Spectra BlackPearl Nearline Gateway

Gen1 Rack Mounting Guide

SpectraLogic.com

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Part Number

90990098 Revision G

Revision History

Revision	Date	Description
A	October 2014	Initial release.
B	January 2015	Second release.
C	May 2015	Third release. Updated process to include 2U chassis.
D	February 2016	Fourth release.
E	June 2016	Minor corrections
F	May 2019	Updated to reflect new process.
G	January 2022	Updated for clarity and consistency.

> **Note:** To make sure you have the most current version of this guide check the Spectra Logic website at https://support.spectralogic.com/documentations/user-guides. For information about other documents related to the Spectra BlackPearl Nearline Gateway, see Additional Publications on page 12.

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Warnings

⚠️ **WARNING**	Do not attempt to install a Spectra BlackPearl 96-bay or 107-bay expansion node on your own. The BlackPearl 96-bay expansion node can weigh up to 270 lb (122.5 kg) and must be installed by Spectra Logic Professional Services. The 107-bay expansion node can weigh up to 270 lb (122.5 kg) and must be installed by Spectra Logic Professional Services. **WARNUNG** Versuchen Sie nicht, einen 96-Bay- oder 107-Bay-Erweiterungsknoten Spectra BlackPearl selbst zu installieren. Der BlackPearl-Erweiterungsknoten mit 96 Einschüben kann bis zu 122,5 kg (270 lb) wiegen und muss von Spectra Logic Professional Services installiert werden. Der Erweiterungsknoten mit 107 Einschüben kann bis zu 122,5 kg (270 lb) wiegen und muss von Spectra Logic Professional Services installiert werden.
⚠️ **WARNING**	Lifting hazard. The **Spectra BlackPearl 4U master node or 44-bay expansion node with its shipping pallet** weighs between 127.4 lb (57.8 kg) and 172 lb (78 kg), depending on the number of drives included. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment. Lifting hazard. The **Spectra BlackPearl 2U master node with its shipping pallet** weighs 80.5 lb (36.5 kg). Use lifting aids and proper lifting techniques with assistance when handling heavy equipment. **WARNUNG** Hebegefahr. Der **Spectra BlackPearl 4U-Master-Knoten oder 44-Bay-Erweiterungsknoten wiegt mit seiner Versandpalette** je nach Anzahl der enthaltenen Laufwerke zwischen 57,8 kg (127,4 lb) und 78 kg (172 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken. **WARNUNG** Hebegefahr. Der **2HE-Masterknoten Spectra BlackPearl mit Versandpalett**e wiegt 36,5 kg (80.5 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.

⚠ WARNING	Lifting hazard. The **Spectra BlackPearl 4U master node and 44-bay expansion chassis** weigh between 57 lb (25.8 kg) and 138.2 lb (62.7 kg), depending on the number of drives installed. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment. Lifting hazard. The **Spectra BlackPearl 2U master node** weighs between 39 lb (17.7 kg) and 60.6 lb (27.5 kg), depending on the number of drives installed. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment. **WARNUNG** Hebegefahr. Der **4U-Masterknoten Spectra BlackPearl und das 44-Bay-Erweiterungsgehäuse** wiegen je nach Anzahl der installierten Laufwerke zwischen 25,8 kg (57 lb) und 62,7 kg (138,2 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken. **WARNUNG** Hebegefahr. Der **2U-Masterknoten Spectra BlackPearl**wiegt je nach Anzahl der installierten Laufwerke zwischen 17,7 kg (39 lb) und 27,5 kg (60.6 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.
⚠ WARNING	Take care when cutting the straps securing the shipping box. The straps around the packaging are secured very tightly; the tension may cause them to whip outward when cut, which could lead to personal injury. **WARNUNG** Vorsicht beim Schneiden der Bänder sichern Sie den Versandkarton. Die Riemen um die Verpackung sehr fest gesichert ist; die Spannung kann bewirken, dass sie nach außen, wenn sie geschnitten Peitsche, die zu Verletzungen führen können.
⚠ WARNING	If you are not installing any other equipment in the rack, install the master node near the bottom of the rack to prevent the rack from being top-heavy, which could cause personal injury. **WARNUNG** Wenn Sie nicht die Installation von anderen Geräten im Rack, installieren Sie die Master-Knoten in der Nähe der Unterseite des Racks, die Zahnstange entfernt, kopflastig zu verhindern, was zu Verletzungen führen könnten.
⚠ WARNING	To reduce the risk of personal injury or damage to the equipment, make sure that the leveling feet are extended to the floor, so that the full weight of the rack rests on the leveling feet. **WARNUNG** Um das Risiko von Verletzungen oder Beschädigungen der Geräte zu vermeiden, stellen Sie sicher, dass die Nivellierungsfüße müssen Bodenkontakt haben, so dass das gesamte Gewicht des Racks muss auf den Nivellierungsfüßen ruht.
⚠ WARNING	Only extend one component at a time. A rack may tip if more than one component is extended, which could lead to personal injury. **WARNUNG** Nur eine Komponente erstrecken zu einem Zeitpunkt. Ein Rack kann umkippen, wenn mehr als eine Komponente erweitert, die zu Verletzungen führen können.

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Contents

Chapter 1 - About This Guide

This guide describes the unpacking and installation of the Spectra® BlackPearl gateway® master node, which is referred to in this guide as *the master node* or *the chassis.*

This guide also describes the unpacking and installation requirements for BlackPearl 44-bay expansion node(s), which is referred to as the *expansion node* in these instructions. The expansion nodes are used in conjunction with the master node and cannot be used as a stand-alone product.

When instructions in this guide apply to both the BlackPearl gateway master node and expansion nodes, *the system* is used to refer to both.

The BlackPearl 96-bay and 107-bay expansion nodes are installed by Spectra Logic professional services and are not covered in this guide.

WARNING

Do not attempt to install a Spectra BlackPearl 96-bay or 107-bay expansion node on your own. The BlackPearl 96-bay expansion node can weigh up to 270 lb (122.5 kg) and must be installed by Spectra Logic Professional Services. The 107-bay expansion node can weigh up to 270 lb (122.5 kg) and must be installed by Spectra Logic Professional Services.

WARNUNG Versuchen Sie nicht, einen 96-Bay- oder 107-Bay-Erweiterungsknoten Spectra BlackPearl selbst zu installieren. Der BlackPearl-Erweiterungsknoten mit 96 Einschüben kann bis zu 122,5 kg (270 lb) wiegen und muss von Spectra Logic Professional Services installiert werden. Der Erweiterungsknoten mit 107 Einschüben kann bis zu 122,5 kg (270 lb) wiegen und muss von Spectra Logic Professional Services installiert werden.

Intended Audience

This guide is intended for data center administrators and operators who maintain and operate file storage systems. The information in this guide assumes a familiarity with computing terminology, RAID technology, SAS connectivity, and Ethernet networking. You also need to be familiar with installing, configuring, and using data file storage and archival software.

Overview

The BlackPearl gateway provides high-density, network-attached storage for most major operating environments, including Microsoft® Windows® operating system, Apple® OS X® operating system, UNIX®, and Linux®, and allows data to move seamlessly into tape storage in a way not previously possible.

Additional Publications

The following documents related to the Spectra BlackPearl gateway are available on the Support Portal website at support.spectralogic.com, and from the Documentation screen on the BlackPearl user interface.

- The *Spectra BlackPearl Nearline Gateway User Guide* provides information about configuring, using and maintaining your BlackPearl gateway.

- The *Spectra BlackPearl Network Setup Tips* provide helpful instructions for troubleshooting common connectivity problems.

- The *Spectra BlackPearl Nearline Gateway Site Preparation Guide* provides important information that you should know before installing a BlackPearl gateway in your storage environment.

- The *Spectra BlackPearl HotPair Installation & Configuration Guide* provides detailed information on installing and using a BlackPearl gateway in a HotPair configuration.

