

EMC CLARiiON CX3 UltraScale Series

The Big Picture

- New CLARiiON CX3 UltraScale architecture is designed from the ground up to deliver optimized performance, new levels of scalability, flexible configurations, and even higher resiliency
- Leading flexibility with support for Fibre Channel and iSCSI connectivity with auto negotiation to simplify deployments in existing SANs
- Industry's only storage platform designed to fully leverage end-to-end 4 Gb/s Fibre Channel technology and deliver optimized storage performance
- High bandwidth throughout the new CX3 UltraScale architecture—from 4 Gb/s SAN, through the state-of-the-art, native PCI Express I/O interconnect, to 4 Gb/s Ultra-Point technology, to high-performance 4 Gb/s 15K RPM disk drives—allows customers to realize the full power of the CLARiiON CX3 series
- Built-in high availability—multi-path data access, mirrored cache, automated system diagnostics, online upgrades, global hot-spare technology—no single points of failure
- Proven third-generation CX series storage arrays that scale from 365 GB to 471 TB in a modular, pay-as-you-grow fashion
- Advanced information protection capabilities—local snapshots, clones, or CDP options; synchronous and asynchronous remote replication; and cross-platform data mobility for all CX3 series models
- 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 to provide storage resource management, path management, and data protection
- New ease-of-use capabilities—customer-replaceable components now supported with the CX3 UltraScale series, including non-disruptive replacement of disk drives, power supplies, fans, and small-form-factor-pluggable (SFP) optical transceivers

The proven midrange storage solution

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 a breakthrough hardware design and advanced software capabilities enables EMC CLARiiON CX3 UltraScale™ series systems to meet the growing IT challenges of today's midsize and large 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 powerful CX3 UltraScale series—CX3 model 10, CX3 model 20, CX3 model 40, and CX3 model 80—include 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 CX3 UltraScale series delivers advanced storage capabilities not found in other midrange storage systems. These capabilities include 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 entry-level solutions to high-performance, maximum-capacity configurations for your most demanding requirements.

CLARiiON CX3 UltraScale architecture—built to last, built for value

The new CLARiiON CX3 UltraScale architecture, based on a high-performance, high-availability design, enables the CX3 UltraScale series to address a broad range of application environments. All CX3 UltraScale series systems are built on the same redundant modular architecture and run the FLARE[®] storage operating environment, offering customers a consistent modular platform starting with the CX3 model 10 and scaling up to the CX3 model 80, supporting capacities from 365 GB to 471 TB in a single system. This is achieved through CLARiiON's unique upgrade capability that enables customers to scale performance and functionality while upgrading from one model to another.



The Big Picture

- Backed by the storage industry's number-one-ranked services and support organization
- More granular fault detection, isolation, and error correction capabilities with all CX3 UltraScale series systems—leading to even higher levels of system reliability
- Continuous system monitoring, call-home notification, and advanced remote diagnostics

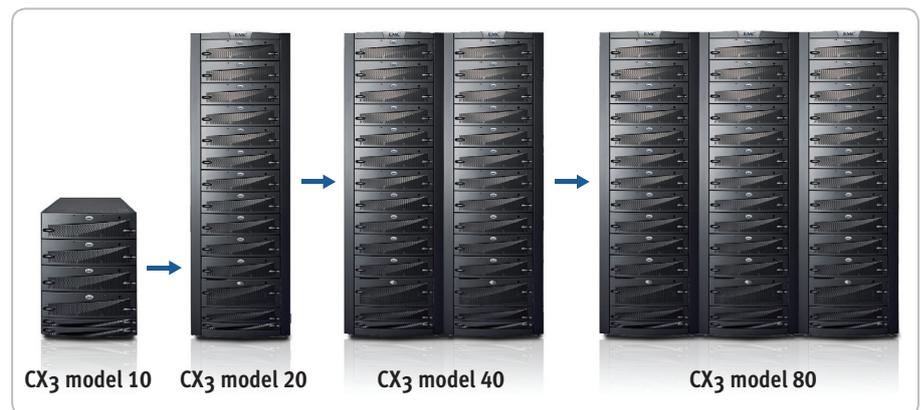
CLARiiON CX3 UltraScale series arrays are unique with their cost-effective data-in-place upgrade path to the higher models in the series. Just add the new software and swap storage processing enclosures and you're ready to go.

