

Cii Honeywell Bull DPS 7 Series New Product Announcement

In two announcements, one in September 1979 and the other in January 1980, CII-HB introduced the first four models of its new DPS 7 Series, a family of modular large-scale distributed processing systems. Designed to provide a common upgrade path for users of CII-HB Level 64 and 64/DPS systems and of CII IRIS systems, the DPS 7 also is aimed at converting users of IBM System/370, ICL 1900 Series, and Siemens System 4004 and Series 77 computers.

CII-HB offers three DPS 7 operating systems—GCOS 64E, SIRIS 3E, and SIRIS 8E—and three instruction sets, providing a direct upgrade path for users now running under GCOS 64, SIRIS 3 or SIRIS 8. For users of other systems, CII-HB offers Transit, a software conversion system.

DPS 7 systems are collections of specialized processors that can operate simultaneously, providing a maximum throughput of up to 25 megabytes per second in the 7/60 and 7/70 models and up to 36 megabytes per second in the larger 7/80 and 7/82 models. Current Mode Logic (CML), a fast, lower power, low heat technology, is used in the main processors, the I/O processors, the cache memories, and, in the 7/80 and 7/82 models, in the control store. Major system functions such as task management, addressing, and data protection, are implemented in firmware, providing a further performance boost.

DPS 7 central processors are composed of seven “mini-machines,” a control store, a 16K-byte cache memory, and a processor bus. This processing “system” is connected, via its cache memory, with the central bus, which also services main memory and the input/output processors. The I/O processors, which have their own control stores and main memories, are connected to the peripheral processors, which also have their own control stores and main memories. This distributed architecture enables various subsystems to operate simultaneously, allows subsystems to communicate with each other without tying up the main processor, and provides flexibility in distributed processing network environments.

The seven mini-machines in the main processor are as follows:

- **Pilot machine (PIM):** The PIM retrieves micro-instruction sequences from the control store and routes them to the appropriate mini-machines. Microprograms are composed of two or more 56-bit words, each protected by an 8-bit autocorrection code.
- **Address Calculation Machine (ACM):** The ACM handles all address translations and includes the base registers and an associative memory that stores up to 128 descriptors. The ACM also handles data protection by checking rings (under GCOS) or keys (under SIRIS).
- **Data and Instruction Management Machine (DIM):** The DIM provides the interface between the cache memory and the other mini-machines and includes a 32-byte lookahead buffer that often allows it to begin interpreting another instruction while a previous instruction is still being executed.
- **Arithmetic and Logic Machine (ALM):** The ALM includes the data registers and executes fixed-point, decimal, and logic operations.
- **Scientific Calculation Machine (SCM):** The SCM executes floating-point operations.
- **Timer:** Using the main clock as a reference, the timer transmits a master frequency along the processor bus and also provides various types of information, such as real time, elapsed time, and process time.
- **Maintenance Interface Machine (MIM):** The MIM provides the interface between the main processor and the service processor for system initialization and testing.

Each I/O processor has a control store of 4K 48-bit words, a main memory of 2K bytes, and a maintenance interface. Via a common memory interface unit, the I/O processor can transfer data to either the cache memory or the system's main memory. Four I/O processors are standard, and the 7/60 and 7/70 can have up to 12, the 7/80 up to 16.

New Product Announcement

Characteristics of the DPS 7 Series

Model	DPS 7/60	DPS 7/70	DPS 7/80	DPS 7/82
Date announced	January 1980	January 1980	September 1979	September 1979
Date of first delivery	4Q 1980	4Q 1980	4Q 1980	4Q 1980
Principal operating systems	GCOS 64E SIRIS 3E SIRIS 8E	GCOS 64E SIRIS 3E SIRIS 8E	GCOS 64E SIRIS 3E SIRIS 8E	SIRIS 8E
MAIN PROCESSORS				
Processors	1	1	1	2
Processor cycle time (nanoseconds)	210	160	110	110
Levels of internal simultaneity	7	7	7	7
CACHE MEMORIES				
Cache memories	1	1	1	2
Cache memory capacity (bytes)	16K	16K	16K	2 x 16K
Cache memory access time (nanoseconds)	160	160	110	110
MAIN MEMORIES				
Memory units	1	1	1	1 or 2
Throughput per unit (millions of bytes per second)	18	18	19	19
Double-word (eight-byte) read time (nanoseconds)	960	960	660	660
Double-word write time (nanoseconds)	880	880	550	550
Main memory capacity (millions of bytes)	2, 3, or 4	2, 3, or 4	3 or 4	4 or 8
SYSTEM BUS				
Bus cycle time (nanoseconds)	160	160	110	110
Bus width (data and address transfers are simultaneous)				
● Data (bytes)	4	4	4	4
● Addresses (bits)	28	28	28	28
Bus throughput (millions of bytes per second)	25	25	36	36
INPUT/OUTPUT PROCESSOR GROUPS				
Number of groups	1	1	1	1 or 2
Maximum throughput per group (millions of bytes per second)	18	18	19	29
Input/output channel throughput (millions of bytes per second)	2.5	2.5	2.5	2.5
Number of input/output processors	4 to 12	4 to 12	4 to 16	4 to 32
SERVICE, UNIT RECORD AND COMMUNICATIONS PROCESSORS				
Integrated Service and Unit Record Processors	1	1	1	1
Additional Unit Record Processors (optional)	1	1	2	5
Maximum connections supported	10	13	21	45
Communications Processor (optional, uses one connection)	1	1	1	—
Lines supported	15	15	15	—
NETWORK PROCESSORS				
Datanet 7100 front-end network processors (optional)	1	2	3	4
Total lines supported	48	128	256	512
MASS STORAGE PROCESSORS				
Integrated processors	1	1	1	1
Additional processors (optional)	2	3	3	7
Maximum disk units supported	27	36	36	72
Maximum online mass storage capacity (millions of bytes)	16,000	21,000	21,000	42,000
MAGNETIC TAPE PROCESSORS				
Single-access processors	Up to 2	Up to 4	Up to 4	Up to 8
Dual-access processors	1	Up to 2	Up to 2	Up to 4
Maximum tape units supported	16	32	32	64

Cii Honeywell Bull DPS 7 Series New Product Announcement

Via the I/O processors, the DPS 7 systems support four types of peripheral processors: unit record, mass storage, tape, and network. The integrated unit record processor supports the system console, card units, printers, diskette drives, document handlers, and, optionally, a DCC4380 communications controller. Details of the peripheral processors are summarized in the Characteristics table.

To help assure system availability, the DPS 7 includes special channels that allow diagnostic tests to be run and the system to be reconfigured without interrupting user service. A remote maintenance service allows the console operator to connect the DPS 7 to a CII-HB center, enabling specialists to monitor system performance, initiate diagnostics, and recommend solutions to problems.

At the low end of the new series, the DPS 7/60 provides about twice the performance of the largest 64/DPS model, the 64/DPS-6. The next model, the DPS 7/70, provides about 1.5 times the performance of the DPS 7/60. The fastest model, the DPS 7/80, provides about 1.3 times the performance of the DPS 7/70. The fourth model, the dual-processor DPS 7/82, is an upgrade only for the IRIS 80 and is not directly comparable to the 64/DPS.

A typical DPS 7/60 configuration will rent for about 125,000 FF per month, including software, and a typical DPS/70 will rent for about 160,000 FF per month. A DSP 7/80 system with about four times the performance of a 64/DPS-6 might rent for 170,000 FF per month, and a DPS 7/82 system with about twice the performance of a dual-processor IRIS 80 might rent for 350,000 FF per month. First deliveries are scheduled for the fourth quarter of 1980.□