

Veritas™ 5250 Appliance Product Description Guide

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https://sort.veritas.com/data/support/SORT_Data_Sheet.pdf

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About the Veritas 5250 Appliance

This chapter includes the following topics:

- [Veritas 5250 Appliance overview](#)
- [Features and components of the Veritas 5250 Appliance](#)
- [Locating the appliance serial number](#)
- [Veritas 5250 Appliance front panel disk drive configurations](#)
- [About the Veritas 5250 Appliance front panel USB port](#)
- [About the 5250 Appliance control panel](#)
- [About the 5250 Appliance rear panel](#)
- [Veritas 5250 Appliance I/O configuration options](#)

Veritas 5250 Appliance overview

Figure 1-1 NetBackup 5250 Appliance



Figure 1-2 Flex 5250 Appliance

The Veritas 5250 Appliance is a hardware and software storage system that can scale to 429.4 TiB of available backup capacity. It consists of a Veritas 5250 Appliance and up to six optional Veritas 2U12 65.5TiB/72TB storage shelves. By itself, the 2U Veritas5250 Appliance offers internal storage from 9.1 TiB to 36.4 TiB, depending on the appliance configuration purchased.

A Veritas 2U12 65 B storage shelf offers 65.5 TiB of storage. Attaching six storage shelves offers 429.4 TiB of storage. As with previous generations of the NetBackup 52xx appliances, the Veritas 5250 Appliance can be configured as a primary server or a media server. It can also be configured as both. The 5250 Appliance supports S Series and D Series storage shelves or a combination of both types of shelves.

See [“Usable appliance storage capacities”](#) on page 38.

See [Veritas Appliance Hardware Get Started Documents](#)

SAS-3 cables connect the Veritas 5250 Appliance to the storage shelves. SAS-3 cables also connect the storage shelves to each other.

The Veritas 5250 Appliance supports the following software:

- NetBackup Appliance software release 3.2 (revised) and above

Note: This model uses a revised version of software release 3.2. This revised software version contains specific support for the 5250 hardware and the related software functionality that is not included in the previous 3.2 release. The minimum supported software version for the 5250 appliance is the revised 3.2 version that is shipped with each unit. If a re-image is ever necessary, you must use the revised 3.2 software version.

- Flex Appliance 2.0.1 and above

About Veritas 5250 Appliance configurations

To determine the right Veritas 5250 Appliance system for your environment, you should consider the environment’s future storage requirements over the lifetime of the system.

Veritas offers multiple I/O configurations from which to choose. You can use the supported Veritas 5250 Appliance I/O configurations to best serve the needs of your particular environment.

These configurations include the following:

- One Veritas 5250 Appliance with 9.1 TiB of internal storage only
- One Veritas 5250 Appliance with 36.4 TiB of internal storage only
- One Veritas 5250 Appliance with up to six external 65.5TiB/72TB storage shelves for a total of 429.4 TiB of storage

If your environment requires more than 36TiBs of storage, consider the Veritas 5250 Appliance with 9.1TiBs of internal storage and one 65.5TiB/72TB Veritas 2U12 65.5TiB/72TB Storage Shelf. If more storage is required, you can add up to five additional 65.5TiB/72TB storage shelves to this configuration.

Features and components of the Veritas 5250 Appliance

This section describes the features and components of the Veritas 5250 Appliance.

Table 1-1 Veritas 5250 Appliance features

Feature	Description
Processor	Two (2) Intel® Scalable 4214 2.2 GHz processors
Appliance software version	NetBackup Appliance 3.2 (revised) or above Flex Appliance 2.0.1 or above Note: For the latest NetBackup Appliance compatibility information, refer to the NetBackup Hardware Compatibility List posted on the following site: http://www.veritas.com/docs/000033647
Performance and capacity	■ Supports high-performance processors with low-power consumption. ■ Provides high-capacity intra-appliance switching bandwidth, along with high I/O throughput. ■ Available internal storage capacities of 9 TB, or 36 TB without optional external storage shelves. The available capacity can be allocated either in part or in whole to a deduplication pool or to an AdvancedDisk pool (non-deduplicated storage).

Table 1-1 Veritas 5250 Appliance features (*continued*)

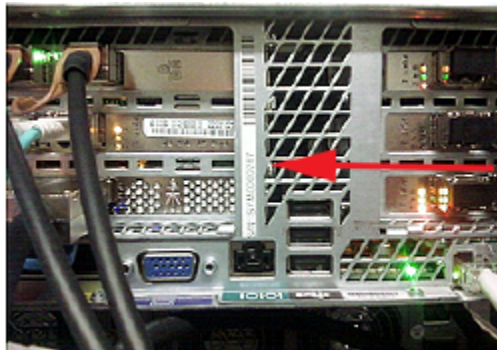
Feature	Description
System memory configuration (DIMMS)	64GB, up to a maximum of 512GB Note: When you purchase the first expansion storage shelf, the Storage Expansion kit that comes with the storage shelf includes a replacement of 256GB memory. A Memory Expansion kit containing eight 32GB DIMM memory chip is needed to support the fifth storage shelf.
Space reduction	The deduplication engine provides up to 100 times reduction in storage. The client-side plug-in provides similar levels of bandwidth reduction.
Scalable architecture	Due to fingerprinting and RAID redundancy, the overall storage capabilities are not a simple multiplication of the disk size and the total number of disks.
High availability	Supports redundant hot-swappable disks and power modules.
RAID levels	RAID 1 (standard mirroring) and RAID 6 (block level striping with double distributed parity) are implemented as follows: ■ Appliance system disks: RAID 1 ■ Appliance storage disks: RAID 6 ■ Storage shelf data storage disks: RAID 6 Note: The disk drives in the appliance are pre-formatted before the appliance is shipped. These drives should not be moved into different slots or otherwise rearranged.
Fibre Channel support	The Veritas 5250 Appliance can be ordered with one, two, three or four PCIe 16 Gb Fibre Channel host bus adapter cards preinstalled. See “Available I/O configurations by slot for Veritas 5250 Appliance installations” on page 27.
PCIe 10/25 Gb Ethernet cards	PCIe 10/25 Gb Ethernet cards with Fibre Optic ports are available.
Rear panel ports	See “About the 5250 Appliance rear panel” on page 19.

Table 1-1 Veritas 5250 Appliance features (*continued*)

Feature	Description
Additional storage	Yes You can attach up to six optional storage shelves to the Veritas 5250 Appliance. Depending on the appliance configuration you purchase, a total of 429.4 TB of usable storage capacity is available. See “Usable appliance storage capacities” on page 38. See Veritas Appliance Hardware Get Started Documents

Locating the appliance serial number

A vertical bar on the rear panel of the appliance contains the serial number.



You can also find the serial number in the pull-out plastic tab located at the front-left-hand of the chassis.

Veritas 5250 Appliance front panel disk drive configurations

The Veritas 5250 Appliance contains 12 SAS hard disk drives, which can be accessed from the appliance's front panel. An embedded RAID controller on the appliance's mainboard is used to configure four of the 12 disks into two RAID1 mirrored volumes. These volumes are labeled Volume0 and Volume1.

The disk drives that are located in slot 0 and slot 1 are configured as the RAID1, VOLUME0 device. These disk drives contain the appliance operating system and

the NetBackup/Flex application. You can hot-swap one of these disk drives at a time; however, you cannot operate the appliance if both disk drives are removed.

The disk drives in slot 2 and slot 3 are configured as the RAID1, VOLUME1 device. These disk drives store all of the log files.

The disk drives in slots 4 through 10 store user data. They are configured as a RAID 6 array, which uses block-level striping with two parity blocks across each of the disk drives in the volume.

The appliance uses the disk drive that is located in slot 11 as a hot-spare disk. If one of the disk drives fails in slots 4 through 10, the appliance automatically initiates a RAID 6 rebuild operation. It rebuilds the RAID 6 array by using the hot-spare disk drive in slot 11. After you replace the failed disk drive, the appliance then copies the information from the disk drive in slot 11 to the new replacement disk. When the copy operation finishes, the disk drive in slot 11 again becomes the hot-spare disk.

Note: The hot-spare drive size depends on the data drive size.

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

Figure 1-3 Veritas 5250 Appliance front panel disk slot assignments



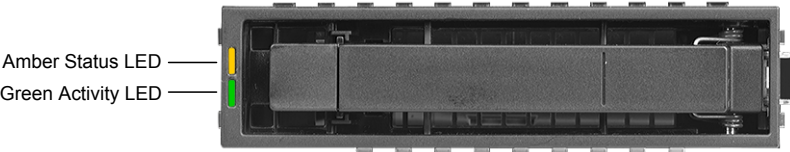
Table 1-2 Veritas 5250 Appliance front panel disk drive configurations

Slot	RAID Configuration	Disk drive size	Disk drive role
0, 1	RAID 1	1TB or 2TB	Boot / swap
2, 3	RAID 1	1TB or 2TB	Log files
4 - 10	RAID 6	2TB (Available internal storage is 9.1TiB) 8TB (Available internal storage is 36.4TiB)	User data
11	RAID 6	2TB 8TB	Hot-spare

About the disk drive LEDs

Each Veritas 5250 Appliance disk drive module contains two LEDs on the left side of each module.

Figure 1-4 Veritas 5250 Appliance disk drive module LEDs



The LED Status descriptions are described in the following table.

Table 1-3 Veritas 5250 Appliance disk drive LED Status descriptions

Number	Description	LED behavior	Condition
1	Amber Status LED	Off	No disk drive access and no disk drive faults
		Solid amber	A disk drive fault has occurred
		Blinking amber	A RAID rebuild is in progress (1Hz blink) Locating / identifying the disk drive (4Hz blink)
2	Green Activity LED	Off	Power on - the disk drive has spun down
		Solid green	Power on - no disk drive activity
		Blinking green	Power on - I/O is being processed by the drive or Power on - the disk drive is spinning up

About the Veritas 5250 Appliance front panel USB port

The Veritas 5250 Appliance front panel includes a USB 2.0-compliant port that supports a data transfer rate of up to 480 Mb/second.



About the 5250 Appliance control panel

The 5250 Appliance includes a control panel on the right side of the front panel. System information is shown on this control panel.

Figure 1-5 Control panel

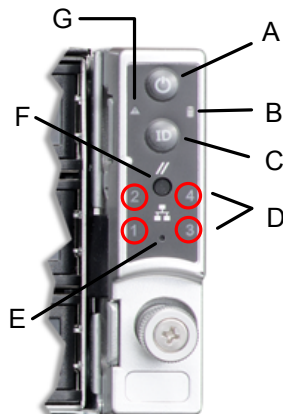


Table 1-4 Control panel system LED descriptions

Label	LED	System information
A	Power button with integrated LED	The Power button toggles the system on and off. See “About the Power button LED states” on page 18.
B	Hard Drive Activity LED	The drive activity LED on the front panel indicates drive activity from the on-board hard disk controllers.
C	System ID button with integrated LED	The System ID button toggles the integrated ID LED and the blue server board LED on and off. The system ID LED identifies the system for maintenance when it is racked with similar server systems.
D	Network Activity LEDs	The front control panel includes four activity LED indicators for each on-board network interface controller (NIC). ■ NIC-1 represents network interface controller 1 ■ NIC-2 represents network interface controller 2 ■ NIC-3 represents network interface controller 3 ■ NIC-4 represents network interface controller 4 When network links are detected on the controllers, the LEDs are activated and remain on. The LEDs blink when network activity occurs, and the rate at which they blink is determined by the amount of network activity that occurs.
E	NMI button (recessed, tool required for use)	When it is depressed, the NMI button puts the appliance in a halt state, issues a non-maskable interrupt (NMI), and then triggers the non-maskable interrupt. When the NMI is triggered, the data that is in the process of being written to the server may be lost. Veritas recommends that you do not enable NMI by pressing the NMI button.
F	System Cold Reset Button (recessed, tool required for use on non-storage models)	When depressed, the System Cold Reset button re-boots and re-initializes the appliance.

