CRAY T90 SERIES MME INTERFACE REFERENCE

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Description of this Document

This document is a reference to the user interface for the Mainframe Maintenance Environment (MME) application used to troubleshoot CRAY T90 series mainframes. This document describes the interfaces used with MME environments 0, 1, and 2. It also describes all available menu button commands. Figure 3, Figure 8, and Figure 9 contain illustrations of all menu button commands available in environments 0, 1, and 2, respectively.

This document is one component of the MME documentation set, which includes the following documents.

CRAY T90 Series MME User Guide, publication number HDM-xxx-0.

This document describes how to use the MME environments for troubleshooting. It includes information about the internal functionality of MME.

CRAY T90 Series MME Interface Reference, publication number HDM-xxx-0.

This document describes the interfaces used with MME environments 0, 1, and 2. It also describes all available menu button commands.

CRAY T90 Series MME Diagnostic Tests and Utilities, publication number HDM-xxx-0.

This document provides quick-reference information for all diagnostic tests and utilities you can use with MME.

Notational Conventions

This document uses the following notational conventions:

- The base of a number is decimal unless stated otherwise. All memory references are octal values.
- Buttons are shown the way they appear in a window; for example, Go.
- Settings are shown the way they appear in a window; for example, Compose.
- The –> symbol indicates holding the MENU mouse button down and moving the mouse pointer to the next menu item.
- `Courier` type indicates a command you can enter.
- **`Courier bold`** type indicates commands you should enter.

- Helvetica type indicates references to the MME interface windows.
- **Helvetica bold** type indicates menu entries you should choose from the MME interface; for example, the text "choose **View –> Memory**" indicates you should choose the Memory entry from the (View ▽) menu button.

ENVIRONMENT 0

This section describes the interface components and menu button commands for MME environment 0.

Interface Components

The MME environment 0 interface, located in the base window, controls testing in environment 0. Environment 0 uses two distinct graphic interfaces: one for automatic and manual modes and one for compose mode.

Automatic or Manual Mode

Figure 1 shows the MME environment 0 graphic user interface for automatic or manual mode. The paragraphs following the figure describe the components of the interface.

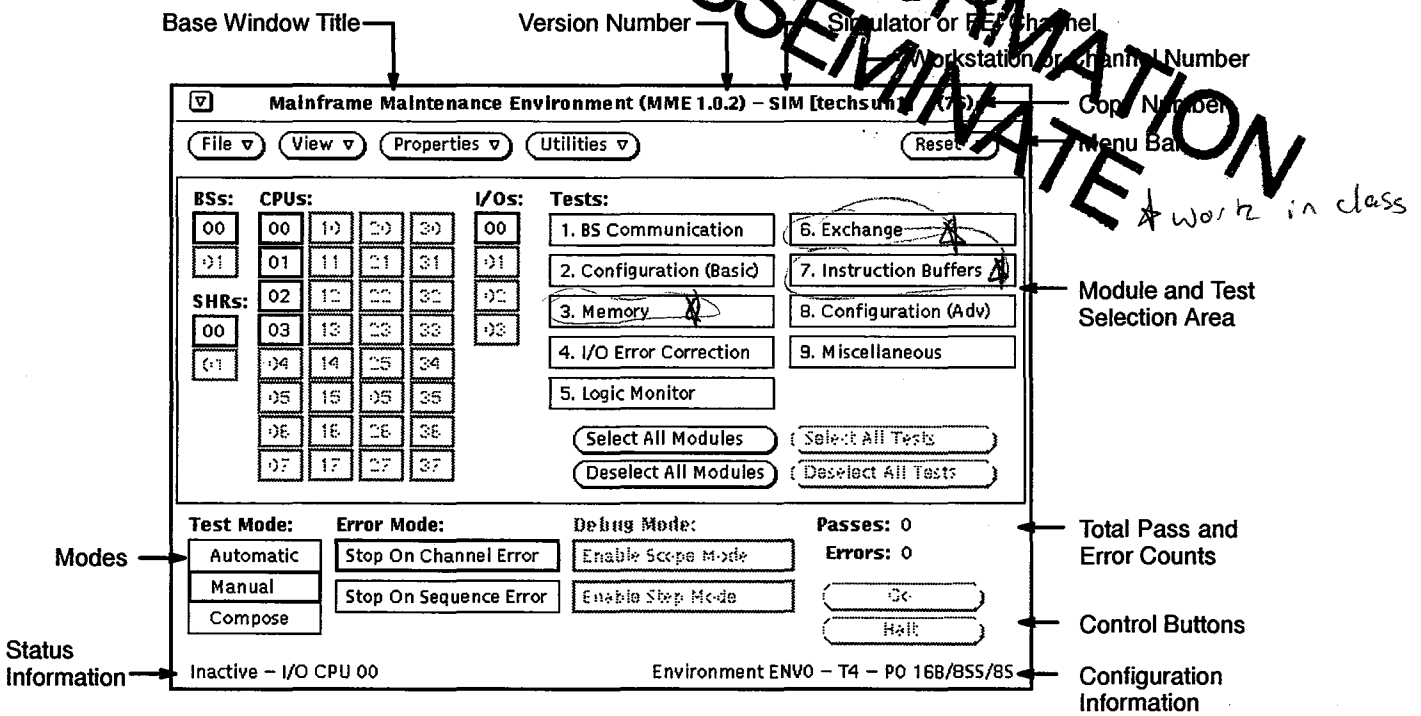


Figure 1. Environment 0 Interface Components (Automatic or Manual Mode)

Base Window Title

The base window title displays the name of the program: Mainframe Maintenance Environment.

Version Number

The version number indicates the version of MME you are using.

Simulator or FEI Channel

The simulator or front-end interface (FEI) channel indicator shows MME is running with the simulator (indicated by SIM) or an FEI channel (indicated by FEI CHN 0 for channel 0, FEI CHN 1 for channel 1, or FEI CHN 2 for channel 2).

Workstation or Channel Number

The workstation or channel number indicator lists the name of the workstation or the channel number on which MME is running.

Copy Number

The copy number indicates the copy of MME you are using. To set the copy number, start MME with the `-copy` option. If you start MME with the default copy number of 0, the MME base does not display a copy number. For more information about starting MME with the `-copy` option, refer to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.

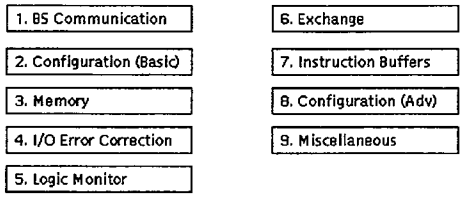
Menu Bar

The menu bar contains five menu buttons: File ▽, View ▽, Properties ▽, Utilities ▽, and Reset ▽. For descriptions of the commands accessible from these menu buttons, refer to "Menu Button Commands" later in this section.

Module and Test Selection Area

In the module and test selection area, you can modules to the environment 0 tests. You can assign four types of modules to tests: BSs (boundary scan modules), SHRs (shared modules), CPUs (CPU modules), and I/Os (input/output modules).

Use the following settings to select environment 0 tests:



Click on a setting to select a test. Use the (Select All Tests) and (Deselect All Tests) buttons to select or deselect all tests (automatic mode only). Use the (Select All Modules) and (Deselect All Modules) buttons to select or deselect all modules.

For more information about the environment 0 tests, refer to the *CRAY T90 Series MME Diagnostic Tests and Utilities* document, publication number HDM-xxx-0.

Total Pass and Error Counts

The total pass count component (Passes) indicates the number of passes a test has completed. The total error count component (Errors) indicates the total number of errors found during the current test(s) executions. The pass and error counts are in decimal.

Control Buttons

Use the control buttons to start testing ((Go)) and stop testing ((Halt)).

Configuration Information

The configuration information component displays the current MME environment and configuration data (mainframe type; partition where MME is running; and number of sections, subsections, and banks). The System Configuration Environment (SCE) provides this information.

For example, the following configuration information indicates MME is in environment 0 (Environment ENV0); the mainframe type is a CRAY T94 system (T4); MME is running in partition 0 (P0); and the configuration consists of 16 banks (16B), 8 subsections (8SS), and 8 sections (8S).

Environment ENV0 – T4 – P0 16B/8SS/8S

The configuration information component displays one of the following mainframe types:

Type	Description
TV1 (1x1)	A tester with 1 CPU and 1 memory module
TV4 (1x4)	A tester with 1 CPU and 4 memory modules
TV4(4x4)	A tester with 4 CPUs and 4 memory modules
T4	A mainframe with 4 CPUs
T16	A mainframe with 16 CPUs
T32	A mainframe with 32 CPUs

Status Information

The status information component displays the current state of the MME program, using the following messages:

Message	Description
Active	Test(s) are running.
Inactive	No test(s) are running.
I/O CPU ##	The specified CPU is the I/O CPU.
I/O Disabled	No CPUs are set as the I/O CPU.

Modes

The modes area contains the settings for the Test Mode, Error Mode, and Debug Mode:

- Test Mode can be set to [Automatic], [Manual], or [Compose] to indicate testing in automatic, manual, or compose mode.
- Error Mode can be set to [Stop On Channel Error] to stop testing when a channel error occurs and [Stop On Sequence Error] to stop testing when a sequence error occurs.
- The Debug Mode settings are used in compose mode only.

Compose Mode

Figure 2 shows the MME environment 0 graphic user interface for compose mode. The paragraphs following the figure describe the components of this interface.

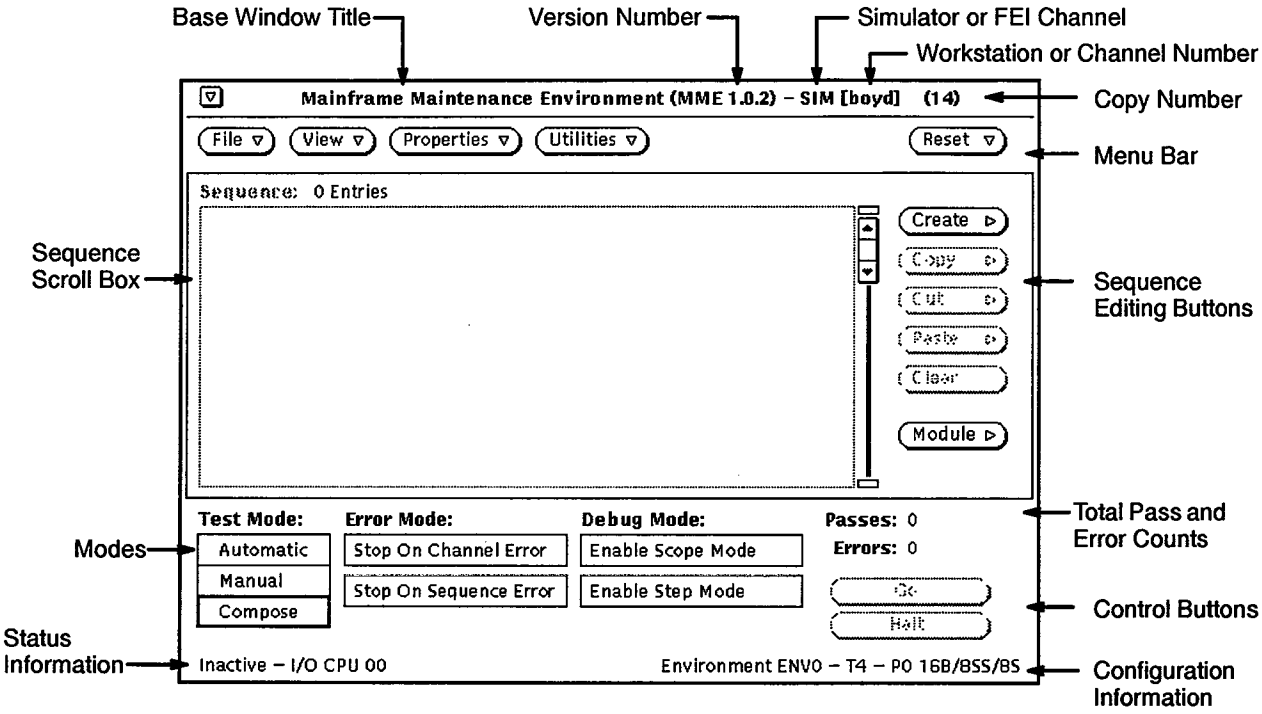


Figure 2. Environment 0 Interface Components (Compose Mode)

Base Window Title

The base window title displays the name of the program: Mainframe Maintenance Environment.

Version Number

The version number indicates the version of MME you are using.

Simulator or FEI Channel

The simulator or FEI channel indicator shows MME is running with the simulator (indicated by SIM) or an FEI channel (indicated by FEI CHN 0 for channel 0, FEI CHN 1 for channel 1, or FEI CHN 2 for channel 2).

Workstation or Channel Number

The workstation or channel number indicator displays the name of the workstation or the channel number where the MME program is running.

Copy Number

The copy number indicates the copy of MME you are using. To set the copy number, start MME with the `-copy` option. If you start MME with the default copy number of 0, the MME base does not display a copy number. For more information about starting MME with the `-copy` option, refer to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.

Menu Bar

The menu bar contains five menu buttons: File ▽, View ▽, Properties ▽, Utilities ▽, and Reset ▽. For descriptions of the commands accessible from these menu buttons, refer to "Menu Button Commands" later in this section.

Sequence Editing Buttons

Use the sequence editing buttons to manipulate the placement of functions and utilities within a test sequence. These buttons perform the following functions:

Button	Function
Create ▷	Creates a new function or utility in the current sequence. The function or utility is placed in the Sequence scroll box. Choose **Create –> Before** to place the function before the selected function in the scroll box. Choose **Create –> After** to place the function after the selected function in the scroll box. Choose **Create –> Top** to place the function at the top of the scroll box. Choose **Create –> Bottom** to place the function at the bottom of the scroll box.
Copy ▷	Copies the selected function or utility in the Sequence scroll box. Choose **Copy –> Selected** to copy the selected function. *The Copy –> Range command is not implemented yet.*

Button	Function
Cut ▷	Cuts the selected function or utility from the current sequence in the Sequence scroll box. Choose **Cut -> Selected** to cut the selected function. *The Cut -> Range command is not implemented yet.*
Paste ▷	Pastes a copied or cut function or utility into the current sequence in the Sequence scroll box. Choose **Paste -> Before** to paste the function before the selected function in the scroll box. Choose **Paste -> After** to paste the function after the selected function in the scroll box. Choose **Paste -> Top** to paste the function at the top of the scroll box. Choose **Paste -> Bottom** to paste the function at the bottom of the scroll box.
Clear	Removes all functions and utilities from the Sequence scroll box.
Module ▷	Sets the module used by the functions and utilities in the current sequence.

Total Pass and Error Counts

The total pass count component (Passes) indicates the number of passes a test has completed. The total error count component (Errors) indicates the total number of errors found during the current test(s) executions. The pass and error counts are in decimal.

Control Buttons

Use the control buttons to start testing (Go) and stop testing (Halt).

Configuration Information

The configuration information component displays the current MME environment and configuration data (mainframe type; partition where MME is running; and number of sections, subsections, and banks). The System Configuration Environment (SCE) provides this information.

For example, the following configuration information indicates MME is in environment 0 (Environment ENV0); the mainframe type is a CRAY T94 system (T4); MME is running in partition 0 (P0); and the configuration consists of 16 banks (16B), 8 subsections (8SS), and 8 sections (8S):

```
Environment ENV0 – T4 – P0 16B/8SS/8S
```

The configuration information component displays one of the following mainframe types:

Type	Description
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T4	A mainframe with 4 CPUs
T16	A mainframe with 16 CPUs
T32	A mainframe with 32 CPUs

Status Information

The status information component displays the current state of the MME program, using the following messages:

Message	Description
Active	Test(s) are running.
Inactive	No test(s) are running.
I/O CPU ##	The specified CPU is the I/O CPU.
I/O Disabled	No CPUs are set as the I/O CPU.

Modes

The modes area contains the settings for the Test Mode, Error Mode, and Debug Mode:

- Test Mode can be set to [Automatic], [Manual], or [Compose] to indicate testing in automatic, manual, or compose mode.
- Error Mode can be set to [Stop On Channel Error] to stop testing when a channel error occurs and [Stop On Sequence Error] to stop testing when a sequence error occurs.
- Debug Mode can be set to [Enabled] to enable scope mode. Debug mode can also be set to [Disabled] to enable step mode, which causes one function or utility to execute each time you click (Go).

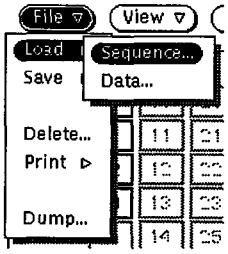
Sequence Scroll Box

The Sequence scroll box shows the function entries for the current sequence. These functions run in the order they are displayed in the scroll box; when you click (Go), function entries at the top of the scroll box run before entries at the bottom.

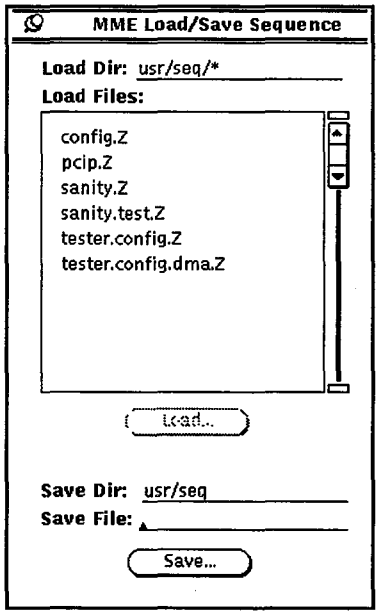
Menu Button Commands

The menu buttons contain commands that manipulate MME environment 0. This subsection describes what each command does and how to use each menu button command. Figure 3 on page 43 shows all available menu button commands for environment 0.

File –> Load –> Sequence



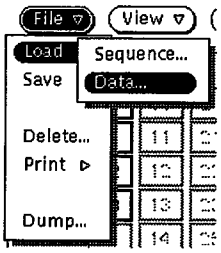
The File –> Load –> Sequence command, as shown at the left, loads previously saved sequences into the MME program (refer to "File –> Save –> Sequence" for more information about saving sequences). Use this command to load specialized sequences you have created or modified for your specific testing needs. This command displays the MME Load/Save Sequence window:



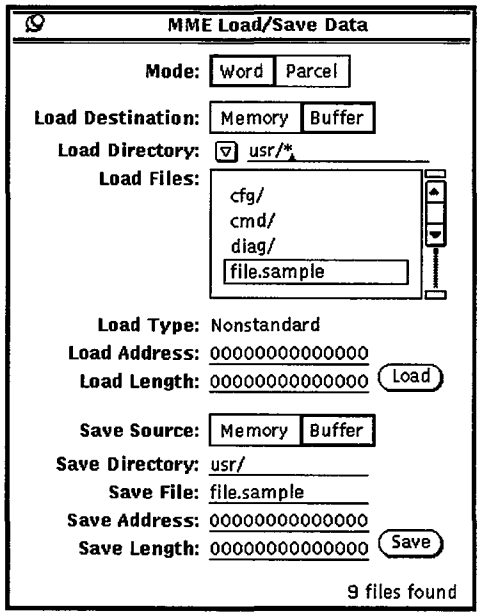
Perform the following procedure to manipulate this window:

1. Change the directory in the Load Dir field, if necessary, and press the Return key.
2. Click on the sequence to load in the Load Files scroll box.
3. Click on Load...; MME loads the specified sequence.

File –> Load –> Data



The File –> Load –> Data command, as shown at the left, loads a data set into the MME buffer or mainframe memory. Use this command to re-create a specific data set for testing without having to manually enter it each time. This command displays the MME Load/Save Data window:



Perform the following procedure to manipulate this window:

1. Select the data Mode. Click on [Word] to use a word load address and length or [Parcel] to use a parcel load address and length. The Load Address and Load Length fields change to the specified format.

2. Specify the Load Destination. Click on [Memory] to load the data into mainframe memory or [Buffer] to load the data into the MME buffer.

3. Change the directory, if necessary, by choosing a new directory from the Load Directory [▽] or by entering the directory in the Load Directory field. The following directories are available in the Load Directory [▽]:

Directory	Description
Release	Menu to access available diagnostic program files from the current offline diagnostic release

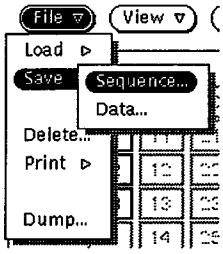
Directory	Description
User	Files you have saved or modified
Alpha	Prereleased diagnostic program files that are being tested and have not been released
Utility –> Release	Utility files from the current offline diagnostic release
Utility –> Alpha	Prereleased utilities that are being tested and have not been released

4. In the Load Files scroll box, click on the data file you want to load. The Load Type and Load Length information is updated, and the (Load) button is activated.

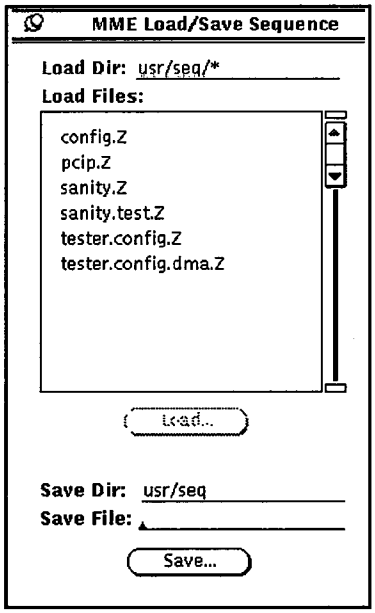
5. In the Load Address field, enter the address at which you want to load data.

6. Click on (Load); MME loads the data at the specified address in mainframe memory or the MME buffer.

File –> Save –> Sequence



The File –> Save –> Sequence command, as shown at the left, saves a sequence of maintenance channel functions and utilities you have created or modified. Use this command to create customized sequences (refer to "File –> Load –> Sequence" earlier in this section for more information about loading sequences). This command displays the MME Load/Save Sequence window:



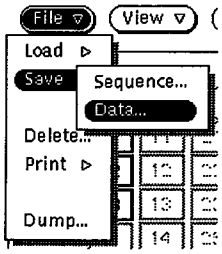
Perform the following procedure to manipulate this window:

1. To change the directory on the maintenance workstation (MWS) where the sequence is saved, specify a different directory in the Save Dir field, and press the Return key.

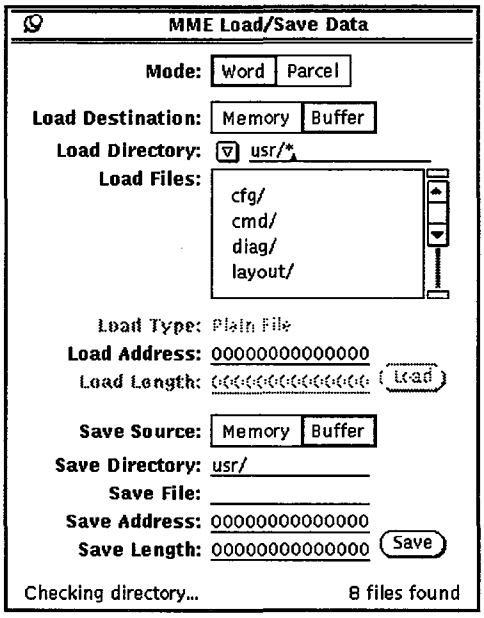
2. In the Save File field, enter the name of the file you want to use, and press the Return key.

3. Click on Save... or press the Return key; MME saves the sequence in the specified file.

File –> Save –> Data



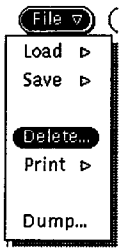
The File –> Save –> Data command, as shown at the left, saves a mainframe memory or an MME buffer data set so you can reuse it. Use this command to recreate a specific data set for testing. This command displays the MME Load/Save Data window:



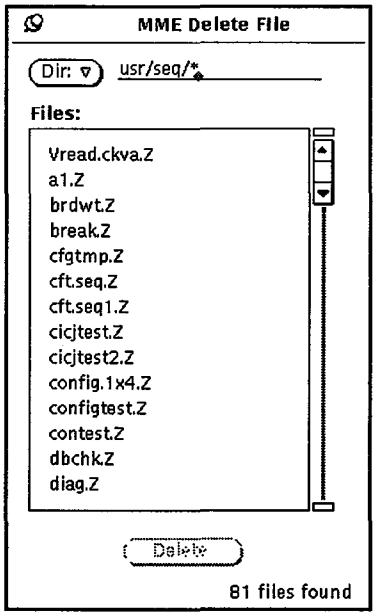
Perform the following procedure to manipulate this window:

1. Click on Mode: [Word] to use a word save address and length or Mode: [Parcel] to use a parcel save address and length. The Save Address and Save Length fields change to the specified format.
2. Click on Save Source: [Memory] to save mainframe memory data, or click on Save Source: [Buffer] to save MME buffer data.
3. To change the directory on the MWS where the data is saved, specify a different directory in the Save Dir field, and press the Return key.
4. In the Save File field, enter the name of the file you want to use.
5. In the Save Address field, enter the starting address of the data block you want to save.
6. In the Save Length field, enter the length of the data block you want to save.
7. Click on (Save); MME saves the specified data set.

