EMC CLARiiON CX Series

Extending the lead in midrange storage

The Big Picture

- Proven architecture that scales from 365 GB to 117 TB in a modular, pay-as-you-grow fashion

- Built-in high availability—no single point of failure, multi-path data access, mirrored cache, automated system diagnostics, non-disruptive upgrades, global hot-spare technology, AC or DC power

- Flexible storage operating environment that spans the CLARiiON product line and supports different host connectivity, network, and drive technologies

- Advanced information protection capabilities—local snapshots or clones, synchronous and asynchronous remote replication, and cross-platform data mobility

- Powerful storage management with EMC Navisphere software—manage, discover, monitor, and configure CLARiiON systems from a Web browser— that can be enhanced with other EMC storage software that provides path management and SAN, storage resource, and replication management

- Choice of network (Fibre Channel or iSCSI), drive technology (SATA or FC), deployment model (DAS, SAN, NAS)

- Backed by the storage industry's number-one-ranked services and support organization

- Continuous system monitoring, call-home notification, and advanced remote diagnostics

CX700

CX500

CX300

CLARiiON CX series arrays are unique with their data-in-place upgrade path to the next higher model in the series or to one of the new CLARiiON CX3 UltraScale™ series arrays. Your data never needs to undergo a risky migration. Just swap storage processing enclosures and you're ready to go.

Leading the industry in simple, scalable, affordable storage solutions

EMC® CLARiiON® leads the midrange storage market in providing customers with cost-effective solutions that deliver the highest levels of performance, functionality, and reliability.

The unique combination of proven hardware design and advanced software capabilities enables CLARiiON to meet the growing IT challenges of today's midsize enterprises—scaling system capacity and performance, simplifying management in complex environments, and delivering increasing levels of information availability and protection for critical applications and data.

The CLARiiON CX series—CX300/CX300i, CX500/CX500i, and CX700 models—includes offerings that are the ideal fit whether your requirements are for departmental applications or support for data-center-class business-critical systems. For companies looking for better ways to address their IT challenges, the CLARiiON CX series delivers advanced storage capabilities not found in other mid-tier storage systems. These capabilities include powerful secure management tools, safeguards to ensure continuous data availability and integrity, advanced array-based information replication functionality, virtual LUN technology, and data mobility within and between systems. All this is available in your choice of systems ranging from affordable starter solutions to maximum-capacity configurations to meet demanding data center requirements.

CLARiiON architecture—built to last, built for value

The CLARiiON architecture, based on a common high-availability design, enables the CX series to address a broad range of application environments. All CX series systems are built on the same redundant modular architecture and run the FLARE® storage operating environment, offering customers a consistent modular growth path starting with the CX300 and scaling up to the CX700, and supporting capacities from 365 GB to 117 TB in a single system. This is achieved through CLARiiON's unique data-in-place upgrade capability that enables customers to scale performance and functionality while upgrading from one model to another by simply swapping storage processing enclosures.

For increased reliability, the CLARiiON architecture includes dual active storage processors, each able to independently access every drive in the array. This design ensures continuous operations via automated failover in the event one storage processor becomes unavailable. In addition, the FLARE storage operating environment provides the CLARiiON architecture with the flexibility to support multiple generations of hardware and different types of interconnects with consistent functionality, thereby ensuring investment protection.

The FLARE storage operating environment also delivers the advanced functionality needed to increase the cost effectiveness and application availability of CLARiiON through a variety of feature such as:

- **CLARiiON metaLUN technology:** Groups of LUNs that, through striping or concatenation, give a user flexibility and control of data layout in the array. MetaLUNs increase performance capability by allowing a volume to span a large number of drives and enable better capacity utilization by non-disruptively expanding capacity anywhere in the array.

- **CLARiiON Virtual LUN technology:** Enables movement of volumes within a CLARiiON array without disrupting the application. This capability enables the dynamic movement of data from FC to ATA drives and provides ILM-type capabilities within a single

CLARiiON array. Data can also be moved from a volume of one RAID type to a volume of a different RAID type to meet the performance requirements of a particular application. Virtual LUN technology can also be leveraged to improve capacity utilization by moving data to underutilized spindles in the array.

