



Spectra BlackPearl NAS Solution

Gen1 Installation Guide



SpectraLogic.com

Legal Notices

Copyright

Copyright © 2022 Spectra Logic Corporation. All rights reserved. This item and the information contained herein are the property of Spectra Logic Corporation.

Notices

Except as expressly stated herein, Spectra Logic Corporation makes its products and associated documentation on an “AS IS” BASIS, WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, BOTH OF WHICH ARE EXPRESSLY DISCLAIMED. In no event shall Spectra Logic be liable for any loss of profits, loss of business, loss of use or data, interruption of business, or for indirect, special, incidental or consequential damages of any kind, even if Spectra Logic has been advised of the possibility of such damages arising from any defect or error.

Information furnished in this manual is believed to be accurate and reliable. However, no responsibility is assumed by Spectra Logic for its use. Due to continuing research and development, Spectra Logic may revise this publication from time to time without notice, and reserves the right to change any product specification at any time without notice.

Trademarks

BlackPearl, BlueScale, CC, RioBroker, Spectra, SpectraGuard, Spectra Logic, StorCycle, TeraPack, TFinity, TranScale, and Vail are registered trademarks of Spectra Logic Corporation. Attack Hardened, Eon Protect, and PreCal are trademarks of Spectra Logic Corporation. MigrationPass is a service mark of Spectra Logic Corporation. All rights reserved worldwide. All other trademarks and registered trademarks are the property of their respective owners.

Part Number

90990157 Revision A

Revision History

Revision	Date	Description
A	January 2022	Initial release.

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 NAS Solution, see [Additional Publications on page 13](#).

End User License Agreement

1. READ CAREFULLY

YOU SHOULD READ THE FOLLOWING TERMS AND CONDITIONS BEFORE ACCEPTING THIS END-USER LICENSE AGREEMENT ("EULA"). THIS EULA IS A LEGAL AGREEMENT BETWEEN YOUR ORGANIZATION, THE END USER, AND SPECTRA LOGIC CORPORATION ("SPECTRA") FOR THE SPECTRA SOFTWARE PRODUCT WHICH INCLUDES COMPUTER SOFTWARE AND MAY INCLUDE ASSOCIATED MEDIA, PRINTED MEDIA, AND "ONLINE" OR ELECTRONIC DOCUMENTATION (COLLECTIVELY, "SOFTWARE PRODUCT"). BY INSTALLING, COPYING, OR OTHERWISE USING THE SOFTWARE PRODUCT, YOU AGREE TO BE BOUND BY THE TERMS OF THIS EULA. IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MAY NOT INSTALL, COPY, DOWNLOAD OR USE THE SOFTWARE PRODUCT. YOU AGREE THAT YOUR USE OF THE SOFTWARE ACKNOWLEDGES THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT, AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS.

2. OWNERSHIP

It is understood and agreed that Spectra Logic Corporation, a Delaware corporation with offices at 6285 Lookout Road, Boulder, CO 80301 ("Licensor") is the owner of all right, title and interest to the Software Product, regardless of the media or form of the original download, whether by the World Wide Web, disk or otherwise. You, as licensee ("Licensee") through your downloading, installing, copying or use of this product do not acquire any ownership rights to the Software Product.

3. GENERAL

The Software Product is licensed, not sold, to you by Spectra for use only under the terms of this EULA. The Software Product is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The rights granted herein are limited to Spectra's and its licensors' intellectual property rights in the Software Product and do not include any other patents or intellectual property rights. The terms of this EULA will govern any software upgrades provided by Spectra that replace and/or supplement the original Software Product, unless such upgrade is accompanied by a separate license in which case the terms of that license will govern.

4. SOFTWARE PRODUCT

The Software Product, as used in this EULA, means, collectively and/or as applicable:

- The Software Product package;
- Any and all contents, components, attachments, software, media, and code with which this Agreement is provided and delivered;
- Any and all images, photographs, art, art work, clip art, fonts or other artistic works (the "Art Work");
- Related explanatory written materials and instructions, and any other possible documentation related thereto ("Documentation"); and
- Upgrades, modified versions, updates, additions and copies of the Software Product (the "Upgrades"), if any, licensed to by Spectra under this EULA.

5. GRANT OF LICENSE AND RESTRICTIONS

- a.** Spectra grants you a non-exclusive, non-transferable End-User license right to install the Software Product solely for the purpose for which it was created.
- b.** Unless provided otherwise in the Documentation or by prior express written consent of Spectra, you shall not display, modify, reproduce and distribute any Art Work, or portion(s) thereof, included with or relating to the Software Product, if any. Any such authorized display, modification, reproduction and distribution shall be in full accord with this EULA. Under no circumstances will your use, display, modification, reproduction and distribution of the Art Work give you any Intellectual Property or Proprietary Rights of the Art Work. All rights, title, and interest belong solely to Spectra.
- c.** Except for the initial loading of the Software Product, you shall not, without Spectra's express written consent:
 - Copy or reproduce the Software Product; or
 - Modify, adapt, or create derivative works based on the Software Product or any accompanying materials.

6. DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS

- a.** Spectra will provide you with support services related to the Software Product ("Support"). Such Support will be provided in accordance with the Spectra Master Support Agreement, available for download and viewing on the Spectra Corporate Web site. Use of Support is governed by this EULA and Spectra's Master Support Agreement.
- b.** Any supplemental software, code, content, or media provided to you in the course of Support shall be considered part of the Software Product and subject to the terms and conditions of this EULA.
- c.** Spectra retains all right, title, and interest in and to the Software Product, and any rights not granted to you herein are reserved by Spectra. You hereby expressly agree not to extract information, reverse engineer, disassemble, decompile, or translate the Software Product, or otherwise attempt to derive the source code of the Software, except to the extent allowed under any applicable law. In the event that such activities are permitted by applicable law, any information you, or your authorized agent, discover shall be promptly disclosed to Spectra and shall be deemed the confidential information of Spectra.
- d.** You shall not modify, sublicense, assign, or transfer the Software Product or any rights under this EULA, except as expressly provided in this EULA. Any attempt to sublicense, assign, or transfer any of the rights, duties, or obligations will be void.
- e.** You may permanently transfer all of your rights under this EULA, provided you retain no copies. The other party must agree to accept the terms and conditions of the EULA.

7. ALL RESERVED

All rights not expressly granted herein are reserved by Spectra.

8. TERM

- a.** This License is effective until terminated. Licensee may terminate it at any time by destroying the Software Product with all copies, full or partial, and removing all of its component parts.
- b.** Your rights under this EULA will terminate automatically without notice from Spectra if you fail to comply with any term(s) or condition(s) of this EULA. In such event, no notice shall be required by Spectra to effect such termination.
- c.** Upon termination of this EULA, you shall cease all use of the Software Product and destroy all copies, full or partial, together with all backup copies, modifications, printed or written materials, and merged portions in any form and remove all component parts of the Software Product.

9. INTELLECTUAL PROPERTY RIGHTS

- a.** Spectra shall retain all right, title, and interest in the Software Product and to any modifications or improvements made thereto, and any upgrades, updates or Documentation provided to End User. End User will not obtain any rights in the Software Product, its updates, upgrades, and Documentation, as a result of its responsibilities hereunder.
- b.** End User acknowledges Spectra's exclusive rights in the Software Product and that the Software Product is unique and original to Spectra and that Spectra is owner thereof. Unless otherwise permitted by law, End User shall not, at any time during or after the effective Term of the Agreement, dispute or contest, directly or indirectly, Spectra's exclusive right and title to the Software Product or the validity thereof.

10. U.S. GOVERNMENT END USERS

The Software Product and related documentation are "Commercial Items," as that term is defined at 48 C.F.R. §2.101, consisting of "Commercial Computer Software" and "Commercial Computer Software Documentation," as such terms are used in 48 C.F.R. §12.212 or 48 C.F.R. §§227.7202-1 through 227.7202-4, as applicable. The Commercial Computer Software and Commercial Computer Software Documentation are being licensed to U.S. Government end users (a) only as Commercial Items and (b) with only those rights as are granted to all other End Users pursuant to the terms and conditions herein. Unpublished rights reserved under the copyright laws of the United States.

11. EXPORT LAW ASSURANCES

You may not use or otherwise export or re-export the Software Product except as authorized by United States law and the laws of the jurisdiction in which the Software Product was obtained. In particular, but without limitation, the Software Product may not be exported or re-exported (a) into (or to a nation or resident of) any U.S. embargoed countries or (b) to anyone on the U.S. Treasury Department's list of Specially Designated Nationals or the U.S. Department of Commerce Denied Persons List or Entity List. By installing or using any component of the Software Product, you represent and warrant that you are not located in, under control of, or a national or resident of any such country or on any such list.

12. DISCLAIMER OF WARRANTIES

YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT USE OF THE SOFTWARE PRODUCT IS AT YOUR SOLE RISK AND THAT THE ENTIRE RISK AS TO SATISFACTORY QUALITY, PERFORMANCE, ACCURACY AND EFFORT IS WITH YOU. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, AND EXCEPT AS MAY BE STATED IN THE SPECTRA MASTER SERVICE AGREEMENT, THE SOFTWARE PRODUCT IS PROVIDED "AS IS," WITH ALL FAULTS AND WITHOUT WARRANTY OF ANY KIND, AND SPECTRA AND SPECTRA'S AFFILIATES (COLLECTIVELY REFERRED TO AS "SPECTRA" FOR THE PURPOSES OF SECTIONS 12 AND 13) HEREBY DISCLAIM ALL WARRANTIES AND CONDITIONS WITH RESPECT TO THE SOFTWARE PRODUCT, EITHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES AND/OR CONDITIONS OF MERCHANTABILITY, OF SATISFACTORY QUALITY, OF FITNESS FOR A PARTICULAR PURPOSE, OF ACCURACY, OF QUIET ENJOYMENT, AND NON-INFRINGEMENT OF THIRD-PARTY RIGHTS. SPECTRA DOES NOT WARRANT AGAINST INTERFERENCE WITH YOUR ENJOYMENT OF THE SOFTWARE PRODUCT THAT THE FUNCTIONS CONTAINED IN THE SOFTWARE PRODUCT WILL MEET YOUR REQUIREMENTS, THAT THE OPERATION OF THE SOFTWARE PRODUCT WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT DEFECTS IN THE SOFTWARE PRODUCT WILL BE CORRECTED. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY SPECTRA OR A SPECTRA AUTHORIZED REPRESENTATIVE SHALL CREATE A WARRANTY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATION ON APPLICABLE STATUTORY RIGHTS OF A CONSUMER, SO THE ABOVE EXCLUSION AND LIMITATIONS MAY NOT APPLY TO YOU.

13. LIMITATION OF LIABILITY

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL SPECTRA, ITS AFFILIATES OR LICENSEES, BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE PRODUCT OR THE PROVISION OF OR FAILURE TO PROVIDE SUPPORT SERVICES, EVEN IF SPECTRA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY CASE, SPECTRA'S ENTIRE LIABILITY UNDER ANY PROVISION OF THIS EULA SHALL BE LIMITED TO THE AMOUNT ACTUALLY PAID BY YOU FOR THE SOFTWARE PRODUCT; PROVIDED HOWEVER, IF YOU HAVE ENTERED INTO A MASTER SUPPORT AGREEMENT, SPECTRA'S ENTIRE LIABILITY REGARDING SUPPORT SERVICES SHALL BE GOVERNED BY THE TERMS OF THAT AGREEMENT. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

14. CONTROLLING LAW AND SEVERABILITY

This EULA will be governed by and construed in accordance with the laws of the State of Colorado, as applied to agreements entered into and to be performed entirely within Colorado between Colorado residents. This EULA shall not be governed by the United Nations Convention on Contracts for the International Sale of Goods, the application of which is expressly excluded. If for any reason a court of competent jurisdiction finds any provision, or portion thereof, to be unenforceable, the remainder of this EULA shall continue in full force and effect.