File –> Delete



The File –> Delete command, as shown at the left, deletes files you no longer need. Use this command to delete unwanted files from the MME user directories stored on the MWS. This command displays the MME Delete File window:



Perform the following procedure to manipulate this window:

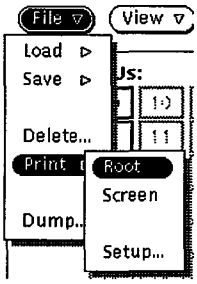
1. Change the directory, if necessary, by:

   - Entering the directory in the Dir: field and pressing the Return key, or
   - Choosing the directory from the Dir: button. The following user directories are available:

Directory	Description
usr/*	All user directories
usr/cmd	User command buffers
usr/tst	User test lists
usr/lst	User listings
usr/seq	User sequences

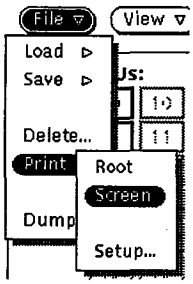
2. Click on the file you want to delete.
3. Click on Delete; MME deletes the file.

File –> Print –> Root



The File –> Print –> Root command, as shown at the left, prints an image of everything contained in the root window, including the MME base window.

File –> Print –> Screen

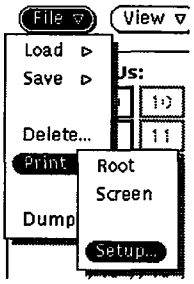


The File –> Print –> Screen command, as shown at the left, prints an image of a window or an icon.

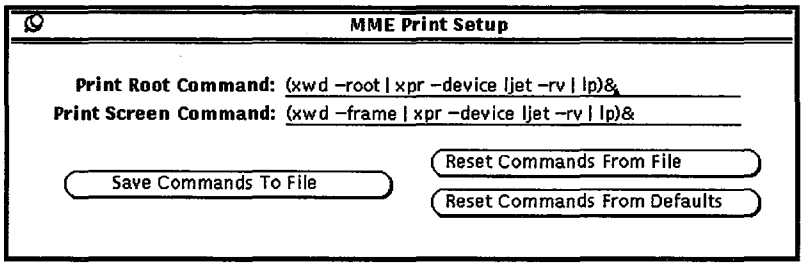
When you choose this command, the cursor becomes a plus symbol. Move the cursor to the window or icon to print, and click any mouse button.

NOTE: This command does not print an image of the MME base window. To print an image of the MME base window, use the File –> Print –> Root command.

File –> Print –> Setup



The File –> Print –> Setup command, as shown at the left, enables you to edit the commands that control how MME prints data for the File –> Print –> Root and File –> Print –> Screen commands. This command displays the MME Print Setup window:

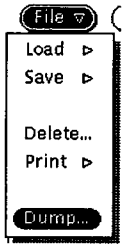


Modify the commands in the Print Root Command and Print Screen Command fields to change how MME prints. For more information about the UNIX `xwd`, `xpr`, and `lp` commands used in the print processes, refer to the UNIX online manual (man) pages (enter **`man xwd`**, **`man xpr`**, or **`man lp`** at a UNIX command prompt).

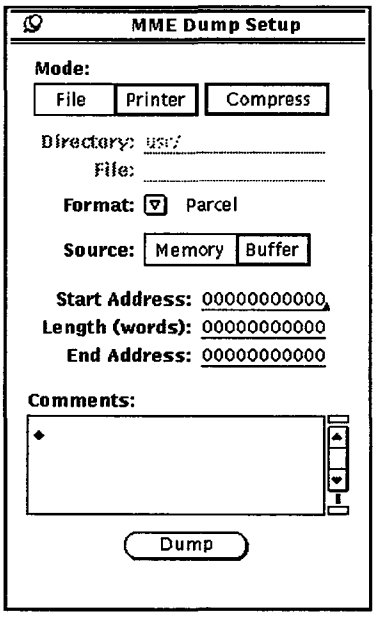
Use the buttons in the MME Print Setup window to:

- Save the current printer setup commands for later use (Save Commands To File).
- Load the printer setup commands you saved previously (Reset Commands From File).
- Load the default printer setup commands that the MME program provides (Reset Commands From Defaults).

File –> Dump



The File –> Dump command, as shown at the left, sends a copy of MME buffer or mainframe memory data to a file or printer. Use this command to create a permanent record of the data so you can analyze it later. This command displays the MME Dump Setup window:



Perform the following procedure to manipulate the MME Dump Setup window:

1. Specify the Mode. Click on [File] to output the data to a file, or click on [Printer] to output the data to the printer.

Click on [Compress] to compress the output of the File –> Dump command. This reduces the size of the data listing by replacing repeated lines with a statement similar to Last line repeated 077 (63) times.

2. If data is being dumped to a file, specify the directory in the Directory field and the file in the File field.

3. Choose the format in which you want the data displayed from the Format [▽]. The following formats are available:

Format	Description
Nibble	Nibble data
Byte	Byte data
Parcel	Parcel data
Halfword	Halfword data
Word	Word data
Hexadecimal	Hexadecimal data
Address	Address data
Text	Text data
Exchange (NI)	Exchange data (not implemented)
Instruction	Instruction data

4. Specify the Source. Click on [Memory] to dump mainframe memory data or [Buffer] to dump MME buffer data.

5. Specify the data block you want to dump by completing any two of the following actions (the third field is automatically set using data from the other two fields):

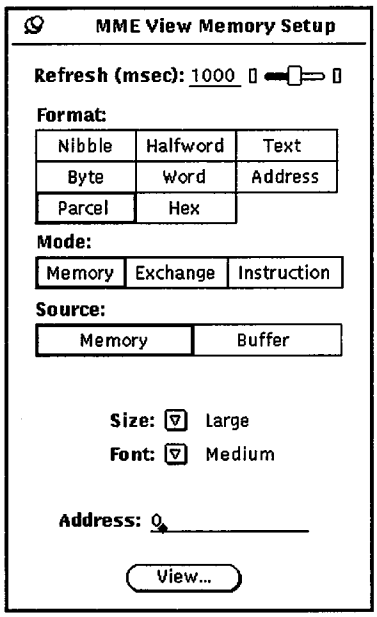
   - Enter the starting address of the data block you want to dump in the Start Address field, and press return.
   - Enter the length (in words) of the data block in the Length (words) field, and press return.
   - Enter the ending address of the data block you want to dump in the End Address field, and press return.

6. Click on the Comments scroll box and type any comments you want to include with the data. For example, you might specify that the data is the result of a specific test or that it was created on a specific date.

7. Click on (Dump); MME sends the specified data to the printer or file.

View –> Memory

The View –> Memory command, as shown at the left, displays mainframe memory in a separate window. Use this command to verify the contents of specific mainframe memory locations or to change the data stored in mainframe memory. This command displays the MME View Memory Setup window:



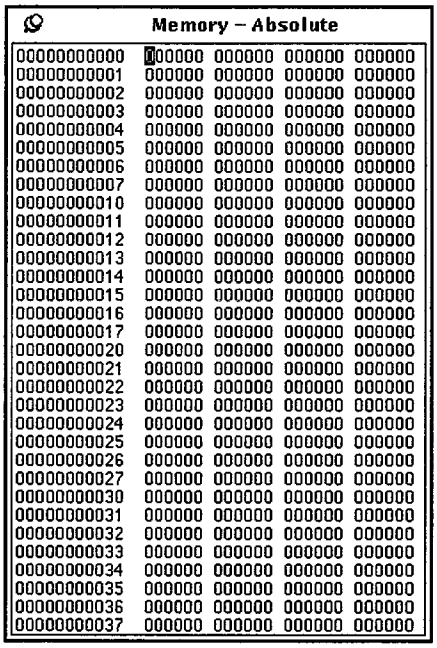
Perform the following procedure to manipulate this window:

1. Set the interval at which memory windows are updated by moving the Refresh (msec) slider or by entering a value in the Refresh (msec) field and pressing the Return key. (Setting this value too low can monopolize the workstation CPU and reduce system performance.)

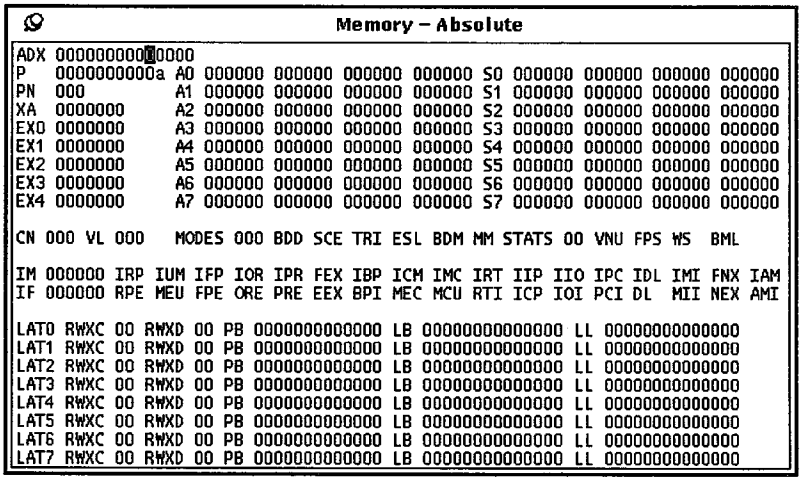
2. Click on a Format [Nibble, Halfword, Text, Byte, Word, Address, Parcel, or Hex (hexadecimal)] to specify the format in which you want the data displayed.

3. Click on a Mode (Memory, Exchange, or Instruction) to specify the way you want the data displayed.

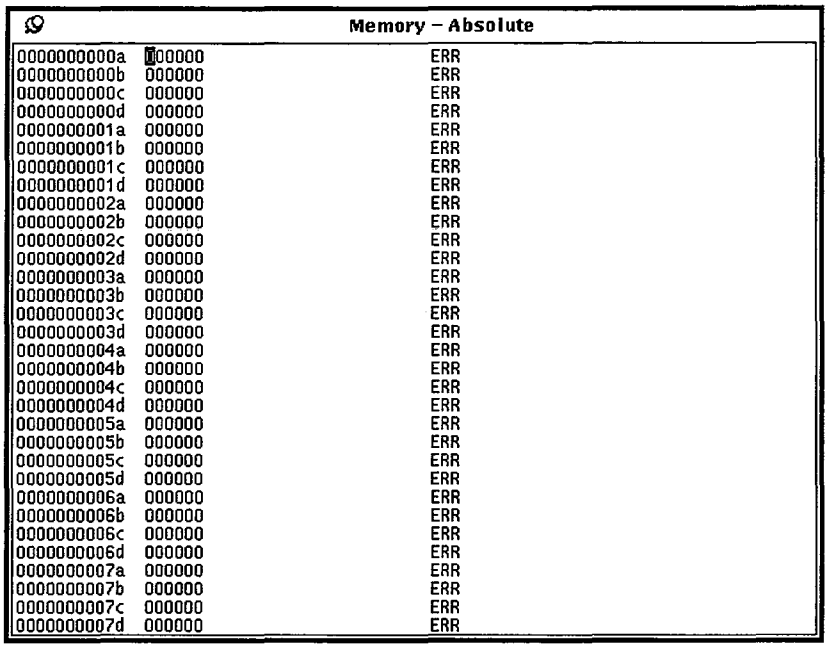
Memory mode (Memory) displays normal memory:



Exchange mode (Exchange) displays exchange information:



Instruction mode (Instruction) decodes the memory into instructions.



4. Choose the size of the display window from the Size ▽. This affects only the memory and instruction mode windows. The following window sizes are available:

Size	Description
Small	The window displays 10_8 words.
Medium	The window displays 20_8 words.
Large	The window displays 40_8 words.
X–Large	The window displays 100_8 words.

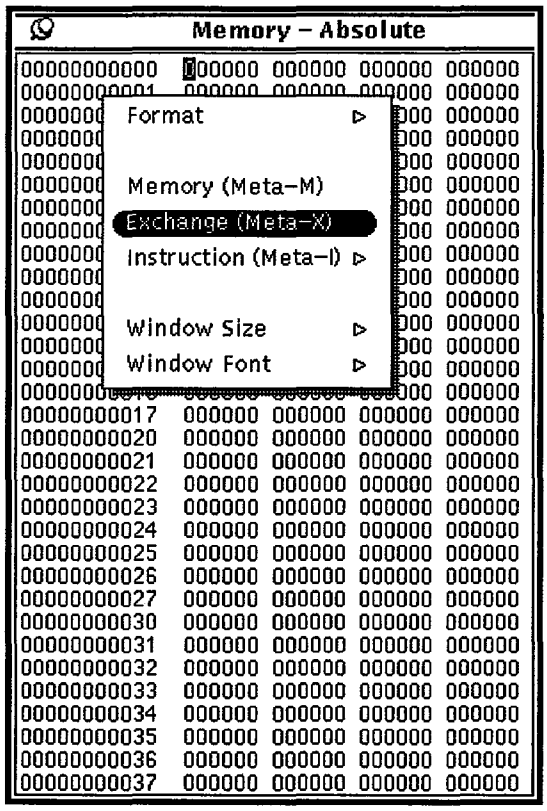
5. Choose the font size you want to display in the window from the Font ▽. The following font sizes are available:

Size	Description
Small	The font size is small.
Medium	The font size is medium.
Large	The font size is large.
X–Large	The font size is extra large.

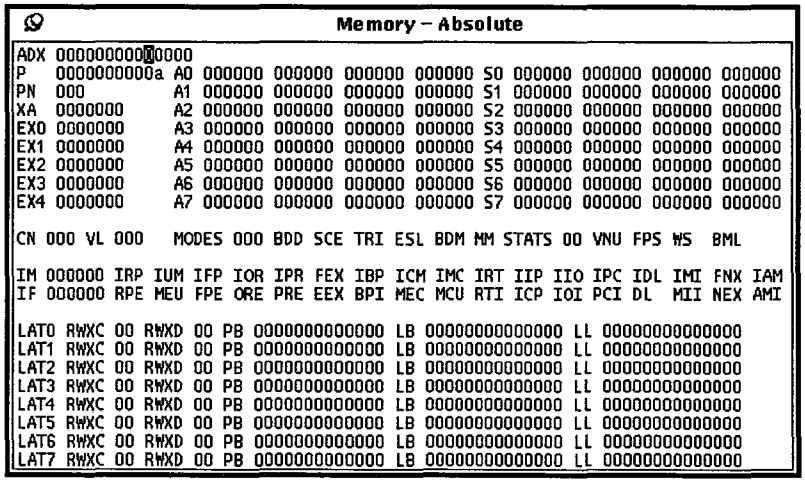
6. Change the starting address, if necessary, by double clicking on the Address field and typing a new value.

7. Click on View... . MME displays a Memory – Absolute window for the specified memory location.

If you want to change the Format, Memory, Exchange, Instruction, Window Size, or Window Font from the Memory – Absolute window, press the MENU mouse button and choose the menu item:



For example, the following Memory – Absolute window appears if you choose the Exchange (Meta–X) format menu option:



You can also change the window format (Format), data type (Memory or Instruction), window size (Window Size), or window font (Window Font) from this menu.

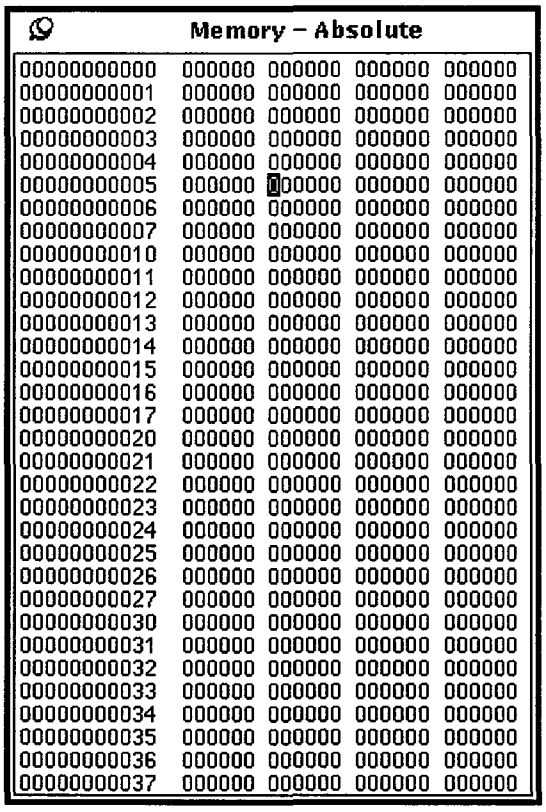
In this example, instead of using the MENU mouse button, you may also use the diamond-shaped meta key (◇ or ◆, depending on the type of keyboard you have) with one of several keyboard shortcuts. The following key combinations are shortcuts to the menu options:

Key Sequence	Function
Meta-a	Switches the display to address format
Meta-n	Switches the display to nibble format
Meta-b	Switches the display to byte format
Meta-p	Switches the display to parcel format
Meta-h	Switches the display to halfword format
Meta-w	Switches the display to word format
Meta-e	Switches the display to hexadecimal format
Meta-t	Switches the display to text format
Meta-i	Switches the display to instruction mode
Meta-x	Switches the display to exchange mode
Meta-m	Switches the display to memory mode

Changing Memory

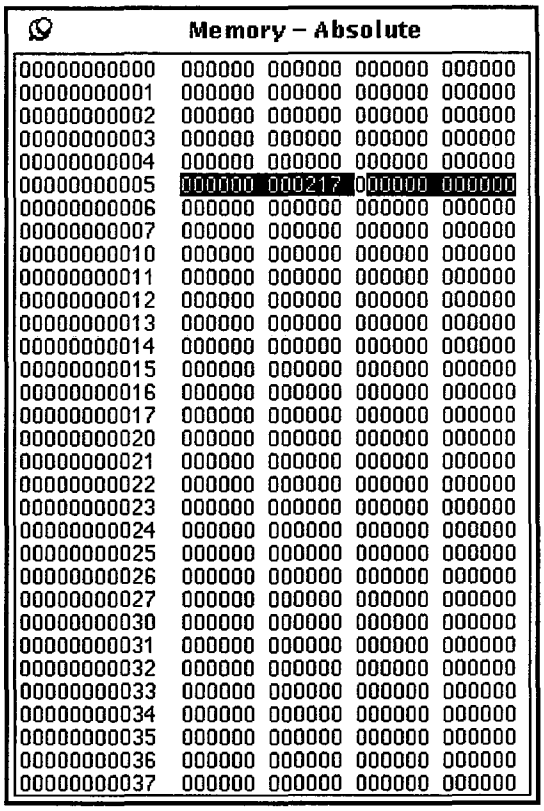
Perform the following procedure from the Memory – Absolute window to change data stored in mainframe memory:

1. Use the arrow keys to move the cursor to the location in memory you want to change, or click on the location. In this example, parcel 00000000005b was selected:

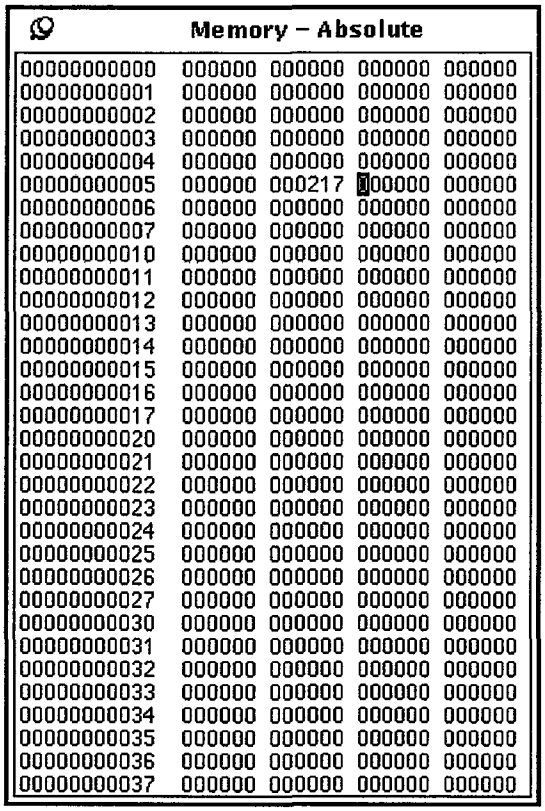


2. Type the new value you want to place in the memory location. The entire word is highlighted, which enables you to change it. Use the arrow keys to move through the highlighted word.

   In the following example, 000217 was typed at memory location 00000000005b:



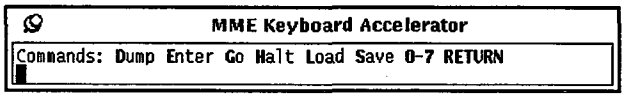
3. Press and release the Return key to update memory. This example shows memory location 00000000005b changed from 000000 to 000217:



4. Repeat Steps 1 through 3 to change all desired memory locations.

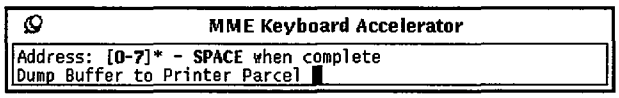
Using the Keyboard Accelerator

The keyboard accelerator offers another way to change memory and includes several other features. To access the keyboard accelerator, move the cursor inside a memory (or buffer) window and press the spacebar. The MME Keyboard Accelerator window appears:



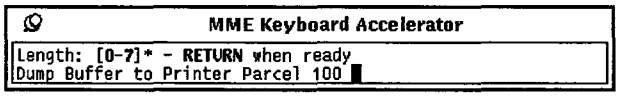
Dump Command

The first command in the MME Keyboard Accelerator window is the Dump command. The Dump command dumps data to a file or the printer. When you type the letter D in the MME Keyboard Accelerator window, the window changes to:

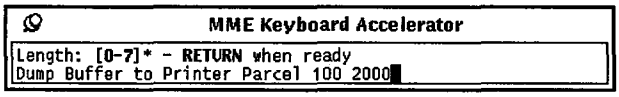


NOTE: By default, the Dump command dumps buffer data to the printer. To change this, press the backspace key several times to delete the default selections. Then, type the menu options you want.

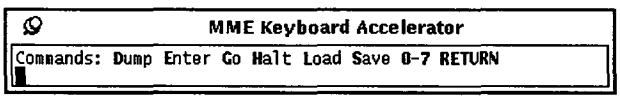
Enter the starting address of the data block you want to dump and press the spacebar; for example, if you wanted to dump the data block starting at 100, you would enter 100:



Then, enter the length of the data block you want to dump; for example, if you wanted to dump a block of 2000_8 parcels, you would enter 2000:

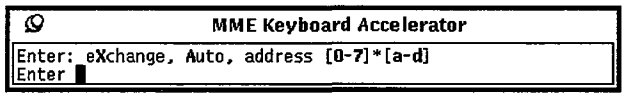


Finally, press the Return key to dump the data. The window displays the main menu again:



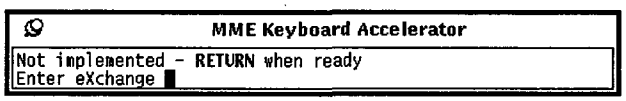
Enter Command

The second command in the MME Keyboard Accelerator window is the Enter command. The Enter command puts data into memory. When you type the letter E in the MME Keyboard Accelerator window, the window changes to:



This window gives you three command options:

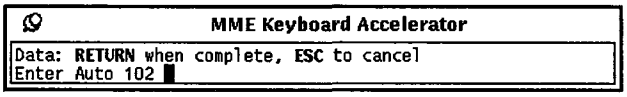
- Type the letter X in the Enter menu to enter exchange data; *this option is not implemented yet*:



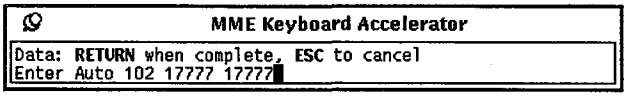
- Type the letter A in the Enter menu to start the automatic increment mode. Automatic increment mode enables you to enter data into consecutive memory locations without having to manually enter each memory address.

