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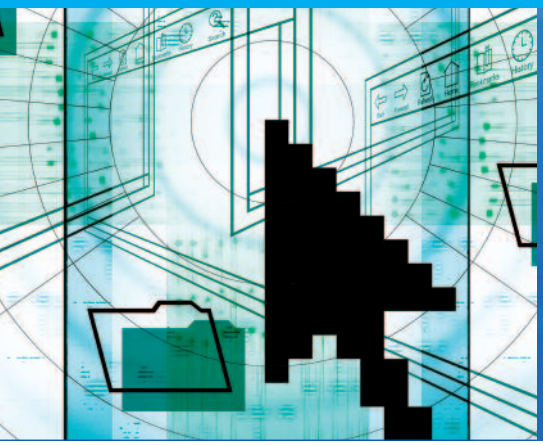

EMC CLARiiON AX150/AX150i

Simplifying networked storage

The Big Picture

- Full-function network storage for Windows, Linux, NetWare, and Solaris server platforms
- Fibre Channel and iSCSI models for flexible connectivity
- 3.0 Gb/s SATA II disk interface for superior application performance
- Up to 9 TB of capacity in a compact 2U rack-mountable enclosure
- Wizard-driven management interface for simplified setup and monitoring
- Automated path management and shared storage management across host and network connections
- Snapshot capabilities to enable point-in-time copies for backup and restore
- Customer-installable and maintainable design with hot-swap components
- Minimizes downtime with high-availability and end-to-end data protection features

Simple, affordable, scalable

The EMC® CLARiiON® AX series extends the benefits of networked storage—including consolidation, automation, and advanced data protection—to a broader range of customers by providing a cost-effective alternative to direct-attached storage. The AX150 combines the advanced functionality and data protection features of the CLARiiON system's industry-leading RAID array architecture with high-capacity Serial ATA II (SATA II) disk drives to deliver highly functional and cost-effective network storage.

Users who have previously relied on direct-attached and internal server-based storage capacity to support Windows, NetWare, Linux, and Solaris servers can now take advantage of a SAN (storage area network) or direct-attached storage solution that can scale with their storage needs. Designed around ease of installation and use, with prepackaged software that includes a simplified Web-based array and storage management suite, the AX150 fits uniquely with the requirements for small to medium-size businesses and distributed workgroup environments.

The system features up to 12 SATA drives in a 2U (3.5-inch) rack-mountable enclosure. Capacity can scale from three to 12 drives, and with 250 GB, 500 GB, and 750 GB disks, provides from 750 GB up to 9 TB of total capacity. The AX150 supports a variety of server platforms with either SAN or direct-attached connection.

Flexible connectivity options for your networked storage

With available iSCSI and Fibre Channel models, the AX150 enables users to choose the network interconnect that is right for each environment. AX150 iSCSI arrays provide the basis for cost-effective shared storage using readily available IP networking components for either direct-attach or for SAN connectivity using conventional Ethernet switches. AX150 Fibre Channel arrays can be connected to local servers with low-cost Fibre Channel fabric host bus adapters (HBAs) to provide a simple direct-attached shared storage solution. With the addition of one or more fabric switches, up to 10 servers per array can be supported.

Each AX150 can support up to 10 hosts and 256 virtual disks (or LUNs), and the dual-controller AX150 models support up to 20 initiators for 10 high-availability host connections. EMC PowerPath® for AX150 software provides enhanced data availability and performance through path failover and load balancing in high-availability installations.

The AX150 single-controller system offers support for varying application, deployment, and scale requirements

The AX150 family includes two models that support a range of application requirements, deployments, and scalability needs. The single-controller AX150 provides a low-cost RAID solution that includes key data integrity features, such as RAID 5 and RAID 1/0 data protection and battery-backed cache, and is ideally suited for customers beginning to implement network storage.

With two front-end host ports, the AX150 single controller can support two direct-attached servers or up to 10 network-attached hosts connected through a switch. The AX150 features 512 MB of processor memory with battery-backed cache to protect against data loss in the event of an outage (for up to 96 hours). CLARiiON RAID technology combines efficiency with availability and protection against data loss in the event of a disk drive failure. With hot-swap disk drives and power supplies, the AX150 is simple for users to maintain, while redundant cooling fans and the option of a second, redundant power supply provide an extra measure of reliability.

AX150 dual-controller system—high availability at a highly affordable price

The dual-controller AX150 provides dual active storage processors, mirrored cache, and dual power supplies to deliver high availability and end-to-end data protection to support business-critical applications.