For increased performance and scalability, the innovative UltraScale architecture incorporates state-of-the-art CPUs and the highest performing memory subsystem, leveraging low-latency, high-bandwidth PCI Express interconnect technology to accelerate 4 Gb/s scalability.

The CX3 UltraScale architecture utilizes 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 (Fibre Channel or iSCSI) 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 features such as:

- **CLARiiON metaLUN technology:** Creates 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 LUNs and metaLUNs within a CLARiiON array without disrupting the application. This capability enables the dynamic movement of data from 2 Gb/s FC to 4 Gb/s FC drives and provides information lifecycle management (ILM) 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 also can 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 0, 1, 1/0, 3, 5, and 6, 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 an advanced point-to-point 4 Gb/s 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.



The CX3 model 10 can be configured with 5 to 60 disk drives and 64 dual-connected hosts via FC or iSCSI, and is ideal for workgroup or remote office storage. CX3 model 10 customers can take advantage of EMC's unique data-in-place upgrade to the CX3 model 20 or to the CX3 model 40.



The CX3 model 20 can be configured with 5 to 120 disk drives and 128 dual-connected hosts via FC or iSCSI, and is an ideal storage platform for departments or midsize companies. CX3 model 20 customers can take advantage of EMC's unique data-in-place upgrade to the CX3 model 40 or to the CX3 model 80 system.



The CX3 model 40 can be configured with 5 to 240 disk drives and supports up to 128 dual-connected hosts via FC or iSCSI. CX3 model 40 customers can take advantage of EMC's unique data-in-place upgrade to the CX3 model 80, and can expand functionality through a broad range of EMC and third-party software.



The enterprise-class CX3 model 80 shares the same hardware and software architecture as the CX3 model 40 and CX3 model 20, but with faster processors, higher capacity, greater connectivity, and greater throughput. It scales from 5 to 480 disk drives and supports up to 256 dual-connected hosts.

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

With support for direct-attach, Fibre Channel, iSCSI, and NAS Gateway deployments, the CLARiiON CX3 UltraScale series platform gives customers the ability to get all the benefits of storage consolidation in a deployment that fits their particular requirements.

By offering both high-performance and low-cost, high-capacity disk technology, customers have the flexibility to meet application requirements with both performance and cost parameters. And because the CLARiiON CX3 UltraScale series can mix and match drive types within the same array for all-in-one tiered storage solutions, customers can keep more information online for longer periods of time for:

- **Backup-to-disk applications**—improving service levels over traditional tape solutions
- **Large file applications**—enabling faster processing at lower cost for applications that handle massive data sets

CLARiiON CX3-10—small in size, big on capability

The entry point into the CLARiiON CX3 UltraScale series, the CX3 model 10 is a strong fit for departmental applications, as well as for midsize and enterprise customers looking for a cost-effective platform for consolidating and protecting information in distributed branch offices. The CX3-10 supports the entire suite of CLARiiON software. The CX3-10 is equipped with four 4 Gb/s Fibre Channel and four 1 Gb/s iSCSI host ports. The CX3 model 10 supports up to 64 highly available, dual-connected hosts, and can be equipped with up to 60 Fibre Channel or SATA disk drives for a maximum capacity of 60 TB. This system supports the full suite of CLARiiON advanced software functionality, including the array-based remote replication offerings EMC MirrorView™ and SAN Copy™.

CLARiiON CX3-20—new levels of flexibility

The CX3 model 20 networked storage system is optimized for cost-effective departmental solutions and supports the entire suite of CLARiiON software. The CX3-20 is available in a Fibre Channel-only configuration with twelve 4 Gb/s Fibre Channel host ports or with FC and iSCSI connectivity with four 4 Gb/s Fibre Channel and eight 1 Gb/s iSCSI host ports. The CX3 model 20 supports up to 128 highly available, dual-connected hosts, and scales from 5 to 120 disk drives for a maximum capacity of 111 TB. The CX3 model 20 offers higher performance and scale than competitive offerings in its class and is ideal for midsize customers looking for a high-performing platform that scales and can deliver array-based remote replication capabilities for disaster recovery. The CX3 model 20 is also a strong fit for enterprise customers looking for a cost-effective platform for consolidating and protecting information in distributed branch offices.

