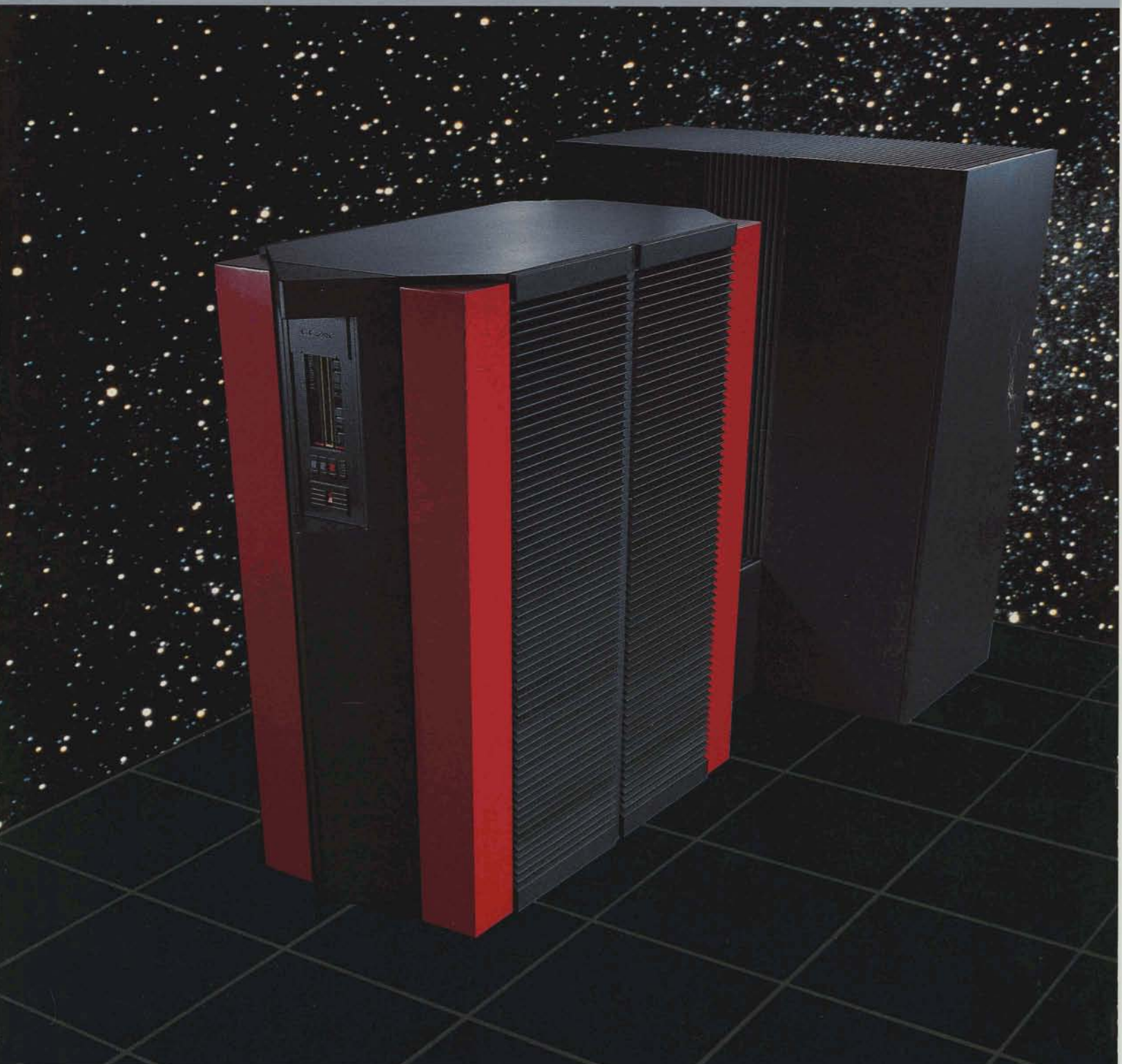


I N T R O D U C I N G T H E  
**C R A Y Y - M P 2 E**  
S U P E R C O M P U T E R



C R A Y R E S E A R C H , I N C.



