

Veritas™ 5250 Appliance Hardware Installation Guide

VERITAS™

Veritas 5250 Appliance Hardware Installation Guide

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

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Hardware overview

This chapter includes the following topics:

- [About the appliance and the storage shelves](#)
- [Appliance disk drives](#)
- [About the 5250 Appliance control panel](#)
- [Appliance rear panel](#)
- [Storage shelf disk drives](#)
- [Storage shelf control panel](#)
- [Storage shelf rear panel](#)
- [Cables](#)
- [About IPMI configuration](#)
- [Product documentation](#)

About the appliance and the storage shelves

The Veritas 5250 Appliance is a hardware and software storage system that can scale to 429.4TiB of available backup capacity. It consists of a Veritas 5250 Appliance and up to six optional Veritas 2U12 65.5TiB/72TB storage shelves.



The 5250 appliance and storage shelves provide storage capacity in several configurations. You can use the appliance by itself to achieve 9.1TiB to 36.4TiB of usable capacity. You can add storage shelves to any appliance to further increase the storage capacity.

You can add up to six Veritas 2U12 65.5TiB/72TB Storage Shelves to an existing 5250 Appliance. 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 amount of usable storage space may fluctuate, depending on how much storage space the MSDP data pool presently uses.

Refer to the *5250 Appliance Product Description Guide* at the following site for details about usable storage options.

[NetBackup Appliance Documentation](#)

Appliance disk drives

The front panel of the appliance contains 12 disk drives.



Slot designations are as follows. Do not rearrange the disk drives from the factory configuration.

Table 1-1 5250 Appliance disk drive slots

Slot	RAID configuration	Disk drive size	Appliance storage capacity	Disk drive role
0, 1	RAID 1	1TB	N/A	Boot/swap
2, 3	RAID 1	1TB	N/A	Log files
4 - 10	RAID 6	2TB, 8TB	9.1TiB, 36.4 TiB	User storage data
11	RAID 6	2TB, 8TB	N/A	Hot spare for user storage data

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 1-1 Control panel

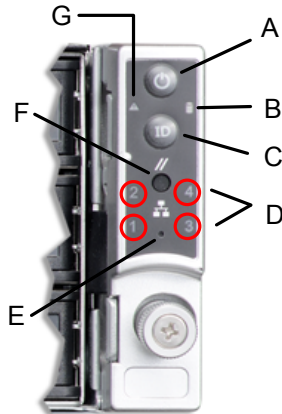


Table 1-2 Control panel system LED descriptions

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 14.
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.

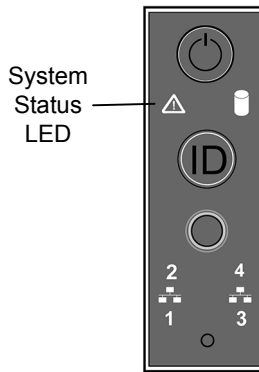
Table 1-2 Control panel system LED descriptions (*continued*)

Label	LED	System information
D	Network Activity LEDs	<p>The front control panel includes four activity LED indicators for each on-board network interface controller (NIC).</p> <ul style="list-style-type: none"> ■ 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 <p>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.</p>
E	NMI button (recessed, tool required for use)	<p>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.</p> <p>Veritas recommends that you do not enable NMI by pressing the NMI button.</p>
F	System Cold Reset Button (recessed, tool required for use on non-storage models)	<p>When depressed, the System Cold Reset button re-boots and re-initializes the appliance.</p>
G	System Status LED	<p>The System Status LED is bi-color indicator that uses the colors green and amber to display the current health of the appliance.</p> <p>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.</p> <p>See “About the System Status LED states” on page 11.</p>

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 1-2 System Status LED control panel location



The following table provides a description of each LED state.

Table 1-3 System Status LED states

Color	State	Criticality	Description
No color	Off - The system is not operating.	Not ready	<ul style="list-style-type: none"> 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.

Table 1-3 System Status LED states (*continued*)

Color	State	Criticality	Description
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: <ul style="list-style-type: none"> ■ 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.
Green	~1 Hz blink	Degraded (continued)	System degraded (continued): <ul style="list-style-type: none"> ■ 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.

Table 1-3 System Status LED states (*continued*)

Color	State	Criticality	Description
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: <ul style="list-style-type: none"> ■ 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.
Amber	Solid on	Critical, non-recoverable – System is halted	Fatal alarm – system has failed or shutdown: <ul style="list-style-type: none"> ■ 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.

Table 1-3 System Status LED states (*continued*)

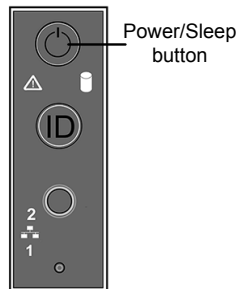
Color	State	Criticality	Description
Amber	Solid on	Critical, non-recoverable – System is halted	<ul style="list-style-type: none"> ■ Uncorrectable Runtime memory error in non-redundant mode ■ DIMM Thermal Trip or equivalent ■ CPU ERR2 signal is asserted ■ BMC/Video memory test failed (Chassis ID shows 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: <ul style="list-style-type: none"> ■ 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 1-3

Power button control panel location



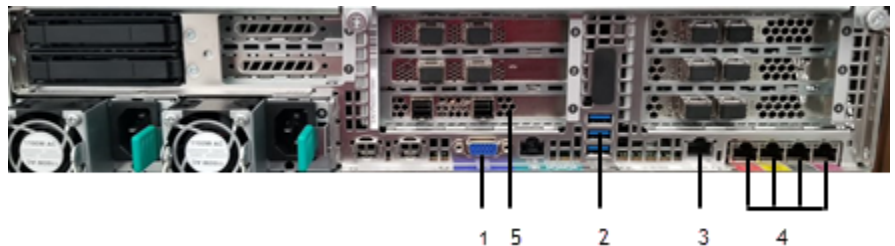
The following table provides a description of each power state.

Table 1-4 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.

Appliance rear panel

The rear panel of the appliance contains several default ports that are embedded. Three PCIe riser assemblies support various configurations.



The three PCIe riser assemblies outlined red are numbered, 1, 2, and 3 from right to left. Slots 1 through 8 are shown in the risers.

The following list describes the numbered ports.

1. VGA port
2. 3 USB ports
3. IPMI, remote management, port
4. Four copper, RJ45, 1Gb Ethernet* ports, NIC1/eth0, NIC2/eth1, NIC3/eth2, and NIC4/eth3, left to right

Note: * The embedded Ethernet ports are copper. PCIe Ethernet ports are optical. You cannot bond the copper ports and the optical ports to each other.

5. Riser Assembly 2, Slot 1, reserved for the RAID PCIe card

Refer to the *5250 Appliance Product Description* at the [NetBackup Appliance Documentation page](#) for optional port configurations.

Storage shelf disk drives

The 5250 Storage Shelf is a 2U enclosure that contains 12 disk drives.



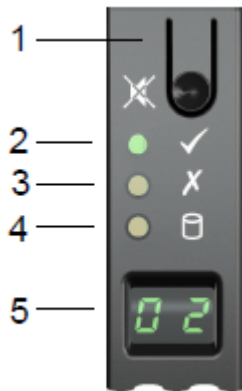
Disk drive carriers in the storage shelf are locked by default. If you need to replace a locked disk drive use a screwdriver with a T10 bit to unlock each carrier.



The lock is located on the left side of each carrier.

Storage shelf control panel

The left, front, of the storage shelf contains the system control panel.

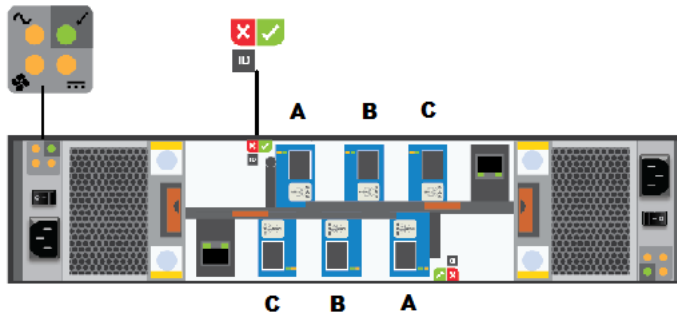


Components of the control panel include the following.

1. The Input switch enables you to set the Unit Identification display.
2. The Power On/Standby LED is amber when only standby power is available. The LED is green when system power is available.
3. The Module Fault LED is on when there is a system hardware fault. A Power Cooling Module (PCM) or an I/O module may be at fault.
4. The Logical Status LED shows a change of status or a fault, typically associated with the shelf's disk drives. This LED also indicates an issue with an internal RAID controller or external RAID controller, or with a host bus adapter.
5. The Unit Identification Display provides information to assist in the configuration of multiple storage shelves.

Storage shelf rear panel

The rear panel of the storage shelf contains two main components; two Power Cooling Modules (PCMs) and two I/O Module canisters.



The PCMs, located on the left and the right sides of the storage shelf, contain fans. The I/O module canisters are located in the center of the rear panel, one on top of the other. Each I/O module contains three mini-SAS HD ports; A, B, and C. The mini-SAS HD ports connect the I/O modules to the appliance and to other storage shelves. Note that the port labels are reversed on the bottom canister. Port C is not used at this time.

The PCMs and the I/O modules include LEDs.

Cables

Two power cables are shipped with each appliance and each storage shelf.

One-meter SAS-3 cables ship with each storage shelf. The one-meter cables are sufficient when the recommended cabling scheme is followed. Three-meter SAS-3 cables are available separately in case of need.



Use the top down, bottom up method to connect storage shelves to the appliance. The general scheme follows.

- The appliance is connected to the first storage shelf with one SAS-3 cable.
- One cable connects the first storage shelf to the next shelf.
- Subsequent storage shelves are connected until the last storage shelf is connected.
- The last storage shelf is connected to the appliance with one cable.

- The last storage shelf is also connected to the next, highest, storage shelf.
- The storage shelves are connected until the shelf closest to the appliance is connected.

See [“Connecting the network cables”](#) on page 54.

About IPMI configuration

The Intelligent Platform Management Interface (or IPMI) provides management and monitoring capabilities independently of the host system's CPU, firmware, and operating system. You can configure the IPMI sub-system for your appliances. You can use the remote management port, located on the rear panel of the appliance, to connect to the IPMI sub-system.

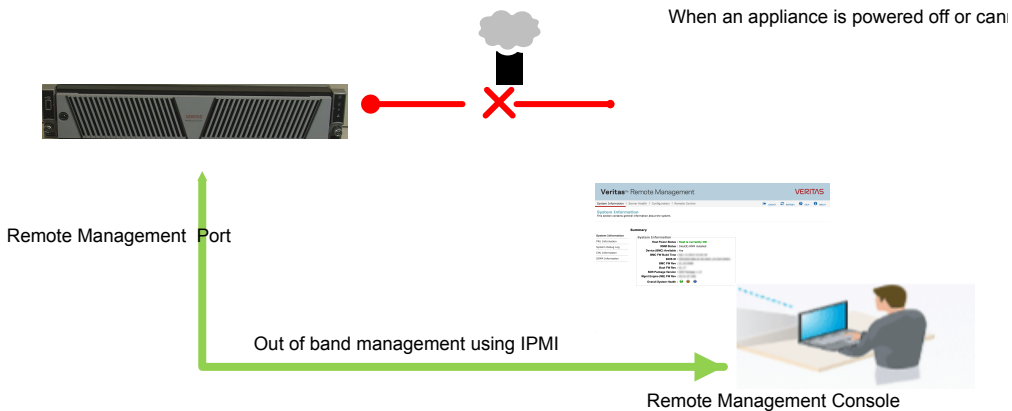
The following figure shows the remote management port (or the IPMI port) on the rear panel of a 5250 appliance:



The IPMI is beneficial after an unexpected power outage shuts down the connected system. In case the appliance is not accessible after the power is restored, you can use a laptop or desktop computer to access the appliance remotely by using a network connection to the hardware rather than to an operating system or login shell. This enables you to control and monitor the appliance even if it is powered down, unresponsive, or without any operating system.

The following diagram illustrates how IPMI works:

How does IPMI work?



The following are some of the main uses of IPMI:

- Manage an appliance that is powered off or unresponsive. Using the IPMI, you can power on, power off, or restart the appliance from a remote location.
- Provide out-of-band management and help manage situations where local physical access to the appliance is not possible or preferred like branch offices and remote data centers.
- Access the NetBackup Appliance Shell Menu remotely using IPMI if regular network interface is not possible.

Note: Only the NetBackup Appliance Shell Menu can be accessed by using the IPMI interface. The NetBackup Appliance Web Console cannot be accessed by using the IPMI interface.

- Reimage the appliance from the IPMI interface by using ISO redirection.
- Monitor hardware health of the appliance from a remote location.
- Avoid messy cabling and hardware like keyboard, monitor, and mouse (KVM) solutions to access the appliance.

Product documentation

Additional documentation is available at the following site.

[NetBackup Appliance Documentation](#)

Preinstallation requirements

This chapter includes the following topics:

- [Customer-provided environment and supplies](#)
- [Appliance shipping container contents](#)
- [Storage shelf shipping container contents](#)
- [Best practices for rack installation](#)
- [Determining rack locations](#)
- [Storage shelf rack requirements](#)
- [Heat dissipation](#)
- [Verifying SAS-3 cable length](#)
- [Prerequisites for IPMI configuration](#)

Customer-provided environment and supplies

For best ventilation, the rack cabinet:

- Should be at least 100 cm (4 feet) from walls
- Should have at least 100 cm (4 feet) from other cabinets on the front and back of the appliance and the storage shelves

Data centers with two-foot spaces in the front and in the back of the appliances are acceptable with proper cooling and ventilation.

Refer to the following section for more details.

See [“Heat dissipation”](#) on page 26.

The following describes the necessary personnel and equipment that are needed at the installation site:

- At least two people or a mechanical lift to move the appliance and the storage shelves.
- Ethernet and Fibre Channel (FC) cables to connect the appliance to your corporate network.
- A USB-keyboard and a monitor to connect to the appliance.
- A 19-inch rack with dual Power Distribution Units (PDUs) with 120VAC or 220VAC power supplies.

Appliance shipping container contents

The appliance and each storage shelf are shipped in separate containers. Each container includes other boxes and contents. The disk drives are installed into the appliance and the storage shelf at the factory.

The following items ship within the appliance box.

- Open Me First container, containing:
 - Deployment plan that provides basic information, and links to detailed information
 - Cable straps
 - Quick Installation card
 - Cable connections poster
- Envelope containing the following:
 - Warranty and license information
- Accessory box containing rack rails
- Two power cables
- Two screws
- Bezel

Storage shelf shipping container contents

The appliance and each storage shelf are shipped in separate containers. Each container includes other boxes and contents. The disk drives are installed into the appliance and the storage shelf at the factory.

The following items ship within the storage shelf box.

- Open Me First container, containing
 - Deployment plan that provides basic information and links to detailed information
 - Quick Installation card
 - Cable connections poster
- Rack rails
- Two SAS-3 cables
- Two power cords
- Bezel

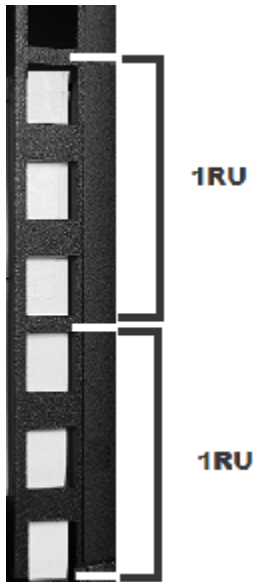
Best practices for rack installation

Prepare for the hardware installation by following these recommendations.

- The appliance requires two RUs of space. Install the appliance in the space that is directly above the storage shelves.
- Two people should install the rails; one person at the back of the rack and one at the front.
- Two people should lift and place the appliance into the mounted rails.
- The storage shelves are heavier than the appliance and should be installed as close to the bottom of the rack as possible.
- Always install the heavier storage shelves at the bottom of the rack. Best practices recommend that you install hardware at the bottom of a rack first. Then work your way up the rack.
- Determine device order and cabling limits.
- Be aware of the depth of the guide rails and the devices. Ensure that the distance between cabinet posts accommodates the rails, devices, cables, and extending ears.
- Physically hold a SAS3 cable between the intended locations for the appliance and the last storage shelf. Visually confirm that the cable is long enough.

Determining rack locations

The appliance and the storage shelves are both two rack units (2RU) high. To help you identify RU spacing, many rack manufacturers typically use a system of lines and sequential numbers starting at the bottom of the rack. The front and the rear of the rack are marked the same to ensure that the rails are installed straight and level. One RU has three holes. The holes for one RU are typically marked with a line below the bottom hole and another line above the top hole.



Next, use the rack templates that ship with the storage shelves to determine the mounting locations.

See [“Best practices for rack installation”](#) on page 23.

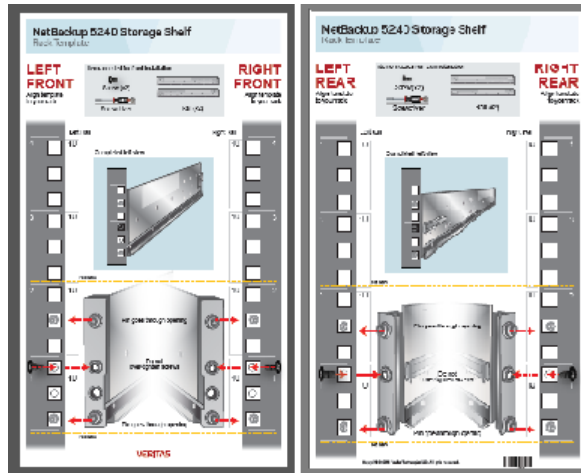
To determine rack locations for the storage shelves

- 1 A storage shelf is 2RU high. Multiply the number 2 by the number of shelves that you plan to install.

An appliance and six storage shelves require a total of 14 RUs.

- 2 Use the rack templates that are provided with the hardware to determine RU locations. The templates show the front and rear of a storage shelf in a rack.

- 3 Fold the template along the yellow dotted lines to match the rack holes exactly.



- 4 Record the rack positions to help you locate them easily when mounting the hardware.
- 5 Next, assess the SAS-3 cables to be sure that you have the correct lengths for your installation.

The following procedure provides information to help you verify that you have the correct lengths of SAS-3 cable.

To determine SAS-3 cable requirements

- 1 Note that each rack unit (RU) is 44.50 mm (1.752 inches) in height. The 5250 Appliance and the 5250 Storage Shelf are both 2RU high.
- 2 Each SAS-3 cable is 1 meter (3.28 feet) long. The 1-meter cable is long enough to connect an appliance to the fourth storage shelf, assuming that the recommended configuration is used.

Verify that your cables are long enough to connect all of the devices.

Longer SAS-3 cables are supported with the 2U12 Storage Shelf if needed for the configuration and are provided by the customer.

Storage shelf rack requirements

For best ventilation, the rack cabinet:

- Should be at least 100 cm (4 feet) from walls.

- Should have at least 100 cm (4 feet) from other cabinets on the front and back of the appliance and the storage shelves.
- Data centers with two-foot spaces in the front and in the back of the appliances are acceptable with proper cooling and ventilation
- There must be a minimum depth of 76 cm (30 in.) between the front of the rack and the rear of the rack.
- Storage shelves should be installed lower in the rack than the appliance.

The following list describes the necessary personnel and equipment that customers must supply at the installation site:

- At least two people or a mechanical lift to move the appliance and the storage shelves.
- Two people to install the rails; one person at the back of the rack and one at the front
- Two people to lift and place the storage shelf into the mounted rails
- Ethernet and Fibre Channel (FC) cables to connect the appliance to your corporate network.
- A USB-keyboard and a monitor to connect to the appliance.
- A 19-inch rack with dual Power Distribution Units (PDUs) with 120VAC or 220VAC power supplies.

Heat dissipation

Air flows from the front of each unit and exits from the rear of each unit. You can install the optional bezel without disruption to the airflow.

For best ventilation, the rack cabinet should:

- Be at least 100 cm (4 feet) from walls.
- Be at least 100 cm (4 feet) from other cabinets on the front and back of the appliance and the storage shelves.

Note: Data centers with two-foot spaces in the front and in the back of the appliances are acceptable with proper cooling and ventilation.

Veritas provides the following requirements to ensure sufficient cooling.

- Veritas requires that you install the system in a National Engineering Manufacturer's Association (NEMA)-certified or equivalent rack.

- A minimum of 3 inches (7.6 cm) of space must be between the front of an appliance and the cabinet door or other air block.
- A minimum of 6 inches (15.2 cm) of space must be between the rear of an appliance and the cabinet rear or other air block.
- A minimum of 1 inch (2.5 cm) of space must be between the front of a storage shelf and the cabinet door or other air block.
- A minimum of 2 inches (5.0 cm) of space must be between the rear of a storage shelf and the cabinet rear or other air block.

Refer to the *5250 Appliance Product Description Guide* for specifications about temperature and cooling.

[NetBackup Appliance documentation](#)

Verifying SAS-3 cable length

Before you install and connect the hardware, be sure to verify that you have the correct length of the SAS-3 cables for your setup.

Each rack unit (RU) is 44.50 mm (1.752 inches) in height. The 5250 Appliance and the 5250 Storage Shelf are both 2RU high.

Each SAS-3 cable is 1 meter (3.28 feet) long. The 1-meter cable is long enough to connect an appliance to the fourth storage shelf when the recommended configuration is used.

Longer SAS-3 cables are supported with the 2U12 Storage Shelf if needed for the configuration.

Prerequisites for IPMI configuration

Verify the following configuration prerequisites:

- The remote management port auto-negotiates its link speed to 1 Gbps.

Note: If the IPMI port is connected to a managed switch port, it is recommended that you configure the switch port to auto-negotiation

- If a firewall exists between the appliance and the remote devices that manage an appliance (like a laptop computer), open the following ports:

80	HTTP
162	SNMP
443	HTTPS
623	Floppy/USB media
627	Secured Floppy/USB media
5120	CD
5124	Secured CD
5900	KVM
5902	Secured KVM

Note: If you have a private internal network, remember to configure the settings accordingly in your network address translation (NAT).

- The remote management port must be configured as a DHCP or static address.

Installation procedures

This chapter includes the following topics:

- [Installing the storage shelf rack rails](#)
- [Installing the storage shelf into a rack](#)
- [Attaching the storage shelf bezel](#)
- [Installing the appliance rack rails](#)
- [Installing the appliance into a rack](#)
- [Understanding appliance and storage shelf connections](#)
- [Connecting an appliance to one storage shelf](#)
- [Connecting an appliance to more than one storage shelf](#)
- [Connecting the network cables](#)
- [Connecting the power cords](#)
- [Turning on the hardware and verifying operation](#)
- [Configuring the IPMI port from the NetBackup Appliance Shell Menu](#)
- [Accessing and using the Veritas Remote Management interface](#)

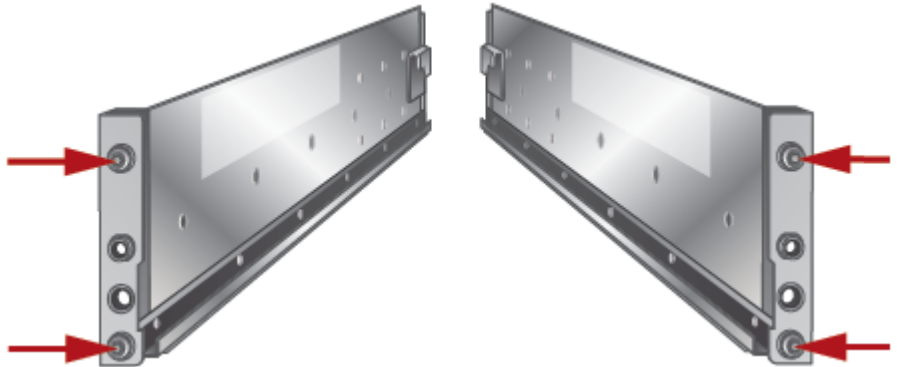
Installing the storage shelf rack rails

Use the following procedure to install the storage shelf rack rails. Ensure that the best practises for installing the rack rails are followed.

See [“Storage shelf rack requirements”](#) on page 25.

To install storage shelf rails

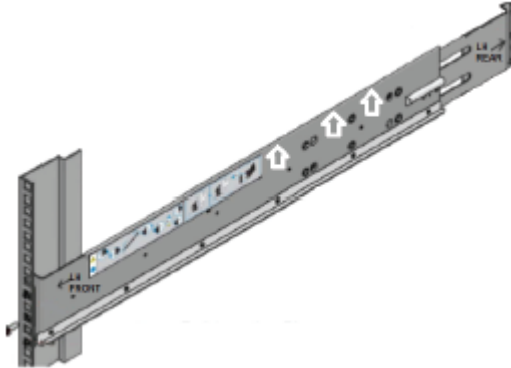
- 1 Identify the front and the rear of each rail. The following illustration shows the front of the left-hand and the right-hand rails. Red arrows show the pins that fit into the rack.



- 2 Use the rack templates to align the rails with the rack holes. Be sure to use the same holes on each side of the rack. Fold the template at the dotted yellow lines to get accurate rail and rack matching.



- 3 Place the left rail inside the rack. The rail holes should match the template. Extend the rail front and back to fit into the rack.



- 4 Insert the screw in the front and in the back of the rail, as shown in the template. Do not over-tighten the screws.
- 5 Repeat for the right rail.

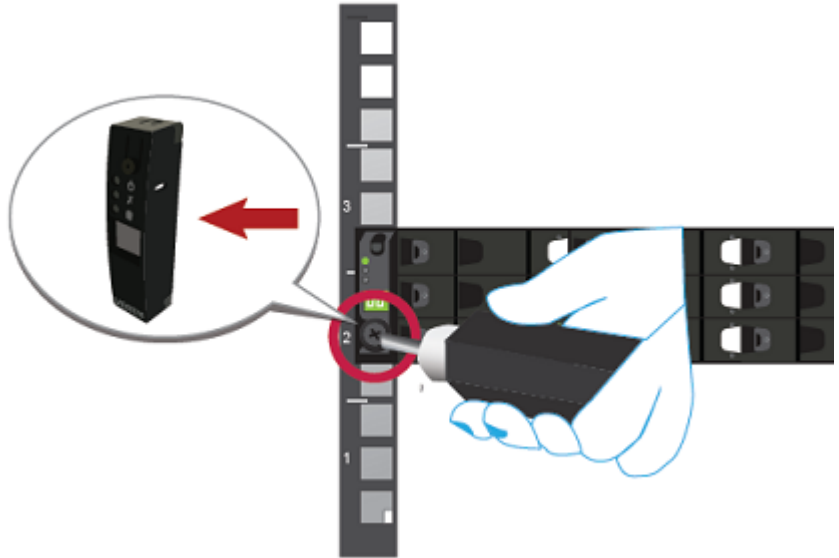
Installing the storage shelf into a rack

The storage shelf should be installed from the front of the rack.

