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CHAPTER 1

Before You Begin

Audience

This guide is for Data Center System Administrators and Professional Services Consultants who install Pillar Axiom storage systems. We assume that you understand how to:

• Assemble hardware components.
• Connect the components to the LAN and to power circuits.
• Use a graphical user interface (GUI) in a web browser.

This guide explains how to:

• Position and stabilize a populated rack in the data center.
• Create rack bays.
• Install hardware components.
• Connect the system to inlet power and to the networks.
• Turn on the system.
• Perform initial configuration.
• Add additional Slammers and Bricks.
Pillar Axiom System Components

This guide explains how to install the following Pillar Axiom 300 Series components in Pillar Data Systems or non-Pillar Data Systems racks:

Table 1  Pillar Axiom 300 Series components

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bricks</td>
<td>BRX 500-160A7</td>
</tr>
<tr>
<td></td>
<td>BRX 500-250A7</td>
</tr>
<tr>
<td></td>
<td>BRX 500-400A7</td>
</tr>
<tr>
<td></td>
<td>BRX 500-500A7</td>
</tr>
<tr>
<td>Slammer (and batteries)</td>
<td>SLM 500</td>
</tr>
<tr>
<td>Pilot</td>
<td>Axiom Pilot</td>
</tr>
<tr>
<td>Power distribution units (PDU)</td>
<td>Pulizzi TPC2104/5</td>
</tr>
<tr>
<td></td>
<td>Pulizzi PC3365</td>
</tr>
<tr>
<td></td>
<td>Marway</td>
</tr>
</tbody>
</table>

Customer-Supplied Materials

You need the following tools to install a Pillar Axiom system:

Table 2  Required tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4-in (7-mm) flat-tip screwdriver</td>
<td>Adjust leveling feet.</td>
<td></td>
</tr>
<tr>
<td>Adjustable wrench, 6 in (15 cm)</td>
<td>Adjust leveling feet.</td>
<td></td>
</tr>
<tr>
<td>#1 and #2 Phillips-head screwdrivers</td>
<td>Remove and secure Pillar Axiom hardware components.</td>
<td></td>
</tr>
<tr>
<td>Socket wrench with a 1/2-in (13 mm) socket</td>
<td>Connect two racks.</td>
<td></td>
</tr>
</tbody>
</table>
Customer-Supplied Materials

Chapter 1 Before You Begin

Note: Pillar Data Systems does not provide these tools.

To install a Pillar Axiom storage system you need to have the following equipment and supplies before you start:

Table 2 Required tools (continued)

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torx® T20 screwdriver</td>
<td>Attach rail assemblies to the vertical channels and secure hardware components to the rails.</td>
<td>![Screwdriver Illustration]</td>
</tr>
<tr>
<td>Torx T30 screwdriver</td>
<td>Connect two racks.</td>
<td>![Screwdriver Illustration]</td>
</tr>
<tr>
<td>Wire cutters</td>
<td>Cut tie wraps.</td>
<td>![Wire Cutters Illustration]</td>
</tr>
</tbody>
</table>

Table 3 Required equipment and supplies

<table>
<thead>
<tr>
<th>On hand?</th>
<th>Item</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>At least two power sources on independent circuits with appropriate connectors for the voltage and amperage ratings</td>
<td>Provide power to the PDUs. Axiom systems require redundant power supplies from two PDUs on separate input circuits.</td>
</tr>
<tr>
<td>□</td>
<td>Copper Ethernet switch with two open 10/100 ports</td>
<td>Connect Pilot management ports to the Ethernet LAN.</td>
</tr>
<tr>
<td>□</td>
<td>Two Category 5 100BaseT cables</td>
<td>Connect Pilot management ports to the Ethernet switch.</td>
</tr>
<tr>
<td>□</td>
<td>For each NAS Slammer, two to four GbE-capable (copper or optical) cables</td>
<td>Connect NAS Slammer network data ports to the LAN.</td>
</tr>
<tr>
<td>□</td>
<td>For each NAS Slammer, a copper or optical Ethernet switch with at least two open GbE ports</td>
<td>Each NAS Slammer has four network data ports. At least one port per Slammer control unit (CU) must be connected.</td>
</tr>
<tr>
<td>□</td>
<td>For each SAN Slammer, two to four SAN Fiber-optic cables</td>
<td>Connect SAN Slammer data ports to the fabric.</td>
</tr>
<tr>
<td>□</td>
<td>For each SAN Slammer, two to four open ports on the SAN fabric</td>
<td>Each SAN Slammer has four data ports. At least one port per Slammer control unit (CU) must be connected.</td>
</tr>
</tbody>
</table>
Table 3  Required equipment and supplies  (continued)

<table>
<thead>
<tr>
<th>On hand?</th>
<th>Item</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>Workstation on the same LAN as the Pilot and with a supported browser:</td>
<td>Connect to the AxiomONE Storage Services Manager to carry out the final installation tasks.</td>
</tr>
</tbody>
</table>

Safety Notice Conventions

Hazard signal words conform to the American National Standards Institute (ANSI) Z535.4-1998 meanings. This guide uses the following conventions for safety notices:

- **DANGER**: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

- **CAUTION**: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**Important!** To emphasize a point, to remind you of something, or to indicate potential problems in the outcome of the in-process task.

A set of important safety notices apply throughout this guide. Read them before working on a Pillar Axiom system. See Appendix B, [Safety Statements](#).

Additional Documentation

Before you install the Pillar Axiom system, refer to the following resources that you completed with the assistance of your Pillar Data Systems representative:

- [Site Preparation Survey](#)
- [Storage Requirements Survey](#)

Use the following resources as you work with an Axiom storage system.
Table 4  Additional resources

<table>
<thead>
<tr>
<th>For information on...</th>
<th>Refer to this document...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terms used within this document</td>
<td>Pillar Glossary</td>
</tr>
<tr>
<td>Axiom system hardware and software architecture</td>
<td>System Architecture Overview</td>
</tr>
<tr>
<td>How to configure, monitor, and administer a system</td>
<td>Administrator’s Guide</td>
</tr>
<tr>
<td>How to develop scripts or set up batch processes</td>
<td>CLI Reference Guide</td>
</tr>
<tr>
<td>How to replace or upgrade hardware components</td>
<td>Service Guide</td>
</tr>
</tbody>
</table>

Contact Information

Table 5  Contacts at Pillar Data Systems

<table>
<thead>
<tr>
<th>For help with...</th>
<th>Contact...</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Error messages</td>
<td>Context-sensitive help that is available in the graphical user interface (GUI).</td>
</tr>
<tr>
<td>• Usage questions</td>
<td><a href="mailto:support@pillardata.com">support@pillardata.com</a>.</td>
</tr>
<tr>
<td></td>
<td>USA: 1-877-4PILLAR (1-877-474-5527)—request</td>
</tr>
<tr>
<td></td>
<td>Technical Support at the prompt.</td>
</tr>
<tr>
<td></td>
<td>International: +1 408 518 4400.</td>
</tr>
<tr>
<td></td>
<td>Web: <a href="http://support.pillardata.com/">http://support.pillardata.com/</a></td>
</tr>
<tr>
<td></td>
<td>Have your system serial number ready.</td>
</tr>
<tr>
<td>• Implementation assistance</td>
<td><a href="mailto:sales@pillardata.com">sales@pillardata.com</a>.</td>
</tr>
<tr>
<td>• System information</td>
<td>USA: 1-877-4PILLAR (1-877-474-5527)—request</td>
</tr>
<tr>
<td>• Enhancement requests</td>
<td>Sales at the prompt.</td>
</tr>
<tr>
<td></td>
<td>International: +1 408 503 4200.</td>
</tr>
<tr>
<td>Documentation improvements and resources</td>
<td><a href="mailto:docs@pillardata.com">docs@pillardata.com</a>.</td>
</tr>
</tbody>
</table>
CHAPTER 2

Set Up the Rack

Unpack the Components

Each Pillar Axiom storage system is built to a customer’s specifications and shipped in a single shipment. Check the components you received against the packing slip (or bill of lading), which lists everything that was shipped. If any components are missing, call 1-877-4PILLAR (474-5527) and report what was not included in your shipment. Note how many pallets or containers you received, in case the missing components are in a container that simply has not yet arrived.

**CAUTION**
A Brick weighs up to 65 lb (29.5 kg). For safe handling, use two people to lift it.

**CAUTION**
A Slammer weighs 94 lb (42.6 kg). For safe handling, use two people to lift it.

**CAUTION**
Before you handle a component, make sure that you have taken electrostatic discharge precautions:

- The minimum requirement is an anti-static wrist strap connected to a hard ground. We recommend that you remove components from their packaging and place them on an ESD-qualified table equipped with ground points for wrist straps.

- Static charges can build up rapidly on rolling carts. If you transport a hardware component by cart, ground the cart with a drag chain on an ESD floor. If there is no ESD cart available or ESD floor, ground yourself before you touch a component that has been transported on a cart.
After you remove the components from their packaging, inspect them for any damage that may have occurred enroute. If there is any damage:

1. Check your Terms of Sale to see who notifies the carrier.
2. Notify the carrier or Pillar Data Systems, as appropriate, within 72 hours.
3. Record all damage.
4. Call Technical Support to open a service request for future insurance claims.

