

# Symantec NetBackup™ Appliance and Symantec Storage Shelf Safety and Maintenance Guide

Release 2.6.1.2

NetBackup 52xx and 5330



# Symantec NetBackup™ Appliance and Symantec Storage Shelf Safety and Maintenance Guide

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- Hardware information

- Available memory, disk space, and NIC information
- Operating system
- Version and patch level
- Network topology
- Router, gateway, and IP address information
- Problem description:
  - Error messages and log files
  - Troubleshooting that was performed before contacting Symantec
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- General product information (features, language availability, local dealers)
- Latest information about product updates and upgrades
- Information about upgrade assurance and support contracts
- Information about the Symantec Buying Programs
- Advice about Symantec's technical support options
- Nontechnical presales questions
- Issues that are related to CD-ROMs, DVDs, or manuals

## Support agreement resources

If you want to contact Symantec regarding an existing support agreement, please contact the support agreement administration team for your region as follows:

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Europe, Middle-East, and Africa [semea@symantec.com](mailto:semea@symantec.com)

North America and Latin America [supportsolutions@symantec.com](mailto:supportsolutions@symantec.com)

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# General safety guidelines

This chapter includes the following topics:

- [Overview](#)
- [Symbol conventions](#)
- [Identifier conventions](#)
- [High-voltage precautions](#)
- [ESD \(Electrostatic Discharge\)](#)
- [Combustible gas](#)
- [Batteries](#)
- [Lasers](#)
- [Optical fibers](#)

## Overview

Before you perform installation or maintenance operations, learn the safety regulations of the site. Read the safety precautions in this document for correct operating methods to ensure safety of persons and devices.



To prevent the risk of accidents, carefully read all operation instructions and precautions in this manual before performing any operation(s). The Caution, Warning, and Danger statements in this document do not cover all possible safety precautions that must be followed. Only specific supplements to standard safety precautions are provided. Personnel responsible for installing and maintaining




Symantec products are required to understand the basics of standard electronic device safety practices. Training and qualification are required to learn the proper operating methods.

See [“Overview”](#) on page 10.

## Symbol conventions

Warning symbols remind you of safety precautions to be followed during installation and maintenance operations.

**Table 1-1** Warning symbols


Symbol	Description
 <b>DANGER</b>	Indicates a hazard with a high level of risk that may result in death or serious injury.
 <b>WARNING</b>	Indicates a hazard with a medium or a low level of risk, that can result in minor or moderate injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.

See [“Identifier conventions”](#) on page 11.





## Identifier conventions

The following table describes warning and safety identifiers.

**Table 1-2** Warning and safety identifiers

Identifier	Descriptions
	Electrostatic discharge (ESD) prevention identifier.  To avoid electrostatic injuries or damage you must take strict ESD-preventive measures such as wearing ESD-preventive gloves or an ESD preventive wrist strap.

**Table 1-2** Warning and safety identifiers (*continued*)

Identifier	Descriptions
	<p>Weight warning identifier.</p> <p>You must pay attention to the weight of the media server before moving it.</p>
	<p>Warning identifier against inserting and removing system disks.</p> <p>You should not insert or remove system disks without following proper procedures.</p>
	<p>Power warning identifier.</p> <p>You must shut off all power sources when turning off a media server.</p>
	<p>Identifier for reading the manual.</p> <p>You must read the manual before operating the media server.</p>
<p>0, 1</p> <p>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11</p>	<p>Drive identifier.</p> <p>Indicates the ID number of the slot where a disk drive resides.</p>

See [“High-voltage precautions”](#) on page 12.

## High-voltage precautions



A high-voltage power supply provides power for the device. Direct or indirect contact (through damp objects) with a high-voltage power supply (including the main power in a building) can result in fatal danger.

- When installing the AC power supply, follow standard safety regulations. Personnel who install the AC power supply must be qualified to perform high voltage and AC operations.
- Do not wear conductive objects such as a watch, chain, bracelet, or ring during the operation.
- Switch off the power supply immediately if you find water in the cabinet or if the rack is damp.
- Make sure that the device is kept away from water when being operated in a damp environment.



Improper operation on a high-voltage power supply may result in fire and electric shock. To connect and route the AC cables through a certain area, you must follow standard rules and regulations. Personnel must have an up-to-date certificate for operating high voltage and AC power devices.



You must use insulated tools when operating on high voltage and AC power.



Do not install or remove a power cord or PDU cord when the power is turned on. Minimal contact between the core of the cord and a conductor can generate an electric arc or spark, to cause a fire or injury.

- Wrap bare wires of the power cable with insulated tape before connecting the cable to the power distribution cabinet.
- Before installing or removing the power cord or PDU cord, turn off the power.
- Before connecting the power cord or PDU cord, make sure that the cord and label conform to the requirements for the installation.

Do not perform operations on high voltage, power supplies and connections, or other conductive materials during the storms which may produce lightning.

Be sure that all devices are properly grounded to prevent damage or injury during storms.

See “[ESD \(Electrostatic Discharge\)](#)” on page 14.

## ESD (Electrostatic Discharge)

The static discharged by human bodies can damage static-sensitive components on the boards.

When you install and maintain equipment, observe appropriate static safety precautions to prevent personnel injuries or device damage.

Wear ESD-preventive gloves, an ESD-preventive wrist strap, or ESD-preventive clothes to avoid personnel injury or damage to a device. When a warning indicates an electrostatic sensitive area, when operating a device you must take ESD-preventive measures. To prevent the devices from damage, pay attention to the following during operations:

- Do not touch devices with bare hands because the ESD from the human body may damage the electrostatically sensitive elements on a board.
- Electronic circuits are prone to damage caused by ESD. When dealing with a disk, especially a raw disk, wear an ESD-preventive wrist strap, ESD-preventive gloves, and ESD-preventive suit. Touch only the edge of the disk.
- Use appropriate ESD-preventive bags when picking up, putting down, and transporting equipment or parts.

To prevent short-circuits, do not leave or drop screws or other metallic parts in the chassis.

When you install or maintain a device, follow regulations about the use and placement of tools. You can avoid short-circuits of the devices that are caused by metallic tools.

See “[Combustible gas](#)” on page 14.

## Combustible gas

Never place or operate a device in an environment with combustible or explosive gases, or smoke.

Operations to any electronic devices in the presence of combustible gases cause an extreme danger.

See “[Batteries](#)” on page 15.

# Batteries

Follow the safety precautions for operating lithium (Li-ion) batteries against personnel and device damage during installation and maintenance of Symantec products.

Be sure that you use correct replacement batteries. Otherwise, an explosion may occur.

- Only use batteries of the same or a similar model as recommended by the vendor.
- Deal with the waste batteries according to standard instructions.
- Do not put a lithium battery into a fire.

See [“Lasers”](#) on page 15.

# Lasers

When you install and maintain equipment, observe standard laser safety precautions to prevent personnel injury or device damage.

The laser that is emitted by the optical interface board is an invisible infrared ray. This laser can cause permanent damage to eyes.

During device maintenance, direct eye exposure to the laser light must be avoided.

To prevent device damage when you operate the device, take the following precautions:

- Cap any unused optical interfaces and the optical connectors of unused tail fibers.
- Use caps when you remove the optical tail fibre that connects to an optical port that is in use. Cover the optical port on the device and the optical connector of the tail fibre with dust-proof caps.
- Use an attenuator when you perform a hardware loopback test on the optical connector with the tail optical fibre. The attenuator protects the optical transceiver from the received optical power.
- Disconnect the optical tail fibre between the peer device and the local device when you use the Optical Time Domain Effect Reflectometer (OTDR). Disconnecting the fibre protects the optical transceiver from the optical power source.
- Do not remove or insert the optical transceiver that connects to the optical fibre without proper safety procedures.

See [“Optical fibers”](#) on page 16.

## Optical fibers

The laser beams of the optical interface board or inside the optical fibre may cause damage to the eyes. Do not expose your eyes to the laser beams.

The safe use of optical fibers ensures proper running of the device and avoids personnel injuries and device damage.

The fibre connectors and optical fibre interfaces of a laser must be cleaned with the special tools and the materials that are listed:

- The special cleaning solvent, isoamylol, is preferred. Propyl alcohol is the next best solvent. Other alcohols and formalin are forbidden.
- Non-woven lens tissue
- Special compressed gas
- Cotton stick (medical cotton or long fibre cotton)
- Special magnifier for optical connectors

When replacing a fibre, cap the connector of a fibre that is not used. Avoid bending or wrapping fibers around narrow or sharp objects.

See [“Precautions when troubleshooting with the power turned on”](#) on page 17.



