

EMC Celerra NS-120 Unified Storage



EMC[®] Celerra[®] NS-120 systems can be integral elements of a comprehensive information lifecycle management strategy—a strategy that helps your enterprise attain the maximum value from its information, at the lowest TCO. The Celerra NS-120 is an affordable, unified storage system that scales to 120 drives, connects to multiple storage networks, and provides no-compromise availability.

Specifications

Architecture

The NS-120 unified storage platform supports both single and dual X-Blade configurations. Dual X-Blade configurations can be deployed in Primary/Primary mode for highest performance or Primary/Standby for additional hardware availability protection (i.e., X-Blade failover).

Each X-Blade consists of the following:

- Dual 2.8 GHz LV Intel[®] Xeon[®] processors
- 4 GB Double Data Rate RAM (266 MHz) on an 800 MHz FSB
- Two 4 Gb/s Fibre Channel ports for storage array connectivity
- Up to two 4 Gb/s Fibre Channel port for tape connectivity
- Four 10/100/1000 BaseT ports or two 10 Gigabit Ethernet Optical ports and two 10/100/1000 BaseT ports
- One 10/100/1000 management port
- Instance of DART File Server software

Single X-Blade configurations can be upgraded non-disruptively to dual X-Blade configurations.

Storage Array I/O Connectivity

EMC UltraFlex[™] I/O modules offer additional flexibility for host and disk connectivity. The I/O modules, per storage processor, provide up to a maximum of up to two 4 Gb or 8 Gb Fibre Channel ports for X-Blade connectivity, up to four 4 Gb or 8 Gb Fibre Channel ports for host (FC, MPFS, or EMC MirrorView[™] host) connectivity or up to two 1 Gb or 10 Gb Ethernet Optical ports for host (iSCSI, MPFS, or MirrorView) connectivity subject to slot limits and certain other restrictions.

Note: FC supports FCP SCSI-3 protocol, FC-AL, and FC-SW with command tag queuing up to 256 tags.

SP System Memory and CPU

- Two identical storage processors per NS-120 platform
- 3 GB of memory per storage processor

Maximum Cable Lengths

Shortwave optical OM2: 50 meters (8 Gb), 100 meters (4 Gb), 300 meters (2 Gb), and 500 meters (1 Gb)
Shortwave optical OM3: 150 meters (8 Gb), 380 meters (4 Gb), 500 meters (2 Gb), and 860 meters (1 Gb)

Disk Connectivity

Each storage processor connects to one of a redundant pair of 4 Gb/s Fibre Channel buses, providing continuous drive access to hosts in the event of a storage processor or bus fault

The NS-120 requires a minimum of five drives (Fibre Channel or 7,200 rpm SATA) and supports a maximum of 120 disk drives in up to eight disk expansion chassis

Platform managed by a Control Station:

- Connection to each X-Blade via 10/100/1000 interface
- Manages X-Blade failover
- Manages all file systems via GUI
- SNMP MIB II manageability
- Secure Shell (SSH) for remote access
- HTTP server management interface
- Dual USB, 250 GB drive, DVD drive
- Single Control Station contains a 3.4 GHz Single Core Xeon CPU with 800 MHz FSB, 2 MB cache, and 2 GB memory



NS-120 comes with integrated storage with the following drive attributes:

- Six (includes a hot spare) to 120 disks in up to eight drive trays. Each tray can be configured with:
 - All FC drives
 - Mixed FC, SATA, and Flash* drives (FC, SATA, and Flash drives must be in separate trays)
- *Flash drives are not configured in the first drive tray

DART File Server Facilities

Protocols Supported

- NFSv2, v3, and v4, CIFS (SMB 1 and SMB 2), FTP, FTP Secure, iSCSI, Fibre Channel, and MPFS
- Network Lock Manager (NLM) v1, v3, v4
- Routing Information Protocol (RIP) v1–v2
- Simple Network Mgmt Protocol (SNMP)
- Network Data Mgmt Protocol (NDMP) v1–v4
- Address Resolution Protocol (ARP)
- Internet Control Message Protocol (ICMP)
- Network Time Protocol (NTP) client
- Simple Network Time Protocol (SNTP)
- Kerberos Authentication
- Lightweight Directory Access Protocol (LDAP)

