

Symantec NetBackup™ 5330 Appliance Product Description

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NetBackup 5330 Appliance overview

This chapter includes the following topics:

- [About the NetBackup 5330 Appliance](#)
- [About the NetBackup 5330 Appliance storage capacity](#)
- [About best practices for rack installation](#)

About the NetBackup 5330 Appliance

The NetBackup 5330 Appliance is a hardware and software storage system that scales to 229TB of usable backup capacity. It consists of a 2U NetBackup 5330 server and one attached 4U Symantec Primary Storage Shelf. For additional storage capacity, an optional 4U Expansion Storage Shelf can be added.

Fibre channel (FC) cables connect the NetBackup 5330 server to the Symantec Primary Storage Shelf. SAS cables connect the Primary Storage Shelf to the Expansion Storage Shelf.

NetBackup 5330 Appliance system features

Table 1-1 NetBackup 5330 Appliance system features

Feature	Description
Performance and capacity	<ul style="list-style-type: none"> ■ Processor - two Intel Xeon 10-core 3.0 GHz E5-2690 v2 CPUs. ■ Supports the high-performance processors with low-power consumption. ■ Provides high-capacity intra-appliance switching bandwidth, along with high I/O throughput. ■ Usable capacity can be any combination of up to 229.2 TB. The usable capacity can be allocated either in part or in whole to a deduplication pool or to an Advanced Disk pool (non-deduplicated storage).
System memory configuration (DIMMs)	16 GB x 24; total RAM: 384 GB
RAID cache	24 GB
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	<p>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.</p> <p>The NetBackup 5330 Appliance system configuration can be configured with a required Primary Storage Shelf, or a Primary Storage Shelf and an optional Expansion Storage Shelf. A NetBackup 5330 server that is paired with a Primary Storage Shelf provides usable storage capacity of 114.6 TB. When the server is paired with both the Primary Storage Shelf and the optional Expansion Storage Shelf, usable storage capacity increases to 229.2 TB.</p>
High availability	Supports redundant hot-swappable disks and power modules.
Easy management	<p>Provides separate out-of-band management network interfaces. You can remotely turn on, turn off, and reset appliances through the network.</p> <p>Supports the SNMP traps and automatically reports alarms.</p> <p>Supports reporting the disk information through the out-of-band management channel.</p>

Table 1-1 NetBackup 5330 Appliance system features (*continued*)

Feature	Description
RAID levels	RAID1 (striping and mirroring) and RAID6 (block level striping with double distributed parity) are used as follows: <ul style="list-style-type: none"> ■ NetBackup 5330 server system disks: RAID1 ■ Storage shelf data storage disks: RAID6
Fibre Channel support	The NetBackup 5330 server can be ordered with two, three, five, or six Fibre Channel (FC) HBA cards already installed. Each card includes two standard Fibre Channel ports. If less than six FC HBA cards are ordered, a 10Gb Ethernet card with two standard ports can be ordered. The server uses the QLE2562, a QLogic 8Gb PCIe dual port adapter.
Rear panel ports	One 1 Gb/s IPMI remote network port One VGA port Four 1GE network ports, with an RJ-45 connector, and link and activity LEDs. Two of the ports are reserved for private networks. Two 10 GE network ports, with Small Form-factor Pluggable (SFP) modules, and link and activity LEDs.

See [“About the NetBackup 5330 server disk configuration”](#) on page 10.

See [“About NetBackup 5330 server disk drive LEDs”](#) on page 11.

See [“About the NetBackup 5330 server control panel”](#) on page 12.

See [“About the NetBackup 5330 server rear panel”](#) on page 13.

See [“About NetBackup 5330 server PCIe slot configurations”](#) on page 15.

See [“NetBackup 5330 Appliance Ethernet port configurations”](#) on page 16.

See [“About the dual-port 8 GB Fibre Channel Host Bus Adapter \(FC HBA\)”](#) on page 17.

See [“About the dual-port 10GB Ethernet card”](#) on page 18.

About the NetBackup 5330 server disk configuration

The NetBackup 5330 server contains eight 3TB SAS disks, which can be accessed from the server's front panel. An embedded RAID controller on the server's mainboard is used to configure four of the eight disks into two RAID1 mirrored volumes. These volumes are labeled Volume 0 and Volume 1. The disks that are located in slot 0 and slot 1 are configured as the RAID1, VOLUME 0 device, while

the disks in slot 3 and slot 4 are configured as the RAID1, VOLUME 1 device. VOLUME 0 contains the NetBackup 5330 server operating system and the NetBackup application.