To install a storage shelf

- 1 Use two people to lift the storage shelf.
- 2 Slide the rear of the shelf into the front of the rails. Be sure that the shelf is straight and even inside the rack. Do not force the shelf to fit.
- 3 Carefully push the shelf towards the rear of the rails.

- 4 Remove the cap from the left and the right sides of the front of the shelf, if they are attached.



- 5 Insert one screw into the front of the rack, on both sides of the shelf.
- 6 Replace the end caps or attach the bezel to the front of the shelf.

Attaching the storage shelf bezel

Use the following procedure to attach the storage shelf bezel after you install the 5250 Storage Shelf in the rack.

To attach the storage shelf bezel

- 1 Remove the bezel from its packaging.

Note: Ensure the end caps that cover the storage shelf control panel on the left and the blank panel on the right are not installed. The bezel cannot be attached if the end caps are installed on the panels.

- 2 With the front of the storage shelf bezel facing you, place the bezel over the front panel of the storage shelf.

The bezel should cover the left control panel assembly and the right panel assembly.

- 3 With the bezel in position, gently press it onto the front panel of the storage shelf.



The bezel is fully seated and correctly installed when it snaps into place on the front panel of the storage shelf.



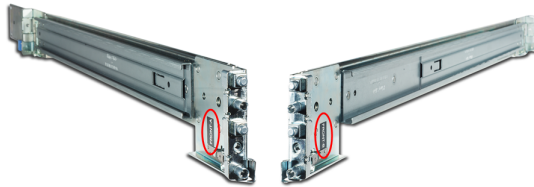
Installing the appliance rack rails

Use the following procedure to install the rack rails. Ensure that the best practises for installing the rack rails are followed.

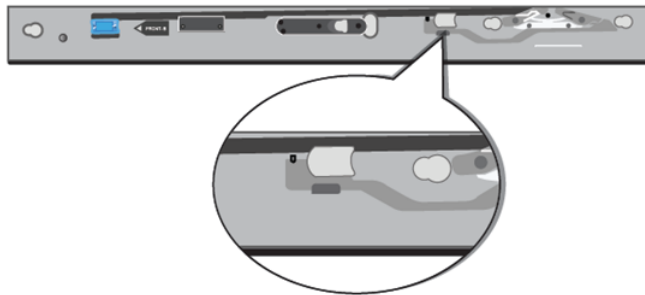
See [“Best practices for rack installation”](#) on page 23.

To install the rails

- 1 Identify the left and the right rails. The front of the left rail is labeled as "FRONT-A." The front of the right rail is labeled as "FRONT-B." The "FRONT" labels face outward.

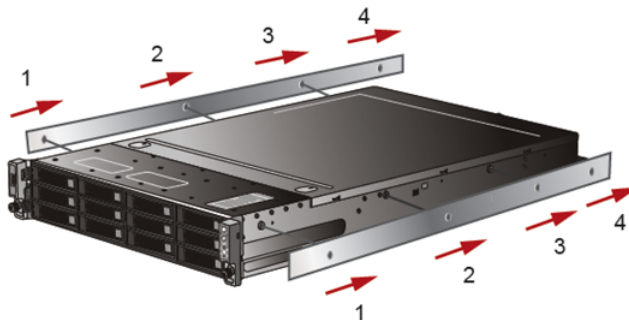


- 2 Extend both rails to expose the white pull tabs on the inner rails.

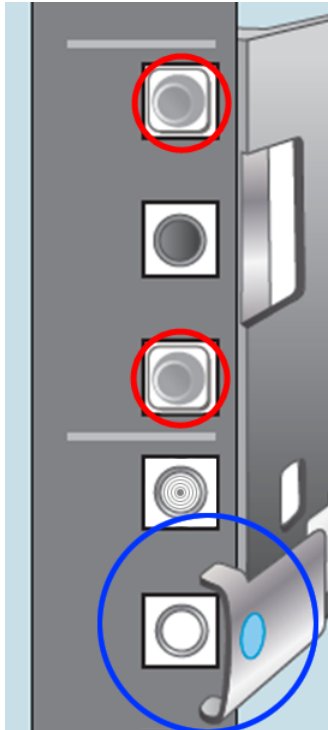


Pull the white tabs forward to release the inner rails from the outer and the intermediate rails.

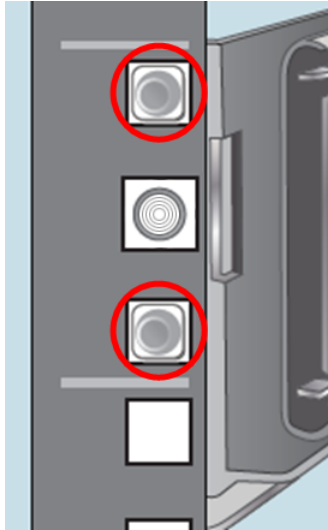
- 3 Install the inner rails on the appliance by sliding them toward the back of the appliance until they click into place.



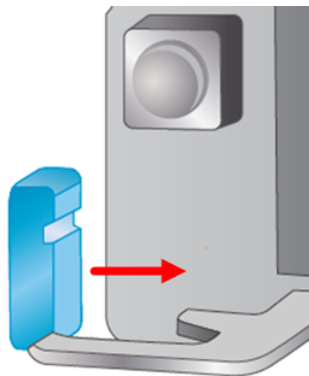
- 4 Starting with one of the rails, align the pins (small circles) on the back of the rail with the rack holes. Slide the rail forward until the lock clicks into place on the rack (large circle).



- 5 Fit the pins on the back of the rail in the appropriate rack holes and push until they click into place. Make sure that the lock is behind the rack post.



- 6 Push the blue tab toward the center of the rack until it clicks to lock the rail in place.



- 7 Repeat the process with the second rail.
- 8 Verify that both rails are parallel and fastened securely and that they can pull out to their full extension.

Installing the appliance into a rack

After the storage shelves and the appliance rails have been installed, you can install the appliance into the rack.

To install the appliance into the rack

- 1 Verify that the rails are securely attached.
 - Verify that the outer rail is securely attached to the rack.
 - Pull the intermediate rail forward. Ensure that the ball bearing retainer is locked forward.
 - Verify that the inner rail is securely attached to the appliance.
- 2 Place the hardware in the front of the rack.
- 3 Pull the intermediate portion of rail the rail forward. Ensure that the ball bearing retainer on the intermediate rail is locked forward.

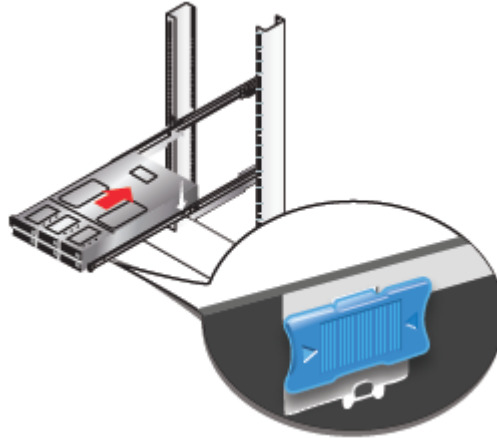
Note: The rails must be in a locked position so that the inner rail can be inserted into the intermediate rail. If the rails are not locked, they may collapse when the inner rail is inserted and the appliance may be damaged.



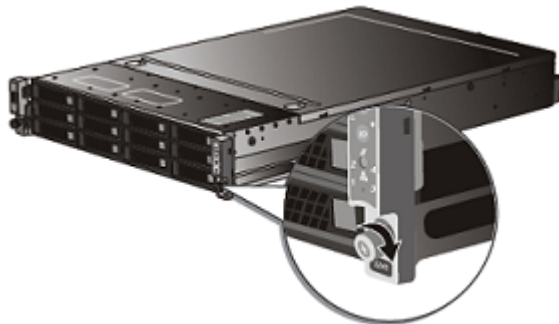
- 4 Align the appliance inner rail to the intermediate rail in the rack. Slide the appliance forward into the rack.

The rail has a lock mechanism that prevents the hardware from being fully pushed into the rack.

- 5 Slide the blue tab to unlock the rails and continue the sliding of the appliance into the rack.



- 6 Secure the captive screws on the appliance ears.



Understanding appliance and storage shelf connections

You cannot use SAS-2 cables with the storage shelf. You must use the SAS-3 cables that are provided with each storage shelf.

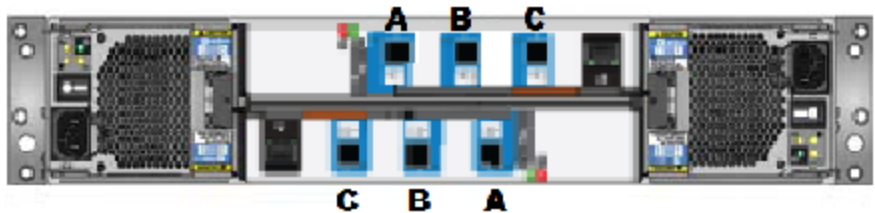


Note: The cables in the illustrations in the following sections are shown in different colors for demonstration purposes only. The actual cables are black.

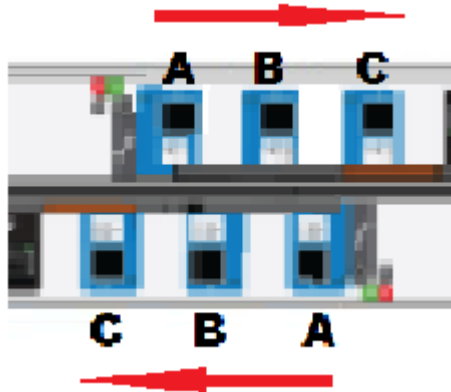
The External RAID PCIe ports on the rear panel of the appliance are in Slot 1 of Riser 2.



There are two I/O module canisters in the middle of the rear panel of the storage shelf. Each I/O module includes three mini-SAS HD ports.



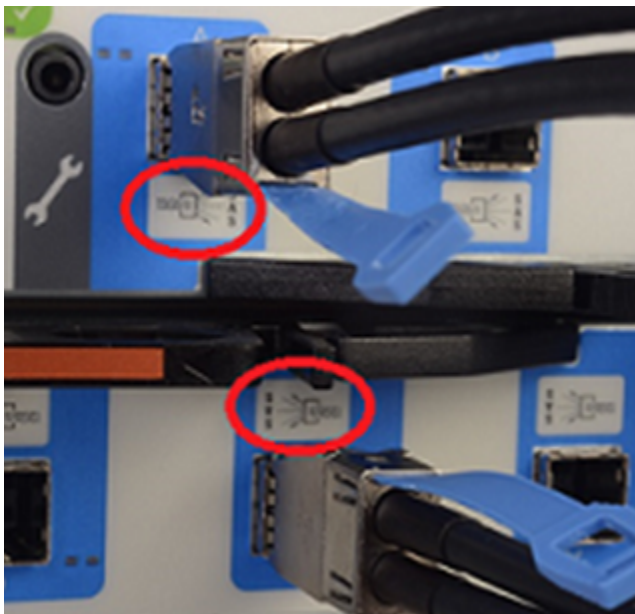
The mini-SAS HD ports on the top I/O module canister are labeled A, B, and C from left to right.



The mini-SAS HD ports on the bottom I/O module canister are labeled in reverse order; C, B, and A from left to right.

The orientation of the blue tab that is attached to the SAS-3 cable connector is very important.

The SAS-3 cable blue tab should align with the white SAS-3 cable label on the I/O module. Hence, ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.



The steps in the following sections assume that the appliance and one or more storage shelves are shipped together and installed at the same time.

Refer to the following sections as needed.

See [“Connecting an appliance to one storage shelf”](#) on page 41.

See [“Connecting an appliance to more than one storage shelf”](#) on page 42.

Connecting an appliance to one storage shelf

The steps in this section assume that the appliance and the storage shelf are shipped together and installed at the same time.

To connect an appliance to one storage shelf

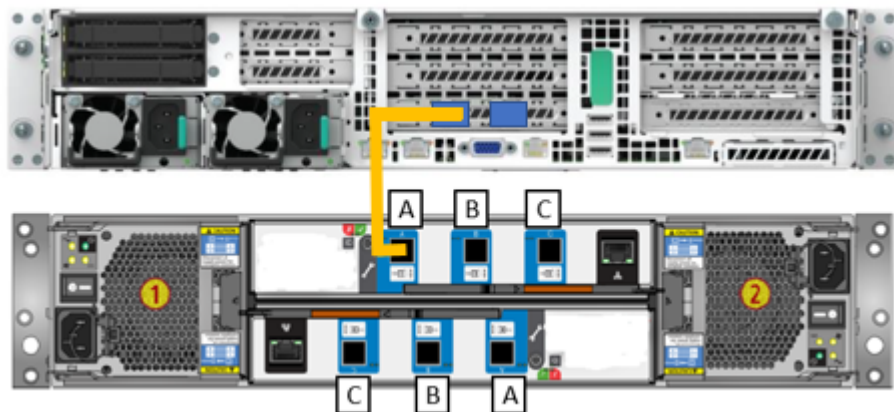
- 1 Connect one end of the SAS-3 cable to the left-hand port in the External RAID PCIe card on the appliance. The blue tab on the SAS-3 connector should be facing down.

Note: Cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

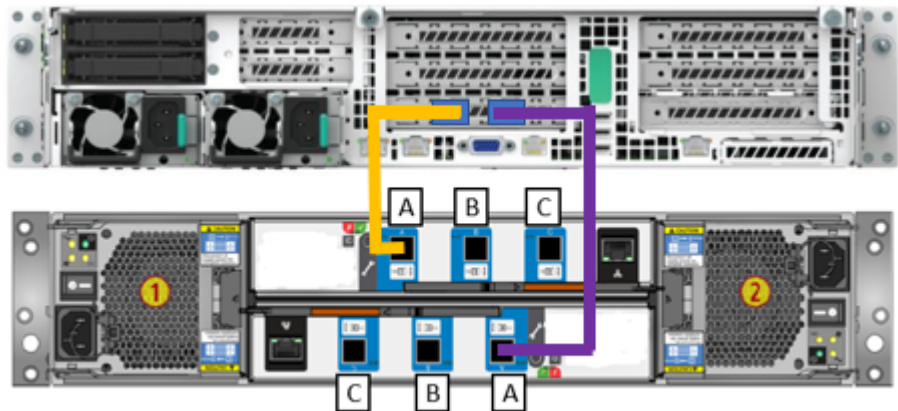
- 2 Connect the other end of the cable to port A in the top canister of the storage shelf.

Be sure that you orient the SAS-3 connector in the storage shelf port A so the blue tab faces down. Refer to the following section for details.

See [“Understanding appliance and storage shelf connections”](#) on page 38.



- 3 Connect one end of the other SAS-3 cable to port A in the bottom canister of the storage shelf. Be sure that you orient the SAS-3 connector in the storage shelf port A so the blue tab faces up, or is on the same side of the cable as the SAS-3 label.
- 4 Connect the other end of this cable to the right-hand port in the External RAID PCIe card on the appliance. The blue tab on the SAS-3 connector should be facing down.



See [“Connecting the network cables”](#) on page 54.

See [“Connecting the power cords”](#) on page 55.

Connecting an appliance to more than one storage shelf

The steps in this section assume that the appliance and the storage shelves are shipped together and installed at the same time. You can install up to six storage shelves with a 5250 appliance.

You can add storage shelves to an operational appliance. Refer to one of the following appendices for instructions.

- Appendix A - Adding one or more storage shelves to an operating appliance that does not have any storage shelves
 See [“Overview”](#) on page 73.
- Appendix B - Adding storage shelves to an operating appliance that has at least one storage shelf attached

See [“Overview”](#) on page 124.

See [“Moving the MSDP partition from a base disk to an expansion disk for optimum performance”](#) on page 125.

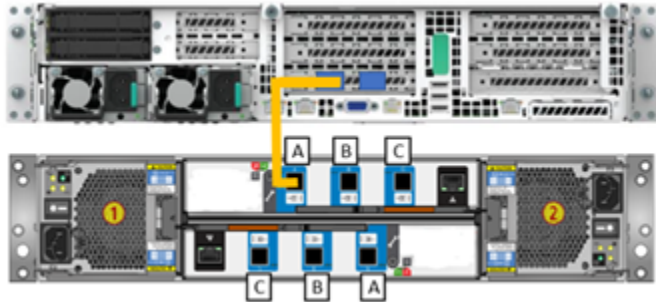
To connect an appliance to storage shelves

Note: This section provides detailed instructions to connect four storage shelves to an appliance. Instructions for connecting six shelves are provided where necessary.

- 1 Connect the appliance external RAID controller left port to port A on the top canister of the storage shelf.

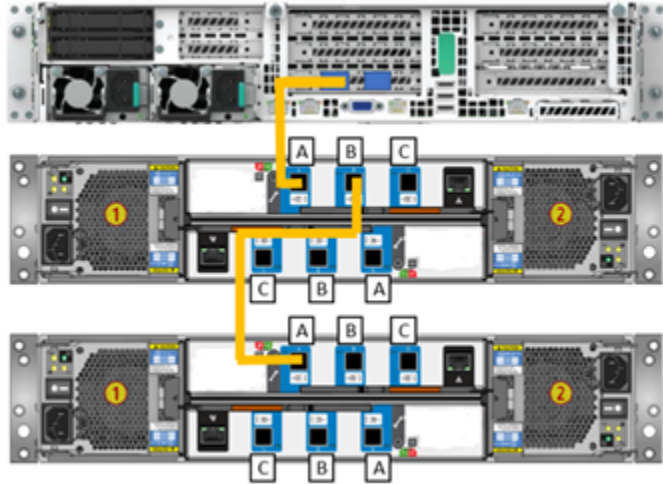
Be sure that you orient the SAS-3 connector in the storage shelf port A so the blue tab faces down. Refer to the following section for details.

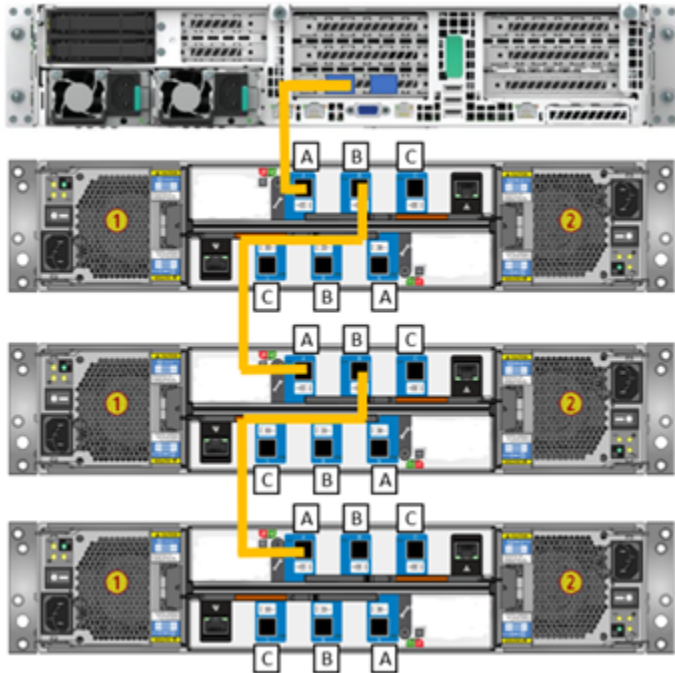
See [“Understanding appliance and storage shelf connections”](#) on page 38.

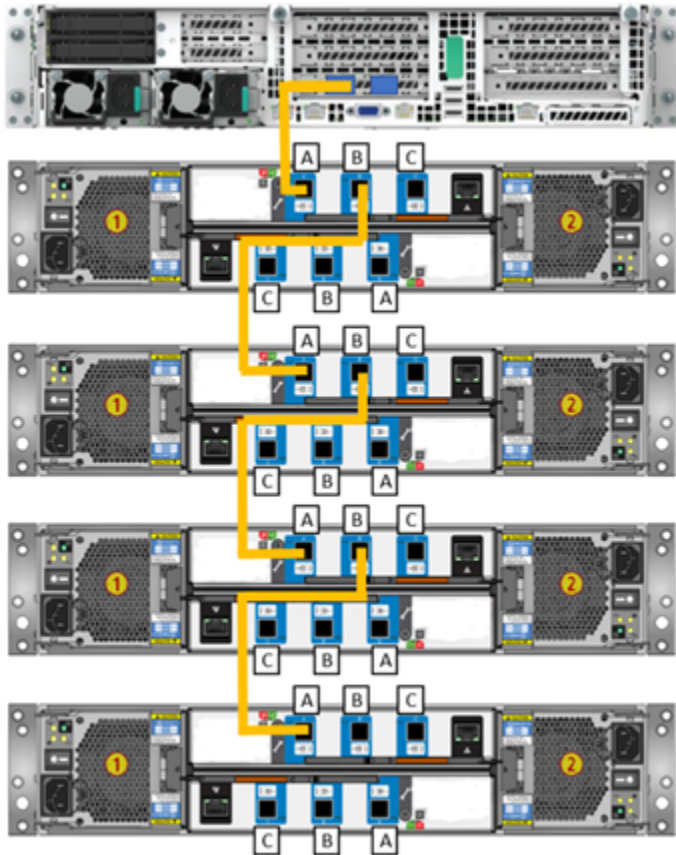


- 2 Connect each storage shelf top canister port B to next storage shelf top canister port A. Ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.

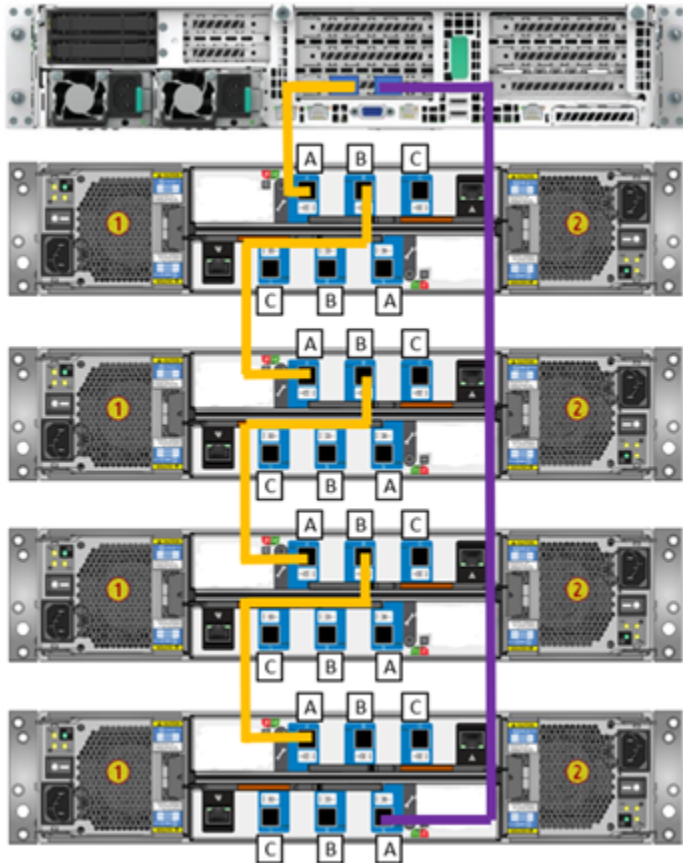
Follow the diagrams until all storage shelf top canisters are connected.





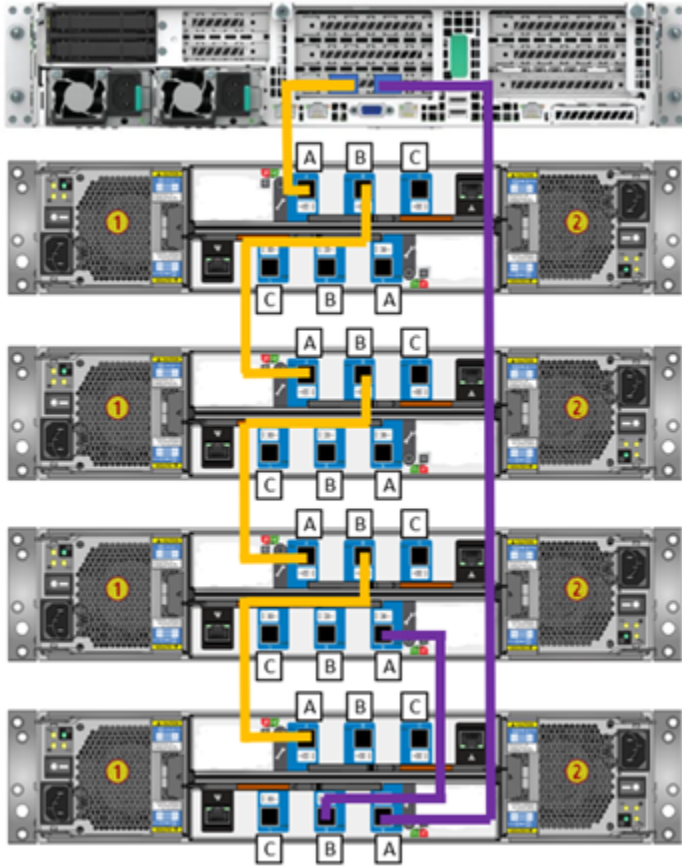


- 3 Connect the appliance external RAID card right port to the last storage shelf bottom canister port A. Ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.



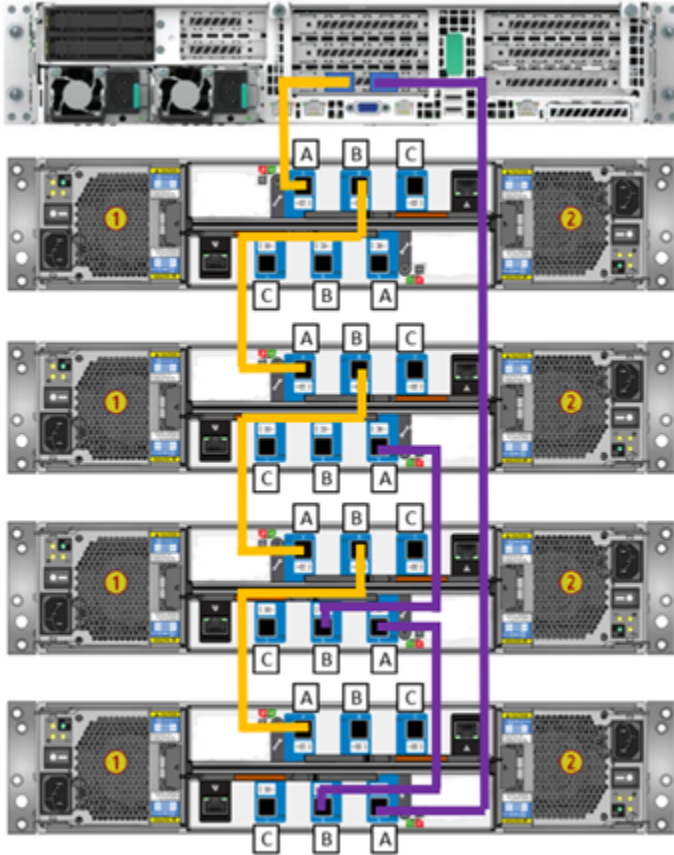
Note: In a six-shelf configuration you must connect the appliance RAID card right port to port A in the bottom canister of the sixth storage shelf.