Warnings



WARNING

Do not attempt to install a Spectra BlackPearl NAS 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 NAS 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 NAS 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 NAS 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 NAS 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 NAS mit Versandpalette** wiegt 36,5 kg (80.5 lb). Verwenden Sie beim Umgang mit schweren Geräten Hebehilfen und geeignete Hebetechniken.

**WARNING**

Lifting hazard. The **Spectra BlackPearl NAS 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 NAS 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 NAS 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 NAS** 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.

Contacting Spectra Logic

To Obtain General Information	
Spectra Logic Website: spectralogic.com	
United States Headquarters	European Office
Spectra Logic Corporation 6285 Lookout Road Boulder, CO 80301 USA Phone: 1.800.833.1132 or 1.303.449.6400 International: 1.303.449.6400	Spectra Logic Europe Ltd. 329 Doncastle Road Bracknell Berks, RG12 8PE United Kingdom Phone: 44 (0) 870.112.2150
Spectra Logic Technical Support	
Technical Support Portal: support.spectralogic.com	
United States and Canada Phone: Toll free US and Canada: 1.800.227.4637 International: 1.303.449.0160	Europe, Middle East, Africa Phone: 44 (0) 870.112.2185 Deutsch Sprechende Kunden Phone: 49 (0) 6028.9796.507 Email: spectralogic@stortrec.de
Mexico, Central and South America, Asia, Australia, and New Zealand Phone: 1.303.449.0160	
Spectra Logic Sales	
Website: shop.spectralogic.com	
United States and Canada Phone: 1.800.833.1132 or 1.303.449.6400 Email: sales@spectralogic.com	Europe Phone: 44 (0) 870.112.2150 Email: eurosales@spectralogic.com
To Obtain Documentation	
Spectra Logic Website: support.spectralogic.com/documentations/documentation	

Contents

Chapter 1 - About This Guide	12
Intended Audience	12
Overview	13
Additional Publications	13
Typographical Conventions	14
Chapter 2 - Installation Checklists	15
Preparing for Installation	15
Installing the Spectra BlackPearl NAS Solution	15
System Information	16
Configuration Information	17
Chapter 3 - Preparing for Installation	18
Acclimating the Spectra BlackPearl NAS Solution	18
Preparing the Rack	18
Spectra BlackPearl NAS Solution Master Node and 44-Bay Expansion Node	19
Unpacking the Spectra BlackPearl NAS Solution	20
Prepare the Unpacking Location	21
Unpack the Components	21
Inventorying the Components	26
Chapter 4 - Installation	27
Installation	27
Installing an HBA in the Master Node	28
Gather Materials and Tools	28
Ensure ESD Protection	29
Install an HBA	29
Installing the Spectra BlackPearl NAS Solution in a Rack	35

Before You Begin	35
Separate the Rails	37
Install the Outer Rail	39
Install the Outer Rail Using Adapters	40
Install the Inner Rails	44
Slide the Chassis into the Rack	47
Installing Additional Drives	50
Connecting the Interface Cables	54
Automatically Import Activation Keys	55
Connecting the Power Cords	56
Installing the Front Bezel	57
Next Steps	57

Chapter 1 - About This Guide

This guide describes the unpacking and installation of the Spectra® BlackPearl NAS solution® 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 NAS solution 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 NAS 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 NAS 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 NAS solution provides high-density, network-attached storage for most major operating environments, including Microsoft® Windows® operating system, Apple® OS X® operating system, UNIX®, and Linux®.

Optimized for secondary storage, the highly versatile BlackPearl NAS solutions have many applications, including use as:

- Network-Attached Storage (NAS) for sharing file-based information over an IP network.
- Bulk file storage for both general and digital preservation usage.
- Disk-to-disk data file storage, either alone or as part of a tiered storage solution.

Additional Publications

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

- The *Spectra BlackPearl NAS Solution User Guide* provides information about configuring, using and maintaining your BlackPearl NAS solution.
- The *Spectra BlackPearl Network Setup Tips* provide helpful instructions for troubleshooting common connectivity problems.
- The *Spectra BlackPearl NAS Solution Site Preparation Guide* provides important information that you should know before installing a BlackPearl NAS solution in your storage environment.
- The *Spectra BlackPearl HotPair Installation & Configuration Guide* provides detailed information on installing and using a BlackPearl NAS solution 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 NAS Solution 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 NAS solution, 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 - Installation Checklists

Use these checklists to ensure the BlackPearl NAS solution is prepared for installation and to record important information during installation.

Preparing for Installation

Status	Description
<input type="checkbox"/>	The system components have acclimated to the site's temperature for at least 24 hours in its packaging (see Acclimating the Spectra BlackPearl NAS Solution on page 18).
<input type="checkbox"/>	The rack is prepared for installation (see Preparing the Rack on page 18).
<input type="checkbox"/>	The system components are unpacked (see Unpacking the Spectra BlackPearl NAS Solution on page 20).
<input type="checkbox"/>	The component inventory is complete (see Inventorying the Components on page 26).

Installing the Spectra BlackPearl NAS Solution

Status	Description
<input type="checkbox"/>	The components are installed on a sturdy work surface, or in a rack (see Installing the Spectra BlackPearl NAS Solution in a Rack on page 35).
<input type="checkbox"/>	The interface cables are connected (see Connecting the Interface Cables on page 54).
<input type="checkbox"/>	The power cables are connected and the system is powered on (see Powering On the Spectra BlackPearl NAS Solution).
<input type="checkbox"/>	The front bezel is installed (see Installing the Front Bezel on page 57).

System Information

System Location:	
Installation Date:	
Master Node Serial Number:	
Expansion Node Serial Number(s):	
BlackPearl NAS Software Version:	
Number of Drives:	
Drive Type:	
Additional Information:	

Configuration Information

Component	Description	Value
Management Interface Port IP Address	<p>By default, the management port is configured with the following address:</p> <p>IP address: 10.0.0.2 Netmask: 255.255.255.0</p> <p>You can configure the management port to use DHCP or a different static (fixed) IP address. See “Initial Configuration” in the <i>Spectra BlackPearl NAS Solution User Guide</i> for more information.</p>	<p><input type="checkbox"/> Use DHCP</p> <p><input type="checkbox"/> Use static IP address</p> <p>Management interface port IP address</p> <p>_____ . _____ . _____ . _____</p> <p>Subnet mask</p> <p>_____ . _____ . _____ . _____</p> <p>Network gateway</p> <p>_____ . _____ . _____ . _____</p>
Mail Recipients	<p>Identify people who should automatically receive email messages about certain library conditions. See “Using AutoSupport” in the <i>Spectra BlackPearl NAS Solution User Guide</i> for more information on setting up email messages for users.</p> <ul style="list-style-type: none"> • Identify the user’s email address. • Specify the types of notification(s) the system should send automatically. 	<p>Email address 1</p> <p>_____</p> <p>Message Severities to Receive:</p> <p><input type="checkbox"/> Info</p> <p><input type="checkbox"/> Warning</p> <p><input type="checkbox"/> Error</p> <p>Email address 2 (if desired)</p> <p>_____</p> <p>Message Severities to Receive:</p> <p><input type="checkbox"/> Info</p> <p><input type="checkbox"/> Warning</p> <p><input type="checkbox"/> Error</p>

Chapter 3 - Preparing for Installation

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

Acclimating the Spectra BlackPearl NAS Solution	18
Preparing the Rack	18
Unpacking the Spectra BlackPearl NAS Solution	20
Inventorizing the Components	26

Acclimating the Spectra BlackPearl NAS Solution

You must allow time for the BlackPearl NAS solution 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 NAS Solution Master Node and 44-Bay Expansion Node

Note: If the system configuration includes a BlackPearl NAS master node with a BlackPearl NAS 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 NAS 4U chassis is 7 inches (18 cm) tall and occupies 4U of rack space. The BlackPearl NAS 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.

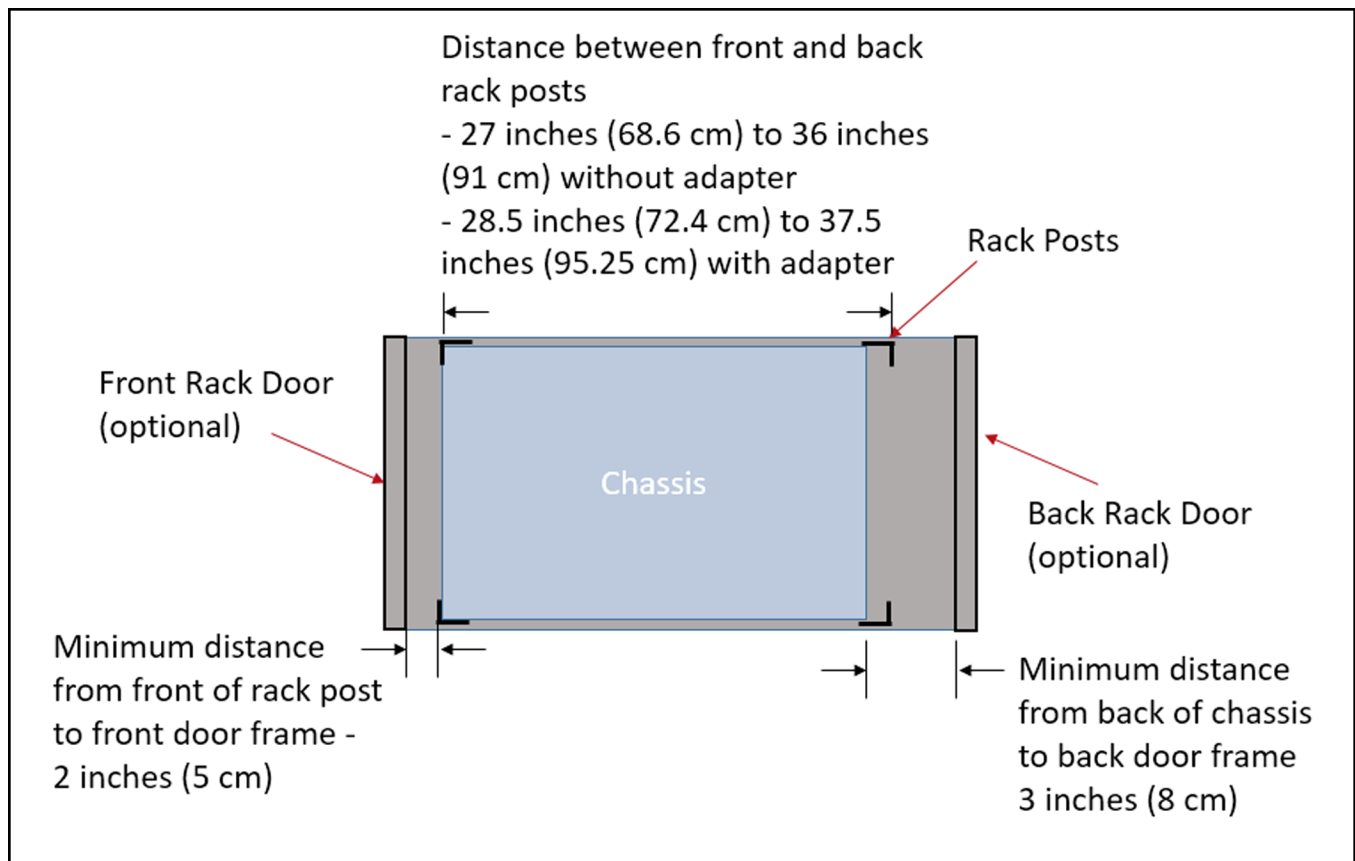


Figure 1 Rack size requirements.