The following documents are available after logging into your Support portal account at:support.spectralogic.com. See Accessing the Technical Support Portal in the *Spectra BlackPearl Nearline Gateway User Guide* for information on creating an account.

- The *BlackPearl Release Notes and Documentation Updates* provide the most up-to-date information about the BlackPearl gateway, including information about the latest software releases and documentation updates.

- The *Spectra 12- & 36-Drive Chassis Boot Drive Replacement Guide* provides instructions for replacing a failed boot drive in the master node.

- The *Spectra 12-, 36- & 45-Drive Chassis Drive Replacement Guide* provides instructions for replacing a failed data drive.

- The *Spectra 12-, 36- & 45-Drive Chassis Fan Replacement Guide* provides instructions for replacing a failed fan.

- The *Spectra 12-, 36- & 45-Drive Chassis Power Supply Replacement Guide* provides instructions for replacing a failed power supply.

- The *Spectra 12-Drive Chassis HBA Replacement Guide* and *Spectra 36-Drive Chassis HBA Replacement Guide* provide instructions for replacing a failed HBA in the master node.

- The *Spectra 96-Drive Chassis Drive Replacement Guide* provides instructions for replacing a failed data drive in a 96-bay expansion node.

- The *Spectra 96-Drive Chassis Fan Replacement Guide* provides instructions for replacing a failed fan in a 96-bay expansion node.

- The *Spectra 96-Drive Chassis Power Supply Replacement Guide* provides instructions for replacing a failed power supply in a 96-bay expansion node.

- The *Spectra 96-Drive Chassis I/O Module Replacement Guide* provides instructions for replacing a failed I/O module in a 96-bay expansion node.

- The *Spectra 107-Bay Chassis FRU Replacement Guide* provides instructions for replacing a failed, drive, fan, SAS expander, or power supply in a 107-bay chassis expansion node.

Typographical Conventions

This document uses the following conventions to highlight important information:

WARNING Read text marked by the "Warning" icon for information you must know to avoid personal injury.

CAUTION Read text marked by the "Caution" icon for information you must know to avoid damaging the system, the drives, or losing data.

IMPORTANT Read text marked by the "Important" icon for information that helps you complete a procedure or avoid extra steps.

Note: Read text marked with "Note" for additional information or suggestions about the current topic.

Chapter 2 - Preparing for Installation

This chapter outlines the requirements for receiving and unpacking BlackPearl components. Make sure that you complete these requirements carefully.

Acclimating the Spectra BlackPearl Nearline Gateway

You must allow time for the BlackPearl gateway to acclimate to the working environment when you move it from the loading dock.

> **CAUTION** When the chassis is moved from a cold storage environment to a warm operating environment, it must acclimate for at least 24 hours before opening its packaging to prevent serious condensation damage from occurring.

Preparing the Rack

Assemble and place an appropriate rack near the AC power outlets and network connections.

> **WARNING** If you are not installing any other equipment in the rack, install the master node near the bottom of the rack to prevent the rack from being top-heavy, which could cause personal injury.
>
> **WARNUNG** Wenn Sie nicht die Installation von anderen Geräten im Rack, installieren Sie die Master-Knoten in der Nähe der Unterseite des Racks, die Zahnstange entfernt, kopflastig zu verhindern, was zu Verletzungen führen könnten.

⚠️ **CAUTION** The rack must be located on a level, hard-surfaced floor, such as cement or tile. Do not place the rack on a carpeted floor or anywhere else that poses risk for static discharge that could damage your system or its drives.

Spectra BlackPearl Nearline Gateway Master Node and 44-Bay Expansion Node

Note: If the system configuration includes a BlackPearl master node with a BlackPearl 96-Bay or 107-Bay expansion node, it must be installed by Spectra Logic Professional Services. See Contacting Spectra Logic on page 9 to arrange installation.

The BlackPearl 4U chassis is 7 inches (18 cm) tall and occupies 4U of rack space. The BlackPearl 2U chassis is 3.5 inches (8.9 cm) tall and occupies 2U of rack space. Both chassis fit in a standard 19-inch, 4-post rack.

Distance between front and back rack posts
- 27 inches (68.6 cm) to 36 inches (91 cm) without adapter
- 28.5 inches (72.4 cm) to 37.5 inches (95.25 cm) with adapter

Rack Posts

Front Rack Door (optional)

Chassis

Back Rack Door (optional)

Minimum distance from front of rack post to front door frame - 2 inches (5 cm)

Minimum distance from back of chassis to back door frame 3 inches (8 cm)
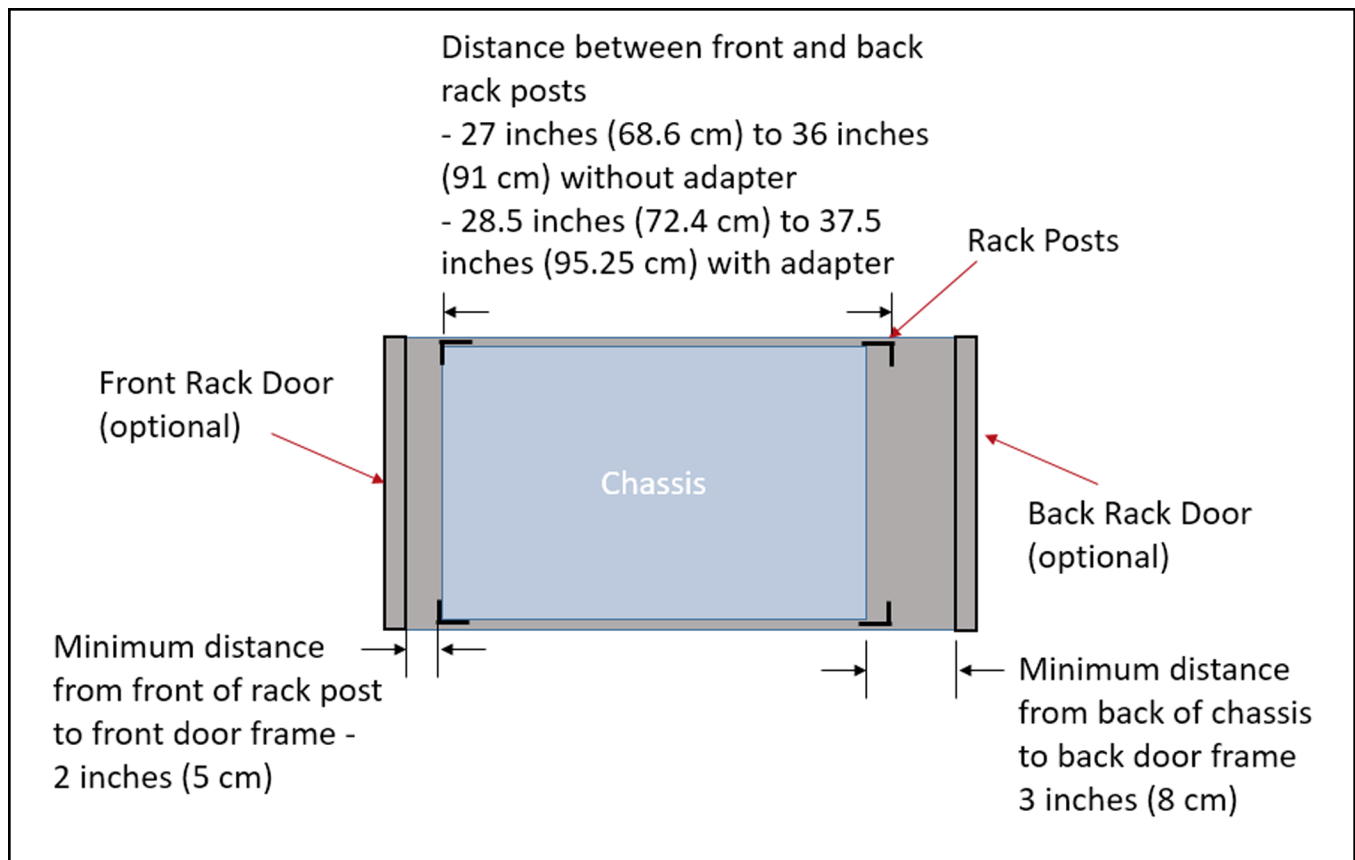
Figure 1 Rack size requirements.