# Detailed safety guidelines

This chapter includes the following topics:

- [Precautions when troubleshooting with the power turned on](#)
- [Lifting heavy objects](#)
- [Binding signal cables](#)

## Precautions when troubleshooting with the power turned on

This section describes the safety precautions you need to follow in case you need to troubleshoot the device when the power is on. Follow these safety precautions to avoid personnel injury and device damage.

- Before checking the device installation and cable connections, confirm that all power supplies to the device are off. Incorrect cable connections or loosened cables can cause personnel injury or damage to the device.
- Do not touch the connectors of power cords, PDU cords, or communication cables. Otherwise, you might receive an electrical shock.
- Do not touch the device with bare hands in an electrostatic sensitive area. To avoid personnel injuries or damage to the devices, take ESD-preventive measures.

If you touch power or PDU cords to perform operations when the power is on, you must remove the ESD-preventive wrist strap to prevent electrocution. To avoid data loss when the power is on:

- Do not unplug cords.
- Turn off all the disk drive activity before turning off the power to the device.
- Wait for a minute before reconnecting the power supply.

During troubleshooting, confirm that:

- The troubleshooting area is clean and dry.
- The cords are intact and effective grounding measures are taken.  
Never carry out troubleshooting in stormy weather when lightening is a possibility.

See [“Precautions when troubleshooting with the power turned on”](#) on page 17.

## Lifting heavy objects

Only trained and qualified personnel are allowed to lift heavy objects. The following precautions need to be taken when you lift heavy objects:

- Do not stand or come in the way or walk under when heavy objects are lifted.
- Check whether the required tools are complete and intact.
- Ensure that the lifting tools are firmly fixed on a wall or fixtures with enough load-bearing capacity.
- If a rope is used, ensure that the angle between two sides of the rope is no larger than 90°.
- Use simple and clear commands while speaking to personnel. This approach helps to avoid any confusion that can cause accidents and damage to personnel or materials.

## Binding signal cables

Signal cables must be separately bundled from the strong-current cables and high-voltage cables at a spacing of at least 30 mm.

See [“Overview”](#) on page 10.

# Maintenance guidelines

This chapter includes the following topics:

- [Basic maintenance](#)
- [General rack installation guidelines](#)
- [Maintenance requirements and timeframes](#)
- [Maintenance tools](#)
- [Maintenance log](#)

## Basic maintenance

The following sections give information about the general maintenance of the NetBackup appliance and the Symantec Storage Shelf.

The following sections give information about the general maintenance of the NetBackup media server and the Storage subsystem.

Reasons for maintaining the NetBackup appliance and the storage shelf include the following:

Reasons for maintaining the NetBackup media server and the storage subsystem include the following:

- Stay aware of general equipment status and current network activity.
- Increase technical expertise with equipment and software to better address the issues that may arise or prevent possible issues.
- Quickly and accurately identify and resolve alarms and problems.

See [“Maintenance requirements and timeframes”](#) on page 21.

# General rack installation guidelines

Make sure that you go through the following rack installation guidelines:

- **Anchor the equipment rack:** The equipment rack must be anchored to an unmovable support to prevent it from falling over. The rack can fall when one or more units are extended in front of the rack on the slides. You must also consider the weight of any other device that is installed in the rack. A crush hazard exists and can cause serious injury should the rack tilt forward.
- **Check temperature:** When the media server is installed in an equipment rack, the temperature must be in the range of 5C (41F)- 40C (104F). Extreme fluctuations in temperature can cause a variety of problems for the media server.
- **Check ventilation:** The equipment rack must provide sufficient airflow to the front of the media server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 2550 BTUs (British Thermal Units) per hour for the NetBackup media server.  
The rack that is selected and the ventilation that is provided must be suitable to the environment in which the equipment is used.
- **Main AC power must be accessible:** The AC power cord(s) is considered the main disconnect for the device and must be readily accessible when installed. If the individual power cord(s) are not readily accessible for disconnection, you must install an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack unit.
- **Grounding the rack installation:** To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. The rack itself must have a proper grounding if the media server power cord is plugged into the AC outlet of the rack. The media server must be plugged into a properly grounded AC outlet. You must provide additional, proper grounding for the rack and other devices that are installed in the rack.
- **Overcurrent protection:** The power supplies contain internal overcurrent protection. If power draw increases, the power supplies shutdown. Hardware monitoring utilities such as the web UI show alerts that indicate problems in the power supply.  
The following values are based on power supply ratings in the various devices.  
Appliance, depending on power source input current:  
Media server, depending on power source input current:
  - 100VAC to 127VAC @ 9.2A
  - 200VAC to 240VAC @ 4.4A

RAID-enabled system and Expansion-enabled system - 200VAC @7.56A to 240VAC @6.3A

Symantec Storage System:

- 100VAC to 127 VAC @ 2.972A
- 200VAC to 240VAC @ 1.756A

## Maintenance requirements and timeframes

The following table describes requirements and timeframes for hardware and software components.

**Table 3-1** Routine requirements and timeframes

Owner	Site	Maintenance requirement	Recommended timeframe
Maintenance engineers	Device site	Check equipment room and device surroundings	Daily
		Check rack cabinet	Monthly
		Check all indicator LEDs on the front panel of the device	Daily for the first week of operation. Then you can check weekly.
		Check all indicator LEDs on the rear panel of the device	Daily for the first week of operation. Then you can check weekly.

**Table 3-1** Routine requirements and timeframes (*continued*)

Owner	Site	Maintenance requirement	Recommended timeframe
Network engineers	Management software site	Check the CPU status	Daily for the first week of operation. Then you can check weekly.
		Check the disk status	Daily for the first week of operation. Then you can check weekly.
		Check the RAID status	Daily for the first week of operation. Then you can check weekly.
		Check the fan status	Daily for the first week of operation. Then you can check weekly.
		Check the power supply status	Daily for the first week of operation. Then you can check weekly.
		Check the FC HBA status	Daily for the first week of operation. Then you can check weekly.
		Check the 10GE NIC status	Daily for the first week of operation. Then you can check weekly.
		Check the RAID card status	Daily for the first week of operation. Then you can check weekly.

See [“Maintenance tools”](#) on page 22.

## Maintenance tools

The following table lists the maintenance tools and their functions.

**Table 3-2** Maintenance diagnostic tools

Tool	Function
NetBackup Appliance Web Console	Shows the real-time operation of systems and components.
NetBackup Appliance Shell Menu	Checks the running status of the device.
Thermometer	Measures the temperature of the equipment room.
Hygrometer	Measures the humidity of the equipment room.

See [“Basic maintenance”](#) on page 19.

## Maintenance log

Make copies of this table to keep a log of maintenance activities. Consistent log keeping may help you identify trends or patterns to better maintain your equipment. Electronic copies are recommended. You can create a sortable spreadsheet to track issues.

See [“Maintenance requirements and timeframes”](#) on page 21.

**Table 3-3** Maintenance log

Requirement/parameter	Status	Comments	Maintenance Owner
Check the equipment running in the environment	Operating temperature	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal	
	Operating humidity	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal	
	Fire safety	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal	
	Dust	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal	
	Enclosure power supply	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal	

**Table 3-3** Maintenance log (*continued*)

Requirement/parameter		Status	Comments	Maintenance Owner
Check the environment inside the cabinet	Power system	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Cable system	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Grounding system	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Protective system	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Dust-proof system	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Cable labeling	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		



**Table 3-3** Maintenance log (*continued*)

Requirement/parameter		Status	Comments	Maintenance Owner
Check the indicator status	System power indicator status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	System alarm indicator	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Disk online status indicator	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Disk read and write status indicator	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Power running and alarm indicator	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Fan running and alarm indicator	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	NetBackup appliance status NetBackup media server status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Link indicator of the management network port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Active indicator of the management network port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Link indicator of the service network port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Active indicator of the service network port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	ACT/LNK indicator of the 10GE NIC port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	GRN=10GE indicator of the 10GE NIC port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	The 2/Amber indicator of the Tape out card (Fiber Channel) port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		

**Table 3-3** Maintenance log (*continued*)

Requirement/parameter		Status	Comments	Maintenance Owner
	The 4/Green indicator of the Tape out card (Fiber Channel) port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	The 8/Yellow indicator of the Tape out card (Fiber Channel) port	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
Checking on the system monitor interface (CLI)	CPU status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Disk status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	RAID status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Fan status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Power Supply status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	Temperature	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
	FC HBA status	<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal		
Problems and troubleshooting				
Remaining problems				
Verification				
Date				

See ["Maintenance requirements and timeframes"](#) on page 21.