Continuous availability and data integrity to keep your business running

CLARiiON delivers superior levels of protection through advanced capabilities of the system, including:

• Write cache, where each storage processor contains both primary cached data for its LUNs and a secondary copy of the cache for its peer storage processor.

• Battery backup for controllers and cache vault disks which allows for an orderly shutdown to ensure data protection in the event of a power failure.

• RAID protection levels 1/0, 0, 1, 3, and 5, all of which can co-exist in the same array simultaneously to match the different protection requirements of your data.

• Redundant data paths, power supplies, drive connections, storage processors—all with non-disruptive field replacement capabilities.

• Continuous cache and data-integrity detection/correction, automatic diagnosis, and advanced call-home capabilities for enhanced availability.

• UltraPoint™ technology combines a new point-to-point Fibre Channel disk array enclosure (DAE) design with more granular fault-detection and isolation capabilities in the FLARE operating environment to complement the existing patented RAID algorithms, end-to-end parity checking, SNiiFER data integrity utility, and global hot spares to enhance system robustness and deliver maximum reliability and availability.

Flexibility to choose deployment model, network technology, and drive type to fit your exact needs

With support for direct-attach, SAN, and NAS deployments, the CLARiiON CX series platform gives customers the ability to get all the benefits of storage consolidation in a deployment that fits their particular requirements. By providing a choice of iSCSI or FC storage area network (SAN), small businesses—or those without existing in-house Fibre Channel skills—can gain the benefits of network storage using their native IP networking skills. CLARiiON CX series iSCSI arrays incorporate high-speed iSCSI TOEs (iSCSI TCP/IP off-load engines) in the hardware design, to maximize performance over an IP storage network. Customers can add NFS and CIFS connectivity to their CLARiiON SAN deployment by coupling a CLARiiON array with an EMC Celerra® NS or NSX gateway.

By offering both Fibre Channel and SATA (Serial Advanced Technology Attachment) disk technology, customers can match application requirements with both performance and cost parameters. Finally, because CLARiiON can mix and match drive types within the same array, customers can use their existing platform to keep information online for longer periods of time for:

• **Backup-to-disk applications**—improving service levels over traditional tape solutions

• **Data replication**—deploying cost-effective SATA drives with EMC SnapView™ and EMC MirrorView™ replication software

• **Large file applications**—enabling faster processing at lower cost for applications that handle massive data sets

CLARiiON CX300/CX300i—small in size, big on capability

The entry point into the CLARiiON CX series, the CX300 networked storage system is optimized for cost-effective workgroup solutions. With the choice of DAS, SAN, or NAS deployment, the CX300 offers easy management and high performance for file/print, e-mail, small database, and Web services applications. Flexible and easy to deploy, the CX300 delivers the same modularity and Web-based management as the CX500 and CX700 in a compact form factor. Available in a rack-mount chassis, the CLARiiON CX300 offers an entry point of 365 GB capacity and has the ability to scale up to 60 drives for a maximum system capacity of 27 TB. The CX300 design fully exploits 2 Gb Fibre Channel technology, supporting up to 64 dual-attached hosts. Additionally, it can benefit from EMC's data-in-place upgrades and can run a broad complement of storage software for exceptional functionality. CLARiiON CX300 Fibre Channel systems are available as NEBS Level 3 certified with built-in DC power options.

The CX300i makes networked storage more affordable by using IP connectivity. The CX300i delivers cost-effective storage consolidation for Windows and Linux servers in workgroups and small to medium businesses and is compatible with industry-standard Ethernet switches.

CLARiiON CX500/CX500i—advanced features, highly scalable

The CLARiiON CX500 extends the CX series into the heart of the mid-tier storage market. The CX500 fits in a standard EMC 40U cabinet or an industry-standard rack with a 4U entry-level configuration offering over 4 TB of raw storage. It can be configured with 5 to 120 disk drives for a maximum system capacity of 57 TB and fits in a maximum of 25U of rack space–50 percent less rack space than competing products with average configura-tion. The CX500 supports up to 128 dual-attached hosts. The CX500 delivers up to twice the bandwidth performance of the CX300, excelling in graphics and video application environments.