# INTRODUCING A NEW STANDARD

For 15 years, Cray Research has set the standard for high-speed, large-scale computing, revolutionizing problem solving in science and engineering. Now, in response to customer requests for more supercomputing options, Cray Research is pleased to announce the CRAY Y-MP2E supercomputer — setting yet another standard in high-performance computing. The CRAY Y-MP2E system establishes the lower boundary of real supercomputing, delivering CRAY Y-MP-class performance in a range of configurations. And it clearly stands out as the performance and price/performance leader.

## A complete supercomputing solution

The CRAY Y-MP2E system is a powerful, general-purpose scientific supercomputing solution based on proven technologies. It offers a full complement of software, including an enhanced UNIX™-based operating system (UNICOS), automatic vectorizing and parallelizing compilers for standard computer languages, networking connections and software, and a large applications library. Like other CRAY Y-MP products, it is a balanced supercomputer; all components in the critical performance path are matched and tuned.

The CRAY Y-MP2E system is available in one- and two-processor configurations with up to 64 million words of central memory. The CPU — the same as that used on the high-end CRAY Y-MP systems — achieves the highest sustained supercomputer performance in its class. For both scalar and vector code, the CRAY Y-MP2E system has a significant advantage over minisupercomputers due to its considerably faster clock period of 6.0 ns (nanoseconds). Its multiple-port memory also sets it apart from minisupercomputer architectures.

The CRAY Y-MP2E system is a cost-effective step up for users of traditional mainframe equipment and departmental minisupercomputers; it provides a significant performance and price/performance advantage over these other systems. The CRAY Y-MP2E also offers an attractive upgrade or addition for current Cray Research customers.

## Real supercomputing within reach

The CRAY Y-MP2E computer system makes supercomputing affordable to a broader range of users because it costs less

to acquire, install, operate, and maintain. The system's low cost of ownership is possible for the following reasons:

- It can be air cooled and thus does not require any special site plumbing; it requires only a standard computer room environment with commercial air conditioning capacity. The CRAY Y-MP2E system can also be water cooled, at the customer's option, without extensive plumbing requirements.
- Its electrical power system does not require a motor generator set.
- Customer personnel can prepare the site before Cray Research personnel arrive to install the system.
- It has a limited number of connections, making installation quick and easy. Additionally, its high level of integration and modular technology result in a system with minimal maintenance needs.
- It consumes only 29-50 kilowatts of electrical power.
- Its high reliability and enhanced maintenance features make possible a low-cost, on-call hardware maintenance option.
- Upgrading a single-processor system to a two-processor system can be done quickly and easily on site.

The CRAY Y-MP2E system is fully compatible with other members of the CRAY Y-MP supercomputer product line. It runs the same operating system as the larger CRAY Y-MP systems (UNICOS, which is based on the AT&T UNIX™ System V operating system), as well as the same compilers and applications software. And as with other Cray Research systems, a customer can network the CRAY Y-MP2E into almost any existing computer environment. Customers who upgrade to a larger Cray Research system can be assured of full hardware and software compatibility.

Model	CPUs (Processors)	Memory in Mwords
CRAY Y-MP2E/264	2	64*
CRAY Y-MP2E/232	2	32
CRAY Y-MP2E/216	2	16
CRAY Y-MP2E/164	1	64*
CRAY Y-MP2E/132	1	32
CRAY Y-MP2E/116	1	16

\*64-Mword models and upgrades will be available in 1991.



# RD IN SUPERCOMPUTING: THE CR

## Configurations to fit present needs, with room to grow

The CRAY Y-MP2E system is available in a variety of CPU and memory configurations. CRAY Y-MP2E systems have the following features and physical characteristics:

- Each Y-MP2E processor has a clock speed of 6.0 ns and four ports to main memory, the same as the larger CRAY Y-MP systems.
- The CRAY Y-MP2E system uses 15-ns access memory devices, the same as in larger CRAY Y-MP systems.
- The new integrated Input/Output Subsystem (IOS) consists of one or two I/O clusters (IOCs), which are housed in the mainframe cabinet along with the CPUs and memory. Each IOC supports up to 16 channel adapters for connection to disk units, tape units, and communications products.
- The mainframe cabinet is connected to the heat exchange unit (HEU), which contains the fully integrated cooling apparatus.
- The new-technology, air-cooled SSD solid-state storage device, which will be available as an option, is housed in a separate cabinet that is connected to a separate HEU.