# NetBackup 5220 and 5230 storage shelf details

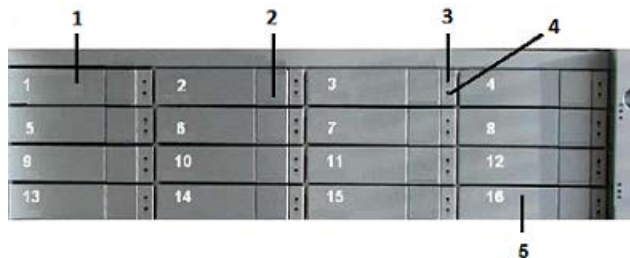
This chapter includes the following topics:

- [Symantec Storage Shelf description](#)
- [Symantec Storage Shelf dimensions and weight](#)
- [Symantec Storage Shelf disk drive module and system LEDs](#)
- [Symantec Storage Shelf I/O module and power module LEDs](#)

## Symantec Storage Shelf description

The NetBackup 52xx appliance can be ordered with 0, 1, 2, 3, or 4 storage shelves. The appliance provides 4 TB of storage capacity without any storage shelves.

The front and the rear panels of the storage shelf are shown in the following images.

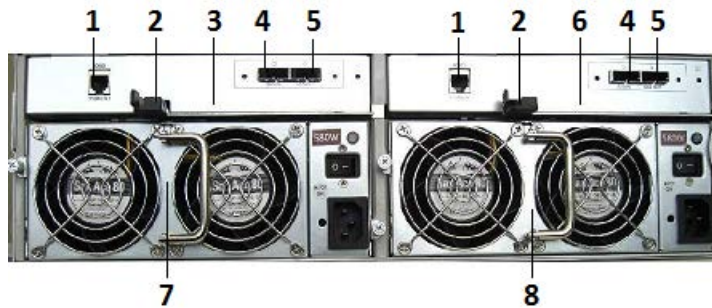


The following table describes the components of the front panel.

**Table 4-1** Front panel components

Number	Description
1	Disk drive module #1 of 16
2	Disk module release button
3	Disk status LED
4	Power/activity LED
5	Slot 16 - hot spare

The following image shows the rear panel.



The following table describes the components of the rear panel.

**Table 4-2** Rear panel components

Number	Description
1	Serial port (not to be used without Symantec approval)
2	I/O module release latch
3	I/O module #1
4	SAS_IN port
5	SAS_OUT port
6	I/O module #2
7	Power supply and fans #1
8	Power supply and fans #2

See [“Symantec Storage Shelf dimensions and weight”](#) on page 29.

## Symantec Storage Shelf dimensions and weight

The Symantec Storage Shelf is 3U high and contains 16 drives. The storage shelf has the following parameters:

- 5.25 inches (13.1 cm) high
- 17.6 inches (44.7 cm) wide
- 22.1 inches (56.1 cm) deep
- Weight is 71.65 pounds (32.5 kg)

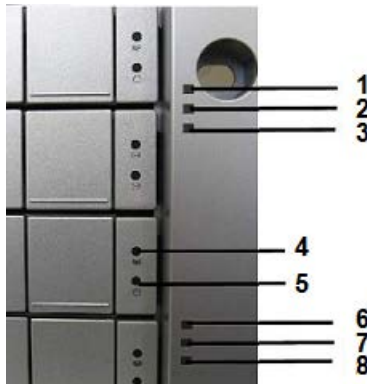
See [“Appliance rear panel”](#) on page 43.

## Symantec Storage Shelf disk drive module and system LEDs

The front panel shows two different sets of LEDs:

- Two LEDs each per disk drive module, for a total of 32 LEDs
- Six system LEDs show the status of the entire storage shelf

**Figure 4-1** Symantec Storage Shelf front panel LEDs



**Table 4-3** Disk drive module LEDs

Number	LED name	State	Description
1	Power	Not lit Solid green	Off On
2	Global Enclosure Status	Not lit Solid green Amber Red	Off On One power supply offline Both power supplies offline
3	Reserved	N/A	N/A
4	Disk status	Solid green Amber or red	Disk drive operation normal Disk drive fault
5	Disk Power/activity	Solid blue Flashing blue	Disk drive operation normal, after appliance is turned on Disk activity is in progress.
6	I/O module 1 activity	Not lit Flashes green	No activity Activity
7	I/O module 2 activity	Not lit Flashes green	No activity Activity
8	Heartbeat	Not lit Flashes green	System off Normal operation

The NetBackup 5220 releases 2.5 and higher support the addition of two storage shelves to the appliance. Each storage shelf has system LEDs that apply to that particular shelf. The storage shelf that is attached to the appliance is known as Storage Shelf #1. The storage shelf that is attached to Storage Shelf #1 is known as Storage Shelf #2.

Release 2.6.0.3 enables support of up to four storage shelves for each appliance. The number designations of storage shelves are the same. Shelf #3 is connected to Shelf #2 and to Shelf #4 if a fourth shelf is used. Shelf #4 is only connected to Shelf #3.

A storage shelf has two I/O modules which contain the SAS\_IN and SAS\_OUT ports. In the rear panel of a storage shelf, the I/O module on the left is I/O Module 1. The I/O module to the right of I/O Module 1 is known as I/O Module 2.

The ports in the I/O module connect to RAID ports on the appliance or other SAS ports on a second storage shelf. If two storage shelves are used with an appliance, the I/O module SAS ports are as follows:

- Storage shelf #1 - SAS\_IN ports in the two I/O modules connect to the two SAS\_OUT ports in the RAID card in the appliance.
- Storage shelf #2 - SAS\_IN ports in the two I/O modules connect to the two SAS\_OUT ports of storage shelf #1.

**Table 4-4** Storage shelf system LEDs

LED name	State	Description
Power	Solid green	The storage shelf functions normally.
Global Enclosure Status	Solid green	The storage shelf functions normally.
Reserved	Off (no light)	This LED is not in use at this time.
I/O Module 1 activity - storage shelf #1	Flashes green	The SAS_IN port of storage shelf #1 is properly connected to a SAS_OUT port of the appliance.
I/O Module 2 activity - storage shelf #1	Flashes green	The SAS_IN port of storage shelf #1 is properly connected to a SAS_OUT port of the appliance.
I/O Module 1 activity - storage shelf #2	Flashes green	The SAS_IN port of storage shelf #2 is properly connected to a SAS_OUT port of storage shelf #1.
I/O Module 2 activity - storage shelf #2	Flashes green	The SAS_IN port of storage shelf #2 is properly connected to a SAS_OUT port of storage shelf #1.
Heartbeat	Flashes green once every 4 seconds.	If one I/O module in one storage shelf is properly connected to an external SAS port.
Heartbeat	Flashes green once every 2 seconds.	If two I/O modules in one storage shelf are properly connected to external SAS ports.

See [“Symantec Storage Shelf disk drive module and system LEDs”](#) on page 29.

# Symantec Storage Shelf I/O module and power module LEDs

The right side of the rear panel of the Symantec Storage Shelf contains two power modules. Each module includes two fans, a connector to a main AC power supply, an on/off switch, and a status indicator LED.

The Symantec Storage Shelf contains two I/O modules, that are accessed from the rear panel. You can connect two storage shelves with their total of four I/O modules to an appliance. The SAS\_IN port on the storage shelf is used to attach to a SAS port on the rear panel of the appliance. The SAS ports are in slot #5 of the PCI riser assembly in the rear of the appliance.

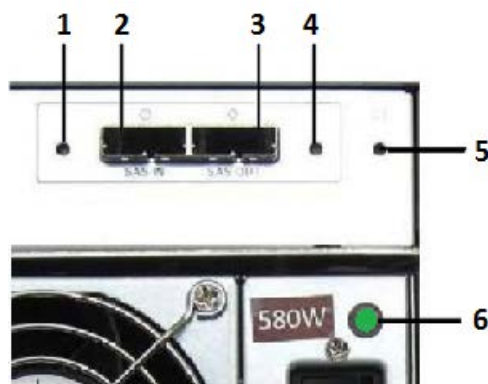
The Symantec Storage Shelf contains two I/O modules, that are accessed from the rear panel. You can connect two storage shelves with their total of four I/O modules to an appliance. The SAS\_IN port on the storage shelf is used to attach to a SAS port on the rear panel of the appliance. The SAS ports are in slot #1 of the PCI riser assembly #2 in the rear of the appliance.

The storage shelf that is connected directly to the appliance is known as Storage Shelf #1. The storage shelf that connects to Storage Shelf #1 is known as Storage Shelf #2.

A storage shelf that is connected to Storage Shelf #2 is known as Storage Shelf #3. A storage shelf that is connected to Storage Shelf #3 is known as Storage Shelf #4. Storage shelves #2, #3, and #4 are not directly connected to the appliance.

One I/O module is shown, however each storage shelf includes two such modules.

