VAX 9000 Family
Console Command Description

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About This Manual

This manual describes the commands implemented by the VAX 9000 family service processor unit (SPU), commonly called the console, in console I/O (CIO) mode. Most of the information in this manual is also available on-line (in CIO mode) from the service processor operating system HELP library, through the console HELP command.

Intended Audience

This manual is written for system operators, Digital Customer Services personnel, and other console interface users. This manual assumes the reader is familiar with the VAX 9000 family architecture and the Digital command language (DCL).

Manual Structure

This manual has three chapters, two appendixes, and an index.

- Chapter 1 provides generic information about the console command language.
- Chapter 2 describes the console commands.
- Chapter 3 describes the lexical functions.
- Appendix A is an alphabetical quick reference list of console commands.
- Appendix B is an alphabetical quick reference list of lexical functions.

Manual Conventions

This manual uses the following conventions:

Convention	Meaning
COMMAND argument	In command description format sections, command verbs are uppercase; user-supplied arguments (qualifiers, object parameters, and so on) are lowercase.
COMMAND arg1 arg2 arg3	Stacked arguments indicate several different argument formats. Only one argument is to be entered.
COMMAND [argument]	Brackets ([ ]) enclose optional arguments.
COMMAND [arg[, . . .]]	The , . . . (comma,ellipsis) indicates a list of similar arguments.
COMMAND [arg1[, . . . argn]]	Indicates a limited list, form 1 through n, of similar arguments.
COMMAND {arg1 | arg2} COMMAND [arg1 | arg2]	The vertical bar (|) separates argument choices; only one choice is to be entered. Braces ({}) enclose a required argument; brackets ([ ]) enclose an optional argument.
LEXICAL (argument)	Lexical function arguments, when used, are enclosed in parentheses (( )).
LEXICAL [(argument)]	The lexical function argument is optional.
LEXICAL ([argument])	One of several lexical function arguments is required.
(D)	Default.
[mm:nn]	Indicates the field or set, *mm* through *nn*. Replaces <mm:nn>.

1
Console Command Language

The console, or SPU, command language merges the standard VAX console command language with basic file-system commands to access the entire SPU operating system from one level. Unlike previous VAX systems, the VAX 9000 family console command language is not implemented as a program running under another operating system.

The console command language resembles the Digital command language (DCL) in its use of lexical functions, command files, symbols, and logical names. While this provides a high degree of familiarity for the majority of VAX 9000 family users, it should be noted that the two languages are not identical.

1.1 Command Syntax

Example 1–1 shows the general format for console commands.

```
>>> VERB [/qualifiers] object [parameters] Return
      ❶        ❷         ❸         ❹        ❺
```

Example 1–1 Console Command Format

❶ The verb is the command name and indicates the command action.

❷ Qualifiers modify the command action and always begin with a slash (/). Qualifiers are usually optional, as indicated by enclosing them in brackets ([]).

❸ The object parameter receives the command action. The object is a required parameter unless a default object parameter is defined for the command.

❹ Optional parameters (enclosed in brackets) provide additional command modifiers.

❺ Most commands are not executed until Return is pressed. (Examples of command usage do not show the Return key symbol.)

As Examples 1–2 and 1–3 show, the general command format is usually modified to fit specific command requirements.

Example 1–2 shows the COPY command format and a typical COPY command.

```
    COPY [/qualifiers] input-file-spec output-file-spec

>>> COPY /NOCONFIRM INPUT.DAT OUTPUT.DAT
      ❶       ❷         ❸          ❹
```

Example 1–2 COPY Command Format

❶ COPY is the command verb.

❷ /NOCONFIRM is an optional qualifier specifying that the file is copied as soon as the command is entered; that is, without confirmation (Section 1.1.1.4).

❸ INPUT.DAT is the first of two required object parameters, and specifies the file to be copied.

❹ OUTPUT.DAT is the second of two required object parameters, and specifies the duplicate file. There are no optional parameters for this command.

Example 1–3 shows the SET command format and a typical SET command. Note that in SET and SHOW commands, the qualifier follows the object parameter.

```
    SET object [/qualifiers] [parameters]

>>> SET BOOTSET /PRIMARY=1 0,1,2
    ❶   ❷        ❸       ❹
```

Example 1–3 SET Command Format

❶ SET is the command verb.

❷ BOOTSET is the object parameter.

❸ /PRIMARY=1 is the optional qualifier specifying CPU1 as the primary CPU in the boot set.

❹ The 0, 1, and 2 are required and optional parameters that specify the boot set includes CPU0, CPU1, and CPU2.

1.1.1 Command Qualifiers

Sections 1.1.1.1 through 1.1.1.4 describe several qualifier attributes that apply to many of the console commands.

1.1.1.1 Qualifier Entry

Command qualifiers are always prefixed with a slash (/), as follows:

```
COMMAND /qualifier
```

Most commands allow qualifiers to be entered in any sequence following the command verb and before or after the object and optional parameters. Note that the following command/qualifier sequences are fixed but can be followed by additional parameters:

CREATE/DIRECTORY
CREATE/WINDOW
DEFINE/KEY
DELETE/PATTERN
DELETE/SYMBOL
DELETE/TRACE
DELETE/WATCH
DELETE/WINDOW

Additionally, some commands (such as LOAD, SHOW STRUCTURE, TEST, and VERIFY) have two sets of qualifiers.

The format section of each command description (Chapter 2) indicates the position of qualifiers and other required and optional command elements.

1.1.1.2 Qualifier Values

Many qualifiers have optional, required, and/or default values. A qualifier value is specified by following the qualifier with a colon (:) or equals (=) character and then the value (Example 1–3). Depending on the command and/or qualifier, the value can be a quoted string, keyword, or numeric value.

1.1.1.3 CPU and SCU Qualifier

Many commands accept a */CPU=cpu-id* qualifier to specify a CPU or CPUs other than the current default. The argument, *cpu-id,* can be an integer value or one of the symbolic names listed in Table 1–1. Generally, if the qualifier is not used (that is, a CPU is not specified), the default CPU is selected. (To specify a CPU as the default, see the SET CPU command description in Chapter 2.)

Table 1–1 CPU Qualifier Arguments

Argument	Description
0, 1, 2, or 3	An integer value. Some commands accept a list; for example: /CPU=(0,1).
ALL	All CPUs. In some commands /CPU=ALL is similar to /CPU=(0,1,2,3) except that ALL does not detect an error if a CPU does not exist.
AVAILABLE	All CPUs in the available set. CPUs in the available set are permanently allocated to the operating system and cannot be modified by the operator while the operating system is executing. The available set is copied from the boot set when the system is booted.
BOOTPRIMARY	The CPU that will be the primary CPU when the system is next bootstrapped.
BOOTSET	All CPUs in the boot set. The boot set is all CPUs that have passed self-test and are enabled. The boot set CPUs are made available to the operating system to execute in the symmetrical multiprocessing (SMP) environment.
PRIMARY	The first CPU to boot in an SMP environment. The primary CPU controls the booting of the other CPUs in the boot set.

Many of the same commands that accept the CPU qualifier also accept the SCU qualifier. Generally, these commands treat the SCU qualifier as if it were another argument to the CPU qualifier. That is, the command has the same affect on the SCU that it has on the specified CPU.

1.1.1.4 Confirmation Qualifier

Many commands accept the */CONFIRM* qualifier to specify selectively whether a command is to be executed. For example, this qualifier is frequently used in file operations where defaults or wildcard characters are used to specify the same operation for more than one file. Specifying confirmation causes the command to display a prompt requesting an affirmative response for each file to be processed.

The valid responses to the confirmation prompt are listed in Table 1–2.

Table 1–2 Confirmation Responses

Response	Result
Y (yes)	Execute the command.
T (true)	Execute the command.
N (no)	Do not execute the command.
F (false)	Do not execute the command.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

1.1.1.5 /ALL Qualifiers

In most cases, commands that offer an */ALL* qualifier also offer one or more specific object parameters. The two are mutually exclusive; that is, the */ALL* qualifier and a specific object parameter cannot be specified in the same command line.

1.2 In-Line Help

In addition to the HELP command, the SPU software provides multilevel in-line help for console commands. As Example 1–4 shows, typing a question mark (?) at some point in the console command line invokes the in-line help facility for that level.

```
>>> ? ❶ Command, one of the following:
  ALLOCATE      BOOT          CLOSE         CONTINUE      COPY
  CREATE        DEALLOCATE    DEASSIGN      DEBUG         DEFINE
  DELETE        DEPOSIT       DIRECTORY     DISMOUNT      EDIT
  EVALUATE      EXAMINE       EXIT          FIND          HALT
  HELP          IF            INITIALIZE    INQUIRE       LOAD
  LOGOUT        MAIL          MICROSTEP     MOUNT         NEXT
  OPEN          PURGE         READ          REBOOT        RECALL
  RENAME        REPEAT        RESET         RESTORE       RUN
  SAVE          SCROLL        SELECT        SEND          SENSE
  SET           SHOW          START         STOP          SUBMIT
  TALK          TEST          TYPE          UNJAM         VERIFY
  WAIT          WRITE         X             Z
or External command, one of the following:
  ERF           DUMP          DIFFERENCES
or Symbol name
or Command file identifier, "@"
>>> SET ? ❷ Parameter, one of the following:
  ATTN_ACTION   AUTOBOOT      BI_DEVICES    BOOTFLAGS     BOOTSET
  CLOCK         COLD_START    COMMAND       CPU           CYCLE
  DEFAULT       ERROR_HANDLING              FAULT_ACTION  ISOLATION
  KEEP_ALIVE    LABELS        LOGGING       MESSAGE       PATTERN
  PERSONAL_NAME               POWER         PROMPT        RADIX
  REMOTE        REVISION      SCOPE         SCM           SCI
  SCREEN        SERIAL        SJA           SOURCE        SPU_UPDATE
  SNAPSHOT      STEP          TERMINAL      TIME          TRACE
  VERIFY        WARM_START    WATCH         XMI_DEVICES   XMI_UPDATE
>>> SET TERMINAL ? ❸ Terminal qualifier, one of the following:
  /[NO]BROADCAST              /CPU:         /DEVICE:      /[NO]ECHO
  /[NO]EIGHTBIT               /[NO]ESCAPE   /KEYPAD:      /PAGE:
  /[NO]PROGRAM /PIO_PORT:     /[NO]TALK_MODE              /WIDTH:
or Terminal name,
or confirm with carriage return
>>> set terminal /keypad:? ❹ Option, one of the following:
  APPLICATION  NUMERIC
```

Example 1–4 In-Line Help

❶ Typing a question mark in response to the console prompt displays a list of console commands.

❷ Typing a question mark after a **SET command** displays a list of SET command parameters or options.

❸ Typing a question mark after a SET command **parameter** displays a list of command qualifiers.

❹ Typing a question mark after a SET command parameter **qualifier** displays a list of qualifier options.

1.3 Special Keys

The console command language interprets LK201 keyboard keys for command recall, command editing, and special functions.

1.3.1 Predefined Keys

Table 1–3 lists the keys defined by the console software.

Table 1–3 Predefined Keys

Keys	Action
Ctrl/A	Switch between insert and overstrike edit mode.
Ctrl/B	Display previous command in recall buffer. Same as Up Arrow.
Ctrl/C	Cancel command processing. Same as Ctrl/Y.
Ctrl/D	Move cursor one character to the left. Same as Left Arrow.
Ctrl/E	Move cursor to end of line.
Ctrl/F	Move cursor one character to the right. Same as Right Arrow.
Ctrl/H	Move cursor to beginning of line.
Ctrl/Q	Resume screen output.
Ctrl/S	Hold screen output.
Ctrl/U	Delete line.
Ctrl/W	Redraw the screen.
Ctrl/Y	Cancel command processing. Same as Ctrl/C.
Ctrl/Z	End of file.
Do	Same as Return key.
Help	Invokes HELP utility.
?	Invokes in-line help. See Section 1.2.
Down Arrow	Display next command in recall buffer.
Left Arrow	Move cursor one character to the left. Same as Ctrl/D.
Right Arrow	Move cursor one character to the right. Same as Ctrl/F.
Up Arrow	Display previous command in recall buffer. Same as Ctrl/B.

1.3.2 User-Defined Keys

In addition to the predefined keys, the user can define function keys, editing keypad keys (except arrows), and numeric keypad keys. To implement user-defined keypad keys, set the keypad mode to application. Table 1–4 lists the keys that the user can define. See the DEFINE/KEY and SET TERMINAL/KEYPAD command descriptions in Chapter 2 for more information.

Table 1–4 User-Defined Keys

Key Name	Key[1]
Editing Keypad	
E1	Find
E2	Insert Here
E3	Remove
E4	Select
E5	Prev Screen
E6	Next Screen
Function Keys	
F6–F14	F6–F14
Do	F15
Help	F16
F17–F20	F17–F20
Numeric Keypad	
PF1–PF4	PF1–PF4
KP0–KP9	0–9
PERIOD	.
COMMA	,
MINUS	–
ENTER	Enter

[1]To implement user-defined keypad keys, set the keypad mode to application.

1.4 Message Format

The console command language uses the DCL format for messages. All messages begin with a percent character (%) in column 1. If the message continues to more than one line, the continuation line(s) begin with a minus character (–) in column 1. Example 1–5 shows the message format.

```
%Facility-Severity-Ident, Text
-Facility-Severity-Ident, Text
     ❶        ❷       ❸     ❹
```

Example 1–5 Message Format

❶ Facility is a 3-character identification code for the SPU operating-system subsystem that produced the message. For example, CLI is the code for the command language interpreter.

❷ Severity is a 1-character code for the message severity, as follows:

S = Success
I = Informational
W = Warning
E = Error
F = Fatal error

❸ Ident is a variable-length, message-unique field. It is usually an acronym for the message.

❹ Text is a brief error description and possible remedy.

1.5 The Radix of Numbers

The console command language uses numbers for VAX data, loop counts, file versions, frequencies, and so on. Normally, the radix is hexadecimal for all VAX data and numbers related to VAX data; and the radix is decimal for all file-related numbers, test numbers, bit numbers, and so on.

The user can specify the radix for all VAX data and numbers related to VAX data. All numbers that are not hexadecimal and do not have a fixed radix are displayed with a radix identifier prefixed to the number. For example:

Decimal numbers are displayed as %D123.
Octal numbers are displayed as %O173.
Binary numbers are displayed as %B1111011.

More specifically, the following data types are decimal values:

Loop count (except /NEXT) and cycle count
Data size
Bit number
Time value
Voltage, current, and frequency values
Test number
File system numbers (generation number, count, keep count)

The following data types are represented in the user-specified radix:

All VAX data and addresses
EVALUATE expressions
CPU ID
RIC ID
XMI node and BI node IDs

All numbers input, except file generation numbers, accept the following radix specifiers:

%D (decimal)
%B (binary)
%O (octal)
%X (hexadecimal)

For example:

```
>>> DEPOSIT R0 %D10
```

deposits 10_{10} in VAX register R0.

NOTE
Decimal quantities are limited to a value that can be stored in 32 bits. In other words, if the radix is specified as %D, the value cannot exceed 2147483647 (signed) or 4294967295 (unsigned).

1.6 Expressions

The parameters of many commands are defined as an expression. This section describes the kinds of expressions and expression operators, including lexical functions.

1.6.1 Types of expressions

- Numeric expressions

  Numeric expressions can have any elements that evaluate to a numeric result.

- String expressions

  String expressions can have any elements that yield a string result.

- Mixed expressions

  Mixed expressions can have either numeric expressions, string expressions, or both.

- Lexical functions

  The command language interpreter (CLI) also provides lexical functions that give string or numeric results (for example, the contents of a register) based on a predetermined operation. Lexical functions are used primarily in command files to allow symbol assignment to CPU data. For a description of the lexical functions, see Chapter 3.

- Arithmetic operators

  The supported arithmetic expression operators are:

  + - / *

- Relational operators

  The following relational integer operators yield 0 or 1 to reflect false and true expressions:

  .EQ. .NE. .GE. .LE. .GT. .LT.

  The following relational string operators yield 0 or 1 to reflect false and true expressions:

  .EQS. .NES. .GES. .LES. .GTS. .LTS.

- Boolean operators

  Boolean operators .AND. and .OR. are provided for data manipulation. They are not relational operators; their precedence is higher than relational operators. The unary operator .NOT. is also provided.

Example 1–6 gives several examples of how expressions are used.

```
DEPOSIT R0 R1
EXAMINE/NEXT:10 @
EVALUATE %X100 + (%X45 * 4)
SAVE_R0 = R0
START @PC
REPEAT IF SIGNAL("UPC") .NE. %X1B00 THEN MICROSTEP/NOSPACEBAR 1
IF P1_.EQS._ "" THEN INQUIRE P1 "_What"
```

Example 1–6 Expression Usage

1.6.2 Data Types

The console command language supports three basic data types: integer, bitvector, and string. Some commands automatically convert between data types, for example:

```
>>> WRITE STDOUT XYZ
```

converts XYZ to a string data type before it is output.

- Integer data type

  An integer data type is limited to 32 bits in length and is a signed value. The range of the value is from –2147483648 to 2147483647. Integers can be used in expressions and all operators accept integer data types.

  Integers can be converted to strings by binary to ASCII translation, and to bitvectors by truncation or zero fill, depending on the bitvector size.

- Bitvector data type

  A bitvector is a 1- to 2048-bit data type. It is used to store large numbers (scan rings, control store words, and so on). Bitvectors can be used as an expression but cannot be used as operands of an expression; that is, the value is accepted and passed, but no operations are performed on the value. Bitvectors can be manipulated with lexical functions.

  Bitvectors can be converted to strings by binary to ASCII translation, and to integers by truncation or zero fill, depending on the bitvector size.

- String data type

  A string is a 0- to 255-character ASCII string. Strings can be used in expressions and can be mixed with integers.

  Strings can be converted to bitvectors or integers by ASCII to binary translation.

2
Console Command Descriptions

The command descriptions in this chapter are nearly identical to the descriptions in the service processor operating system HELP library. In most cases, the two are distinguished only by minor formatting differences to accommodate the different media.

ALLOCATE

Locks the specified unit so that only this process can use the unit. This allows a single process to ensure that no other operations are performed on the specified unit.

Format

ALLOCATE *object*

Parameters

object
Specifies one of the following:

- CPU[id] — Allocate the specified CPU; if a CPU is not specified, the default CPU is allocated. See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.
- MCM — Allocate the clock subsystem.
- PCS — Allocate the power subsystem.
- SCU — Allocate the system control unit, memory, and I/O.

Example

```
>>> ALLOCATE MCM
```

Allocates the clock subsystem to the current process.

:= (Assign String)

Assigns a symbolic name to a character string.

Format

symbol-name :=[=] string

Parameters

symbol-name

The symbol name can contain between 1 and 255 characters. It must begin with an alphabetic character, underscore (_), or dollar sign ($). The remaining characters can be any alphanumeric character from the Digital multinational character set, underscores, or dollar signs.

A single equal sign (:=) in the statement places the symbol in the local symbol table. Double equal signs (:==) place the symbol in the global symbol table. The global symbol table is available at the interactive command level and to command procedure files. Command procedures (see HELP for the @ command) also have unique local symbol tables.

string

The string can be specified as a string literal consisting of any alphanumeric or special characters, or as a symbol or lexical function that evaluates to a string literal.

The := string assignment statement automatically converts lowercase text to uppercase, removes leading and trailing spaces and tabs, and compresses multiple spaces and tabs to a single space.

String literals need not be enclosed in quotation marks ("). However, to preserve case and retain multiple spaces and tabs, place quotation marks around the string. To use quotation marks in a string, enclose the string in quotation marks and use a double set of quotation marks within the string. For example:

```
>>> TEST    := "this     is a ""test"" string"
>>> SHOW SYMBOL TEST
TEST = "this     is a "test" string"
```

To define a symbol as a null string, do not specify a string. For example:

```
>>> NULL :=
```

To request substitution of a symbol or lexical function, place apostrophes (') around the item. For example:

```
>>> A := "Quoted string"
>>> B := 'A'
>>> SHOW SYMBOL B
B = "Quoted string"
```

Examples

1

```
>>> TIME := SHOW TIME
>>> TIME
10-OCT-1988 16:35:44
```

The string SHOW TIME is assigned to symbol TIME. Because the symbol is the first word on the command line, the command interpreter substitutes its string value and executes the command SHOW TIME.

2

```
>>> STAT := @DISK$HARD:[CONSOLE]STAT.CMD
>>> STAT
```

This example shows how to define a symbol as a foreign command. The symbol STAT is equated to a string that begins with the at sign (@) character (execute command procedure) followed by a file specification. The symbol STAT can now be used as a synonym for the command:

```
>>> @DISK$HARD:[CONSOLE]STAT.CMD
```

When STAT is subsequently entered on the command line, the command interpreter executes the command procedure file.

3

```
>>> A := "this is a big     space."
>>> SHOW SYMBOL A
A = "this is a big     space."
>>> B := 'A'
>>> SHOW SYMBOL B
B = "this is a big     space."
```

This example shows how to request symbol substitution with the string assignment statement. The apostrophes in the definition for symbol B cause the symbol to take on the value assigned to symbol A instead of the literal string A.

= (Assign Symbol)

Assigns a symbolic name to a character string or integer value.

Format

symbol-name =[=] expression

Parameters

symbol-name

The symbol name can contain between 1 and 255 characters. It must begin with an alphabetic character, underscore (_), or dollar sign ($). The remaining characters can be any alphanumeric character from the Digital multinational character set, underscores, or dollar signs.

A single equal sign (=) in the statement places the symbol in the local symbol table. Double equal signs (==) place the symbol in the global symbol table. The global symbol table is available at the interactive command level and to command procedure files. Command procedures (see HELP for the @ command) also have unique local symbol tables.

expression

The expression can be a character string, integer value, symbol, lexical function, or combination of entities.

If the expression evaluates to a string, the symbol is assigned a string value. If the expression evaluates to an integer, the symbol is assigned an integer value. If a symbol is specified in an expression, the value of the symbol is used in evaluating the expression.

To specify a literal character string in an expression, enclose the string in quotation marks (").

Examples

1
```
>>> LIST == "DIRECTORY"
>>> LIST
Directory DISK$HARD:[CONSOLE]

CPU0.CMD;1        CPU1.CMD;1        CPU2.CMD;1        CPU3.CMD;1
DEBUG.CMD;2       LOGIN.CMD;3       Z.CMD;2           Z.CMD;1
Total of 8 files.
```

The assignment statement defines the symbol LIST as the character string DIRECTORY and places the symbol in the global symbol table. When LIST is entered on the command line, the symbol's definition is retrieved from the global symbol table and the command DIRECTORY is executed.

2
```
>>>   COUNT = 0
>>> LOOP:
>>>   COUNT = COUNT + 1
      .
      .
      .
>>>   IF COUNT .LT. 5 THEN GOTO LOOP
```

The symbol COUNT is defined in a command procedure. The procedure initializes, increments, and tests the value of COUNT to control iterations through the code loop. If COUNT is less than 5, the IF statement causes a branch to label LOOP; otherwise, the procedure exits the loop and executes the command following the IF statement.

3
```
>>> A = 25
>>> CODE = 4 + INTEGER("6") - 'A'
>>> SHOW SYMBOL CODE
CODE = -15   HEX = FFFFFFF1   Octal = 1777761
```

Two symbols are defined for a mixed arithmetic expression. First, a value of 25 is assigned to the symbol 'A'. The second statement evaluates an expression containing the integer 4, the lexical function INTEGER("6"), and the symbol 'A'; the result, -15, is assigned to the symbol CODE.

NOTE

Assuming the default radix is hexadecimal, symbol A must be enclosed in quotes to distinguish it from A_{16}.

@ (Execute Procedure)

Executes commands from a command procedure file. Some commands are valid *only* in a command procedure. These are:

CALL GOTO LABEL ON RETURN

Format

@ file-spec *[p1 [p2 [. . . p8]]]*

Parameters

file-spec
The command procedure file to be executed. The default file type is CMD and the default directory is the current directory. Wildcard characters are not allowed in the file-spec.

Command procedures can contain any console command and can be nested to a depth of eight.

[p1 [p2 . . . [p8]]]
Up to eight parameters can be passed to a command procedure. The parameters assign character string values to the symbols named P1 through P8 that are local to the command procedure. Command procedures also have access to the global symbol table.

Separate multiple parameters with spaces. Specify a null parameter with quotation marks (""). Specify a parameter with a character string value containing alphanumeric or special characters using the following restrictions:

- The command interpreter converts lowercase letters to uppercase and delimits parameters with spaces. To preserve lowercase and embedded spaces, enclose the parameter in quotation marks.
- To pass a parameter containing literal quotation marks and spaces, enclose the entire string in quotation marks and use a double set of quotation marks within the string. For example:

  ```
  >>> @TEST1 "Spaced and ""quoted string"""
  ```

  When TEST1.CMD executes, parameter P1 is equated to the string:

  ```
  Spaced and "quoted string"
  ```

- If a string contains quotation marks but not spaces, the quotation marks are preserved in the string and the letters within the quotation marks remain in lowercase. For example:

```
>>> @TEST2 abc"def"ghi
```

When TEST2.CMD executes, parameter P1 is equated to the string:

```
ABC"def"GHI
```

- To use a symbol as a parameter, enclose the symbol in apostrophes to force symbol substitution. For example:

```
>>> NAME = "JOHNSON"
>>> @INFO 'NAME'
```

The symbol NAME is replaced with value "JOHNSON" and the parameter "JOHNSON" is passed as P1 to INFO.CMD.

Examples

1
```
>>> SET VERIFY
>>> @SYSINIT
```

Executes the system initialization procedure SYSINIT.CMD.

2
```
>>> CREATE EXAMINE.CMD
DEPOSIT/PHYSICAL/LONGWORD/NEXT=20 200 0
EXAMINE/PHYSICAL/LONGWORD/NEXT=20 200 Ctrl/Z
^Z
>>> @EXAMINE
```

This procedure deposits zeros into 20 consecutive longwords starting at physical address 200 and then examines the longwords.

BOOT

Executes a command procedure that loads, and optionally starts, operating system software.

Format

BOOT *[/qualifiers] [device]*

Qualifiers

/BI=node-id
Specifies the boot device controller's BI node number. The number is loaded into GPR R0 bits [3:0].

/NODE=node-id
The XMI node of the boot device, where node-id is a hexadecimal number.

/PIO_MODE(D)
/NOPIO_MODE
Specifies whether the process enters program I/O (PIO) mode after starting the primary bootstrap.

/R3=register-data
Register-data is additional boot data and flags expressed as a hexadecimal value.

/R5=boot-flags
The numeric value boot-flags sets bootstrap control flags in GPR R5. The flags can be specified with this qualifier or with a DEPOSIT R5 command in the boot procedure. If the /R5 qualifier is to be used, the DEPOSIT R5 command in the boot procedure must be commented out. When this qualifier specifies the flags, they are loaded before the boot procedure is executed. The flags provide additional boot sequence information to the primary bootstrap loader VMB.EXE.

/START (D)
/NOSTART
Specifies whether the processor starts at the completion of the boot procedure. When /NOSTART is specified, the GPRs and VMB.EXE are loaded, but the procedure returns to the console prompt instead of issuing the START command.

/XMI=xmi-id
Specifies the XMI node number (hexadecimal) of the boot device controller or of the BI adapter that maps the boot device's BI controller. The value is loaded into GPR R0 bits [9:4], where [9:8] specify the XJA number and [7:4] specify the node.

Parameters

device
Specifies the device and unit number from which the boot procedure is to be executed. If the parameter is not specified, the default boot procedure DEFBOO.CMD is executed.

The device parameter format is:

dddnnn

where *ddd* is a device name that invokes the command procedure *ddd*BOO.CMD and *nnn* is a unit number that is loaded into GPR R3.

Examples

1 `>>> BOOT`

Executes the default boot procedure DEFBOO.CMD.

2 `>>> B XCI2`

Executes XCIBOO.CMD and specifies system boot device unit 2.

3 `>>> B/R5=1`

Executes DEFBOO.CMD and specifies a conversational boot sequence.

CALL

Transfers control to a labeled subroutine in a command procedure and creates a new procedure level. The next instruction of the calling routine is saved on a stack for return.

Format

CALL *label*

Parameters

label:
The first item on a command line. A label cannot contain embedded blanks. When the CALL command is executed, control passes to the command following the label. The label can precede or follow the CALL statement in the command procedure.

All labels are procedure-level dependent except for labels that define subroutine entry points. Subroutine entry point labels are local to the current command procedure file level and must be unique.

CLOSE

Closes a file that was opened with the OPEN command and deassigns the logical name specified with the OPEN command.

Format

CLOSE *logical-name*

Parameters

logical-name
Specifies the logical name assigned to the open file by the OPEN command.

Examples

1
```
START:
  OPEN/READ FILE TEST.DAT
LOOP:
  READ/END_OF_FILE=DONE FILE LINE
    .
    .
    .
  GOTO LOOP
DONE:
  CLOSE FILE
```

The OPEN command opens file TEST.DAT and gives it the logical name FILE. The READ command /END_OF_FILE qualifier transfers control to the line at label DONE when the end of the file is reached. The CLOSE command closes the input file.

```
2  >>> @READFILE
   >>> SHOW LOGICAL/PROCESS
         .
         .
         .
   "INFILE" = "TEST.DAT"
   "OUTFILE" = "NEWTEST.DAT"
   >>> CLOSE INFILE
   >>> CLOSE OUTFILE
```

Command procedure READFILE.CMD is executed. SHOW LOGICAL/PROCESS displays the logical names in the process logical name table, including INFILE and OUTFILE that were assigned by OPEN commands in READFILE.CMD. The CLOSE commands close these files and deassign the logical names.

CONTINUE

Resumes macrocode execution in the default or specified CPU.

Format

CONTINUE *[/qualifier]*

Qualifiers

/CPU=cpu-id
The CPU to be continued, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

A CPU list can also be specified, for example: /CPU=(0,1,2,3). CONTINUE/CPU=ALL is similar to CONTINUE/CPU=(0,1,2,3) except that ALL does not detect an error if a CPU does not exist. If a CPU is not specified, the default CPU is continued.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/LOG
/NOLOG
Determines whether to display command results on the terminal.

/PIO_MODE (D)
/NOPIO_MODE
If /NOPIO_MODE is not specified, the SPU enters program I/O (PIO) mode for the continued processor.

/PIO_PORT={OPA0 | OPA1}
Specifies the port to which the terminal is temporarily connected in PIO mode.

Description

When CONTINUE is executed, CPU macrocode execution resumes at the current PC, CPU state changes from HALTED to RUNNING, and, if the default CPU is continued, the console is placed in program I/O (PIO) mode. Characters typed in PIO mode are always sent to the primary console communication register set regardless to which CPU the console is attached. The CPU is not initialized.

Typing Ctrl/P returns the console to console I/O (CIO) mode. If the continued CPU is not the default, the console is not placed in PIO mode.

Examples

1 `>>> CONTINUE`

Resume program execution in the default CPU and enter PIO mode.

2 `>>> CONTINUE/CPU=PRIMARY`

Resume program execution in the primary CPU. Enter PIO mode only if the primary CPU is also the default CPU.

3 `>>> CONTINUE/CPU=1`

Resume program execution in CPU1. Enter PIO mode only if CPU1 is also the default CPU.

COPY

Creates a new file from an existing file, or a group of files from a group of existing files.

Format

COPY *[/qualifiers] input-file-spec output-file-spec*

Qualifiers

/CONFIRM
/NOCONFIRM (D)
Determines whether an affirmative response is required before a file is copied. Valid responses to the confirmation prompt are:

Response	Result
Y (yes)	The file is copied.
T (true)	The file is copied.
N (no)	The file is not copied.
F (false)	The file is not copied.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

/CONTIGUOUS
Specifies that the new file is to be contiguous on disk.

/LOG
/NOLOG (D)
/LOG displays the complete input and output file specifications and number of blocks for each file that is copied.

Parameters

input-file-spec
The file or files to be copied. The default device and directory are used unless otherwise specified.

An input file list cannot be specified; however, the asterisk (*) wildcard character can be used in place of any whole or partial field (file name, type, or version) in the file specification.

If the input file specification is omitted, the `From:` prompt is displayed.

output-file-spec
Specifies the name of the file or files to be created. The default device and directory are used unless otherwise specified. If the created file has the same name as an existing file, the created file is given the next higher version number.

The output file specification must include at least one field (file name, type, or version); the corresponding input file field replaces any missing fields.

The asterisk (*) wildcard character can be used in place of any whole field in the output file specification. The field is replaced by the corresponding field from the input file specification.

If the output file specification is omitted, the `To:` prompt is displayed.

Examples

1
```
>>> COPY
From: TEST.DAT
To:   NEWTEST.DAT
```

Copies file TEST.DAT to file NEWTEST.DAT, both in the current directory.

2
```
>>> COPY TEST.TXT TMP
>>> COPY TEST.TXT .TMP
```

Copy file TEST.TXT into files named TMP.TXT and TEST.TMP. The missing output file fields are duplicated from the corresponding input file fields.

