SPECTRA Stack

Spectra Stack Tape Library Overview

All Spectra Stack library installations begin with the 6U controller module, with capacity for 80 tape cartridges and up to six half-height LTO tape drives, up to three full-height LTO tape drives, or a combination of half-height and full-height drives.

The Spectra Stack library is expandable, allowing a user to grow the tape storage capacity as data requirements increase. As data storage needs grow, the Spectra Stack library can also grow by adding one or more 6U expansion module(s). Each expansion module supports an additional 80 tape cartridges and an additional six half-height LTO tape drives or three full-height LTO tape drives.

Up to six expansion modules can be added to a controller module, bringing the total library capacity to 560 tape cartridges and 42 half-height drives, 21 full-height drives or a combination of half- and full-height drives in a single 19-inch NEMA rack.

Precautions

Each Spectra Stack library module weighs approximately 88 lb. (40 kg) without drives or tape cartridges installed, and approximately 144 lb. (70 kg) with six tape drives and 80 tape cartridges installed.

WARNING   *Before moving or installing the library, observe local health and safety requirements and obtain adequate assistance to lift and stabilize the modules during installation or removal.*
When installing or removing a library module from a rack:
- *Extend the rack leveling jacks to the floor.*
- *Ensure that the full weight of the rack rests on the leveling jacks.*
- *Extend only one rack component at a time.*
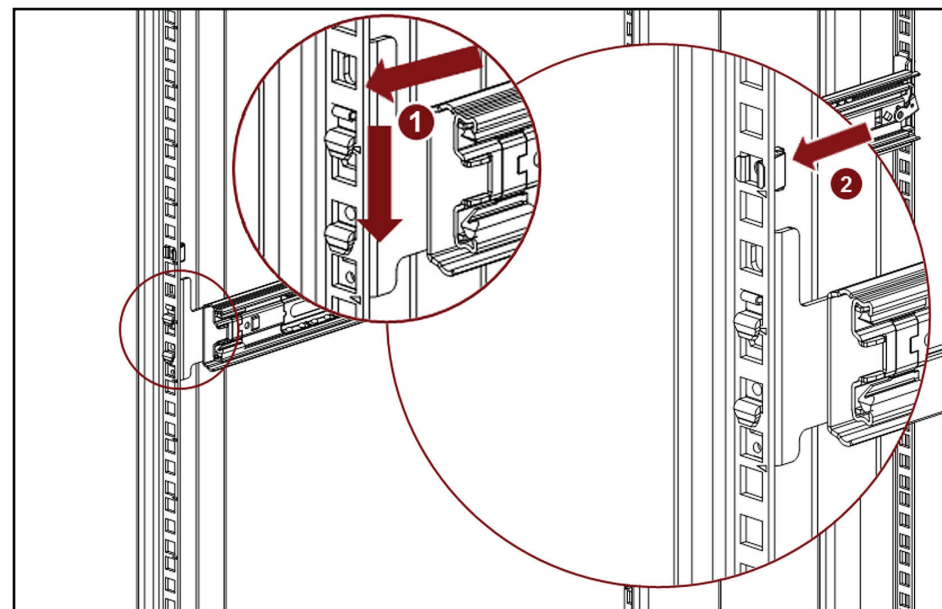- *Install stabilizing feet on the rack (recommended).*

Unpack Library Components

1) Clear a work surface near the targeted rack where you plan to install the library.
2) Inspect the shipping container for damage. If you notice any damage, contact Spectra Logic Technical Support (see page 4 for contact information).
3) Cut and remove the bands on the outside of the container.
4) Lift up the outer cardboard box. It is not secured to the pallet and lifts off easily.
5) Remove the inner cardboard sleeve surrounding the module.
6) Remove the rack rails and accessory kit.
7) Remove the foam pieces off of the top of the module.
8) With assistance, lift the module out of the bottom foam nest.
9) Remove the wrapping from the module and then place the module on a sturdy work surface.
10) Save the packaging materials for future use.

Install Rack Rails

Use the instructions in this section to install the required rack hardware before installing a library module. Rack hardware is included in the accessory box shipped with each module.