The disks in slots 3 and 4 are configured as the RAID 1, VOLUME 1 device.

The appliance uses the disks that are located in slot 2 and slot 5 as hot-spare disks. If a disk in either RAID volume experiences a hardware error, the appliance automatically initiates a RAID rebuild operation. During the rebuild operation, the appliance randomly selects a hot-spare disk from slot 2 or slot 5, and then rebuilds the RAID volume.

The disks in slots 6 and 7 are reserved for future use.

Figure 1-1 NetBackup 5330 server front panel disk slot assignments



Table 1-2 NetBackup 5330 server disk slot assignments and RAID disk assignments

NetBackup 5330 server disk slot assignments and RAID disk assignments								
Slots	0	1	2	3	4	5	6	7
RAID layout	Disk0 of RAID1, Volume 0	Disk1 of RAID1, Volume 0	Hot spare disk	Disk0 of RAID1, Volume 1	Disk1 of RAID1, Volume 1	Hot spare disk	Reserved for future use	Reserved for future use
	Set as Boot Volume		Slots 8, 9, 10, and 11 are intentionally empty for server cooling purposes.					

About NetBackup 5330 server disk drive LEDs

Each disk drive module contains two LEDs on the left-hand side of each module.

The LEDs appear as follows:

- The LED on the top is solid amber when a disk drive fault occurs. This LED is not lit when there are no disk drive faults.
- The LED on the bottom is solid green when power is supplied to the disk drive. This LED flashes green when the disk drive is active.

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.

Figure 1-2 Disk drive module LEDs



Table 1-3 Disk drive module LED descriptions

LED color	Condition	Description/Behavior
Amber	Off	No access and no fault
Amber	Solid On	A hard drive fault has occurred
Amber	Blinking	A RAID rebuild is in progress (1 Hz), Identify (2 Hz)
Green	Power on with no drive activity	LED stays on
Green	Power on with drive activity	LED blinks off when processing a command
Green	Power on and drive spun down	LED stays off
Green	Power on and drive spinning up	LED blinks

About the NetBackup 5330 server control panel

The front panel of the NetBackup 5330 server includes a small panel that is attached to the right side of the device. System information is shown on this panel.

Figure 1-3 NetBackup 5330 server control panel

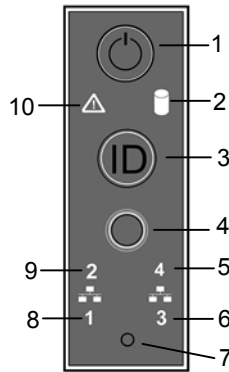


Table 1-4 LED panel descriptions

Label	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 (restarts the appliance instantly)
5	NIC4/eth3 activity LED (for public use)
6	NIC3/eth2 activity LED (for public use)
7	NMI button (recessed; a tool is required for use)
8	NIC1/eth0 activity LED (for public use)
9	NIC2/eth1 activity LED (for public use)
10	Status LED

About the NetBackup 5330 server rear panel

The rear panel of a NetBackup 5330 server has several access ports and other features, which are displayed in the following diagram and table.

Figure 1-4 NetBackup 5330 server rear panel access ports and features

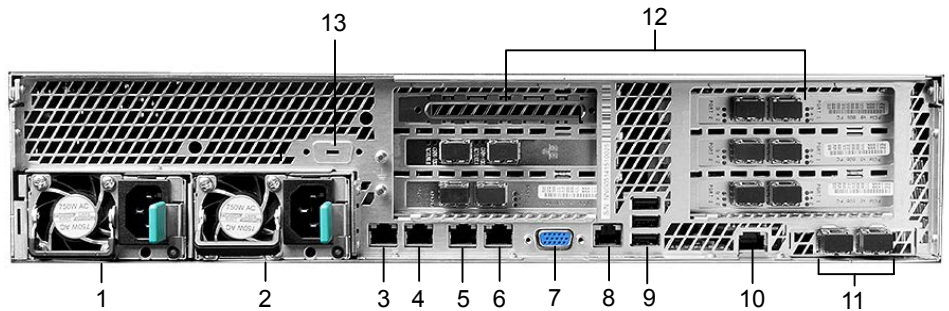
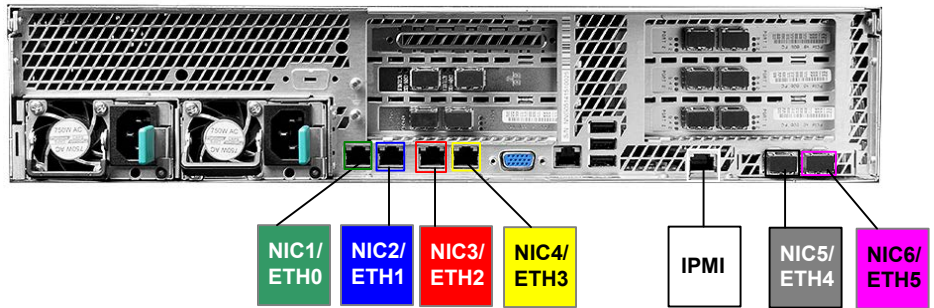