Keep the following in mind when selecting a rack:

• Make sure that the distance between the mounting surfaces on the front and rear posts is between 27 inches (68.6 cm) and 36 inches (91 cm).

Note: If you are using the adapters to install the rack-mount kit in a rack with circular mounting cutouts, the distance between the front and rear posts must be at least 28.5 inches (72.4 cm), and not more than 37.5 inches (95.25 cm).

- Allow approximately 3 inches (8 cm) of additional depth at the back of the rack for cable clearance.

- If the rack has a door, allow at least 2 inches (5 cm) of clearance between the front door frame and the front mounting posts of the rack to allow the door to close over the front bezel.

- Check your rack's specifications to make sure it will accommodate the weight and depth of the BlackPearl chassis.

    Notes:

    - Using a two-post rack is not supported.

    - An enclosed 19-inch, four-post rack is available for purchase from Spectra Logic. The rack has two doors and removable side panels.

- In earthquake-prone areas, provide restraints as necessary. See the *Spectra BlackPearl Nearline Gateway Site Preparation Guide* for more information.

Unpacking the Spectra BlackPearl Nearline Gateway

 IMPORTANT Do not unpack a BlackPearl gateway if the shipping box shows signs of damage. Contact both the shipping company and Spectra Logic (see Contacting Spectra Logic on page 9) to report the problem.

The Spectra BlackPearl gateway and its drives are shipped in a cardboard box attached to a pallet. The only tool needed to unpack them is a pair of scissors.

Save the box, anti-static bags, and foam packaging in case you need to move or ship the master node later.

Prepare the Unpacking Location

Move the pallet with the boxes to the location where you plan to install the BlackPearl master node. Make sure you have adequate clearance around and above the shipping boxes so that you can safely unpack them. Have a sturdy work surface nearby that is large enough to accommodate the chassis and other components as you unpack them.

WARNING

Lifting hazard. The **Spectra BlackPearl 4U master node or 44-bay expansion node with its shipping pallet** weighs between 127.4 lb (57.8 kg) and 172 lb (78 kg), depending on the number of drives included. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment.

Lifting hazard. The **Spectra BlackPearl 2U master node with its shipping pallet** weighs 80.5 lb (36.5 kg). Use lifting aids and proper lifting techniques with assistance when handling heavy equipment.

WARNUNG Hebegefahr. Der **Spectra BlackPearl 4U-Master-Knoten oder 44-Bay-Erweiterungsknoten wiegt mit seiner Versandpalette** je nach Anzahl der enthaltenen Laufwerke zwischen 57,8 kg (127,4 lb) und 78 kg (172 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.
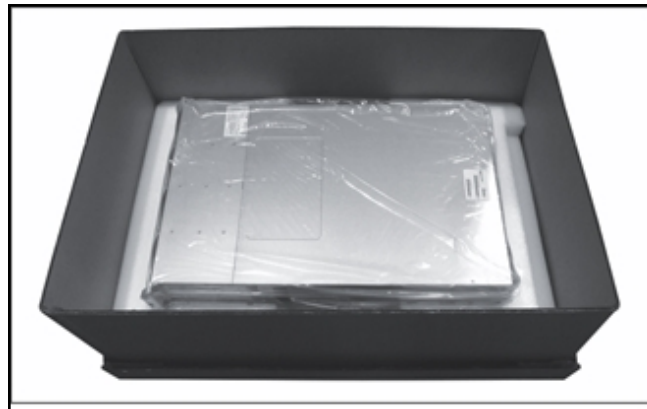
WARNUNG Hebegefahr. Der **2HE-Masterknoten Spectra BlackPearl mit Versandpalett**e wiegt 36,5 kg (80.5 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.

> **Note:** If necessary, unpack the master node in the receiving area.

Unpack the Components

1. Inspect the shipping box for signs of damage.

Notes:

- The images in this section show the BlackPearl 4U master node. The procedure is similar for the BlackPearl 2U master node and the BlackPearl 44-bay expansion node.

- The BlackPearl 4U master node ships with ten drives installed in the chassis, the BlackPearl 2U master node ships with twelve drives installed in the chassis. If you purchased additional drives with your order, they are shipped in a separate box.

- The BlackPearl 44-bay expansion node ships without any drives installed. Drives for the expansion node are shipped in a separate box.

2. Use scissors to cut the straps securing the shipping box to the pallet.

⚠️ **WARNING**   Take care when cutting the straps securing the shipping box. The straps around the packaging are secured very tightly; the tension may cause them to whip outward when cut, which could lead to personal injury.

WARNUNG Vorsicht beim Schneiden der Bänder sichern Sie den Versandkarton. Die Riemen um die Verpackung sehr fest gesichert ist; die Spannung kann bewirken, dass sie nach außen, wenn sie geschnitten Peitsche, die zu Verletzungen führen können.

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3. Lift the top cover off of the shipping box.

Figure 2 Lift the top cover off of the shipping box.

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4. Remove the two foam pieces that protect the front bezel during shipping, and then remove the bezel.
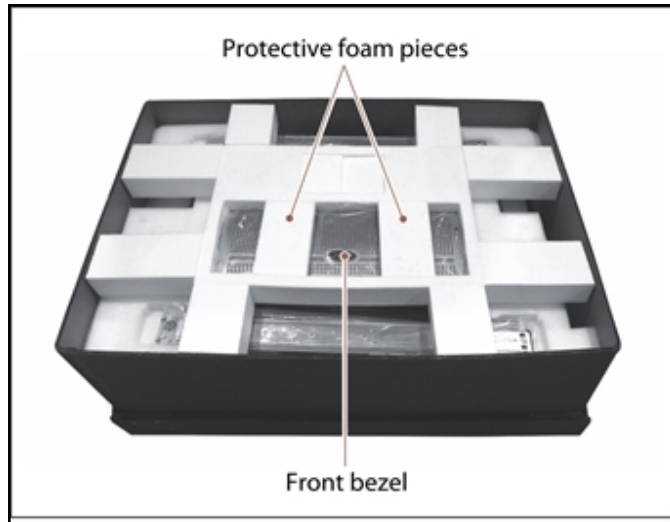
Figure 3 Remove the two protective foam pieces and the front bezel.

5. Remove the outer foam insert covering the rack mount kit and accessory box.
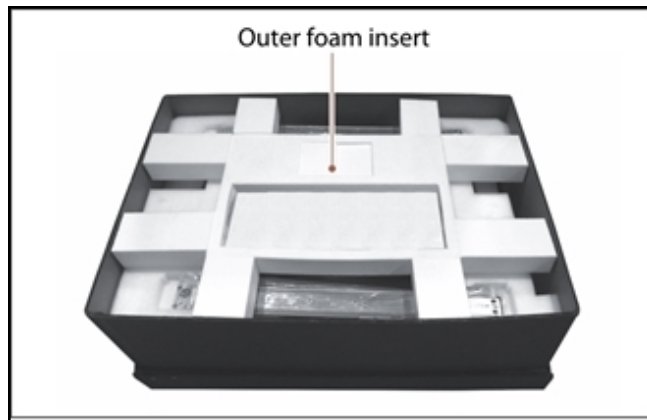
Figure 4 Remove the outer foam insert.