3
```
>>> COPY A*.* [SAVE]*.*
```

Copies all files beginning with A from the default directory to a group of files with the same file names in directory [SAVE].

CREATE

Creates a file from text entered at the terminal. Typing Ctrl/Z closes the file and terminates the command.[1]

Format

CREATE *[/[NO]LOG] file-spec*

Qualifier

/LOG
/NOLOG (D)
/LOG displays the complete file specification, including device and directory, after the file is created.

Parameters

file-spec
The file to be created. Defaults are not supplied; if either the file-name field or the file-type field is omitted, the field is null. If the specified file exists, a new version of the file is created. Wildcard characters are not allowed.

[1] Command variants, of the form CREATE/OPTION, are listed in the table of contents and described separately on the following pages.

Example

```
>>> CREATE/LOG A.DAT
First line of file A.DAT
Next line of file
     .
     .
     .
Last line Ctrl/Z
^Z
DEVICE:[DIRECTORY]A.DAT;1 created
>>>
```

The CREATE command creates file A.DAT in the current directory, reads the lines of text from the terminal, and writes them into the file. Ctrl/Z terminates the command and closes the file. The /LOG qualifier displays the complete file specification.

CREATE/DIRECTORY

Creates a new directory or subdirectory.

Format

CREATE/DIRECTORY *[/[NO]LOG] directory-spec*

Qualifier

/LOG
/NOLOG (D)
/LOG displays the complete directory specification, including device, after the directory is created.

Parameters

directory-spec
The directory or subdirectory to be created. The directory specification must contain a directory name enclosed in brackets ([]). A device name is optional. A subdirectory name begins with a period (.) to separate the directory levels.

When creating a subdirectory, the top and any intermediate level directories must exist; they are not automatically created. For example, to create subdirectory [A.B.C], top level directory [A] and subdirectory [A.B] must exist or be created first. Wildcard characters are not allowed.

Examples

1
```
>>> CREATE/DIRECTORY [TEST]
```

Creates the directory [TEST] and places the file TEST.DIR in the top level directory, [000000], of the current device.

2
```
>>> CREATE/DIRECTORY [TEST.SUB]
>>> SET DEFAULT [TEST.SUB]
```

The CREATE/DIRECTORY command creates subdirectory [TEST.SUB] and places file SUB.DIR in directory [TEST]. The SET DEFAULT command changes the default directory to the subdirectory.

CREATE/WINDOW

Creates a window of a specified type and position on the screen. If the screen is off or suspended (by SET SCREEN OFF), it is turned on.

Format

CREATE/WINDOW *[/qualifiers] window-name [AT location]*

Qualifiers

/CPU=cpu-id
The CPU associated with trace or microcode windows, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is selected.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/ECS
Creates a window to trace the EBox control store microcode. An ECS trace window displays the ASCII source code of the microword at the current EBox microPC. The data displayed is read from the EBox microcode listing file. The window is updated every microstep that does not burst clocks; if clocks burst, only the final PC is displayed.

/EXAMINE
Creates an examine window. This window can be used with the EXAMINE/WINDOW command to display memory data in ASCII, or instruction or binary data in the current context (byte, word, quadword, or longword).

/JCS
Creates a window to trace the JBox control store microcode. A JCS trace window displays the ASCII source code of the microword at the current JBox microPC. The data displayed is read from the JBox microcode listing file. The window is updated every microstep that does not burst clocks; if clocks burst, only the final PC is displayed.

/ODOMETER

Creates a window to monitor selected signals in the CPU. An odometer window can monitor the state of up to 256 CPU signals at a time. The SET TRACE/ODOMETER command specifies the signals to be monitored. The value of each signal and the last 32 characters of its name are displayed.

The window is updated every microstep that does not burst clocks; if clocks burst, only the final PC is displayed. When the window is updated following a microstep command, signals that have changed state are highlighted with reverse video.

/UPDATE (D)
/NOUPDATE

Determines whether the specified window is updated on a MICROSTEP or NEXT command. /NOUPDATE is the same as /VIEWONLY.

/VIEWONLY

Specifies a microcode window is display only. The window does not respond to MICROSTEP commands, but it can be scrolled to view the microcode.

Parameters

window-name

A unique window name, having up to 11 characters. The name identifies the window for SCROLL, SELECT, and DELETE/WINDOW commands.

location

The position of the window on the screen. The window can occupy a quarter, third, half, or whole screen. Window location keywords are:

Table 2–1 Window Location Keywords

Keyword	Screen Segment	Keyword	Screen Segment
W1	Whole screen	H1	First (upper) (D)
		H2	Second (lower)
T1	First (upper)	Q1	First (upper)
T2	Second	Q2	Second
T3	Third (lower)	Q3	Third
		Q4	Fourth (lower)

The command window occupies at least five lines. It is automatically extended from the end of the lowest window to the bottom of the screen.

Examples

1
```
>>> CREATE/WINDOW
_Window_name: TOP
```

Creates a window named TOP and turns the screen on if it was off. The window type defaults to ECS (EBox control store trace window) and the location defaults to H1 (upper half of screen).

2
```
>>> CREATE/WINDOW/CPU=1 CP1 AT Q1
>>> CREATE/WINDOW/ODOMETER/CPU=1 OD1 AT Q2
>>> SET TRACE/ODOMETER=OD1 @TRACE.LIST
>>> MICROSTEP
STEP>
```

This example creates ECS window CP1 to trace CPU1 EBox microcode and ODOMETER window OD1 to trace selected CPU1 signals. The SET TRACE/ODOMETER command specifies that signals in file TRACE.LIST are to be traced and displayed in window OD1. The MICROSTEP command places the SPU in space bar step mode (SBSM), causing one clock cycle to be issued each time the space bar is pressed. The SPU exits SBSM when any other key is pressed.

3
```
>>> CREATE/WINDOW/ODOMETER/CPU=0 CP0 AT Q1
>>> CREATE/WINDOW/ODOMETER/CPU=1 CP1 AT Q2
>>> SET TRACE/ODOMETER=CP0 @TRACE.LIST
>>> SET TRACE/ODOMETER=CP1 @TRACE.LIST
>>> MICROSTEP/CPU=(0,1)
STEP>
```

This example creates ODOMETER windows for CPU0 and CPU1 and specifies that each CPU traces the signals in file TRACE.LIST. The MICROSTEP command places the SPU in SBSM for both CPUs so that a clock cycle is issued in both CPUs each time the space bar is pressed.

DEALLOCATE

Unlocks the specified unit. Only the locking process (see ALLOCATE) can successfully issue this command.

Format

DEALLOCATE *object*

Parameters

object
Specifies one of the following:

- CPU[id] — Deallocate the specified CPU; if a CPU is not specified, the default CPU is allocated. See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.
- MCM — Deallocate the clock subsystem.
- PCS — Deallocate the power subsystem.
- SCU — Deallocate the system control unit, memory, and I/O.

Example

```
>>> DEALLOCATE MCM
```

Deallocates the previously allocated clock subsystem.

DEASSIGN

Removes a logical name from a specified logical name table. The /ALL qualifier and logical-name parameter are mutually exclusive.

NOTE
Logical names created by the command interpreter (for example, SYS$INPUT and SYS$OUTPUT) cannot be deassigned.

Format

DEASSIGN *[/qualifier] logical-name*

Qualifiers

/ALL
Removes all logical names from the specified table. If a logical name table is not specified, the default is the process table. If /ALL is specified, do not specify the logical-name parameter.

/PROCESS (D)
Specifies the process (private) logical name table.

/SYSTEM
Specifies the system logical name table.

Parameters

logical-name
The logical name to be deassigned. If the logical name contains any characters other than alphanumerics, dollar signs ($), or underscores (_), enclose it in quotation marks (""). Wildcard characters are not allowed. If /ALL is specified, do not specify the logical-name parameter.

Example

```
>>> DEFINE SOURCE DUA50:[SOURCE]
>>> SHOW LOGICAL SOURCE
"SOURCE" = "DUA50:[SOURCE]" (PROCESS)
      .
      .
      .
>>> DEASSIGN SOURCE
>>> SHOW LOGICAL SOURCE
%CLI-S-NOTRAN, no translation for logical name SOURCE
```

The DEFINE command assigns the logical name SOURCE to the device and directory specification DUA50:[SOURCE]. Subsequent references to logical name SOURCE result in references to that directory.

The first SHOW LOGICAL command displays the equivalence string and logical name table for the logical name SOURCE. The DEASSIGN command deassigns the logical name. The second SHOW LOGICAL command shows that the name has been deassigned.

DEBUG

Causes the SPU to enter the local debugger.

Format

DEBUG *[/CONFIRM]*

Qualifier

/CONFIRM (D)
/NOCONFIRM
/CONFIRM issues a confirmation prompt before entering the debugger.

DEFINE

Creates a logical name entry in a specified logical name table and assigns an equivalence string to the logical name.[2]

Format

DEFINE *[/qualifiers] logical-name[:] equivalence-string*

Qualifiers

/LOG (D)
/NOLOG
Determines whether to display a message when a defined logical name supersedes an existing name.

/PROCESS (D)
Places the logical name in the process private logical name table.

/SYSTEM
Places the logical name in the system logical name table.

Parameters

logical-name
The logical name to be defined. It can include any alphanumeric character, dollar signs, or underscores.

Logical names ending with a colon (:) are assumed to be definitions of disk volumes for use in file specifications. The colon is not stored as part of the logical name.

Logical names are placed in the process logical name table by default.

[2] DEFINE/KEY, a special form of the command, is described separately on the following pages.

equivalence-string

A quoted or unquoted string associated with the logical name.

If the string contains spaces, tabs, or lowercase letters, enclose the string in quotation marks. To use quotation marks in a string, enclose the entire string in quotation marks and use a double set of quotation marks ("") within the string. For example:

```
DEFINE QUOTED_STRING "This is a ""quoted"" string"
```

If the logical name is to be used as a file specification, include the punctuation marks (colons (:), brackets ([ ]), periods (.)) in the equivalence string that would be required if the string were used directly as a file specification. For example:

```
DEFINE FILE DUA0:[CONSOLE]TEST.DAT
```

Local area network node names must be defined as logical names. The equivalence string is a decimal number with the format:

dd.nnn

where *dd* is the area number and *nnn* is the node number. Limiting the logical name to six characters is consistent with VMS conventions but not necessary.

DEFINE/KEY

Assigns an equivalence string to a terminal key so that pressing the key is equivalent to entering the string on the command line. Up to 32 keys on an LK201 keyboard can be defined.

Format

DEFINE/KEY *[/qualifiers] key-name equivalence-string*

Qualifiers

/ECHO (D)
/NOECHO
Determines whether the equivalence string is displayed when the key is pressed.

/NOECHO and /NOTERMINAL cannot be used together.

/LOG
Displays the result of the key definition.

/TERMINAL
/NOTERMINAL (D)
/TERMINAL processes the command line and terminates the current equivalence string when the key is pressed.

/NOTERMINAL allows the equivalence string to be inserted in or appended to the current command line. The command line is processed when Return is pressed, or when a key with the /TERMINAL option is pressed. /NOTERMINAL and /NOECHO cannot be used together.

Parameters

key-name
The name of the key to be defined. The types of keys that can be defined are:

- Numeric keypad keys
- Function keys F6 through F20
- Editing keypad keys (except the arrow keys)

Valid key names are:

Key Name	Key
Editing Keypad	
E1	Find
E2	Insert Here
E3	Remove
E4	Select
E5	Prev Screen
E6	Next Screen
Function Keys	
F6–F14	F6–F14
Do	F15
Help	F16
F17–F20	F17–F20
Numeric Keypad	
PF1–PF4	PF1–PF4
KP0–KP9	0–9
PERIOD	.
COMMA	,
MINUS	–
ENTER	Enter

NOTE
For key definitions to take effect, the keypad must be in application mode (SET TERMINAL/KEYPAD=APPLICATION).

equivalence-string

The string to be processed when the key is pressed. If the string contains spaces, enclose the string in quotation marks.

Example

```
>>> SET TERMINAL/KEYPAD=APPLICATION
>>> DEFINE/KEY/TERMINAL KP0 "MICROSTEP 0"
```

Defines the 0 key on the numeric keypad as the MICROSTEP command with a step count of 0 to prevent the command from entering space bar step mode after each clock cycle.

DELETE

Deletes one or more files from a mass storage device.[3]

Format

DELETE *[/qualifiers] file-spec*

Qualifiers

/CONFIRM
/NOCONFIRM (D)
Determines whether an affirmative response is required before each file is deleted. Valid responses to the confirmation prompt are:

Response	Result
Y (yes)	Delete the file.
T (true)	Delete the file.
N (no)	Do not delete the file.
F (false)	Do not delete the file.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

/LOG
/NOLOG (D)
Determines whether the file specification and block size of each deleted file are displayed.

[3] Command variants, of the form DELETE/OPTION, are listed in the table of contents and described separately on the following pages.

Parameters

file-spec
The file or files to be deleted. The file specification must include the file name, type, and version number. If device or directory are not specified, the default device and directory are assumed. The wildcard can be substituted for a group of files or any field (file name, type, or version) or partial field in the file specification. The DELETE command does not allow a file list.

To delete the latest version of a file, but not earlier versions, either do not specify a version number after the semicolon field separator, specify a version number of 0, or leave one or more spaces after the semicolon.

Examples

1
```
>>> DELETE COMMON.SUM;2
```

Deletes the file COMMON.SUM;2 from the default disk and directory.

2
```
>>> DELETE *.OLD;*
```

Deletes all versions of files with the file type of .OLD.

3
```
>>> DELETE A*.*;*
```

Deletes all files starting with A.

4
```
>>> DELETE TEST.DAT;
```

Deletes only the highest numbered version of TEST.DAT.

DELETE/PATTERN

Deletes one or more scan patterns for the specified CPU from the system scan pattern table.

Format

DELETE/PATTERN *[/qualifiers] [pattern-name]*

Qualifiers

/ALL
Deletes all scan patterns for the specified CPU. If /ALL is specified, do not specify the pattern-name parameter.

/CPU=cpu-id
The CPU for which scan patterns are to be deleted, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, scan patterns for the default CPU are deleted.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/LOG
/NOLOG (D)
Determines whether the the name of each deleted pattern is displayed.

/RESET
Specifies that all tracepoints, watchpoints, or patterns that were set by any process are to be deleted. This qualifier is primarily for development use and should be avoided.

/SCU
/NOSCU
Determines whether system control unit pattern points are deleted.

Parameters

pattern-name
The name of one or more pattern definitions to be deleted. The asterisk (*) wildcard character is allowed. If /ALL is specified, do not specify the pattern-name parameter. For information on scan patterns, see the SET PATTERN command description.

DELETE/SYMBOL

Deletes one or all symbols from a local or global symbol table.

Format

DELETE/SYMBOL *[/qualifiers] [symbol-name]*

Qualifiers

/ALL
Deletes all symbols in the specified symbol table. If a symbol table is not specified, the local symbol table is assumed. If /ALL is specified, do not specify the symbol-name parameter.

/GLOBAL
Specifies the global symbol table.

/LOCAL (D)
Specifies the local symbol table.

/LOG
/NOLOG (D)
Determines whether the name of each deleted symbol is displayed.

Parameters

symbol-name
The symbol to be deleted. By default, the symbol is assumed to be in the local symbol table. If /ALL is specified, do not specify the symbol-name parameter.

Examples

```
1  >>> DELETE/SYMBOL/ALL
```

Deletes all symbol definitions from the local symbol table.

```
2  >>> DELETE/SYMBOL/LOG FOO
   %CLI-I-DELSYM, Local symbol FOO has been deleted
```

Deletes symbol FOO from the local symbol table and displays an informational message listing the symbol deleted.

```
3  >> DELETE/SYMBOL/GLOBAL PDEL
```

Deletes symbol PDEL from the global symbol table.

DELETE/TRACE

Deletes one or more tracepoints from the system tracepoint table for the specified CPU.

Format

DELETE/TRACE *[/qualifiers] [tracepoint-name]*

Qualifiers

/ALL
Deletes all tracepoints for the specified CPU.

Specifying /ALL causes a special opcode to flush the SCM's tracepoint table. This differs from issuing DELETE/TRACE * in that it resynchronizes the tracepoint table. If /ALL is specified, do not specify the tracepoint-name parameter.

/CPU=cpu-id
The CPU from which tracepoints are to be deleted, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, tracepoints are deleted from the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/LOG
/NOLOG (D)
Determines whether the name of each deleted tracepoint is displayed.

/RESET
Specifies that all tracepoints, watchpoints, or patterns that were set by any process are to be deleted. This qualifier is primarily for development use and should be avoided.

/SCU
/NOSCU
Determines whether system control unit tracepoints are deleted.

Parameters

tracepoint-name
The name of one or more tracepoints to be deleted. The asterisk (*) wildcard character is allowed. If /ALL is specified, do not specify the tracepoint-name parameter. For information on tracepoints, see the SET TRACEPOINT command description.

DELETE/WATCH

Deletes one or more watchpoints from the system watchpoint table for the specified CPU.

Format

DELETE/WATCH *[/qualifiers] [watchpoint-name]*

Qualifiers

/ALL
Deletes all watchpoints and tracepoints for the specified CPU.

Specifying /ALL causes a special opcode to flush the SCM's watchpoint table. This differs from issuing DELETE/WATCH * in that it resynchronizes the watchpoint table. If /ALL is specified, do not specify the watchpoint-name parameter.

/CPU=cpu-id
The CPU from which watchpoints are to be deleted, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, watchpoints are deleted from the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/LOG
/NOLOG (D)
Determines whether the name of each deleted watchpoint is displayed.

/RESET
Specifies that all tracepoints, watchpoints, or patterns that were set by any process are to be deleted. This qualifier is primarily for development use and should be avoided.

/SCU
/NOSCU
Determines whether system control unit watchpoints are deleted.

Parameters

watchpoint-name
The name of one or more watchpoints to be deleted. The asterisk (*) wildcard character is allowed. If /ALL is specified, do not specify the watchpoint-name parameter. For information on watchpoints, see the SET WATCHPOINT command description.

DELETE/WINDOW

Deletes a window from the screen. If the window was visible on the screen, the screen is redrawn to display previously hidden windows.

Format

DELETE/WINDOW *[/ALL] [window-name]*

Qualifier

/ALL
Deletes all windows from the screen and turns off screen mode. If /ALL is specified, do not specify the window-name parameter.

Parameters

window-name
The name of the window to delete. Wildcard characters are not allowed. Note that the command window cannot be deleted. If /ALL is specified, do not specify the window-name parameter.

DEPOSIT

Replaces the contents of a location or series of locations specified by an address expression with data specified by a value expression. A pointer to the location and the context of the data are saved for subsequent DEPOSIT and EXAMINE commands.

The DEPOSIT command can replace the contents of locations in memory, I/O space, general-purpose registers (GPRs), internal processor registers (IPRs), control stores, data structures, register structures, and scan rings.

Format

DEPOSIT *[/qualifiers] address-expression value-expression*

Qualifiers

/ASCII

The value-expression is an ASCII string and must be enclosed in quotation marks (""). Subsequent unqualified references default to the ASCII data type.

/BYTE

Specifies the value-expression is integer data and is to be deposited one byte at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/CODE

Specifies program address space. Valid only with /PEM or /RIC.

/CPU=cpu-id

The CPU in which the data is to be deposited, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, data is deposited in the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/D_FLOAT
The value-expression is a floating-point number in the specified format.

/ECS
The address-expression specifies an EBox control store location.

/EMEMORY
Specifies external memory address space. Valid only with /PEM or /RIC.

/EREG
The address-expression specifies an EBox register.

/F_FLOAT
The value-expression is a floating-point number in the specified format.

/GENERAL
The address-expression is a general-purpose register (in the range 0 to 15). Subsequent unqualified references default to general-purpose register address space.

/G_FLOAT
The value-expression is a floating-point number in the specified format.

/IMEMORY
Specifies internal memory address space. Valid only with /PEM or /RIC.

/INTERNAL
The address-expression is an internal register (in the range 0 to 255). Subsequent unqualified references default to internal register address space.

/JCS
The address-expression specifies a JBox control store location.

/LENGTH=bits
Valid only when /RING is specified. Specifies the number of bits (in the current radix) to be deposited. If not specified, the command defaults to the length specified in the configuration database (CDB) file.

/LOG
/NOLOG
Displays the address and value of each location to which data is deposited.

/LONGWORD (D)

Specifies the value-expression is integer data and is to be deposited one longword at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/MCM

Specifies a master clock module register. The address-expression specifies a register address and can be a numeric literal or one of the following mnemonics:

Table 2–2 MCM Register Mnemonics

BURST	CCR0	CCR1	DIVIDER	FREQUENCY
INTERVAL	POSITION	SERIAL	TRANSFER	

/NEXT[=count]

Deposit data into the address-expression location and the next [count] location[s].

/OCTAWORD

Specifies the value-expression is integer data and is to be deposited one octaword at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/PEM

Specifies a power and environmental monitor register, port register, memory address (internal or external), or program space location. A register address-expression can be a numeric literal or one of the following mnemonics:

Table 2–3 PEM Register Mnemonics

ASDREG	BBUREG	BSCREG	CSREG	EMEREG
KEYAREG	KEYBREG	MISREG	OCPDISREG	OCPLEDREG
OCPSWREG	POLLREG	PSREG	PWR1REG	PWR2REG
P1REG	RBDIREG	RBDSREG	RICAVAREG	RTEREG
STCREG	TOFFREG	VSNREG		

The following address space qualifiers can also be specified with the /PEM qualifier:

Table 2–4 PEM Address Space Qualifiers

Qualifier	Address Space Specified
/CODE	Program space
/EMEMORY	External memory
/IMEMORY	Internal memory
/PORT_REGISTER	Port register
/REGISTER	Internal register

/PHYSICAL
The address-expression is a 32-bit physical address. Subsequent unqualified references default to physical address space.

/PORT_REGISTER
Specifies port register address space. Valid only with /PEM or /RIC.

/QUADWORD
Specifies the value-expression is integer data and is to be deposited one quadword at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/REGISTER
Specifies internal register address space. Valid only with /PEM or /RIC.

/RIC=ric-id
Specifies a regulator intelligence card register, port register, memory address (internal or external), or program space location. The ric-id can be a numeric literal or one of the following mnemonics:

Table 2–5 RIC Register Mnemonics

ADREG	ASDREG	BIREG	BIXREG	CSREG
DAREG	DLYREG	EMEREG	ESREG	HWSREG
IDREG	LMREG	MGNREG	MUXREG	PFREG
PLREG	PSREG	P1REG	RCREG	RENREG
RSREG	SCSREG	SEREG	VSNREG	XUEREG

The following address space qualifiers can also be specified with the /RIC qualifier:

Table 2–6 RIC Address Space Qualifiers

Qualifier	Address Space Specified
/CODE	Program space
/EMEMORY	External memory
/IMEMORY	Internal memory
/PORT_REGISTER	Port register
/REGISTER	Internal register

/RING
Specifies a physical scan ring.

/SCC
Specifies a scan controller register. The address-expression specifies a register address and can be a numeric literal or one of the following mnemonics:

Table 2–7 SCC Register Mnemonics

ABR	CSR	CCR	DCSR	DMAE
DMAI	DMAM	DMAO	ESR	MSR
RCR	SCR	SDR	SHR	SSR

/SCU
/NOSCU (D)
Specifies a system control unit register.

/SJA

Specifies an SPU-to-JBox adapter register. The address-expression specifies a register address and can be a numeric literal or one of the following mnemonics:

Table 2–8 SJA Register Mnemonics

ADDR	CMND	DATHI	DATLO	DMASK
DXCNT	DXCS	DXMEM	DXSPU	FLAG
RETRD	RXCS	RXDB	RXFCT	RXPAR
RXPRM	SJACS	SJCS	TODR	TXCS
TXDB	TXFCT	TXPRM	XJA	

/SPU

Specifies service processor unit memory.

/VERIFY
/NOVERIFY

Valid only when /RING is specified. Specifies whether scan ring deposits are verified. To verify scan ring deposits, a test pattern is written to the ring, followed by the value-expression. When the ring is rotated to deposit the data, the test pattern is verified.

/VECTOR=register:element

Specifies vector register number and element number.

/VIRTUAL

The address-value is a 32-bit virtual address. If the address is in P0 or P1 space, a CPU must be specified (/CPU=cpu-id) to determine process context. If a CPU is not specified, the default CPU is assumed.

/WORD

Specifies the value-expression is integer data and is to be deposited one word at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

Parameters

address-expression
The address of a location or the starting address of a series of locations to receive data. The address can be a numeric literal, symbolic address, or special operator.

value-expression
The data to be deposited. The value can be a numeric literal, lexical function, or special operator.

Expressions

numeric-literals
An address-expression or value-expression can be a numeric value in any of four radixes determined by one of the following radix operators:

%B = Binary
%D = Decimal
%X = Hexadecimal (D)
%O = Octal

For example, in the command:

```
DEPOSIT 100 %D1234
```

the value-expression is a decimal value.

The default radix can be changed with the SET RADIX command.

special-operators

The DEPOSIT and EXAMINE commands allow special operators to be used in place of expressions. The following table lists the operators:

Table 2–9 DEPOSIT Special Operators

Operator	Definition
. (period)	Use last referenced location.
* (asterisk)	Use last referenced location.
+ (plus)	Increment last referenced location by current data size (memory references) or by one (all other references).
– (minus)	Decrement last referenced location by current data size (memory references) or by one (all other references).
@ (at)	Use contents of last referenced location as new address (indirect addressing). Or, use data from last DEPOSIT command as new deposit data.

symbolic-address-mnemonics

The DEPOSIT and EXAMINE commands allow mnemonics to be used in place of numeric literal addresses to reference the processor status longword (PSL), general-purpose registers (GPRs), and internal processor registers (IPRs). The qualifiers /GENERAL and /INTERNAL cannot be used with a mnemonic.

The following tables list the GPR and IPR mnemonics. The addresses in the tables are the hexadecimal values that would be required if the /GENERAL or /INTERNAL qualifiers were used. For example: `DEPOSIT R0 1234` is equivalent to `DEPOSIT/GENERAL 0 1234`.

Table 2–10 GPR and PSL Register Mnemonics

Mnemonic	Address	Name
AP	12	Argument pointer
FP	13	Frame pointer
PC	15	Program counter
PSL	–	Processor status longword
R0–R11	00	GPRs R0 to R11
SP	14	Stack pointer

Table 2–11 IPR Register Mnemonics

Mnemonic	Address	Register Name
ASTLVL	13	Asynchronous system trap level
ESP	01	Executive stack pointer
ICCS	18	Interval clock control
ICR	1A	Interval count
IPL	12	Interrupt priority level
ISP	04	Interrupt stack pointer
KSP	00	Kernel stack pointer
MAPEN	38	Memory management enable
NICR	19	Next interval count
P0BR	08	P0 base register
P0LR	09	P0 length register
P1BR	0A	P1 base register
P1LR	0B	P1 length register
PCBB	10	Process control block base
PME	3D	Performance monitor enable
RXCS	20	Console receiver control and status
RXDB	21	Console receiver data buffer
SBR	0C	System base register
SCBB	11	System control block base
SID	3E	System identification
SIRR	14	Software interrupt request
SISR	15	Software interrupt summary
SLR	0D	System length register
SSP	02	Supervisor stack pointer
TBCHK	3F	Translation buffer check
TBIA	39	Translation buffer invalidate all
TBIS	3A	Translation buffer invalidate single
TODR	1B	Time of year
TXCS	22	Console transmit control and status
TXDB	23	Console transmit data buffer
USP	03	User stack pointer

Examples

1
```
>>> DEPOSIT 100 100
>>> DEPOSIT + 200
>>> EXAMINE .
P 00000104 00000200
```

The first command deposits a value of 100 in physical memory address 100. The second command increments this address by the current data size (4 for longword) and deposits a value of 200 in the resultant location (104).

2
```
>>> DEPOSIT/VIRTUAL 100 200
>>> DEPOSIT + @
>>> EXAMINE .
 00000104 00000200
```

The first command deposits a value of 200 in virtual memory address 100. The second command increments this address by the current data size and deposits the value from the previous DEPOSIT command (200) in the resultant location.

3
```
>>> DEPOSIT/ASCII 100 "ABC DEF GHI"
>>> EXAMINE/ASCII 100
P 00000100 ABC DEF GHI
>>> EXAMINE/LONG/NEXT:2 100
P 00000100 20434241
P 00000104 20464544
P 00000108 00494847
```

The DEPOSIT command deposits an ASCII character string in physical memory starting at address 100. The EXAMINE commands display the data in ASCII and in longword format.

DIRECTORY

Lists the contents of a directory or provides information about a file or group of files that match a given file specification.

Format

DIRECTORY *[/qualifiers] [file-spec]*

Qualifiers

/DATE
Lists the creation date of each specified file.

/FULL
Lists the following items for each specified file:

File name, type, and version number
Number of blocks used and allocated
Owner's user identification code (UIC)
Creation and last revision dates
Expiration and backup dates
File organization and attributes
Record format and attributes
File protection

/OWNER
Lists the owner UIC of each specified file.

/PROTECTION
Lists the file protection of each specified file.

/SIZE
Lists the size in blocks of each specified file.

/TOTAL
Displays only the total number of files and, if /SIZE is specified, the total number of blocks for all files in the directory.

Parameters

file-spec

The file or files to be listed, according to the following syntax:

Syntax	Action
No file-spec	List all versions of all files in the current directory.
Device only	Use current directory as a default and list all versions of all files in that directory of the specified device.
Device and directory	List all versions of all files in the specified directory of the specified device.
Device, directory, and file name, or file name only	List all files of that name in the specified or current directory of the specified or current device, regardless of file type and version.
Device, directory, and file type, or file type only	List all files of that type in the specified or current directory of the specified or current device, regardless of file name and version.
Wildcards	The asterisk (*) and percent sign (%) wildcard characters can be used in certain fields of the file specification, as follows:

Field	Valid Wildcard
Name	* or %
Type	* or %
Version	* only

Examples

1 `>>> DIRECTORY`

Lists all versions of all files in the default device and directory.

2 `>>> DIRECTORY A*`

Lists all types and versions of all files beginning with A in the default device and directory.

3 `>>> DIRECTORY DUA0:[CONSOLE]*.CMD`

Lists all versions of all files with the CMD file type field in device DUA0 directory [CONSOLE].

DISMOUNT

Closes a previously mounted disk or tape volume and deassigns the logical name, if any, associated with the device. All open files on the volume must be closed before the device can be dismounted.

Format

DISMOUNT *[/[NO]UNLOAD] device-name[:]*

Qualifier

/UNLOAD
/NOUNLOAD
Specifies whether a tape is unloaded on dismount.

Parameters

device-name[:]
The name of the device to be dismounted. The device name can be a physical device name or a logical name assigned to the device.

Example

```
>>> MOUNT DU: TESTVOL DISK
    .
    .
    .
>>> DISMOUNT DISK:
```

The MOUNT command mounts disk volume TESTVOL on physical device DUA0 and assigns the logical name DISK to the device. The DISMOUNT command closes access to the volume, deallocates the device, and deletes the logical name DISK.

EDIT

Invokes the EDT text editor.

Format

EDIT *[/qualifiers] input-file-spec*

Qualifiers

/COMMAND[=command-file] (D)
/NOCOMMAND
/COMMAND causes the editor to execute a startup command file. If the qualifier or command-file specification is omitted, the editor executes a system- or user-defined default startup command file. To use some other startup command file, use the command-file specification. For example:

```
>>> EDIT/COMMAND=[CONSOLE.TOOLS]XEDTINI TEST.DAT
```

Wildcard characters are not allowed, and the default startup command file type is .EDT.

If /NOCOMMAND is specified or a startup command file does not exist, the editor begins the editing session in its default state.

/CREATE (D)
/NOCREATE
Determines whether the editor creates a new file if the specified input file does not exist. If /NOCREATE is specified and the file does not exist, the editor does not create the file and displays an error message.

/JOURNAL[=journal-file]
/NOJOURNAL
Determines whether the editor records the editing session in a journal file. The default journal file specification is the input file name with file type .JOU. To specify a different journal file name or type, use the /JOURNAL=journal-file option. Wildcard characters are not allowed. The journal file allows recovery from an abnormally ended editing session (see /RECOVER).

/NOJOURNAL prevents the editor from recording the editing session.

/OUTPUT[=output-file]
/NOOUTPUT

Determines whether the editor creates an output file at the end of the editing session. The default output file specification is the same as the input file specification. Use the /OUTPUT=output-file option to specify a different output file specification. Wildcard characters are not allowed in the file specification.

If you specify /NOOUTPUT on the command line but then decide to save the editing session, issue the the editor line-mode command WRITE to output the text to an external file before ending the session.

NOTE
Specifying /NOOUTPUT suppresses the creation of an output file but not the creation of a journal file.

/RECOVER

Specifies that the editor read a journal file at the start of the editing session.