Table 1-5 NetBackup 5330 server port functions

Number	Function
1,2	Power Supply Modules #1, #2 (120/220VAC)
3,4	NIC1/eth0 and NIC2/eth1. NIC1/eth0 is reserved for use during the initial configuration of the appliance. However, after initial configuration is complete, both NIC1/eth0 and NIC2/eth1 can be used for public networks. Both are 1GB connectors
5,6	NIC3/eth2 and NIC4/eth3 - used for public networks. Both are 1GB connectors
7	DB-15 VGA connector
8	RJ45 Serial-A port (reserved)
9	USB connectors
10	A NIC port for IPMI remote management
11	NIC5/eth4 and NIC6/eth5, left to right: 10Gb network connectors that can be used for public networks
12	Add-in PCIe adapter slots (Fibre Channel, 10Gb Ethernet)
13	Serial-B port (reserved)

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

Figure 1-5 NetBackup 5330 server rear port colors

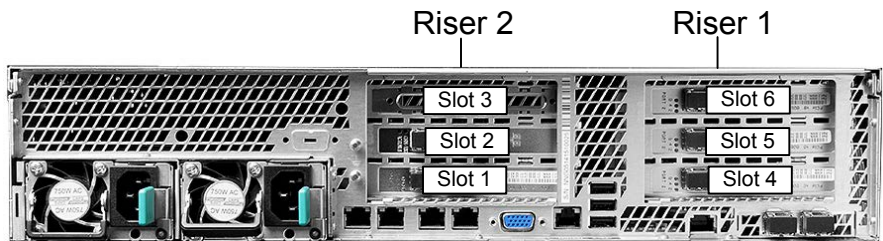


The rear panel also has two sets of low profile, full height, 3.5" form factor PCIe slots.

See [“About NetBackup 5330 server PCIe slot configurations”](#) on page 15.

About NetBackup 5330 server PCIe slot configurations

The rear panel of the NetBackup 5330 server contains six PCIe slots that are numbered 1 to 6. Slots 1, 2, and 3 are located in PCIe Riser Assembly 2. Slots 4, 5, and 6 are located in PCIe Riser Assembly 1.



All PCIe slots are factory-populated. Each slot contains either a Fibre Channel (FC) host bus adapter (HBA) card or a 10GB Ethernet network interface card (Ethernet). Slots 1 and 4 are reserved exclusively for attachment to the Primary Storage Shelf.

The following table describes the factory-available PCIe card configurations for the NetBackup 5330 Appliance.

Table 1-6 Factory-available PCIe slot configurations for the NetBackup 5330 server

Model	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
A	FC HBA	10 Gb Ethernet	10 Gb Ethernet	FC HBA	10 Gb Ethernet	10 Gb Ethernet
B	FC HBA	10 Gb Ethernet	10 Gb Ethernet	FC HBA	10 Gb Ethernet	8 Gb FC HBA
C	FC HBA	10 Gb Ethernet	10 Gb Ethernet	FC HBA	8 Gb FC HBA	8 Gb FC HBA
D	FC HBA	8 Gb FC HBA	10 Gb Ethernet	FC HBA	8 Gb FC HBA	8 Gb FC HBA
E	FC HBA	8 Gb FC HBA	8 Gb FC HBA	FC HBA	8 Gb FC HBA	8 Gb FC HBA

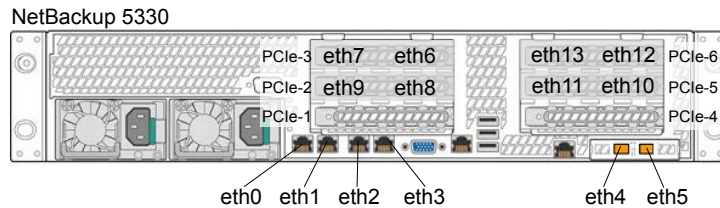
See [“NetBackup 5330 Appliance Ethernet port configurations”](#) on page 16.