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 NAS 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 NAS Solution Site Preparation Guide](#) for more information.

Unpacking the Spectra BlackPearl NAS Solution

**IMPORTANT**

Do not unpack a BlackPearl NAS solution 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 NAS solution 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 NAS 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 NAS 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 NAS 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 NAS 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 NAS mit Versandpalette** 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 NAS 4U master node. The procedure is similar for the BlackPearl NAS 2U master node and the BlackPearl NAS 44-bay expansion node.
- The BlackPearl NAS 4U master node ships with ten drives installed in the chassis, the BlackPearl NAS 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 NAS 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.

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



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

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

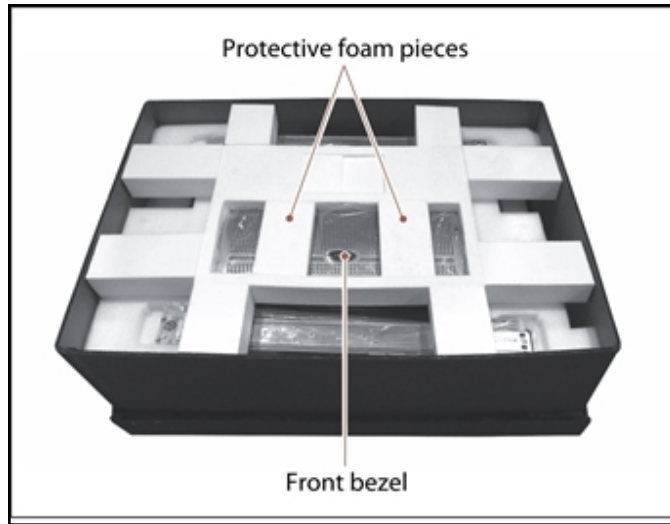


Figure 3 Remove the two protective foam pieces and the front bezel.

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

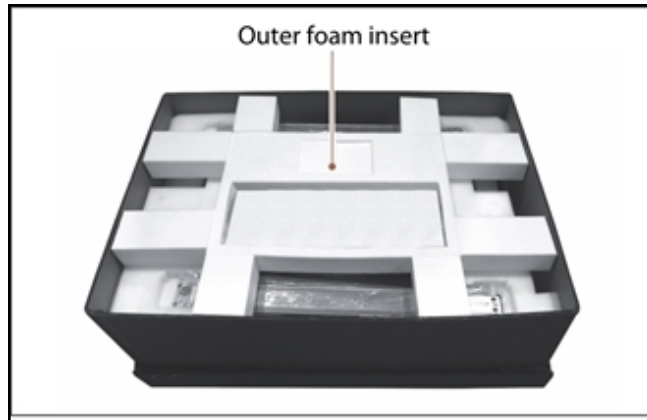


Figure 4 Remove the outer foam insert.

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

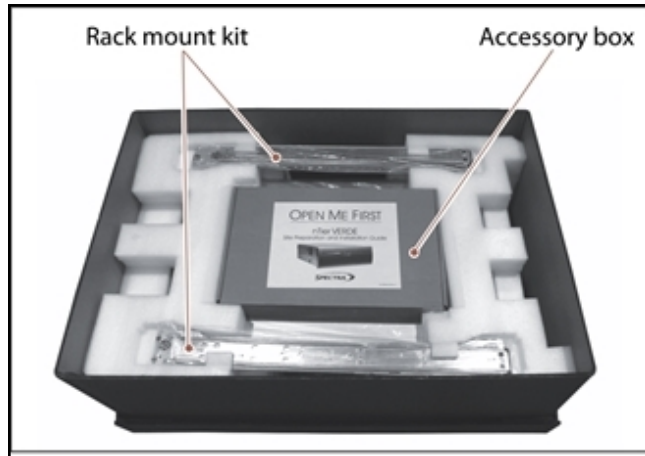


Figure 5 Remove the accessory box and rack mount kit.

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

- 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 NAS 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 NAS 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 NAS 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 NAS** 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.

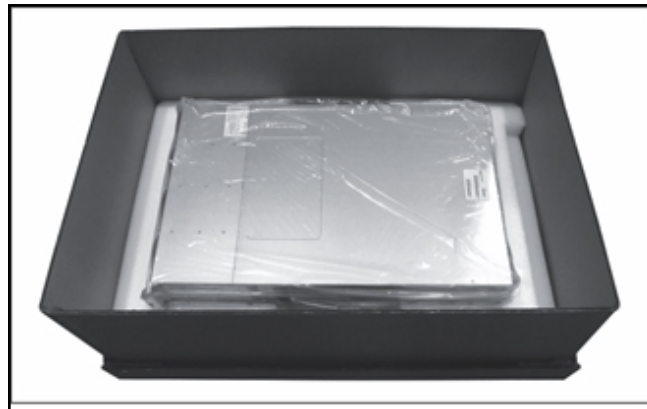


Figure 6 Lift the master node out of the shipping box.

- Remove the plastic bag from around the chassis.

Inventorying the Components

Unpack and identify the components that shipped with the BlackPearl NAS solution 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 NAS solution 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 NAS solution configuration (for either 110 VAC or 220 VAC operation).
Serial cable (<i>HotPair only</i>)	Included in the accessory box. One null modem cable is included with a HotPair configuration.

Chapter 4 - Installation

This chapter describes the installation process for a Spectra BlackPearl NAS solution.

The BlackPearl NAS solution 96-bay or 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 NAS 96-bay or 107-bay expansion node on your own. The BlackPearl 96-bay expansion node can weigh up to 269.8 lb (112.9 kg) and must be installed by Spectra Logic Professional Services. The 107-bay expansion node can weigh up to 265 lb (120.2 kg) and must be installed by Spectra Logic Professional Services.

WARNUNG Versuchen Sie nicht, einen 96-Bay- oder 107-Bay-Erweiterungsknoten Spectra BlackPearl NAS selbst zu installieren. Der BlackPearl-Erweiterungsknoten mit 96 Einschüben kann bis zu 112,9 kg (269.8 lb) wiegen und muss von Spectra Logic Professional Services installiert werden. Der Erweiterungsknoten mit 107 Einschüben kann bis zu 120,2 kg (265 lb) wiegen und muss von Spectra Logic Professional Services installiert werden.

Installation	27
Installing an HBA in the Master Node	28
Installing the Spectra BlackPearl NAS Solution in a Rack	35
Installing Additional Drives	50
Connecting the Interface Cables	54
Automatically Import Activation Keys	55
Connecting the Power Cords	56
Installing the Front Bezel	57
Next Steps	57

Installation

Use the information in this section to install a BlackPearl NAS solution chassis in a rack , or if you need to move and reinstall the chassis. If you do not have to install an HBA, continue to [Installing the Spectra BlackPearl NAS Solution in a Rack on page 35](#).

Installing an HBA in the Master Node

The BlackPearl NAS solution master node ships with the 10 GigE HBA installed, if one was purchased with your order. If there are one or more SAS or 40 GigE HBAs included with the shipment, use the instructions in this section to install them.

Gather Materials and Tools

Required

- A grounded anti-static wristband
- A #2 Phillips screwdriver
- One or more 40 GigE HBA from Spectra Logic (*PN 90999713, not shown*)
- One or more SAS HBA from Spectra Logic (*PN 90999693 or 90999719*)

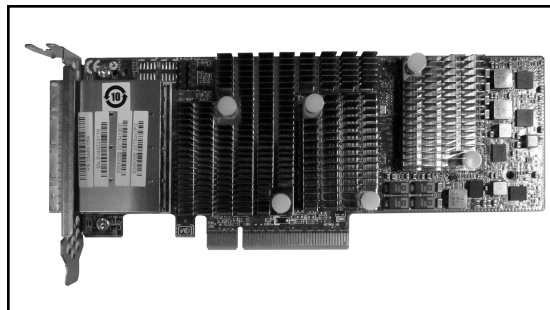


Figure 7 The SAS HBA.

Note: The SAS card you receive may look different than the one pictured above.

Recommended

- An anti-static mat
- A static protection wristband or grounding footstrap

Ensure ESD Protection

The installation environment for the system must be free of conditions that could cause electrostatic discharge (ESD). To protect the system from ESD, follow these procedures when installing the system:

- Place a static protection mat on the work surface used while installing system components. Use a 1-megohm resistor to ground the static protection mat.
- Wear a static protection wristband or grounding footstrap whenever you handle system components that have been removed from their anti-static bags. Connect the wristband to the static protection mat or to other suitable ESD grounding.

Note: Keep all electronic components in anti-static bags when not in use.

Install an HBA

1. Remove the cover.

BlackPearl NAS solution 4U Master Node

- a. Using a #2 Phillips screwdriver, remove the four screws that secure the cover to the chassis. Three screws are located on the sides of the chassis, while one is located on the top.
- b. Slide the cover toward the rear of the chassis to remove it.

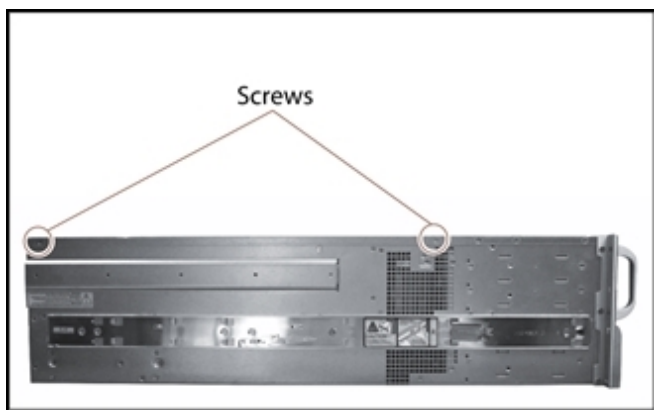


Figure 8 Remove the screws on the left-hand side of the chassis.

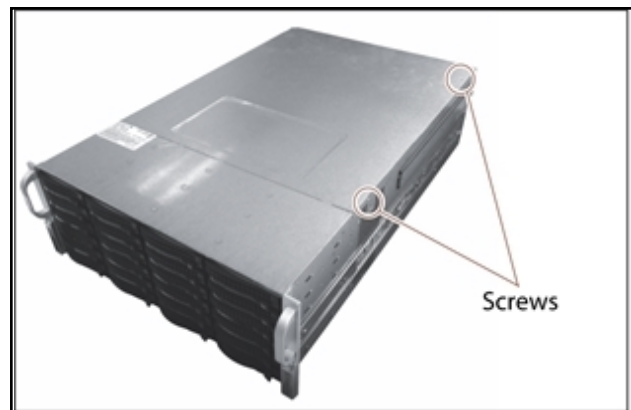


Figure 9 Remove the screws on the right-hand side and top of the chassis.

BlackPearl NAS solution 2U Master Node

Press down on the two release latches and slide the cover toward the rear of the chassis to remove it.

