

## EMC CLARiiON CX4 Series

### The most capable and flexible mid-tier SAN for virtual infrastructure

#### The Big Picture

- Flexible consolidation for dynamic virtualized infrastructures. CX4 offers integrated dual protocol, FC and iSCSI, to meet any consolidation needs, and expandable and future-ready front-end connectivity with CX4 UltraFlex technology
- Leading ease of use with simple wizard-based installation and management tools and virtual provisioning to increase utilization and easily provision storage for new virtual machines
- Highest availability for virtualized IT environments based on EMC CLARiiON technology with proven five-nines (99.999 percent) availability
- Disaster recovery via EMC RecoverPoint/SE and EMC MirrorView integration with VMware Site Recovery Manager (SRM); RecoverPoint integration with VMware vCenter gives customers the ability to view and manage virtual machines that are configured for replication
- End-to-end virtual-to-physical visibility provided by virtualization-aware EMC Navisphere simplifies the complex tasks of managing mixed virtual and physical environments
- Optimized server, storage, and data-path utilization with EMC PowerPath/VE
- End-to-end service-level management with Navisphere Quality of Service Manager (NQM) and VMware Distributed Resource Scheduler (DRS)
- Accelerated virtual infrastructure deployments with EMC best-practice white papers for VMware environments

## The simple, scalable, and reliable storage system optimized for virtualized server environments

### Extend the benefits of VMware deployment with CLARiiON CX4 series

With VMware<sup>®</sup> you have realized the significant, tangible benefits of server consolidation, including increased resource utilization, energy savings, and reduction of operational costs. A storage area network (SAN) featuring EMC<sup>®</sup> CLARiiON<sup>®</sup> CX4 series storage, powered by Intel<sup>®</sup> Xeon<sup>®</sup> processors, furthers the benefits of VMware by enabling and supporting new functionality such as VMotion<sup>™</sup>, Distributed Resource Scheduler (DRS), High Availability (HA), Site Recovery Manager (SRM), that make VMware Infrastructure 3 and VMware vSphere<sup>™</sup> 4 such powerful solutions. A solution that combines VMware with the flexible, simple, scalable, and reliable CLARiiON CX4 series provides enterprise-class capabilities and efficiencies in an easy-to-use storage platform.

### Flexible consolidation for dynamic virtualized infrastructures

The dynamic nature of virtualized environments requires a flexible storage solution in order to realize the full benefit of virtualization technology. VMware customers who leverage the industry-leading CLARiiON CX4 SAN for storage consolidation enjoy the most flexible and highest performing deployments available for virtualized data centers.

The CX4 series offers iSCSI connectivity, which is the ideal option for customers who want to leverage their existing LAN infrastructures, and Fibre Channel (FC) connectivity for environments with high throughput requirements. This flexibility continues with tiered storage, enabling administrators to deploy drives of different capacities and performance levels to meet the needs of different applications within their environment. These options include low-cost/high-capacity SATA drives for applications such as backup-to-disk (B2D) and file sharing, FC drives for applications that require high performance, and Enterprise Flash drives (EFDs) for tier "0" ultra-high-performance requirements.

The benefits of the CX4's network and drive options extend into the platform's scalability where users can begin with as few as five drives and scale up to 960. With CX4 UltraFlex<sup>™</sup> technology, front-end connectivity can scale on demand and can also incorporate the latest connectivity options available on CX4 systems, such as 8 Gb/s FC. Qualified and listed on VMware's compatibility/support matrix, the CLARiiON CX4 series provides choice without compromise and the scalability for growing VMware virtualized environments.

### Leading ease of use for virtualized infrastructures

To complement VMware's ability to quickly and easily deploy new virtual machines, the CLARiiON CX4 series delivers new ease-of-use features designed to improve management in a VMware environment and support a growing virtualized information infrastructure. The installation of CX4 systems has been simplified with new interactive installation wizards that facilitate rapid VMware deployments. Using the Navisphere<sup>®</sup> Manager and Navisphere Taskbar, users can quickly provision, deploy, migrate, or expand volumes associated with their ESX virtual servers. When the Navisphere Management suite is deployed with VMware, users can also leverage integrated technologies such as VMware Site Recovery Manager (SRM) using CLARiiON's MirrorView<sup>™</sup> and RecoverPoint/SE replication software to automate the process for site failover.



Being able to quickly and non-disruptively deploy new virtual machines on the fly has changed the game in information technology. CLARiiON streamlines and expedites storage management with technologies such as metaLUN and Virtual LUN, which are included free of charge with the CX4. These features allow for realtime, online expansion of LUNs and transparent volume movement, respectively, with no interruption to host I/O.