6. Remove the Open Me First accessory box and the rack mount kit.
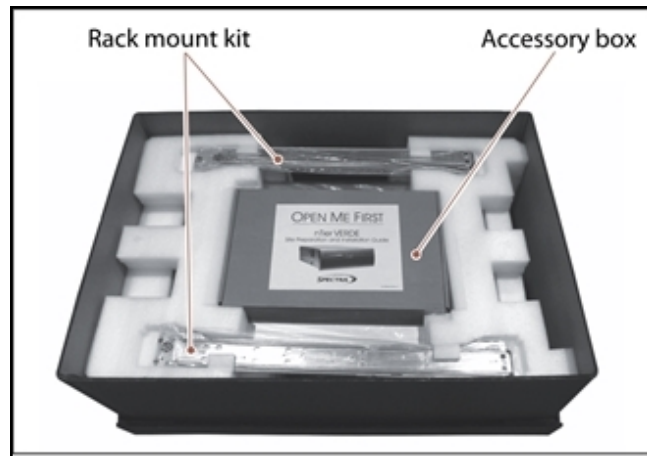
Figure 5 Remove the accessory box and rack mount kit.

7. Remove the inner foam inserts covering the BlackPearl master node.

8. Using two people, lift the chassis off of the pallet and place it on a cart or table sturdy enough to support the weight.

WARNING

Lifting hazard. The **Spectra BlackPearl 4U master node and 44-bay expansion chassis** weigh between 57 lb (25.8 kg) and 138.2 lb (62.7 kg), depending on the number of drives installed. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment.

Lifting hazard. The **Spectra BlackPearl 2U master node** weighs between 39 lb (17.7 kg) and 60.6 lb (27.5 kg), depending on the number of drives installed. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment.

WARNUNG Hebegefahr. Der **4U-Masterknoten Spectra BlackPearl und das 44-Bay-Erweiterungsgehäuse** wiegen je nach Anzahl der installierten Laufwerke zwischen 25,8 kg (57 lb) und 62,7 kg (138,2 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.

WARNUNG Hebegefahr. Der **2U-Masterknoten Spectra BlackPearl**wiegt je nach Anzahl der installierten Laufwerke zwischen 17,7 kg (39 lb) und 27,5 kg (60.6 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.

Figure 6 Lift the master node out of the shipping box.

9. Remove the plastic bag from around the chassis.

Inventorying the Components

Unpack and identify the components that shipped with the BlackPearl gateway master node using the following table and the packing list for reference.

Component	Description
Rack-mounting kit	Included in the main and accessory boxes. The rack-mounting kit includes all the components required to mount a BlackPearl gateway chassis in a standard 4-post, 19-inch (48.3 cm) rack. The main box contains the arms of the rack kit, while the accessory box contains the screws necessary to install the rack kit into the rack.
Power cords	Included in the accessory box. Two power cords are provided with the standard BlackPearl gateway configuration (for either 110 VAC or 220 VAC operation).
Serial cable *(HotPair only)*	Included in the accessory box. One null modem cable is included with a HotPair configuration.

Chapter 3 - Installing the Spectra BlackPearl Nearline Gateway in a Rack

Install the BlackPearl gateway in a standard 4-post, 19-inch (48.3-cm) rack. The BlackPearl master nodes occupy either 2 units (2U) or 4 units (4U) of rack space, depending on which model was ordered. The BlackPearl 44-bay expansion node occupies 4 units (4U) of rack space. If you do not want to install the master node in a rack, continue with Installing Additional Drives.

Before You Begin

Before you install a BlackPearl chassis in a rack:

- Have on hand:
  - #2 Phillips screwdriver, magnetic if available, to keep small screws from falling
  - Bubble level (recommended), to make sure the chassis is level
- Identify the vertical location in the rack where you will install the chassis.

- Unpack the rack-mount kit and identify the components listed in the following table.

Item #	Rack Rail Mounting Components	# Required	Use
The rack rails ship attached to each other. See Separate the Rails on page 25 for instructions.			
1	Inner Rack Rails	2	Inner rack rails attach to the sides of the BlackPearl chassis.
2	Outer Rack Rails	2	Outer rack rails attach to the posts of the rack. The chassis-mounted inner rack rails will slide into the outer rack rails.
The following items are shipped in the Open Me First box			
3	Inner Rail Screws	2 or 4	Secure the inner rack rail to the chassis • BlackPearl 4U chassis use **two** screws. • BlackPearl 2U chassis use **four** screws.
4	Outer Rail Screws	8	Attach the rail assemblies to the rack.
5	Washers	8	Used with the outer rail screws to attach the rail assemblies to the rack.
6	Chassis Screws	2	Secure the chassis to the rack.
7	Circular Cutout Rack Adapters	4 (optional)	Optional adapters attach to the ends of the outer rack rails, allowing the rack kit to be installed in a circular cut-out rack.

Separate the Rails

If necessary, for each rail, remove the inner rack rail section from the outer rack rail. You will attach the inner rails to the chassis and the outer rails to the rack.

1. Orient the rack rail with the open end to the left and the inner rail facing you (see Figure 7). The figures below show the right rail.

Open end   Hard stop end

Figure 7 Location of the hard stop and open ends of the outer rack rail.

2. Push the end of the inner rail near the hard stop towards the open end of the outer rail until the self-locking latch engages.
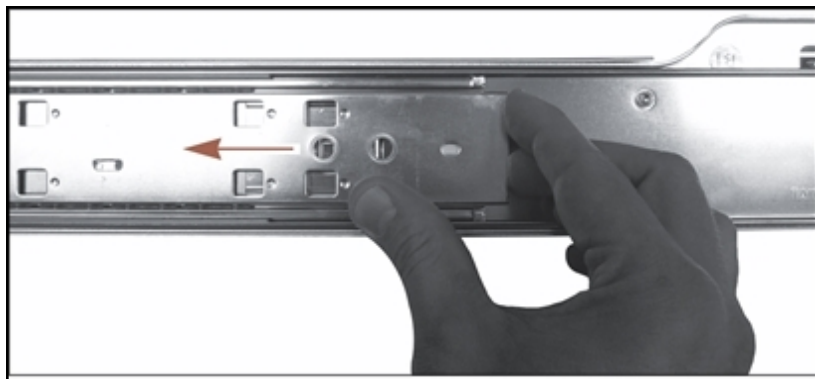
Figure 8 Extend the inner rail beyond the outer rail.

3. Flip the rail assembly over so the outer rail is on top and the self-locking latch is facing you (see Figure 9).

4. Press the self-locking latch toward the closest edge of the inner rail and then fully extract the inner rail from the outer rail.
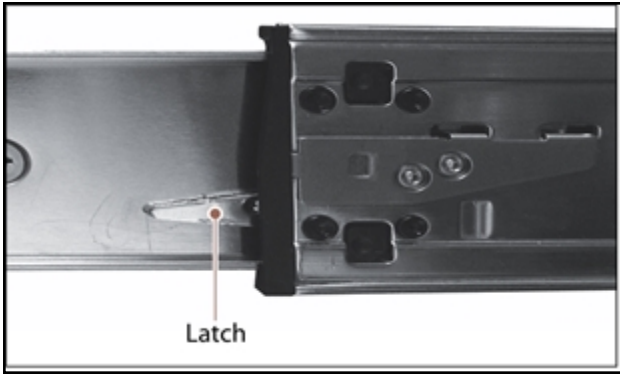
Figure 9 Self-locking latch.
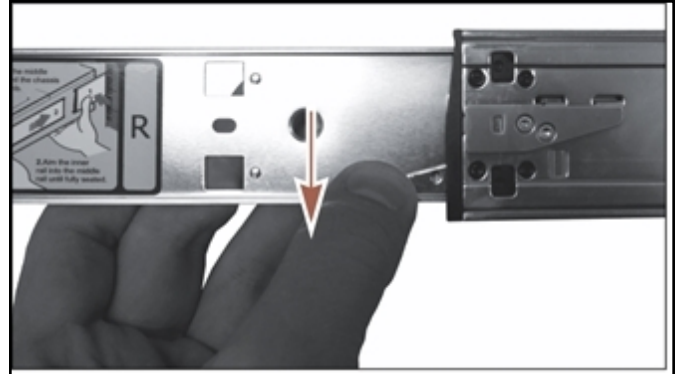
Figure 10 Press the latch toward the closest outer edge.