- Starting with the last storage shelf, connect the storage shelf bottom canister port B to the next storage shelf bottom canister port A. Ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.

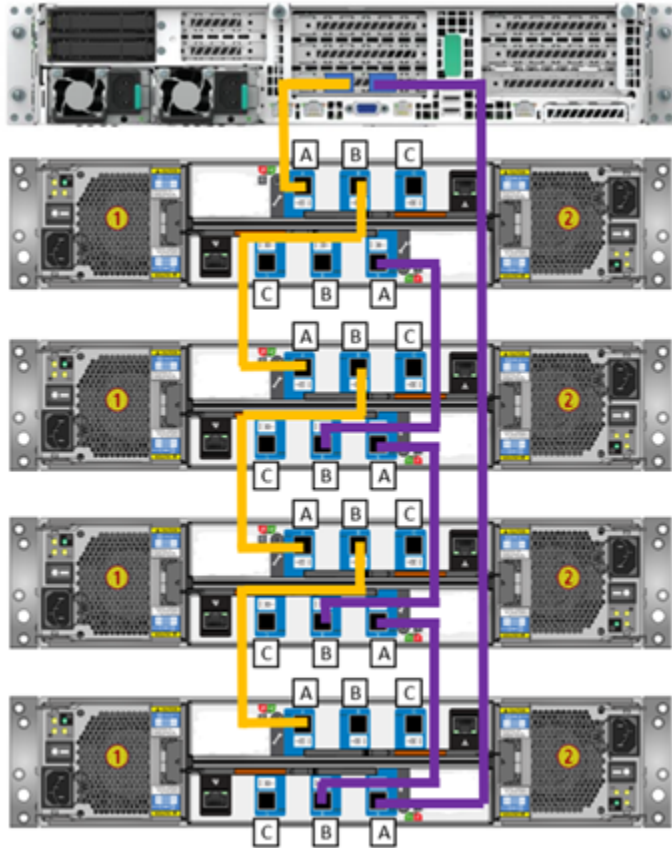


- Connect another cable to the shelf that is second from the bottom. Use port B on the lower canister of that shelf. Ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.

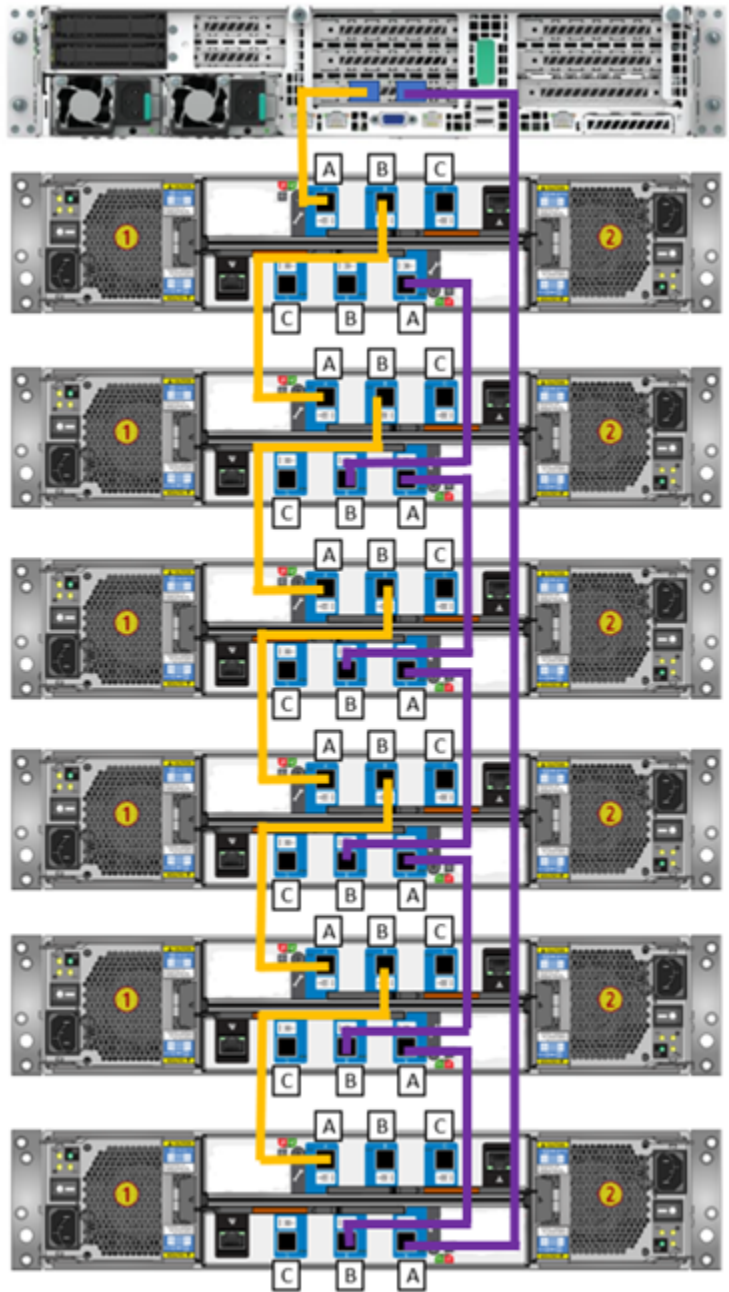
- 6 Connect the other end of the cable to the shelf that is third from the bottom. Use port A on the lower canister of that shelf. Ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.



- 7 Continue until the all storage shelf bottom canisters are connected. Ensure that the blue tab is on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.



- 8 In a six-shelf configuration verify that all cables are installed as shown.



See [“Connecting the network cables”](#) on page 54.

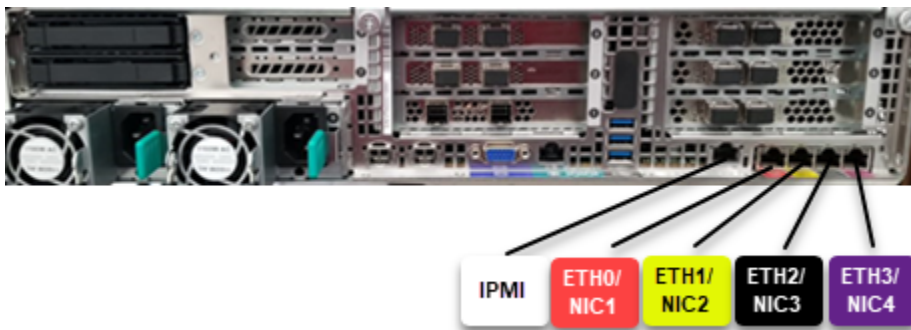
See [“Connecting the power cords”](#) on page 55.

Connecting the network cables

The networking ports are accessed on the rear panel of the device. The remote management port is for use by Veritas Technical Support staff or by approved field service technicians.

The following picture shows the layout of the network ports. It includes the four 1 Gb Ethernet ports on the right.

The remote management (IPMI) port is located to the left of the 1 Gb Ethernet ports.



By default, NIC1 (eth0) is factory set to IP address 192.168.229.233. This private network address is reserved to provide a direct connection from a laptop to perform the initial configuration. NIC1 (eth0) is typically not connected to your network environment.

Once the initial configuration has been completed, you can connect NIC1 (eth0) to an administrative network that does not provide any backup data transfer.

Note: You cannot bond the copper 1 GbE ports that are installed in the appliance chassis with optical ports on PCIe 10/25 GbE cards.

See [“Connecting the power cords”](#) on page 55.

Connecting the power cords

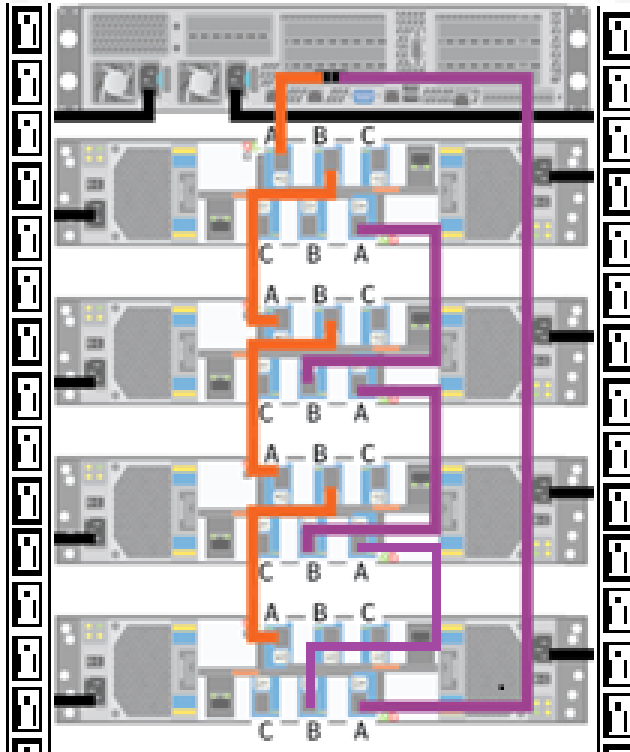
Each appliance and each storage shelf contains two AC power supplies. To ensure power redundancy, connect the power supplies on each component to separate AC power sources.

Caution: Do not turn on the power to any components while connecting the power cords. The components must be turned on in a specific sequence to ensure correct communication.

To connect the power cables

- 1 Verify that the AC power supply input for the appliance and for the storage shelf is within one of these ranges.
 - 100 - 127 VAC at 50/60 Hz
 - 200 - 240 VAC at 50/60 Hz
- 2 For each device, obtain two power cords that are appropriate for your region and equipment.

- 3 Connect one cable to one PDU strip.
- 4 Connect the other cable to the other PDU strip.



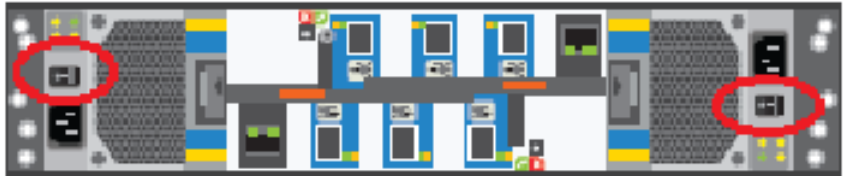
See [“Turning on the hardware and verifying operation”](#) on page 56.

Turning on the hardware and verifying operation

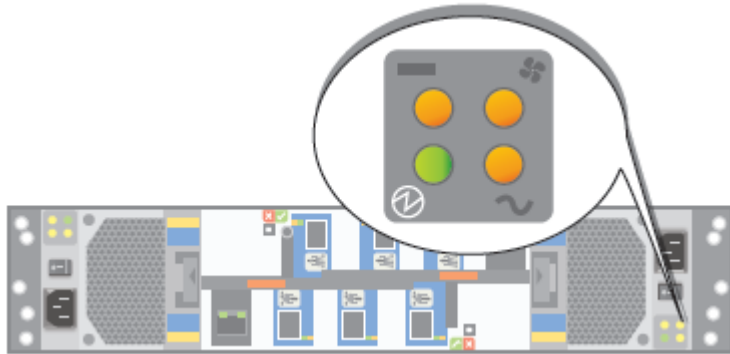
The appliance and the storage shelves must be turned on in a specified order. If the hardware is not turned on correctly the appliance RAID controller may not recognize some storage units.

To turn on the storage shelves





- 1 Start with the storage shelf that is farthest from the appliance.
- 2 Flip on the power switches on each power supply on the rear of the shelf.



- 3 Verify that the power LED on each power module is green.



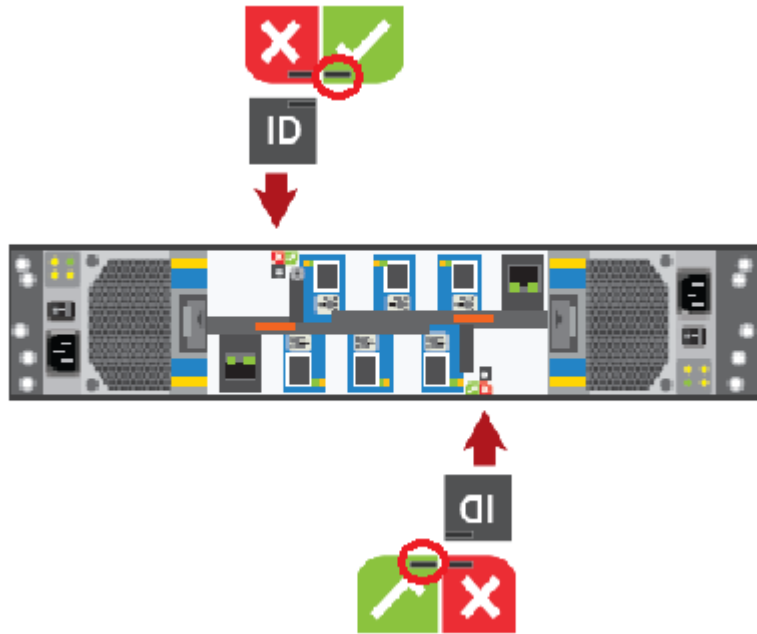
The LEDs are explained in the following table.

LED	Description
	Green = power module ok
	Amber = AC power fault
	Amber = Fan fault
	Amber = DC fault

The following table provides LED status details about the fans, AC and DC power, and the power cooling modules (PCMs).

Status	PCM Ok (Green)	Fan fault (Amber)	AC power fault (Amber)	DC power fault (Amber)
No AC power in either PCM	Off	Off	Off	Off
No AC power in a specific PCM	Off	Off	On	On
AC power present in a PCM	On	Off	Off	Off
PCM fan out of tolerance	On	Off	Off	On
PCM fault (over temp., over voltage, over current)	Off	On	On	On
PCM fan has failed	Off	On	On	On
Standby mode	Flashing	Off	Off	Off
PCM firmware download	Off	Flashing	Flashing	Flashing

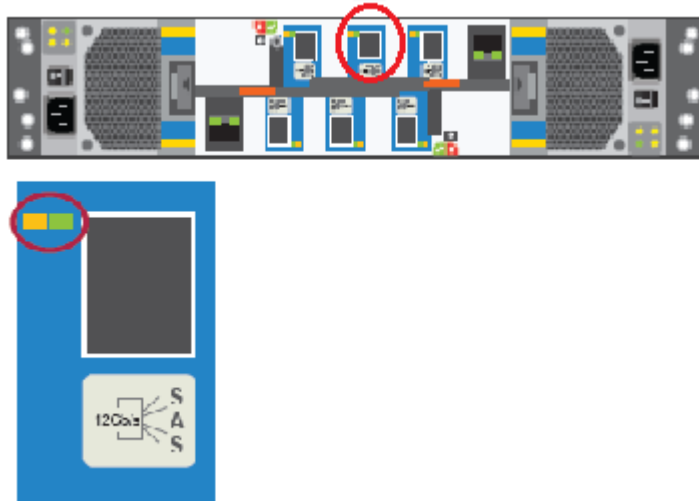
- 4** Locate the LEDs on each I/O module canister.



LED indications are as follows.

- The LED in the red area with the white X-mark indicates an I/O module canister fault when the LED is amber.
- The LED in the ID area is blue when each module is identified.
- The LED in the green area with a white checkmark is green when functions are normal.

5 Locate the SAS port LEDs.



Note: The illustration shows the LEDs for port B in the top I/O module. The LEDs for all six ports are the same.

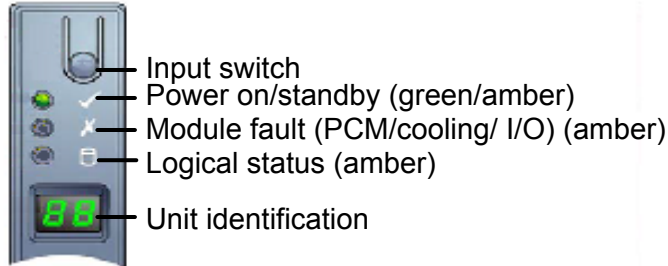
The Fault LED is farthest from each SAS port.

The Activity LED is closest to each SAS port.

The following table describes the SAS port LEDs. The combination of both LEDs provides the status.

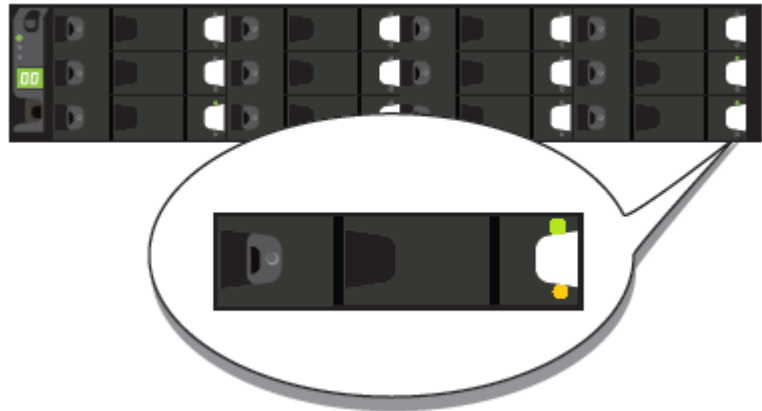
Status	Activity (green) LED	Fault (amber) LED
No cable present	Off	Off
Cable present, no activity	On	Off
Cable present, all links active	Blinking if one or more disk drives are active.	Off
Critical fault	Off	On
Non-critical fault	Blinking if one or more disk drives are active.	Blinking at a rate of one second on, and one second off.

6 Move to the front of the storage shelf.



- Verify that the Power on/standby LED is green.
- If the Power LED or the other two LEDs are amber, escalate the issue.
- The input switch is used to set the Unit identification (ID). The display is a seven-segment display. You can reset the ID number. The values “01” to “99” are valid. The value “00” is reserved. “00” is also the default value.
 - Press the input switch and hold it down for five seconds.
 The switch enters a programming mode. The digit on the left side of the display begins to flash first. The flashes appear on for 0.5 seconds and off for 0.5 seconds.
 - Press the input switch once to increment the number by one digit.
 - When your first required number is reached press the switch for five seconds.
 The first number is now locked.
 - Set the second number in the same manner that you set the first number.
 If you do not want to set a second number press and hold the input switch for five seconds.
 The number “0” displays.

- 7 Locate the LEDs on each disk drive carrier.



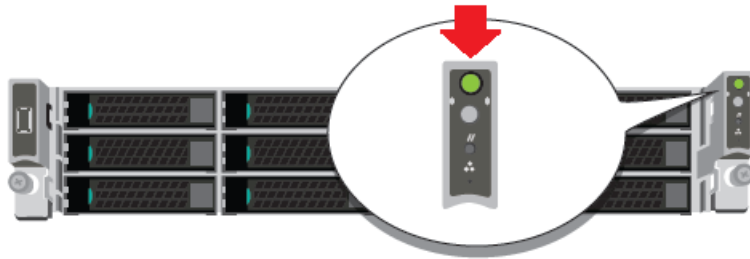
The following table describes the disk drive carrier LEDs. The combination of both LEDs provides the status.

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
Device identity.	On	Blinks at a rate of one second on and one second off.
Drive slot fault.	Off	On
Drive fault. Power control circuit fault.	On	On
Possible drive fault.	On	Blinks at a rate of one second on and one second off.

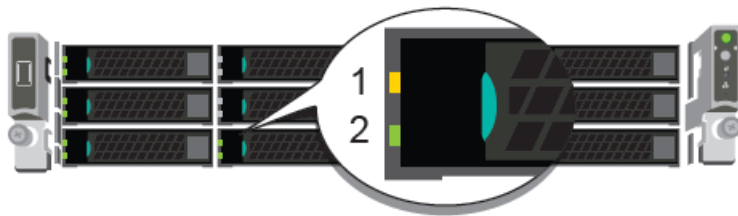
- 8 Repeat these steps for each storage shelf. Let each shelf initialize before you turn on the next shelf. Initialization should take 2 minutes to 3 minutes.
- 9 When all of the storage shelves are operational, turn on the appliance.

To turn on the appliance

- 1 Verify that all connected storage shelves function correctly. Use the LED information in the procedure that explains how to turn on the storage shelves.
- 2 On the front, right, side of the appliance press the Power button.



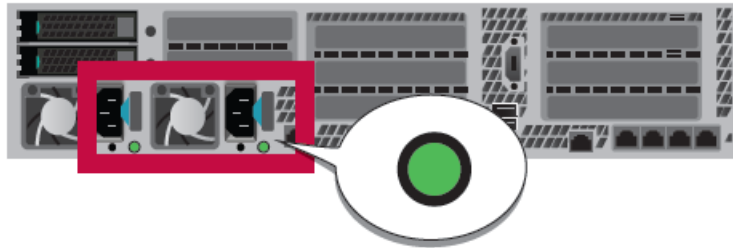
- 3 Verify that the bottom LED in all 12 disk drive slots are green.



The following table provides details of the appliance disk drive LEDs.

LED	States	Description
1-Status LED, Top	Off	No disk fault
	Solid amber	Disk fault
	Blinking amber	A RAID rebuild is in progress
2-Activity LED, Bottom	Off	Power is on and the disk has spun down
	Solid green	Power is on but there is no disk activity
	Blinking green	Power is on and the disk is spinning up
	Blinks green occasionally	Commands are processing

- 4 On the bottom, left, rear of the appliance verify that the LED on each power supply is green.



- 5 Proceed to the next section to configure remote management.

Configuring the IPMI port from the NetBackup Appliance Shell Menu

This section explains how to configure IPMI from the NetBackup Appliance Shell Menu.

Before starting the IPMI configuration, obtain the following information for the appliance for which you want to configure the IPMI:

IP address	IP address for the remote management port so that the default static IP address of the remote management port can be changed.
Subnet mask	Enable connectivity between your network computer and the remote management port.
Gateway IP address	Enable connectivity between your network computer and the remote management port.

The defaults for the remote management port are:

- IP Address: 192.168.0.10
- Subnet Mask: 255.255.255.0

Also review the following section on the IPMI prerequisites.

See [“Prerequisites for IPMI configuration”](#) on page 27.

For configuring the IPMI, you must connect to the appliance first. You can connect to the appliance in the following ways:

Based on how you want to connect to the appliance, you can configure the IPMI by using one of the following procedures:

See [“To configure the IPMI port by using a keyboard and monitor”](#) on page 66.

See [“To configure the IPMI by using the eth0 port”](#) on page 68.

To configure the IPMI port by using a keyboard and monitor

- 1** Connect the following components to the appropriate ports on the rear panel of the appliance:
 - A standard video cable between the VGA (Video Graphics Array) port and a computer monitor.
 - A USB keyboard to a USB port on the appliance.
- 2** Verify that the appliance is turned on.
Once the startup process is complete, a login prompt appears.
- 3** Enter the username and password for the appliance. By default, the user name is `admin` and the password is `P@ssw0rd` where 0 is the number zero.
- 4** At the **Main_Menu** prompt, type **Support** to navigate to the **Support** menu.
- 5** From the **Main_Menu > Support** view, enter the following command to configure the remote management port:

```
IPMI Network Configure <IPAddress> <Netmask> <GatewayIPAddress>
```

where *IP address* is the new IP address of the remote management port. The Subnet mask and Gateway enable connectivity between your network computer and the remote management port.

The remote management port must be configured as a DHCP or static address.

At any point in time, you can run the following command to see the IPMI network details:

```
IPMI Network Show
```

- 6 Enter the following command if you want to add a new user to access the IPMI sub-system. Note that this is an optional step.

```
IPMI User Add <User_Name>
```

At the **New Password** prompt, enter a password for the user.

The default user name is **sysadmin**. The default password is **P@ssw0rd**, where **0** is the number zero.

At any point in time, you can run the following command to view the users who can access the IPMI:

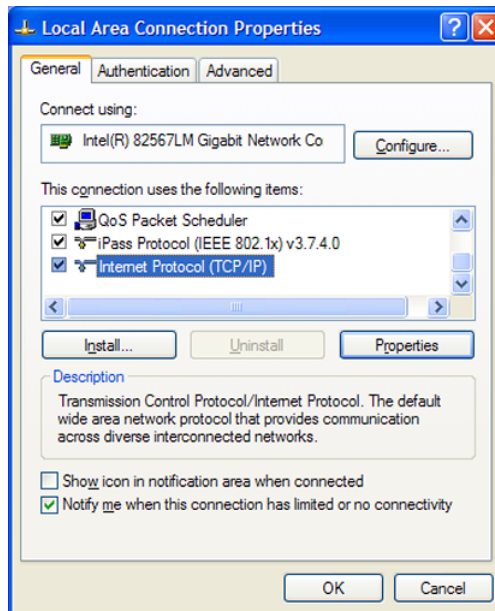
```
IPMI User List
```

- 7 Type **Return** to return to the **Main_Menu** prompt.
- 8 Use a Cat5 or a Cat6 cable to connect the remote management port to the network.
- 9 Make sure you can reach the Veritas Remote Management Console over the network by using the new address in a web browser.
- 10 The appliance is ready for initial configuration. See the *NetBackup Appliance Initial Configuration Guide* for the appropriate platform for information about initial configuration requirements and procedures.

Note: Once the initial configuration has been completed, you can connect NIC1 (eth0) to an administrative network that does not provide any backup data transfer.

To configure the IPMI by using the eth0 port

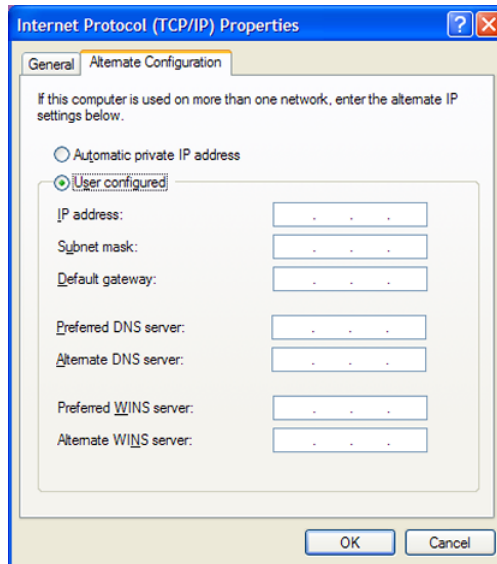
- 1 Verify that the appliance is turned on.
Connect a laptop to the NIC1 (eth0) port on the rear panel of the appliance by using an Ethernet cable.
- 2 Open the **Local Area Connection Properties** dialog box by right-clicking on the local area connection and selecting **Properties**.



On the **General** tab, select **Internet Protocol (TCP/IP)** and then click **Properties**.

Note: This step may differ for specific OS versions. Check your OS documentation for reference.

- 3 In the **Internet Protocol (TCP/IP) Properties** dialogue window, click the **Alternate Configuration** tab.



- 4 From the **Alternate Configuration** tab, make sure the **User Configured** option is selected.

