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Identification

An Overview of Line Printer Output

D. L. Stone

Purpose

This document describes in general terms the mechanism by which lines are printed under Multics.

General Discussion

The printing of lines under Multics is accomplished in two stages:

1) The user directs output calls through the IO switch to the pseudoprinter module. This module accepts calls and executes returns exactly as if it were directing the calls to the PRT-202. In fact, however, the data received is stored in the file system. The result of a series of calls to the pseudoprinter is a linear file system file consisting of ascii characters. The status returns will indicate that output has been accomplished, although in general, none will have been initiated. During the creation of the output file the pseudoprinter communicates with the Line Printer Driver -- a system process which oversees the physical printing of files. The driver executes some output strategy designed to keep the printers busy and the file system uncluttered.

2) At some time following the detachment of the user's output stream from the pseudoprinter, the line printer driver initiates the physical printing of the file which represents that user's output. The driver is responsible at this time for device allocation, forms strategy and operator communication. The driver passes a file name to the printer pump when it decides that that file should be printed. The pump and modules below it are in a separate process which is associated with the GIOC channel which has the desired printer connected to it. That is, there is a separate instance of the pump for each printer in the system. The pump is responsible for obtaining data from the file created by the pseudoprinter. Having obtained some data, the

pump calls through the IØ switch to the Printer Interface Module (PIM) which translates enough ascii data into six bit GE BCD to produce one page and then calls the GIOC Interface Module (GIM). Status information concerning the physical transaction is decoded by the PIM but is acted upon by the pump, which receives its information in the status return string of the normal interface (thus allowing IØ system trapping).

For privileged users, there is another method of producing printed output which allows synchrony. This alternate path directs a user call through the IØ switch directly to the Printer Interface Module. Any standard IØ system call which can be made to the pseudoprinter can be made to the PIM. It is anticipated that systems programmers and customer engineers will be the only direct users of the PIM, since a printer must be dedicated to each such user for the duration of his attachment.