IBM System Storage N series N7900 Model A11 and Model A21 offer enterprise-class Fibre Channel, iSCSI, and NAS storage

At a glance

IBM System Storage N series, both the N7900 Model A11 and Model A21, can be configured with a maximum of 84 EXN storage expansion units. These models are designed to provide:

- Enterprise-class performance

- Support of up to 1,176 disk drives

- Both FC and SATA disk expansion units attachment

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

- 32 GB (per node) of random access memory

- Upgrade a Model A11 to Model A21

The IBM System Storage N7900 Model A21 is also designed to provide enhanced reliability with active/active failover support.

Overview

The IBM System Storage™ N series storage controller includes the Model A11, a single-node base unit, and the Model A21, an active/active dual-node base unit. Both models are designed to provide fast data access, simultaneous multiprotocol support, expandability, upgradeability, and low maintenance requirements.

The two models of the N7900 feature:

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

- Support of 1,176 disk drives of up to 1 TB 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

- 28 backend FC loops, per node (8 native)

- Upgrade capability from Model A11 to Model A21

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

The N7900 storage controller supports both the EXN1000 SATA

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storage expansion unit and the EXN2000 and EXN4000 Fibre Channel storage expansion units. At least one storage expansion unit must be attached to the N7900. A maximum of 84 storage expansion units may be attached.

The EXN1000 storage expansion unit can be configured with 4 to 14 disk drives of 250 GB, 320 GB, 500 GB, or 1 TB physical capacity. The EXN2000 and EXN400 storage expansion units 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 and EXN4000 FC storage expansion units may not share the same Fibre Channel loop.

Note: Not all disk drive sizes (capacities) may be available on new machines, however all are supported.

Key prerequisites

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

Planned availability dates

- April 18, 2008: For all but model and feature conversions

- May 23, 2008: For model and feature conversions

Description

The IBM System Storage N series N7900 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 N7900 storage controllers consist of the Model A11 and Model A21, and associated software.

The Model A11 is designed to provide a single-node storage controller with iSCSI support, and NFS, CIFS, and FCP support via optional features. The N7900 is a 6U storage controller that must be mounted in a standard 19-inch rack. The N7900 storage controller does not include storage in the base chassis. The base chassis includes:

- Four AMD 2.6 GHz Opteron 252 processors

- 32 GB of DDR-333 memory

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

- Six integrated Gigabit Ethernet RJ45 ports

- Eight integrated 4 Gbps Fibre Channel ports

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

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

- Six PCIe expansion slots (one reserved for NVRAM)

- One serial console port

The maximum number of additional expansion adapters is eight. One expansion slot is used for the standard (included with the N7900) 2 GB NVRAM adapter card.

The Model A11 can be upgraded to a maximum of 14 multipath (loop A and loop B) FC loops (28 2-Gbps FC ports) via the addition of optional FC HBAs for Disk Attachment (feature number 1014, 1029, or 1035). The 14 loops will support a maximum of 840 total disk drives, though not all can be fully populated.

The Model A11 can be upgraded to a maximum of 14 Gigabit Ethernet ports via the addition of two optional quad-port copper Gigabit (NICs) (feature number 1009).

The Model A11 may be upgraded to a Model A21. The upgrade from a Model A11 to a Model A21 is a disruptive upgrade.

The Model A21 is designed to provide identical function as the N7700 Model A11, but with the addition of a second processing node and the Clustered Failover (CFO) licensed function. The Model A21 also supports a maximum of 840 drives, 64 GB of DDR-333 memory, and 14

backend Fiber Channel loops.

The Model A21 consists of eight processors that are designed to provide failover and failback function, helping improve overall availability. For the Model A21, each node is a 6U rack-mountable storage controller; the Model A21 occupies a total of 12U of rack space.

The Model A21 includes:

- Eight AMD 2.6 GHz Opteron 252 processors

- 64 GB of DDR-333 memory

- 2 GB of NVRAM

- 12 integrated Gigabit Ethernet RJ45 ports

- 16 integrated 4 Gbps FC ports

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

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

- 12 PCIe expansion slots (2 reserved for NVRAM)

- Two serial console ports

For the Model A21, the maximum number of additional expansion adapters is 16. The Model A21 can be upgraded to a maximum of 14 multipath (loop A and loop B) FC loops (28 4-Gbps FC ports) via the addition of optional FC HBAs for Disk Attachment (feature number 1014, 1029, or 1035). The Model A21 can be 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 A21 (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, number 1040 and number 1041, also require feature number 1042.

The N7700 storage controller Models A11 and A21 require at least one storage expansion unit, either an EXN1000, EXN2000, or EXN4000. The EXN1000 storage expansion unit provides a 3U rack-mountable disk enclosure containing 5 and up to a maximum of 14, serial advanced technology attachment (SATA) disk drives, either in 250 GB, 500 GB, 750 GB, or 1 TB physical capacities. The 1 TB disk drives require Data ONTAP 7.2.4, or later.

The EXN2000 and EXN4000 storage expansion units provide 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 N series, 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 N7700 system is determined only by the number of disk drives supported. The N7700 Model A11 and Model A21 both support 840 drives (regardless of capacity).

The following table describes the maximum supported total physical storage capacity for the N7700:

Disk enclosure	Disk drive capacity	Maximum storage enclosures	Maximum disk drives	Maximum physical capacity
EXN1000	250 GB SATA disk drives	84	1,176	294.00 TB
EXN1000	500 GB SATA disk drives	84	1,176	588.00 TB
EXN1000	750 GB SATA disk drives	84	1,176	882.00 TB
EXN1000	1 TB SATA disk drives (1)	84	1,176	1,176.00 TB
EXN2000	72 GB FC disk drives	84	1,176	82.67 TB
EXN2000	144 GB FC disk drives	84	1,176	169.34 TB
EXN2000	300 GB FC disk drives	84	1,176	352.80 TB
EXN4000	144 GB FC disk drives	84	1,176	169.34 TB

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EXN4000     300 GB FC disk drives      84          1,176    352.80 TB
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(1) The 1 TB SATA disk drive requires Data ONTAP 7.2.4, or later.

Note: All disk drives listed above are supported by the N7900, however, not all may be available for a new EXNx000 order.

EXN1000 SATA storage expansion units must not share a Fibre Channel loop with EXN2000 or EXN4000 FC storage expansion units. A maximum of six storage expansion units (EXN1000 or EXN2000) are supported on a single Fibre Channel loop.

Reference information

Refer to Hardware Announcement A07-0028, dated February 13, 2007, IBM System Storage N series function authorizations for IBM System Storage N series N7700 and N7900 hardware.

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