Optional DART Software Facilities

- Celerra Event Enabler (CEE): Integration facilities with third-party vendors
 - Celerra Anti-virus: Celerra integration with industry-leading, anti-virus vendors
 - Celerra Event Publishing Agent: Celerra integration with industry-leading, quota-management vendors
 - EMC Celerra Replicator™: Replicate over IP for disaster recovery, backup, and/or testing
 - Celerra Manager Advanced Edition: Extended management and monitoring of multiple Celerra systems
 - Celerra File-Level Retention
 - Celerra File-Level Retention—Enterprise
 - Celerra File-Level Retention—Compliance
 - Celerra Multi-Path File System (MPFS): Delivers improved performance and scalability over traditional NAS
- Note: Celerra Manager-Basic, Virtual Provisioning, Deduplication, and SnapSure™ are bundled.

Client Connectivity Facilities

- File access by FTP, NFS, CIFS and MPFS
- Block access by Fibre Channel and iSCSI
- Virtual Data Movers for Microsoft® Windows® clients
- Ethernet Trunking
- Link Aggregation (IEEE 802.3ad)
- Virtual LAN (IEEE 802.1q)
- UNIX archive utilities (tar/cpio)
- Network Status Monitor (NSM) v1
- Portmapper v2
- Network Information Service (NIS) Client
- Supports Microsoft DFS as Leaf node or Root Server
- NT LAN Manager (NTLM)
- LDAP signing for Windows
- Native Windows 2000/2003/2008 support
- Microsoft Windows Server 2003 Access-based Enumeration (ABE)

Optional Software Facilities

- EMC Navisphere® Manager: Comprehensive configuration, management, and event notification for single or multiple systems
- Navisphere Analyzer: Comprehensive performance, management, and event notification
- Navisphere Quality of Service Manager (NQM): Manage systems to meet performance service levels
- SnapView™: Point-in-time view of information for non-disruptive backup and recovery
- MirrorView/A and MirrorView/S: Remote asynchronous or synchronous replication for disaster recovery
- EMC PowerPath®: Path management
- EMC SAN Copy™: Enables local or long-distance data movement among various arrays (e.g., EMC CLARiiON®, EMC Symmetrix®, non-EMC)

High-Availability Features

NS-120 X-Blade Enclosure

- Redundant power supplies for X-Blades
- Hot-swappable power and cooling
- Internal environmental status monitoring

DART Software Capabilities

- Celerra Manager: Web-based configuration and management
- Automated Volume Management (AVM): File system provisioning
- Virtual provisioning: Enables logical sizing and physical provisioning
- SnapSure: Creates read-only or read-write, point-in-time logical snaps
- Monitoring: At-a-glance system status and performance statistics
- Data deduplication: File-based deduplication and compression
- FileMover API: Open API for automated, transparent data movement between tiers of storage
- Ethernet trunking
- Link aggregation
- Failsafe networking
- Network interface port failover
- X-Blade failover

Optional VMware Facilities

- Celerra Plug-in for VMware®: For provisioning, management, cloning, and deduplication
- PowerPath/VE: Path management for iSCSI and Fibre Channel
- Site Recovery Manager (SRM): Managing failover and failback making disaster recovery rapid and reliable
- Replication Manager: Host-based management of array-based copies of data

Control Station

- Administration and management
- X-Blade installation and configuration
- X-Blade failover
- Monitor diagnostics
- Configuring network interfaces
- Creating and exporting file systems
- File system consistency checks
- Extending file systems
- Auto-call event alerting
- Call-in remote maintenance

