The CRAY EL92 deskside computer system delivers CRAY Y-MP and CRAY C90 compatibility to an office environment at a low price point. With up to two processors and 512 Mbytes (64 Mwords) of central memory, the CRAY EL92 system offers a clear upgrade path to large-scale parallel Cray Research supercomputing.

## Deskside flexibility

Because the CRAY EL92 system is binary compatible with the world's most powerful supercomputers, it can serve a wide variety of purposes:

☐ Provide a low-cost application development and optimization platform for CRAY C90 supercomputers and the CRAY T3D massively parallel system

☐ Off-load smaller codes and jobs currently running on large networked Cray Research systems

☐ Provide a low-cost, high-performance network node for vector and parallel applications

☐ Run pilot simulations of large jobs destined for large Cray Research systems

☐ Act as a "network resource broker" using Cray Research's Network Queuing Environment (NQE)

## High performance HIPPI connectivity

The HIPPI interface provides high performance for network connectivity applications such as

Parallel Virtual Machine (PVM) and assists transfers of large datasets to CRAY C90 and CRAY T3D systems. The CRAY EL92 system can be configured with up to two 100 Mbyte/s HIPPI-to-memory channels.

## Cray Research software at the deskside

The CRAY EL92 system includes the same operating system, programming environments, compilers, and networking capabilities as more powerful Cray Research systems. As a result, it provides an ideal, source-compatible application development platform.

The CRAY EL92 system includes UNICOS, a POSIX compliant, standard UNIX System V environment enhanced to provide efficient parallel/vector processing, production quality resource utilization, security, and network connectivity. Based on actual and de facto industry standards, this proven supercomputing environment enhances application development, system interoperability, and user productivity.

To enhance application development and user productivity, users can choose from a powerful set of programming environments that include industry leading optimizing compilers, advanced performance-analysis tools, industry standard visual interfaces, and high-performance scientific and I/O libraries. The CRAY T3D Emulator is also available, which helps programmers using the CF77 Fortran programming environment to develop and test CRAY T3D application codes on the CRAY EL92 system.

To provide sustained gigaflops performance, the CRAY EL92 provides distributed computing capabilities that allow CRAY EL92 systems to be clustered with a CRAY Y-MP, CRAY C90, or CRAY T3D system and applied to a single job using PVM software. The CRAY EL92 system also provides interoperability with heterogeneous computers on a network through adherence to industry standards in its operating system (UNIX System V), languages, (Fortran 77, C, C++), networks (HIPPI, FDDI, Ethernet), protocols (RPC, OSI, TCP/IP), and distributed computing environments (PVM, RQS/NQS, NQE).

| | | | CRAY EL92 configurations | | |
|---|---|---|---|---|---|
| Model | CPUs | Memory Size (Mbytes) | Maximum disk capacity (Gbytes) | HIPPI channels (optional) | Power |
| 100 | 1 | 256 (32 Mwords) | 6 | N/A | 100 VAC |
| 200 | 1 | 256 (32 Mwords) | 20 | 1 | 220 VAC |
| 300 | 1 | 512 (64 Mwords) | 20 | 1 | 220 VAC |
| 400 | 2 | 512 (64 Mwords) | 20 | 2 | 220 VAC |

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## A full range of applications

The CRAY EL92 system runs over 600 supported applications from nearly every scientific and engineering discipline. With parallelization capabilities and real main memory, the CRAY EL92 system can provide scalable application solutions unique in its price range. As problem complexity increases, a CRAY EL92 application can be scaled easily to run on binary compatible CRAY Y-MP and CRAY C90 systems.

## Ease of installation

CRAY EL92 systems can be customer-installed easily in an office environment. The model 100 CRAY EL92 system runs on standard 100-120 VAC power and the 200, 300, and 400 models run on standard 200 - 240 V power. Both 50 Hz and 60 Hz power are supported to allow installation worldwide.

## Service

A variety of service options for the CRAY EL92 system have been designed to meet your needs for service. You may choose from options ranging from full service through self service, depending on your operational needs. Additional professional services allow you to tailor a customized solution to meet your requirements.