  For example, if you wanted to enter data in consecutive memory locations starting at address 102, you would perform the following steps:

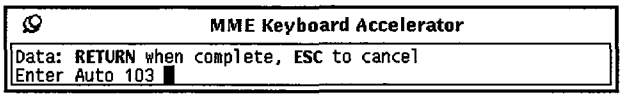
  1. Enter the address at which you want to enter the data and press return. For this example, you would enter 102:



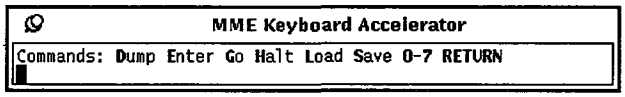
  2. Enter the first data word and press return. For this example, you would enter 17777 177777:



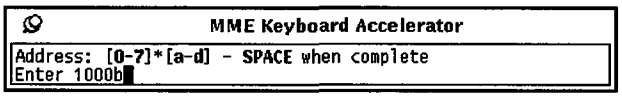
The window advances to the next memory location:



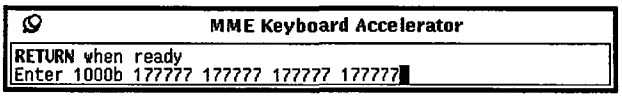
3. Enter the next data word and press return. Repeat this process to enter all of your data. When you have finished entering data, press the ESC key and automatic increment mode halts. The MME Keyboard Accelerator window returns to the main menu:



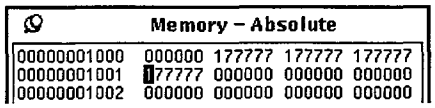
- Type a number-letter combination in the Enter menu to enter a parcel address which indicates the memory address you want to change. For example, if you wanted to change parcel 1000b, you would enter 1000b:



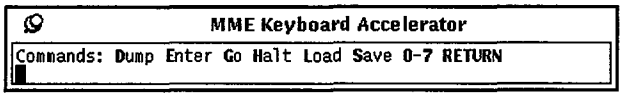
Then, enter the data you want to write to memory; for example, if you wanted to enter 177777 177777 177777 177777, you would enter 177777 177777 177777 177777:



Press return to write the data to memory:

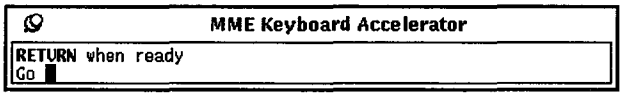


The window displays the main menu again:



Go Command

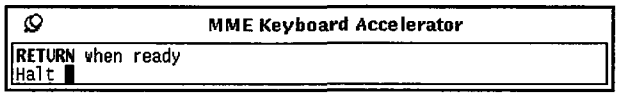
The third command in the MME Keyboard Accelerator window is the Go command. The Go command runs the selected test sequences. When you type the letter G in the MME Keyboard Accelerator window, the window changes to:



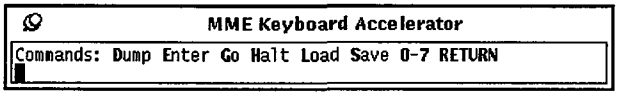
Press return to start the selected test sequences. The window displays the main menu again:

Halt Command

The fourth command in the MME Keyboard Accelerator window is the Halt command. The Halt command halts the current running test sequences. When you type the letter H in the MME Keyboard Accelerator window, the window changes to:

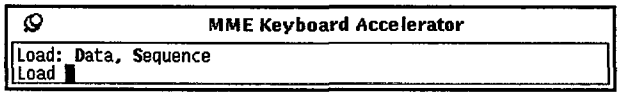


Press return to halt the test sequences. The window displays the main menu again:



Load Command

The fifth command in the MME Keyboard Accelerator window is the Load command. The Load command loads a data set or sequence. When you type the letter L in the MME Keyboard Accelerator window, the window changes to:

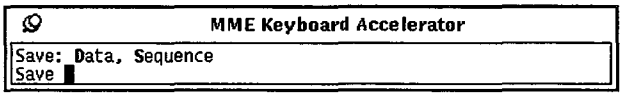


This window gives you two options:

- Type the letter D in the Load menu to load a data set; *this command is not implemented yet.*
- Type the letter S in the Load menu to load a sequence; *this command is not implemented yet.*

Save Command

The sixth command in the MME Keyboard Accelerator window is the Save command. The Save command saves a data set or sequence. When you type the letter S in the MME Keyboard Accelerator window, the window changes to:



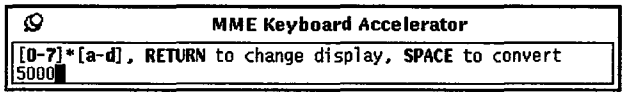
This window gives you two options:

- Type the letter D in the Save menu to save the current data set; *this command is not implemented yet.*
- Type the letter S in the Save menu to save the current sequence; *this command is not implemented yet.*

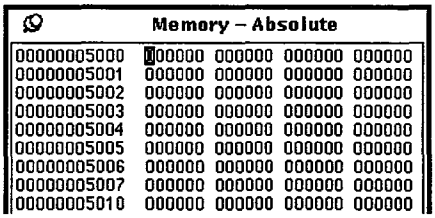
Numeric Commands

Two options are available when you type a number in the MME Keyboard Accelerator window: you can display memory starting at the number, or you can convert the number from octal to parcel format or from parcel format to octal.

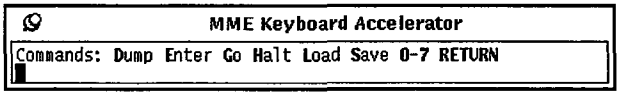
- To display a specific memory location, type the location in the MME Keyboard Accelerator window and press the Return key. For example, to view memory location 5000, enter 5000:



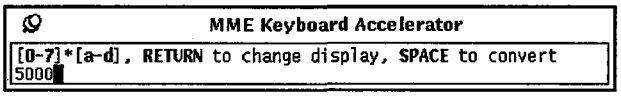
The Memory — Absolute window displays memory at location 5000:



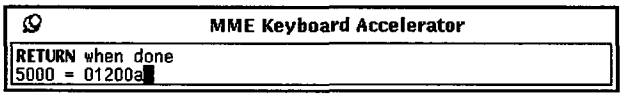
The window displays the main menu again:



- To convert a number from octal to parcel format or from parcel format to octal, type the number and press the spacebar. For example, to convert octal value 5000 to parcel format, enter 5000 and press the spacebar:



The parcel format equivalent is displayed:

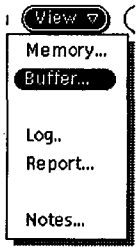


Press the Return key, and the window displays the main menu again:

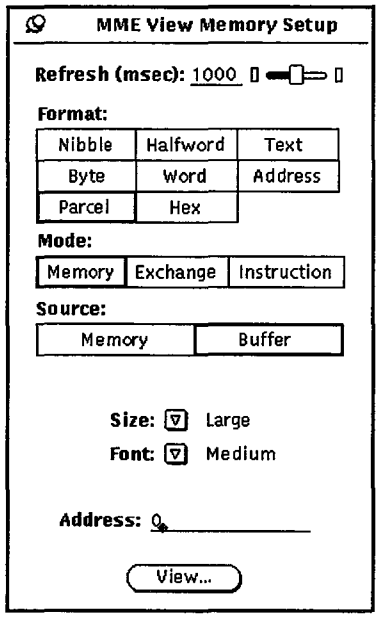
Return

To close the MME Keyboard Accelerator window, press the Return key while the cursor is in the window.

View –> Buffer

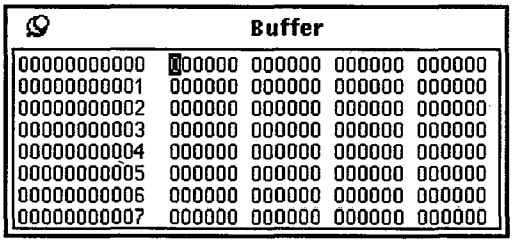


The View –> Buffer command, as shown at the left, displays MME buffer data in a separate window. Use this command to verify the contents of specific MME buffer memory locations or to change the data stored in the MME buffer. This command displays the MME View Memory Setup window:



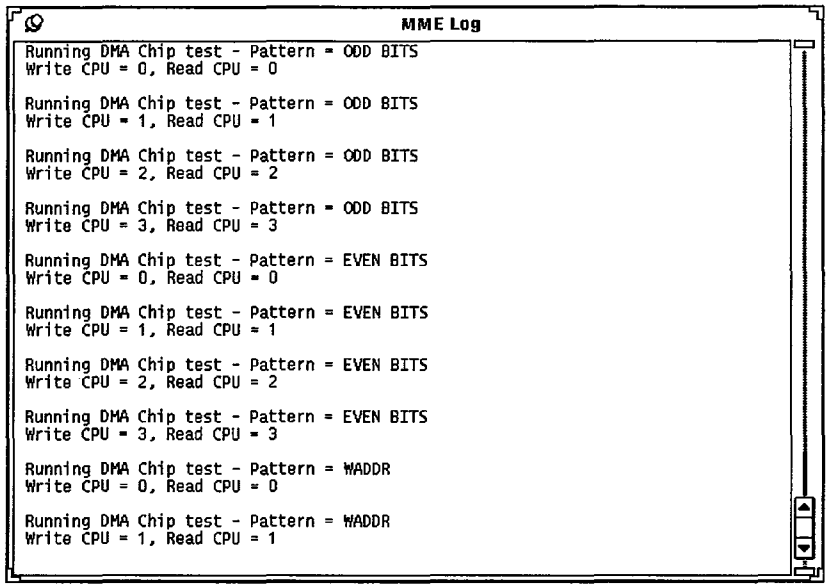
This is the same window that appears when you choose **View –> Memory,** except [Buffer] is set as the Source, indicating MME will display MME buffer memory in a window. For more information about manipulating the MME View Memory Setup window, changing data stored in memory, and using the keyboard accelerator; refer to "View –> Memory" earlier in this section.

NOTE: When you are viewing MME buffer data, the window header displays Buffer instead of Memory – Absolute:



View -> Log

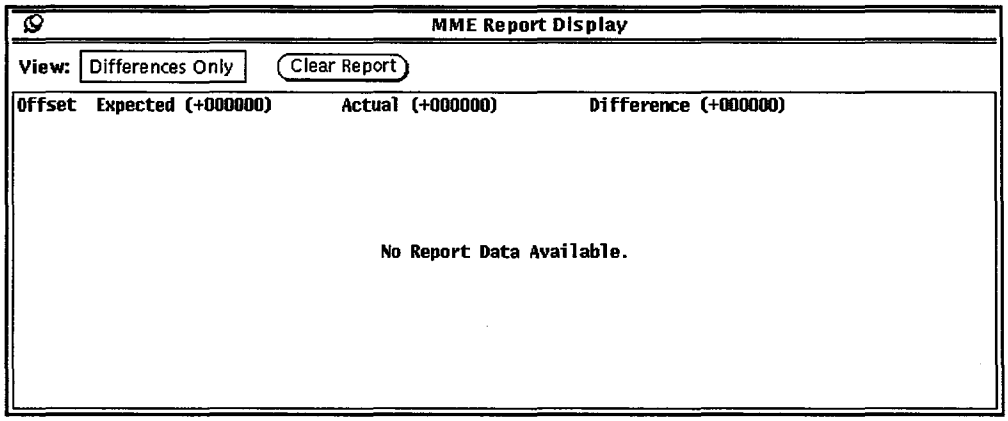
The View -> Log command, as shown at the left, displays the MME Log window:



Use this command to view any errors that occur while a test is running.

View -> Report

The View -> Report command, as shown at the left, displays the error report information in the MME Report Display window. Use this command to view the error report generated by the memory or instruction buffer tests. This command displays the MME Report Display window:



This window displays the Expected, Actual, and Difference values for the contents of memory where differences are detected. These values are offset into the MME buffer, indicated by the value in parentheses.

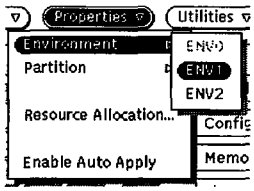
Use the Differences Only setting and Clear Report button in this window to:

- Display only the addresses where differences occurred (Differences Only).
- Clear the MME Report Display window of data (Clear Report).

View –> Notes

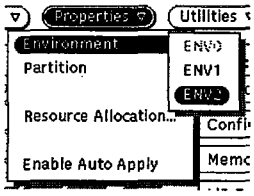
The View –> Notes command, as shown at the left, displays the MME release notes in a separate window. Use this window to read about any changes to MME for the current offline diagnostic release.

Properties –> Environment –> ENV1



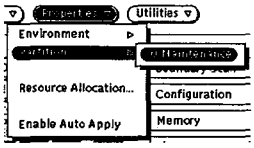
The Properties –> Environment –> ENV1 command, as shown at the left, switches MME to environment 1. Use this command to switch to single-control-point testing. Refer to the "Environments 1 and 2" section later in this document for more information about environment 1.

Properties –> Environment –> ENV2



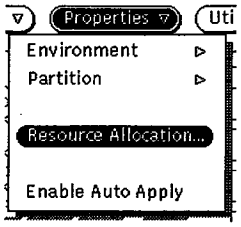
The Properties –> Environment –> ENV2 command, as shown at the left, switches MME to environment 2. Use this command to switch to multiple-control-point testing. Refer to the "Environments 1 and 2" section later in this document for more information about environment 2.

Properties –> Partition



The Properties –> Partition command, as shown at the left, selects the logical partition in which MME will run. Use this command to select the partition you want to troubleshoot. MME scans the current configuration for available partitions and allows you to select only partitions that allow maintenance or concurrent maintenance. MME displays the available partitions in a menu attached to the Properties –> Partition menu command.

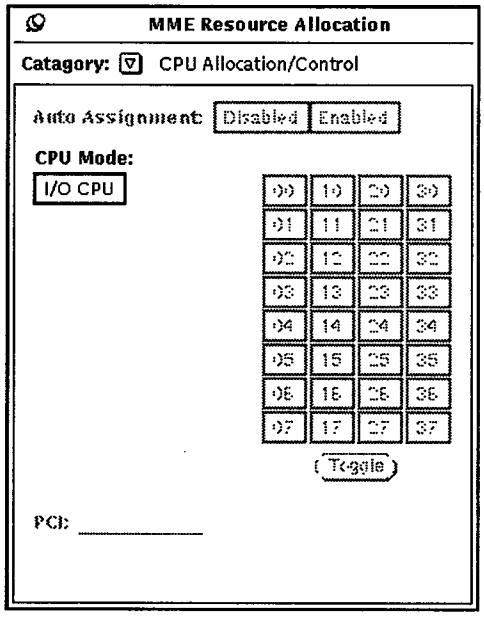
Properties –> Resource Allocation



The Properties –> Resource Allocation command, as shown at the left, changes the way MME performs. Use this command to specify which CPU is used to write and read memory and which debug level MME uses. This command displays the MME Resource Allocation window; choose the category you want to modify from the Category ▽.

Specifying which CPU Writes and Reads Memory

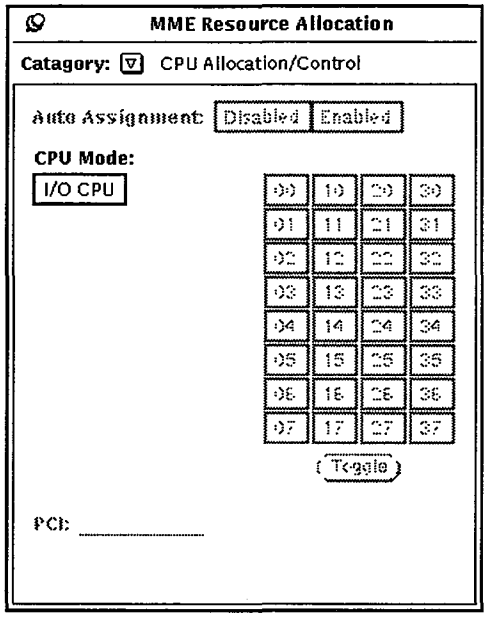
To specify which CPU writes to and reads from mainframe memory, choose **CPU Allocation/Control** from the Category: ▽. The MME Resource Allocation window changes to:



Click on the CPU you want to write to and read from memory.

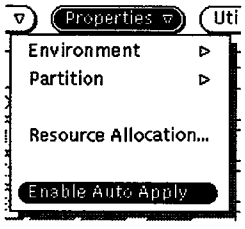
Setting the Debug Level that MME Uses

To specify which debug level MME uses, choose **Miscellaneous** from the Category: ▽. The MME Resource Allocation window changes to:



The debug level specifies the amount of output that MME returns to the standard output window from which you started MME. Set the value to 0, 1, or 2, where 0 causes MME to display the least information and 2 causes MME to display the most information. Enter the number in the Debug Level field and press return, or click on the arrows to change the number in the field.

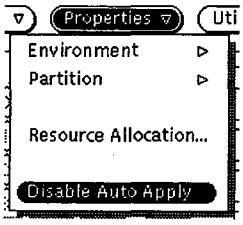
Properties –> Enable Auto Apply



The Properties –> Enable Auto Apply command, as shown at the left, enables automatic application of function or utility changes in compose mode.

When the automatic apply function is enabled, you do not need to click on (Apply) in the MME Compose Sequence Entry window to apply any changes you make to a function or utility. Instead, move the cursor to the MME base window or to the menu bar in the MME Compose Sequence Entry window to automatically apply the changes.

Properties –> Disable Auto Apply



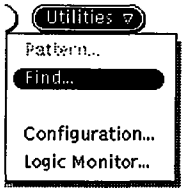
The Properties –> Disable Auto Apply command, as shown at the left, disables automatic application of function or utility changes in compose mode.

When the automatic apply function is disabled, you must click on (Apply) in the MME Compose Sequence Entry window to apply any changes you make to a function or utility.

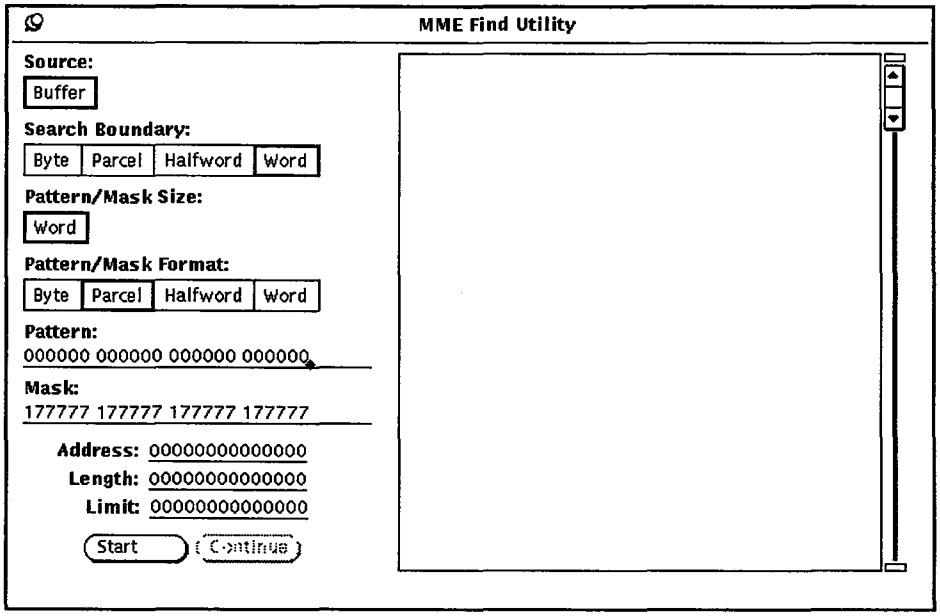
Utilities –> Pattern

This feature has not been implemented yet.

Utilities –> Find



The Utilities –> Find command, as shown at the left, searches MME buffer memory for a data pattern. Use this command to locate all occurrences of a data pattern within a block of memory. This command displays the MME Find Utility window:



The left side of the window contains the settings that specify the pattern to search for and the memory block to search. The right side contains a scroll box that displays the memory locations that have the matching data pattern. The scroll box displays up to 256 entries; if more than 256 matches are found, the message 256 matches, additional occurrences known to exist is displayed in the lower-left corner of the window. To view the additional occurrences, click on the (Continue) button.

Perform the following procedure to manipulate this window.

NOTE: Source defaults to [Buffer] because the Utilities -> Find command in environment 0 searches MME buffer memory.

1. Specify the Search Boundary you want to use. The search boundary indicates the stride used for checking memory.

   Click on [Byte] to check memory in byte increments, click on [Parcel] to check memory in parcel increments, click on [Halfword] to check memory in halfword increments, or click on [Word] to check memory in word increments.

2. Specify the Pattern/Mask Size. The size indicates the size of the data pattern that is searched for and the mask that is used.

   The settings available depend on the Search Boundary setting. Click on [Byte], [Parcel], [Halfword], or [Word] to select the pattern and mask size.

3. Specify the Pattern/Mask Format. The format indicates the type of data pattern that is searched for and mask that is used.

   The settings available depend on the Pattern/Mask Size setting. Click on [Byte], [Parcel], [Halfword], or [Word] to select the pattern and mask format.

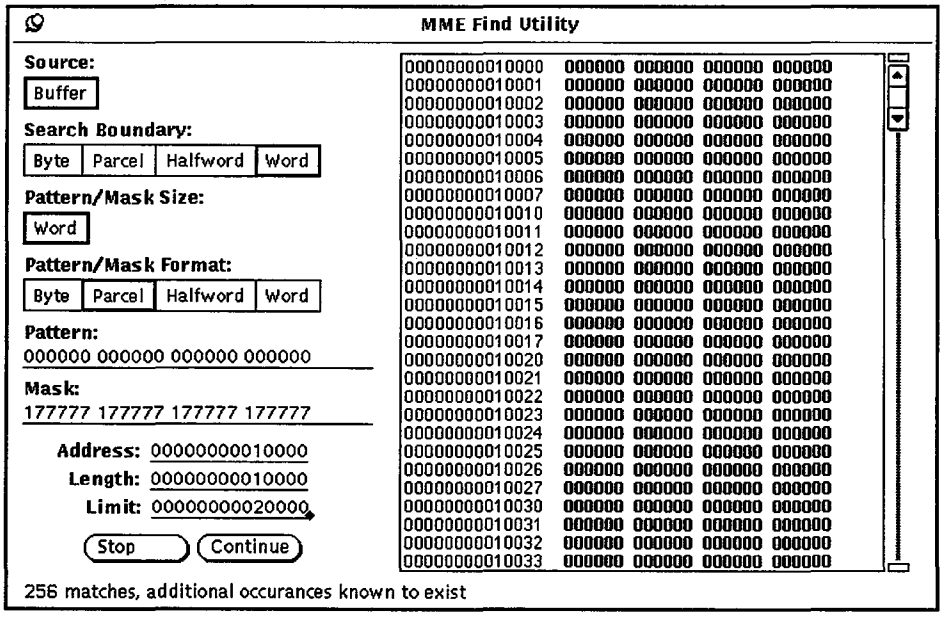
4. Specify the data pattern you want to search for in the Pattern field.

5. Specify the mask you want to use in the Mask field. The mask specifies which bits to compare. If a bit in the mask is set to 0, the bit position is not compared; if a bit in the mask is set to 1, the bit position is compared.

6. Specify the memory block you want to search (performing any two of the following actions automatically updates the third field):

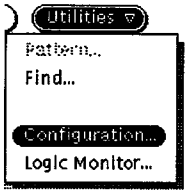
   - Enter the first address of the memory block in the Address field, and press return.
   - Enter the length of the memory block in the Length field, and press return.
   - Enter the last address of the memory block in the Limit field, and press return.

7. Click on (Start) to start the search. The (Start) button changes to (Stop), and MME updates the MME Find Utility window.



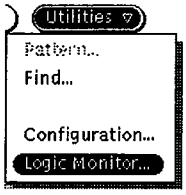
Click on (Stop) to stop searching for the pattern; click on (Continue) to see the next set of entries if more than 256 occurrences exist.

Utilities –> Configuration



The Utilities –> Configuration command, as shown at the left, starts the System Configuration Environment (SCE). Use this application to configure the mainframe. For more information about SCE, refer to the *System Configuration Environment* document, publication number HDM-xxx-0.

Utilities –> Logic Monitor



The Utilities –> Configuration command, as shown at the left, starts the Logic Monitor Environment (LME). For more information about LME, refer to the *CRAY T90 Series LME User Guide* document, publication number HDM-xxx-0.