In the **IP address** field, enter the following addresses:

- Type the eth0 port IP address (default **192.168.229.nnn**), where **nnn** is any number from 2 to 254, except 233.

In the **Subnet mask**, enter **255.255.255.0**.

Click **OK**.

- 5 Test the connection by using the following method:

- Open a secure shell (SSH) connection to 192.168.229.233 using an SSH client. Once the NetBackup Appliance Shell Menu opens with a user name and password prompt, you have successfully connected to the appliance for initial configuration.

- 6 When the NetBackup Appliance Shell Menu appears, log on using the user name and password for the appliance

By default, the user name is `admin` and the password is `P@ssw0rd` where 0 is the number zero.

- 7 Go to the `Main_Menu > Support view`.

- 8 Enter the following command to configure the IPMI port:

```
IPMI Network Configure <IPAddress> <Netmask> <GatewayIPAddress>
```

Where *IP address* is the new IP address for the IPMI port. The Subnet mask and Gateway enable connectivity between your network computer and the IPMI port.

The IPMI port must be configured as a DHCP or static address.

At any point in time, you can run the following command to see the IPMI network details:

```
IPMI Network Show
```

- 9 Type `Exit` and press Enter to log out of the NetBackup Appliance Shell Menu.
- 10 Use a Cat5 or a Cat6 cable to connect the remote management port to the network.
- 11 Make sure you can reach the Veritas Remote Management Console over the network by using the new address in a web browser.
- 12 The appliance is ready for initial configuration. See the *NetBackup Appliance Initial Configuration Guide* for the appropriate platform for information about initial configuration requirements and procedures.

Note: Once the initial configuration has been completed, you can connect NIC1 (eth0) to an administrative network that does not provide any backup data transfer.

Accessing and using the Veritas Remote Management interface

The IPMI web interface is known as Veritas Remote Management interface. You can use Veritas Remote Management interface to log on to the appliance shell.

Before you use the remote management interface, the following prerequisites must be met:

- The Remote Management interface (IPMI port) must first be configured.
- At least one power cable must be connected to a functioning power source.
- At least one user must be enabled to use the LAN channel(s).

Note: A default user is configured in the system. The default user name is **sysadmin**. The default password is **P@ssw0rd**, where 0 is the number zero.

To access and use the Veritas Remote Management web interface from a remote computer

- 1 Log on to a remote computer in the network and open a supported Windows browser.
- 2 Enter the remote management (IPMI) port IP address (https://) that is assigned to the remote management port. The following page appears:



- 3 Enter your login credentials. The default user name is **sysadmin**. The default password is **P@ssw0rd**, where **0** is the number zero.

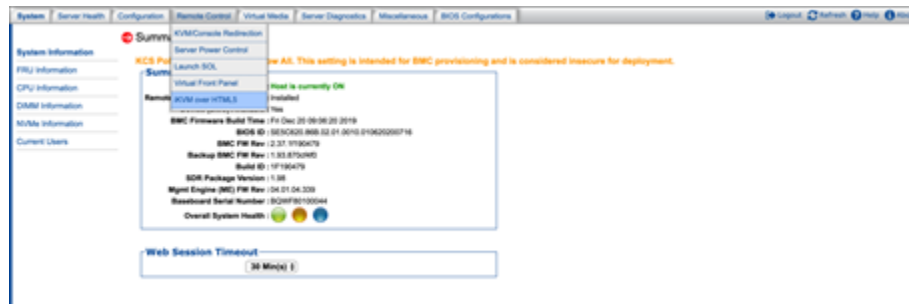
Click **Login**.

- 4 Click the **Remote Control** section located at the top of the page. The **Remote Control** section lets you remotely monitor and control the server.

Do **one** of the following to launch the Flex Appliance Shell:

- Navigate to **Remote Control> iKVM over HTML5**.

Click **Launch iKVM over HTML5** to launch the Appliance shell. A new window opens that enables you to remotely monitor and control the appliance.



- Click **Remote Control > KVM/Console Redirection** . Click **Launch Console** to launch the appliance shell menu.

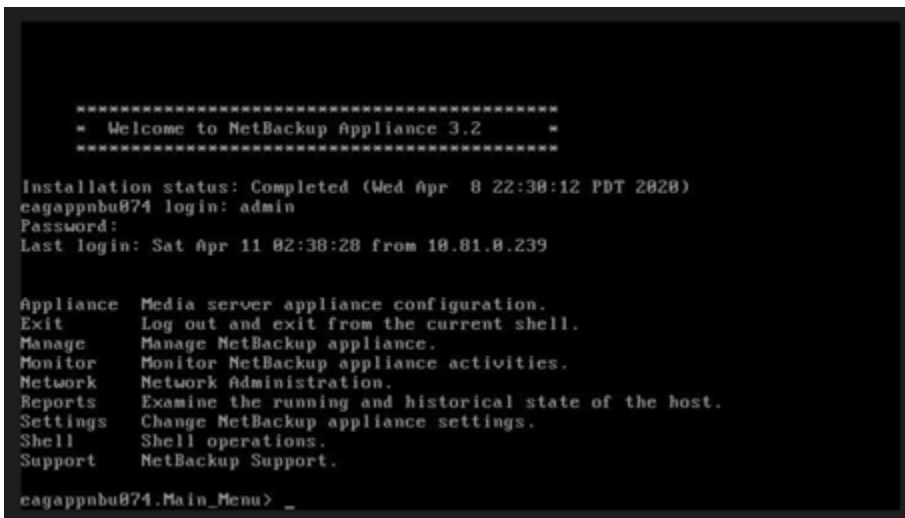


A JViewer application opens that enables you to remotely monitor and control the appliance. This application requires Java Runtime Environment (JRE) version 6.0 or later. Install Java. You can login to the JViewer application using the same user name and password from step 3

- 5 You can now access and log on to the appliance shell. Enter the user name and password for the appliance.

By default, the user name `admin` has the password, `P0ssw0rd` where 0 is the number zero.

Type "?" and then enter the "system" command to actually see the list of available commands.



Adding one or more storage shelves to an operating appliance that does not have any storage shelves

This appendix includes the following topics:

- [Overview](#)
- [Preparing the appliance](#)
- [Removing the appliance cover](#)
- [Installing the Expansion Storage Kit components](#)
- [Replacing the appliance cover](#)
- [Connecting the storage shelves to the appliance](#)

Overview

Several procedures are involved in the process of adding one or more storage shelves to an existing appliance that does not have any storage shelves. New components inside the chassis are required as described in this appendix.

An appliance that does not have storage shelves needs additional components to support the external storage shelves.

The 5250 Expansion Storage Kit contains the following required hardware components:

- Eight, 32Gb, Dual in-line memory modules (DIMMs)

The procedures in this appendix explain the tasks which are required to be performed to add one or more storage shelves.

These tasks must be performed in the order that is provided.

- Preparing the appliance
See [“Preparing the appliance”](#) on page 75.
- Removing the appliance cover
See [“Removing the appliance cover”](#) on page 76.
- Installing the Expansion Storage Kit components into the appliance
See [“Installing the Expansion Storage Kit components”](#) on page 77.
- Replacing the appliance cover
See [“Replacing the appliance cover”](#) on page 83.
- Installing the storage shelves rack rails
See [“Installing the storage shelf rack rails”](#) on page 29.
- Installing one or more storage shelves into a rack
See [“Installing the storage shelf into a rack”](#) on page 31.
- Installing the appliance into the rack
See [“Installing the appliance into a rack”](#) on page 37.
- Understanding appliance and storage shelf connections
See [“Understanding appliance and storage shelf connections”](#) on page 38.
- Connecting the appliance to the storage shelves
See [“Connecting the storage shelves to the appliance”](#) on page 84.
- Connecting the network cables
See [“Connecting the network cables”](#) on page 54.
- Connecting the power cords
See [“Connecting the power cords”](#) on page 55.
- Turning on the appliance and verifying operation
See [“Turning on the hardware and verifying operation”](#) on page 56.

Preparing the appliance

Best practices recommend removing the appliance from the rack to access the inside of the chassis. Alternatively you can either pull out the appliance on its rails. Be sure that the appliance and rack are stable.

Turn off the appliance properly and disconnect it from AC power sources. A soft shutdown informs the appliance operating system to stop and close all active processes. After the operating system stops all of the processes, the appliance turns itself off.

Warning: Never turn off the appliance by using the power button on the control panel. Using the power button to turn off the appliance can cause data loss or corruption.

To perform a soft shutdown of the appliance

- 1 Log on to the NetBackup Appliance Shell Menu.
- 2 Enter `Support > Shutdown`.
- 3 Verify that the appliance is completely turned off. All LEDs are off. Fans are not running.
- 4 Remove the power cords that connect the appliance to the rack Power Distribution Units (PDUs).

The following procedure explains the process of removing the appliance from the rack.

To remove the appliance from the rack

- 1 Verify that the appliance is off and that the power cords have been disconnected from the power sources.
- 2 Remove the front bezel of the appliance.
- 3 Locate and unscrew the two screws on the edges of the front panel that secure the appliance to the rack.



- 4 Slide the chassis fully forward out of the rack until the rail guides lock.

- 5 With the rails fully extended and locked, locate the blue tabs at the front of the rail assemblies.



- 6 With a person on each side, place a hand underneath the unit.
- 7 Pull the blue tabs back to release the front studs in the chassis rails.
- 8 Lift the front end to release the front studs from the cutouts in the guide rails.
- 9 Place your free hands under the back of the chassis for support.
- 10 Pull the appliance straight out of the rack.
- 11 Lift the appliance and place it on a secure surface.

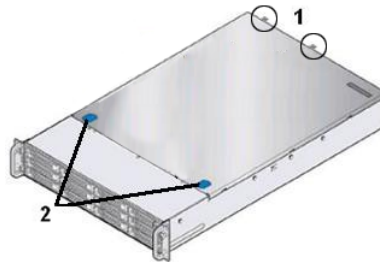
Removing the appliance cover

The appliance cover must be removed to install the components of the Expansion Storage Kit.

Caution: Veritas service personnel must perform all tasks that involve the inside of the appliance chassis.

To remove the cover

- 1** If the top of the appliance looks like this Do the following:



- 1** Completely loosen the two thumb screws (circled) on the rear of the chassis cover.
- 2** Press down on the blue thumb grips and slide the cover back 0.5 inches.
- 3** Lift the cover off the chassis and set it aside where it cannot be damaged.

- 2** Proceed to install the storage kit components into the appliance.

Installing the Expansion Storage Kit components

This section explains the process of installing the components of the Expansion Storage Kit into the appliance.

The expansion storage kit contains eight, 32Gb, Dual in-line memory modules (DIMMs)

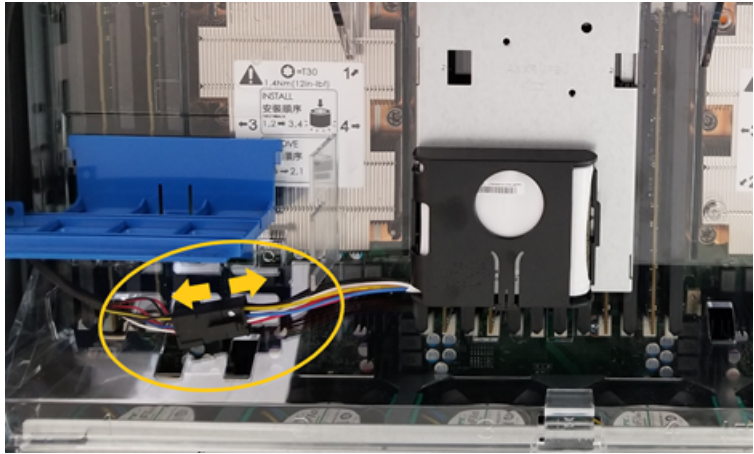
Caution: Veritas service personnel must perform all tasks that involve the inside of the appliance chassis.

To replace the DIMMs

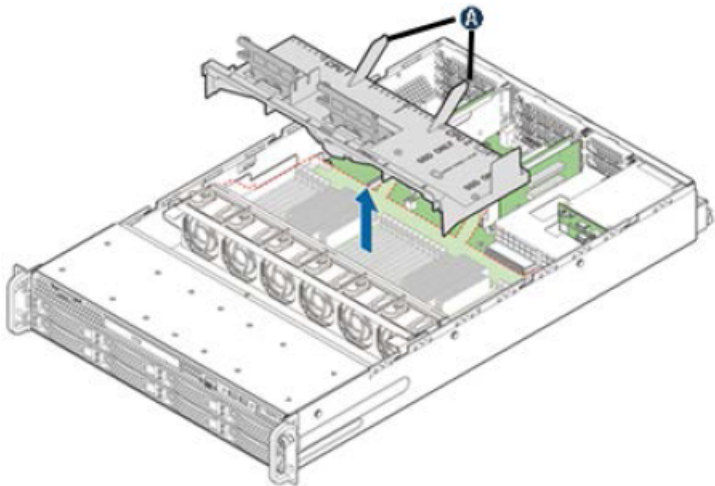
- 1** Put on a grounded ESD-compliant wrist strap or take other ESD-preventive measures.

Note: The static discharged by human bodies can damage static-sensitive components on the boards. When installing and maintaining the equipment, you must observe appropriate electrostatic safety precautions to prevent personnel injuries or device damage.

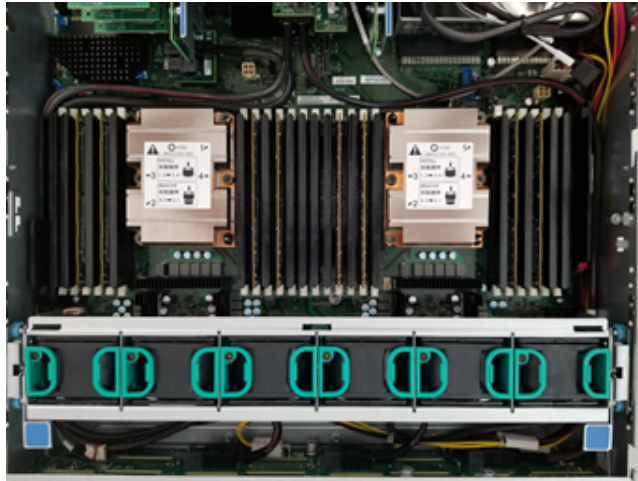
- 2** Remove the air duct that covers the DIMM slots as follows:
- Disconnect the cable connector that is mid-way between the MFBU and the external SAS controller PCIe card. Then, disconnect the cable from the external maintenance free backup unit (MFBU) holder.



- Unlatch two rear tabs (A in the following figure) and lift the air duct straight up until the tabs on the front edge of the air duct are free from the fan assembly. Make sure to place the air duct on a stable surface.

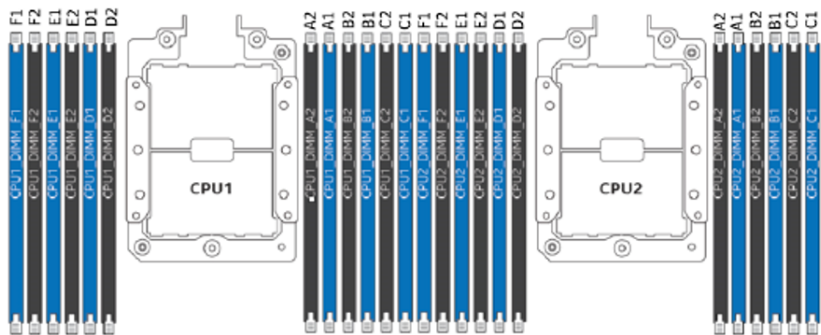


- 3 Locate the DIMM slots next to the CPUs on the mainboard.



The DIMMs on the appliance mainboard are located near the CPUs. Each DIMM slot has a silkscreen identifier on the board that consists of a two-digit alphanumeric number. The number indicates the channel and slot for which the DIMM provides support. Slot identifiers have the format A1, A2, B1, B2, C1, C2, etc., where the letter indicates the channel and the number indicates the slot. Look for the identifier on the mainboard near the socket.

The following diagram shows the configuration of the DIMM sockets as viewed from the front of the appliance. The fans are located between the DIMMs and the front of the appliance.



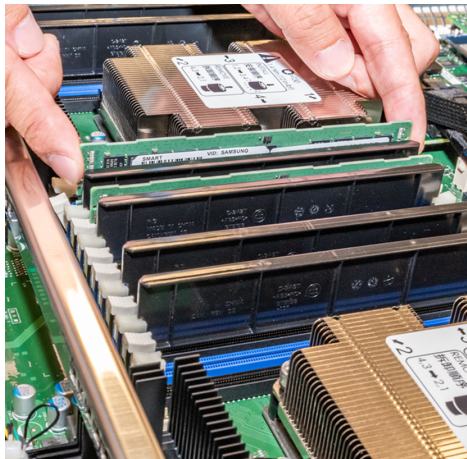
Front of the Appliance

The following table shows the configuration of the DIMMs.

DIMM population for Veritas Appliances																								
DIMM slots as viewed from front of appliance	CPU 1						CPU 2						Total Memory (GB)											
	F1	F2	E1	E2	D1	D2	A2	A1	B2	B1	C2	C1		F1	F2	E1	E2	D1	D2	A2	A1	B2	B1	C2
5250 (server only)			8		8		8		8					8		8		8		8				64

- 4 Locate the DIMM chip or DIMM chips that you want to remove.
- 5 Open the retaining clips at each end of the socket.
- 6 Hold the DIMM by the edges and lift it from the socket.

Caution: Always hold the edges of the DIMM. Do not touch the front or the back of the DIMMs.



- 7 Place the DIMM in an ESD-protective bag.

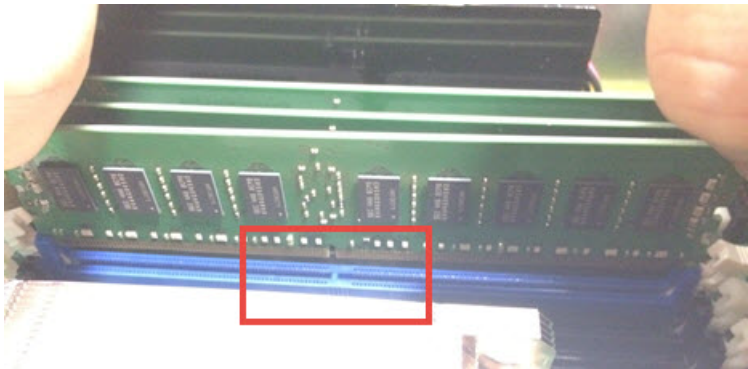
Caution: If you must place more than one DIMM in an ESD-protective bag, be sure that the edge connectors do not touch.

- 8 Repeat these steps to remove the other 8GB DIMMs.
- 9 Install the replacement DIMM as follows:
 - Make sure that the retaining clips on the socket in which you want to install the DIMM are open.
 - Locate the gap in the connector edge of the DIMM as shown in the image below.

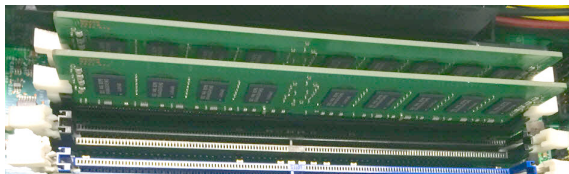


- Locate the key in the DIMM socket, and orient the DIMM over the socket so that the notch in the bottom edge of the card and the key in the socket align.

Caution: Always hold the edges of the DIMM. Do not touch the front or the back of the DIMM chips. Do not touch the front or the back of the DIMM chips.



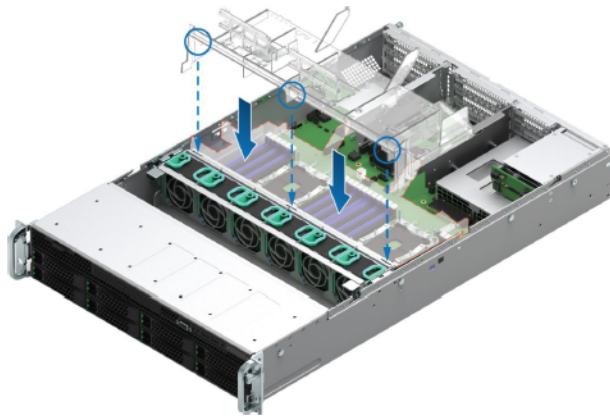
- Align the edges of the DIMM memory module with the grooves in the posts at both ends of the socket.
- Insert the DIMM memory module in the socket grooves and push down evenly and firmly until the retaining clips snap into place. Make sure that the memory module is firmly in place.



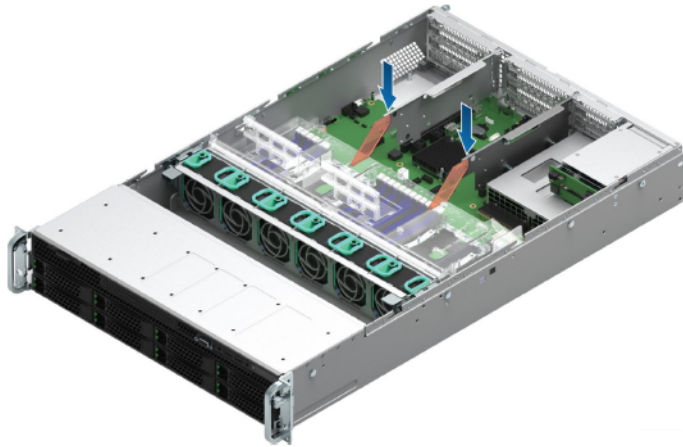
- 10** Repeat step for each DIMM that you need to replace. The 32GB DIMMs should be installed in the following slots: CPU1 (E1, D1, A1, B1), CPU2 (E1, D1, A1, B1) as shown in the table below. The following table shows the configuration of the DIMMs.

DIMM population for Veritas Appliances																										
DIMM slots as viewed from front of appliance	CPU 1						CPU 2						Total Memory (GB)													
	F1	F2	E1	E2	D1	D2	A2	A1	B2	B1	C2	C1		F1	F2	E1	E2	D1	D2	A2	A1	B2	B1	C2	C1	
5250 + storage shelf			32		32		32		32					32		32			32		32					256

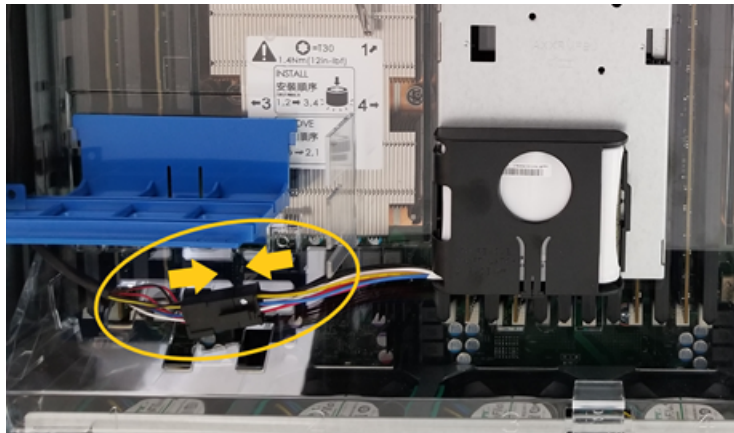
- 11** Check each DIMM to make sure that it is seated in the slot properly.
- 12** Replace the air duct as follows:
- Align the three tabs on the front edge of the air duct with the matching slots on the fan assembly.



- Lower the air duct into the system ensuring the three tabs are securely installed in the fan module.
- Press down on the back edge of the air duct so that the tabs at the end of each air duct post snaps underneath the top edge of the rise assemblies. The air duct should lay/be flat and secure.



- Reconnect the cable to the external maintenance free backup unit (MFBU) holder.

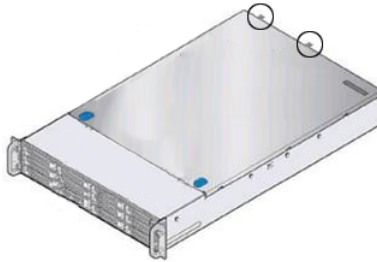


Replacing the appliance cover

To replace the appliance cover

- ◆ Replace the appliance cover.
 - Align the cover with the edge along the top of the chassis.
 - Place the cover on the chassis so that there is about 1.5 inches of overhang.

- Slide the cover forward until the edge slides under the lip of the enclosure.
- Secure the cover by doing the following:



- Tighten the two thumb screws (circled) on the rear panel.

Connecting the storage shelves to the appliance

Select one of the following sections that describe the complete connection of one, two, three, and four shelves.

See [“Connecting one storage shelf to an appliance”](#) on page 84.

See [“Connecting two storage shelves to an appliance”](#) on page 87.

See [“Connecting three storage shelves to an appliance”](#) on page 92.

See [“Connecting four storage shelves to an appliance”](#) on page 99.

See [“Connecting the fifth storage shelf to an appliance”](#) on page 107.

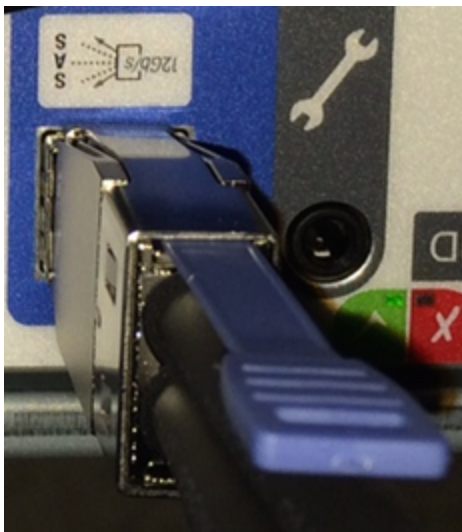
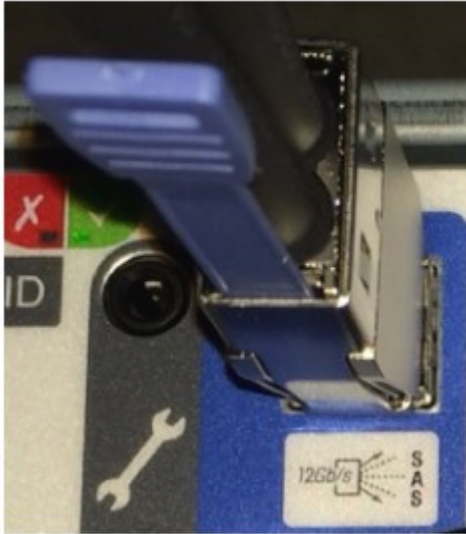
See [“Connecting the sixth storage shelf to an appliance”](#) on page 115.

Note: The appliance server needs to be powered off when adding any storage shelves to an existing appliance installation.

Connecting one storage shelf to an appliance

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

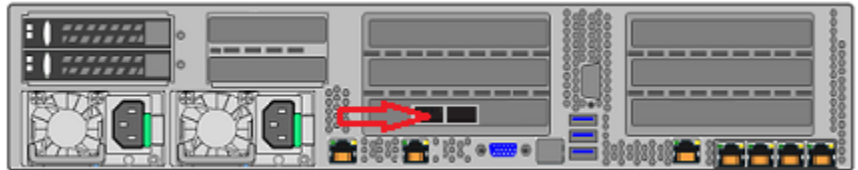
Note: The SAS-3 cable blue tab should align with the white SAS-3 cable label on the I/O module.



