

# The Xerox 560 Computer



XEROX

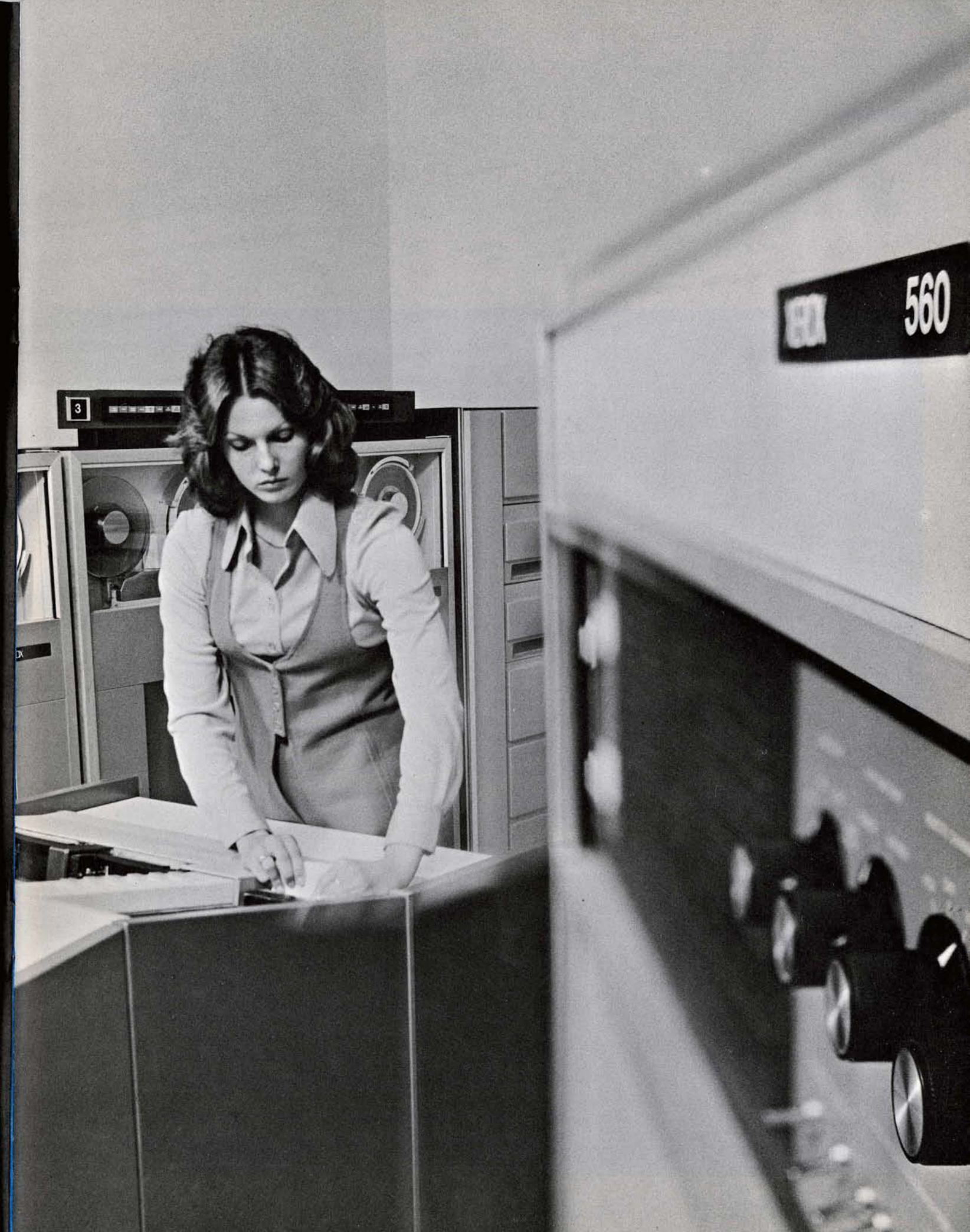
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The Xerox 560 computer system is a highly superior, multi-use computer system which satisfies the most demanding commercial, engineering and real-time data processing requirements. The 560 is targeted directly at the needs of the user. Five concurrent modes of processing offer the user unusual flexibility in the implementation of even the most complex applications; these are multiprogrammed batch, remote batch, conversational time-sharing, transaction processing and real-time. Up to 128 time-sharing and transaction processing users, 16 local and/or remote batch jobs, along with multiple real-time tasks, may all simultaneously utilize the resources of the Xerox 560.

