



EMC Celerra NS Series/ Integrated

High-end features in a mid-tier IP Storage solution: NS20, NS40, NS80

Meeting the mid-tier information-sharing challenge

Start small, but think big with the EMC® Celerra® NS Series/Integrated IP Storage servers. Each Celerra NS Series/Integrated product—the NS20, NS40, and NS80—is a dedicated network server optimized for file and block access and delivers high-end features in a mid-tier package. For the ultimate in price/performance, the Celerra NS Series/

Integrated services leverages both the innovative EMC CLARiiON® Fibre Channel RAID storage—delivering best-in-class availability and data protection—and industry-leading EMC Celerra availability, performance, and ease of management. Celerra NS Series/

Integrated 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 file systems with multi-protocol file access. Take advantage of simultaneous support for NFS and CIFS protocols by letting UNIX and Windows clients share files using the DART (Data Access in Real Time) operating system's sophisticated file locking mechanisms.

The advanced functionality features included with the Celerra NS Series/Integrated platform enable consolidation of file servers and direct-attached application storage, resulting in lower total cost of ownership (TCO) of your server and storage assets.

Flexible solutions to meet a wide range of requirements

Integrated IP Storage combines a front-end enclosure and dedicated storage in a single packaged solution. This approach offers the lowest acquisition cost along with simple implementation and management without sacrificing configurability options.

- NS20/NS40: multi-protocol (NAS, iSCSI, and Fibre Channel) connectivity
- One to four X-Blade configurations
- Fibre Channel and ATA drive support
- Block and file I/O
- Performance/availability mode

Start small and...

Businesses looking for an entry-level EMC IP Storage solution or platform for deploying a single-box block and file approach using iSCSI or Fibre Channel should choose the Celerra NS Series/Integrated products. These products include advanced functionality at the best price/performance in the mid-tier.

...Upgrade non-disruptively

Celerra NS Series/Integrated systems can be upgraded online from single- to dual-X-Blade configurations (NS20/NS40), or from two- to three- to four-X-Blade configurations (NS80) for increased availability, capacity, or performance.

The Big Picture

- Ensure no-compromise availability through integrated advanced clustering, managed as a single device with EMC Celerra NS Series/Integrated high-availability and fault-tolerant networking options
- Capitalize on industry-leading price/performance and consolidate more file servers and application storage while improving service levels to your users
- Experience advanced functionality such as Failsafe Networking, Link Aggregation, VLAN Tagging, and Anti-Virus integration in an easy-to-use, easy-to install, mid-tier IP Storage offering
- Leverage the flexibility of NS20 and NS40 multi-protocol connectivity
- See up to four times the performance over standard NAS using EMC's patented Multi-Path File System (MPFS)
- Improve reliability and speed of backup and recovery in traditional backup application environments using the Celerra NS Series/Integrated as a backup-to-disk target
- Minimize storage overhead by consolidating block and file storage assets onto a single, scalable, modular storage array
- Allow your Windows and UNIX users to share the same files
- Take advantage of optimized network access for all of your users files
- Enjoy the comfort of knowing your EMC solution is serviced by the number-one-rated vendor in the industry
- Reduce the number of servers in your environment by combining block (iSCSI) and file (NAS) applications in a single, easy-to-manage package

Celerra NS Series/Integrated Server system elements

The Celerra NS Series/Integrated 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 Data Access in Real Time (DART) operating system, designed and optimized for high-performance, multi-protocol network file and block access. The SPE manages the back-end CLARiiON disk arrays. The SPE has two storage processors (SPs) that deliver the same processing power as the X-Blades and is based on the industry-leading EMC UltraScale™ architecture. The combination of the front-end X-Blades with the SPE back-end forms the only truly integrated, high-availability offering in the mid-tier IP Storage market.

Your choice of high availability or maximum performance

Depending on your operational needs, you can deploy Celerra in several operating modes including Primary/Standby, Primary/Primary, or advanced N+1 clustering. 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 second one manages all of the data movement between the network and storage.

Other environments that value performance over continuous availability can choose to operate their dual X-Blade Celerra NS Series/Integrated 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, typically in seconds. The NS20, NS40, and the dual X-Blade NS80 can operate in either of these modes. For a three- or four-X-Blade NS80, you are able to deploy an advanced N+1 cluster model with all of the scale and performance benefits at mid-tier prices.

Unequaled availability features

With the Celerra NS Series/Integrated, no-compromise availability means non-stop file access achieved through transparent, dynamic failover to a hot standby X-Blade. For information protection, Celerra NS Series/Integrated 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 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 mirror operation, you also save disk space and time. For an even higher degree of information protection, EMC Celerra Replicator™ creates a point-in-time, read-only/read-write copy of a production file system 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. In the event of an X-Blade failover, DART uses a metadata logging facility to recover within seconds or minutes. The advanced clustering capabilities allow the hot spare to take over the full workload, running at the same performance and service levels as before the failure.