The CX500i delivers data-center-class networked storage and functionality combined with low-cost IP connectivity for Windows and Linux servers. As expected, the CX500i provides leading iSCSI performance.

The CX700—tops in function, scale, and flexibility

Sharing the same hardware and software technologies as the CX500, the CX700 incor-porates faster processors, more cache, higher capacity, and greater connectivity and throughput. The CX700 provides eight host connections, supporting up to 256 dual-con-nected hosts. Fitting into a standard EMC 40U cabinet or industry-standard rack, the CX700 can be configured with 5 to 240 disk drives.

A complete suite of advanced storage software

EMC CLARiiON offers a complete suite of advanced storage software—the most extensive in the industry—designed for full backwards compatibility. For more information, please refer to the respective data sheets for each of the software products listed below.

Storage Management Software

EMC Navisphere Manager—securely manage CLARiiON storage from anywhere, anytime

The EMC Navisphere® Management Suite simplifies and automates the management of your CLARiiON storage infrastructure through a simple-to-use, browser-based GUI or via the command-line interface (CLI). Navisphere is common across the CX series and previous

generations of CLARiiON arrays, enabling customers to securely discover, monitor, tune, and provision storage on multiple CLARiiON storage systems—from anywhere, at any time—including management of CLARiiON replication software. Navisphere Analyzer provides detailed realtime and historical performance information about your CLARiiON array, allowing you to investigate performance patterns and trends before problems occur.

Navisphere Management Suite also integrates into and can be operated through the EMC ControlCenter® family of enterprise-class storage infrastructure management software. This integration enables you to easily manage your entire mixed heterogeneous storage infrastructure—consisting of EMC CLARiiON, EMC Symmetrix®, other EMC platforms, as well as non-EMC storage arrays—all from one control panel. In addition, EMC fully supports, and all CLARiiON CX series systems can be managed by SMI-S, the emerging industry standard for storage management.

EMC VisualSRM and VisualSAN—simplify SRM and SAN management for mid-tier environments

EMC VisualSRM™ is a storage resource management (SRM) application that discovers, reclaims, and manages storage at the file level. VisualSRM includes a full suite of reports that provide summary, file-level detail, and chargeback reporting for file systems, mail servers, and database servers. VisualSRM supports a wide range of platforms and enterprise applications including Exchange, Oracle databases, Sybase databases, and SQL Server databases.

EMC VisualSAN® network management software provides discovery, visualization, monitoring, and configuration capabilities for CLARiiON-based storage area networks.
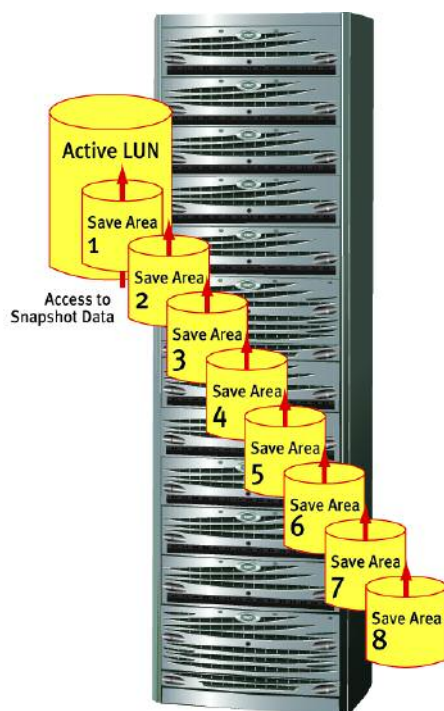
Path Management Software

EMC PowerPath—keep your critical applications online

EMC PowerPath® software provides application continuity in the event of an I/O channel failure for both CLARiiON FC and iSCSI SAN deployments. PowerPath offers multi-path access between CLARiiON and attached servers and storage, automatically shifting the I/O load to surviving paths if one or more fails, and resumes use of failed paths upon their repair. PowerPath also dynamically balances the I/O load over all channels, enabling more work to be done in less time.