The Xerox Control Program-Five (CP-V), the operating system for the Xerox 560, provides a virtual memory capability which maximizes memory utilization as well as increases the effectiveness of other system resources. The modular way in which the Xerox 560 system configuration can be structured assures that a user's current and future requirements will be met with an unusual simplicity and flexibility.

Implemented with state-of-the-art technology in computer, peripheral and software design, the Xerox 560 computer system provides enhanced capabilities; it fulfills the fast throughput, high reliability and ease of use requirements of the multi-use environment, while offering substantially improved price/performance.



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## Features

### Fast Response

**The Xerox 560 architecture offers extensive throughput capabilities.** The architecture features a multi-unit memory permitting high throughput and a multiple memory bus structure allowing independent processors to simultaneously access memory. Input/output transfers can take place simultaneously with computing operations.

**The Xerox 560 architecture offers high configuration flexibility.** The modularity of the system elements allows the Xerox 560 system to be optimized for each application.

### Reliable Performance

**The Xerox 560 control software, Control Program-Five (CP-V), utilizes the capabilities of the Xerox 560 hardware to meet a wide variety of multi-use requirements.** The use of the Memory Map and the Master/Slave/Master Protect modes of operation to insure program integrity permit CP-V to offer time-sharing, remote batch, real-time, local batch and transaction processing all running concurrently.

**To maximize the availability of the Xerox 560 system, comprehensive reliability and maintainability capabilities are designed into both the hardware and software.** Extensive availability features are designed into the Xerox 560 hardware, the Diagnostic Programming System, and CP-V. Operating within a hierarchical structure, this capability permits verification of each level of system operation before proceeding to test the next. The Xerox Remote Assist capability further enhances maintainability by permitting all diagnostic operations to be controlled remotely via a telephone connection.

**The Xerox 560 computer achieves maximum availability.** The watchdog timer monitors instruction execution time to

assure that instructions exceeding the maximum time allowed for their completion do not affect system integrity. The power monitor automatically shuts down and then resumes processing in the event of a transient power failure.

### Ease of Use

**The Xerox 560 computer system allows you to select the optimum programming processor needed to meet your requirements.** A comprehensive set of programming languages from assemblers through compilers to interpreters is available, in addition to problem-oriented languages which do not require a knowledge of programming to get your job done.

**The Xerox 560 computer allows you to develop fast running, tightly coded programs quickly and easily.** The Xerox 560 offers a comprehensive set of instructions, requiring only two instruction formats. Index registers automatically align themselves to the data type being accessed.

**The File Management System offers identical services to programs operating in any of the processing modes.** On-line and batch programs may simultaneously access the same data base. The system provides enqueue/dequeue facilities to allow a program to access a data base being utilized by others, totally transparent to the other user programs and the data base.

**When a special requirement is outside the Xerox 560 system's broad range of capabilities, Xerox will help.** The Xerox Custom Systems organization will assist in defining these requirements and in identifying and optimizing potential solutions. If requested, Xerox will also implement such solutions including hardware development, software development, system integration and documentation.

**The Xerox Application Services organization can handle your complete conversion requirements.** Application Services will assist you in achieving your program conversion objectives in a controlled and orderly manner. Application Services is prepared to provide fixed-task, fixed-price services ranging from program translation to complete operational system testing.



