



IBM System Storage N series N6270 offers enterprise-class Fibre Channel, iSCSI, and NAS storage with gateway options

Table of contents

1 Overview	28 Publications
2 Key prerequisites	29 Technical information
2 Planned availability date	31 Terms and conditions
2 Description	35 Pricing
4 Product number	35 AP distribution

At a glance

The IBM® System Storage® N series Models C22, E12, and E22 are designed to provide:

- High data availability and system-level redundancy
- Support of concurrent block I/O and file serving over Ethernet and Fibre Channel (FC) SAN infrastructures
- High throughput and fast response times
- Support of enterprise customers requiring Network Attached Storage (NAS), with FC, or Internet Small Computer System Interface (iSCSI) connectivity
- Attachment of FC, SAS, and serial advanced technology attachment (SATA) disk expansion units

Overview

The IBM System Storage N6270 storage controllers include:

- Model C22 - an active/active dual-node base unit consisting of a single chassis with two controllers and no I/O expansion modules
- Model E12 - a single-node base unit consisting of a single chassis with one controller and one I/O expansion module
- Model E22 - the coupling of two E12 models

All three models are designed to provide fast data access, simultaneous multiprotocol support, expandability, upgradability, and low maintenance requirements.

These three models can be configured as gateways and are designed to provide:

- High data availability and system-level redundancy designed to address the needs of business-critical and mission-critical applications
- Single, integrated architecture designed to support concurrent block I/O and file serving over Ethernet and FC SAN infrastructures
- High throughput and fast response times for database, email, and technical applications
- Enterprise customer support for unified access requirements for NAS via FC or iSCSI
- FC, SAS, and SATA attachment options for disk expansion units designed to allow deployment in multiple environments, including data retention, NearStore, disk-

to-disk backup scenarios, and high-performance, mission-critical I/O intensive operations

The IBM System Storage N series supports the EXN1000 SATA storage expansion unit, the EXN2000 and EXN4000 FC storage expansion units, the EXN3000 SAS/SATA expansion unit, and the EXN3500 SAS expansion unit. At least one storage expansion unit must be attached to the N series system.

Key prerequisites

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

Planned availability date

June 3, 2011 for N6270 and features
August 5, 2011 model conversion

Description

The IBM System Storage N series is designed to interoperate with products capable of data transmission in the industry-standard iSCSI, CIFS, FCP, and NFS protocols. Supported systems include the IBM System p®, IBM System i® (NFS only), IBM System x®, and IBM System z® (NFS only) servers. The N6270 systems consist of the Model C22, Model E12, or Model E22, and associated software.

All three models can be configured, via optional features, to be either storage controllers or gateways. Dual-node configurations include Clustered Failover (CFO) support (via required feature), designed to provide failover and failback function, helping to improve overall availability.

All five must be mounted in a standard 19-inch rack. None of the five include storage in the base chassis.

Physical attributes

Attribute	C22	E12	E22
Number of controllers	2	1	2
Rack space required	3U	3U	6U
Dual core 2.3 GHz CPU	-	-	-
Quad core 2.3 GHz CPU	2	1	2
Random access memory (GB)	32	16	32
4-Gb Fibre Channel ports	4	2	4
6-Gb SAS ports	4	2	4
Disk drives supported	960	960	960
1-Gb Ethernet ports	4	2	4
PCIe expansion slots	4	6	12
Serial console ports	2	1	2
LAN management (RLM) ports	2	1	2
Redundant power supplies	Yes	Yes	Yes
Redundant cooling fans	Yes	Yes	Yes

The Model E12 can be upgraded to a Model E22. Model upgrades are disruptive upgrades.

Optional adapter features can be used to increase the maximums as follows. Note that each platform is limited by the maximum number of adapters that can be installed.

Maximums	C22	E12	E22
FC loops	8	13	26
FC loops (dual-path)	4	N/A	13

SAS stacks	N/A	13	12
SAS stacks (dual-path) . .	4	N/A	13
10-Gb Ethernet ports . . .	8	12	24
10-Gb FCoE ports	8	12	24
EXN1000 expansion units . .	48	68	68
EXN2000 expansion units . .	48	68	68
EXN3000 expansion units . .	40	40	40
EXN3500 expansion units . .	40	40	40
EXN4000 expansion units . .	48	68	68

The N6270 storage controllers may be ordered without an accompanying expansion unit, but require at least one storage expansion unit to be operational. The EXN1000, EXN2000, EXN3000, EXN3500, or EXN4000 satisfy this requirement.

The EXN1000 storage expansion unit provides a 3U rack-mountable disk enclosure containing five, and up to a maximum of 14, SATA disk drives, either in 500 GB, 750 GB, 1 TB, or 2 TB physical capacities.

The EXN2000 and EXN4000 storage expansion units provide a 3U rack-mountable disk enclosure containing five, and up to a maximum of 14, FC disk drives. They support FC disk drives of 300 GB physical capacity (10,000 rpm or 15,000 rpm), 450 GB physical capacity (15,000 rpm), and 600 GB physical capacity (15,000 rpm).

The EXN3000 storage expansion unit is a 4U rack-mountable disk enclosure containing five, up to a maximum of 24, SAS or SATA disk drives. The supported disk drives are:

- SAS: 300 GB, 450 GB, and 600 GB physical capacities
- SATA: 500 GB, 750 GB, 1 TB, and 2 TB physical capacities

The EXN3500 storage expansion unit is a 2U rack-mountable disk enclosure containing five, up to a maximum of 24, SAS disk drives. The supported disk drives are:

- SAS: 450 GB and 600 GB physical capacities

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 N6270 systems is determined by the number of disk drives supported. The N6270 models each support up to 960 hard drive spindles.

The following table describes the maximum supported total physical storage capacity for the N6270:

Disk enclosure	Disk drive capacity	Maximum storage enclosures	Maximum disk drives	Maximum physical capacity
EXN1000	500 GB SATA disk drives	68	960	480.00 TB
EXN1000	750 GB SATA disk drives	68	960	720.00 TB
EXN1000	1 TB SATA disk drives	68	960	960.00 TB
EXN1000	2 TB SATA disk drives	68	960	1920.00 TB
EXN3000	300 GB SAS disk drives	40	960	320.00 TB
EXN3000	450 GB SAS disk drives	40	960	432.00 TB
EXN3000	500 GB SATA disk drives	40	960	480.00 TB
EXN3000	600 GB SAS disk drives	40	960	576.00 TB
EXN3000	750 GB SATA disk drives	40	960	720.00 TB
EXN3000	1-TB SATA disk drives	40	960	960.00 TB
EXN3000	2-TB SATA disk drives	40	960	1920.00 TB
EXN3500	450 GB SAS disk drives	40	960	432.00 TB
EXN3500	600 GB SAS disk drives	40	960	576.00 TB
EXN4000	300 GB FC disk drives	68	960	320.00 TB
EXN4000	450 GB FC disk drives	68	960	432.00 TB
EXN4000	600 GB FC disk drives	68	960	576.00 TB

EXN1000 SATA storage expansion units must not share a Fibre Channel loop with EXN2000 nor EXN4000 FC storage expansion units. A maximum of six storage expansion units are supported on a single Fibre Channel loop. A maximum of ten storage expansion units are supported on a single SAS stack.

Product number

Description	Machine	Model	Feature
N6270 Model C22	2858	C22	
N6270 Model E12	2858	E12	
N6270 Model E22	2858	E22	
Hardware features			
2-Port Fiber GbE NIC	2858	C22, E12	1012
4-Gbps FC HBA - Disk, 2-port	2858	E22 C22, E12	1014
4-Gbps FC HBA - Tape, 2-port	2858	E22 C22, E12	1015
2-Port 4-Gbps FC HBA-Target	2858	E22 C22, E12	1017
4-Port Cu GbE NIC	2858	E22 C22, E12	1023
4-Port 4-Gbps FC HBA - Disk	2858	E22 C22, E12	1029
4-Port 4-Gbps PCIe Target	2858	E22 C22, E12	1030
2-Port 8-Gbps PCIe Target	2858	E22 C22, E12	1036
Fibre Channel wrap plug - LC	2858	E22 C22, E12	1044
FC cable, 50u, 31m, LC/LC	2858	E22 C22, E12	1051
FCoE SFP+ copper cable, 5m	2858	E22 C22, E12	1055
512-GB Flash Cache	2858	E22 C22, E12	1057
4-Port 3-Gbps SAS Adapter	2858	E22 C22, E12	1061
2-Port FCoE Fi Target Adapt	2858	E22 C22, E12	1063
2-Port FCoE Cu Target Adapt	2858	E22 C22, E12	1064
2-Port 10-Gbps Enet NIC	2858	E22 C22, E12	1065
8-Gb MetroCluster VI FC HBA	2858	E22	1066
8-Gb SnapMirror over FC HBA	2858	E22 C22, E12	1067
NIC SFP+	2858	E22 C22, E12	2012
10GbE SFP+	2858	E22 C22, E22	2013
Licensed Function Indicators			
Data ONTAP Essentials	2858	E12 C22, E22	5800 5850
CIFS initial	2858	E12 C22, E22	5801 5851
CIFS secondary	2858	E12 C22, E22	5802 5852
FCP initial	2858	E12 C22, E22	5803 5853
FCP secondary	2858	E12 C22, E22	5804 5854
iSCSI initial	2858	E12 C22, E22	5805 5855
iSCSI secondary	2858	E12 C22, E22	5806 5856