CLARiiON CX3-40—advanced features, highly scalable

The CLARiiON CX3 model 40 extends the CX3 UltraScale series into the heart of the midtier storage market. The CX3 model 40 is the OLTP workhorse of the CX3 UltraScale series. With support for up to 128 highly available, dual-connected hosts and the capability to scale up to 240 disk drives for a maximum capacity of 231 TB, it outperforms competitors' largest midrange arrays at a more affordable price. The CX3-40 is available in a FibreChannel-only configuration with eight 4 Gb/s Fibre Channel host ports or with FC and iSCSI connectivity with four 4 Gb/s Fibre Channel and eight 1 Gb/s iSCSI host ports. The CX3 model 40 is ideal for enterprise customers with demanding OLTP workloads, and for customers with larger requirements for array-based replication.

The CX3-80—tops in performance, scale, and functionality

The CX3 model 80 is the world's largest and most powerful midrange storage array, occupying a new performance and scale position above all competitors. The enterprise-class CX3 model 80 shares the same hardware and software architecture as the CX3 model 40 and model 20, but with faster processors, higher capacity, greater connectivity, and greater throughput.

The CX3 model 80 has eight 4 Gb/s Fibre Channel host connections, supports up to 256 highly available, dual-connected hosts, and scales up to 480 disk drives, for a maximum capacity of 471 TB. The CX3 model 80 enables a new class of application requiring high drive counts and high bandwidth. Key applications include very large-scale backup-to-disk, seismic data processing, computational chemistry, and demanding data warehouse environments.

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.

Storage Management Software

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

The EMC Navisphere® Management Suite simplifies the management of CX3 UltraScale series and previous generations of CLARiiON arrays, enabling you to discover, monitor, provision, and manage CLARiiON replication software via a secure, easy-to-use browser-based GUI or command-line interface (CLI). The Navisphere Task Bar makes managing CLARiiON storage extremely easy—one terabyte of storage can be provisioned in just one minute. 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 with the EMC ControlCenter® family of enterprise-class storage resource management software. In addition, EMC fully supports, and all CLARiiON CX3 UltraScale series systems can be managed by, SMI-S, the emerging industry standard for storage management.

EMC Navisphere Quality of Service Manager—manage CLARiiON to meet performance service levels

EMC Navisphere Quality of Service Manager (NQM) is a new software product that enables you to monitor and achieve performance objectives for applications. With NQM, you can schedule user-defined policies and benefit from consolidation while optimizing the performance of mission-critical applications. For example, you can set up a policy to optimize response time for your e-mail application during the day and another policy to optimize bandwidth when your backup process runs in the evening.

EMC VisualSRM—simplify SRM for midrange 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.

Path Management Software

EMC PowerPath—keep your critical applications online

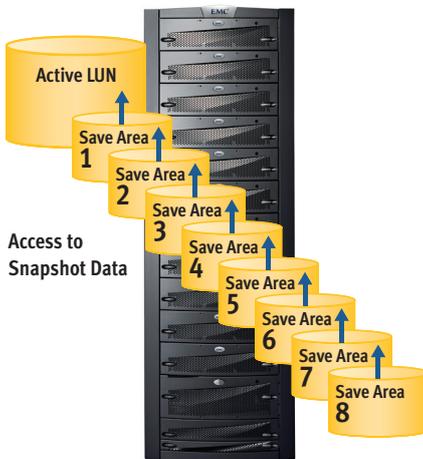
EMC PowerPath® offers multi-path access between CLARiiON and attached servers for path failover and load balancing.

Data Protection and Data Mobility Software

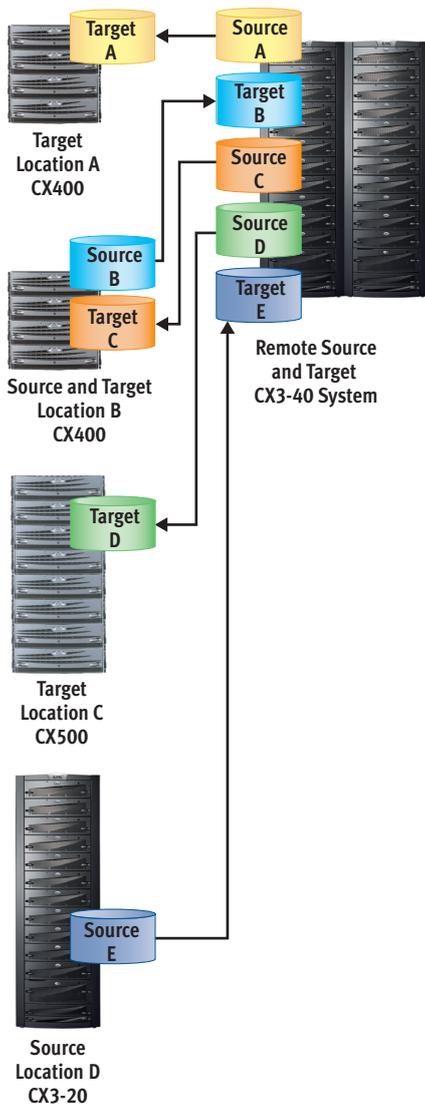
EMC has a broad portfolio of data protection and data mobility software to meet a wide range of customer requirements.