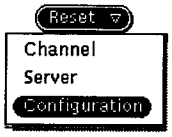
Reset –> Channel

The Reset –> Channel command, as shown at the left, resets the FY driver.

Reset –> Server

The Reset –> Sever command, as shown at the left, resets the server. This halts any sequence(s) that MME is executing.

Reset –> Configuration



The Reset –> Configuration command, as shown at the left, causes SCE to reapply the configuration.

NOTE: This command does not work if any partitions have an OS owner. For more information about partition ownership, refer to the *System Configuration Environment* document, publication number HDM-xxx-0.

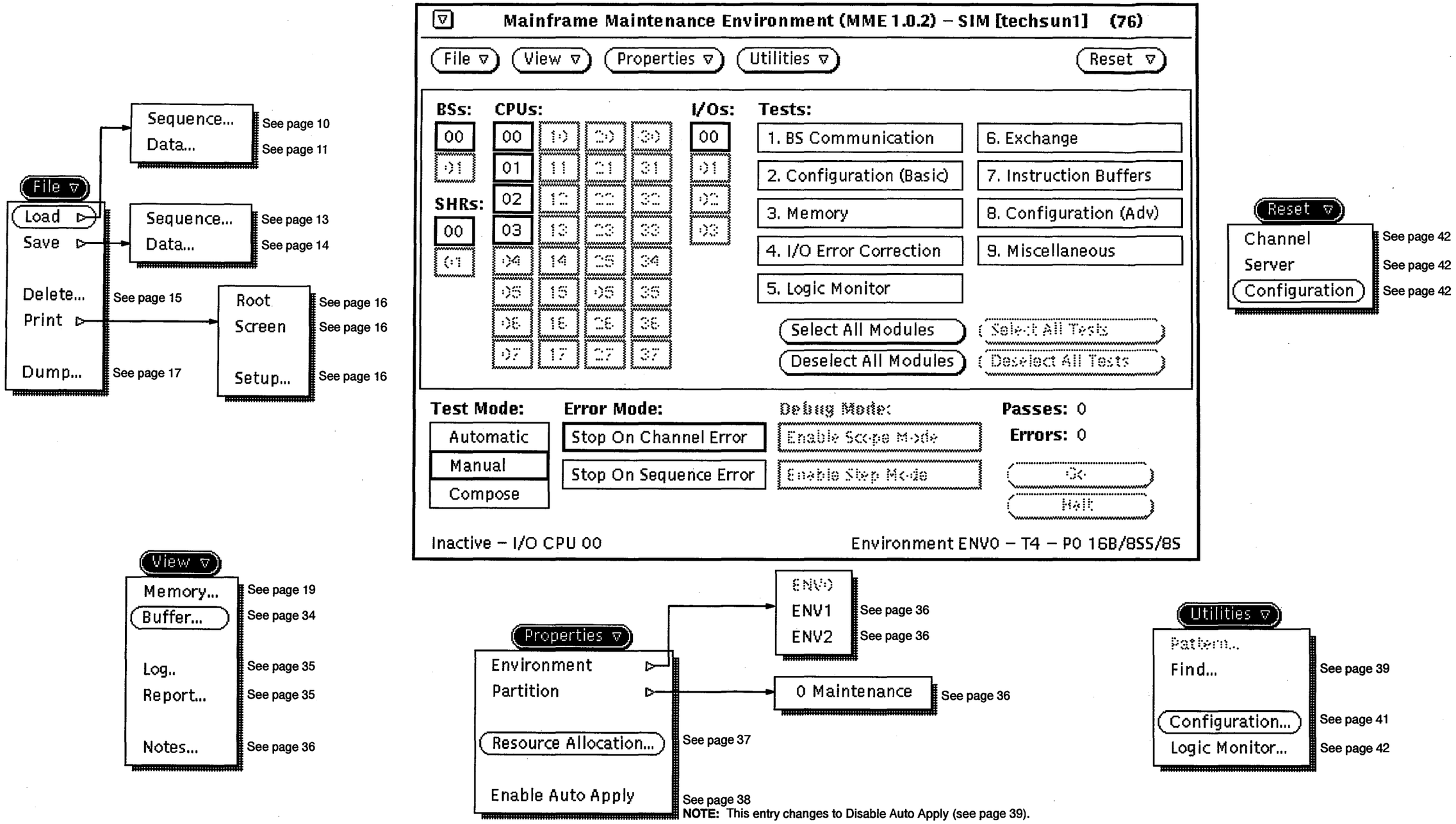


Figure 3. Environment 0 Menu Quick Reference

ENVIRONMENTS 1 AND 2

This section describes the interface components and menu button commands for MME environments 1 and 2.

Interface Components

The environment 1 and 2 interfaces share an identical interface that is located in the base window. Use this interface to control testing in environment 1 and environment 2. Figure 4 shows the common interface. The paragraphs that follow the figure describe the components of the interface.

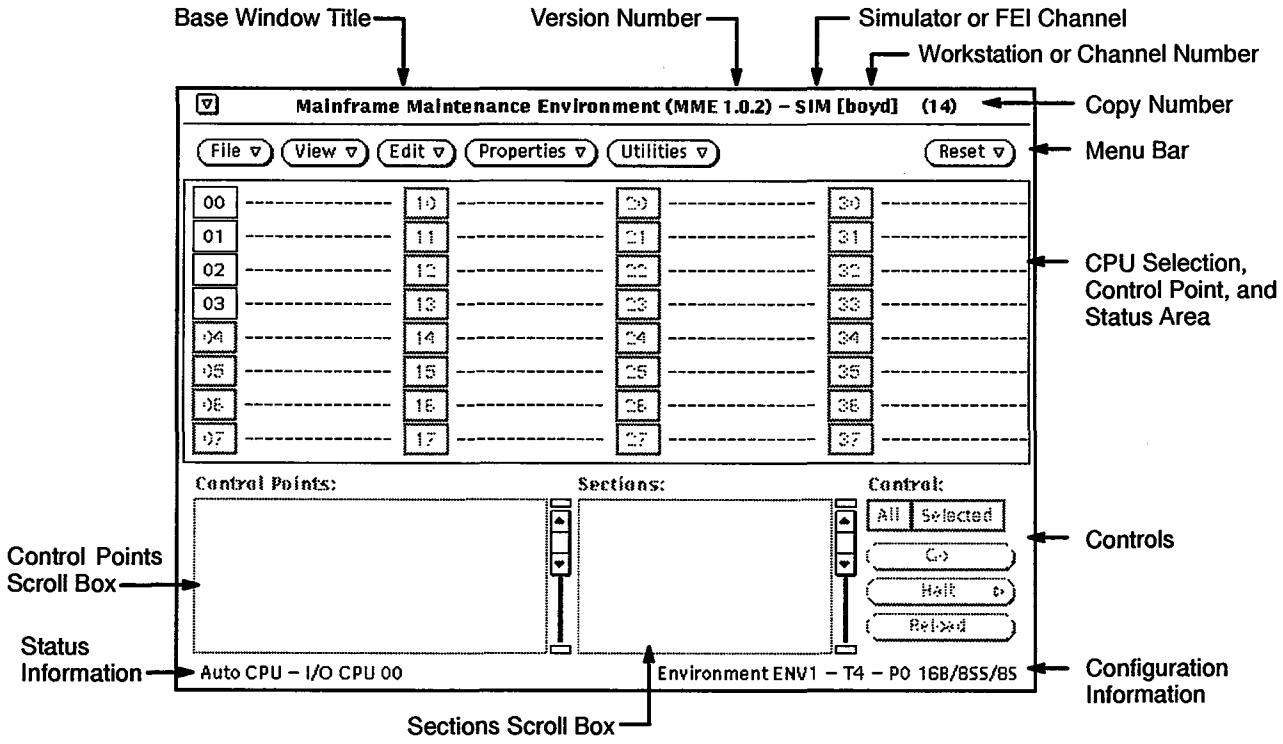


Figure 4. Environments 1 and 2 Interface Components

Base Window Title

The base window title displays the name of the program: Mainframe Maintenance Environment.

Version Number

The version number indicates the version of MME you are using.

Simulator or FEI Channel

The simulator or front-end interface (FEI) channel indicator shows MME is running with the simulator (indicated by SIM) or an FEI channel (indicated by FEI CHN 0 for channel 0, FEI CHN 1 for channel 1, or FEI CHN 2 for channel 2).

Workstation Name or Channel Number

The workstation or channel number indicator lists the name of the workstation or the channel number on which MME is running.

Copy Number

The copy number indicates the copy of MME you are using. To set the copy number, start MME with the `-copy` option. If you start MME with the default copy number of 0, the MME base window does not display a copy number. For more information about starting MME with the `-copy` option, refer to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.

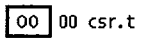
Menu Bar

The menu bar contains six menu buttons: File ▽, View ▽, Edit ▽, Properties ▽, Utilities ▽, and Reset ▽. For descriptions of the commands accessible from these menu buttons, refer to "Menu Button Commands" later in this section.

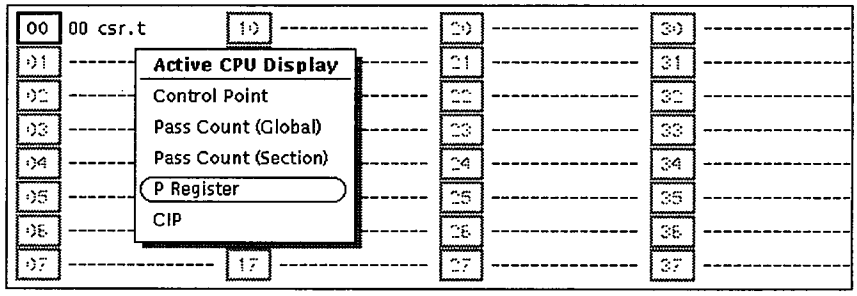
CPU Selection, Control Point, and Status Area

The CPU selection, control point, and status area is where you assign CPU(s) to control points and where MME displays status information for running control points.

To assign CPUs to the current control point, click on any of the CPU settings (00 through the available number of CPUs in the mainframe). The CPU setting is highlighted and the control point name is displayed next to the CPU setting:



MME displays several types of status information for the CPUs; to change the status information displayed, press the MENU mouse button in this area. The following menu appears:



The entries in this menu enable you to choose which status information is displayed:

Entry	Description
Control	Displays the control point name
Pass Count (Global)	Displays the pass count for all sections
Pass Count (Section)	Displays the pass count for the current section
P Register	Displays the current P register value
CIP	Displays the current instruction parcel (CIP) register value

The number shown to the left of the control point name is the control point copy number when several CPUs are assigned to a control point. A plus (+) next to the copy number indicates the master CPU for a group of CPUs assigned to a multiple-CPU control point. The master CPU is the first CPU assigned to the control point.

MME also automatically displays status information for executing control points. This information includes interrupt flags (in environments 1 and 2), which are indicated by IFLAG, as shown in Figure 5, and controller status messages (in environment 2 only), which are indicated by CSTAT, as shown in Figure 6).

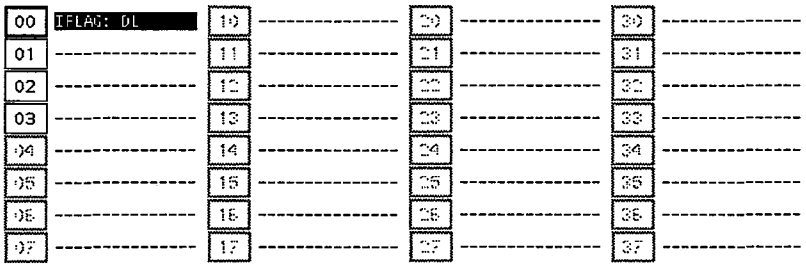


Figure 5. Example Interrupt Flag

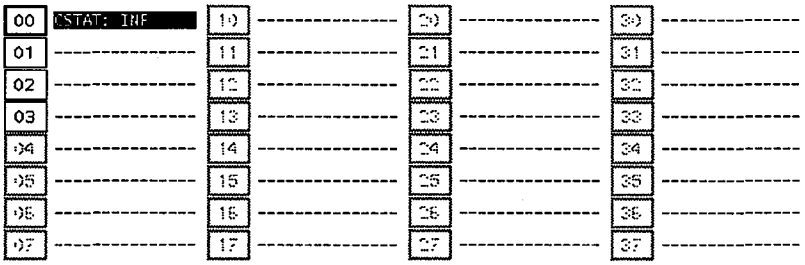


Figure 6. Example Controller Status Message

Table 1 describes the interrupt flags.

Table 1. Interrupt Flags

Interrupt Flag	Description
AMI	Address multiply range error interrupt
BPI	Breakpoint interrupt
DL	Deadlock
EEX	Error exit (000 issued)
FPE	Floating-point error
ICP	Internal CPU interrupt
IOI	Input/output (I/O) interrupt
MCU	MCU interrupt

Table 1. Interrupt Flags (continued)

Interrupt Flag	Description
MEC	Correctable memory error
MEU	Uncorrectable memory error
MII	001*ij* does not equal zero or 033 instruction interrupt
NEX	Normal exit (004 issued)
PCI	Programmable-clock interrupt
PRE	Program range error
RPE	Register parity error
RTI	Real-time interrupt

Table 2 describes the controller status messages.

Table 2. Controller Status Messages

Status Message	Description
CIB	The control point attempted to clear a cluster that is not in the data space.
CNR	The control point attempted to clear a cluster that was not reserved.
CRE	A channel reservation error occurred: at least two CPUs were in the channel reservation code at the same time.
DMP	The control point dumped the CPU's registers and idled the CPU in the controller's idle loop.
HTM	The control point stopped and requested all CPUs to hang.
HTS	The control point stopped at the request of another CPU.
INF	The CPU exchanged to the controller with no interrupt flags.
IUC	An interrupt on unreserved channel occurred.
LEBi	The logical base from dmpAREA is less than the starting logical base [for an exchange using IEXP (hDIFM)].
LBEI	The logical base from dmpAREA is less than the starting logical base [for a restart CPU load (cLOAD) function].
LBEx	The logical base from dmpAREA is less than the starting logical base [for an exchange using an XP table request (hXEXP)].
LES	The control point stopped on a logical address translation (LAT) table fault.
LLEi	The logical limit from dmpAREA is less than the starting logical limit [for an exchange using IEXP (hDIFM)].
LLEI	The logical limit from dmpAREA is less than the starting logical limit [for a restart CPU load (cLOAD) function].

Table 2. Controller Status Messages (continued)

Status Message	Description
LLEx	The logical limit from dmpAREA is less than the starting logical limit [for an exchange using an XP table request (hXEXP)].
MEI	The control point stopped on an invalid memory error.
MES	The control point stopped on a memory error (used MRSTOP).
MWS	MME sent a bad request.
OK	A normal operation occurred.
PEI	The control point stopped on an invalid parity error.
PES	The control point stopped on a parity error (used MRSTOP).
REQ	The CPU performed a dump and idle, but the mwsTOcpu request was not a dump request, or there was no idleSTAT and no mwsTOcpu request.
RES	MWS request was cleared before a register dump was completed.
SRE	A cluster reservation error occurred: at least two CPUs were in the cluster reservation code at the same time.
TRP	An invalid exchange occurred.
WTS	The control point stopped due to a dump and wait/resume request.
WTW	The control point is waiting due to a dump and wait/resume request.
XNRi	An exchange occurred using a cluster that was not reserved [for an exchange using IEXP (hDIFM)].
XNRI	An exchange occurred using a cluster that was not reserved [for a restart CPU load (cLOAD) function].
XNRx	An exchange occurred using a cluster that was not reserved [for an exchange using an XP table request (hXEXP)].

Controls

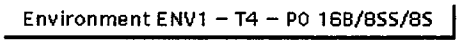
The controls are buttons and settings that enable you to start or stop running control points and reload control points.

Button/Setting	Description
All	Performs the control button command on all control points assigned CPUs.
Selected	Performs the control button command on the selected control points.
Go	Starts the control points.
Halt	Stops the control points. Three options are available: Halt –> No Dump sets Master Clear on the CPU(s). This halt option is not available for environment 2. Halt –> Exchange Dump sets Master Clear on the CPU(s) and uses a maintenance channel feature to perform an exchange dump. This halt option is not available for environment 2. Halt –> Register Dump sets Master Clear on the CPU(s), restarts the CPU(s), builds a starting exchange package (SEXP) that points to dump memory, and dumps registers at memory location dmpAREA. For detailed information about what happens when you choose one of the halt options, refer to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.
Reload	Reloads the control points.
Resume	Resumes execution of a holding control point. This button appears when a control point hold request executes.

Configuration Information

The configuration information displays the current MME environment (environment 1 or 2) and the current configuration data (mainframe type; partition where MME is running; and number of sections, subsections, and banks). The System Configuration Environment (SCE) provides this information.

For example, the following configuration information indicates MME is in environment 1 (Environment ENV1); the mainframe type is a CRAY T94 system (T4); MME is running in partition 0 (P0); and the configuration consists of 16 banks (16B), 8 subsection (8SS), and 8 sections (8S):



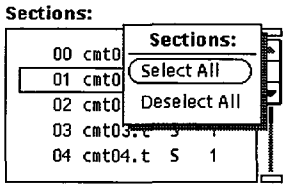
The configuration information component displays the following mainframe types:

Type	Description
Test(1x1)	A tester with 1 CPU and 1 memory module
Test(1x4)	A tester with 1 CPU and 4 memory modules
Test(4x4)	A tester with 4 CPUs and 4 memory modules
T4	A mainframe with 4 CPUs
T16	A mainframe with 16 CPUs
T32	A mainframe with 32 CPUs

Sections Scroll Box

The Sections scroll box displays the sections available to run for the current control point. This scroll box shows the section number; the file containing the section; a letter indicating the section is a single-CPU (S) or multiple-CPU (M) section; and numbers indicating the section can be run in environment 1 (1), environment 2 (2), or environments 1 and 2 (1/2).

When you select a control point in the Control Points scroll box, the Sections scroll box displays the test sections. Sections that are selected to run when Go is clicked have a check mark (✓) next to them. To select or deselect a section, move the mouse pointer over the section and click the EXTEND mouse button. To select or deselect all sections, move the mouse pointer over the Sections scroll box, and press the MENU mouse button. The following menu appears.



Choose **Select All** to select all sections of the test; choose **Deselect All** to deselect all sections of the test.

To select or deselect sections for testing while control points are running, use the EXTEND (for single sections) or MENU (for all sections) mouse buttons.

To choose the current section, move the mouse pointer over the section and click the SELECT mouse button; a box surrounds the section to indicate it is the current section, and the section is loaded into mainframe memory.

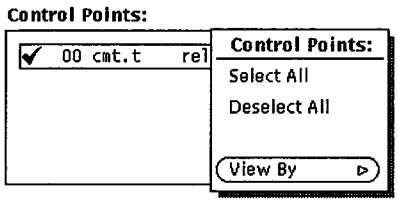
Status Information

The status information displays the current state of the MME program, using the following messages:

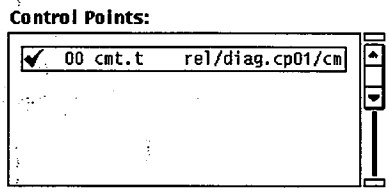
Message	Description
Auto CPU	Enables automatic assignment of control points. When a control point is loaded, MME assigns a system-selected CPU to it. For more information about changing this option, refer to the "Properties –> Resource Allocation" description later in this section.
I/O CPU ##	The CPU specified by ## is the I/O CPU.
I/O Disabled	No CPU is set as the I/O CPU.

Control Points Scroll Box

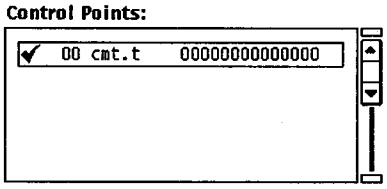
The Control Points scroll box shows the current control point loaded in MME. If you press the MENU mouse button in this scroll box, the following menu appears:



Choose **Select All** to select all control points. Choose **Deselect All** to deselect all control points. Choose **View By –> Filename** to see the control point indicated by its filename:



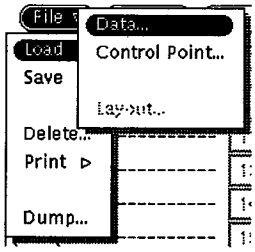
Choose **View By –> Location** to see the control point listed by its location in mainframe memory:



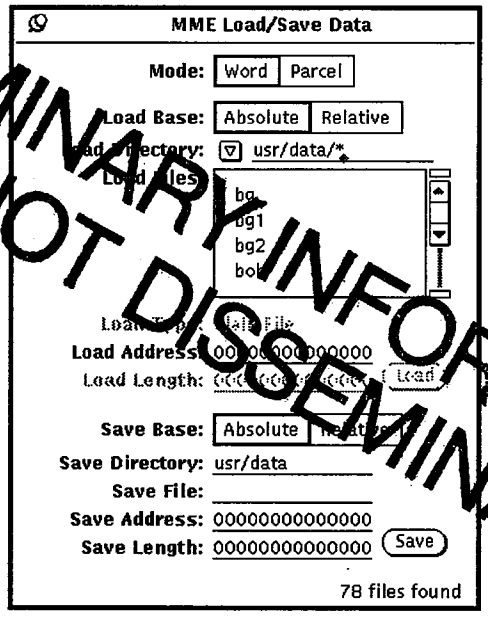
Menu Button Commands

The menu buttons contain commands you use to manipulate MME environments 1 and 2. This subsection describes what each command does and how to use each menu button command. Figure 8 on page 111 and Figure 9 on page 112 show all available menu button commands for environments 1 and 2, respectively.

File –> Load –> Data



The File –> Load –> Data command, as shown at the left, loads a data set into mainframe memory. Use it to re-create a specific data set for testing without having to manually enter it each time. This command displays the MME Load/Save Data window:



Perform the following procedure to manipulate this window:

1. Select the data Mode. Click on [Word] to use a word load address and length or [Parcel] to use a parcel load address and length. The Load Address and Load Length fields change to the specified format.

2. Specify the Load Base. Click on [Absolute] to load the data at a fixed location in memory or [Relative] to load the data relative to the base location in memory of the current control point section.

3. Change the directory, if necessary, by choosing a directory from the Load Directory ▽ or by entering the directory in the Load Directory field. The following directories are available in the Load Directory ▽:

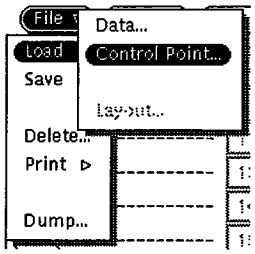
Directory	Description
Release	Diagnostic program files from the current offline diagnostic release
User	Files you have saved or modified
Alpha	Prereleased diagnostic program files that are being tested and have not been released
Utility –> Release	Utility files from the current offline diagnostic release
Utility –> Alpha	Prereleased utilities that are being tested and have not been released

4. In the Load Files scroll box, click on the data file you want to load. The Load Type entry displays what type of data is contained in the file. The Load Length field displays the length of the chosen data file.

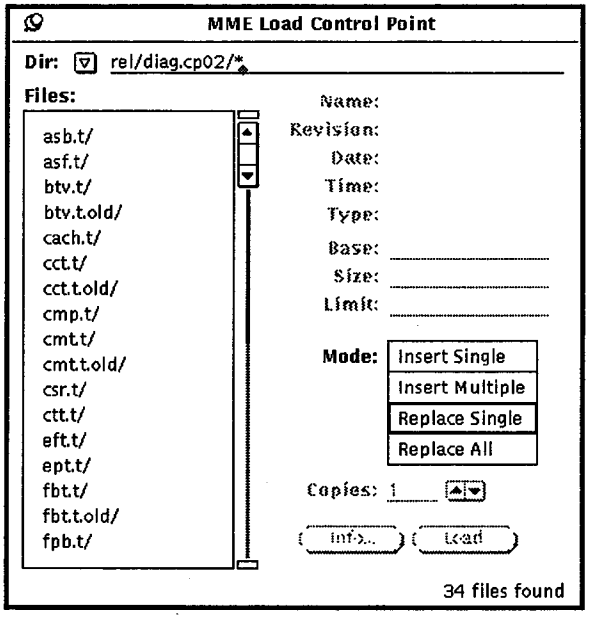
5. In the Load Address field, enter the address at which the data should be loaded. The (Load) button activates.