The smallest-configuration CRAY Y-MP2E systems are upgradeable by adding a second CPU, a second IOC, or additional main memory. Initially, main memory can be upgraded to 32 or 64 Mwords, with a future option to upgrade to 128 Mwords, adding another boost to system capability and throughput performance. Very-high-speed secondary memory also can be added via an optional SSD solid-state storage device, available in 128-Mword, 256-Mword, 512-Mword, and 1024-Mword (1-Gword) sizes.

As a customer's computing needs grow, a smooth upgrade path exists through the CRAY Y-MP product line all the way up to the CRAY Y-MP8 system. The large CRAY Y-MP systems, which are recognized as the most powerful general-purpose supercomputers in the world, can be configured with from two to eight CPUs.

CRAY Y-MP2E systems support current Cray Research disk and tape storage products such as the DD-49 disk storage unit. New, low-cost, high performance disk storage units for the CRAY Y-MP2E system will be announced in the near future.

## Power and cooling simplified

The CRAY Y-MP2E system runs on one of the following common sources of well-conditioned commercial electrical power:

- 208 or 480 Vac, 3 phase, 60 Hz
- 380 to 415 Vac, 3 phase, 50 Hz

This allows the system to accommodate most standard power sources, wherever it is installed in the world. CRAY Y-MP2E systems do not require a motor generator set.

Cooling the CRAY Y-MP2E system is a simple matter, too. No refrigerant connections need to be made directly to the system; the modules in the system are cooled by captive Fluorinert liquid coolant, which then transfers the heat to air-cooled Freon in the HEU. Alternatively, and at the customer's option, a CRAY Y-MP2E system can be cooled with closed loop (treated) building water (40-85 degrees F; 4.4-29.4 degrees C).

## A stand-alone unit or a specialist

A CRAY Y-MP2E system can function as the sole supercomputer at a site, or it can work alongside larger Cray Research systems as a complementary machine. It can function, for example, as a developmental system or as a separate system for secure applications.

The lower total costs of the CRAY Y-MP2E system enable users to access Cray Research high-performance I/O to address the file-storage needs of their environment. A file server based on the CRAY Y-MP2E system can satisfy requests from multiple supercomputers over Gbit networks while also providing service to small systems, workstations, and personal computers.

Whether employed as a file server, a dedicated system, or a general-purpose supercomputer, the CRAY Y-MP2E system is a key component of Cray Research's Network Supercomputing strategy, which aims to deliver supercomputing power to the desktops of as many scientists and engineers as possible. The following diagram indicates potential roles the CRAY Y-MP2E system can play in a typical heterogeneous networking environment.



