Digital Equipment DECsystem-10
New Product Announcement

DECSYSTEM 1090 AND 1099: On November 24, 1976, DEC announced the DECsystem 1090, a significant enhancement to the DECsystem-10 family of large-scale time-sharing systems. A dual-processor system, designated the DECsystem-1099 and based on two 1090's, was also announced.

Readers with long memories may recall that the DECsystem 1090 was "officially" announced in October 1974, along with the DECsystem 1080, but DEC concedes that only one system was actually introduced then and that the announcement of the 1090 at that time was premature.

The 1090 is based on a new CPU, designated the KL10B. It is a direct replacement for the KL10 CPU that is currently used in the DECsystem 1080 and the dual-processor 1088. The most significant improvement in the KL10B is the addition of integrated mass storage controllers, very much like those used in the KL20 CPU that is the basis for the DECsystem-20 (Report 70C-384-03).

Until the introduction of the DECsystem 1090, all DECsystem-10 models employed external controllers for mass storage. The 1090, however, has provisions for connecting the older-style external controllers, permitting existing DECsystem-10 installations to upgrade to the new CPU without traumatic hardware changes and replacements.

The new integrated channels can be used for either magnetic tape or disk drives. Up to eight RP04 (20 million words) or RP06 (40 million words) disk drives or up to four magnetic tape drives can be connected to each controller. A dual controller arrangement can also be implemented, allowing up to eight tape drives on a single CPU channel.

The new controllers include 16-word buffers that help to reduce the overhead caused by multiple direct memory access requests. The older controllers do not have the buffering capabilities, and can increase system loading through additional memory requests. Diagnostic capabilities have also been included in the integrated controllers.

By incorporating the mass storage controllers into the CPU cabinets, the basic system package cost is reduced by about 25 percent.

A new subsystem and a new communications subsystem were also unveiled with the 1090. The new MH10 memory system includes 256K 36-bit words and features two-way interleaving and eight memory ports for multiple CPU and/or I/O accesses to memory. The older MG10 memories have four-way interleaving but only four memory ports. The DECsystem 1090 can have up to 16 MH10's, providing a total of 4096K 36-bit words.

The DN87S communications front-end is a subsystem built around a PDP-11 minicomputer. It is housed in a separate cabinet and can terminate up to 12 synchronous or 112 asynchronous lines in specified mixtures.

The DECsystem 1090 can support more than 128 users engaged in general-purpose time-sharing activities, such as program development and multiple applications programs, or over 1000 transaction processing users. System prices for practical DECsystem 1090 configurations start at about $700,000 and can extend beyond $2,000,000.

The new dual-processor DECsystem, called the 1099, employs two 1090 systems operating in a master-slave relationship. Such configurations are supported by the TOPS-10 operating system, and dual-processor versions of every DECsystem-10 model have been produced.

The basic DECsystem 1090 configuration includes the KL10B CPU, 256K words of main memory, one RP04 20-million-word disk drive, 16 asynchronous communications lines, an LA36 DECwriter II console terminal, and system software consisting of the TOPS-10 operating system with virtual memory, the batch system loader, the macro assembler, editor, and utilities. Programming languages included with the system software include FORTRAN, ALGOL, BASIC, COBOL, and the GALAXY batch processor. The purchase price for this minimum system is $580,000, with a monthly maintenance charge of $2,091. Shipments of the new DECsystem 1090 and 1099 are scheduled to begin in March 1977.

NEW SOFTWARE: DEC also announced a number of software products that can be used with the DECsystem-10 computers.

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APL-SF is an IBM-compatible programming system that features the *divide-quad, execute, quote,* and *dyadic-format* operators; dynamically variable user workspaces and symbol tables; immediate-mode line editing; and random statement branching, in which branching may occur anywhere in the statement line. Multiple statements per line and double-precision floating-point (18 decimal digits) are also supported. APL-SF also includes system functions such as file operations, including Enqueue/Dequeue, and allows the creation of local functions.

DBMS is a new version of the Data Base Management System that contains all the features of DEC's earlier CODASYL-compatible DBMS packages plus some new capabilities. The new features include a simultaneous-update facility, which permits multiple jobs to update one file simultaneously, and a new data base format designed to improve system performance. The DBMS package also includes a utility called DBINFO that can be used to generate cross-reference listings, visual maps, and system statistics, such as the amount of free space available.

As a complement to the DBMS package, the *Interactive Query Language (IQL)* processes DBMS files through operator-initiated queries. IQL is a retrieval and report-writing system that includes condition processing, computational expressions, built-in summary statements, and formatting capabilities for the generation of multiple reports.

Conversational Programming Language (CPL) is a high-level interpreter subset of the ANS PL/1 language. It includes the majority of PL/1 built-in functions and pseudo-variables and employs all four classes of PL/1 storage. Also implemented in the interpreter are the *fixed, float, character, character varying, bit, bit varying,* and *pointer* data types.

SORT/MERGE is a new version of SORT-10 that adds a merge capability to the earlier utility program. It has interfaces to both FORTRAN and COBOL, permitting direct calls from programs written in these languages. SORT/MERGE automatically controls the use of disk space and provides error diagnostics and statistics upon completion. FORTRAN-10 and COBOL-10 have also been enhanced to support the merge capabilities of the new package.□

		Purchase Prices	Monthly Maint. 12-hour	Monthly Maint. 24-hour
PROCESSORS				
KL10B	CPU for 1090 System; includes TOPS-10 virtual memory monitor license, LA36 console terminal, and integrated channels for up to eight mass storage controllers and up to three DN87S communications subsystems, for upgrade of existing systems	$ 395,000	$ 814	$1,030
SYSTEM PACKAGES				
DECsystem-1090 configurations include the KL10B CPU; 256K words of main memory; one disk drive; 16 asynchronous communications lines; one LA36 DECwriter II console terminal; the TOPS-10 operating system, including the VMSER virtual memory option; the batch system loader; the macro assembler; the FORTRAN, ALGOL, BASIC, and COBOL compilers; and the GALAXY batch processor.				
1090-F	DECsystem-1090 with one RP04 20-megaword disk drive	609,000	2,091	2,643
1090-H	DECsystem-1090 with one RP06 40-megaword disk drive	620,000	2,091	2,643
1090-X	DECsystem-1090 with one dual-access RP04 20-megaword disk drive	650,000	2,856	3,614
1090-Y	DECsystem-1090 with one dual-access RP06 40-megaword disk drive	660,000	2,856	3,614
DECsystem-1099 configurations include the basic DECsystem-1090 plus an additional KL10B processor.				
1099-F	DECsystem-1099 with one RP04 20-megaword disk drive	990,000	3,233	4,090
1099-H	DECsystem-1099 with one RP06 40-megaword disk drive	1,010,000	3,233	4,090
1099-X	DECsystem-1099 with one dual-access RP04 20-megaword disk drive	1,030,000	3,906	4,944
1099-Y	DECsystem-1099 with one dual-access RP06 40-megaword disk drive	1,050,000	3,906	4,944
MEMORY				
MH10-L	Memory module; 256K words, 1 microsecond, includes 8 ports	130,000*	725	918
COMMUNICATIONS SUBSYSTEMS				
DN87S-A	Synchronous/Asynchronous Communications Subsystem; controls up to 112 asynchronous or 12 synchronous lines	33,000	234	296

*Single-quantity price; quantity memory purchases are discounted separately from the standard DEC Quantity Discount Agreement.