To connect one storage shelf to the appliance

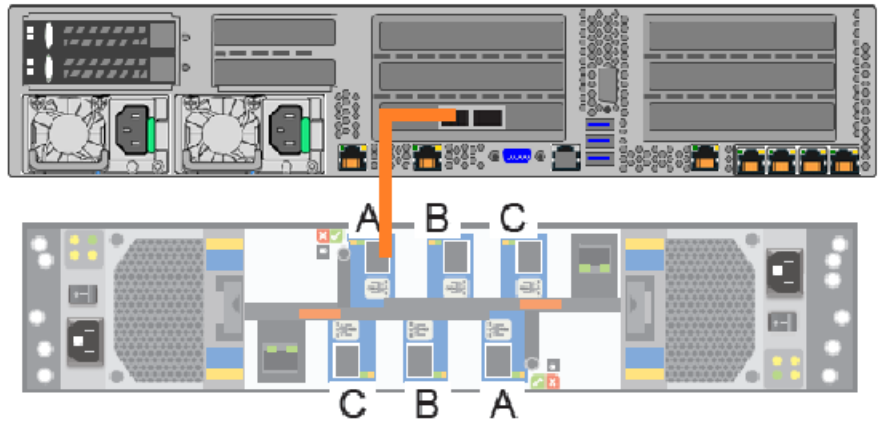
- 1 Connect a SAS-3 cable to the left RAID port in the appliance.

Be sure that the blue tab on the cable connector in the appliance port points down.



- 2 Connect the other end of the cable to port A in the top I/O module of the storage shelf.

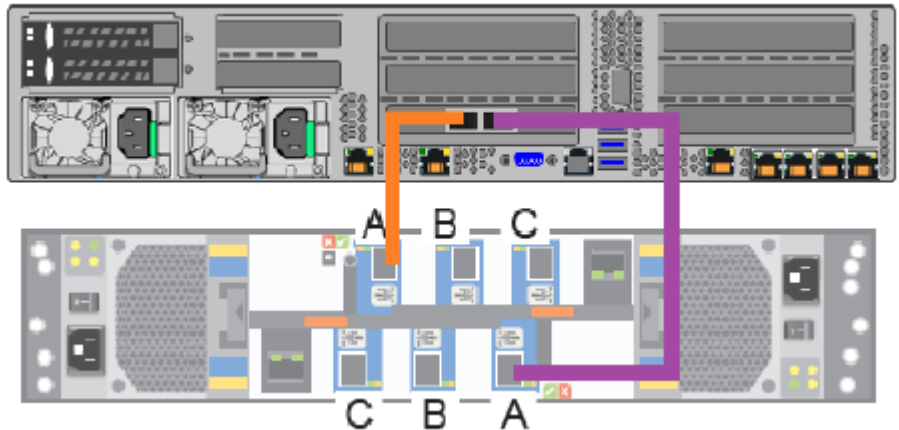
The blue tab should be on the same side of the SAS-3 cable as the SAS-3 label when the cable is connected.



- 3 Attach another SAS-3 cable between port A on the bottom I/O module and the right port on the appliance RAID card.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.

Be sure that the blue tab on the connector in the appliance points down.

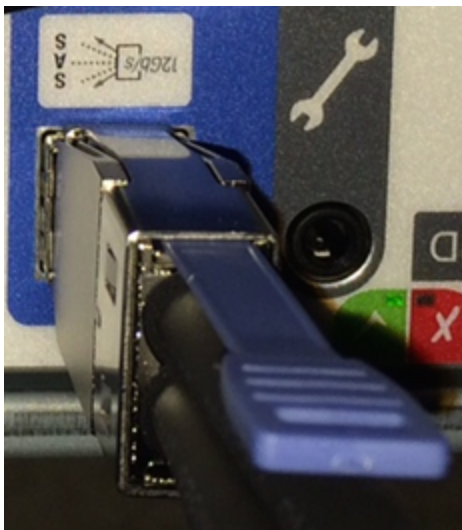
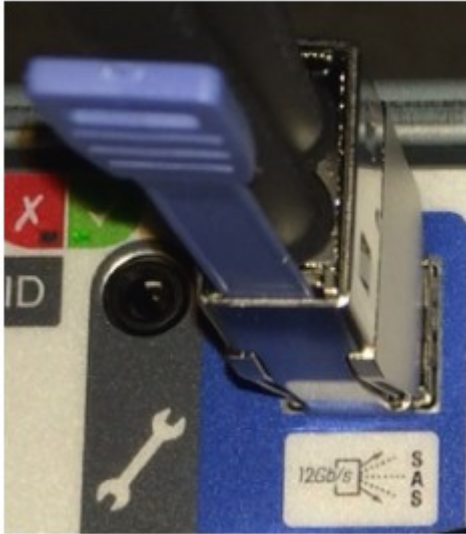


Next, connect network and power cables. Turn on the storage shelves and the appliance per the required sequence. Verify that all units function correctly.

Connecting two storage shelves to an appliance

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

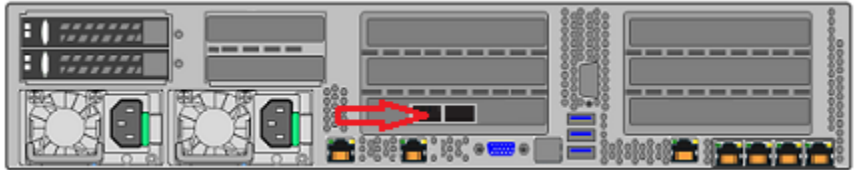
Note: The SAS-3 cable blue tab should align with the white SAS-3 cable label on the I/O module.



To connect two storage shelves to the appliance

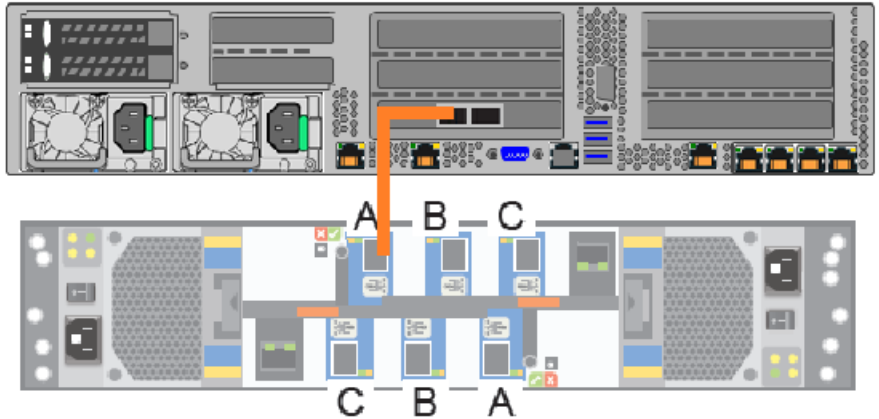
- 1 Connect a SAS-3 cable to the left RAID port in the appliance.

Be sure that the blue tab on the cable connector in the appliance port points down.



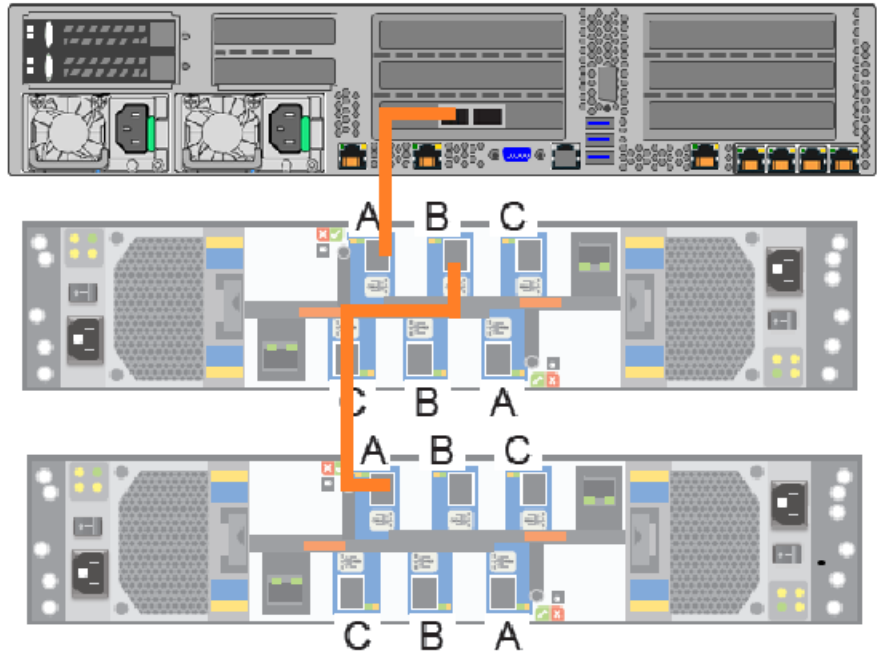
- 2 Connect the other end of this cable to port A in the top I/O module of the storage shelf.

The blue tab on the SAS cable in port A should be on the same side of the cable as the SAS label when connected.



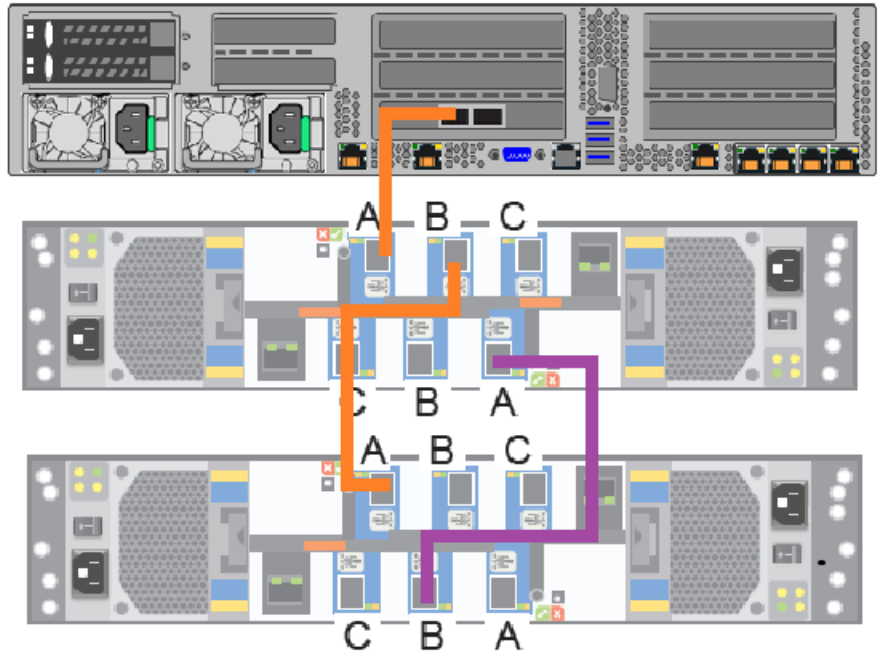
- 3 Connect another SAS-3 cable to port B in the top I/O module of the first storage shelf. Connect the other end of this cable to port A in the top I/O module in the second storage shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



- 4 In the bottom I/O module in the second shelf, connect a SAS-3 cable to port B.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.

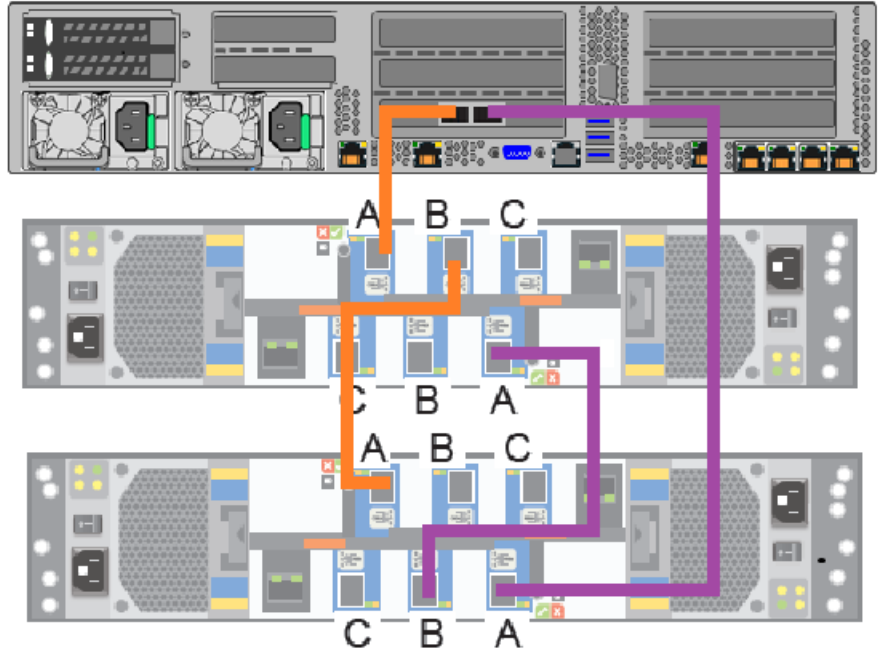


- 5 In the bottom I/O module of the first shelf, connect the other end of the cable to port A.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.

- 6 In the bottom I/O module of the second shelf, connect another SAS-3 cable to port A.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



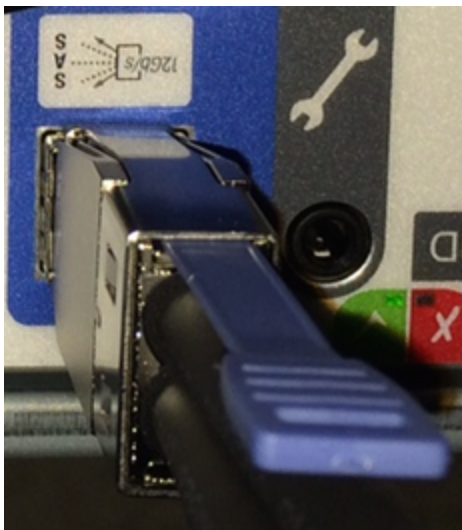
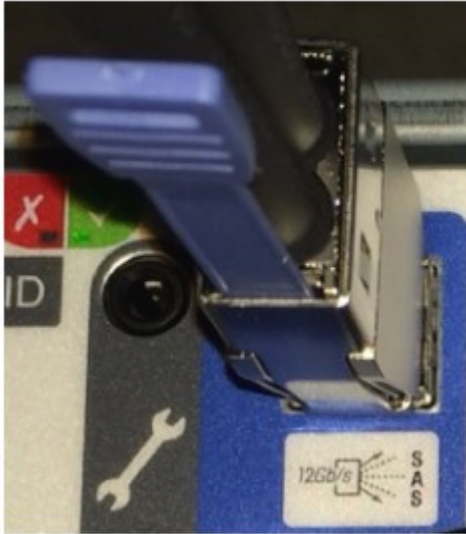
- 7 Connect the other end of this cable to the right port in the RAID card in the appliance. Be sure that the blue tab on the connector in this port points down.

Next, connect network and power cables. Turn on the storage shelves and the appliance per the required sequence. Verify that all units function correctly.

Connecting three storage shelves to an appliance

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

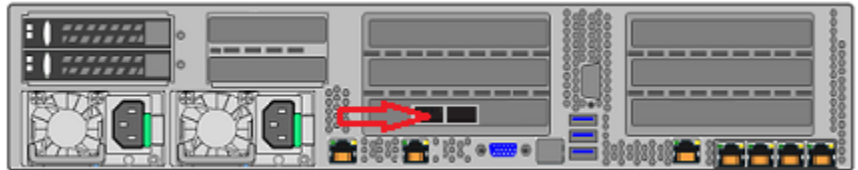
Note: The SAS-3 cable blue tab should align with the white SAS-3 cable label on the I/O module.



To connect three storage shelves to an appliance

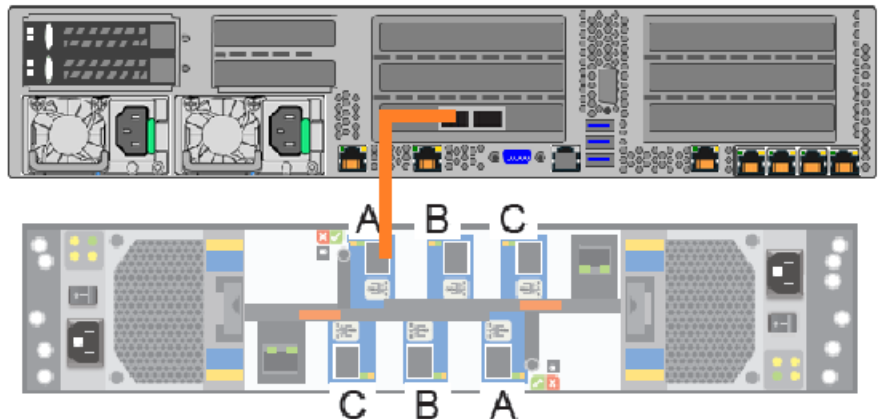
- 1 Connect a SAS-3 cable to the left RAID port in the appliance.

Be sure that the blue tab on the connector in the appliance port points down.



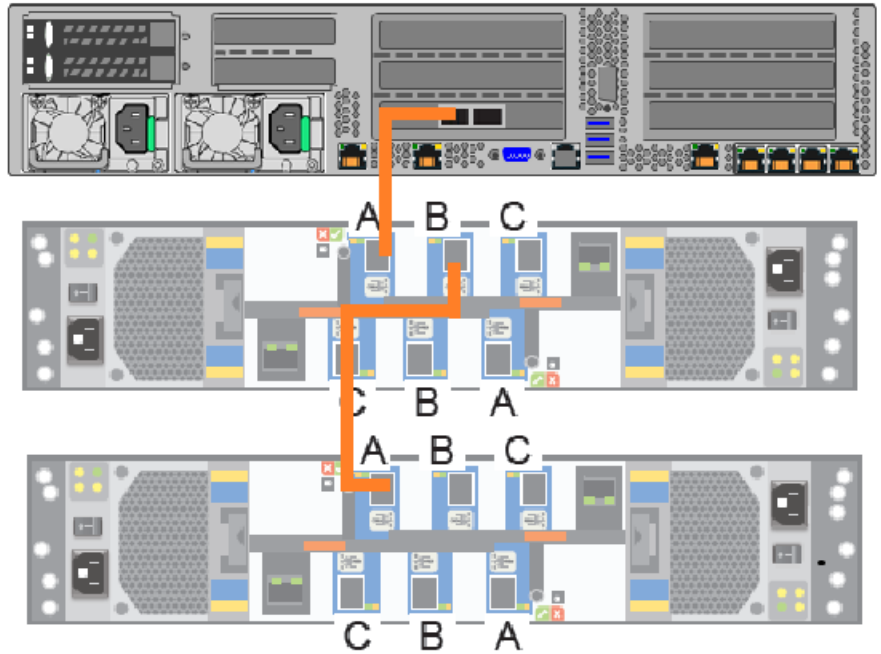
- 2 Connect the other end of this cable to port A in the top I/O module of the storage shelf.

The blue tab on the SAS cable in port A should be on the same side of the cable as the SAS label when connected.



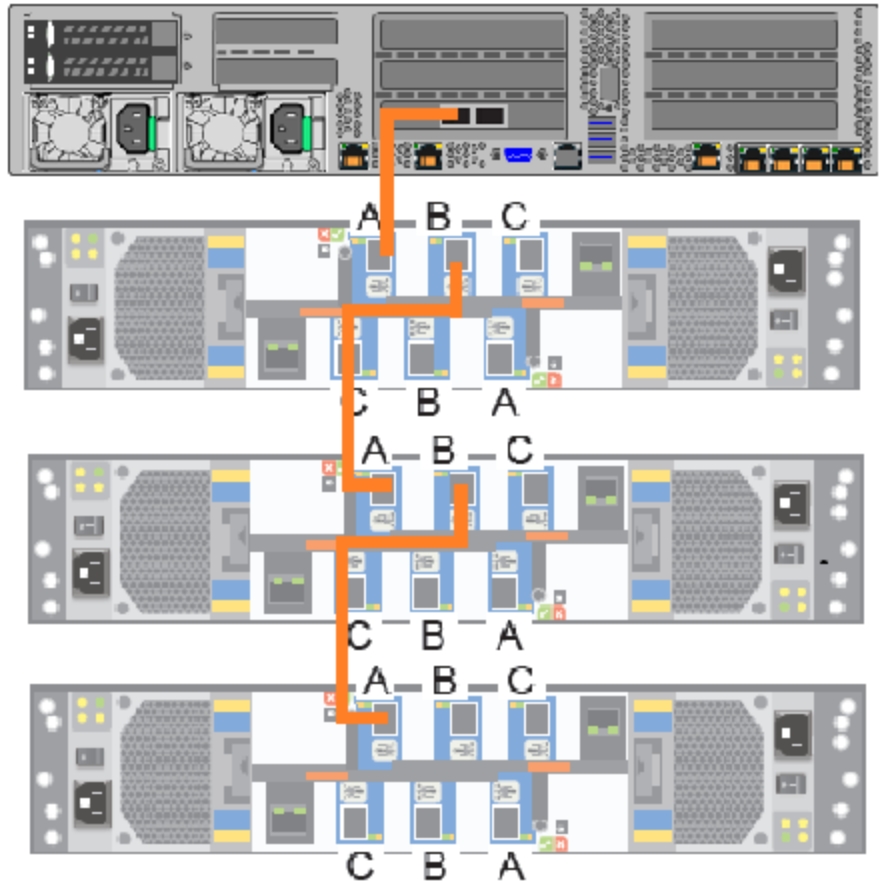
- 3 Connect another SAS-3 cable to port B in the top I/O module of the first storage shelf. Connect the other end of the cable to port A in the top I/O module in the second storage shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



- 4 Connect a SAS-3 cable to port B of the top I/O module in the second shelf. Connect the other end of the cable to port A in the top I/O module in the third shelf.

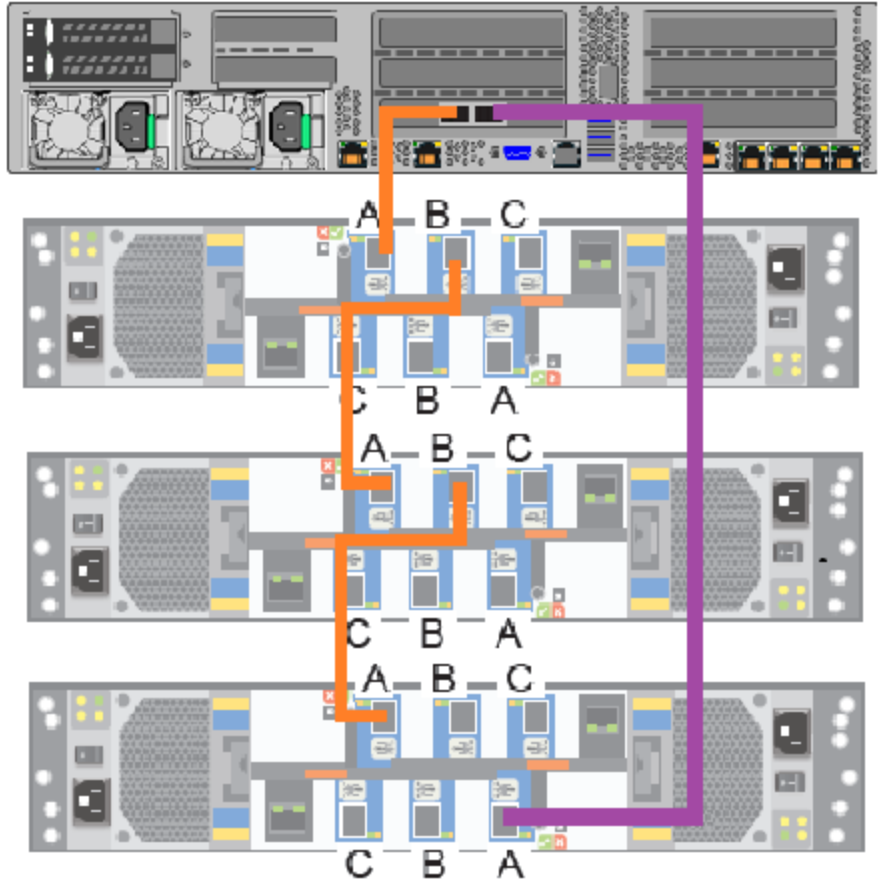
The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



- 5 Connect a SAS-3 cable to port A of the bottom I/O module in the third shelf. The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.

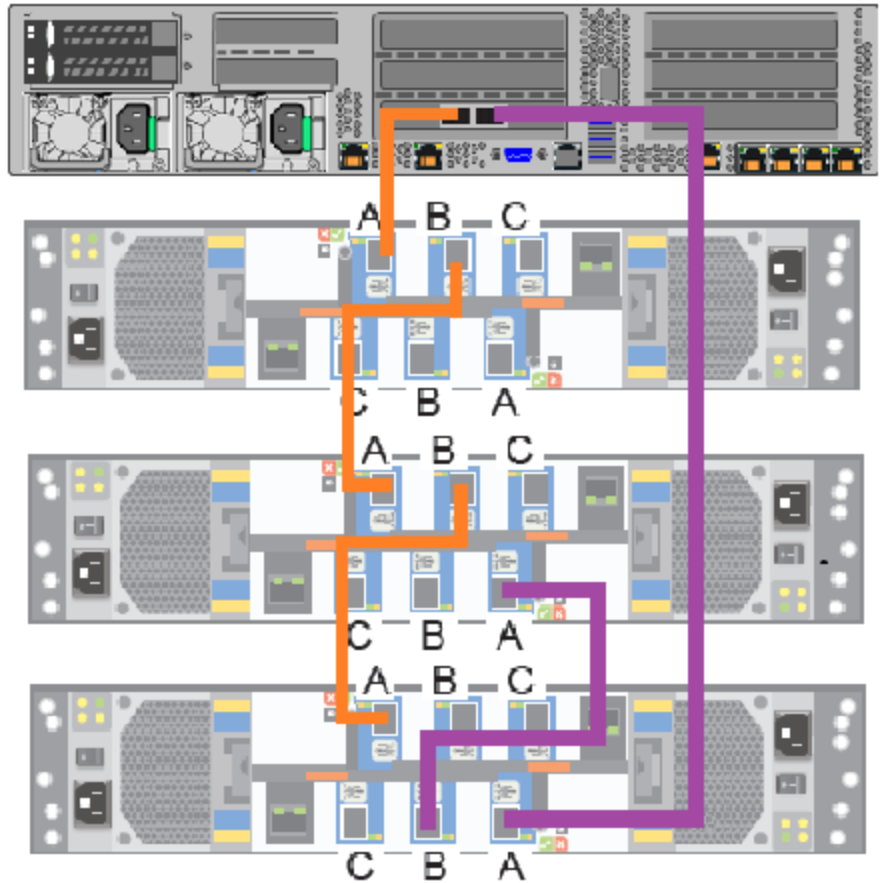
- 6 Connect the other end of the cable to the right port in the appliance RAID PCIe card.