Data Protection and Data Mobility Software

EMC SnapView—accelerate backup and restore, application integrity, and application development, all from one software product

EMC SnapView™ software is available across the CLARiiON CX series and cost-effectively accelerates backup and recovery through economical, disk-based consistent split and "instant restore" of production data. SnapView creates consistent point-in-time snapshots and full-copy business continuance volumes (BCVs) of production data while maintaining application integrity for non-disruptive backup. Restore information and application consistently in seconds versus the hours often required for traditional tape-based methods.

SnapView can create up to eight business continuance volumes (BCVs) from a production source, and up to eight fully readable and writeable point-in-time snapshots of logical units using EMC's copy-on-first-write algorithm. These can be used for non-disruptive backups, testing, analysis, or simply to be kept on a rotational basis for potential recovery.

Target Location A CX400

Source and Target Location B CX400

Target Location C CX500

Source Location D CX500

Remote Source and Target CX700 System

MirrorView sessions for remotely mirroring information are quickly and easily managed from one central location using EMC Navisphere software. MirrorView is compatible with midsize and high-end CLARiiON CX Fibre Channel series arrays as well as previous generation FC4700 arrays.

EMC MirrorView—maximize data availability through advanced synchronous and asynchronous disaster recovery

EMC MirrorView™ software provides highly available data storage by performing remote data mirroring—uni-directionally or bi-directionally—between CLARiiON arrays across campus or across the globe. And because MirrorView is array-based, applications and servers are free to service users. MirrorView/Synchronous (MirrorView/S) replicates data continuously—on an application I/O-by-I/O basis for maximum availability.

MirrorView/Asynchronous (MirrorView/A) replicates data independent of the application I/O, ensuring recoverability and extending distance while reducing network bandwidth requirements. MirrorView is tightly integrated with SnapView snapshot software for simplification and consolidation of routine processes. MirrorView/Synchronous and MirrorView/Asynchronous run on the CX700, CX500, CX600, and CX400 networked storage systems.

EMC SAN Copy—copy data between multi-vendor storage systems

EMC SAN Copy™ software enables high-speed data copying between multi-vendor storage systems. With SAN Copy you can rapidly copy data between CLARiiON and Symmetrix systems and between EMC, HDS, IBM (Shark and DS4000 series; formerly FAStT), Sun, and HPQ systems. This gives customers the flexibility to deploy a data mobility and data protection configuration that includes all your data center, regional, and distributed systems—regardless of location. SAN Copy reduces risk and lowers costs associated with routine data movement, including protection of data against disasters. SAN Copy is tightly integrated with SnapView snapshot and BCV/clone software so that a replica that is created via SnapView can be replicated to a second array with SAN Copy. SAN Copy runs on the CX700, CX500, CX600, and CX400 arrays. SAN Copy/E runs on the CX300 and AX100 models and can replicate data to arrays running SAN Copy.
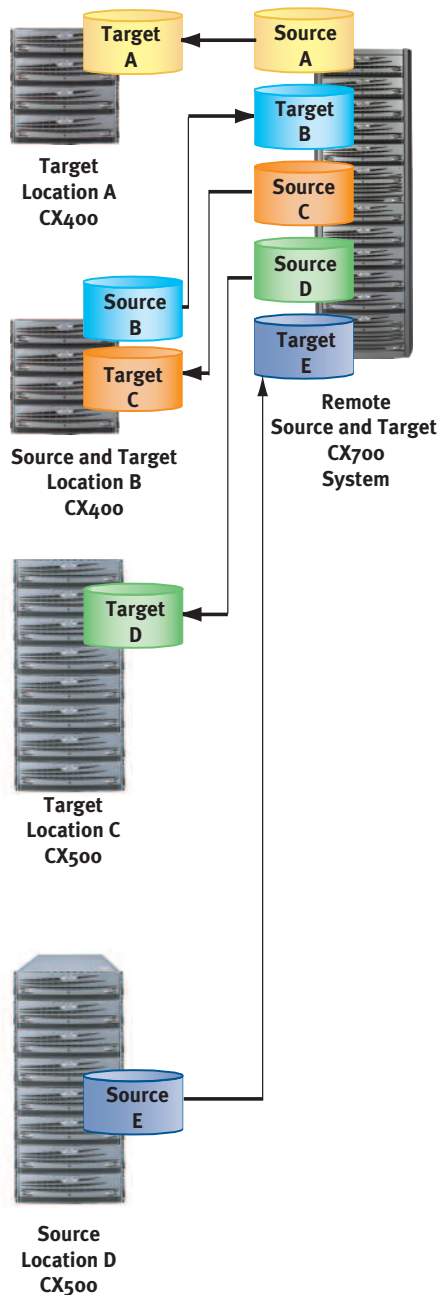
EMC RepliStor—host-based data protection software for Windows servers

