

The CRAY T94 Supercomputer System

Bringing the value of supercomputing straight to the bottom line

The CRAY T94 computer system from Cray Research is a powerful general purpose supercomputer that features high-speed processors, each with a peak performance of approximately 2 billion floating point operations per second (2 GFLOPS). As the entry-level system of the CRAY T90 series, the CRAY T94 system provides up to 4 processors, 1024 Mbytes of central memory, and a peak performance of approximately 8 GFLOPS.

Balanced architecture delivers the best overall performance

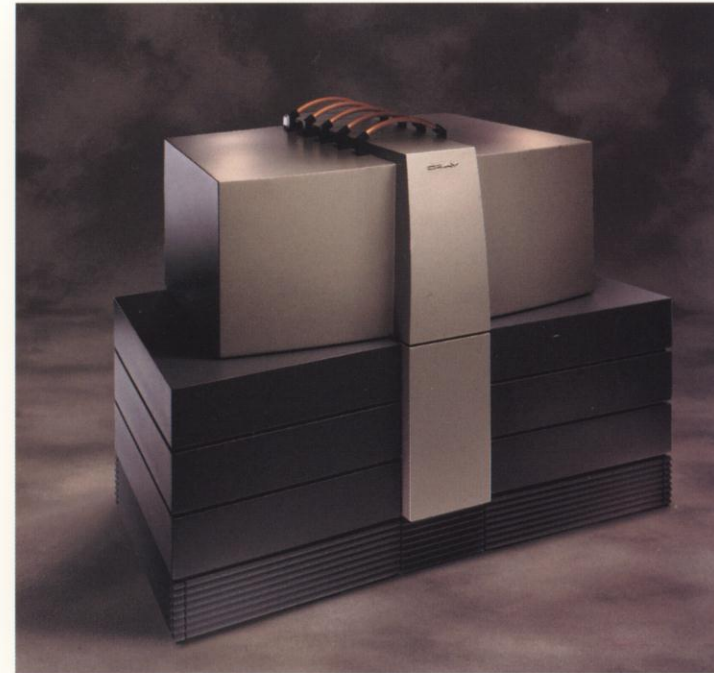
The CRAY T94 system incorporates custom-designed high-speed processors, high-speed static RAM memory, and a high-bandwidth I/O subsystem. This combination of fast processors, fast memory, and fast I/O delivers top performance on the most complex and varied workloads. For scalar, short vector, long vector, and parallel processing, in any combination, the CRAY T94 system provides superior overall performance.

The CRAY T94 system supports multiple ATM, FDDI, and HIPPI connections. Disk

drive technology support includes IPI drives and, in the near future, SCSI and fiber channel disks offering a maximum disk capacity of 64,000 Gbytes (64 Tbytes) of storage. Tape connectivity includes support for numerous tapes and tape silo products through BLOCK MUX and ESCON technology. The CRAY T94 also supports solid-state disk technology (SSD) allowing you to further improve system throughput.

MPP ready

The CRAY T94 system can be closely coupled to Cray Research MPP systems. For highly parallel applications, this heterogeneous architecture delivers an unprecedented level of performance to a wide spectrum of users.



CRAY T94 system highlights

- Full binary compatibility with CRAY C90 line
- 1 to 4 processors
- Approximately 8 GFLOPS peak performance
- MPP ready
- 512 to 1024 Mbytes of central memory
- Memory bandwidth of over 100 Gbytes/s
- Aggregate I/O bandwidth of over 8 Gbytes/s
- Optional SSD with 1024 or 4096 Mbytes
- UNICOS operating system based on UNIX System V



Configuration flexibility offers superior scalability

To meet the demands of your growing business, the CRAY T94 system is extremely scalable: as you add more processors, your performance improves almost linearly. To provide an even more scalable parallel processing path, Cray Research SuperCluster software allows you to efficiently cluster Cray Research systems with equipment from other computer vendors. Acting as a node in a clustered environment, the CRAY T94 system can distribute applications and balance workloads across its internal processors, eliminating the network transfer delays (latencies) that typically compromise performance in clustered workstation environments.

Powerful UNIX software taps the speed of the hardware

To ensure that your applications take full advantage of the CRAY T94 system performance, Cray Research provides the UNICOS operating system and associated system software products. UNICOS is a standard UNIX environment that has been enhanced to provide efficient parallel processing, production

quality resource management, security, and network connectivity. With over twelve years of parallel UNIX experience, Cray Research provides the reliable operating system environment required for high performance simulation. User productivity is enhanced through the use of visual interfaces, advanced application-building tools, expert performance analysis tools, and automatic optimization tools.

