DataGeneral

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Using the ECLIPSE MV/9500™ System Control Program

Using the ECLIPSE MV/9500™ System Control Program

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Notice

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Preface

This manual explains how to use the System Control Program (SCP) in ECLIPSE MV/9500™ series computers. The SCP's monitoring and debugging capabilities make it an integral feature of ECLIPSE MV/9500 computers.

The manual is useful to operators who power up computers, load the SCP and operating system, run diagnostics, and gather preliminary information for field service engineers. This reference is also helpful to programmers who use the SCP for debugging operating systems under development.

After reading this manual, operators and programmers can use the SCP commands to do the following:

- Initialize the system.
- Examine/modify the SCP, computer registers, and memory locations.
- Execute programs.

Organization of This Manual

The manual is divided into chapters as follows:

Chapter 1 introduces the System Control Program (SCP) and describes the methods for entering the SCP.

Chapter 2 provides information about each SCP command, including format, related commands and messages, and examples.

Readers, Please Note:

The following conventions are used this manual.

COM[MAND]	Uppercase letters indicate command mnemonics. If you prefer, use the command name instead of its mnemonic. The portion of the command name enclosed by brackets is optional.
argument [*argument*]	Lowercase italic characters indicate arguments. Arguments within brackets are optional. You must replace the italicized characters with the exact argument characters you need. Do not include the brackets; they only indicate that you have a choice.
Example Line	Characters in italics in the examples show the SCP messages that appear on the system console.
USER INPUT	Uppercase boldface characters in the examples show what you must type on the operator console. (See COMMAND description above.)
↴	New Line key on the keyboard.
<CR>	Carriage Return or Return key on the keyboard.

Related Manuals

This manual is one of a set of programmer's reference manuals, designed to provide detailed information on programming the system hardware. This set is for persons with computer hardware background.

Additionally, the computer is supported by guides to its operation and its programmable features. An operator's reference manual provide basic information on operating system hardware for both nontechnical and technical audiences. Programmer's reference manuals provide a detailed description of ECLIPSE® MV/Family assembly language instructions for those with hardware and/or assembly language backgrounds.

The operator's reference, programmer's reference, and technical reference manuals are primarily concerned with the hardware aspects of the system. The following section lists these and other manuals related to system-specific hardware. Additional manuals are available for the software, operating systems, and peripherals. The procedure for ordering individual manuals or a complete list of all publications is provided at the end of this Preface.

Operator's Reference Manuals

Starting ECLIPSE MV/9500™ Computer Systems, 014-001852

Describes the power-up and power-down sequences up to the point where the operating system is loaded. Lists diagnostic error codes and related messages.

Programmer's Reference Manuals

ECLIPSE/MV9500™ *System Principles of Operation Supplement,* 014-001855

Contains the assembly language programming information specific to the ECLIPSE™ MV/9500 computer. Supplements the *ECLIPSE® MV/Family (32-Bit) Systems Principles of Operation* manual.

ECLIPSE® MV/Family (32-Bit) Systems Principles of Operation, 014-001371

Explains the concepts, functions, and instruction sets of ECLIPSE MV/Family computers from an assembly language programming point of view.

ECLIPSE® MV/Family (32-Bit) Systems Instruction Dictionary, 014-001372

Explains the concepts, functions, and instruction sets of ECLIPSE MV/Family computers from an assembly language programming point of view.

ECLIPSE® MV/Family Instruction Reference Booklet, 014-000702

Pocket reference guide containing a brief summary of all ECLIPSE MV/Family assembly language instructions.

Technical Reference Manuals

Configuring Your ECLIPSE MV/9500™ Computer System, 014-001853

Describes the procedures for configuring the hardware options available for the system. It summarizes the basic system elements and options available, covers the rules and restrictions for adding these options, and includes examples of both an initial configuration and a system upgrade.

Designing Interfaces for the ECLIPSE® I/O Bus, 014-001185

Explains how to design a custom I/O interface to connect to an ECLIPSE I/O bus. Describes operation, timing constraints, and electrical characteristics of the burst multiplexor channel and I/O buses.

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End of Preface

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Chapter 1
Entering and Exiting the System Control Program

The System Control Program (SCP), accessed from the system console, allows operators and programmers to determine machine status, reset the system and boot the system from an I/O device. Programmers can also use the SCP to debug an operating system.