Tip: Check the packing materials to verify that you have retrieved all the small parts before recycling.

_Important!_ Pillar Axiom components are compatible with racks that are compliant to the EIA-310-D standard. Pillar Axiom Slammers and Bricks may not install successfully into a rack that is not EIA-310-D compliant.

Illustrations show a Pillar Axiom 42U rack or parts of it. If you have a non-Pillar rack, it should be similar.

---

**Position the Rack**

The following figure illustrates a floor plan for new rack installations. The space around the rack (or bay, if you have multiple racks) is needed to perform the installation tasks safely.

*Figure 1  Floor plan for rack installation*
Connect Multiple Racks

If you are installing more than one rack, connect them together first. If you do not have multiple Pillar racks, skip to Adjust the Leveling Legs.

Prepare the Racks

To create a bay of Pillar racks, first remove the adjacent (inner) side panels from each rack and move the racks into position. You will route the cables directly from one rack to the other through the open sides because the cables are not long enough to route through a raised floor.

Figure 2 Sample 42U side panels

To remove a side panel from a rack:

1. If locked, unlock the side panel.
2. Unlatch the side panel by:
   - Pushing the release button, or
   - Lifting the release handle(s).
3. Remove the side panel and set it aside.
4. Position the racks so that their open sides abut and their front sides are flush.
Chapter 2 Set Up the Rack

Attach the Connection Bracket

The connection bracket provides extra rigidity to the bay.

**Important!** Make sure at least one of the racks is not anchored so you can adjust its position as you attach them together.

To attach the connection bracket:

1. Locate the two adjacent frame corners at the top and rear of two racks to be connected.

2. Place the connection bracket into the frame corner.

3. Insert an M8 hex screw through the hole in one of the bracket corners.

4. Loosely screw the M8 screw into the threaded hole in the frame.

---

**Figure 3 Location of frame corners**

Front

Top rear frame corner

Second rack

Threaded screw holes

Looking up into top rear frame corner, with a second rack moved close for attachment

---

**Figure 4 Connection bracket installation**

Frames

Baying connection bracket

M8 hex screws
5 Insert an M8 hex screw through one of the other corner holes in the bracket and loosely screw it into the threaded hole in the frame.

6 Repeat Step 5 for the other two corner holes.

Note: You will tighten the screws after all the bay connections are in place.

## Attach the Baying Plates

Baying plates bind two Pillar racks together at the roof and bottom of the rack.

Tip: Use the stabilizer plate described in Install a Stabilizer Plate in conjunction with the baying kit that comes with each rack.

To attach the baying plates at the top:

1 At the front of each rack roof, use a T30 Torx® screwdriver to remove the two adjacent Torx-head screws and set them aside.

2 Place a baying plate over the two holes.

![Figure 5 Roof baying plate attachment](image)

3 Insert a Torx screw (from Step 1) into each plate hole.

4 Re-seat the Torx screws loosely.

5 Repeat Steps 1 through 4 for the two holes at the back of the roof.
6 At the bottom of the adjacent rack sides, remove the anti-tip brackets, if any, and unscrew the anchor bolts.

Figure 6 Adjacent anchor bolts at the front of the racks

7 Hold the baying plate across the two anchor-bolt holes and loosely replace the anchor bolts.

8 Repeat Steps 6 and 7 in the back of the racks.

9 Use the socket wrench to tighten the connection bracket screws.

10 Use the T30 Torx-head screwdriver to tighten the top baying plate screws.

11 Use the 3/4-in (19-mm) open-end wrench to tighten the bottom baying plate anchor bolts.
Adjust the Leveling Legs

Racks have built-in leveling legs at each corner. Adjust these legs so they are in firm contact with the floor and the rack is level. If the rack connects to others, adjust the legs so the racks are at the same height and can be bolted together.

To adjust the legs:

1. Turn each leveling leg clockwise to lower the feet until they touch the floor. Use a 1/4-in (7-mm) flat-tip screwdriver in the slot at the top of the leg.

2. Use a 3/4-in (19-mm) open-end wrench on the bottom of the legs to jack up the rack. Raise the rack until level with all the casters off the floor.

   If you connect racks in a bay it is more important that the racks be at the same height than level so that you can bolt them together.
Stabilize the Rack

After you move the rack to its final position and adjust the legs, you must stabilize it to keep it from shifting when you install the components.

You can take any one of the following actions to stabilize the rack:

- Attach anti-tip brackets and secure them to the floor.
- Attach a stabilizer plate and secure it to the floor.
- Install a seismic stabilization system.

**Important!** If the rack will be part of a bay of racks, attach the rack to the bay before you install stabilizer plates or some other stabilization system.

Install the Anti-Tip Brackets

One stabilization option is to install the anti-tip brackets that are included with the system. Before you install the anti-tip brackets, consider:

- If you intend to bay the rack with another Pillar rack, you must use baying plates on connecting corners. Baying plates prevent the use of anti-tip brackets so you must stabilize the bay with stabilization plates.

- Make sure that the rack is in its final position before you secure anti-tip brackets to the floor.

- Anti-tip brackets may require a sub-floor tie-down system if the floor has removable panels.

- For solid floors, drill holes into the floor and use appropriate anchor bolts to secure the anti-tip brackets.

  **Important!** If you intend to install an optional stabilizer plate, do not install the front anti-tip brackets.
To install the anti-tip brackets:

1. Screw the anchor bolt into the bottom outside corner of the rack frame until the bolt is seated.

   **Figure 9 Attach anchor bolts to rack**

2. Slide the bracket fingers into the anchor bolt pocket.

   **Figure 10 Position anti-tip brackets**

3. Position the anti-tip bracket so that it points away from the rack and is parallel to the sides.
4 Adjust the anchor bolt so that it is finger-tight against the anti-tip bracket, and secure the anti-tip bracket to the floor.

Figure 11 Secure anti-tip brackets to the floor

5 Repeat Step 1 through Step 4 for all four corners.

Install a Stabilizer Plate

At the front of the rack, you can install an optional stabilizer plate instead of anti-tip brackets. Stabilizer plates provide greater stability than anti-tip brackets, which must be removed in order to install a stabilizer plate. You cannot use anti-tip brackets in a bay because the anchor bolts are used to hold the baying plates in place. Therefore you should use stabilizer plates for racks in a bay.

Also note that if you have removable floor panels, you must bolt the stabilizer plates through to the solid sub-floor.

To install a stabilizer plate:

1 Place the stabilizer plate at the front of the rack with the short side up.
2 Align the holes in the short side with the holes in the rack frame. Adjust the leveling legs to raise or lower the rack to align the plate and rack holes.
3 Insert an M8 bolt into each hole in the short side of the stabilizer plate.
4 Use the hex wrench to tightly bolt the stabilizer plate to the rack.

Figure 12  Stabilizer plate attached to the rack base and floor

5 Secure the stabilizer plate to the floor with bolts and washers that are appropriate for the type of floor.

Important! The floor bolts must be no smaller than M12.

Component Placement

This section helps you locate Pillar Axiom components within a rack and gives you the rack unit (U) heights of these components.

The figure below illustrates how the Pillar Axiom storage system components are mapped into a fully loaded 42U rack. The first figure illustrates the mapping for a rack that contains the following maximum configurations:

- For a one-Slammer system:
  - 1 Pilot
  - 1 Slammer
  - 16 Bricks
• For a two-Slammer system:
  • 1 Pilot
  • 2 Slammers
  • 14 Bricks

Note: 2U of space is reserved above the PDUs for cable routing. The number and type of PDUs depends on the power supply. If more PDUs are needed, then everything has to move up to make room, keeping the 2U of reserved space, and moving any Bricks displaced at the top to the next rack.

Figure 13  Hardware mapping in a fully loaded 42U rack

A Pillar Axiom storage system can contain a maximum of 32 Bricks. The additional Bricks must be placed in a second 42U rack. The figure below illustrates how these residual Bricks are mapped into a second 42U rack.
Chapter 2 Set Up the Rack

Note: In a system that is configured for the maximum number of Bricks, you should connect the additional racks to the first rack before you install and cable the hardware components. Start populating each subsequent rack at the top to facilitate cabling. A high center of gravity is not a problem because the racks are secured to each other and to the floor.