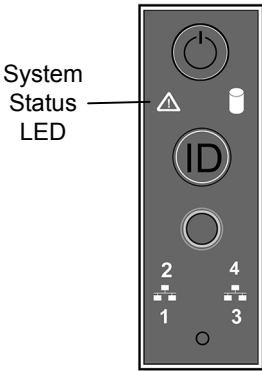
Table 1-4 Control panel system LED descriptions (continued)

Label	LED	System information
G	System Status LED	The System Status LED is bi-color indicator that uses the colors green and amber to display the current health of the appliance. Two locations are provided for you to monitor the health of the system. You can find the first location on the front control panel, while the second location is located on the back edge of the server board. It is viewable from the rear of the appliance. Both LEDs show the same state of health. See “About the System Status LED states” on page 15.

About the System Status LED states

The System Status LED is a bi-color (Green/Amber) indicator that shows the current health of the system. The appliance provides two locations for this feature. The first location is on the Front Control Panel, while the second location is on the back edge of the server board.

Figure 1-6 System Status LED control panel location



The following table provides a description of each LED state.

Table 1-5 System Status LED states

Color	State	Criticality	Description
No color	Off - The system is not operating.	Not ready	■ System power is off (AC and/or DC) ■ System is in EuP Lot6 Off Mode ■ System is in S5 Soft-Off State
Green	Solid on (SO)	Healthy	Indicates that the system is running (in S0 State) and its status is "Healthy". The system is not exhibiting any errors. AC power is present and BMC has booted and manageability functionality is up and running.
Green	~1 Hz blink	Degraded The system is operating in a degraded state although still functional. or The system is operating in a redundant state but with an impending failure warning.	System degraded: ■ Redundant loss, such as power supply or fan. Applies only if the associated platform sub-system has redundancy capabilities. ■ Fan warning or failure when the number of fully operational fans is more than minimum number needed to cool the system. ■ Non-critical threshold crossed: Temperature (including HSBP temp), voltage, input power to power supply, output current for main power rail from power supply and Processor Thermal Control (Therm Ctrl) sensors. ■ Power supply predictive failure occurred while redundant power supply configuration was present. ■ Unable to use all of the installed memory (one or more DIMMs failed/disabled but functional memory remains available). ■ Battery failure ■ BMC executing in uBoot. (Indicated by Chassis ID blinking at 3Hz). System in degraded state (no manageability). BMC uBoot is running but has not transferred control to the BMC Linux. Server will be in this state 6-8 seconds after BMC reset while it pulls the Linux image into flash.

Table 1-5 System Status LED states (*continued*)

Color	State	Criticality	Description
Green	~1 Hz blink	Degraded (continued)	System degraded (continued): ■ BMC booting Linux. (Indicated by Chassis ID solid ON). System in degraded state (no manageability). Control has been passed from BMC uBoot to BMC Linux itself. It will be in this state for 10-20 seconds. ■ BMC Watchdog has reset the BMC. ■ Power unit sensor offset for configuration error is asserted. ■ Hard disk drive HSC is off-line or degraded.
Amber	~1 Hz blink	Non-critical The system is operating in a degraded state with an impending failure warning. However, the system is still functioning.	Non-fatal, although the system is likely to fail due to the following issues: ■ Critical threshold crossed – Voltage, temperature (including HSBP temp), input power to power supply, output current for main power rail from power supply and PROCHOT (Therm Ctrl) sensors. ■ VRD Hot asserted ■ Minimum number of fans to cool the system not present or failed ■ Hard drive fault ■ Power Unit Redundancy sensor – Insufficient resources offset (indicates not enough power supplies present) ■ Correctable memory error threshold has been reached for a failing DIMM when the system is operating in a non-redundant mode.

Table 1-5 System Status LED states (*continued*)

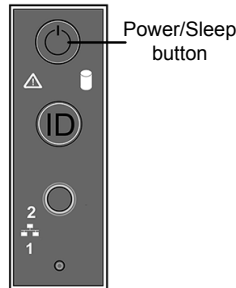
Color	State	Criticality	Description
Amber	Solid on	Critical, non-recoverable – System is halted	Fatal alarm – system has failed or shutdown: ■ CPU CATERR signal asserted ■ MSID mismatch detected (CATERR also asserts for this case) ■ CPU1 is missing ■ CPU Thermal Trip ■ No power – power fault ■ DIMM failure when there is only one DIMM present; no other good DIMM memory present ■ Runtime memory uncorrectable error in non-redundant mode.
Amber	Solid on	Critical, non-recoverable – System is halted	■ Uncorrectable Runtime memory error in non-redundant mode ■ DIMM Thermal Trip or equivalent ■ CPU ERR2 signal is asserted ■ BMC/Video memory test failed (Chassis ID shows blue/solid-on for this condition) ■ SBB Thermal Trip or equivalent ■ 240VA fault ■ Both uBoot BMC FW images are bad (Chassis ID shows blue/solid-on for this condition) ■ Fatal Error in processor initialization: ■ Processor family not identical ■ Processor model not identical ■ Processor core/thread counts not identical ■ Processor cache size not identical ■ Unable to synchronize processor frequency ■ Unable to synchronize QPI link frequency

About the Power button LED states

The Power button is located on the Veritas 5250 Appliance control panel. It is used to turn the appliance on and off.

Figure 1-7

Power button control panel location



The following table provides a description of each power state.

Table 1-6 Power button LED states

State	Power Mode	LED	Description
Power - off	Non-ACPI	Off	The system power is off, and the BIOS has not initialized the chipset.
Power - on	Non-ACPI	On	The system power is on and the green Power button LED is active.
S0	ACPI (Advanced Configuration and Power Interface)	Steady on	The system and the operating system are up and running.
S5	ACPI (Advanced Configuration and Power Interface)	Off	Mechanical is off and the operating system has not saved any context to the hard disk drive.

About the 5250 Appliance rear panel

The rear panel of the appliance has several access ports and other features, which are displayed in the following figures.

Figure 1-8 Veritas 5250 Appliance rear panel overview

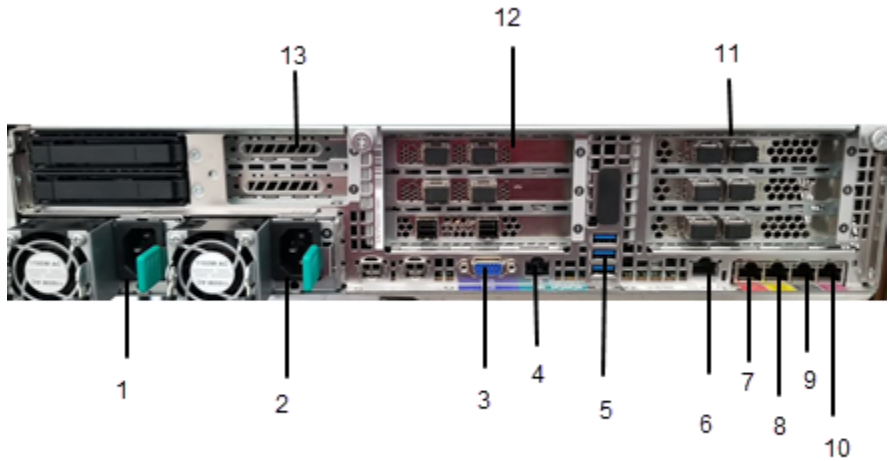


Table 1-7 Veritas 5250 Appliance rear panel features and connectors

Number	Function
1,2	Power Supply 1 and Power Supply 2 - Dual, redundant, and hot-swappable power supply modules
3	DB-15 VGA monitor connector
4	Serial port - Serial connection for Veritas Technical Support use only
5	Three stacked USB 3.0 Type A serial ports for general use
6	IPMI port - An external RJ45 port used for appliance remote management purposes

Table 1-7 Veritas 5250 Appliance rear panel features and connectors
(continued)

Number	Function
7	eth0/host0 ■ NetBackup Appliance (eth0): Used for the initial configuration of the appliance. After completing the initial configuration, you can connect NIC1 (eth0) to an administrative network that does not provide any backup data transfer. For more information, see the <i>NetBackup™ 52xx Appliance Initial Configuration Guide</i>. ■ Flex Appliance (host0): A 1-GbE port copper connector that you can connect to an administrative network to manage the appliance system. It is bonded during initial configuration as a standalone bond mgmt0.
8	eth1/NIC0 ■ NetBackup Appliance (eth1): A 1-GbE port for general use. ■ Flex Appliance (NIC0): A 1-GbE port for general use.
9	eth2/NIC1 ■ NetBackup Appliance (eth2): A 1-GbE port for general use. ■ Flex Appliance (NIC1): A 1-GbE port for general use.
10	eth3/NIC2 ■ NetBackup Appliance (eth3): A 1-GbE port for general use. ■ Flex Appliance (NIC2): A 1-GbE port for general use.
11	PCIe riser assembly 1 *
12	PCIe riser assembly 2 *

Table 1-7 Veritas 5250 Appliance rear panel features and connectors
(continued)

Number	Function
13	PCIe riser assembly 3 * Contains two half height PCIe slots. Note: PCIe riser assembly 2 and riser assembly 3 are riveted together. As a result, riser assembly 2 and riser assembly 3 are removed as one unit.

* The 5250 Appliance add-in cards are available in multiple configurations. Several configurations include at least one Fibre Channel host bus adapter card for VMware, optimized deduplication over Fibre Channel, or tape library connectivity.

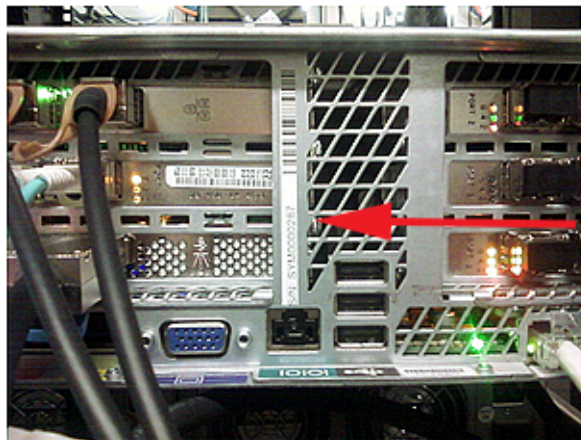
In some configurations the Fibre Channel host bus adapter cards are installed into some of the PCIe slots. If the cards are installed in slots 5 and 6, the configuration supports Fibre Transport Media Server (FTMS) mode. Port 1 of each card is configured by default as Target, while port 2 is configured by default as Initiator. If you want, you can configure port 2 on both cards as Target, and you can configure port 1 on both cards as Initiator.

Note: You should not bond copper 1 Gb Ethernet ports that are installed in the appliance chassis with PCIe-based 10/25 Gb Ethernet Fibre Channel ports.

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

The serial number is located on a vertical bar on the rear panel of the appliance.