This chapter explains how to enter and exit the SCP.

Entering the SCP

The system can enter the SCP in any of the following ways: by encountering a macrocode Halt instruction, by pressing the system console's Break key, by pressing either the System Reset switch or Console Reset switch on the front control panel, or by the Central Processing Unit (CPU) encountering a fatal system error.

Halt Instruction

When the CPU encounters a Halt instruction, it performs the following tasks:

1. Increments the Program Counter to point to the next instruction.

2. Enters SCP mode.

3. Displays the message,

CPU HALTED

followed by the SCP prompt:

Scp-Cli>

Break Key, System Reset Switch, or Console Reset Switch

Pressing the Break key or either the System Reset or the Console Reset switch interrupts the system console and the CPU enters into the SCP.

The SCP prompt appears:

Scp-Cli>

Fatal System Errors

Fatal system errors (for example, infinite protection, infinite page faults, data channel bus timeout, etc.) cause the CPU to enter SCP mode. The SCP prompt appears after the SCP displays the following message:

Fatal System Error

Exiting the SCP

The SCP commands Boot, Continue, Start, and TTY allow you to exit from the SCP. These commands are detailed in the following chapter, "Command Dictionary."

End of Chapter

Chapter 2
Command Dictionary

This chapter is arranged alphabetically (by minimal mnemonic) and provides information on ECLIPSE MV/9500 series SCP commands. Command formats, switches, and examples are also presented in this chapter.

SCP Command Conventions

SCP commands are entered after a prompt and terminated with a Carriage Return (CR) or a New Line (↓). A Carriage Return allows you to view sequential data in ascending order. For example:

Scp-Cli> **EX ME 407** <CR>	Examine memory address 00000407.
MEMORY 00000407 0008 <CR>	Enter Carriage Return to examine next address, 00000408.
MEMORY 00000408 002F <CR>	Enter Carriage Return to examine next address, 00000409.
MEMORY 00000409 00FF ↓	Enter New Line to return to SCP prompt.
Scp-Cli>	

The SCP also recognizes Ctrl-U, which displays a new prompt without processing any previously entered characters, and the Delete key (Del), which erases characters to the immediate left of the cursor. Ctrl-A, which echoes the last command string entered, is also recognized by the SCP.

When users examine or modify registers or memory locations, all values entered are interpreted as least significant bits. Higher-order bits are padded with zeroes and do not need to be entered explicitly. For example:

Scp-Cli> **E ME 400** <CR>	Examine memory address 0000400.
MEMORY 0000400 0070 **FF** ↓	Change contents at address.
Scp-Cli> **E ME** <CR>	Re-examine memory address 0000400 (defaults to address). Shows contents changed to 00FF. New Line returns the SCP prompt.
MEMORY 0000400 00FF ↓	
Scp-Cli>	

Input and output values to/from the SCP are in the current radix: either octal or hexadecimal, with octal as the default. (See the Examine/Modify State of Internal Console Flags command on how to set the Radix flag.)

Commands are executed by entering at least the minimal mnemonic, and at most, the complete mnemonic. In cases where the given mnemonic is not unique, the SCP will default to the first command that matches what you entered. Similarly, if a command argument is required and none is given, a default argument may be assumed. Observe the following examples:

Scp-Cli> **E F** <CR>
FPAC0 0000000000000000

In this case, Examine/Modify Floating Point Accumulators (mnemonic: E[XAMINE] F[PAC][#]) is given priority over Examine/Modify Floating Point Status Register (mnemonic: E[XAMINE] FPS[R]). The alphabetical order of the minimal mnemonics determines which command will be the default. Further, since no floating point accumulator number is specified, FPAC0 is examined as a default.

Here is another example of a default for a missing argument:

Scp-Cli> **EX A** <CR>
AC0 00000000

Accumulator zero is displayed since no accumulator value is explicitly specified in the Examine/Modify Accumulators command.

Command Dictionary Format

The Command Dictionary uses the following format:

Command name — Minimal Mnemonic

MINIMAL MNEMONIC[COMPLETED MNEMONIC] [*argument*]

A description of the command.

Arguments

argument	The command accepts an argument. The argument might be a command name, switch, device code, number, register, name value, or an address number. Before execution, argument consists of signed 16-bit integer. If argument is omitted, default action occurs.
None	No argument is required.

