EMC CELERRA UNIFIED STORAGE

Comprehensive unified storage solutions with high-end features across the product family: NX4, NS-120, NS-480, NS-960

ESSENTIALS

- Leverage the flexibility of unified storage **connectivity**; NAS (CIFS and NFS including pNFS), MPFS, iSCSI, and Fibre Channel

- **Simple** consolidated management for your NAS and SAN environment while experiencing NAS simplicity and native block functionality

- Experience **efficiency**-driven storage technologies, including: simple and efficient storage management, tiered storage (Flash, Fibre Channel, and SATA drives), FAST Cache, file system deduplication and compression, automated volume management, Virtual Provisioning, and asynchronous replications

- Ensure no-compromise **availability**, designed to deliver five-nines (99.999 percent) availability through advanced failover

- Accelerate the value of virtualization by deploying a unified, multi-protocol storage environment that is **virtualization aware**

- Capitalize on industry-leading **scalability** with up to eight X-Blades, enabling large scale consolidation within a single IP platform, while improving service levels

- Enjoy the comfort of knowing your EMC solution is **serviced** by the number-one-rated vendor in the industry

MEETING THE INFORMATION-SHARING CHALLENGE

Start small, think big with the EMC® Celerra® unified storage platforms. Each Celerra unified product—the NX4, NS-120, NS-480, and NS-960—is a dedicated network server optimized for file and block access, delivering high-end features in a scalable, easy-to-use package. For the ultimate in scalability, the Celerra unified storage platforms leverage both the innovative best-in-class EMC Fibre Channel RAID storage—delivering best-in-class availability and data protection—and deliver industry-leading EMC Celerra availability, performance, and ease of management. Celerra unified storage systems deliver a single-box block and file solution offering a centralized point of management for distributed environments. This enables you to dynamically grow, share, and cost-effectively manage multi-protocol file systems as well as providing multi-protocol block access. Take advantage of simultaneous support for NFS and CIFS protocols by letting Microsoft® Windows® and Linux/UNIX clients share files using the DART (Data Access in Real Time) operating system's sophisticated file-locking mechanisms. Leverage iSCSI for Tier 2 block applications and even native Fibre Channel for high-bandwidth or latency-sensitive applications.

Celerra's unified product offerings are ideal for the growing server virtualization space. Whether customers look to VMware®, Microsoft Hyper-V™, or Xen-based server solutions, Celerra is fully certified for all supported protocols to ensure successful deployments of virtualized infrastructures through all phases of implementation.

The advanced functionality features included with the Celerra unified storage platforms enable consolidation of file servers, direct-attached application storage, and even mission-critical block storage requirements, resulting in lower total cost of ownership (TCO) of your server and storage assets.

FLEXIBLE SOLUTIONS TO MEET A WIDE RANGE OF REQUIREMENTS

Celerra unified storage platforms combine an IP storage enclosure with integrated storage providing NAS, iSCSI, and Fibre Channel in a single packaged solution. This approach offers the lowest acquisition cost along with simple implementation and management without sacrificing configurability options.

- Multi-protocol—NAS, (CIFS and NFS including NFSv4.1 with pNFS support) connectivity
- Native Block Option for EMC CLARiiON® Fibre Channel and iSCSI* connectivity
- One to eight X-Blade configurations
- Flash*, Fibre Channel, ATA drive support

EMC²®

Celerra NX4

- 1 or 2 X-Blades
- N+1 failover
- 16 TB usable capacity per X-Blade (32 TB per system)

Celerra NS-120

- 1 or 2 X-Blades
- N+1 failover
- 32 TB usable capacity per X-Blade (64 TB per system)

Celerra NS-480

- 2 or 4 X-Blades
- N+1 and N+M advanced failover
- 64 TB usable capacity per X-Blade (192 TB per system)

Celerra NS-960

- 2 to 8 X-Blades
- N+1 and N+M advanced failover
- 256 TB usable capacity per X-Blade (1792 TB per system)

- Block and file I/O, or combine the two with Celerra MPFS* for high-performance data-sharing applications
- Performance/availability mode

START SMALL AND…

Businesses looking for an entry-level EMC storage solution or platform for deploying a single-box block and file approach using iSCSI or Fibre Channel should choose the Celerra unified storage products.

…UPGRADE NON-DISRUPTIVELY

Celerra unified systems can be upgraded online from single to dual X-Blade configurations with the NX4 and NS-120, from two to four X-Blade configurations with the NS-480, or from two to eight blades in single-blade increments with the NS-960, seamlessly adding increased availability, capacity, and performance to your initial investment.