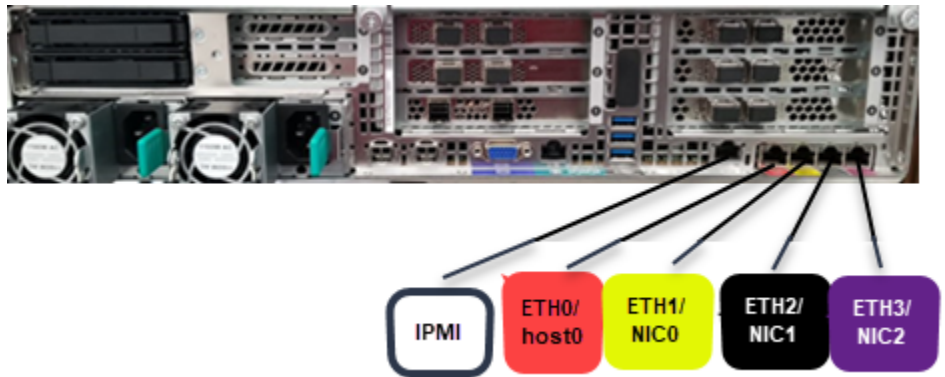
Figure 1-9 Serial number location



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

Figure 1-10

5250 Appliance rear port color codes

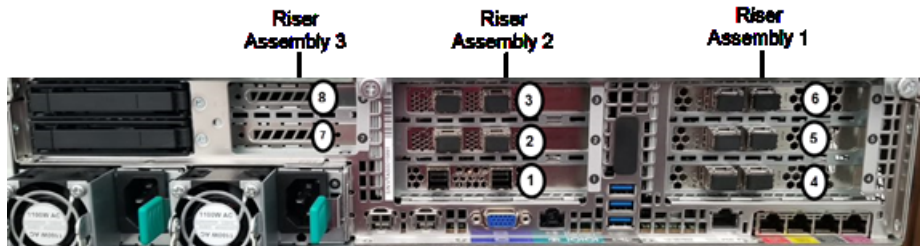


Veritas 5250 Appliance I/O configuration options

The rear panel of the Veritas 5250 Appliance contains three PCIe riser card assemblies. PCIe riser card assemblies 1 and 2 each support three standard PCIe cards, while PCIe riser card assembly 3 supports two low profile PCIe cards. The slots are labeled 1 to 8. Slots 1, 2, and 3 are located in PCIe riser card assembly 2. Slots 4, 5, and 6 are located in PCIe riser card assembly 1, while slots 7 and 8 are located in PCIe riser card assembly 3.

Figure 1-11

Rear panel riser assembly locations and PCIe slot number assignments



The Veritas 5250 Appliance supports multiple PCIe-based I/O configuration options. The following table shows the different I/O configuration options that are available.

Table 1-8 Available Veritas 5250 Appliance PCIe-based I/O configuration options

I/O configuration option	Slot 1 *	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot 8
A	-	-	10/25 GbE NIC	-	-	-	-	-
B	-	-	10/25 GbE NIC	-	-	16 Gb FC HBA	-	-
C	-	10/25 GbE NIC	10/25 GbE NIC	10/25 GbE NIC	16 Gb FC HBA	16 Gb FC HBA	-	-
D	-	16 Gb FC HBA	10/25 GbE NIC	16 Gb FC HBA	16 Gb FC HBA	16 Gb FC HBA	-	-
E	-	10/25 GbE NIC	10/25 GbE NIC	16 Gb FC HBA	16 Gb FC HBA	16 Gb FC HBA	-	-
F	-	10 GbT NIC	10 GbT NIC	10 GbT NIC	16 Gb FC HBA	16 Gb FC HBA	-	-

* Slot 1 contains a factory installed PCIe RAID controller.

Note: The Flex 5250 Model F has 3 x 10 GbT (Standard CAT6a cabling with RJ45 connectors) network cards.

Figure 1-12 Flex 5250 Appliance Model A

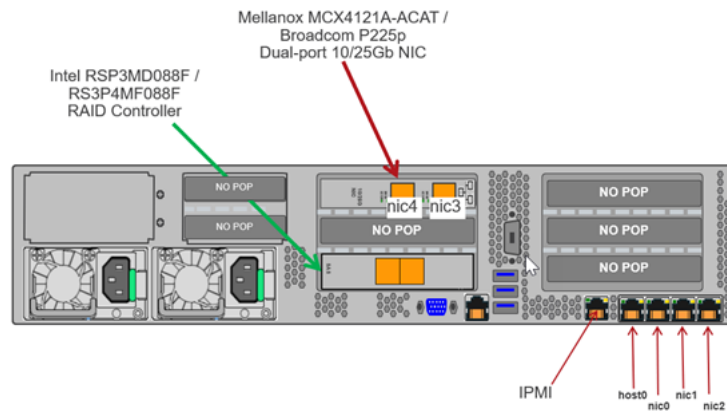


Figure 1-13 Flex 5250 Appliance Model B

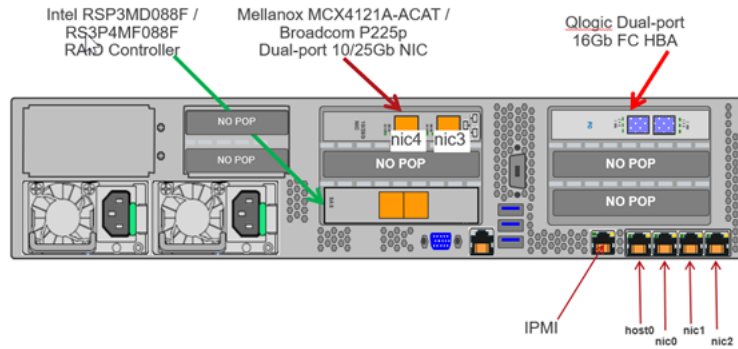


Figure 1-14 Flex 5250 Appliance Model C

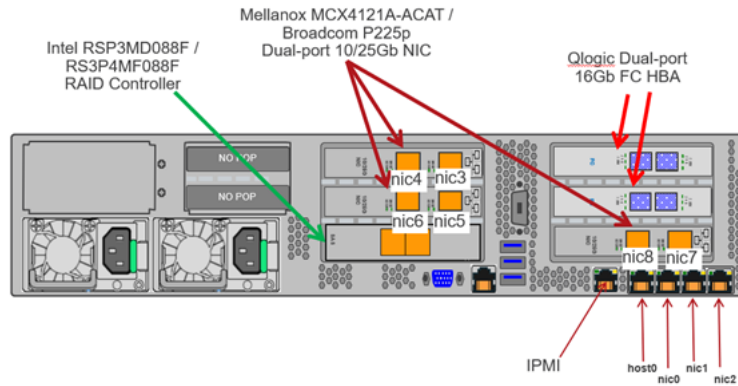


Figure 1-15 Flex 5250 Appliance Model D

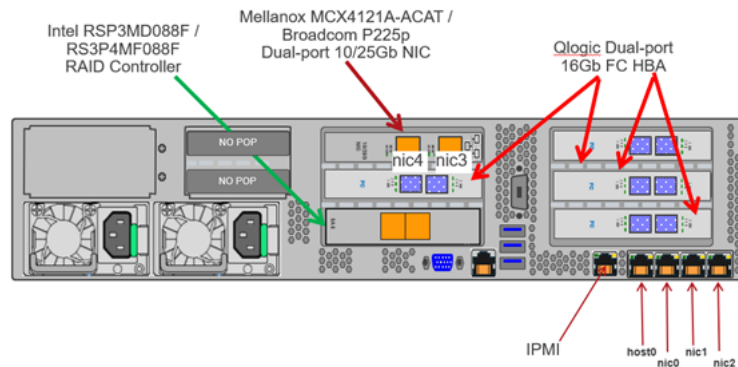
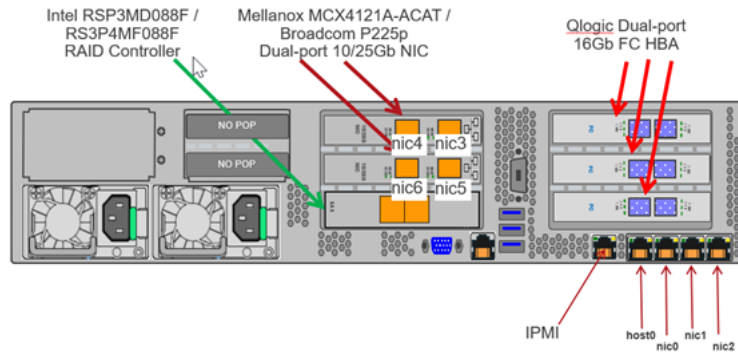


Figure 1-16 Flex 5250 Appliance Model E



Veritas 5250 Appliance total I/O on-board and PCIe ports

Table 1-9 Total number of Veritas 5250 Appliance on-board and PCIe I/O ports for each I/O configuration

I/O Configuration option	1GbT Ethernet ports (copper)	10/25 Gb Ethernet PCIe ports (optical/SFP)	16 Gb Fibre Channel PCIe ports (optical/SFP)	10 GbT Ethernet PCIe ports (copper)
A	4 on-board	2	0	0
B	4 on-board	2	2	0
C	4 on-board	6	4	0
D	4 on-board	2	8	0
E	4 on-board	4	6	0
F	4 on-board	0	4	6
Cable connection types: copper = Standard copper cable optical = fiber optic cable				

Available I/O configurations by slot for Veritas 5250 Appliance installations

You can use the supported Veritas 5250 Appliance I/O configurations to best serve the needs of your particular environment.

The controller is installed in both non-shelf and with-shelf configurations

The following table provides information on the make and model of each the PCIe cards that are available for use in each appliance I/O slot.

Table 1-10 Acceptable PCIe-based I/O cards for each appliance I/O slot

Slot	Acceptable PCIe I/O card	Comment
1	INTEL RMS3MD088F 12Gb/s 8 port Internal / 8 port External PCI-Express 3.0 X8 SAS RAID controller	External RAID controller to which you connect a Veritas 2U12 65.5TiB/72TB Storage Shelf
	INTEL RMS3MF088F 12Gb/s 8 port Internal / 8 port External PCI-Express 4.0 X8 SAS RAID controller	External RAID controller to which you connect a Veritas 2U12 65.5TiB/72TB Storage Shelf
2	QLE2692 dual-port 16Gb Fibre Channel host bus adapter *	PCIe-based 16 Gb Fibre Channel host bus adapter
	Mellanox ConnectX-4 Lx EN MCX4121A-ACAT Ethernet card	PCIe-based 10/25 Gb network interface card
	Broadcom P225p Ethernet card	PCIe based 10/25 Gb Ethernet card
	Intel X550-T2 dual-port 10Gb Ethernet card	PCIe-based 10 Gb dual-port network interface card
3	Mellanox ConnectX-4 Lx EN MCX4121A-ACAT Ethernet card	PCIe-based 10/25 Gb network interface cards
	Broadcom P225p Ethernet card	PCIe based 10/25 Gb Ethernet card
	Intel X550-T2 dual-port 10Gb Ethernet card	PCIe-based 10 Gb dual-port network interface card
4	QLE2692 dual-port 16Gb Fibre Channel host bus adapter	PCIe-based 16Gb Fibre Channel host bus adapter
	Mellanox* ConnectX-4 Lx EN MCX4121A-ACAT Ethernet card	PCIe-based 10/25 Gb network interface cards
	Broadcom P225p Ethernet card	PCIe based 10/25 Gb Ethernet card
	Intel X550-T2 dual-port 10Gb Ethernet card	PCIe-based 10 Gb dual-port network interface card

Table 1-10 Acceptable PCIe-based I/O cards for each appliance I/O slot
(continued)

Slot	Acceptable PCIe I/O card	Comment
5	QLE2692 dual-port 16Gb Fibre Channel host bus adapter *	PCIe-based 16Gb Fibre Channel host bus adapter
6	QLE2692 dual-port 16Gb Fibre Channel host bus adapter *	PCIe-based 16Gb Fibre Channel host bus adapter

QLE2692 dual-port 16Gb Fibre Channel host bus adapter

The QLE2692 dual-port 16Gb Fibre Channel (FC) host bus adapter is used for optimized deduplication over Fibre Channel, tape library connectivity, or Fibre Transport Media Server (FTMS) mode.