		E12	5856
NFS initial	2858	C22, E22	5807
		E12	5857
NFS secondary	2858	C22, E22	5808
		E12	5858
SnapLock Compliance	2858	C22, E22	5809
		E12	5859
Data ONTAP	2858	C22, E22	5810
		E12	5860
SnapRestore	2858	C22, E22	5811
		E12	5861
SnapMirror	2858	C22, E22	5812
		E12	5862
SnapVault	2858	C22, E22	5813
		E12	5863
FlexClone	2858	C22, E22	5814
		E12	5864
SnapManager Suite	2858	C22, E22	5815
		E12	5865
Complete Bundle	2858	C22, E22	5816
		E12	5866
MetroCluster	2858	E22	5817
Flash Cache	2858	C22, E22	5818
		E12	5868
SnapLock Enterprise	2858	C22, E22	5819
		E12	5869
Data ONTAP Essentials - GW	2858	C22, E22	5825
		E12	5875
CIFS initial - GW	2858	C22, E22	5826
		E12	5876
CIFS secondary - GW	2858	C22, E22	5827
		E12	5877
FCP initial - GW	2858	C22, E22	5828
		E12	5878
FCP secondary - GW	2858	C22, E22	5829
		E12	5879
iSCSI initial - GW	2858	C22, E22	5830
		E12	5880
iSCSI secondary - GW	2858	C22, E22	5831
		E12	5881
NFS initial - GW	2858	C22, E22	5832
		E12	5882
NFS secondary - GW	2858	C22, E22	5833
		E12	5883
SnapLock Compliance - GW	2858	C22, E22	5834
		E12	5884
Data ONTAP - GW	2858	C22, E22	5835
		E12	5885
SnapRestore - GW	2858	C22, E22	5836
		E12	5886
SnapMirror - GW	2858	C22, E22	5837
		E12	5887
SnapVault - GW	2858	C22, E22	5838
		E12	5888
FlexClone - GW	2858	C22, E22	5839
		E12	5889
SnapManager Suite - GW	2858	C22, E22	5840
		E12	5890
Complete Bundle - GW	2858	C22, E22	5841
		E12	5891
MetroCluster - GW	2858	E22	5842
Flash Cache - GW	2858	C22, E22	5843
		E12	5893
SnapLock Enterprise - GW	2858	C22, E22	5844
		E12	5894
Host software			
SnapDrive for UNIX® - AIX®	2858	C22, E12	8024
		E22	
SnapDrive for UNIX - Solaris	2858	C22, E12	8025
		E22	
SnapDrive for UNIX - HP-UX	2858	C22, E12	8026

SnapDrive for UNIX - Linux®	2858	E22 C22, E12	8027
SnapDrive for windows®	2858	E22 C22, E12	8050
ONTAP DSM for Windows MPIO	2858	E22 C22, E12	8052
SnapManager/Oracle - WIN	2858	E22 C22, E12	8129
SnapManager/Exchange - Host	2858	E22 C22, E12	8131
SnapManager/VI - Host	2858	E22 C22, E12	8133
SnapMgr Hyper-V - Host	2858	E22 C22, E12	8135
SnapManager for SAP - win	2858	E22 C22, E12	8140
SnapManager for SQL - Host	2858	E22 C22, E12	8141
SnapManager for Oracle	2858	E22 C22, E12	8143
SnapManager for SAP	2858	E22 C22, E12	8145
SnapManager SharePoint-Host	2858	E22 C22, E12	8147
SM SharePoint Mgmt. Bundle	2858	E22 C22, E12	8149
Single Mbox Recovery 100pk	2858	E22 C22, E12	8150
Single Mbox Recovery 500pk	2858	E22 C22, E12	8151
Single Mbox Recovery 1000pk	2858	E22 C22, E12	8152
Single Mbox Recovery 2500pk	2858	E22 C22, E12	8153
Single Mbox Recovery 5K pk	2858	E22 C22, E12	8154
Single Mbox Recovery 10K pk	2858	E22 C22, E12	8155
Single Mbox Recovery 50K pk	2858	E22 C22, E12	8156
SMBR CA-ARCSERVE Extract Wiz	2858	E22 C22, E12	8158
SMBR Tivoli® Tape Extract Wiz	2858	E22 C22, E12	8159
SMBR Legato Tape Extract Wiz	2858	E22 C22, E12	8160
SMBR NetBackup Extract Wiz	2858	E22 C22, E12	8161
SMBR PST Tape Extract Wiz	2858	E22 C22, E12	8162
SMBR HP Extract Wiz	2858	E22 C22, E12	8163
SMBR Commvault Galaxy Ex Wiz	2858	E22 C22, E12	8164
SMBR UltraBac Extract Wizard	2858	E22 C22, E12	8165
SMBR Agent for Adv Search	2858	E22 C22, E12	8166
SMBR Content Analysis Wizard	2858	E22 C22, E12	8167
SMBR Administrative Server	2858	E22 C22, E12	8168
SMSP Migrator 100 - Host	2858	E22 C22, E12	8181
SMSP Migrator 250 - Host	2858	E22 C22, E12	8182
SMSP Migrator 500 - Host	2858	E22 C22, E12	8183
SMSP Migrator 1000 - Host	2858	E22 C22, E12	8184
SMSP Migrator 5000 - Host	2858	E22 C22, E12	8185
SMSP Archiver - Host	2858	E22 C22, E12	8186

DFM Server License	2858	E22 C22, E12 E22	8255
Power cords			
PDU Pwr Cord, 42U Rack	2858	C22, E12 E22	9000
Power Cord, Cont. Europe	2858	C22, E12 E22	9001
Power Cord, UK	2858	C22, E12 E22	9002
Power Cord, Japan	2858	C22, E12 E22	9003
Power Cord, North America	2858	C22, E12 E22	9004
Power Cord, Australia/N.Z.	2858	C22, E12 E22	9005
Power Cord, Switzerland	2858	C22, E12 E22	9006
Power Cord, Argentina	2858	C22, E12 E22	9007
Power Cord, China	2858	C22, E12 E22	9008
Power Cord, Denmark	2858	C22, E12 E22	9009
Power Cord, India/S.Africa	2858	C22, E12 E22	9010
Power Cord, Israel	2858	C22, E12 E22	9011
Power Cord, Italy	2858	C22, E12 E22	9012
Power Cord, N.America 250V	2858	C22, E12 E22	9013
Power Cord, Brazil	2858	C22, E12 E22	9014
Power Cord, Taiwan	2858	C22, E12 E22	9015
Power Cord, Taiwan 250V	2858	C22, E12 E22	9016
Installation			
Plant install in 2101 rack	2858	C22, E12 E22	9201
Field install rack mount kit	2858	C22, E12 E22	9202
Uninstalled code authoriztn	2858	C22, E12 E22	9550
Gateway Indicator	2858	C22, E12 E22	9551
MES ordering			
MES Order Indicator	2858	C22, E12 E22	9555
IBM Global Finance transaction			
IGF Transaction Indicator	2858	C22, E12 E22	9556
Port/loop counts			
Num. of FC Target Ports	2858	C22, E12 E22	9557
Num. of FC Storage Loops	2858	C22, E12 E22	9558
Num. of SATA Storage Loops	2858	C22, E12 E22	9559
Dual-path FC Cabling	2858	C22, E22	9560

Model conversions

From Type Model	To Type Model	Description
2858 E12	2858 E22	N6270 Model E22

Feature conversions

Type	From	To	Description
2858	5850	5800	Data ONTAP Essentials
2858	5851	5801	CIFS initial
2858	5852	5802	CIFS secondary
2858	5853	5803	FCP initial
2858	5854	5804	FCP secondary
2858	5855	5805	iSCSI initial
2858	5856	5806	iSCSI secondary
2858	5857	5807	NFS initial
2858	5858	5808	NFS secondary
2858	5859	5809	SnapLock Compliance
2858	5860	5810	Data ONTAP
2858	5861	5811	SnapRestore
2858	5862	5812	SnapMirror
2858	5863	5813	SnapVault
2858	5864	5814	FlexClone
2858	5865	5815	SnapManager Suite
2858	5866	5816	Complete Bundle
2858	5868	5818	Flash Cache
2858	5869	5819	SnapLock Enterprise
2858	5875	5825	Data ONTAP Essentials - GW
2858	5876	5826	CIFS initial - GW
2858	5877	5827	CIFS secondary - GW
2858	5878	5828	FCP initial - GW
2858	5879	5829	FCP secondary - GW
2858	5880	5830	iSCSI initial - GW
2858	5881	5831	iSCSI secondary - GW
2858	5882	5832	NFS initial - GW
2858	5883	5833	NFS secondary - GW
2858	5884	5834	SnapLock Compliance - GW
2858	5885	5835	Data ONTAP
2858	5886	5836	SnapRestore - GW
2858	5887	5837	SnapMirror - GW
2858	5888	5838	SnapVault - GW
2858	5889	5839	FlexClone - GW
2858	5890	5840	SnapManager Suite - GW
2858	5891	5841	Complete Bundle - GW
2858	5893	5843	Flash Cache - GW
2858	5894	5844	SnapLock Enterprise - GW

Additional information

Feature descriptions

Hardware features

The N6270 models only support PCIe adapters. The N6270 Model C22 allows a maximum of four adapters, Model E12 allows a maximum of six, and Model E22 allows a maximum of 12.