Related Commands

Lists closely related commands and briefly describes how their functions differ. "None" indicates that there are no related commands.

Related Messages

Lists unique messages generated upon execution of the command. "None" indicates that there are no messages unique to the command.

Example

Gives an example of how the command works. User input is presented in **BOLDFACE** type. The SCP response is displayed in italics.

If you enter a command that is not recognized, a bell rings and/or the following message appears:

Command Unknown

If you enter a command that is greater than 32 characters, a bell rings and/or the following message appears:

Input String Too Long

If a keyboard character is entered that does not represent a number in the radix used, the following message appears:

Illegal Digit

Display Macro Status •

. (period)

The Display Macro Status command, executed by entering a period and either a New Line or a Carriage Return, displays the current contents of the four fixed-point accumulators, program counter (PC), carry bit (CARRY), and the state (ON or OFF) of the address translation unit in that order and then returns the SCP prompt.

Arguments

None	The command does not require an argument.

Related Commands

E A[C][#]	Allows you to display and change the contents of an accumulator.
E CA	Allows you to display and change the carry bit.
E PC	Allows you to display and change the program counter.

Related Messages

CPU RUNNING	The CPU must be halted to display macro status.

Example

Scp-Cli> . ↵ Return the following status:

AC0	*AC1*	*AC2*	*AC3*	*PC*	*CARRY*	*ATU*
00000000	*00000000*	*FFFFFFFE*	*FFFFFFFE*	*00000001*	*1*	*ON*

Scp-Cli>

Boot a Load Device B

B[OOT] [*device code*]

The Boot a Load Device command loads a program from the device specified by the argument. The SCP will not return to the prompt because this command causes the system to exit the SCP.

Arguments

device code — Device code of load device in the current radix. If argument is omitted, CPU boots from the device currently specified for automatic program load (APL).

Related Commands

F A — The Examine/Modify State of Internal Console Flags command with Auto flag specified allows the user to change the default APL device code. This code is often initially set by the user to $(22)_8$, which Data General operating systems recognize as the device code for a tape subsystem.

Related Messages

Invalid Argument — This message appears if the number is greater than $(77)_8$.

Example

Scp-Cli> **B** <CR>	Execute Boot command.
Load from what device? [22] **27** ↵	Enter device code (default is in brackets). Enter New Line to accept new device (if specified) or default.

Continue with Macrocode Program Execution C

C[ONTINUE]

The Continue with Macrocode Program Execution command starts macrocode execution at the current program counter value. The SCP will not return to the prompt because the C command causes the system to exit the SCP. Pressing the Break key at this point will return the system to SCP mode.

Arguments

None — The command does not require an argument.

Related Commands

E PC — Allows you to display and change the program counter.

Related Messages

None

Example

Scp-Cli> **C** ↵ — Continue program execution.

Clear Log CLEARLOG

CLEARLOG

The Clear Log command allows you to clear all entries in the error log.

Arguments

None	The command does not require an argument.

Related Commands

F E	The ELOG flag of Examine/Modify State of Internal Console Flags command allows you to enable/disable the logging of errors and events.
E E	The Examine Error Log command allows you to display the error/event log entries.

Related Messages

None

Example

Scp-Cli> **CLEARLOG** ↵ *Scp-Cli*>	Clear error log and return SCP prompt.

Configure Memory CONF

CONF[IGURE]

The Configure Memory command allows you to examine and modify configuration table entries for memory. When you execute the command, the SCP responds with a memory configuration listing that indicates the physical (Yes, No) existence of specific parameters, memory module capacities, and their logical (enabled, disabled) states.

To alter a parameter, enter the parameter's listing number/character. A Carriage Return or New Line returns an SCP prompt.

Changes made to the configuration table do not take effect until the next powerup. From next powerup, the SCP asks you the following:

Do you want to use the saved memory configuration? (Y/N)

If you answer "Y", the changes will take effect. If you answer "N", the changes will be lost and the physical configuration will take effect.

Arguments

None — The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **CONF** ↵ — Display configuration table.

Memory Configuration

(1) Module 0	*Yes*	*8 M*	*Enabled*
(2) Module 1	*No*	---	----
(3) Module 2	*Yes*	*8 M*	*Disabled*
(4) Module 3	*Yes*	*32 M*	*Enabled*

Enter number to change, Carriage Return/New Line=finish > __

Scp-Cli>

Date D

D[ATE]

The Date command allows you to examine the current system date. Upon command execution, the screen displays the following:

DD:MMM:YY

Arguments

None	The command does not require an argument.