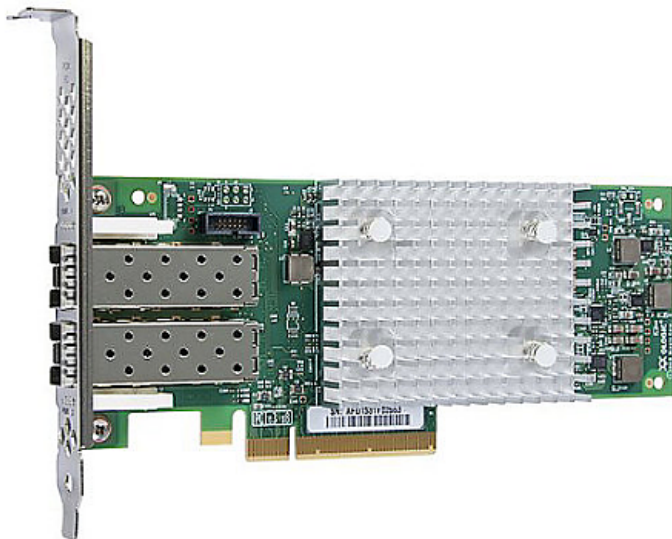


Table 1-11 QLE2692 dual-port 16Gb Fibre Channel host bus adapter specifications

Item	Description
Bracket height	Full Height

Table 1-11 QLE2692 dual-port 16Gb Fibre Channel host bus adapter specifications (*continued*)

Item	Description				
Form factor	Low-profile PCIe card (6.6 inches × 2.731 inches)				
Power consumption (watts)	9.3 W				
Operating temperature	0°C to 55°C (32°F to 131°F)				
Storage temperature	–20°C to 70°C (–4°F to 158°F)				
Operating humidity	10% to 90%				
Storage humidity	5% to 95%				
System interface type	PCIe v3.0				
Certifications	UL, CSA, TUV, CB, FCC, VCCI				
Maximum cable distances	Rate	Cable and Distance (m) (multimode optic cable)			
		OM1	OM2	OM3	OM4
	4Gbps	70	150	380	400
	8Gbps	21	50	150	190
	16Gbps	*	35	100	125

* Not supported

The following table describes the Fibre Channel host bus adapter LED indicator status activity.

Table 1-12 QLE2692 dual-port 16Gb Fibre Channel host bus adapter LED indicator status activity

Yellow LED	Green LED	Amber LED	Activity
Off	Off	Off	Power off
On	On	On	Power on (pre-firmware initialization)
Blink	Blink	Blink	Power on (post-firmware initialization)
Blink alternately	Blink alternately	Blink alternately	Firmware error
Off	Off	On/Blink	4Gbps link / input-output (I/O) activity
Off	On/Blink	Off	8Gbps link / input-output (I/O) activity
On/Blink	Off	Off	16Gbps link / input-output (I/O) activity

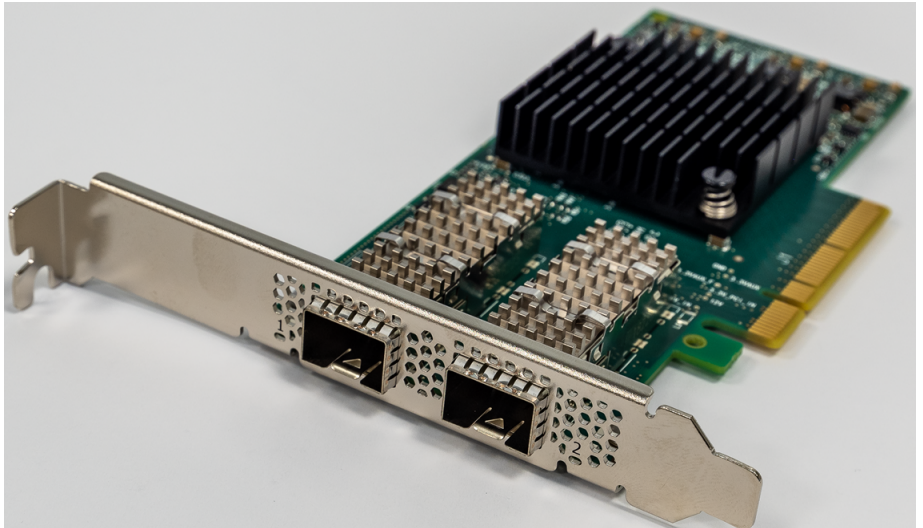
To purchase a QLE2692 dual-port 16Gb Fibre Channel host bus adapter for your appliance, contact your Veritas sales representative, or your Veritas Partner representative.

QLE2692 dual-port 16Gb Fibre Channel host bus adapter

SKU Number	Description
19441	QLOGIC 16Gb Fibre Channel host bus adapter

Mellanox ConnectX-4 Lx EN MCX4121A-ACAT Ethernet card

The Mellanox ConnectX-4 Lx EN Ethernet card supports both optical (short wave and long wave optics) and copper (twinax) traffic at 10/25 Gbps Ethernet line rate speeds.



Note: Veritas recommends that you use Finisar FTLX8574D3BCV SFP part for 10G connectivity and Mellanox MMA2P00-AS SFP part for 25G connectivity.

Table 1-13 Mellanox ConnectX-4 Lx EN MCX4121A-ACAT Ethernet card specifications

Item	Specification
Bracket height	Full Height
Power consumption	Typical: 9.6 watts Maximum: 15.0 watts
Operating temperature	0°C to 55°C (32 F to 131 F)
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Storage humidity	90% RH (operating, non-operating)
System interface type	PCIe v3.0
Speed and slot width	8.0 GT/s (gigatransfers per second), 8-Lane
Data rate supported per port	10/25
Air Flow (minimum)	300 LFM (linear feet per minute)

Broadcom P225p 10/25Gb PCIe Ethernet card

The Broadcom® BCM957414A4142CC is a dual-port 25 Gb/s, PCI-Express Gen3 x8 Network Interface Card that supports both SFP28/SFP+ optical modules and copper direct attach cable. The card uses the Broadcom BCM57414 25GbE MAC controller with the integrated dual channel 25GbE SFI transceiver.

By default, a 10 GB SFP is shipped with the appliance.



Note: Veritas recommends that you use Finisar FTLX8574D3BCV SFP part for 10G connectivity and Mellanox MMA2P00-AS SFP part for 25G connectivity.

Note: The Broadcom P225p 10/25Gb PCIe Ethernet card does not support the installation of a 10G SFP and 25G SFP within the same card. You must either have SFPs with the same maximum speed on both ports at any given time or remove the unused SFP from the card.

Table 1-14 Broadcom P225p NIC adapter specifications

Item	Specification
Bracket height	Full height
Power consumption	Typical: 12.5 watts Maximum: 12.9 watts
Operating temperature	0°C to 55°C (32 F to 131 F)

Table 1-14 Broadcom P225p NIC adapter specifications (*continued*)

Item	Specification
Storage temperature	-40°C to +70°C (-49°F to +221°F)
Storage humidity	90% at 35°C
System interface type	PCIe v3.0
Speed and slot width	8.0 GT/s (gigatransfers per second), 8-Lane
Data rate supported per port	10/25Gb
Air Flow (minimum)	150 LFM (linear feet per minute)

Intel X550-T2 dual-port 10Gb Ethernet card

The Intel X550-T2 dual-port network interface card connects the appliance to the 10Gb network infrastructure over 10GBase-T technology.



Table 1-15 Intel X550-T2 dual-port 10Gb Ethernet card specifications

Item	Specification
Bracket height	Full Height Low Profile
Power consumption	Typical: 11.2 watts @ 10Gbps Maximum 13 watts @ 10Gbps
Operating temperature	5°C to 35°C
Storage temperature	-40 °C to +85 °C
Storage humidity	5% to 95%, non-condensing
System interface type	PCIe v3.0
Speed and slot width	8.0 GT/s (gigatransfers per second), 4-Lane
Data rate supported per port	10GbE/5GbE/2.5GbE/1GbE/100Mb
LED indicators	LINK (solid) and ACTIVITY (blinking) LINK SPEED (green=10Gbps; yellow=1Gbps)
Air Flow (minimum)	150 LFM (linear feet per minute)

Intel RAID Adapter RS3P4MF088F

The Intel RAID Adapter RS3P4MF088F is a tri-mode RAID Adapter with 12Gb SAS-3 MegaRAID 8 internal ports.

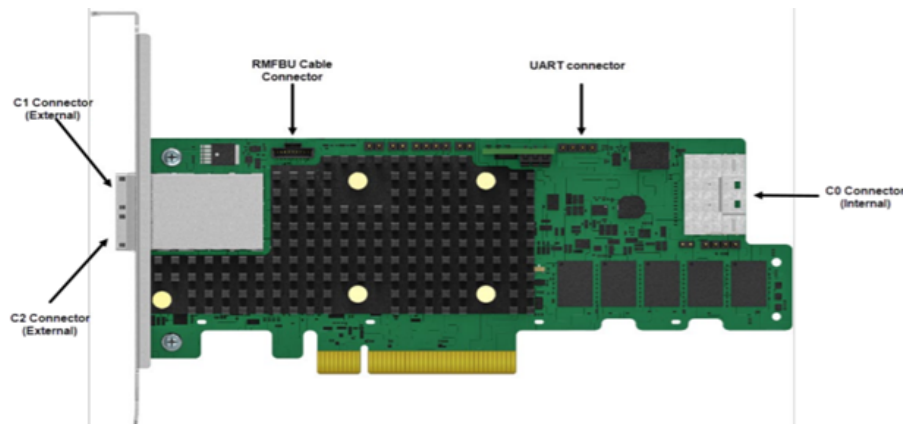


Table 1-16 RS3P4MF088F RAID adapter specifications

Item	Specification
Bracket height	Low profile mounting bracket
Power consumption	Typical: 16.70 watts Maximum: 17.71 watts
Operating temperature	0°C to 55°C (32 F to 131 F)
Storage temperature	-45°C to +105°C (-49°F to +221°F)
Storage humidity	20-80% RH (operating) 05-90% RH (non-operating)
System interface type	PCIe v4.0 (x8 PCI Express* 4.0 PCIe*)
Speed and slot width	16 GT/s (gigatransfers per second), per lane
Data rate supported per port	12, 6, 3 Gbps per port SAS 6, 3 Gbps per port SATA 16 Gbps per lane NVMe*
Air Flow (minimum)	200 LFM (linear feet per minute)

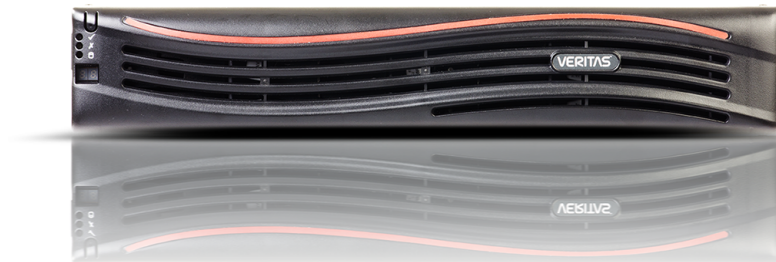
Veritas 2U12 65.5TiB/72TB Storage Shelf

This chapter includes the following topics:

- [Storage Shelf overview](#)
- [Usable appliance storage capacities](#)
- [Components of the S Series Storage Shelf](#)
- [Components of the D Series Storage Shelf](#)

Storage Shelf overview

S Series Storage Shelf



The optional Veritas S Series 2U12 65.5TiB/72TB Storage Shelf is a 2U12 drive enclosure that contains twelve 8TB 7200 rpm SAS hard disk drives. Available

storage capacity of the storage shelf is 65 TiB. Each disk drive can be accessed from the storage shelf's front panel. The PCIe RAID controller is used to configure the disk drives into a RAID 6 configuration. One of the disk drives is reserved as a global hot spare and can be used in case of any drive failure.