CELERRA NS SERIES UNIFIED STORAGE PLATFORM SYSTEM ELEMENTS

The Celerra unified storage platform is comprised of one or more autonomous servers called X-Blades and a storage processor enclosure (SPE). The X-Blades control data movement from the disks to the network. Each X-Blade houses two Intel processors and runs EMC's DART operating system, designed and optimized for high-performance, multi-protocol network file and block access. The SPE manages the physical storage of the disk arrays. The SPE takes advantage of the industry-leading EMC UltraFlex™ technology and has two independent storage processors (SPs) that deliver dedicated, array-based processing power. The combination of the X-Blades with the SPE delivers the only truly integrated, highly available, unified offering based on industry-leading technologies.

YOUR CHOICE OF THE MOST FLEXIBLE AVAILABILITY OPTIONS

Depending on your operational needs, you can deploy Celerra in several operating modes including primary/standby or primary/primary with N+1 failover for the NX4 or NS-120, or N+M advanced failover for the NS-480 and NS-960 (where N is the number of active X-Blades and M is the number of X-Blades in the standby pool).

Primary/standby is designed for environments that cannot tolerate any system downtime due to a hardware failure. In this mode, one of the X-Blades operates in standby mode while the primary one manages all of the data movement between the network and storage. In systems with greater than two X-Blades, one or more blades can be configured as standby for the active blades, providing a pool of blades for the highest levels of availability. The standby blade(s) seamlessly take over the operation of any failing blade, delivering equal performance to the primary system after a failover, thus allowing the system to fully scale without concern for managing potential resource constraints in the event of a failure.

Other environments that value performance over continuous availability can choose to operate their dual X-Blade Celerra systems in primary/primary mode. Through a simple menu selection, both X-Blades can be made available to handle unusually large loads and user populations that can bring standard file servers to a virtual standstill.

In primary/primary mode, should an X-Blade fail due to a software fault, it will execute a fast reboot to come back online. The NX4, NS-120, and NS-480 can operate in either primary/primary mode or primary/standby mode.

Unified Storage Application Value
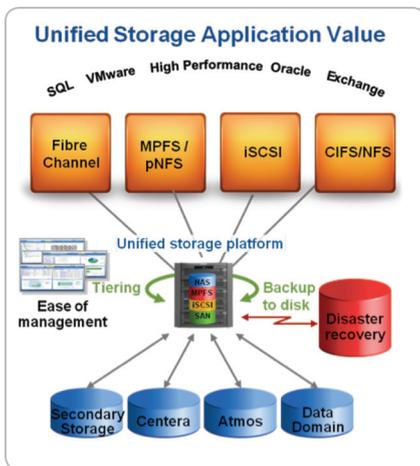
- Dedicated storage
- Integrated NAS, MPFS, iSCSI, and Fibre Channel
- Easy to deploy, simple to manage
- Scale capacity

EMC Unisphere
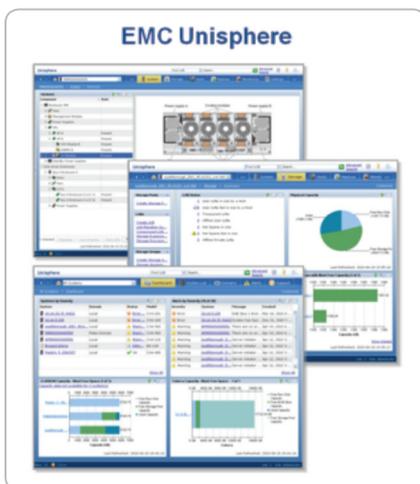
- Next-generation storage management
- Common experience for your mid-range SAN and NAS
- Pluggable architecture
- Built-in access to support community

UNEQUALED AVAILABILITY FEATURES

With the Celerra unified storage platform, no-compromise availability means non-stop file access achieved through transparent, dynamic failover to a hot standby X-Blade. For information protection, Celerra unified systems offer EMC Celerra SnapSure™ software for creating read-only/read-write copies of file systems and iSCSI LUNs. The snapshot can be used for online backups as well as quick recovery of deleted files. With the addition of Microsoft Volume Shadow Copy Services (VSS) integration, this capability is taken a step further, enabling the end user to leverage the functionality in Windows XP clients to recover deleted files directly from the Windows Explorer user interface.