Related Commands

TI	Displays the current system time.

Related Messages

None

Example

Scp-Cli> **D** ↵ *12-Dec-89* *Scp-Cli>*	Display the system date and return the SCP prompt.

Examine/Modify Accumulators E A

E[XAMINE] A[C][#]

The Examine/Modify Accumulators command allows you to display and change the contents of any of the four accumulators. Upon command execution, the screen displays the following:

AC# accumulator_contents

To modify the 32-bit accumulator, enter a new value and then a Carriage Return or New Line. Carriage Return allows you to examine/modify successive accumulators and then the program counter and carry bit. New Line returns an SCP prompt. If argument is omitted, the default is ac0.

Arguments

#	Accumulator number (0–3).

Related Commands

. (period)	Display Macro Status command. Displays the current state of accumulators, program counter, and carry bit, and shows the current addressing mode.

Related Messages

None

Examples

Scp-Cli> **E A** ↵	Examine contents of AC0 (default).
AC0 00000000 <CR>	Examine contents of AC1 and return the
AC1 00000000 ↵	SCP prompt.
Scp-Cli> **E AC3** ↵	Examine contents of AC3.
AC3 00000000 <CR>	Examine contents of program counter.
PC 00000001 ↵	Return the SCP prompt.
Scp-Cli>	

Examine/Modify Carry Bit — E C

E[XAMINE] C[ARRY]

The Examine/Modify Carry Bit command allows you to display and change the carry bit. Upon command execution, the screen displays the following:

CARRY carry_bit

To modify the carry bit, enter a new value (0 or 1) and then a Carriage Return or New Line. The screen returns an SCP prompt.

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

Number Too Big	This message appears if you enter a number other than 0 or 1.

Example

Scp-Cli> **E C** ↵	Examine carry bit.
CARRY 0 **1** ↵	Display carry bit status. Change carry bit to 1 and return SCP prompt.
Scp-Cli>	

Examine/Modify CPU Identification — E CP

E[XAMINE] CP[UID]

The Examine/Modify CPU Identification command allows you to display the CPU identification number and to change its memory size field. Upon command execution, the screen displays the following:

CPUID CPUID_number memory_size

The memory size field bits indicate the amount of available physical memory in units of 256 Kbytes. To modify the memory size field, enter a new value and then a Carriage Return or New Line. The screen returns an SCP prompt.

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **E CP** ↵	Examine CPU identification.
CPUID 0000	Display CPUID and memory size using 32-bit
Memory Size 0000 **7777** ↵	numbers in current radix. Change memory size and return the SCP prompt.
Scp-Cli>	

Examine Error Log — E E

E[XAMINE] E[RROR LOG]

The Examine Error Log command allows you to display the log entries recorded by the SCP operating system in reverse chronological order. It is not necessary to set the ELOG flag to display entries.

Arguments

None	The command does not require an argument.

Related Commands

F E	The ELOG flag of Examine/Modify State of Internal Console Flags command allows you to enable/disable the logging of errors and events.
CLEARLOG	The **CLEARLOG** command allows you to clear all logging of events.

Related Messages

None

Example

Scp-Cli> **E E** ↵ Display error log as follows:

**** System Error/Event Log ****

Type	*Level*	*Data/Time*	*Syndrome*	*Description*
BOOT	*3*	*26-May/09:25*	*----*	*SCP command history*
ERCC	*2*	*26-May/11:40*	*11010100*	*0001 single-bit soft error*
ERCC	*2*	*26-May/11:40*	*00001110*	*0010 single-bit soft error*
ERCC	*1*	*26-May/12:01*	*10010001*	*0011 sniffing hard error*
CPU	*1*	*26-May/12:10*	*-----*	*infinite protection fault*
REMOT	*3*	*26-May/13:05*	*-----*	*remote connected*
RESET	*3*	*26-May/13:03*	*-----*	*SCP command history*
CONFG	*3*	*26-May/13:10*	*-----*	*memory configuration changed*

.
.
.

etc.

