Symantec NetBackup™ Appliance and Symantec Storage Shelf Product Description

Release 2.6.0.3

NetBackup 5230

Symantec™

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Chapter 1

Product overview

This chapter includes the following topics:

- About the appliance
- About storage capacity
- About best practices for rack installation
- About the appliance front panel
- About the appliance rear panel
- About the mainboard RAID controller
- About the external RAID controller
- About the NetBackup 5230 rear panel configurations
- About the FC HBA ports
- About the 2-port 8 Gb FC HBA
- About the dual-port 10 Gb Ethernet card
- About the Symantec Storage Shelf
- Appliance and storage shelf connections
- NetBackup 5230 documentation

About the appliance

The NetBackup 5230 appliance and the Symantec Storage Shelf provide complete deduplication and backup solutions. This document describes the major hardware aspects of these devices. This document is available to the general public.

Table 1-1 lists the features of the product.

Table 1-1 Appliance features

Feature	Description
Space reduction	The deduplication engine provides up to 100 times reduction in storage. The client-side plug-in provides similar levels of bandwidth reduction.
Scalable architecture	Due to fingerprinting and RAID redundancy, the overall storage capabilities are not a simple multiplication of the disk size and the total number of disks. See "About storage capacity" on page 10.
High availability	Supports the redundant hot-swappable disks and power modules.
Easy management	Provides separate out-of-band management network interfaces. You can remotely turn on, turn off, and reset appliances through the network. Supports remotely configuring and managing the appliances through KVM over IP. Supports the SNMP traps and automatically reports alarms. Supports reporting the disk information through the out-of-band management channel.
RAID levels	RAID 1 (standard mirroring) and RAID 6 (block level striping with double distributed parity) are used as follows: ■ Appliance system disks: RAID 1 ■ Appliance storage disks: RAID 6 ■ Storage shelf data storage disks: RAID 6 **Note:** The disk drives in the appliance are pre-formatted before the appliance is shipped. These drives should not be moved into different slots or otherwise rearranged.
Performance and capacity	■ Supports the high-performance processors with low-power consumption. ■ Provides the high-capacity intra-appliance switching bandwidths and high I/O throughput. ■ Usable capacity can be any combination of up to 144 TB deduplication pool or 148 TB Advanced Disk pool (non-deduplicated storage). ■ Processor - two 6-core 2.5GHz E5-2620 CPUs

Table 1-1 Appliance features *(continued)*

Feature	Description
Fibre Channel support	The NetBackup 5230 appliance can be ordered with two to five FC HBA cards already installed. A 10Gb Ethernet card can also be ordered and preinstalled.
Rear panel ports See "About the appliance rear panel " on page 15.	Two SAS ports that connect to the storage shelf One 1 Gb/s IPMI remote management network port One VGA port Three USB 2.0 ports Four 1Gb Ethernet network ports, each with link and activity LEDs. Two 10Gb Ethernet network ports, each with link and activity LEDs. These ports support fiber cabling and copper cabling. Two 10GBASE-SR (Short Range) SFP+ transceivers ship with each server. The customer can use these connectors. Alternately, customers can provide 10GBASE-LR (Long Range) transceivers or twin-ax copper cables depending on their network environment. Contact Symantec Technical Support for more information. The appliance can be ordered with several combinations of SAS RAID cards, Fibre Channel cards, and 10Gb Ethernet cards installed. See "About the NetBackup 5230 rear panel configurations" on page 19.

The technical specification section contains dimensions and weights for both types of devices.

See "About storage capacity" on page 10.

About storage capacity

Hardware manufacturers calculate storage hard drive capacity on a base-10 system. For instance; MB = 1,000,000 bytes, GB = 1,000,000,000 bytes and TB = 1,000,000,000,000 bytes. When we look at the available NetBackup storage capacity, a base-2 system is used for calculation. For instance; KB = 2^{10}, MB = 2^{20}, GB = 2^{30} and TB = 2^{40}.

The disks for the Symantec Storage Shelf have either 2-TB or 3-TB of available capacity. With 3-TB drives a single Symantec Storage Shelf supports up to 36-TB of formatted, available disk space.