Figure 14 Hardware mapping for Bricks in additional racks

![Diagram showing hardware mapping for Bricks in additional racks]

Note: Brick names are just for illustration; actual names, as seen in the AxiomONE Storage Services Manager, may be different.
Install Slammer Rack Rails

Slammer rails are 4U rack rail assemblies that contain the following parts:

### Table 6 Slammer rail kit parts (not to scale)

<table>
<thead>
<tr>
<th>Component</th>
<th>Drawing</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slammer rails</td>
<td><img src="image" alt="Slammer rails" /></td>
<td>One left-right pair per kit.</td>
</tr>
<tr>
<td>1475-00024-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1475-00025-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slammer rail scopes</td>
<td><img src="image" alt="Slammer rail scopes" /></td>
<td>One left-right pair per kit.</td>
</tr>
<tr>
<td>2525-00093-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2525-00095-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-32 Hex nuts for attaching scopes to rails</td>
<td><img src="image" alt="Hex nuts" /></td>
<td>Eight per kit</td>
</tr>
<tr>
<td>2500-01051-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack mount spacers</td>
<td><img src="image" alt="Rack mount spacers" /></td>
<td>Eight per kit</td>
</tr>
<tr>
<td>2500-01065-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-32 x 1/2 in Torx head (#20) screws</td>
<td><img src="image" alt="Torx head screws" /></td>
<td>Ten per kit</td>
</tr>
<tr>
<td>2500-01071-xx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Verify that the rail kit contains all the parts listed in the table.

To install a pair of Slammer rails, you need:

- One Slammer rack rail kit with rails and scopes pre-attached
- #20 Torx wrench
- Socket wrench
To install a pair of Slammer mounting rails:

1. Hang the scope hook in the appropriate hole at the back of the rack, as shown below. These rail scopes are always used for components that take up at least two rack units.

![Scope hook attachment](http://example.com)

**Figure 15  Scope hook attachment**

In the figure above, two labeled rack units, 31 and 32, are shown at the back of the rack.

- The bottom of unit 31 is just out of sight below its bottom hole.
- The scope hook is one-and-a-half units above the bottom of the rail.
- When you place the hook in the middle of unit 32, the bottom of the rail lines up with the bottom of unit 31.
- A 4U Slammer rail would fill units 31-34 in the above illustration.

2. At the front of the rack, slide the rail scopes until the rail reaches the holes at the front.

3. Making sure the rail is horizontal, place a spacer on a #20 Torx screw and screw it through the bottom hole in the front frame and into the rail, as shown in the next figure. Repeat this for the hole above it (but not the top hole, which is for securing the Slammer).

4. Secure the screws at the back, under the scope hook.
5  Repeat steps 1-4 for the other side rail.

Figure 16 Slugger rails installed in rack

6  Tighten the four slider lock nuts that attach each rail scope to the rail.
Install Brick Rack Rails

Brick rails are 2U rack rail assemblies that contain the following parts:

Table 7  Brick rail kit parts (not to scale)

<table>
<thead>
<tr>
<th>Component</th>
<th>Drawing</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick rails</td>
<td><img src="image" alt="Brick Rail" /></td>
<td>One left-right pair per kit.</td>
</tr>
<tr>
<td>1450-00022-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1450-00023-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick rail scopes</td>
<td><img src="image" alt="Brick Rail Scope" /></td>
<td>One left-right pair per kit.</td>
</tr>
<tr>
<td>2525-00093-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2525-00095-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-32 Hex nuts for attaching scopes to rails</td>
<td><img src="image" alt="Hex Nut" /></td>
<td>Eight per kit</td>
</tr>
<tr>
<td>2500-01051-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack mount spacers</td>
<td><img src="image" alt="Rack Mount Spacer" /></td>
<td>Four per kit</td>
</tr>
<tr>
<td>2500-01065-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-32 x 1/2 in Torx head (#20) screws</td>
<td><img src="image" alt="Torx Screw" /></td>
<td>Ten per kit</td>
</tr>
<tr>
<td>2500-01071-xx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Verify that the rail kit contains all the parts listed in the table.

To install a pair of 2U rack rails, you need:

- One Brick rail kit with rails and scopes pre-attached
- #20 torx wrench
- Socket wrench
To install a pair of Brick mounting rails:

1. Hang the scope hook in the appropriate hole at the back of the rack, as shown below. These rail scopes are always used for components that take up at least two rack units.

   **Figure 17 Scope hook attachment**

   In the figure above, two labeled rack units, 31 and 32, are shown at the back of the rack.

   - The bottom of unit 31 is just out of sight below its bottom hole.
   - The scope hook is one-and-a-half units above the bottom of the rail.
   - When you place the hook in the middle of unit 32, the bottom of the rail lines up with the bottom of unit 31.
   - A 2U Brick rail would fill units 31-32 in the above illustration.

2. At the front of the rack, slide the rail scopes until the rail reaches the holes at the front.
3 Making sure the rail is horizontal, place a spacer on a #20 Torx screw and screw it through the center hole in the front frame and into the rail, as shown in the next figure. Repeat this for the other center screw in the front and the screws at the back, under the scope hook.

The square hole in the front is at the top on the left side and at the bottom on the right side. These square holes are for securing the Brick. Use only the round holes to secure the rails into the rack.

Figure 18 2U rack rails installed in rack

4 Repeat steps 1-3 for the other side rail.

5 Tighten the four slider lock nuts that attach each rail scope to the rail.
## Install Pilot Rack Rails

Pilot rails are 2U rack rail assemblies that contain the following parts:

<table>
<thead>
<tr>
<th>Component</th>
<th>Drawing</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot rail kits</td>
<td><img src="image1.png" alt="Image" /></td>
<td>One left-right pair per kit</td>
</tr>
<tr>
<td>1475-00036-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1450-00037-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilotrail scopes</td>
<td><img src="image2.png" alt="Image" /></td>
<td>One left-right pair per kit</td>
</tr>
<tr>
<td>2525-00093-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2525-00095-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-32 Hex nuts for attaching scopes to rails</td>
<td><img src="image3.png" alt="Image" /></td>
<td>Eight per kit</td>
</tr>
<tr>
<td>2500-01051-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack mount spacers</td>
<td><img src="image4.png" alt="Image" /></td>
<td>Four per kit</td>
</tr>
<tr>
<td>2500-01065-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack mount nut bar</td>
<td><img src="image5.png" alt="Image" /></td>
<td>Two per kit</td>
</tr>
<tr>
<td>2526-00106-xx</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-32 x 1/2 in Torx head (#20) screws</td>
<td><img src="image6.png" alt="Image" /></td>
<td>12 per kit</td>
</tr>
<tr>
<td>2500-01071-xx</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Verify that the rail kit contains all the parts listed in the table.
Before installing a pair of Pilot rack rails, make sure you have:

- One Brick rail kit with rails and scopes pre-attached
- #20 Torx wrench
- Socket wrench

To install a pair of Pilot mounting rails:

1. Hang the scope hook in the appropriate hole at the back of the rack, as shown below:

   ![Figure 19 Scope hook attachment](image)

   In the figure above, two labeled rack units, 31 and 32, are shown at the back of the rack.

   - The bottom of unit 31 is just out of sight below its bottom hole.
   - The scope hook is one-and-a-half units above the bottom of the rail.
   - When you place the hook in the middle of unit 32, the bottom of the rail lines up with the bottom of unit 31.
   - A 2U Pilot rail would fill units 31-32 in the above illustration.

2. At the front of the rack, slide the rail scopes until the rail reaches the holes at the front. The rail flange goes in front of the rack mount holes, and the four-hole spacer bar goes behind, as shown below.
3. Making sure the rail is horizontal, fit the four-hole spacer bar into the four square rack holes that span the boundary between the two units this rail is to occupy. The figure below shows positioning a spacer for units 35 and 36.

Figure 20  Positioning spacer bar

4. Use two #20 torx screws to secure the rail, through the rack into the spacer bar. Repeat this for a second screw in the front, as shown above. Use the center holes. The top and bottom holes are for securing the Pilots to the rack.

Figure 21  Pilot rail front attachment
5 At the back, place a spacer on a #20 Torx screw and screw it through the hole in the rear frame and into the rail under the scope hook. Install the second screw the same way.

6 Repeat steps 1-4 for the other side rail.

7 Tighten the four slider lock nuts that attach each rail scope to the rail.
CHAPTER 3

Install Components

Install Power Distribution Units

Mount power distribution units (PDUs) in the bottom units of the rack. The default configuration places up to four 1U 220v/30a PDUs at the bottom of the rack.

To install a PDU, you need:

- A 1U or 3U PDU.
- #2 Phillips-head screwdriver.
- Four snap-in cage nuts (for square mounting holes) or four clip-on cage nuts (for round mounting holes).
- Four 10-32 x ½ in screws.

**Important!** We strongly recommend that you use PDUs from Pillar Data Systems. If you install non-Pillar PDUs, they must meet the Pillar Data Systems PDU specification, as described in the *Pillar Axiom System Site Planning Guide*.

To install a 1U PDU:

1. Choose one of the following options:
   - For square mounting holes, snap a 10-32 snap-in cage nut into the bottom and 3rd hole of each channel.

   ![Snap-in cage nut](image)
• For round mounting holes, clip one 10-32 clip-on cage nut into the bottom and 3rd holes of each channel in the pair. (Pillar Data Systems does not provide clip-on cage nuts.)

2 Insert the PDU into the rack, as shown below. There are no rails for a PDU.

![Figure 23 Securing a 1U PDU in the bottom of a rack](image)

3 Align the ears of the PDU to the four cage nuts.

4 Insert a 10-32 x ½ in screw through the top and bottom holes in the right and left ears of the PDU and into the cage nuts. Secure both screws tightly.