Examine/Modify Floating Point Accumulators E F

E[XAMINE] F[PAC] [#]

The Examine/Modify Floating Point Accumulators command allows you to display and change any of the four floating point accumulators. Upon command execution, the screen displays the following:

FPAC# accumulator_contents

To modify the 64-bit floating point accumulator, enter a new value and either Carriage Return or New Line. Enter Carriage Return to examine/modify the next accumulator. Enter New Line to return an SCP prompt. If argument is omitted, the default is FPAC0.

Arguments

#	Floating point accumulator number (0-3).

Related Commands

None

Related Messages

None

Examples

Scp-Cli> **E F** ↵	Examine contents of FPAC0 (default).
FPAC0 0000000000000000 <CR>	Examine next FPAC.
FPAC1 0000000000000000 ↵	Display contents of FPAC1 and return the SCP prompt.
*Scp-Cli>***E FPAC3** ↵	Examine contents of FPAC3.
FPAC3 0000000000000000 ↵	Display contents of FPAC3 and return the SCP prompt.
Scp-Cli>	

Examine/Modify Floating Point Status Register E FPS

E[XAMINE] FPS[R]

The Examine/Modify Floating Point Status Register command allows you to display and change the contents of the floating point status register (FPSR). Certain bits in the FPSR cannot be changed. Modifiable bits include: 0–8, 33–63 (Floating Point Program Counter) and 28–31 (Intrinsic Instruction Set error bits). Upon command execution, the screen displays the following:

FPSR register_contents

To modify the contents of the 64-bit floating point status register, enter a new value and then New Line. The screen returns an SCP prompt.

For more information, refer to the *microMV™ Processor Principles of Operation Supplement*.

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **E FPS** ↵	Examine contents of FPS.
FPSR 0000700000001234 ↵	Display contents of FPSR and return the SCP prompt
Scp-Cli>	

Examine/Modify Main Memory E M

E[XAMINE] M[EMORY] [*address*]

The Examine/Modify Main Memory command allows you to display and change the contents of a main memory location. Upon command execution, the screen displays the following:

MEMORY logical_address [physical_address] memory_data

To modify the memory location data, enter a new value and then either a Carriage Return or a New Line. Carriage Return allows you to examine/modify the next memory location. New Line returns the SCP prompt. If argument is omitted, the default address is the last memory address entered or, if no address has been entered, zero.

The second address is not printed out if PHYS flag is set to Y (indicating Physical mode). In Physical mode, the Address Translation Unit (ATU) is turned off and the physical address is the same as the logical address. Note that until system microcode is loaded, the SCP defaults to Physical mode.

Memory_data consists of one memory word if the SING flag is set to Y, and one double word if the SING flag is set to N.

Arguments

address	This is a number specifying a particular location in main memory.

Related Commands

F	Allows you to set and examine internal console flags.

Related Messages

None

Examples

Scp-Cli> **F** ↵	Display internal console flags and return SCP prompt.
RADIX 16.	
SING N	SING =N (for double-word display).
PHYS N	Physical mode off (for physical_address display).
LOCK N	
AUTO Y, Device 0	
ELOG Y	
Scp-Cli>	Return the SCP prompt.

```
Scp-Cli> EX ME 0 ↵                          Examine memory address 0.
MEMORY  00000000 0000000 00010070  <CR>     Examine next address.
MEMORY  00000002 0000002 0000412F           New Line returns SCP prompt.

Scp-Cli> F S Y ↵                            Change SING flag to Y

Scp-Cli> F ↵                                Display internal console flags and return the
RADIX 16.                                   SCP prompt.
SING  Y                                     SING =Y (for single-word display).
PHYS  N                                     Physical mode off (for physical_address
LOCK  N                                     display).
AUTO  Y,  Device 0
ELOG  Y
Scp-Cli>                                    Return the SCP prompt.

Scp-Cli> EX M ↵                             Examine memory address 2 (default).
MEMORY 00000002 07FFFC02 0001  <CR>  Examine/modify next address.
MEMORY 00000003 07FFFC03 0070        Return to SCP prompt.

Scp-Cli> F S N ↵                            Change SING flag to N.

Scp-Cli> F P Y ↵                            Change PHYS flag to Y.

Scp-Cli> F ↵                                Display internal console flags and return the
RADIX 16.                                   SCP prompt.
SING  N                                     SING =N (for double-word display).
PHYS  Y                                     Physical mode on (single address display -
                                            physical_address same as logical_address).
LOCK  N
AUTO  Y,  Device 0
ELOG  Y
Scp-Cli>                                    Return the SCP prompt.

Scp-Cli> E ME 400 ↵                         Examine memory address 400.
MEMORY  0000400 00010070  <CR>              Examine next address.
MEMORY  0000402 0070412F  <CR>              Examine next address.
MEMORY  0000404 382F3234 ↵                  Return the SCP prompt.
Scp-Cli>
```