The S Series Storage Shelf also contains two Storage Bay Bridge 2.1 compliant (SBB) Input/Output (I/O) modules. Each I/O module has three mini-SAS HD ports, which are labeled A, B, and C. As such, each storage shelf contains a total of six mini-SAS HD I/O ports. However, only ports A and B of each I/O module are used to connect the storage shelf to the appliance or other storage shelves.

Each I/O module also includes one Ethernet port and a 3.5mm RS232 Interface-to-Enclosure Services Processor jack. The Ethernet port and the RS232 jack are only used during on-site debugging operations. They are not used during normal appliance operations.

Along with the I/O modules and the disk drives, the Storage Shelf also includes a front control panel. The control panel provides LED indications of the health of the storage shelf. It uses a dual seven segment display for enclosure identification and a switch that is used for storage shelf configuration purposes.

The Storage Shelf serial number appears on a plastic panel on the left side of Power Cooling Module 0 (PCM 0). The storage shelf serial number begins with the letters SH.

See [“S Series Storage Shelf front panel components”](#) on page 39.

See [“S Series Storage Shelf rear components”](#) on page 43.

See [“S Series Storage Shelf control panel”](#) on page 41.

D Series Storage Shelf

The Veritas D Series 2U12 65.5TiB/72TB Storage Shelf is a direct-attach storage enclosures designed to maximize your server storage capacity. Available storage capacity of the storage shelf is 65 TiB. It offers the flexibility of 3.5-inch or 2.5-inch hard drives (with specially designed carriers) in a 2U, 12-drive enclosure. The PCIe RAID controller is used to configure the disk drives into a RAID 6 configuration. One of the disk drives is reserved as a global hot spare and can be used in case of any drive failure.

The D Series Storage Shelf also contains two Storage Bay Bridge 2.1 compliant (SBB) Input/Output (I/O) modules. Each I/O module has four mini-SAS HD ports, which are labeled 1, 2, 3 and 4. As such, each storage shelf contains a total of six mini-SAS HD I/O ports. However, only ports 1 and 2 of each I/O module are used to connect the storage shelf to the appliance or other storage shelves.

The Storage Shelf service tag number is located on a black tab on the right side of the rear panel, between the bottom I/O module and the power supply. Pull out the

tab to display the serial number. The service tag number/serial number is also located on the front panel right side ear. The service tag number/serial number is listed after the “ST:” notation.

See [“D Series Storage Shelf front panel components”](#) on page 52.

See [“D Series Storage Shelf rear components”](#) on page 55.

See [“D Series Storage Shelf control panel”](#) on page 54.

Usable appliance storage capacities

Note: All the storage on the head node and shelves are included in the licensed storage capacity and require entitlement.

Table 2-1 Usable storage capacities - Veritas 5250 Appliance and Veritas 2U12 65.5TiB/72TB Storage Shelves

Appliance only	Storage shelf capacity	Appliance and one storage shelf	Appliance and two storage shelves	Appliance and three storage shelves	Appliance and four storage shelves	Appliance and five storage shelves	Appliance and six storage shelves
10TB (9.1TiB)	72TB (65.5TiB)	82TB (74.6 TiB)	154TB (140.1 TiB)	226TB (205.6 TiB)	298TB (271.1TiB)	370TB (336.6TiB)	442TB (402.1TiB)
40TB* (36.4TiB)	72TB (65.5TiB)	112TB (101.9TiB)	184TB (167.4TiB)	256TB (232.9TiB)	328TB (292.4TiB)	400TB (363.9TiB)	472TB (429.4TiB)

Note: Usable storage capacities are rounded values. Veritas calculates these values from the raw storage capacities of the various Veritas 5250 Appliance-only configurations. The raw capacity of the Veritas 2U12 65.5TiB/72TB Storage Shelf is 65.5 terabyte. To determine the exact usable capacities of each configuration, use the following formulas: <appliance-only capacity> + 65.5 = exact usable capacity

* You can add up to six Storage Shelves to an existing Veritas 5250 Appliance with internal storage capacities of 9.1TiB or 36.4TiB. However, before you place the system into a production environment, you must migrate all MSDP data from the appliance to the first external storage shelf. After you migrate the MSDP data, the system's usable storage space may fluctuate, depending on how much actual storage space the MSDP data pool uses.

A 256GB memory upgrade kit is available for purchase when adding the first 2U12 65.5TiB/72TB Storage Shelf, which replaces all existing DIMM modules in the appliance. Contact your Veritas account representative for details.

Note: Spanning MSDP data across both Veritas 5250 Appliance internal storage and a storage shelf is not recommended as it may result in degraded performance.

Warning: Failure to migrate MSDP data after you connect a storage shelf may result in degraded appliance throughput performance.

For more information about migrating MSDP data, see the following document: [Moving the MSDP partition from a base disk to an expansion disk for optimum performance](#).

Components of the S Series Storage Shelf

The following sections describe the components of the Veritas S Series 2U12 65.5TiB/72TB Storage Shelf.

S Series Storage Shelf front panel components

Hard disk drive capacities and drive bay slot assignments

The Veritas S Series 2U12 65.5TiB/72TB Storage Shelf contains 12 disk drive storage bays that are populated with 8 TB 7200 rpm SAS hard disk drives. The available backup storage capacity of the storage shelf equals 65 TiB. One of the disk drives is reserved as a hot spare. All disk drives are accessible from the front panel of the storage shelf after you remove the storage shelf bezel.

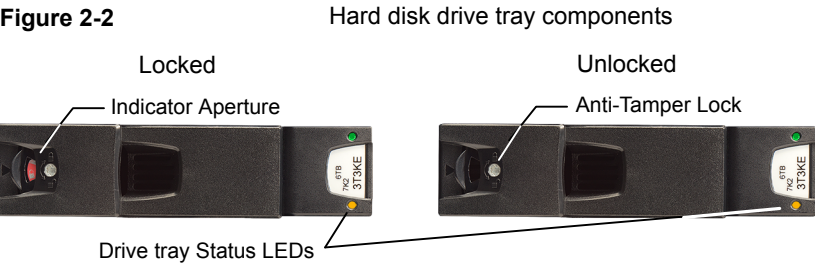
The following figure shows the front panel disk drive slot assignments within the Veritas 2U12 65.5TiB/72TB Storage Shelf.

Figure 2-1 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf disk drive slot layout



Hard disk drive carrier characteristics

Each storage shelf hard drive is housed in a disk drive carrier. Each disk drive carrier uses a locking mechanism that secures the disk drive within the storage shelf.



The following table describes the disk drive carrier LEDs. Note that the combination of both LEDs provides the status.

Table 2-2 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf disk drive carrier LED status

Status	Activity (green) LED	Fault (amber) LED
No disk drive installed.	OFF	OFF
Drives are installed, turned on, and operational.	Blinks during I/O activity and during startup.	OFF
SCSI Enclosure Services (SES) Device identity set.	ON	Blinks at a rate of 1 second ON and 1 second OFF.
Drive slot fault.	OFF	ON
Drive fault. Power control circuit fault.	ON	ON
Logical fault. Possible drive failed.	ON	Blinks at a rate of 3 seconds ON and one 1 second OFF.

Note: For security purposes, each drive tray is locked by default when the storage shelf is shipped from the factory. To access a hard disk drive, each storage bay must be unlocked using a T10 torx screw driver.



S Series Storage Shelf control panel

The Veritas S Series 2U12 65.5TiB/72TB Storage Shelf control panel is installed on the front left side of the storage shelf.

Figure 2-3 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf control panel



Table 2-3 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf control panel functions

Number	Item	Description
1	Input switch	The Input switch enables you to set the Unit Identification display.
2	Power On / Standby LED (Green or Amber)	The Power On/Standby LED shows Amber when only standby power is available. Otherwise, the LED shows Green when system power is available.
3	Module Fault LED (Power Cooling Module, Cooling, I/O module status) (Amber)	The Module Fault LED illuminates when there is a system hardware fault. The system hardware fault may be associated with a fault LED on a Power Cooling Module (PCM) or on an I/O module.
4	Logical status LED (amber)	The Logical Status LED shows a change of status or a fault. Typically these changes of status or faults are associated with the shelf's disk drives. However, the Logical Status LED can also indicate an issue with an internal RAID controller or external RAID controller, or with a host bus adapter.
5	Unit Identification Display	The Unit Identification Display is a dual digit display that provides information about the storage shelf. Its primary function is to assist in the configuration of multiple storage shelves.

Table 2-4 S Series Control panel LED conditions and statuses

System Power (Green or Amber)	Module Fault (Amber)	Logical Fault (Amber)	Associated LEDs/Alarms	Status
On (Amber)	Off	Off	None	Standby power present, Overall Power failed or switched off
On (Green)	On (Amber)	N/A	Single beep, then double beep	Control Panel Power on - test state (Test state = 5 seconds)
On (Green)	Off	Off	None	Power On - All functions good

Table 2-4 S Series Control panel LED conditions and statuses (*continued*)

System Power (Green or Amber)	Module Fault (Amber)	Logical Fault (Amber)	Associated LEDs/Alarms	Status
On (Green)	On (Amber)	N/A	Power Cooling Module Fault LEDs Fan Fault LEDs	Any Power Cooling Module Fault, Fan Fault, or an over or under temperature issue
On (Green)	On (Amber)	N/A	I/O module LEDs	Any I/O module fault
On (Green)	On (Amber)	N/A	None	Enclosure Logical Fault
On (Green)	Flashing	N/A	Module Fault LED on an I/O module	Unknown I/O module type installed (Invalid or Mixed)
On (Green)	Flashing	N/A	Power Cooling Module Fault LEDs Fan Fault LEDs	Unknown Power Cooling Module installed. (Invalid or Mixed)
On (Green)	N/A	On	Array in a failed or degraded state	Drive failure has occurred causing loss of availability or redundancy
On (Green)	N/A	Flashing	Arrays in an impacted state	Array operating background function
On	Flashing	N/A	SES state S1	Enclosure ID setting different from "start of day" setting

N/A - Not Applicable

For more information, see the *Veritas 5250 Appliance Hardware Installation Guide*.

S Series Storage Shelf rear components

This section describes the rear panel features of the Veritas S Series 2U12 65.5TiB/72TB Storage Shelf.

The following figure provides an overview of the components that comprise the Veritas S Series 2U12 65.5TiB/72TB Storage Shelf rear panel.