IMPORTANT   *The included rack-mounting hardware is only compatible with square hole racks. An adaptor kit is available for round hole racks. Some threaded round hole racks are not supported. The distance between the rack front and rear posts must be between 26.6 inches and 30.8 inches. Add an additional 1.5 inches when using adaptors. See the Spectra Stack Library User Guide for more information.*

1) Locate the position where you want to install the Control Module. The rail position corresponds to the lowest 1U of the module chassis.
2) If your library includes one or more Expansion Modules, locate the rail position for each additional module at 6U spacing intervals. Otherwise, continue to Step 3.
3) Position each rail according to the left-right front-rear orientation information stamped on the rail.
4) From the front of the rack, position a rack rail inside the rack and insert the rear rail hangers into the holes of the rear vertical support of the rack.
5) Lower the front of the rail until the rail is approximately level.
6) Extend the front of the rail and insert the hangers through the holes in the vertical support of the rack (**1**) until the retention spring snaps into place.

7) Install a clip nut above the mounting bracket on both of the front vertical supports of the rack. Position the clip two holes above the top of the mounting bracket (**2**) at the front of the rail and push it through the hole in the vertical supports.
8) Repeat for each additional rack rail.
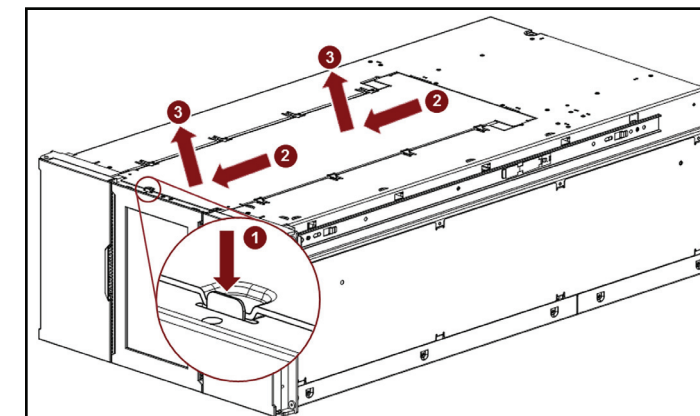
Prepare Library Modules

The Control Module has a removable cover at the top and bottom of the library chassis. If your library configuration includes one or more Expansion Modules, you must transfer one or both covers from the Control Module to the Expansion Module. If your library configuration does not include an Expansion Module, skip to *Install & Align Library Modules*.

Use the instructions in this section to move a cover from the Control Module to an Expansion Module. The covers are identical and the procedure to move them is the same for both the top and bottom cover.
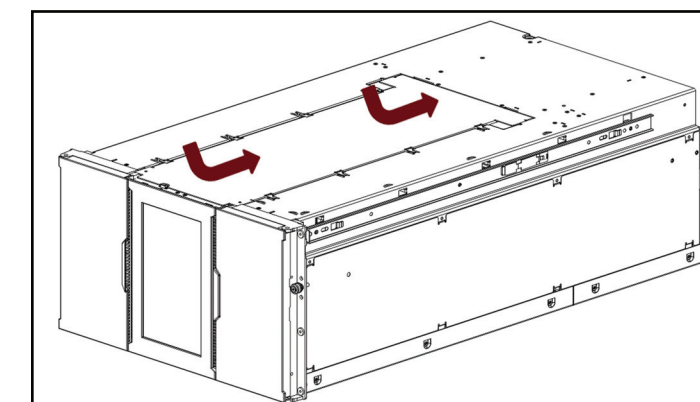- If you are installing Expansion Modules **below** the Control Module, move the bottom cover from the Control Module to the Expansion Module that you plan to install as the bottom module of the library.
- If you are installing Expansion Modules **above** the Control Module, move the top cover from the Control Module to the Expansion Module that you plan to install as the top module of the library.