Storage

- Disk scrubbing
- Mirrored write cache with de-stage for AC power loss
- Redundant hot-swap power, bus structures and I/O subsystems
- Online global hot-spare disks
- PowerPath failover for Windows and UNIX hosts

RAID Levels

RAID 1/0: Data mirrored, then striped across four to 16 drives

RAID 5: Independent data access on three to 16 drives (with striped parity)

RAID 6: Dual parity distributed across four to 16 drives

Any combination of these RAID levels can exist on a single NS-120

RAID stripe depth configurable to 4, 16, 64, 128, or 256 sectors per disk

MetaLUNs: Storage virtualization via online LUN expansion through either striping or concatenation

Configurable global hot spares

Rebuild priority tuning: Adjustment of minimum I/O reserved for server use during rebuild

Supported Disk Drives

	73 GB 4 Gb/s Enterprise Flash Drive	200 GB 4 Gb/s Enterprise Flash Drive	400 GB 4 Gb/s Enterprise Flash Drive	146 GB 4 Gb/s	300 GB 4 Gb/s	450 GB 4 Gb/s
Nominal Capacity						
Formatted Capacity* (520 bytes/sector, 1 MB = 1,048,576 bytes)	72.67 GB	186.31 GB	372.5 GB	135 GB	272 GB	408.896 GB
Form Factor	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
Height	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"
Rotational Speed	N/A—Solid State	N/A—Solid State	N/A—Solid State	15,000 rpm	15,000 rpm	15,000 rpm
Interface	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel	Fibre Channel
Access Time						
Average Seek	0.020 ms Read 0.020 ms Write	0.020 ms Read 0.020 ms Write	0.020 ms Read 0.020 ms Write	3.7 ms Read 4.2 ms Write	3.5 ms Read 4.0 ms Write	3.4 ms Read 3.9 ms Write
Rotational Latency	N/A—Solid State	N/A—Solid State	N/A—Solid State	2.0 ms	2.0 ms	2.0 ms
Nominal Power Consumption						
Operating Mode	8.4 W	8.4 W	8.4 W	16.5 W	18.8 W	15.01 W
Idle Mode	5.4 W	5.4 W	5.4 W	10.7 W	13.7 W	10.38 W
Number of Drives per Disk Expansion Chassis	2-15	2-15	2-15	2-15	2-15	2-15

	600 GB 4 Gb/s	450 GB 4 Gb/s	600 GB 4 Gb/s	1 TB 4 Gb/s	2 TB 4 Gb/s	2 TB 4 Gb/s Low Power
Nominal Capacity						
Formatted Capacity* (520 bytes/sector, 1 MB = 1,048,576 bytes)	545.195 GB	408 GB	545 GB	931.5 GB	1,852.09 GB	1,852.09 GB
Form Factor	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
Height	1.0"	1.0"	1.0"	1.0"	1.0"	1.0"
Rotational Speed	15,000 rpm	10,000 rpm	10,000 rpm	7,200 rpm	7,200 rpm	5,400 rpm
Interface	Fibre Channel	Fibre Channel	Fibre Channel	SATA	SATA	SATA
Access Time						
Average Seek	3.4 ms Read 3.9 ms Write	3.8 ms Read 4.4 ms Write	3.8 ms Read 4.4 ms Write	8.5 ms Read 9.5 ms Write	8.2 ms Read 9.2 ms Write	N/A Read N/A Write
Rotational Latency	2.0 ms	3.0 ms	3.0 ms	4.16 ms	4.17 ms	4.2 ms
Nominal Power Consumption						
Operating Mode	15.01 W	9.54 W	10.07 W	11.6 W	11.1 W	8.4 W
Idle Mode	11.82 W	5.96 W	6.49 W	8.0 W	7.5 W	4.0 W
Number of Drives per Disk Expansion Chassis	2-15	2-15	2-15	2-15	2-15	2-15

*Note: The EMC FLARE® storage operating environment requires 62 GB of disk space on each of the first five drives.