2-Port Fiber GbE NIC (#1012)

This Gigabit Ethernet (1000Base-SX) PCIe feature provides two LC duplex connectors. The maximum supported distance is 275 meters using 62.5 micron MMF media and 550 meters using 50 micron MMF media.

4-Gbps FC HBA - Disk, 2-port (#1014)

This feature provides one PCIe dual-port 4-Gbps HBA for attaching disk expansion units (EXN1000, EXN2000, and EXN4000) to the N series system. This adapter auto-negotiates connections of 1 Gbps, 2 Gbps, or 4 Gbps. Two small form factor (SFF) multimode optical ports with LC connectors support the following cable lengths:

Link operating speed	50 micron multimode fiber	62.5 micron multimode fiber
1 Gbps	500 m	300 m
2 Gbps	300 m	150 m
4 Gbps	150 m	70 m

The ports of this adapter may not be used as FCP target ports.

4-Gbps FC HBA - Tape, 2-port (#1015)

This feature provides one PCIe dual-port 4-Gbps HBA for attaching tape devices. This adapter auto-negotiates connections of 1 Gbps, 2 Gbps, or 4 Gbps. Two SFF multimode optical ports with LC connectors support the following cable lengths:

Link operating speed	50 micron multimode fiber	62.5 micron multimode fiber
1 Gbps	500 m	300 m
2 Gbps	300 m	150 m
4 Gbps	150 m	70 m

The ports of this adapter may not be used as FCP target ports.

A 50-micron optical loopback cable with LC connectors is included with this feature.

(#1017) 2-Port 4-Gbps FC HBA-Target

This feature provides one PCIe dual-port 4-Gbps HBA for FCP target ports. This adapter may only be used to provide target ports in lieu of the onboard target ports; it may not be used to attach storage expansion units. It auto-negotiates connections of 1-Gbps, 2-Gbps, or 4-Gbps. Two SFF multimode optical ports with LC connectors support the following cable lengths.

Link operating speed	50 micron multimode fiber	62.5 micron multimode fiber
1 Gbps	500 m	300 m
2 Gbps	300 m	150 m
4 Gbps	150 m	70 m

All FC target ports must be either onboard FC ports or FC HBA ports (#1017). They may not be used in combination.

4-Port Cu GbE NIC (#1023)

This 10/100/1000 Ethernet (10Base-t, 100Base-TX, and 1000Base-T) PCIe feature provides four RJ45 connectors. The maximum supported distance is 100 meters using Cat. 5, or better, unshielded twisted pair (UTP) four-pair media.

4-Port 4-Gbps FC HBA - Disk (#1029)

This feature provides one PCIe quad-port 4-Gbps HBA for attaching disk expansion units (EXN1000, EXN2000, and EXN4000) to N series storage controller. This adapter auto-negotiates connections of 1 Gbps, 2 Gbps, or 4 Gbps. This adapter has

four small form factor pluggable (SFP) multimode optical ports with LC connectors that support the following cable lengths:

Link operating speed	50 micron multimode fiber	62.5 micron multimode fiber
1 Gbps	500 m	300 m
2 Gbps	300 m	150 m
4 Gbps	150 m	70 m

The ports of this adapter may not be used as FCP target ports.

4-Port 4-Gbps PCIe Target (#1030)

This feature provides one PCIe quad-port 4-Gbps HBA for FCP target ports. This adapter may only be used to provide additional target ports; it may not be used to attach storage expansion units. It auto-negotiates connections of 1 Gbps, 2 Gbps, or 4 Gbps. Two SFP multimode optical ports with LC connectors support the following cable lengths:

Link operating speed	50 micron multimode fiber	62.5 micron multimode fiber
1 Gbps	500 m	300 m
2 Gbps	300 m	150 m
4 Gbps	150 m	70 m

2-Port 8-Gbps PCIe Target (#1036)

This feature provides one PCIe dual-port 8-Gbps HBA for FCP target ports. This adapter may only be used to provide additional target ports and may not be used to attach storage expansion units. It auto-negotiates connections of 1 Gbps, 2 Gbps, 4 Gbps, or 8 Gbps. Two SFP multimode optical ports with LC connectors support the following cable lengths:

Link operating speed	50 micron multimode fiber	62.5 micron multimode fiber
1 Gbps	500 m	300 m
2 Gbps	300 m	150 m
4 Gbps	150 m	70 m
8 Gbps	50 m (OM2)	21 m
8 Gbps	150 m (OM3)	

Fibre Channel wrap plug - LC (#1044)

This wrap plug feature is used to terminate unused FC initiator ports on the N series hardware. Initiator ports are ports that are normally used to connect to back-end storage, either tape or disk. Any empty ports should be terminated to avoid warnings during boot-up. These are not required for target ports (used to connect to host systems) as target ports are self-terminating.

FC cable, 50u, 31m, LC/LC (#1051)

This 50-micron Fibre Channel cable is 31 meters long with an LC connector on each end. Its intended use is connecting the N series machine to its host system.

FCoE SFP+ copper cable, 5m (#1055)

This feature provides a 5-meter passive, copper, SFP+ cable for connecting the copper-cabled Fibre Channel over Ethernet (FCoE) adapters (feature #1064) or 10Gb SFP+ NIC (feature #1065) on the N series controllers to a Cisco FCoE switch.

512-GB Flash Cache (#1057)

The Flash Cache module is the second generation of PCIe Flash Cache adapters for N series systems. This feature provides up to 512 GB of onboard cache memory and is designed to augment the system's onboard memory, improving performance with some configurations. The design allows the N series system to be sized based on required capacity instead of performance, reducing the need for excess spindles in some environments and helping improve capacity utilization.

Note: This feature was previously called 512-GB Perf Accel Module.

4-Port 3-Gbps SAS Adapter (#1061)

This feature provides one PCIe adapter with four SAS ports for connecting SAS-based storage (EXN3000 or EXN3500) behind the N series controller. The SAS adapter operates at 3 Gbps.

2-Port FCoE Fi Target Adapt (#1063)

This feature provides one PCIe adapter with two FCoE ports for connecting the N series controller to FCoE environments, supporting FCoE, iSCSI, NFS, and CIFS with FCoE-enabled hosts. This adapter utilizes optical connections to the FCoE networks.

2-Port FCoE Cu Target Adapt (#1064)

This feature provides one PCIe adapter with two FCoE ports for connecting the N series controller to FCoE environments, supporting FCoE, iSCSI, NFS, and CIFS with FCoE-enabled hosts. This adapter utilizes copper connections to the FCoE networks.

2-Port 10-Gbps Enet NIC (#1065)

This 10Gb Ethernet PCIe NIC adapter feature provides two SFP+ ports on the adapter. To use optical, LC fiber optic cables, one SFP+ optical module (#2012) is required per optical port. To connect to a Cisco switch using copper SFP+ cables, use one of #1055 per port (each feature provides one passive, copper, SFP+ cable).

8-Gb MetroCluster VI FC HBA (#1066)

This PCIe adapter is used only in support of the MetroCluster license function feature and compatible switches. It provides the connection heartbeat for the cluster over a FC link. One is used per node in a Fabric MetroCluster implementation. This adapter is not required for Stretch MetroCluster installations.

8-Gb SnapMirror over FC HBA (#1067)

This feature provides one 8 Gb PCIe card for support SnapMirror over Fibre Channel. Use this feature to configure 8 Gbps FC for SnapMirror.

NIC SFP+ (#2012)

This feature provides one SFP+ module. It is intended for use with feature #1065 when fiber optic cables are being used. One feature must be ordered for each optical port used, that is, when an LC connection is required.