The standard NetBackup 5230 Appliance provides 4.55-TB of storage capacity without any storage shelves. This configuration uses 1-TB storage drives in slots 4 through 11 in the front panel of the appliance. You can use 3-TB storage drives in these slots to achieve 13.65-TB of formatted storage without a storage shelf. The option of 3-TB appliance drives is available in NetBackup Appliance release 2.6.0.2 and subsequent releases.

In NetBackup Appliance release 2.6.0.3 and subsequent versions the NetBackup 5230 Appliance ships with zero, one, two, three, or four Symantec Storage Shelves.

Table 1-2 provides information regarding the different storage capacities.

Table 1-2 NetBackup 5230 storage capacity options

Appliance storage drives (TB)	Appliance available storage capacity (TB)	Storage shelf drives (TB)	Storage shelf available storage capacity (TB)	Appliance and one storage shelf available storage capacity (TB)	Appliance and two storage shelves available storage capacity (TB)	Appliance and three storage shelves available storage capacity (TB)	Appliance and four storage shelves available storage capacity (TB)
1	4.55	2	24	28.55	52.55	*	*
1	4.55	3	36	40.55	76.55	112.55	148.55
3	13.65	2	24	37.65	61.65	*	*
3	13.65	3	36	49.65	85.65	121.65	157.65

* If required, 2TB storage drives can be provided.

Note: The disk drives in slots 0 and 1 of the appliance are 1-TB drives. These drives provide the operating system for the appliance.

See "About best practices for rack installation" on page 11.

About best practices for rack installation

The heaviest equipment should be installed at the bottom of a rack. The heavy devices that are installed at the top of a rack make the rack "top-heavy", or unstable. Unstable racks jeopardize staff and equipment safety and are subject to risk.

When you install more than one device per rack, do the following:

- Find out how much each device weighs.

- Determine device order and cabling limits.
  - A storage device is heavier than an appliance and must always be installed under the appliance.
- Be aware of the depth of the guide rails and the devices. Ensure that the distance between cabinet posts accommodates the rails and devices.
  - The rack rails that are provided for the NetBackup 5230 Appliance are extensible to 30” (752mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 30” (752mm) the rails and the appliance cannot be properly installed. The width of the appliance is 19” (482.6mm).
  - The rack rails that are provided for the Symantec Storage Shelf are extensible to 36” (914mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 36” (914mm) the rails and the appliance cannot be properly installed. The width of the storage shelf is 19” (482.6mm).
  - If your rack dimensions do not conform to these requirements contact Symantec Technical Support.

See “About the appliance front panel ” on page 12.

About the appliance front panel

The appliance front panel contains 12 disk slots, as shown. See Figure 1-1 on page 13. The slots are labeled from 0 to 11, starting at the bottom left slot. The NetBackup appliance contains two SAS system hard disk drives (HDDs), which are located in slots 0 and 1. These disks provide the operating system and mirrored RAID1 functions for the appliance. You can hot-swap one of these disks at a time. You cannot operate the appliance if both disks are removed.

In the NetBackup 5230, 8 storage disk drives are installed in the appliance. These 8 drives are installed in slots 4 through 11.

You can order 1-TB or 3-TB storage drives.

Blank carriers are installed in the unused slots to maintain proper airflow. The carriers must stay in place.

Warning: The disk drives are pre-formatted before the appliance is shipped. Do not rearrange the disks from their original locations.

Figure 1-1 NetBackup 5230 appliance with system disks and storage disks

Table 1-3 describes the slots and disk drives in the NetBackup 5230 appliance.

Table 1-3 Appliance front panel disk drives

Number	Description
1	System disk drives in slot 0 and slot 1, forming a RAID 1 group.
2	Storage disk drives in slots 4 through 11. Slots 2 and 3 contain blank drive carriers. The available storage capacity of the storage disks is 4-TB if you use 1-TB storage disks. If you use 3-TB storage disks the available capacity is 14-TB. These eight disks form a RAID 6 group.
3	Slot #11, containing the hot spare.

Each disk drive module contains two LEDs on the left-hand side of each module. The LEDs appear as follows:

Figure 1-2 Disk drive module LEDs

Table 1-4 Disk drive LEDs

Number	Description	Color	Indication
1	Status LED	Not lit	No faults
		Solid amber	Disk fault
		Blinking amber	RAID rebuild is in progress

Table 1-4 Disk drive LEDs *(continued)*

Number	Description	Color	Indication
2	Activity LED	Not lit	The disk has spun down.
		Solid green	There is no disk activity.
		Blinking green	The disk spins up.
		Blinking green occasionally	Commands are processed.