Dimensions (approximate)

	NS-120 with 1 15 disk tray	Expansion Disk Tray (can add 7)	40U Rack Enclosure
Height	14.0 in. (35.6 cm), 8 NEMA units (U), including mounting rails	5.25 in. (13.34 cm) 3 NEMA units (U)	75.0 in. (190.8 cm)
Width	18.92 in. (48.06 cm); mounting bars fit standard 19-inch NEMA cabinets	17.72 in. (45.0 cm)	24.0 in. (61.1 cm)
Depth	Chassis to rear: 31.58 in. (80.21 cm)	14.00 in. (35.56 cm)	39.0 in. (99.2 cm)
Weight	237.5 lbs (107.7 kg)	68 lbs (30.8 kg)	Empty: 380 lbs (173 kg)

Operating Environment

Temperature: 50–104 degrees F (10–40 degrees C)

Temperature Gradient: 18 degrees F/hr (10 degrees C/hr)

Relative Humidity: 20% to 80% (non-condensing)

Altitude: 7,500 ft. (2,286.4 m) @ 104 degrees F (40 degrees C) max.
10,000 ft (3,048 m) @ 98.6 degrees F (37 degrees C) max.

Electromagnetic Emissions and Immunity

FCC Class A EN55022 Class A

CE Mark VCCI Class A (for Japan)

ICES-003 Class A (for Canada) AS/NZS 3548 Class A (for Australia/New Zealand)

EN55024 Immunity, ITE BSMI Class A (for Taiwan)

Quality and Safety Standards

UL 60950; CSAC 22.2-60950, FN 60950

Manufactured under an ISO 9000-registered quality system

ETSI EN 300 386

AC Power and Dissipation

Requirement	NS-120 with One 15-Disk Tray	Expansion Disk Tray*
AC Line Voltage	100 to 240 V AC, 50–60 Hz, single-phase	100 to 240 V AC, 50–60 Hz, single-phase
AC Line Voltage Tolerance	Voltage \pm 10%, frequency \pm 3 Hz	Voltage \pm 10%, frequency \pm 3 Hz
AC Line Current (Operating Maximum)	11.2 A max. at 100 V AC, 5.6 A max. at 200 V AC	3.8 A max. at 100 V AC, 1.9 A max. at 200 V AC
Power Consumption (Operating Maximum)	1,115 VA (970 W) max.	380 VA (365 W) max. (fully configured)*
Power Factor	0.98 min. at full load, low voltage	0.98 min. at full load, low voltage
Heat Dissipation (Operating Maximum)	3.49×10^6 J/hr, (3,400 Btu/hr) max.	1.31×10^6 J/hr, (1,250 Btu/hr) max.
In-rush Current	138 A max. for ½ line cycle, per line cord at 240 V AC 69 A max. for ½ line cycle, per line cord at 120 V AC	50 A max. for ½ line cycle, per line cord at 240 V AC 25 A max. for ½ line cycle, per line cord at 120 V AC
Startup Surge Current	59 A rms max. for 50 ms, at any line voltage	15 A pk (10.6 A rms) max. for 100 ms, at any line voltage
AC Protection	10 A fuse on each power supply, both phases	10 A fuse on each power supply, both phases
AC Receptacle	IEC320-C14 appliance coupler, per power supply	IEC320-C14 appliance coupler, per power supply
Ride-through Time	30 ms min.	30 ms min.
Current Sharing	\pm 15% of full load, between power supplies	\pm 10% of full load, between power supplies

*Ratings assume fully loaded disk array enclosure that includes two power supplies, two LLCs, and 15 disk drives.

Warranty and Support Options

Standard three-year Enhanced Warranty: 5x9 NBD, 7x24 remote support, customer installation of replacement disk drives, power supplies, fans, and small form-factor-pluggable optical transceivers.

Optional Premium Maintenance upgrade: 7x24 onsite support, four-hour response time commitment, critical problem escalation management, and EMC installation of replacement parts.



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