If an editing session ends abnormally while journaling is in effect, use the /RECOVER qualifier to start the next session. When /RECOVER is specified, the editor processes the commands contained in the journal file to restore the edits made in the previous session. For example:

```
>>> EDIT/RECOVER TEST.DAT
```

The default journal file name is the input file name and the default file type is .JOU. If the journal file name is not the same as the input file name or the file type is not .JOU, include /RECOVER and /JOURNAL on the command line. For example:

```
>>> EDIT/RECOVER/JOURNAL=SAVE.XXX TEST.DAT
```

Parameters

input-file-spec
Specifies the file to be created or edited. Wildcard characters are not allowed. If the file does not exist, and /NOCREATE is not specified, the editor creates the file. The editor does not provide a default file type when creating files. If a file type is not specified, the field is left null. The file must be a disk file on a Files-11 formatted volume.

Examples

```
1  >>> EDIT/OUTPUT=NEWFILE.TXT OLDFILE.TXT
        1       This is the first line of the file OLDFILE.TXT.
   *
```

The EDIT command opens OLDFILE.TXT for editing and writes the output to file NEWFILE.TXT when the session ends.

```
2  >>> EDIT/RECOVER OLDFILE.TXT
```

The editor opens file OLDFILE.TXT and processes journal file OLDFILE.JOU to recover from an abnormally ended editing session. Normal interactive editing can resume after the journal file is processed.

EVALUATE

Evaluates a numeric expression and displays the result on the console terminal in the current or specified radix. The current radix is set by the SET RADIX command.

Format

EVALUATE *[/qualifier] expression*

Qualifiers

/DISPLAY=radix-spec
Specifies the radix of the result, where radix-spec can be:

HEXADECIMAL
DECIMAL
OCTAL
BINARY

The expression is evaluated in the current radix as specified by the SET RADIX command.

/RADIX=radix-spec
Overrides the current radix. The expression is evaluated and the result displayed in the specified radix, where radix-spec can be:

HEXADECIMAL
DECIMAL
OCTAL
BINARY

Parameters

expression
The numeric expression to be evaluated. The expression can consist of integer values, or symbols or lexical functions that evaluate to integers.

An integer value can be prefixed by a radix operator to override the current radix. The radix operators are:

%X = Hexadecimal
%O = Octal
%D = Decimal
%B = Binary

NOTE
If the default radix is hexadecimal, the EVALUATE command interprets the characters A through F (upper or lowercase) as hexadecimal data and not as symbols. To force symbol substitution of these characters, enclose them in apostrophes.

Example

```
>>> SET RADIX HEX
>>> A = 1
>>> B = 2
>>> EVALUATE A + B
    00000015
>>> EVALUATE 'A' + 'B'
    00000003
```

The first EVALUATE command interprets the characters A and B as hexadecimal data and computes the sum to be 15_{16}. The second EVALUATE command substitutes the values defined for symbols A and B (1 and 2) and computes the sum to be 3.

EXAMINE

Displays the contents of a location or series of locations specified by an address expression. A pointer to the location and the context of the data are saved for subsequent DEPOSIT and EXAMINE commands.

The EXAMINE command can display the contents of locations in memory, I/O space, GPRs, IPRs, control stores, data structures, register structures, and scan rings.

Format

		address-expression
EXAMINE	*[/qualifiers]*	*signal*
		structure

Qualifiers

/ASCII[=count]
Displays data in ASCII format. For example:

```
>>> DEPOSIT/ASCII 1000 "This is an ASCII string"
>>> EXAMINE/ASCII 1000
P 00001000  This is an ASCII string
```

Binary data is converted to ASCII before it is displayed. If the binary value has no ASCII equivalent, the EXAMINE command displays a period (.). Count is a hexadecimal number.

When /ASCII is specified, or ASCII mode is the default, the EXAMINE command uses hexadecimal as the default radix for numeric literals that are specified on the command line.

/BYTE
Specifies the result is integer data and is to be displayed one byte at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/CODE
Specifies program address space. Valid only with /PEM or /RIC.

/CPU=cpu-id

The CPU in which a location is to be examined, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the location is in the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/D_FLOAT

The result is a floating-point number in the specified format.

/ECS

The address-expression specifies an EBox control store location.

/EMEMORY

Specifies external memory address space. Valid only with /PEM or /RIC.

/EREG

The address-expression specifies an EBox register.

/F_FLOAT

The result is a floating-point number in the specified format.

/GENERAL

The address-expression is a general-purpose register (in the range 0 to 15). Subsequent unqualified references default to general-purpose register address space.

/G_FLOAT

The result is a floating-point number in the specified format.

/IMEMORY

Specifies internal memory address space. Valid only with /PEM or /RIC.

/INSTRUCTION

The result data type is a VMS macroinstruction. For example:

```
>>> DEPOSIT 1000 5150D0
>>> EXAMINE/INSTRUCTION 1000
    P 00001000  MVL R0,R1
```

/INTERNAL

The address-expression is an internal register (in the range 0 to 255). Subsequent unqualified references default to internal register address space.

/JCS

The address-expression specifies a JBox control store location.

/LABEL

Displays a hierarchical list of labels from the current database (CDB) file in the format:

CPU.MCU: Model = mmm Revision = v

as follows:

```
>>> EXAMINE/LABEL
    %CPU0.CTL: Model = CTL  Revision = A
    %CPU0.CTU: Model = CTU  Revision = A
    %CPU0.DST: Model = DST  Revision = A
    %CPU0.DTA: Model = DTA  Revision = A
    %CPU0.DTB: Model = DTB  Revision = A
    %CPU0.FAD: Model = FAD  Revision = A
    %CPU0.INT: Model = INT  Revision = A
    %CPU0.MUL: Model = MUL  Revision = A
    %CPU0.OPU: Model = OPU  Revision = A
    %CPU0.UCS: Model = UCS  Revision = A
    %CPU0.VAD: Model = VAD  Revision = A
    %CPU0.VAP: Model = VAP  Revision = A
    %CPU0.VIC: Model = VIC  Revision = A
    %CPU0.VML: Model = VML  Revision = A
    %CPU0.VRG: Model = VRG  Revision = A
    %CPU0.XBR: Model = XBR  Revision = A
```

/LENGTH=bits

Valid only when /RING is specified. Specifies the number of bits (in the current radix) to be displayed. If not specified, the command defaults to the length specified in the current database (CDB) file.

/LOG
/NOLOG

Displays the address and value of each location examined.

/LONGWORD (D)

Specifies the result is integer data and is to be examined one longword at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/MCM

Specifies a master clock module register. The address-expression specifies a register address and can be a numeric literal or one of the following mnemonics:

MCM Register Mnemonics

BURST	CCR0	CCR1	DIVIDER	FREQUENCY
INTERVAL	POSITION	SERIAL	TRANSFER	

/NEXT[=count]

Examines the address-expression location and the next [count] location[s].

/OCTAWORD

Specifies the result is integer data and is to be displayed one octaword at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/PEM

Specifies a power and environmental monitor register, port register, memory address (internal or external), or program space location. A register address-expression can be a numeric literal or one of the following mnemonics:

PEM Register Mnemonics

ASDREG	BBUREG	BSCREG	CSREG	EMEREG
KEYAREG	KEYBREG	MISREG	OCPDISREG	OCPLEDREG
OCPSWREG	POLLREG	PSREG	PWR1REG	PWR2REG
P1REG	RBDIREG	RBDSREG	RICAVAREG	RTEREG
STCREG	TOFFREG	VSNREG		

The following address space qualifiers can also be specified with the /PEM qualifier:

PEM Address Space Qualifiers

Qualifier	Address Space Specified
/CODE	Program space
/EMEMORY	External memory
/IMEMORY	Internal memory
/PORT_REGISTER	Port register
/REGISTER	Internal register

/PHYSICAL

The address-expression is a 32-bit physical address. Subsequent unqualified references default to physical address space.

/PORT_REGISTER

Specifies port register address space. Valid only with /PEM or /RIC.

/QUADWORD

Specifies the result is integer data and is to be examined one quadword at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

/REGISTER

Specifies internal register address space. Valid only with /PEM or /RIC.

/RIC=ric-id

Specifies a regulator intelligence card register, port register, memory address (internal or external), or program space location. The ric-id can be a numeric literal or one of the following mnemonics:

RIC Register Mnemonics

ADREG	ASDREG	BIREG	BIXREG	CSREG
DAREG	DLYREG	EMEREG	ESREG	HWSREG
IDREG	LMREG	MGNREG	MUXREG	PFREG
PLREG	PSREG	P1REG	RCREG	RENREG
RSREG	SCSREG	SEREG	VSNREG	XUEREG

The following address space qualifiers can also be specified with the /RIC qualifier:

RIC Address Space Qualifiers

Qualifier	Address Space Specified
/CODE	Program space
/EMEMORY	External memory
/IMEMORY	Internal memory
/PORT_REGISTER	Port register
/REGISTER	Internal register

/RING

Specifies a physical scan ring.

/SCC

Specifies a scan controller register. The address-expression specifies a register address and can be a numeric literal or one of the following mnemonics:

SCC Register Mnemonics

ABR	CSR	CCR	DCSR	DMAE
DMAI	DMAM	DMAO	ESR	MSR
RCR	SCR	SDR	SHR	SSR

/SCU
/NOSCU (D)

Specifies a system control unit register.

/SJA

Specifies an SPU-to-JBox adapter register. The address-expression specifies a register address and can be a numeric literal or one of the following mnemonics:

SJA Register Mnemonics

ADDR	CMND	DATHI	DATLO	DMASK
DXCNT	DXCS	DXMEM	DXSPU	FLAG
RETRD	RXCS	RXDB	RXFCT	RXPAR
RXPRM	SJACS	SJCS	TODR	TXCS
TXDB	TXFCT	TXPRM	XJA	

/SPU

Specifies service processor unit memory.

/SYMBOL=name

Primarily used in command procedures, this qualifier assigns a symbol name to the result and suppresses the display. If the result is less than 32 bits, the data type is integer; otherwise, the data type is bitvector. If the /INSTRUCTION qualifier is specified, the data type is string.

/VECTOR=register-number:element-number

Specifies vector register number and element number.

/VIRTUAL

The address-value is a 32-bit virtual address. If the address is in P0 or P1 space, a CPU must be specified (/CPU=cpu-id) to determine process context. If a CPU is not specified, the default CPU is assumed.

/WINDOW[=window-name]

Displays data in the specified format in the specified window. If window-name is not specified, data is displayed in the default EXAMINE window. The window can be scrolled up or down with the SCROLL command.

/WORD

Specifies the result is integer data and is to be displayed one word at a time. This qualifier is valid only in the context of physical or virtual address space. Subsequent unqualified references default to this data type.

Parameters

address-expression

The address of the location or the starting address of a series of locations to examine. The address can be a numeric literal, symbolic address, or special operator.

signal-name

Specifies a signal name as listed in the current database (CDB) file in the format:

%CPUn.label.label.signal<end-bit:start-bit>
%SPU.label.label.signal<end-bit:start-bit>

structure-name

Specifies a control store, register file, data cache, or control structure as listed in the current database (CDB) file in the format:

%CPUn.structure-name[location]<end-bit:start-bit>
%SPU.structure-name[location]<end-bit:start-bit>

Expressions

numeric-literals

An address-expression or value-expression can be a numeric value in any of four radixes determined by one of the following radix operators:

%B = Binary
%D = Decimal
%X = Hexadecimal (D)
%O = Octal

For example, in the following command the %D operator specifies the address as decimal:

```
>>> EXAMINE %D100
  P 00000064 A06267D0
```

The default radix is determined by the SET RADIX command.

special-operators

The DEPOSIT and EXAMINE commands allow special operators to be used in place of expressions. The following table lists the operators:

Table 2–12 EXAMINE Special Operators

Operator	Definition
. (period)	Use last referenced location.
* (asterisk)	Use last referenced location.
+ (plus)	Increment last referenced location by current data size (memory references) or by one (all other references).
– (minus)	Decrement last referenced location by current data size memory references or by one (all other references).
@ (at)	Use contents of last referenced location as new address (indirect addressing). Or, use data from last DEPOSIT command as new deposit data.

symbolic-address-mnemonics

The DEPOSIT and EXAMINE commands allow mnemonics to be used in place of numeric literal addresses to reference the processor status longword (PSL), general-purpose registers (GPRs), and internal processor registers (IPRs). The qualifiers /GENERAL and /INTERNAL cannot be used with a mnemonic.

The following tables list the GPR and IPR mnemonics. The addresses in the tables are the hexadecimal values that would be required if the /GENERAL or /INTERNAL qualifiers were used. For example:

```
EXAMINE R0
```

is equivalent to

```
EXAMINE/GENERAL 0
```

GPR and PSL Register Mnemonics

Mnemonic	Address	Name
AP	12	Argument pointer
FP	13	Frame pointer
PC	15	Program counter
PSL	–	Processor status longword
R0–R11	00	GPRs R0 to R11
SP	14	Stack pointer

IPR Register Mnemonics

Mnemonic	Address	Register Name
ASTLVL	13	Asynchronous system trap level
ESP	01	Executive stack pointer
ICCS	18	Interval clock control
ICR	1A	Interval count
IPL	12	Interrupt priority level
ISP	04	Interrupt stack pointer
KSP	00	Kernel stack pointer
MAPEN	38	Memory management enable
NICR	19	Next interval count
P0BR	08	P0 base register
P0LR	09	P0 length register
P1BR	0A	P1 base register
P1LR	0B	P1 length register
PCBB	10	Process control block base
PME	3D	Performance monitor enable
RXCS	20	Console receiver control and status
RXDB	21	Console receiver data buffer
SBR	0C	System base register
SCBB	11	System control block base
SID	3E	System identification
SIRR	14	Software interrupt request
SISR	15	Software interrupt summary
SLR	0D	System length register
SSP	02	Supervisor stack pointer
TBCHK	3F	Translation buffer check
TBIA	39	Translation buffer invalidate all
TBIS	3A	Translation buffer invalidate single
TODR	1B	Time of year
TXCS	22	Console transmit control and status
TXDB	23	Console transmit data buffer
USP	03	User stack pointer

Examples

```
1  >>> EXAMINE 1000
       P 00001000 D05957C0
```

Displays the contents of address 1000. The default address space is physical and the default size is longword.

```
2  >>> EXAMINE/INSTRUCTION .
       P 00001000 ADDL2   R7,R9
```

The /INSTRUCTION qualifier specifies to display data starting at the current address as an instruction.

```
3  >>> EXAMINE/LONGWORD/NEXT=2 1000
       P 00001000 D05957C0
       P 00001004 0001FF8F
       P 00001008 00005100
```

The /LONGWORD qualifier resets the default data size to longword and /NEXT=2 specifies to display the next two locations in addition to the starting address.

```
4  >>> EXAMINE/GENERAL 4
```

Displays the contents of GPR 4. The default data size is longword.

```
5  >>> EXAMINE SP
```

Displays the contents of the stack pointer (GPR 14).

```
6  >>> EXAMINE P0BR
```

Displays the contents of the P0 base register (IPR 08).

EXIT

Terminates processing of the current command procedure. If the command procedure was called from within another command procedure, control returns to the calling procedure. Optionally, a return status can be specified.

Format

EXIT */qualifiers [status-code]*

Qualifiers

/ATTN
Returns CPU attention to the caller. Allows a command procedure that traps a CPU attention (with ON ATTN, see the ON command description) to pass the attention to the calling procedure for further processing.

/FAULT
Returns power fault to the caller. Allows a command procedure that traps a power fault (with ON FAULT, see the ON command description) to pass the fault to the calling procedure for further processing.

Parameters

status-code
A numeric value representing success or failure of the exiting procedure.

The status code can be an integer or an expression that equates to an integer value. An odd value indicates failure and an even value indicates success of the procedure. A status code of %X8000000 causes all command procedure file levels to exit.

If no status is specified, the default success status is returned, as follows:

Bit 0 set = Success
Bit 0 not set = Warning
Bit 1 set = Error
Bit 2 set = Fatal/severe error

FIND

The FIND command does one of the following:

- Specifies the CPU in which GPRs are to be modified.
- Finds the starting address of a 256-Kbyte block of good main memory.
- Finds the starting address of the restart parameter block.

Format

FIND */qualifier [blocks]*

Qualifiers

/CPU=cpu-id
The CPU in which GPRs are to be modified, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, GPRs in the default CPU are modified.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/MEMORY

Returns the starting address of the first page-aligned, 256-Kbyte block of main memory. VMB is loaded at this address.

When a number of blocks is specified with FIND/MEMORY, that number of pages are located, if possible. If that number of pages are located, the SP contains the base address plus 200_{16}.

/RPB

Finds the location of the restart parameter block (RPB) in main memory. If the RPB is found, the SP is set to the base address plus 200_{16} and the PC is set to the address in the RPB.

Parameters

blocks

The number of main memory blocks to be located.

GOTO

Valid only in a command procedure. GOTO transfers control to a specified label.

Format

GOTO *label*

Parameters

label
The first item on a command line. A label cannot contain embedded blanks. When the GOTO command is executed, control passes to the command following the label. The label can precede or follow the GOTO statement in the command procedure.

All labels are procedure-level dependent except for labels that define subroutine entry points. Subroutine entry point labels are local to the current command procedure file level and must be unique. Labels must be terminated with a colon (:).

HALT

Stops macroprogram execution in a specified processor. The HALT command is usually not used for a multiprocessor because it can leave the multiprocessor in an undefined state.

Format

HALT *[/CPU=cpu-id]*

Qualifier

/CPU=cpu-id
The CPU to be halted, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is halted.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

HELP

The HELP command invokes the SPU HELP facility to display information about an SPU command or topic. You can abbreviate any topic name, but ambiguous abbreviations display all matches. In response to the Topic? prompt, you can:

- Type the command, topic, or subtopic on which help is needed.
- Type ? (question mark) to display a list of topics or subtopics.
- Press Return to exit to the previous topic or SPU command level.
- Enter Ctrl/Z to exit to the SPU command level.

IN-LINE HELP
For information on in-line help, see Section 1.2.

Format

HELP *[topic . . .]*

Parameters

topic
Specifies a command, topic, or subtopic on which help is needed. A topic and subtopic, separated by spaces, can be specified. If a topic is not specified, a list of all commands and topics in the HELP library is displayed.

Examples

1
```
>>> HELP
.
.
.
Topic?
```

Displays information about using the HELP command; lists the commands and topics for which help is available; returns the Topic? prompt.

2
```
>>> HELP DEFINE
```

Displays information about all the DEFINE command subtopics.

3
```
>>> HELP DEFINE/KEY
```

Displays information about all the DEFINE/KEY command subtopics.

IF

Valid only in a command procedure. IF allows commands to be executed conditionally.

Format

IF *expression THEN command*

Parameters

expression

Specifies an expression to be evaluated. See Section 1.6 for details on expression syntax.

command

Specifies the command to be executed. The command can be any legal command including GOTO.

The REPEAT command can be used with the IF command to produce a WHILE command as long as the target command is repeatable. See HELP REPEAT for repeatable commands.

INITIALIZE

Initializes various system elements and data structures. When issued without qualifiers, initializes the boot set.

Format

INITIALIZE *[/qualifiers]*

Qualifiers

/BANK_MASK=mask
Valid only with /MEMORY, where mask is a hexadecimal number.

/BRIEF
Valid only with /KERNEL and /SCU. Passes a flag to the SYS$SYSTEM:INIT.CMD command procedure specifying a brief initialization. The procedure then skips clock subsystem initialization, does not load the various structures, and does not save system state.

/CLOCK
Initializes the clock subsystem.

/CPU=cpu-id
The CPU to be initialized, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is initialized. This qualifier can also be specified with /KERNEL, /MEMORY, /SCAN, and /SCU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DEBUG
/NODEBUG
Used with /SCM and /SJA.

/FIRMWARE=file-spec
Used with /SCAN or /SCM. Specifies loadable firmware.

/INTERLEAVE=type
Valid only with /MEMORY, where type is one of the following:

1WAY 2WAY 2WAY_1UNIT 2WAY_2UNIT 4WAY

/IO
Initializes the I/O subsystem. INITIALIZE/IO issues a RESET to all XMI-to-SCU adapters (XJAs) and scans the XMI bus for I/O adapters. The results are used to configure and load the JBox I/O physical address memory map (IPAMM).

/KERNEL
Initializes the processor after microcode is loaded and the scan subsystem is initialized. INITIALIZE/KERNEL should be issued before starting program execution.

/LOG
/NOLOG
Used with /SCAN, /SCM, and /SJA. Determines whether to display command results.

/MEMORY
Initializes the memory subsystem. INITIALIZE/MEMORY determines the preferred memory configuration from self-test results and configures and loads the JBox memory physical address memory map (MPAMM) and nonexistent physical address memory map (NPAMM).

NOTE
The /INTERLEAVE qualifier can be used to override the preferred memory configuration.

/OUTPUT=file-spec
/NOOUTPUT
Valid only with /MEMORY. Determines whether the main memory bad block list is output to a file. If file-spec is not specified, the default file is [UCODE]DEFECT_LIST.SYS.

/POWER
Invokes the command procedure [SYSEXE]POWER.CMD to initialize the power subsystem.

/RESET
/NORESET
Used with /SCAN.

/RESTORE=file-spec
/NORESTORE
Valid only with /MEMORY. Determines whether to restore main memory bad block information. If file-spec is not specified, the default file is [UCODE]DEFECT_LIST.SYS.

/SCAN
Invokes the command procedure SCAN.CMD to initialize the scan subsystem.

/SCM
Initializes the scan control module.

/SCU
/NOSCU
Valid only with /SCAN. Initializes the SCU.

/SIMULATION
/NOSIMULATION
Valid only with /SJA. Specifies whether the SJA driver connects to the specified CPU or a simulation running on a remote host.

/SJA
Initializes the SPU-to-JBox adapter.

/SUNDANCE
/NOSUNDANCE
Valid only with /SCM. For use only with the MCU tester. Specifies whether the scan control module is controlling the VAX 9000 scan system or the MCU tester (which requires different firmware).

/TEST(D)
/NOTEST
Valid only with the /MEMORY qualifier. This qualifier determines whether test data is used to build the memory bitmap.

/TIMEOUT=seconds
Valid only with /SCM, where seconds is a decimal number.

/VOLUME
Initializes a disk or tape volume.

/WPT_AREA=kbytes
Valid only with /SCM, where kbytes is a decimal number.

Example

```
>>> INITIALIZE/KERNEL
[Initializing Master Clock Module]
%CLI-I-KNLREV, system kernel revision is A
[Initializing memory subsystem]
[Configured memory size is 10000000 (256 MBytes)]
[Initializing IO subsystem]
[Waiting for self test to complete]
[Setting up XJA adapter 0]
>>>
```

The INITIALIZE/KERNEL command display.

INQUIRE

Valid only in a command procedure. INQUIRE requests input from the terminal during execution of the procedure and assigns a symbol to the input string. The symbol is defined in the local symbol table.

Format

INQUIRE *[/qualifier] symbol-name* *prompt-string*
prompt-symbol

Qualifiers

/EXPRESSION
/NOEXPRESSION
Specifies whether data input to the prompt-string is to be evaluated as an expression.

/STRING
/NOSTRING
Specifies whether data input to the prompt-string is to be interpreted as a string.

Parameters

symbol-name
An alphanumeric name containing from 1 to 255 characters.

prompt-string | prompt-symbol
The prompt displayed when the INQUIRE command is executed. String values are automatically converted to uppercase, leading and trailing spaces and tabs are removed, and multiple spaces and tabs are compressed to a single space.

To prevent case conversion and retain multiple spaces and tabs, place quotation marks around the string. To use quotation marks in a string, enclose the string in quotation marks and use a double set of quotation marks within the string. If the string includes an at sign (@), enclose the string in quotation marks.

If prompt-string is not specified, the command interpreter prompts for the string with:

```
_PROMPT:
```

If prompt-symbol is specified, the symbol value is used as the prompt string.

LABEL

Valid only in a command procedure. A label identifies a point in the procedure that can be referenced by GOTO and CALL commands.

Format

label: *[command]*

Parameters

label:
The first item on a command line. A label cannot contain embedded blanks. When the command is executed, control passes to the command following the label. The label can precede or follow the command that references it in the command procedure.

All labels are procedure-level dependent except for labels that define subroutine entry points. Subroutine entry point labels are local to the current command procedure file level and must be unique. Labels must be terminated with a colon (:).

command
A command, preceded by a space, can follow a label on the same line.

LOAD

Loads the contents of a file into memory or into a control store.

Main memory loading is assumed to be in EXE file format. If the EXE header is not present, the file is loaded as a binary image file. If the header is present, it is skipped and the remainder of the file is loaded as a binary image file.

If a control store qualifier is specified, the contents of the file are loaded into the specified control store. Data checking is provided for control store loads and an error is returned if the file format is incorrect.

Format

LOAD *[/structure] [/qualifier] file-spec*

Structures

/ABS

Loads a test case in absolute format. The absolute file format is the same as an EXE file without a header but with an additional block at the end of the file. This block is loaded into memory and is used to set the program starting address and the values of all GPRs and IPRs. The default file type is .CDB.

/CDB

Loads a configuration database. This file describes the system scan rings and contains the routines to load each structure. The default file type is .EXE.

/MAIN_MEMORY (D)

Loads main memory. This is the default if no other structure is specified. The file format is assumed to be standard .EXE. The entire file is loaded as a binary image.

/PEM

Loads the power and environmental monitor firmware. The file format is assumed to be binary data. The /START qualifier must be used to specify the start address. The standard address is 8000_{16}. The default file type is .BIN.

/RIC=ric-id

Loads the specified regulator intelligence card firmware. The file format is assumed to be binary data. The /START qualifier must be used to specify the start address. The standard address is 8000_{16}. The default file type is .BIN.

/RING[=ring-id]

Loads fixed patterns into an internal scan ring. The input data file specifies ring selects, lengths, and data to be moved into a ring. The MCU broadcast ring (ring 15) can also be loaded. The default file type is .RING.

/STRUCTURE

Loads one or more structures from a binary file. The structure names are contained in the file. The default file type is .LOD.

/TEXT

Loads a structure from a MICRO2-format ULD file. This file is the same format as the input file to ULINK. It performs the function as the .LOD file loaded with /STRUCTURE but is much slower.

/VECTOR

Loads a text file that specifies the elements of the vector registers. Any register can be loaded and a subset of the elements can be loaded for each vector.

Qualifiers

/CPU=cpu-id

The CPU for nonmemory load, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is loaded.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DATA (D)
/NODATA

Specifies whether the structure data is loaded or only the structure symbol table.

/LOG
/NOLOG
Determines whether load status is displayed.

/REVISION=version
Specifies the version to be compared against the revision information stored in the .LOD file for each structure.

/SCU
/NOSCU
Directs the load to the system control unit.

/START=address
Loads the structure, starting at the specified address.

/SYMBOL
/NOSYMBOL
Determines whether to load control store symbols.

/VERIFY
/NOVERIFY
Verifies a scan ring load.

Parameters

file-spec
The file containing the data to be loaded. Data is loaded into the specified data structure starting at location 0 unless /START is specified.

LOGOUT

Deletes the current command language interpreter (CLI) process and returns the process to the host system. Only remote processes can log out. Local processes ignore this command.

Format

LOGOUT *[/qualifiers]*

Qualifiers

/BRIEF
Echoes the LOGOUT command.

/FULL (D)
Displays the logout message, which includes user name and date and time of logout.

Examples

1
```
>>> LOGOUT/BRIEF
```

The LOGOUT/BRIEF format.

2
```
>>> LOGOUT
  GIBRISH   logged out at 15-APR-1988 14:23:45.30
```

The default LOGOUT (/FULL) message format.

MAIL

Mails the specified file to the specified recipient.

Format

MAIL *[/qualifiers] file-spec* *recipient[, . . .]*
@recipient-list

Qualifiers

/FILE=file-spec
The file to send.

/SELF
/NOSELF
Determines whether the sender receives a copy of the mailed file.

/SUBJECT=quoted-string
The subject of the mailed file.

Parameters

file-spec
The file to be mailed.

recipient
Can specify one or more recipients or a list of recipients using the at sign (@).

MICROSTEP

Issues a specified number of clock cycles to a specified CPU.

Format

MICROSTEP *[/qualifiers] step-count*

Qualifiers

/BURST
/NOBURST
Specifies whether to burst the clocks for the number of cycles specified by step-count.

/CPU=cpu-id
Specifies the CPU to be stepped, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If the cpu-id is BOOTSET, all CPUs and the SCU are stepped together. The SET STEP BOOTSET command permanently selects this option.

If the cpu-id is ALL, all CPU clocks are stepped.

If a CPU is not specified, the default CPU is stepped.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SPACEBAR(D)
/NOSPACEBAR
Determines whether to enter space bar step mode (SBSM) at the end of the specified step-count.

In SBSM, the prompt changes to `STEP>` and one clock cycle is issued each time the space bar is pressed.

SBSM is exited when any other key is pressed.

/SCU
/NOSCU
Specifies whether to step the SCU clocks. When the SCU clocks are stepped, memory timing is switched from STBY to STEP and one clock is issued (unless /BURST is specified). Memory timing is switched back to STBY and any tracepoints set in the SCU are scanned. The process is repeated for each count in the step-count. On the final count, active tracepoints are displayed followed by the microPC.

Parameters

step-count
A decimal value specifying the number of clock cycles to issue.

If step-count is nonzero, the SPU enters space bar step mode (SBSM, see /SPACEBAR) at the end of the specified count.

If step-count is zero, SBSM is not entered after the clock cycle is generated. This command form is used when a key is defined to step a processor instead of SBSM.

MOUNT

Mounts a specified volume on a specified device.

Format

MOUNT *device volume-name*

Parameters

device

If the device is not specified, the command prompts for it.

The asterisk (*) wildcard character can be used to specify disk device labels to mount the disk present. The label is read from the device and the system logical DISK$label is defined as the name of the disk device.

The tape device label must be specified; the asterisk (*) wildcard character cannot be used. The system logical name TAPE$label is defined as the name of the specified tape device. A warning message is issued if the tape label does not match the tape installed in the drive.

volume-name

The volume to be mounted on the specified device. If the volume is not installed on the device, an error message is issued. If the volume name is not specified, the command prompts for it.

NEXT

Executes the specified number of macroinstructions. The processor executes a HALT after the current instruction completes. The PC points to the instruction following the single-stepped instruction.

Format

NEXT *[/qualifiers] [step-count]*

Qualifiers

/CPU=cpu-id
Specifies the CPU to be stepped, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is stepped.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SPACEBAR (D)
/NOSPACEBAR
Determines whether to enter space bar step mode (SBSM) at the end of the specified step-count.

In SBSM, the prompt changes to `NEXT>` and one macroinstruction is executed each time the space bar is pressed.

SBSM is exited when any other key is pressed.

/VIRTUAL
/NOVIRTUAL
Specifies whether the instruction decode routine uses virtual or physical memory when decoding and displaying the next instruction.

Parameters

step-count
A decimal value specifying the number of macroinstructions to execute.

If step-count is nonzero, the SPU enters space bar step mode (SBSM, see /SPACEBAR) at the end of the specified count.

If step-count is zero, SBSM is not entered after the instruction is executed. This command form is used when a key is defined to step a processor instead of SBSM.

ON

Valid only in a command procedure. Executes a specified command when a specified condition occurs during procedure execution.

NOTE
The ON command is executed only once and then disables itself. The ON target command must reexecute the ON command to reestablish the condition handler.

Format

ON *condition THEN command*

Parameters

condition

One of the following:

ATTN	Scan subsystem unhandled attention
ERROR	CLI process command error
FAULT	Power subsystem unhandled exception
SEVERE	CLI process command severe error
WARNING	CLI process command warning

command

Any valid CLI command.

OPEN

Opens a file for command-level reading and/or writing ASCII record-oriented files. Such files can store temporary data or test case results for later comparison. Files opened with the OPEN command remain open until closed with the CLOSE command.

Format

OPEN *[/qualifier] logical-name file-spec*

Qualifiers

/APPEND
Opens an existing file for write access, starting at the end of the file. The original file content cannot be modified.

/ERROR=label
On error, transfers control to label. Valid only in a command procedure.

/LOG
/NOLOG
Determines whether to display an informational message when the file is opened.

/READ(D)
Opens an existing file for read, starting at the beginning of the file.

/WRITE
Creates a new file.

Parameters

logical-name
Specifies a logical name to be assigned to the open file and placed in the process logical name table.

file-spec
The name of the file or device to be opened for input or output. Wildcard characters are not allowed in the file specification.

PURGE

Deletes all previous versions of files that match a given file specification.

Format

PURGE *[/qualifiers] [file-spec[, . . .]]*

Qualifiers

/CONFIRM
/NOCONFIRM (D)
Determines whether an affirmative response is required before a file is purged. Valid responses to the confirmation prompt are:

Response	Result
Y (yes)	The file is purged.
T (true)	The file is purged.
N (no)	The file is not purged.
F (false)	The file is not purged.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

/KEEP=number
Specifies the maximum number of file versions to be retained. If not specified, only the highest numbered version of the file is kept.

/LOG
/NOLOG (D)
Determines whether file-specs are displayed as each file is deleted.