Install the Outer Rail

If you are installing the rack kit in a circular cut-out rack, skip to Install the Outer Rail Using Adapters on page 28. Instructions give the item numbers in parenthesis for parts listed in the table on page 23.

1. Determine the vertical position of the rack mount kit in the rack. Figure 11 and Figure 12 show the relationship of the rack kit position in the rack and the resulting position of the chassis.

   - The 4U chassis extends 6 cut-outs above the top of the rack rail and one cut-out below the bottom of the rack rail when installed.

   - The 2U chassis extends one cut-out above the top of the rack rail is even with the bottom of the rack rail when installed.

WARNING — If you are not installing any other equipment in the rack, install the master node near the bottom of the rack to prevent the rack from being top-heavy, which could cause personal injury.

WARNUNG Wenn Sie nicht die Installation von anderen Geräten im Rack, installieren Sie die Master-Knoten in der Nähe der Unterseite des Racks, die Zahnstange entfernt, kopflastig zu verhindern, was zu Verletzungen führen könnten.

Figure 11 Relationship between rack kit position and the position of the 4U chassis.
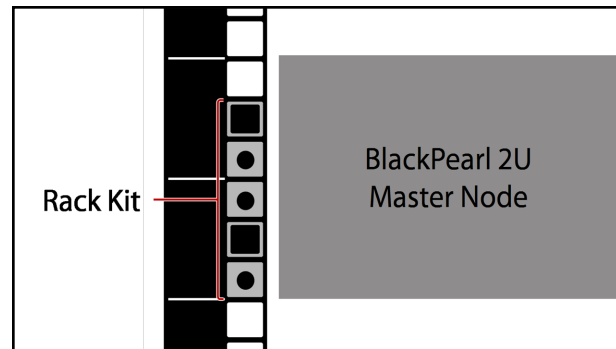
Figure 12 Relationship between rack kit position and the position of the 2U chassis.

2. Position the outer rack rail (2) at the desired height in the rack with the open end facing the front of the rack. Make sure the mounting hooks are behind the cut-outs in the posts and face down.

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3. Insert the mounting hooks on the open end of the outer rack rail (2) into the cut-outs in the front of the rack and press the outer rail down to lock the mounting hooks to the rack. Inserting the mounting hooks depresses the black tabs used to lock the rail in to the rack. When pressed down, the black tabs pop through the holes in the front of the rack and lock in place with an audible click.
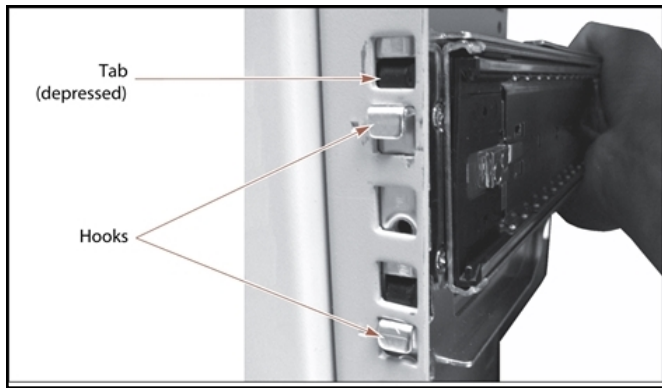

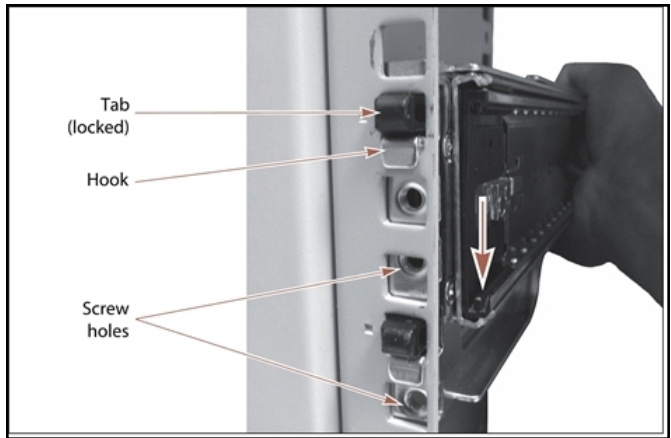
Figure 13 Insert the mounting hooks through the cut-outs in the rack.

Figure 14 Press the rail down to lock it into place.

4. Repeat Step 2 on page 27 through Step 3 to attach the rear mounting hooks of the outer rack rail to the rear post of the rack.

   Note: If provided, use the rack's rack unit markings to determine the correct location.

5. Use a level to make sure that the outer rack rail is level.

6. Using a #2 Phillips screwdriver, secure the outer rail to the rack.

   a. Install two outer rail screws (4) and washers (5) in the holes above and below the bottom mounting hook in the front mounting bracket to secure the rail to the front post (see Figure 14).

   b. Install two screws (4) and washers (5) in the upper and lower holes to secure the back of the outer rail to the rear post.

7. Repeat Step 2 through Step 6 to attach the second outer rail to the other side of the rack.

8. Use a level to make sure the installed rails are level and coplanar in relation to each other.

9. Continue to Install the Inner Rails on page 32.

Install the Outer Rail Using Adapters

If you are installing the rack kit in a circular cut-out rack, you will need to install the four included adapters on the ends of both outer rails. Instructions give the item numbers in parenthesis for parts listed in the table on page 23.

1. Position the outer rail (2) so that the inner side is facing upward.

2. The adapters (7) used on the front of the outer rail are different from the ones used on the back of the rail. Use adapters labeled "A" for the front of the outer rails, and adapters labeled "B" for the back of the rails.
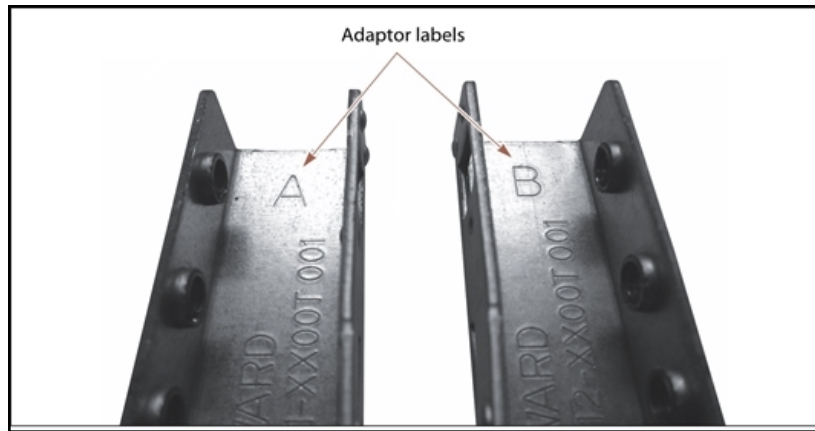

Figure 15 Location of the adapter labels.