WARNING   *If you plan to remove the bottom cover, you must first remove the top cover and confirm that the shipping lock is in place. Use the sticker on the top of the robot to lock the robot if needed.*

1) Remove a cover from the Control Module.
   a) Insert a small screwdriver into the hole (**1**) to retract the spring lock.
   b) Slide the cover toward the front of the Control Module (**2**) until it contacts the screwdriver. Remove the screwdriver and continue sliding the cover until all the tabs are released.
   c) Lift the cover off the module (**3**).
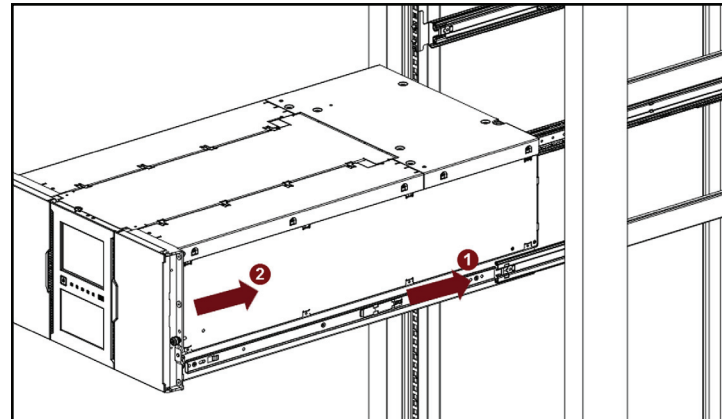   d) If necessary, repeat to remove the other cover.

2) Install a cover on an Expansion Module.
   a) Align all tabs on the cover with the slots on the module, gently push it down, and then slide the cover towards the back of the module until the spring lock engages.
   b) If necessary, repeat to install the other cover.

Install & Align Library Modules

Use the instructions in this section to install a module into a rack. If your library includes multiple modules, install the lowest module first, and proceed upward until all modules are installed.
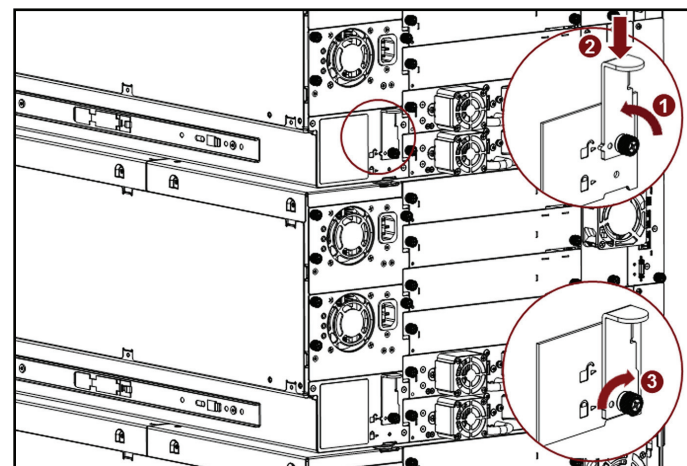
1) Using two people or a lift, raise the library module to the height of the rack rails where you want to install the module.
2) Extend the middle rails of the rack rail until they lock in place.
3) Move the sliding assembly to the front of the middle rails.

4) Slide the rails attached to the library module into the middle rack rails (**1**).
5) Slide the library module into the rack (**2**).
6) Using your fingers, tighten the captive thumbscrews on each side of the module into the clip nuts.
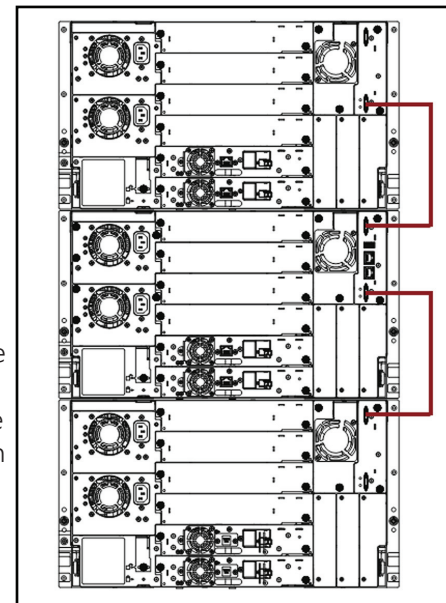7) If necessary, repeat for each additional module.

Aligning the library modules ensures that the robot can move freely between each module. If your library does not include any Expansion Modules, skip to Install Tape Drives. Otherwise, continue with the instructions below.

1) From the front of the library, loosen the thumbscrews on both sides of each library module.
2) From the back of the library starting with the bottom pair of modules, loosen the thumbscrew on the module alignment mechanism on the upper module of the pair (**1**).

