IBM®

IBM System Storage N7800 Model A10 and Model A20 offer enterprise-class NAS, Fibre Channel and iSCSI storage

Overview

The IBM System Storage™ N7800 storage controller includes the Model A10, a single-node base unit and the Model A20, an active/active dual-node base unit. Both models are designed to provide fast data access, simultaneous multiprotocol support, expandability, upgradability and low maintenance requirements.

The two models of the N7800 feature:

- Support of enterprise customers requiring Network Attached Storage (NAS), Fibre Channel (FC) or Internet Small Computer System Interface (iSCSI) connectivity

- 672 (Model A10) and 1008 (Model A20) disk drive support — regardless of physical capacity

- Attachment of both FC and Serial Advanced Technology Attachment (SATA) disk expansion units

- 32 GB (per node) of DDR-333 memory

- 2 GB (per node) of non-volatile random access memory

- Eight backend FC loops, per node, (four per node, native, plus four optional using FC HBA features)

- Upgrade capability from Model A10 to Model A20

These N series models are designed to provide fast data access, simultaneous multiprotocol support, expandability, upgradability and low maintenance requirements. Additional functions, such as snapshot, compliance, mirroring and business continuance capability, are available through optional licensed functions.

The N7800 storage controller supports both the EXN1000 SATA storage expansion unit and the EXN2000 Fibre Channel storage expansion unit. At least one storage expansion unit must be attached to the N7800. A maximum of 48 storage expansion units may be attached to the Model A10; 72 for the Model A20. The EXN1000 storage expansion unit can be configured with 4 to 14 disk drives of 250 GB, 320 GB or 500 GB physical capacity. The EXN2000 storage expansion unit can be configured with 5 to 14 disk drives of 72 GB, 144 GB or 300 GB physical storage capacity. EXN1000 SATA storage expansion units and EXN2000 FC storage expansion units may not share the same FC loop.

Key prerequisites

The IBM System Storage N7800 requires FC, NFS, CIFS or iSCSI protocol function.

Planned availability dates

- September 1, 2006: Except for model conversion (A10 to A20)

- December 15, 2006: Model conversion (A10 to A20)

At a glance

The IBM System Storage N7800 Model A10 can be configured with a maximum of 48 EXN storage expansion units; Model A20 with a maximum of 72. These models are designed to provide:

- Enterprise-class performance

- Up to 672 (Model A10) and 1008 (Model A20) disk drive support (regardless of capacity)

- Both FC and SATA disk expansion unit attachment

- Four AMD 2.6 GHz 64-bit Opteron processors (per node), each with 1 MB of level 2 cache

- 32 GB (per node) of DDR-333 memory

- Upgrade a Model A10 to Model A20

The IBM System Storage N7800 Model A20 is also designed to provide enhanced reliability with active/active failover support.

Description

The IBM System Storage N7800 storage controllers are designed to interoperate with products capable of data transmission in the industry-standard iSCSI, CIFS, FCP, and NFS protocols. These include the IBM System p™, IBM System i™ (NFS only), IBM System x™ and IBM System z™ (NFS only) servers. The N7800 storage controllers consist of the Model A10 and Model A20 and associated software.

The IBM System Storage N7800 Model A10 is designed to provide a single-node storage controller with iSCSI support and NFS, CIFS and FCP support via optional features. The N7800 is a 6U storage controller that must be mounted in a standard 19-inch rack. The N7800 storage controller does not include storage in the base chassis. The base chassis includes:

- Four AMD 2.6 GHz Opteron processors, each with 1 MB of level 2 cache

- 32 GB of DDR-333 memory

- 2 GB of non-volatile random access memory (NVRAM)

- Six integrated Gigabit Ethernet RJ45 ports

- Eight integrated 2 Gbps FC ports

- Dual redundant hot-plug integrated power supplies and cooling fans

- Three PCI-X expansion slots for additional FC HBAs or Gigabit Ethernet NICs

- Five PCIe expansion slots

- One serial console port

The maximum number of additional expansion adapters is eight. One expansion slot is used for the standard (included with the N7800) 512 MB NVRAM adapter card. The Model A10 can be upgraded to a maximum of four multipath (loop A and loop B) FC loops (16 2-Gbps FC ports) via the addition of four optional FC HBAs for Disk Attachment (feature number 1014). The eight loops will support a maximum of 672 total disk drives. The Model A10 can be upgraded to a maximum of 14 Gigabit Ethernet ports via the addition of two optional quad-port copper Gigabit Ethernet NICs (feature number 1009). The Model A10 may be upgraded to a Model A20. The upgrade from a Model A10 to a Model A20 is a disruptive upgrade.

The Model A20 is designed to provide identical function as the N7800 Model A10, but with the addition of a second processing node and the Clustered Failover (CFO) licensed function. The Model A20 supports a maximum of 1008 drives, 64 GB of DDR-333 memory and 16 backend FC loops. The Model A20 consists of eight processors that are designed to provide failover and failback function, helping improve overall availability. For the Model A20, each node is a 6U rack-mountable storage controller. Therefore, the Model A20 occupies a total of 12U of rack space.