10GbE SFP+ (#2013)

This feature provides one 10 GbE SFP+ module. It is intended for use with the embedded (built-in) NICs for optical connections. The onboard ports and SFP+ modules are only used for cluster communications, and cannot be used for Ethernet traffic. This feature can also be used for MetroCluster connections between the controllers.

Licensed Function Indicators

Data ONTAP Essentials and Data ONTAP Essentials - GW

These features enable the Data ONTAP Essentials licensed function. Data ONTAP Essentials feature includes CFO (dual-node only), SyncMirror, Deduplication, FlexCache, MultiStore, NearStore, HTTP, DSM for MPIO (25 licenses per controller), one license per node for each of Operations Manager, Protection Manager, Provisioning Manager, and Protection Manager DR protocol support. All versions of OSSV are also entitled with this feature, but the license keys must be downloaded from the N series support website; they are not shipped with the system.

The corequisite IBM 2870 feature must be specified to establish authorization for use of the Data ONTAP Essentials licensed function.

Protocol features

The N series systems will function with HTTP protocol only, that is if none of the protocol features are ordered and installed. All other protocol features are optional. The first protocol feature ordered must be one of the *initial* protocol features. One, and only one, initial protocol feature may be ordered and installed on an N series system. Additional protocols can be ordered and installed; all additional protocols must be *secondary* protocols. Secondary protocol features require an *initial* protocol feature be ordered and installed.

CIFS initial and CIFS initial - GW

These features enable the CIFS licensed function which is designed to provide connectivity to clients that transfer data via the CIFS protocol. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the CIFS licensed function before the feature activation code is provided by IBM.

Note: Only one of the initial protocol features may be ordered and installed on the N series system.

CIFS secondary and CIFS secondary - GW

These secondary protocol features provide function identical to CIFS initial. They may be ordered only if one of the initial protocol features is ordered.

FCP initial and FCP initial - GW

These features enable the Fibre Channel Protocol (FCP) licensed function which is designed to provide connectivity to clients that transfer data via the FCP protocol subject to the client applying a feature activation code made available by IBM. These features are also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the FCP initial licensed function before the feature activation code is provided by IBM.

Note: The combination of FCP and MultiStore is supported only on virtual filer 0. They are otherwise mutually exclusive.

FCP secondary and FCP secondary - GW

These secondary protocol features provide function identical to FCP initial. They may be ordered only if one of the initial protocol features is ordered.

iSCSI initial and iSCSI initial - GW

These features enable the iSCSI licensed function which is designed to provide connectivity to clients that transfer data via the iSCSI protocol. You must apply a

feature activation code made available by IBM. These features are also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the NFS licensed function before the feature activation code is provided by IBM.

iSCSI secondary and iSCSI secondary - GW

These secondary protocol features provide function identical to iSCSI initial. They may be ordered only if one of the initial protocol features is ordered.

NFS initial and NFS initial - GW

These features enable the NFS licensed function subject to the client applying a feature activation code made available by IBM. The NFS licensed function is designed to provide connectivity to clients that transfer data via the NFS protocol. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the NFS licensed function before the feature activation code is provided by IBM.

NFS secondary and NFS secondary - GW

These secondary protocol features provide function identical to NFS initial. They may be ordered only if one of the initial protocol features is ordered.

SnapLock Compliance

This feature enables the SnapLock Compliance licensed function subject to the client applying a feature activation code made available by IBM. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapLock Compliance licensed function before the feature activation code is provided by IBM.

Note: This feature requires Data ONTAP 7.3.5, or later, but is not supported by Data ONTAP 8.0.x.

SnapLock Enterprise

This feature enables the SnapLock Enterprise licensed function subject to the client applying a feature activation code made available by IBM. SnapLock Enterprise is designed to provide high performance and high-security data permanence to disk-based primary and secondary N3400 storage subsystems. An integrated element of the proven IBM Data ONTAP operating system, SnapLock software is designed to support the accuracy, integrity, and security of data by helping prevent the alteration of business records and allow rapid online access for long periods of time. SnapLock Enterprise allows administrators to delete entire SnapLock Enterprise volumes. However, it is designed to prevent any SnapLock Enterprise user or administrator from deleting or modifying individual SnapLock Enterprise WORM records. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapLock Enterprise licensed function before the feature activation code is provided by IBM.

Note: This feature requires Data ONTAP 7.3.5, or later, but is not supported by Data ONTAP 8.0.x.

Data ONTAP and Data ONTAP - GW

These features enable the Data ONTAP licensed function. Data ONTAP is an optimized, scalable, and flexible operating system for the IBM N series storage controllers that is designed for heterogeneous environments. Data ONTAP is

designed to deliver flexible management and high availability, support business continuance, and support data retention, thereby helping reduce storage management complexity in your enterprise.

The corequisite IBM 2870 feature must be specified to establish authorization for use of the Data ONTAP licensed function.

SnapRestore and SnapRestore - GW

These features enable the SnapRestore licensed function subject to the client applying a feature activation code made available by IBM. SnapRestore is designed to help an enterprise recover from data loss that may occur due to user error, viruses, or many other disasters. SnapRestore is designed to help users recover data, from individual files to multi-terabyte volumes, using snapshot copies to help enable quick resumption of operations. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapRestore licensed function before the feature activation code is provided by IBM.

SnapMirror and SnapMirror - GW

These features enable the SnapMirror licensed function subject to the client applying a feature activation code made available by IBM. SnapMirror is designed to replicate data between one or more N series storage controllers. It is designed to continually update the mirrored data to help keep it current and available for disaster recovery, offloading tape backup, read-only data distribution, testing on nonproduction systems, and online data migration. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapMirror licensed function before the feature activation code is provided by IBM.

SnapVault and SnapVault - GW

SnapVault provides a centralized disk-based backup solution for heterogeneous storage environments. Storing backup data in multiple snapshot copies on the SnapVault secondary storage system from multiple SnapVault primary systems helps let enterprises keep weeks of backups online for fast restoration. Backing up multiple SnapVault primary storage systems to a single SnapShot copy on a large SnapVault secondary storage system can help allow enterprises to centralize their backup and restore operations in a single location. SnapVault primary storage systems can be local or remote N series storage controllers or gateways, Windows servers, or UNIX servers connected via a LAN or a WAN. The SnapVault secondary storage system can also be located at a remote disaster recovery site to help protect against production site failures.

These features include both SnapVault primary and SnapVault secondary functions. This feature is also used for maintenance billing purposes. These features enable the SnapVault licensed function subject to the client applying a feature activation code made available by IBM.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapVault Primary licensed function before the feature activation code is provided by IBM.

FlexClone and FlexClone - GW

These features enable the FlexClone licensed function subject to the client applying a feature activation code made available by IBM. FlexClone is designed to enable true cloning -- near-instant replication of data volumes and data sets -- without requiring additional storage space being preallocated. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the FlexClone licensed function before the feature activation code is provided by IBM.

SnapManager Suite and SnapManager Suite - GW

These features enable the SnapManager Suite of licensed functions subject to the client applying a feature activation code made available by IBM.

SnapManager Suite consists of:

- SnapManager/Exchange - Filer
- SnapManager/SQL - Filer
- SnapManager SharePoint-Filer
- SnapManager Oracle - Filer
- SnapManager SAP - Filer
- SnapManager VI - Filer,
- SnapManager Hyper-V - Filer
- SnapDrive for Win - Filer
- SnapDrive for UNIX - Filer

This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the FlexClone licensed function before the feature activation code is provided by IBM.

SnapManager/Exchange - Filer

This function enables the SnapManager/Exchange - Filer licensed function subject to the client applying a feature activation code made available by IBM. IBM SnapManager for Microsoft® Exchange is a comprehensive data management solution designed to streamline storage management while simplifying configuration, backup, and restore operations for Exchange databases. Deployed in combination with N series storage systems, SnapManager software is designed to provide near-instantaneous hot backups and rapid restores to help you achieve a combination of availability, scalability, performance, and reliability for Exchange environments.

This feature allows connectivity of any number of exchange servers to one N series system.

Note: SnapManager/Exchange - Filer and SnapManager/Exchange - Host (#8131) provide identical function but support different numbers of hosts. Only one or the other is needed, not both. SnapManager/Exchange - Filer allows connectivity to any number of hosts, SnapManager/Exchange - Host allows just one host connection. If the planned number of hosts to be supported, multiplied by the feature #8131 price, is greater than the price of SnapManager/Exchange - Filer, the latter may be a more cost-effective choice. Other factors may influence this decision.

This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapManager/Exchange - Filer licensed function before the feature activation code is provided by IBM.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager/SQL - Filer

This function enables the SnapManager/SQL - Filer licensed function subject to the client applying a feature activation code made available by IBM. IBM SnapManager for Microsoft SQL is a comprehensive data management solution designed to streamline storage management while simplifying configuration, backup, and

restore operations for SQL databases. Deployed in combination with N series storage systems, SnapManager software is designed to provide near-instantaneous hot backups and rapid restores to help you achieve a combination of availability, scalability, performance, and reliability for SQL environments.