3) Slide the alignment mechanism down (**2**). If you encounter resistance, adjust the position of the upper module so that the pin on the alignment mechanism slides into the hole in the lower module.
4) Tighten the thumbscrew on the alignment mechanism (**3**).

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5) Repeat Step 2 through Step 4 for each remaining module.
6) Verify the alignment mechanism of the lowest module is in the unlocked (retracted) position.
7) From the front of the library, tighten the thumbscrews of each module using your fingers.
8) From the rear of the library, connect each module to its adjacent module using the expansion interconnect cable provided in the shipping box.
   Starting with the lowest module, connect the interconnect cable from the upper expansion port in the lower module, to the lower expansion port in the upper module.
9) Repeat Step 8 for each additional module.

Install Tape Drives

IMPORTANT *Full-height tape drives can only be installed in the top, bottom, or middle pair of half-height drive bays.*

1) Locate an appropriate vacant drive bay on the back of the library.
2) Remove the face plate covering the drive bay by loosening the screws holding it in place.
3) Remove one drive bay cover to install a half-height tape drive.
4) Remove two drive bay covers to install a full-height tape drive.
5) To assist in aligning the drive, only remove the drive bay covers for one drive at a time.
   CAUTION *All unused drive bays must have drive bay covers installed.*
6) Holding the tape drive by the handle and supporting it from the bottom, slide the tape drive along the alignment rails into the drive bay until it is flush with the back of the library.
   CAUTION *If you encounter resistance, do not force the drive into the drive bay.*
7) Tighten the blue captive screws with your fingers to secure the tape drive to the chassis. If you cannot tighten the thumbscrews, verify that the tape drive is installed properly.

Connect Cables

Use the instructions in this section to connect Fibre Channel, SAS, and Ethernet cables, and power cords.

Connecting the Ethernet Cable
Plug an Ethernet cable from your network into the **lower Ethernet port** on the Control Module.

Connecting Power Cords
For each power supply, plug a cord into the power module, and then plug the cord into the AC supply. If your library configuration includes two redundant power supplies, for increased redundancy, plug each power cord into a different AC power circuit.

Connecting Fibre Channel Cables
1) If necessary, remove the port cap from the Fibre Channel port on the tape drive.
2) Connect a Fibre cable from an HBA or SAN to the port on the tape drive.

Connecting SAS Cables
Connect a SAS cable from an HBA to the SAS port on the tape drive.

Power On Library

Power on the library by pressing the power button on the front panel of the Control Module. The power button LED illuminates green.
   NOTE: All front panel lights blink during library initialization.

Configure Internal IP Addressing

The library uses an internal Ethernet connection for communication between the Control Module and any installed Expansion Modules configured with an internal IP address range. To prevent conflicts between the internal and external Ethernet networks, when the library first initializes, you must configure an IP address range for the internal network using the operator control panel.
   NOTE: This step is required even if your library configuration does not include any Expansion Nodes.

1) When the library completes its first initialization, the Internal and External IP Conflict Prevention screen displays.
2) Using the drop-down menu, select one of the three default IP address ranges that is not used by your data center network.

3) If none of the three pre-entered address ranges is suitable for use in your network, contact Spectra Logic Technical Support.
4) Click **Set and Proceed**. The library reboots and displays the Login screen.

Login to the Library

1) Access the user interface by touching the OCP screen to clear the screen saver and display the login screen.
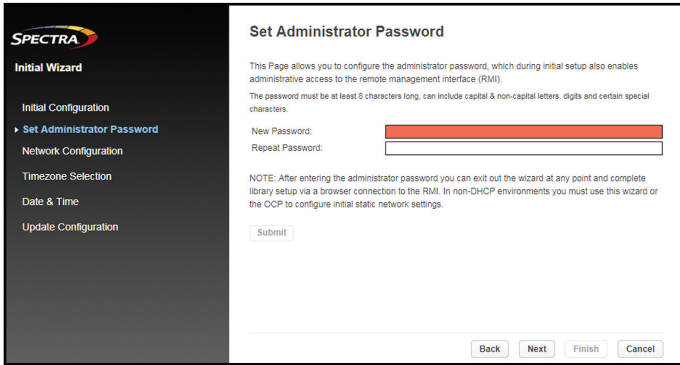