Parameters

file-spec[, . . .]
Specifies one or more files to be purged. If omitted, all files in the directory are purged. The version number cannot be specified. Wildcard characters can be substituted for the directory, name, or type fields or partial fields.

Examples

1 `>>> PURGE`

Deletes all but the highest numbered version of all files in the default directory.

2 `>>> PURGE/KEEP=2`

Deletes all but the two highest numbered versions of all the files in the default directory.

3 `>>> PURGE/KEEP=2 TAMPA::DISK1:[EXAMPLE]*.LIS`

Deletes all but the two highest numbered versions of each file with the file type .LIS in the directory EXAMPLE on remote node TAMPA.

READ

Reads a line from a specified file and assigns a symbol to the line.

Format

READ *[/END_OF_FILE=label] logical-name symbol-name*

Qualifiers

/END_OF_FILE=label
Control is transferred to label if the end-of-file condition is detected. Valid only in command procedures.

/ERROR=label
Control is transferred to label if an error condition is detected. Valid only in command procedures.

Parameters

logical-name
The logical name assigned by the OPEN command when the file was opened. STDIN, STDOUT, SYS$INPUT, and SYS$OUTPUT are the predefined logical names for the terminal or controlling file.

symbol-name
A 1- through 255-character alphanumeric name equated to the contents of the record being read. The first character must be an alphabetic letter, underscore (_), or dollar sign ($). The command interpreter places the symbol name in the local symbol table for the current command level. If the symbol was previously defined, the READ command redefines it to the new value being read.

Example

```
>>> OPEN INFILE NAMES.DAT
>>> LOOP:
>>> READ/END_OF_FILE=ENDIT INFILE NAME
      .
      .
      .
 >>> GOTO LOOP
>>> ENDIT:
>>> CLOSE INFILE
```

The OPEN command opens the file NAMES.DAT for input and assigns it the logical name INFILE. The READ command reads records from file INFILE into symbol NAME, and it specifies label ENDIT to receive control when the last INFILE record has been read. The procedure loops until all records in the file have been processed.

REBOOT

Reboots the SPU. The command causes the SPU to enter kernel mode and execute a HALT instruction. The SPM attempts to reboot if the Startup switch is set to Boot.

Format

REBOOT *{/CONFIRM|/NOCONFIRM}*

Qualifier

/CONFIRM (D)
/NOCONFIRM
Must be specified to avoid accidental execution. Determines whether an affirmative response is required before the reboot is executed. Valid responses to the confirmation prompt are:

Response	Result
Y (yes)	Reboot.
T (true)	Reboot.
N (no)	Do not reboot.
F (false)	Do not reboot.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

Example

```
>>> REBOOT/NOCONFIRM
```

The SPU is rebooted without confirmation.

RECALL

Recalls previously entered commands from the command buffer. The command buffer stores up to 20 commands; the most recently entered command is number 1. If the qualifier and parameters are omitted, the most recently entered command (that is, number 1) is recalled. The RECALL command is not given a number and cannot be recalled.

Format

RECALL *[/ALL] [command | index]*

Qualifier

/ALL

Displays all commands in the command buffer with their numbers. If /ALL is specified, do not specify the command or index parameter.

Parameters

command

The leading substring of the command to be recalled. The leading substring is the minimum number of characters required to identify uniquely the wanted command from other commands in the buffer.

index

The recall buffer number of the command to be recalled.

Example

```
>>> RECALL/ALL
 1 EVE RECALL.SDML
 2 help read
 3 mail
 4 help read
 5 help purge
 6 mail
 7 MAIL
 8 set ho 3d
 9 mail
10 WIPEM
11 mail
12 help logout
13 SPELL LOAD.SDML
14 WIPEM
15 MAIL
16 mail
17 help lexicals
18 WIPEM
19 mail
20 help lexicals f$leng
```

Typical contents of a full command buffer.

RENAME

Changes the directory, file name, file type, or version of an existing file specification.

NOTE
Files cannot be renamed from one device to another.

Format

RENAME *[/qualifiers] input-file-spec[, . . .] output-file-spec*

Qualifiers

/LOG
/NOLOG (D)
Determines whether the file-spec is displayed for each renamed file.

/CONFIRM
/NOCONFIRM (D)
Determines whether an affirmative response is required before a file is renamed. Valid responses to the confirmation prompt are:

Response	Result
Y (yes)	The file is renamed.
T (true)	The file is renamed.
N (no)	The file is not renamed.
F (false)	The file is not renamed.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

Parameters

input-file-spec[, . . .]
One or more file specifications that are to be changed. Wildcard characters are allowed in the directory, file name, file type, or version number fields of the file specification. All files with specifications that match the wildcard fields are renamed.

output-file-spec
The new file specification. The device, directory, file name, and file type of the input-file-spec provide defaults for output-file-spec fields that are not specified or that contain a wildcard character. Wildcard characters in corresponding fields of input-file-specs and output-file-specs result in multiple rename operations.

Version numbers are applied to output-file-specs according to the first of the following rules that applies:

1. The output-file-spec specified version number.
2. The input-file-spec version number if either the input-file-spec or output-file-spec has an asterisk (*) in the version number field.
3. Version number 1 if the output-file-spec file name and file type fields do not currently exist.
4. The highest existing version number +1 if the output-file-spec file name and file type fields currently exist.

Example

```
>>> RENAME/LOG PS*.* [DIAG]ONTHA.*
%CLI-I-RENAMED, DUA0:[TEST]PSN.QT;1 renamed to DUA0:[DIAG]ONTHA.QT;1
```

Any file in the default directory having PS as the first two characters of the file name is renamed to file name ONTHA in directory [DIAG] and has the same file type as the input file.

REPEAT

Repeats the execution of a command until Ctrl/C is typed, an error occurs, or an IF command expression becomes FALSE.

The REPEAT IF command is a special case that performs the same function as a WHILE command. Loops can be constructed as follows:

```
>>> LOOP_COUNT = 0
>>> REPEAT IF LOOP_COUNT.LEQ.100 LOOP_COUNT=LOOP_COUNT+1
```

The REPEAT command increments LOOP_COUNT until it reaches 101 and then returns control to the command interpreter.

If the target command of a REPEAT IF command is not repeatable, the command executes as if REPEAT was not entered.

Format

REPEAT *[/COUNT=number] command*

Qualifier

/COUNT=number
The command is repeated the specified number of times. If not specified, the command is repeated forever.

Parameters

command
The command to be repeated. If the command is not repeatable, execution terminates after the command is executed once.

RESET

Scans the RESET vector from the CDB into the specified CPU. Only scan latches are affected and all are modified. Then the command file [SYSEXE]RESET.CMD is executed. This file can contain any valid SPU commands.

Format

RESET */qualifiers*

Qualifiers

/CPU=cpu-id
The CPU to be reset, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is reset. All error checking is turned on.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Determines whether the SCU is reset. All error checking is turned on and all ports are turned off.

RESTORE

Restores previously saved scan state or SPU context information (see the SAVE command description). A qualifier must be specified; if not, the command prompts for additional input. The qualifiers allow the saved component states to be restored at the same time with one RESTORE command or individually with separate commands. Scan state is restored on units that are not running. If the system clocks are running on any of the specified units, an error message reports the running unit(s).

Format

RESTORE *qualifiers*

Qualifiers

/CPU=cpu-id
The CPU on which the scan state is to be restored, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU state is restored.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Specifies whether to restore the SCU scan state.

/SPU
/NOSPU
Specifies whether to restore the SPU context state.

RETURN

Valid only in a command procedure. Returns control to the procedure at the top of the CALL stack. The stack is decremented.

Format

RETURN

RUN

Loads the specified program and creates a job to execute it. The current terminal is attached to the new job until it completes unless the /DETACH qualifier is specified. If /DETACH is not specified, the CLI is suspended until the program completes.

Format

RUN *[/qualifier] file-spec [command-line]*

Qualifiers

/DEBUG
/NODEBUG
The /DEBUG qualifier causes the job to enter the debug wait state before starting execution. If this qualifier is specified without the remote debugger present, the job hangs. The job must be continued with the remote debugger.

/DETACHED
/NODETACHED
The /DETACHED qualifier starts a server job to execute the specified program. The CLI continues after starting the job.

/JOB_PRIORITY=level
Specifies the job priority level, from 1 (high) to 31 (low).

/KERNEL_STACK=size
Specifies the size of the kernel stack as a decimal number. Unlike the user stack, the kernel stack is not automatically increased when necessary.

/LOAD
/NOLOAD
The /LOAD qualifier causes the specified program to be unloaded and reloaded before execution. This ensures that the latest version of the image file is executed.

/MAXIMUM_MESSAGES=number
Specifies the maximum number (decimal) of messages that can be pending on the job's port.

/MODE={KERNEL | USER}
Specifies the initial execution mode.

/PARAMETERS=quoted-string
Passes parameters to the program to be run.

/POWER_RECOVERY
/NOPOWER_RECOVERY
The /POWER_RECOVERY qualifier specifies that the job requires powerfail restart.

/PROCESS_PRIORITY=number
Specifies the process priority (decimal) for the first process in the job.

/USER_STACK=size
Specifies the initial size (decimal) of the user stack. If necessary, the user stack is automatically extended.

Parameters

file-spec
Specifies the program to be loaded and executed.

[command-line]
The command line is passed to the specified program, where it is interpreted (or ignored).

SAVE

Save scan state or SPU context state. The state is saved in a global area of SPU memory where it can be referenced by SPU software or restored (see the RESTORE command description). Scan state is typically saved as part of the system initialization procedure INIT.CMD to establish a system reset vector. The SPU uses the vector internally during the recovery phase of CPU/SCU error handling.

A qualifier must be specified; if not, the command prompts for additional input. The qualifiers allow the component states to be saved at the same time with one SAVE command or individually with separate commands. Scan state is saved on units which are not running. If the system clocks are running on any of the specified units, an error message reports the running unit(s).

Format

SAVE *qualifiers*

Qualifiers

/CPU=cpu-id
The CPU on which the scan state is to be saved, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU scan state is saved.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Specifies whether to save the SCU scan state.

/SPU
/NOSPU
Specifies whether to save the SPU context state.

SCROLL

Valid only in screen mode. Scrolls a specified window left, right, up, or down a specified amount. In addition, microcode windows can be scrolled to the current, next, or previous microPC, or to a specified microcode address.

Format

SCROLL *[/qualifiers] [window-name]*

Qualifiers

/CURRENT
Valid only in microcode and EXAMINE windows. Scrolls the window to the microcode listing location that corresponds to the current microPC of the control store associated with the window.

/DOWN[=lines] (D)
Scrolls the window down (forward). The default is six lines.

/LEFT[=columns]
Valid only in microcode windows. Scrolls the window to the left. The default is eight columns.

/NEXT[=lines]
Valid only in microcode windows. Scrolls the window forward the specified number (decimal) of lines. If lines are not specified, scrolls to the microcode listing location corresponding to the next microPC.

/PREVIOUS[=lines]
Valid only in microcode windows. Accurate only if the clocks are single-stepped. Scrolls the window backward the specified number (decimal) of lines. If lines are not specified, scrolls the window to the microcode listing location corresponding to the previous microPC.

/RIGHT[=columns]
Valid only in microcode windows. Scrolls the window to the right. The default is eight columns.

/TO=address
Valid only in microcode and EXAMINE windows. Scrolls the window to the microcode listing location corresponding to the specified hexadecimal address.

/UP[=lines]
Scrolls the window up (backward). The default is six lines.

Parameters

window-name
The name of a window created by a CREATE/WINDOW command.

If a window is not specified and if the currently selected window type supports the specified scrolling operation, the currently selected window is scrolled.

SELECT

Selects and optionally relocates and resizes a window. The command window is resized as required. If screen mode is suspended (by SET SCREEN OFF), it is automatically enabled.

NOTE
The command window cannot be selected.

Format

SELECT *[/NEXT] window-name [AT location]*

Qualifier

/NEXT
Selects the next least-recently created window.

Parameters

window-name
The window to be selected. The specified window becomes the default window for the SCROLL command, and the window name is highlighted in the associated information line.

location

The screen segment the window is to occupy, specified by one of the following keywords:

Keyword	Screen Segment	Keyword	Screen Segment
W1	Whole screen	H1	First (upper) (D)
		H2	Second (lower)
T1	First (upper)	Q1	First (upper)
T2	Second	Q2	Second
T3	Third (lower)	Q3	Third
		Q4	Fourth (lower)

The window is resized to conform to the new location. If the window type does not support resizing, the command fails.

NOTE

The bottom five lines of the screen are reserved for the command window.

SEND

Broadcasts a message to all terminals or a specified terminal.

Format

SEND *[/qualifier] [terminal-name] string*

Qualifiers

/ALL

Broadcasts the message string to all terminals. If /ALL is specified, do not specify the terminal-name parameter.

/BELL

Sends one bell character with the message.

/OPCOM

Sends the message through VMS to the operator communications manager.

/URGENT

Appends an urgent header to the message.

Parameters

terminal-name

The terminal to receive the message. If /ALL is specified, do not specify the terminal-name parameter.

string

The message text. It is limited to one line and is displayed on the line following the SEND header. The header displays the message source, urgency, and time.

SENSE

Determines the configuration and current status of various VAX 9000 system components. During system initialization, the command options determine the appropriate data files and configuration, and whether to attempt a cold boot, warm boot, or hot boot.[4]

Format

SENSE *option*

[4] Command variants, of the form SENSE OPTION, are listed in the table of contents and described separately on the following pages.

SENSE CLOCK

Reads the current state of the clock subsystem and the MCM revision and serial numbers.

Format

SENSE CLOCK

SENSE CPU

Executes scan hard-core tests:

0 (SCI loopback)
1 (CD loopback)
4 (sense rings)

to determine the revision and configuration of the specified CPU. The command destroys the state of the CPU scan subsystem and does not execute if the CPU clocks are running.

Format

SENSE CPU *cpu-id*

Parameters

cpu-id
The CPU to be sensed, specified by numeric literal 0, 1, 2, or 3.

SENSE IO

Displays information about the I/O subsystem.

Format

SENSE IO

SENSE POWER

Reads the power subsystem status to determine the cabinet configuration, BBU state, and power status. This information and the front panel switches determine the power-on action.

Format

SENSE POWER

SENSE SCU

Executes scan hard-core tests:

0 (SCI loopback)
1 (CD loopback)
4 (sense rings)

to determine the revision and configuration of the SCU. This command destroys the state of the SCU scan subsystem and does not execute if the SCU clocks are running.

Format

SENSE SCU

SENSE SYSTEM

Executes a SENSE POWER command followed by a SENSE CLOCK command. This sets up the state of the clock and power subsystems (which must be known before executing the SENSE CPU and SENSE SCU commands). Next, each CPU and then the SCU are sensed.

Format

SENSE SYSTEM */qualifiers*

Qualifiers

/COMPARE
Compares the system part and serial number information to the saved history records. If used with /LOG, any differences will be displayed.

/LOG
/NOLOG
Determines whether to display command results.

SET

Defines or modifies characteristics of the processors or the service processor (SPU) subsystem.[5]

Format

SET *option*

[5] Command variants, of the form SET OPTION, are listed in the table of contents and described separately on the following pages.

SET ATTN_ACTION

Defines a command to be executed when the scan subsystem generates an unhandled scan attention.

Scan attentions are normally serviced by the error handling subsystem. If an attention is not recognized, or the error handler is disabled, the attention may be delivered to all CLI processes that have established an ATTN_ACTION.

Format

SET ATTN_ACTION *command*

Parameters

command
The command to be executed following a scan attention.

Example

```
>>> SET ATTN_ACTION @FIX_IT
```

Executes the procedure FIX_IT.CMD following an unhandled scan attention.

SET AUTOBOOT

Controls the automatic bootstrap flags.

Format

SET AUTOBOOT *{ON|OFF}*

Parameters

ON|OFF
Determines whether automatic bootstrap is enabled (ON) or disabled (OFF).

SET BI_DEVICES

Loads the BI device names and IDs from the specified file.

Format

SET BI_DEVICES *[parameters]*

Parameters

file-spec
Specifies a file that translates BI node IDs into device names. If file-spec is not specified, the default file is [UCODE]BI_DEVICES.DAT.

device[, . . .]
Specifies one or more devices. If not specified, the default file [UCODE]BI_DEVICES.DAT is used.

SET BOOTFLAGS

Sets the default value of the bootstrap flags in R5.

Format

SET BOOTFLAGS *value*

Parameters

value
A hexadecimal value to be loaded into R5.

SET BOOTSET

Specifies the set of CPUs that operates in an SMP environment when the system is next bootstrapped.

Format

SET BOOTSET *[/qualifiers] cpu-id [, . . .]*

Qualifiers

/ENABLE=(cpu-id [, . . .])
Explicitly includes one or more CPUs in the boot set. To specify more than one CPU, separate the CPU identifiers with commas and enclose the list in parentheses.

/DISABLE=(cpu-id [, . . .])
Explicitly excludes one or more CPUs in the boot set. To specify more than one CPU, separate the CPU identifiers with commas and enclose the list in parentheses.

/PRIMARY=cpu-id
Specifies the CPU to become the primary CPU when the system is next bootstrapped. The specified CPU must be a member of the boot set.

Parameters

cpu-id
Specifies the CPUs that form the boot set. Included CPUs are enabled, excluded CPUs are disabled.

CPUs are specified by numeric literals 0, 1, 2, and 3. If the primary CPU is not specified (see /PRIMARY) or the previous primary is not available, the lowest numbered CPU in the list becomes the primary CPU.

Examples

1 `>>> SET BOOTSET 0,1,2,3`

In a quad CPU system, includes all available CPUs in the boot set. CPU0 is the boot primary by default.

2 `>>> SET BOOTSET/PRIMARY=1 0,1`

Includes CPU0 and CPU1 in the boot set and specifies CPU1 as the boot primary.

SET CLOCK

Modifies the state of the master clock subsystem.

Format

SET CLOCK *[/qualifiers] [ON(D)|OFF]*

Qualifiers

/ATTENTION[=attention-name]
/NOATTENTION
Determines whether a clock subsystem fault is reported to the console as an attention and entered in the error log. The attention-name argument can be:

- PHASE_ERROR

  Indicates that a clock synchronization error exists between clock distribution chips on the MCUs.

- UNLOCKED_ERROR

  Indicates that the master clock module (MCM) frequency synthesizer has lost internal synchronization.

Both attentions are enabled by default.

/CPU=cpu-id
Specifies the CPU in which the clock subsystem is to be modified, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU's clock subsystem is modified.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/EMULATION
/NOEMULATION
When emulation is specified, MCM control is disabled and SCM driver loopback functions are enabled for system testing.

/FREQUENCY=value
The frequency, in MHz, of the master clock.

The frequency value must be in the range of 332 to 580_{10}. If the value is not a multiple of four, the frequency is automatically rounded up to the next higher multiple of four.

/INTERVAL=cycles
The interval, in machine cycles, during which system clocks are turned off. For example, if cycles is 0, clocks are generated every machine cycle; if cycles is 1, clocks are generated every other machine cycle.

The interval value must be in the range of 0 to 255_{10}.

/LOG
/NOLOG
Determines whether an informational message is displayed when the command is executed.

/POSITION=value
The position of reference clock relative to master clock. The position value must be in the range of 0 to 1023_{10}.

CAUTION
This value is set during initialization and should not need to be modified. If this value is 0, the MCM may not be able to synchronize the main and reference clocks.

/SAMPLE_RATE=hertz

The sampling rate, in Hz, of the master-clock-to-reference-clock phase alignment relationship. The rate argument can be one of the following:

OFF (disable the sample loop)
488
976
1950

The normal sampling rate is 488 Hz.

/SCU
/NOSCU

Specifies the system control unit clock group. Valid only when setting the clock state on or off.

/SYNCH=synch-option

The control mode for master-clock-to-reference-clock phase alignment. The synch-option argument can be one of the following:

- AUTOMATIC

  The MCM automatically controls the phase alignment.

- MANUAL

  The console, through the MCM position register, controls the phase alignment.

- NONE

  Phase alignment is disabled.

Parameters

ON | OFF

Turns clocks on or off in the specified CPU(s). If not specified, the clocks are turned on.

Examples

1
```
>>> SET CLOCK ON
```

Starts the clock in the default CPU.

2
```
>>> SET CLOCK/CPU=ALL ON
```

Starts the clock in all available CPUs.

3
```
>>> SET CLOCK/CPU=(0,1)/SCU ON
```

Starts the clocks in CPU0 and CPU1 and in the SCU.

4
```
>>> SET CLOCK/CPU=(0,1)/SCU OFF
```

Stops the clocks in CPU0 and CPU1 and in the SCU.

5
```
>>> SET CLOCK/FREQUENCY=400
```

Sets the clock frequency to 400 MHz.

6
```
>>> SET CLOCK/FREQ=401/LOG
%CLI-I-NOTMULT4, specified frequency has been rounded to 404 MHz
```

Attempts to set a clock frequency that is not a multiple of 4 MHz. The CLI displays an informational message and automatically rounds the frequency up to the next multiple of 4 MHz. Note that /NOLOG would inhibit the informational message.

SET COLD_START

Sets or clears the cold-start flag for the specified CPU. This command is used primarily for debug.

Format

SET COLD_START *[/CPU=cpu-id] {ON | OFF}*

Qualifier

/CPU=cpu-id
Specifies the CPU in which the cold-start flag is to be set or cleared, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the cold-start flag is set or cleared in the default CPU

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

Parameters

ON | OFF
Determines whether the cold-start flag is set.

SET COMMAND

Adds commands to the process command table.

Format

SET COMMAND *[/qualifiers] file-spec*

Qualifiers

/CLEAR
/NOCLEAR
Clears the command tables.

/LOG
/NOLOG (D)
Determines whether to display memory and keyword usage for each new command.

Parameters

file-spec
Specifies the name of a command definition file. The default file type is .CLD.

Example

```
>>> SET COMMAND TEST
```

Adds the commands in TEST.CLD to the process command table.

SET CPU

Specifies the default CPU for commands that reference a CPU.

Format

SET CPU *[/[NO]LOG] cpu-id*

Qualifier

/LOG
/NOLOG
Determines whether to display command results.

Parameters

cpu-id
The default CPU. The cpu-id can be an integer value or symbolic name, as follows:

Integer	0, 1, 2, or 3
BOOTPRIMARY	Next primary processor
PRIMARY	Current primary processor

NOTE
The SET CPU command does not allow a list of processors.

Examples

1 `>>> SET CPU 0`

Specifies CPU0 as the default CPU.

2 `>>> SET CPU PRIMARY`

Specifies the PRIMARY CPU as the default CPU.

SET CYCLE

Modifies the clock cycle counter.

Format

SET CYCLE *[/qualifiers] count*

Qualifiers

/CPU=cpu-id
The CPU in which the clock cycle counter is to be modified, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU's clock cycle counter is modified.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/INTERVAL=value
The number of time units per cycle.

/SCU
/NOSCU
Determines whether the system control unit clock cycle counter is modified.

Parameters

count
The count to be loaded into the clock cycle counter.

The clock cycle counter is the time base for the SET TRACE and SET PATTERN commands and is incremented each time the clock is stepped. A null count clears the counter.

Examples

```
1  >>> SET CYCLE
```

Clears the clock cycle counter in the default CPU.

```
2  >>> SET CYCLE/CPU=1/INTERVAL=1000 1
```

In CPU1, sets the clock cycle counter value to 1 and sets the interval to 1000.

SET DEFAULT

Changes the default device and/or directory name. The new default is applied to all subsequent file specifications that do not include a device or directory name. A fatal message is displayed if the target directory does not exist.

Format

SET DEFAULT *directory-spec[:]*

Parameters

directory-spec[:]
Specifies the device and/or directory name to be used as the default device or directory in file specifications. Terminate a physical device name with a colon (:). Enclose a directory name in brackets ([]). The relational directory specifiers [-] or [--] can be specified to set default one level above the current level. For example:

```
SET DEFAULT [-.FILES]
```

The device and directory can also be specified as a logical name. For example:

```
SET DEFAULT SYS$LOGIN
```

Examples

1 `>>> SET DEFAULT [UCODE]`

Changes the default directory to [UCODE]. The default device does not change.

2 `>>> SET DEFAULT DISK2:`

Changes the default device to DISK2. The default directory does not change.

3 `>>> SET DEFAULT DISK0:[TEST]`

Changes the default device to DISK0 and the default directory to [TEST].

SET ERROR_HANDLING

Sets the state of the CPU/SCU error handling system.

Format

SET ERROR_HANDLING *[/qualifiers] {ON | OFF}*

Qualifiers

/MATCH
/NOMATCH
Determines whether macroPC, microPC, and physical address match handling for the CPUs is on or off. If /MATCH is specified and a match condition is detected, the error handling system signals a match exception to the CLI. If /NOMATCH is specified, detected match conditions are treated as errors.

/RECOVERY
/NORECOVERY
Determines whether error recovery for the CPUs and SCU is enabled. If /RECOVERY is specified, the error handling system attempts to recover from any errors that occur. If /NORECOVERY is specified, error recovery is not attempted and errors are signaled to the CLI.

/REPORTING
/NOREPORTING
Determines whether error log entries are generated for all recovered and nonrecovered CPU and SCU errors.

Parameters

ON | OFF
Determines whether the CPU/SCU error handling system is on or off. If error handling is ON, errors are reported as specified by the qualifiers. If error handling is OFF, errors are reported to the CLI.

SET FAULT_ACTION

Specifies a command to be executed when an unhandled exception is detected in the power subsystem.

Format

SET FAULT_ACTION *command*

Parameters

command
Specifies the command to be executed following a power exception.

Power subsystem exceptions are normally serviced by the error handling subsystem. If the error handler fails to recognize an exception or is disabled, all CLI processes that established a POWER FAULT action are notified.

SET ISOLATION

Loads isolation data for the MCU tester.

Format

SET ISOLATION *[/qualifiers] file-spec*

Qualifiers

/CPU=cpu-id
Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is selected.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/LOG
Displays command results.

/SYBIL
Specifies isolation for SYBIL patterns.

Parameters

file-spec
The file containing the isolation data.

SET KEEP_ALIVE

Controls the state of the SPU keep-alive monitor.

Format

SET KEEP_ALIVE *[/CPU=cpu-id] {ON | OFF | MANUAL}*

Qualifier

/CPU=cpu-id
Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is selected.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

Parameters

ON | OFF | MANUAL
Determines whether the keep-alive monitors in the CPUs are enabled and how the SCM polls the monitors.

If a keep-alive failure is detected when MANUAL is enabled, the file SYS$SYSTEM:KAF.CMD is executed.

If a keep-alive failure is detected when ON is enabled, the CLI handles the failure internally by logging the error and rebooting the CPU.

Examples

1 `>>> SET KEEP_ALIVE ON`

Turns the keep-alive monitor on.

2 `>>> SET KEEP_ALIVE OFF`

Turns the keep-alive monitor off.

SET LABELS

Appends bit-range labels to each line of data displayed by the SPU.

Format

SET LABELS *{ON|OFF}*

Parameters

ON|OFF
Determines whether bit-range labels are displayed.

Example

```
>>> SET LABELS ON
>>> EXAMINE ECS[0]
%CPU0.ECS[0]<145:0> = F9007702 03621800 08601F00 0206942E ! Bit 127:0
                                                  2C3F3 ! Bit 145:128
>>> SET LABELS OFF
>>> EXAMINE ECS[0]
%CPU0.ECS[0]<145:0> = F9007702 03621800 08601F00 0206942E
                                                    2C3F3
```

The labels indicate that the first line of data shows the value of bits 127 through 0, and the second line bits 145 through 128.

SET LOGGING

Opens a specified file and copies all terminal output to the file. Up to five logging files can be open at the same time. The command does not affect normal terminal output. All terminal output does not go to the logging file. For example:

```
>>> WRITE SYS$OUTPUT "FOO"
```

will not go to the logging file.

Format

SET LOGGING *[/qualifiers] {ON | OFF}*

Qualifiers

/ALL
Specifies that the command affects all log files.

/DISABLE
Temporarily disables output logging to the specified file(s). The file remains open.

/ENABLE
Reenables output logging to the specified file(s).

/FILE[=file-spec]
The log file. If file-spec is not specified, the default is CONSOLE.LOG in the current directory.

If /FILE is not specified, the output is sent to the printer port. SET LOGGING ON enables the printer port and SET LOGGING OFF disables the printer port.

Parameters

ON | OFF
Turns terminal output logging on and off. To turn off logging to a file, the file must be specified exactly as it was when logging was enabled.

Examples

1 `>>> SET LOGGING ON`

Copies terminal output to remote printer port.

2 `>>> SET LOGGING/FILE=[UCODE]UCODE.LOG`

Copies terminal output to [UCODE]UCODE.LOG.

SET MESSAGE

Determines the format for error, warning, and informational messages.

NOTE
At least one message field must be displayed. Specifying /NOFACILITY/NOSEVERITY/NOIDENT/NOTEXT displays all fields.

Format

SET MESSAGE */qualifiers* [file-spec]

Message Format

All messages from the SPU command language start with either a percent sign (%) or a minus (–) in column 1. The percent sign denotes the start of a message, the minus indicates message continuation. The message format is:

```
%Facility-Severity-Ident, Text
-Facility-Severity-Ident, Text
```

where:

Field	Description
Facility	Three-character identification code for the facility that produced the message. For example, CLI is the code for the command language interpreter.
Severity	Single-character code for the message severity, as follows: S = Success I = Informational W = Warning E = Error F = Fatal error
Ident	A variable-length, message-unique field. It is usually an acronym for the message.
Text	A brief error description and possible remedy.

Qualifiers

/FACILITY
/NOFACILITY
Determines whether the facility name prefix is displayed.

/IDENT
/NOIDENT
Determines whether the identification prefix is displayed.

/SEVERITY
/NOSEVERITY
Determines whether the severity level is displayed.

/TEXT
/NOTEXT
Determines whether the message text is displayed.

Parameters

file-spec
The current message file.

SET PATTERN

Specifies a set of signals that is driven by patterns in a file.

Format

SET PATTERN	*[/qualifiers] pattern-name* *[/qualifiers] signal-list* *[/qualifiers] @file-name* */SYBIL pattern-name*

Qualifiers

/ABSOLUTE

Sets absolute times. The time field is controlled by the count variable (see SET CYCLE) and can specify an absolute or a relative count. Absolute counts specify the time at which the pattern should be applied. Absolute times less than the current count are discarded.

/ALL

Select all patterns. If /ALL is specified, do not specify the pattern-name parameter.

/CPU=cpu-id

Specifies the CPU to which patterns are applied, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, patterns are applied to the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DISABLE

Disable the pattern. Patterns can be disabled to prevent signals from being driven. The pattern definition is maintained and is resumed when the pattern is enabled.

/ENABLE
Enable the pattern. When a pattern is enabled, patterns that appear before the current time are discarded.

/FILE=file-name
The pattern file file-name.

/LOG
/NOLOG
Determines whether changes are displayed.

/NAME=pattern-name
Sets a pattern point name.

/ODOMETER[=window-name]
Displays changes in an odometer window.

/RELATIVE
Sets relative time. The time field is controlled by the count variable (see SET CYCLE) and can specify an absolute or a relative count. Relative counts are added to the current count to determine at which time the pattern should be applied.

/SCU
/NOSCU
Determines whether pattern points apply to the system control unit.

/SYBIL
Remote patterns can be executed using the /SYBIL qualifier. The SET/SYBIL command creates a network link to the node defined by logical name SYBIL$NODE.

/VERIFY
/NOVERIFY
Determines whether to display a message when patterns are applied.

Parameters

signal-list

The signals to be driven. To specify more than 1 (up to 256) signal, separate the signal names with commas, as follows:

```
>>> SET PATTERN [/qualifiers] signal-spec[,signal-spec...]
```

The asterisk (*) wildcard character can be used to specify several like-named signals. For example:

```
>>> SET PATTERN [/qualifiers] E3.*
```

file-name

The file containing the pattern.

pattern-name

The default pattern-name format is PATTERNdd, where *dd* is a decimal number to make the name unique. The pattern can also be explicitly named with the /NAME qualifier. When the pattern is established, it must be referenced by its assigned name.

For SYBIL patterns, the pattern-name is part of the name of the file that contains the patterns.

Description

The pattern file format is shown below:

```
! Comments
! Time  Signal States
10      11100111111
11      11000111111
```

A pattern deletes itself when no more activity is scheduled.

SET PERSONAL_NAME

Sets the user's personal name for use with the MAIL command.

Format

SET PERSONAL_NAME *quoted-string*

Parameters

quoted-string
A user-specified string.

SET POWER

Modifies the state of the power subsystem.

The power subsystem is partitioned into voltage buses in processor cabinets. The cabinets can be selected as a set to modify all voltage groups within a cabinet, or each individual voltage can be modified.

Only the local CLI process can execute the SET POWER command.