This feature allows connectivity of any number of SQL servers to one N series storage controller.

Note: SnapManager/SQL - Filer and SnapManager for SQL - Host (#8141) provide identical function but support different numbers of hosts. Only one or the other is needed, not both. SnapManager/SQL - Filer allows connectivity to any number of hosts, SnapManager for SQL - Host allows just one host connection. If the planned number of hosts to be supported, multiplied by the feature #8141 price, is greater than the price of SnapManager/SQL - Filer, the latter may be a more cost-effective choice. Other factors may influence this decision.

This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapManager/SQL - Filer licensed function before the feature activation code is provided by IBM.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager SharePoint-Filer

This function enables the SnapManager SharePoint-Filer licensed function provided the customer has applied a feature activation code that is made available by IBM. IBM SnapManager for Microsoft SharePoint is designed to enable a single console to manage disk-based backup and recovery of SharePoint content databases, portals, sites, sub-sites, folders, documents, and versions of documents. Deployed in combination with an N series storage system, SnapManager software is designed to provide near-instantaneous hot backups and rapid restores to help you achieve a combination of availability, scalability, performance, and reliability for SharePoint environments.

This feature is designed to allow connectivity of any number of Microsoft SharePoint servers to one N series storage system. It is also used for maintenance billing purposes.

The corequisite 2870 feature number must be purchased to establish authorization for use of the SnapManager SharePoint licensed function before the feature activation code is provided by IBM.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager Oracle - Filer

IBM SnapManager for Oracle is designed to integrate with an Oracle Database and automate crucial tasks such as back up, restore, database recovery, and cloning.

Note: FlexClone is required with NFS and is optional for FCP and iSCSI environments. SnapRestore is always required with SnapManager for Oracle. When using iSCSI or FCP, you must have the appropriate host support kit (iSCSI - downloadable) or FCP Host Attach Kit.

This feature allows connectivity of any number of Oracle servers to one storage controller. SnapDrive for UNIX or SnapDrive for Windows is required.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager for Oracle requirements vary depending on the host operating system. For full details on supported operating system levels Oracle database levels, and other SnapManager for Oracle requirements, refer to the N series interoperability matrix at

SnapManager SAP - Filer

This function is designed to allow SAP administrators to back up and restore an SAP System hosted on an Oracle Database. It is integrated with the interface for SAP br* tools for back up and recovery of SAP systems as well as with the N series data management tools. It is designed to simplify provisioning and data protection on enterprise SAP systems.

This feature allows connectivity of any number of SAP servers to one storage controller. SnapDrive for UNIX is required.

Note: FlexClone is required with NFS and is optional for FCP and iSCSI environments. SnapRestore is always required with SnapManager for SAP. When using iSCSI or FCP, you must have the appropriate host support kit (iSCSI - downloadable) or FCP Host Attach Kit.

SnapManager VI - Filer

IBM SnapManager for Virtual Infrastructures (SnapManager VI) is designed to integrate with a virtual server infrastructure and automate crucial tasks such as back up, restore, recovery, and cloning. It allows connectivity of any number of VMWare servers to one storage controller.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager Hyper-V - Filer

This function is designed to integrate with the Microsoft Hyper-V virtual server infrastructure and automate crucial tasks such as back up, restore, recovery, and cloning. It allows connectivity of any number of Microsoft Hyper-V servers to one storage gateway.

Note: Use of this feature with FCP requires the FCP protocol feature, the host attach kit for the appropriate hosts, and one of the SnapDrive for Windows features. If running with iSCSI, the iSCSI protocol feature and appropriate iSCSI host attach kit are required.

SnapDrive for Win - Filer

This feature is designed to provide software that enhances the storage management capability of Windows-based systems, including easier management of dynamic volume management, cluster management, snapshot management, and replication management. One feature allows the connection of any number of hosts to the licensed storage controller.

Note: Use of this feature with FCP requires the FCP protocol feature and the host attach kit for the appropriate hosts. If running with iSCSI, the iSCSI protocol feature and appropriate iSCSI host attach kit are required.

SnapDrive for UNIX - Filer

This feature is designed to provide software that enhances the storage management capability of UNIX-based systems, including easier management of dynamic volume management, cluster management, snapshot management, and replication management. One feature allows the connection of any number of hosts to the licensed storage controller.

Note: Use of this feature with FCP requires the FCP protocol feature and the host attach kit for the appropriate hosts. If running with iSCSI, the iSCSI protocol feature and appropriate iSCSI host attach kit are required.

Complete Bundle and Complete Bundle - GW

This feature enables the Complete Bundle licensed function. Complete Bundle includes all protocols, SnapRestore, SnapVault, SnapMirror, FlexClone, and the

SnapManager Suite, SnapLock (Compliance and Enterprise), and SMBR - Windows (1500 pack).

The corequisite IBM 2870 feature must be specified to establish authorization for use of the Complete Bundle licensed function.

MetroCluster and MetroCluster - GW (E22 only)

This feature is an integrated, high-availability, and business continuance solution designed to leverage proven technologies from IBM. It expands the capabilities of the IBM N series portfolio of high-availability and disaster-recovery solutions -- a portfolio that includes failover, data replication, and backup solutions. MetroCluster is designed to be a simple-to-administer solution that extends failover capability from within a data center to a remote site. It is also designed to provide replication of data from the primary site to a remote site, helping keep data at the remote site current. The combination of failover and data replication aids in the recovery from disaster in less time than otherwise possible, helping prevent loss of data.

For additional information on MetroCluster configurations, refer to the IBM N series Interoperability Matrix, located on the N series support site, or at

<http://www-03.ibm.com/servers/storage/support/nas/>

Flash Cache and Flash Cache - GW

This feature provides the software required to support the Flash Cache adapters. It requires at least one Flash Cache adapter (#1057). Flash Cache was formerly called the Performance Accelerator Module (PAM) II.

SnapLock Enterprise and SnapLock Enterprise - GW

This feature enables the SnapLock Enterprise licensed function subject to the client applying a feature activation code made available by IBM. SnapLock Enterprise is designed to provide high performance and high-security data permanence to disk-based primary and secondary N system storage subsystems. An integrated element of the proven IBM Data ONTAP operating system, SnapLock software is designed to support the accuracy, integrity, and security of data by helping prevent the alteration of business records and allow rapid online access for long periods of time. SnapLock Enterprise allows administrators to delete entire SnapLock Enterprise volumes. However, it is designed to prevent any SnapLock Enterprise user or administrator from deleting or modifying individual SnapLock Enterprise WORM records. This feature is also used for maintenance billing purposes.

The corequisite IBM 2870 feature must be purchased to establish authorization for use of the SnapLock Enterprise licensed function before the feature activation code is provided by IBM.

Note: This feature requires Data ONTAP 7.3.5, or later, but is not supported by Data ONTAP 8.0.x.

Host software

SnapDrive for UNIX - AIX (#8024)

This feature provides a software application designed to enhance the storage management capabilities in an AIX environment, including easier management of dynamic volume management, cluster management, snapshot management, and replication management. One feature must be ordered for each host on which it will be installed.

Note: Use of this feature with FCP attachment requires the FCP Protocol feature. This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapDrive for UNIX - Solaris (#8025)

This feature provides a software application designed to enhance the storage management capabilities in a Solaris environment, including easier management of

dynamic volume management, cluster management, snapshot management, and replication management. One feature must be ordered for each host on which it will be installed.

Note: Use of this feature with FCP attachment requires the FCP Protocol feature. This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapDrive for UNIX - HPUX (#8026)

This feature provides a software application designed to enhance the storage management capabilities in an HP-UX environment, including easier management of dynamic volume management, cluster management, snapshot management, and replication management. One feature must be ordered for each host on which it will be installed.

Note: Use of this feature with FCP attachment requires the FCP Protocol feature. This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapDrive for UNIX - Linux (#8027)

This feature provides a software application designed to enhance the storage management capabilities in an Linux environment, including easier management of dynamic volume management, cluster management, snapshot management, and replication management. One feature must be ordered for each host on which it will be installed.

Note: Use of this feature with FCP attachment requires the FCP Protocol feature.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapDrive for Windows (#8050)

This feature provides SnapDrive for Windows function. One feature must be ordered for each host on which it will be installed. It provides a software application that is designed to enhance the storage management capability in a Windows environment, including easier management of dynamic volume management, cluster management, snapshot management, and replication management.

Note: ONTAP DSM for Windows MPIO (#8052) is highly recommended when using feature number 8050 with FCP.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

ONTAP DSM for Windows MPIO (#8052)

This feature provides the multipathing MPIO driver for FC data transmission in Windows environments connected to N series machines. It is required when FC multipathing function is required.

