

Xerox 560 Computer System

The Xerox 560 computer system is a powerful, multi-use computer system designed to extend comprehensive personalized computing capabilities to a diverse community of users. The Xerox 560 offers five concurrent modes of processing: multiprogrammed batch, remote batch, conversational time sharing, transaction processing and real time.

Utilizing Xerox Control Program-Five (CP-V), the Xerox 560 provides virtual memory capabilities which facilitate maximal utilization of system resources. The Xerox 560's flexible configurability, with up to 21 I/O processors, 256K words (1024K bytes) of memory and an extensive array of available peripherals, allows the Xerox 560 to be

tailored to the needs of the users. The Xerox 560 is capable of providing service to a large and complex user environment servicing up to 128 active time-sharing and transaction processing users, and 16 local batch and remote batch tasks, in addition to real-time oriented functions.

System reliability is a major concern, particularly in a multi-use environment in which many users depend on the system. The Xerox 560 has been designed to insure a high level of system availability and integrity through the implementation of a comprehensive set of error detection recovery, diagnostic and protection features, including self-testing microdiagnostics.



Xerox 560 Computer System

System Architecture

The system is organized as a series of resource pools with each pool containing a combination of system elements. There are two basic types of resource pools: memory units and processor clusters. Each memory unit contains up to 32K words of storage and hardware write-lock logic, and provides up to 6 separate and independent access paths. The processor clusters are of two types, Basic and I/O. The Basic Cluster contains a Basic Processor (arithmetic and logic unit) and a Multiplexing I/O Processor (MIOP). Each I/O Cluster contains up to three MIOPs and one Rotating Memory Processor (RMP). Processor clusters communicate with memory through independent memory paths. Centralized system functions are provided by the System Control Processor which contains control functions such as interrupts, system clock, system control panel, configuration control panel, real-time clocks, operator's console and remote assist facilities.

System Features

- CENTRALIZED SYSTEM CONTROL — Allows the full hardware and software capabilities of the system to be managed from the operator's console.
- VIRTUAL MEMORY—Standard; implemented with the Xerox memory map, includes access protection.
- ADDRESSING — Direct, Indirect, Indexed.
- DECIMAL ARITHMETIC — Standard.
- FLOATING POINT — Standard, provides single and double precision.
- MEMORY PROTECTION — Hardware lock and key.
- GENERAL REGISTERS — 64 Standard (4 blocks of 16).
- INTERRUPT SYSTEM — Up to 48 unique external interrupts (4 blocks of 12).
- INDEXING — Seven index registers for each group of general registers; automatic displacement alignment facilitates handling varying data sizes.
- CLOCK SYSTEM — Four clocks are standard.
- MEMORY BUS — Up to six independent buses to memory.
- STACK OPERATIONS — Facilitates reentrant programming.
- SINGLE POINT CONFIGURATION CONTROL — Enhances redundant system operation and partitioning.
- AVAILABILITY/SECURITY — Comprehensive error detection reported in status registers within each system element, stratified fault localization, micro-diagnostics and on-line system diagnostics.
 - Full parity checking on all data transmissions
 - Power failure and over-temperature detection
 - System control memories include parity checking
 - Control sequence error detection
 - System partitioning and reconfiguration
 - Automatic retry
 - Two access protection mechanisms
- REMOTE ASSIST — Expert assistance from a remote communication link to a Xerox Field Engineering Center helps reduce troubleshooting time.

Memory Specifications

- CYCLE TIME — 645 nanoseconds.
- WORD SIZE — 32 data bits (four 8-bit bytes) with parity checking per byte.
- SIZE — Up to 256K words in 16K word increments.
- PORTS — Up to six separate paths to each memory unit.
- INTERLEAVE — Modulo 2.

I/O Summary

- I/O PROCESSORS — Up to 21 I/O processors operating independently of the CPU, with data rates up to 1 million bytes per second per I/O processor.
- MULTIPLEXER I/O PROCESSOR — Up to three per I/O cluster; provides multiplexed I/O channels to and from a complete line of standard peripherals.
- ROTATING MEMORY PROCESSOR — One per I/O cluster; provides monitoring and control of high-speed disk memory system. Dual access is available.
- PERIPHERALS — Full line of peripherals including magnetic tapes, removable disks, RADs, card equipment, line printers and communications equipment.
- DIO — The Direct Input/Output Interface allows immediate transfer of a 32-bit word under direct program control.
- DIRECT MEMORY INTERFACE—Special-purpose devices can be interfaced directly to memory ports to provide the capability of performing I/O up to memory speeds.
- ERROR DETECTION AND REPORTING — Each I/O processor includes extensive error detection and reporting facilities such as: bus check faults during main memory read operations; control check faults for internal MIOP operations; parity generation and/or checking for all control and data exchanges with device controllers and memory; memory address error detection; hardware-detected program errors.