Applications support delivers the best possible performance

Thanks to our standards-based implementations, our system software transparently delivers scalable application performance. Our industry-leading compilers automatically parallelize, vectorize, and scalar-optimize standard applications to deliver the best possible performance from your CRAY T94 system.

To provide more choices and to further enhance our standards in precision, we also offer IEEE floating point compatibility. IEEE compatibility enhances compatibility with workstations and makes it easier to port IEEE-based application codes to the CRAY T94 system.

CRAY T94 Product Specifications

Processor

Technology	Custom silicon 50,000 gate array circuits
Number of processors	1 to 4
Vector pipes	2 per processor
Peak performance	Approximately 8 GFLOPS

Memory

Technology	4 Mbit static RAM
Memory size	512 or 1024 Mbytes
Maximum memory bandwidth	Over 100 Gbytes/s

I/O

Number of I/O clusters	1 to 8
I/O bandwidth	More than 8 Gbytes/s
Max. LOSP channels	8
Max. HISP channels	8
Max. VHISP channels	4

Optional SSD

Capacity	1024 or 4096 Mbytes
Bandwidth	More than 7 Gbytes/s

Physical characteristics

Mainframe cabinet footprint area	5' x 3' x 4' (1.5 m x 1 m x 1.2 m)
Cooling unit area	3.6' x 4.2' x 5.5' (1.1 m x 1.3 m x 1.7 m)

The CRAY T916 Supercomputer System

T916

Bringing the value of supercomputing straight to the bottom line

The CRAY T916 computer system from Cray Research is a powerful general purpose supercomputer that features high-speed processors, each with a peak performance of approximately 2 billion floating point operations per second (2 GFLOPS). As the mid-range system of the CRAY T90 series, the CRAY T916 system provides up to 16 processors, 4096 Mbytes of central memory, and a peak performance of approximately 32 GFLOPS. Put in perspective, the CRAY T916 offers approximately twice the performance of a CRAY C916 system—at a significantly lower cost.

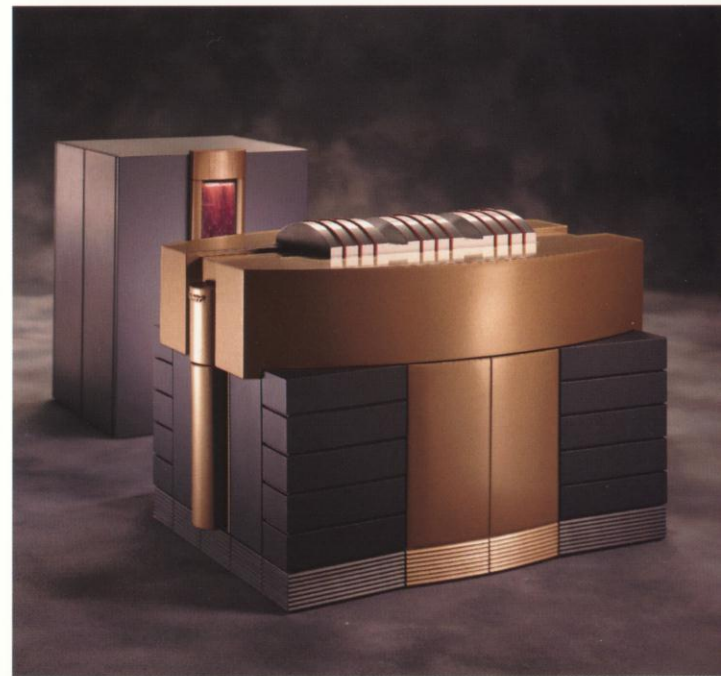
Balanced architecture delivers the best overall performance

The CRAY T916 system incorporates custom-designed high-speed processors, fast static RAM memory, and a high bandwidth I/O subsystem. This combination of fast processors, fast memory, and fast I/O delivers top performance on the most complex and varied workloads. For scalar, short vector, long vector, or parallel processing, in any combination, the CRAY T916 system provides superior overall performance.

The CRAY T916 system supports multiple ATM, FDDI, and HIPPI connections. Disk drive technology support includes IPI drives and, in the near future, SCSI and fiber channel disks offering a maximum disk capacity of 128,000 Gbytes (128 Tbytes) of storage. Tape support includes support for numerous tapes and tape silos through BLOCK MUX and ESCON technology. The CRAY T916 also supports solid state disk technology, improving system throughput.