Note: Feature number 8052 is highly recommended when using feature numbers 8050, 8140, or 8149 with FCP.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager/Oracle - WIN (#8129)

SnapManager for Oracle is designed to integrate with an Oracle Database and automate crucial tasks such as backup, restore, database recovery, and cloning. This feature allows connection of one Oracle host server to a storage controller. One of this feature is required for each Oracle host. SnapManager for Oracle for Windows is available for Oracle databases running on Windows.

Note: When running SnapManager for Oracle for Windows, iSCSI or NFS must be licensed on the N series storage controller. When using NFS protocol FlexClone is a

requirement. FlexClone is optional for iSCSI environments. SnapRestore is always required with SnapManager for Oracle. The necessary SnapDrive code and license are included as part of the SnapManager for Oracle feature.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

For full details on supported OS levels and Oracle database levels, refer to the N series interoperability matrix at

<http://www.ibm.com/servers/storage/nas>

SnapManager/Exchange - Host (#8131)

This feature allows connection of one exchange host server to the storage controller. One of this feature is required for each exchange host. The FCP feature or iSCSI must be installed on the attached storage controller.

Note: SnapManager/Exchange - Host and SnapManager/Exchange - Filer provide identical functions but support different numbers of hosts. Only one or the other is needed, not both. SnapManager/Exchange - Filer allows connectivity to any number of hosts, SnapManager/Exchange - Host allows just one host connection. If the planned number of hosts to be supported, multiplied by the feature #8131 price, is greater than the price of SnapManager/Exchange - Filer, SnapManager/Exchange - Filer may be a more cost-effective choice. Other factors may influence this decision.

Note: This feature requires either FCP or iSCSI Protocol, SnapRestore, and SnapDrive for Windows to be installed on the machine. This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

This feature enables the SnapManager/Exchange - Host licensed function subject to obtaining a feature activation code made available by IBM. This feature is also used for maintenance billing purposes.

SnapManager VI - Host (#8133)

This feature provides SnapManager function for Virtual Infrastructure (VI) environments, utilizing the VMWare system. It is designed to provide snapshot management for any number of N series controllers attached to a single VMWare host.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapMgr Hyper-V - Host (#8135)

This feature is designed to integrate with the Microsoft Hyper-V virtual server infrastructure and automate crucial tasks such as backup, restore, recovery, and cloning. It allows one Microsoft Hyper-V server to connect to any number of N series controllers.

Note: Use of this feature with FCP requires the FCP protocol feature, the host attach kit for the appropriate hosts, and one of the SnapDrive for Windows features. If running with iSCSI, the iSCSI protocol feature and appropriate iSCSI host attach kit are required.

SnapManager for SAP - Win (#8140)

This feature is designed to allow SAP administrators in Windows environments to backup and restore a SAP System hosted on an Oracle Database. It is integrated with the interface for SAP br* tools for backup and recovery of SAP systems as well as with the N series data management tools. It is designed to simplify provisioning and data protection on enterprise SAP systems.

This feature includes feature #8050, SnapDrive for Windows.

One of this feature must be ordered for each host on which it will be installed.

Note: SnapRestore is always required with SnapManager for SAP. The necessary SnapDrive code and license are included as part of the SnapManager for SAP feature.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager for SQL - Host (#8141)

This feature allows connection of one SQL host server to the storage controller. One of this feature is required for each SQL host. The FCP feature or iSCSI must be installed on the attached N series storage controller.

Note: SnapManager for SQL - Host and SnapManager/SQL - Filer provide identical functions but support different numbers of hosts. Only one or the other is needed, not both. SnapManager/SQL - Filer allows connectivity to any number of hosts, SnapManager for SQL - Host allows just one host connection. If the planned number of hosts to be supported, multiplied by the feature #8141 price, is greater than the price of SnapManager/SQL - Filer, SnapManager/SQL - Filer may be a more cost-effective choice. Other factors may influence this decision.

This feature enables the SnapManager/SQL - Host licensed function subject to having obtained a feature activation code made available by IBM. This feature is also used for maintenance billing purposes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager for Oracle (#8143)

SnapManager for Oracle is designed to integrate with an Oracle Database and automate crucial tasks such as backup, restore, database recovery, and cloning. This feature allows connection of one Oracle host server to a storage controller. One of this feature is required for each Oracle host.

Note: FlexClone is required with NFS and is optional for FCP and iSCSI environments. SnapRestore is always required with SnapManager for Oracle. The necessary SnapDrive code and license are included as part of the SnapManager for Oracle feature.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager for Oracle requirements vary depending on the host OS. For full details on supported OS levels, Oracle database levels, and other SnapManager for Oracle requirements, refer to the N series interoperability matrix at

<http://www.ibm.com/servers/storage/nas>

SnapManager for SAP (#8145)

This feature is designed to allow SAP administrators to backup and restore a SAP System hosted on an Oracle Database. It is integrated with the interface for SAP br* tools for backup and recovery of SAP systems as well as with the N series data management tools. It is designed to simplify provisioning and data protection on enterprise SAP systems.

This feature includes SnapManager for Oracle (#8143). Features #8024 through #8027 and #8143 need not be ordered if SnapManager for SAP (#8145) is ordered.

One of this feature must be ordered for each host on which it will be installed.

Note: FlexClone is required with NFS and is optional for FCP environments. SnapRestore (or a feature that includes SnapRestore) is always required with SnapManager for SAP. The necessary SnapDrive code and license are included as part of the SnapManager for SAP feature.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SnapManager SharePoint-Host (#8147)

This feature enables the SnapManager SharePoint-Host licensed function provided the customer has applied a feature activation code that is made available by IBM. SnapManager for Microsoft SharePoint (SMSP) is designed to enable a single console to manage disk-based backup and recovery of SharePoint content databases, portals, sites, subsites, folders, documents, and versions of documents. Deployed in combination with an N series storage system, SnapManager software is designed to provide near-instantaneous hot backups and rapid restores to help you achieve a combination of availability, scalability, performance, and reliability for SharePoint environments.

This feature is designed to allow connectivity between a single Microsoft SharePoint server to one N series storage system. It is also used for maintenance billing purposes.

The corequisite 2870 feature number must be purchased to establish authorization for use of the SnapManager SharePoint licensed function before the feature activation code is provided by IBM.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SM SharePoint Mgmt. Bundle (#8149)

This feature includes SnapManager for SQL - Host (#8141), SnapManager SharePoint-Host (#8147), and SnapDrive for Windows (#8050). It is a feature bundle designed to simplify the feature ordering for SM SharePoint environments.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mailbox Recovery

Single Mail Box Recovery for Microsoft Exchange (SMBR) software is designed to provide rapid recovery of single mail boxes, individual folders, or single messages from a valid SnapManager backup to the production Exchange server, to any off-line Exchange server, or an Outlook .pst file. The software can help save time and money by avoiding the need for cumbersome and disk-intensive brick level backups or investments in a dedicated recovery server infrastructure.

These features provide the tape extract wizard for NT backup and Veritas; other support must be ordered separately (features #8158 - #8166).

Single Mbox Recovery 100pk (#8150)

This feature provides support for 100 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mbox Recovery 500pk (#8151)

This feature provides support for 500 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mbox Recovery 1000pk (#8152)

This feature provides support for 1,000 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mbox Recovery 2500pk (#8153)

This feature provides support for 2,500 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mbox Recovery 5K pk (#8154)

This feature provides support for 5,000 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mbox Recovery 10K pk (#8155)

This feature provides support for 10,000 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Single Mbox Recovery 50K pk (#8156)

This feature provides support for 50,000 mailboxes.

Note: This feature also requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

SMBR CA-ARCSERVE Extract Wiz (#8158)

The CA-ARCSERVE Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR Tivoli Tape Extract Wiz (#8159)

The Tivoli Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR Legato Tape Extract Wiz (#8160)

The Legato Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR NetBackup Extract Wiz (#8161)

The NetBackup Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR PST Tape Extract Wiz (#8162)

The PST Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR HP Extract Wiz (#8163)

The HP Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR Commvault Galaxy Ex Wiz (#8164)

The Commvault Galaxy Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR UltraBac Extract Wizard (#8165)

The UltraBac Extract Wizard is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR Agent for Adv Search (#8166)

The SMBR Agent for Advanced Search is designed to restore both private and public exchange information, and stored data, from tape and disk backups, to any alternate location, for example, machine, volume, or folder, helping eliminate the need for a recovery server.

SMBR Content Analysis Wizard (#8167)

The SMBR Content Analysis Wizard (CAW) is designed to enable you to automate and save search results with Microsoft Exchange by selecting sources, including entire Exchange Database (EDB) files, individual mailboxes from an EDB, or folders from an EDB. Any number of sources is allowed, including multiple EDBs.