Figure 2-4 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf rear components

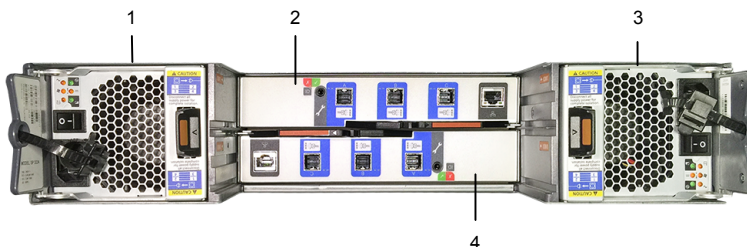


Table 2-5 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf rear components

Number	Component
1	Power Cooling Module 0 (PCM0)
2	I/O module 0
3	Power Cooling Module 1 (PCM1)
4	I/O module 1

See [“S Series Storage Shelf I/O modules”](#) on page 44.

See [“S Series Storage Shelf Power Cooling Modules”](#) on page 48.

See [“S Series Power Cooling Module LEDs”](#) on page 50.

S Series Storage Shelf I/O modules

This section discusses the Veritas S Series 2U12 65.5TiB/72TB Storage Shelf I/O modules.

Figure 2-5 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf I/O module



The following figure and table provides details of the two Veritas 2U12 65.5TiB/72TB Storage Shelf I/O module canisters.

Figure 2-6 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf I/O modules

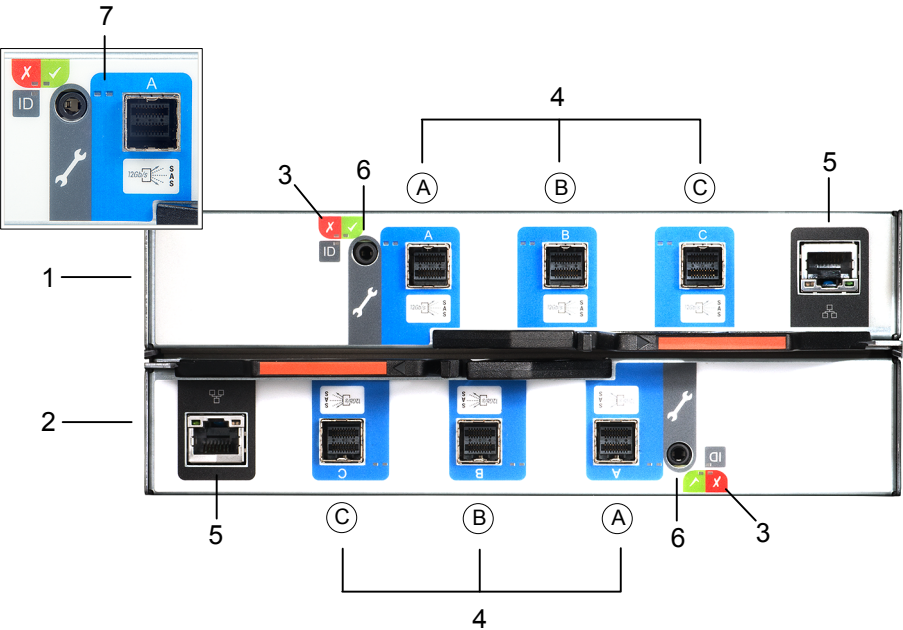


Table 2-6 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf I/O module components

Number	Description
1	I/O module 0
2	I/O module 1
3	I/O module Status LEDs See “S Series I/O module Status LED location and conditions” on page 46.
4	mini-SAS HD ports - A, B, and C
5	Ethernet port (debugging purposes only)
6	RS232 jack (debugging purposes only)
7	SAS Activity LEDs See “S Series I/O module SAS Activity LED location and conditions” on page 47.

S Series I/O module Status LED location and conditions

This section discusses the location of the Status LEDs on the I/O module and the Status LED conditions.

Figure 2-7 S Series I/O module Status indicator LED location

I/O module Status LED location

**Table 2-7** S Series I/O module Status LED conditions

Condition	Activity LED (green)	Fault LED (amber)
Module Fault (amber)	On	The I/O module has encountered a fault condition.
	Off	The I/O module is operating normally.

Table 2-7 S Series I/O module Status LED conditions (*continued*)

Condition	Activity LED (green)	Fault LED (amber)
Power (green)	On	The I/O module is on.
	Off	The I/O module is off.
ID (blue)	On	The I/O module controller is being identified.

See [“S Series I/O module SAS Activity LED location and conditions”](#) on page 47.

See [“S Series Storage Shelf I/O modules”](#) on page 44.

S Series I/O module SAS Activity LED location and conditions

This section discusses the location of the SAS Activity LEDs on the I/O module and the SAS Activity LED conditions.

Figure 2-8 S Series I/O module SAS Activity LED location

SAS Activity LED location

**Table 2-8** S Series I/O module SAS Activity LED conditions

Condition	Activity LED (green)	Fault LED (amber)
No Cable Present	Off	Off
Cable Present All links up, no activity.	On	Off
Cable Present All links up.	Flash with aggregate port activity	Off

Table 2-8 S Series I/O module SAS Activity LED conditions (*continued*)

Condition	Activity LED (green)	Fault LED (amber)
Critical Fault Any fault which causes operation of the cable to cease or fail to start. For example, an OVERCURRENT trip.	Off	On
Non-Critical Fault Any fault which does not cause the connection to cease operation. For example, not all links established; OVERTEMPERATURE condition detected.	Flash with aggregate port activity	Flashing - One second on; one second off

See [“S Series Storage Shelf I/O modules”](#) on page 44.

See [“S Series I/O module Status LED location and conditions”](#) on page 46.

S Series Storage Shelf Power Cooling Modules

The Veritas S Series 2U12 65.5TiB/72TB Storage Shelf includes two Power Cooling Modules (PCM). The dual PCMs provide redundant power to the storage shelf. If one PCM fails, the storage shelf continues to operate as the second PCM continues to supply the storage shelf with power.

Figure 2-9 S Series Power Cooling Module

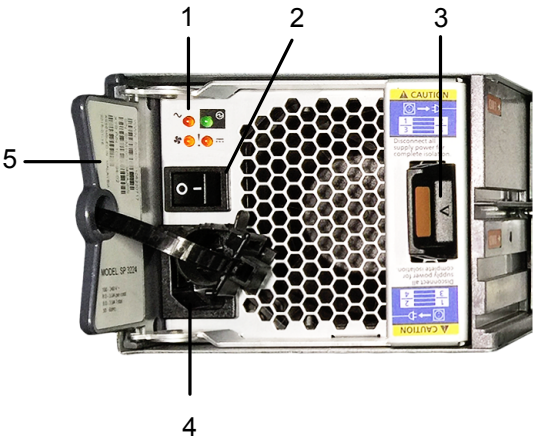


Table 2-9 S Series Power Cooling Module components

Number	Component
1	Power Cooling Module LEDs See “S Series Power Cooling Module LEDs” on page 50.
2	On/Off switch
3	Release tab
4	AC power socket

Table 2-9

Number	Component
5	Serial number - located on the Power Cooling Module 0 tab Note: The storage shelf serial number begins with the letters SH. 

S Series Power Cooling Module LEDs

The S Series Power Cooling Modules (PCM) use four LEDs to indicate the status of the PCM.

Figure 2-10 S Series Power Cooling Module LEDs

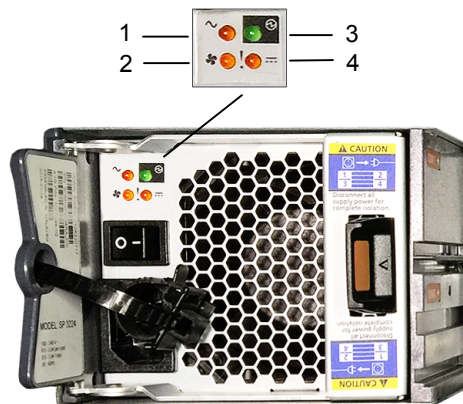


Table 2-10 S Series Power Cooling Module LED legend

Number	LED condition
1	AC fail
2	Fan fail
3	Power Cooling Module OK
4	DC fail

Table 2-11 S Series Power Cooling Module LED conditions

Status	Power Cooling Module OK (Green)	Fan Fail (Amber)	AC Fail (Amber)	DC Fail (Amber)
No AC Power (any Power Cooling Module)	Off	Off	Off	Off
No AC Power (this Power Cooling Module only)	Off	Off	On	On
AC Present (Power Cooling Module On OK)	On	Off	Off	Off
Power Cooling Module fan out of tolerance	On	Off	Off	On
Power Cooling Module fan fail	Off	On	Off	Off
Power Cooling Module Fault (Over temp, over volts, over current)	Off	On	On	On
Standby Mode	Flashing	Off	Off	Off
Power Cooling Module firmware download	Off	Flashing	Flashing	Flashing

See [“S Series Storage Shelf Power Cooling Modules”](#) on page 48.

Components of the D Series Storage Shelf

The following sections describe the components of the Veritas D Series 2U12 65.5TiB/72TB Storage Shelf.

D Series Storage Shelf front panel components

Hard disk drive capacities and drive bay slot assignments

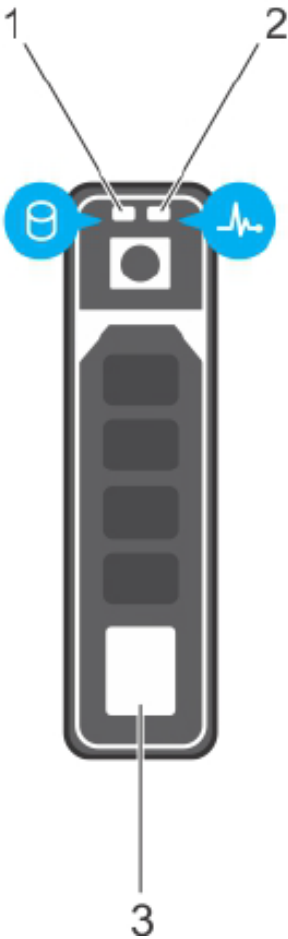
The Veritas D Series 2U12 65.5TiB/72TB Storage Shelf contains 12, 3.5-inch SAS hot-swappable hard disk drives. The available backup storage capacity of the storage shelf equals 65 TiB. One of the disk drives is reserved as a hot spare. All disk drives are accessible from the front panel of the storage shelf after you remove the storage shelf bezel.

The following figure shows the front panel disk drive slot assignments within the Veritas D Series 2U12 65.5TiB/72TB Storage Shelf.



Hard disk drive indicator patterns

Figure 2-11 Hard disk drive indicators



- 1 hard disk drive activity indicator (green)
- 2 hard disk drive status indicator (green and amber)
- 3 hard disk drive

The following table describes the disk drive carrier status indicator pattern.

Table 2-12 Disk drive carrier status indicator pattern

Status indicator pattern (RAID Only)	Condition
Blinks green two times per second	Identify hard disk drive or preparing for removal
Off	Hard disk drive ready for insertion or removal
Blinks green, amber, and off	Hard disk drive predicted failure
Blinks amber four times per second	Hard disk drive failed
Blinks green slowly	Hard disk drive rebuilding
Steady green	Hard disk drive online
Blinks green for three seconds, amber for three seconds, and turns off in six seconds.	Rebuild aborted

Note: The hard disk drive status indicator remains off until all hard disk drives are initialized after system power is turned on. Hard disk drives are not ready for insertion or removal during this time.

D Series Storage Shelf control panel

The Veritas D Series 2U12 65.5TiB/72TB Storage Shelf control panel is installed on the front left side of the storage shelf.