MPP ready

The CRAY T916 system can be closely coupled to the massively parallel CRAY T3D system. For highly parallel applications, this heterogeneous architecture makes an unprecedented level of performance accessible to a wide spectrum of users.



CRAY T916 System Highlights

- Full binary compatibility with CRAY C90 line
- 8 or 16 processors
- Approximately 32 GFLOPS peak performance
- MPP ready
- 2048 to 4096 Mbytes of central memory
- Memory bandwidth of more than 400 Gbytes/s
- Aggregate I/O bandwidth greater than 17 Gbytes/s
- Optional SSD with 4096 to 16,384 Mbytes
- UNICOS operating system based on UNIX System V

T916

Configuration flexibility offers superior scalability

To meet the demands of your growing business, the CRAY T916 system is extremely scalable: as you add more processors, your performance improves almost linearly. To provide an even more scalable parallel processing path, Cray Research SuperCluster software allows users to efficiently cluster Cray Research systems with equipment from other computer vendors. Acting as a node in a clustered environment, the CRAY T916 system can distribute applications and balance workloads across its internal processors, eliminating the network transfer delays (latencies) that typically compromise performance in clustered workstation environments.

Powerful UNIX software taps the speed of the hardware

To ensure that your applications take full advantage of the CRAY T916 system performance, Cray Research provides the UNICOS operating system and associated system software products. UNICOS is a standard UNIX environment that has been enhanced to provide efficient parallel processing, production

quality resource management, security, and network connectivity. With over twelve years of parallel UNIX experience, Cray Research provides the reliable operating system environment required for high-performance simulation. User productivity is enhanced through the use of visual interfaces, advanced application-building tools, expert performance analysis tools, and automatic optimization tools.

Applications support delivers the best possible performance

Thanks to our standards-based implementations, our system software transparently delivers scalable application performance. Our industry-leading compilers automatically parallelize, vectorize, and scalar-optimize standard applications to deliver the best possible performance from your CRAY T916 system.

To provide more choices and to further enhance our standards in precision, we also offer IEEE floating point compatibility. In addition, IEEE compatibility enhances compatibility with workstations and makes it easier to port IEEE-based application codes to the CRAY T916 system.

CRAY T916 Product Specifications

Processor	
Technology	Custom silicon 50,000 gate array circuits
Number of processors	8 or 16
Vector pipes	2 per processor
Peak performance	Approximately 32 GFLOPS
Memory	
Technology	4 Mbit static RAM
Memory size	2048 or 4096 Mbytes
Maximum memory bandwidth	More than 400 Gbytes/s
I/O	
Number of I/O clusters	1 to 16
I/O bandwidth	Greater than 17 Gbytes/s
Max. LOSP channels	16
Max. HISP channels	16
Max. VHISP channels	8
Optional SSD	
Capacity	4096, 8192, 12,288, or 16,384 Mbytes
Bandwidth	More than 14 Gbytes/s
Physical characteristics	
Mainframe cabinet footprint area	7.5' x 5' x 5' (2.3 m x 1.5 m x 1.5 m)
Cooling unit area	3.6' x 4.2' x 5.5' (1.1 m x 1.3 m x 1.7 m)

The CRAY T932 Supercomputer System

932

Bringing the value of supercomputing straight to the bottom line

The CRAY T932 computer system is Cray Research's most powerful supercomputer. Its high-speed processors each deliver a peak performance of approximately 2 billion floating point operations per second (2 GFLOPS). As the top-end system of the CRAY T90 series, the CRAY T932 system provides up to 32 processors, 8192 Mbytes of central memory, and a peak performance of more than 60 GFLOPS.