Realtime LUN expansion also supports the creation of new virtual machines on the fly. This means that additional storage capacity is immediately available to the ESX Server™, a process that is non-disruptive to the host application. Both RDM and VMFS are supported with metaLUNs and users can leverage this key technology to make efficient usage of their storage resources in a VMware environment.

The CLARiiON CX4 series enables online non-disruptive movement of virtual machines between drive types and RAID groups. This flexibility allows users to move virtual machines within the array based on varying performance requirements as they change over time. In the event that a virtual machine becomes less critical, that single machine or the entire VMFS file system can be migrated from FC to SATA drives while the virtual machine is online. You can also reconfigure the CX4 layout and add additional capacity non-disruptively. This technology makes the CLARiiON CX4 the most flexible midrange networked storage system on the market, allowing users to manage and change the system configuration as their VMware environment changes and grows.

With CLARiiON CX4, users can provision their virtual infrastructures using CLARiiON Virtual Provisioning software to increase storage capacity on demand. This software allows users to present applications with the capacity that they need for current and future use, while physically allocating only what is needed for today. This capability enables users to defer the purchase of additional capacity and saves up-front cost, energy, and valuable floor space.

To keep the ever-growing number of virtual machines under control, it is becoming increasingly clear that administrators need tools that can navigate easily between the virtual and physical worlds. Virtualization-aware Navisphere functionality—a new FLARE® 29 feature that is tightly integrated with VMware—bridges the gap between virtual and physical worlds and greatly simplifies the complex tasks of troubleshooting in mixed virtual and physical environments. Users can discover and map the entire environment from virtual machines to physical servers to supporting storage. Navisphere provides detailed virtual machine storage data and automatically maintains and updates relationships. Management and reporting are simplified with access through the Navisphere Taskbar.

## Highest availability for virtualized IT environments

The CLARiiON CX4 series is built upon CLARiiON technology that has proven to deliver five-nines availability. In addition to the fully redundant hardware architecture, the unique software capabilities of the FLARE operating environment provide CLARiiON CX4 with end-to-end data integrity checking technologies to maximize system resiliency. The availability of your virtual machines is only as good as the storage on which they ultimately reside. The CLARiiON CX4 is the mid-tier SAN industry leader with advanced technologies to deliver the highest levels of reliability and availability required for VMware environments.

## End-to-end service-level management with NQM

Service-level management with the ability to tier virtual machines brings about another consideration when choosing a storage solution for virtualized environments. Not all virtual machines are created equal—and they have different service levels. CLARiiON's powerful Navisphere Quality of Service Manager (NQM) is the only storage software capable of providing the granular LUN-by-LUN SLA management that is required for virtualized environments.

In VMware environments, VMware's QoS functionality, VMware DRS, which provides SLA management for ESX memory and CPU, can be used in conjunction with NQM to provide users with best-of-breed, end-to-end, policy-based application service-level management for their entire virtual infrastructure.

## Services and expertise

EMC's extensive experience with VMware, combined with a comprehensive suite of virtualization services, can help organizations transform their entire infrastructure by leveraging the capabilities of VMware along with CLARiiON CX4 storage. Years of experience in deploying iSCSI SANs with VMware have been captured in the online library of best-practice white papers and solution guides, designed to accelerate deployments. The EMC E-Lab™ has also tested the CLARiiON CX4 with VMware, providing peace of mind that every implementation will work the first time. E-Lab has validated CX4 compatibility with all of the most popular operating environments; including Windows, Solaris, and Linux. The following assessment and implementation services are available to help users accelerate deploying CLARiiON CX4 systems with VMware's virtualized infrastructure suite:

- EMC Assessment for Virtualization examines current infrastructure and business objectives to provide an analysis of and design recommendations for the proposed virtualization initiative, as well as the financial impact.
- EMC Design for Server and Storage Virtualization provides a detailed design and migration plan for x86 server virtualization with storage consolidation based on the results of the Assessment Service and future business needs.
- Managed Services provide world-class services for management of information and storage systems and processes and reference architectures for individual company needs.



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### Take the next step

Find out how the EMC CLARiiON CX4 can simplify and complement your VMware environment. Find out why more customers are choosing CLARiiON for their VMware environments than any other networked storage array. For more information, contact your local EMC Velocity<sup>2</sup> Partner or visit our website at [www.EMC.com](http://www.EMC.com).