



file: IPC/Multics

Massachusetts Institute of Technology
Information Processing Center
Cambridge, Massachusetts 02139

November 14, 1969

To Members of the Faculty and Staff:

The M. I. T. Information Processing Center announces the general availability of a major new information-processing service. The Center now operates a General Electric GE-645 computer system, located in Technology Square, to provide Multics (Multiplexed Information and Computing Service) to the M. I. T. campus.

The Multics operating system has been developed by a cooperative project involving M. I. T.'s Project MAC, the General Electric Company, and the Bell Telephone Laboratories. The system provides one of the most advanced time- and information-sharing facilities available.

The Center will cooperate with Project MAC in the continuing development of the Multics system, while providing the M. I. T. computing community with a powerful, sophisticated, and reliable remote-access computer utility. We expect that many of the application programs now operating under CTSS, and possibly other user-developed subsystems now running in other time-shared computers, will be transferable to the Multics environment with an acceptable level of program-modification effort. Once in Multics, these programs can begin to benefit from the improved capabilities that are available in the new system. The cost-performance ratio for Multics, initially about equal to that of CTSS, will improve considerably over the three-year initial period. Multics will supplant CTSS as the Institute's primary general-purpose time-sharing system, and CTSS service will be terminated (with appropriate notice) when Multics has proved its ability to support the work now being done on CTSS. A tentative target date for CTSS termination is 31 December 1970.

Features

The initial hardware configuration for Multics consists of two processors, two input/output controllers, 393,000, 36-bit words of core memory, one 4-million-word paging drum, and 51 million words of disk storage. This configuration may be modified and will be expanded as necessary to meet the needs of the community. Multics can now be used from terminals connected to the M. I. T. data switch. The system presently supports M. I. T.-modified 2741's and 1050's, and standard Model 37 teletypes. Provisions for handling ARDS consoles, GE TermiNet 300's, and Model 35 Teletypes are planned.

The Multics system provides a state-of-the-art software environment, which allows the user to make use of a segmented address space whose virtual size (span) exceeds 4 billion words. The system provides dynamic symbolic subroutine linkage, a flexible I/O stream attachment capability and support for the PL/I language and the ASCII character set. The file system allows controlled in-core read and write sharing of information among users, and a multiple-level directory hierarchy in which each file is referenced by its symbolic name. PL/I is the recommended language in the present system, although several other languages are currently accepted, and more are planned.

Three-Year Service Commitment

This announcement carries out the new policy of explicitly committing to provide a major service component for a stated minimum time period. In the case of Multics, a commitment period of three years, beginning 1 October 1969, was recommended by the Information Processing Advisory Committee, endorsed by the Information Processing Board, and approved by the Provost.

The significance to users of such a commitment is that it provides a basis for planning and proposing research and educational tasks with the assurance that the computer-system base on which they rest will not be unexpectedly swept away. A three-year minimum commitment, of course, does not mean that we expect Multics to be terminated at the end of three years; in fact, we would hope after a year of experience with the system to announce a substantial extension of the commitment period.

Similar commitments with respect to other IPC services are being established and will be published shortly.

Further Information

Manuals and further information on the Multics system are available from the Center's Publications Office, 39-477. At present, users may obtain consulting help from IPC and MAC staff members in 39-219 between the hours of 2 and 4 p. m. , Monday through Friday. Any M. I. T. user wishing further information should contact Mr. J. R. Steinberg, Manager of User Services, in 39-427.

Richard G. Mills, Director
Information Processing Services

INTERDEPARTMENTAL

MASSACHUSETTS INSTITUTE OF TECHNOLOGY CAMBRIDGE, MASS. 02139

from the office of Information Processing Services

October 14, 1969

To: All IPC Users

From: R. G. Mills

Subject: Charges for the Use of the Multics System

The following provisional prices for use of Multics (Multiplexed Information and Computing Service) on the GE-645 are effective October 6, 1969.

CPU Time

Shift 1	(0800 - 1800)	\$420/hour
Shift 2	(1800 - 2400)	\$330/hour
Shift 3	(0000 - 0800)	\$180/hour
Shift 4	(0800 - 2400 weekends)	\$240/hour

Terminal Connect Time

\$1.00/hour

Secondary Storage

\$1.00/page/month
(effective October 17, 1969)

Registration

\$10/user/month

The secondary storage charge will be assessed daily at a rate of \$.033/page/day. The registration fee will be charged as \$10 for each month or fraction of a month in which a user is registered.

For those of you who are familiar with CTSS charging, you will find that these prices represent an improvement. The GE-645 has a more powerful CPU, a more extensive instruction set, and a 1 μ sec memory. In addition, directory records are not charged for at a higher rate, as they are on CTSS.

These prices will remain in effect for at least the months of October and November. A new, finer-grained accounting scheme is now being worked on which will permit us to lower the CPU rate, charge explicitly for core usage, and provide CTSS-like resource-usage limit stops. Ample notice will be given to users before any revisions are made to the current rate schedule.