Be sure that the blue tab on the connector in port A points up. The blue tab in the appliance port connector should point down



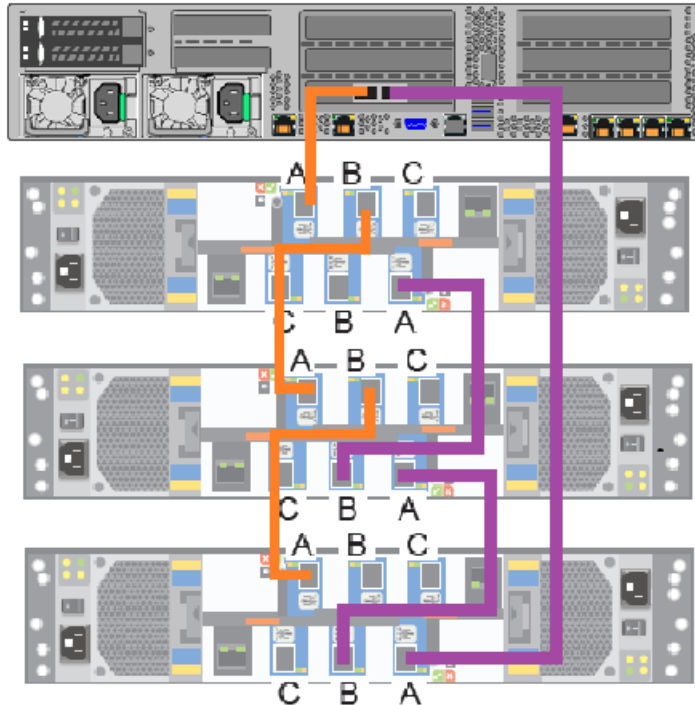
- 7 Connect a SAS-3 cable from port B of the bottom I/O module in the third shelf to port A in the bottom I/O module in the second shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



- 8 Connect a SAS-3 cable to port B of the bottom I/O module in the second shelf. Connect the other end of the cable to port A on the bottom I/O module in the first shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.

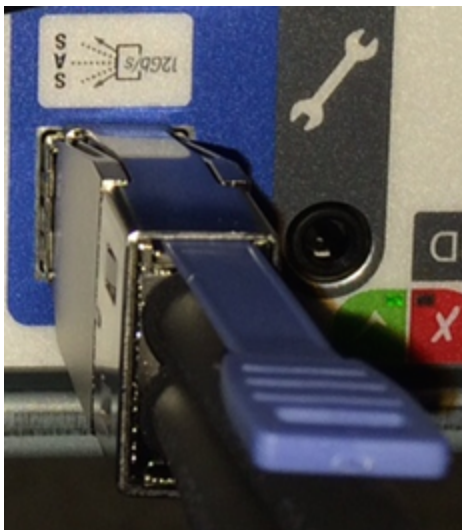
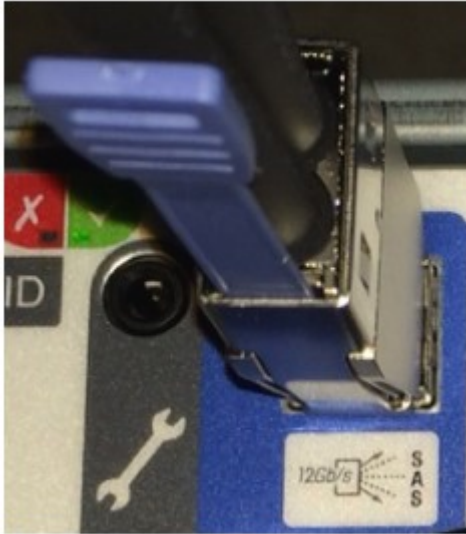


Next, connect network and power cables. Turn on the storage shelves and the appliance per the required sequence. Verify that all units function correctly.

Connecting four storage shelves to an appliance

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

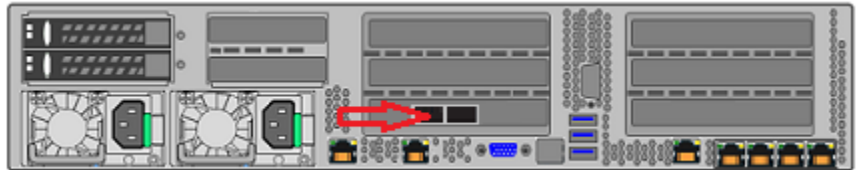
Note: The SAS-3 cable blue tab should align with the white SAS-3 cable label on the I/O module.



To connect four storage shelves to an appliance

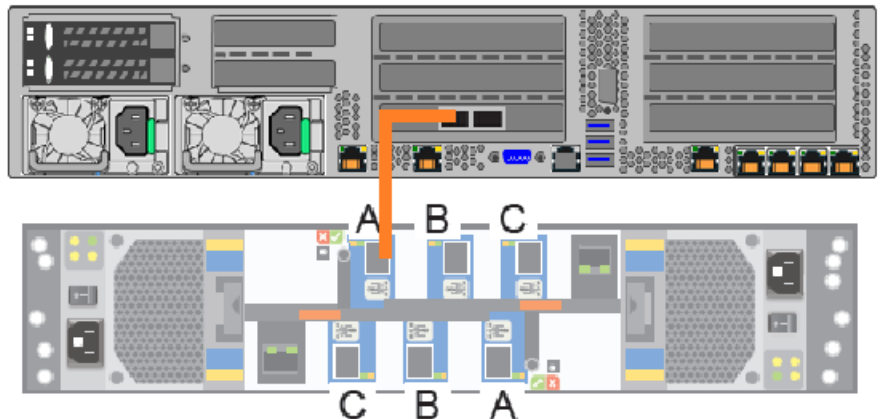
- 1 Connect a SAS-3 cable to the left port in the appliance RAID PCIe card.

Be sure that the blue tab in this port points down.

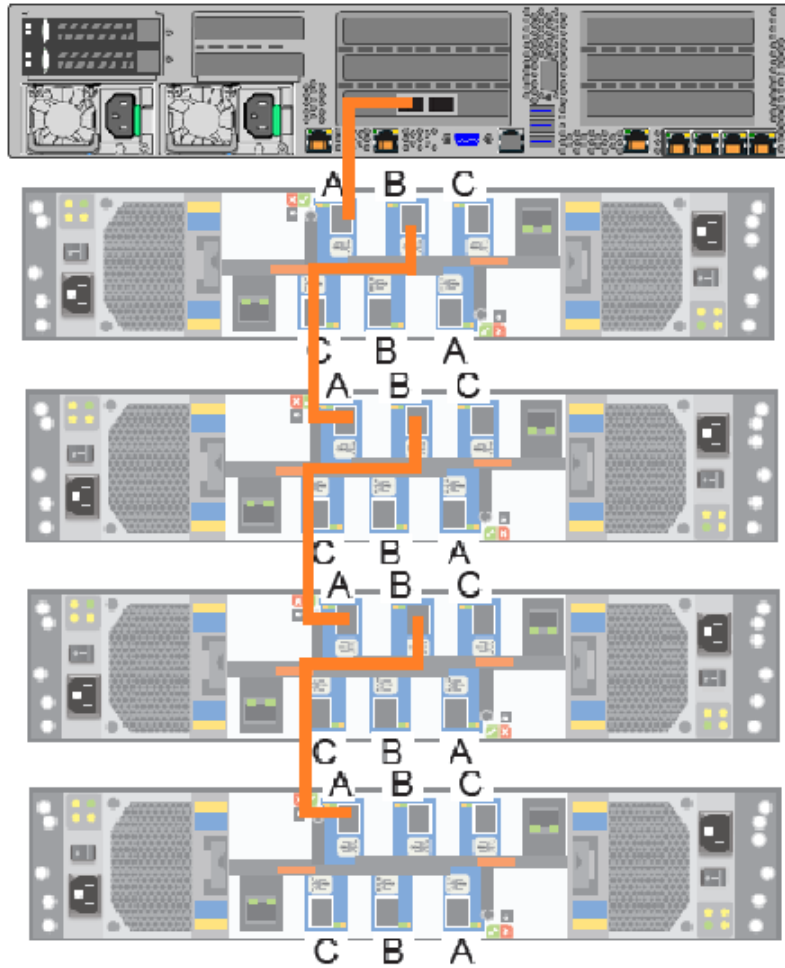


- 2 Connect the other end of the SAS-3 cable to port A in the top I/O module of the first storage shelf.

The blue tab on the SAS cable in port A should be on the same side of the cable as the SAS label when connected.

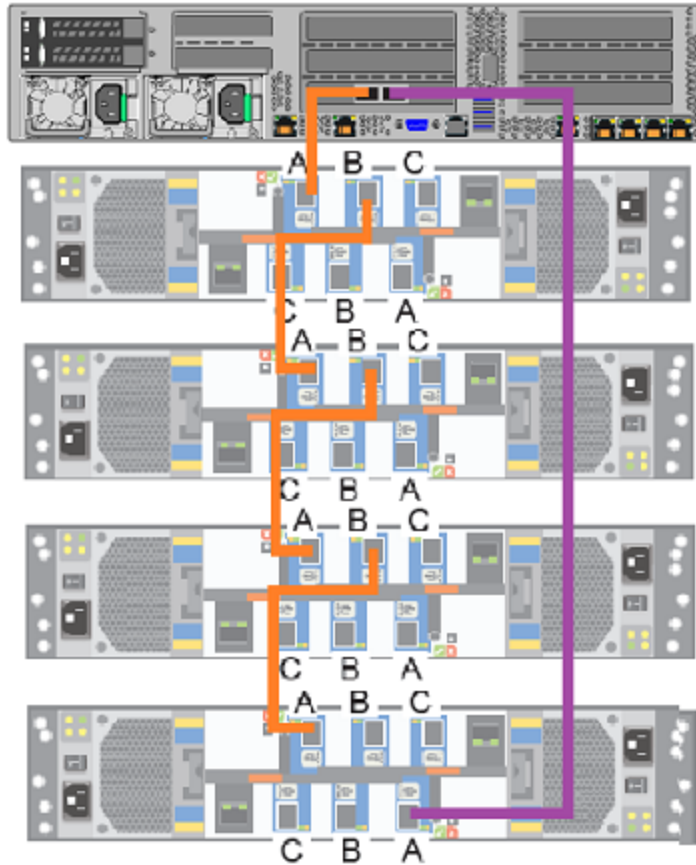


- 3 Connect SAS-3 cables between the remaining four storage shelves. Be sure that the blue tab in the connectors in these ports point down.



- 4 Connect a SAS-3 connector to port A in the bottom of the I/O module in the fourth shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.

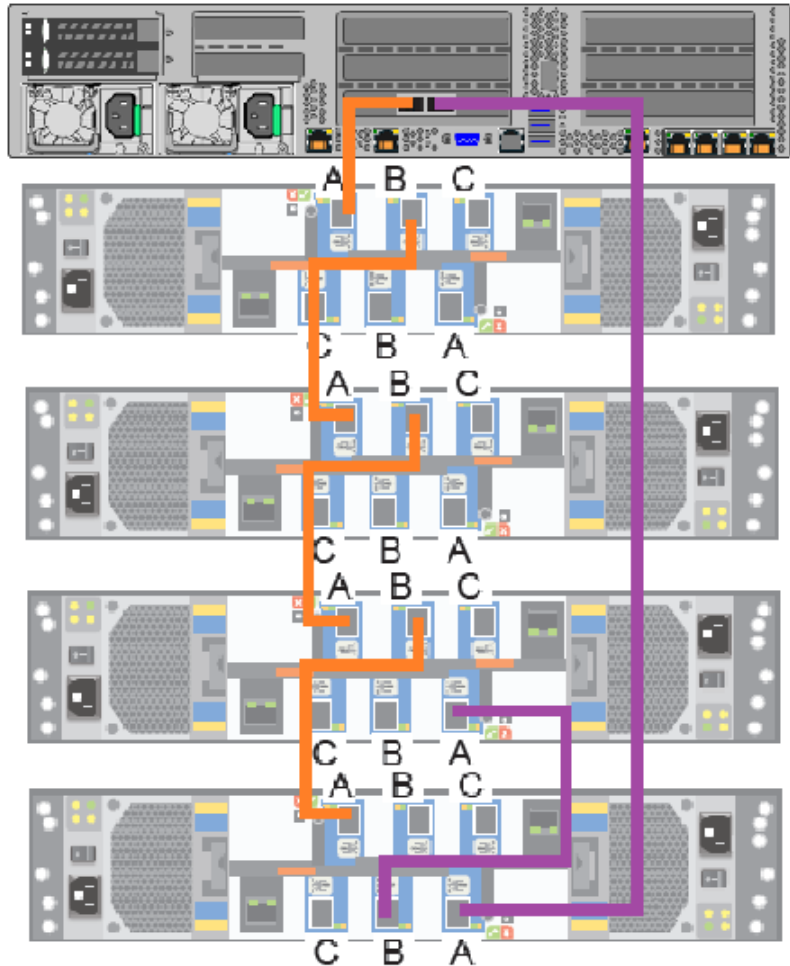


- 5 Connect the other end of the cable to the right port in the appliance RAID PCIe card.

Be sure that the blue tab on the connector in this port points down.

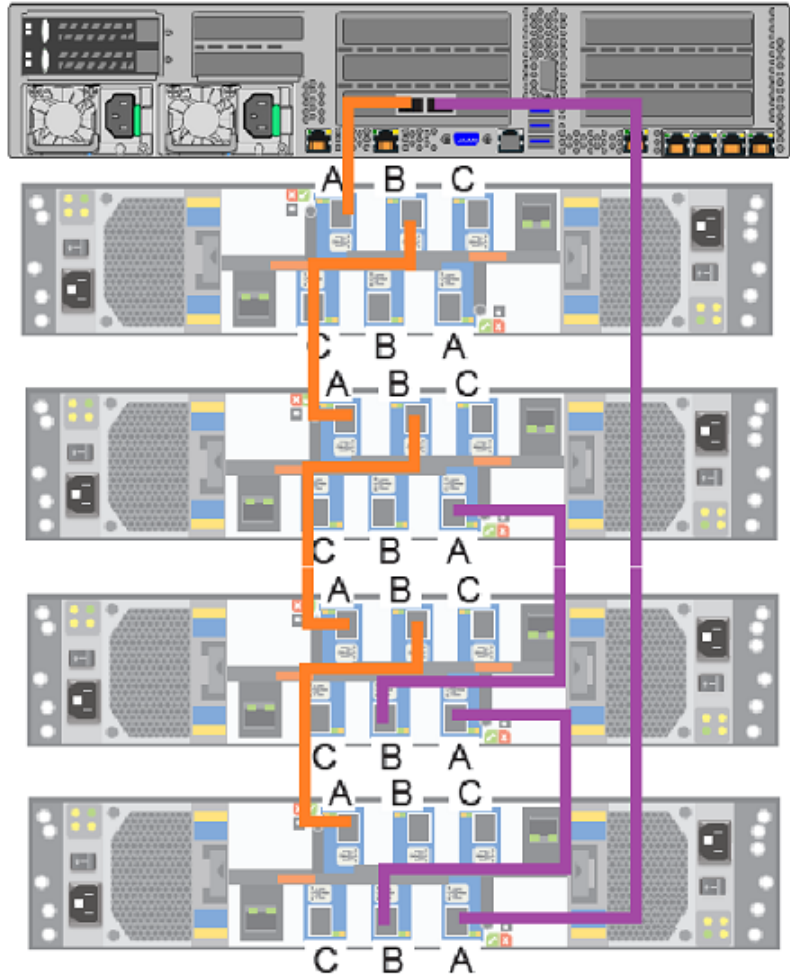
- 6 Connect a SAS-3 cable to port B in the bottom I/O module of the fourth shelf. Connect the other end of the cable to port A in the bottom I/O module of the third shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



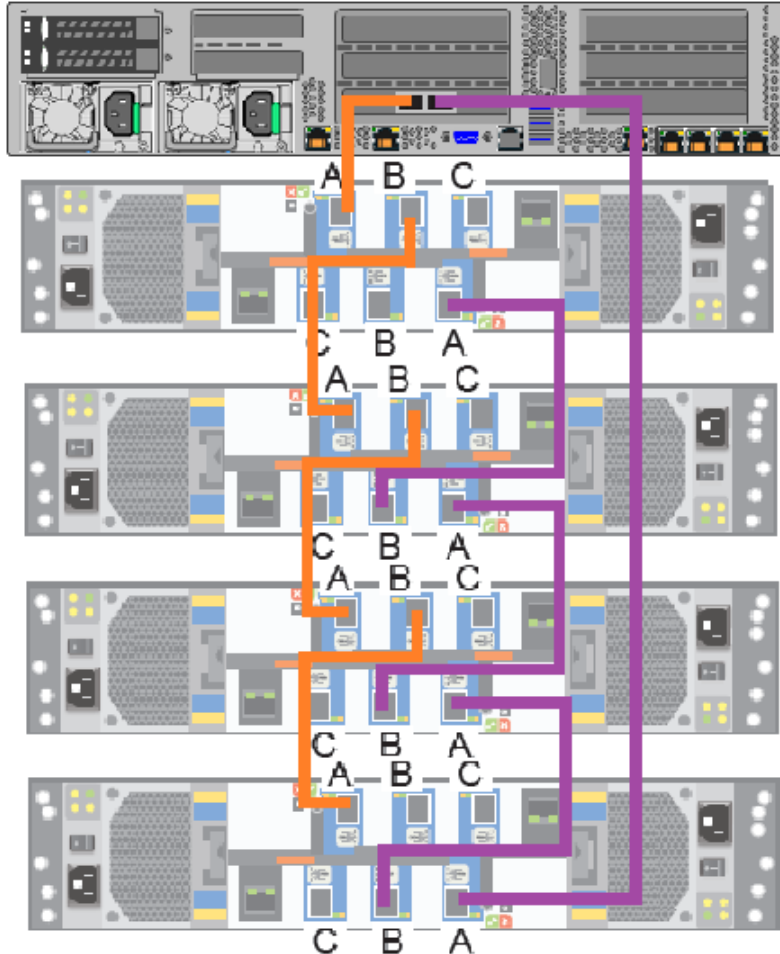
- 7 Connect port B in the bottom I/O module of the third shelf to port A in the bottom I/O module in the second shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



- 8 Connect port B in the bottom I/O module of the second shelf to port A in the bottom I/O module in the first shelf.

The blue tab on the SAS-3 cable should be on the same side of the cable as the SAS-3 label when the cable is connected.



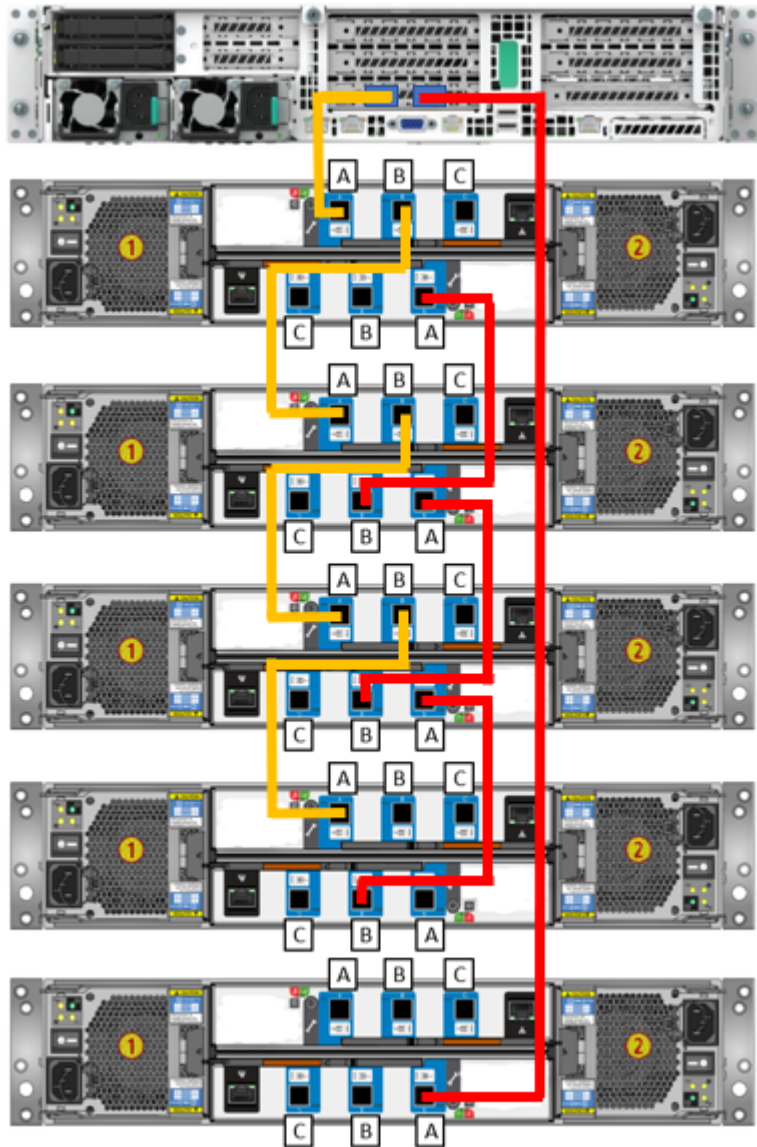
Next, connect network and power cables. Turn on the storage shelves and the appliance per the required sequence. Verify that all units function correctly.

Connecting the fifth storage shelf to an appliance

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

To connect the fifth storage shelves to an appliance

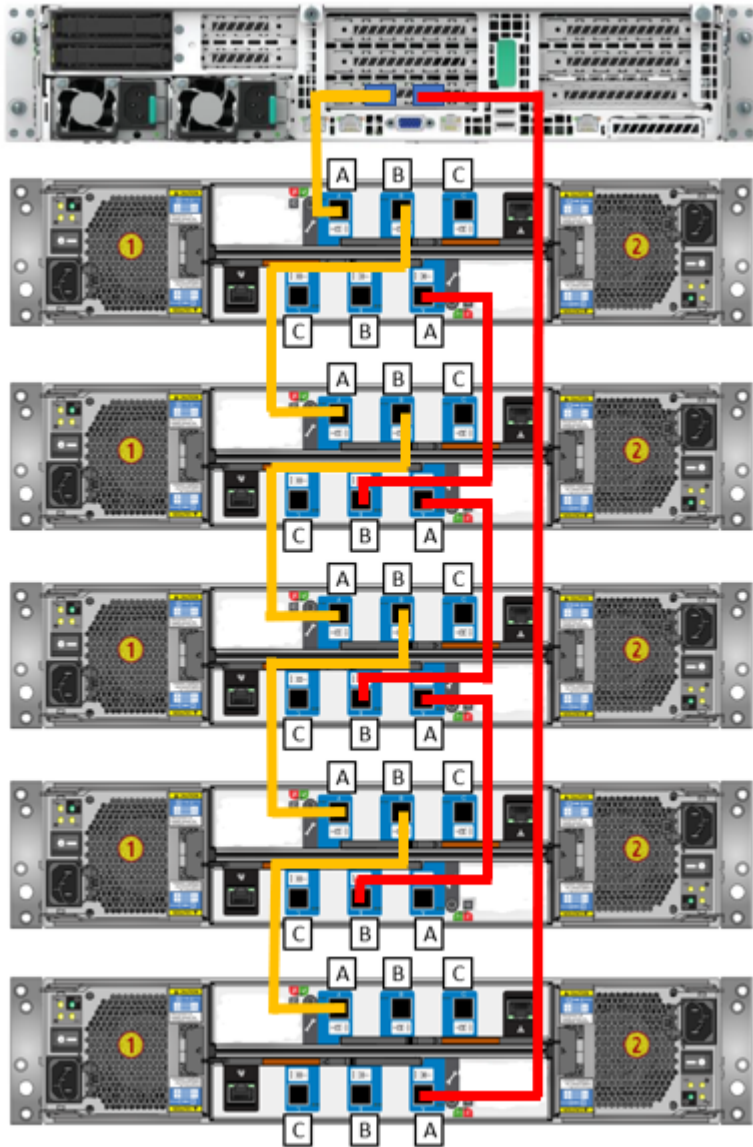
- 1 Disconnect the SAS-3 cable from port A on the bottom I/O module on the fourth storage shelf and connect the cable to port A on the bottom I/O module of the fifth shelf.



The blue tab on the SAS cable in port A should be on the same side of the cable as the SAS label when connected.



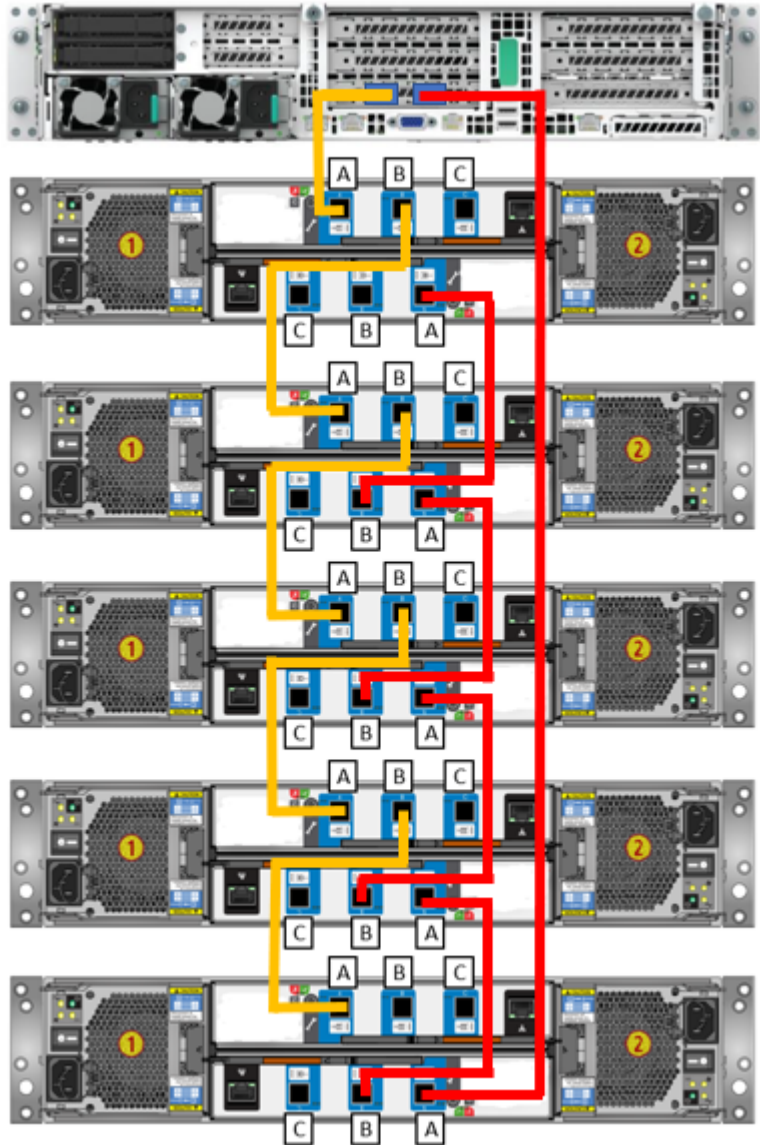
- 2 Connect one SAS-3 cable to port B in the top I/O module of the fourth storage shelf. Connect the other end of this cable to port A in the top I/O module in the fifth storage shelf.