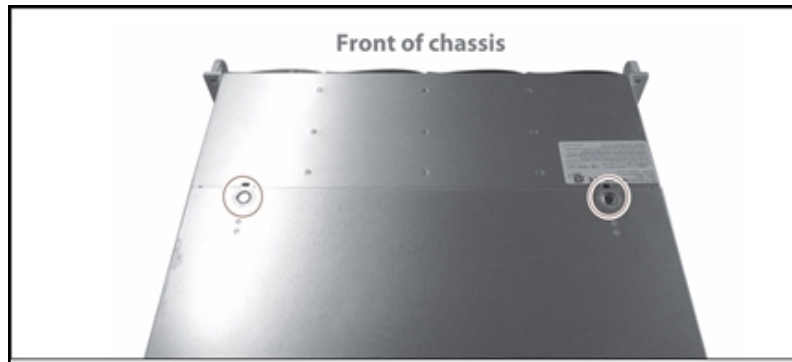


Figure 10 Release latches on the BlackPearl NAS solution 2U master node.

- 2. Set the cover aside.
- 3. Locate the slot where you want to install an HBA in the chassis.

BlackPearl NAS solution 4U Master Node

Note: The BlackPearl NAS solution 4U master nodes ship with a 10 GigE HBA installed in slot 1.

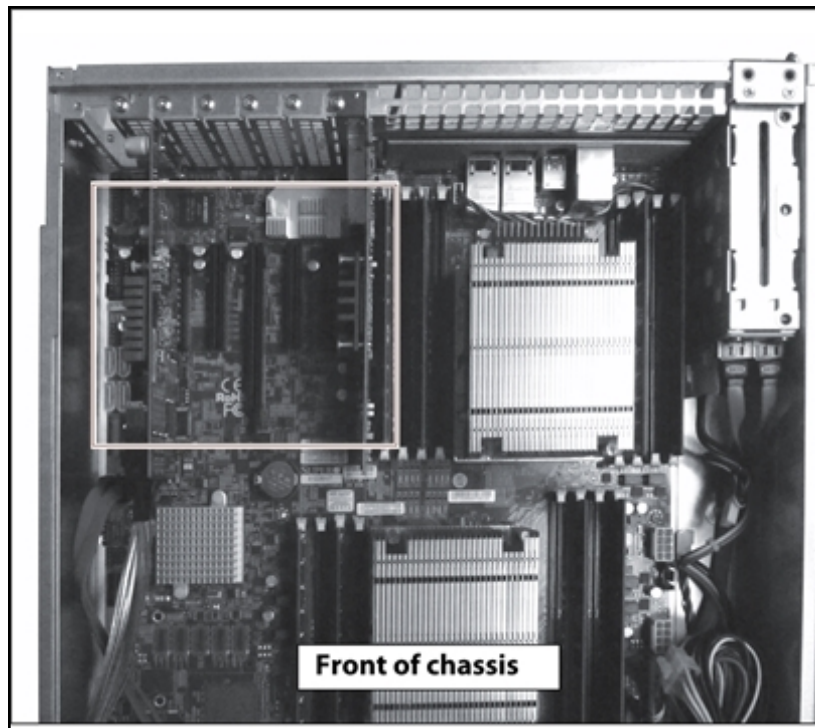


Figure 11 HBA locations in the BlackPearl NAS solution 4U master node.

BlackPearl NAS solution 2U Master Node

Notes:

- Because the BlackPearl NAS solution 2U master node only has a single CPU, only three of the seven PCI slots are active. Make sure you install the HBA into one of the indicated slots, which are labeled on the motherboard as slots 1, 2, and 3.
- Depending on your order configuration, a 10 GigE HBA may occupy slot 3.
- If you have a BlackPearl NAS solution 1.0 chassis, which can be identified by the presence of four RJ45 ports on the rear panel, see the *Spectra 12-Drive Chassis HBA Replacement Guide* for instructions on which motherboard slots to use when installing an HBA.

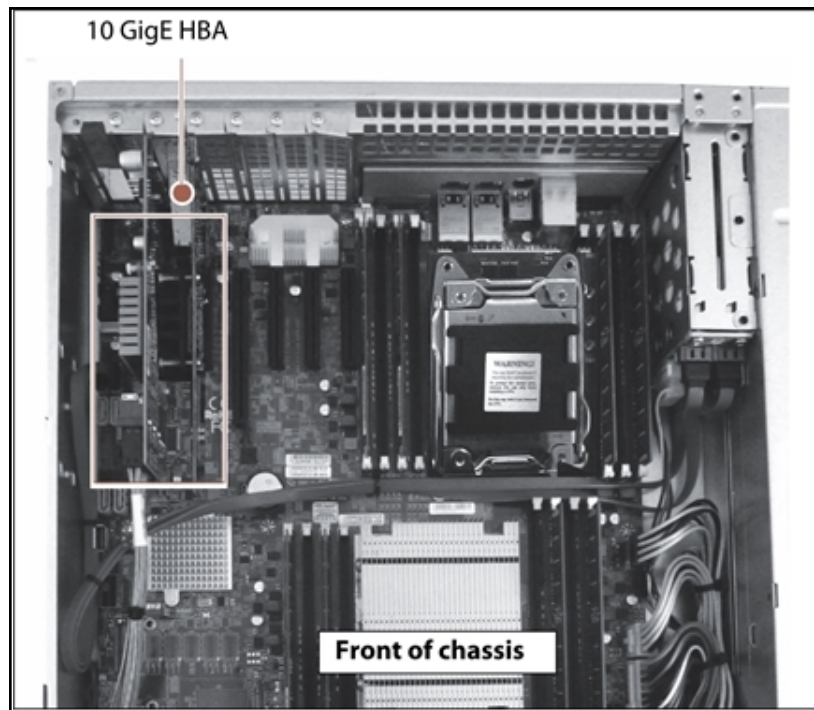


Figure 12 HBA locations in the BlackPearl NAS solution 2U master node.

- 4. Using a #2 Phillips screwdriver, remove the single screw that secures the PCI blanking plate to the chassis.

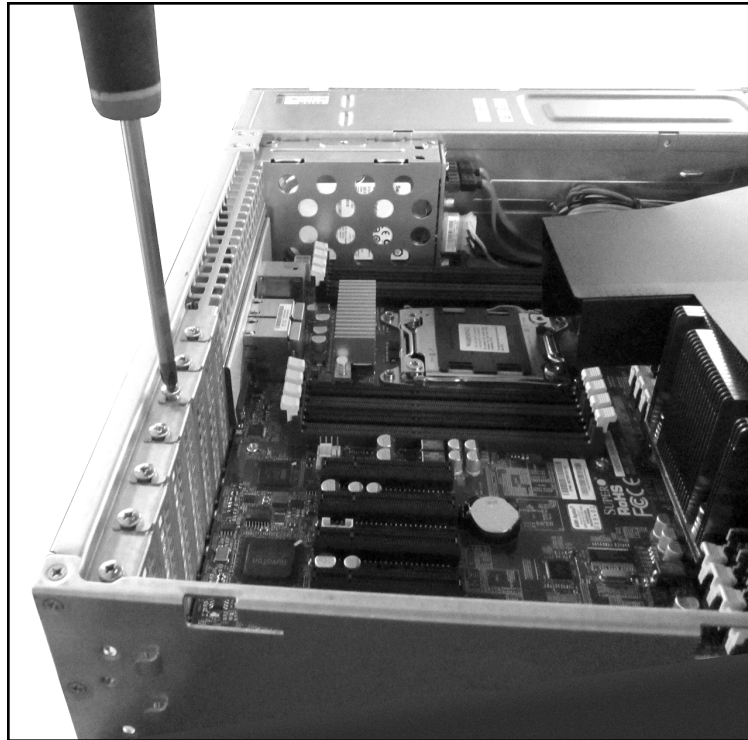


Figure 13 Remove the PCI blanking plate screw.

- 5. Remove the HBA from its packaging.
- 6. Orient the HBA so that the card bracket faces the rear of the chassis and the edge connector is oriented down.

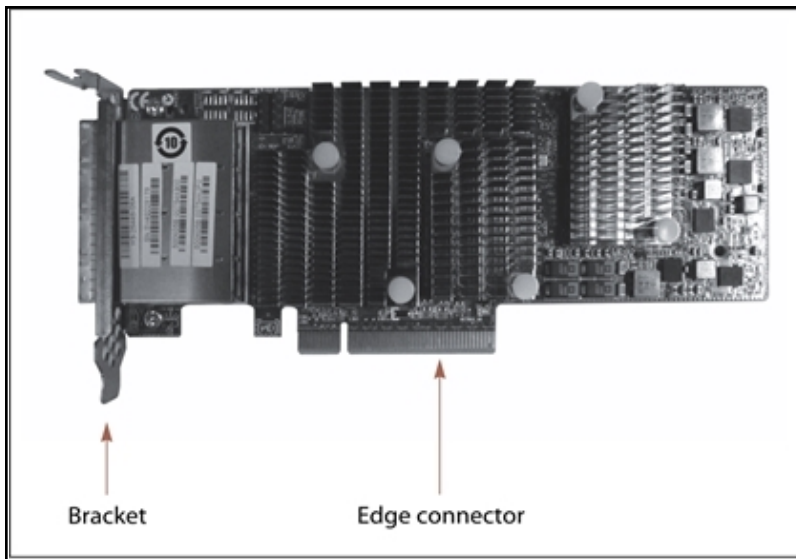


Figure 14 The SAS HBA.

7. Guide the connectors on the HBA through the slot on the rear of the chassis.

**CAUTION**

Be careful not to damage the connectors on the HBA as you guide them through the slot on the rear of the chassis.

8. Press down on the HBA to secure it in the socket on the motherboard. The card will fit firmly in the socket.

Note: This image shows the 10 GigE HBA. The SAS HBA is installed in a similar manner.

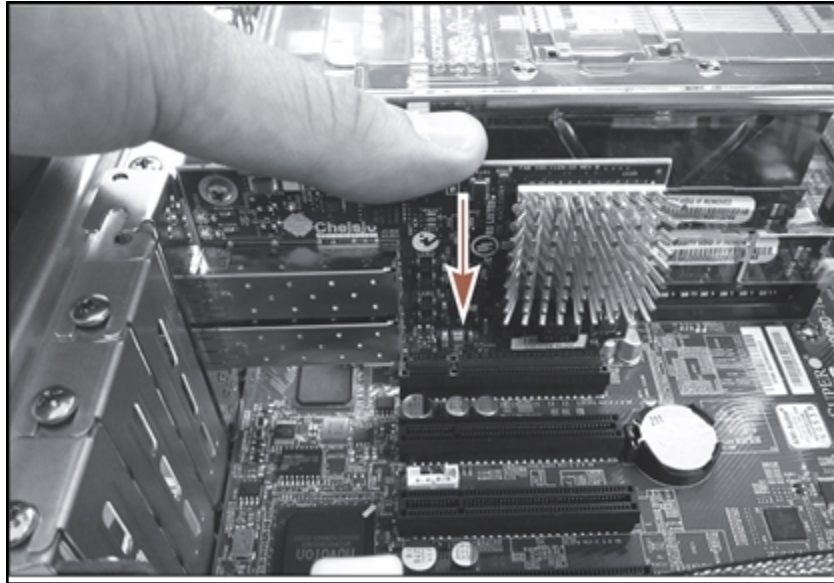


Figure 15 Install the HBA.

9. Using a #2 Phillips screwdriver, install the bracket screw to secure the HBA to the chassis (see Figure 13 on page 32).

10. Repeat [Step 3 on page 30](#) through [Step 9](#) for any additional HBA(s) that need to be installed.
11. Install the cover.

BlackPearl NAS solution 4U Master Node

- a. Orient the cover over the chassis with the tabs facing toward the front of the chassis.