CAW provides a method for email administrators to perform content analysis offline from the production server. It is designed to:

- Minimize the time it takes to detect and filter out emails that include specific content
- Minimize the time it takes to detect and filter out a specific type of email file that is being sent or received (for example, specific extension, subject, date), or emails being sent and received
- Analyze the number of emails being sent and received that contain politically incorrect content (for example tasteless jokes or pornography)
- Analyze the number of emails with confidential content that go out unprotected, that is, unencrypted
- Minimize the time it takes to determine if someone is using the system for unauthorized activity (for example, spamming, inappropriate downloads, starting a business)

SMBR Administrative Server (#8168)

This feature is designed to provide a framework that can host centralized services for multiple clients and provide both client and server support for Single Mailbox Recovery 5.0, or later, and Single Mailbox Recovery ExtractWizard users. It

facilitates server configuration, mailbox permissions, and application auditing services for SMBR environments.

SMSP Migrator and Archiver

SMSP Archiver: This feature is used with Microsoft SharePoint and SnapManager SharePoint (SMSP) environments to migrate binary large object data (BLOB) into a CIFS share, accessible outside of the SharePoint data structure. This method of externalizing data helps improve scalability of the SharePoint environment while providing access to the data. These CIFS shares can reside on primary (FC/SAS) storage or on secondary storage (SATA), allowing the core SharePoint data and the externalized data to be stored on a single system.

SMSP Migrator: This feature adds the ability to use SMSP functions to migrate data from existing CIFS shares and Exchange public folders to the SharePoint data structure to take advantage of collaboration security provided by SharePoint. Data contained in existing CIFS shares that require increased security for collaboration can be migrated directly to the SharePoint environment. Similarly, the data in Exchange public folders can be migrated to the SharePoint environment while keeping in place all the existing access security components.

SMSP Migrator 100 - Host (#8181)

This feature supports migration of 100 GB of data.

SMSP Migrator 250 - Host (#8182)

This feature supports migration of 250 GB of data.

SMSP Migrator 500 - Host (#8183)

This feature supports migration of 500 GB of data.

SMSP Migrator 1000 - Host (#8184)

This feature supports migration of 1000 GB of data.

SMSP Migrator 5000 - Host (#8185)

This feature supports migration of 5000 GB of data.

SMSP Archiver - Host (#8186)

This feature provides SMSP Archiver for the N series environment.

DFM Server License (#8255)

This feature provides a license for one DFM Server. One of this feature must be installed on each physical server that is to provide DFM Server functions for managing N series storage controllers.

Note: This feature requires an electronically distributed installation file available on the N series Support website. Refer to the [Software requirements](#) section for details.

Power (line) cords

Feature Description

#9000	PDU Pwr Cord, 42U Rack
#9001	Power Cord, Cont. Europe
#9002	Power Cord, UK
#9003	Power Cord, Japan
#9004	Power Cord, North America
#9005	Power Cord, Australia/N.Z.
#9006	Power Cord, Switzerland
#9007	Power Cord, Argentina
#9008	Power Cord, China

#9009 Power Cord, Denmark
#9010 Power Cord, India/S.Africa
#9011 Power Cord, Israel
#9012 Power Cord, Italy
#9013 Power Cord, N.America 250V
#9014 Power Cord, Brazil
#9015 Power Cord, Taiwan
#9016 Power Cord, Taiwan 250V

These features provide two power (line) cords to supply external power to the N series system. One power cord feature must be specified, either the PDU power cord for IEC 320, sheet C13 outlets, or one based on the country or region in which the system will be installed.

Rack installation

Either feature number 9201 or 9202, but not both, must be included in the order for any N series system.

Plant install in 2101 rack (#9201)

This feature specifies that the N series system will be installed in an IBM System Storage 2101 Model N42 System Rack by IBM manufacturing prior to shipment. When selecting this feature, a 2101 Model N42 rack order must be tied to the N series order using the multi-system order function.

Field install rack mount kit (#9202)

This feature specifies that the N series system is to be installed in the field in a customer-provided rack. Rack mounting hardware is included. This, or feature number 9201, is a required feature.

Uninstalled code authoriztn (#9550)

This feature authorizes IBM to ship the N series machine without the software having been preloaded. When this feature is specified, the license function activation codes will be shipped separately. Installation of the activation codes is a customer responsibility.

Gateway Indicator (#9551)

This specify feature must be included in all orders for N series system machines intended to be used as gateways. Feature number 9551 is a prerequisite for all Licensed Function Indicators used on gateway machines.

MES Order Indicator (#9555)

This feature indicates a field order for power cords or cables and will be automatically added by e-config during the first occurrence of a field order for these features. It is for administrative purposes only.

IGF Transaction Indicator (#9556)

This specify feature is used to designate that a new N series system is involved in an IBM Global Finance (IGF) transaction (lease or financing). It is for administrative purposes only.

For a new N series order that includes licensed function features (excluding Data ONTAP), the IGF Transaction Indicator feature must be ordered as a Record Purposes Only (RPO) MES to the N series system. This feature is field-install only and cannot be included on the initial order.

Configuration indicators

Features #9557, #9558, and #9559 must be specified to verify that sufficient FC ports (and sufficient FC expansion cards) are included in the initial order for an N series storage controller.

For an N6270 Model C22, the maximum number of feature #9557 that may be specified is eight and the total of features #9558 and #9559 may not exceed eight.

For an N6270 Model E12, the maximum number of feature #9557 that may be specified is four and the total of features #9558 and #9559 may not exceed 13.

For an N6270 Model E22, the maximum number of feature #9557 that may be specified is eight and the total of features #9558 and #9559 may not exceed 26.

Num. of FC Target Ports (#9557)

This no-charge feature specifies the number of onboard FC ports that are to be configured as FCP target ports. Target ports added via feature number 1017 must not be included in this number. FCP target ports are used for FC attachment of the N system to application servers (containing FC HBAs) or to FC storage area networks.

This feature is only relevant if you intend to use the FCP feature on the N series system.

Valid choices are

- N6270 Model C22: 0, 2, and 4.
- N6270 Model E12: 0, 2, and 4.
- N6270 Model E22: 0, 2, 4, and 8.

Num. of FC Storage Loops (#9558)

This no-charge feature specifies, on the initial order of an N series system, the number of dual-path FC storage loops that are to be configured for the attachment of the total of EXN2000 and EXN4000 storage expansion units. The expansion units included in the initial order will be distributed across the specified number of storage loops.

Valid choices are

- N6270 Model C22: 0 through 8.
- N6270 Model E12: 0 through 13.
- N6270 Model E22: 0 through 26.

Num. of SATA Storage Loops (#9559)

This no-charge feature specifies, on the initial order of an N series storage controller, the number of dual-path FC storage loops that are to be configured for the attachment of EXN1000 SATA storage expansion units. The EXN1000 expansion units, included in the initial order, will be distributed across the specified number of storage loops.

Valid choices are

- N6270 Model C22: 0 through 8.
- N6270 Model E12: 0 through 13.
- N6270 Model E22: 0 through 26.

Dual-path FC Cabling (Model C22 and E22 only) (#9560)

This no-charge, administrative feature enables multipath FC cabling. It is designed to improve reliability, availability and serviceability of the expansion units attached

to the storage controller by creating two redundant paths from each storage controller to each loop of the expansion units.

This feature requires the order of one additional 5-meter optical cable feature (#2044) and one SFP GBIC feature (#2010 or #2011) on each expansion unit (EXNx000) that will be directly attached to the storage controller.

Note: These are features of the EXN1000, EXN2000, and EXN4000. If dual-path FC cabling is installed, every storage loop of the storage controller must be "dual-path".

Feature number 9560 is a plant-only feature -- it may be specified when the N series system is initially ordered. It may not be specified for an MES (field) order. Dual-path FC cabling may be implemented on installed N series storage controllers via an MES order of one each of feature #2010 or #2011 and any of the FC optical cables (#2042, #2043, or #2044) for **each** expansion unit in the configuration that is attached directly to the storage controller (N6240 Model A2x). The FC cables must be of sufficient length.

Additional FC adapters may be required if additional ports are needed.

Publications

The following publications are shipped with the product.

Title	Order number
Shipped as hardcopy:	
IBM System Storage N6200 Series Filer Installation and Setup Instructions	GA32-0840
IBM System Storage N6200 Series Gateway Installation and Setup Instructions	GA32-0841
Shipped on CD-ROM:	
IBM System Storage N6200 Series Hardware and Service Guide	GA32-0838
IBM System Level Diagnostics Guide	GA32-0839
IBM System Storage N series Platform Monitoring Guide	GC27-2088
On the WEB, all above, and:	
IBM System Storage N series Introduction and Planning Guide	GA32-0543

All of the publications are available on the N series support website

<http://www.ibm.com/storage/support/nas/>

Publications are only available for download for existing IBM N series customers who have registered their N series products on the N series support site.