Examine/Modify Program Counter — E P

E[XAMINE] P[C]

The Examine/Modify Program Counter command allows you to display and change the program counter. Upon command execution, the screen displays the following:

PC pc_contents

To modify the 31-bit program counter, enter a new value and then a Carriage Return or New Line. The screen returns an SCP prompt.

Arguments

None	The command does not require an argument.

Related Commands

C	Starts macrocode execution at current value of program counter.

Related Messages

None

Example

Scp-Cli> **E PC** ↵	Examine PC.
PC 00000C03 **34** ↵	Change PC value to 34 (current radix) and return the SCP prompt.
Scp-Cli>	

Examine/Modify Processor Status Register E PS

E[XAMINE] PS[R]

The Examine/Modify Processor Status Register command allows you to display and change the contents of the processor status register. Upon command execution, the screen displays the following:

PSR psr_contents

To modify the contents of the processor status register, enter a new value and then a Carriage Return or New Line. The screen returns an SCP prompt. Only bits 0–3 can be modified. For more information, refer to the *microMV™ Processor Principles of Operation Supplement*.

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

None

Examples

Scp-Cli> **E PS** ↵	Examine processor status register.
PSR 00000000 **FFFFFFFF** ↵	Change value to FFFFFFFF and return the SCP prompt.
Scp-Cli> **EX PS** ↵	Examine contents of PSR.
PSR F0000000 ↵	Only bits 0–3 are modified. Return
Scp-Cli>	the SCP prompt.

Examine/Modify Segment Base Registers E S

E[XAMINE] S[BR][#]

The Examine/Modify Segment Base Registers command allows you to display and change the contents of the segment base registers (SBRs), which are numbered 0–7. Upon command execution, the screen displays the following:

SBR# sbr_contents

To modify the contents of the 32-bit segment base register, enter a new value and then Carriage Return or New Line. Carriage Return allows the operator to examine/modify the next segment base register. New Line returns the SCP prompt. If the argument is omitted, the default value is 0. For more information, refer to the *microMV™ Processor Principles of Operation Supplement*.

Arguments

#	Segment base register number (0–7).

Related Commands

None

Related Messages

Command Unknown	This message appears if the number specified in the completed mnemonic is greater than 7.

Example

Scp-Cli> **E S** ↵	Examine segment base register 0 (default).
SBR0 80000000 <CR>	Examine/modify next SBR.
SBR1 80000000 **80000001** ↵	Change value in SBR1 to 80000001_{16} and return the SCP prompt.
Scp-Cli> **E SBR1** ↵	Examine segment base register 1.
SBR1 80000001 ↵	Display register contents and return the SCP prompt
Scp-Cli>	

Examine/Modify Wide Frame Pointer E W

E[XAMINE] W[FP]

The Examine/Modify Wide Frame Pointer command allows you to display and change the wide frame pointer (WFP). Upon command execution, the screen displays the following:

WFP wfp_contents

To modify the 32-bit wide frame pointer, enter a new value and then a New Line to return the SCP to the prompt. Entering Carriage Returns will allow you to examine sequential information (for example, contents of wide stack base, wide stack limit, wide stack pointer).

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **E W** ↵	Examine contents of WFP.
WFP 00000000 **00FF0000** ↵	Change contents of WFP to 00FF0000.
Scp-Cli> **E WFP** ↵	Examine contents of WFP again.
WFP 00FF0000 <CR>	Examine wide stack base.
WSP 00FF0000 <CR>	Examine wide stack limit.
WSL 00FF00FF <CR>	Examine wide stack pointer.
WSB 00FF000F ↵	Return the SCP prompt.
Scp-Cli>	

Examine/Modify Wide Stack Base — E WS

E[XAMINE] WS[B]

The Examine/Modify Wide Stack Base command allows you to display and change the wide stack base (WSB). Upon command execution, the screen displays the following:

WSB wsb_contents

To modify the 32-bit wide stack base, enter a new value and then a New Line to return the SCP prompt. Carriage Return allows you to examine the next block of sequential information (for example, wide stack limit, wide stack pointer).

