EMC²

Centriplex 2000 ICDA Systems

Open storage for open systems.

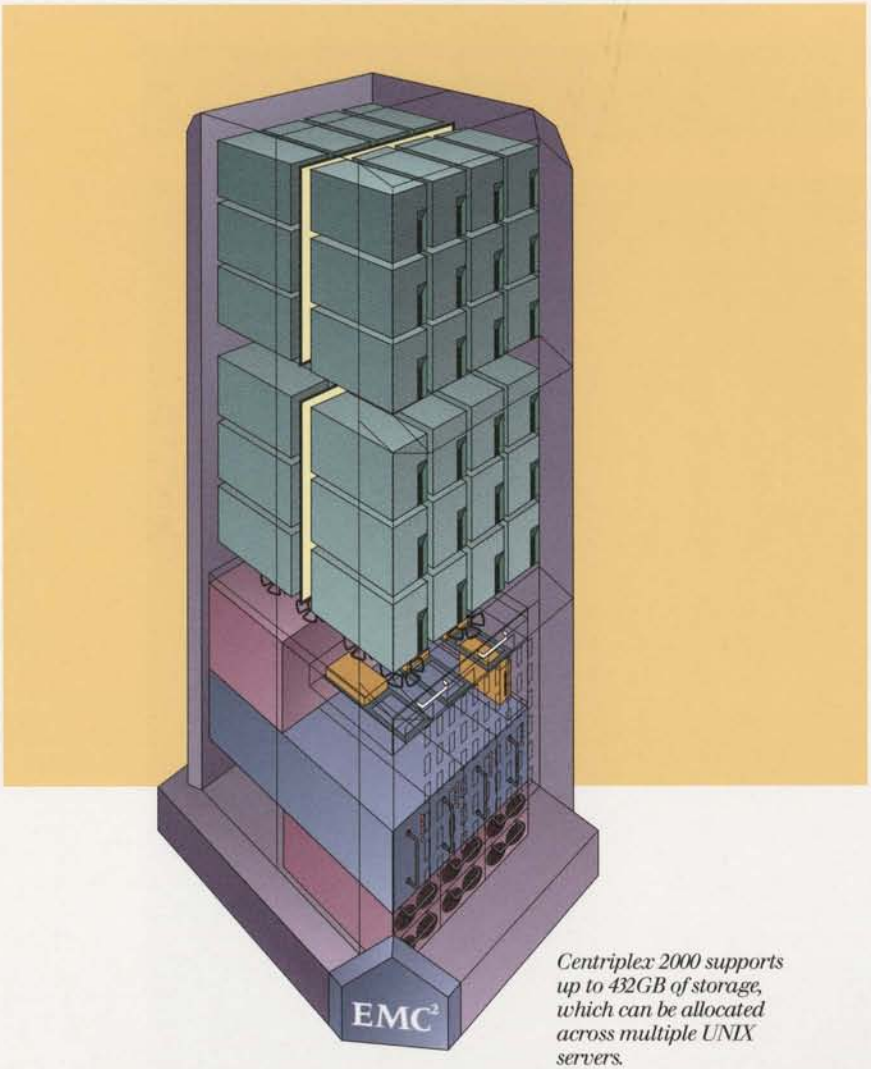
Setting a new standard for manageability, flexibility and availability in open systems data storage.

Data Sheet

Centriplex 2000

1. *Open storage solution for leading UNIX® servers*
2. *Capacity, performance, and connectivity that scale to fit your environment*
3. *Easy to manage*
4. *Intelligent maintenance features keep your system running*
5. *High availability architecture protects data*

Centriplex 2000 — The open storage solution for open systems.



Centriplex 2000 supports up to 432GB of storage, which can be allocated across multiple UNIX servers.

Helping you manage change and growth in open systems environments.

