

DPM50

DMP50 DIAG MON
CZKMPA0

AH-F406A-MC
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IDENTIFICATION

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SEQ 0001

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1.0 ABSTRACT

The purpose of the RSX tasks is the selection and control of contemporary LSI11/IP300 diagnostics through a host system task. These diagnostics are down-line loaded thru an ISB11/ISV11 to an LSI11, run in a stand-alone environment and monitored by the host task in a real-time environment.

The tasks will provide utilities to allow a Field Service Engineer to perform first level diagnosis from the host system, or at a remote subsystem, to call and execute stand-alone type diagnostics utilizing the complete RSX11M/Dataway hardware as though it were merely an XDP media.

Additionally, the tasks will allow an operator to perform limited modifications to diagnostic "image" files.

2.0 REQUIREMENTS

2.1 ENVIRONMENT - HARDWARE REQUIREMENTS

RSX11M System
DEC Dataway
DPM50
96k

2.2 ENVIRONMENT - SOFTWARE REQUIREMENTS

2.2.1 RSX-11M Operating System

The following macros are required:

2.2.1.1 FCS

FSRSZ\$, FINIT\$, FDBDF\$, FDATA\$, FDOP\$,
FDRC\$, FDBF\$, NMBLK\$, OPENS\$, OPENS\$,
CLOSE\$, GET\$, PUT\$

2.2.1.2 CSI

CS1\$, CS1\$1, CS1\$2

2.2.1.3 OTHEVS

E 1

SEQ 0004

ALUND, aLUNSS, hGLUNS, DIRS, ASTXSS, EXITSS,
CMKTSS, MRKTSS, WTSESS, WAITSS, QIOS, QIOWS

2.2.2 ITG SoftwarePackage

3.0n TESTnFUNCTAONAL DESCRIPTION

Primary DPM50 testing, diagnosing and verifying will be performed by VS:hTas"shUtm,m:m.Ghahsdr Es\$ff'daagnstic "image" files on the system disk. The facility to update the current "image" files will be provided in the diagnostic task.

The RSX11 tasks and 8080 monitor will provide the operator with the ability to call and execute stand-alone diagnostics in the remote subsystem under test with calling facilities and error reporting at either a local terminal or the host system console.

3.1 DPM50 'ON-LINE' DIAGNOSTIC

This program/procedure will consist of three basic pieces which are: a) an RSX11M non-privileged task with limited "user-mode diagnostic" features (i.e., in respect to the ISB11 driver only), b) a small down-line loadable 8080 based monitor to facilitate communications between the F.S. maintenance console and the host, and c) a set of files on the customer's disk, each of which represents one stand-alone LSI11/IP300 diagnostic task in image format.

The image files described in "c" above will be initially provided on the same distribution media as the RSX11 DPM50 tasks and will be capable of being updated via patching facilities built into the RSX task in the host mode.

Operation of this DPM50 task is in essentially two modes, one of which is selected immediately after the operator "calls" the DPM50 diagnostic task (i.e., > RUN CZKMP). The two modes of the task are: a) LOCAL DIAGNOSIS MODE and b) HOST DIAGNOSIS MODE. In this and all subsequent references "LOCAL" infers diagnostic procedures initiated and controlled at the LSI11/IP300 subsystem level and "HOST" infers operator control exclusively from a host RSX11M system.

3.1.2 Local Diagnosis Mode

Conceptually, this process consists of three levels of abstraction utilizing the system QIO calls and the IPG software commands as the threads of communication interlinking the RSX11M host task, the 8080 diagnostic monitor and the LSI11 based stand-alone diagnostic.

3.1.3 Host Diagnosis Mode

The purpose of this type of test is to verify the operation of individual components on the remote DPM50 subsystem from the host system. The diagnostic process is quite similar to the APT "quick verify" process which, although it is expected to find most faults, it is not and cannot be expected to be as comprehensive a testing process as that conducted in "local" mode. It does provide, however, an efficient method for Field Service to verify basic functionality of the remote subsystems.

The process, which can be initiated in several ways, always utilizes the testing methodology analogous to the Automated Process Testing (APT) utilized in various mfg. plants. It follows then that for a diagnostic to be usable, it must be fully APT-compatible utilizing hooks for controlling the test and reporting end of pass and errors. It is anticipated that the "up-line load" command will be utilized for reporting and the "down-line load" command for test initiation, termination and control.

4.0 STARTING PROCEDURE

```
SET /UIC=[200,270]
```

This instruction will establish the user code to be the same as that used when the tasks and image files of LSI11/IP300 diagnostics were originally loaded on the disk.

```
RUN CZKMPA
```

This instruction will start the RSX diagnostic task.

5.0. OPERATING PROCEDURE

5.1 INITIALIZATION

CZKMPA VERSION 2.2

At the beginning of the task, the current version number of the task will be printed as shown above.