Since the snap is not a physical data mirror operation, you also save disk space and time. For an even higher degree of information protection, EMC Celerra Replicator™ creates an asynchronous point-in-time, read-only/read-write copy of a production file system on a local or geographically remote Celerra system. Celerra Replicator provides multi-site protection, simplifies administration with easy-to-define business policies including recovery-point objectives (RPOs), and utilizes standard IP-based networks for maintaining consistent replicas between the sites. In the event of an X-Blade failover, DART uses a metadata logging facility to recover within seconds or minutes. The advanced failover capabilities allow the hot spare to take over the full workload, running at the same performance and service levels as before the failure.

Dedicated hardware-based RAID controllers means there is minimal performance degradation during a RAID rebuild. Other high-end file servers can take hours to reboot and recover large-capacity file systems and will run at reduced performance and service levels until the failing component is replaced during a RAID rebuild. The Celerra unified systems define mid-tier high availability, delivered with X-Blade failover, hardware RAID protection, non-disruptive component replacement, storage processor battery backup, and advanced volume management. In addition, EMC Celerra Replicator supports application-consistent iSCSI replication for Windows applications. Optionally managed by EMC Replication Manager, only the changed data is sent to the replica, improving network efficiencies. The copy can be made read/write in the event of a failure of the primary or for other purposes such as testing. iSCSI replication offers an efficient, robust means of protecting LUNs via asynchronous replication.

Native LUN replication, in the form of MirrorView™/Synchronous (MirrorView/S), is also supported for your most critical data that requires zero-data-loss availability in case of a disaster.

SIMPLE AND EFFICIENT FEATURES

- **EMC Unisphere™** provides a simple, consolidated interface to manage both your CLARiiON and Celerra platforms. From one pane of glass, you can now take advantage of task-based navigation and dashboard views for at-a-glance management and reporting. Unisphere's flexible design allows for additional element managers to be plugged-in and it offers built-in, online access to key support tools, including software downloads, online customer communities, and live chat support.
- **Command-line interface (CLI)** is present for administrators preferring to work with UNIX-like commands and scripts.
- **Celerra Data Deduplication** with compression delivers the maximum storage efficiency for primary and archived file systems.
- **FAST Cache** is a performance optimization feature that accelerates application performance. Using Enterprise Flash drives to extend existing cache capacities, FAST Cache automatically absorbs unpredicted "spikes" in application workloads.

- Provide file-based tiering with **File Manager Appliance (FMA) or FMA/VE** within a single platform or to a secondary platform (to a Celerra, EMC Centera®, EMC Atmos™, or EMC Data Domain®) with concurrent support for ultra-performance Flash drives, high-speed Fibre Channel, cost-efficient serial ATA, and low-power serial ATA drives.
- **Celerra Virtual Provisioning™** enables file systems and iSCSI LUNs to be logically sized to required capacities and physically provisioned with less, so storage does not sit idly in a file system or LUN until it is used. Automatic File System Extension and Dynamic iSCSI LUN extension allow the physical allocation to be increased on the fly.
- **Celerra Automated Volume Management** lets you quickly and painlessly provision file systems by workload in only four clicks.
- **Celerra Quotas** let system administrators allocate disk space on a per-user, per-group, and per-directory tree basis leveraging DART's extensive support for byte, block-level, and directory quotas.
- **Celerra Multi-Path File System (MPFS*)** offers improved performance and scalability over traditional NAS environments.
- **Native Block Option iSCSI* and Fibre Channel capabilities** are delivered through the array and fully support all EMC CLARiiON features and functions including:
  –CLARiiON Fully Automated Storage Tiering (FAST)—Improve performance and efficiency
  –CLARiiON Block Data Compression for reclaiming storage capacity
  –CLARiiON Virtual Provisioning—Simplify storage growth management
  –For more information on CLARiiON features and functions, consult the EMC CLARiiON CX4 Series data sheet
- **EMC Celerra SnapSure** software creates read-only/read-write copies of file systems and iSCSI LUNs for backups and quick recovery of deleted files or file systems. Since SnapSure isn't mirroring your data, it saves disk space and time.
- **EMC Celerra Replicator** creates a point-in-time, read-only/read-write copy of a production file system or iSCSI LUN on either a local or geographically remote Celerra system. Celerra Replicator provides multi-site protection, simplifies administration with easy-to-define business policies including recovery-point objectives (RPOs), and utilizes standard IP-based networks for maintaining consistent replicas between the sites. Replicator is integrated with VMware Site Recovery Manager providing failover and failback of virtual infrastructures.
- Native LUN replication, in the form of **EMC MirrorView/Synchronous (MirrorView/S),** is also supported for your most critical data that requires zero-data-loss availability in case of a disaster.
- **Celerra FileMover API** enables transparent policy-based movement of files between tiers of storage and is leveraged by EMC File Management Appliance and third-party vendors for a seamless file archiving solution.
- **Celerra Event Enabler (CEE)** suite which comprises:
  –**Celerra Anti-Virus Agent (CAVA)** provides on-demand, anti-virus support through tight integration with industry-leading anti-virus vendors, such as Symantec, McAfee, Computer Associates, Trend Micro, Kaspersky, and Sophos.
  –**Celerra Event Publishing Agent (CEPA)** provides on-demand, event-driven functionality via tight integration with industry-leading quota management and auditing vendors, such as Northern Parklife, NTP Software, and Veronis.
- **Celerra File-Level Retention (FLR)** delivers on disk-based WORM requirements with an Enterprise and Compliant option.
- **Celerra Startup Assistant (CSA) with Celerra Provisioning Wizard (CPW):** CSA is a host-based tool that ensures the installation of a Celerra unified system is simple, enabling basic unified installations in less than 15 minutes. CPW operates within the CSA and provides the same host-based functionality for production implementation, including host-based iSCSI initiator configuration and MPFS end-to-end deployments.