![Figure 24 An installed PDU at the bottom of the rack](image)

**Important!** Do not plug the PDU into a power supply until the rack is complete and ready for start-up.

Repeat the procedure to install any other PDUs.
To install a 3U PDU:

1. For square or round mounting holes:
   - Insert one 10-32 snap-in cage nut into the 3rd hole from the bottom of each channel in the pair.
   - Insert one 10-32 snap-in cage nut into the 7th hole from the bottom of each channel in the pair.

2. Align the slots in the PDU ears to the four cage nuts.

3. Insert a 10-32 x ½ in screw through the bottom hole in the right and left ears of the PDU and into the cage nuts. Secure both screws tightly.

4. Repeat Step 3 for the top holes in both ears.

**Important!** Until you are instructed to do so, do not plug the PDU into an inlet power supply.

---

**Install a Pilot**

Install the Pilot at the bottom of the rack, just above the PDUs. This placement makes installation and future expansion as efficient as possible.

**WARNING**
Ensure that component distribution in the rack is balanced. Follow the hardware placement map to ensure this balance. Uneven distribution can cause hazardous instability. The rack must have stabilization plates or anti-tip brackets installed so the rack does not tip when you install a component.

**WARNING**
Mounting rail assemblies must be used to support and secure a Pilot in the rack. The Pilot’s mounting ears by themselves will not support the weight of the Pilot.

To install a Pilot:

1. Put on an antistatic wrist strap and attach the grounding wire to ground.

2. From the front of the rack, place the back side of the first Pilot server component on the bottom mounting rails and slide it into place.

   **Important!** When sliding a Pilot CU into the rack, keep it level to avoid bending the rail supports.
3 Insert the other Pilot CU above it, as shown below.

![Figure 25 Inserting the upper Pilot server component](image)

4 Use a 10-32 Torx screw through the hole in each Pilot server component ear and screw it in securely with a #20 Torx wrench.

**Important!** Do not plug the chassis into a PDU until instructed to do so.

![WARNING] Never block the inlet and outlet holes in the chassis components. Sufficient air circulation is required for the components to operate properly and to avoid a fire hazard. Do not push objects of any kind into the ventilation holes. Such action could result in fire or electrical shock. Keep all liquids away from hardware components.
Install a Slammer

Install the Slammers above the Pilot.

**CAUTION**  
A Slammer weighs 94 lb (42.6 kg). For safe handling, use two people to lift it.

**WARNING**  
Ensure that component distribution in the rack is balanced. Follow the hardware placement map to ensure this balance. Uneven distribution can cause hazardous instability. The rack must have stabilization plates or anti-tip brackets installed so the rack does not tip when you install a component.

To install a Slammer:

1. Put on an antistatic wrist strap and attach the grounding wire to ground.

2. From the front side of the rack, set the back of the Slammer onto the mounting rails and slide the Slammer into place. Leave about one inch (2.5 cm) of clearance between the Slammer’s ears and the vertical channels.

**Important!** When sliding the Slammer into the rack, keep it level to avoid bending the rail supports, which would make it difficult to insert a component below.
Figure 26 Inserting a Slammer

3 Put a spacer on a 10-32 x 1/2-in Torx screw, then insert the screw through the hole in the ear on the left side of the Slammer. This spacer helps to center the Torx screw in the hole.

4 Push the Slammer so that its ears and the spacers rest against the vertical channels and start the Torx screws with your fingers.

5 Use a #20 Torx wrench to secure the screws to the rack.
   Note: This step only keeps the Slammer in place; the screws provide no other support.

6 Repeat Steps 3-6 for the right side of the Slammer.

If you have a 2-Slammer system, install the second Slammer now.

Important! Do not apply power to the Slammer until instructed to do so.
Install a Brick

Pillar Data Systems packages and ships the Bricks separately from the system. As you install the Bricks, work from the bottom of the rack toward the top. If you have additional racks of Bricks, work from the top down.

1. Put on an antistatic wrist strap, ground strap, or heel strap, and attach the grounding wire to a ground.

2. At the front of the rack, insert the Brick onto the mounting rack rails and slide into place.

**CAUTION** Bricks weigh up to 65 lb. (29.5 kg) each. For safe handling, use two people to lift it.

**Important!** When you slide the component into the rack, keep it level to avoid bending the rail supports, which would make it difficult to insert a component below.

Figure 27 Inserting a Brick
3 Use two, 10-32 Torx screws (two on each side) and a Torx T20 driver to secure the Brick ears to the rack.

**Important!** Use care as you install the screws on the right to avoid damaging the printed circuit, which provides power and signals to the Brick bezel.

![Figure 28 Brick ears](image)

4 Inspect the disk drives to ensure each drive is flush and securely seated.

To seat an improperly seated disk drive:

- Fully open the cam latch on the disk drive carrier.
- Press the disk drive carrier into the Brick chassis until it stops.
- Close the cam latch until it snaps shut to engage the disk drive with the Brick midplane.

![Figure 29 Brick front](image)

If you have multiple Bricks, install them all now, even those that require additional racks.
Install the Slammer Batteries

Slammer batteries are shipped separately. Use the following procedure to install them.

1. Ensure the installation dates on the Slammer batteries have not expired. If a battery has expired, contact Technical Support.

2. Slammer batteries install from the front of the Slammer, so you have to remove the front cover (bezel). If the bezel is not attached, skip to step 5.

3. Press the Slammer ejector tabs on the bezel to unlock them.

4. Lift both ejector tabs to disengage the bezel from the rack.

Figure 30 Slammer bezel removal
5 Insert the batteries into the Slammer, but do not secure them until you complete the installation. When you secure them, they start to discharge as they preserve data in memory. Since there is no data to preserve, you should wait until you are ready to power the system before securing the batteries.

Figure 31 Slammer battery insertion
Cable Requirements

Connections between the Pilot and a Slammer and between the Slammer’s control units require a total of three Ethernet Cat 5e cables.

Fibre Channel patch cables that connect the Slammer and Bricks support the private management interface and the Storage System Fabric (SSF). These cables come in two lengths: 20 inches (0.5 m) and 6.5 feet (2 m). The purpose of these sizes is outlined in the following table.

Table 9  FC patch cable purposes

<table>
<thead>
<tr>
<th>If the purpose is ...</th>
<th>Use this cable ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>To connect Slammer control units</td>
<td>20 in (50.8 cm)</td>
</tr>
<tr>
<td>To connect Slammers to Bricks</td>
<td>6.5 ft (2 m)</td>
</tr>
<tr>
<td>To connect Brick RAID controllers</td>
<td>20 in (50.8 cm)</td>
</tr>
<tr>
<td>To cascade Bricks</td>
<td>6.5 ft (2 m)</td>
</tr>
</tbody>
</table>

The Cat 5e and Fibre Channel cables that you need are included in your installation kit.

When running a Fibre Channel cable, be sure not to bend it into a turn with a radius of less than two inches (5.1 cm). Also, do not tighten tie wraps or fasteners so tightly that they crimp the cable casing.

Note: The cables shown in the figures in this chapter are colored to make them easier to follow, but they are actually black. Attach matching labels to the ends of each cable to help you keep track of your connections.
Slammer CU Interconnections

The Slammer contains two control units (CUs) that must be connected together so that if one CU fails the other one can take over. Connect the control units as shown below. Note that port FC1 in each CU connects to port FC8 in the other CU. Use an Ethernet cable to connect the ETH1 ports together.

![Figure 32 Cables interconnect control units](image)

Brick CU Interconnections

Each RAID controller in a Brick manages six disk drives. If one of the controllers fails, the other takes control of all disk drives. To support the failover feature, connect the RAID controllers with the 20 in (0.5 m) Fibre Channel cable, as shown below. Port FC0 in each RAID controller connects to port FC3 in the other.

![Figure 33 FC cables connect Brick RAID controllers for failover](image)

Note:
Pilot CU Interconnections

Each control unit in a Pilot can take over if the other fails. To support the failover feature, connect the controllers with the Cat 5e cable between Ethernet port 0 on each CU.

Figure 34  Cat5e cables connect Pilot controllers for failover

Connections with One Slammer

This topic describes connecting a Pilot to the Slammer with Ethernet cables and connecting Bricks to the Slammer with Fibre Channel cables through a Storage System Fabric (SSF).

Pilot-to-Slammer Connections

The Fast Ethernet connection between the Pilot and the Slammer control units provides the Pillar Axiom private management interface with a redundant data path in case of a Slammer control unit failover.

To cable the Pilot to one Slammer:

1. Make the Cat 5e Ethernet connections between the Pilot and Slammer ports. Use the information in the table below to guide you.

Table 10  Cat 5e connections for internal management

<table>
<thead>
<tr>
<th>From</th>
<th>CU</th>
<th>Port</th>
<th>To</th>
<th>CU</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot</td>
<td>0</td>
<td>ETH-1</td>
<td>Slammer-1</td>
<td>0</td>
<td>ETH-0</td>
</tr>
<tr>
<td>Pilot</td>
<td>1</td>
<td>ETH-1</td>
<td>Slammer-1</td>
<td>1</td>
<td>ETH-2</td>
</tr>
</tbody>
</table>
2 Verify your Cat 5e connections against the following figure.