2) Using the drop-down menu, select the desired **User**.
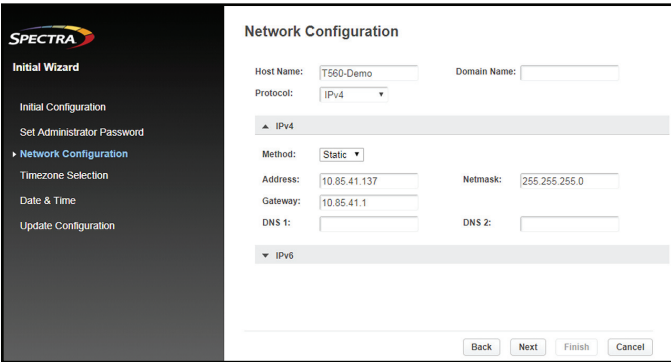3) If necessary, enter the **Password** for the user.
4) Click **Login**.

Initial Configuration Wizard

When the library initializes for the first time, the Initial Wizard displays on the OCP. The wizard guides you through configuring the date and time and network settings, setting an administrator password, and running an initial system test.

- If desired, you can skip individual sections of the wizard, or stop the wizard at any time.
- Once you configure network settings and the administrator password, you can complete the remaining steps using the Remote Management Interface (RMI).
- The Ready and Attention LEDs blink until you complete the Initial Wizard.

1) When the Initial Configuration screen displays, click **Next** to start the wizard. The Set Administrator Password screen displays.
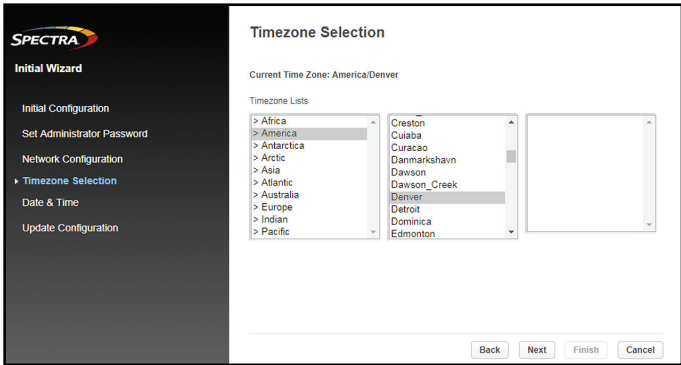
2) Enter the desired password for the administrator user in the **New Password** entry field. Enter the password again in the **Repeat Password** entry field, and click **Submit**.
3) Click **Next**. The Network Configuration screen displays.

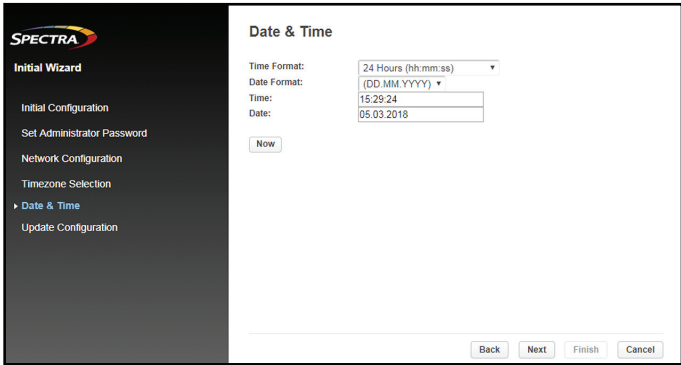> **NOTE** - It may be helpful to have your System Administrator assist you in configuring the network settings.