- **Full VMware qualification:** Multi-protocol (NFS, iSCSI, FC) support for VMware, including VMware Site Recovery Manager Integration for NFS with failover and automated failback for reliable disaster recovery, Celerra Plug-In for VMware on NFS providing provisioning of NFS datastores, copying VMs, and VM storage optimization leveraging new Celerra Data Deduplication with compression capabilities, and data protection with Replication Manager providing the maximum flexibility to support the broadest set of support requirements.
- **Common criteria certification:** Successfully tested by an independent and accredited evaluation laboratory and conforming to IT security standards sanctioned by the International Standards Organization.
- **Microsoft certified for Windows Server 2008 R2 with Native Microsoft Management:** Full Active Directory support, native share and quota management tools, GPO support, Access-Based Enumeration, Identity Management for UNIX, custom-built Celerra MMC snap-ins, and more provide a Windows "look and feel" in managing any member of the Celerra unified family.
- **EMC Replication Manager** provides host-based management of array-based copies of data. Replication Manager leverages VMware, Oracle, and Microsoft integration to produce application-consistent copies of Microsoft Exchange, SQL Server®, SharePoint®, and Oracle database data deployed on NFS, iSCSI, or FC storage.

MAXIMIZE THE BENEFITS OF CELERRA UNIFIED STORAGE PLATFORM WITH EMC GLOBAL SERVICES

EMC delivers the full complement of services for Celerra unified storage products to ensure they perform as expected in your storage environment while minimizing risk to your business and your budget. Expert planning, design, and implementation services help you quickly realize the value of your investment in your environment, no matter how simple or complex.

After implementation, EMC's data migration services can help you plan, design, and safely migrate your critical data over any distance to your new system. EMC will also help you integrate your new system into your information architecture and applications from companies such as Oracle and Microsoft, and manage your new environment when it is complete. Extensively trained professional services personnel and project management teams, leveraging EMC's extensive storage deployment best practices and guided by our proven methodology, accelerate the business results you need without straining the resources you have.

CELERRA UNIFIED STORAGE SERVICE OFFERINGS THAT FIT YOUR NEEDS

The Celerra QuickStart services rapidly deliver a fully functioning NX4, NS-120, NS-480, or NS-960 unified storage system, serving files to authenticated users in a production environment. The service includes configuration of network interfaces, file systems, and other software; implementation and testing of your hardware; and concludes with a functional overview of product features with your staff. EMC can assess your environment to determine the optimum configuration and integration of your Celerra unified storage platform into your infrastructure, create a detailed technical design, and review the lifecycle of your data assets to help you define and develop the ideal IT organization for your storage environment and best-practice policies to support it.

EMC GLOBAL SERVICES FOR THE IT LIFECYCLE

EMC Global Services delivers results to our customers throughout the IT lifecycle: plan, build, manage, and support. 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 delivers 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—six-time winner of the SSPA STAR Award for outstanding mission-critical support—helps you keep your information available 24/7 to deliver competitive advantage and drive revenue. And EMC Education Services drives the value of your investment with a comprehensive portfolio of customer courses. Ask your EMC sales representative about the full spectrum of services from EMC that can benefit your organization.

* Not supported with the Celerra NX4.

CONTACT US

For more information on how EMC Celerra unified storage platforms can meet your networked information sharing needs and bring increased value to your business, contact your EMC sales representative or authorized EMC value-added systems integrator. Or visit our website at www.EMC.com.

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