# Hardware

## Architecture

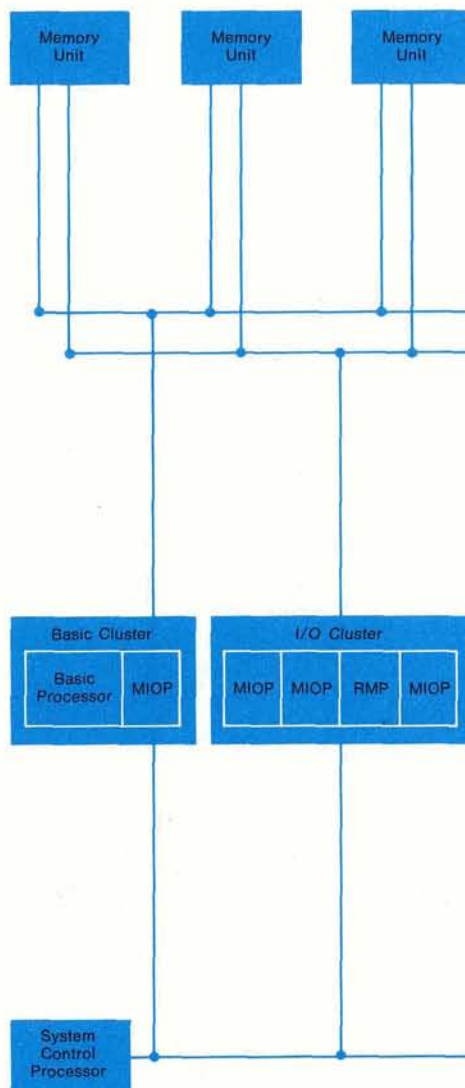
**Architecture** The architecture of the Xerox 560 system is both flexible and modular. Only the elements required for each application need be included in a 560 system. If these requirements subsequently change, so can the 560 configuration.

**Main Memory** Main memory is divided into units, each of which may be accessed simultaneously. This overlap greatly increases total memory bandwidth. To automatically increase the occurrence of access overlap, unit addressing may be interleaved. The number of units and their size can be selected for the application.

**Memory Bus Structure** The parallel memory bus structure allows all clusters to independently access main memory. Each bus serves one cluster and has a port into each memory unit. Clusters may access different memory units simultaneously. Coincident accesses to a single unit are serviced by port priorities.

**Cluster Configuration** Clusters are groups of processors which are available in two standard configurations—the Basic Cluster and the I/O Cluster. The 560 Basic Cluster includes a Basic Processor and a Multiplexer Input/Output Processor (MIOP). Along with a System Control Processor, the Basic Cluster incorporates all the computing capability required for many applications. Each Input/Output Cluster permits adding up to three additional MIOPs and one high-speed Rotating Memory Processor (RMP). Processors within a cluster share the bandwidth of a single memory bus but access memory independently. Additional Basic and I/O Clusters may be configured as required by each application.

**System Control Processor** The System Control Processor (CP) is a centralized manager for interrupts, clocks, configuration and operator control. The optional Direct I/O Interface also is controlled by the CP. A separate processor bus provides a centralized responsive communication link between clusters and the CP. Intercommunication proceeds independently of memory operation.



## System Specifications

Memory Word Size	32 bits plus 1 check bit per 8-bit byte
Memory Cycle Time	645 nanoseconds per word (full cycle)
Memory Size	16,384 words (65,536 bytes) expandable to 262,144 words (1,048,576 bytes)
Memory Unit Structure	1 to 8 memory units
Memory Unit Size	16,384 or 32,768 words
Interleaving	Modulo 2 between memory units
Number of Busses	One per processor cluster
Number of Ports	Up to 6 per memory unit
Bandwidth per I/O Processor	Up to 1 million bytes/sec
Number of Processor Clusters	Up to 6 per system
Types of Processor Clusters	Basic Cluster I/O Cluster
Types of Processors	System Control Processor Basic Processor Multiplexer I/O Processor (up to 3 per I/O Cluster) Rotating Memory Processor (1 per I/O Cluster)

















