Figure 4-2 I/O module and power module components





**Table 4-5** I/O module and power module descriptions

Number	Component	LED states	Description
1	SAS_IN port LED	<ul style="list-style-type: none"> <li>■ Solid green</li> <li>■ Flashes green</li> <li>■ Red</li> <li>■ Not lit</li> </ul>	<ul style="list-style-type: none"> <li>■ Link available</li> <li>■ Activity</li> <li>■ N/A</li> <li>■ No link available</li> </ul>
2	SAS_IN port	N/A	N/A
3	SAS_OUT port	N/A	N/A
4	SAS_OUT port LED	<ul style="list-style-type: none"> <li>■ Solid green</li> <li>■ Flashes green</li> <li>■ Red</li> <li>■ Not lit</li> </ul>	<ul style="list-style-type: none"> <li>■ Link available</li> <li>■ Activity</li> <li>■ N/A</li> <li>■ No link available</li> </ul>
5	I/O module LED	<ul style="list-style-type: none"> <li>■ Solid green</li> <li>■ Flashes green</li> <li>■ Red</li> <li>■ Not lit</li> </ul>	<ul style="list-style-type: none"> <li>■ Ready</li> <li>■ n/a</li> <li>■ Starting up</li> <li>■ Off</li> </ul>
6	Power module LED	<ul style="list-style-type: none"> <li>Solid green</li> <li>Flashes green</li> <li>Red</li> <li>Not lit</li> </ul>	<ul style="list-style-type: none"> <li>Power ok</li> <li>Power ok, but turned off</li> <li>Turning on the power failed</li> <li>Power not detected</li> </ul>

**Note:** When you start the Symantec Storage Shelf, the primary I/O module (on the left side of the rear panel) starts up first. The LED turns green a few seconds after the main startup. The LED of the secondary I/O module (on the right of the rear panel) starts after the primary module is operational.

See [“Appliance disk drive module LEDs”](#) on page 38.

# NetBackup 5220 appliance details

This chapter includes the following topics:

- [NetBackup 5220 Appliance description](#)
- [Appliance disk drive module LEDs](#)
- [Appliance control panel LEDs](#)
- [Product documentation](#)

## NetBackup 5220 Appliance description

The following sections describe the physical features of the NetBackup 5220 Appliance.

The following image shows the front and top of the appliance chassis.



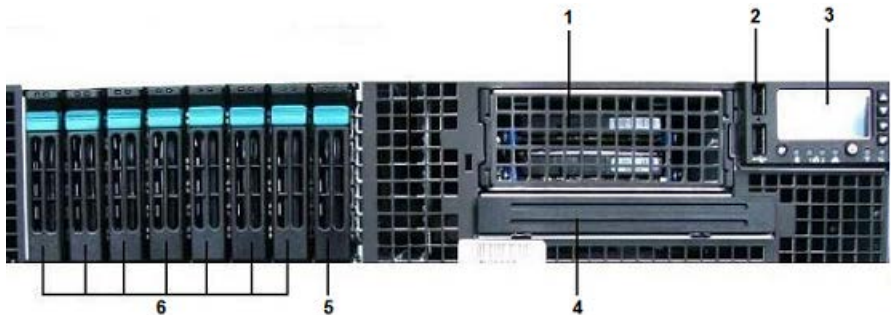
The following are some features of the 2U appliance.

- 3.44 inches (87.38 mm) high
- 16.93 inches (430 mm) wide
- 27.75 inches (704.8 mm) deep
- Approximately 50 lbs (22.7 kg)

See “[Appliance front panel](#)” on page 35.

## Appliance front panel

The following image shows details about the front of the appliance.



The following table lists the appliance front panel components that are displayed in the image.

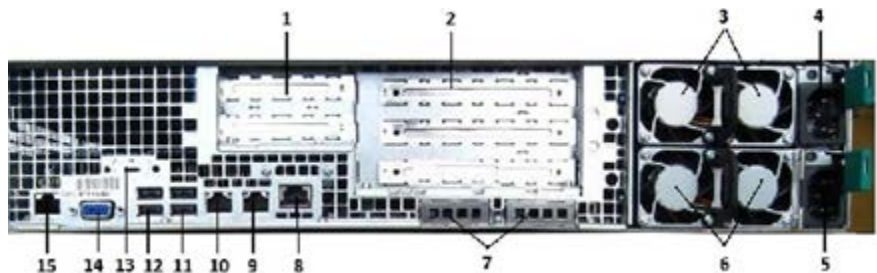
**Table 5-1** NetBackup 5220 Appliance front panel components

Number	Description
1	Drive tray containing two SATA hard disk drives (not hot swappable). System power must be turned off to insert or remove these drives. Contact Symantec Technical Support for assistance.
2	USB ports (qty 2)
3	Control panel with system LED indicators, on/off button, scroll mechanism to obtain system messages.
4	Slimline drive bay (functionality not available with NetBackup 5220).
5	Hot spare SAS disk drive module, slot #7.
6	Disk modules containing one SAS disk drive and one disk carrier each (qty 8, labeled 0 through 7 from left to right) (hot swappable). Drives can consume up to 17 watts of power each. Drives must run at a maximum ambient temperature of 45°C.

See [“Appliance rear panel”](#) on page 36.

## Appliance rear panel

The following image shows the rear panel of the NetBackup 5220 Appliance.

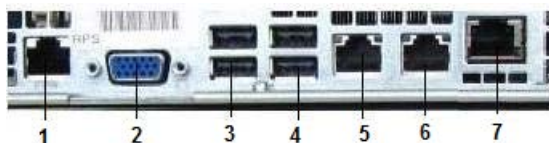


The following table lists the appliance rear panel components that are displayed in the image.

**Table 5-2** NetBackup 5220 Appliance rear panel components

Number	Description
1	Low Profile PCIe Add-in Card Slots (qty 2)
2	Full-height PCIe Add-in Card Slots (qty 3)
3	Upper Power Supply Module
4	Upper Power Receptacle
5	Lower Power Receptacle
6	Lower Power Supply Module
7	I/O Expansion Module (not available)
8	Remote management port. This port is also known as the IPMI port.
9	NIC2/eth1 Ethernet port
10	NIC1/eth0 Ethernet port
11 and 12	USB 2.0 ports
13	DB-9 Serial B Connector
14	Video Graphics Array (VGA) port
15	RJ-45 Serial A Connector

The following image displays the rear panel ports of the appliance.



The following tables list the ports and LEDs on the rear panel of the appliance.

**Table 5-3** Appliance rear panel ports

Number	Name	Qty	Model	Function
1	Serial port	1	RJ45	For use by Symantec Technical Support only.
2	VGA (video) port	1	D15	Connects to a computer monitor.

**Table 5-3** Appliance rear panel ports (*continued*)

Number	Name	Qty	Model	Function
3 and 4	USB 2.0 ports	2	A	Connects a mouse, keyboard, or similar devices.
5	NIC1/eth0 Ethernet port	1	RJ-45	“Private” network port provides for device management.
6	NIC2/eth1 Ethernet port	1	RJ-45	Customer network port provides input or output access to the device from the customer’s network.
7	Remote management port	1	RJ-45	Provides remote access to the appliance for Symantec Technical Support. This port is also known as the IPMI port.

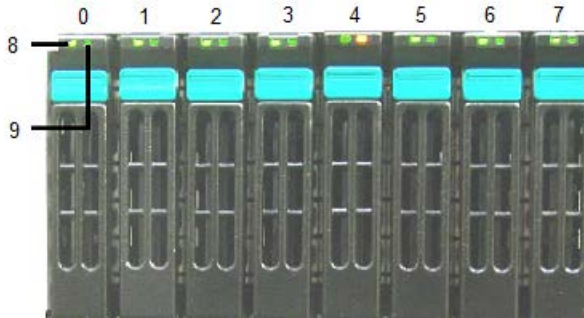
**Table 5-4** NIC port LED indications

LED	State	Indications
Left	Off	No network connection
	Solid Amber	Network connection in place
	Flashes Amber	Transmit/receive activity
Right	Off	10-Mbps connection (if left LED is on or flashes)
	Solid Amber	100-Mbps connection
	Solid Green	1000-Mbps connection

## Appliance disk drive module LEDs

Drive bay slots are labeled 0-7 starting from the left. Slot 7 contains the hot spare. Each drive has 2 LEDs; one red LED and one green LED. The green LED (8) flashes when drive activity occurs and is lit when no activity occurs. The red LED (9) is lit when drive faults occur.