Dual storage processors, dual hot-swappable power supplies, and N+1 redundant cooling result in superior availability, data protection, and integrity. An available rackmount UPS (required with the AX150 dual-controller models) allows the array to destage data from cache to disk in the event of a power failure. The operation of the UPS is fully integrated with the AX150 to provide a graceful shutdown of the array in the event of a power outage, further enhancing data protection and recovery. The dual-controller AX150 provides high-availability storage for up to four direct-attached hosts or two host clusters or for up to 10 fabric-connected servers in a department.

Improved I/O performance with SATA II disk drive technology

The AX150 family provides support for SATA II disk drives, providing the highest disk capacities, cost-effective performance, and advanced data integrity features. SATA II provides faster 3.0 Gb/s data transfer to and from the disks as well as Native Command Queuing (NCQ), which streamlines sequential data transfers. SATA II technology results in significantly improved performance for I/O-intensive applications such as messaging,

file serving, and databases. The AX150's hot-swap design and user-friendly configuration tools make it practical to start small and easily add additional drives as storage needs grow.

Data is protected with array-based failover and replication

The design of the AX150 array results in improved availability and reduced exposure to outages. The system cooling modules provide N+1 redundancy, and the AX150 features dual hot-swappable power supplies for no single point of failure.

The AX150 also includes an integrated, array-based snapshot capability. Up to eight concurrent snapshots can be created, enabling users to improve and simplify backup and recovery operations.

Simple customer installation and integrated management

All aspects of the AX150 are designed for simplified installation, ease of use, and maintainability. All functionality is included and pre-loaded. A wizard-based setup utility directs users through the brief array installation process. All major array components, including disk drives, power supplies, cooling fans, and processor modules, are designed as customer-replaceable units (CRUs).

The EMC Navisphere® Express interface, included with the AX150, provides new levels of ease of use and simplified management. The functionality required to install, configure, and manage the AX150 and host environments is pre-installed and is included with the array at no additional cost. The AX150 includes a wizard-driven management interface for user-friendly array setup and monitoring, shared storage management, and automated path failover across host and networked connections.

Increase the performance and availability of your Microsoft applications—affordably

AX150 software features are tightly integrated to leverage the advanced capabilities of the Microsoft Windows operating system, delivering an efficient, cost-effective way to scale Microsoft Exchange and SQL Servers. The AX150i networked storage system gives you the capacity to host hundreds of e-mail users with plenty of room to grow—on a fully RAID-protected storage platform. Add EMC Storage Administrator for Exchange software and you can automate storage management and provisioning, simplify data migration from Exchange 2000 to Exchange 2003, and increase application availability via storage group failover—without the cost or complexity of clustering.

A single management tool

Simplify management with the use of optional Navisphere Manager software. Organizations deploying a mix of CLARiiON AX and CX series systems can centrally manage and monitor their CLARiiON systems from a single Navisphere Manager console. Navisphere Manager also provides the ability to manage AX150 arrays from the Navisphere CLI.

Protect your information with advanced backup, recovery, and replication software

EMC Retrospect® for Windows is designed to deliver automated, reliable, cost-effective protection for small, midsize, and distributed enterprises seeking protection of servers used for business-critical applications. Advanced backup and recovery is easy to set up and manage with Retrospect.

Additionally, for customers planning to utilize AX150 along with CLARiiON arrays running EMC SAN Copy™ software, adding SAN Copy/E software to the AX150 provides the ability to replicate data from the AX150 via Navisphere. For example, using the AX150, SAN Copy/E can be used to replicate data from branch offices back to the data center to provide disaster recovery protection and to consolidate the backup process. SAN Copy/E delivers flexible deployment options with support for both full-volume and incremental copy features.

Service and support

The AX150 offers exceptional ease of use and is either customer- or partner-installable and maintainable. A comprehensive set of AX150 installation, configuration, and maintenance support documentation is available on the multilingual Web page, www.EMC.com/ax150support.

The warranty support and maintenance for the AX150 include a standard one-year system warranty with five-day/nine-hour telephone break/fix support and next-business-day (NBD) advance return parts. Optional premium maintenance service contracts are also available.*

*Availability may vary by location. Consult your EMC representative or reseller for details. Warranty and service terms may vary by EMC reseller or partner.

Specifications

	AX150	AX150SC	AX150i	AX150SCi
Controllers per Array	2	1	2	1
Front-End (Host) Connectivity Ports per Controller	2	2	2	2
Port Type	2 Gb/s optical	2 Gb/s optical	1 Gb/s copper	1 Gb/s copper
Protocol	FCP SCSI-3	FCP SCSI-3	iSCSI	iSCSI
Operating System Support	Windows, Linux, NetWare, Sun Solaris	Windows, Linux, NetWare, Sun Solaris	Windows, Linux	Windows, Linux
Maximum Cable Length	Shortwave Optical: 300 m (2 Gb/s) FC-AL and FC-SW support		CAT5/5E and CAT6 Copper: 100 m (1 Gb/s)	

Support for up to 10 servers (high availability and/or non-high availability)

Back-End (Disk) Connectivity and RAID Levels

Each storage processor connects to up to 12 SATA drives.