For more information and benchmarking time on a CRAY EL92 system, contact your local Cray Research representative.

## Software highlights

### UNICOS operating system
- ☐ Standard UNIX, POSIX 1003.1 compliant
- ☐ Batch and interactive processing
- ☐ Efficient parallel processing
- ☐ Multi-level and network security features
- ☐ Flexible file I/O (FFIO)

### Programming environments
- ☐ Standard portable languages (Fortran 77, C, C++)
- ☐ Industry leading optimizing compilers
- ☐ Advanced performance-analysis tools
- ☐ Industry standard visual interfaces
- ☐ High-performance scientific and I/O libraries

### Networking and distributed computing
- ☐ HIPPI, FDDI, Ethernet
- ☐ PVM, RQS/NQS, NQE
- ☐ RPC, OSI, TCP/IP

### Data storage management
- ☐ Data Migration Facility (DMF)
- ☐ Online tape support
- ☐ REELlibrarian

## Hardware specifications

### CPU
| | |
|---|---|
| Peak performance | 133 MFLOPS per CPU |

### Memory
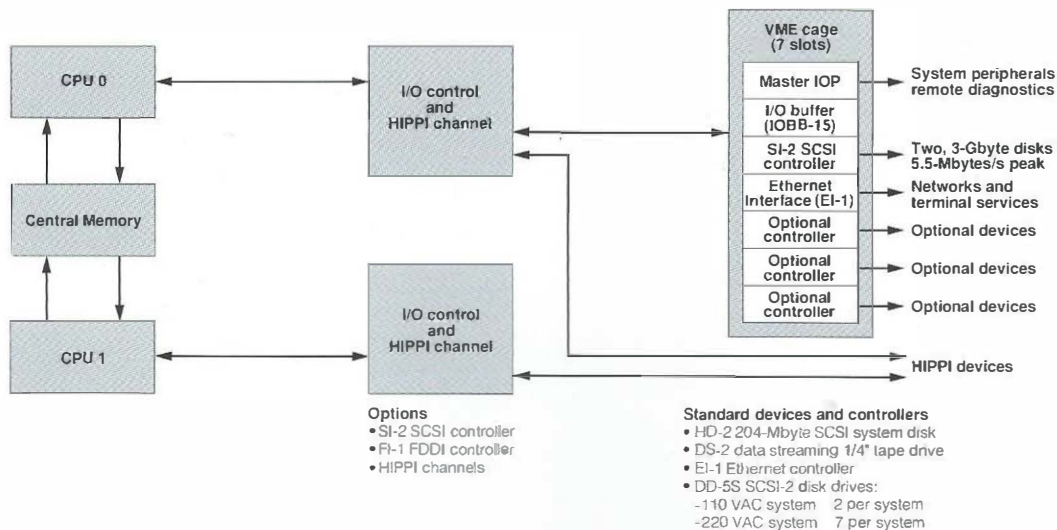| | |
|---|---|
| Technology | 70 ns CMOS DRAM |
| Memory size | 256 - 512 Mbytes (32 - 64 Mwords) |
| Total memory bandwidth | 1.7 Gbytes/s |

### VME-based IOS
| | |
|---|---|
| Number of IOSs | 1 per system |
| HIPPI to memory channels | 1 channel pair per processor module @100 Mbytes/s per channel |

### Physical characteristics
| | |
|---|---|
| Weight | 280 to 325 lbs (127 to 147 kg) |
| Footprint area | 4.3 ft² (0.4 m²) |
| Max. power consumption | 3200 W (3.2 kVA) |
| Min. power consumption | 1200 W (1.2 kVA) |
| Operating temperature | 50 - 85°F (10 - 35°C) |



**Options**
- SI-2 SCSI controller
- FI-1 FDDI controller
- HIPPI channels

**Standard devices and controllers**
- HD-2 204-Mbyte SCSI system disk
- DS-2 data streaming 1/4" tape drive
- EI-1 Ethernet controller
- DD-5S SCSI-2 disk drives:
  - -110 VAC system   2 per system
  - -220 VAC system   7 per system