EMC RepliStor® software provides file-based local and remote asynchronous replication for Microsoft Windows environments using TCP/IP connectivity. RepliStor provides data protection capabilities for CX300 and CX iSCSI-based systems.

Replication Manager—automate replication of application data

EMC Replication Manager simplifies management and automation of the entire information replication process for CLARiiON SnapView, SAN Copy, and other EMC replication software. From replica discovery, configuration, and scheduling to a simple wizard-driven process for recovery operations, Replication Manager allows you to maximize the value of point-in-time copies of application data. Replication Manager also integrates with leading applications and databases such as Microsoft Exchange, SQL, and Oracle, as well as Windows and UNIX file systems.

In addition to these EMC software applications, a wealth of third-party solutions is available from independent software vendors. As members of the EMC Developers Program™, they have access to EMC's application programming interfaces (APIs) and develop solutions that take advantage of the latest CLARiiON capabilities.

EMC²
where information lives®

Data Sheet
C1075.5

Maximize CLARiiON CX series benefits with EMC Services

EMC Services provides expert plan, build, and manage services to ensure that your EMC CLARiiON hardware and software perform optimally in your environment and meet your business objectives. Trained services professionals and project management teams, leveraging EMC's extensive storage deployment best practices and proven methodologies, accelerate time-to-value without straining the resources you have, minimizing risk to your business and your budget.

New customer serviceability options

CLARiiON Support Options

EMC expands its world-class customer support to offer greater flexibility and serviceability for customers with EMC CLARiiON Support Options. These features allow customers to choose the three-year 7x24 Premium or three-year 5x9 Enhanced warranty or maintenance options with the confidence that they are supported by EMC's proactive, pre-emptive world-class support. Only EMC delivers the storage-focused expertise backed by our global network of remote support, field, and Authorized Support Network Partners to keep our customers' information infrastructures running at peak performance.

Easy to manage: Powerful tools deliver easy management features to achieve maximum performance. From the CLARiiON Disk Replacement Utility to comprehensive changes guided by the CLARiiON Configuration Generator, EMC delivers convenience and flexibility to match business and budget requirements.

Easy to support: EMC eServices, available on EMC Powerlink™, EMC's secure extranet, deliver information and tools to optimize your CLARiiON investment. Support tools and easy-to-replace components empower customers to resolve most routine issues. Backed by EMC world-class customer service, choose the CLARiiON Support Option that best meets your business and budget requirements.

EMC Services for the IT lifecycle

EMC Services delivers results to our customers throughout the IT lifecycle: Plan, Build, Manage. Strategic storage consulting services from EMC Consulting help companies achieve the maximum value from their information, at the lowest total cost, at every point in the information lifecycle. EMC Technology Solutions professionals deliver product-specific point solutions in addition to comprehensive custom planning, design, implementation, and integration services for EMC technology—everything from consolidation of your current resources to a transformation of your environment to achieve information lifecycle management.

EMC Customer Service—four-time winner of the SSPA STAR Award for outstanding mission-critical support—helps you keep your information available 7x24 to deliver competitive advantage and drive revenue. And EMC Education Services drive the value of your investment with a comprehensive portfolio of customer courses.

CLARiiON CX300/CX300i, CX500/CX500i, and CX700 systems come standard with a three-year, 5x9, onsite warranty on hardware and the FLARE storage operating environment, and a 90-day warranty on software. Warranties can be extended with an EMC Service Agreement.* Ask your EMC sales representative about the full spectrum of services from EMC that can benefit your organization.

*Warranties may vary outside the United States. Contact your EMC representative for local warranty and service terms and conditions.