Arguments

None — The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **E WS** ↵	Examine contents of WSB.
WSB 00000000 **12345678** ↵	Change contents of WSB to 12345678_{16} and
Scp-Cli>	return the SCP prompt.

Examine/Modify Wide Stack Limit — E WSL

E[XAMINE] WSL

The Examine/Modify Wide Stack Limit command allows you to display and change the wide stack limit (WSL). Upon command execution, the screen displays the following:

WSL wsl_contents

To modify the 32-bit wide stack limit, enter a new value and then a New Line to return the SCP prompt. Carriage Return allows you to examine the next block of sequential information (for example, wide stack pointer, FPAC0, FPAC1).

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **E WSL** ↵	Examine contents of WSL.
WSL 00000000 **12345678** ↵	Change contents of WSL to 12345678_{16}
Scp-Cli>	and return the SCP prompt.

Examine/Modify Wide Stack Pointer — E WSP

E[XAMINE] WSP

The Examine/Modify Wide Stack Pointer command allows you to display and change the wide stack pointer (WSP). Upon command execution, the screen displays the following:

WSP wsp_contents

To modify the 32-bit wide stack pointer, enter a new value and then a New Line to return the SCP prompt. Carriage Return allows you to examine the next block of sequential information (for example, FPAC0, FPAC1).

Arguments

None	The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **E WSP** ↵	Examine contents of WSP.
WSP 00000000 **12345678** ↵	Change contents of WSP to 12345678_{16} and
Scp-Cli>	return the SCP prompt.

Examine/Modify State of Internal Console Flags F

F[LAGS] [*flag(value)*]

The Examine/Modify State of Internal Console Flags command with [flag(value)] arguments allows you to change the value of the internal console flags. When a flag is specified, a value for that flag must also be specified. If an argument is omitted, the internal console flags' state is displayed.

Arguments

[*flag(value)*] The SCP console flag and its value. In the value column below, the default value is listed first.

Flag	Value	Description
E[LOG]	(Y,N)	If this flag is Y (the default), the SCP sets the system error log.
L[OCK]	(N,Y)	If this flag is Y, the SCP automatically sets its software lock when it enters TTY mode. To unlock the software lock and re-enter the SCP command mode, press the Console Reset switch on the front panel. Default value is N.
P[HYS]	(Y,N)	If this flag is Y (the default), the SCP assumes that the memory addresses you enter are physical. If the flag is N, it assumes that memory addresses are logical. Until system microcode is loaded, the SCP defaults to Physical mode regardless of the value of the PHYS flag.
R[ADIX]	(8,16)	This flag determines the radix of data entered or displayed by the SCP commands. Default value is 8.
S[ING]	(N,Y)	If this flag is Y, the SCP displays memory as single-word, 16-bit data and increments addresses by 1. If this flag is N (the default), the SCP displays memory as double-word, 32-bit data and increments addresses by 2.

Related Commands

E ME Allows you to display and change the contents of a main memory location.

Related Messages

None

Examples

Scp-Cli> **F** ↵ *RADIX 16.* *SING Y* *PHYS Y* *LOCK N* *AUTO N* *ELOG Y*	Display internal console flags and return SCP prompt. SING =Y (for single-word display). Physical mode on (single address display - physical_address same as logical_address).
Scp-Cli> **F R 8** ↵	Change radix setting to 8.
Scp-Cli> **F S N** ↵	Change single setting to N.
Scp-Cli> **F P N** ↵	Change physical setting to N.
Scp-Cli> **F A Y** ↵	Change auto setting to Y.
Load from what device? [22] **27** ↵	Change default APL device to 27 and return SCP prompt.
Scp-Cli> **F** ↵ *RADIX 8* *SING N* *PHYS N* *LOCK N* *AUTO Y, Device 27* *ELOG Y*	Display internal console flags and return SCP prompt. SING =N (for double-word display). Physical mode off (for physical_address display).

Help H

H[ELP]

Displays a list of available SCP commands.

Arguments

None — The command does not require an argument.

