

EMC CLARiiON AX100/AX100i



Networked storage made simple

The Big Picture

- Cost-effective network storage for Windows, Linux, and NetWare server platforms
- Up to 3 TB of capacity in a compact 2U rack-mountable enclosure
- Wizard-driven management interface for user-friendly setup and monitoring
- Automated path management and volume control across host and network connections
- Snapshot capabilities to enable point-in-time copies for backup and restore
- A simple and cost-effective service option with a customer-installable and maintainable design
- Minimizes downtime with high availability and end-to-end data protection features
- Available through EMC's channel partners and authorized distributors

Simple, affordable, scalable networked storage

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 AX100 combines the advanced functionality and data protection features of CLARiiON's industry-leading RAID array architecture with high-capacity serial ATA (SATA) disk drives to deliver highly functional cost-effective network storage.

Users that have previously relied on direct-attach and internal server-based storage capacity to support Windows, NetWare, and Linux servers can now take advantage of a SAN or direct-attach storage solution that can scale with their storage needs. Designed around ease of installation and use, and with prepackaged functionality that includes a simplified Web-based array and storage management interface, the AX100 fits comfortably with small to medium business requirements and distributed workgroup environments.

The system features up to 12 serial ATA (SATA) drives in a 2U (3.5-inch) rack-mountable enclosure. Capacity can scale from three to twelve drives, and with 160GB and 250GB disks, provides from 480 GB up to 3 TB of total capacity. The AX100 supports a variety of server platforms with SAN, NAS, and direct-attach connections.

AX100SC single controller system

The AX100 family includes two models that support a range of application requirements, deployments, and scalability needs. The single-controller AX100SC provides a low-cost RAID solution that includes key data integrity features, such as RAID 5 data protection and battery-backed cache, and is ideally suited for customers beginning to implement network storage.

The AX100SC 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 5 technology combines efficiency with availability and protection against data loss in the event of a disk drive failure. With two front-end 2Gb FC ports, the AX100SC can support two direct-attached servers, or up to eight network-attached hosts connected through an EMC SAN switch. The AX100SCi features one Gigabit Ethernet front-end port with full iSCSI offload and supports up to eight hosts connected through a GigE-managed switch.

AX100 dual-controller system—high availability at a highly affordable price

The dual-controller AX100 and AX100i provide active-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 and dual hot-swappable power supplies result in no single point of failure and provide superior availability, data protection, and integrity. An available rack-mount UPS (required with the AX100 dual-controller models) allows the array to de-stage data from cache to disk in the event of a power failure. The operation of the UPS is fully integrated with the AX100 to provide a graceful shutdown of the array in the event of a power outage, further enhancing data protection and recovery. The Fibre Channel AX100 provides high-availability storage for up to four direct-attached hosts or two-host clusters, or for up to eight fabric-connected servers in a department. The iSCSI AX100i supports two direct-attached hosts, or up to eight servers in an IP SAN.

Serial ATA disk drive technology

The AX100 family utilizes 7,200 RPM serial ATA drives, providing the highest disk capacities, cost-effective performance, and advanced data integrity features. The AX100's hot-swap design and user-friendly configuration tools make it practical to start small and easily add additional drives as storage needs grow.

Flexibility in storage networking

Each AX100 can support up to 8 hosts and 256 virtual disks (or LUNs), and the dual-controller AX100 models support up to sixteen initiators for eight high-availability host connections. Path management, included with the AX100, provides enhanced data availability and performance through path failover and load balancing in high-availability installations.

Redundant and hot-swap components

The design of the AX100 array results in improved availability and reduced exposure to outages. The system cooling modules provide N+1 redundancy, and the AX100 features dual hot-swappable power supplies for no single point of failure.

Customer installable and maintainable

All aspects of the AX100 and AX100SC are designed for simplified installation, ease of use, and maintainability. All functionality is included and pre-loaded. A wizard-based quick setup guide directs users through the brief installation and setup process. All major array components, including disk drives, power supplies, cooling fans, and processor modules, are designed as customer-replaceable units (CRUs).

Integrated functionality

The EMC Navisphere® Express interface, included with the AX100, provides new levels of ease of use and simplified management. The functionality required to install, configure, and manage the AX100 and host environments is pre-installed and is included with the array at no additional cost. The AX100 includes a wizard-driven management interface for user-friendly array setup and monitoring, snapshot capabilities to enable point-in-time images that can be used for backup and automated path management across host and networked connections.

Integrated array-based replication

The AX100 includes integrated array-based replication to create and manage point-in-time snapshots to allow users to improve and simplify backup and recovery. This provides new levels of functionality at an attractive price point available in other traditional low-end SCSI-based storage systems.

Add capability with Navisphere Manager and SAN Copy/E software

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 AX100 arrays from the Navisphere CLI.

Additionally, for customers planning to utilize AX100 along with CLARiiON arrays running EMC SAN Copy™ software, adding SAN Copy/E software to the AX100 provides the ability to replicate data from the AX100 via Navisphere. For example, using the AX100, 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 AX100 offers exceptional ease of use and is either customer or partner-installable and maintainable. The warranty support and maintenance for the AX100 include a standard two-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

Front-End (Host) Connectivity

	AX100	AX100SC	AX100i	AX100SCI
One or two storage processors per AX100				
Ports per storage processor	2	2	1	1
Port type	2Gb/s optical	2Gb/s optical	1Gb/s copper	1Gb/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	Windows
Maximum Cable Length	Shortwave Optical: 300 m (2 Gb/s) FC-AI and FC-SW support		CAT5E and CAT6 Copper: 100 m (1Gb/s)	
Support for up to 8 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 3 to 12 drives (with striped parity)
- RAID 1/0: Data mirrored, then striped across 2 to 12 drives
- Configurable global hot spare

Drive Interface

Failover from each storage processor to all drives is possible.

	160 GB SATA	250 GB SATA
Formatted Capacity (520 bytes/sector)	149 GB	233 GB
Form Factor	3.5"	3.5"
Height	1.0"	1.0"
Rotational Speed	7,200 rpm	7,200 rpm
Interface	Serial ATA	Serial ATA
Data Buffer	8 MB	8 MB
Transfer Rates		
Buffer to/from Media	37–67 MB/s	37–67 MB/s
SP to/from Buffer	150 MB/s (max.)	150 MB/s (max.)
Access Time		
Average Seek	8.5 ms Read 9.5 ms Write	8.5 ms Read 9.5 ms Write
Rotational Latency	4.17 ms	4.17 ms



AX100 Front View



AX100 Rear View

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:	4	4
Total Hosts:	8 (1 HBA per)	8 (1 or 2 HBAs per)
Total AX100s per Host:	4	4
Total Clustered Hosts:	4 nodes	8 nodes

Dimensions (approximate)

Rack-mount 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. (21.82 kg) max.

Rack-mount 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. (44.59 kg) max.

40U Rack Enclosure

Height	Width	Depth	Weight
75.0 in. (190.8 cm)	24.0 in. (61.1 cm)	36 in. (91.6 cm)	Empty: 300 lb. (136kg)

Power

	Single Processor Chassis	Dual Processor Chassis
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

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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