4) If desired, enter a new **Host Name**.
5) If desired, enter a **Domain Name**.
6) Using the **Protocol** drop-down menu, select IPv4, IPv6, or IPv4 & IPv6.
   - If you selected the IPv4 protocol:
     a) Using the **Method** drop-down menu, select either DHCP or Static addressing. If you are configuring a static IP address, enter the **Address**, **Netmask**, and **Gateway** addresses.
     b) If desired, enter **DNS** server information.
   - If you selected the IPv6 protocol:
     a) Using the **Method** drop-down menu, select Static or Stateless. If you are configuring a static IP address, enter the **Address**, **Prefix Length**, and **Gateway**.
     b) If desired, enter **DNS** server information.
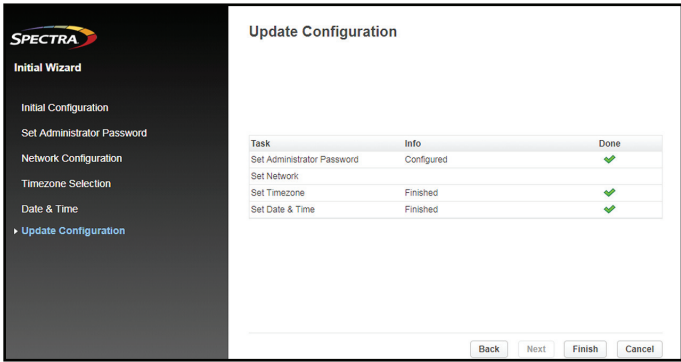
7) Click **Next**. The Timezone Selection screen displays.

8) Use the **Timezone Lists** to select the geographical location of the library. The screen displays a list of continents, countries, and regions. When you select an area name preceded by "**>**", a submenu is displayed in the next column. Expand the timezone lists, as necessary, until a location with the appropriate time zone is visible.

> **NOTE** - Depending on your location, the right-most pane may not be needed.

9) Click **Next**. The Date & Time screen displays.

10) Using the **Time Format** drop-down menu, select either a 12-hour or 24-hour clock. If you selected the 12-hour time format, select AM or PM from the drop-down menu.
   - If desired, click the **Time** entry field and enter the system time manually.
   - If you want to manually configure the date, click the **Date** entry field. A calendar dialog box displays. Select the desired date.
   - If desired, click **Now** to reset the entry fields to the current library time and date.

11) Click **Next**. The Update Configuration screen displays.

The screen shows the status of each step of the Initial Wizard. The Set Network field does not show a status until the wizard completes.

12) Click **Finish**. The screen refreshes to show the status of the network configuration.
13) Click **OK** to exit the wizard.

Configure Encryption Password

If you plan to use Encryption Standard with your Stack library, you must configure the encryption password before you can configure a partition to use encryption.
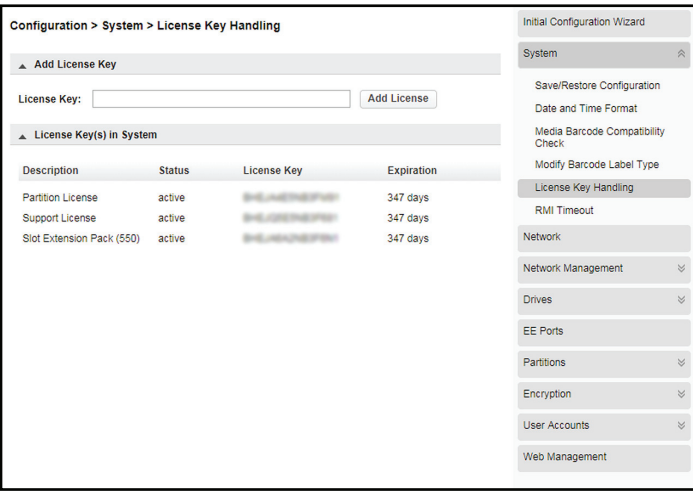
1) Login as a Security user.
2) From the home screen, click **Configuration**. The Configuration screen displays.
3) On the right-hand pane, select **Encryption** tab to expand the Encryption menu, and then select **Encryption Standard**.
4) Enter the password in the **Encryption Password** entry field.
   IMPORTANT *During initial configuration, the password is blank.*
5) Click **Login**.
6) Enter the **New Encryption User Password**.
7) **Retype** the password and click **Submit**.

Enter Activation Keys

Activation keys enable features on your library. Your activation keys are emailed to the contact person listed on the sales order for your library. If you cannot find the email, contact Spectra Logic Technical Support.

IMPORTANT *Activation keys can only be entered using the RMI (Remote Management Interface).*

1) From the home screen, click **Configuration**. The Configuration screen displays.
2) On the right-hand pane, select **System** tab to expand the System menu, and then select **License Key Handling**.