The Model A20 includes:

- Eight AMD 2.6 GHz Opteron processors, each with 1 MB of level 2 cache

- 64 GB of DDR-333 memory

- 4 GB of NVRAM

- 12 integrated Gigabit Ethernet RJ45 ports

- 16 integrated 2 Gbps FC ports

- Dual redundant hot-plug integrated power supplies and cooling fans

- Ten PCIe expansion slots

- 12 PCIe expansion slots

- Two serial console ports

For the Model A20, the maximum number of additional expansion adapters is 16 (8 per node). The Model A20 can be upgraded to a maximum of 12 multipath (loop A and loop B) FC loops (24 2-Gbps FC ports) via the addition of four optional FC HBAs for Disk Attachment (feature number 1014). The Model A20 can up upgraded to a maximum of 20 Gigabit Ethernet ports via the addition of four optional quad-port copper Gigabit Ethernet NICs (feature number 1009).

The physical proximity of the two processing nodes within a Model A20 (with respect to each other) is determined by which Infiniband cluster interconnect cables are ordered (feature numbers 1037, 1038, 1039, 1040, and 1041). Optical cables, #1040 and #1041, also require feature number 1042.

The N7800 Models A10 and A20 require at least one storage expansion unit, either an EXN1000 or an EXN2000. The EXN1000 storage expansion unit provides a 3U rack-mountable disk enclosure containing four and up to a maximum of 14 serial advanced technology attachment (SATA) disk drives, either in 250 GB or 500 GB physical capacities. The EXN2000 storage expansion unit provides a 3U rack-mountable disk enclosure containing 5 and up to a maximum of 14 FC disk drives. The EXN2000 supports the following FC disk drive speeds and capacities:

- 15,000 revolutions per minute (15K RPM) in 72 GB and 144 GB capacities

- 10,000 revolutions per minute (10K RPM) in 72 GB, 144 GB and 300 GB capacities

Each EXNx000 storage expansion unit contains a maximum of 14 disk drives, all of a particular type (rotational speed and capacity). For the initial order of the IBM System Storage N7800, you may *not* include EXNx000 storage expansion units containing more than two types (rotational speed and capacity) of disk drives.

The maximum raw storage capacity of the N7800 system is determined only by the number of disk drives supported. The N7800 Model A10 supports a maximum of 672 drive spindles and the Model A20 supports 1008 (regardless of capacity).

The following table describes the maximum supported total physical storage capacity for the N7800 Model A10:

Disk enclosure	Disk drive capacity	Maximum storage enclosures	Maximum disk drives	Maximum physical capacity
EXN1000	250 GB SATA disk drives	48	672	168.00 TB
EXN1000	500 GB SATA disk drives	48	672	336.00 TB
EXN2000	72 GB FC disk drives	48	672	48.38 TB
EXN2000	144 GB FC disk drives	48	672	96.76 TB
EXN2000	300 GB FC disk drives	48	672	201.60 TB

The following table describes the maximum supported total physical storage capacity for both the N7800 Model A20:

Disk enclosure	Disk drive capacity	Maximum storage enclosures	Maximum disk drives	Maximum physical capacity
EXN1000	250 GB SATA disk drives	72	1008	252.00 TB
EXN1000	500 GB SATA disk drives	72	1008	504.00 TB
EXN2000	72 GB FC disk drives	72	1008	72.57 TB
EXN2000	144 GB FC disk drives	72	1008	145.15 TB
EXN2000	300 GB FC disk drives	72	1008	302.40 TB

EXN1000 SATA storage expansion units and EXN2000 FC storage expansion units must not share a FC loop. A maximum of six storage expansion units (EXN1000 or EXN2000) are supported on a single FC loop.

Reference information

Refer to:

- Hardware Announcement A06-1429, dated August 22, 2006, IBM System Storage N7600 offers enterprise-class FC and iSCSI Network Attached Storage

- Hardware Announcement A06-1433, dated August 22, 2006, IBM System Storage N series function authorization for IBM System Storage N7600 and N7800 Models A10, A20, G10 and G20

Trade-marks

System Storage, System i, System p, System x, and System z are trade-marks of International Business Machines Corporation used under license by IBM Canada Ltd.

AIX and Tivoli are registered trade-marks of International Business Machines Corporation used under license by IBM Canada Ltd.

Windows is a trade-mark of Microsoft Corporation.

UNIX is a registered trade-mark of the Open Company in the United States and other countries.

Linux is a trade-mark of Linus Torvalds in the United States, other countries or both.

NetApp, MultiStore, SnapMirror, SnapMover, SnapRestore, SnapValidator and SnapVault are registered trade-marks and Data ONTAP, FlexClone, FlexVol, LockVault, SnapLock, FlexShare and Snapshot are trade-marks of Network Appliance, Inc. in the U.S. or other countries.

Other company, product and service names may be trade-marks or service marks of others.