**Figure 35 Pilot cabled to one Slammer**

Run the data cables so that they do not obstruct component replacement. They should go down the rear corner of the rack opposite from the power cables, which can cause interference if they are run alongside data cables. Use the tie wraps and velcro straps provided to secure bundles of cables to the rack.

Ethernet cables are not labeled. Use the shortest cable you can. However, make sure that:

- They are properly dressed to the side, so that other components can be removed without unplugging the cable.
- The cable is not so taut that it puts a strain on the connectors.

**Brick-to-Slammer Connections**

**Connect SATA Bricks to One Slammer**

This section describes the cabling needs for connecting SATA Bricks to a single Slammer.

One Slammer can manage from 2 to 32 SATA Bricks. This section describes how to cable these SATA Bricks. It covers connecting the control units within each Brick as a failover capability and connecting Bricks to Slammers.
Brick and Slammers are connected by the Storage System Fabric (SSF). The example below shows how to connect five Bricks to a Slammer. Connect the Brick control units (CUs) to the Slammer with the 6.5 ft (2 m) Fibre Channel (FC) cables, as shown in the table below.

Table 11  SATA Brick / Slammer FC connections

<table>
<thead>
<tr>
<th>From</th>
<th>CU</th>
<th>Port</th>
<th>To</th>
<th>CU</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick-1</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS2</td>
</tr>
<tr>
<td>Brick-1</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS0</td>
</tr>
<tr>
<td>Brick-2</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS0</td>
</tr>
<tr>
<td>Brick-2</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS2</td>
</tr>
<tr>
<td>Brick-3</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS3</td>
</tr>
<tr>
<td>Brick-3</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS1</td>
</tr>
<tr>
<td>Brick-4</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS1</td>
</tr>
<tr>
<td>Brick-4</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS3</td>
</tr>
<tr>
<td>Brick-5</td>
<td>1</td>
<td>FC2</td>
<td>Brick-1</td>
<td>1</td>
<td>FC1</td>
</tr>
<tr>
<td>Brick-5</td>
<td>0</td>
<td>FC2</td>
<td>Brick-1</td>
<td>0</td>
<td>FC1</td>
</tr>
</tbody>
</table>
Verify your SSF Fibre Channel connections against the following figure:

Figure 36  Slammer cabled to five SATA Bricks

You can connect up to 32 Bricks in this way. Brick: 6 would connect to Brick 2 the same way Brick 5 connects to Brick 1; Brick 9 to Brick 5, and so on up to Brick 32 connecting to Brick 28.
Connections with Two Slammers

This topic describes connecting a Pilot to two Slammers with Ethernet cables and connecting Bricks to the Slammer with Fibre Channel cables through a Storage System Fabric (SSF). This section does not include power cables or the connection from the Axiom system to your local area network.

Pilot-to-Slammers Connections

The Ethernet connection between the Pilot and the Slammers and the Ethernet connections between the two Slammers provides the Pillar Axiom private management interface with a redundant data path if a Slammer CU should fail over.

To make the Ethernet connections among the Pilot and two Slammers:

1. Make the Cat 5e Ethernet connections between the Pilot and Slammers as follows:

<table>
<thead>
<tr>
<th>From</th>
<th>CU Port</th>
<th>To</th>
<th>CU Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot</td>
<td>0 ETH1</td>
<td>Slammer-1</td>
<td>0 ETH0</td>
</tr>
<tr>
<td>Pilot</td>
<td>1 ETH1</td>
<td>Slammer-2</td>
<td>1 ETH2</td>
</tr>
</tbody>
</table>

2. Make the Cat 5e Ethernet connections between the Slammers as follows:

<table>
<thead>
<tr>
<th>From</th>
<th>CU Port</th>
<th>To</th>
<th>CU Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slammer-1</td>
<td>0 ETH1</td>
<td>Slammer-1</td>
<td>1 ETH1</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>0 ETH2</td>
<td>Slammer-2</td>
<td>0 ETH0</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>1 ETH0</td>
<td>Slammer-2</td>
<td>0 ETH2</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>1 ETH2</td>
<td>Slammer-2</td>
<td>1 ETH0</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>0 ETH1</td>
<td>Slammer-2</td>
<td>1 ETH1</td>
</tr>
</tbody>
</table>
3 Verify your Cat 5e connections against the following figure.

**Figure 37 Pilot cabled to two Slammers**

Run the data cables so that they do not obstruct component replacement. They should go down the rear corner of the rack opposite from the power cables, which can cause interference if they are run alongside data cables. Use the tie wraps and velcro straps provided to secure bundles of cables to the rack.

Ethernet cables are not labeled. Use the shortest cable you can while still making sure that they are properly dressed to the side, so that other components can be removed without unplugging any cable, and that it is not so taut that it puts a strain on the connector ends.
### Fibre Channel Slammer-to-Slammer Connections

To cable for Fibre Channel cross-connect and failover in two Slammers:

1. Connect the Slammer control units (CUs) with Fibre Channel cable as described in the following table.

#### Table 14 Fibre Channel Slammer-to-Slammer connections

<table>
<thead>
<tr>
<th>From</th>
<th>CU</th>
<th>Port</th>
<th>To</th>
<th>CU</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slammer-1</td>
<td>0</td>
<td>FC0</td>
<td>Slammer-2</td>
<td>0</td>
<td>FS7</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>0</td>
<td>FC1</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS8</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-2</td>
<td>1</td>
<td>FS9</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>1</td>
<td>FC0</td>
<td>Slammer-2</td>
<td>1</td>
<td>FS7</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>1</td>
<td>FC1</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS8</td>
</tr>
<tr>
<td>Slammer-1</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-2</td>
<td>0</td>
<td>FS9</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>0</td>
<td>FC0</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS7</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>0</td>
<td>FC1</td>
<td>Slammer-2</td>
<td>1</td>
<td>FS8</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS9</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>1</td>
<td>FC0</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS7</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>1</td>
<td>FC1</td>
<td>Slammer-2</td>
<td>0</td>
<td>FS8</td>
</tr>
<tr>
<td>Slammer-2</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS9</td>
</tr>
</tbody>
</table>
2 Verify your Slammer Fibre Channel connections against the following diagram:

**Figure 38 Fibre Channel Connections between Slammers**

Bricks-to-Slammers Connections

The Storage System Fabric (SSF) subsystem provides the interconnects among the Bricks and Slammers supports all data and coordination traffic. This subsystem enables the Slammers and Bricks in a particular configuration to act as a single system, with scalability and high performance.
Connect SATA Bricks to Two Slammers

This section describes the cabling required to connect SATA Bricks to two Slammers.

Brick and Slammers are connected by the Storage System Fabric (SSF). The example below shows how to connect five Bricks to a Slammer. Connect the Brick control units (CUs) to the Slammer with the 6.5 ft (2 m) Fibre Channel (FC) cables, as shown in the table below.

Table 15 SATA Brick / Slammer FC connections

<table>
<thead>
<tr>
<th>From</th>
<th>CU</th>
<th>Port</th>
<th>To</th>
<th>CU</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick-1</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS2</td>
</tr>
<tr>
<td>Brick-1</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS0</td>
</tr>
<tr>
<td>Brick-2</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS0</td>
</tr>
<tr>
<td>Brick-2</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS2</td>
</tr>
<tr>
<td>Brick-3</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS3</td>
</tr>
<tr>
<td>Brick-3</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS1</td>
</tr>
<tr>
<td>Brick-4</td>
<td>1</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>1</td>
<td>FS1</td>
</tr>
<tr>
<td>Brick-4</td>
<td>0</td>
<td>FC2</td>
<td>Slammer-1</td>
<td>0</td>
<td>FS3</td>
</tr>
<tr>
<td>Brick-5</td>
<td>1</td>
<td>FC2</td>
<td>Brick-1</td>
<td>1</td>
<td>FC1</td>
</tr>
<tr>
<td>Brick-5</td>
<td>0</td>
<td>FC2</td>
<td>Brick-1</td>
<td>0</td>
<td>FC1</td>
</tr>
</tbody>
</table>
Verify your SSF Fibre Channel connections against the following figure:

**Figure 39 Slammer cabled to five SATA Bricks**

You can connect up to 32 Bricks in this way. Brick 6 would connect to Brick 2 the same way Brick 5 connects to Brick 1; Brick 9 to Brick 5, and so on up to Brick 32 connecting to Brick 28.
Combine FC and SATA Brick Strings

A string is a collection of Bricks connected together and connected to two Slammer ports, with each Brick connected to the prior Brick or to the set of Slammers. Strings may be composed of combinations of FC RAID Bricks, FC Expansion Bricks and SATA Bricks.

Add SATA Bricks to a FC RAID Brick System

When you are populating a rack with a combination of FC RAID Bricks and FC Expansion Bricks pairs and additional SATA Bricks, the RAID Bricks should be positioned closest to the Slammer with the corresponding Expansion Brick positioned just behind each one. The SATA Bricks are added to the end of the string.