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

EMC SnapView™ software is available across the CLARiiON CX3 UltraScale series. SnapView creates consistent point-in-time snapshots and full-copy clones of production data while maintaining application integrity for non-disruptive backup. Restore information and applications consistently in seconds versus the hours often required for traditional tape-based methods.



SnapView can create up to eight clones from a production source, and up to eight fully readable and writeable point-in-time snapshots of logical units (LUNs) 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.



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 CX3 UltraScale series arrays as well as most previous generation CX 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 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 for maximum availability. MirrorView/Asynchronous (MirrorView/A) replicates data independent of the application I/O, ensuring recoverability and extending distance.

MirrorView/Synchronous and MirrorView/Asynchronous run on all CX3 UltraScale series and CX700, CX500, CX600, and CX400 networked storage systems.

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

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), Sun, and HPQ systems. SAN Copy is tightly integrated with SnapView 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 all CX3 UltraScale models and CX700, CX500, CX600, and CX400 arrays.

EMC RecoverPoint—cost-effective network-based data protection

EMC RecoverPoint/SE is a comprehensive data protection solution for CLARiiON providing operational recovery to any point in time with the Continuous Data Protection (CDP) license option or asynchronous remote replication for disaster recovery with the Continuous Remote Replication (CRR) option. RecoverPoint/SE protects companies from data loss due to common problems such as data corruption, software errors, viruses, and end-user errors, while also protecting against catastrophic events that can bring an entire data center to a standstill.

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 via IP.

EMC Replication Manager—automate replication management

EMC Replication Manager simplifies management and automation of the entire information replication process from the application layer to the array for CLARiiON SnapView, SAN Copy, RecoverPoint, 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.

Maximize CLARiiON CX3 UltraScale 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.

In addition to exceptional performance, availability, functionality, and economic benefits, CLARiiON CX3 UltraScale customers have access to the world's top-rated customer service and support. The EMC Services organization helps you make the most of your EMC technology investment with a continuum of best-in-class services spanning the entire information lifecycle.

Breaking new ground in customer serviceability

CLARiiON Support Options

CLARiiON Support Options deliver unprecedented choice and flexibility without compromise. Count on EMC's world-class support paired with new usability features from CLARiiON to keep information available and working.

With the CLARiiON CX3 UltraScale series arrays, EMC introduces a new service feature—support for customer-replaceable components. Customers now can non-disruptively replace disk drives, power supplies, fans, and small form-factor pluggable (SFP) optical transceivers. EMC provides a new tool, a disk replacement utility wizard, that guides a customer through the disk replacement process, while automatically checking each step to make sure data is protected at all points in the process.

EMC expands its world-class customer support to offer greater flexibility and usability for customers with EMC CLARiiON Support Options. Customers can choose the three-year Enhanced 5x9 support coverage or three-year Premium 7x24 support coverage option with the confidence that they are supported by EMC 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 customers' information infrastructures running at peak performance. Choose with confidence.

- **Easy to manage:** Powerful tools deliver easy management features to get 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.

CLARiiON CX3 UltraScale series systems come standard with a three-year, five-day-per-week by nine-hour-per-day, next-business-day onsite response warranty on hardware and the FLARE storage operating environment, and a 90-day warranty on software media. Customers can upgrade to the Premium level of service—seven-day-per-week by 24-hour, four-hour onsite response—during the warranty period. 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.



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Take the next step

For more information on the superior performance, functionality, and economics offered by the CLARiiON CX UltraScale series of mid-tier networked storage systems, contact your EMC sales representative or authorized EMC value-added systems integrator. You can also visit our website at www.EMC.com or, in North America, call EMC directly at 1-866-464-7381.