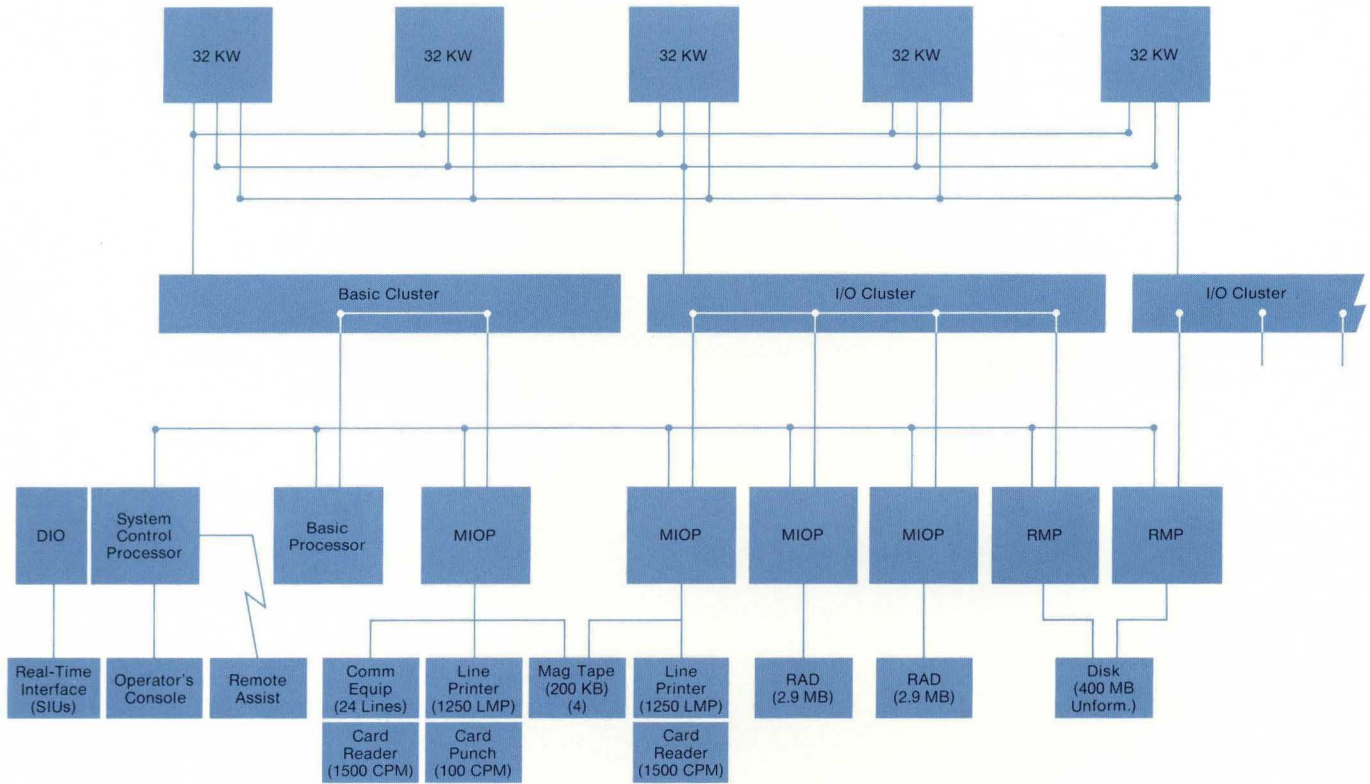
System Software

The Xerox 560 operates under the control of the Xerox Control Program-Five (CP-V). CP-V is a multi-use, virtual memory system, offering five concurrent modes of operation:

- MULTI-PROGRAMMED BATCH
- REMOTE BATCH
- CONVERSATIONAL TIME SHARING
- TRANSACTION PROCESSING
- REAL TIME

CP-V makes a complete set of language and applications processors available to both batch and on-line users. CP-V incorporates extensive performance measurement and provides installation management with the facility to dynamically "tune" the system for maximum operating efficiency. The Control Program for Real-Time (CP-R) is also available to support specialized real-time requirements.

Typical Xerox 560 System Configuration



Includes 4 register blocks, memory map, memory protection, 4 real-time clocks, priority interrupts, power fail safe, direct I/O interface, system control panel, configuration control panel, floating point, decimal, local and remote assist facility.

XEROX

701 South Aviation Boulevard
El Segundo, California 90245
213 679-4511

All specifications subject to change without notice.

XEROX® and 560 are trademarks of XEROX CORPORATION Printed in U.S.A. 50-02-16A (1/74)