Product publications are available in English. IBM may translate key product publications.

When completed, translations will be available through country ordering systems and the N series support website.

Services

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

EMC conformance

- Taiwan BSMI CNS13438 (Taiwan EMC Standard)
- ACA C-Tick (Australia and New Zealand)

Specified operating environment

Physical specifications

&N6270. Models C22, E12, and E22

width: 44.7 cm (17.6 in.)
Depth: 71.3 cm (28.1 in.) with cable management arms
64.6 cm (25.5 in.) without cable management arms
Height: 13 cm (5.12 in.) (times 2 for E22)

IBM 2101-N42 rack

width: 65 cm (25.6 in) with side panels
62.3 cm (24.5 in) without side panels
Depth: 109.8 cm (43.3 in) with standard front and rear doors
Height: 201.5 cm (79.3 in)
weight: 215.5 kg (475 lb)
weight: Add 36.1 kg (79.5 lb) for each Model C22
weight: Add 33.7 kg (74.3 lb) for each Model E12
weight: Add 67.4 kg (148.6 lb) for each Model E22
weight: Add 2.3 kg (5.1 lb) for each 3U Rail Kit
weight: Add 4.3 kg (9.5 lb) for each standard PDU
weight: Add 6.1 kg (13.5 lb) for each iPDU
weight: Add 35.0 kg (77.0 lb) for each EXN1000 (14 HDD)
weight: Add 35.8 kg (78.8 lb) for each EXN2000 (14 HDD)
weight: Add 44.6 kg (98.3 lb) for each EXN3000 (24 HDD)
weight: Add 22.7 kg (49 lb) for each EXN3500 (24 HDD)
weight: Add 30.0 kg (66.2 lb) for each EXN4000 (14 HDD)

To assure installability and serviceability in non-IBM industry standard racks, review the installation planning information for any product specific installation requirements.

Operating environment

- Temperature:
 - Maximum range: 10° to 40° C (50° to 104° F)
 - Recommended: 20° to 25° C (68° to 77° F)
 - Non-operating: -40° to 70° C (-40° to 158° F)
 - Relative humidity:
 - Maximum operating range: 20% to 80% (non-condensing)
 - Recommended operating range: 40% to 55%
 - Non-operating range: 10% to 95% (non-condensing)
 - Maximum wet bulb: 28° C
 - Maximum altitude: 3050 m (10,000 ft.)
- Note:** Operating at extremes of environment may increase failure probability.
- Wet bulb (caloric value): 1847 Btu/hr
 - Maximum electrical power: 100-240 V ac, 12-8 A per node, 50-60 Hz
 - Nominal electrical power: 100-120 V ac, 4.7 A; 200-240 V ac, 2.3 A, 50-60 Hz
 - Noise level:
 - 55.5 dBa at 1 m at 23° C
 - 7.5 bels at 1 m at 23° C

Hardware requirements

Licensed machine code (LMC)

The N6270 requires LMC level 7.5.1, or later. Some N6270 features and functions may not be available or supported in all environments. Current information on supported environments, prerequisites, and minimum operating systems levels is available at

<http://www.ibm.com/servers/storage/nas>

Current license terms for the machine code provided with this product prohibit transfer of the machine code without approval from NetApp.

Licensed functions

Data ONTAP (feature) is *required* on every N6270 platform. In addition, for dual-node models the CFO function is required; the Data ONTAP Essentials feature includes CFO.

Licensed functions require the selection of N6270 Model C22, E12, or E22 features and the acquisition of the corresponding IBM 2870 Model 58F, 58G, or 58H function authorization features.

Software requirements

Current information on servers, operating systems, host adapters, and connectivity products supported by the N6270 are available at

<http://www.ibm.com/servers/storage/nas>

The required 2870 license features are the same as for the equivalent 2858 Model C22, Model E12, and Model E22.

Limitations

- The N6270 is supported only in rack installations.
- This product is functional with the System i and OpenPower® platforms. However, on the System i, support is available only on Linux on Power® and AIX partitions, not i5/OS®.
- Current license terms for the machine code provided with this product prohibit transfer of the machine code without approval from NetApp.

Planning information

Customer responsibilities

Following good safety practice, IBM recommends that three or more persons install this product.

Physical configuration and installation planning for the 2858 is a customer responsibility. Information about physical configuration and installation requirements, including equipment, site, and power requirements, can be found in the *IBM System Storage N6200 series Filer Installation and Setup Instructions - GA32-0840*.

A customer-supplied Ethernet cable is required to connect the machine to a server or Ethernet network.

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet website or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

Fibre Channel cables are required to connect an expansion unit to a N6270 system. Cables can be purchased using expansion unit features.

Installability

Estimated time to unpack an N6270, install it in the rack, and perform a simple discovery and configuration is two hours.

Security, auditability, and control

This product uses the security and auditability features of host hardware, host software, and application software to which it is attached.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and conditions

Volume orders: Contact your IBM representative.

Warranty period

Three years

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature

is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature is the same as the machine in which it is installed.

Warranty service

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM website. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country and location specific information. This product is covered by the following type(s) of service.

Customer Replaceable Unit Service and On-site for other selected parts

Customer Replaceable Unit Service IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 CRU

Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

For machines with on-site same-day response service IBM will replace a Tier 1 CRU part at your request, at no additional charge.

Tier 2 CRU

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next business day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container is shipped with the replacement CRU and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRU parts:

- AC power cord
- AC power supply
- Disk drive
- Cables
- Memory modules
- Wrap plug
- Operator panel

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response

Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response time objectives and are not guaranteed.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following service selections are available as warranty upgrades for your machine type.

- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average, same-business-day response, IOR
- 24 hours per day, 7 days a week, 4-hour average response, IOR
- 24 hours per day, 7 days a week, 2-hour average response, IOR

Customer Replaceable Units (CRUs) may be provided as part of the Machine's standard warranty CRU Service except that you may install a CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified above. For additional information on the CRU service, see warranty information.

Maintenance Services

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the Machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM website. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country and location specific information. The following service selections are available as maintenance options for your machine type.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit, and suitable for the purpose.

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response
- 9 hours per day, Monday through Friday, excluding holidays, 4 hour average response
- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

Customer Replaceable Units

If your problem can be resolved with a CRU (e.g., keyboard, mouse, speaker, memory, or hard disk drive), and depending upon the maintenance service offerings in your geography, IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request.

Based upon availability, CRUs will be shipped for next business day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container is shipped with the replacement CRU and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement. Customer Replaceable Units (CRUs) may be provided as part of the Machine's standard maintenance service except that you may install a CRU yourself or request IBM installation, at no additional charge, under any of the On-site Service levels specified above.

Warranty service upgrades

Usage plan machine

No

IBM hourly service rate classification

One

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

Field-installable features

Yes

Model conversions

Yes

Machine installation

Installation is performed by IBM. IBM will install the machine in accordance with the IBM installation procedures for the machine. In the United States, contact IBM at 1-800-IBM-SERV (426-7378). In other countries, contact the local IBM office.

The *IBM System Storage N6200 Series Filer Installation and Setup Instructions* specifies site preparation, physical requirements, and installation (operating) environment and any cabling included in the installation along with the approximate installation time in hours. Customer requests for installation of items not covered in the installation guide may be performed at IBM's hourly service rate designated for the machine.

Graduated program license charges apply

No

Licensed machine code

This product contains, or is provided together with, code which is licensed to the user, not sold. That code is copyrighted and may be the property of IBM, its supplier(s) or other third parties. You are authorized to use the code to the extent set forth in the applicable license agreement(s) provided with the product. You may also obtain a copy of applicable license agreement by contacting your IBM representative.

Current license terms for the machine code provided with this product prohibit transfer of the machine code without approval from NetApp.

Machines using machine code: 2858-C22, 2858-E12, or 2858-E22.

IBM may release changes to the machine code. IBM plans to make the machine code changes available for download from the IBM System Storage technical support websites

<http://www-03.ibm.com/servers/storage/support/nas/n6040/downloading.html>

<http://www-03.ibm.com/servers/storage/support/nas/n6070/downloading.html>

If the machine does not function as warranted and your problem can be resolved through your application of downloadable machine code, you are responsible for downloading and installing these designated machine code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable machine code changes; however, you may be charged for that service.

Educational allowance

A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

The educational allowance is 15% for the products in this announcement.

Pricing

For all local charges, contact your IBM representative.

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AP distribution

Country/region	Announced
AP IOT	
ASEAN*	Yes
India/South Asia**	Yes
Australia	Yes
People's Republic of China	Yes

Hong Kong S.A.R of the PRC	Yes
Macao S.A.R of the PRC	Yes
Taiwan	Yes
Korea	Yes
New Zealand	Yes
Japan IOT	
Japan	Yes

* Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, and Vietnam
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