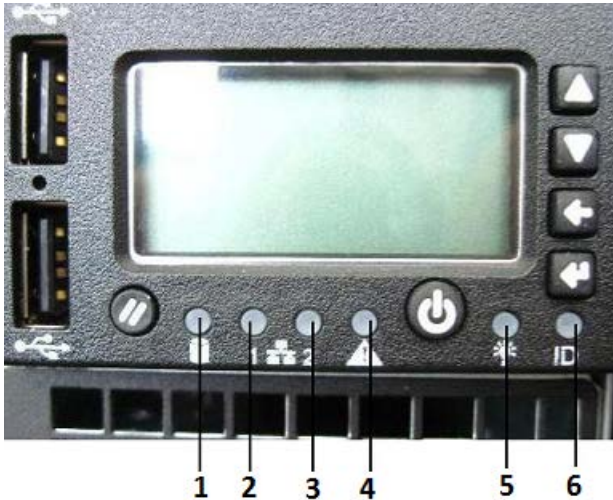
**Figure 5-1** Appliance disk drive slots and LEDs



See “Appliance control panel LEDs” on page 39.

## Appliance control panel LEDs

**Figure 5-2** Control panel LEDs



**Table 5-5** LED functions and indicators

Number	LED function	Indicator
1	Hard disk Activity	<ul style="list-style-type: none"> <li>Random flashing green light indicates hard disk drive activity (SAS).</li> <li>No light indicates no hard disk drive activity.</li> </ul>

**Table 5-5** LED functions and indicators (*continued*)

Number	LED function	Indicator
2	NIC 2 Activity	<ul style="list-style-type: none"> <li>■ Continuous green light indicates a link between the system and the network to which it is connected.</li> <li>■ Flashing green light indicates network activity.</li> </ul>
3	NIC 1 Activity	<ul style="list-style-type: none"> <li>■ Continuous green light indicates a link between the system and the network to which it is connected.</li> <li>■ Flashing green light indicates network activity.</li> </ul>
4	System Status	<ul style="list-style-type: none"> <li>■ Solid green indicates normal operation.</li> <li>■ Flashing green indicates degraded performance.</li> <li>■ Solid amber indicates a critical or non-recoverable condition.</li> <li>■ Flashing amber indicates a non-critical condition.</li> <li>■ No light indicates POST is running or the system is off.</li> </ul>
5	Power/Sleep	<ul style="list-style-type: none"> <li>■ Continuous green light indicates that the system has power that is applied to it or the system is in S0 state.</li> <li>■ Flashing green indicates that the system is in sleep or in ACPI S1 state.</li> <li>■ No light indicates that the power is off or the system is in ACPI S4 or in S5 state.</li> </ul>
6	System identification	<ul style="list-style-type: none"> <li>■ Solid blue indicates that system identification is active.</li> <li>■ No light indicates that system identification is not activated.</li> </ul>

See “8Gb FC HBA LEDs” on page 55.

## Product documentation

[Table 5-6](#) lists the documents that are related to the NetBackup 5220 and the Symantec Storage Shelf.

**Table 5-6** NetBackup 5220 Appliance and Symantec Storage Shelf hardware documentation

Document	Description
<i>NetBackup 5220 Product Description Guide</i>	Describes all physical aspects of the appliance and storage shelf including configuration options.



**Table 5-6** NetBackup 5220 Appliance and Symantec Storage Shelf hardware documentation (*continued*)

Document	Description
<i>NetBackup 52xx Hardware Installation and Initial Configuration Guide</i>	Provides the hardware-specific information to install the hardware components into an equipment rack. Describes the steps and the options that are involved in the initial configuration of the appliance.

To obtain the 52xx series documentation, go to the following URL.

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

See “Appliance front panel” on page 35.

# NetBackup 5230 appliance details

This chapter includes the following topics:

- [Appliance front panel](#)
- [Appliance rear panel](#)
- [Appliance dimensions and weight](#)
- [Appliance disk drive LEDs](#)
- [Appliance front panel LEDs](#)
- [Appliance Ethernet port LEDs](#)
- [FTMS support](#)
- [Product documentation](#)

## Appliance front panel

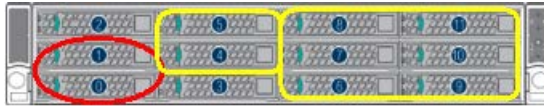


The following sections describe the physical features of the NetBackup 5230 appliance.

The disks in Slots 0 and 1 provide the operating system for the appliance. The NetBackup 5230 appliance contains eight data storage disks in slots 4 through 11.

Disks that have 1-TB formatted storage capacity provide a RAID6 group and 4 TB of storage. You can also use 3-TB disks for 14 TB of storage.

The following image shows the storage disks, circled in yellow. The two operating system disks are circled in red. The hot spare is in slot 11 in the upper right corner of the front panel.

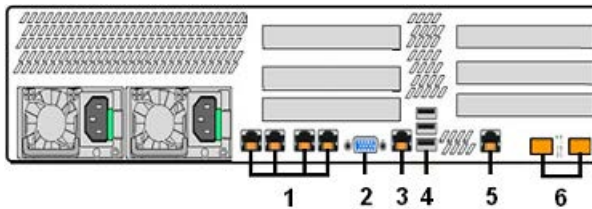


The 5230 appliance can have expanded storage capability with up to four storage shelves.

See “ [Appliance rear panel](#)” on page 43.

## Appliance rear panel

The following image shows the rear panel of the NetBackup appliance.



The following table lists the appliance rear panel components that are displayed in the image.

**Table 6-1** Appliance rear panel components

Number	Description
1	1Gb Ethernet ports (labeled from left to right, eth0/NIC1, eth1/NIC2, eth2/NIC3, eth3/NIC4)
2	Video Graphics Array (VGA) port
3	Serial port (reserved)
4	USB ports (quantity 3)
5	Remote management port
6	10Gb Ethernet ports (labeled from left to right, eth4/NIC5 and eth5/NIC6)

See “ [Appliance dimensions and weight](#)” on page 44.

## Appliance dimensions and weight

The 2U appliance has the following parameters:

- 3.44 inches (87.38 mm) high
- 16.93 inches (430 mm) wide
- 27.75 inches (704.8 mm) deep
- 52 pounds (23.58 kg)

See “[Symantec Storage Shelf dimensions and weight](#)” on page 29.

## Appliance disk drive LEDs

Drive bay slots are labeled 0-11 starting from the lower, left corner. Each drive has two LEDs which appear as follows:

**Figure 6-1** Appliance disk drive LEDs

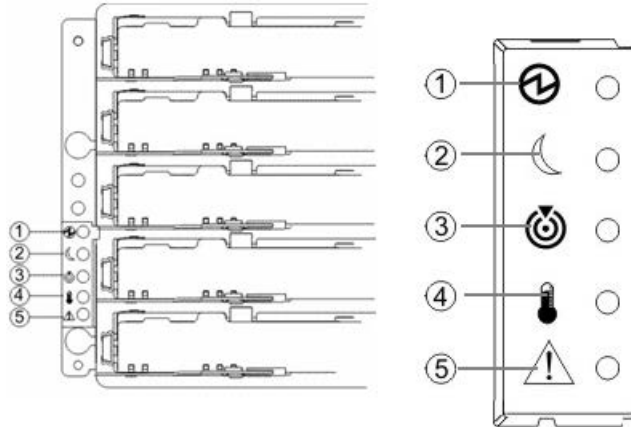


**Table 6-2** Disk drive module LEDs

Number	Description	Color	Indication
1	Status LED	Not lit Solid amber Blinking amber	No faults Disk fault RAID rebuild is in progress
2	Activity LED	Not lit Solid green Blinking green Blinking green occasionally	The disk has spun down. No disk activity. The disk spins up. Commands are processed.

The following is an image of the storage subsystem LEDs.

**Figure 6-2** Storage subsystem disk drive LEDs

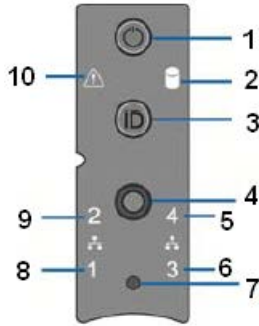


Number	Description
1	Power LED
2	Standby Power LED
3	Locate LED
4	Over-temperature LED
5	Service Action Required LED

See [“Appliance front panel LEDs”](#) on page 46.

# Appliance front panel LEDs

**Figure 6-3** Front panel LEDs



**Table 6-3** LED functions and indicators

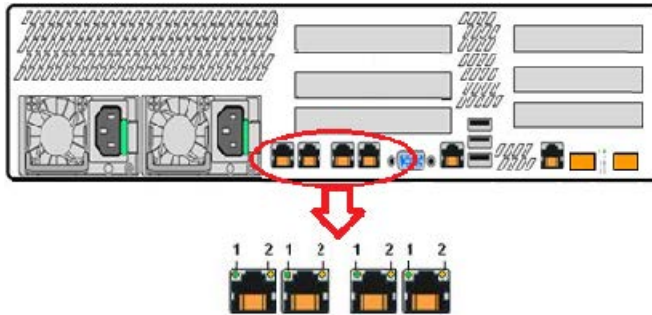
Number	Description
1	System ID button with integrated LED.
2	Hard drive activity LED
3	ID button with integrated LED
4	Cold reset button
5	NIC4 activity LED
6	NIC3 activity LED
7	NMI button (This button triggers a nonmaskable interrupt. All server data is lost.)
8	NIC1 activity LED
9	NIC2 activity LED
10	Appliance status LED

See [“Appliance Ethernet port LEDs”](#) on page 46.