Format

SET POWER *[/qualifiers] [ON | OFF]*

Qualifiers

/BUS=bus-name
Specifies the power or I/O buses affected by the command, as follows:

Table 2–13 System Power Buses

Bus Name	Volts	Model 200 Cabinet	Model 400 Cabinet	Tester
A	+5.0	SCU	SCU	MCM
B	+5.0	BBU	BBU	None
C	-3.4	SCU/CPA	SCU	None
D	-5.2	SCU/CPA	SCU	None
E	-3.4	CPB	None	None
F	-5.2	CPB	None	None
J	-3.4	None	CPA	UNIT 0
K	-5.2	None	CPA	UNIT 0
M	-3.4	None	CPB	UNIT 1
N	-5.2	None	CPB	UNIT 1

Table 2–14 System I/O Buses

Bus Name	Bus Name
XMIA_7214A	XMIB_7214A
XMIA_7214B	XMIB_7214B
XMIA_7215A	XMIB_7215A
XMIA_7215B	XMIB_7215B

/CABINET=cabinet-id

The cabinets to which the command applies. The cabinet-ids represent the buses that supply the cabinet (see /BUS).

Table 2–15 System Cabinets

Cabinet ID	Model 200 Buses	Model 400 Buses	Tester Buses
SCU	A, B, C, D	A, B, C, D	None
CPA	C, D	J, K	None
CPB	E, F	M, N	None
UNIT_0	None	None	J, K
UNIT_1	None	None	M, N
5VOLT	None	None	A, B

/COUNTERS

Clears the counters in the power subsystem driver.

/IO

Modify the state of the I/O power supplies.

/MARGIN=margin-keyword
/NOMARGIN
Determines the voltage conditions for checking system operation. Margin keywords are as follows:

HIGH
LOW
NOMINAL
NONE

Parameters

ON(D) | OFF
Turns power on or off. If not specified, the default is ON.

SET PROMPT

Defines a new string for the CLI command prompt.

Format

SET PROMPT *[prompt-string]*

Parameters

prompt-string
Specifies the string to replace the default CLI prompt (>>>). The string can consist of one or more ASCII characters. Any ASCII character can be used in the string.

To include spaces or lowercase letters in the string, enclose the string in quotation marks. Otherwise, letters are automatically converted to uppercase, and leading and trailing spaces are removed.

If no string is specified, the default prompt is restored.

NOTE
The default prompt is required by some external utilities.

Example

```
>>> SET PROMPT "What now?> "
What now?> SHOW TIME
 18-MAR-1989 10:29:15
```

The SET PROMPT command replaces >>> with `What now?>`.

SET RADIX

Specifies a default radix for parsing numeric literals.

Format

SET RADIX *radix-name*

Parameters

radix-name
The new default radix is specified by one of the following keywords:

HEXADECIMAL
DECIMAL
OCTAL
BINARY

The default radix is command-specific. In general, numbers that are values for processor variables are hexadecimal and expression numbers are decimal.

The default radix can be overridden on the command line by preceding the numeric value with one of the following radix operators:

%D (decimal)
%O (octal)
%B (binary)
%X (hexadecimal)

If the radix is other than hexadecimal, the specifier precedes displayed numbers.

SET REMOTE

Controls access by the remote port. Only the local CLI process can execute this command.

Format

SET REMOTE *[/[NO]PASSWORD] [ON | OFF]*

Qualifier

/PASSWORD=string
/NOPASSWORD
Determines whether a password is needed for remote port access.

The console software maintains one password for remote port access. The password can be set only by the local CLI process and must be entered before the remote port is allowed access to the CLI process. The password is not displayed.

Parameters

ON | OFF
Enables or disables access by the remote port.

SET REVISION

Sets the revision level of the operating system or planar.

Format

SET REVISION *[/qualifiers] revision-string*

Qualifiers

/CPU=cpu-id
Valid only with /PLANAR. Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is selected.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/OS
Specifies that the operating system's revision is to be set.

/PLANAR
Specifies that the planar's revision is to be set.

/SCU
Valid only with /PLANAR. Specifies the SCU.

Parameters

revision-string
The operating system or planar revision level. For the planar, a single letter in the range A to Z.

SET SCI

Sets the state of the scan control interconnect of a specific port.

The primary use of the SET SCI command is for debugging solid faults in the scan distribution subsystem. Note that any intervening scan commands, including SHOW CLOCK, potentially alter the state of the SCI. If the SET SCI or SHOW SCI commands are in use, no other scan activity should be allowed.

Format

SET SCI *[/qualifiers]*

Qualifiers

/BROADCAST={0 | 1}
/NOBROADCAST
Sets the SCI BDCST line to 1 to select all MCUs on a port for a specified operation. Sets the SCI BDCST line to 0 to use the address on the SCI SELECT lines.

/BYPASS={0 | 1}
/NOBYPASS
Determines whether the port is in bypass mode. Sets the SCI BYPASS to 1 to bypass the extra latches in the data path or to 0 to use the latches.

If the port is not in bypass mode (/BYPASS=0), the command issues two extra B-phase clocks to ensure that data is propagated to the output of the two-stage delay in the SCM module. The two clocks are issued before any specified clock options. For example:

```
>>> SET  SCI/DATA=1/CLOCK=STEP_A
```

will cause the following sequence:

1. Set data out to 1.
2. Issue two B-phase clocks.
3. Issue one A-phase clock.

Note that /CLOCK=FORCE_B will defeat this propagation and data out is unpredictable.

Data in is latched by the two B-phase clocks and is reported as the latched value, not the actual value of the line. Except when performing manual port loopback tests, this command is expected, and highly recommended, to be used with the port in bypass mode.

/CDS={0|1}
/NOCDS
Sets the SCI CDS line to 0 to hold the address on the SCD SCI SELECT lines; sets the SCI CDS line to 1 to load the address.

/CLOCK=state
Sets the SCI clock to one of the following states for the current SCI command. The clock function is always executed after any B-phase clocks required to propagate data to the I/O pins.

State	Description
[NO]FORCE_A	[Clear or] set the SCI A CLK line.
[NO]FORCE_B	[Clear or] set the SCI B CLK line.
RUN	Free run both SCI CLK lines.
STEP	Step one cycle of both SCI CLK lines.
STEP_A	Step one cycle of the SCI A CLK line.
STEP_B	Step one cycle of the SCI B CLK line.
STOP	Stop both SCI CLK lines.

/DATA={0|1}
Specifies the value on the SCI DATA IN line (this is data from the SCM module). A two-stage timing delay in the SCI data path can be disabled with the SCI BYPASS. To ensure that the data set with the /DATA qualifier is propagated to the SCI pin, the SCM module issues two B-phase clocks if SCI BYPASS is not asserted (see /BYPASS).

/DEFAULT

Overrides the value set with any other qualifier and sets the following SCI lines to the state indicated:

SCI Line	State
SCI BDCST H, L	0, 1
SCI BYPASS H, L	0, 1
SCI CDS H, L	0, 1
SCI FCT 1 H, L	0, 1
SCI FCT 0 H, L	0, 1
SCI SEL 3 H, L	0, 1
SCI SEL 2 H, L	0, 1
SCI SEL 1 H, L	0, 1
SCI SEL 0 H, L	0, 1
SCI A CLK H, L	0, 1
SCI B CLK H, L	0, 1

/FUNCTION=state

Sets the SCI FCT[1:0] lines to the specified state, as follows:

State	Description
NOP	Set FCT lines to 0 (NOP).
SCAN	Set FCT lines to 1 (SCAN).
STRAM_LOAD	Set FCT lines to 2 (STRAM_LOAD).
SCAN_LOAD	Set FCT lines to 3 (SCAN_LOAD).

/PORT=port-id

Specifies the port affected by the command where port-id is the port name or number, as follows:

Port Name	Port Number
CPU0	0
CPU1	1
CPU2	4
CPU3	5
SCU	2
MCM	6

/SELECT={0 | 1}

Sets the SCI SELECT [3:0] lines to the specified value.

SET SCM

Controls operation of the scan control module.

Format

SET SCM *[/qualifiers]*

Qualifiers

/ATTENTIONS=mask
/NOATTENTIONS
Allows the SCM to determine whether CPU and SCU attentions are enabled. Mask bit 4 is for the SCU and bits [3:0] are for CPU3 through CPU0. The INIT.CMD procedure sets up and controls the mask. This qualifier does not control MCU attention enable bits and does not affect MCM attentions.

/BI_VERIFY
/NOBI_VERIFY
Determines whether the SCM verifies BI transfers by comparing the source and destination buffers after the transfer is complete. Verification is normally disabled.

/BYPASS
/NOBYPASS (D)
Determines whether the SCI normal mode latches are enabled. Normally, the latches are not bypassed. Bypass mode is only for diagnostic use, and scan rates faster than 400 ns are not reliable in bypass mode.

/CACHE
/NOCACHE
Determines whether the SCM internal scan ring cache is enabled. When /CACHE is specified, the SCM caches scan data to minimize scan I/O operations and to improve performance of error handling software and initialization procedures. The cache is automatically swept when the system clocks are started or when the cache is disabled.

/RATE=scan-rate

One of the following:

100NS (D)	200NS	300NS	400NS
800NS	1600NS	3200NS	EXTERNAL

The SCAN.CMD procedure selects the 100 ns default scan rate, which should not be changed.

/SCAN_VERIFY
/NOSCAN_VERIFY

Determines whether the SCM verifies scan operations by performing a pattern test on the target ring before applying scan-write data or after reading scan-read data. Normally this feature is enabled.

/VECTOR_PROCESSOR=mask
/NOVECTOR_PROCESSOR

The mask indicates to the SCM which optional vector processor units are present.

/VERIFY
/NOVERIFY

Controls the /SCAN_VERIFY and /BI_VERIFY qualifiers as a pair.

SET SCOPE

Sets the default scope for labels.

Format

SET SCOPE */[NO]LOG label-spec*

Qualifier

/LOG
/NOLOG
Determines whether to display command results.

Parameters

label-spec
Specifies a label name in the current model (current scope) or an absolute label reference. A label specification can have one of the following forms:

Type	Format	Specifies a Label:
Absolute	%NET[.label[.label]]	At the top level
Absolute	%SCU[.label[.label]]	At the top level
Absolute	%CPU0[.label[.label]]	At the top level
Absolute	%CPU1[.label[.label]]	At the top level
Absolute	%CPU2[.label[.label]]	At the top level
Absolute	%CPU3[.label[.label]]	At the top level
Relative	label[.label[.label]]	In this model
Indirect	-[.label[.label]]	In the model that contained this model's label

Relative and indirect references can appear anywhere in a label-spec (the label-spec after %nnn is a relative specification). Absolute specifications can appear only as the first label. Specifying CPU*n* rather than NET overrides the default set with SET CPU. Specifying SCU rather than NET is the only way to examine SCU signals as there is no SET DEFAULT command for the SCU.

SET SCREEN

Controls the state of screen mode. Use the SHOW WINDOW command to display the state of the screen.

Format

SET SCREEN *{ON|OFF}*

Parameters

ON (D)
If the screen is off, creates the command window and sets it to the entire screen. If the screen was suspended, it is refreshed.

When screen mode is on, the window manager controls the screen. Input is restricted to the command window and the output from most commands is displayed in the window. The command window is created automatically when the screen is first turned on.

The CREATE/WINDOW command and various SET TRACE commands turn screen mode on.

OFF
Suspends the screen and resets the scrolling region to the entire screen. The windows are not deleted. Selecting a window or creating a new window turns the screen on again.

When the screen is off, the screen scrolls normally, but window definitions remain. The windows are updated and redisplayed when the screen is again turned on.

SET SERIAL

Allows manual serial number entry for components that do not have SPU-readable serial numbers. The SPU operating system saves this information in data file SYS$SYSTEM:MANUAL.DAT, from which it is retrieved by the SENSE command.

Format

SET SERIAL */qualifiers 10-digit-serial-number*

Qualifiers

/AIE
Specifies the serial number is for the SPU AIE (T1034) adapter.

/AIO
Specifies the serial number is for the SPU AIO (T1031) adapter.

/CPU=cpu-id
Valid only with /PLANAR. Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is selected.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DAC
Specifies the serial number is for one of the daughter array cards.

/IDENTIFIER=dac-number
Valid only with /DAC, dac-number is a decimal number in the range 0 through 15.

/PLANAR
Specifies the serial number is for the specified CPU or SCU planar module.

/SCM
Specifies the serial number is for the SPU SCM (T2050) adapter.

/SCU
Valid only with /PLANAR. Specifies the SCU.

Parameters

10-digit-serial-number
Specifies the serial number according to DEC STD 012 and as seen on module serial number tags.

SET SNAPSHOT

Enables or disables the snapshot function when a hardware keep-alive is detected. The command can also be used to trigger a snapshot for testing purposes or to enable snapshots to be taken from command procedures.

Format

SET SNAPSHOT *[/qualifiers] {ON | OFF | TRIGGER}*

Qualifiers

/CPU=cpu-id
Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is used. See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/EXCLUDE=section
One of the following:

CONTEXT	HISTORY	IO	LATCH
MCM	MICRO	PAMM	PCS
REVISION	SPU	STACK	

/FILENAME=file-spec
Specifies the name and type for the snapshot data file. The default file-spec is SNAPSHOT.DAT.

/SELECT=section
One of the following:

CONTEXT	HISTORY	IO	LATCH
MCM	MICRO	PAMM	PCS
REVISION	SPU	STACK	

/SCU
/NOSCU
Specifies the system control unit.

Parameters

ON
Enables the snapshot function.

OFF
Disables the snapshot function.

TRIGGER
Enables the snapshot function in command procedures and for testing.

SET SOURCE

Establishes a directory path for the CREATE/WINDOW/ECS command. The directory path specifies the location of the MCR file for the currently loaded microcode. It overrides the initial MCR file directory created at assembly and contained in the microcode LOD file.

Format

SET SOURCE *directory*

Parameters

directory
Specifies the location of the MCR file for the currently loaded microcode.

SET STEP

Sets the step characteristics that control the NEXT (macrostep) command.

Format

SET STEP *parameter*

Parameters

INSTRUCTION(D)
NOINSTRUCTION
Determines whether results are to be displayed in assembler notation.

SET TERMINAL

Specifies the characteristics of the specified terminal.

Format

SET TERMINAL *[/qualifiers] [terminal-name]*

Qualifiers

/BROADCAST (D)
/NOBROADCAST
Determines whether the terminal can receive broadcast messages such as SEND and exception messages.

/CPU=cpu-id
The CPU to which the terminal is logically connected in program I/O (PIO) mode, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the terminal is connected to the default CPU. This qualifier is incompatible with any terminal characteristic qualifier.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DEVICE={LA100 | VT200}
Specifies the terminal device type to the console software.

/ECHO (D)
/NOECHO
Determines whether the terminal echoes (displays) keyboard input.

/EIGHTBIT
/NOEIGHTBIT
Determines whether the terminal uses 8-bit or 7-bit ASCII character codes. If NOEIGHTBIT (7-bit code) is specified, the most significant bit is forced to zero.

/ESCAPE
/NOESCAPE
Determines whether ANSI standard escape sequences transmitted from the terminal are handled as a single multiple-character terminator.

If /ESCAPE is specified, the terminal driver checks escape sequences for syntax before passing them to the program.

/KEYPAD={APPLICATION | NUMERIC}
Determines the terminal's keypad mode.

The /KEYPAD=APPLICATION qualifier sets the terminal keypad to application mode to enable the DEFINE/KEY facility.

/PAGE=lines
Specifies the number of lines in a terminal page.

/PIO_PORT={OPA0 | OPA1}
Determines to which port the console terminal is connected. OPA0 is the normal console port and OPA1 is the remote port.

/PROGRAM
/NOPROGRAM
Causes the process to enter program I/O (PIO) mode. This qualifier is incompatible with any terminal characteristic qualifier.

/TALK_MODE
/NOTALK_MODE
Determines whether the terminal accepts TALK requests.

/WIDTH=characters
Specifies the number of characters per terminal line.

Parameters

terminal-name
Specifies the terminal affected by the command. If terminal-name is not specified, the controlling terminal is affected.

Example

```
>>> SET TERMINAL/DEVICE=LA100
```

Establishes the console terminal as an LA100 and sets the default characteristics for that terminal type.

SET TIME

Resets the system time.

Format

SET TIME *time-string*

Parameters

time-string
A string in the format: "DD-MMM-YYYY HH:MM:SS.DD"

The string must be quoted if a new date is entered.

Examples

1
```
>>> SET TIME 03:21
```

Sets system time to 03:21. The date is unchanged.

2
```
>>> SET TIME "18-Mar-1989 16:30"
```

Sets system date to 18-MAR-1989 and system time to 16:30.

SET TRACE

Establishes, enables, or disables tracepoints for the specified list of scan signals.

Use DELETE/TRACE to remove tracepoints and SHOW TRACE to display tracepoint status.

Format

SET TRACE *[/qualifiers]* *signal-list*
@signal-file

Qualifiers

/ABSOLUTE

Specifies that times in comparison files (see /COMPARE) are absolute. the clock cycle count (specified with /FROM) when signal

The /ABSOLUTE and /RELATIVE qualifiers are mutually exclusive.

/ALL

With /ENABLE or /DISABLE, enables or disables all tracepoints. If /ALL is specified, do not specify /NAME.

/COMPARE

Compares the signals in a signal comparison file to the current machine state. The signal comparison file is specified with /FILE.

/CPU=cpu-id

The CPU on which signals are to be traced, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If multiple CPUs are specified, a duplicate tracepoint is established on each processor. If a CPU is not specified, signals are traced on the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DISABLE
Temporarily inhibits trace reporting. The tracepoint definition is maintained, but trace activity is suspended until the tracepoint is enabled.

/NAME specifies the tracepoint to be disabled.

/ENABLE
Enables reporting of a tracepoint.

/NAME specifies the tracepoint to be enabled.

/FILE=file-spec
Specifies the file to which trace results are sent, or a signal comparison file (see /COMPARE).

/FROM=cycle
Tracing begins when the /FROM cycle count is reached, or immediately if /FROM is not used. Tracing ends when the /TO count is reached or when the trace is deleted with DELETE/TRACE.

/LOG
/NOLOG
Displays the result of the trace action.

/NAME=tracepoint-name
The name assigned to a tracepoint when it is established, or the name of a tracepoint to be enabled (/ENABLE) or disabled (/DISABLE).

If /NAME is not specified when a tracepoint is established, the SET TRACE command automatically assigns a name. If the name is already in use, a warning message is issued.

Wildcard characters can be used when enabling or disabling similarly named tracepoints.

If /ALL is specified, do not specify /NAME.

/ODOMETER[=odometer-window-name]
Creates an odometer window to display trace activity, or assigns a previously created window (CREATE/WINDOW/ODOMETER) to the tracepoint.

If /ODOMETER is specified without a window name, the SET TRACE/ODOMETER command automatically assigns a name.

/RELATIVE

Specifies that times in comparison files (see /COMPARE) are relative (can be forced by preceding the time with a plus (+).)

/ABSOLUTE and /RELATIVE are mutually exclusive.

/SCU
/NOSCU

Determines whether tracepoints apply to the system control unit.

/TO=cycle

Tracing begins when the /FROM cycle count is reached, or immediately if /FROM is not used. Tracing ends when the /TO count is reached or when the trace is deleted with DELETE/TRACE.

/VECTOR

Creates a file and outputs the traced signal values and times to the file. The file can be used with SET TRACE/COMPARE and SET PATTERN commands.

Parameters

signal-file

The file that lists the signals to be traced. The at sign (@) is required to denote a signal-file. For example:

```
>>> SET TRACE [/qualifiers] @SIGNALS
```

signal-list

The signals to be traced. To specify more than 1 (up to 256) signal, separate the signal names with commas, as follows:

```
>>> SET TRACE [/qualifiers] signal-spec[,signal-spec...]
```

The asterisk (*) wildcard character can be used to specify several like named signals. For example:

```
>>> SET TRACE [/qualifiers] E3.*
```

Description

A single tracepoint can identify up to 256 signals, either directly on the command line or through a file.

When a tracepoint is established, traced signals are monitored after each step of the clock in the selected processor(s). Signals that change state between clock steps are displayed on the terminal.

Tracepoints are evaluated only when the clock is single-stepped as a result of a MICROSTEP command; MICROSTEP/BURST does not display signal transitions. The trace action is executed before the completion of the MICROSTEP command.

The /FROM and /TO qualifiers specify the starting and ending clock cycle counts between which tracing occurs. See also the SET CYCLE command description.

Signals can be simultaneously traced (and/or watched) by all users (tracepoint tables are shared resources).

SET VERIFY

Determines whether command and data lines from command procedures are displayed at the terminal.

Format

SET VERIFY *{ON|OFF}*

Parameters

ON(D)|OFF
Turns verification on and off.

SET VERIFY ON causes commands in command procedures to be displayed as they are executed. SET VERIFY OFF cancels this action.

SET WARM_START

Sets or clears the warm-start flag for the specified CPU. This command is used primarily for debug.

Format

SET WARM_START *[/CPU=cpu-id] {ON | OFF}*

Qualifier

/CPU=cpu-id
Specifies the CPU in which the warm-start flag is to be set or cleared, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the warm-start flag is set or cleared in the default CPU

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

Parameters

ON | OFF
Determines whether the warm-start flag is set.

SET WATCH

Establishes, enables, or disables watchpoints for the specified list of scan signals.

Use DELETE/WATCH to remove watchpoints and SHOW WATCH to display watchpoint status.

Format

SET WATCH *[/qualifiers]* *signal-list* / *@signal-file* *DO command*

Qualifiers

/ALL

With /ENABLE or /DISABLE, enables or disables all watchpoints. If /ALL is specified, do not specify /NAME.

/CPU=cpu-id

The CPU on which signals are to be watched, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If multiple CPUs are specified, a duplicate watchpoint is established on each processor. If a CPU is not specified, signals are watched on the default CPU.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/DISABLE

Temporarily inhibits watch reporting. The watchpoint definition is maintained, but watch activity is suspended until the watchpoint is enabled.

/NAME specifies the watchpoint to be disabled.

/ENABLE

Enables reporting of a watchpoint.

/NAME specifies the watchpoint to be enabled.

/FROM=cycle

Watching begins when the /FROM cycle count is reached, or immediately if /FROM is not used. Watching ends when the /TO count is reached or when the watch is deleted with DELETE/WATCH.

/LOG
/NOLOG

Displays the result of the watch action.

/NAME=watchpoint-name

The name assigned to a watchpoint when it is established, or the name of a watchpoint to be enabled (/ENABLE) or disabled (/DISABLE).

If /NAME is not specified when a watchpoint is established, the SET WATCH command automatically assigns a name. If the name is already in use, a warning message is issued.

Wildcard characters can be used when enabling or disabling similarly named watchpoints.

If /ALL is specified, do not specify /NAME.

/SCU
/NOSCU

Determines whether watchpoints apply to the system control unit.

/TO=cycle

Watching begins when the /FROM cycle count is reached, or immediately if /FROM is not used. Watching ends when the /TO count is reached or when the watch is deleted with DELETE/WATCH.

Parameters

signal-file

The file that lists the signals to be watched. The at sign (@) is required to denote a signal-file. For example:

```
>>> SET WATCH [/qualifiers] @SIGNALS DO [command]
```

signal-list

The signals to be watched. To specify more than 1 (up to 256) signal, separate the signal names with commas, as follows:

```
>>> SET WATCH [/qualifiers] signal-spec[,signal-spec...] DO [command]
```

Several like-named signals can be specified with the asterisk (*) wildcard character. For example:

```
>>> SET WATCH [/qualifiers] E3.* DO [command]
```

command

A command to be executed following a state transition of any watched signal. The command can be any single line SPU command, including no command, or a command procedure.

Description

A single watchpoint can identify up to 256 signals, either directly on the command line or through a signal-file.

When a watchpoint is established, watched signals are monitored after each step of the clock in the selected processor(s). Signals that change state between clock steps cause the command entered on the SET WATCH command line to be executed.

Watchpoints are evaluated only when the clock is single-stepped as a result of a MICROSTEP command; MICROSTEP/BURST does not apply to watchpoints. The watch action is executed immediately after the MICROSTEP command completes.

/FROM and /TO specify the starting and ending clock cycle counts between which watch activity is to take place. See also the SET CYCLE command description.

Signals can be simultaneously watched (and/or traced) by all users (watchpoint tables are shared resources).

SET XMI_DEVICES

Loads the XMI device names and IDs from the specified file.

Format

SET XMI_DEVICES *[file-spec]*

Parameters

file-spec
Specifies a file that translates XMI node IDs into device names. If file-spec is not specified, the default file is [UCODE]XMI_DEVICES.DAT.

SHOW

The SHOW option command displays characteristics of the processors or the service processor (SPU) subsystem.[6]

Format

SHOW *options*

[6] Command variants, of the form SHOW OPTION, are listed in the table of contents and described separately on the following pages.

SHOW ATTN_ACTION

Displays the command to be executed when the scan attention interrupt is delivered to the CLI.

The scan attention interrupt is delivered to the CLI only if error handling is disabled. For debug purposes, this function provides the means to execute a command procedure and save system failure data; this function is not used by the SPU error handling subsystem.

Format

SHOW ATTN_ACTION

Example

```
>>> show attn_action
No ATTN_ACTION currently specified
>>>
```

The SHOW ATTN_ACTION command display.

SHOW AUTOBOOT

Shows the state of the automatic bootstrap flags.

Format

SHOW AUTOBOOT

Example

```
>>> show autoboot
  CPU 0 Auto Boot: ENABLED
  CPU 1 Auto Boot: ENABLED
  CPU 2 Auto Boot: ENABLED
  CPU 3 Auto Boot: ENABLED
>>>
```

The SHOW AUTOBOOT command display.

SHOW AVAILABLE

Displays the set of processors passed to the operating system for inclusion in the symmetrical multiprocessor (SMP).

Format

SHOW AVAILABLE

Example

```
>>> show available
  CPU0
>>>
```

The SHOW AVAILABLE command display.

SHOW BATCH

Displays the state of the batch streams.

Format

SHOW BATCH

Example

```
>>> SHOW BATCH

          EWBAA Batch Process Jobs
          20-AUG-1989 13:50:12.43

Username          Port ID       Status
CONSOLE           001100CD     Executing
 /LOG=DUA50:[CONSOLE]TEST.LOG
 DUA50:[CONSOLE]TEST.CMD
```

The SHOW BATCH display format.

SHOW BBU

Shows the state of the battery backup unit.

Format

SHOW BBU

Example

```
>>> show bbu
  BBU 1: Available, Charged
  BBU 2: Available, Charged
>>>
```

The SHOW BBU command display.

SHOW BI_DEVICES

Displays the node names and device types for all devices loaded with the SET BI_DEVICES command.

Format

SHOW BI_DEVICES

SHOW BOOTFLAGS

Shows the setting of the permanent bootstrap flags.

Format

SHOW BOOTFLAGS

Example

```
>>> show bootflags
  Boot flags: 00000000
>>>
```

The SHOW BOOTFLAGS command display.

SHOW BOOTSET

Displays the current definition of the boot set.

The boot set is the set of processors that are available to execute the operating system. The boot set is displayed as a list of CPUs.

Format

SHOW BOOTSET

Example

```
>>> SHOW BOOTSET
  CPU0, CPU1, CPU3
>>>
```

The bootset includes CPU0, CPU1, and CPU3.

SHOW CLOCK

Displays the current state, frequency, and period of the clocks to each module.

Format

SHOW CLOCK *[/FULL]*

Qualifier

/FULL
Displays additional information about the internal state of the clock module, as follows:

Frequency
Period
Interval
Phase-locked loop (PLL) status
Phase control and current phase register contents

Example

```
>>> show clock
    CPU0    CPU1    CPU2    CPU3    SCU
    ----    ----    ----    ----    ---
    Stop    Stop    Stop    Stop    Run

    Frequency  = 500MHz
    Cycle time = 16.000ns
>>>
```

The SHOW CLOCK command display.

SHOW CONFIGURATION

Displays the configuration of various system components. The command can display the version and type of all components as well as the serial number for most components.

The configuration of all system components is saved in a history file when system power is turned on. History file data can be displayed with the /DATE qualifier.

Format

SHOW CONFIGURATION */qualifiers*

Qualifiers

/CLOCK
Displays the configuration of the clock subsystem.

/CPU=cpu-id
Displays the configuration of the specified CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU's configuration is displayed.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

The configuration is displayed in the following format:

```
MCU     TYPE    NAME    REVISION        SERIAL
00+             ABC     0000
01+             DEF     0000
02+             XYZ     0000
```

NOTE
A plus (+) following the MCU ID indicates self-test passed; a minus (–) indicates self-test failed.

/DATE=date

Displays the configuration for the specified date, where date is a quoted string or an unquoted field.

/IO

Displays the I/O configuration of all four XMI buses and any BI buses connected to the XMI bus, in the following format:

```
XJA XMI TYPE    NAME      VERSION     IDENTIFIER       S/N     BASE
00  07+ 0C04    XWATCH    FFFF        NOT AVAILABLE
00  0D+ 2001    DWMBA/A   0000        NOT AVAILABLE
00  0E+ 2001    DWMBA/A   0000        NOT AVAILABLE
01  07+ 0C04    XWATCH    FFFF        NOT AVAILABLE
01  0D+ 2001    DWMBA/A   0000        NOT AVAILABLE
01  0E+ 2001    DWMBA/A   0000        NOT AVAILABLE

XJA XMI TYPE    NAME      VERSION     IDENTIFIER       S/N     BASE
00  01+ 2107    DWMBA/B   0000        NOT AVAILABLE
00  06+ 410E    TBK50     0000        NOT AVAILABLE

XJA XMI TYPE    NAME      VERSION     IDENTIFIER       S/N     BASE
01  01+ 2107    DWMBA/B   0000        NOT AVAILABLE
01  06+ 410E    TBK50     0000        NOT AVAILABLE

XJA XMI TYPE    NAME      VERSION     IDENTIFIER       S/N     BASE
02  01+ 2107    DWMBA/B   0000        NOT AVAILABLE
02  06+ 410E    TBK50     0000        NOT AVAILABLE

XJA XMI TYPE    NAME      VERSION     IDENTIFIER       S/N     BASE
03  01+ 2107    DWMBA/B   0000        NOT AVAILABLE
03  06+ 410E    TBK50     0000        NOT AVAILABLE
```

NOTE

A plus (+) following the node or XBI ID indicates self-test passed; a minus (–) indicates self-test failed.

/KERNEL

Displays kernel configuration.

/MCU=mcu-id

Displays information about the specified MCU.

/MEMORY

Displays memory configuration.

/OUTPUT=file-spec

Outputs the command results to the specified file. The default is the current terminal name.

/POWER

Displays power subsystem configuration in the following format:

```
                      EEPROM     EPROM
NODE     TYPE  NAME   VERSION    VERSION        SERIAL NUMBER
 0+      ....  PEM    31 ( 49)   31 ( 49)       ............
11+      ....  RIC    31 ( 49)   31 ( 49)       ............
12+      ....  RIC    31 ( 49)   31 ( 49)       ............
13+      ....  RIC    31 ( 49)   31 ( 49)       ............
21+      ....  RIC    31 ( 49)   31 ( 49)       ............
22+      ....  RIC    31 ( 49)   31 ( 49)       ............
23+      ....  RIC    31 ( 49)   31 ( 49)       ............
```

NOTE

A plus (+) following the RIC ID indicates self-test passed; a minus (–) indicates self-test failed.

/RINGS

Displays testing and CDB ring lengths.

/SCU

Displays the configuration of the SCU in the following format:

```
MCU      TYPE      NAME      REVISION          SERIAL
00+                ABC       0000
01+                DEF       0000
02+                XYZ       0000
```

NOTE

A plus (+) following the MCU ID indicates self-test passed; a minus (–) indicates self-test failed.

/SPU

Displays the configuration of the installed SPU modules, in the following format:

```
NODE     TYPE     NAME       VERSION          IDENTIFIER     S/N      BASE
02+      0120     SPM        0000 (    0)     T2051-00.A              20004000
06+      0121     SCM        0037 (   55)     T2050-00.A              2000C000
07+      410F     DEBNA      0248 (  584)     T1034-00.C              2000E000
0A+      410D     KFBTA      004B (   75)     T1031-00.A              20014000
```

NOTE

A plus (+) following the node ID indicates self-test passed; a minus (–) indicates self-test failed.

/SYSTEM

Displays the system cabinet configuration in the following format:

```
        System Configuration Summary

System type: UNKNOWN

CPA Cabinet: Absent
CPB Cabinet: Absent
IOA Cabinet: Absent
IOB Cabinet: Absent
SCU Cabinet: Absent

CPU 0: Absent
CPU 1: Absent
CPU 2: Absent
CPU 3: Absent
SCU:   Absent

XJA 0: Absent
XJA 1: Absent
XJA 2: Absent
XJA 3: Absent

MMU 0: Absent
MMU 1: Absent
```

/XMI=xmi-id

Displays the configuration of the installed XMI modules, in the following format:

```
XJA XMI TYPE   NAME    VERSION     IDENTIFIER     S/N     BASE
```

NOTE

A plus (+) following the node ID indicates self-test passed; a minus (–) indicates self-test failed.