SELECT MODE: LOCAL, HOST, AUTO-MAP OR EXIT (L,H,A,E)

The mode query enables to user to select which mode of operation is to be used or to exit the task. The Auto-map feature is planned for future development. Host mode will continually return the user to this mode query for additional input and it must be used as the exit medium. Local mode will terminate the task normally when the user specifies from the remote subsystem. A CNTL Z input to any Host mode query will return the user to this mode query.

All input values are in octal unless otherwise specified as decimal. The same is true of numbers used in printed statements.

ENTER NUMBER OF TERMINALS [D] =

Enter the total number of terminals to be specified as input. This number will be compared against the number of terminals specified later and will generate an error if they are not equal. As indicated, this is a decimal number.

ENTER CONTROLLER NUMBER [O] =

Enter the controller number in a range from 0 - 3.

ENTER TERMINAL NUMBERS [O] =

Enter the terminal numbers to be used associated with the above controller number within a range from 0-77. They may be entered in the following formats:

1,3
1-5
1-5,7-12

NUMBER OF ENTERED TERMINALS = 2

This statement will print out the number of requested terminals which were successfully attached to the task. If both port addresses of a DPM50 were specified as input, only the base port address will be included in the count. The count is the number of subsystems not addresses. Both addresses are attached to the task.

UNIT ** CONTROLLER ** LOGICAL SB ** LUN **

1 1

SEQ 0008

1 0 1 7
1 1 41 10

A table of the successfully attached subsystems will be printed. The number of entries will match the number of terminals printed in the statement above.

5.2 LOCAL DIAGNOSIS MODE

The following inputs will be entered on a terminal connected to the local DPM50 being diagnosed by the F>S> Engineer.

>FILE NAME

Enter any LSI11/IP300 diagnostic file name for which there is an image file on disk. Whenever the prompt character ">" is printed, enter a file name or a CNTRL Z which will allow entry of the termination code.

157776
@200G

The memory size and an "at" sign will be printed when the diagnostic has been successfully downloaded into LSI memory. The system is in ODT mode and the diagnostic can be started by entering 200G (the standard diagnostic start-up). The diagnostic will operate as though it were in stand-alone XXDP mode and will print any messages or errors on the terminal.

To halt the diagnostic and re-enter ODT mode, press the "BREAK" key.

017312
@760144/000000 1

As the subsystem re-enters ODT mode, the address at which the break was made will be printed (disregard) and an "at" sign. Open location 760144 (CSR4) and enter

1 (to terminate the task) or

2 (to request another diagnostic).

Termination will print a message of @EX. Alternately, a prompt character will be issued for another file name.

NOTE: THE TASK MUST BE TERMINATED IN THE MANNER. IT CANNOT BE SUCCESSFULLY TERMINATED FROM THE HOST COMPUTER.

The following messages printed in relation to the running of the hardcore diagnostics are also printed on the host terminal following the execution of local mode. They are the last procedure run in local mode but the first one in host mode.

STARTING HARDCORE DIAG -- TERMINAL X WILL GO OFFLINE

This is simple a message warning the user that the terminal should be expected to go offline during these tests.

TERMINAL X IS OFFLINE
TERMINAL X IS BACK ONLINE

These messages indicate that the terminal did go offline and returned successfully to an online status. If the hardcore diagnostics fail, the DPM50 will not come back online and an error message will indicate this condition. If the softcore tests (which are the last three tests of the hardcore diagnostics) fail, the unit will return online but error messages indicating the softcore failures will be printed.

SYS ID ** PORT ** MEM SIZE
400 1 157776

This is a printout of the system id, base port address and memory size of the DPM50 on which hardcore diagnostics were just run.

ENTER S OR A FOR SCRIPT OR AUTO-SCRIPT =

A carriage return will skip over the script mode and allow individual input of diagnostic file names. An "A" should be used for auto-script operation when the desired script already exists. An "S" should be used when a script is to be created and then executed.

When an "A" is input, the following message will be printed.

ENTER SCRIPT NAME =

Enter the name of the script already created that is to be executed.

When an "S" is input, the following is printed.

TO SAVE SCRIPT, ENTER NAME =

If the script is to be saved on disk for future use, enter the name to be used to recall it later. If the script is not to be saved, enter a carriage return and after the script is executed it will be destroyed.

ENTER FILE NAMES TO BE SCRIPTED AND NUMBER OF PASSES

FILE NAME =

Enter any LSI11/IP300 diagnostic for which there is an image file on disk. To terminate a script, type a carriage return after this query.

PASSES =

Enter the decimal number of passes to be executed of the above diagnostic. The maximum is 32768.

These two queries will be repeated until the script is terminated by a carriage return. The script will then be executed.

After the execution of a script, the following query will be printed.

ANOTHER SCRIPT? (Y OR N)

To run another script, enter "Y" and the task will return to the script query. Otherwise, the task will return to the mode query.

If script mode is skipped, the task will jump to this point.

ENTER FILE NAME =

L 1

SEQ 0011

Enter any LS111/IP300 diagnostic for which there is an image file on disk.