Note that the disk drive modules that do not contain disk drives also have LEDs. Although there is no drive activity going on, some colored lights may still be seen through the disk modules.

The front panel includes a small panel that is attached to the right side of the device. System information is shown on this panel.

Figure 1-3 LED panel

Table 1-5 describes LEDs on the front panel.

Table 1-5 LED panel

Number	Description
1	AC power button with integrated LED (executes a shutdown before turning off power)
2	Hard drive activity LED
3	ID button with integrated LED
4	Cold reset button (turns off power instantly)
5	NIC4/eth3 activity LED (for public network use)
6	NIC3/eth2 activity LED (for public network use)

Table 1-5 LED panel *(continued)*

Number	Description
7	NMI button (This button triggers a nonmaskable interrupt. All server data is lost.)
8	NIC1/eth0 activity LED (for initial configuration, if desired, and then reconfigure for network use)
9	NIC2/eth1 activity LED (for public network use)
10	Status LED

You can see a black tag on the left side of the front panel. Pull out the tag to display the serial number of the appliance.

Figure 1-4 Appliance serial number

See "About the appliance rear panel " on page 15.

About the appliance rear panel

The rear panel of the appliance has several access ports and other features, which are displayed in Figure 1-5.

Figure 1-5 Rear panel access ports and features

Table 1-6 Rear panel connectors and features

Number	Function
1, 2	Power Supply Modules #1, #2 (120VAC)
3	Starting with NetBackup Appliance release 2.6.0.2, the eth0/NIC1 port can be configured and used in your network for backup jobs. If you decide to use this port for backups, you must configure the remote management (IPMI) port to access the appliance.
4, 5, 6	NIC2/eth1, NIC3/eth2, and NIC4/eth3, reserved for public networks. All three are 1Gb connectors.
7	DB-15 VGA connector
8	RJ45 Serial-A port (reserved)
9	USB connectors
10	IPMI remote management port
11	NIC5/eth4 and NIC6/eth5, left to right: 10Gb network connectors for public networks
12	Add-in PCIe adapter slots (SAS, Fibre Channel, 10Gb Ethernet)
13	Serial-B port (reserved)

In January 2014 NetBackup 5230 appliances may include grounding studs in case your lab environment has such a requirement. The studs are located on the rear panel of the appliance. You can use standard grounding practices to connect grounding wires to the studs.

Figure 1-6 Appliance grounding studs

The ports on the rear panel are color-coded for easy identification.

Figure 1-7 Rear panel port colors

The rear panel has two sets of low profile, full height, 3.5" form factor PCIe slots. The following diagram shows the slot numbers.

Figure 1-8 Rear panel slot numbers

The NetBackup 5230 appliance add-in cards are available in five configurations. Several configurations include at least one FC HBA card for VMware, Optimized Deduplication over FC, or tape library connectivity.

In some configurations the FC HBA cards are installed into some of the PCIe slots. If the cards are installed in slots 5 and 6 the configuration supports Fibre Transport media server (FTMS) mode. Port 1 of each card is configured in Target mode (1) as shown. Port 2 is configured in Initiator mode (2). Only configurations D and E support FTMS.

Figure 1-9 FC HBA ports in slots 5 and 6

See "About the NetBackup 5230 rear panel configurations" on page 19.

About the mainboard RAID controller

The SAS RAID controller in the appliance is an Intel RMS25CB080 card. The controller is preinstalled at the factory, on the mainboard of the appliance. This controller is also known as the *internal* controller. The SAS RAID controller that is installed in the PCIe riser slot is known as the *external* controller.

The mainboard RAID controller includes a maintenance-free backup unit (MFBU) with a super-capacitor and flash memory. The parameters that are associated with the controller are as follows:

- Dimensions - 2.713 in x 6.600 in (6.891 cm x 16.764 cm) (low-profile). The card is full height and low profile.
- Operating voltage - +3.3 V +/-8%, +12 V +/-8%
- PCI power (nominal) - 9W typical, airflow minimum 200 LFM
- Environmental humidity - 0°C to 50°C; 5% to 90% non-condensing, operating
- Environmental humidity - -45°C to 105°C; 5% to 90% non-condensing, storage
- MTBF - more than 3,000,000 hours

See "About the 2-port 8 Gb FC HBA " on page 22.