Hardware-based RAID controllers mean there is no performance degradation during a 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 NS Series defines 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. 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, safe means of protecting LUNs via asynchronous replication. EMC Rainfinity® also offers synchronous IP replication. This feature of Rainfinity Global File Virtualization™ adds a higher level of data protection by allowing synchronous IP-based replicas of critical files. This replication is available across heterogeneous servers and IP storage devices, protecting critical information without requiring agents on the servers.

Failsafe Networking interfaces for failover of network ports

The Celerra NS Series system can be configured to tolerate both internal and external failures, such as the failure of a switch or router. Failsafe Networking allows network ports to have a dedicated backup port on a separate network card take over in the event of a failure in either the primary adapter or an external switch or router. Applications requiring higher availability and bandwidth than any single network port can deliver are candidates for industry-standard Link Aggregation (IEEE802.3ad) or Ethernet Port Trunking. Multiple network ports can be aggregated and transmitted using a single logical address, providing greater link availability and potentially higher network bandwidth.

Ease-of-use features, functions, and management

Management and performance monitoring of the Celerra NS Series/Integrated is accomplished in a variety of ways to accommodate the skill set and preference of the administrator.

- **Celerra Manager/Basic Edition** supports the most common functions for configuration and management of a single device including wizards, “at-a-glance” statistics, and phone-home capabilities.
- **Celerra Manager/Advanced Edition**, an extension of the Basic Edition, simplifies the tasks of configuration, reconfiguration, ongoing operation, data migration, and monitoring of multiple Celerra environments.
- **Microsoft Management Console (MMC)** snap-ins provide a Windows “look and feel” in managing any member of the Celerra NS Series; for example, a snap-in for managing shares and quotas.
- **Command-line interface (CLI)** is present for administrators preferring to work with UNIX-like commands and scripts.
- **Replication Manager** provides application integration with Exchange and SQL Server and leverages Microsoft Volume Shadowcopy Service for iSCSI snapshots and replicas.
- **EMC ControlCenter®** can discover, monitor, and launch native management applications for any member of the Celerra NS Series as part of an enterprise infrastructure.
- **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.
- **Celerra File Level Retention** provides disk-based WORM functionality.
- **Celerra FileMover API** allows automated policy-based movement of files between tiers of storage.
- **Celerra Multi-Path File System (MPFS)** accelerates file access up to four times over standard NAS without the need to recode applications.
- **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, and Sophos.
- **Celerra Event Publishing Agent (CEPA)** provides on-demand, event-driven functionality via tight integration with industry-leading quota management vendors, such as Northern Parklife and NTP Software.
- **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 Automated Volume Management** lets you quickly and painlessly provision file systems by workload in only four clicks.

- **Celerra Virtual Provisioning** allows 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, as needed.

Network capabilities

Celerra NS Series/Integrated platforms support Gigabit Ethernet and 10/100BaseT for network or iSCSI connections and optional 4Gb/s Fibre Channel ports for host connections (NS20/NS40). VLAN support allows network administrators more flexibility in creating logical workgroups, which, in turn, benefits overall network efficiency by localizing broadcast traffic at the workgroup level. DART supports NFSv2, v3, v4, CIFS, and options for standards-based local and network backup. To eliminate any single points of failure, the Celerra NS Series/Integrated offers N+1 redundant load-sharing power supplies, battery backup, environmental controls, Auto-Call remote maintenance parameter monitoring, and redundant storage and network components.

Flexible, fast backup and recovery

The Celerra NS Series/Integrated features industry-standard Network Data Management Protocol (NDMP v1, v2, v3) for better-than-network speeds with no multi-protocol attribute concerns and no impact on existing network traffic. The Celerra NS Series/Integrated, through its support for both Fibre Channel and ATA drives, can serve as a fast, reliable target for distributed backup-to-disk deployments.

Maximize the benefits of Celerra NS Series/Integrated with EMC Global Services

EMC delivers the full complement of services for Celerra NS Series/Integrated products to ensure they perform as expected in your IP 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 NS Series/Integrated service offerings that fit your needs

The Celerra NS Series/Integrated QuickStartES services rapidly deliver a fully functioning NS20, NS40, or NS80 integrated 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. Custom integration services are also available specifically designed to meet the exact requirements of your environment. EMC can assess your environment to determine the optimum configuration and integration of your Celerra NS Series/Integrated 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—four-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 drive 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.



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Take the next step

For more information on how the EMC Celerra NS Series/Integrated 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.