EMC's Centriplex™ 2000 ICDA® Systems offer an entirely new approach to storing, managing, and protecting data for multiple UNIX servers. For the first time, open systems users can take advantage of storage that is truly open — storage that is simple to manage, delivered in an architecture that is reusable, scalable, and protected.

Centriplex 2000 open storage is operating system independent, providing concurrent support for a wide range of open system platforms and operating systems — including the IBM® RS/6000® Series running AIX,® the HP 9000® Series running HP-UX,® the Sun® SPARC® Family running either SunOS® or Solaris,® and the AT&T® GIS System 3000 running SVR4 — plus many leading network operating systems. Centriplex 2000 requires no specialized host device drivers, so you can add new versions of server operating systems and server platforms in just minutes, with no operational impact.

Highlights

- **Open storage solution.**
  Operating system independence enables you to easily share and reallocate storage capacity among leading UNIX and network operating system servers.

- **Scalable to fit your applications.**
  Start with the capacity, connectivity, cache, and availability you need today; add more later to support your fast-changing open systems applications.

Managing Centriplex 2000 Systems is simple. By consolidating storage for multiple servers, Centriplex 2000 helps you minimize the growing cost and complexity of storage management. Your administrative staff now has just a single, centralized storage system to learn and operate. Up to 432GB can be allocated across multiple heterogeneous servers, and managed as a single image from the Centriplex Management Console.

You can also reallocate and reuse Centriplex 2000 storage as your application needs change, extending the life of your investment. Storage can be dynamically reallocated quickly and easily from one server to another through software, without requiring hardware to be physically moved.

The highly scalable Centriplex 2000 architecture makes it easier to support large relational databases and other client/server applications, by giving you the flexibility to support these growing environments while protecting your storage investment. Start with the storage capacity, device channels, cache size, and host connectivity you need today and add more as your applications change or grow.

Centriplex 2000 open storage offers you a range of cost-effective options to protect your critical data. A single system concurrently supports RAID 1, 5 and 10, active hardware redundancy, and hot-swappable components, enabling you to mix and match the exact levels of availability and protection demanded by each of your applications.

Scalable support for client/server applications.

To meet fast-changing application requirements, Centriplex 2000 combines high capacity, connectivity, cache, and availability features in a single storage architecture, with the flexibility to scale and manage it.

A unique Modular Interconnect Architecture enables dense packaging of SCSI devices and supports scalable capacity by means of a rigid midplane that eliminates internal SCSI cabling between devices. This architecture supports either a single- or dual-device shelf configuration. Each shelf features 12 device slots in front and 12 in back, for a maximum configuration of 432GB of storage. The disk drives that plug into these slots are packaged as Customer-Replaceable Units (CRUs). The result is a highly reliable, modular design that allows you to add or swap drives, without disrupting operations. You can change capacity as usage, growth, or new applications demand.

The innovative Centriplex 2000 design supports a virtual disk architecture, allowing physical resources to be shared among many servers, as well as user-configurable SCSI connections, permitting a customized balance of server connectivity and storage capacity to meet your needs.

For example, SCSI connectivity can be configured so that at maximum capacity, a 432GB system can concurrently support IBM RS/6000, Sun SPARC, HP 9000, and AT&T System 3000 platforms.

Centriplex 2000 Systems use high performance technologies, including fast-write cache, along with a large number of I/O channels. Employing EMC's high-performance Integrated Cached Disk Array (ICDA) technology, Centriplex 2000 offers up to 512MB of read/write cache. Cache is incrementally expandable from 32MB to 512MB and is shared among all connected hosts. For random reads, the cache reduces "hot spots" on disks. For writes, data is written to cache instead of directly to disk, thus eliminating I/O bottlenecks. You can enable write caching on a physical drive basis to optimize performance for your applications.

Management features put control in your hands.

Centriplex 2000 offers extensive management features that improve control of vital open systems data. Its open architecture offers immediate management advantages by consolidating storage for multiple servers. Managing storage is easy with the Centriplex Management Console and a graphical user interface used to display configuration, control and status information. The Centriplex 2000 intelligent controller module provides a single system view of all drives which can then be managed from the console.