NetBackup 5330 Appliance Ethernet port configurations

The rear panel of the NetBackup 5330 Appliance contains six PCIe slots, which are populated according to five different supported configurations. The PCIe slot configuration determines the number of Ethernet ports that are available on your appliance.

[Figure 1-6](#) shows where each Ethernet port is located on the rear panel of the appliance.

Figure 1-6 NetBackup 5330 Appliance Ethernet port locations



All NetBackup 5330 Appliances include the following ports, which are built in along the base of the rear panel:

- 1-Gb ports: eth0, eth1, eth2, and eth3
- 10-Gb ports: eth4 and eth5

Additional ports are located in the 10-Gb Ethernet network interface cards that are installed in the PCIe slots. The number of ports depends on the PCIe slot configuration of your appliance.

[Table 1-7](#) shows the additional available Ethernet ports for each PCIe slot configuration.

Table 1-7 NetBackup 5330 Appliance PCIe Ethernet port configurations

Model	Slot and Ethernet port number
A (four 10-Gb Ethernet cards)	<ul style="list-style-type: none"> ■ Slot 2: eth8 (right), eth9 (left) ■ Slot 3: eth6 (right), eth7 (left) ■ Slot 5: eth10 (right), eth11 (left) ■ Slot 6: eth12 (right), eth13 (left)
B (three 10-Gb Ethernet cards)	<ul style="list-style-type: none"> ■ Slot 2: eth8 (right), eth9 (left) ■ Slot 3: eth6 (right), eth7 (left) ■ Slot 5: eth10 (right), eth11 (left)
C (two 10-Gb Ethernet cards)	<ul style="list-style-type: none"> ■ Slot 2: eth8 (right), eth9 (left) ■ Slot 3: eth6 (right), eth7 (left)
D (one 10-Gb Ethernet card)	<ul style="list-style-type: none"> ■ Slot 3: eth6 (right), eth7 (left)
E (no 10-Gb Ethernet cards)	N/A

About the dual-port 8 GB Fibre Channel Host Bus Adapter (FC HBA)

The Fiber Channel (FC) host bus adapter ports are used to connect the appliance to a Primary Storage Shelf, along with clients and other devices for Fibre Transport data transfer.

Table 1-8 Dual-port 8 GB Fibre Channel Host Bus Adapter specifications

Item	Description
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

Table 1-8 Dual-port 8 GB Fibre Channel Host Bus Adapter specifications
(continued)

Item	Description
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)

About the dual-port 10GB Ethernet card

The 10Gb Ethernet card is available with the NetBackup 5330 Appliance. The card can be installed in the PCI Riser Assembly in addition to Fibre Channel cards.

Table 1-9 Dual-port 10GB Ethernet card specifications

Item	Specification
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)

About the NetBackup 5330 Appliance storage capacity

The NetBackup 5330 server itself does not contain internal storage. Instead, a required Symantec Primary Storage Shelf using RAID6 technology is used as the main storage device. The Primary Storage Shelf also extends RAID6 capabilities to an optional Extended Storage Shelf when additional storage is required.

The NetBackup 5330 Primary Storage Shelf and the NetBackup 5330 Expansion Storage Shelf each contain 60 SAS hard disk drives. Two of the disks are global hot spares, while four of the disks provide a dedicated RAID1 metadata volume group. Each storage shelf provides 114.6TB of formatted storage capacity, for a total of 229.2TB of usable backup capacity if both shelves are used with the appliance. The front panel of the Primary Storage Shelf and Expansion Storage

Shelf contain five drawers, with each drawer containing 12 disk drives. The front panels of both systems are the same, physically and functionally.

Figure 1-7 Primary Storage Shelf and Expansion Storage Shelf front panel



Figure 1-8 Primary Storage Shelf and Expansion Storage Shelf disk configuration



About the NetBackup 5330 Appliance Primary Storage Shelf and Expansion Storage Shelf front panel

The NetBackup 5330 Appliance Primary Storage Shelf and Expansion Storage Shelf each contain 60 SAS hard disk drives. The front panel of the Primary Storage Shelf and Expansion Storage Shelf contain five drawers. The drawers are numbered one through five, beginning with the top drawer. Each storage shelf drawer contains