Figure 2-12 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf control panel

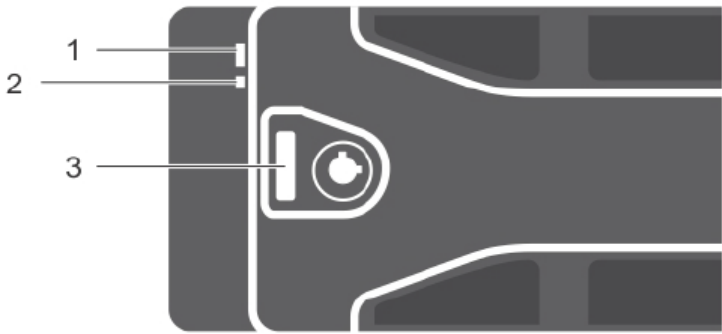


Table 2-13 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf control panel functions

Number	Item	Description
1	Enclosure status LED	The enclosure status LED lights when the enclosure power is on.
2	Power LED	The power LED lights when at least one power supply unit (PSU) is supplying power to the enclosure.
3	Latch	The latch is used to remove the bezel from the enclosure.

Table 2-14 D Series Enclosure status LED conditions and statuses

Indicator	Description
Solid blue	Normal operation
Blinks blue	Host server is identifying the enclosure or the system identification button is pressed
Blinks amber or remains solid amber for a few seconds and then turns off	EMMs are booting or resetting.
Blinks amber for an extended time	The enclosure is in a warning state.
Solid amber	the enclosure is in the fault state.

D Series Storage Shelf rear components

This section describes the rear panel features of the Veritas D Series 2U12 65.5TiB/72TB Storage Shelf.

The following figure provides an overview of the components that comprise the Veritas D Series 2U12 65.5TiB/72TB Storage Shelf rear panel.

Figure 2-13 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf rear components

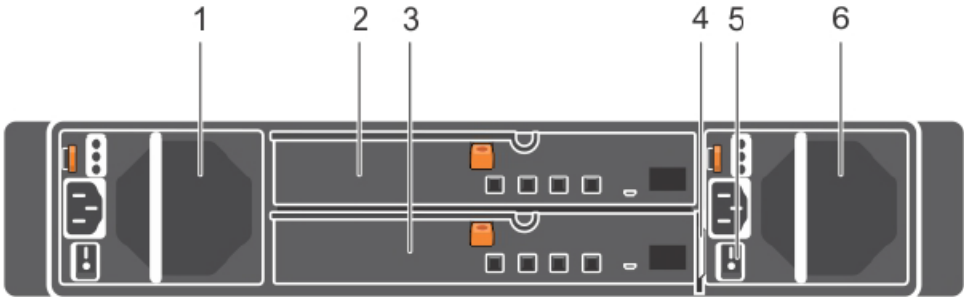


Table 2-15 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf rear components

Number	Indicator	Description
1	Power supply unit or cooling fan module (PS1)	600 W power supply. See “D Series Power indicator codes” on page 56.
2	Primary enclosure management module (EMM 0)	Provides a data path between the enclosure and the host server.
3	Secondary EMM (EMM 1)	Provides enclosure management functions for the enclosure.
4	Information tag	A slide-out label panel, which helps to record the Service Tag.
5	Power switches (2)	Controls the power supply output to the enclosure.
6	Power supply unit or cooling fan module (PS 2)	600 W power supply. See “D Series Power indicator codes” on page 56.

D Series Power indicator codes

This section discusses the power indicator codes of the Veritas D Series 2U12 65.5TiB/72TB Storage Shelf.

Figure 2-14 Veritas D Series 2U12 65.5TiB/72TB Power indicator codes

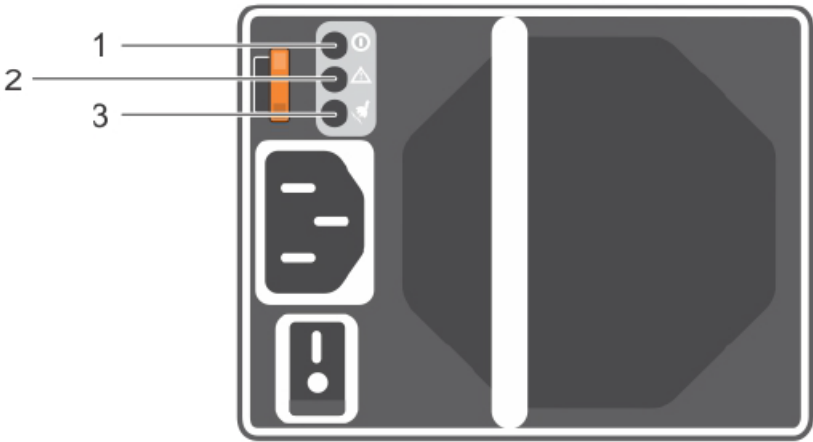


Table 2-16 Veritas D Series 2U12 65.5TiB/72TB Power indicator codes

Number	LED	Color	State
1	DC power	Green	ON — Normal operation. Power supply is connected to DC power and the power switch is on. The power supply module is supplying DC power to the array. OFF — Indicates any one of the following: ■ The power switch is off. ■ The power supply module is not connected to power. ■ There is a fault condition.
2	Power supply module fault	Yellow	ON — Fault detected. OFF — OK. Blinks briefly when power is first turned on to the power supply module.
3	AC power	Green	ON — Power supply module is connected to a source of AC power irrespective of whether or not a power switch is on. OFF — Power supply module is completely disconnected from any source of AC power.

Veritas 5250 Appliance and Veritas 2U12 65.5TiB/72TB Storage Shelf cables

This chapter includes the following topics:

- [Power cables](#)
- [Network cable](#)
- [Multi-Mode fiber optic cable](#)
- [Twinaxial copper cables](#)
- [SAS-3 cable](#)

Power cables

Each of the AC power modules in the Veritas 5250 Appliance and in the optional Storage Shelf accept one AC power cable. One end of the AC power cable is connected to the power supply on the appliance or the storage device. The other end of the cable is connected to an external Power Distribution Unit (PDU) on the rack.

Power cables include a live line, a neutral line, and a grounding line.

Figure 3-1 AC power cable



- A AC power connector (IEC-60320-C14) to an external power supply Power Distribution Unit (PDU) on a rack.
- B AC power connector (IEC-60320-C13) to an appliance or a storage device.

Note: If your power distribution unit is not compatible with the IEC-60320-C14 plug, then Veritas recommends that you purchase your power cable locally. Make sure the power cable meets or exceeds the indicated power rating.

See [“Veritas 5250 Appliance technical specifications”](#) on page 65.

See [“Multi-Mode fiber optic cable”](#) on page 60.

See [“SAS-3 cable”](#) on page 62.

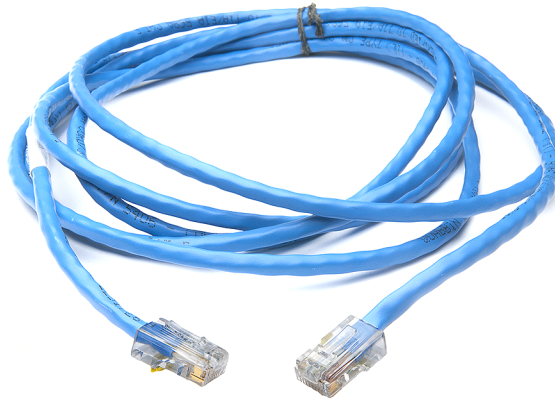
See [“Twinaxial copper cables”](#) on page 61.

See [“Network cable”](#) on page 59.

Network cable

The appliance communicates with the Ethernet networks 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 RJ45 connectors.

Figure 3-2 Network cable



See [“Power cables”](#) on page 58.

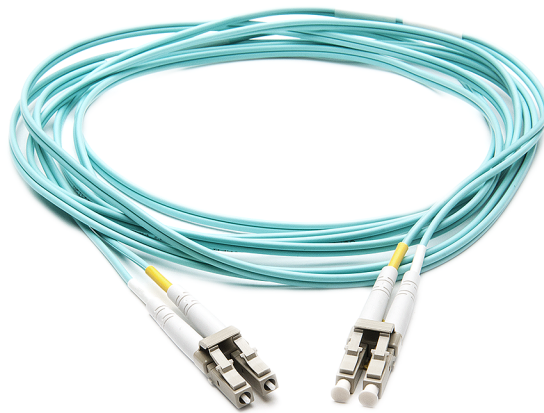
See [“Multi-Mode fiber optic cable”](#) on page 60.

See [“SAS-3 cable”](#) on page 62.

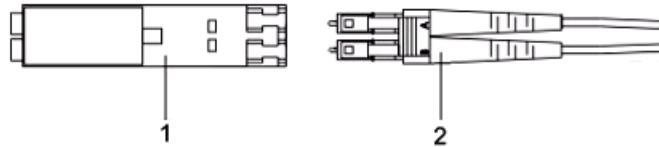
See [“Twinaxial copper cables”](#) on page 61.

Multi-Mode fiber optic cable

Figure 3-3 Multi-Mode fiber 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

Note: Veritas recommends that you use Finisar FTLX8574D3BCV SFP part for 10G connectivity and Mellanox MMA2P00-AS SFP part for 25G connectivity.

See [“Power cables”](#) on page 58.

See [“SAS-3 cable”](#) on page 62.

See [“Twinaxial copper cables”](#) on page 61.

See [“Network cable”](#) on page 59.

Twinaxial copper cables

The Veritas 5250 Appliance communicates with Ethernet networks through high speed Twinaxial copper cables. If you configure the appliance to communicate with 10/25 Gb Ethernet networks, these cables connect to the 10/25Gb NIC card in the appliance.

These cables are also known as Direct-Access Copper (DAC) cables, and are available in 1-meter, 3-meter, or 5-meter lengths.



See [“Power cables”](#) on page 58.

See [“Multi-Mode fiber optic cable”](#) on page 60.

See [“SAS-3 cable”](#) on page 62.

See [“Network cable”](#) on page 59.

SAS-3 cable

SAS-3 data cables are used to connect the optional Veritas 2U12 65.5TiB/72TB Storage Shelf to the Veritas 5250 Appliance. SAS-3 cables have a mini-SAS HD connector on both ends. Two 1m SAS-3 cables are shipped with each S Series Storage Shelf. For the D Series Storage Shelves, a 2 meter cable is standard. Longer SAS-3 cables are supported with the 2U12 Storage Shelf if needed for the configuration.

Figure 3-4 SAS-3 cable



See [“Power cables”](#) on page 58.

See [“Multi-Mode fiber optic cable”](#) on page 60.

See [“Twinaxial copper cables”](#) on page 61.

See [“Network cable”](#) on page 59.

Technical specifications, Environmental/Protocol standards, and Compliance standards

This appendix includes the following topics:

- [Veritas 5250 Appliance technical specifications](#)
- [Veritas S Series 2U12 65.5TiB/72TB Storage Shelf technical specifications](#)
- [Veritas D Series 2U12 65.5TiB/72TB Storage Shelf technical specifications](#)
- [Environmental specifications](#)
- [Protocol standards](#)
- [Regulatory, compliance, and certification information](#)
- [Product regulatory compliance](#)
- [Country approvals](#)
- [Product safety compliance](#)
- [Product EMC Compliance - Class A Compliance](#)
- [Product environmental compliance](#)

Veritas 5250 Appliance technical specifications

The following table provides technical specifications for the Veritas 5250 Appliance.