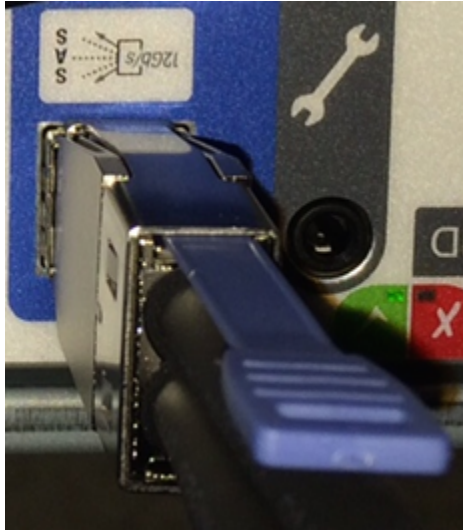
The blue tab on the SAS cable in port A and port B should be on the same side of the cable as the SAS label when connected.



- 3 Connect one SAS-3 cable to port A in the bottom I/O module of the fourth storage shelf. Connect the other end of this cable to port B in the bottom I/O module in the fifth storage shelf.



The blue tab on the SAS cable in port A and port B should be on the same side of the cable as the SAS label when connected.



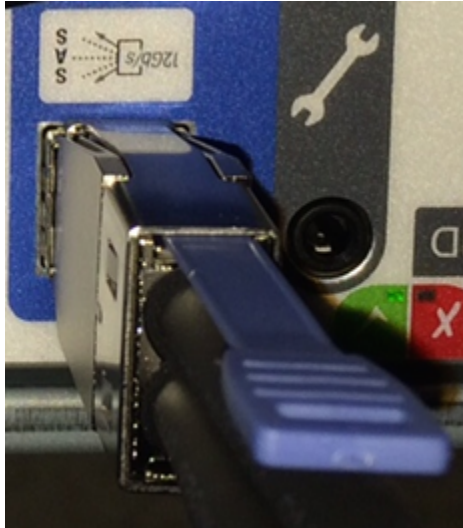
Connecting the sixth storage shelf to an appliance

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

To connect the sixth storage shelves to an appliance

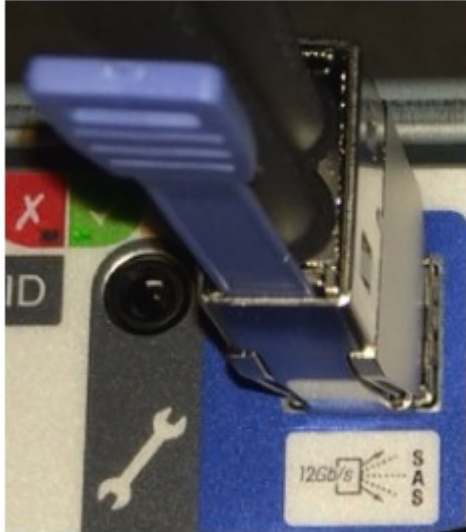
- 1 Disconnect the SAS-3 cable from port A on the bottom I/O module on the fifth storage shelf and connect the cable to port A on the bottom I/O module of the sixth shelf.

The blue tab on the SAS cable in port A should be on the same side of the cable as the SAS label when connected.

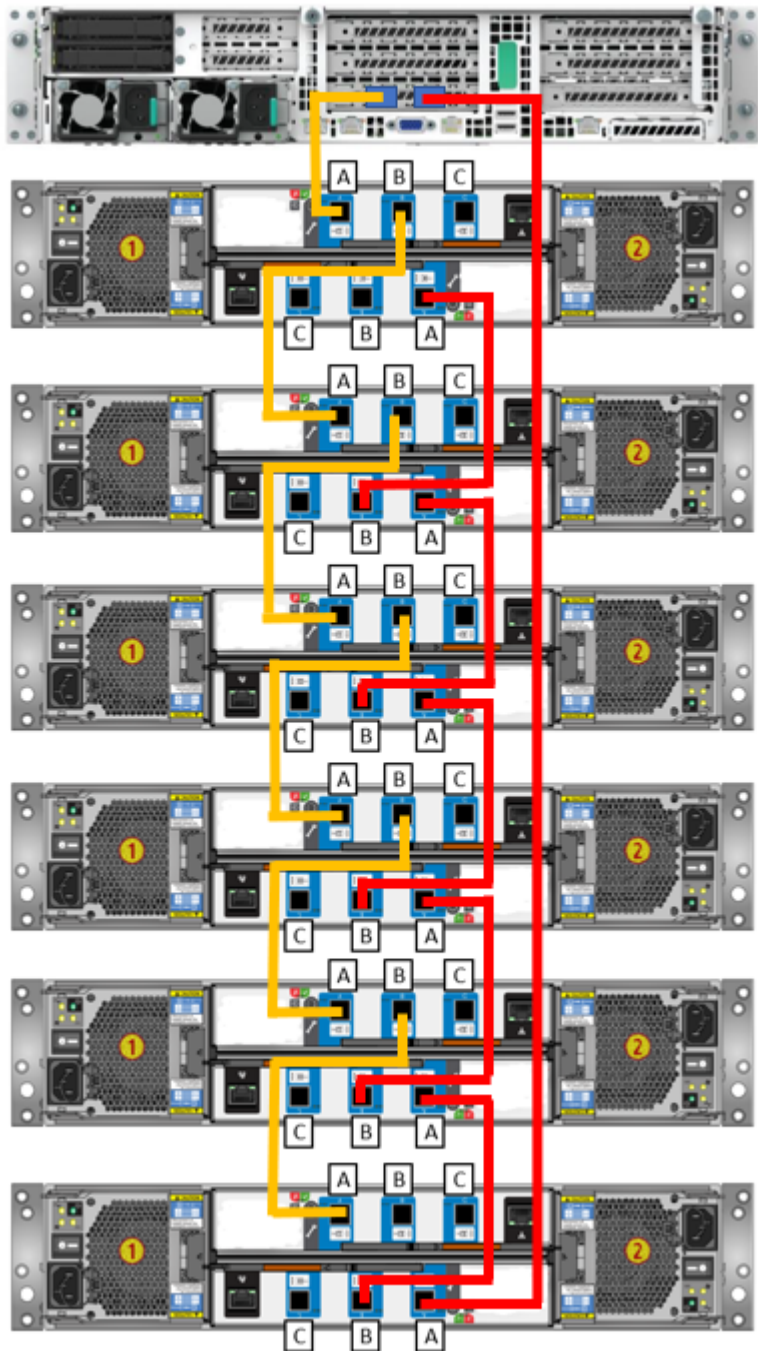


- 2 Connect one SAS-3 cable to port B in the top I/O module of the fifth storage shelf. Connect the other end of this cable to port A in the top I/O module in the sixth storage shelf.

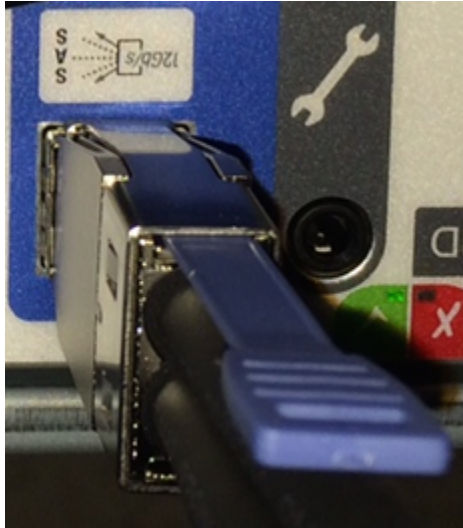
The blue tab on the SAS cable in port A and port B should be on the same side of the cable as the SAS label when connected.



- 3** Connect one SAS-3 cable to port A in the bottom I/O module of the fifth storage shelf. Connect the other end of this cable to port B in the bottom I/O module in the sixth storage shelf.



The blue tab on the SAS cable in port A and port B should be on the same side of the cable as the SAS label when connected.



Adding storage shelves to an operating appliance that has at least one storage shelf attached

This appendix includes the following topics:

- [Overview](#)
- [Moving the MSDP partition from a base disk to an expansion disk for optimum performance](#)
- [Additional storage shelf scenarios](#)
- [Installing storage shelves to an appliance that has at least one storage shelf](#)
- [Recabling to connect additional shelves](#)

Overview

The 5250 Appliance operates with up to six external storage shelves. If your appliance has at least one storage shelf that is connected and running properly you can add more shelves for a total of six shelves.

Existing 5250 Appliances with internal storage capacities of 9.1TiB and 36.4TiB support up to six Veritas 2U12 65.5TiB/72TB Storage Shelves.

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 amount of usable storage space may fluctuate, depending on how much storage space the MSDP data pool presently uses.

See [“Moving the MSDP partition from a base disk to an expansion disk for optimum performance”](#) on page 125.

Spanning MSDP data across a 5250 Appliance and a storage shelf is not recommended.

More information about Migration Utilities is available in the NetBackup Appliance Administrator's Guide at the following site.

[NetBackup Appliance Documentation](#)

Moving the MSDP partition from a base disk to an expansion disk for optimum performance

If all or a part of your Media Server Deduplication Pool (MSDP) partition resides on the appliance base unit (base disk), it is recommended that you move the MSDP partition to an expansion disk. This recommendation applies to 52xx appliances and is needed for optimum performance.

The following procedures explain how to move the MSDP partition from a base disk to an expansion disk. The base disk resides on the appliance base unit. The expansion disk resides on a storage shelf that is attached to the appliance. A 5230, 5240 and 5250 appliance can have up to four expansion disks.

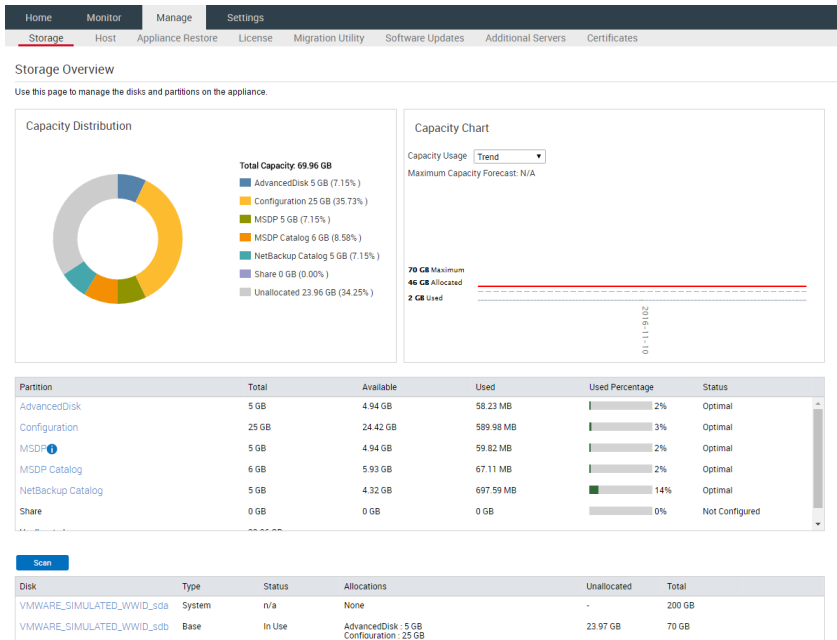
Consider the following scenarios:

- Scenario 1 - The MSDP and AdvancedDisk partitions are configured on the base disk. The expansion units are physically attached to the appliance but have not been added yet.
- Scenario 2 - The MSDP partition exists on the base disk. The expansion units are configured and partitions exist on them.

Select the scenario that applies to you and follow the appropriate procedure outlined below.

Scenario 1 - To move the MSDP partition from a base disk to an expansion disk

- 1 Log on to the NetBackup Appliance Web Console.
- 2 Click **Manage > Storage** and go to **Disks** section. Check the partitions that are on the Base disk. Suppose that you have MSDP, MSDP Catalog, AdvancedDisk, NetBackup Catalog, and Configuration partitions on the base disk.



Note: If you have added storage shelves, click the **Scan** button to scan the new storage to create RAID volumes and add the new shelf to the unallocated storage.

See “Adding the disk space of additional storage shelves from the NetBackup Appliance Shell Menu” on page 146.

See “Adding the disk space of additional storage shelves from the NetBackup Appliance Web Console” on page 147.

- 3 Ensure that the base disk is fully allocated by resizing the non-MSDP partitions (like AdvancedDisk). To ensure that the base disk is full, resize the AdvancedDisk partition to a value that is just below the maximum value.

- In the **Partition** section, click **AdvancedDisk** partition to open the partition details page.

Partition	Total	Available	Used	Used Percentage	Status
AdvancedDisk	5 GB	4.94 GB	58.23 MB	2%	Optimal
Configuration	25 GB	24.42 GB	588.97 MB	3%	Optimal
MSDP	5 GB	4.94 GB	59.10 MB	2%	Optimal
MSDP Catalog	6 GB	5.93 GB	67.12 MB	2%	Optimal
NetBackup Catalog	5 GB	4.31 GB	708.43 MB	14%	Optimal
Share	0 GB	0 GB	0 GB	0%	Not Configured

- On the partition details page, click **Resize** in the **Partition Distributions on Disk** section. Enter a size in the **New Size** field that is slightly below the maximum value.

The screenshot shows the Veritas NetBackup Appliance interface. A 'Resize Partition' dialog box is open, displaying the following information:

- Estimated time to resize the partition: 2 to 5 minutes.
- Used Size: 58.23 MB
- Unallocated Size: 23.0 GB
- Current Size: 5 GB
- New Size: 22.9 GB (selected in the input field)

The background interface shows the 'AdvancedDisk' section with a 'Capacity Distribution' chart and a 'Partition Distributions on Disk' table. The table has columns for Partition Number, Disk, Type, and Size.

Partition Number	Disk	Type	Size
0	VMWARE_SIMULATED_VVWID_sdb	Base	5 GB

Click **Resize** to resize. In this example, the AdvancedDisk partition is being resized to 22.9 GB. The maximum value that it can be resized to is 23 GB.

Click **OK** after the resize operation is complete. The page is refreshed automatically and reflects the updated size.

- In the **Disks** section, click the **Add** link. Click **Yes** to confirm the addition and **OK** when it finishes. Repeat this process for the second expansion unit.

Storage Overview

Use this page to manage the disks and partitions on the appliance.

Capacity Distribution

Total Capacity: 69.96 GB

- AdvancedDisk 22 GB (31.45%)
- Configuration 25 GB (35.73%)
- MSDP 5 GB (7.15%)
- MSDP Catalog 6 GB (8.58%)
- NetBackup Catalog 5 GB (7.15%)
- Share 0 GB (0.00%)
- Unallocated 6.96 GB (9.95%)

Capacity Chart

Capacity Usage: Trend

Maximum Capacity Forecast: N/A

70 GB Maximum
46 GB Allocated
2 GB Used

Partition	Total	Available	Used	Used Percentage	Status
AdvancedDisk	22 GB	21.81 GB	194.76 MB	1%	Optimal
Configuration	25 GB	24.42 GB	590.15 MB	3%	Optimal
MSDP	5 GB	4.94 GB	59.88 MB	2%	Optimal
MSDP Catalog	6 GB	5.93 GB	67.11 MB	2%	Optimal
NetBackup Catalog	5 GB	4.32 GB	696.51 MB	14%	Optimal
Share	0 GB	0 GB	0 GB	0%	Not Configured

[Scan](#)

Disk	Type	Status	Allocations	Unallocated	Total
VMWARE_SIMULATED_WWID_sda	System	n/a	None	-	200 GB
VMWARE_SIMULATED_WWID_sdb	Base	In Use	AdvancedDisk : 22 GB Configuration : 25 GB	6.97 GB	70 GB
VMWARE_SIMULATED_WWID_sdc	Expansion	New Available	None	-	200 GB
VMWARE_SIMULATED_WWID_sdd	Expansion	New Available	None	-	200 GB

Note that the Unallocated space increases.

- 5 Check the space occupied by MSDP partition and how the MSDP partition is distributed across disks..

In the **Partition** section, click the **MSDP** link to open the MSDP partition detail page.

Storage Overview

Use this page to manage the disks and partitions on the appliance.

Capacity Distribution

Total Capacity: 469.9 GB

- AdvancedDisk 22 GB (4.68%)
- Configuration 25 GB (5.32%)
- MSDP 5 GB (1.06%)
- MSDP Catalog 6 GB (1.28%)
- NetBackup Catalog 5 GB (1.06%)
- Share 0 GB (0.00%)
- Unallocated 406.9 GB (86.59%)

Capacity Chart

Capacity Usage: Trend

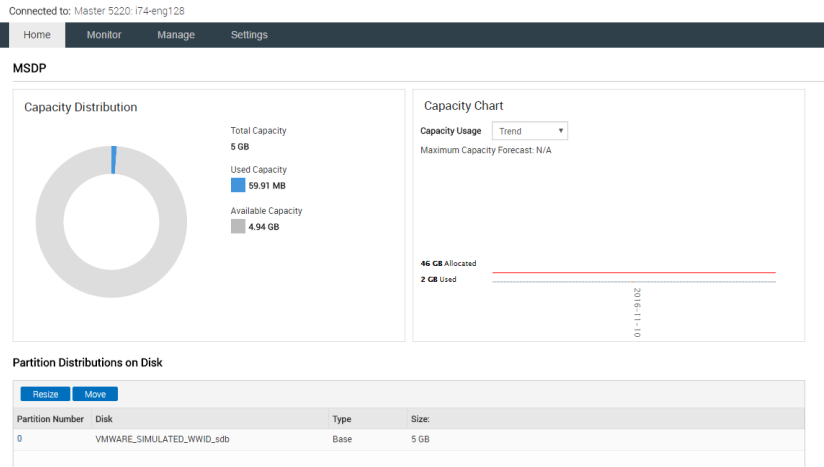
Maximum Capacity Forecast: N/A

70 GB Maximum
 46 GB Allocated
 2 GB Used

Partition	Total	Available	Used	Used Percentage	Status
AdvancedDisk	22 GB	21.81 GB	194.76 MB	1%	Optimal
Configuration	25 GB	24.42 GB	590.41 MB	3%	Optimal
MSDP	5 GB	4.94 GB	59.91 MB	2%	Optimal
MSDP Catalog	6 GB	5.93 GB	67.11 MB	2%	Optimal
NetBackup Catalog	5 GB	4.32 GB	696.51 MB	14%	Optimal
Share	0 GB	0 GB	0 GB	0%	Not Configured

Disk	Type	Status	Allocations	Unallocated	Total	
VMWARE_SIMULATED_WWID_sdb	System	n/a	None	-	200 GB	
VMWARE_SIMULATED_WWID_sdb	Base	In Use	AdvancedDisk : 22 GB Configuration : 25 GB	6.97 GB	70 GB	
VMWARE_SIMULATED_WWID_sdc	Expansion	In Use	None	199.97 GB	200 GB	Remove
VMWARE_SIMULATED_WWID_sdd	Expansion	In Use	None	199.97 GB	200 GB	Remove

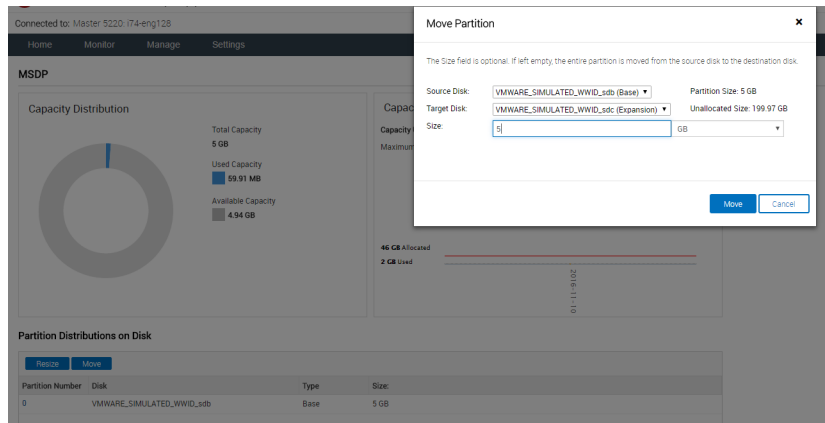
On MSDP partition detail page, check the **Partition Distributions on Disk** section.



In this example, all of the MSDP partition resides on the base disk and occupies 5 GB.

Note that the expansion disk must have at least 5 GB of unallocated space when you move the MSDP partition to the expansion disk at a later point.

- 6 Click **Move** in the **Partition Distributions on Disk** section.
- 7 The **Move Partition** window is displayed. Select the target disk from the drop-down list to which you want to move the partition.

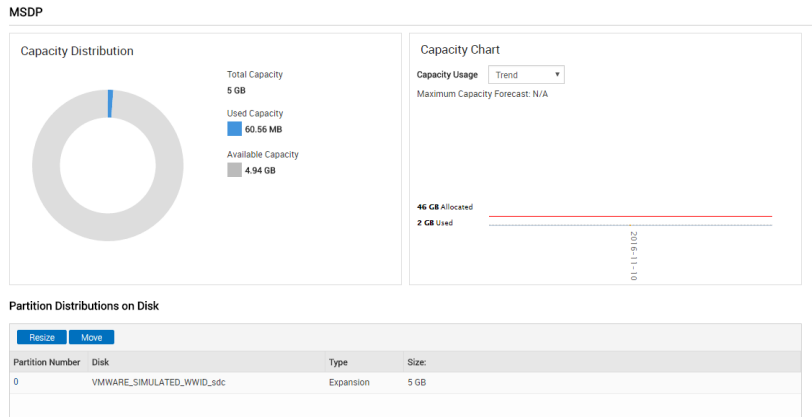


In this example, all of the MSDP partition that resides on the base disk is moved to one expansion disk.

- 8 Click **Move** to move the partition.

Note: The partition size and the workload on the system determine the time it takes to move a partition.

- 9 Dialogs in the **Move Partition** displays the progress details and status of the move operation. Click **OK** once the operation is complete. The MSDP detail page is automatically refreshed.
- 10 On the MSDP detail page, check the **Partition Distributions on Disk** section. The MSDP partition resides on the expansion disk.



The following procedure explains how to move the MSDP partition from a base disk to an expansion disk when the expansion disk has partitions configured on it.

Scenario 2 - To move the MSDP partition from a base disk to an expansion disk

- 1 Log on to the NetBackup Appliance Web Console.
- 2 Click **Manage > Storage** .

In the **Partition** area, click **MSDP** to go to the MSDP detail page.

Storage Overview
 Use this page to manage the disks and partitions on the appliance.

Capacity Distribution

Total Capacity: 129.93 GB

- AdvancedDisk 5 GB (3.85%)
- Configuration 25 GB (19.34%)
- MSDP 5 GB (3.85%)
- MSDP Catalog 6 GB (4.62%)
- NetBackup Catalog 5 GB (3.85%)
- Share 0 GB (0.00%)
- Unallocated 83.93 GB (64.60%)

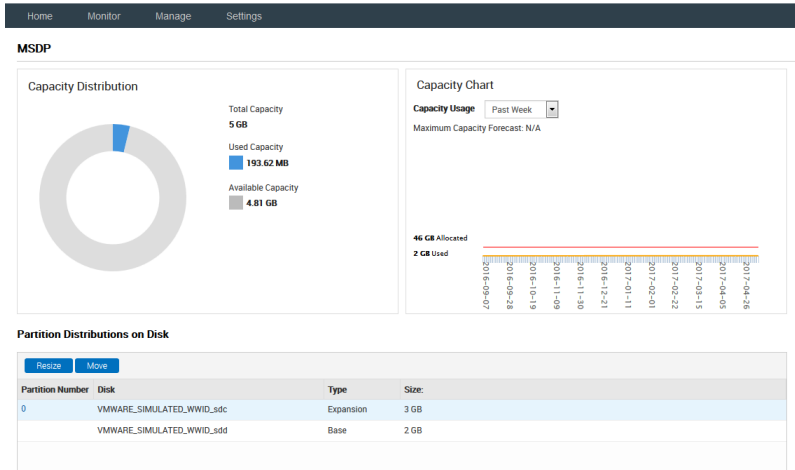
Capacity Chart
 Capacity Usage: Trend
 Maximum Capacity Forecast: N/A

130 GB Maximum
 46 GB Allocated
 2 GB Used

Partition	Total	Available	Used	Used Percentage	Status
AdvancedDisk	5 GB	4.94 GB	58.23 MB	2%	Optimal
Configuration	25 GB	24.42 GB	589.80 MB	3%	Optimal
MSDP	5 GB	4.82 GB	188.83 MB	4%	Optimal
MSDP Catalog	6 GB	5.93 GB	67.14 MB	2%	Optimal
NetBackup Catalog	5 GB	4.64 GB	367.24 MB	8%	Optimal
Share	0 GB	0 GB	0 GB	0%	Not Configured

- 3 On the MSDP partition detail page, check the **Partition Distributions on Disk** section.

If the **Type** is Base for any of the disks, all or a part of the MSDP partition resides on the base disk. In this example, the MSDP partition is located on the base disk as well as the expansion disk.

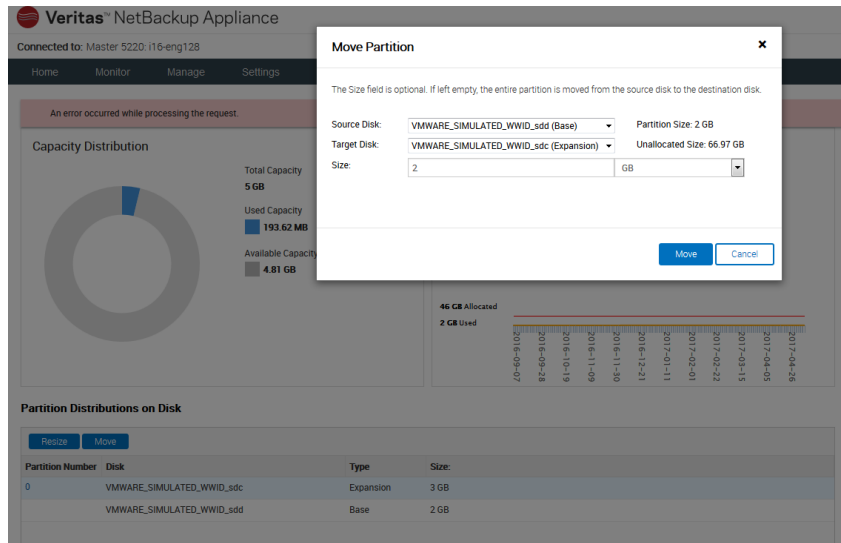


If the **type** is Expansion for all the disks, the MSDP partition doesn't exist on the base disk. In this case, you do not need to move the MSDP partition. You can ignore the rest of the procedure.

