

Identification

Overview of Interprocess Communication

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Purpose

A means is presented by which users and/or processes may conveniently exchange information with one another.

Discussion

It is imperative, within the Multics system, that processes be able to easily communicate with one another. Some of the uses of interprocess communication (IPC) are:

- 1) Users may wish to talk to one another through Multics. Facilities which allow this are mail and interconsole messages which use IPC extensively.
- 2) A user may wish to multiprogram a problem thereby necessitating coordination of many processes.
- 3) User processes may wish to call upon system processes to perform system services (e.g., logging out, bulk I/O).
- 4) One process may wish to inform another process that it has performed some supervisory function in the latter's behalf (e.g., processed an I/O interrupt or alarm clock interrupt for the latter process).
- 5) An overseer process in a group of processes may wish to give instructions to or receive responses from subordinate processes.

The above are some general applications of interprocess communication.

Probably the best example of a facility in Multics that facilitates interprocess communication is the file system. The ability to share segments makes the transmission of data between processes extremely easy. However, this section is concerned with those primitives specifically provided to allow processes to directly transfer information. These primitives, of course, make extensive use of the sharing capabilities within the file system.

IPC logically divides into two facilities, message segments and interprocess event signals (IPES). Message segments allow processes and/or users to communicate messages, i.e., data in the form of strings of bits, with one another. IPES allows processes to communicate timing information by permitting one process to notify another that some event of mutual interest has occurred so that the latter may take appropriate action at that time. In this way processes can be synchronized.

Both message segments and IPES are described in detail in other MSPM sections.