# CRAY Y-MP2E SUPERCOMPUTER

## Low maintenance costs

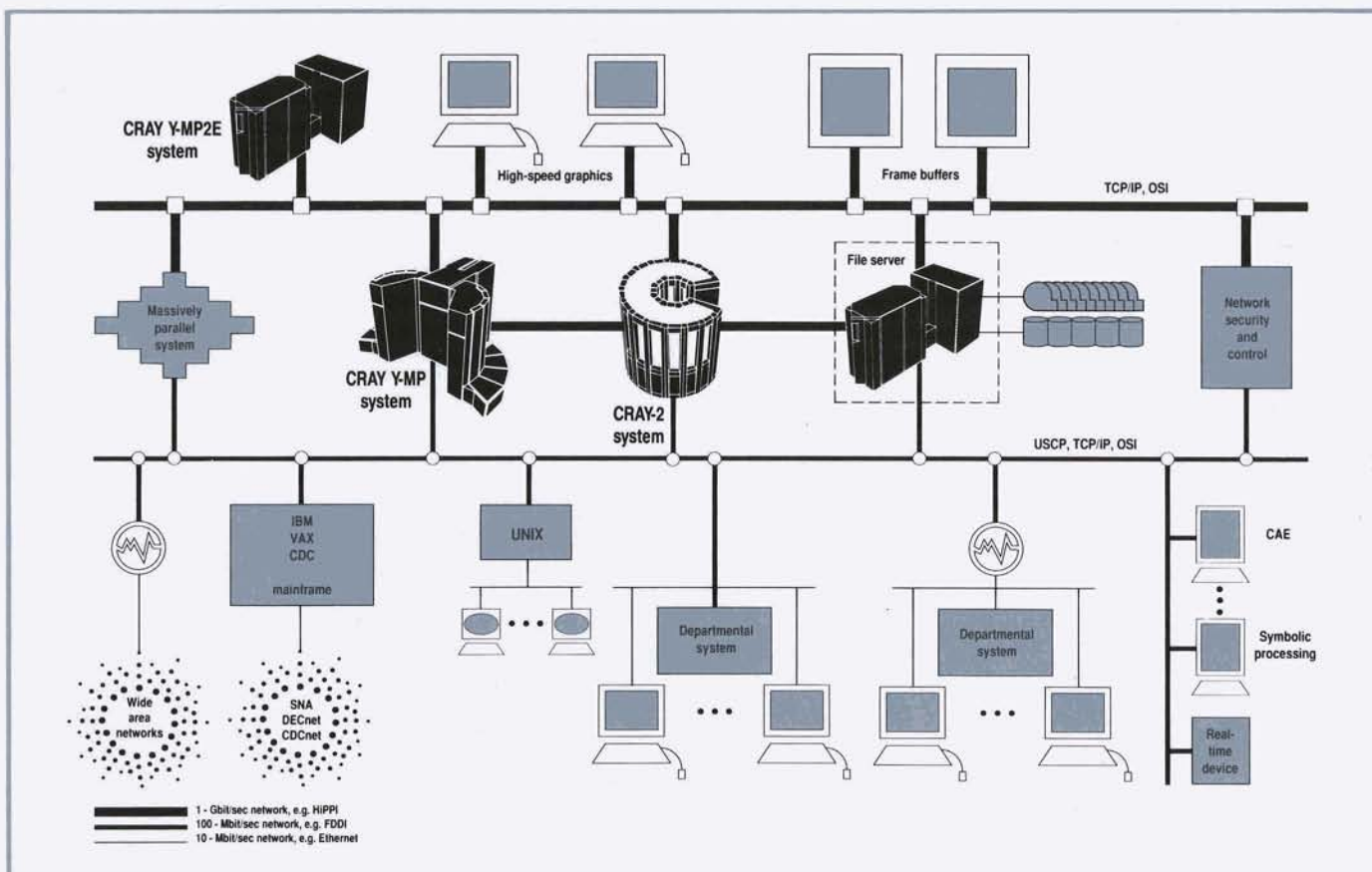
New maintenance features and service strategies for the CRAY Y-MP2E supercomputer allow Cray Research to offer a full range of maintenance options, including an on-call service option for hardware. The on-call service option can significantly reduce maintenance costs; customers allowing remote access for service receive an additional discount.