3) Enter the key in the **License Key** entry field.
4) Click **Add License**.
5) Repeat for any additional activation keys.

Optional - Change Barcode Reporting

You cannot mix checksummed and non-checksummed barcodes in a library. Checksummed barcodes are selected by default. See the *Spectra Stack Library User Guide* for information on changing the barcode label type.
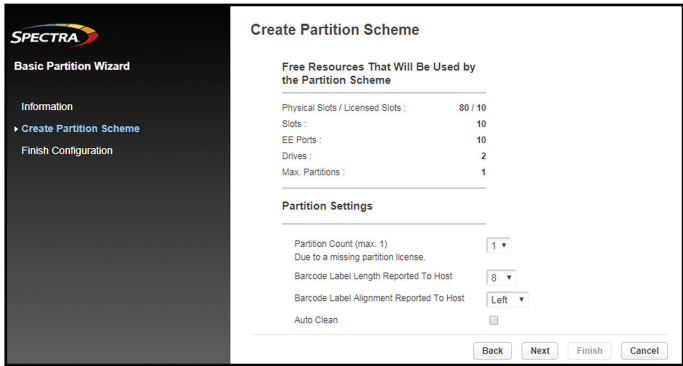
Create a Partition

You must create at least one partition before you can use your Stack library for data backup operations. The following instructions guide you through partition creation using the Basic Wizard, which creates one or more partitions using all drives and licensed slots in the library.

> **NOTE** - If you want to configure advanced partition settings, see the *Spectra Stack Library User Guide* for instructions on using the partition Expert Wizard. Use the Expert Wizard to configure partitions that will have different resources or to adjust resource assignments for existing partitions.

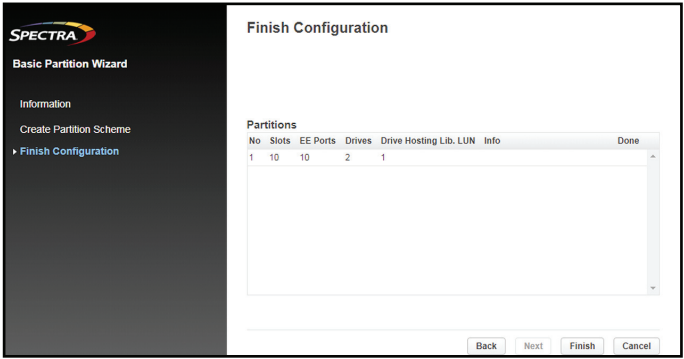**IMPORTANT** *Using the Basic Wizard deletes any previously configured partitions.*

IMPORTANT *Partitions can only be created using the RMI (Remote Management Interface).*

1) From the home screen of the user interface, select **Configuration**. The Configuration screen displays.
2) On the right-hand pane, select **Partitions** to expand the Partitions menu, and select **Basic Wizard**. The Information screen of the Basic Wizard displays.
3) A warning displays that the Basic Wizard deletes any existing partitions. Click **Proceed** and then click **Next**. The Create Partition Scheme screen displays.

4) Use the **Partition Count** drop-down menu to select the number of partitions you want to create, up to the maximum number of licensed partitions. The resources in the library (drives and licensed slots) divide evenly between each partition.

> **NOTE** - Magazine slots are allocated in five-slot groups. The wizard assigns the drives and storage slots as evenly as possible to the partitions. Any extra drives or slots are assigned to the first partition.

5) Use the **Barcode Label Length Reported To Host** drop-down menu to select the number of digits on a tape barcode that are reported to your backup software. This option provides interchange compatibility with libraries with more limited barcode reading capabilities. The maximum length is 15 and the default is 8. This configuration applies to all partitions.

> **NOTE** - The industry standard length for LTO barcode labels is eight characters. Barcode labels longer than eight characters might scan incorrectly, particularly if they are not high quality labels.

6) Use the **Barcode Label Alignment Reported To Host** drop-down menu to configure the library to report the barcode digits to the backup software starting from the left or right side of the barcode. The default setting is left.

7) If desired, select **Auto Clean** to configure the library to automatically clean a tape drive when it requests cleaning.
8) Click **Next**. The Finish Configuration screen displays with details for the partition(s) configured using the wizard.