6. Click on (Load); MME loads the data at the specified address.

File –> Load –> Control Point



The File –> Load –> Control Point command, as shown at the left, loads a control point to use for testing. Use it to access control points from the current offline diagnostic release, to access prerelease versions of the control points, and to access user-created or modified control points. This command displays the MME Load Control Point window:



This window displays the control points you can load under MME. The directory path displayed to the right of the Dir ▽ indicates the current directory. All control points are divided into sections, which are files contained in subdirectories of the current directory. The Files scroll box displays the subdirectories that hold the control point sections. When you load a control point, the Sections scroll box displays the sections.

Perform the following procedure to manipulate this window:

1. Change the directory, if necessary, by choosing a directory from the Dir ▽ or by entering the directory in the Dir field. The following directories are available in Dir ▽:

Directory	Description
Release	Diagnostic program files from the current release
User	Files you have saved or modified

Directory	Description
Alpha	Prereleased diagnostic program files that are being tested and have not been released
Utility –> Release	Utility files from the current release
Utility –> Alpha	Prereleased utilities that are being tested and have not been released

NOTE: A .t extension indicates a control point assembled in Triton mode. A .c extension indicates a control point assembled in C90 mode.

2. Click on the control point you want to load. The following description information is updated:

Field	Description
Name	Name of the control point
Revision	Revision level of the control point
Date	Date the control point was assembled
Time	Time the control point was assembled
Type	Diagnostic, Utility, or Loop indicator
Base	Address where the control point is loaded
Size	Octal size of the control point code that is loaded into memory
Limit	Last available address for the control point

3. Change any or all of the Base, Size, and Limit values, if necessary. When you change any two of these values, this window updates the third automatically.

   - Base indicates the address in memory where the control point is loaded. Normally, this should be zero.
   - Size indicates the size of the control point. Normally, this should be the default value.
   - Limit indicates the maximum address for the control point. Normally, this should be the default value.

4. Change the Mode setting to specify how MME loads the control point. Click on one of the following settings:

Setting	Description
Insert Single	Loads a new control point. If a control point is already loaded in environment 1, an error message appears that indicates no memory is available because usually only one control point can be loaded at a time in environment 1. If a control point is already loaded in environment 2, the new control point is also loaded if enough memory is available.
Insert Multiple	Loads multiple copies of the control point you specify. This option is for environment 2 only. In the Copies field, specify the number of copies to load.
Replace Single	Replaces a loaded control point with the control point you specify; use this option to replace a control point that is already loaded.
Replace All	Replaces all loaded control points with the control point you specify This option is for environment 2 only.

5. Click on (Load); MME loads the specified control point.

NOTE: The (Info...) button displays the information file for the control point. This file indicates the available sections and the memory requirements for the control point.

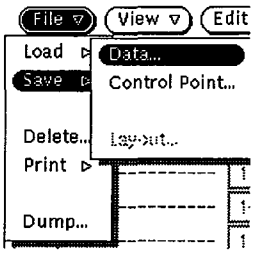
File –> Load –> Test List

This feature has not been implemented yet.

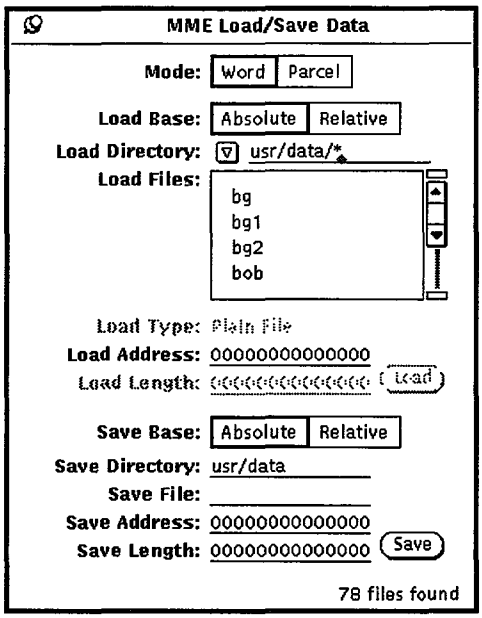
File –> Load –> Layout

This feature has not been implemented yet.

File –> Save –> Data



The File –> Save –> Data command, as shown at the left, saves a data set so you can reuse it. Use it to re-create a specific data set for testing. This command displays the MME Load/Save Data window:



Perform the following procedure to manipulate this window:

1. Select the data Mode. Click on [Word] to use a word save address and length or [Parcel] to use a parcel save address and length. The Save Address and Save Length fields change to the specified format.

2. Specify the Save Base. Click on [Absolute] to save the data from an absolute memory location (based on a starting address of 0), or click on [Relative] to save the data relative to the base address of the current control point section.

3. Specify a different directory in the Save Directory field, if necessary.

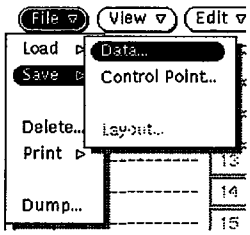
4. Specify the name of the file in the Save File field.

5. Specify the starting address of the data block you want to save in the Save Address field.

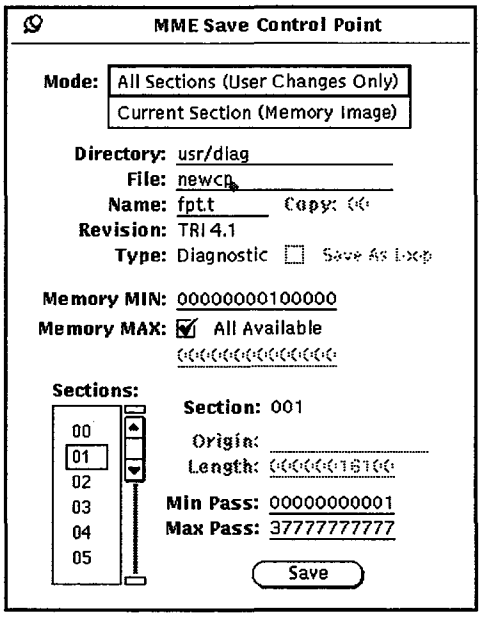
6. Specify the length of the data block you want to save in the Save Length field.

7. Click on (Save); MME saves the specified data set.

File –> Save –> Control Point



The File –> Save –> Control Point command, as shown at the left, saves a control point you have modified. Use it to create customized control points for troubleshooting. This command displays the MME Save Control Point window:



Perform the following procedure to manipulate this window:

1. Specify the Mode. Click on [All Sections (User Changes Only)] to save the changes you have made; this creates a new information file that contains the user changes for the control point (minimum and maximum memory) and all sections (minimum and maximum pass counts) and makes hard links to the original files for the sections.

   Click on [Current Section (Memory Image)] to save a memory image of the current control point section; this creates an information file that contains the minimum and maximum memory and minimum and maximum pass counts for the section. You may adjust the length of the memory image to save data outside the normal range for the section; this is useful for capturing diagnostic-created data (for example, a diagnostic-generated instruction block).

2. In the Directory field, enter the name of the directory in which you want to save the control point.

3. In the File field, type the name of the file in which you want to save the control point; the Name field shows the current name of the control point, the Revision shows the revision of the offline diagnostic, and the Type field indicates the type of file.

NOTE: To save a diagnostic as a loop so MME will not configure the diagnostic when loading it, click on the Save As Loop check box.

4. In the Memory MIN field, specify the minimum amount of memory the control point can be assigned. If the specified amount of memory is not available, the control point will not load when you use the File –> Load –> Control Point command.

5. In the Memory MAX field, specify the maximum amount of memory the control point requires, or click in the check box next to All Available to specify that the control point should use all available memory.

6. If you are saving a loop, specify, in the Origin field, the starting address of the loop in mainframe memory.

7. If you clicked on [Current Section (Memory Image)], specify the length of the memory image you want to save in the Length field.

8. If you clicked on [All Sections (User Changes Only)], click on the section, in the Sections scroll box, for which you want to change the minimum and maximum pass counts. Repeat Steps 8 through 10 for each section you want to modify.

9. In the Min Pass field, specify the minimum number of passes the selected section must complete before MME can load a different control point section.

10. In the Max Pass field, specify the maximum number of passes the section should complete before MME disables testing of the section.

11. Click on (Save); MME saves the modified control point information.

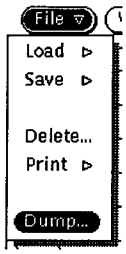
File –> Save –> Test List

This feature has not been implemented yet.

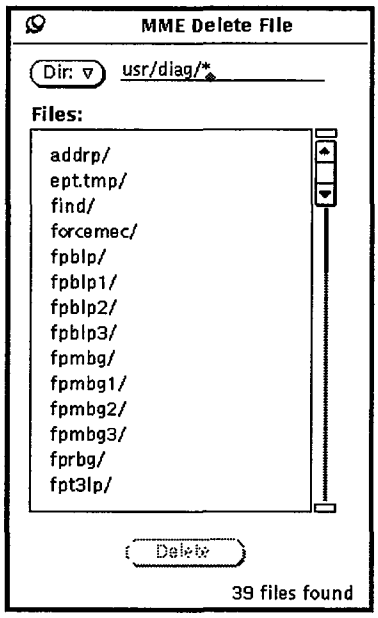
File –> Save –> Layout

This feature has not been implemented yet.

File –> Delete



The File –> Delete command, as shown at the left, deletes file(s) you no longer need. Use this command to delete unwanted files from the MME user directories stored on the maintenance workstation (MWS). This command displays the MME Delete File window:



Perform the following procedure to manipulate this window:

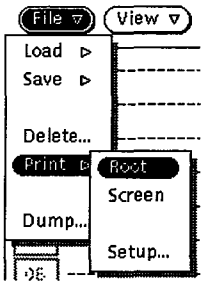
1. Change the directory, if necessary, by:

   - Entering the directory in the (Dir:) field and pressing the return key, or
   - Choosing the directory from the (Dir:) button. The following user directories are available:

Directory	Description
usr/*	All user directories
usr/cmd	User command buffers
usr/tst	User test lists
usr/lst	User listings
usr/seq	User sequences

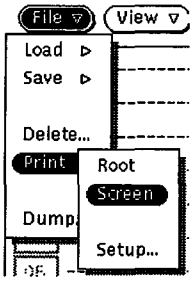
2. Click on the file you want to delete.
3. Click on (Delete). MME deletes the file.

File –> Print –> Root



The File –> Print –> Root command, as shown at the left, prints an image of everything contained in the root window, including the MME base window.

File –> Print –> Screen

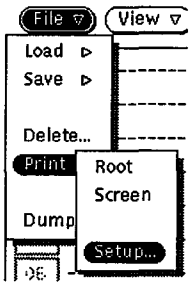


The File –> Print –> Screen command, as shown at the left, prints an image of a window or an icon.

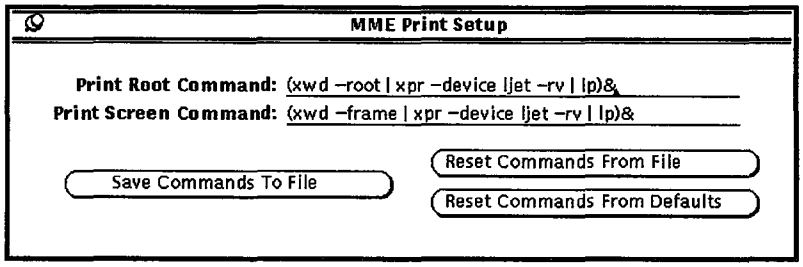
When you choose this command, the cursor becomes a plus symbol. Move the cursor to the window or icon to print, and click any mouse button.

NOTE: This command does not print an image of the MME base window. To print an image of the MME base window, use the File –> Print –> Root command.

File –> Print –> Setup



The File –> Print –> Setup command, as shown at the left, enables you to edit the commands that control how MME prints data for the File –> Print –> Root and File –> Print –> Screen commands. This command displays the MME Print Setup window:

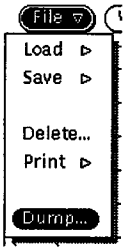


Modify the commands in the Print Root Command and Print Screen Command fields to change how MME prints. For more information about the UNIX `xwd`, `xpr`, and `lp` commands used in the print processes, refer to the UNIX online manual (man) pages (enter **`man xwd`**, **`man xpr`**, or **`man lp`** at a UNIX command prompt).

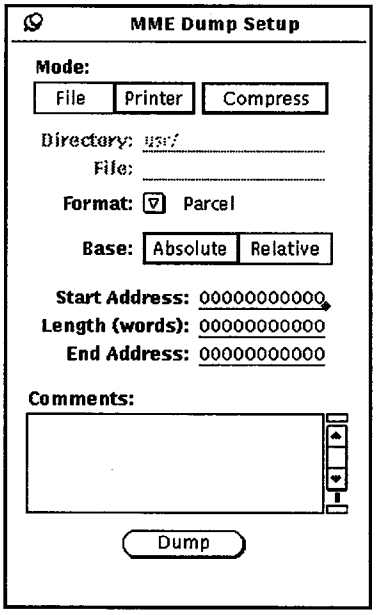
Use the buttons in the MME Print Setup window to:

- Save the current printer setup commands for later use (Save Commands To File).
- Load the printer setup commands you saved previously (Reset Commands From File).
- Load the default printer setup commands that the MME program provides (Reset Commands From Defaults).

File –> Dump



The File –> Dump command, as shown at the left, sends a copy of mainframe data to a file or the printer. Use this command to create a permanent record of the data so you can analyze it later. This command displays the MME Dump Setup window:



Perform the following procedure to manipulate this window:

1. Specify the Mode. Click on [File] to output the data to a file, or click on [Printer] to output the data to the printer.

Click on [Compress] to compress the output of the File –> Dump command. This reduces the size of the data listing by replacing repeated lines with a statement similar to Last line repeated 077 (63) times.

2. If data is being dumped to a file, specify the directory in the Directory field and the file in the File field.

3. Choose the display format of the data from the Format [▽]. The following formats are available:

Format	Description
Nibble	Nibble data
Byte	Byte data
Parcel	Parcel data
Halfword	Halfword data
Word	Word data
Hexadecimal	Hexadecimal data
Address	Address data
Text	Text data
Exchange (NI)	Exchange data (not implemented)
Instruction	Instruction data

4. Specify the Base. Click on [Absolute] to dump data from an absolute memory location (based on a starting address of 0) or [Relative] to dump data relative to the base address of the current control point section.

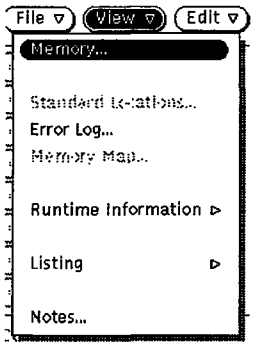
5. Specify the data block you want to dump by completing any two of the following actions (the third field is automatically set using data from the other two fields):

   - In the Start Address field, enter the starting address of the data block to dump and press return.
   - In the Length (words) field, enter the length (in words) of the data block and press return.
   - In the End Address field, enter the ending address of the data block you want to dump and press return.

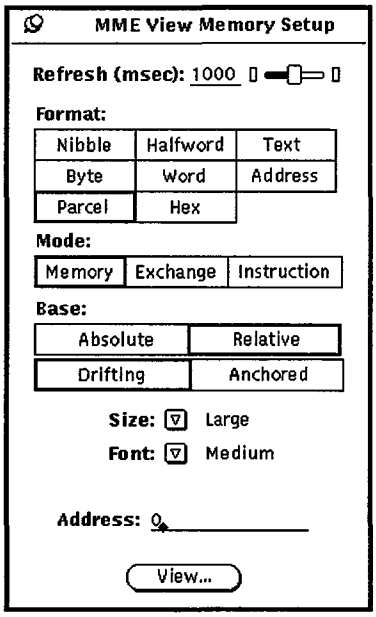
6. Click in the Comments scroll box and type any comments you want to include with the data. For example, you might specify that the data is from of a specific test or that you created it on a specific date.

7. Click on (Dump); MME sends the specified data to the printer or file.

View –> Memory



The View –> Memory command, as shown at the left, displays mainframe memory in a separate window. Use this command to verify the contents of specific memory locations or to change the data stored in memory. This command displays the MME View Memory Setup window:



Perform the following procedure to manipulate this window:

1. To set the interval at which memory windows are updated, move the Refresh (msec) slider or enter a new value in the Refresh (msec) field. (Setting this value too low can monopolize the workstation CPU and reduce system performance.)

2. Click on a Format [Nibble, Halfword, Text, Byte, Word, Address, Parcel, or Hex (hexadecimal)] to specify the format in which you want to display the data.

3. Click on a Mode (Memory, Exchange, or Instruction) to specify the way you want to display the data.

Memory mode (Memory) displays normal memory:

```
Memory – Absolute
00000000000  000000 000000 000000 000000
00000000001  000000 000000 000000 000000
00000000002  000000 000000 000000 000000
00000000003  000000 000000 000000 000000
00000000004  000000 000000 000000 000000
00000000005  000000 000000 000000 000000
00000000006  000000 000000 000000 000000
00000000007  000000 000000 000000 000000
00000000010  000000 000000 000000 000000
00000000011  000000 000000 000000 000000
00000000012  000000 000000 000000 000000
00000000013  000000 000000 000000 000000
00000000014  000000 000000 000000 000000
00000000015  000000 000000 000000 000000
00000000016  000000 000000 000000 000000
00000000017  000000 000000 000000 000000
00000000020  000000 000000 000000 000000
00000000021  000000 000000 000000 000000
00000000022  000000 000000 000000 000000
00000000023  000000 000000 000000 000000
00000000024  000000 000000 000000 000000
00000000025  000000 000000 000000 000000
00000000026  000000 000000 000000 000000
00000000027  000000 000000 000000 000000
00000000030  000000 000000 000000 000000
00000000031  000000 000000 000000 000000
00000000032  000000 000000 000000 000000
00000000033  000000 000000 000000 000000
00000000034  000000 000000 000000 000000
00000000035  000000 000000 000000 000000
00000000036  000000 000000 000000 000000
00000000037  000000 000000 000000 000000
```

Exchange mode (Exchange) displays exchange information:

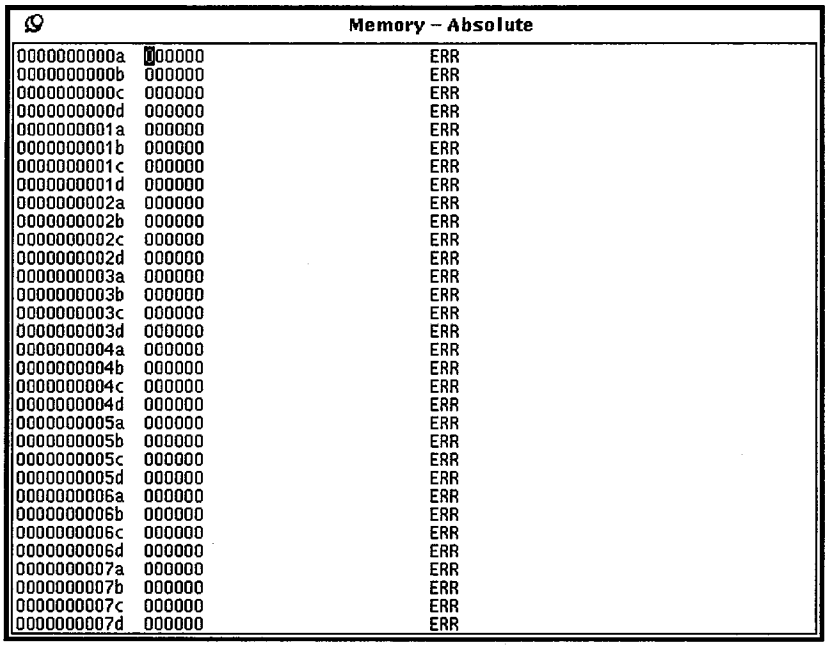
```
Memory – Absolute
ADX 000000000X0000
P   0000000000a A0 000000 000000 000000 000000 S0 000000 000000 000000 000000
PN  000         A1 000000 000000 000000 000000 S1 000000 000000 000000 000000
XA  0000000     A2 000000 000000 000000 000000 S2 000000 000000 000000 000000
EX0 0000000     A3 000000 000000 000000 000000 S3 000000 000000 000000 000000
EX1 0000000     A4 000000 000000 000000 000000 S4 000000 000000 000000 000000
EX2 0000000     A5 000000 000000 000000 000000 S5 000000 000000 000000 000000
EX3 0000000     A6 000000 000000 000000 000000 S6 000000 000000 000000 000000
EX4 0000000     A7 000000 000000 000000 000000 S7 000000 000000 000000 000000

CN 000 VL 000   MODES 000 BDD SCE TRI ESL BDM MM STATS 00 VNU FPS WS  BML

IM 000000 IRP IUM IFP IOR IPR FEX IBP ICM IMC IRT IIP IIO IPC IDL IMI FNX IAM
IF 000000 RPE MEU FPE ORE PRE EEX BPI MEC MCU RTI ICP IOI PCI DL  MII NEX AMI

LAT0 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT1 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT2 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT3 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT4 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT5 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT6 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
LAT7 RWXC 00 RWXD 00 PB 0000000000000 LB 00000000000000 LL 00000000000000
```

Instruction mode (Instruction) decodes the memory into instructions:



4. Specify a Base. Click on Absolute to display absolute memory addresses, based on a starting address of 0. This is the setting you will normally use in environment 1 because only one control point is loaded.

   Click on Relative to display memory addresses that are relative to the base address of the current control point. The window displays different areas of memory depending on the base address of the current control point. This setting is useful for looking at the contents of multiple control points in environment 2.

   Click on Drifting to display memory locations for the current control point as you change control points. The window "drifts" to the base address for the current control point as you change control points.

   Click on Anchored to always display memory for the control point that was current when the memory window was first displayed. The window becomes "anchored" to the base address for one control point and always displays memory for that control point.

5. Choose the size of the display window from the Size ▽. This affects only the memory and instruction mode windows.

   The following window sizes are available:

Size	Description
Small	The window displays 10_8 words.
Medium	The window displays 20_8 words.
Large	The window displays 40_8 words.
X–Large	The window displays 100_8 words.

6. Choose the font size you want to display in the window from the Font ▽.

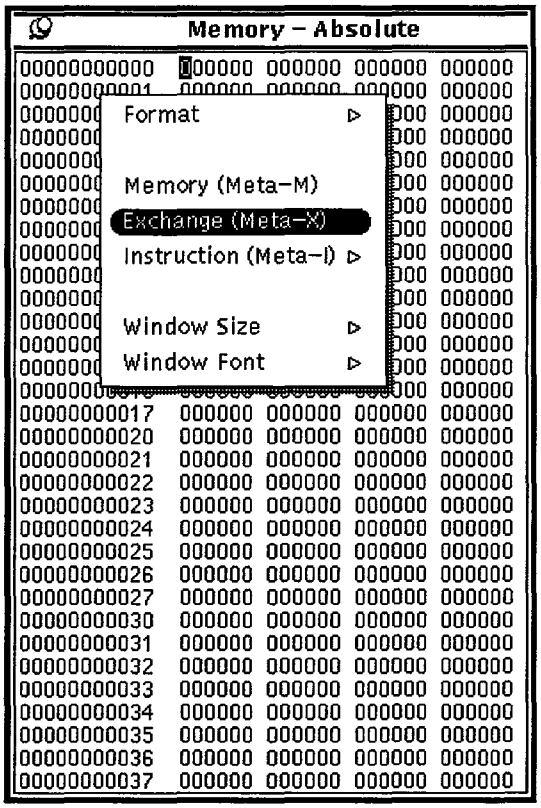
   The following font sizes are available:

Size	Description
Small	The font size is small.
Medium	The font size is medium.
Large	The font size is large.
X–Large	The font size is extra large.

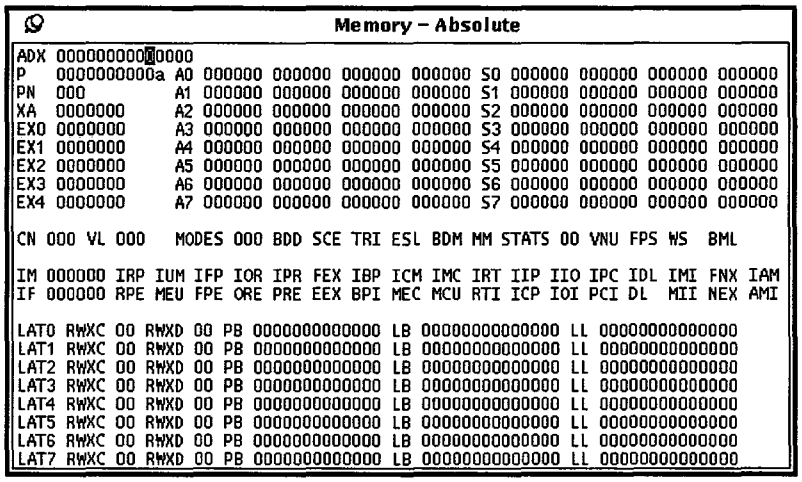
7. Change the starting address, if necessary, by double clicking on the Address field and typing a new value.