## Appliance Ethernet port LEDs

Each Ethernet port on the rear panel of the appliance has two LEDs. These LEDs indicate the status and the transmission rate of the network connection. The following image shows the 1Gb Ethernet port LEDs.

**Figure 6-4** 1 Gb port LEDs



The following table lists the 1 Gb Ethernet port LED indications.

**Table 6-4** 1Gb port LED indications

LED location	State	Description
1	Off	No LAN connection
	Solid Green	Connected to LAN
	Flashes Green	Transmit/receive activity occurs
2	Off	10-Mbps connection
	Solid Amber	100-Mbps connection
	Solid Green	1000-Mbps connection

## FTMS support

The NetBackup 5230 Appliance supports some Fibre Transport media server (FTMS) configurations. Some NetBackup 5230 Appliance configurations do not support FTMS. You need to understand the difference between Initiator and Target FC ports to verify that cable connections are correct.

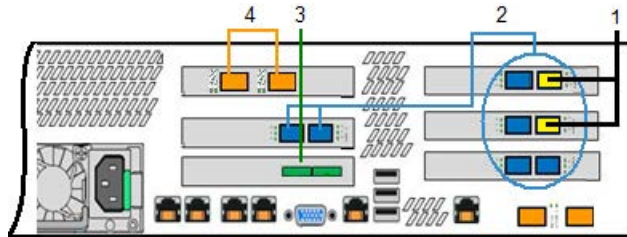
NetBackup 5230 Appliance configurations D and E are shown. These configurations support FTMS. The yellow port (1) is the Target port. Blue ports are Initiator ports.

In Configuration D the blue ports on the cards in slots 2 and 4 are Initiator ports. In Configuration E the blue ports on the cards in slots 2, 3, and 4 are Initiator ports.

Fibre Channel cards that support FTMS are installed in PCIe slots 5 and 6. The cards in the other slots cannot be used for FTMS.

The following images and tables show the D and the E configurations.

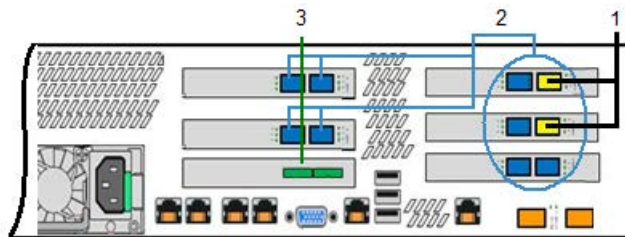
**Figure 6-5** NetBackup 5230 Appliance configuration D



**Table 6-5** NetBackup 5230 Appliance configuration D components

Number	Component
1	Target ports on FC cards
2	Initiator ports on FC cards
3	SAS RAID ports
4	10 Gb Ethernet ports

**Figure 6-6** NetBackup 5230 Appliance configuration E



**Table 6-6** NetBackup 5230 Appliance configuration E components

Number	Component
1	Target ports on FC cards
2	Initiator ports on FC cards
3	SAS RAID ports

See “ [Appliance rear panel](#)” on page 43.



# Product documentation

The following section gives information about the 5400 media server hardware and software documents.

## NetBackup 5230 documentation

[Table 6-7](#) lists the documents for the NetBackup 5230 appliance and Symantec Storage Shelf.

**Table 6-7** NetBackup 5230 hardware documentation

Document	Description
<i>Symantec NetBackup 5230 Product Description Guide</i>	Describes all aspects of the NetBackup 5230 and the attached storage shelf. Provides the compliance and environmental information.
<i>Symantec NetBackup 52xx Hardware Installation and Initial Configuration Guide</i>	Describes the hardware installation and startup procedures for the appliance and the storage shelf. The document includes hardware validation and initial configuration instruction.

You can also look at the following documents:

- *Symantec NetBackup Appliance Administrator Guide*
- *Symantec NetBackup Appliance Command Reference Guide*
- *Symantec NetBackup Appliance Release Notes*

You can find hardware and software documentation for the NetBackup 5230 appliance at the following URL.

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

## NetBackup 5400 documentation

The following table lists the documents that are related to NetBackup 5400 media server and the Storage Subsystem.

**Table 6-8** NetBackup 5400 documentation set

Document	Description
NetBackup 5400 Appliance and Disk Systems Hardware Product Description	Describes all aspects of the NetBackup 5400 appliance and the Disk System. Provides the compliance and environmental information.
NetBackup 5400 Appliance and Disk Systems Administrator Guide	Provides the information about deployment, administering the appliance, and monitoring the appliance and the connected devices.
Symantec NetBackup 5400 Appliance and Disk System Hardware Installation and Initial Configuration Guide	Provides the instructions to install the appliance and the Disk System, and then to turn on the devices.
Symantec NetBackup Appliance Command Reference Guide	Provides a complete list of the commands that are available through the NetBackup Appliance Shell Menu.

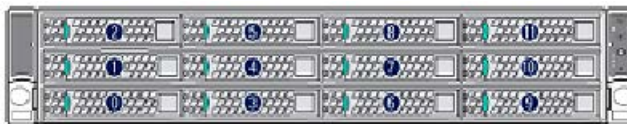
# NetBackup 5330 appliance and storage shelf details

This chapter includes the following topics:

- [NetBackup 5330 appliance overview](#)
- [NetBackup 5330 appliance PCIe card configurations](#)
- [NetBackup 5330 storage shelves and disk drives](#)

## NetBackup 5330 appliance overview

The front panel of the appliance contains 12 disk drive slots. The slots are numbered from zero (lower left slot) to 11 (upper right slot).



Disk drives in the NetBackup 5330 appliance include the following:

- Eight 3TB SAS disks, which can be accessed from the NetBackup 5330 Appliance front panel. The disks are configured into two RAID 1 volumes, which are labeled Volume 0 and Volume 1. The disks that are located in slot 0 and slot 1 are configured as the RAID 1, Volume 0 device. This volume contains the appliance 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

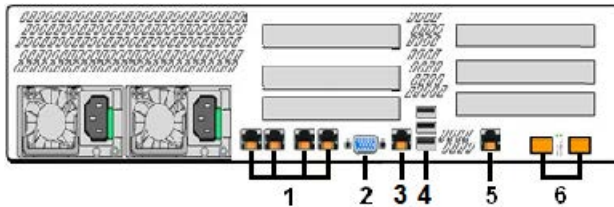
automatically initiates a RAID rebuild operation. During the rebuild operation, the appliance selects a hot-spare disk from slot 2 or slot 5, and then rebuilds the RAID volume.

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

The rear panel of the appliance contains embedded ports and PCIe card slots.

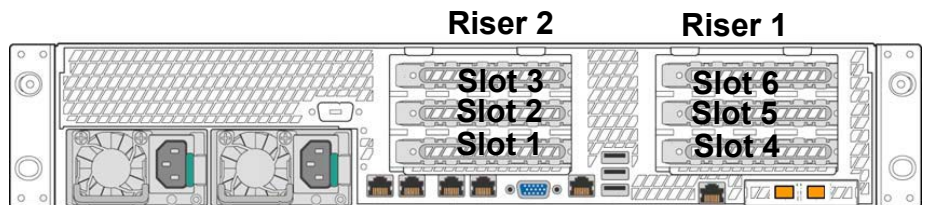
The embedded ports include the following (with numbers associating the ports to the items in the bulleted list):

- Four 1Gb Ethernet ports (1)
- One Video Graphics Array (VGA) port (2)
- One serial port (for Symantec Technical Support use only) (3)
- Three USB ports (4)
- One Intelligent Platform Management Interface (IPMI) port for remote management (5)
- Two 10Gb Ethernet ports (6)



## NetBackup 5330 appliance PCIe card configurations

The rear panel of the appliance 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 an Ethernet network interface card. Slots 1 and 4 are reserved exclusively for attachment to the Primary Storage Shelf.

[Table 7-1](#) describes the factory-available PCIe card configurations for the NetBackup 5330.

**Table 7-1** Factory-available PCIe slot configurations for the NetBackup 5330

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

## NetBackup 5330 storage shelves and disk drives

The NetBackup 5330 appliance supports two types of external disk drive storage as follows:

- Primary Storage Shelf
- Expansion Storage Shelf

Each NetBackup 5330 appliance requires one Primary Storage Shelf. The Expansion Storage Shelf provides additional storage capacity.