Related Commands

None

Related Messages

None

Example

Scp-Cli> **H** ↵	Help command entered.
The following commands are available:	Display list of commands and return the SCP prompt.
BOOT	
CLEARLOG	
CONFIGURE	
CONTINUE	
DATE	
EXAMINE	
FLAGS	
HELP	
HALT	
RESET	
SS	
START	
TIME	
TTY	
.	
Scp-Cli>	

Halt CPU HA

HA[LT]

Halts the CPU and displays contents of the accumulators, carry bit, and PC. Also shows state of the address translation unit; then returns to the SCP prompt.

Arguments

None	The command does not require an argument.

Related Commands

. (period)	Displays the contents of the accumulators, carry bit, and program counter, as well as indicating the state of the address translation unit.

Related Messages

None

Example

Scp-Cli> **HA** ↵
CPU HALTED

Halts CPU and displays contents of the accumulators, carry bit, and PC. Also shows state of the address translation unit.

AC0	*AC1*	*AC2*	*AC3*	*PC*	*CARRY*	*ATU*
00000000	*00000000*	*FFFFFFFE*	*FFFFFFFE*	*00000001*	*1*	*ON*

Scp-Cli>

Reset the System — RESET

RESET

The Reset command resets the processor and all I/O devices to initial power-up state and returns to the SCP prompt.

Arguments

None — The command does not require an argument.

Related Commands

None

Related Messages

Invalid Abbreviation — This message appears if the entire mnemonic is not entered.

Example

Scp-Cli> **RESET** ↵ — Reset CPU.
SYSTEM RESET
Scp-Cli>

Single-Step Macrocode Program Execution SS

SS

The SS command allows you to single step macrocode program execution. When you execute the command, the SCP lets the CPU execute one macrocode instruction of current PC (Program Counter); then halts the CPU to return to SCP prompt. You can use the command when the CPU is already halted.

Arguments

None	The command does not require an argument.

Related Commands

E PC	Displays contents of the PC and allows changing its contents.
CONT	Starts program execution at current PC value.
HA	Halts CPU and displays contents of the accumulators, carry bit, and PC. Also shows state of the address translation unit.

Related Messages

None

Example

Scp-Cli> **SS** ↵ Executes macrocode instruction currently in PC.
Single-Step

AC0	*AC1*	*AC2*	*AC3*	*PC*	*CARRY*	*ATU*
00001234	*FFFF0000*	*00000000*	*0000B655*	*7025C76A*	*1*	*ON*

Scp-Cli>

Start Macrocode Program Execution ST

ST[**ART**] *address*

The Start command begins program execution from main memory at the address specified. The SCP will not return to the prompt because this command causes the system to exit SCP mode.

Arguments

address	Where the program begins execution.

Related Commands

C	Starts macrocode execution at current program counter value.

Related Messages

Command Requires Argument(s)	This message appears if you omit the argument.
Invalid Abbreviation	This message appears if you type S.

Example

Scp-Cli> **ST 4** ↵ Start program execution at address 4.

Time TI

TI[ME]

The Time command allows you to examine the current system time. Upon command execution, the screen displays the following:

HH:MM:SS

The HH field represents hours in a 24-hour format.

Arguments

None	The command does not require an argument.

Related Commands

D	Displays the current system date.

Related Messages

None

Example

Scp-Cli> **TI** ↵ Display the system time and return the SCP prompt.
12:10:05
Scp-Cli>

Enter TTY Mode — TTY

TTY

The Enter TTY Mode command exits you from the SCP and places you in TTY mode. In TTY mode, you can communicate with the host operating system via the system console. This command is only valid when the CPU is running.

Arguments

None	The command does not require an argument.

Related Commands

C	Use **C** to resume macrocode execution following a CPU halt.

Related Messages

Only valid when CPU is running	This message appears if you try to execute the TTY command when the CPU is halted.

Example

Scp-Cli> **TTY** ↵ Exit SCP and enter TTY mode.

End of Chapter

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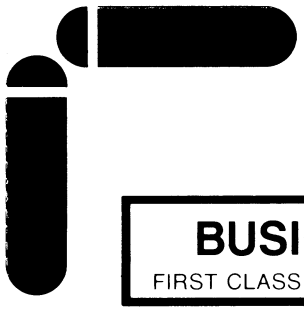

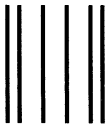

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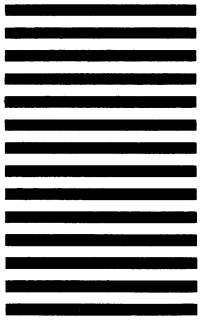

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