Table A-1 Veritas 5250 Appliance technical specifications

Technical Specification	Veritas 5250 Appliance
Rack information	19" EIA standard The rack rails that are provided for the Veritas 5250 Appliance are extensible to 32" (813mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 32" (813mm) the rails and the appliance cannot be properly installed.
Processor	Two (2) Intel® Xeon® Silver 4214 2.2GHz Processor
CPU speed	2.20GHz
Cores	24 (12 per processor)
System memory (currently supported)	64 GB 256 GB 512GB Note: When you purchase the first expansion storage shelf, the Storage Expansion Kit that comes with the storage shelf includes 256 GB of memory that replaces the existing 64GB. Additional 256GB memory kit is required when you add the fifth shelf.
Memory type and configuration (DIMMs)	DDR4 RDIMM 8 x 8GB (64GB) 8 x 32GB (256GB) 16 x 32GB (512GB)
SAS RAID card installed in a PCIe riser assembly (Y/N)	Mezzanine card: Yes PCIe RAID card: Yes
RAID cache	4 GB is also included on the external PCIe RAID controller
Usable MSDP and AdvancedDisk storage capacity (TiB)	Appliance: 9.1TiB, 36.4TiB Each storage shelf: 65.5TiB Maximum configuration shipped from the factory: 429.4TiB

Table A-1 Veritas 5250 Appliance technical specifications (*continued*)

Technical Specification	Veritas 5250 Appliance
Maximum number of storage shelves	6
1 Gb Ethernet ports	Up to 4 maximum
10/25 Gb Ethernet ports	Up to 6 maximum
16 Gb Fibre Channel ports	Up to 8 maximum
Dimensions (IEC rack compliant)	Height: 8.89cm (3.5") (approximately 2U) Width: 48.26cm (19") Depth: 79.38cm (31.25")
Maximum weight	23.26 kg (51.28 lbs)
AC power requirements	110 VAC at 6.2 A 220 VAC at 3.2 A
AC power cable	Specification: IEC-60320-C14 to IEC-60320-C13, 10A/250V, Black, 4 ft The IEC-60320-C14 plugs into a Power Distribution Unit. The IEC-60320-C13 plugs into an appliance or storage shelf power supply. Note: If your power distribution unit is not compatible with the IEC-60320-C14 plug, then Veritas recommends that you purchase your power cable locally. Make sure the power cable meets or exceed the indicated power rating. See "Power cables" on page 58.
AC Frequency range	50/60Hz
Typical power consumption	240 watts
Typical power consumption with a maximum of six connected external storage shelves	1776 watts (3.76 watts per TB)
Maximum power consumption	550 watts

Table A-1 Veritas 5250 Appliance technical specifications (*continued*)

Technical Specification	Veritas 5250 Appliance
Maximum power consumption with a maximum of six connected external storage shelves	3430 watts (7.27 watts per TB)
System cooling requirement (heat dissipation)	819 BTU/hr (Typical) 1876.7 BTU/hr (Maximum)
System cooling requirement with maximum external storage (heat dissipation)	6060 BTU/hr (Typical) 11703.6 BTU/hr (Maximum)
Operating voltage	100V - 127 VAC 200V - 240 VAC
Power conversion efficiency	90% +
Acoustic noise	70 dBA

See [“Veritas S Series 2U12 65.5TiB/72TB Storage Shelf technical specifications”](#) on page 67.

Veritas S Series 2U12 65.5TiB/72TB Storage Shelf technical specifications

The following table provides technical specifications for a Veritas S Series 2U12 65.5TiB/72TB Storage Shelf.

Table A-2 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf technical specifications

Technical specification	Description
Rack information	The rack installation height is the space occupied by a storage shelf in a rack cabinet. The height for the storage shelf is 3.5 inches, 88.9mm. The shelf fits into a 2U rack space. Install the storage shelf in a rack cabinet that is 19 inches (483mm) wide. The rack rails that are provided for the storage shelf are extensible to 32" (813mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 32" (813mm) the rails and the appliance cannot be properly installed.
Hot swappable components	Disk drives, power cooling modules, and I/O modules (Storage Bay Bridge (SBB) 2.1)
Usable storage capacity (TB)	65.5TiB/72TB
Maximum weight (fully populated)	28 kg (62 lbs)
Shipping weight	52 kg (115 lbs)
Dimensions	Height: 8.89cm (3.5") (approximately 2U) Width: 48.26cm (19") ICE rack compliant Depth: 60.20cm (23.7")
Device types supported	Dual ported 12Gb/s SAS drives
Maximum drives per enclosure	12
Typical power consumption	256 watts per storage shelf You can connect a maximum of six storage shelves to the Veritas 5250 Appliance.
Maximum power consumption	480 watts per storage shelf You can connect a maximum of six storage shelves to the Veritas 5250 Appliance.
System cooling requirement (heat dissipation)	873 BTU/hr (typical) 1637.8 BTU/hr (Maximum)
Operating voltage	100V - 127VAC 200V - 240VAC

Table A-2 Veritas S Series 2U12 65.5TiB/72TB Storage Shelf technical specifications (*continued*)

Technical specification	Description
AC Frequency range	50/60Hz
Power conversion efficiency	>80% @ 100V, >80% @240V (>30% load)
Acoustic noise	63 dBA
Non-operational altitude	-300 to 12,192 m (-1,000 to 40,000 ft)
Operational shock	2g 11mSec half sine
Non-operational shock	25g 10mSec half sine
Operational vibration	0.21g RMS 5-500Hz random
Non-operational vibration	1.04g RMS 2-200Hz random
Relocation vibration (Non-operational)	0.3g 2-200Hz sinusoidal

See [“Veritas 5250 Appliance technical specifications”](#) on page 65.

Veritas D Series 2U12 65.5TiB/72TB Storage Shelf technical specifications

The following table provides technical specifications for a Veritas D Series 2U12 65.5TiB/72TB Storage Shelf.

Table A-3 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf technical specifications

Technical specification	Description
Rack information	The rack installation height is the space occupied by a storage shelf in a rack cabinet. The height for the storage shelf is 3.43 inches, 87mm. The shelf fits into a 2U rack space. Install the storage shelf in a rack cabinet that is 19 inches (483mm) wide. The rack rails that are provided for the storage shelf are extensible to 32” (813mm). This distance is the maximum depth that is allowed between rack posts. If the distance between rack posts is longer than 32” (813mm) the rails and the appliance cannot be properly installed.

Table A-3 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf technical specifications (*continued*)

Technical specification	Description
Hot swappable components	Disk drives, power cooling modules, and I/O modules
Usable storage capacity (TB)	65.5TiB/72TB
Maximum weight (fully populated)	28.59 kg (63 lbs)
Dimensions	Height: 8.7cm (3.43") (approximately 2U) Width: 48.2cm (18.98") ICE rack compliant Depth: 54.61cm (23.3")
Device types supported	Dual ported 12Gb/s SAS drives
Maximum drives per enclosure	12
Typical power consumption	AC - 600W DC - 700W You can connect a maximum of six storage shelves to the Veritas 5250 Appliance.
System cooling requirement (heat dissipation)	AC - 2047BTU/hr DC - 2388BTU/hr.
Temperature	Operating: 10° to 35°C (50° to 95°F) with maximum temperature gradation of 10°C per hour Storage: -40° to 65°C (-40° to 149°F) with temperature gradation of 20°C per hour
Relative humidity	Operating: 8% to 85% (non-condensing) with maximum humidity gradation of 10% per hour Storage: 5% to 95% (non-condensing)
Amperage	8.6A at 100V, 4.3A at 240V
Supported continuous consumption	Up to 1.2A at +5V Up to 0.5A at +12V
Operating voltage	100V - 240V AC 48V DC 200V - 240VAC

Table A-3 Veritas D Series 2U12 65.5TiB/72TB Storage Shelf technical specifications (*continued*)

Technical specification	Description
AC Frequency range	50/60Hz
Non-operational altitude	-16 to 10,600 m (-50 to 35,000 ft)

Environmental specifications

Veritas Appliance compute node environmental specifications

Table A-4 Veritas Appliance compute node environmental specifications

Specification	5250 Appliance compute node
Operating temperature	ASHRAE A2 (10°C to 35°C) (50°F to 95°F)
Non-operating temperature	-25°C to 70°C (-14°F to 158°F) The non-operating temperature is defined as the temperature of the system when the system is turned off. It is also referred to as the storage temperature. Veritas recommends that you do not store the system in an environment where the temperatures fall outside of the listed temperature range.
Operating humidity (RH)	20% RH to 80% RH
Non-operating humidity	8% RH to 90% RH
Operating altitude (feet)	-30 to 3000 m with ASHRAE A2 class derating (0 to 10,000 ft)
Temperature gradient (per hour)	10°C/h (50°F/h)

See [“Protocol standards”](#) on page 72.

See [“Regulatory, compliance, and certification information”](#) on page 72.

Protocol standards

The following table provides standards with which the Veritas 5250 Appliance and the Veritas 2U12 Storage Shelf comply.

Table A-5 Veritas 5250 Appliance / Veritas 2U12 Storage Shelf 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 - 3.0
ACPI	Advanced Configuration and Power Interface Specification, Revision 3.0, September 2
IP	RFC0791: Internet Protocol
FC	INCITS T11 (X3T9.3)
PCIe Express	PCIe 3.0

See [“Veritas 5250 Appliance technical specifications”](#) on page 65.

See [“Veritas S Series 2U12 65.5TiB/72TB Storage Shelf technical specifications”](#) on page 67.

See [“Veritas D Series 2U12 65.5TiB/72TB Storage Shelf technical specifications”](#) on page 69.

See [“Environmental specifications”](#) on page 71.

Regulatory, compliance, and certification information

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 may void the regulatory approvals of the product. The result is noncompliance with product regulations in the region in which the product is sold.

Alterations to the configuration of your appliance may require additional 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.

Product regulatory compliance

The appliance, 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.

Country approvals

- US/Canada
- CE - European Union (EU)
- Australia / New Zealand
- KCC South Korea
- EACU Certification
- IRAM Certification (Argentina)

- CCC Certification (China)
- BIS India
- NOM Mexico
- InMetro Brazil
- NRCS & SABS South Africa
- BSMI Taiwan
- VCCI Japan
- KVALITET Serbia

Note: Other countries are either based on these requirements or do not require certification. For more regulatory compliance information please refer to this link: [Regulatory Compliance / Homologation](#)

Product safety compliance

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

- UL60950 - CSA 60950 (USA / Canada)
- EN 62368-1:2014 + AC:2015
- EU Directive: Low Voltage 2014/35/EU
- CSA C22.2 No. 62368-1
- EN60950 (EU)
- CB Certificate & Report, IEC60950 & IEC62368-1 (report to include all country deviations)

Product EMC Compliance - Class A Compliance

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

- EU Directive: EMC 2014/30/EU
- EN 55032:2015 +A11:2020
- EN 55024:2010
- EN 61000-3-2:2014
- EN 61000-3-3:2013

- FCC /ICES-003 - Emissions (USA/Canada) Verification
- VCCI Emissions (Japan)
- AS/NZS 3548 Emissions (Australia / New Zealand)
- BSMI CNS13438 Emissions (Taiwan)

Note: For a complete list of regulatory notices please refer to this link:

[Veritas Safety and Compliance Guide](#)

Product environmental compliance

Use of banned substances are restricted in accordance with world-wide regulatory requirements. Restrictions include quantity limitations on the following:

- Quantity limit of 0.1% by mass (1000 PPM) for: Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated Biphenyls Diphenyl-Ethers (PBB/PBDE), Bis (2-ethylhexyl) phthalate (DEHP), Benzyl butyl phthalate (BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate (DiBP).
- 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)
- India RoHS
- EU WEEE Directive
- EU Packaging Directive
- EU Batteries Directive
- EU Commission Regulation (EU) 2019/424 of 15 March 2019
- EU REACH Regulation

Product environmental declarations of compliance are available in this [link](#).

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