- **Easy to manage.**
  Consolidating storage reduces the cost and complexity of managing your storage.
- **Intelligent maintenance.**
  Non-disruptive component replacement design and remote maintenance features help ensure problems are solved quickly and easily.
- **High availability.**
  Concurrent RAID 1, 5, and 10 and n+1 hardware redundancy protect critical data.

The controller module provides automatic device addressing of disks configured on SCSI device busses. The management console is then used to define and display physical groupings of devices, RAID levels and logical partitions, and to map these logical partitions for read-only or read-write access to specific servers. You can configure the system and dynamically reallocate storage from one server to another — strictly through the user interface.

This consolidated approach to data management and system configuration minimizes the learning curve for you and your staff and provides an easy, efficient way to manage growth of client/server applications across heterogeneous servers.

Intelligent maintenance.

The Centriplex 2000 architecture includes a number of built-in intelligent maintenance features and technologies that keep your storage system running without interruption.

The system automatically and transparently monitors the status of its components — including drives, power, cooling, and battery backup units. All of these key components are designed for quick and easy repair or replacement while Centriplex 2000 remains online.

In the event of a physical, electrical or environmental fault, maintenance is handled at multiple levels. An error message is logged at the local management console and if configured, the Remote Maintenance Processor (RMP) software will notify EMC. Optionally the Centriplex 2000 SNMP agent will alert network management frameworks such as HP OpenView.®

Local console monitoring and configuration management is done via a graphical user interface supported on the Centriplex 2000 Management Console. The GUI facilitates communication with the Centriplex 2000 controller module for all configuration, management and maintenance tasks.

Optionally, Centriplex 2000 can be configured with an SNMP management agent, designed to allow network-based management of Centriplex 2000 storage. The SNMP agent automatically interprets console output and issues alerts and alarms to SNMP management applications such as OpenView.

EMC's Remote Maintenance Processor (RMP) software provides an additional level of maintenance by providing a remote two-way connection with EMC's Customer Support Center. The RMP software uses automatic error detection and monitoring to detect threatening faults, and as a result, permits remedial or preventive maintenance to be taken before system operations are affected. A phone-home capability automatically dials into EMC's Fieldwatch® system, instantly alerting EMC of any problems. RMP also allows EMC technicians to dial into the system and run diagnostics to pinpoint the source of trouble.

High availability.

Centriplex 2000 Systems offer high availability options that scale to the level of protection your data requires. You can configure a single system with varying levels of high availability, cost-effectively providing the appropriate degree of protection for each application. The result is increased uptime that helps keep your business running.

Using the graphical user interface from the system's management console, system administrators can assign RAID levels to physical groups of disks. Centriplex 2000 provides concurrent support for RAID levels 1, 5 and 10. The system implements RAID 1 mirroring along with a cost-effective, multi-channel implementation of RAID 5, allowing more drives to be configured in a single RAID 5 set than in conventional SCSI storage systems — with channel resiliency. Should a drive or channel fail, the system remains operational; data integrity and data access are maintained. RAID 10 is a combination of RAID 1 and 0. It effectively mirrors striped sets.

Key Centriplex 2000 components are configured for n+1 redundancy, including disks, power supplies, fans and battery backup units. In the event of a failure, the system remains operational by switching over to the redundant or spare component. Because these components are designed for non-disruptive replacement, repairs can be made quickly and easily.

All data in cache is protected against power failure by means of an intelligent battery backup system that is configured for n+1 redundancy. Battery backup will keep Centriplex 2000 Systems operational long enough for the controller module to fully de-stage data from cache to disk in the event of a power outage, permitting an orderly system shut-down without the loss of data.

EMC service and support.