About the external RAID controller

The RAID controller for the storage disks in the storage shelf is located in the appliance. This SAS RAID controller is installed in PCIe slot #1 as an add-in card. The card contains two SAS ports which connect to the storage shelf with SAS cables.

Features of the RAID card include:

- Supports data redundancy using SAS or SATA hard disk drives through mirroring, parity, and double parity (RAID levels 1 and 6).

- The maintenance-free backup unit (MFBU) is built using NAND flash that can retain data for up to ten years. The MFBU contains a supercapacitor.
- Embedded 1-GB DDR3 1333-MHz cache (ECC DDR3 memory)
- x8 PCI Express* Generation 3 interface for fast communication with the appliance.
- LSI* SAS 2208 RAID-on-chip (ROC) controller providing SAS 2.0 compliance, including 6-Gb/s data transfer.

About the NetBackup 5230 rear panel configurations

The NetBackup 5230 appliance ships in 5 configurations. The Symantec Storage Shelves can be ordered as separate devices.

Configuration A

In Configuration A, one FC HBA card (1) is installed. You can use the FC ports for VMware, Optimized Deduplication over FC, or tape library connectivity. This configuration is not used with a storage shelf.

Figure 1-10 NetBackup 5230 configuration A

Configuration B

In Configuration B, one SAS RAID controller card (1) is installed into Slot 1. The SAS ports on the RAID controller connect to the SAS_IN ports on one storage shelf. The SAS_OUT ports on the first storage shelf are attached to the SAS_IN ports on the second storage shelf, if two shelves are used.

One FC HBA card (2) is installed. You can use the FC ports for VMware, Optimized Deduplication over FC, or tape library connectivity.

Figure 1-11 NetBackup 5230 configuration B

Configuration C

In Configuration C, one 10 Gb Ethernet card (1) is installed. You can connect the Ethernet ports to other devices that are connected to your network.

One SAS RAID controller card (2) is installed into Slot 1. The SAS ports on the RAID controller connect to the SAS_IN ports on one storage shelf. The SAS_OUT ports on the first storage shelf are attached to the SAS_IN ports on the second storage shelf, if two shelves are used.

One FC HBA card (3) is installed. You can use the FC ports for VMware, Optimized Deduplication over FC, or tape library connectivity.

Figure 1-12 NetBackup 5230 configuration C

Configuration D

In Configuration D, one 10 Gb Ethernet card is installed. You can connect the Ethernet ports to other devices that are connected to your network.

One SAS RAID controller card is installed into Slot 1. The SAS ports on the RAID controller connect to the SAS_IN ports on one storage shelf. The SAS_OUT ports on the first storage shelf are attached to the SAS_IN ports on the second storage shelf, if two shelves are used.

Four FC HBA cards are installed.

- You can use the FC ports in slots 2 and 4 for VMware, Optimized Deduplication over FC, or tape library connectivity. Both ports on each card are configured in Initiator mode.
- You can use the FC ports in slots 5 and 6 for Fibre Transport media server (FTMS) support.
- Port 1 on the FC HBA cards in slots 5 and 6 is configured in Target mode. The other port on these cards is configured in Initiator mode.

Figure 1-13 NetBackup 5230 configuration D

Configuration E

In Configuration E, one SAS RAID controller card is installed into Slot 1 (1). The SAS ports on the RAID controller connect to the SAS_IN ports on one storage shelf. The SAS_OUT ports on the first storage shelf are attached to the SAS_IN ports on the second storage shelf, if two shelves are used.

Five FC HBA cards (2) are installed. You can connect the FC ports to Fibre Transport data transfer clients or other devices. This configuration provides the maximum number of FC ports in a NetBackup 5230 appliance.

- You can use the FC ports in slots 2, 3, and 4 for VMware, Optimized Deduplication over FC, or tape library connectivity. Both ports on each card are configured in Initiator mode.
- You can use the FC ports in slots 5 and 6 for Fibre Transport media server (FTMS) support.
- Port 1 on the FC HBA cards in slots 5 and 6 is configured in Target mode. The other port on these cards is configured in Initiator mode.

Zero Ethernet cards are included in this configuration.

