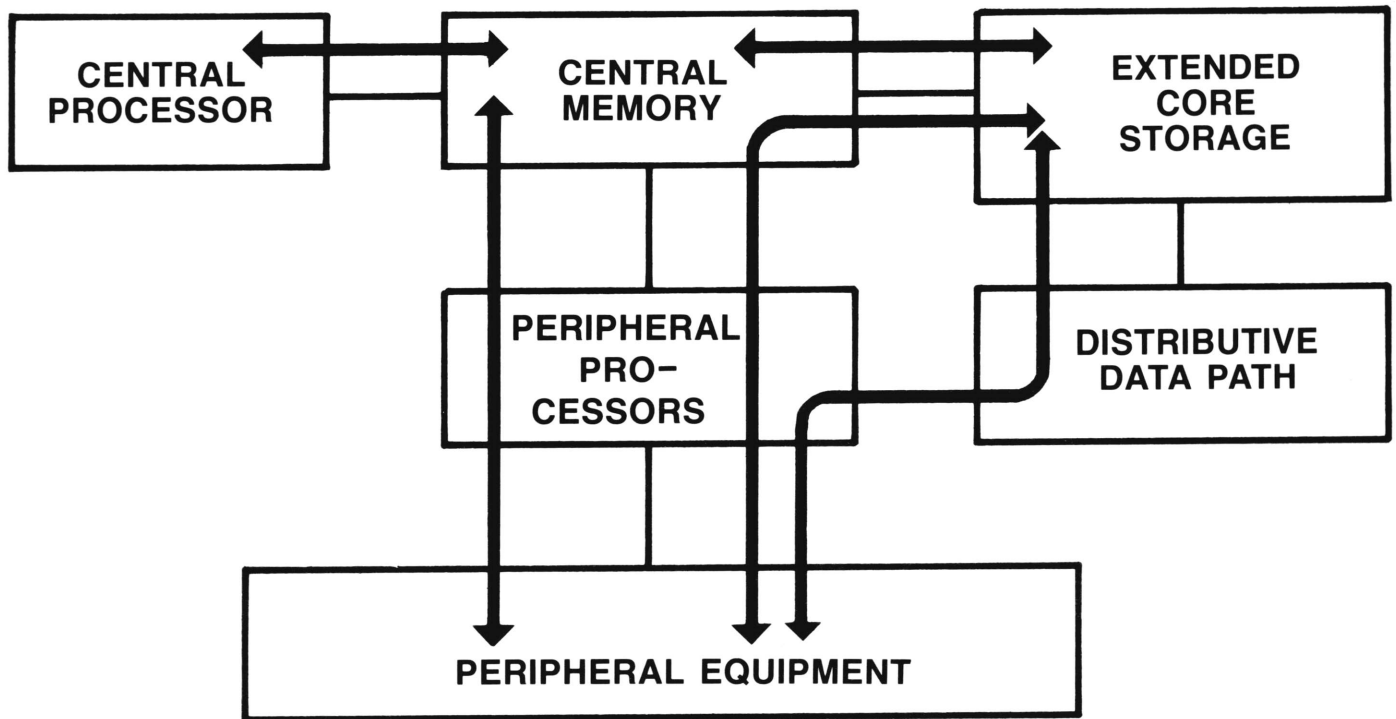


CONTROL DATA® CYBER 70™ SERIES EXTENDED CORE STORAGE

CONTROL DATA
CORPORATION



CONTROL DATA Extended Core Storage (ECS) is supported as an internal component of the CDC CYBER 70 Series/Model 72, 73 and 74 Computing Systems. The diagram above shows the basic components of a CYBER 70 computer. These include the central processor (a second central processor is optional), high-speed central memory, extended core storage, and peripheral processors. Modularity and flexibility of the CYBER 70 Family permits wide selection of central memory sizes, extended core storage sizes, and the number of peripheral processors employed. The heavy lines and arrows in this diagram show primary data paths.

ECS serves as an extension to the central memory, provides a instruction and information storage as well as serving as a high-speed input/output buffer.

Extended core storage enhances the capabilities of each element of the computing system and eliminates processing conflicts often existing in systems of more conventional design.

The following ECS functions outline the benefits of distributive system activities and highlight the advantages of multiple data paths within the CYBER 70 Series ECS:

- Provides a large economic extension to central memory. With ECS, the distributive data path provides paths for data flow, into and out of the system. This allows data preparation and input/output processing to proceed in parallel with data processing activities of the central processor.
- Supports the programmer by providing a large work area in which to store data elements and working parts of his program. He is able to solve larger programs and he gets his job through the system faster.

- Accelerates the operations of the central processor by buffering input/output operations. This permits the central processor to proceed at a rate unaffected by the speed of the peripheral equipment. The user is able to make efficient use of the central processor capabilities, and experiences faster job turn-around.
- Minimizes idle time of the central processor by providing job preparation and loading time.
- Supplements central memory by holding system information and library elements. This makes central memory more available for individual programs, and allows an installation to meet its requirements using smaller central memory capacities — with associated cost savings.
- Provides an extremely fast job-swapping medium, a key factor to fast response in remote terminal activities. A job in central memory can be swapped out, the remote terminal serviced, and the production job swapped back to central memory to continue processing — all within a fraction of a second.
- Supports the peripheral processors by holding library items that ordinarily would be kept on the system disk. Peripheral processors can perform their normal functions faster because of the access provided by ECS.
- The computer installation obtains higher performance on production jobs, faster turn-around, better response to remote terminals, and has more storage capacity for running extra-large programs.

ECS benefits the installation in general by greatly improving the efficiency of mass-storage use. The primary characteristics of an Extended Core Storage System are:

- Direct 60-bit connection between central memory and ECS for maximum transfer rates.

- Transfer rates between ECS and central memory up to 100 million characters per second (10 characters per 60-bit word).
- Single-word transfers or multi-word block transfers.
- Data stored in 488-bit "super words" which contain eight 60-bit words, plus a parity bit for each word.
- 3.2 microsecond cycle time per 488-bit "super word."
- 60-bit words available at 0.1 microsecond intervals on block transfers — depending on number of memory banks.
- Banks of 125,952, 60-bit words; banks multi-phased for maximum block transfer rates.
- Configurations of 125, 250, and 500 thousand, and one or two-million 60-bit words.
- Hardware-bounds protection for each job area in ECS.

The distributive data path consists of a large 480-bit buffer register which connects to ECS and to a CYBER 70 input/output channel. The buffer register provides an interface between the large data record (480 bits) of ECS and the 12-bit bytes of the peripheral processors. Three additional buffer registers may be added as optional equipment. These units allow up to four peripheral processors to access ECS simultaneously. Each buffer register has its own channel connection, and all four timeshare the connection to ECS.