VLA COMPUTER MEMORANDUM NO. 160
GRIDDER SYSTEM
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Part 3 - Changes made to Floating Point Systems Software

1. Introduction

During the year, I made some changes to the FPS provided Array
Processor software. The changes were made for the following reasons:
-Errors in the FPS software
-Indirect command loader for APAL and APLOAD
-Extension of driver and changes to APEX to be able to program
without a resident I/O page to save addressing space
-Addition of STOP support to APEX
-Smaller size of APSTOP

All routines changed can be found in [302,14] together with a command
file that compiles it with the same name.

In [302,14] there are two libraries:
FPSLIB.OLB - incorporating all errors and additions.
FPSWNB.OLB - in addition incorporating the changed version of
APSTOP and the non-resident I/O page version of APEX.

To generate a new system in which non-privileged task images   will
work, the necessary steps are:
-Create FPSMC.MAC, defining the number of AP's in the system.
-Copy DAPEX.MAC, DAPEX1.MAC, DAPEX.CMD, DAPEX1.CMD, FPSLIB.OLB,
FPSWNB.OLB, APDRV1.MAC, APDRV1ASM.CMD, APDRVBLD.CMD to new
system.
-Run @APEX, @DAPEX1, @APDRV1
-Copy any FPS task wanted to new system (be sure to copy from
[302,14] any tasks wanted with corrected errors).

To generate a completely new system:
-Follow FPS generating procedure.
-Copy all files from [302,14]
-Do the above
-Do the following if error correction wanted:
@MAPAR, APLLI, APRUN, APDEV, APSTOP
@APA, @APL

2. Details

2.1 DAPEX
Addition of STDMA, STRUN, APSI commands; identical to WTDMA, WTRUN,
APWI, but using STFOR rather than WTFOR. Included in FPSLIB.

2.2 DAPEX1
Addition of STDMA, STRUN, APSI; and using driver calls instead of
I/O page mapping.
Included in FPSWNB.

2.3 APDRV1
Addition of pre-queuing part to execute functions normally done via I/O page.

2.4 APSTOP
Deletion of all message texts (saves a lot of memory).
Included in FPSWNB.

2.5 APLLI
Included line 28: CALL FDBSET (LUNIT, 'READONLY'). Done to prevent the locking of the AP binary file each time a program error or crash occurs.
Included in FPSLIB and FPSWNB.

2.6 APRUN
Included line 9 and 10 to specify APXCOM, and changed line 34 to be able to set breakpoints with APEX, so that APLOAD and APLINK can work the same way. This patch probably has to be undone if the overlay possibility of APLOAD is ever used.
Included in FPSLIB and FPSWNB.

2.7 WLIN (for APA)
Changed the line formatting to suppress the output of multiple blank pages (this error could be due to the DEC10 spooler).

2.8. MAPAR (for APA and APL)
Macro routine to be able to use indirect command files.

2.9 APALI (for APA)
Changed all terminal input requests to calls to MAPAR.

2.10 IOMAPS
Changed translation tables to include [] (square brackets) to be able to use them in any APAL or APLOAD reference. Included in FPSLIB and FPSWNB.

2.11 APL (for APL)
Changed all terminal input requests to calls to MAPAR.

2.12 LOADMP (for APL)
Included line 7 (INTEGER TABGET) to suppress a multitude of format conversion errors in printouts of storage maps.

NOTE: Some of the changes were done in haste or hate, and not all of them are properly documented in the routies themselves.

2.13 APLIB.
In [302,14] a library called APLIB.LED exists. It is identical to APLIB but has been through the LED (library editor) to increase the access speed.