8. Click on View... . MME displays a window for the specified memory location.

   If you want to change the Format, Memory, Exchange, Instruction, Window Size, or Window Font from the Memory – Absolute window, press the MENU mouse button and choose the menu item.



For example, the following window appears if you choose the Exchange (Meta–X) format menu option:



You can also change the window format (Format), data type (Memory or Instruction), window size (Window Size), or window font (Window Font) from this menu.

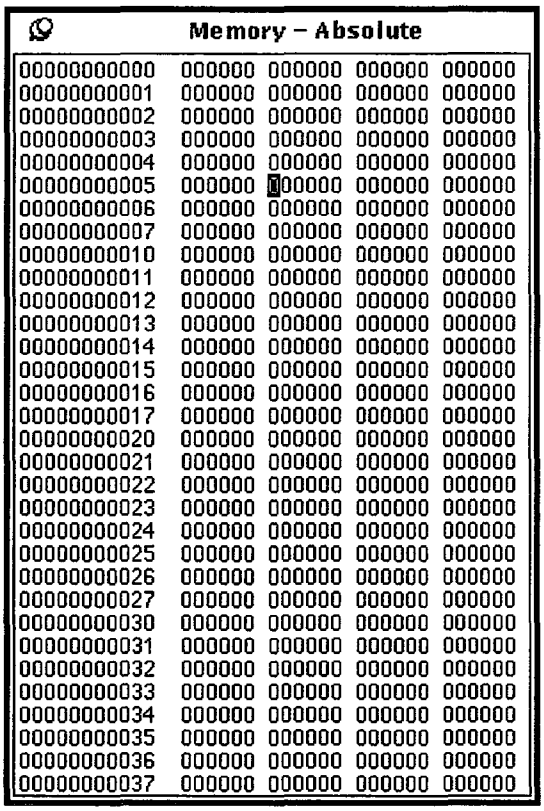
In this example, instead of using the MENU mouse button, you may also use the diamond-shaped meta key (◇ or ◆, depending on the type of keyboard you have) with one of several keyboard shortcuts. The following key combinations are shortcuts to the menu options:

Key Sequence	Function
Meta-a	Switches the display to address format
Meta-n	Switches the display to nibble format
Meta-b	Switches the display to byte format
Meta-p	Switches the display to parcel format.
Meta-h	Switches the display to halfword format
Meta-w	Switches the display to word format
Meta-e	Switches the display to hexadecimal format
Meta-t	Switches the display to text format
Meta-i	Switches the display to instruction mode
Meta-x	Switches the display to exchange mode
Meta-m	Switches the display to memory mode

Changing Memory

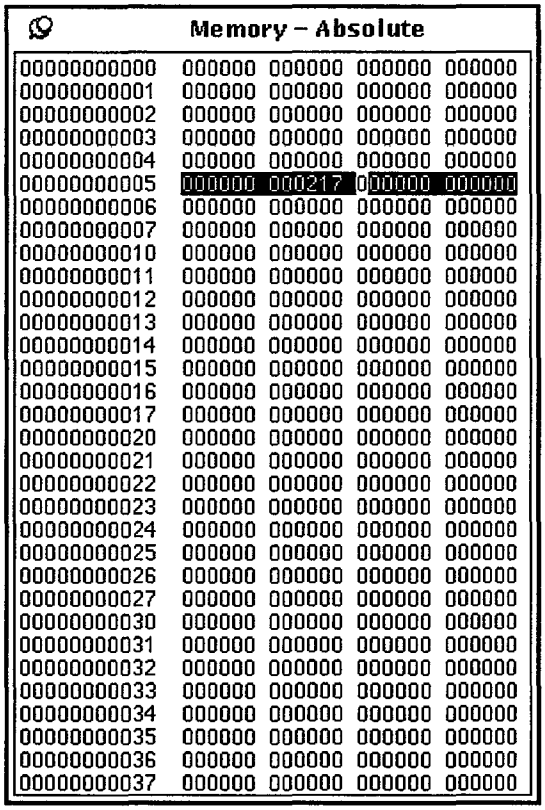
Perform the following procedure from a memory window to change data stored in mainframe memory:

1. Use the arrow keys to move the cursor to the location in memory you want to change, or click on the location. In this example, parcel 00000000005b was selected:

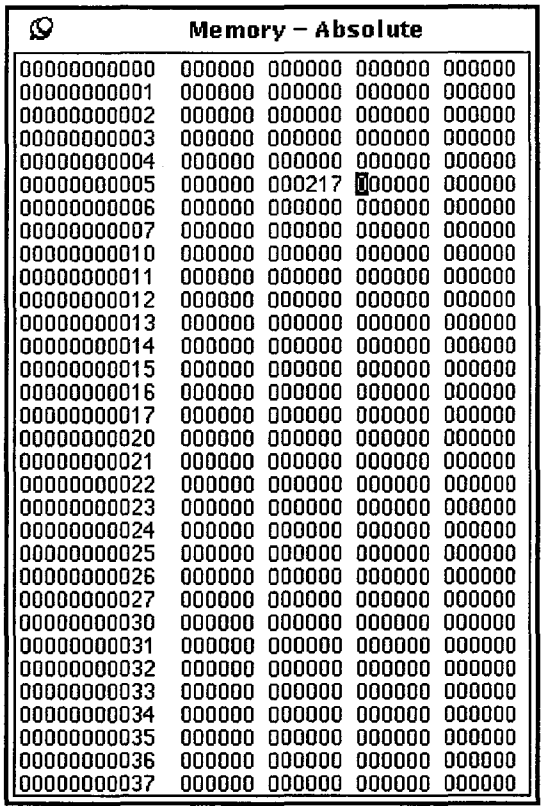


2. Type the new value you want to place in the memory location. The entire word is highlighted, which enables you to change it. You can move through the highlighted word with the arrow keys.

   In the following example, 000217 was typed at memory location 00000000005b:



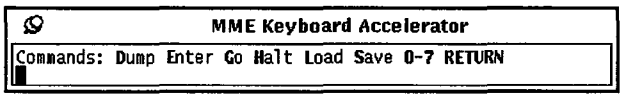
3. Press and release the return key, which updates memory. In this example, memory location 00000000005b changed from 000000 to 000217, as shown:



4. Repeat Steps 1 through 3 to change all desired memory locations.

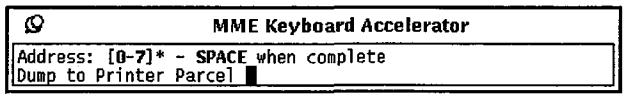
Using the Keyboard Accelerator

The keyboard accelerator offers another way to change memory and includes several other features. To access the keyboard accelerator, move the cursor inside a memory window and press the spacebar. The MME Keyboard Accelerator window appears:



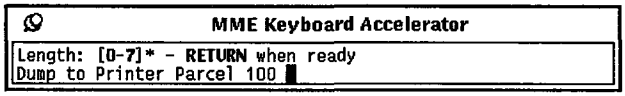
Dump Command

The first command in the MME Keyboard Accelerator window is the Dump command. The Dump command dumps data to a file or printer. When you type the letter D in the MME Keyboard Accelerator window, the window changes to:

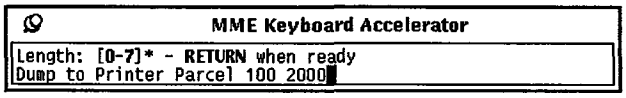


NOTE: By default, the Dump command dumps parcel data to the printer. To change this, press the backspace key several times to delete the default selections. Then, type the menu options you want.

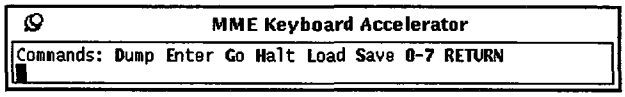
Enter the starting address of the data block you want to dump and press the spacebar; for example, if you wanted to dump the data block starting at 100, you would enter 100:



Then, enter the length of the data block you want to dump; for example, if you wanted to dump a block of 2000_8 parcels, you would enter 2000:

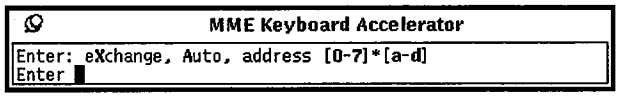


Finally, press the return key to dump the data. The window displays the main menu again:



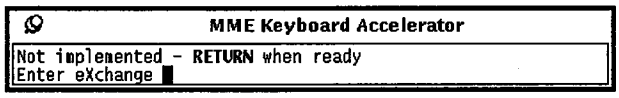
Enter Command

The second command in the MME Keyboard Accelerator window is the Enter command. The Enter command puts data into memory. When you type the letter E in the MME Keyboard Accelerator window, the window changes to:



This window gives you three command options:

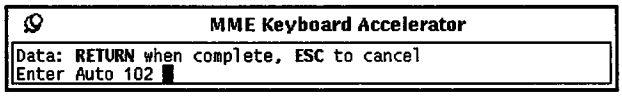
- Type the letter X in the Enter menu to enter exchange data; *this option is not implemented yet*:



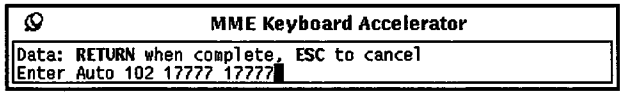
- Type the letter A in the Enter menu to start the automatic increment mode. Automatic increment mode enables you to enter data into consecutive memory locations without having to manually enter each memory address.

  For example, if you wanted to enter data in consecutive memory locations starting at address 102, you would perform the following steps:

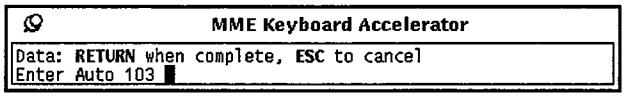
  1. Enter the address at which you want to enter the data and press return. For this example, you would enter 102:



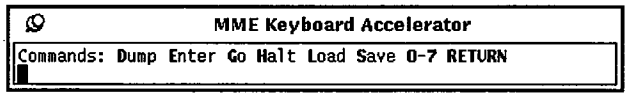
  2. Enter the first data word and press return. For this example, you would enter 17777 177777:



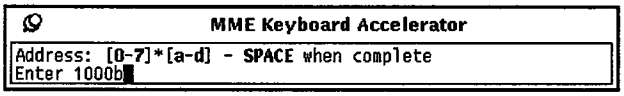
The window advances to the next memory location:



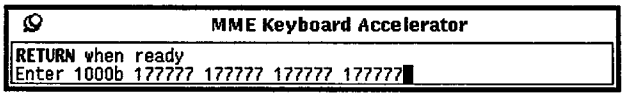
3. Enter the next data word and press return. Repeat this process to enter all of your data. When you have finished entering data, press the ESC key and automatic increment mode halts. The MME Keyboard Accelerator window returns to the main menu:



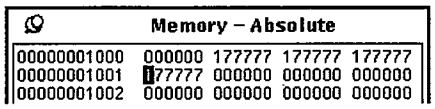
- Type a number-letter combination in the Enter menu to enter a parcel address which indicates the memory address you want to change. For example, if you wanted to change parcel 1000b, you would enter 1000b:



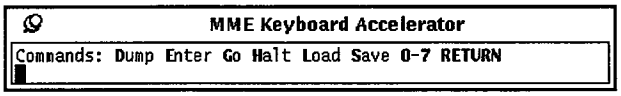
Then, enter the data you want to write to memory; for example, if you wanted to enter 177777 177777 177777 177777, you would enter 177777 177777 177777 177777:



Press return to write the data to memory:

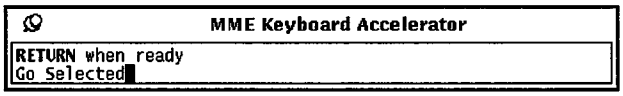


The window displays the main menu again:



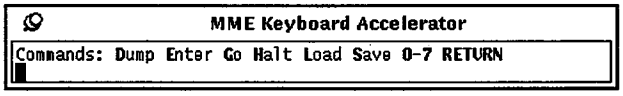
Go Command

The third command in the MME Keyboard Accelerator window is the Go command. The Go command runs the assigned control point(s). When you type the letter G in the MME Keyboard Accelerator window, the window changes to:



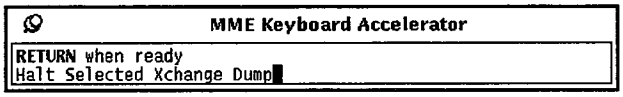
NOTE: By default, the Go command runs the selected control point(s). To run all control points, press the backspace key to move backward through the menu selections. Then, type the menu options you want.

Press return to start the control point(s). The window displays the main menu again:



Halt Command

The fourth command in the MME Keyboard Accelerator window is the Halt command. The Halt command halts the current running control point(s). When you type the letter H in the MME Keyboard Accelerator window, the window changes to:

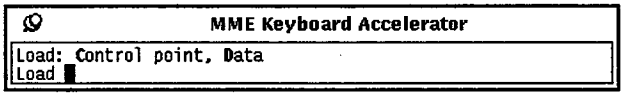


NOTE: By default, the Halt command halts the selected control point(s) and performs an exchange dump. To halt all control points, perform a register dump, or halt with no dump; press the backspace key to move backward through the menu selections. Then, type the menu options you want.

Press return to halt the control point(s). The window displays the main menu again:

Load Command

The fifth command in the MME Keyboard Accelerator window is the Load command. The Load command loads a control point or data set. When you type the letter L in the MME Keyboard Accelerator window, the window changes to:

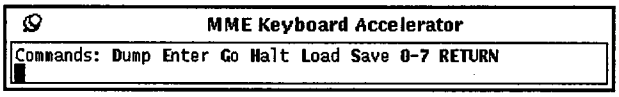


This window gives you two options: loading a control point and loading a data set.

- Type the letter C in the Load menu to load a control point.

Then, enter the name of the control point from the current offline diagnostic release that you want to load. For example, if you want to load asb.t, enter the following:

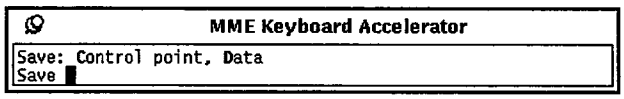
Finally, press return to load the control point. The window displays the main menu again:



- Type the letter D in the Load menu to load a data set; *this command is not implemented yet.*

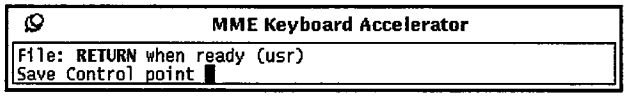
Save Command

The sixth command in the MME Keyboard Accelerator window is the Save command. The Save command saves a control point or data set. When you type the letter S in the MME Keyboard Accelerator window, the window changes to:

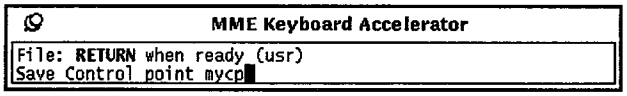


This window gives you two options: saving a control point and saving a data set.

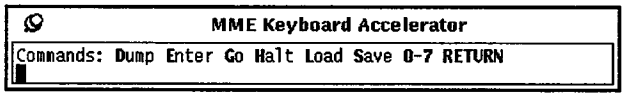
- Type the letter C in the Save menu to save a control point.



Then, enter a filename to save the control point. For example, to save the control point as mycp, enter mycp:



Finally, press return to save the control point. The window displays the main menu again:

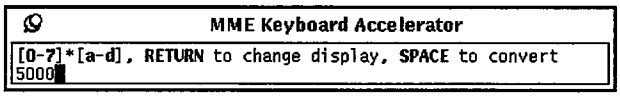


- Type the letter D in the Save menu to save a data set; *this command is not implemented yet.*

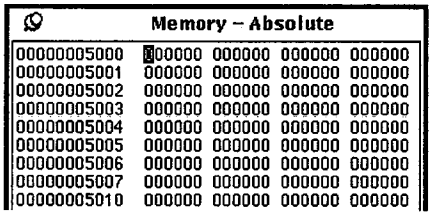
Numeric Commands

Two options are available when you type a number in the MME Keyboard Accelerator window: you can display memory starting at the number, or you can convert the number from octal to parcel format or from parcel format to octal.

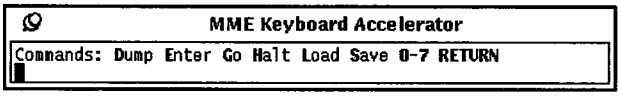
- To display a specific memory location, type the location in the MME Keyboard Accelerator window and press the return key. For example, to view memory location 5000, enter 5000:



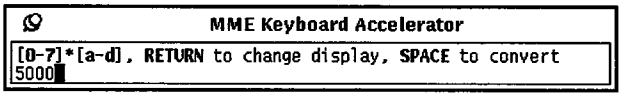
The window displays memory at location 5000:



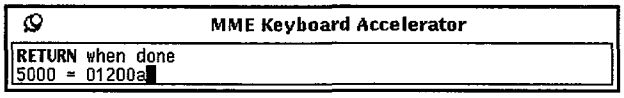
The window displays the main menu again:



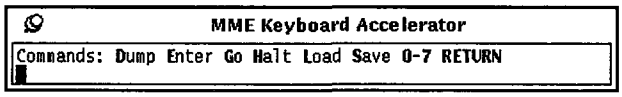
- To convert a number from octal to parcel format or from parcel format to octal, type the number and press the spacebar. For example, to convert octal value 5000 to parcel format, enter 5000 and press the spacebar:



The window then displays the parcel format equivalent.



Press the return key, and the window displays the main menu again:



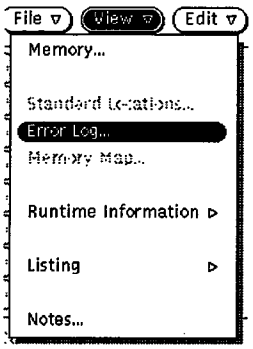
Return

To close the MME Keyboard Accelerator window, press the return key while the cursor is in the window.

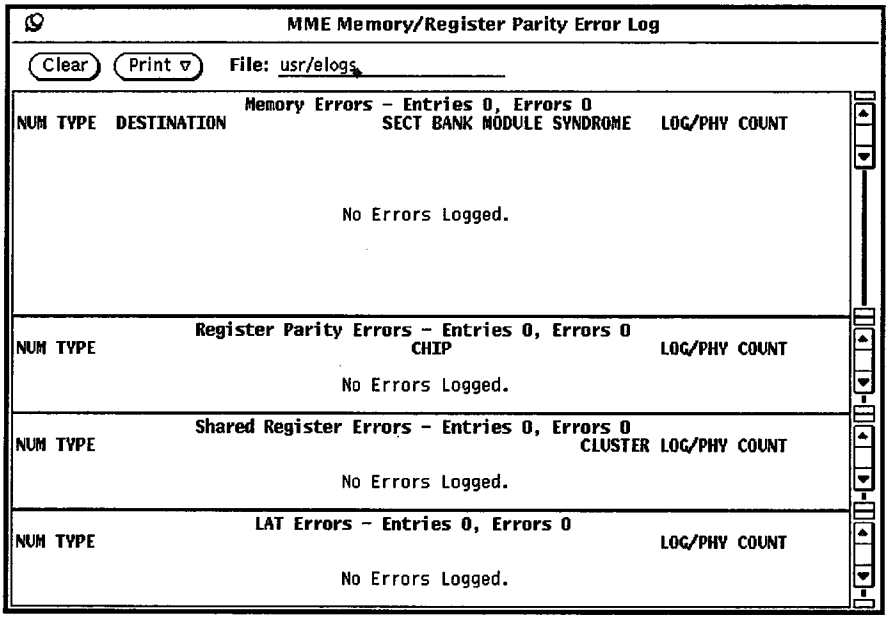
View –> Standard Locations

This feature has not been implemented yet.

View –> Error Log



The View –> Error Log command, as shown at the left, displays memory, register parity, shared register, and logical address translation (LAT) table errors logged in the status registers. Use this command to track the occurrence of these errors. This command displays the MME Memory/Register Parity Error Log window:



The Clear button clears all logged errors from the display. The Print button sends a copy of the error log to the printer (choose **Print –> To Printer**) or to the file specified in the File field (choose **Print –> To File**).

Memory Error Information

The MME Memory/Register Parity Error Log window displays the following memory error information:

Label	Description
NUM	Entry number in the table
TYPE	Type of error that occurred (correctable or uncorrectable)

Label	Description
DESTINATION	Destination of the memory read error (cache read, V register read, S register read, A register read, T register read, B register read, fetch read, I/O read, exchange read, I/O write, processor write, reconfigure, or memory error)
SECT	Section where the error occurred
BANK	Bank where the error occurred
MODULE	Module where the error occurred
SYNDROME	Syndrome
LOG/PHY	Logical/physical CPU number
COUNT	Number of errors for this entry

Register Parity Error Information

The MME Memory/Register Parity Error Log window displays the following register parity error information:

Label	Description
NUM	Entry number in the table
TYPE	Type of error that occurred
CHIP	Chip number where the error occurred
LOG/PHY	Logical/physical CPU number
COUNT	Number of errors for this entry

Shared Register Error Information

The MME Memory/Register Parity Error Log window displays the following shared register error information:

Label	Description
NUM	Entry number in the table
TYPE	Type of error that occurred
CLUSTER	Cluster where the error occurred
LOG/PHY	Logical/physical CPU number
COUNT	Number of errors for this entry

LAT Error Information

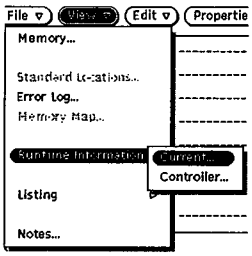
The MME Memory/Register Parity Error Log window displays the following LAT error information:

Label	Description
NUM	Entry number in the table
TYPE	Type of error that occurred
LOG/PHY	Logical/physical CPU number
COUNT	Number of errors for this entry

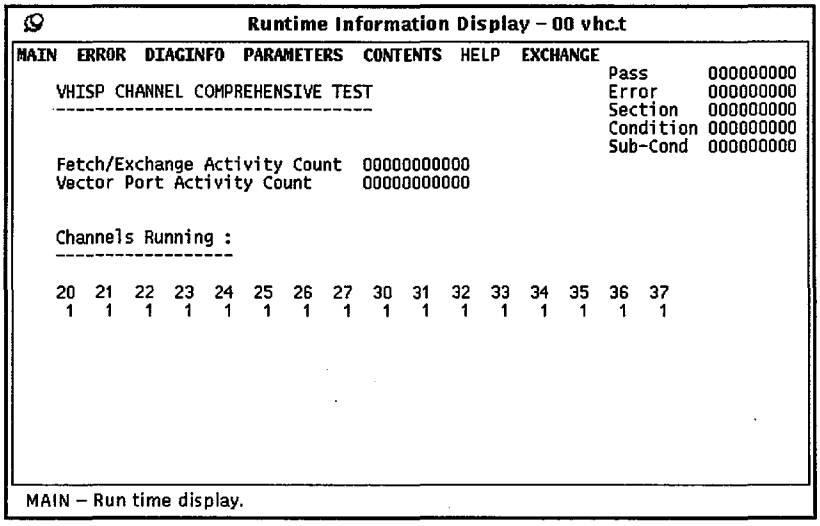
View –> Memory Map

This feature has not been implemented yet.

View –> Runtime Information –> Current



The View –> Runtime Information –> Current command, as shown at the left, displays the runtime information display for the current control point:



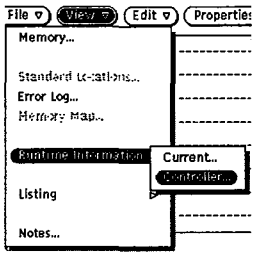
Use this window to get updated information from the control point as the control point executes. Table 3 describes the runtime information categories you can view for control points.

On color displays this window uses the following colors: black indicates the text is mainframe memory data, blue indicates the text is window text, and green indicates you can click on the text to switch to a different display. On monochrome displays, bold text indicates you can click on the text to switch to a different display.