Balanced architecture delivers the best overall performance

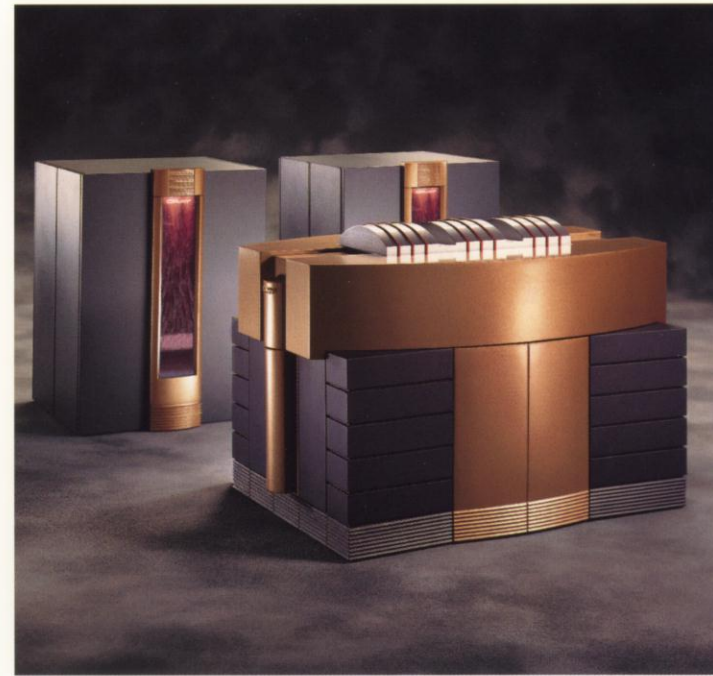
The CRAY T932 system incorporates custom-designed high-speed processors, fast static RAM memory, and a high bandwidth I/O subsystem. This combination of fast processors, fast memory, and fast I/O delivers top performance on the most complex and varied workloads. For scalar, short vector, long vector, and parallel, in any combination, the CRAY T932 system provides superior overall performance.

The CRAY T932 system supports multiple ATM, FDDI, and HIPPI connections. Disk drive technology support includes IPI drives

and, in the near future, SCSI and fiber channel disks offering a maximum disk capacity of 256,000 Gbytes (256 Tbytes) of storage. Tape support includes support for numerous tapes and tape silos through BLOCK MUX and ESCON technology. The CRAY T932 also supports solid-state disk technology (SSD) allowing you to further improve system throughput.

MPP ready

The CRAY T932 system can be closely coupled to the massively parallel CRAY T3D system. For highly parallel applications, this heterogeneous architecture makes an unprecedented level of performance accessible for a wide spectrum of users.



CRAY T932 System Highlights

- Full binary compatibility with CRAY C90 line
- 8, 16, or 32 processors
- Over 60 GFLOPS peak performance
- MPP ready
- 1024 to 8192 Mbytes of central memory
- Memory bandwidth of over 800 Gbytes/s
- Aggregate I/O bandwidth of more than 35 Gbytes/s
- Optional SSD with 4096 to 16,384 Mbytes
- UNICOS operating system based on UNIX System V

T932

Superior scalability

To meet the demands of your growing business, the CRAY T932 system is extremely scalable: as you add more processors, your performance improves almost linearly. To provide an even more scalable parallel processing path, Cray Research SuperCluster software allows users to efficiently cluster Cray Research systems with equipment from other computer vendors. Acting as a node in a clustered environment, the CRAY T932 system can distribute applications and balance workloads across its internal processors, eliminating the network transfer delays (latencies) that typically compromise performance in clustered workstation environments.

Powerful UNIX software taps the speed of the hardware

To ensure that your applications take full advantage of the CRAY T932 system performance, Cray Research provides the UNICOS operating system and associated system software products. UNICOS is a standard UNIX environment that has been enhanced to provide efficient parallel processing, production quality resource management, security, and

network connectivity. With over twelve years of parallel UNIX experience, Cray Research provides the reliable operating system environment required for high performance simulation. User productivity is enhanced through the use of visual interfaces, advanced application-building tools, expert performance analysis tools, and automatic optimization tools.

Applications support delivers the best possible performance

Thanks to our standards-based implementations, our system software transparently delivers scalable application performance. Our industry-leading compilers automatically parallelize, vectorize, and scalar-optimize standard applications to deliver the best possible performance from your CRAY T932 system.

To further enhance our standards in precision, we also offer IEEE floating point compatibility. In addition, IEEE compatibility enhances compatibility with workstations and makes it easier to port IEEE-based application codes to the CRAY T932 system.

CRAY T932 Product Specifications

Processor

Technology	Custom silicon 50,000 gate array circuits
Number of processors	16 or 32
Vector pipes	2 per processor
Peak performance	Over 60 GFLOPS

Memory

Technology	4 Mbit static RAM
Memory size	4096 or 8192 Mbytes
Maximum memory bandwidth	Over 800 Gbytes/s

I/O

Number of I/O clusters	1 to 32
I/O bandwidth	More than 35 Gbytes/s
Max. LOSP channels	32
Max. HISP channels	32
Max. VHISP channels	16

Optional SSD

Capacity	4096, 8192, 12,288, or 16,384 Mbytes
Bandwidth	Over 28 Gbytes/s

Physical characteristics

Mainframe cabinet footprint area	7.5' x 5' x 5' (2.3 m x 1.5 m x 1.5 m)
Cooling unit area (per unit)	3.6' x 4.2' x 5.5' (1.1 m x 1.3 m x 1.7 m)