Figure 1-14 NetBackup 5230 configuration E

Other configurations or other cards in the PCIe slots of the NetBackup 5230 appliance are not supported.

See "About the FC HBA ports" on page 22.

About the FC HBA ports

The NetBackup 5230 appliance add-in cards are available in five configurations. Several configurations include one FC HBA card for VMware, Optimized Deduplication over FC, or tape library connectivity.

Configurations D and E support FTMS. In these configurations Port 1 on each FC HBA card (1) in slots 5 and 6 are configured in Target mode. Port 2 in slots 5 and 6 and all of the other FC ports are configured in Initiator mode.

Figure 1-15 FC HBA card target and initiator ports

See "About the NetBackup 5230 rear panel configurations" on page 19.

About the 2-port 8 Gb FC HBA

The Fiber Channel (FC) ports connect the appliance to clients or other devices for Fibre Transport data transfer.

Dimensions - 2.54 in x 6.6 in (6.4516 cm to 16.764 cm) (low-profile)

Power consumption - Typical: 6.2 watts at 0°C to 55°C (32°F to 131°F)

Operating temperature - 0°C to 55°C

Storage temperature - -40°C to +70°C (-40°F to +158°F)

Storage humidity - 10% RH to 90% RH (operating, non-condensing) and 5% RH to 93% RH (non-operating, non-condensing)

See "About the dual-port 10 Gb Ethernet card" on page 23.

About the dual-port 10 Gb Ethernet card

A 10Gb Ethernet card is available with the NetBackup 5230 appliance.

Dimensions - 2.54 in x 6.6 in (6.4516 cm to 16.764 cm) (low-profile)

Power consumption - Typical: 6.2 watts at 0°C to 55°C (32°F to 131°F)

Operating temperature - 0°C to 55°C

Storage temperature - -40°C to +70°C (-40°F to +158°F)

Storage humidity - 10% RH to 90% RH (operating, non-condensing) and 5% RH to 93% RH (non-operating, non-condensing)

See "About the Symantec Storage Shelf " on page 23.

About the Symantec Storage Shelf

Table 1-7 lists the Symantec Storage Shelf features.

Table 1-7 Storage shelf features

Feature	Description
Capacity	Holds 16 3.5-inch, 3 TB, 7,200 rpm SAS disk drives. 2-TB disks are also available.
RAID level	RAID 6

Table 1-7 Storage shelf features *(continued)*

Feature	Description
I/O ports	Four SAS 6.0-Gbps ports (two per each independent I/O module). Each I/O module contains one SAS_IN port and one SAS_OUT port. Each storage shelf has two I/O modules. Therefore, a storage shelf has two SAS_IN ports and two SAS_OUT ports. The SAS_IN ports on one storage shelf connect to the appliance. The appliance does not physically connect to more than one storage shelf, although the appliance monitoring software can detect all storage shelves in the system. The SAS_OUT ports on one storage shelf connect to the SAS_IN ports on the second storage shelf, if two shelves are used. Two serial RJ-11 ports (1 per I/O module) - for Symantec Technical Support use only.

Figure 1-16 shows the front and the rear panels of the Symantec Storage Shelf.

Figure 1-16 Storage shelf front panel

Table 1-8 lists the storage shelf front panel components that are shown in Figure 1-16.

Table 1-8 Storage shelf front panel components

Number	Component
1	Disk module #1 of 16.
2	Disk module release button.
3	Disk status LED
4	Disk power and activity LED
5	Slot #16 - hot spare

Figure 1-17 Storage shelf rear panel

Table 1-9 lists the storage shelf rear panel components that are shown in the illustration.

Table 1-9 Storage shelf rear panel components

Number	Component
1	Serial port
2	Release latch
3	I/O module #1
4	SAS_IN port
5	SAS_OUT port
6	I/O module #2
7	Power supply #1 and fans
8	Power supply #2 and fans

Storage shelf serial numbers are located on a white plastic panel that pulls out from the right, rear panel of the storage shelf.

Figure 1-18 Serial number tab

See "Appliance and storage shelf connections" on page 26.

Appliance and storage shelf connections

When more than one storage shelf is used, SAS cables connect the second shelf to the first shelf. The second shelf is not physically connected to the appliance.

Network cables for use with Fibre Channel ports or Ethernet ports are not provided. Customers must supply any Fibre Channel or Ethernet cables.