- RAID 5: Independent data access on three to 12 drives (with striped parity)
- RAID 1/0: Data mirrored, then stripped across two to 12 drives
- Configurable global hot spare

Drive Interface

Failover from each storage processor to all drives is possible.

	250 GB SATA II	500 GB SATA II	750 GB SATA II
Formatted Capacity (520 bytes/sector)	233 GB	465 GB	698 GB
Form Factor	3.5 in.	3.5 in.	3.5 in.
Height	1.0 in.	1.0 in.	1.0 in.
Rotational Speed	7,200 rpm	7,200 rpm	7,200 rpm
Interface	1.5 Gb/s Serial ATA II	3.0 Gb/s Serial ATA II	3.0 Gb/s Serial ATA II
Data Buffer	16 MB	16 MB	16 MB
Transfer Rates			
Buffer to/from Media	41–77 MB/s	31–64 MB/s	72–78 MB/s
SP to/from Buffer	150 MB/s (max.)	300 MB/s (max.)	300 MB/s (max.)
Access Time			
Average Seek	9.0 ms Read	8.2 ms Read	8.5 ms Read
Rotational Latency	4.17 ms	4.17 ms	4.16 ms

Integrated Management Features

Array-based Management Utility: Web-accessible configuration and management for an individual array

Shared Storage Control: data protection, shared storage access, and security for heterogeneous SAN environments

Path Management: path failover for continuous data access and load balancing for optimal performance

Snapshot Management: create local point-in-time snapshots for flexible backups

System Expansion

	Single Processor	Dual Processor
Total LUNs	256	256
Total Snap LUNs	8	8
Total Hosts	10 (1 HBA per)	10 (1 or 2 HBAs per)
Total AX150s per Host	4	4
Total Clustered Hosts	4 nodes	8 nodes

Dimensions (approximate)

Rackmount Single Processor Chassis with Battery-Backed Cache

Height	Width	Depth	Weight
3.415 in. (8.68 cm), 2 EIA units	17.72 in. (45.0 cm)	24.5 in. (62.3 cm)	48 lb. (21.8 kg) max.

Rackmount Dual-Processor Chassis with UPS

Height	Width	Depth	Weight
5.165 in. (13.12 cm), 3 EIA units	17.72 in. (45.0 cm)	24.5 in. (62.3 cm)	98.3 lb. (44.6 kg) max.

Power

	Single Processor Chassis	Dual Processor Chassis
Power Supplies per Array	1*	2
Frequency	47–63 Hz	47–63 Hz
AC Voltage	90–264 Vrms, single phase	90–264 Vrms, single phase
Power Factor	.96 (typ.)	.96 (typ.)
Power Consumption (maximum)	275 VA, 250W	360 VA, 326W
Heat Dissipation (maximum)	850 Btu/hour	1,110 Btu/hour
Protection	10 A, internally fused	10 A, internally fused (each supply)
AC Circuits	Single, external AC circuits	Redundant, external AC circuits
Inlet Type	Single Inlet IE320, C14 appliance coupler	Dual Inlet IE320, C14 appliance coupler

*Second power supply optional

AC Power Capability

40U Cabinet (optional)
Dual Inlets
NEMA L6-30P or IEC309-332P6 or Australia (Clipsal 56PA332)
200–240 VAC +/–10%, single phase
47–63 Hz
4,800 VA @ 200 V, 5,760 VA @ 240 V
30A, 2-pole circuit breaker

Operating Environment

Temperature: 50–104 degrees F (10–40 degrees C)
Temperature Gradient: 10 degrees C/hr
Relative Humidity: 20% to 80% (non-condensing)
Altitude
8,000 ft. (2438.4 m) @ 104 degrees F (40 degrees C) max.
10,000 ft. (3048 m) @ 98.6 degrees F (37 degrees C) max.

Electromagnetic Emissions and Immunity

FCC Class A EN55022 Class A
CE Mark VCCI Class A (for Japan)
ICES-003 Class A (for Canada); AS/NZS 3548 Class A (for Australia/New Zealand)
EN55024 Immunity, ITE BSMI Class A (for Taiwan)

Quality and Safety Standards

UL 1950; CSA C22.2-950; EN60950
Manufactured under an ISO 9000-registered quality system

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01748-9103
1-508-435-1000
In North America 1-866-464-7381

Data Sheet
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