HOW MANY PASSES?

Enter the number of passes to be run of the diagnostic up to a maximum of 32768. However, unlimited iterations of the diagnostic may be run by entering a carriage return. The diagnostic will continue to execute until the RSX task is aborted. If unlimited iterations are to be run, the following query will be printed. For a specified number of passes, the pass count will be printed as often as it is uploaded from the diagnostic.

ENTER NUMBER OF PASSES BETWEEN PRINT STATEMENTS =

Enter any decimal number to a maximum of 32768. A carriage return will cause a default to 1000.

ANY PATCHES (Y OR N)?

Enter yes, if there are patches to be made to the diagnostic before it is downloaded.

OPTIONS ARE:

1 = LOAD AND SAVE

This option will patch the diagnostic and save the new version on disk as well as execute the patched version.

2 = LOAD AND GO

This option will patch the diagnostic and execute it but it will not be saved.

3 = PATCH ONLY

This option will patch the diagnostic and save it but it will not be executed.

ENTER OPTION CODE =

Enter the option code selected from the list above.

ENTER PATCHES

Enter the patches by typing first the address to be patched followed by a slash "/" and then the new value to be stored. All addresses to be patched must be entered although not necessarily in sequential order. A line feed will not

retrieve the next address. Each entry must be on a separate
line and the list terminated by a line with only a carriage
return as input.

M 1

SEQ 0012

PATCH TABLE LOADED

This indicates the patches have been successfully accepted.

DOWNLOADING DIAGNOSTIC XXXXXX.IMG;1
ON TERMINAL X

N 1

SEQ 0013

Since there is a slight pause as the diagnostic is being downloaded and started, this message is to indicate what is happening. After the diagnostic is started, the pass count will be continuously printed as shown below.

PASSES COMPLETED = 9999 ON TERMINAL X

A pass count will not be printed after every pass since more than one pass may be completed of the diagnostic between uploads from the diagnostic. The last pass count may be greater than the specified number of passes for the same reason.

CZKMPA ... END OF DIAGNOSTIC

This message indicates the diagnostic has completed the required number of passes.

ANOTHER DIAGNOSTIC ON THE SAME TERMINAL IN HOST MODE? (Y OR N)

If yes, the program will return to the file name query. If no, it will return to the mode query.

6.0 ERROR REPORTING

Except for the two errors returned under local mode on the local terminal, all errors will be reported on the host terminal. The two exceptions are:

BD = Bad load
 NX = Non-existent file

In addition, errors from the LS111/IP300 diagnostics being run in local mode will be reported on the local terminal as stated earlier.

The errors reported on the host terminal fall into the following categories.

RSX ERRORS

A knowledge of the RSX operating system would be helpful in interpreting these errors. However, the most common DSW error code will be a -65, which indicates the DPM50 is offline.

Controller X Terminal XX is not SYSGENed In
 Terminal XX Cannot be Assigned - DSW =
 Terminal XX Cannot be Attached - DSW =
 Lun 99 Cannot be Assigned - DSW =
 Download Error on Terminal X - DSW =
 Upload Error on Terminal X - DSW =
 File Name in Error is XXXXXX
 CZKMPA ... Directive Failure During (operation listed below)
 CZKMPA ... I/O Error During (operation listed below)

Terminal Assign Logical Unit Number (ALUN)
 Console Prompt
 Console Reply
 Attach Serial Bus (SB)
 Detach SB
 CSI (Command String Interpreter)
 File Open
 File Read
 File Write
 Kill Attach
 SB ALUN
 SB GLUN
 SB Already Attached

Mark Time
 Clear Mark Time
 INPUT DATA ERRORS

CZKMPA ... Invalid Controller Number
 CZKMPA ... Invalid Terminal Numbers
 CZKMPA ... Invalid Response
 CZKMPA ... Terminal Input Exceeds Total
 CZKMPA ... Multiple Terminals Cannot be Diagnosed in Local Mode
 Terminal X is the Upper Port of a DPM50 (Warning Only)

CZKMPA ... Bad Data on the Script File

HARDCORE DIAGNOSTIC ERRORS

Terminal X Remained Offline (Hardcore Failed)

Softcore Failure:

Terminal X Softcore Error 1

Terminal X Softcore Error 2: Memory Error

Terminal X Softcore Error 3: CPU Error

These errors will generate a query regarding whether the user wishes to ignore these errors.

OVERRIDE SOFTCORE ERROR? (Y OR N)

A yes answer will generate the following warning:

WARNING -- TESTING MAY GENERATE UNPREDICTABLE RESULTS

LSI11/IP300 ERRORS

These errors are reported via the APT window.

Diagnostic Failed on Terminal X - Fatal Error 99

Diagnostic Hung on Terminal X - No Activity

7.0 MISCELLANEOUS

All LSI11/IP300 diagnostics must be APT-compatible.

The Diagnostic Supervisor has not been used in this RSX task.