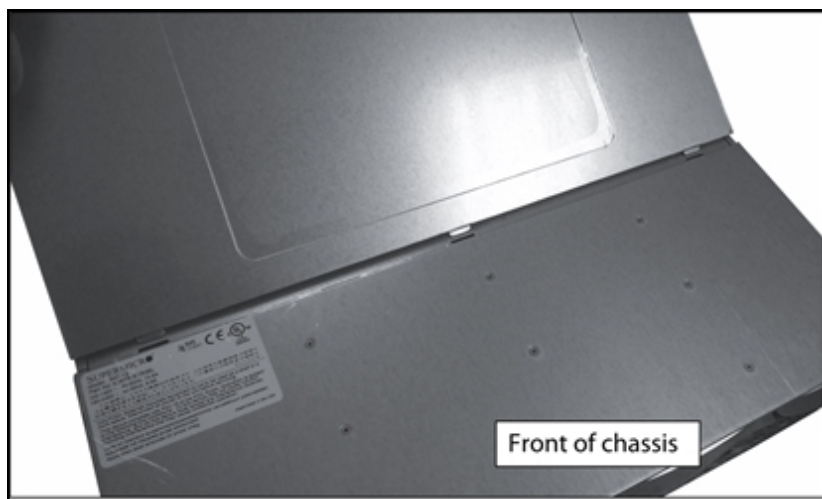


Figure 16 Orient the cover with the tabs facing the front of the chassis.

- b. Insert the tabs into the slots in the chassis and rotate the cover down.
- c. Using a #2 Phillips screwdriver, install the four screws to secure the cover to the chassis (see [Figure 8](#) and [Figure 9 on page 29](#)).

BlackPearl NAS solution 2U Master Node

- a. Position the cover on top of the chassis with the hooks of the release latches facing toward the front of the chassis.

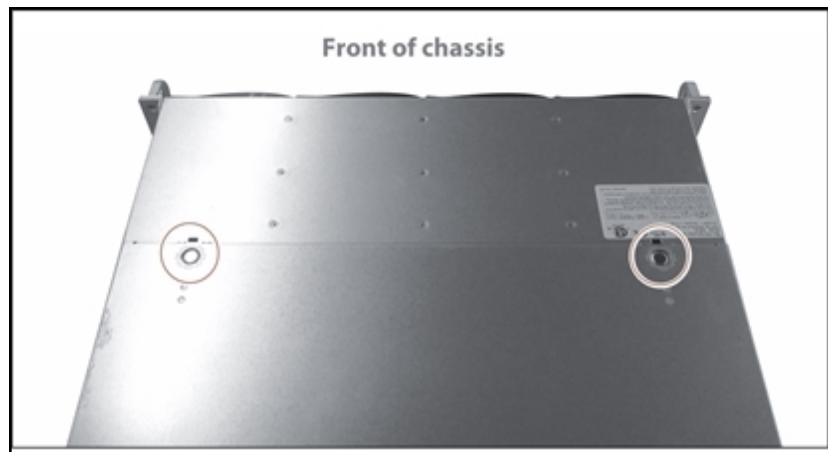


Figure 17 Release latches on the BlackPearl NAS solution 2U master node.

- b. While holding down the release latches, slide the cover toward the front of the chassis until it locks in place.

Installing the Spectra BlackPearl NAS Solution in a Rack


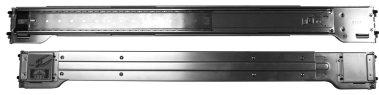





Install the BlackPearl NAS solution in a standard 4-post, 19-inch (48.3-cm) rack. The BlackPearl NAS master nodes occupy either 2 units (2U) or 4 units (4U) of rack space, depending on which model was ordered. The BlackPearl NAS 44-bay expansion node occupies 4 units (4U) of rack space. If you do not want to install the master node in a rack, continue with [Installing Additional Drives](#) on page 50.

Before You Begin

Before you install a BlackPearl NAS 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 37 for instructions.			
1	 <p>Inner Rack Rails</p>	2	Inner rack rails attach to the sides of the BlackPearl NAS chassis.
2	 <p>Outer Rack Rails</p>	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	 <p>Inner Rail Screws</p>	2 or 4	Secure the inner rack rail to the chassis <ul style="list-style-type: none"> • BlackPearl NAS 4U chassis use two screws. • BlackPearl NAS 2U chassis use four screws.
4	 <p>Outer Rail Screws</p>	8	Attach the rail assemblies to the rack.
5	 <p>Washers</p>	8	Used with the outer rail screws to attach the rail assemblies to the rack.
6	 <p>Chassis Screws</p>	2	Secure the chassis to the rack.
7	 <p>Circular Cutout Rack Adapters</p>	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 18](#)). The figures below show the right rail.



Figure 18 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.

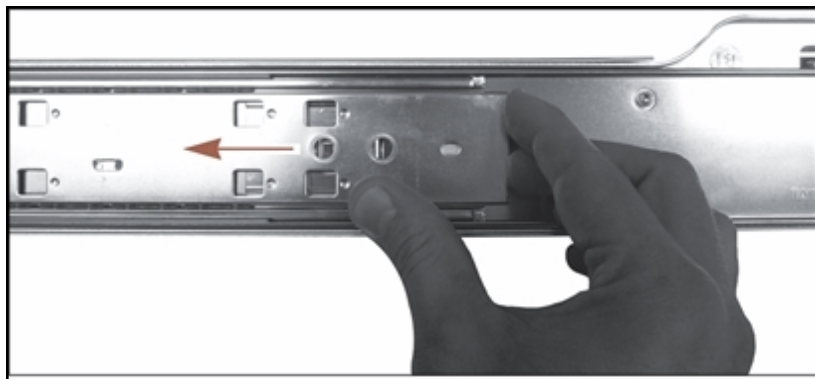


Figure 19 Extend the inner rail beyond the outer rail.

3. Flip the rail assembly over so the outer rail is on top and the self-locking latch is facing you (see [Figure 20](#)).

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.

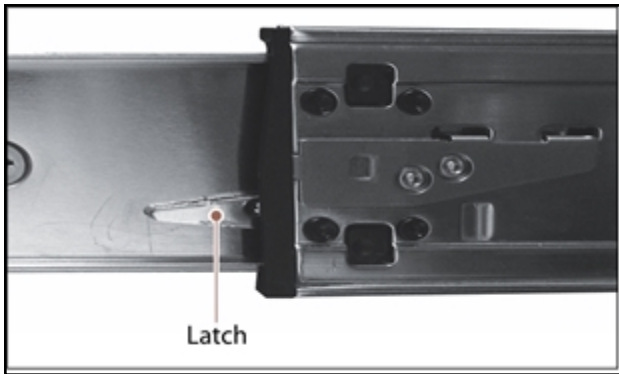


Figure 20 Self-locking latch.

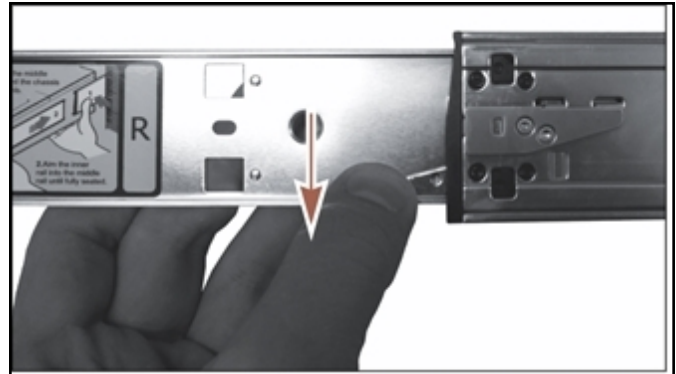


Figure 21 Press the latch toward the closest outer edge.

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 40](#). Instructions give the item numbers in parenthesis for parts listed in the table on [page 35](#).

1. Determine the vertical position of the rack mount kit in the rack. [Figure 22](#) and [Figure 23](#) 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.

WARNING 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.

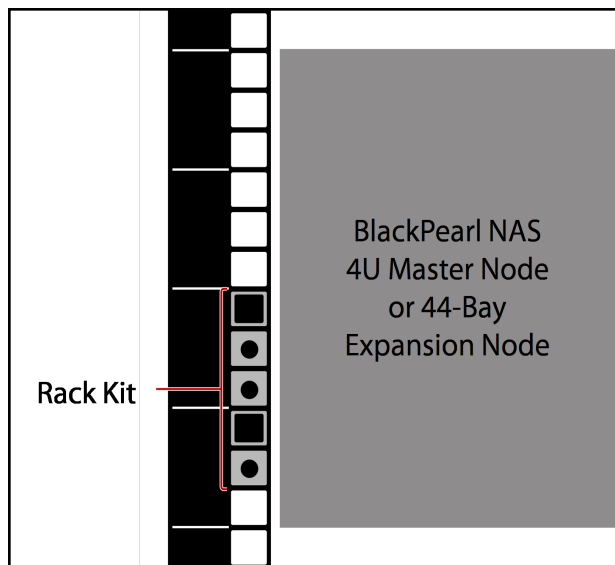


Figure 22 Relationship between rack kit position and the position of the 4U chassis.

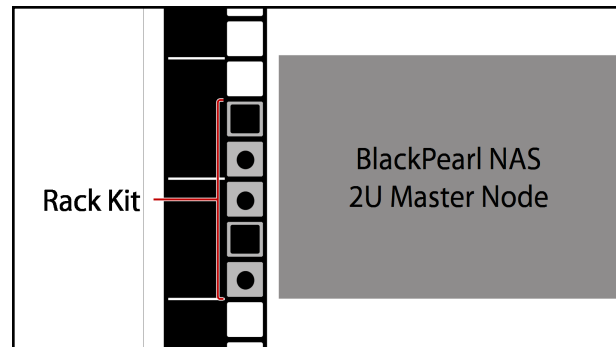


Figure 23 Relationship between rack kit position and the position of the 2U chassis.

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.

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.

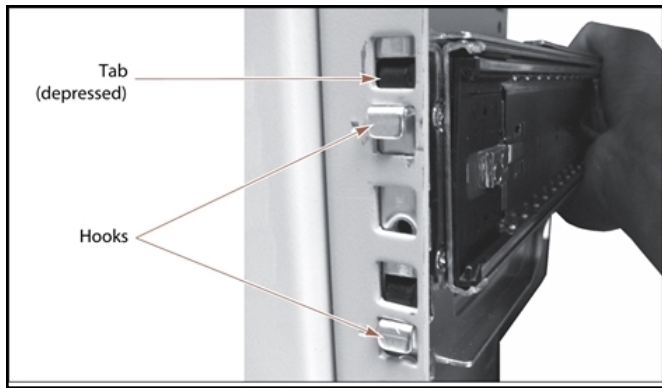


Figure 24 Insert the mounting hooks through the cut-outs in the rack.

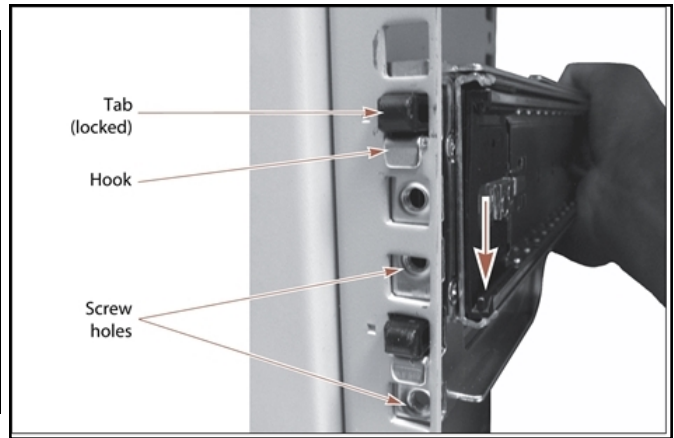


Figure 25 Press the rail down to lock it into place.