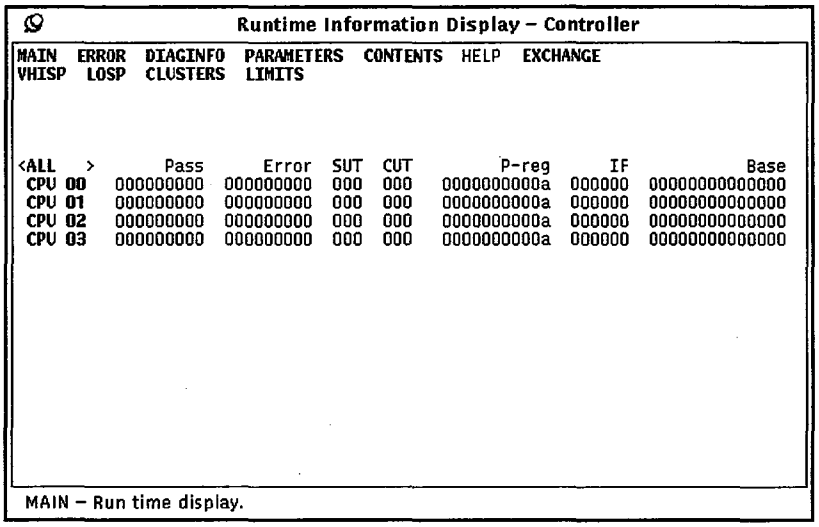
Table 3. Control Point Runtime Information Categories

Category	Description
MAIN	This display shows general information about the control point. This display typically includes the pass count, error count, current section, current condition, current subcondition, and control-point-specific information.
ERROR	This display shows any control-point-specific error information.
DIAGINFO	This display shows information from the standard locations, including the difference of the actual and expected values, the actual value, the expected value, the error count, the pass count, the error return address, the failing data address, the failing element mask, the section under test, the condition under test, the subcondition under test, the condition loop count, and the subcondition loop count.
PARAMETERS	This display shows any control-point-specific parameters.
CONTENTS	This display shows the location of several standard locations, the code block, the data area, and the block storage segment.
HELP	This display shows help information, if any is available.
EXCHANGE	This display shows information from the deadstart exchange package, starting exchange package, interrupt exchange package, working exchange packages, current exchange packages, and trap exchange packages.

View –> Runtime Information –> Controller (Environment 2 Only)



The View –> Runtime Information –> Controller command, as shown at the left, displays the runtime information display for the controller:



Use this window to get updated information from the controller while the control points execute in environment 2. Table 4 describes the runtime information categories you can view for the controller.

On color displays this window uses the following colors: black indicates the text is mainframe memory data, blue indicates the text is window text, and green indicates you can click on the text to switch to a different display. On monochrome displays, bold text indicates you can click on the text to switch to a different display.

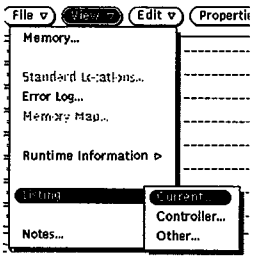
Table 4. Controller Runtime Information Categories

Category	Description
MAIN	This display shows general CPU information. This display contains the information used to update the MME base window (pass count, error count, section under test, condition under test, P register value, interrupt flags, and base address).
ERROR	This display shows the hartBEAT and idleSTAT parameters and interrupt flags for all CPUs. For more information about these parameters, refer to the online listing of the controller or to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.

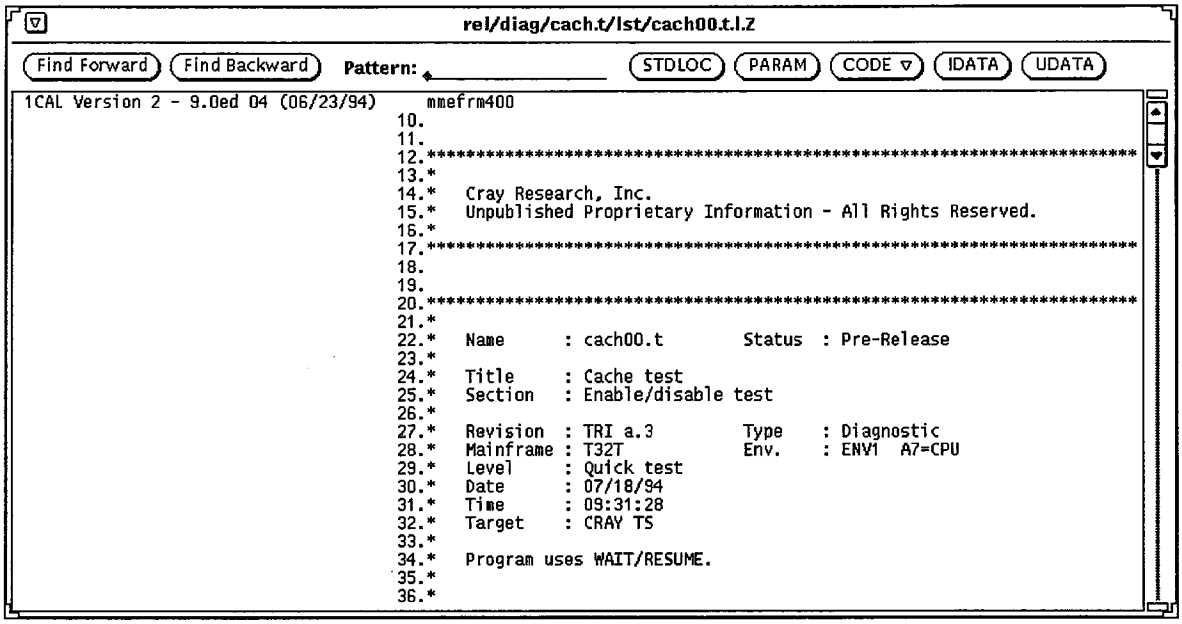
Table 4. Controller Runtime Information Categories (continued)

Category	Description
DIAGINFO	This display shows the pass count, error count, P register value, interrupt flags, mmeCIFM parameter, and dcCIFM parameter for each CPU. For more information about these parameters, refer to the online listing of the controller or to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.
VHISP	This display shows the VHISP reservation table.
LOSP	This display shows the LOSP reservation table.
CLUSTERS	This display shows the cluster reservation table.
LIMITS	This display shows the control point base and limit values for each CPU that is running control point code.
PARAMETERS	This display shows the MWS-to-CPU and CPU-to-MWS request and response parameters.
CONTENTS	This display shows the location of several standard locations, the code block, and the block storage segment.
EXCHANGE	This display shows information from the controller's deadstart exchange package, starting exchange package, interrupt exchange package, working exchange packages, trap exchange packages, and buffer exchange packages. This display also shows the trap exchange address (XA) and trapSTAT parameter. For more information about these parameters, refer to the online listing of the controller or to the *CRAY T90 Series MME User Guide*, publication number HDM-xxx-0.

View –> Listing –> Current



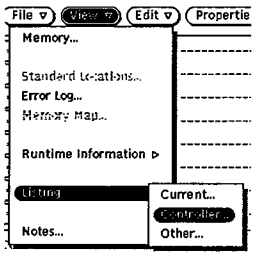
The View –> Listing –> Current command, as shown at the left, displays the listing for the current section in the Sections scroll box. Use this command to learn more about the current section; the listing describes what is stored in memory and what the section is testing. This command displays the listing in a separate window.



You can manipulate the listing as follows:

- To search forward from the current location in the window for a data pattern, enter the pattern in the Pattern field and click on (Find Forward).
- To search backward from the current location in the window for a data pattern, enter the pattern in the Pattern field and click on (Find Backward).
- To split the window to view multiple areas of the listing, press the MENU mouse button over the scroll bar and choose **Split View.** Choose **Join Views** to restore the window to the original view.
- To make the window a full-size display, double click in the window header. This enables you to see more of the listing at one time. Double click in the window header to return the window to normal size.
- To view the standard locations, parameters, initialized data (IDATA), or uninitialized data (UDATA); click on the corresponding button ((STDLOC), (PARAM), (IDATA), or (UDATA)).
- To view the standard code, diagnostic main code, or subroutines, choose **CODE –> STDCODE**, **CODE–> MAIN**, or **CODE –> CODESUB**, respectively.

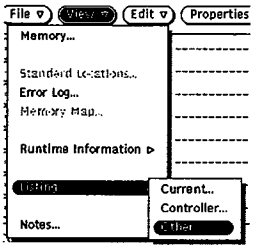
View –> Listing –> Controller



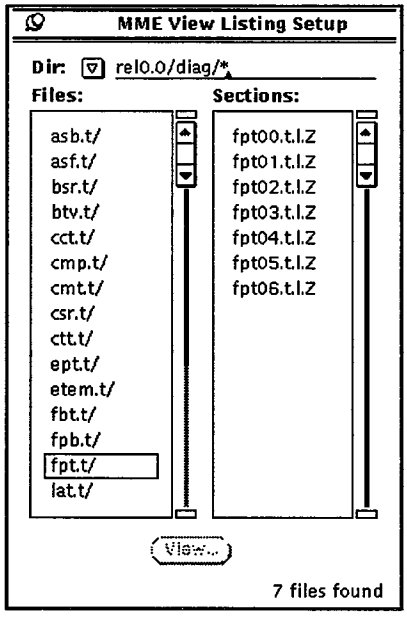
The View –> Listing –> Controller command, as shown at the left, displays the listing for the diagnostic controller. Use this command to learn more about the diagnostic controller. This command displays the listing in a separate window.

Refer again to the "View Listing –> Current" subsection for an example of the listing window and a description of manipulating the listing.

View –> Listing –> Other



The View –> Listing –> Other command, as shown at the left, displays the listing for the control point section you specify. Use this command to get detailed information about a control point section. This command displays the MME View Listing Setup window:



Each section is an individual file, so you must specify the control point and then pick one section. To do this, perform the following steps.

1. In the Dir field, specify the directory in which to search for the listing file; enter the directory in the Dir field or choose it from the Dir ▽. The following options are available:

Directory	Description
Release	Listings for diagnostic tests included in the current offline diagnostic release (choose the appropriate revision level)
User	Listings saved or modified by the user
Alpha	Listings for prereleased diagnostic tests (choose the appropriate revision level)
Utility –> Release	Listings for control point utilities included in the current offline diagnostic release (choose the appropriate revision level)
Utility –> Alpha	Listings for prereleased control point utilities (choose the appropriate revision level)

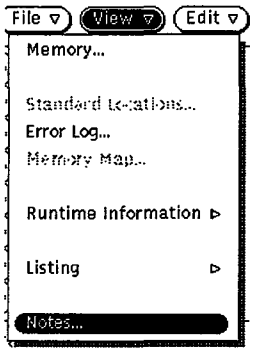
2. Click on the control point in the Files scroll box. The Sections scroll box displays the section listings available.

3. Click on the section in the Sections scroll box for which you want to see the listing.

4. Click on (View...). MME displays the listing.

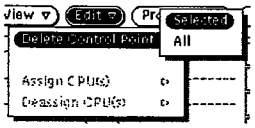
Refer again to the "View Listing –> Current" subsection for an example of the listing window and a description of manipulating the listing.

View –> Notes



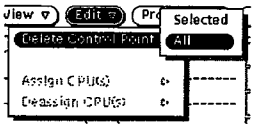
The View –> Notes command, as shown at the left, displays the MME release notes in a separate window. Use this window to read about any changes to MME for the current offline diagnostic release.

Edit –> Delete Control Point –> Selected



The Edit –> Delete Control Point –> Selected command, as shown at the left, deletes the current control point selected in the Control Points scroll box. Use this command to delete a control point you are no longer using.

Edit –> Delete Control Point –> All



The Edit –> Delete Control Point –> All command, as shown at the left, deletes all loaded control points. Use this command when you are done using all control points.

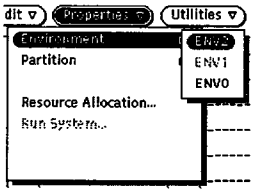
Edit –> Assign CPU(s)

This feature has not been implemented yet.

Edit –> Deassign CPU(s)

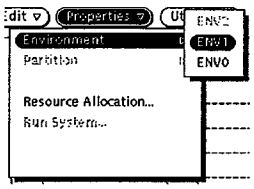
This feature has not been implemented yet.

Properties –> Environment –> ENV2 (Environment 1 Only)



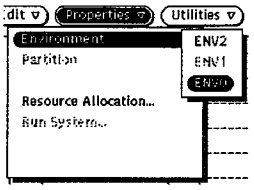
The Properties –> Environment –> ENV2 command, as shown at the left, switches MME to environment 2. Use this command to switch to multiple-control-point testing. This command is available in environment 1 only.

Properties –> Environment –> ENV1 (Environment 2 Only)



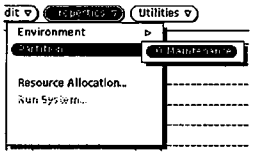
The Properties –> Environment –> ENV1 command, as shown at the left, switches MME to environment 1. Use this command to switch to single-control-point testing. This command is available in environment 2 only.

Properties –> Environment –> ENV0



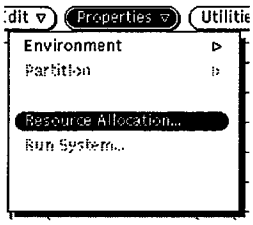
The Properties –> Environment –> ENV0 command, as shown at the left, switches MME to environment 0. Use this command to switch to MWS based testing. Refer to the "Environment 0" section earlier in this document for more information about environment 0.

Properties –> Partition



The Properties –> Partition command, as shown at the left, selects the logical partition in which MME will run. Use this command to select the partition you want to troubleshoot. MME scans the current configuration for available partitions and allows you to select only partitions that allow maintenance or concurrent maintenance. MME displays the available partitions in a menu attached to the Properties –> Partition menu command.

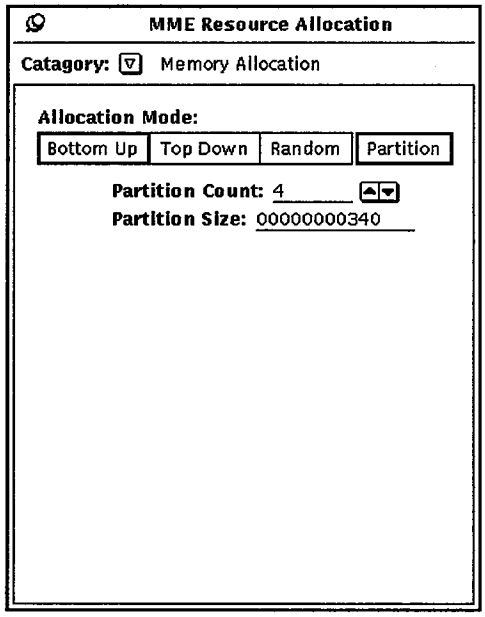
Properties –> Resource Allocation



The Properties –> Resource Allocation command, as shown at the left, changes the way MME performs. Use this command to change the memory allocation, the CPU automatic assignment option and CPU modes; the CPU to memory delays; or the section swap interval. This command displays the MME Resource Allocation window; choose the category you want to modify from the Category ▽.

Changing Memory Allocation (Environment 2 Only)

To change the memory allocation in environment 2, choose **Memory Allocation** from the Category ▽. The MME Resource Allocation window changes to:



The Memory Allocation category is valid for environment 2 only. Memory allocation defines how control point sections are loaded into memory (refer to Figure 7), whether memory is partitioned, the number of memory partitions, and the size of memory partitions. Memory allocation changes affect only the control points that are loaded after the changes are made.

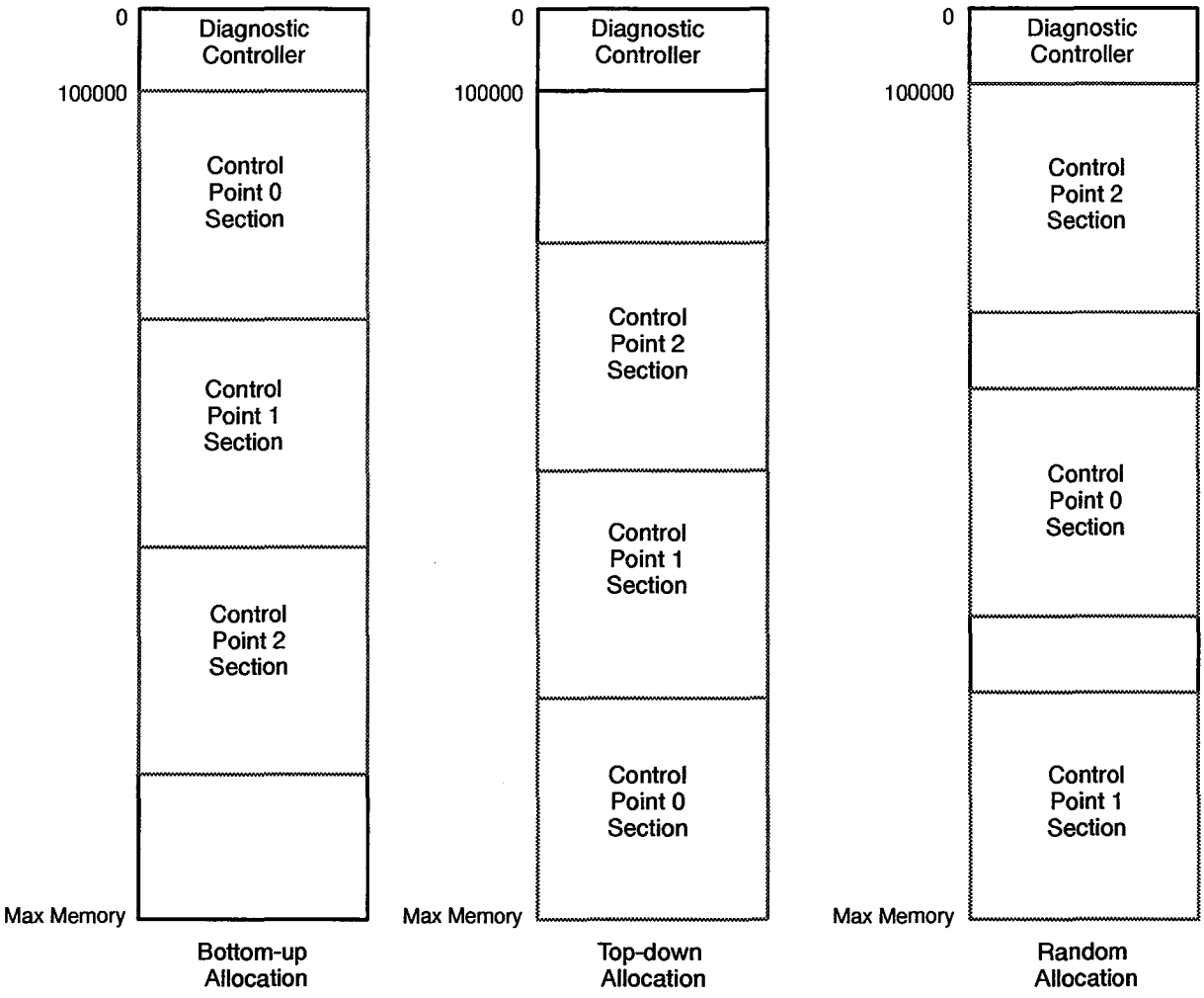


Figure 7. Memory Allocation in Environment 2

You can specify the allocation mode by clicking on [Bottom Up], [Top Down], or [Random]. You can also configure memory into partitions that cause all control points to use the same amount of memory; to do this, click on [Partition]. When you partition memory, the number of control points you may load is limited to the number of partitions available.

Partitions are defined by count and size. The easiest way to define partitions is to enter the desired number of partitions in the Partition Count field. MME automatically calculates the size of the partitions. You may also define partitions by entering the desired partition size in the Partition Size field. MME automatically calculates the number of partitions. The default partition count is the number of CPUs MME uses.

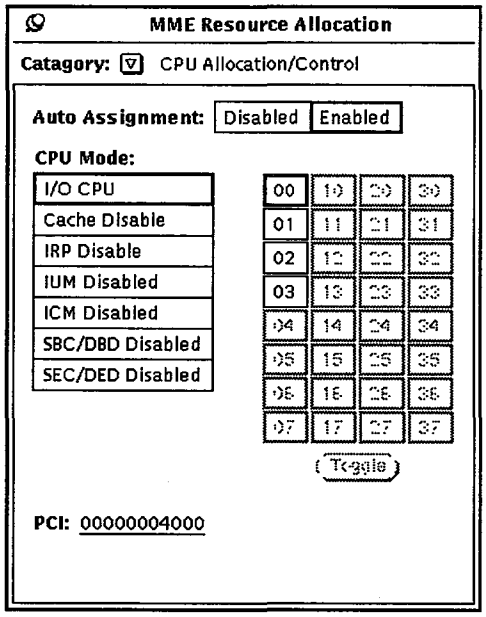
MME uses the following formulas to calculate the partition size and partition count; the diagnostic_controller_size is 100000_8 words.

- Partition_size = (mainframe_memory_size minus diagnostic_controller_size) divided by partition_count
- Partition_count = (mainframe_memory_size minus diagnostic_controller_size) divided by partition_size

NOTE: If you use these formulas to determine a partition count or size, ensure that you use all octal values.

Changing the Auto Assignment, CPU Allocation, or CPU Control Options

To change the CPU assignment option and CPU modes, choose **CPU Allocation/Control** from the Category ▽. The MME Resource Allocation window changes to:



Perform the following procedure to manipulate this window:

1. Specify the Auto Assignment option. Click on [Disabled] or [Enabled] to specify whether MME automatically assigns the first available CPU to a control point when the control point is loaded.

2. Click on the CPU Mode allocation option you want to change:

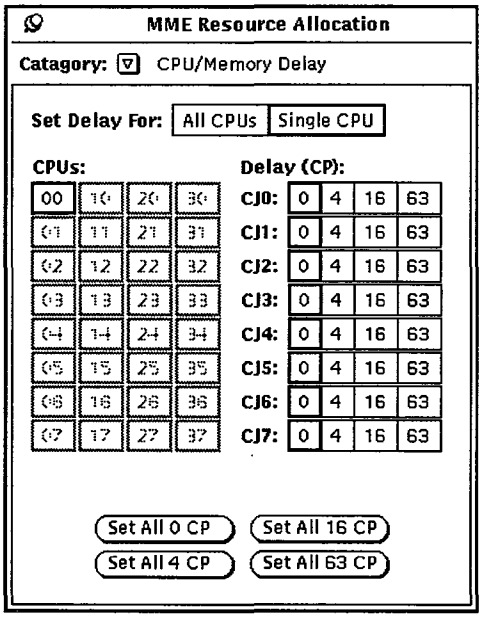
Mode	Description
I/O CPU	Specifies a CPU to read and write memory
Cache Disable	Disables scalar cache
IRP Disable	Disables interrupt on register parity error (IRP) for a CPU by clearing the IRP flag in the starting exchange package for the CPU if the flag is set
IUM Disabled	Disables interrupt on uncorrectable memory error (IUM) for a CPU by clearing the IUM flag in the starting exchange package for the CPU if the flag is set
ICM Disabled	Disables Interrupt on correctable memory error (ICM) for a CPU by clearing the ICM flag in the starting exchange package for the CPU if the flag is set
SBC/DBD Disabled	Disables single-byte correction/ double-byte detection (SBCDBD)
SEC/DED Disabled	Disable single-error correction/ double-error detection (SECDED)

3. Click on the CPU(s) that you want to set for the selected mode. Only one CPU can be selected as the I/O CPU. The other modes can be set for one or more CPU(s) at a time. Use the (Toggle) button to toggle the CPU selections, except in [I/O CPU] mode.

4. In environment 2 only, in the PCI field, enter the number you want to store in the PCITIME standard location. This value specifies how often the CPU checks the controller communication port to determine if MME has a function for the CPU to perform.

Changing the CPU to Memory Delay

To change the CPU to memory delays, choose **CPU/Memory Delay** from the Category ▽. The MME Resource Allocation window changes to:



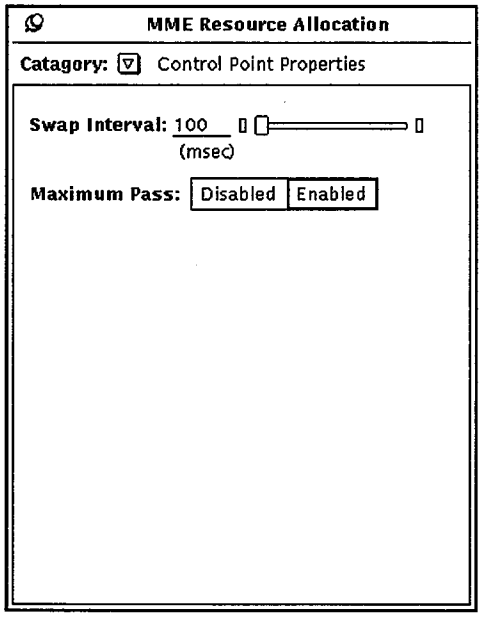
Perform the following procedure to manipulate this window:

1. Specify the CPUs for which you want to set the delay (click on All CPUs to set the delay for all CPUs or Single CPU and a CPU to set the delay for one CPU).