The following figure shows the cable connections between the appliance and the storage shelves.

Figure 1-19 Connecting the NetBackup 5230 appliance and 2 storage shelves

Table 1-10 describes the configuration of an appliance and two storage shelves.

Table 1-10 Appliance connection to two storage shelves

Number	Component
1	Appliance
2	Appliance SAS_IN and SAS_OUT ports
3A	Symantec Storage Shelf SAS_IN ports connecting to the appliance
3B	Symantec Storage Shelf SAS_IN ports connecting to another storage shelf
4	Symantec Storage Shelf SAS_OUT ports, only used to connect to SAS_IN ports on other storage shelves
5	Storage shelves

NetBackup Appliance release 2.6.0.3 supports the use of up to four storage shelves with one appliance.

Figure 1-20 Four storage shelves and one appliance

Table 1-10 lists the components in the four-shelf configuration.

See "About the Symantec Storage Shelf " on page 23.

NetBackup 5230 documentation

The NetBackup 5230 appliance runs NetBackup appliance software to provide deduplication and advanced storage backup capabilities. Documentation for the appliance and for the NetBackup software is available at the following URL.

http://www.symantec.com/docs/DOC2792

See “About the appliance” on page 8.

Chapter 2

Cables

This chapter includes the following topics:

- Power cables
- Network cable
- Multi-Mode fibre cable
- SAS cable

Power cables

Each AC power module of the appliance and of the storage device requires a single AC power cable. One end of the AC power cable is connected to the power socket on the appliance or the storage device. The other end of the cable is connected to the external power supply.

Note: Power cables vary in different regions. Standard international cables are used as an example in this document.

Figure 2-1 AC power cable

A power cable includes live line, neutral line, and grounding lines.

NetBackup storage shelves currently ship with two AC power cords. To improve the power distribution within a rack environment, Symantec will ship two of the Power Distribution Unit (PDU) compatible cords (C13-C14) instead of the AC power cords. The transition to the new cords will be gradual.

Figure 2-2 and Table 2-1 show the C13 connector.

Figure 2-2 C13 connector to the appliance or to the storage shelf

Table 2-1 C13 connector details

Number	Component color
1	Green and yellow
2	Blue
3	Brown

Figure 2-3 and Table 2-2 show the C14 connector.

Figure 2-3 C14 plug to the PDU

Table 2-2 C14 plug details

Number	Components color
1	Green and yellow
2	Brown
3	Blue

See “Network cable” on page 32.

Network cable

The appliance communicates with the outside through an Ethernet network cable. One end of the network cable connects to the management network port or customer network port of the appliance. The other end of the cable connects to the network switch or an external gateway. Both ends of the cable are RJ-45 connectors.

Figure 2-4 Network cable

See "Multi-Mode fibre cable" on page 32.

Multi-Mode fibre cable

The appliance communicates with an FC switch through a multi-mode fibre. One end of the multi-mode fibre connects to a 10GE port or an FC port on the appliance. The other end of the cable connects to the FC switch or other network devices. The two ends of the multi-mode fibre are LC connectors.

Note: Fibre cables are not delivered with the product. Customers must provide these cables.

Figure 2-5 Multi-Mode fibre cable

Fiber optic cables require Small Form-factor Pluggable (SFP+) transceivers, which are provided with each device having Fibre Channel ports. The diagram shows the SFP, labeled 1, and the fiber optic cable which is attached to it, labeled 2.

Supported SFPs are listed:

- Finisar
- JDSU

See "SAS cable" on page 33.

SAS cable

A SAS cable has a SAS connector on both ends. Two SAS cables ship with each storage device. The maximum supported length of each SAS cable is 1 meter (3.28 feet).

Refer to the appliance and the storage system connection sections as needed for details.

Figure 2-6 SAS cable

See "Power cables" on page 30.

Chapter 3

Technical specifications, standards, and compliance information

This chapter includes the following topics:

- Technical specifications
- Environmental specifications
- Protocol standards
- Regulatory, compliance, and certification information

Technical specifications

Table 3-1 and Table 3-2 provide device specifications.

Note: The weight of the appliance includes 10 disk drive modules, 2 empty disk drive carriers, and 2 power modules.

Note: The maximum weight of a storage shelf includes the 16 disk drive modules and 2 power modules.