4. Repeat [Step 2 on page 39](#) 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 25](#)).
 - 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 44](#).

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 35](#).

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.

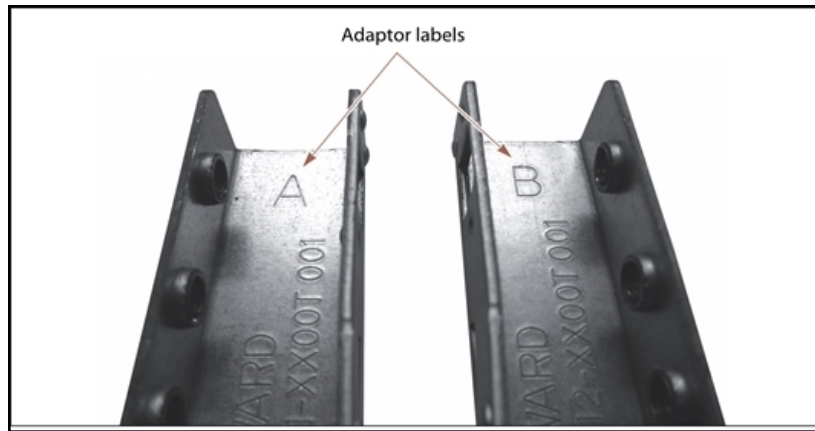


Figure 26 Location of the adapter labels.

- 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.

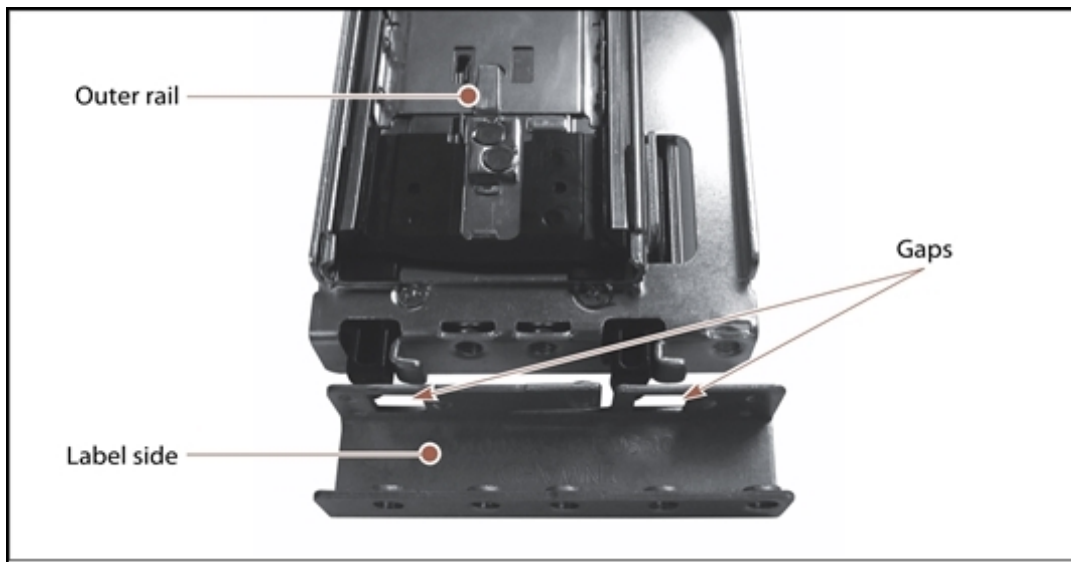


Figure 27 Position the adapter with the label side facing up and the gaps facing the outer rail.

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.

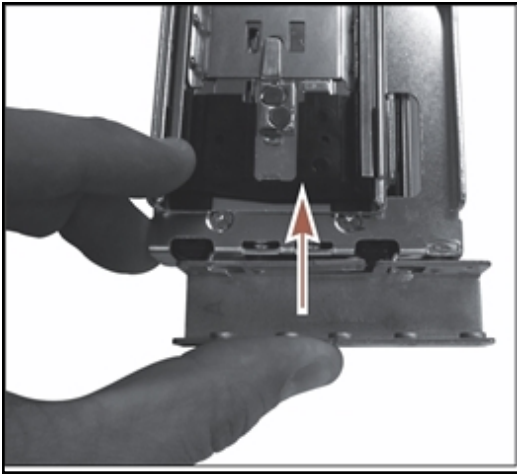


Figure 28 Press the adapter in toward the outer rail.

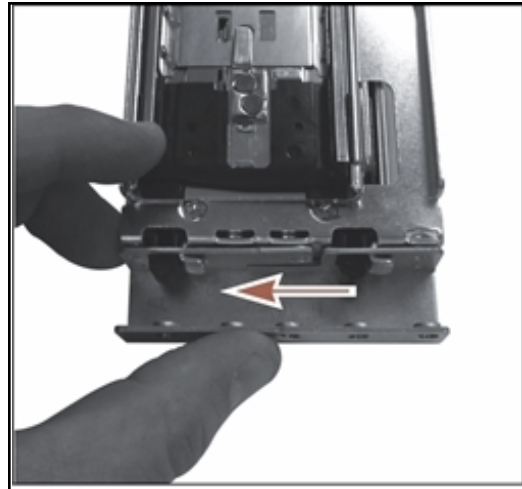


Figure 29 Slide the adapter to the left to lock it in place.

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 30](#) and [Figure 31](#) 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.

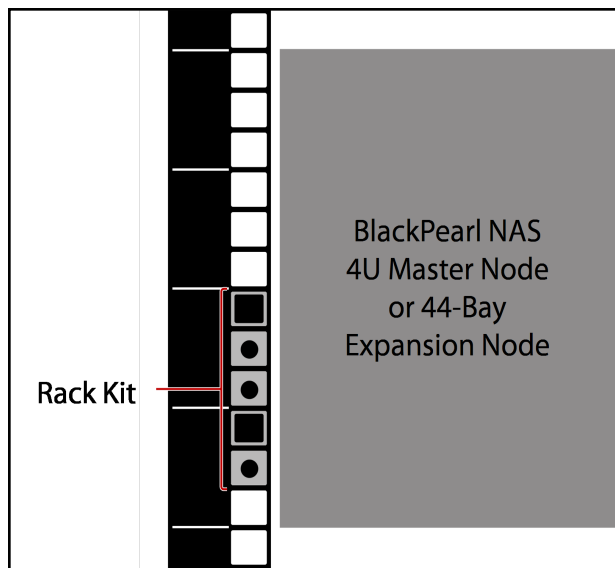


Figure 30 Relationship between rack kit position and the position of the 4U chassis.

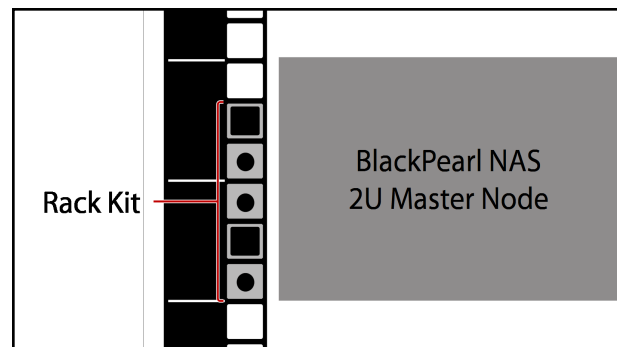


Figure 31 Relationship between rack kit position and the position of the 2U chassis.

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.

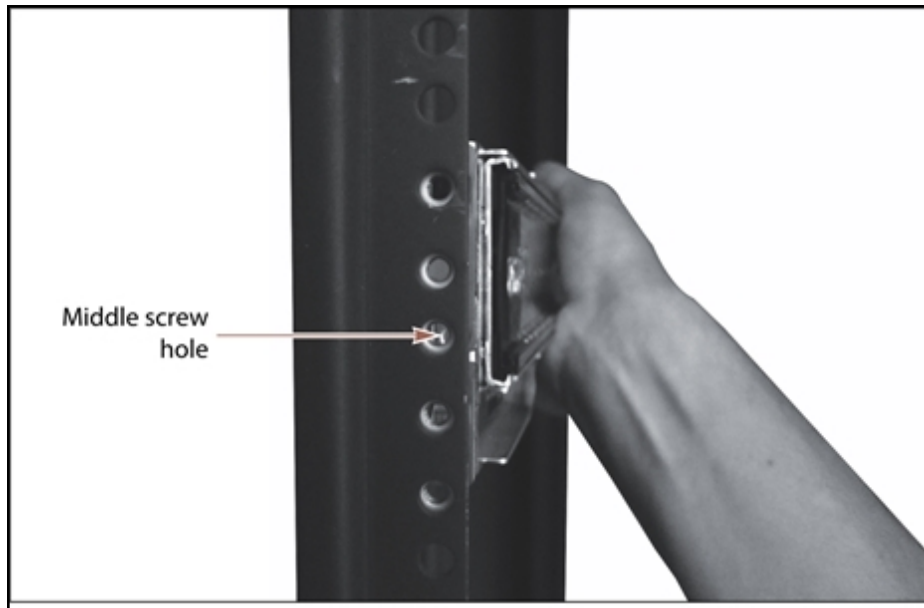


Figure 32 Position the outer rail.

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 40](#) 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 44](#).

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.

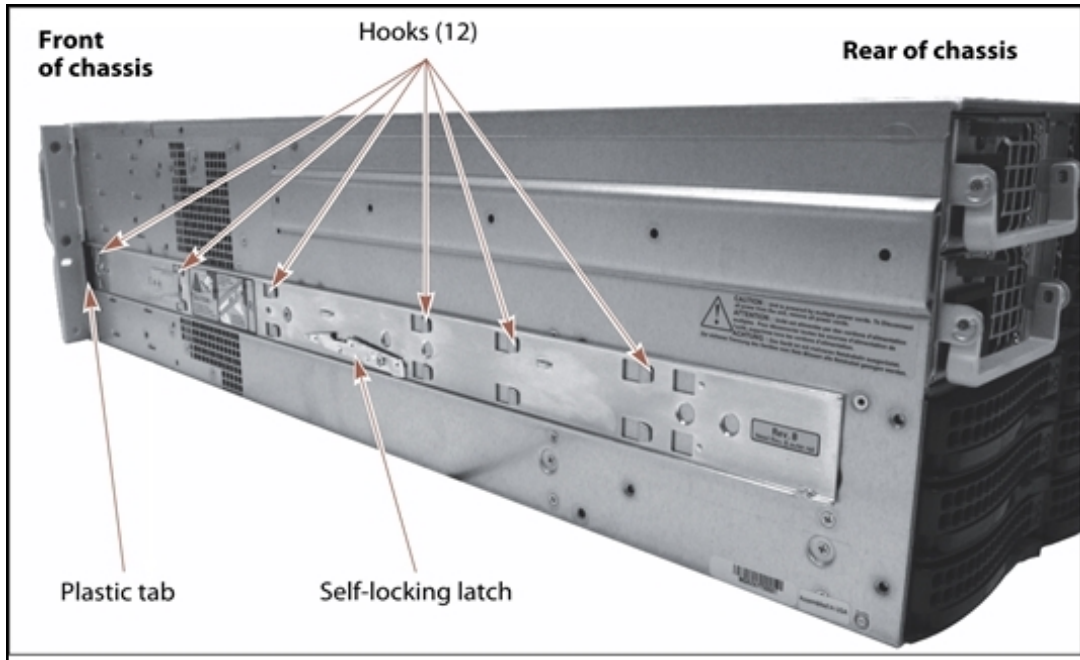


Figure 33 Install the inner rail over all hooks (BlackPearl NAS solution 4U chassis shown from left rear view).