3. Position the adapter with the label side facing upward, and the square gaps in the side facing toward the end of the outer rail.
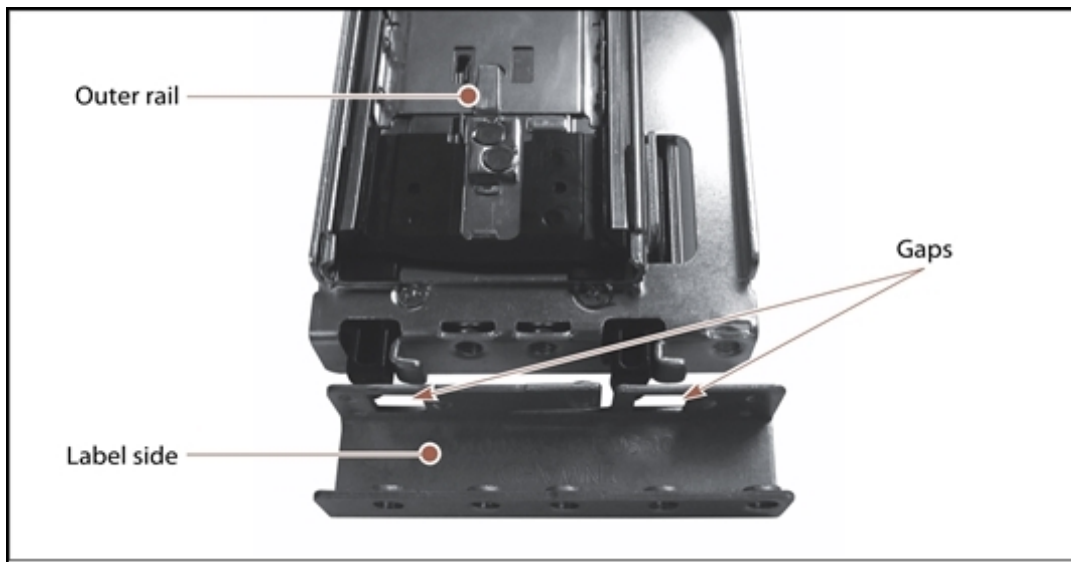

Figure 16 Position the adapter with the label side facing up and the gaps facing the outer rail.

4. Press the adapter in toward the outer rail, which depresses the black plastic tabs on the outer rail, and then slide the adapter to the left to lock it in place.
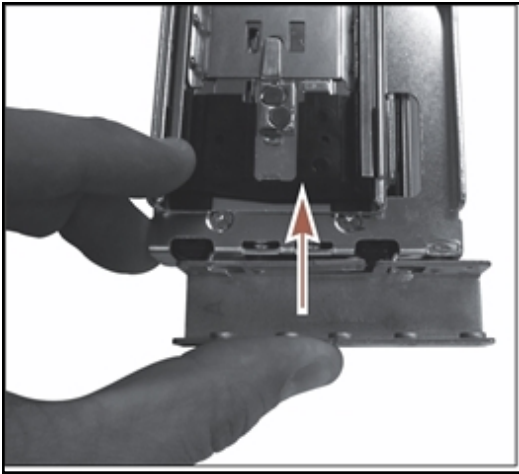
Figure 17 Press the adapter in toward the outer rail.
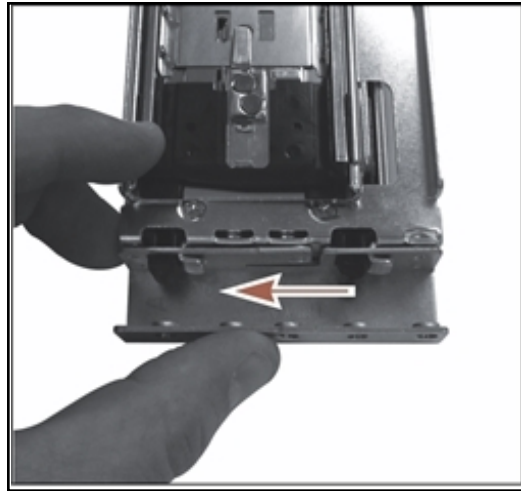
Figure 18 Slide the adapter to the left to lock it in place.

5. Repeat Step 3 through Step 4 as needed to install the remaining adapters.

6. Determine the vertical position of the rack mount kit in the rack. Figure 19 and Figure 20 show the relationship of the rack kit position in the rack and the resulting position of the chassis.

- The 4U chassis extends 6 cut-outs above the top of the rack rail and one cut-out below the bottom of the rack rail when installed.

- The 2U chassis extends one cut-out above the top of the rack rail is even with the bottom of the rack rail when installed.

WARNING If you are not installing any other equipment in the rack, install the master node near the bottom of the rack to prevent the rack from being top-heavy, which could cause personal injury.

WARNUNG Wenn Sie nicht die Installation von anderen Geräten im Rack, installieren Sie die Master-Knoten in der Nähe der Unterseite des Racks, die Zahnstange entfernt, kopflastig zu verhindern, was zu Verletzungen führen könnten.
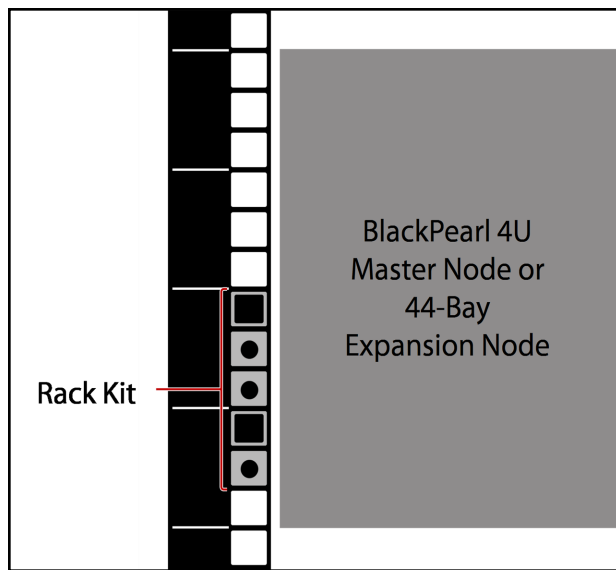

Figure 19 Relationship between rack kit position and the position of the 4U chassis.
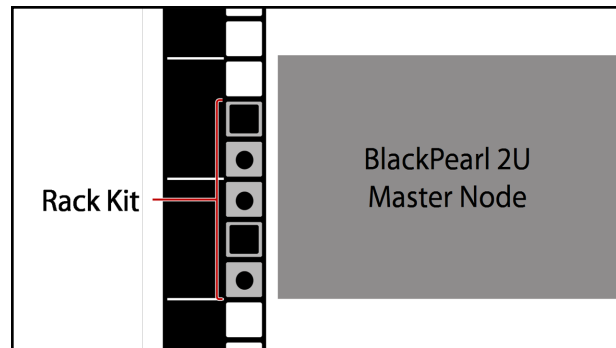
Figure 20 Relationship between rack kit position and the position of the 2U chassis.

7. Position the outer rack rail at the desired height in the rack with the open end facing the front of the rack. Make sure the inner side of the outer rack rail is facing toward the inside of the rack.
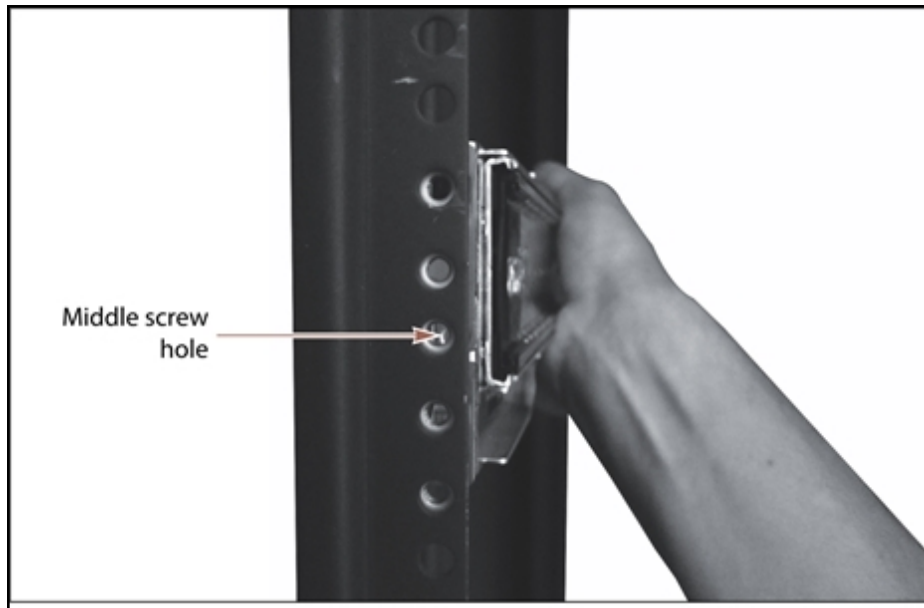

Figure 21 Position the outer rail.