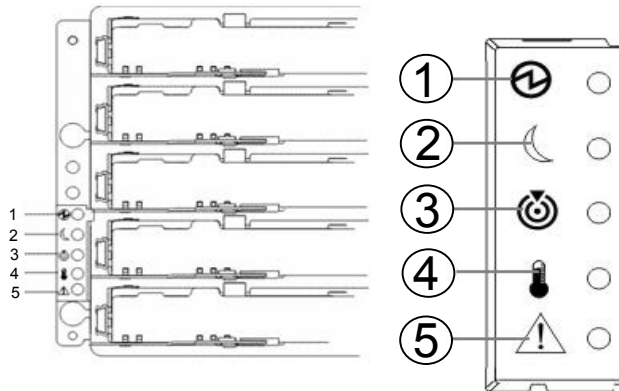
12 disk drives. The front panels of both systems are physically and functionally the same, as seen in the following diagram.

Figure 1-9 Primary Storage Shelf and Expansion Storage Shelf front panel



The following table shows the front panel LEDs in detail.

Figure 1-10 Disk system front panel LEDs



The following table describes LEDs available on the disk system front panel.

Table 1-10 Primary Storage Shelf and Expansion Storage Shelf front panel LED definitions

Number	Definition	Color
1	Power LED	Green
2	Standby Power LED	Green
3	Locate LED	White
4	Over-temperature LED	Amber

Table 1-10 Primary Storage Shelf and Expansion Storage Shelf front panel LED definitions (*continued*)

Number	Definition	Color
5	Service Action Required LED	Amber

As mentioned, each drawer in a storage shelf contains slots for 12 disks. The slots are numbered as shown in the following diagram.

Figure 1-11 Drawer disk layout



About the NetBackup 5330 Appliance Primary Storage Shelf and Expansion Storage Shelf rear panels

The NetBackup 5330 Appliance Primary Storage Shelf and the Expansion Storage Shelf includes two power cords that should be plugged into the appropriate external power source within a rack. When connecting power cables, wear an ESD-preventive wrist strap to prevent equipment damage.

The rear panel of both disk systems contains three types of canisters:

- RAID or Expansion canisters
- AC power canisters (220VAC)
- Fan canisters

The Primary Storage Shelf has two RAID canisters, which are inserted in the central slots of the back panel. The power supplies are inserted at the top and bottom of the back panel, and the fans are on either side. The RAID canisters are attached to the NetBackup 5330 Appliance with fiber optic cables. The device must have at least one functioning RAID canister, one functioning power supply, and one functioning fan.

The following figure shows the Primary Storage Shelf rear panel.

Figure 1-12 Primary Storage Shelf rear panel



Note: Latches that let you remove the canisters are circled in red.

Table 1-11 Primary Storage Shelf rear panel components

Number	Description
1	Fan canisters
2 and 5	Power canisters
3 and 4	RAID controller canisters

Each RAID canister has a set of LEDs which are defined in the following figure. The table describes the LEDs functions and colors. The LEDs labeled '1' track the data rate of the link. If both are off, the link is inactive, and if both are on, the data rate is 8 Gb per second. If only one LED is on, the LED on the left indicates a 2 Gb/s data rate, and the one on the right indicates a 4 Gb/s data rate. The canister also displays the ID of the Primary Storage Shelf, which is set to '99'.

Figure 1-13 RAID canister LEDs

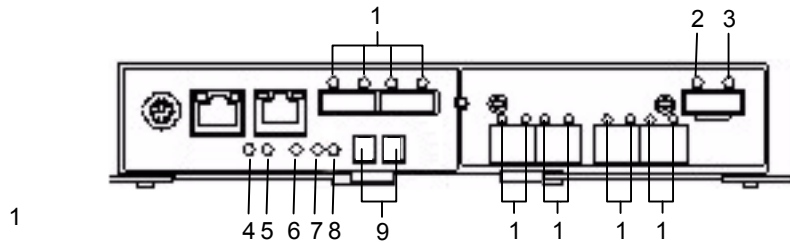


Table 1-12 RAID canister LEDs

Number	Description	Color
1	Data link activity	Green
2	SAS expansion fault	Amber
3	SAS expansion active	Green
4	Battery service action required	Amber
5	Battery charging	Green
6	RAID service system action allowed	Blue
7	RAID service system action required	Amber
8	Cache active	Green
9	Seven-segment display LEDs for system ID	Displays '99'

The Expansion Storage Shelf also contains two fans, on either side, and two power supplies, in the top and the bottom slots. The power supplies should be connected to the Power Distribution Units (PDU), which must be connected to an external 240V power supply. The two center slots contain expansion canisters, one of which must always function. The Expansion Storage Shelf must be attached to a Primary Storage Shelf by SAS cables, plugged into the expansion canisters.