9) Click **Finish** to create the partition(s) and exit the wizard.
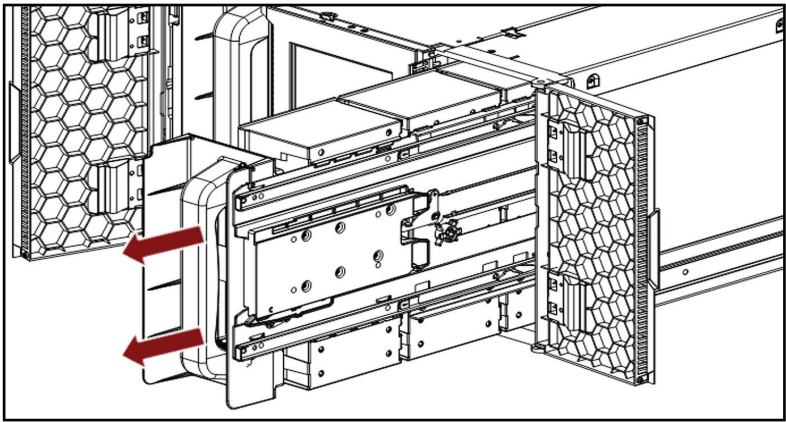

Load Tape Media

The library does not require tape cartridges to initialize, but needs tape media to perform certain tests and to backup data. Use the instructions in this section to import tape cartridges. There are two ways to import tape cartridges - using the EE port or a bulk load. Importing tapes using the EE port allows the library to continue normal operations. All library operations stop when opening a magazine to bulk load media.

Using the EE Port

If the EE port is enabled, it can be used to import tape cartridges into the library.

- If you created partition(s) using the Basic Wizard, the EE Port is enabled by default. If you used the Expert Wizard, see the Spectra Stack Library User Guide for information on enabling the EE Port.
- If you plan to import a large number of tape cartridges, Spectra Logic recommends bulk loading magazines.

1) Using the OCP or the RMI, from the Home screen, click **Open EE Port**.
2) From the list of modules, locate the module into which you want to import tapes and select **Open** to unlock the magazine door.
3) Open the magazine door and pull the EE port out.

> **NOTE** - The image below shows a magazine being removed for a bulk load. When removing the EE port from the library, the handle and the first bank of 10 slots disconnects from the magazine.

3) Insert up to 10 tape cartridges into the EE port.
4) Gently push the EE port back into the library until it locks in place.
5) Close the EE port door.
6) If desired, repeat Step 1 through Step 5 to import more tape cartridges.

Bulk Loading Magazines

Use the instructions below to bulk load tape cartridges into the library.

> **IMPORTANT** *All library operations stop when a magazine is open.*

1) Using the OCP or the RMI, select the module into which you want to bulk import cartridges.
   a) From the Home screen, click **Open Magazine**.
   b) From the list of modules, locate the module into which you want to import tapes and select **Open** for either the right or left magazine. The magazine unlocks.
   > **NOTE** - You can only open one side of the module at a time.
2) Open the magazine access door.
3) Gently extend the magazine away from the library. The magazine is not removable and does not extend past the 40 slots in the magazine.
4) Starting with the back of the magazine, load tape cartridges into open slots in the magazine.
   > **NOTE** - If you configured multiple partitions, navigate to **Status > Partition > Graphical View** to determine which banks of 5 slots in each magazine belong to each partition.
5) Push the magazine into the library after you fill each bank of ten tapes.
6) When the magazine is full, or you are done adding cartridges to the magazine, slowly push the magazine into the library until the latch snaps in place.
7) Close the magazine door.
8) Repeat Step 1 through Step 7 to bulk import additional cartridges.

Contact Spectra Logic

Phone Support	
United States and Canada	1.800.227.4637 toll free or 1.303.449.0160
Europe	44 (0) 870.112.2185
Deutsch Sprechende Kunden	49 (0) 6028.9796.507
Australia	1.800.452.137
Mexico, Central/South America, Asia, New Zealand, Africa, Middle East	1.303.449.0160
Online Support	
Support Website	support.spectralogic.com

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