8. Using a #2 Phillips screwdriver, secure the outer rail (2) to the rack.

   a. Install two outer rail screws (4) and washers (5) in the middle and lowest screw holes in the front mounting bracket to secure the rail to the front post.

   b. Install two screws (4) and washers (5) in the upper and lower holes to secure the back of the outer rail to the rear post.

   Note: If provided, use the rack's rack unit markings to determine the correct location.

9. Repeat Step 1 on page 28 through Step 8 to attach the second outer rail to the other side of the rack.

10. Use a level to make sure the installed rails are level and coplanar in relation to each other.

11. Continue to Install the Inner Rails on page 32.

Install the Inner Rails

1. Place the chassis on a sturdy, flat surface.

2. Orient the inner rail (1) with the self locking latch visible and facing you and the black plastic tab on the end of the rail oriented toward the front of the chassis.

3. Position the inner rack rail over the hooks extending out from the side of the chassis. The rail is keyed to only fit one way.
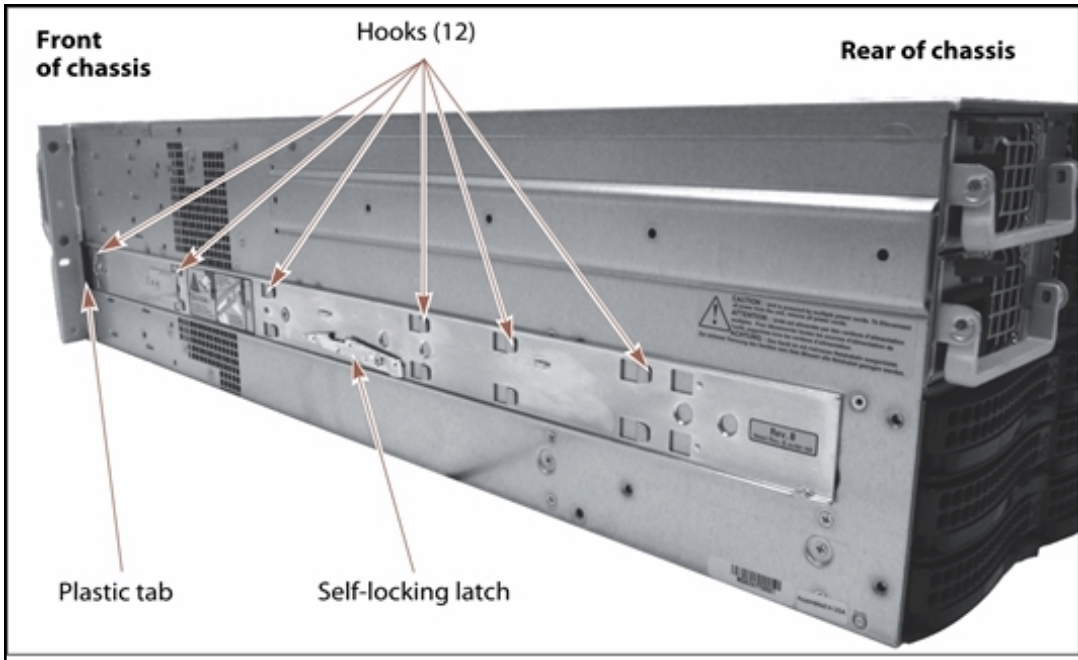

Figure 22 Install the inner rail over all hooks (BlackPearl gateway 4U chassis shown from left rear view).
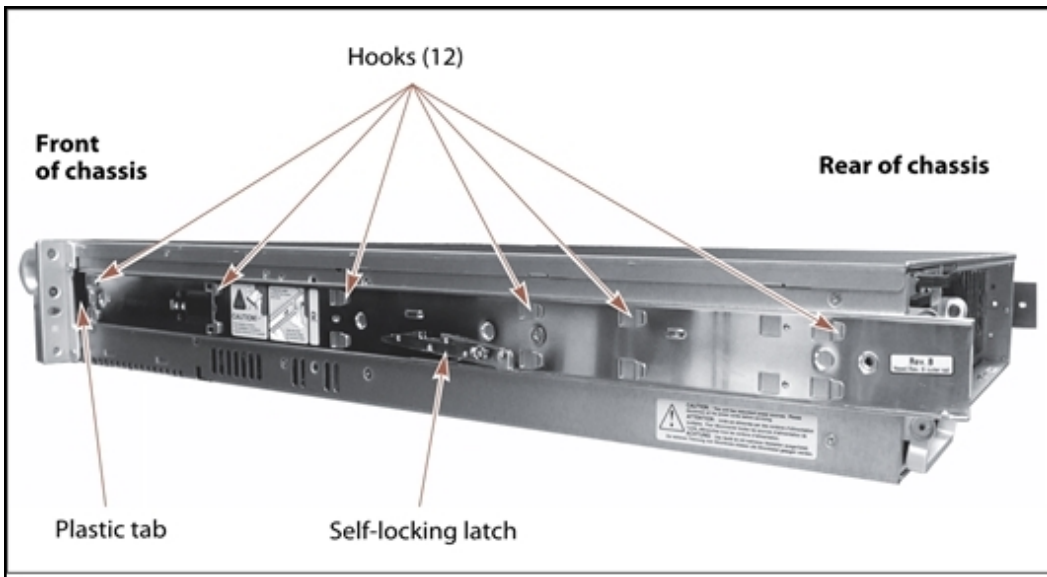

Figure 23 Install the inner rail over all hooks (BlackPearl gateway 2U chassis shown from left rear view).

4. While pressing the inner rail against the side of the chassis, slide the inner rail towards the front of the chassis to engage the mounting hooks. Ensure all hooks are engaged.

5. Using a #2 Phillips screwdriver, secure the rail to the chassis using one screw (3) for the 4U chassis, and two screws for the 2U chassis.
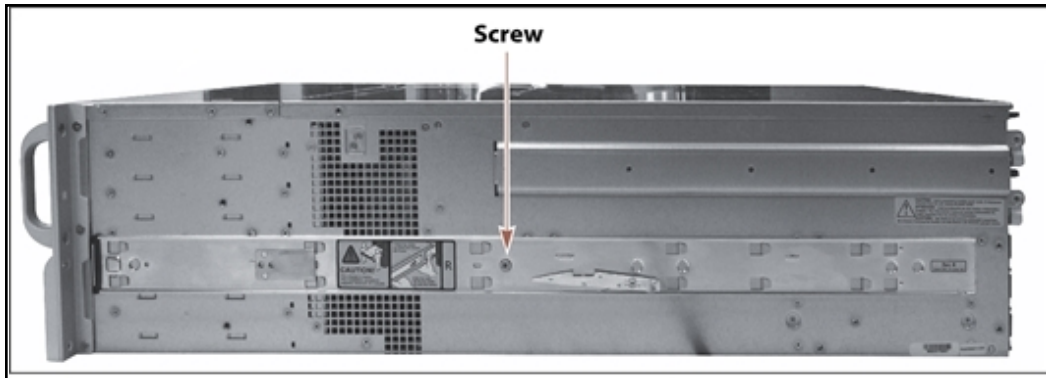

Figure 24 Install the inner rail screw on the BlackPearl 4U chassis.

Figure 25 Install the inner rail screws on the BlackPearl 2U chassis.