Note: The transportation weight is the sum of the maximum weight of a device and the maximum weight of the transportation materials.

Table 3-1 Appliance specifications

Parameter	Description
Rack information	The rack rails that are provided for the NetBackup 5230 Appliance are extensible to 30” (752mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 30” (752mm) the rails and the appliance cannot be properly installed.
Weight	Weight: 23.58 kg (52 lbs)
Dimensions	Height: 8.76 cm (3.45”) (approximately 2U) Width: 43.8 cm (17.24”) Depth: 69.59 cm (27.39”)
Power consumption	750W maximum
Power parameters	100 - 127 V at 50/60 Hz 8.2 A 200 - 240 V at 50/60 Hz 4.4 A
Inherent availability of the system	≥ 99.95%
Mean Time to Repair (MTTR)	1hr
Operating temperature	+10°C to +35°C with the maximum rate of change not to exceed 10°C per hour
Non-operating temperature	-40°C to +70°C
Non-operating humidity	90%, non-condensing at 35°C
Acoustic noise	Sound power: 7.0 dB in operating condition at typical office ambient temperature. (23°C +/- 2)
System Cooling Requirement	460 W maximum – 1570 BTU/hour 750 W maximum – 2560 BTU/hour

The following table provides details about the storage shelf.

Table 3-2 Storage shelf technical specifications

Parameter	Description
Rack information	The rack installation height is the space occupied by a storage shelf in a rack cabinet. The rack height for the storage shelf is 3U (5.25 inches, 13.35 cm). Install the storage shelf in a rack cabinet that is 19 inches (48.26 cm) wide. The rack rails that are provided for the Symantec Storage Shelf are extensible to 36” (914mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 36” (914mm) the rails and the appliance cannot be properly installed.
Weight	Maximum weight: 32.5 kg (71.65 lb) Transportation weight: Approx. 50 kg (110.23 lb)
Dimensions	Height: 13.1 cm (5.25”) (approximately 3U) Width: 44.7 cm (17.6”) Depth: 56.1 cm (22.1”)
Power consumption	580W maximum
Power parameters	AC voltage range: 100 V to 127 V, 200 V to 240 V AC frequency range: 47 Hz to 63 Hz
Inherent availability of the system	≥ 99.95%
Mean Time to Repair (MTTR)	< 1 hour

See “Environmental specifications” on page 36.

Environmental specifications

The following table lists the requirements for the NetBackup appliance and the storage devices.

Table 3-3 Environmental requirements

Component	Requirement
Operating temperature	10°C to 35°C (41°F to 95°F)
Storage temperature	-40°C to 70°C (-40°F to 158°F)

Table 3-3 Environmental requirements *(continued)*

Component	Requirement
Transportation temperature	-40°C to 70°C (-40°F to 158°F)
Temperature gradient	10°C/h
Operating humidity	10%RH to 85%RH
Operating altitude	-30 meters to 3,000 meters In altitudes from -60 meters to +1,800 meters, the ambient temperature ranges from 5°C to 35°C. When the altitude ranges from 1,800 meters to 3,000 meters, the environment temperature decreases by 0.6°C when the altitude increases by 100 meters.
Storage altitude	-30 meters to 3,000 meters
Noise	< 72 A-weighted decibel This value reflects the maximum noise of the appliance when the ambient temperature is 25°C.

See "Protocol standards" on page 37.

Protocol standards

The following table provides standards with which the NetBackup appliance and storage devices comply.

Table 3-4 Standards compliance

Standard	Version
IPMI2.0	Intelligent Platform Management Interface Specification Second Generation v2.0, Document Revision 1.0
SMBIOS	System Management BIOS (SMBIOS) Reference Specification, Version 2.5
SAS	SAS- 2.1
ACPI	Advanced Configuration and Power Interface Specification, Revision 3.0, September 2
IP	RFC0791: Internet Protocol
FC	INCITS T11 (X3T9.3)

Table 3-4 Standards compliance *(continued)*

Standard	Version
PCI Express	PCIe 3.0

See "Regulatory, compliance, and certification information" on page 38.

Regulatory, compliance, and certification information

Refer to the *NetBackup Appliance Safety and Maintenance Guide* for detailed information.

http://www.symantec.com/docs/DOC2792

See "Technical specifications" on page 34.

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