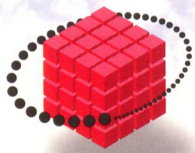


THE RIGHT TOOL AT THE RIGHT TIME

U N I C O S M A X

SYSTEM SUPPORT FOR EFFECTIVE MASSIVELY PARALLEL COMPUTING



Robust, reliable, sharable. Three words that echo the demands of the high-performance computing community. Three words that describe the UNICOS MAX operating system. The effective system administration, standards-based features, and high-bandwidth I/O of UNICOS MAX spread the benefits of system-level high performance to a broad user community.

Cray Research's UNICOS operating system is the recognized industry leader in scientific and engineering computing. UNICOS builds upon its UNIX base by providing a POSIX-compliant environment that meets production demands for high-performance I/O, resource management, data management, and connectivity. UNICOS MAX extends this reliable supercomputer-class production environment to the CRAY T3D massively parallel processing (MPP) system.

Scalable heterogeneous supercomputing— the best of both worlds

Distributed UNICOS MAX lets users take full advantage of the underlying massively parallel and parallel vector architecture of the heterogeneous Cray Research system. Users can choose the approaches that best suit their applications: highly parallel applications running entirely on the CRAY T3D system, moderately parallel applications running entirely on the Cray Research host system, or applications distributed across the tightly coupled CRAY T3D and Cray Research host systems.

Distributed operating system services to maximize available resources

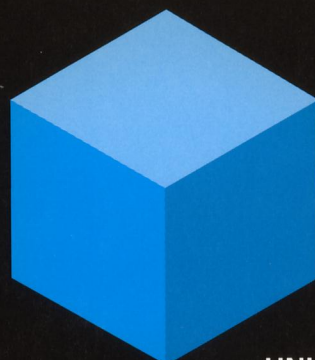
UNICOS MAX distributes operating system services between microkernels on each of the CRAY T3D processing elements (PEs) and the UNICOS operating system on the Cray Research host system. This approach minimizes operating system overhead on the CRAY T3D system and maximizes the computational resources available for user applications.

Parallel Vector System (CRAY Y-MP or CRAY C90)

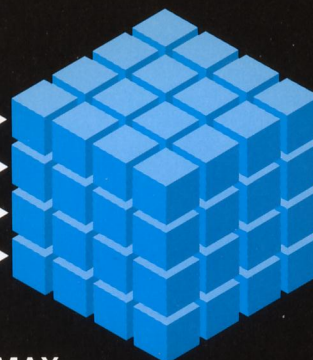
UNICOS

- Standard UNIX
 - Familiar interactive environment
 - NQS (enhanced batch system)
- Connectivity
 - Ethernet, HIPPI, FDDI
 - TCP/IP, OSI
- High performance I/O
- Supercomputer quality data and resource management
 - Hierarchical storage management (DMF)
 - Security (MLS)
 - System accounting, User Data Base, and activity reporting

Shared Uniform Memory



Shared Distributed Memory



UNICOS MAX

CRAY T3D MPP System

UNIX microkernels on each PE

- Controls interprocessor communication
- Performs memory allocation
- Small operating system memory requirement per PE

UNICOS MAX

UNICOS supports batch and interactive job submission, high-performance I/O, data management, resource management, connectivity to a wide range of networks and external peripherals, and system administration. Microkernel servers on the CRAY T3D system perform frequently used system services such as memory allocation, inter-processor communication, and interrupt handling. A UNIX agent links the microkernel on the CRAY T3D system to UNICOS on the host system.

I/O worthy of a supercomputer

By drawing upon Cray Research's latest Model E I/O technology, UNICOS MAX on the CRAY T3D system gives users supercomputer-level I/O with gigabytes-per-second peak performance. A full range of high-bandwidth disk peripherals can be connected to the CRAY T3D system, including HIPPI disks and striped disk devices. File systems span multiple physical device volumes, limited only by total disk capacity. Production-level tape support includes D2, standard IBM, ANSI standard, multi-volume, and nonlabeled tapes, and tape autoloader technology.

Managing computing resources

The CRAY T3D system's resource management capabilities were designed with large user communities in mind. UNICOS MAX serves these communities by providing flexible resource sharing.

Multiple applications can run concurrently on separate partitions of the CRAY T3D system. Users request from two PEs to the whole system on which to run their work. Users submit jobs to the CRAY T3D system either from an interactive session on the Cray Research host, or from batch submission through the Network Queuing System (NQS), which has been enhanced for the CRAY T3D system.

Managing data resources

UNICOS MAX also supports users by providing full UNICOS data management capabilities: hierarchical data management, user disk quotas, data buffering, and tape management. Hierarchical data management is provided by Cray Research's Data Migration Facility (DMF), which transparently migrates files between disks and lower-cost offline storage.

Connectivity—linking the CRAY T3D system with other computational resources

Extensive networking connectivity is supported on the CRAY T3D system via the Cray Research host system to a variety of protocols through HIPPI, FDDI, and Ethernet hardware media. Accepted protocols include Transmission Control Protocol/Internet Protocol (TCP/IP), International Standards Organization Open Systems Interconnection (ISO/OSI), and UNICOS station call processor (USCP).

Finally—an MPP system that's easy to administer

It can be a challenge to administer a large high-performance computer system, especially in a production environment. The CRAY T3D system equips administrators with the tools they need to effectively meet this challenge.

The PEs in a CRAY T3D system are configured into groups, termed administrative pools. PEs in a given pool share characteristics that the system administrator defines. For example, pools can be designated for batch work or allocated to a specific user group. Several applications can execute simultaneously within each pool, each within its own partition of the pool's PEs. Users define partition sizes when they submit their jobs.

Administrators can take advantage of enhanced UNIX facilities within UNICOS to manage resources and accounting on CRAY T3D systems.

Hardware supported

UNICOS MAX runs on the Cray Research CRAY T3D, CRAY C90, and CRAY Y-MP (Model E IOS only) systems.

UNICOS MAX—sharing the right tool at the right time

UNICOS MAX spans the range of high-performance capabilities needed to support the use of CRAY T3D systems in both application development and production environments. For more information on the UNICOS MAX or UNICOS operating systems, contact the nearest Cray Research representative.



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