6. Repeat Step 2 on page 32 through Step 5 to install the inner rail on the opposite side of the chassis.

Slide the Chassis into the Rack

WARNING	Lifting hazard. The **Spectra BlackPearl 4U master node and 44-bay expansion chassis** weigh between 57 lb (25.8 kg) and 138.2 lb (62.7 kg), depending on the number of drives installed. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment. Lifting hazard. The **Spectra BlackPearl 2U master node** weighs between 39 lb (17.7 kg) and 60.6 lb (27.5 kg), depending on the number of drives installed. Use lifting aids and proper lifting techniques with assistance when handling heavy equipment. **WARNUNG** Hebegefahr. Der **4U-Masterknoten Spectra BlackPearl und das 44-Bay-Erweiterungsgehäuse** wiegen je nach Anzahl der installierten Laufwerke zwischen 25,8 kg (57 lb) und 62,7 kg (138,2 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken. **WARNUNG** Hebegefahr. Der **2U-Masterknoten Spectra BlackPearl**wiegt je nach Anzahl der installierten Laufwerke zwischen 17,7 kg (39 lb) und 27,5 kg (60.6 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.
WARNING	Only extend one component at a time. A rack may tip if more than one component is extended, which could lead to personal injury. **WARNUNG** Nur eine Komponente erstrecken zu einem Zeitpunkt. Ein Rack kann umkippen, wenn mehr als eine Komponente erweitert, die zu Verletzungen führen können.

1. Pull the center section of the outer rails out of the rack until they are fully extended (see Figure 26 on page 36).

2. If necessary, remove the front bezel of the BlackPearl gateway. The bezel is held in place with magnets. Grasp the sides of the bezel and pull it straight off the chassis.

3. Position the chassis in front of the rack rails and lift it so that the inner rails are at the same height as the extended sections of the outer rails attached to the rack.
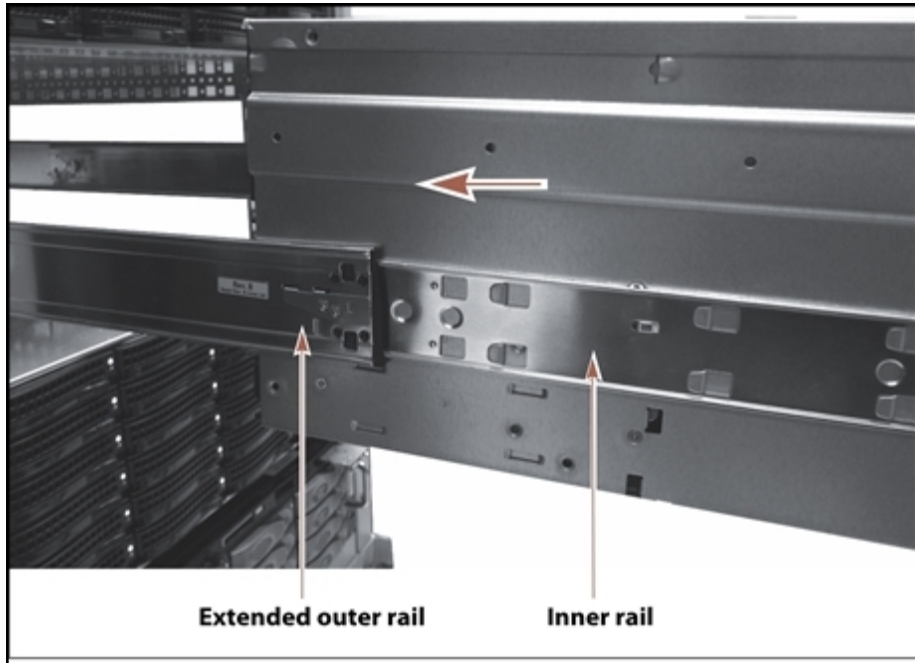

Figure 26 Extend outer rails and slide chassis into rack.

4. Slide the chassis into the rack until the self-locking latches engage.

Installation Guide-Spectra BlackPearl Nearline Gateway

5. While supporting the front of the chassis with one hand or a lift, press the self-locking latches on both the left and right inner rails downward. Push the chassis the rest of the way into the rack until the mounting brackets on the front of the chassis are flush with the front posts of the rack.
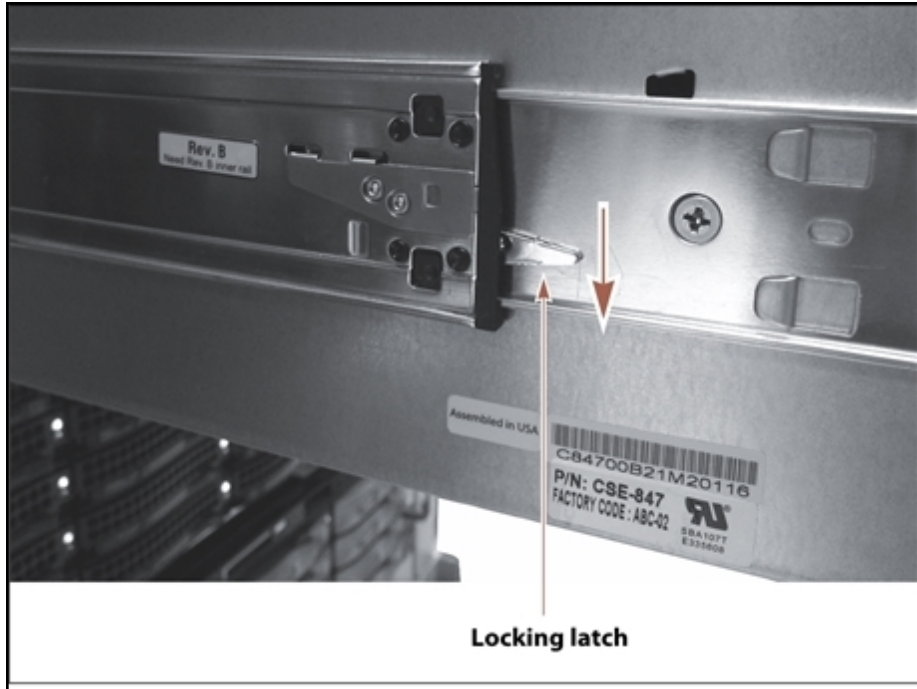

Figure 27 Press the self-locking latch downward.

6. Using a #2 Phillips screwdriver, install one chassis screw (6) into the hole in the mounting bracket on each side of the chassis to secure the chassis to the rack. Do not over-tighten the screw.
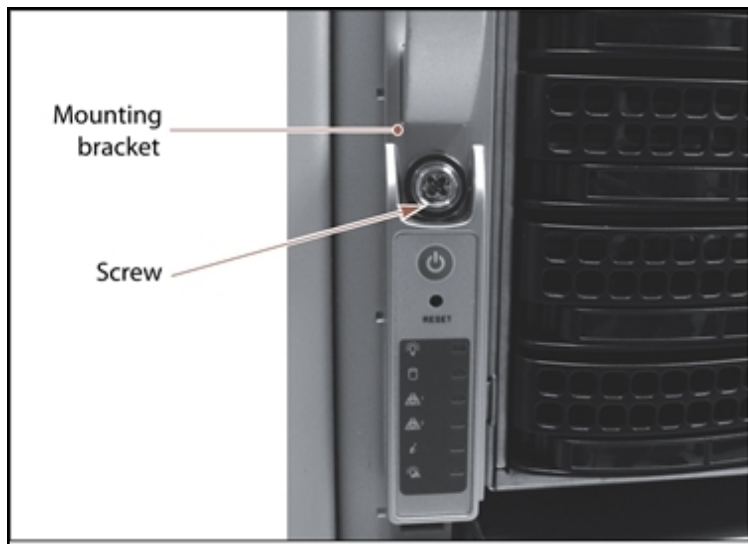

Figure 28 Secure the chassis to the rack (front left shown).

7. Attach the front bezel by aligning the bezel to the pogo pins on the chassis and allowing the magnet on the bezel to pull the bezel into the mounted position. No screws are used to hold the bezel.

Spectra Logic Professional Services will install all cables, including power cables.