Figure 1-14 Expansion Storage Shelf rear panel

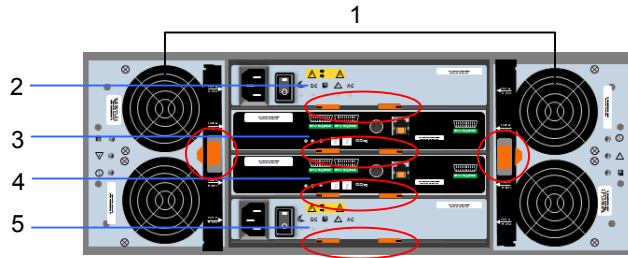


Table 1-13 Expansion Storage Shelf rear panel components

Number	Description
1	Fan canisters
2 and 5	Power canisters
3 and 4	Expansion canisters

The following diagram shows the LEDs in the Expansion Storage Shelf canister, along with the SAS ports. It also gives the location of the tray ID that is displayed when the system is initialized. The Primary Storage Shelf recognizes the Expansion Storage Shelf where the ID is set to 00.

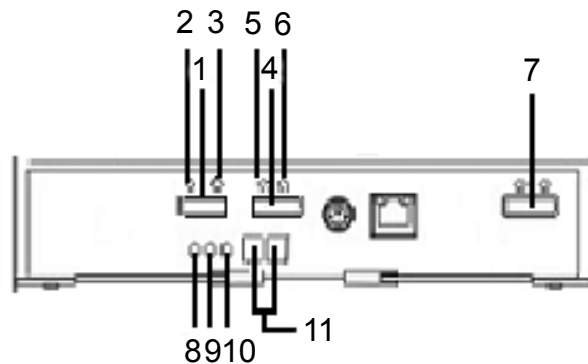


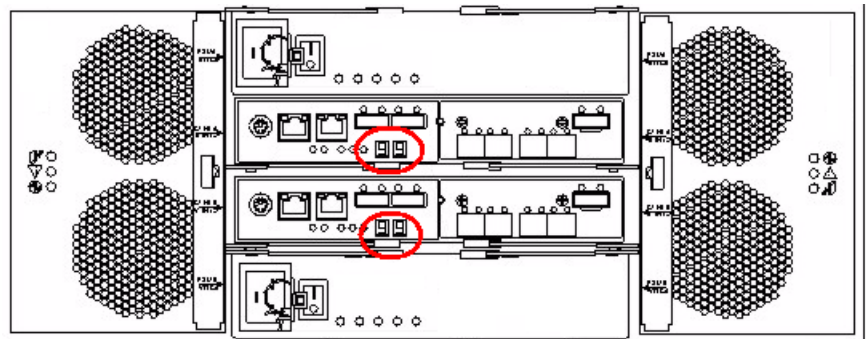
Table 1-14 Expansion Storage Shelf rear panel features

Number	Description	LED Display
1	SAS port	n/a
2	Link fault LED	Amber

Table 1-14 Expansion Storage Shelf rear panel features (*continued*)

Number	Description	LED Display
3	Data Link LED	Green
4	SAS port	n/a
5	Link fault LED	Amber
6	Data Link LED	Green
7	SAS port	n/a
8	Service action allowed LED	Blue
9	Service action required LED	Amber
10	Power LED	Green
11	Seven-segment display LEDs for system ID	00

As seen in both diagrams, the seven-segment display LEDs shows the storage system ID, once the devices have been turned on and are recognized. The following diagram shows the location of these displays, as seen on the rear panel of the Primary Storage Shelf, which are circled in red.



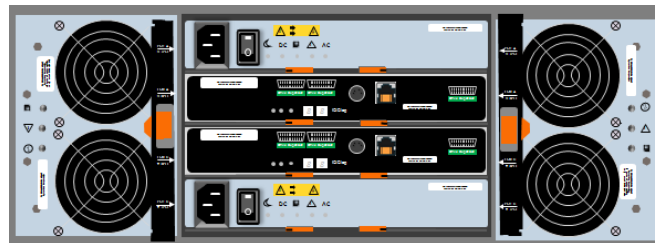
IMPORTANT: Notice that both systems have identical power supply canisters and fan canisters. However, the Primary Storage Shelf contains RAID controller canisters. The Extension Storage Shelf contains expansion canisters instead of RAID canisters. The following figure provides a comparison of the two canister types.