SHOW CPU

Displays the current default CPU or the state of the CPU(s).

Format

SHOW CPU *[/qualifiers] [cpu-id]*

Qualifiers

/ALL
Displays the state of all CPUs.

/FULL
Displays the state of the default CPU.

Parameters

cpu-id
Specifies the CPU. If not specified, the default CPU's state is displayed.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

Examples

1
```
>>> SHOW CPU
   Default CPU is 0
```

Displays the default CPU.

2
```
>>> SHOW CPU/FULL
   CPU 0 is present and has a CDB file loaded
   Unit revision: A00
   Unit CDB file: DUA50:[UCODE]CPUA00.CDB
   VBOX: Available
   Unit state flags:
         Power On
         Not Broken
         Not Initialized
         Clocks Not On
         Not Running
         Hard Core Not Executed
         Pattern Test Not Executed
```

Displays the default CPU's status.

SHOW CYCLE

Displays the current cycle counter for the specified CPU. The interval is multiplied by the cycle count to determine the time. This is used with TRACE and PATTERN points.

Format

SHOW CYCLE *[/qualifiers]*

Qualifiers

/CPU=cpu-id
The CPU containing the cycle counter to be displayed, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU's cycle counter is displayed.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Determines whether to display the system control unit cycle counter.

Example

```
>>> SHOW CYCLE
Cycle = 5, Interval = 1000, Time = 5000 for CPU 0
```

Shows cycle for the default CPU. The cycle count is always a decimal value.

```
>>> SHOW CYCLE/SCU
Cycle = 5, Interval = 1000, Time = 5000 for CPU 0
Cycle = 0, Interval = 1, Time = 0 for SCU
```

Shows cycle for the default CPU and SCU.

SHOW DEFAULT

Displays the current default directory specification.

Format

SHOW DEFAULT

Example

```
>>> SHOW DEFAULT
   DISK$HARD:[SYS4.CONSOLE]
```

The default directory is the CONSOLE subdirectory of the SYS4 directory on device DISK$HARD.

SHOW DEVICE

Displays the status and interrupt level of devices known to the service processor operating system.

Format

SHOW DEVICE *[device-name]*

Description

Physical device information is not available to the command language interpreter (CLI). A device is considered off-line if the device driver is not present or if the device was not configured in the system. A device is on-line if the driver is present and the device can be accessed.

Network terminal devices (RTA) are considered on-line if the specified unit is in use. The base device (RTA0) status is the same as for other devices.

If the drive is present and mounted, disk volumes are shown as mounted with the volume name free block count. Tape volumes cannot be displayed and volume names are not available.

Parameters

device-name
Displays the status and interrupt level of the specified device. The device name is assumed to end with * (asterisk wildcard). Therefore:

```
>>> SHOW DEVICE D
```

displays information on all devices with names that start with d.

Display Format

```
>>> SHOW DEVICE
 Device            Driver          Driver       Volume       Free        Total
  Name             Status            IPL         Name       Blocks      Blocks
 DUA50             Mounted            20       DISK$HARD    105840      136408
 DUA51             Offline            20
 DUA52             Offline            20
 DUA53             Offline            20
 VMA50             Online             20

 Device            Driver          Driver
  Name             Status            IPL
 MUA7              Online             21

  Device            Driver          Driver
  Name             Status            IPL
 PRINTER           Online             20
 CONSOLE           Online             21
 REMOTE            Online             22
 RTA0              Online              0
 RTA1              Online              0
 RTA2              Offline             0
 RTA3              Offline             0
 RTA4              Offline             0

  Device            Driver          Driver
  Name             Status            IPL
 XBA               Online             20
 PCS               Online             21
 SJA               Online             22
 SCM               Online             20
```

The devices are displayed in groups, as follows:

1. Disk devices
2. Tape devices
3. Terminal devices
4. Generic devices

SHOW ENVIRONMENT

Displays the environmental conditions of the system.

Format

SHOW ENVIRONMENT *[/qualifiers]*

Qualifiers

/CONTINUOUS

Causes the display to be refreshed every 2 seconds or at intervals specified with the /INTERVAL qualifier.

/INTERVAL=seconds

Specifies the continuous display refresh interval in seconds.

/OUTPUT=file-spec

Specifies the file to which the information is to be written.

Display Format

```
>>>SHOW ENVIRONMENT
                WCU0     WCU1                          SCU      CPA      CPB
 AIR                                  AIR
 INLET TEMP     22.87C   00.00C        FAN 1 TEMP     00.00C   28.72C   00.00C
     STATUS     NOM      OPEN              STATUS     NOM      OPEN     OPEN
 OUTLET TEMP    23.18C   00.00C        FAN 2 TEMP     28.10C   00.00C   00.00C
     STATUS     NOM      OPEN              STATUS     NOM      OPEN     OPEN
 COOLANT                              FAN 3 TEMP     00.00C
 INLET TEMP     23.75C   00.00C            STATUS     NOM
     STATUS     WARM     NOM             AMBIENT     00.00C
 OUTLET TEMP    22.74C   00.00C            STATUS     NOM
     STATUS     WARM     NOM
 STATUS                               STATUS
  WCU STATE     FLT      OK            AIR FLOW 1     OK       OK       OK
     PUMP A     RUN      OK            AIR FLOW 2     OK       OK       OK
     PUMP B     OK       RUN           AIR FLOW 3     OK       OK       OK
   BLOWER A     OK       OK            AIR FLOW 4     OK       OK       OK
   BLOWER B     OK       OK            AIR FLOW 5     OK
   PRESSURE     OK       OK            AIR FLOW 6     OK
      LEVEL     OK       OK
       FLOW     OK       OK
 PAN DETECT     OK       OK
```

Temperature sensors and status information for each cabinet are displayed.

SHOW ERROR_HANDLING

Shows the current error handling settings.

Format

SHOW ERROR_HANDLING

Examples

```
1  >>> show error_handling

   System Error Handling Statistics

     Options -
       State:            DISABLED
       Recovery:         ENABLED
       Reporting:        ENABLED
       Match Detect:     ENABLED
       Error interval:   0
       Cache Threshold:  0
       VBOX Threshold:   0
       CPU Threshold:    0
   >>>
```

The SHOW ERROR_HANDLING command display.

SHOW FAULT_ACTION

Displays the command executed when the power fault interrupt is delivered to the CLI. This function is for debug purposes and is not used by the SPU error handling subsystem.

Format

SHOW FAULT_ACTION

Example

```
>>> show fault_action
No FAULT_ACTION currently specified
>>>
```

The SHOW FAULT_ACTION command display.

SHOW FLAGS

Displays the state of the cold-start and warm-start flags for each CPU. This command is used for debug.

Format

SHOW FLAGS *[/CPU=cpu-id]*

Qualifier

/CPU=cpu-id
Displays flags of the specified CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU's flags are displayed.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

Example

```
>>> SHOW FLAGS
  CPU 0 Boot Flags
    WARM_START: OFF
    COLD_START: OFF
```

Both flags are off.

SHOW HISTORY

Displays the contents of the PC history file in the specified EBox.

Format

SHOW HISTORY *[/qualifiers]*

Qualifiers

/BINARY
/NOBINARY
Determines whether the history buffer is output to a binary file. The default file is SYS$LOGIN:HISTORY.DAT.

/CPU=cpu-id
Displays the specified CPU's history buffer, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, displays the default CPU's history buffer.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/INSTRUCTION
/NOINSTRUCTION
Specifies whether the contents of memory at the saved address is to be decoded and displayed in assembler mnemonics.

/MAXIMUM=locations
Specifies the maximum number of locations to display. The default is the last 16 locations.

/OUTPUT=file-spec
Saves the history buffer in the specified file rather than displaying it.

/PHYSICAL
Specifies that history buffer addresses are physical addresses.

/SCU
/NOSCU
Determines whether to display the system control unit history buffer.

/VIRTUAL
Specifies that history buffer addresses are virtual addresses. The SPU assumes that the current process is the process recorded in the history file.

/WINDOW[=window-name]
Specifies the window in which the history buffer is to be displayed.

Example

```
>>> show history
PC history for CPU 0 (starting with oldest PC)
    8022DF9B
    8022DF9D
    8022DFAD
    8022E17E
    8022E182
    8022E188
    8022E18F
    8022E1B3
    8022E1B8
    8022E1BA
    8022E1BF
    8022E1C5
    8022E1CA
    8022E1CC
    8022E1CE
    8022E1D3
>>>
```

The SHOW HISTORY command display.

SHOW ISOLATION

This command is for use with the two-hole tester and the SYBIL process. It displays the isolation data that has been loaded for each MCU and CPU. It can also display the isolation data for a specific bit in the broadcast ring.

Format

SHOW ISOLATION */qualifiers [broadcast-ring-bit-number]*

Qualifiers

/CPU=cpu-id
Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is used.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/MCU=mcu-id
Displays the isolation data that has been loaded for the specified MCU.

/SYBIL
Displays the SYBIL isolation data that has been loaded.

Parameters

broadcast-ring-bit-number
Displays the isolation data for the specified broadcast ring bit. For example:

```
>>> SHO ISOLATION 5

    Flex: FP4.67, Bit: 5, MCU: 0, Unit: 0 (SYB4_IO_PIN_H<92>)
    Flex: FP4.203, Bit: 710, MCU: 1, Unit: 0 (SYB1_IO_PIN_H<80>)

    Flex: FP4.67, Bit: 5, MCU: 1, Unit: 0 (SYB4_IO_PIN_H<92>)
    Flex: FP4.203, Bit: 710, MCU: 0, Unit: 0 (SYB1_IO_PIN_H<80>)
>>>
```

SHOW KEEP_ALIVE

Displays the state of the keep-alive monitor.

Format

SHOW KEEP_ALIVE

Example

```
>>> show keep_alive

Keep Alive Monitor State

  Options -
    CPU 0: MANUAL
    CPU 1: MANUAL
    CPU 2: MANUAL
    CPU 3: MANUAL
>>>
```

Displays state of keep-alive monitor.

SHOW KEY

Displays the DEFINE/KEY definition of the specified key.

Format

SHOW KEY *[/ALL] [key-name]*

Qualifiers

/ALL
Displays the definition of all keys defined with the DEFINE/KEY command. If /ALL is specified, do not specify the key-name parameter.

/FULL
Displays the flags associated with the key definition. For example:

```
>>> SHOW KEY MINUS
  MINUS = SC/TO:SIGNAL("CS[" + 'UPC()' + "]<11:0>")
>>> SHOW KEY/FULL MINUS
  MINUS = SC/TO:SIGNAL("CS[" + 'UPC()' + "]<11:0>") (NOECHO,TERMINAL)
>>>
```

Parameters

key-name
Displays the DEFINE/KEY definition of the specified key. If /ALL is specified, do not specify the key-name parameter.

Valid key names are:

Key Name	Key
Editing Keypad	
E1	Find
E2	Insert Here
E3	Remove
E4	Select
E5	Prev Screen
E6	Next Screen
Function Keys	
F6–F14	F6–F14
Do	F15
Help	F16
F17–F20	F17–F20
Numeric Keypad	
PF1–PF4	PF1–PF4
KP0–KP9	0–9
PERIOD	.
COMMA	,
MINUS	–
ENTER	Enter

SHOW LOGGING

Displays the name and status of the current terminal log files if any exist.

Format

SHOW LOGGING

Example

```
>>> show logging
  Current log file(s) open:

    DUA50:[CROWLEY]ESDP_1.LOG
>>>
```

The SHOW LOGGING command display.

SHOW LOGICAL

Displays the equivalence string assigned to a logical name with the DEFINE command.

Format

SHOW LOGICAL *[/qualifiers] [logical-name]*

Qualifiers

/ALL

Displays definitions for all logical names. If omitted, the command prompts for the logical-name parameter. If /ALL is specified, do not specify the logical-name parameter.

/PROCESS

Searches only the process logical name table for the specified logical-name. If logical-name is not specified, displays all the entries in the process logical name table.

/SYSTEM

Searches only the system logical name table for the specified logical-name. If logical-name is not specified, displays all the entries in the system logical name table.

Parameters

logical-name

The logical name for which the definition is to be displayed. If omitted, the command prompts for the logical-name parameter. If /ALL is specified, do not specify the logical-name parameter.

SHOW MEMORY

Displays the status of main memory.

Format

SHOW MEMORY

Example

```
>>> show memory
        System Memory Resources at  7-MAR-1990 09:32:13.90

Physical Memory Usage (pages): Total   In Use   Free   Largest
  Main Memory (16.00Mb)        32768    19930  12838     12784

System Memory Usage (pages):   Total   In Use   Free   Largest
  System Memory                18632    13830   4802         0

Dynamic Memory Usage (blocks): Total   In Use   Free
  Kernel Pool (128 bytes per)   3000      902   2098

Page Table Usage (Slots):      Total   In Use   Free
  Page Table Slots              200       94    106

Port Object Usage (ports):     Total   In Use   Free
  Port statistics               256       57    199
>>>
```

Displays memory resources.

SHOW MESSAGE

Displays information about the current message file and message format settings.

Format

SHOW MESSAGE *[message-id]*

Parameters

message-id
Displays the specified message, where message-id is a hexadecimal number.

Examples

1
```
>>> show message
Message file: DUA50:[SYSEXE]SYSMSG.EXE (0)
Message flags:
                /NOFACILITY
                /NOSEVERITY
                /NOIDENT
                /NOTEXT
>>>
```

The SHOW MESSAGE default command display.

2
```
>>> show message 1
%KERNEL-S-SUCCESS, normal successful completion
>>>
```

The SHOW MESSAGE display of a specified message.

SHOW MODE

Displays the current mode and defaults for the EXAMINE and DEPOSIT commands.

Format

SHOW MODE

Example

```
>>> show mode
  Address Space: MEMORY
  Data Context: LONGWORD
  Default Address: 00000000
  Default Radix: HEXADECIMAL
>>>
```

The SHOW MODE command display.

SHOW NODE

Displays the current network node and address.

Format

SHOW NODE

Example

```
>>> SHOW NODE
  Initial node name: MRBONZ
  Initial node address: AA-00-04-00-19-1D (7.281)

  Current node name: MRBONZ
  Current node address: AA-00-04-00-19-1D (7.281)
>>>
```

The SHOW NODE command display.

SHOW PATTERN

Displays information about the specified pattern file. The name of the file and affected signals are displayed with the cycle count of the next event in the file.

Format

SHOW PATTERN *[/qualifiers] [pattern-name]*

Qualifiers

/CPU=cpu-id
The CPU to which the pattern applies, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is selected.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/NODE=node-id
Valid only with /SYBIL. Specifies the remote node name or node number (in the format *z.nnn*) where the pattern file resides.

/REMOTE
Displays a list of available remote (that is, SYBIL) patterns rather than listing pattern points.

/SCU
/NOSCU
Determines whether to display system control unit pattern points.

/SYBIL
Specifies SYBIL remote patterns.

Parameters

pattern-name
The name of the pattern point; if not specified, all patterns are displayed.

SHOW PERSONAL

Shows the user's personal name.

Format

SHOW PERSONAL

Examples

```
1  >>> show personal
     No personal name set
   >>>
```

The SHOW PERSONAL command display.

SHOW POWER

Displays various regulator (group) voltage measurements.

Format

SHOW POWER *[/qualifier]*

Qualifiers

/BUS=bus-name
Specifies the buses affected by the command, as follows:

Bus Name	Volts	Model 200 Cabinet	Model 400 Cabinet	Tester
A	+5.0	SCU	SCU	MCM
B	+5.0	BBU	BBU	None
C	-3.4	SCU/CPA	SCU	None
D	-5.2	SCU/CPA	SCU	None
E	-3.4	CPB	None	None
F	-5.2	CPB	None	None
J	-3.4	None	CPA	UNIT 0
K	-5.2	None	CPA	UNIT 0
M	-3.4	None	CPB	UNIT 1
N	-5.2	None	CPB	UNIT 1

/CABINET=cabinet-id

The cabinets to which the command applies. The cabinet-ids represent the buses that supply the cabinet (see /BUS).

Cabinet ID	Model 200 Buses	Model 400 Buses	Tester Buses
SCU	A, B, C, D	A, B, C, D	None
CPA	C, D	J, K	None
CPB	E, F	M, N	None
UNIT_0	None	None	J, K
UNIT_1	None	None	M, N
5VOLT	None	None	A, B

If a cabinet is not specified, the command applies to all cabinets.

/CONTINUOUS

Causes the display to be refreshed every 2 seconds or at intervals specified with the /INTERVAL qualifier.

/COUNTERS

Displays the event counters in the power subsystem driver.

/INTERVAL=seconds

Specifies the continuous display refresh interval in seconds.

/IO

Displays the state of the I/O power supplies.

/OUTPUT=file-spec

Logs command output in the specified file.

Example

```
>>> SHOW POWER /IO
                        XMI0                                    XMI1
       7214 A  7215 A  7214 B  7215 B  7214 A  7215 A  7214 B  7215 B
STATUS
  REG OK    OK      OK      OK      OK      OK      OK      OK      OK
  BIAS 0    OK      OK      OK      OK      OK      OK      OK      OK
  BIAS 1    OK      OK      OK      OK      OK      OK      OK      OK
  BIAS 2    OK      OK      OK      OK      OK      OK      OK      OK
  BIAS 3    OK      OK      OK      OK      OK      OK      OK      OK

                        BI0                                     BI1
        REG A   REG B   REG C   REG D   REG A   REG B   REG C   REG D
STATUS
  REG OK    OK      OK      OK      OK      OK      OK      OK      OK
                        BI2                                     BI3
        REG A   REG B   REG C   REG D   REG A   REG B   REG C   REG D
STATUS
  REG OK    OK      OK      OK      OK      OK      OK      OK      OK
```

SHOW POWER /IO display format.

SHOW PROCESS

Displays information about the current CLI process, including allocated devices and process statistics.

Format

SHOW PROCESS

Display Format

```
>>> SHOW PROCESS

 20-AUG-1989 13:54:05.57    RTA1:            User: CONSOLE
 Job ID: 0016   Port ID: 000400B3   Image: CLI
 Priority: 17   Default directory: DUA50:[CONSOLE]
 CPU time:    0 00:00:02.25   Pages: 273   P0 pages: 1073   P1 pages: 25

 Devices allocated: RTA1:

 Process  Priority   State    Run time            Memory Pages
 1        8          Run         0 00:00:02.16    13
 2        1          Wait        0 00:00:00.06    4
 3        1          Wait        0 00:00:00.00    2
 4        1          Wait        0 00:00:00.00    2
 5        1          Wait        0 00:00:00.03    2
 6        8          Wait        0 00:00:00.00    2
```

SHOW RADIX

Displays the current radix setting.

Format

SHOW RADIX

Example

```
>>> SHOW RADIX
  Default radix is hex
>>>
```

The current radix is hexadecimal.

SHOW REMOTE

Displays the state of the remote port.

Format

SHOW REMOTE

Example

```
>>> SHOW REMOTE
  Front panel access: DISABLED
  Software controlled access: ENABLED
  Remote status: 1 ACTIVE LINK
>>>
```

The SHOW REMOTE command display.

SHOW SCI

Displays the current state of the SCI. The value of the SCI DATA IN line is displayed with the saved state of the SCI output lines (the output lines cannot be directly read).

NOTE
If the SET SCI/SHOW SCI commands are in use, no other scan activity should occur. Any intervening scan commands, including SHOW CLOCK, could change the SCI state.

Format

SHOW SCI *[/qualifiers]*

Qualifiers

/DATA_ONLY
/NODATA_ONLY
Determines whether only the data is displayed.

/PORT=port-id
Displays SCI state of the specified port, where port-id is the physical port number$_{16}$ or port name, as follows:

CPU0 CPU1 CPU2 CPU3 MCM SCU

Example

```
>>> show sci

 Current SCI Saved State Information for port 0 (CPU0)

  SELECT<3:0>          0
  FUNCTION<1:0>        0     (NOP)
  CDS                  0
  BYPASS               0
  BROADCAST            0
  DATA OUT (from SCM)  0
  CLOCK A              0     (NOP)
  CLOCK B              0     (NOP)
  DATA IN (to SCM)     0     (Data from latch in SCD logic)
>>>
```

The SHOW SCI command display.

SHOW SCM

Displays information about the scan control module.

Format

SHOW SCM *[/qualifiers]*

Qualifiers

/BAD_PAGE_MAP
Displays bad page block, as follows:

```
>>> SHOW SCM /BAD_PAGE_MAP

Scan Control Module BAD_PAGE_BLOCK
  00000000 00000000 00000000 00000000 : Page 000:07F
  00000000 00000000 00000000 00000000 : Page 080:0FF
  00000000 00000000 00000000 00000000 : Page 100:17F
  00000000 00000000 00000000 00000000 : Page 180:1FF
  00000000 00000000 00000000 00000000 : Page 200:27F
  00000000 00000000 00000000 00000000 : Page 280:2FF
  00000000 00000000 00000000 00000000 : Page 300:37F
  00000000 00000000 00000000 00000000 : Page 380:3FF
>>>
```

/ENTRY_BLOCK

Displays last entry block, as follows:

```
>>> SHOW SCM /ENTRY_BLOCK

Scan Control Module LAST_ENTRY_BLOCK

  Valid flag  00000001
  R0 - R3     00000000 1F830A10 1F817600 00000005
  R4 - R7     1F8004E8 00000000 1F80103C 00017600
  R8 - R11    00A3C600 00000001 00000000 0001C602
  AP FP SP PC 1F8033F8 1F8033E4 1F802BF0 1F8009AE
  PSL         00000200 bi_stop
  00(SP)      55000004
  04(SP)      0C16EF9E
  08(SP)      D0540000
  0C(SP)      ACD05204
  10(SP)      53D45108
  14(SP)      FD8F5191
  18(SP)      53D60B13
  1C(SP)      5062417E
  SCM CSR     FFFFFFBF
  Reserved    115055C0 F88F780C 407E5051 54C05062
  Checksum    905E2A3B valid
>>>
```

/ERROR_BLOCK

Displays error block, as follows:

```
>>> SHOW SCM /ERROR_BLOCK

Scan Control Module LAST_ERROR_BLOCK

  Error Code  00000008 FATAL_MACHINE_CHECK
  SCB Vector  00000004
  DType       04442121
  BI CSR      05010806
  BER         00000000 no_errors
  Port PC     00000006
  Port PS     B8040740
  Port PE     00000001
  Port PD     1F8072D4
  00(SP)      0000000C
  04(SP)      00000080
  08(SP)      9D86B914
  0C(SP)      0A00000B
  10(SP)      1F8072D4
  14(SP)      00010000
  18(SP)      00000000
  1C(SP)      00000000
  SCC CSR     000040C2 PCE
  SCC CLK CTL 40000001
  SCC DMA CSR 00000000
  SCC DMA OUT 1F821B10
  SCC DMA IN  1F822380
  SCC DMA MSK 1F800000
  SCC DMA EXP 1F811810
  DYRC CSR    00003000
  DYRC ADDR   00005CC0
  BCI3 CSR    FC7F0000
  BCI3 EV Sts 00000006 no_errors
  BCI3 DM Cnf 1FDFC000
  BCI3 BI Adr C096DA20
  BCI3 II Adr DF8223D0
  Reserved    04040118 00000004
  Checksum    7CE8A9C2 valid
>>>
```

/MEMORY

Displays SCM memory statistics, as follows:

```
>>> SHOW SCM /MEMORY

        Scan Control Module Memory Resources

ROM Space (pages)        Total     In Use     Free
  Firmware                 256        158       98

RAM Space (pages)        Total     In Use     Free Largest
  Static Storage           181        181        0
  CDB Storage              795        774       21       21
  SCC Buffer Area           35         25       10       10
  Watchpoint Area           12          0       12       12
>>>
```

Example

```
>>> SHOW SCM

Scan Control Module Statistics

  Revision levels -
    SCM Firmware: V68      SCM RBD: V61

  Options -
    Scan Verification: DISABLED
    BI Verification:   DISABLED
    Signal Caching:    ENABLED
    Attention Polling: DISABLED
    Scan Mode:         NORMAL
    Scan Clock Rate:   100NS
    Vector proc mask:  01
    Attention mask:    00
>>>
```

Displays scan control module statistics.

SHOW SCOPE

Displays the current default scope for use with the EXAMINE, DEPOSIT, SET TRACE, SET WATCH, and SET PATTERN commands. The scope display format (same as EXAMINE/LABEL) is as follows:

```
Label:  Model=Model-name, Revision=Model-revision
```

Format

SHOW SCOPE

Example

```
>>> show scope
      Scope = %CPU0,  Model = CPU,  Revision = A
>>>
```

The SHOW SCOPE command display.

SHOW SCU

Displays the current state of the SCU.

Format

SHOW SCU

Display Format

```
>>> SHOW SCU
   SCU is present and has a CDB file loaded
   Unit revision: A00
   Unit CDB file: DUA50:[UCODE]SCUA00.CDB
   DA1: Broken
   Unit state flags:
         Power On
         Not Broken
         Not Initialized
         Clocks Not On
         Not Running
         Hard Core Not Executed
         Pattern Test Not Executed
```

SHOW SJA

Displays the current state of the SJA.

Format

SHOW SJA

Example

```
>>> SHOW SJA

SPU/Jbox Adapter Statistics

Revision levels -
  SJA Array: A        SPM Module: A

Options -
  Memory type:      EMULATED    Register type:    EMULATED
  Looback:          DISABLED    DMA mode:         DISABLED
  Primary CPU ID:   00          Simulated O/S:    DISABLED,INACTIVE
  Memory mode:      STEP        Cur Mem state:    STBY
  Debug mode:       DISABLED    CPUCNF access:    DISABLED
  MMU present mask: 00          XJA present mask: 00
  Check MMU hndshk: ENABLED     Check XJA hndshk: ENABLED
  Trace mode:       DISABLED    PF Int enable:    DISABLED

Attentions -
  Received ATTNs:   0
                    CPU0 CPU1 CPU2 CPU3 SCU
  Attention mask:   0000 0000 0000 0000 0000
  Hot check mask:   0000 0000 0000 0000 0000
  Clock check mask: 0000 0000 0000 0000 0000
>>>
```

The SHOW SJA command display.

SHOW SOURCE

Displays the source directory for microcode trace windows.

Format

SHOW SOURCE

Example

```
>>> SHOW SOURCE
   DISK$HARD:[SYS4.CONSOLE]
```

The source directory for the microcode trace windows is the CONSOLE subdirectory of the SYS4 directory on device DISK$HARD.

SHOW STEP

Displays the current STEP attributes. The INSTRUCTION mode state and the BOOTSET mode state are displayed.

Format

SHOW STEP

Example

```
>>> SHOW STEP
  Instruction
>>>
```

The SHOW STEP command display.

SHOW STRUCTURE

Displays the structure current state, version, symbol table state, and file-spec from which the structure was loaded.

Format

SHOW STRUCTURE *[structure-name] [/qualifiers]*

Parameters

structure-name
Specifies one structure. If not specified, all structures are displayed. Valid structure names are as follows:

Table 2–16 Structure Names

BP	CACHE0	CACHE1	ECC0	ECC1
ECS	EREG	FRAM	IPAMM	JCS
MPAMM	NPAMM	PCHB	TAG0	TAG1
TAGRM	TBRAMS	VALIDRAMS	VIC	VICA
VICB	VREG			

Qualifiers

/CPU=cpu-id
Specifies the CPU that contains the structure(s), where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU structure information is displayed.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Determines whether to display system control unit structure information.

Display Format

```
>>> show structure

 Status of structures on CPU 0

Name         State       Signal name          Version     Symbols
----         -----       -----------          -------     -------
VREG         Initialized %CPU.VREG[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]VREG.LOD
BP           Initialized %CPU.BP[]            NONE        NOT Loaded
Loaded from file DUA50:[UCODE]BP.LOD
EREG         Initialized %CPU.EREG[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]CONSTANT0.LOD
CACHE0       Initialized %CPU.CACHE0[]        NONE        NOT Loaded
Loaded from file DUA50:[UCODE]CACHE0.LOD
CACHE1       Initialized %CPU.CACHE1[]        NONE        NOT Loaded
Loaded from file DUA50:[UCODE]CACHE1.LOD
FRAM         Initialized %CPU.FRAM[]          A48e*DE     NOT Loaded
Loaded from file DUA50:[UCODE]FRAM.LOD
VALIDRAMS    Initialized %CPU.VALIDRAMS[]     NONE        NOT Loaded
Loaded from file DUA50:[UCODE]VALIDRAMS.LOD
PCHB         Undefined   %CPU.PCHB[]          NONE        NOT Loaded

ECC0         Initialized %CPU.ECC0[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]ECC0.LOD
ECC1         Initialized %CPU.ECC1[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]ECC1.LOD
VICA         Initialized %CPU.VICA[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]VICA.LOD
VICB         Initialized %CPU.VICB[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]VICB.LOD
ECS          Initialized %CPU.ECS[]           E272        Loaded
Loaded from file DUA50:[UCODE]AQUARIUS.LOD
VIC          Initialized %CPU.VIC[]           NONE        NOT Loaded
Loaded from file DUA50:[UCODE]VIC.LOD
TAG0         Initialized %CPU.TAG0[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]TAG0.LOD
TAG1         Initialized %CPU.TAG1[]          NONE        NOT Loaded
Loaded from file DUA50:[UCODE]TAG1.LOD
TBRAMS       Initialized %CPU.TBRAMS[]        NONE        NOT Loaded
Loaded from file DUA50:[UCODE]TBRAMS.LOD
>>>
```

Displays information about all the structures for the default CPU (CPU0).

SHOW SWITCHES

Displays the current position of the Startup and Service Processor Access switches on the operator control panel. The possible values are:

Table 2–17 Operator Control Panel Switches

Startup Switch Positions	Service Processor Access Switch Positions
BOOT	REMOTE
RESTART_BOOT	REMOTE_DISABLE
RESTART_HALT	LOCAL
HALT	LOCAL_DISABLE

Format

SHOW SWITCHES

Example

```
>>> SHOW SWITCHES

 Boot Switch: HALT
 Access Switch: REMOTE
```

The Boot switch is set to Halt and the Access switch is set to Remote.

SHOW SYMBOL

Displays symbol values defined by the symbol assignment command. If /ALL or symbol-name are not specified, the command issues the input prompt:

```
_SYMBOL:
```

Format

SHOW SYMBOL *[/qualifiers] [symbol-name]*

Qualifiers

/ALL (D)

Displays all symbols in the specified table. If /ALL is specified, do not specify the symbol-name parameter.

/GLOBAL

Displays only global symbols.

/LOCAL

Displays only local symbols.

/structure_qualifier

Displays the symbols loaded for the specified structure. Valid structure qualifiers are:

/BP	/CACHE0	/CACHE1	/ECC0	/ECC1
/ECS	/EREG	/FRAM	/IPAMM	/JCS
/MPAMM	/NPAMM	/PCHB	/TAG0	/TAG1
/TAGRM	/TBRAMS	/VALIDRAMS	/VIC	/VICA
/VICB	/VREG			

Parameters

symbol-name

The symbol to be displayed. If omitted, all symbol definitions are displayed. If symbol-name contains a wildcard character, all matching symbol definitions are listed. If /ALL is specified, do not specify the symbol-name parameter.

SHOW SYSTEM

Displays the processes currently defined in the SPU software system. The memory usage of each process is displayed with the CPU usage. The display format is similar to the VMS SHOW SYSTEM command.

Format

SHOW SYSTEM *[/[NO]PROCESS]*

Qualifiers

/PROCESS
/NOPROCESS
Specifies whether to display subprocess information for each job in the system.

Example

```
>>> show system
EWBAA V10.8(332)  on node SPUS18 13-MAR-1990 19:08:50.90
  Pid     Process name State Pri      CPU       RW Mem P0 Mem P1 Mem
00020000 XBDRIVER     Wait   1  0 00:00:00.17     45     65     16
00030000 CONSOLE_31   Wait   2  0 00:00:09.15     19     43     50
00040000 EDEBUGREM    Wait   3  0 00:00:00.01      2     23      4
00050000 BUDRIVER_31  Wait   4  0 00:00:45.64    159    143     58
00060000 MBDRIVER_31  Wait   4  0 00:00:00.04     52     36     24
00070000 VMDRIVER     Wait  16  0 00:00:00.15      9    107     42
00080000 FALSERVER    Wait  16  0 00:00:00.01      1     12      2
000B0000 SCMDRIVER    Wait   5  0 00:00:08.48    566    127     54
000C0000 SJADRIVER    Wait  16  0 00:00:00.81    846    246     74
000D0000 PCSDRIVER    Wait   5  0 00:00:00.81    408     98     48
000E0000 RTDRIVER     Wait   4  0 00:00:00.00      4     43      2
000F0000 REMOTE       Wait   6  0 00:00:00.02      9     43     13
00100000 PRINTER      Wait   6  0 00:00:00.01      9     42     13
00110000 CONTROL      Wait  12  0 00:00:00.03     42    283     21
00120000 CLI          Run   17  0 00:01:06.67    703   1035     97
00130000 EFM          Wait  12  0 00:00:00.41    432     79     10
>>>
```

The SHOW SYSTEM command display.