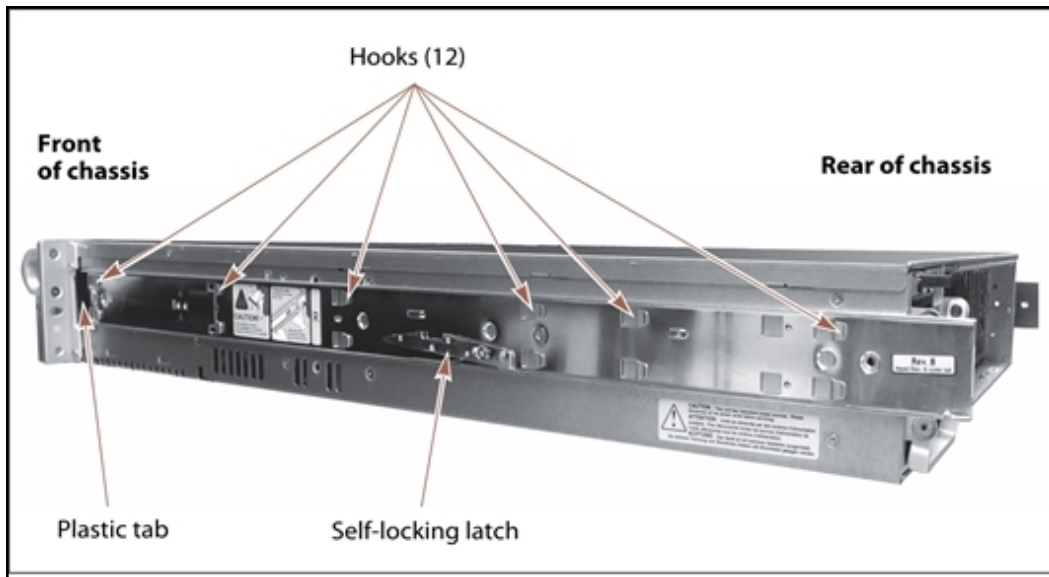


Figure 34 Install the inner rail over all hooks (BlackPearl NAS solution 2U chassis shown from left rear view).

- 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.

- 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.

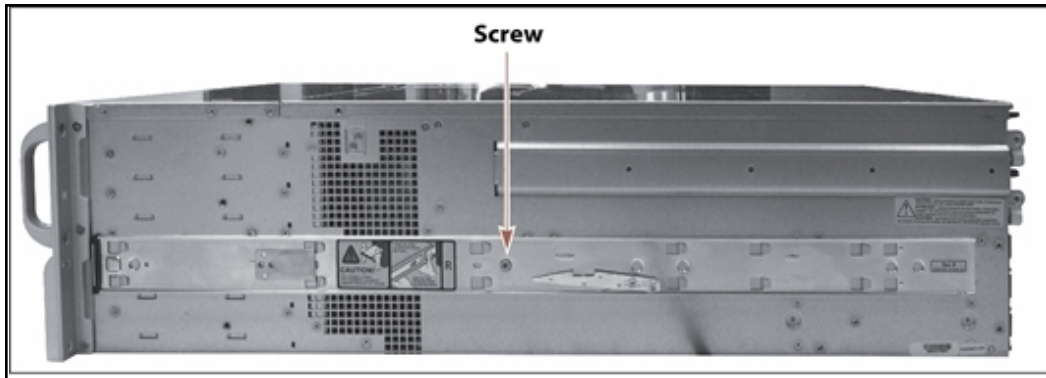


Figure 35 Install the inner rail screw on the BlackPearl NAS 4U chassis.



Figure 36 Install the inner rail screws on the BlackPearl NAS 2U chassis.

- Repeat [Step 2 on page 44](#) 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 NAS 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 NAS 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 NAS 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 NAS** 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 37 on page 48).

2. If necessary, remove the front bezel of the BlackPearl NAS solution. 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.

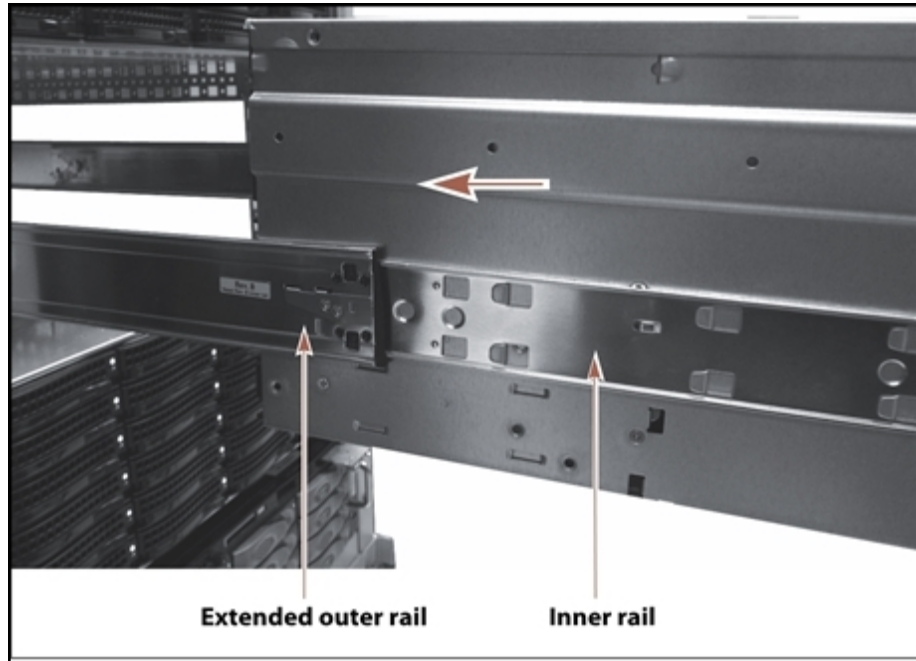


Figure 37 Extend outer rails and slide chassis into rack.

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

- 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.

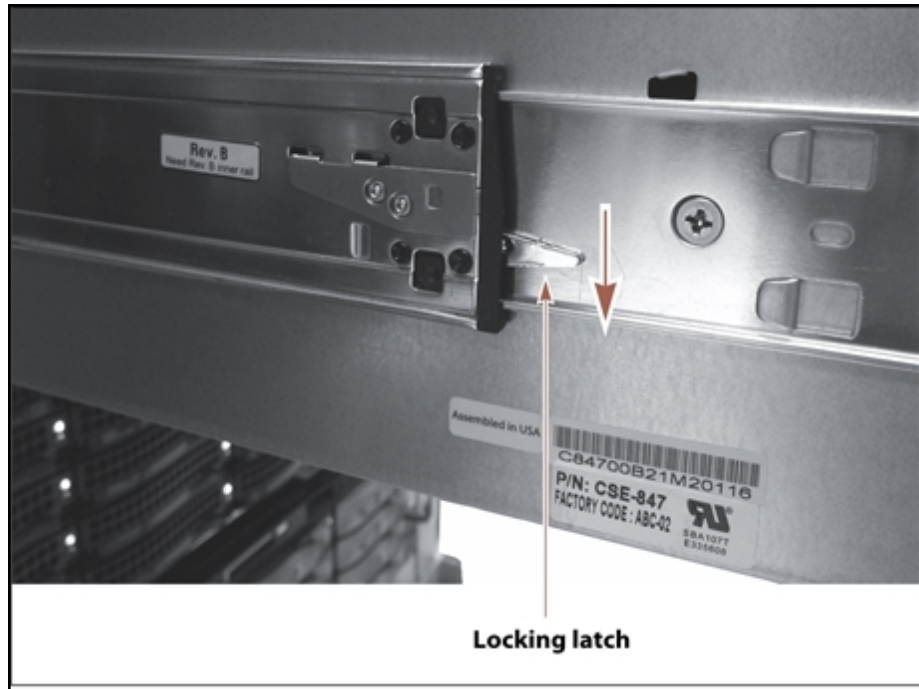


Figure 38 Press the self-locking latch downward.

- 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.

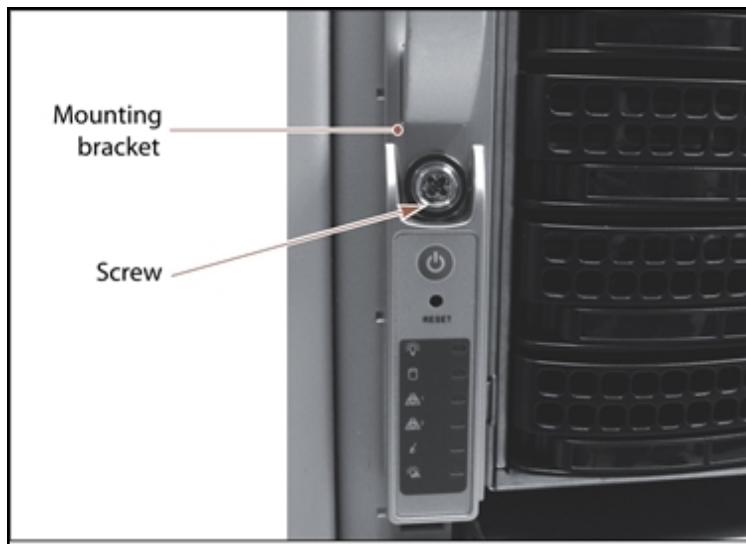


Figure 39 Secure the chassis to the rack (front left shown).

- 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.

Installing Additional Drives

The BlackPearl NAS 2U master node ships with all drives installed.

The BlackPearl NAS 4U master node ships with 10 drives installed in the front of the chassis. The BlackPearl NAS expansion node ships without drives installed. If you purchased additional drives with your order, they ship in a separate box. Install the additional drives before you begin using the system. If you do not have additional drives to install, continue with [Connecting the Power Cords on page 56](#).

Install additional drives in to the BlackPearl NAS 4U chassis until you have installed every additional drive, or the chassis is full. Install any additional drives in BlackPearl NAS expansion nodes.

The drives used in the BlackPearl NAS solution are mounted on drive sleds that ensure proper data and electrical connection with the backplane inside the BlackPearl NAS solution chassis. Only install drives that you purchase from Spectra Logic.

**CAUTION**

Any damage to a BlackPearl NAS solution caused by failure to protect it from electrostatic discharge (ESD) voids the products's warranty. To protect the drives from damage:

- Wear an anti-static wristband, properly grounded, throughout the procedure. If a wristband is not available, touch a known grounded surface, such as the unpainted metal chassis.
- Leave the drive in its anti-static bag until you are ready to install it.
- Do not place a drive that is not in an anti-static bag, on any metal surfaces.

Remove the Empty Drive Sled

Use the following steps to remove an empty drive sled.

1. Put on an anti-static wristband and attach it to an anti-static mat or an unpainted metallic surface. Continue to wear the wristband throughout the entire procedure.
2. Locate the empty drive bays where you want to install the drives.

Notes:

- For the BlackPearl NAS 4U master node, do not install a drive in slot 1, which is the top left drive in the front of the chassis. This slot is reserved for the Visual Status Beacon control sled.
- For the BlackPearl NAS expansion node, if the expansion node includes an active bezel, do not install a drive in slot 1, which is the top left drive in the front of the chassis. This slot is reserved for the Visual Status Beacon control sled. If the expansion node includes a passive bezel, you may install a drive into slot 1.
- The images in this section show a normal drive sled in slot 1 for clarity.