Figure 1-15 Comparison of the Primary Storage Shelf and Extension Storage Shelf canisters

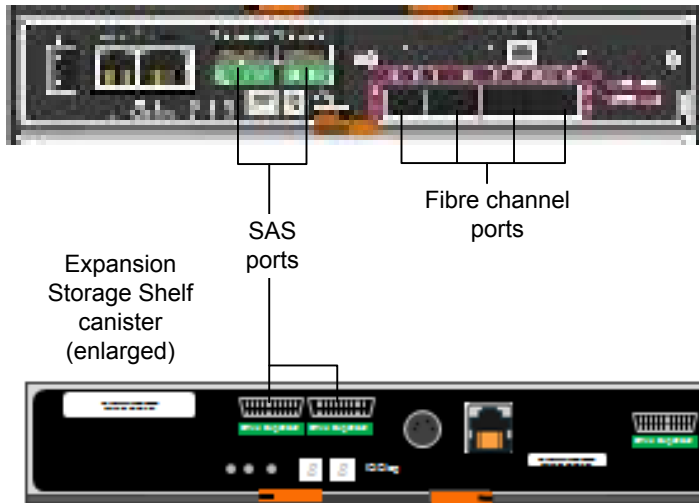
Primary Storage Shelf



Expansion Storage Shelf



Primary Storage
Shelf RAID
canister
(enlarged)



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.

Note: A storage device is heavier than an appliance and must always be installed under the appliance.

- Determine device order and cabling limits.
- 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 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.

NetBackup 5330 Appliance cables

This chapter includes the following topics:

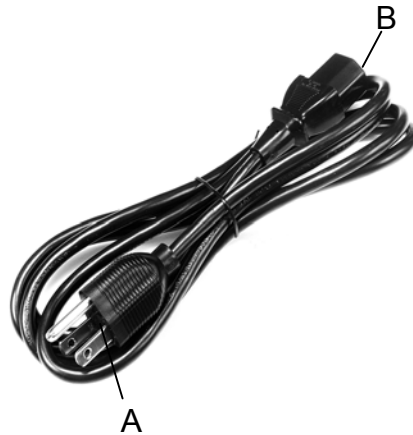
- [Power cables](#)
- [Network cable](#)
- [Multi-Mode fibre cable](#)
- [SAS cable](#)

Power cables

Each AC power module of the appliance and of the storage device is configured with one 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 AC power connector to wall outlet.
- B AC power connector to an appliance or a storage device.

Note: This figure shows an example of possible connectors. Actual connectors vary per country.

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

Network cable

The NetBackup 5330 Appliance communicates with the outside through an Ethernet network cable. One end of the network cable connects to the management network port or service 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.

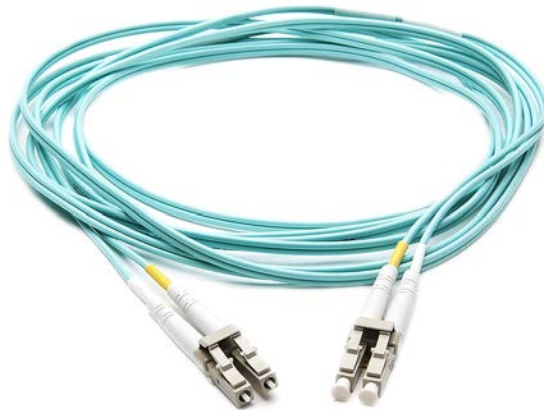
Figure 2-2 Network cable



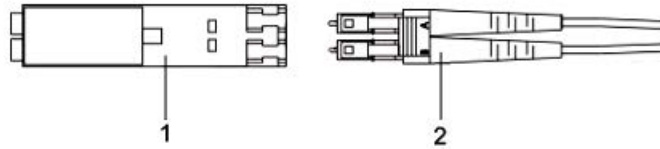
Multi-Mode fibre cable

The NetBackup 5330 Appliance communicates with the fiber channel switch through a multi-mode fibre cable. One end of the multi-mode fibre cable connects to the 10GE service network port or the fibre channel port. The other end of the cable connects to the fiber channel switch or other devices. The two ends of the multi-mode fibre are LC connectors.

Figure 2-3 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

SAS cable

A SAS cable has a SAS connector on both ends. Two SAS cables ship with each Expansion Storage Shelf.

Figure 2-4 SAS cable



Refer to NetBackup 5330 Appliance and storage shelf connection sections as needed for details.