To combine FC RAID Bricks with SATA Bricks

1. Connect the FC RAID Bricks and Slammers as you would normally. You may use either the one Slammer or two Slammer configuration. The SATA Brick are added to the end of the FC RAID Bricks.

2. Connect your SATA Bricks to the FC RAID Bricks using the 6.5 ft (2 m) FC cables, based on the table below:

<table>
<thead>
<tr>
<th>From port</th>
<th>To port</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chassis</strong></td>
<td><strong>CU</strong></td>
</tr>
<tr>
<td>FC RAID Brick 1</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 1</td>
<td>0</td>
</tr>
<tr>
<td>FC RAID Brick 2</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 2</td>
<td>0</td>
</tr>
<tr>
<td>FC RAID Brick 3</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 3</td>
<td>0</td>
</tr>
</tbody>
</table>
Combine FC and SATA Brick Strings

Table 16  Brick / Slammer cables (continued)

<table>
<thead>
<tr>
<th>From port</th>
<th>To port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis</td>
<td>CU</td>
</tr>
<tr>
<td>FC RAID Brick 4</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 4</td>
<td>0</td>
</tr>
<tr>
<td>FC RAID Brick 5</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 5</td>
<td>0</td>
</tr>
<tr>
<td>FC RAID Brick 6</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 6</td>
<td>0</td>
</tr>
<tr>
<td>FC RAID Brick 7</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 7</td>
<td>0</td>
</tr>
<tr>
<td>FC RAID Brick 8</td>
<td>1</td>
</tr>
<tr>
<td>FC RAID Brick 8</td>
<td>0</td>
</tr>
</tbody>
</table>

Note:  The Expansion Bricks are not connected to the SATA Bricks.

3  Verify your SSF Fibre Channel connections against the following figure:
Chapter 4 Connect Data Cables

Figure 40  FC cables to connect additional SATA bricks to FC RAID Bricks

SATA Brick 8
SATA Brick 7
SATA Brick 6
SATA Brick 5
SATA Brick 4
SATA Brick 3
SATA Brick 2
SATA Brick 1
Expansion 8
Brick 8
Expansion 7
Brick 7
Expansion 6
Brick 6
Expansion 5
Brick 5
Expansion 4
Brick 4
Expansion 3
Brick 3
Expansion 2
Brick 2
Expansion 1
Brick 1
Slammer 2 - CU-0
Slammer 2 - CU-1
Slammer 1 - CU-0
Slammer 1 - CU-1
Add FC RAID Bricks to a SATA System

It is not always practical to configure a system with all of the FC Brick pairs closest to the Slammer. This section discusses adding a FC RAID Brick and FC Expansion Brick pair to an existing SATA System.

When adding bricks to systems, FC RAID Bricks may be added onto SATA Brick strings and SATA Bricks may be added onto the FC RAID Brick pairs. The figure below shows examples of how to cable both of these instances:

Figure 41  Mixed Brick system example
Rules for Combining Bricks

Showing every possible combination of FC and SATA Bricks is outside the scope of this document. However, if you follow these rules you should be successful.

These rules apply to both the Ax500 and Ax300 systems:

1. FC Bricks must always be configured in pairs of one FC RAID Brick and one FC Expansion Brick.

2. Slammer ports are used by FC RAID Bricks in the same order as the scheme for connecting SATA Bricks. This fosters balance among the strings while maintaining predictable assignment of Bricks to strings.

3. Bricks should be added to Strings so that the number of Bricks in any string differs by no more that 2 between the longest and the shortest String.

4. If additional SATA or FC RAID Bricks are added to a string, they attach to the last existing on that string. They should not be inserted into the middle of a string.

5. FC Brick pairs may be added to any configuration. These may be added to a running system as long as the new units are cabled up within the rack, are powered on, and have completed their initialization process prior to connecting them to the existing configuration.

6. Brick CU-0 upstream ports are connected to Slammer CU-0 ports or the CU-0 downstream ports of other Bricks; likewise, Brick CU-1 ports are connected to Slammer CU-1 ports or Brick CU-1 ports.

7. The Ax300 supports single FC RAID Brick configurations, but larger Ax300 FC Brick configurations must be composed of pairs of FC RAID Bricks and FC Expansion Bricks. Ax300 systems with a single FC RAID Brick can have a single FC Expansion Brick added to complete the pair with the previously installed FC RAID Brick.
Connect the Cables Between Two Racks

Be sure the two racks are bayed before you make connections between them. Route the Fibre Channel (FC) cables directly from one rack to the other through the open sides. Do not route cables from rack to rack through the raised floor. The cables supplied are not long enough.

When routing an FC cable from one rack to the other, route the cable through the plastic chase that is dedicated to FC cables on the right side of the rack (from the rear). The FC chase to use depends on which side the racks join.

**Important!** Make sure the Fibre Channel cables do not cross over or get too close to the power supply cords. Keep them separated to minimize EMI.

Connect to your Network

To connect the system to your network:

1. Connect the Pilot management (MGMT) ports to the Ethernet LAN on which the management console resides.

Figure 42 Pilot management cables
2 For NAS Slammers, connect two gigabit Ethernet (GbE) cables from the NIM interface ports on the Slammer to any open data port available on two separate gigabit Ethernet network switches. For SAN Slammers, connect two Fibre Channel cables from the NIM interface ports on the Slammer to any open data port available on two separate FC network switches.

Figure 43 Slammer network cables
CHAPTER 5

Connect Power Cables

Cable Connection Procedure

If you are using Pillar Data Systems racks, the system comes with all the components and power supplies (power distribution units or PDUs) already installed in the rack. When you ordered the system you specified the type of power (voltage, amperage, and phases), which determines the type of electrical service outlets you have at your facility. The plugs on the PDUs you ordered have been installed to match these outlets.

Use the following procedure to connect the component’s power cables and power cables that were not pre-installed:

1. Review the Pillar Axiom system Component Power Usage.
2. Review the PDU Outlet Amperage Limits.
3. Understand the Power Cabling Examples.
4. Plug in your system components so that no PDU amperage limits are exceeded.
5. Dress all cables to the opposite side of the rack from any data cables.
6. Secure them to the rack such that they do not restrict the removal of any other component.

Note: You should not turn on any power circuits until the installation is complete and all network cables are in place. Powering on the system is described in Chapter 6, Complete the Installation.
Component Power Usage

The Pillar Axiom storage system components must be plugged in to the PDUs such that they do not exceed the amperage rating of any outlet group. If you exceed the amperage rating, the circuit breakers trip.

Except where indicated, the maximum rated amperage of the outlet banks remains the same regardless of the electrical service voltage. Therefore, if you are using 230V service, components draw half the amperage as when powered by 115V and you can plug more components into each PDU.

This table lists the maximum electrical requirements of the basic Pillar Axiom components. Each component has redundant power cords plugged into different PDUs on separate circuits.

Table 17  Pillar Axiom component electrical requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Amps at 115V</th>
<th>Amps at 230V</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slammer</td>
<td>6.1 A</td>
<td>3.05 A</td>
<td>685 W</td>
</tr>
<tr>
<td>SATA Brick</td>
<td>2.54 A</td>
<td>1.17 A</td>
<td>254 W</td>
</tr>
<tr>
<td>Pilot</td>
<td>1.5 A</td>
<td>0.8 A</td>
<td>143 W</td>
</tr>
</tbody>
</table>

With redundant power supplies, the amperage draw for each power cord is rated for the case when one circuit fails, which increases the amperage draw on the other cord.
Chapter 5 Connect Power Cables

PDU Outlet Amperage Limits

The number of Axiom system components you can plug into each Pillar-supplied PDU varies. This section discusses each PDU.

The Pulizzi TPC2105, below, can use 115V or 230V, 30 A electrical service. The amperage limits are the same at either input voltage.

Figure 44 Pulizzi TPC2105 outlet amperage limits

The Pulizzi TPC2104, below, can use 115V or 230V 20 A electrical service. The amperage limits per four-outlet group are different for 115 V and 230 V, but the overall amperage limit is 16 A regardless of the input voltage.

Figure 45 Pulizzi TPC2104 outlet amperage limits
The Pulizzi PC3365 is shown below. It requires 230/400 VAC WYE three-phase input power. The output at each outlet is always 215V. This PDU is only available outside the United States.

Figure 46 Pulizzi PC3365 outlet amperage limits

Power Cabling Examples

Here are some examples of where to plug components with various types of PDUs.

With a Pillar Data Systems rack, the Brick power cords are pre-installed in the rack with colored tie wraps, ready for you to plug into the back of each Brick. All cords of the same color connect to one set of power distribution units (PDUs), while the other cords connect to the other set of PDUs.
One Slammer and Three SATA Bricks

Also, there hasn't been enough time to create power diagrams specifically for FC Bricks, but I've made notes on the power differences.