## Real supercomputing made more affordable

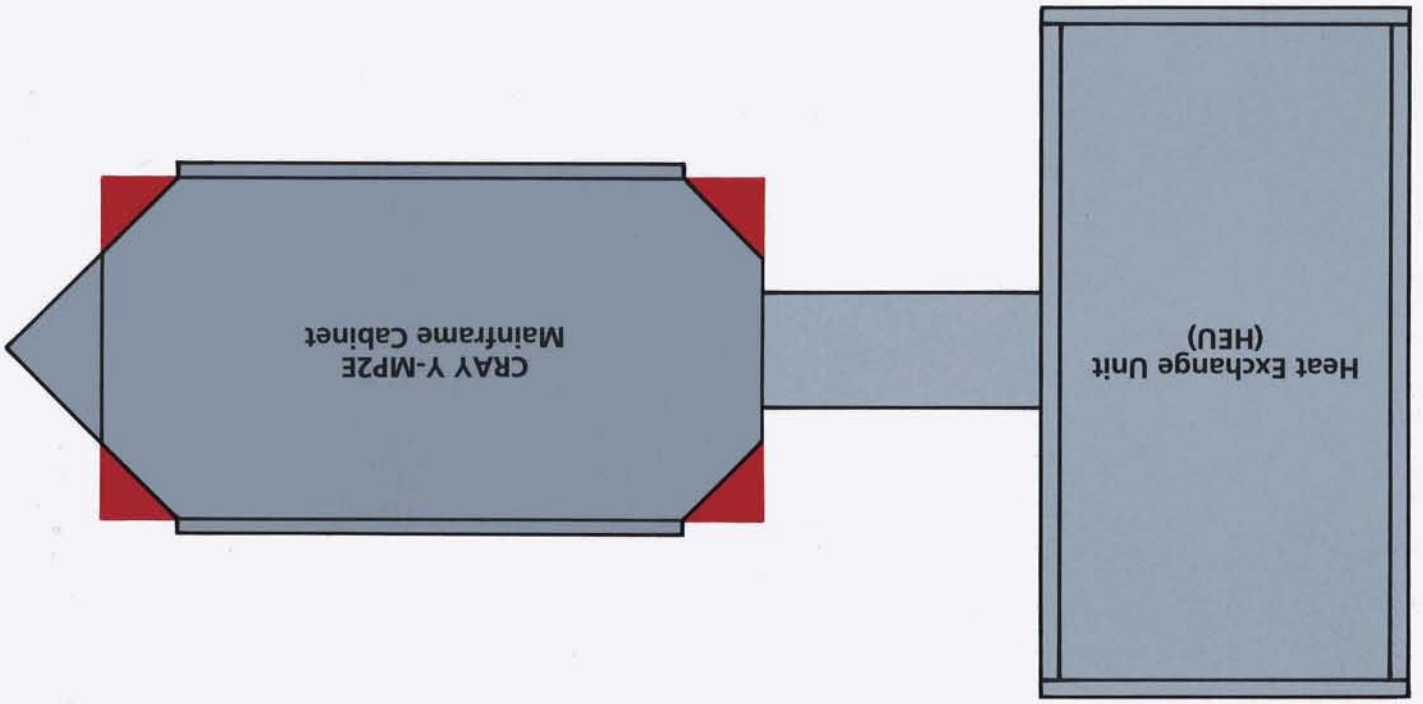
CRAY Y-MP2E supercomputers offer the benefits of real supercomputing at a lower cost of ownership. A real supercomputer excels in a wide range of applications,

delivers more accurate simulations, produces more solutions in a given time, and delivers results faster than other types of computer systems, resulting in more creativity, greater productivity, and strategic advantage. Although the benefits of real supercomputing are clear, until now the cost of ownership has put supercomputing out of reach for many organizations. Now, CRAY Y-MP2E systems open up the possibility of real supercomputing for a much broader community of users, enabling creativity and productivity on a previously undreamed-of scale.

For more information on the CRAY Y-MP2E supercomputer, contact your local Cray Research representative.



CRAY Y-MP2E systems integrated into a heterogeneous networking environment.



**CRAY Y-MPZE footprint**

The CRAY Y-MPZE mainframe cabinet is approximately .8 m W x 1.5 m D x 1.7 m H (32" W x 60" D x 68.5" H). The heat exchange unit (HEU) cabinet is approximately 1.5 m W x .8 m D x 1.8 m H (60" W x 32" D x 72" H). The connection between cabinets is .3 m W x .6 m L (12" W x 24" L).





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The product specifications contained in this announcement and the availability of the products are subject to change without notice. For the latest information, contact your Cray Research representative.