SHOW TERMINAL

Displays the current terminal characteristics.

Format

SHOW TERMINAL *[terminal-name:]*

Parameters

terminal-name:
Displays the specified terminal characteristics, where terminal-name must be terminated with a colon (:). For example:

```
>>> SHOW TERMINAL CONSOLE
%CMD-W-SYNTAXERR, illegal command - check command description
 \CONSOLE\
>>> SHOW TERMINAL CONSOLE:
Terminal: CONSOLE      Device_type: VT100        Connected_to: OPA1

   Input:   9600      LFfill: 0      Width:    80      Parity: None
   Output:  9600      CRfill: 0      Length:   24

Terminal Characteristics
  Echo
  Escape
  No Eightbit
  No Passall
  Broadcast
  Talk_Mode
>>>
```

If not specified, the current terminal characteristics are displayed.

Example

```
>>> SHOW TERMINAL
Terminal: CONSOLE:    Device_type: VT100    Connected_to: OPA0
  Input:  9600    LFFill: 0      Width:  80       Parity: None
  Output: 9600    CRFill: 0      Length: 24

Terminal Characteristics
  Echo
  Escape
  No Eightbit
  No Passall
  Broadcast
  Talk_Mode
```

The current terminal characteristics.

SHOW THRESHOLD

Displays the current error handling system thresholds.

Format

SHOW THRESHOLD

Example

```
>>> show threshold

Error thresholds and current counts

  Cache Cache
  Set 0 Set 1 Vbox CPU
Threshold: 0 0 0 0
    CPU 0: 16384 0 784 0
    CPU 1: 0 0 0 0
    CPU 2: 0 0 0 0
    CPU 3: 0 3584 0 0
>>>
```

The SHOW THRESHOLD command display.

SHOW TIME

Displays the current date and time in the following format:

```
DD-MMM-YYYY HH:MM:SS
```

Format

SHOW TIME

Example

```
>>> SHOW TIME
 11-JAN-1990 10:17:49
```

The current date and time display.

SHOW TRACE

Displays information about the specified tracepoint.

Format

SHOW TRACE *[/qualifiers] [tracepoint-name]*

Qualifiers

/CPU=cpu-id
Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is used.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Determines whether to display system control unit tracepoints.

Parameters

tracepoint-name
The tracepoint to be displayed.

Example

```
>>> SHOW TRACE TRACE1
 TRACE1     /FROM=0     /TO=0     /CPU=0     (enabled)     USER=0
      %CPU0.DECODE_PC<31:0>
      %CPU0OX_UPC<11:0>
      %CPU0.LOAD_UPC<11:0>
```

Tracepoint TRACE1 information display.

SHOW USERS

Displays the user name, port ID, and terminal name of processes currently logged in to the SPU.

Format

SHOW USERS

Example

```
>>> SHOW USERS
           SPU/ELN Interactive Users
            25-AUG-1988 00:00:21.01

  Username          Port ID       Terminal
  CONSOLE           000200EA      CONSOLE:
  MYNAME            000400D7      RTA1:
```

User information display.

SHOW VERSION

Displays the version of the specified object. Hardware object displays include the hardware part number and serial number, if available. Software object displays include the facility or module name.

Format

SHOW VERSION */object*

Objects

/ALL
Valid only with /CLI and /RTL. Displays all data for the subsystem.

/CLI (D)
Displays command language interpreter version.

/CLOCK
Displays the top level clock subsystem revision.

/FACILITY=name
Valid only with /CLI and /RTL. Displays more information about the module specified by facility-name.

/RTL
Displays the SPU runtime (RTL) library version.

/SCM
Displays the scan control module version.

Examples

1

```
>>> SHOW VERSION

      EWBAA X10.7(324)

DEB;47.0 FILE;22.0 MAC;69.0 MAIN;75.0 SET;62.0 TEST;27.0 WIN;22.0

Built by EVANS on node SALTON at 17-FEB-1990 13:00:17.51
>>>
```

Displays CLI version information. Note that CLI is the default if no qualifiers are specified.

2

```
>>> SHOW VERSION /RTL

      SPURTL X10.5(322)

CMD;30.0 CSA;7.0  ERH;27.0 KNL;47.0 LIB;92.0 PCS;26.0 RMS;8.0
SCM;35.0 SJA;37.0 TRM;13.0

Built by EVANS on node SALTON at 17-FEB-1990 11:52:30.90
>>>
```

Displays runtime library version information.

SHOW WATCH

Displays information about the specified watchpoint.

Format

SHOW WATCH *[/qualifiers] watchpoint-name*

Qualifiers

/CPU=cpu-id
Specifies the CPU, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is used.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/SCU
/NOSCU
Determines whether to display system control unit watchpoints.

Parameters

watchpoint-name
The watchpoint to be displayed; if omitted, all watchpoints are displayed.

Example

```
>>> SHOW WATCH WATCH1
 WATCH1    /FROM=0    /TO=0    /CPU=0    (enabled)    USER=0
   Command to execute is EXAMINE %CPU0.*PC*
     %CPU0.DECODE_PC<31:0>
     %CPU0OX_UPC<11:0>
     %CPU0.LOAD_UPC<11:0>
```

Watchpoint WATCH1 information display.

SHOW WINDOW

Displays information about the specified window, including its name, type, location, visibility, and plane. This information appears in the command window.

Format

SHOW WINDOW *[window-name]*

Display Format

The window information is displayed in the following format:

```
  Type       Name    Start    End  Visible  Partial  Update  Plane
 Examine     TEST      2       9      N        N       Y       1
 Odometer    NEW      11      19      Y        Y       Y       2
*Microcode   UCODE     2       9      Y        Y       Y       0
```

The window name was assigned when the window was created. *Start* and *End* are the first and last line numbers of the window. *Visible* and *Partial* indicate (yes or no) whether a complete or partial window is visible. *Plane* is the internal window ID.

Parameters

window-name

Specifies the window about which information is to be displayed.

SHOW XMI_DEVICES

Displays the node names and device types for all devices loaded with the SET XMI_DEVICES command.

Format

SHOW XMI_DEVICES

SHOW ZONE

Displays information about the memory allocation zone manager.

Format

SHOW ZONE

Example

```
>>> SHOW ZONE


Zone ID: 808D8088 Zone type: Shared User
  Extend by 312 page(s)
  Maximum of 5000 page(s) in zone
  Currently 312 page(s) in zone
  No fill on allocation
  No fill on deallocation
  Area extension is ENABLED
  Area allocated from system pool
  Area list
    Block address: 808E0C00
    Block size:    00027000

  Free block list
    Block address: 808E0D78
    Block size:    00026E80

>>>
```

The SHOW ZONE command display.

START

Begins execution in the specified CPU at the specified address.

Format

START *[/qualifiers] address-expression*

Qualifiers

/CPU=cpu-id
The CPU to be started, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is started.

See Section 1.1.1.3 for more information on specifying a CPU. See the SET CPU command description for more information on specifying the default CPU.

/LOG
/NOLOG
Determines whether to display command results.

/PIO_MODE(D)
/NOPIO_MODE
Determines whether to enter program I/O (PIO) mode. If PIO mode is entered, typing Ctrl/P returns the SPU to console I/O (CIO) mode and displays the following message:

```
[Entering Console IO mode.  Please type 'CONTINUE' to return.]
```

/PIO_PORT={OPA0 | OPA1}
Determines to which port the console terminal is connected. OPA0 is the normal console port and OPA1 is the remote port.

Parameters

address-expression
The address of a location. The address can be a numeric literal, symbolic address, special operator, or lexical function. See Section 1.6 for more information on expressions.

STOP

Stops a process on the SPU or scan control module (SCM).

Format

STOP */qualifier*

Qualifiers

/JOB=port-id
The port ID (hexadecimal) of the batch job to be stopped (deleted). The SHOW BATCH command lists the port ID.

/PROCESS=process-id
The process to be stopped, where process-id is a hexadecimal number.

/SCM
Issues a BI STOP command to the SCM.

SUBMIT

Enters the specified command procedure file in a batch job queue.

Format

SUBMIT *[/[NO]LOG] file-spec*

Qualifier

/LOG
/NOLOG
Determines whether to display command results.

Parameters

file-spec
The command procedure file to be entered in the batch queue. The default file type is .CMD.

TALK

Enables parallel control/communications between the local terminal and a remote process. When talk mode is enabled, the following message is displayed:

```
%CLI-I-LINK, terminal link established from xxx
```

In talk mode, the local and remote terminals act as a single logical terminal to the remote process, with the characteristics of the remote terminal. Input from either terminal is echoed on both terminals and is treated as part of the remote process's command stream.

Pressing Ctrl/P on the terminal that initiated the link disables talk mode. When talk mode is disabled, any commands in progress continue.

Format

TALK *terminal-name*

Parameters

terminal-name
The name of the remote terminal, for example:

```
>>> TALK RTA1:
%CLI-I-LINK, terminal link established from RTA1
```

TYPE

Displays the contents of the specified file(s). The stop (Ctrl/S) and start (Ctrl/Q) scroll keys suspend and resume screen scrolling.

Format

TYPE *[/qualifiers] file-spec[, . . .]*

Qualifiers

/CONFIRM
/NOCONFIRM (D)
Determines whether an affirmative response is required before each file is typed. Valid responses to the confirmation prompt are:

Response	Result
Y (yes)	The file is typed.
T (true)	The file is typed.
N (no)	The file is not typed.
F (false)	The file is not typed.
Q (quit)	Abort command processing.

Responses can be upper or lowercase. The first character of the response is checked for Y, T, or Q. Any response other than Y, T, N, F, or Q is interpreted as N or F.

/PAGED
/NOPAGED
Displays the file one screen page at a time.

Parameters

file-spec[, . . .]
The file to be displayed. The default file type is .CMD.

To specify two or more files, separate the file specifications with either commas or plus signs. The files are displayed in the order listed.

The asterisk (*) wildcard character can be used in place of any whole or partial field (file name, type, or version) and the percent (%) wildcard character can be used in place of any single character in the file specification. The command displays all files that satisfy the file description.

Examples

1
```
>>> TYPE COMMON.DAT
```

Displays the contents of file COMMON.DAT.

2
```
>>> TYPE TEST
```

Displays the contents of file TEST.CMD.

UNJAM

Performs an I/O subsystem reset. The SCU treats this as a power-up initialization and the XMI interface executes a RESET sequence. This, in turn, causes a BI RESET, and so on.

Format

UNJAM *[/XJA=xja-id]*

Qualifier

/XJA=xja-id
Specifies the hexadecimal number of the XJA to be reset.

VERIFY

Compares the specified structure data with the specified file-spec data. Any mismatches cause the mismatched structure and file data to be displayed.

Format

VERIFY */structure [/qualifiers] file-spec*

Structures

/MAIN_MEMORY
Compares main memory.

/PEM
Compares PEM firmware.

/RIC=ric-id
Compares RIC firmware. The ric-id is a hexadecimal number.

/STRUCTURE
Compares structure microcode.

Qualifiers

/CPU=cpu-id
Specifies the CPU that contains the structure, where cpu-id is one of the following:

0	1	2	3	
ALL	AVAILABLE	BOOTPRIMARY	BOOTSET	PRIMARY

If a CPU is not specified, the default CPU is used.

/END=address
Specifies the address (hexadecimal) where the comparison ends.

/LOG
/NOLOG
The /LOG qualifier displays the structure and file names.

/START=address

Specifies the structure starting address (hexadecimal), not the position in the file, where the comparison starts.

Parameters

file-spec

Specifies the file that contains the data to be compared.

WAIT

Pauses the current CLI process for the specified time. The command can be interrupted (the wait canceled) by typing Ctrl/P.

Format

WAIT *time*

Parameters

time
The wait time can be relative or absolute. Relative time is specified as a quoted string in the following format:

```
>>> wait "0 HH:MM:SS"
```

or in seconds as an unquoted integer. For example, a five second wait:

```
>>> wait 5
```

Absolute time is specified as a quoted string as follows:

```
>>> wait "DD-MMM-YYYY HH:MM:SS"
```

Examples

1 `>>> WAIT "0 00:00:05"`

Wait 5 seconds (relative time format).

2 `>>> WAIT 5`

Wait 5 seconds (relative time format).

3 `>>> WAIT "12:44:16"`

Wait until 12:44:16 (absolute time format).

4 `>>> WAIT "11-JAN-1990 00:00:15"`

Wait until January 11, 1990, 00:00:15 (absolute time format).

WRITE

Writes the string-expression to the specified file.

Format

WRITE *[/NOCRLF] logical-name string-expression*

Qualifier

/NOCRLF
Allows strings to be appended to each other in the output file record by not terminating the record with a carriage return.

Parameters

logical-name
The logical name assigned by the OPEN command when the file was opened. The predefined logical names STDOUT and SYS$OUTPUT can also be used.

string-expression
An expression containing any elements that result in a string.

Z

Establishes the XMI XCOM (default) or BI RXCD communication protocol with the specified node. Commands can then be passed to the node and results displayed.

Format

Z *[/qualifier] [node]*

Qualifiers

/BI=node
Specifies the BI RXCD protocol. The node argument specifies the XBI node and the node parameter is not used.

/SPU=node
Specifies an SPU BI node and the BI RXCD protocol (the /BI qualifier should not be used). The node argument specifies the BI node and the node parameter is not used.

Parameters

node
A two-digit number with the most significant digit is the XJA number and the least significant digit is the node number. For example:

```
>>> Z 34
```

specifies XJA3 node 4.

3
Lexical Function Description

The lexical function descriptions in this chapter are nearly identical to the descriptions in the service processor operating system HELP library. In most cases, the two are distinguished only by minor formatting differences to accommodate the different media.

Lexical functions return numeric or string results and can be used anywhere numeric or string expressions are valid. The supported lexical functions are listed below and are described on the following pages:

ASCII	BITVECTOR	CLOCK	CONFIG	CPU
EXTRACT	FIELD	FILL	INFORMATION	INTEGER
LENGTH	LOCATE	LOGICAL	MCU	MEMORY
PARSE	PART	POWER	RADIX	REVISION
SCI	SCU	SEARCH	SERIAL	SID
SIGNAL	STRING	SWITCH	TIME	UPC
VERIFY				

ASCII

Returns the ASCII character for the specified number or keyword. The number is assumed to be in the default radix (usually hexadecimal).

Format

ASCII (*number* | *keyword*)

Return Value

The ASCII character for the specified number or keyword.

Arguments

number
A number in the default radix (usually hexadecimal).

keyword
One of the following:

BACKSPACE
BELL
ESCAPE
FORMFEED
LINEFEED
NEWLINE
RETURN
TAB
VERTICAL_TAB

BITVECTOR

Evaluates the specified expression and returns a bitvector data type. The expression must yield a numeric result.

Format

BITVECTOR *(expression [, length])*

Return Value

A bitvector data type of the specified length or fewest bytes that can hold the expression result.

Arguments

expression
The expression to be evaluated.

length
The number of bits in the returned bitvector. If the length value exceeds the number of bits in the result, the fewest bytes that can hold the result are returned.

CLOCK

Returns information about the clock subsystem.

Format

CLOCK *(item)*

Return Value

See the item argument description for returned values.

Arguments

item

item	**Returned Value**
DISABL	DISABL bit state.
EMULATION	TRUE if clock emulation is enabled.
FREQUENCY	Frequency register.
INTERVAL	Interval register.
POSITION	Position (delay) register.
SYNCH	SYNCH bit state.

CONFIG

Returns system configuration information.

Format

CONFIG *(item)*

Return Value

See the item argument description for returned values.

Arguments

item

item	Returned Value
ICU	A mask of ICUs present as a number.
ICU0	TRUE/FALSE.
ICU1	TRUE/FALSE.
MMU	A mask of MMUs present as a number.
MMU0	TRUE/FALSE.
MMU1	TRUE/FALSE.
XJA	A mask of XJAs present as a number.
XJA0	TRUE/FALSE.
XJA1	TRUE/FALSE.
XJA2	TRUE/FALSE.
XJA3	TRUE/FALSE.

CPU

Returns information about the default or specified CPU. See also the SCU lexical.

Format

CPU *(item, [cpu-id])*

Return Value

See the item argument description for returned values.

Arguments

item

item	**Returned Value**
ALLOCATED	User who allocated CPU or " " (null) if not allocated.
AVAILABLE	TRUE if this unit is in available set.
BOOT_SET	TRUE if unit is in boot set.
BROKE	TRUE if the unit is broken.
CDB	CDB file name.
CLOCK	TRUE if unit's clock is running.
COLD_START	State of COLD_START flag.
DEFAULT	Default CPU as a string.
HARD	TRUE if the unit has passed the hard-core tests.
INITIALIZED	TRUE if unit is initialized.
POWER	TRUE if the unit has power.
PRESENT	TRUE if unit is present.
REVISION	Revision string for this unit.
RUN	TRUE if the unit is running.

item	**Returned Value**
SENSE	TRUE if this unit has been SENSED.
STATE	The UCB state bits as a number.
WARM_START	State of WARM_START flag.

cpu-id

Specifies the CPU, where cpu-id is one of the following integers or strings:

0 1 2 3 CPU0 CPU1 CPU2 CPU3

If not specified, the default CPU.

EXTRACT

Extracts a substring from a string based on the start position and length information.

Format

EXTRACT *(start, length, string)*

Return Value

A character substring delimited by the start and length arguments. If the start argument is greater than or equal to the length of the string, a null string (" ") is returned.

Arguments

start
An integer expression representing the offset of the extracted substring. Offset is the position of a string character or a substring relative to the leftmost string character. The leftmost, or first, character in a string is position 0.

length
The number of characters to be extracted. If the length value exceeds the number of characters in the string from the start position to the end of the string, the characters from the start position to the end of the string are returned.

string
The string from which the substring is to be extracted.

Example

```
>>> NAME = "JOHN Q. PUBLIC"
>>> LAST = EXTRACT (8,6,NAME)
>>> SHOW SYMBOL LAST
LAST = "PUBLIC"
```

The last six characters are extracted from the character string assigned to symbol NAME, and assigned to symbol LAST.

FIELD

Extracts a bitvector from the specified expression based on the specified start and length.

Format

FIELD *(start, length, expression)*

Return Value

A bitvector based on the specified start and length arguments. If the length of the returned data is less than 32 bits, an integer is returned; otherwise, a bitvector is returned.

Arguments

start
An integer value representing the offset of the field. Offset is the position of the field relative to the leftmost bit in the expression.

length
The number of bits in the extracted bitvector.

expression
The bitvector or integer from which the field is to be extracted.

FILL

Inserts the specified fill pattern into an integer or bitvector data type at the specified offset. The pattern is repeated the number of times necessary to fill the length argument.

Format

FILL *(start, length, pattern, size, expression)*

Arguments

start
Specifies the offset of the fill pattern in the expression. Offset is the position of the pattern relative to the leftmost bit in the expression.

length
Specifies the total length of the inserted data.

pattern
The bit pattern to be inserted and repeated as necessary to fill the length argument.

size
The number of bits in the pattern.

expression
The integer or bitvector into which the pattern is to be inserted.

INFORMATION

Returns information about various subsystems.

Format

INFORMATION *(subsystem [, item [, select]])*

Arguments

subsystem [, item [, select]]

subsystem	*[, item*	*[, select]]*	Returned Value
BOOT_PRIMARY	–	–	The boot primary number as string.
CLOCK	DISABL	–	State of DISABL bit.
CLOCK	FREQUENCY	–	Master clock frequency.
CLOCK	INTERVAL	–	Clock interval count.
CLOCK	POSITION	–	Position register.
CLOCK	SYNCH	–	Synch flag value.
CPU	AVAILABLE	cpu-id or null (D)	TRUE if CPU is in available set.
CPU	BOOTSET	cpu-id or null (D)	TRUE if CPU is in boot set.
CPU	CDB	cpu-id or null (D)	CDB file name.

subsystem	*[, item*	*[, select]]*	**Returned Value**
CPU	INITIALIZED	cpu-id or null (D)	Initialized state flag.
CPU	PRESENT	cpu-id or null (D)	Present state flag.
CPU	REVISION	cpu-id or null (D)	CPU revision.
CPU	STATE	cpu-id or null (D)	Current CPU state.
DEFAULT	–	–	Default CPU.
ENVIRONMENT	FAULT	monitor-name	Fault flag.
ENVIRONMENT	STATE	monitor-name	Current state.
MODE	–	–	BATCH or INTERACTIVE.
POWER	FAULT	voltage-name	Group fault flag.
POWER	MARGIN	voltage-name	Group margin flag.
POWER	STATE	voltage-name	Group state.
PRIMARY	–	–	Primary unit number as a string.
SCOPE	–	–	Default scope as string.
SIMULATION	–	–	TRUE if the default unit is DECSIM simulation.
SYSTEM	–	–	System type (AQUARIUS, ARIDUS, TESTER, UNKNOWN).
TERMINAL	–	–	TTY name.

INTEGER

Converts a string to an integer based on the optional radix. The default radix is decimal.

Format

INTEGER *(string [, radix])*

Return Value

An integer value, in the specified radix, that is equivalent to the specified string expression.

Arguments

string
The string expression to be converted.

radix
Controls integer interpretation, and can be one of the following:

DECIMAL
HEXADECIMAL
OCTAL
BINARY

If not specified, the current default radix.

Example

```
>>> A = "3"
>>> B = INTEGER("5" + A, HEXADECIMAL)
>>> SHOW SYMBOL B
B = 35
```

First, the string literal "5" is concatenated with the string literal "3". (Note that the value of symbol A is automatically substituted in a string expression and the plus (+) is a string concatenation operator.) After the string expression is evaluated, the character string "53" is converted to integer value 35_{16} and assigned to symbol B.

LENGTH

Returns the length of a string.

Format

LENGTH *(string)*

Return Value

An integer value for the length of the string.

Arguments

string
The character string of which the length is to be determined.

Example

```
>>> MESSAGE = "exceeded quota"
>>> STRING_LENGTH = LENGTH(MESSAGE)
>>> SHOW SYMBOL STRING_LENGTH
STRING_LENGTH = 14
```

The LENGTH function returns the length of the character string assigned to the symbol MESSAGE, and assigns the value, 14, to the symbol STRING_LENGTH. Note that quotation marks are not used around symbols (for example, MESSAGE) in character string expressions.

LOCATE

Returns the offset of a substring within a string. Returns the length of the string if the substring is not part of the string.

Format

LOCATE *(substring, string)*

Return Value

An integer value representing the offset of the substring argument from the first character in the string. The first character in a string is the leftmost character and is position 0. If the substring argument is not found, the length of the string is returned.

Arguments

substring
The string of characters to be located in the specified string. Specify the substring as a character string expression.

string
The string in which the specified substring is to be found. Specify the string as a character string expression.

Example

```
>>> NAME = "JOHN Q. PUBLIC"
>>> NO_LAST = LOCATE(".",NAME)
>>> SHOW SYMBOL NO_LAST
NO_LAST = 6
```

The LOCATE function returns the position of the period in the string with respect to the beginning of the string. The period is in offset position 6, and that value is assigned to symbol NO_LAST.

The period character is the substring argument and is specified as a string literal (in quotation marks). The string argument NAME is a symbol and is not placed in quotation marks. NAME is automatically replaced by its current value.

LOGICAL

Returns the translation of a logical name.

Format

LOGICAL *(logical-name)*

Return Value

An equivalence string for the specified logical name. The LOGICAL function searches process, job, group, and system logical name tables, in that order, for the first match. If no match is found, LOGICAL returns a null string.

Arguments

logical-name
The logical name is passed as a string expression.

MCU

Returns information about the specified MCU.

Format

MCU *(number, item [, ring])*

Return Value

See the item argument description for returned values.

Arguments

number
The MCU number.

item

item	Returned Value
PRESENT	TRUE if MCU is present in system.
REVISION	The revision field.
RING_LENGTH	Specified CDB ring length or broadcast ring length if ring is not specified.
SERIAL	The serial number (as a number).
STATE	MCU state (GOOD/BROKEN).
TESTED_LENGTH	Specified tested ring length or broadcast ring length if ring is not specified.
TYPE	The type field.
VARIATION	The variation field.

ring
Optionally specifies the ring for the RING_LENGTH and TESTED_LENGTH items. If not specified, the broadcast ring is the default.

MEMORY

Returns information about the memory subsystem.

Format

MEMORY *(item)*

Return Value

See the item argument description for returned values.

Arguments

item

item	Returned Value
ALLOCATED	The user name who allocated memory; otherwise, " " (null). Currently always returns " " as there is no way to allocate memory.
INITIALIZED	TRUE if the memory have been initialized; otherwise, FALSE.
SIZE	The highest location in main memory.

PARSE

Parses a file name and extracts a specified field.

Format

PARSE *(file-spec [, default-spec] [, field])*

Return Value

A character string containing the expanded file specification or the specified field.

Arguments

file-spec
The file specification to be parsed, specified as a character string expression. Wildcard characters can be used; if used, they appear in the returned file specification.

default-spec
A default file specification, specified as a character string expression. Fields in the default file specification are substituted in the output string for missing fields in the file-spec argument.

field
The name of a field in a file specification, specified as a character string expression. This argument returns a specific portion of the file specification. The field name can be abbreviated. Valid keywords for the field name are as follows:

Keyword	Field Returned
NODE	Node name
DEVICE	Device name
DIRECTORY	Directory name
NAME	File name
TYPE	File extension
VERSION	File version

NOTE
No punctuation is returned with the type and version fields.

Examples

1
```
>>> SET DEF DUA0:[CONSOLE]
>>> DIAG = PARSE("TEST1.CMD","[PROCS]")
>>> SHOW SYMBOL DIAG
>>> DIAG = "DUA0:[PROCS]TEST1.CMD;"
```

The default device and directory are DUA0:[CONSOLE]. Because the directory name [PROCS] is specified as the default-spec argument in the assignment statement, it is used as the directory name in the output string. Note that the default device returned in the output string is DUA0 and the default version number for the file is null. The arguments TEST1.CMD and [PROCS] are placed in quotes because they are string literals.

2
```
>>> SET DEFAULT DUA0:[CONSOLE]
>>> DIAG = PARSE("TEST1.CMD",,"DIRECTORY")
>>> SHOW SYMBOL DIAG
>>> DIAG = "[CONSOLE]"
```

PARSE returns the directory name of file TEST1.CMD. Note that the default-spec argument's place in the argument list is delimited by a comma when the argument is omitted.

3
```
>>> DIAG = PARSE("SERE::DUA0:[CONSOLE]TEST1.CMD",,"DEVICE")
>>> SHOW SYMBOL DIAG
>>> DIAG = "DUA0:"
```

A file specification containing a node name is parsed for the DEVICE field and returns DUA0:.

PART

Returns the specified element's part identifier as a string. See also the SERIAL and REVISION lexicals.

Format

PART (*element* | *element, arg*)

Return Value

The specified element's part identifier as a string.

Arguments

element

element	*arg*
AIE	None.
AIO	None.
DAC	Specifies which DAC.
MAC	Specifies which MAC.
MCM	None.
MCU	MCU name or number (for example, VAP or 4).
PEM	None.
PLANAR	Specifies CPUn or SCU. If not specified, default scope unit is used.
RIC	Specifies which RIC, as in 0x52, and so on. This includes CPRIC and IORICs.
SCM	None.
SPM	None.

arg

See the element argument table.

POWER

Returns information about system power.

Format

POWER *(item, [bus/cabinet])*

Return Value

See the item argument description for returned values.

Arguments

item

item	Returned Value
ALLOCATED	User who allocated PCS or " " (null) if not allocated.
FAULT	FAULT state.
MARGIN	HI/LO/NOMINAL.
STATE	TRUE/FALSE.

bus/cabinet

The bus argument is one of the following:

A, B, C, D, E, F, G, H, I, or J

Valid bus arguments depend on system configuration.

The cabinet argument is one of the following:

CPA, CPB, SCU, IOA, or IOB

If bus/cabinet are not specified, the returned value is the ORed result of all the buses.

RADIX

Returns the string name of the current radix.

Format

RADIX *()*

Return Value

The current radix is returned as one of the following strings:

BINARY
DECIMAL
HEXADECIMAL
OCTAL

REVISION

Returns the specified element's revision string. This is the part of the string following the part number. For example, if the part number is nn-nnnnn-nn.*ll*nn, *ll* is returned. See also the PART lexical.

Format

REVISION (*element* | *element, arg*)

Return Value

The specified element's revision string.

Arguments

element

element	*arg*
MCU	MCU name or number (for example, VAP or 4).
KERNEL	None.

arg

Specifies which MCU.

SCI

Returns an integer data type with the value of the specified SCI line.

Format

SCI *(line, port)*

Return Value

The last value set with the SET SCI command on the specified line.

Arguments

line
Specifies one of the following SCI lines:

BROADCAST
BYPASS
CDS
DATA_IN
DATA_OUT
FUNCTION
SELECT

port
Specifies one of the following SCI ports:

CPU0
CPU1
CPU2
CPU3
SCU
MEM

SCU

Returns information about the SCU. See also the CPU lexical.

Format

SCU *(item)*

Return Value

See the item argument description for returned values.

Arguments

item

item	Returned Value
ALLOCATED	User who allocated SCU or " " (null) if not allocated.
BROKE	TRUE if the unit is broken.
CDB	CDB file name.
CLOCK	TRUE if unit's clock is running.
DEFAULT	Default CPU as a string.
HARD	TRUE if the unit has passed the hard-core tests.
INITIALIZED	TRUE if unit is initialized.
POWER	TRUE if the unit has power.
REVISION	Revision string for this unit.
RUN	TRUE if the unit is running.
SENSE	TRUE if this unit has been SENSED.
STATE	The UCB state bits as a number.

SEARCH

Scans a directory and returns expanded file names that match the input file-spec.

Format

SEARCH *(file-spec)*

Return Value

A character string containing the expanded file specification for the file-spec argument. Each time the SEARCH lexical is called with the same file-spec argument, it returns the next expanded file specification that matches the argument. After the last file-spec match or if the file is not found in the directory, a null string is returned.

Arguments

file-spec
The file specification to be searched for, specified as a character string expression. If not specified, default device and directory are used. Defaults are not supplied for file name or type. If the version number is not specified, the file specification with the highest version number is returned. Wildcards can be used.

Example

```
$ START:
$     FILE = SEARCH("SYS$SYSTEM:*.EXE")
$     IF FILE .EQL. " " THEN EXIT
$     SHOW SYMBOL FILE
$     GOTO START
```

This command procedure displays the file-specs of the latest version of all .EXE files in the SYS$SYSTEM directory. (Only the latest version is returned because a wildcard is not used as the version number.) The file-spec argument SYS$SYSTEM:*.EXE is a character string expression and is placed in quotation marks.

SERIAL

Returns the specified element's serial number as a string. See also the PART lexical.

Format

SERIAL (*element* | *element, arg*)

Return Value

The specified element's serial number as a string.

Arguments

element

element	*arg*
AIE	None.
AIO	None.
DAC	Specifies which DAC.
MAC	Specifies which MAC.
MCM	None.
MCU	MCU name or number (for example, VAP or 4).
PEM	None.
PLANAR	CPU or SCU or null to use default scope unit.
RIC	Specifies which RIC, as in 0x52, and so on. This includes CPRIC and IORICs.
SCM	None.
SPM	None.

arg

See the element argument table.

SID

Returns the system ID.

Format

SID *([item])*

Return Value

See the item argument description for returned values.

Arguments

item

item	Returned Value
SIDEX	SPM SIDEX register.
SPM	SPM system ID register.
SYSTEM	System ID (default if item is not specified).

SIGNAL

Returns the value of a signal.

Format

SIGNAL *(signal-name)*

Return Value

The value of the specified signal.

Arguments

signal-name
A string expression that is a valid signal name.

STRING

Converts an integer expression to a string.

Format

STRING *(expression [, radix])*

Return Value

A character string that is equivalent to the specified expression.

Arguments

expression
The expression to be evaluated using the specified radix. Leading zeros are dropped, and a minus (–) is placed at the beginning of the string representation of a negative number.

radix
Controls integer interpretation, and can be one of the following:

DECIMAL (D)
HEXADECIMAL
OCTAL

Example

```
>>> A = 5
>>> B = STRING(-2 + 'A')
>>> SHOW SYMBOL B
B = "3"
```

First, the expression (`-2 + 'A'`) is evaluated. Note that 5, the value of symbol A, is automatically substituted when the integer expression is evaluated. Next, the resulting integer, 3, is converted to the string "3" and assigned to symbol B.

NOTE
Assuming the default radix is hexadecimal, symbol A must be enclosed in quotes to distinguish it from A_{16}.

SWITCH

Returns information about the operator control panel switches.

Format

SWITCH *(item)*

Return Value

See the item argument description for returned values.

Arguments

item

item	Returned Value
BOOT	Boot switch state.
ACCESS	Access switch state.

TIME

Returns the current date and time string.

Format

TIME *()*

Return Value

The current date and time string.

UPC

Returns the current microPC of the specified control store.