This example uses 230 V power and two Pulizzi TPC 2104 PDUs. The power cords on each component must go to separate PDUs, plugged in to separate circuits. A sample power cabling scheme such as the one below would distribute the load within the limits of each outlet bank.

Figure 47  Sample power cabling scheme with 230V power

In the above example, the two Slammers and two SATA Bricks in the four-outlet bank require 1.525, 1.525, 1.17, and 1.17 A respectively, or 5.39 A. This is below the 10-A limit for a four-outlet bank.
If we modify the example to use 120V, the cable connections depend on which PDU you are using. The same two Slammers and two SATA Bricks draw 3.05, 3.05, 2.54, and 2.54 or 11.18 A. This load is acceptable for the Pulizzi TPC 2104 PDU because the amperage limit for a four-outlet bank is 15 A at 115 V.

For the TCP2105-1 PDU, at 115 V the maximum for four outlets is 10 A. Therefore, you would have to distribute the plugs differently than the 230 V system, as shown below:

**Figure 48  Sample power cabling scheme with 115V on a TCP2105-1 PDU**

Other arrangements are possible. Make sure that you do not exceed the rating for a four-outlet bank or the rating for a set of two banks, which is 12 A for this PDU.

Another PDU is still needed for the power cords for the redundant circuit, which was left out of the above figures for simplicity. The redundant PDU should be cabled the same way.

Note: The amperage requirements for an FC Brick are higher than a SATA Brick at 115 Volts. The FC Bricks draw almost 1 full additional amp each. Configuring for FC Bricks may require upgrading your PDU specification. If you have any questions about your PDU configuration please contact Pillar Data Systems Technical Support.

**One Slammer and 16 SATA Bricks**

One Slammer and 16 SATA Bricks (and a Pilot) represents a full 42U rack. Split power cables (the plug end splits into two outlet ends) enable you to connect two components to a single outlet in the PDU and reduce the density of the cabling.
Note: The total amperage draw per outlet bank is more important than which Brick is plugged in to which outlet. The drawings below illustrate one way to distribute the load. Always try to balance the load among the outlet banks.

**Figure 49 Sample power cabling scheme with 230V (one circuit shown)**

**Important!** If you use split power cables, as shown above, make sure they power separate components. Do not use a split power cable to power two sides of the same component. The two sides need to be on separate circuits, in case one fails.

Note: The amperage requirements for an FC Brick are higher than a SATA Brick at 115 Volts. The FC Bricks draw almost 1 full additional amp each. Configuring for FC Brick pairs may require upgrading your PDU specification. If you have any questions about your PDU configuration please contact Pillar Data Systems Technical Support.
CHAPTER 6

Complete the Installation

Power On the System

As part of your site planning, you set up a separate circuit and power outlet for each PDU. These outlets should be located within reach of the 15 ft. (4.572 m) PDU power input cables.

To supply power:

1. Ensure the PDU circuit breakers are in the Off position.
2. Connect the PDUs to a facility power source. If the facility’s main circuit breakers are off, turn them on to supply power to the PDUs.
3. At the front of the system, use a #2 flathead or Phillips head screwdriver to secure the Slammer batteries in place with the two attached screws.

Figure 50  Secure Slammer batteries
4 At the back of the system, turn on the power switches for each Brick.

**Figure 51 Turn on Brick power**

![Brick power switches](image)

Note: Slammers and Pilots automatically power on when you apply power to the system in the next step.

5 At the front of the system, switch on the PDU circuit breakers to apply power to the hardware components. This lights the Power On LED, and starts the component cooling fans.

**Figure 52 Turn on PDU power**

![PDU power](image)

**Important!** You must turn on all of the PDUs within 10 sec of each other.
Verify Status LEDs

Check the component LEDs to verify hardware installation.

At the front of the system:

1. Verify the Pilot CU LEDs are green and not blinking.
   
   If the LEDs are off, ensure there is power to the PDU circuit breakers and you have turned them on within 10 sec of each other.

   ![Figure 53 Pilot bezel LEDs](image)

2. Verify that the Slammer Status LEDs are green and not blinking. They may be amber while the Slammer is booting and the software initializing, but should turn green when the Slammer is operational.

   ![Figure 54 Slammer bezel LEDs](image)

3. Verify that the Fault LEDs are off. If they are on at this stage, it is usually because the bezel is not fully seated.
4 For each Brick make sure that the CU 0 and CU 1 Status LEDs are green. Blinking means activity and is normal.

Figure 55 Brick bezel LEDs

5 Verify that the Fault LED for each Brick is off. A lit Fault LED at this stage usually means the bezel is not fully seated.

For a detailed list of Slammer LED startup progress codes refer to Appendix A, Slammer LED Startup Progress Codes.

At the back of the system:

1 Verify that the connectivity LEDs on each Pilot CU are green. Blinking indicates activity, which may be normal during bootup.

If the LEDs are off, check both Pilot management connections and both connections to your Ethernet LAN.

Figure 56 Pilot connectivity LEDs
2. The Slammer has numerous status LEDs.

**Figure 57  Pilot connectivity LEDs**

- The power supply LEDs are green and not blinking. If the power supply LEDs are off or are amber make sure the power cable is securely connected at both ends and the PDUs are powered on.

- On a NAS Slammer, for each GbE network port, the LED on the left is green and not blinking, and the one on the right is amber. If they are off, check the network connections.

- On a SAN Slammer, the Fibre Channel port LEDs are green and not blinking.

- For the control unit LEDs, the ST LED is green. The ACT LED might be on if the Slammer is configured and active, but is normally off at this stage of installation.

- All LEDs with an FC or FS cable port connection are green and not blinking. If they are amber or off, check the FC cabling.
3 On the Bricks, verify:

- The power supply LEDs are green and not blinking.

**Figure 58 Brick LEDs**

If either power supply LED is off or amber:

- Ensure the power cable on that side is securely connected at both ends.
- Ensure the PDU and Brick is powered on.
- Ensure you turned on the PDUs within 10 sec of each other.

- The enclosure services (ES) module LED is green and not blinking.
  
  If the ES module LED is amber, ensure that both power cables are securely connected to both the Brick and the PDU.

- The connected RAID controller LEDs are green.
  
  If the RAID controller LEDs are off or are blinking green, check the network connections.

- The spare disk drive LEDs are green and not blinking.

If the ES module, RAID controller, or spare disk drive has failed, contact Technical Support.

---

**Attach the Bezels**

At the front of the system, ensure all disk drives are fully seated by pressing each disk drive carrier into the Brick chassis to make sure they are fully seated.

You must attach all bezels or the system generates an error condition and lights amber LEDs.
To attach the bezels:

1. Insert the bottom two hooks on the bezel into the bottom rack rail tabs.

   **Figure 59 Bezel hook on the right side of the bezel**

2. Press the top corners of the bezel to engage the top two bezel hooks with the top rail tabs.

3. Press both ejector tabs (if open) until they lock in place. The top hooks should latch with an audible click. If the bezel does not light when you apply power to the system, verify that the top and bottom hooks are all properly engaged.

   **Figure 60 Press ejector tabs to lock bezel**
Install HBA Drivers and Firmware (SAN Only)

You must install Fibre Channel HBAs in the servers and their required software before you can access LUNs on a SAN system. Complete the instructions from your HBA vendor to:

- Install the HBAs in the servers.
- Download available drivers and firmware.
- Install or update the BIOS, if required.

Note: If you intend to install Axiom Path Manager software, refer to the appropriate Pillar Axiom Path Manager Installation Guide.

Set Up Switch Zones for the HBA (SAN Only)

If appropriate, follow the instructions from your switch vendor to set up zones to:

- Permit host HBA ports to access the Slammer ports.
- Segregate servers with different operating systems.
- Segregate servers with different security requirements.

Attach the Rack Doors and Panels

In this procedure, you reattach the front and back doors and both side panels to the rack. These steps help to ensure the security and proper cooling of Pillar Axiom components.

To reattach the doors on a rack:

1. Based on the type of door hinge, reassemble the hinges.
2. Reattach the doors.
3. Reattach the door grounding straps at the bottom of the doors.
4. Lock the front and back doors to the rack (optional).
To reattach the side panels on a rack:

1. Hang the top of the panel on the top of the rack frame and latch the panel to close it.
   
   **Important!** Be sure not to pinch any cables that might have strayed from their proper moorings.

2. Secure the panel appropriately using one of the following options:
   
   • Engage the latch handle(s) and snap the panel into place.
   
   • Screw the panels to the rack frame at the top and bottom.

3. Lock both side panels (optional).
CHAPTER 7

Initial Configuration

Pre-Configuration Checklist

This is a list of the information you need to know for configuration.

Table 18 Global system parameters

<table>
<thead>
<tr>
<th>Done</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>Check the Pillar Axiom 500 Release Notes and the Pillar Data Systems Support Portal to see if there any software updates available. Refer to the Administrator’s Guide for instructions on installing software upgrades.</td>
</tr>
</tbody>
</table>

GUI access

☐ Get the IP address of the Pilot (the default is 10.0.0.2) and the user ID and password from the Site Preparation Survey or from Pillar Data Systems.