2. Specify the delay in clock periods (CPs) for each of the ports (CJ0 through CJ7; CJ refers to the option type), or click Set All 0 CP, Set All 4 CP, Set All 16 CP, or Set All 63 CP to set the delay for all ports to the same value.

Changing the Section Swap Interval and Enabling or Displaying the Maximum Pass Option

To change the section swap interval and enable or disable the maximum pass option, choose **Control Point Properties** from the Category ▽. The MME Resource Allocation window changes to:

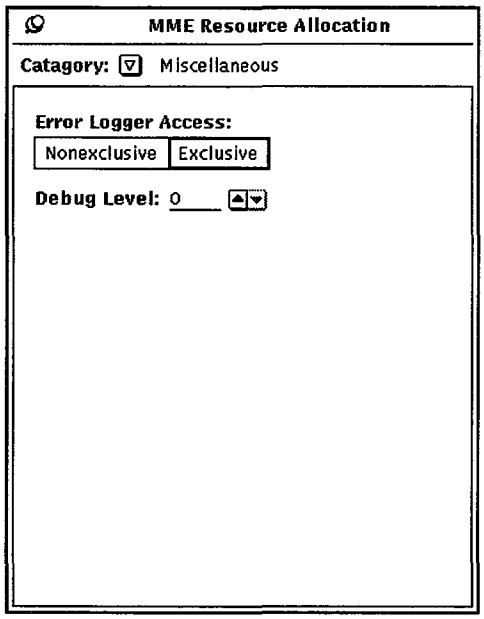


The section swap interval value specifies how often MME checks the pass and error counts for each section to determine whether the section should be swapped. To change this interval, enter a new value in the field or move the slider to select a value.

The maximum pass option specifies whether MME should stop executing a control point section when the pass count for the section reaches the maximum pass value. Click on the appropriate setting to enable or disable the option.

Changing the Error Logger Access Setting and Setting the Debug Level

To change the error logger access setting and set the debug level, choose **Miscellaneous** from the Category ▽. The MME Resource Allocation window changes to:



The error logger access setting specifies whether MME has exclusive access to the error channel. By default, MME has exclusive access to the error logger channel: when a control point requests MME to log errors from the error channel, MME restricts access to the error channel so the error logging software doesn't also log these known errors. The Error Logger Access settings enable you to specify whether MME has exclusive access to the error channel. Click on the appropriate setting.

The debug level specifies the amount of output that MME returns to the standard output window from which you started MME. Set the value to 0, 1, or 2, where 0 causes MME to display the least information and 2 causes MME to display the most information. Enter the number in the Debug Level field and press return, or click on the arrows to change the number in the field.

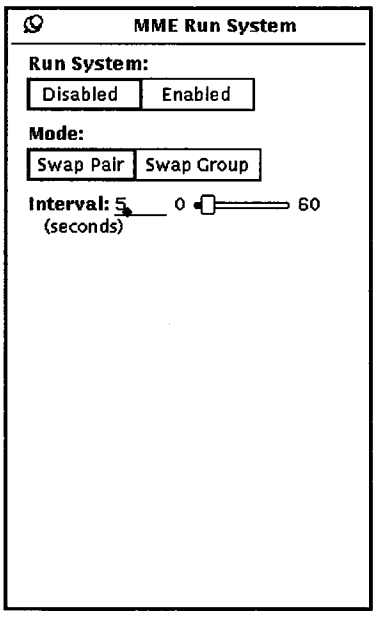
Properties –> Run System (Environment 2 Only)

The Properties –> Run System command, as shown at the left, enables you to enable and disable the run system and set the run system parameters.

The run system is an environment 2 operation mode that swaps CPUs among any eligible control points. This creates an operating system type of environment, where the control points simulate jobs. For a control point to be eligible, the control point must satisfy the following conditions:

- The control point must rotate under the run system. This property is defined by the programmer and communicated to MME through the section information. (Refer to the *CRAY T90 Series MME Diagnostic Tests and Utilities* document, publication number HDM-xxx-0, to determine which control points rotate under the run system.)
- The control point must have only one CPU assigned to it.

This command displays the MME Run System window:



Perform the following procedure to manipulate this window:

1. Click on Run System: Enabled or Disabled to enable or disable the run system.

You can enable the run system at any time. MME checks the current loaded control points for eligible control points. If MME finds two or more eligible control points that have not detected errors, MME begins to swap the CPUs.

If MME cannot find at least two eligible control points without errors, MME idles the run system. The run system remains enabled and waits until at least two eligible control points without errors are available.

If a loaded control point does not rotate under the run system or is assigned more than one CPU, MME does not affect it.

2. Specify the mode you want to use. Click on Mode: [Swap Pair] to swap CPUs for a pair of control points at each swap interval. Click on Mode: [Swap Group] to swap CPUs for all control points at each swap interval.

3. Specify the interval (in seconds) you want to pass before MME swaps the CPUs. Enter the value in the Interval field or move the slider. An interval of 0 causes MME to swap CPUs as fast as possible.

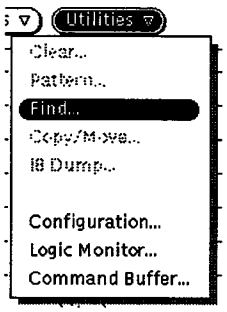
Utilities –> Clear

This feature has not been implemented yet.

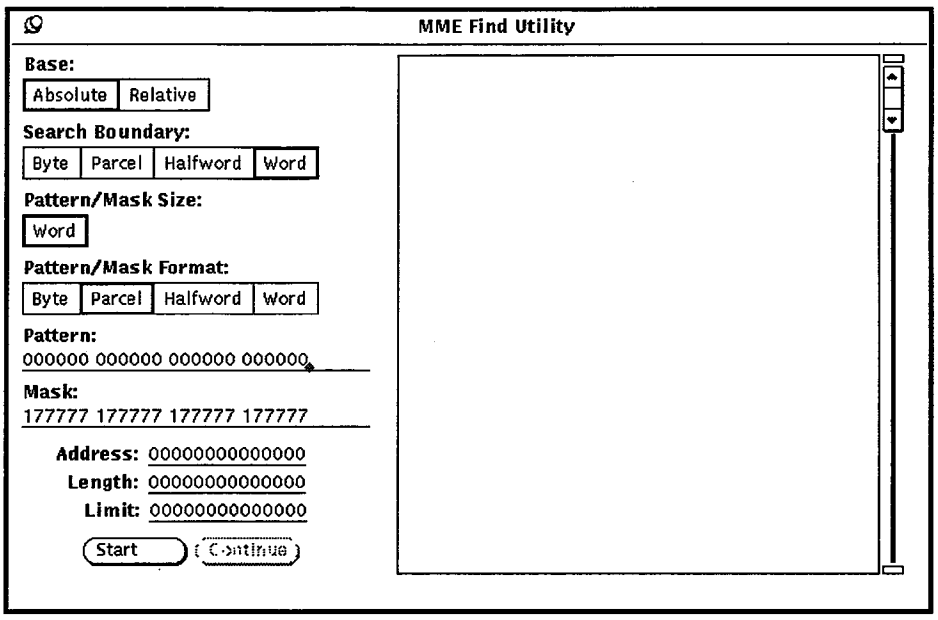
Utilities –> Pattern

This feature has not been implemented yet.

Utilities –> Find



The Utilities –> Find command, as shown at the left, searches mainframe memory for a data pattern. Use this command to locate all occurrences of a data pattern within a block of memory. This command displays the MME Find Utility window.



The left side of the window contains the settings that specify the pattern to search for and the memory block to search. The right side contains a scroll box that displays memory locations with the matching data pattern. The scroll box displays up to 256 entries; if more than 256 matches are found, the message 256 matches, additional occurrences known to exist is displayed in the lower-left corner of the window. To view the additional occurrences, click on the Continue button.

Perform the following procedure to manipulate this window:

1. Specify the Base to use. For environment 1, Base should usually be set to Absolute because only one control point is loaded.

   Click on Absolute to use memory addresses based at 0. Click on Relative to use memory addresses relative to the base address of the current control point section.

2. Specify the Search Boundary to use. The search boundary indicates the stride used for checking memory.

   Click on Byte to check memory in byte increments, click on Parcel to check memory in parcel increments, click on Halfword to check memory in halfword increments, or click on Word to check memory in word increments.

3. Specify the Pattern/Mask Size. The size indicates the size of the data pattern for which this utility searches and the mask it uses.

   The settings available depend on the Search Boundary setting. Click on [Byte], [Parcel], [Halfword], or [Word] to select the pattern and mask size.

4. Specify the Pattern/Mask Format. The format indicates the type of data pattern for which this utility searches and the mask it uses.

   The settings available depend on the Pattern/Mask Size setting. Click on [Byte], [Parcel], [Halfword], or [Word] to select the pattern and mask format.

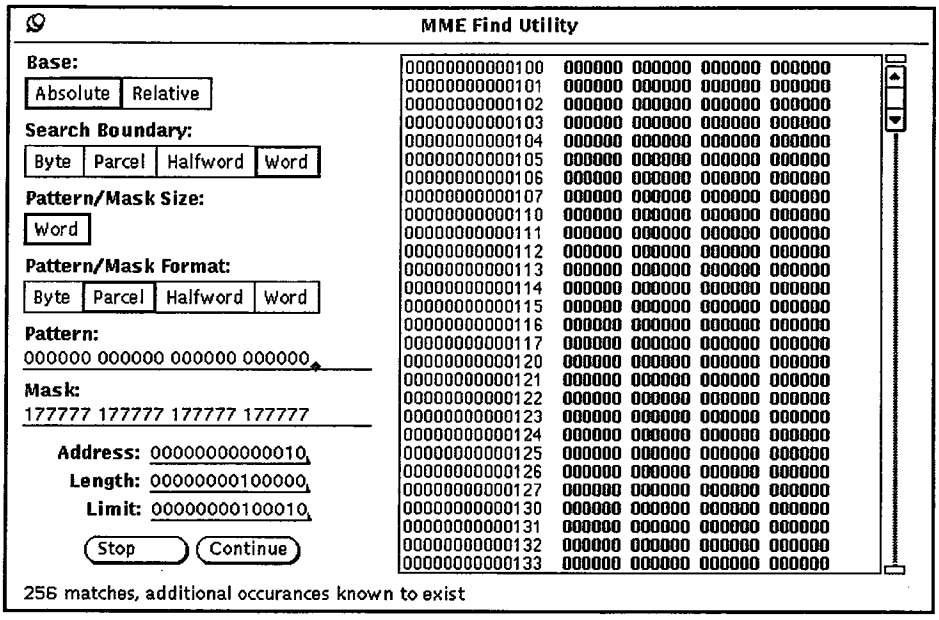
5. Specify the data pattern you want to search for in the Pattern field.

6. Specify the mask you want to use in the Mask field. The mask specifies which bits to compare. If a bit in the mask is set to 0, the bit position is not compared; if a bit in the mask is set to 1, the bit position is compared.

7. Specify the memory block to search (performing any two of the following actions automatically updates the third field):

   - Enter the first address of the memory block in the Starting Address field and press return.
   - Enter the length of the memory block in the Length field and press return.
   - Enter the last address of the data block in the Limit field and press return.

8. Click on (Start) to start the search. The (Start) button changes to (Stop), and MME updates the MME Find Utility window.



Click on Stop to stop searching for the pattern; if more than 256 occurrences exist, click on Continue to see the next set of entries.

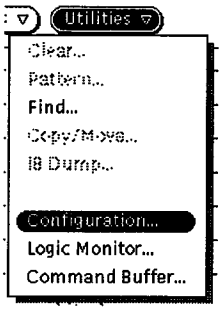
Utilities –> Copy/Move

This feature has not been implemented yet.

Utilities –> IB Dump

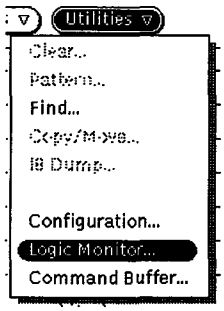
This feature has not been implemented yet.

Utilities –> Configuration



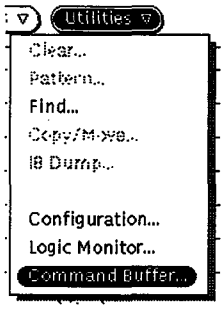
The Utilities –> Configuration command, as shown at the left, starts the System Configuration Environment (SCE), which you use to configure the mainframe. For more information about SCE, refer to the *System Configuration Environment* document, publication number HDM-xxx-0.

Utilities –> Logic Monitor



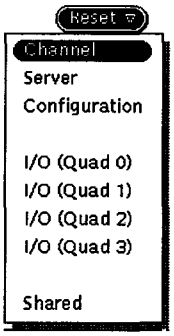
The Utilities –> Logic Monitor command, as shown at the left, starts the Logic Monitor Environment (LME). For more information about LME, refer to the *CRAY T90 Series LME User Guide* document, publication number HDM-xxx-0.

Utilities –> Command Buffer



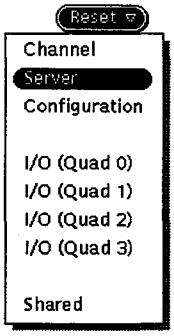
The Utilities –> Command Buffer command, as shown at the left, starts the Command Buffer Parser (CBP) application with the CRAY T90 series CBP runtime module. For more information about the CRAY T90 series CBP runtime module, refer to the *CRAY T90 Series CBP Runtime Module* document, publication number HDM-xxx-0.

Reset –> Channel



The Reset –> Channel command, as shown at the left, resets the FY driver.

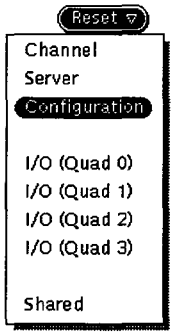
Reset –> Server



The Reset –> Sever command, as shown at the left, resets the server. This halts all control points, reloads the controller (environment 2 only), and reloads the control points.

NOTE: The control point reload function done by the Reset –> Server command does not remove any global or local changes you have made to the control points. If you want to reload control points and remove any global or local changes, click on Reload.

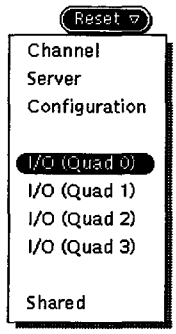
Reset –> Configuration



The Reset –> Configuration command, as shown at the left, causes SCE to reapply the configuration.

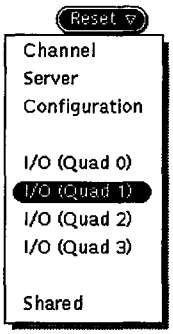
NOTE: This command does not work if any partitions have an OS owner. For more information about partition ownership, refer to the *System Configuration Environment* document, publication number HDM-xxx-0.

Reset –> I/O (Quad 0)



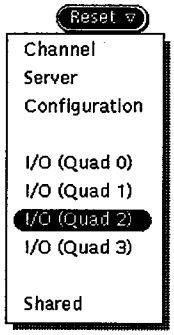
The Reset –> I/O (Quad 0) command, as shown at the left, toggles Master Clear for I/O quadrant 0.

Reset –> I/O (Quad 1)



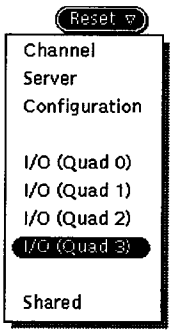
The Reset –> I/O (Quad 1) command, as shown at the left, toggles Master Clear for I/O quadrant 1.

Reset –> I/O (Quad 2)



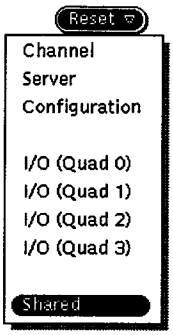
The Reset –> I/O (Quad 2) command, as shown at the left, toggles Master Clear for I/O quadrant 2.

Reset –> I/O (Quad 3)



The Reset –> I/O (Quad 3) command, as shown at the left, toggles Master Clear for I/O quadrant 3.

Reset –> Shared



The Reset –> Shared command, as shown at the left, toggles Master Clear for the shared module.

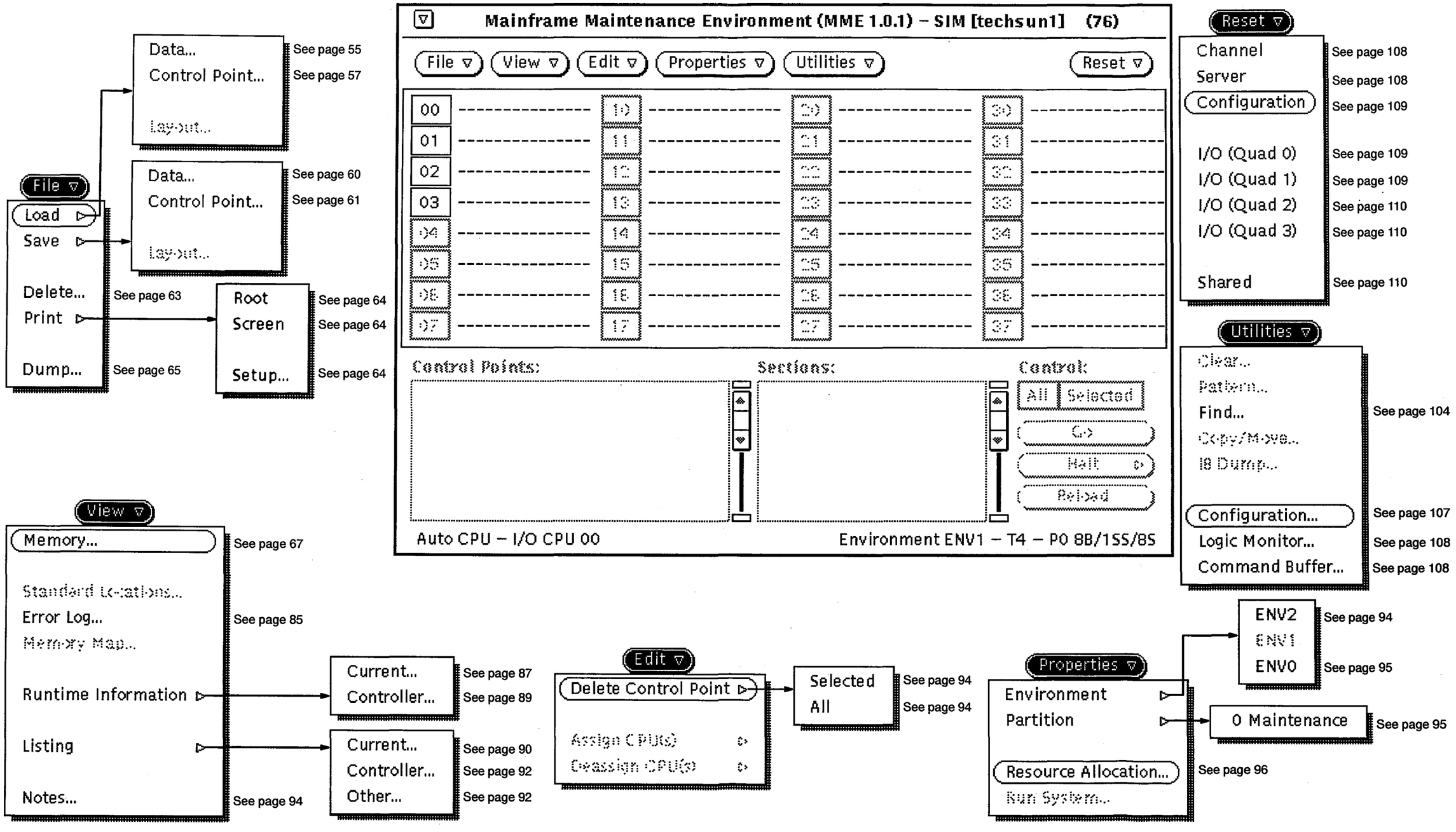


Figure 8. Environment 1 Menu Quick Reference

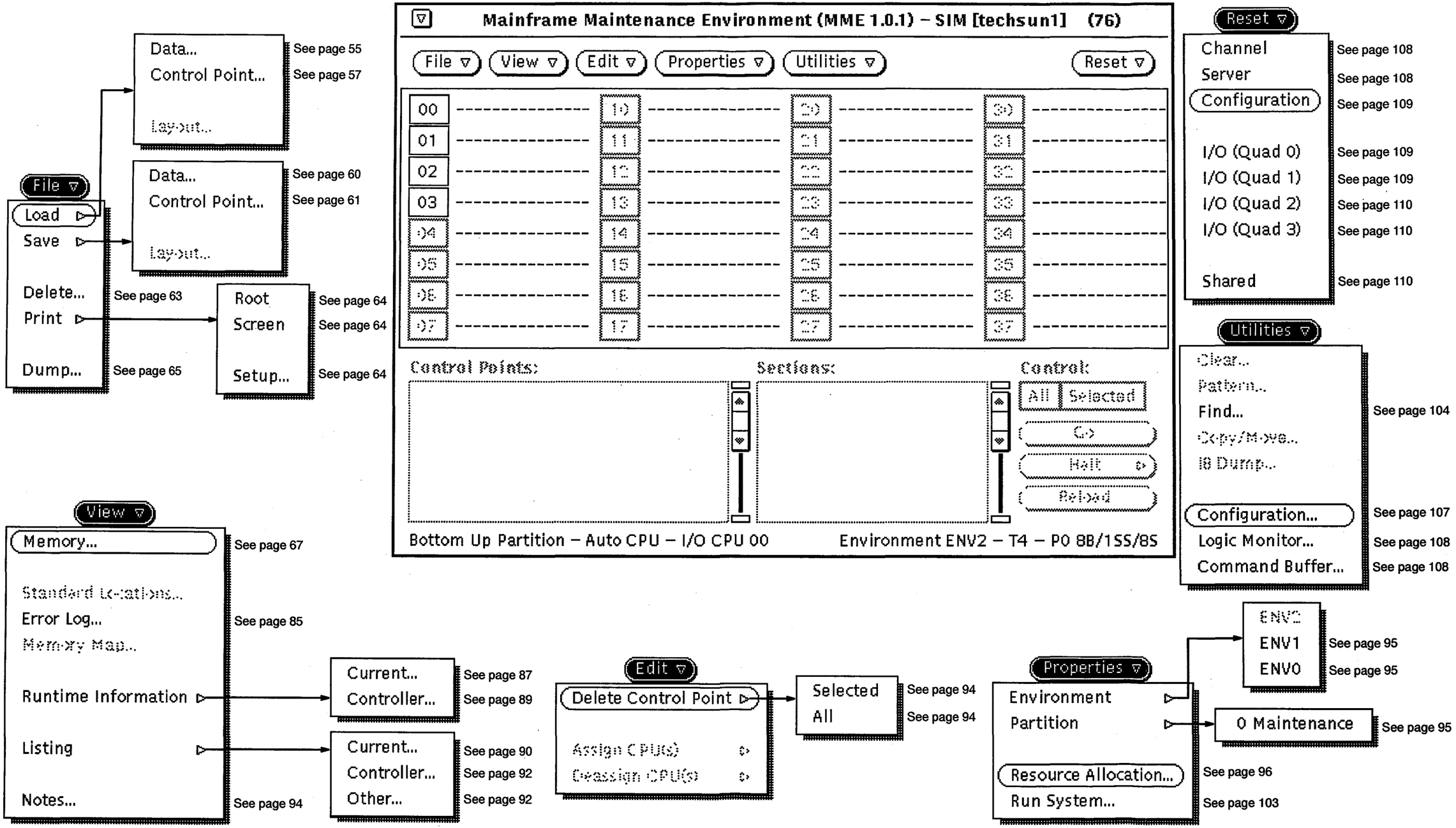


Figure 9. Environment 2 Menu Quick Reference

Reader Comment Form

Title: **CRAY T90™ Series**
MME Interface Reference
Preliminary Information

Number: **HDM-xxx-0**
December 1994

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