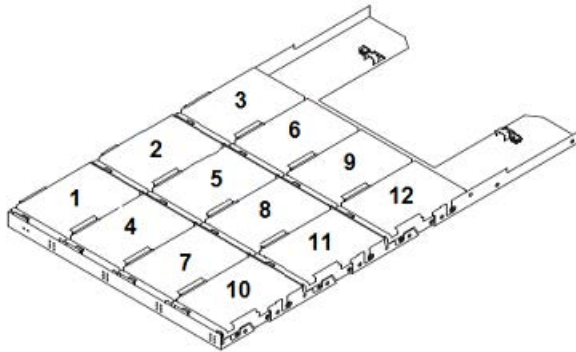
Due to weight considerations, the storage shelves should be installed at or as close to the bottom of the rack as is possible. When the storage shelves and an appliance have been installed, the Fibre Channel (FC), SAS, and power cables are connected between the units. The FC cables connect the appliance to the Primary Storage Shelf. The SAS cables connect a Primary Storage Shelf to an Expansion Storage Shelf. When all connections are completed, turn on the storage shelves and the appliance to initialize and synchronize the units.

To help reduce the weight of the units during installation, the disk drives are not factory-installed into the storage shelves. The disks are shipped in separate packages, with ten disks in each package. Six packages are required to fully populate each storage shelf. Each individual disk is wrapped in an anti-static bag. Disks must be installed into the storage shelves by opening the storage shelf drawers and inserting each disk into a slot. Best practices recommend that you start at the bottom drawer and move up. Insert the disks into one drawer at a time.

The drawers for each shelf are numbered from 1 to 5 starting at the top of the shelf.



The disk slots in each drawer are numbered from 1 to 12 starting at the left side of the drawer.



Three LEDs on the front of the drawer provide information about each column of three slots.



# PCIe add-in card LED status indicators

This chapter includes the following topics:

- [8Gb FC HBA LEDs](#)
- [1GE add-in card LEDs](#)
- [10GE add-in card LEDs](#)

## 8Gb FC HBA LEDs

An 8Gb FC HBA card connects the appliance to other network and storage devices. The card provides two FC ports for tape transport. By using the Fibre Channel tape out card, data can be exported from the appliance to a tape library for offline storage.

Each port contains a Receive (RX) LED (1) and a Transmit (TX) LED (2). These LEDs show the type of input or output through each port.

**Figure 8-1** 8Gb FC HBA ports



Each port on the 8Gb FC HBA card has three data transfer rate LEDs. The LEDs are labeled “8”, “4”, and “2” to correspond to the rate of data transfer (8Gbit/s, 4Gbit/s, or 2Gbit/s).

**Table 8-1** 8Gb FC HBA data transfer rate LED descriptions

8 - Yellow	4 - Green	2 - Amber	Description
Off	Off	Off	Turn off.
Off	Off	On, Flashes	Data transfers at a rate of 2 Gbit/s.
Off	On, Flashes	Off	Data transfers at a rate of 4 Gbit/s.
On, Flashes	Off	Off	Data transfers at a rate of 8 Gbit/s.
On	On	On	Turn on (before firmware initialization).
Flashes	Flashes	Flashes	Turn on (after firmware initialization).
Flashes alternately			Firmware error.

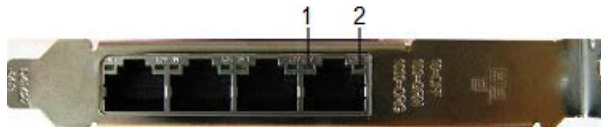
See “[1GE add-in card LEDs](#)” on page 56.

## 1GE add-in card LEDs

The model of the 4-port 1GE (Gigabit Ethernet) card is Intel E1G44HT. The 4-port 1GE NIC provides four 1GE network ports for backup or replication.

Each port contains one Activity (ACT) LED (2) and one Link (LNK) LED (1).

**Figure 8-2** 1GE NIC ports



**Table 8-2** 1GE card LED descriptions

Type	Color	Status	Description
ACT	Green	Flashes	The link is normal and data transfers.
	Green	On	The link is normal.
	n/a	Off	No link.
LNK	n/a	Off	Data transfers at a rate of 10 MB.
	Green	On	Data transfers at a rate of 100 MB.
	Amber	On	Data transfers at a rate of 1000 Gbit/s.



See [“10GE add-in card LEDs”](#) on page 57.

# 10GE add-in card LEDs

This section provides the physical view, features, and technical specifications for the 10GE (10 Gigabit Ethernet) card. This card provides two 10GE network ports for backup.

**Figure 8-3** 10GE ports



**Table 8-3** 10GE LED indicators

Type	Color	Status	Description
ACT/LINK	Green	Flashes	The link is normal and data transfers.
	Green	On	The link is normal.
	n/a	Off	No link.
GRN=10G	n/a	Off	No link.
	Green	On	Data transfers at a rate of 10 Gbit/s.
	Yellow	On	Data transfers at a rate of 1 Gbit/s.

See [“Symantec Storage Shelf disk drive module and system LEDs”](#) on page 29.

# Troubleshooting

This chapter includes the following topics:

- [Troubleshooting overview](#)
- [Appliance-induced shutdown](#)
- [Temperature issues](#)
- [Chassis issues](#)
- [Power supply module issues](#)

## Troubleshooting overview

The following sections give information and guidelines to troubleshoot any problems with the appliance and the storage shelf.

For detailed troubleshooting information, refer to the *NetBackup 52xx Appliance Troubleshooting Guide* at the following URL.

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

See “[Appliance-induced shutdown](#)” on page 58.

## Appliance-induced shutdown

The terms "protection" or "protected" refer to a power supply that has shutdown or locked up. The appliance may turn off to protect itself and other components that are connected to the appliance. A short-circuit, voltage overload, or power surge can cause self-protection.

If both power supplies are faulty, do not attempt to turn on the appliance. If the power supplies are not working, the fans in the power supplies do not operate to

cool the appliance. Physical damage to the appliance and a potential loss of data may be caused by increased temperatures.

See [“Temperature issues”](#) on page 59.

## Temperature issues

Several problems may lead to the appliance or the storage shelf temperatures higher than 35C. Thoroughly check all aspects of the rack environment, such as:

- Make sure that nearby equipment is not overly warm.
- Make sure that room temperature is within specifications.
- Make sure that the AC power that is supplied to the devices functions properly.
- Make sure that the front and back of the NetBackup 5220 appliance are clear of any obstructions. Air must flow easily and continually from the front of the appliance to the back of the appliance.

When the system alarm and location indicator on the appliance control panel is red, the alarm information is displayed in the NetBackup Appliance Web Console. The following types of information are shown.

**Table 9-1** Temperature alarm information

Alarm indication	Issue	Affected component	Description
Overtemperature of the CPU core	Temperature	CPU	Temperature is not critical yet, but approaches the upper limit of the range.
Overtemperature of the chassis air intake	Temperature	Chassis air intake	Temperature is not critical yet, but approaches the upper limit of the range.
Fan module absence	Cooling device	Fan	Device absent

See [“Chassis issues”](#) on page 59.

## Chassis issues

Problems may occur because the chassis cover is damaged or improperly installed. Intake and output vents in the front and rear of the chassis may be blocked or damaged. A visual inspection of all external parts of the chassis is required.

If the chassis is damaged, contact Technical Support for assistance. Photograph the damage for the support engineer.

If there is significant damage that cannot be repaired, it may be necessary to turn off the appliance. Before you turn off the appliance, turn off all peripheral devices that are connected to the appliance. Shut down all programs and jobs that are running. Press the power button on the front of the appliance to turn it off. Unplug the AC power cords from the main AC power sources.

See [“Power supply module issues”](#) on page 60.

## Power supply module issues

The two power supply modules are hot-swappable. However, there must be one functioning power supply in the appliance at all times. If a power supply is faulty, order a new power supply quickly. If there is only one functioning power supply, the appliance is at risk if that power supply also fails. If there are no functioning power supplies in the appliance, internal temperature increases and damages the components inside the chassis.

The fans in the power supply module are not removable. They remain inside the module as a complete unit. If there are problems with the fans, the entire power supply module must be removed and replaced.

See [“Troubleshooting overview”](#) on page 58.

# Technical references

This appendix includes the following topics:

- [750W single power supply input voltages](#)
- [Environmental specifications](#)

## 750W single power supply input voltages

The power supply must operate within all specified limits over the input voltage range. The following table lists the appliance power supply input voltages.

The power supply must operate within all specified limits over the input voltage range. The following table lists the media server power supply input voltages.