Technical specifications, standards, and compliance information

This appendix includes the following topics:

- [NetBackup 5330 Appliance system technical specifications](#)
- [Environmental specifications](#)
- [Protocol standards](#)
- [Regulatory, compliance, and certification information](#)

NetBackup 5330 Appliance system technical specifications

Note: The maximum weight of the NetBackup 5330 Appliance includes the eight disk drive modules, eight disk drive carriers, and two power modules.

Note: The maximum weight of the storage shelves includes 60 disk drive slots, two power canisters, and two fan canisters.

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

Table A-1 NetBackup 5330 Appliance specifications

Parameter	Description
Rack information	The rack installation height is the space occupied by an appliance in a rack cabinet. The rack height for the appliance is 2U (1U = 44.5 cm). Install the appliance in a rack cabinet that is 19 inches (1 inch = 2.54 cm) wide and 39.37 inches (100 cm) deep, or deeper.
Weight	Weight: approximately 30 kg (66 lbs)
Dimensions	Height: 8.76 cm (3.45") (approximately 2U) Width: 43.8 cm (17.24") Depth: 69.59 cm (27.39")
Power consumption	750 watts maximum
AC power requirements	110 VAC or 220 VAC 100 - 110 VAC at 50/60 Hz 8.2 A 200 - 220 VAC at 50/60 Hz 4.4 A
Inherent availability of the system	≥ 99.95%
Mean Time to Repair (MTTR)	1 hour
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 watts maximum – 1570 BTU/hour 750 watts maximum – 2559 BTU/hour

The technical specifications for the NetBackup 5330 Appliance Primary Storage Shelf and for the NetBackup 5330 Appliance Expansion Storage Shelf are as follows.

Table A-2 Primary Storage Shelf and Expansion Storage Shelf technical specifications

Parameter	Description
Rack information	4U
Weight	Approximately 105.2 kg (232 lb) with the 60 disk drives installed Approximately 80 kg (176 lb) without the disk drives
Dimensions	Height: 82.55 cm (32.50") (approximately 4U) Width: 48.28 cm (19.00") Depth: 17.78 cm (7.00")
Overall maximum AC currents (agency ratings)	7.56 A at 200 VAC 6.3 A at 240 VAC
AC power requirements	Input voltage: 200 - 240 VAC Frequency: Range 50 Hz to 60 Hz Typical operating current: Range 4.9 A to 5.75 A Symantec nameplate rating: Range 6.3 A to 7.56 A
Primary Storage Shelf Power ratings and heat dissipation including two fan canisters, two power canisters, 60 disk drives, and two RAID canisters.	Watts: 1135 AC (typical) Watts: 1222 AC (maximum) Cooling BTU/hr: 3873 (typical) Cooling BTU/hr: 4180 (maximum)
Expansion Storage Shelf Power ratings and heat dissipation including two fan canisters, two power canisters, 60 disk drives, and two expansion canisters.	Watts: 847 AC (typical) Watts: 1222 AC (maximum) Cooling BTU/hr: 2890 (typical) Cooling BTU/hr: 4180 (maximum)
NetBackup 5330 Server with a Primary Storage Shelf connected Total storage capacity: 114TB	Watts: 1595 watts (typical) Watts: 1972 watts (maximum) Cooling BTU/hr: 5442 (typical) Cooling BTU/hr: 6739 (maximum)

Table A-2 Primary Storage Shelf and Expansion Storage Shelf technical specifications (*continued*)

Parameter	Description
NetBackup 5330 Server with both a Primary Storage Shelf and an Expansion Storage Shelf connected	Watts: 2442 (typical) Watts: 3194 (maximum)
Total storage capacity: 229TB	Cooling BTU/hr: 8332 (typical) Cooling BTU/hr: 10919 (maximum)
Sound levels	Sound power (standby operation): 6.5 bels Sound power (normal operation): 6.8 bels Sound pressure: 68 dB

Environmental specifications

The following table lists the requirements for the NetBackup 5330 Appliance and the storage shelves.

Table A-3 Environmental specifications

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)
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

Table A-3 Environmental specifications (*continued*)

Component	Requirement
Noise	<p>< 72 A-weighted decibel</p> <p>This value reflects the maximum noise of the appliance when the ambient temperature is 25°C.</p>

Protocol standards

The following table provides standards with which the NetBackup 5330 Appliance and storage shelves comply.

Table A-4 Standards compliance

Standard	Version
IPMI 2.0	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)
PCI Express	PCIe 3.0

Regulatory, compliance, and certification information

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

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