Centriplex 2000 ICDA Systems are backed by EMC's highly skilled and dedicated service organization. EMC's base one-year warranty plan includes 7-day a week, 24-hour coverage. Post-warranty service offerings include 7 × 24 coverage, technical support, and service and maintenance contracts.

Underlying the Centriplex 2000 design, and all members of EMC's Open Storage Family, is the MOSAIC:2000™ architecture. This unique architectural approach to storage system development is your assurance that an investment today is protected into the future. All EMC storage solutions are based on this architectural plan which allows easy upgrades in hardware, microcode, and functionality as technology advances.

Centriplex 2000 Systems Technical Specifications

Base Model Configurations

	CX16–S54	2100–9012	2100–9018	2100–9024
Capacity (GB), Unformatted	54	108	162	216
Drives	6	12	18	24
Cache (MB)	32	128	128	256
SCSI Device Channels	6	6	6	8
SCSI Host Connections	4	4	4	8
Battery Backup (n+1)	2	2	2	3
Multiple Power Supplies (n+1)	3	3	3	4
	2200–9030	**2200–9036**	**2200–9042**	**2200–9048**
Capacity (GB), Unformatted	270	324	378	432
Drives	30	36	42	48
Cache (MB)	256	256	256	256
SCSI Device Channels	8	8	8	8
SCSI Host Connections	8	8	8	8
Battery Backup (n+1)	3	3	3	3
Multiple Power Supplies (n+1)	4	4	5	5

Scalability

	Minimum	Maximum
Capacity (GB), Unformatted	54	432
5.25-inch Disks (9GB ea)	6	48
Read/Write Cache (MB)	32	512

Management Console

Hardware Configuration	CX16-PC 486-50 with 4MB RAM
Modem	14,400 bps
Software	DOS 6.0, Windows 3.1, ProComm Plus 2.03, CloseUp 6.0

Disk Storage Specifications

Form Factor	5.25-inch	Average Seek Time (ms)	12
Capacity (GB), Unformatted	9	Average Latency (ms)	5.5
Capacity (GB), Formatted	8.75, (1 MB = 10^6)	Data Transfer Rate (MB/s)	10
RPM	5400	MTBF (drive)	500,000 hrs

Concurrent O/S Support

Vendor	Server	Operating System	Vendor	Server	Operating System
IBM	RS/6000	AIX	AT&T	System 3000	SVR4
HP	HP 9000 Series 800 Servers	HP-UX	Compaq®	Proliant®	NetWare®, Windows NT, OS/2®
Sun	SPARC Series	Solaris, SunOS			

Power

	Single Shelf	Dual Shelf
Input Voltage (VAC)	208 (+7%, –10%) single phase	208 (+7%, –10%) single phase
Frequency (Hz)	50/60 Hz	50/60 Hz
kVA (max. configuration)	1.94	3.2
Btu/hr (max. configuration)	6,129	10,127

Power Cord

U.S.	NEMA L6-30R, 208VAC
Non-U.S.	Country-specific

Physical Specifications

	Single Shelf	Dual Shelf
Depth	38in/97cm	38in/97cm
Width	25in/64cm	25in/64cm
Height	51in/130cm	72in/183cm
Weight (max.)	700lbs/318kg	1100lbs/500kg

Environmental Specifications

(operating)	
Temperature	50° F – 90° F/10° C – 35° C
Humidity (non-condensing)	10% – 70%
Maximum Altitude	sea level to 10,000ft/3,048m

Regulatory Approvals

UL 1950	CISPR 22 Class A/EN 55022
FCC Part 15, Subpart B	IEC 801-2/EN 55024-2
CSA 950	IEC 801-3/EN 55024-3
IEC 950/EN60950	IEC 801-4/EN 55024-4

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THE STORAGE ARCHITECTS

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For more information.

Find out how Centriplex 2000 Systems can increase the value of your open systems data. Contact your EMC sales representative or authorized distributor today. Or call EMC directly at 1-800-424-EMC2.

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