**Table A-1** Power supply input voltages

Parameter	Min.	Rated	Max.	Startup VAC	Power off VAC	Max input AC current	Max rated input AC current
Voltage (110)	90 Vrms	100-127 Vrms	140 Vrms	85 VAC +/- 5 VAC	75 VAC +/- 5VAC	12 Arms	11.0 Arms
Voltage (220)	180 Vrms	200-240 Vrms	264 Vrms	-	-	6.0 Arms	5.5 Arms
Frequency	47 Hz	50/60 Hz	63 Hz	-	-	-	-

Important information about input current:

- Maximum input AC current at low input voltage range is measured at 90 VAC, at maximum load.
- Maximum input AC current at high input voltage range is measured at 180 VAC, at maximum load.

- Maximum rated input current is measured at 100 VAC and 200 VAC.

See “[Environmental specifications](#)” on page 62.

## Environmental specifications

The following table defines the system level operating and non-operating environmental limits for the NetBackup appliance and the Symantec Storage Shelf.

The following table defines the system level operating and non-operating environmental limits for the NetBackup media server.

**Table A-2** System Environmental Specifications

Parameter	State	Details
Temperature	Non-operating	-40°F to 70°F
	Operating	The maximum rate of change is 10°C to 35°C and should not to exceed 10°C per hour.
Humidity	Non-operating	90% relative humidity (non-condensing) at 28°C.
Shock	Operating	2.0-g peak, 11 msec, half sine
	Packaged	Non-palletized free fall in height 24" (> 40 lbs to < 80 lbs)
	Unpackaged	Operational after an 18" free fall. Trapezoidal, 25 g, velocity change 136 inches per sec.
Vibration	Unpackaged	5 Hz to 500 Hz, 2.20 g RMS random
Acoustic noise		Sound Power: 7.0 DBA in an idle state at typical office ambient temperature (23 +/- 2°C)
Electrostatic discharge (ESD)		+/-12 KV except I/O port +/- 8 KV
System Cooling Requirement		NetBackup appliance: 2550 BTU/Hr NetBackup media server: 2550 BTU/Hr Storage Shelf: 1270 BTU/Hr

See “[750W single power supply input voltages](#)” on page 61.

# Regulatory and compliance information

This appendix includes the following topics:

- [Overview](#)
- [Product regulatory compliance](#)
- [Product safety compliance](#)
- [Product EMC Compliance - Class A Compliance](#)
- [Product ecology compliance](#)
- [Certifications / Registrations / Declarations](#)
- [Electromagnetic compatibility notices](#)
- [FCC Verification Statement \(USA\)](#)
- [ICES-003 \(Canada\)](#)
- [CE Declaration of Conformity \(Europe\)](#)
- [VCCI \(Japan\)](#)
- [BSMI \(Taiwan\)](#)

## Overview

The following sections give information about the product regulations and compliance.



## WARNING

To ensure regulatory compliance, you must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components that are specified in this guide. Use of other products or components voids the UL listing and other regulatory approvals of the product. The result is noncompliance with product regulations in the region(s) in which the product is sold.

Before computer integration, make sure that the appliance, power supply, and other modules have passed EMC testing. This process helps to ensure EMC compliance with your local regional rules and regulations. The testing is done using a server board with a microprocessor from the same family (or higher) and operating at the same (or higher) speed as the microprocessor that is used on this server board. The final configuration of your appliance product may require additional EMC compliance testing.

Before computer integration, make sure that the media server, power supply, and other modules have passed EMC testing. This process helps to ensure EMC compliance with your local regional rules and regulations. The testing is done using a server board with a microprocessor from the same family (or higher) and operating at the same (or higher) speed as the microprocessor that is used on this server board. The final configuration of your media server product may require additional EMC compliance testing.

This product is an FCC Class A device. Integration of it into a Class B system does not result in a Class B device.

See [“Product regulatory compliance”](#) on page 64.

## Product regulatory compliance

The NetBackup appliance, when correctly integrated per this guide, complies with the following safety and electromagnetic compatibility (EMC) regulations.

The NetBackup media server, when correctly integrated per this guide, complies with the following safety and electromagnetic compatibility (EMC) regulations.

**Intended Application** - This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments, other than an ITE application, may require further evaluation. Other product categories and environments may include medical,



industrial, telecommunications, NEBS, residential, alarm systems, and test equipment.

See [“Product safety compliance”](#) on page 65.

## Product safety compliance

The following is a list of product safety compliance norms for different countries:

- UL60950 - CSA 60950 (USA / Canada)
- EN60950 (Europe)
- IEC60950 (International)
- CB Certificate & Report, IEC60950 (report to include all country national deviations)
- GS Certification (Germany)
- GOST R 50377-92 - Certification (Russia)
- Belarus Certification (Belarus)
- Ukraine Certification (Ukraine)
- CE - Low Voltage Directive 73/23/EEE (Europe)
- IRAM Certification (Argentina)
- GB4943- CNCA Certification (China)

See [“Product EMC Compliance - Class A Compliance”](#) on page 65.

## Product EMC Compliance - Class A Compliance

The following is a list of EMC compliance norms for different countries:

- FCC /ICES-003 - Emissions (USA/Canada) Verification
- CISPR 22 - Emissions (International)
- EN55022 - Emissions (Europe)
- EN55024 - Immunity (Europe)
- EN61000-3-2 - Harmonics (Europe)
- EN61000-3-3 - Voltage Flicker (Europe)
- CE - EMC Directive 89/336/EEC (Europe)
- VCCI Emissions (Japan)

- AS/NZS 3548 Emissions (Australia / New Zealand)
- BSMI CNS13438 Emissions (Taiwan)
- GOST R 29216-91 Emissions (Russia)
- GOST R 50628-95 Immunity (Russia)
- Belarus Certification (Belarus)
- Ukraine Certification (Ukraine)
- GB 9254 - CNCA Certification (China)
- GB 17625 - (Harmonics) CNCA Certification (China)

See [“Product ecology compliance”](#) on page 66.

## Product ecology compliance

Use of banned substances are restricted in accordance with world-wide regulatory requirements. A Material Declaration Data Sheet is available.

- Use of banned substances are restricted in accordance with world-wide regulatory requirements. A Material Declaration Data Sheet is available.
  - Quantity limit of 0.1% by mass (1000 PPM) for: Lead, Mercury, Hexavalent Chromium, Polybrominated Biphenyls Diphenyl-Ethers (PBB/PBDE)
  - Quantity limit of 0.01% by mass (100 PPM) for: Cadmium
- California Code of Regulations, Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials
- China - Restriction of Hazardous Substances (China RoHS)
- WEEE Directive (Europe)
- Packaging Directive (Europe)

See [“Certifications / Registrations / Declarations”](#) on page 66.

## Certifications / Registrations / Declarations

The following is a list of the required certifications, registrations, and declarations:

- NRTL Certification (US/Canada)
- CE Declaration of Conformity (CENELEC Europe)
- FCC/ICES-003 Class A Attestation (USA/Canada)
- VCCI Certification (Japan)

- C-Tick Declaration of Conformity (Australia)
- MED Declaration of Conformity (New Zealand)
- BSMI Certification (Taiwan)
- GOST R Certification / Certification (Russia)
- Belarus Certification / Certification (Belarus)
- IRAM Certification (Argentina)
- CNCA CCC Certification (China)
- Ecology Declaration (International)
- China RoHS Environmental Friendly Use Period
- Packaging & Product Recycling Marks

See [“Electromagnetic compatibility notices”](#) on page 67.

## Electromagnetic compatibility notices

The following sections list the compatibility notices for USA, Canada, Europe, Japan, and Taiwan.

See [“FCC Verification Statement \(USA\)”](#) on page 67.

## FCC Verification Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If the equipment is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to a radio or a television reception (can be determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. Any changes or modifications not expressly approved by the grantee of this device can void the user's authority to operate the equipment. The customer is responsible to ensure the compliance of the modified product. Only peripherals (computer input or output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception. All cables that are used to connect to peripherals must be shielded and grounded. Operation with the cables that are connected to peripherals that are not shielded and grounded may result in interference to radio and TV reception.

See [“ICES-003 \(Canada\)”](#) on page 68.

## ICES-003 (Canada)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadien des Communications.

English translation of the notice above:

This digital apparatus does not exceed the Class A limits for radio noise emissions from the digital apparatus that is set out in the interference-causing equipment standard entitled: "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

See [“CE Declaration of Conformity \(Europe\)”](#) on page 68.

## CE Declaration of Conformity (Europe)

This product has been tested in accordance to, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

See [“VCCI \(Japan\)”](#) on page 69.

## VCCI (Japan)

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If the product is used near a radio or a television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

See [“BSMI \(Taiwan\)”](#) on page 69.

## BSMI (Taiwan)

The BSMI Certification Marking and EMC warning label is located on the outside rear area of the product.

See [“Certifications / Registrations / Declarations”](#) on page 66.

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