3. Slide the drive sled locking tab to the right to release the drive sled handle.

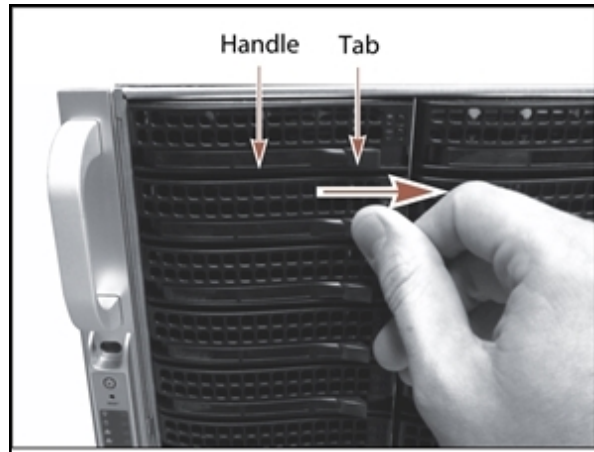


Figure 40 Slide the tab to the right to release the sled handle.

4. Slide the sled completely out of the chassis. If the sled does not slide easily by pulling on the handle, grasp the sides of the sled and pull the sled out of the chassis.

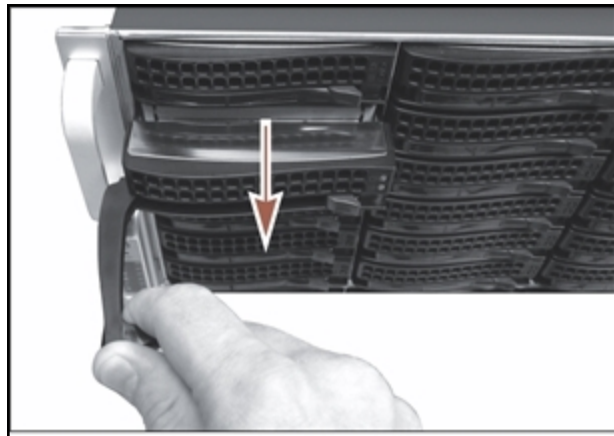


Figure 41 Pull the sled out of the chassis.

5. Dispose of the empty sled in accordance with your company's guidelines.

Install the Drives

1. Drives are shipped installed in a drive sled. Slide the locking tab on the front of the drive sled to the right to release the handle.

2. With the drive handle in the open position, slide the drive sled into the chassis until the front of the drive sled is flush against the chassis. The drive sled slides in easily; do not force it.



Figure 42 Install the drive into the chassis.

3. When the drive sled is in position, push the handle inward and to the right until the locking tab secures it in place. An audible click indicates that the drive sled is locked into position.

Connecting the Interface Cables

Connect the interface cables to the system. [Figure 43](#) shows the location of the connectors. The locations of the connectors are similar on the BlackPearl NAS solution 4U master node and the BlackPearl NAS solution 2U master node.



IMPORTANT Do not connect power cords at this time

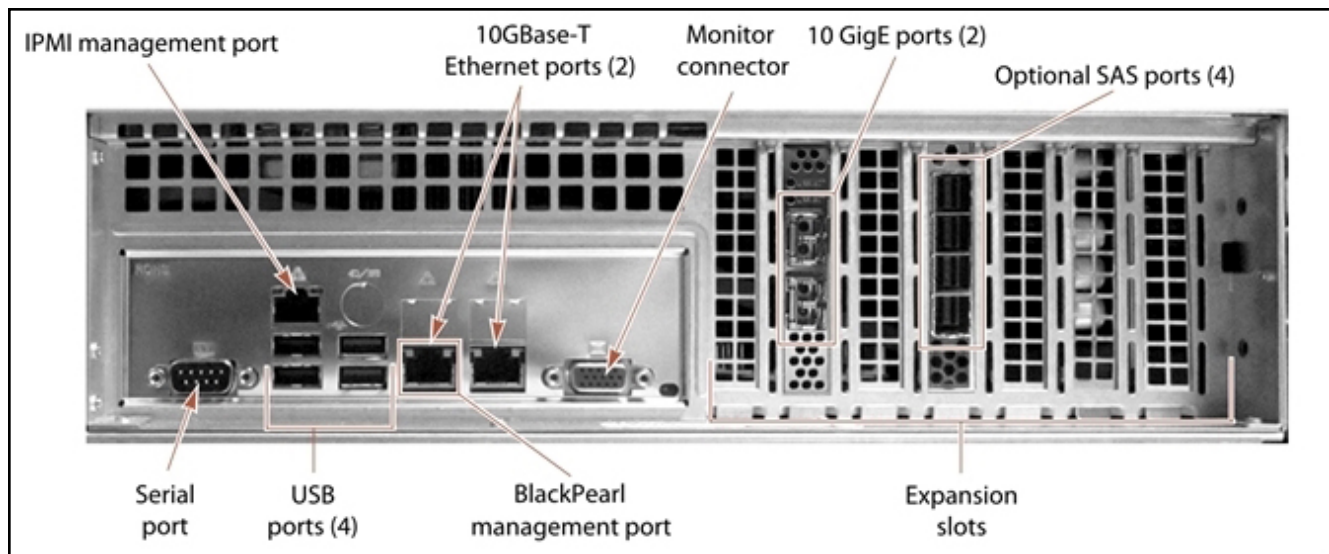


Figure 43 The BlackPearl NAS solution master node rear panel components.

Notes:

- The types of connections available depend on your configuration.
- See the *Spectra BlackPearl HotPair Installation & Configuration Guide* for information on connecting cables for a HotPair configuration.

Use the following steps to connect the interface cables to the BlackPearl NAS solution master node.

1. Connect a Category 5 Ethernet cable to the BlackPearl NAS solution management port on the rear panel. Connect the other end of the cable to an active network over which a computer can access the system. This connection is used to access the web interface.

Note: The BlackPearl NAS solution management port is used to access the web interface and cannot be used for data transfer. Use a separate Ethernet port for data traffic.

2. Connect an Ethernet cable from your network switch to the appropriate connector (10GBase-T or 10 GigE) on the rear panel of the master node (see [Figure 43](#)). This connection provides host access to the RAID storage on the master node. If you plan to configure link aggregation, connect additional cables as needed.

3. If your configuration includes a BlackPearl NAS solution 44-bay expansion node, connect an included SAS cable from any port on the four port SAS card in the BlackPearl NAS solution master node, to the **Front Primary In** connector on the expansion node. Connect a second cable from the master node to the **Rear Primary In** connector on the expansion node.

Notes:

- When inserting cables into one of the four ports on the SAS card in the master node, make sure the cable is fully seated by feeling for two clicks as you insert the cable.
- The BlackPearl NAS solution 96-Bay and 107-Bay expansion node is installed by Spectra Logic professional services and is connected to your BlackPearl NAS solution master node during installation.

Automatically Import Activation Keys

Activation keys enable features on the BlackPearl NAS solution. They are tied to the serial number of the system for which they are issued, and cannot be used on another system. Renewals of expired activation keys are obtained by contacting Spectra Logic Technical Support (see [Contacting Spectra Logic on page 9](#)).

The USB device in the BlackPearl NAS documentation kit contains the activation keys for the options that you purchased.

Note: If your BlackPearl NAS documentation kit does not contain a USB device, see "Manually Enter Activation Keys" in the *Spectra BlackPearl NAS Solution User Guide* for instructions for manually entering the activation keys.

Insert the USB device into a USB port on the back of the system. See [Figure 43 on page 54](#).

Connecting the Power Cords

Use the following steps to connect the power cords to the BlackPearl NAS solution master node and any 44-bay expansion nodes. The figure below shows the BlackPearl NAS solution 4U master node. Power connectors on the BlackPearl NAS solution 2U master node, and the BlackPearl NAS solution 44-Bay expansion node are in similar locations.



IMPORTANT

Do not connect power cords to a BlackPearl NAS solution 96-Bay or 107-Bay expansion node at this time.



IMPORTANT

The chassis power on as soon as you connect the power cord to the AC power outlet.

1. Connect a power cord to each of the power supply connectors.

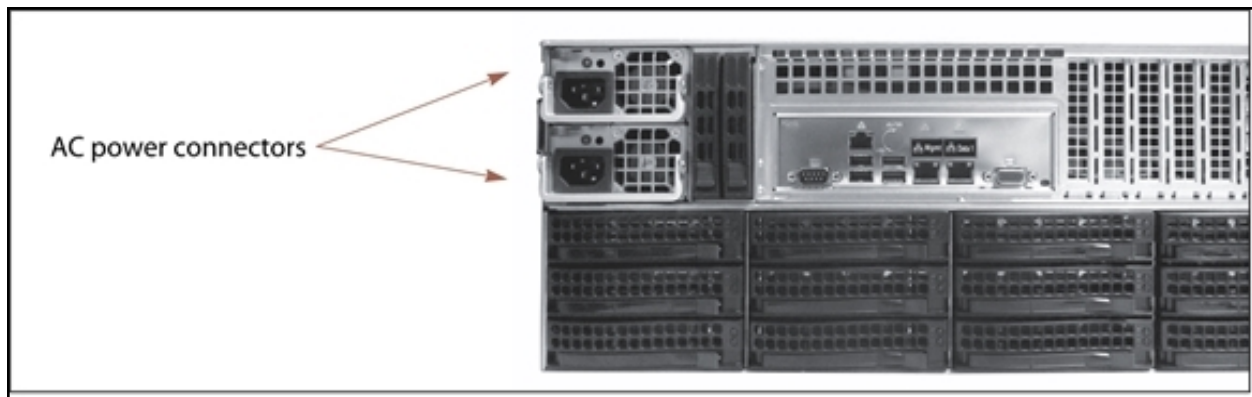


Figure 44 Connect the power cords to the power supplies (BlackPearl NAS solution 4U master node shown).

2. Plug the other end of each cord into an AC power outlet. Spectra Logic recommends connecting the cords to separate electrical circuits for power redundancy.
3. When the BlackPearl NAS solution powers on and detects the Activation Key USB device (see [Automatically Import Activation Keys](#) on page 55) it automatically imports the activation keys and power cycles the system. Wait while the BlackPearl system performs its power-on sequence.

Note: The first time that you log in after importing activation keys, an informational message displays indicating that you can now safely remove the USB device. Use the following steps to close the message:

- i. Remove the USB device.
- ii. On the menu bar, select **Status > Messages**. The messages screen displays.
- iii. Select the message about safely removing the USB device, and then select **Action > Mark as read**. The informational message closes.

Installing the Front Bezel

The front bezel attaches to the chassis using magnets.

1. Orient the front bezel so the Visual Status Beacon light bar is closest to the top and the Spectra logo is not upside down.



Figure 45 The front bezel.

2. Install the front bezel over the front of the chassis. The magnets hold it in place.

Next Steps

Your BlackPearl NAS solution is now installed. For information about configuring and using the system, read the following chapters in the *Spectra BlackPearl NAS Solution User Guide*:

- Read “Initial Configuration” to learn about the required steps to configure the BlackPearl NAS solution.
- Read “Configuring Network Attached Storage” to learn about configuring storage pools and sharing volumes.
- Read “Configuring a BlackPearl NAS solution” to learn how to configure network connections and other settings.
- Read “Monitoring a BlackPearl NAS solution” to learn about day-to-day monitoring and operation.
- If you purchased a HotPair BlackPearl NAS solution, read the *Spectra BlackPearl HotPair Installation & Configuration Guide* for information about configuring a HotPair BlackPearl NAS solution.