- 4 Click **Move** in the **Partition Distributions on Disk** section.

- 5 The **Move Partition** window is displayed. Select the target disk from the drop-down list to which you want to move the partition.

The target disk must be an expansion disk.



- 6 Click **Move** to move the partition.

Note: The partition size and the workload on the system determine the time it takes to move a partition.

- 7 After the operation completes, click **OK** to close the **Move Partition** window.

Additional storage shelf scenarios

You can have up to six storage shelves with the 5250 Appliance. You may already have storage shelves connected to your appliance. The following options are available.

Note: When adding a fifth or sixth storage shelf, an additional storage expansion kit is required. This adds up to a total of 512GB memory.

- If you already have one storage shelf you can add one to five shelves.
- If you already have two storage shelves you can add one to four shelves.

- If you already have three storage shelves you can add one to three shelves.
- If you already have four storage shelves you can add one or two shelves.
- If you already have five storage shelves you can add one shelf.

If you already have six storage shelves you cannot add any more shelves at this time.

Note: The appliance server needs to be powered off when adding any storage shelves to an existing appliance installation.

Installing storage shelves to an appliance that has at least one storage shelf

The installation of storage shelves in a rack to an appliance that already has at least one storage shelf does not differ much from other installation scenarios. Refer to the following sections for detailed instructions. Read all of the information before starting.

See [“Storage shelf rack requirements”](#) on page 25.

See [“Determining rack locations”](#) on page 24.

See [“Installing the storage shelf rack rails”](#) on page 29.

See [“Installing the storage shelf into a rack”](#) on page 31.

See [“Understanding appliance and storage shelf connections”](#) on page 38.

To add up to four storage shelves to an appliance that has at least one storage shelf, See [“Recabling to connect additional shelves”](#) on page 135.

Recabling to connect additional shelves

When storage shelves are added to an appliance that already has at least one storage shelf you need to reroute one existing cable connection. You also need to install the new cables that ship with the additional storage shelf or shelves. Each storage shelf ships with two 1-meter SAS-3 cables.

The following sections provide cable instructions for an appliance and a total of four storage shelves. The instructions are the same for five or six storage shelves.

Note: The cables in the following diagrams are shown in different colors for demonstration purposes only. The actual cables are black.

A green box outlines the storage shelves that are added to the existing devices.

See [“Connecting additional shelves to an appliance that already has one operating shelf”](#) on page 137.

See [“Connecting additional shelves to an appliance that already has two operating shelves”](#) on page 140.

See [“Connecting a storage shelf to an appliance that already has three operating shelves”](#) on page 143.

Refer to one of the following sections to add the additional disk space.

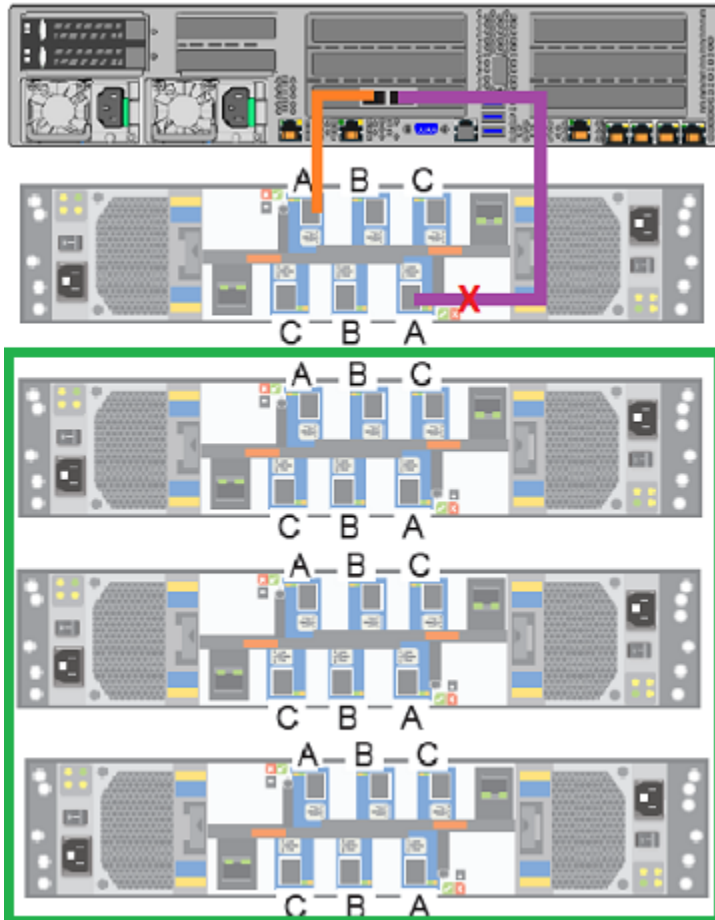
See [“Adding the disk space of additional storage shelves from the NetBackup Appliance Shell Menu”](#) on page 146.

See [“Adding the disk space of additional storage shelves from the NetBackup Appliance Web Console”](#) on page 147.

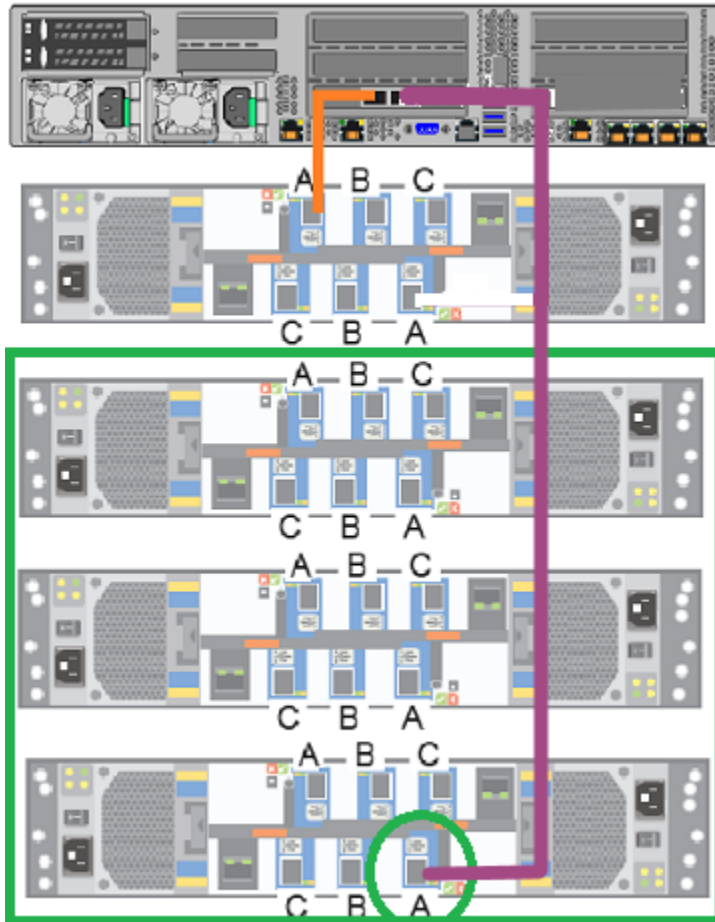
Connecting additional shelves to an appliance that already has one operating shelf

To connect additional shelves to an appliance that already has one operating shelf

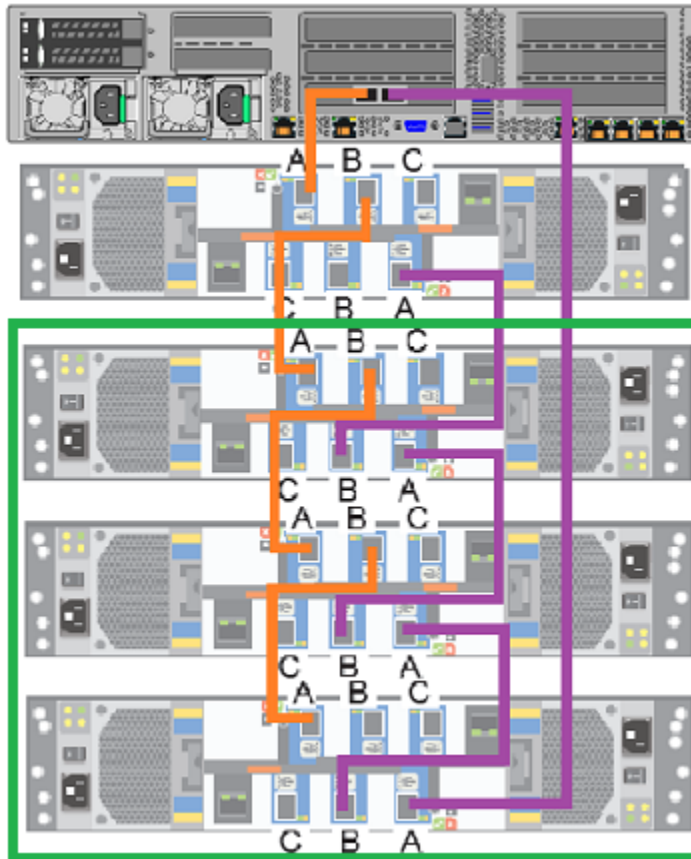
- 1 Remove the connector from the port that is marked with a red X.



- 2 Reconnect the cable to the port that is marked with a green circle.



- 3 Connect the two new SAS-3 cables that ship with each storage shelf, as shown.



- 4 Connect power cords between the new storage shelves and separate Power Distribution Units (PDUs) in the rack.
- 5 Turn on the storage shelf that is farthest from the appliance. Let the shelf initialize for a few minutes.
- 6 Turn on the other storage shelves, in sequence. Do not turn on all of the shelves at once.
- 7 Verify that the new shelves function correctly.

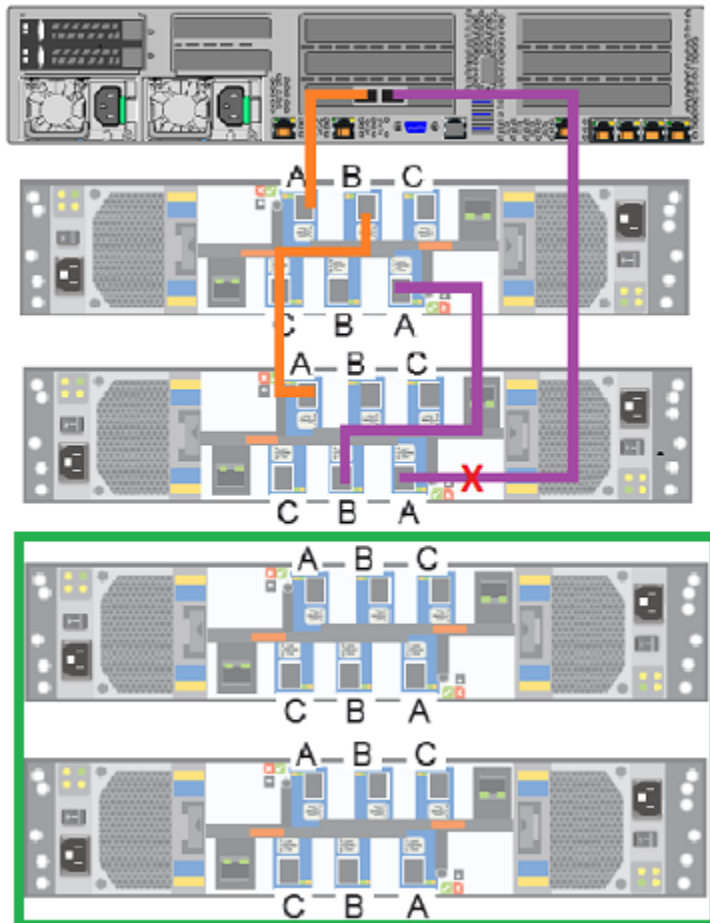
Refer to the following section for details.

See [“Turning on the hardware and verifying operation”](#) on page 56.

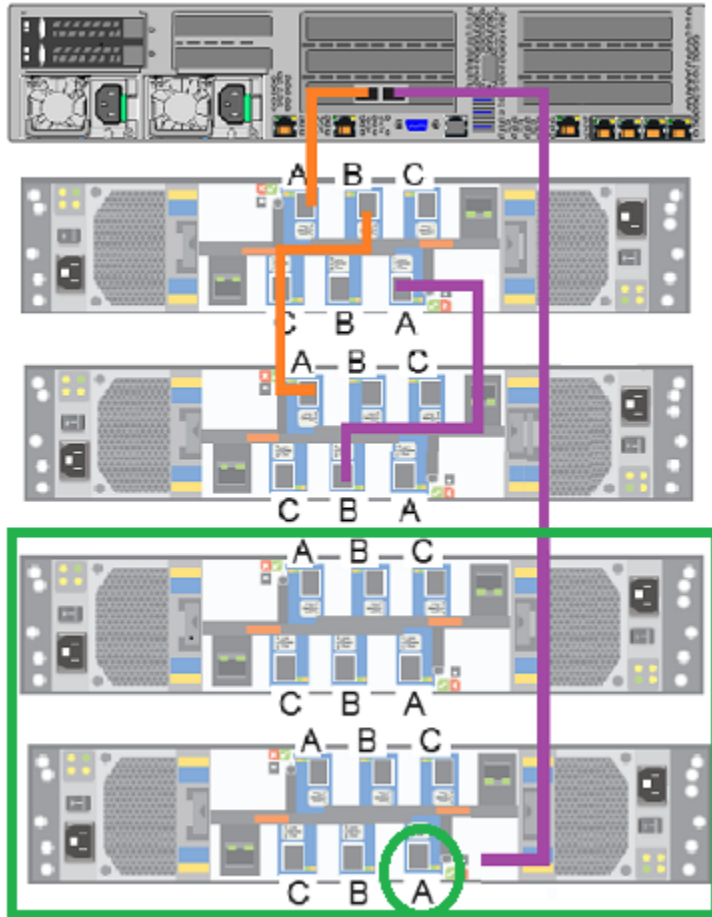
Connecting additional shelves to an appliance that already has two operating shelves

To connect additional shelves to an appliance that already has two operating shelves

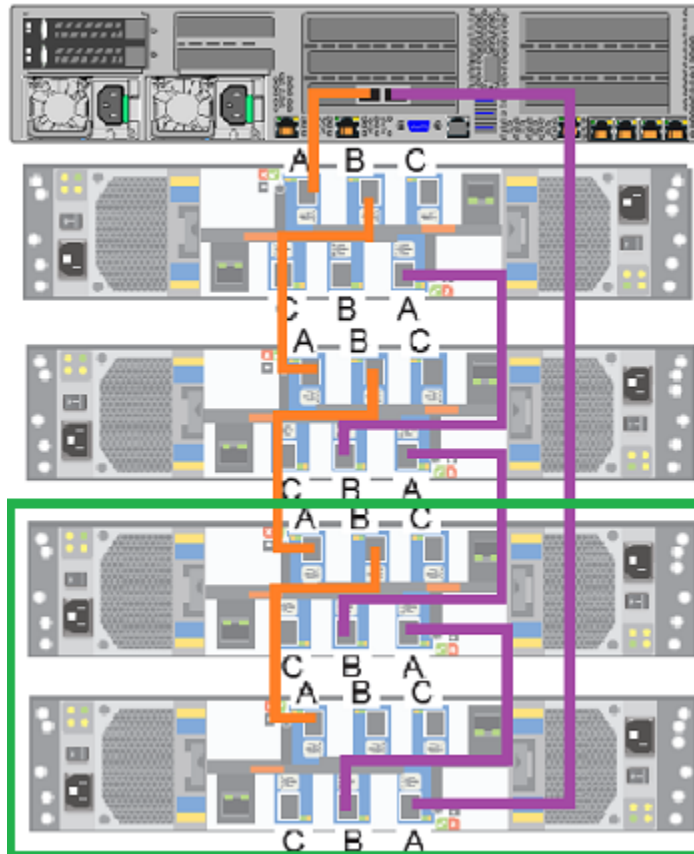
- 1 Remove the connector from the port that is marked with a red X.



- 2 Reconnect the cable to the port that is marked with a green circle.



- 3 Connect the two new SAS-3 cables that ship with each storage shelf, as shown.



- 4 Connect power cords between the new storage shelves and separate Power Distribution Units (PDUs) in the rack.
- 5 Turn on the storage shelf that is farthest from the appliance. Let the shelf initialize for a few minutes.
- 6 Turn on the other storage shelves, in sequence. Do not turn on all of the shelves at once.
- 7 Verify that the new shelves function correctly.

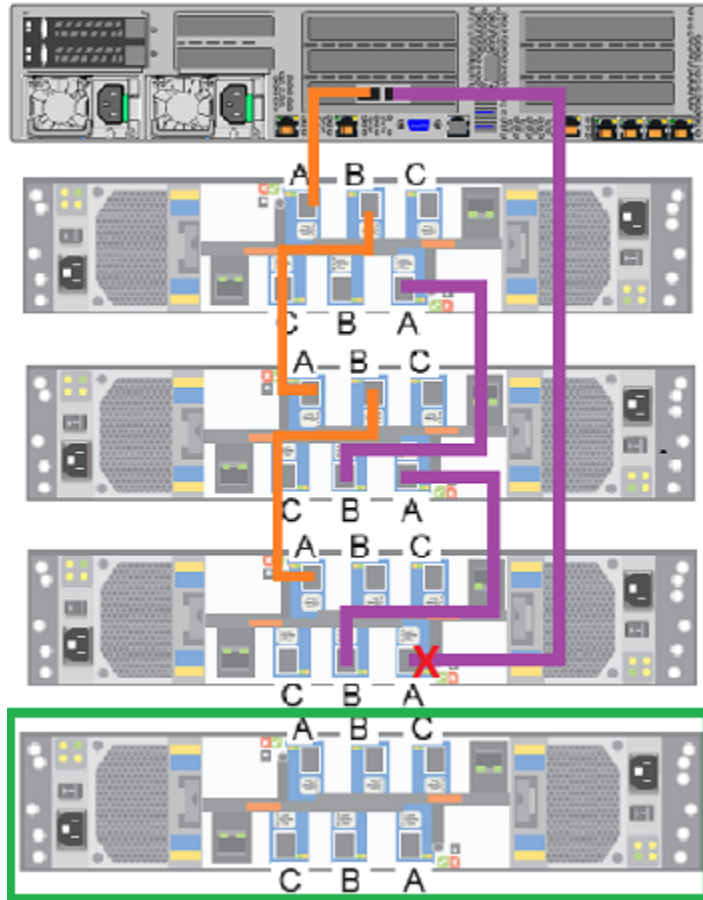
Refer to the following section for details.

See [“Turning on the hardware and verifying operation”](#) on page 56.

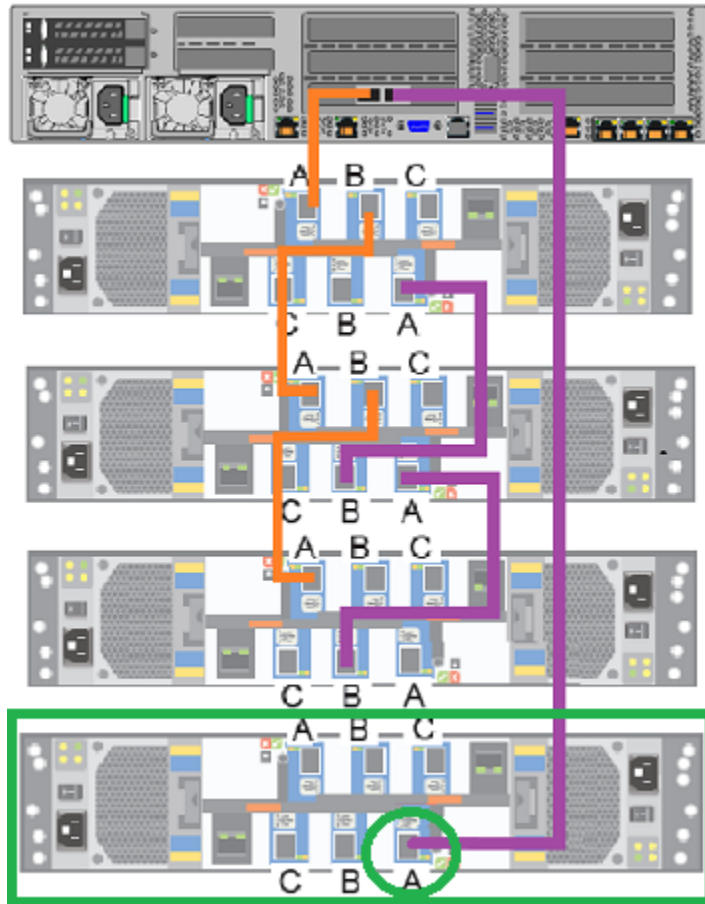
Connecting a storage shelf to an appliance that already has three operating shelves

To connect a storage shelf to an appliance that already has three operating shelves

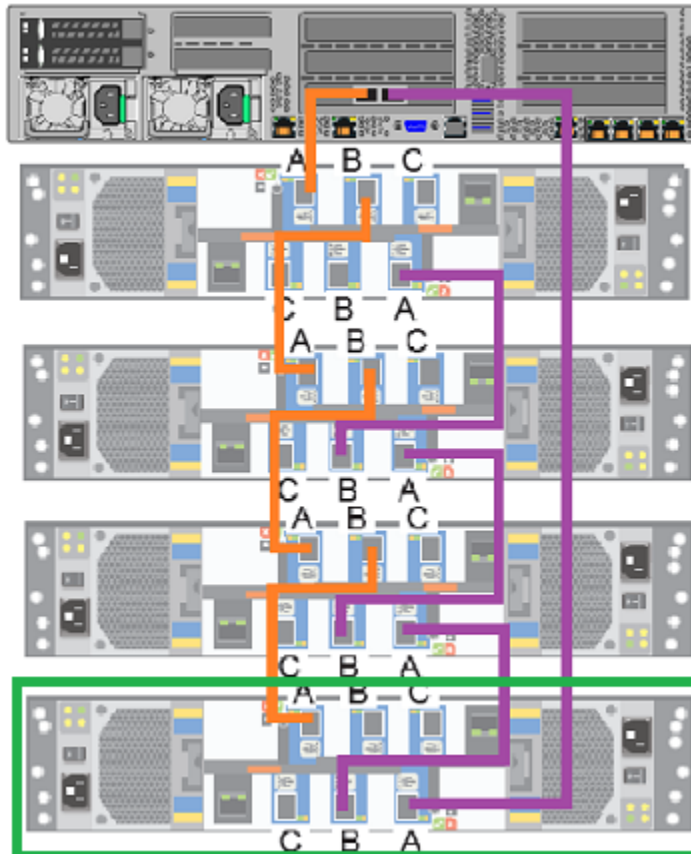
- 1 Remove the connector from the port that is marked with a red X.



- 2 Reconnect the cable to the port that is marked with a green circle.



- 3 Connect the two new SAS-3 cables that ship with each storage shelf, as shown.



- 4 Connect power cords between the new storage shelf and separate Power Distribution Units (PCUs) in the rack.
- 5 Turn on the new storage shelf. Let the shelf initialize for a few minutes.
- 6 Verify that the new shelf functions correctly.

Refer to the following section for details.

See [“Turning on the hardware and verifying operation”](#) on page 56.

Adding the disk space of additional storage shelves

This appendix includes the following topics:

- [Adding the disk space of additional storage shelves from the NetBackup Appliance Shell Menu](#)
- [Adding the disk space of additional storage shelves from the NetBackup Appliance Web Console](#)

Adding the disk space of additional storage shelves from the NetBackup Appliance Shell Menu

The following procedure describes how to add new storage shelf disk space to a NetBackup appliance using the NetBackup Appliance Shell Menu.

To add new storage shelf disk space to a NetBackup appliance using the NetBackup Appliance Shell Menu

- 1 Use PuTTY to start an SSH session to access the NetBackup Appliance Shell Menu.

Note: You can also connect a laptop, keyboard and monitor, or KVM to the appliance to access the NetBackup Appliance Shell Menu.

- 2 Log on to the NetBackup Appliance Shell Menu. The **Main_Menu** prompt appears.
- 3 Go to the **Monitor** view as follows:
Type `Monitor` and press `Enter`.

Adding the disk space of additional storage shelves from the NetBackup Appliance Web Console

- 4 Type **Hardware ShowHealth** and press **Enter**. Verify that the new storage devices appear. If the new storage devices do not appear, check the cable connections and make sure that the power is on.
- 5 At the prompt, type **return** to return to the **Main** menu.
- 6 Perform a scan as follows:
 - At the **Main_Menu** prompt, enter `Manage` and press `Enter`.
 - Enter `Storage` and press `Enter`.
 - Enter `Scan` and press `Enter`.

The scan takes a couple of minutes to complete.
- 7 Navigate to the **Storage** view.

From the Storage menu, enter **Add** and press **Enter**. It displays the disks that are in a **New Available** state and can be added. Copy a disk ID that is displayed.
- 8 At the prompt, enter **add < disk ID >** and press **Enter**. `< disk ID >` is the disk ID that you copied. Repeat step 7 and 8 to add each disk ID that is displayed.
- 9 View the available storage space as follows:
 - Navigate to the **Storage** menu.
 - At the prompt, enter **Show Disk** and press **Enter**. The status of the newly added disks is displayed as **In Use** and space in the Unallocated column is the disk space available for the new disk.

Adding the disk space of additional storage shelves from the NetBackup Appliance Web Console

The following procedure describes how to add new storage shelf disk space to a NetBackup appliance using the NetBackup Appliance Web Console.

To add new storage shelf disk space to a NetBackup appliance using the NetBackup Appliance Web Console

- 1 Launch the NetBackup Appliance Web Console and verify that the new storage devices appear on the **Monitor > Hardware** page. If the new storage devices do not appear, check the cable connections and make sure that the power is on.
- 2 Click **Manage > Storage**.

- 3 Select the **Disks** tab.
- 4 Click the **Click here to scan for new disks** option.
- 5 In the **Do you want to scan for new disk?** dialog box, click **OK** to start the scan.
- 6 When the scan is complete, click **OK** to refresh the **Disk** tab.

In the **Disk** column, a new ID should appear for the new storage shelf units. The new entries should have the following attributes:

- **Type = Expansion.**
 - **Status = New Available**
- 7 In the **Status** column, next to **New Available**, click **Add** to activate the storage in the RAID.
 - 8 In the **Confirmation** dialog box, click **Yes** to start a scan.

When the process completes, the following message should appear:

Storage operation completed. Succeeded.

- 9 Click **OK** to refresh the system.
- After the system refreshes, the **Disks** tab should show the following attributes for the new storage shelf units:
- **Type = Expansion**
 - **Status = In Use**
 - **Unallocated = n TB**

Where n is the usable volume or disk space available in the new storage shelf.

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