Format

UPC *([control-store])*

Return Value

The current microPC of the specified control store.

Arguments

control-store
One of the following:

ECS = EBox control store
JCS = JBox control store

If not specified, the control store of the selected window. (See the SELECT command description in Chapter 2.)

VERIFY

Returns an integer value indicating whether the procedure verification flag is currently on or off. If used with arguments, the procedure verification flag can be turned on or off.

Format

VERIFY *[(expression)]*

Return Value

The integer 0 if the procedure verification flag is off, or the integer 1 if the procedure verification flag is on.

Arguments

expression
An integer expression with a value of 0 to turn the procedure verification flag off, or 1 to turn it on. When specified, the VERIFY function first displays the current flag state, then turns procedure verification on (1) or off (0) as specified by the argument.

When procedure verification is on, each command line in the procedure is displayed.

A
Command Quick Reference

General Syntax: **VERB [/qualifiers] object [parameters]**
(D) = default

symbol-name :=[=] string

symbol-name =[=] expression

@ file-spec [p1 [p2 [. . . p8]]]

ALLOCATE { CPU=cpu-id | MCM | PCS | SCU }

BOOT [/BI=node-id | /NODE=node-id | /[NO]PIO_MODE(D) | /R3=register-data | /R5=boot-flags | /[NO]START(D) | /XMI=xmi-id] [device]

CALL label

CLOSE logical-name

CONTINUE [/CPU=cpu-id | /[NO]LOG | /[NO]PIO_MODE(D) | /PIO_PORT={OPA0 | OPA1}]

```
COPY [ /[NO(D)]CONFIRM ]
     [ /CONTIGUOUS     ] input-file-spec output-file-spec
     [ /[NO(D)]LOG     ]

CREATE [/[NO(D)]LOG] file-spec

CREATE/DIRECTORY [/[NO(D)]LOG] directory-spec

CREATE/WINDOW [ /CPU=cpu-id    ]                [     W1    ]
              [ /ECS           ]                [ H1 . . . H2 ]
              [ /EXAMINE       ] window-name    [ T1 . . . T3 ]
              [ /JCS           ]                [ Q1 . . . Q4 ]
              [ /ODOMETER      ]
              [ /[NO]UPDATE(D) ]
              [ /VIEWONLY      ]

DEALLOCATE CPU=cpu-id
           MCM
           PCS
           SCU

DEASSIGN [ /ALL          ] [logical-name]
         [ /PROCESS(D)   ]
         [ /SYSTEM       ]

DEBUG [/[NO]CONFIRM(D)]

DEFINE [ /[NO]LOG(D)  ] logical-name[:] equivalence-string
       [ /PROCESS(D)  ]
       [ /SYSTEM      ]

                                    E1 . . . E6
                                    F6 . . . F14
                                    Help
                                    Do
DEFINE/KEY [ /[NO]ECHO(D)      ]    F17 . . . F20
           [ /LOG              ]    PF1 . . . PF4    equivalence-string
           [ /[NO(D)]TERMINAL  ]    KP0 . . . KP9
                                    PERIOD
                                    COMMA
                                    MINUS
                                    ENTER
```

```
DELETE [ /[NO(D)]CONFIRM ] file-spec
       [ /[NO(D)]LOG     ]

DELETE/PATTERN [ /ALL          ] [pattern-name]
               [ /CPU=cpu-id   ]
               [ /[NO(D)]LOG   ]
               [ /RESET        ]
               [ /[NO]SCU      ]

DELETE/SYMBOL [ /ALL          ] [symbol-name]
              [ /GLOBAL       ]
              [ /LOCAL(D)     ]
              [ /[NO(D)]LOG   ]

DELETE/TRACE [ /ALL          ] [tracepoint-name]
             [ /CPU=cpu-id   ]
             [ /[NO(D)]LOG   ]
             [ /RESET        ]
             [ /[NO]SCU      ]

DELETE/WATCH [ /ALL          ] [watchpoint-name]
             [ /CPU=cpu-id   ]
             [ /[NO(D)]LOG   ]
             [ /RESET        ]
             [ /[NO]SCU      ]

DELETE/WINDOW [ /ALL        ]
              [ window-name ]
```

DEPOSIT

[/PHYSICAL
/SPU
/VIRTUAL

/ECS
/EREG
/GENERAL
/INTERNAL
/JCS
/VECTOR=register:element

/ASCII
/BYTE
/D_FLOAT
/F_FLOAT
/G_FLOAT
/LONGWORD(D)
/OCTAWORD
/QUADWORD
/WORD

/LENGTH=bits
/RING

/NEXT[=count]

/CPU=cpu-id
/[NO(D)]SCU

/[NO]LOG
/[NO]VERIFY

/MCM
/PEM
/RIC=ric-id
/SCC
/SJA

/CODE
/EMEMORY
/IMEMORY
/PORT_REGISTER
/REGISTER]

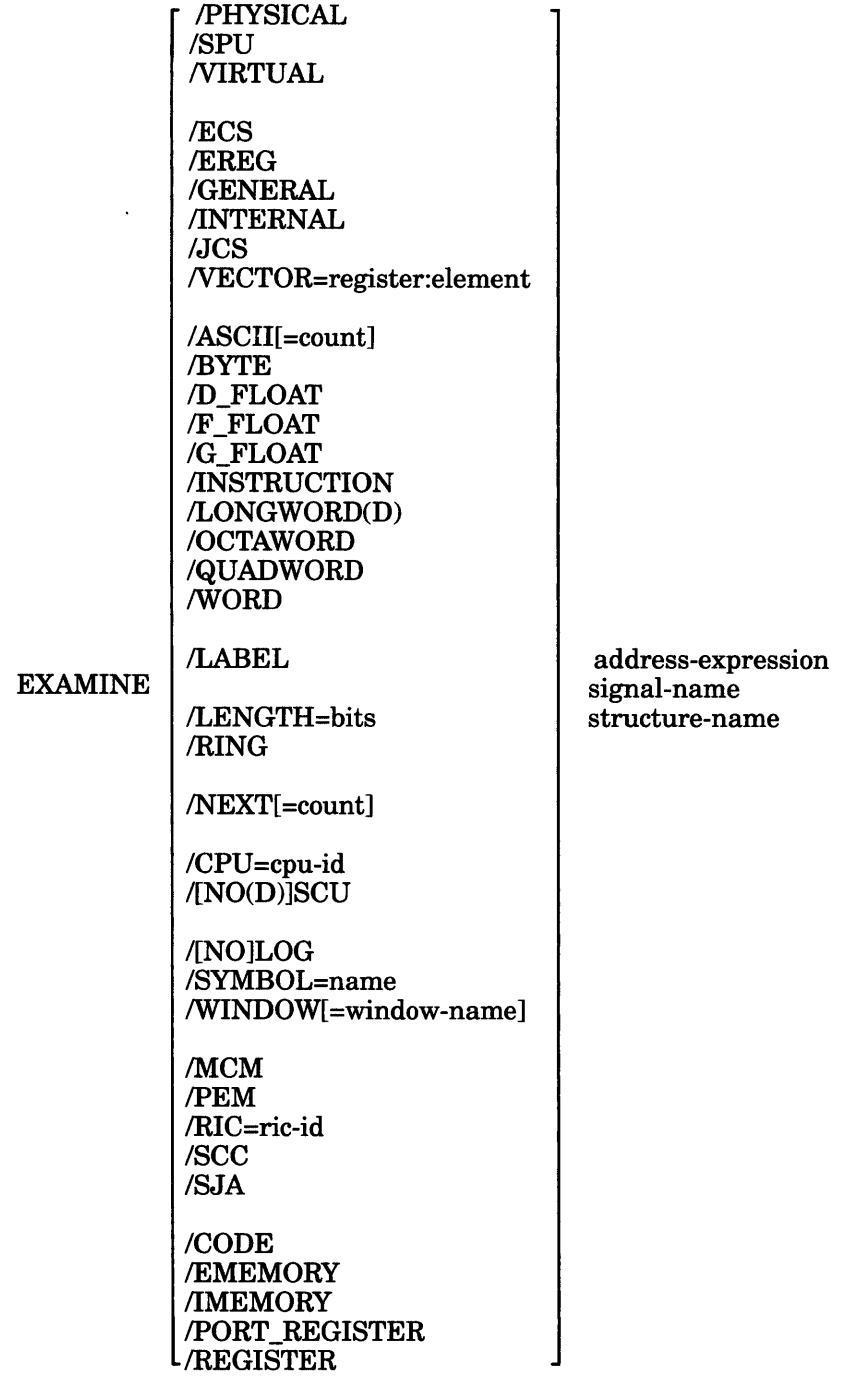
address-expression value-expression

```
DIRECTORY [ /DATE       ] [file-spec]
          [ /FULL       ]
          [ /OWNER      ]
          [ /PROTECTION ]
          [ /SIZE       ]
          [ /TOTAL      ]
```

```
DISMOUNT [/[NO]UNLOAD] device-name[:]
```

```
EDIT [ /[NO]COMMAND(D)[=command-file] ]
     [ /[NO]CREATE(D)                 ]
     [ /[NO]JOURNAL[=journal-file]    ] input-file-spec
     [ /[NO]OUTPUT[=output-file]      ]
     [ /RECOVER                       ]
```

```
EVALUATE [ /DISPLAY=radix-spec ] expression
         [ /RADIX=radix-spec   ]
```


/PHYSICAL
/SPU
/VIRTUAL
/ECS
/EREG
/GENERAL
/INTERNAL
/JCS
/VECTOR=register:element
/ASCII[=count]
/BYTE
/D_FLOAT
/F_FLOAT
/G_FLOAT
/INSTRUCTION
/LONGWORD(D)
/OCTAWORD
/QUADWORD
/WORD
EXAMINE
/LABEL
/LENGTH=bits
/RING
/NEXT[=count]
/CPU=cpu-id
/[NO(D)]SCU
/[NO]LOG
/SYMBOL=name
/WINDOW[=window-name]
/MCM
/PEM
/RIC=ric-id
/SCC
/SJA
/CODE
/EMEMORY
/IMEMORY
/PORT_REGISTER
/REGISTER
address-expression
signal-name
structure-name

```
EXIT  /ATTN
      /FAULT    [status-code]

      /CPU=cpu-id
FIND  /MEMORY   [blocks]
      /RPB

GOTO label

HALT [/CPU=cpu-id]

HELP [topic . . . ]

IF expression THEN command

                 [ /CLOCK
                 | /CPU=cpu-id
                 | /IO
                 | /KERNEL [/BRIEF]
                 |
                 | /MEMORY [ /BANK_MASK=mask
                 |        | /INTERLEAVE=type
                 |        | /[NO]OUTPUT=file-spec
                 |        | /[NO]RESTORE=file-spec
                 |        | /[NO]TEST(D)          ]
                 | /POWER
                 |
                 | /SCAN [ /FIRMWARE=file-spec
                 |       | /[NO]LOG
                 |       | /[NO]RESET
                 |       | /SCU [/BRIEF]         ]
INITIALIZE       |
                 | /SCM [ /[NO]DEBUG
                 |      | /FIRMWARE=file-spec
                 |      | /[NO]LOG
                 |      | /SUNDANCE
                 |      | /TIMEOUT=seconds
                 |      | /WPT_AREA=kbytes      ]
                 |
                 | /SJA [ /[NO]DEBUG
                 |      | /[NO]LOG
                 |      | /[NO]SIMULATION       ]
                 |
                 | /VOLUME                        ]
```

```
INQUIRE [ /[NO]EXPRESSION ] symbol-name  prompt-string
        [ /[NO]STRING     ]              prompt-symbol

LABEL: [command]

        [ /ABS             ]   [ /CPU=cpu-id          ]
        [ /CDB             ]   [ /[NO]DATA(D)         ]
        [ /MAIN_MEMORY(D)  ]   [ /[NO]LOG             ]
        [ /PEM             ]   [ /REVISION=version    ]
LOAD    [ /RIC=ric-id      ]   [ /[NO]SCU             ]   file-spec
        [ /RING[=ring-id]  ]   [ /START=address       ]
        [ /STRUCTURE       ]   [ /[NO]SYMBOL          ]
        [ /TEXT            ]   [ /[NO]VERIFY          ]
        [ /VECTOR          ]

LOGOUT [ /BRIEF ]
       [ /FULL(D) ]

        [ /FILE=file-spec  ]                 recipient[, . . . ]
MAIL    [ /[NO]SELF        ]  file-spec      @recipient-list
        [ /SUBJECT="string" ]

          [ /[NO]BURST       ]
          [ /CPU=cpu-id      ]
MICROSTEP [ /[NO]SCU         ]  step-count
          [ /[NO]SPACEBAR(D) ]

MOUNT device volume-name

        [ /CPU=cpu-id      ]
NEXT    [ /[NO]SPACEBAR(D) ]  [step-count]
        [ /[NO]VIRTUAL     ]

     ATTN
     ERROR
ON   FAULT       THEN command
     SEVERE
     WARNING

        [ /APPEND          ]
        [ /ERROR=label     ]
OPEN    [ /[NO]LOG         ]  logical-name file-spec
        [ /READ(D)         ]
        [ /WRITE           ]
```

```
PURGE [ /[NO(D)]CONFIRM ]
      [ /KEEP=number    ] [file-spec[, . . . ]]
      [ /[NO(D)]LOG     ]

READ [ /END_OF_FILE=label ] logical-name symbol-name
     [ /ERROR=label       ]

REBOOT /[NO]CONFIRM(D)

RECALL [/ALL | command | index]

RENAME [ /[NO(D)]CONFIRM ] input-file-spec[, . . . ] output-file-spec
       [ /[NO(D)]LOG     ]

REPEAT [/COUNT=number] command

RESET [ /CPU=cpu-id ]
      [ /[NO]SCU    ]

          /CPU=cpu-id
RESTORE   /[NO]SCU
          /[NO]SPU

RETURN

     [ /[NO]DEBUG                ]
     [ /[NO]DETACHED             ]
     [ /JOB_PRIORITY=level       ]
     [ /KERNEL_STACK=size        ]
     [ /[NO]LOAD                 ]
RUN  [ /MAXIMUM_MESSAGES=number  ] file-spec [command-line]
     [ /MODE={KERNEL | USER}     ]
     [ /PARAMETERS="string"      ]
     [ /[NO]POWER_RECOVERY       ]
     [ /PROCESS_PRIORITY=number  ]
     [ /USER_STACK=size          ]

       /CPU=cpu-id
SAVE   /[NO]SCU
       /[NO]SPU

       [ /CURRENT          ]
       [ /DOWN[=lines](D)  ]
       [ /LEFT[=columns]   ]
SCROLL [ /NEXT[=lines]     ] [window-name]
       [ /PREVIOUS[=lines] ]
       [ /RIGHT[=columns]  ]
       [ /TO=address       ]
       [ /UP[=lines]       ]
```

```
SELECT [/NEXT] [ window-name [ AT  W1
                               H1 . . . H2
                               T1 . . . T3
                               Q1 . . . Q4 ] ]

SEND [ /ALL
       /BELL
       /OPCOM
       /URGENT ] [terminal-name] string

       CLOCK
       CPU=cpu-id
       IO
SENSE  POWER
       SCU
       SYSTEM [ /COMPARE
                /[NO]LOG ]

SET ATTN_ACTION command

SET AUTOBOOT {ON | OFF}

SET BI_DEVICES [ file-spec
                 device[, . . . ] ]

SET BOOTFLAGS value

SET BOOTSET [ /ENABLE=(cpu-id [, . . . ])
              /DISABLE=(cpu-id [, . . . ])
              /PRIMARY=cpu-id ] cpu-id [, . . . ]

SET CLOCK [ /[NO]ATTENTION(D)=attention-name
            /CPU=cpu-id
            /[NO]EMULATION
            /FREQUENCY=value
            /INTERVAL=cycles
            /[NO]LOG
            /POSITION=value
            /SAMPLE_RATE=hertz
            /[NO]SCU
            /SYNCH=synch-option ] [ON(D) | OFF]

SET COLD_START [/CPU=cpu-id] {ON | OFF}

SET COMMAND [ /CLEAR
              /[NO(D)]LOG ] file-spec
```

```
                                0 . . . 3
SET CPU [/[NO]LOG(D)]           BOOTPRIMARY
                                PRIMARY

                  [ /CPU=cpu-id    ]
SET CYCLE         [ /INTERVAL=value ] count
                  [ /[NO]SCU       ]

SET DEFAULT directory-spec[:]

                  [ /[NO]MATCH     ]
SET ERROR_HANDLING[ /[NO]RECOVERY  ] {ON | OFF}
                  [ /[NO]REPORTING ]

SET FAULT_ACTION command

                  [ /CPU=cpu-id ]
SET ISOLATION     [ /LOG        ] file-spec
                  [ /SYBIL      ]

SET KEEP_ALIVE [/CPU=cpu-id] {ON | OFF | MANUAL}

SET LABELS {ON | OFF}

                  [ /ALL           ]
SET LOGGING       [ /DISABLE       ] {ON | OFF}
                  [ /ENABLE        ]
                  [ /FILE=[file-spec] ]

                  /[NO]FACILITY
                  /[NO]IDENT
SET MESSAGE       /[NO]SEVERITY    [file-spec]
                  /[NO]TEXT

                  [ /ABSOLUTE                    ]
                  [ /ALL                         ]
                  [ /CPU=cpu-id                  ]
                  [ /DISABLE                     ]
                  [ /ENABLE                      ]
                  [ /FILE=file-name              ]   @file-name
SET PATTERN       [ /[NO]LOG                     ]   pattern-name
                  [ /NAME=pattern-name           ]   signal-list
                  [ /ODOMETER[=window-name]      ]
                  [ /RELATIVE                    ]
                  [ /[NO]SCU                     ]
                  [ /SYBIL                       ]
                  [ /[NO]VERIFY                  ]
                  [/SYBIL pattern-name]
```

```
SET PERSONAL_NAME "string"

                  [ /[NO]ATTENTION=class[, . . . ] ]
                  | /BUS=bus-name                  |
SET POWER         | /CABINET=cabinet-id            | [ON(D) | OFF]
                  | /COUNTERS                      |
                  | /IO                            |
                  [ /[NO]MARGIN=margin-keyword     ]

SET PROMPT [prompt-string]

                  HEXADECIMAL
SET RADIX         DECIMAL
                  OCTAL
                  BINARY

SET REMOTE [/[NO]PASSWORD=string] {ON | OFF}

                  [ /OS                                    ]
SET REVISION      |                                        | revision-string
                  [ /PLANAR [ /CPU=cpu-id ]                ]
                  |         [ /SCU       ]                |

                  [ /[NO]BROADCAST={0 | 1} ]
                  | /[NO]BYPASS={0 | 1}    |
                  | /[NO]CDS={0 | 1}       |
                  | /CLOCK=state           |
SET SCI           | /DATA={0 | 1}          |
                  | /DEFAULT               |
                  | /FUNCTION=state        |
                  | /PORT=port-id          |
                  [ /SELECT={0 | 1}        ]

                  [ /[NO]ATTENTIONS=mask          ]
                  | /[NO]BI_VERIFY                 |
                  | /[NO]BYPASS                    |
                  | /[NO]CACHE                     |
SET SCM           | /RATE=scan-rate                |
                  | /[NO]SCAN_VERIFY               |
                  | /[NO]VECTOR_PROCESSOR=mask     |
                  [ /[NO]VERIFY                    ]

SET SCOPE [/[NO]LOG] label-spec

SET SCREEN {ON(D) | OFF}
```

```
                  /AIE
                  /AIO
SET SERIAL        /DAC [/IDENTIFIER=dac-number]      10-digit-serial-number
                  /PLANAR [ /CPU=cpu-id ]
                          [ /SCU        ]
                  /SCM

                  [ /CPU=cpu-id                     ]
SET SNAPSHOT      [ /FILENAME=file-spec             ] {ON | OFF | TRIGGER}
                  [ /[NO]SCU                        ]

SET SOURCE directory

SET STEP {INSTRUCTION(D) | NOINSTRUCTION}

                  [ /[NO]BROADCAST(D)                                  ]
                  [ /CPU=cpu-id                                        ]
                  [ /DEVICE={LA100 | VT200}                            ]
                  [ /[NO]ECHO(D)                                       ]
                  [ /[NO]EIGHTBIT                                      ]
SET TERMINAL      [ /[NO]ESCAPE                                        ] [terminal-name]
                  [ /KEYPAD={APPLICATION | NUMERIC}                    ]
                  [ /PAGE=lines                                        ]
                  [ /PIO_PORT={OPA0 | OPA1}                            ]
                  [ /[NO]PROGRAM                                       ]
                  [ /[NO]TALK_MODE                                     ]
                  [ /WIDTH=characters                                  ]

SET TIME time-string

                  [ /ABSOLUTE                                  ]
                  [ /ALL                                       ]
                  [ /COMPARE                                   ]
                  [ /CPU=cpu-id                                ]
                  [ /DISABLE                                   ]
                  [ /ENABLE                                    ]
SET TRACE         [ /FILE=file-spec                            ] signal-list
                  [ /FROM=cycle                                ] @signal-file
                  [ /[NO]LOG                                   ]
                  [ /NAME=tracepoint-name                      ]
                  [ /ODOMETER[=odometer-window-name]           ]
                  [ /RELATIVE                                  ]
                  [ /[NO]SCU                                   ]
                  [ /TO=cycle                                  ]
                  [ /VECTOR                                    ]

SET VERIFY {ON(D) | OFF}

SET WARM_START [/CPU=cpu-id] {ON | OFF}
```

SET WATCH [/ALL | /CPU=cpu-id | /DISABLE | /ENABLE | /FROM=cycle | /[NO]LOG | /NAME=watchpoint-name | /[NO]SCU | /TO=cycle] signal-list @signal-file DO command

SET XMI_DEVICES [file-spec]

SHOW ATTN_ACTION

SHOW AUTOBOOT

SHOW AVAILABLE

SHOW BATCH

SHOW BBU

SHOW BI_DEVICES

SHOW BOOTFLAGS

SHOW BOOTSET

SHOW CLOCK [/FULL]

SHOW CONFIGURATION [/CLOCK | /CPU=cpu-id | /DATE=date | /KERNEL | /MCU=mcu-id | /MEMORY | /OUTPUT=file-spec | /POWER | /RINGS | /SCU | /SPU | /SYSTEM | /XMI=xmi-id]

SHOW CPU [/ALL | /FULL] [cpu-id]

SHOW CYCLE [/CPU=cpu-id | /[NO]SCU]

SHOW DEFAULT

SHOW DEVICE [device-name]

SHOW ENVIRONMENT [/CONTINUOUS | /INTERVAL=seconds | /OUTPUT=file-spec]

SHOW ERROR_HANDLING

SHOW FAULT_ACTION

SHOW FLAGS [/CPU=cpu-id]

SHOW HISTORY [/[NO]BINARY | /CPU=cpu-id | /[NO]INSTRUCTION | /MAXIMUM=locations | /OUTPUT=file-spec | /PHYSICAL | /[NO]SCU | /VIRTUAL | /WINDOW[=window-name]]

SHOW ISOLATION [/CPU=cpu-id | /MCU=mcu-id | /SYBIL] [broadcast-ring-bit-number]

SHOW KEEP_ALIVE

SHOW KEY
/ALL
E1 . . . E6
F6 . . . F14
Help
Do
F17 . . . F20
PF1 . . . PF4
KP0 . . . KP9
PERIOD
COMMA
MINUS
ENTER

SHOW LOGGING

SHOW LOGICAL [/ALL | /PROCESS | /SYSTEM] [logical-name]

SHOW MEMORY

SHOW MESSAGE [message-id]

SHOW MODE

SHOW NODE

SHOW PATTERN [/CPU=cpu-id | /NODE=node-id | /REMOTE | /[NO]SCU | /SYBIL] [pattern-name]

SHOW PERSONAL

SHOW POWER [/BUS=bus-name | /CABINET=cabinet-id | /CONTINUOUS | /COUNTERS | /INTERVAL=seconds | /IO | /OUTPUT=file-spec]

SHOW PROCESS

SHOW RADIX

SHOW REMOTE

SHOW SCI [/[NO]DATA_ONLY | /PORT=port-id]

SHOW SCM [/BAD_PAGE_MAP | /ENTRY_BLOCK | /ERROR_BLOCK | /MEMORY]

SHOW SCOPE

SHOW SCU

SHOW SJA

SHOW SOURCE

SHOW STEP

SHOW STRUCTURE [BP | CACHE0 | CACHE1 | ECC0 | ECC1 | ECS | EREG | FRAM | IPAMM | JCS | MPAMM | NPAMM | PCHB | TAG0 | TAG1 | TAGRM | TBRAMS | VALIDRAMS | VIC | VICA | VICB | VREG] [/CPU=cpu-id | /[NO]SCU]

SHOW SWITCHES

SHOW SYMBOL [/ALL(D) | /GLOBAL | /LOCAL | /BP | /CACHE0 | /CACHE1 | /ECC0 | /ECC1 | /ECS | /EREG | /FRAM | /IPAMM | /JCS | /MPAMM | /NPAMM | /PCHB | /TAG0 | /TAG1 | /TAGRM | /TBRAMS | /VALIDRAMS | /VIC | /VICA | /VICB | /VREG] [symbol-name]

SHOW SYSTEM [/[NO]PROCESS]

SHOW TERMINAL [terminal-name:]

SHOW THRESHOLD

SHOW TIME

SHOW TRACE [/CPU=cpu-id | /[NO]SCU] [tracepoint-name]

SHOW USERS

SHOW VERSION [/ALL | /CLI(D) [/FACILITY=name] | /CLOCK | /RTL [/FACILITY=name] | /SCM]

SHOW WATCH [/CPU=cpu-id | /[NO]SCU] [watchpoint-name]

SHOW WINDOW [window-name]

SHOW XMI_DEVICES

SHOW ZONE

START [/CPU=cpu-id | /[NO]LOG | /[NO]PIO_MODE(D) | /PIO_PORT={OPA0 | OPA1}] address-expression

STOP /JOB=port-id | /PROCESS=process-id process-name | /SCM

SUBMIT [/LOG] command-procedure-file

TALK terminal-name

TYPE [/[NO(D)]CONFIRM | /[NO]PAGED] file-spec[, . . .]

UNJAM [/XJA=xja-id]

VERIFY [/MAIN_MEMORY | /PEM | /RIC=ric-id | /STRUCTURE] [/CPU=cpu-id | /END=address | /[NO]LOG | /START=address] file-spec

WAIT time

WRITE [/NOCRLF] logical-name string-expression

X address count

Z [/BI=node | /SPU=node | node]

B

Lexical Function Quick Reference

VERB (argument [, optional-argument], . . .)
(D) = default

General Syntax:

{ ARG1 / . . . / ARGn } **= Select one required argument.**

[ARG1 / . . . / ARGn] **= Select one optional argument.**

ASCII ({ number / BACKSPACE / BELL / ESCAPE / FORMFEED / LINEFEED / NEWLINE / RETURN / TAB / VERTICAL_TAB })

BITVECTOR (expression [, length])

CLOCK ({ DISABL / EMULATION / FREQUENCY / INTERNAL / POSITION / SYNCH })

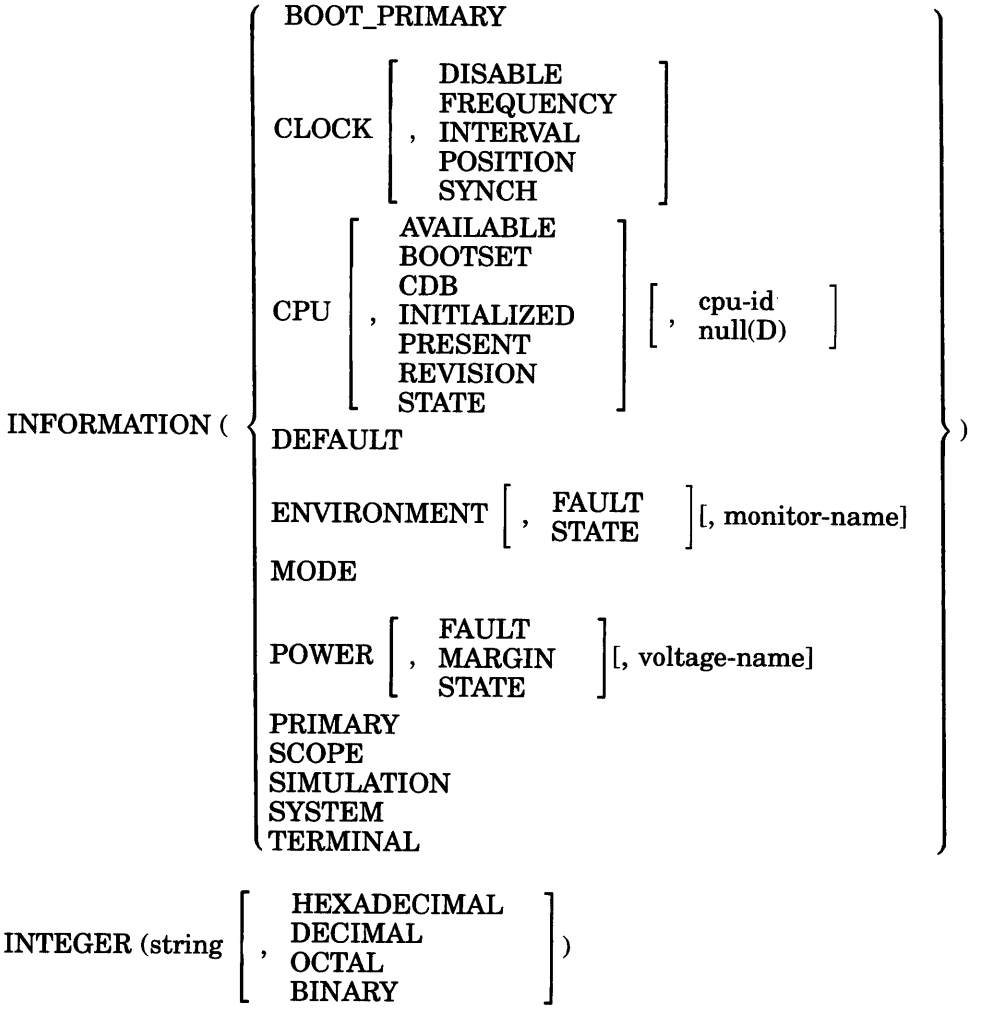
CONFIG ({ ICU | ICU0 | ICU1 | MMU | MMU0 | MMU1 | XJA | XJA0 | XJA1 | XJA2 | XJA3 })

CPU ({ ALLOCATED | AVAILABLE | BOOT_SET | BROKE | CDB | CLOCK | COLD_START | DEFAULT | HARD | INITIALIZED | POWER | PRESENT | REVISION | RUN | SENSE | STATE | WARM_START } [, cpu-id])

EXTRACT (start, length, string)

FIELD (start, length, expression)

FILL (start, length, pattern, size, expression)



LENGTH (string)

LOCATE (substring, string)

LOGICAL (logical-name)

```
MCU ( number, { PRESENT
              | REVISION
              | RING_LENGTH [, ring]
              | SERIAL
              | STATE
              | TESTED_LENGTH [, ring]
              | TYPE
              | VARIATION } )

MEMORY ( { ALLOCATED
         | INITIALIZED
         | SIZE } )

PARSE (file-spec [, default-spec] [ , { DEVICE
                                      | DIRECTORY
                                      | NAME
                                      | NODE
                                      | TYPE
                                      | VERSION } ] )

PART ( { AIE
       | AIO
       | DAC, dac-id
       | MAC, mac-id
       | MCM
       | MCU, mcu-id
       | PEM
       | PLANAR [, { CPUn
                   | SCU } ]
       | RIC, ric-id
       | SCM
       | SPM } )

POWER ( { ALLOCATED
        | FAULT
        | MARGIN
        | STATE [ , { A
                    | B
                    | C
                    | D
                    | E
                    | F
                    | G
                    | H
                    | I
                    | J } [ / { CPA
                              | CPB
                              | IOA
                              | IOB
                              | SCU } ] ] } )
```

RADIX ( )

REVISION ({ KERNEL / MCU, mcu-id })

SCI ({ BROADCAST / BYPASS / CDS / DATA_IN / DATA_OUT / FUNCTION / SELECT } , { CPU0 / CPU1 / CPU2 / CPU3 / MEM / SCU })

SCU ({ ALLOCATED / BROKE / CDB / CLOCK / DEFAULT / HARD / INITIALIZED / POWER / REVISION / RUN / SENSE / STATE })

SEARCH (file-spec)

SERIAL ({ AIE / AIO / DAC, dac-id / MAC, mac-id / MCM / MCU, mcu-id / PEM / PLANAR [, CPUn / SCU] / RIC, ric-id / SCM / SPM })

SID ({ SIDEX | SPM | SYSTEM })

SIGNAL (signal-name)

STRING (expression [, { HEXADECIMAL | DECIMAL(D) | OCTAL }])

SWITCH ({ ACCESS | BOOT })

TIME ( )

UPC ({ null | ECS | JCS })

VERIFY [(expression)]

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