Global system parameters

☐ Get the IP address of your primary NTP server for synchronizing system time.

☐ Decide on three IP addresses that are available to assign to the Pilot.

☐ Know the management network submask and the IP address for the gateway.

☐ Understand Link Aggregation and whether to use it for Slammer data paths.

☐ To allow alerts to be e-mailed, you need the IP address of your e-mail server.

☐ Get the Call-Home information from Pillar Data Systems.

NAS storage parameters

☐ If you saved a performance profile (from another Axiom system), you must know where it is so you can browse to it.
The AxiomONE Storage Services Manager provides a graphical user interface (GUI) to manage the Axiom system. Access the GUI by connecting to the Pilot’s high-availability IP address, which is 10.0.0.2.

To connect to the GUI for the first time:

1. Through a Web browser, connect to the Pilot IP address 10.0.0.2 (network mask is 255.255.255.0).
   Tip: Because this address is not routable, be sure that the browser host is on the local subnet.

2. Use the following values to log in:
   - Login Name: administrator
   - Password: pillar

3. When prompted, enter a new password.
Start the Graphical User Interface (GUI)

Chapter 7 Initial Configuration

Note: Get the password that is to be used from the Site Preparation Survey. Be sure that the Primary System Administrator also gets this password.

**CAUTION** Do not lose this new password; otherwise, the system must be reset.

4 Click the OK button.

At this point, the system tests the cabling among the Slammers and Bricks. After the cable test, the system reports that all connections are OK or lists the connections that failed.

To troubleshoot a failed connection:

1 Ensure that the Fibre Channel cable is properly seated at both ends.

2 Run the system verification test manually by going to the Support > Verify System Operation page in the GUI. Click on the System Configuration link in the content pane.

3 If the connection still fails, swap the cable with one that works.

4 Repeat Step 2.

   Note: This second test should determine whether the cable or one of the original ports is bad.

5 Contact Technical Support who will help you determine whether you have a bad cable or port and which one is bad:

   • Request a replacement Fibre Channel cable for a bad cable.
   
   • Request a replacement private interconnect module for a bad Slammer port or RAID controller for a bad Brick port.

After the cable test, the system asks if you want to run the Configuration Wizard.
Configure the System with the Configuration Wizard

The Configuration Wizard pages guide you through the manual steps to configure your system.

1. From the initial GUI screen, select Configuration Wizard.
2. From the Configuration Wizard initial page, click the Next button.
3. Select all three configuration tasks:

   ![Figure 61 Configuration Tasks page]

4. Click the Next button.

   Note: If you intend to configure both NAS and SAN Slammers, run this wizard a second time, select only Storage Parameters, and specify a filesystem instead of a LUN (or the other way around).
Configure Global System Parameters

To configure the Global System parameters:

1. In the System Time page, enter the IP addresses of the primary Network Time Protocol (NTP) server and up to two secondary NTP servers (optional).

   Note: If you do not set the system time, the Pillar Axiom system uses the default time set on the Pilot (Pacific Time).

2. Select the time zone that you want to define for the Pillar Axiom system, and click the Next button.

Figure 62  System Time page
3 In the Management and Data Path Interfaces page, enter the System Name. This is the name of the management interface IP address and can be used with an external naming service to access the management interface by a host name rather than the IP address. This is not the host or NetBIOS name.

Figure 63 Management and Data Path Interfaces page

4 Select a Static IP Address.

5 Enter a reachable management IP Default Address. (The default address of 10.0.0.2 cannot be routed.) If you only enter the default address, the system automatically assigns the next two IP addresses in sequence as Pilot CU 0 and Pilot CU 1 addresses. For example, if you enter 129.214.10.10 as the default address, the system automatically assigns IP address 129.214.10.11 to Pilot CU 0 and 129.214.10.12 to Pilot CU 1.

If those sequential addresses are not available, enter the desired values for the additional IP addresses in the fields for Pilot CU0 and Pilot CU1.

Important! All three addresses must be on the same subnet.

Note: Get the IP address that is to be used from the Site Preparation Survey. Be sure that the Primary System Administrator also gets this IP address.

CAUTION Do not lose this IP address; otherwise, the system must be reset.
6 Enter the subnet mask for your network and the IP address of the default gateway for the management interfaces. If you do not want the management interfaces to be reachable from anywhere other than the local subnet, leave the default gateway blank. However, you must enter a valid netmask.

7 Select Enable Link Aggregation for the data interfaces if you are using it in your network and want to use it for Slammer data paths.

**Important!** If you select this option, only one port is available for configuration for each Slammer CU data path—the aggregated port.

8 Click the Next button. The Next button assigns the primary IP addresses and brings up the next dialog.

**Figure 64 Notification and Account Security Settings page**

![Configuration Wizard screenshot](image)
9 Enter the Account Security values for failed log-ins and session time-out period.

10 To receive alerts by email, check Enable Email and specify your Email server IP address.

11 To enable the Call-Home feature, choose whether to use the Pillar Server or the local host and enter the Call-Home information you got from Pillar Data Systems.

12 Check Enable Automatic Recovery of Failed NAS Slammers if you want NAS Slammers to automatically fail back when a failed control unit is restored. If you want to control when a recovery occurs, do not check this box. (SAN Slammers fail back automatically.)

13 Click the Next button to configure your storage.

**Configure NAS Storage Parameters**

If you do not have NAS storage, skip to Configure SAN Storage.

To configure NAS Storage Parameters:

1 In the Storage Allocation and Quality of Service (QoS) page, select Filesystem from the Storage Type drop-down box.

**Figure 65 Storage Allocation and Quality of Service (QoS) page**
2 Select an option on which to base the QoS settings. Choose one of:

- Application Category to select the application category that best describes your storage use environment. Each category has certain default profile values that you can edit on the Capacity and Performance page.

- If you have exported a performance profile from another filesystem to use here, select the Performance Profile option and Highest Throughput. If you select this option you get a chance to browse to the exported profile.

3 Click the Next button to configure this filesystem.

4 Enter the filesystem’s name as well as the capacity values.

Figure 66 Storage Capacity and Performance Settings page

5 The performance settings are based on the application category you selected, but you can change them to suit your needs.

6 To specify SecureWORMfs for this filesystem, check the retention policy box.

7 Click Next. If you check the Retention Policy box you go to the Retention Policy Settings page. Otherwise you go to the File Sharing page in Step 10.

8 In the Retention Policy Settings page set the master retention period values.

9 Specify suitable scan times and click the Next button.
10 In the File Sharing page, select the type(s) of file sharing that you want for this filesystem, and click the Next button.

11 On Shares page, specify a share name and use just a back-slash (\) for the path. A new filesystem is empty, so there is no other path to specify.

12 Check Enabled to share the filesystem to Windows (CIFS) users and click the Next button.

13 On the Exports page, enter a back-slash (\) for the path. The UID for anonymous is for a CIFS user with no matching user account. It is also for a root user on a client if the filesystem is not exported as root access. A common value to use for this is -2.

14 Specify the hosts to which you would like to export this filesystem and whether it should be exported as Read Only or Root Access.

15 Click Next to specify a File Server.

To create a File Server:

1 In the Choose a File Server page, select Create a New File Server, and click the Next button.

Figure 67  Create New File Server page

2 Enter the File Server name, which becomes the name your clients use to access the File Server.
3 Specify an IP address that is available on the data network, the appropriate netmask, and the default gateway. This is not the same network you use for the management interface.

4 If you are using a virtual LAN in your network and want to use it for your NAS Slammer, specify its ID here. Leave it blank or specify 0 for no VLAN.

5 Specify the name of the NAS Slammer, its control unit (CU 0 or 1), and port (0 or 1). This is where the filesystem is connected.

6 Leave Jumbo Frame Size at 1500, which means do not use Jumbo Frames. If you use Jumbo Frames, all the hardware on the network has to support Jumbo Frames.

7 Specify the IP address for one or more Domain Name Servers.

8 Click the Next button to configure administrator accounts. Then, if you need to configure SAN storage, restart the Wizard and go to the next section.

**Configure SAN Storage**

If you just configured NAS storage, run the Configuration Wizard a second time, and only specify Storage Parameters. You do not need to configure the global parameters or accounts again if they are already configured.

To configure SAN storage parameters:

1 In the Storage Allocation and Quality of Service (QoS) page, select LUN from the Storage Type drop-down box.
2 Select an option on which to base the QoS settings. Choose either:

- Application Category to select the application category that best describes your storage use environment. Each category has certain default profile values that you can edit on the Capacity and Performance page.

- If you have exported a performance profile from another filesystem to use here, select the Performance Profile option and Highest Throughput. If you select this option you get a chance to browse to the exported profile.

3 Click the Next button to configure this LUN.
4 Enter a LUN name and LUN number.

5 Enter values to specify the LUN capacity, redundancy, and performance attributes, if you need to change the defaults for this application type.

   Note: You can modify a LUN to update its capacity attributes at any time. You cannot change a LUN’s redundancy and performance attributes after you create the LUN.

6 If you want to create a Snap LUN, enter the amount of space you would like to allocate.

7 Click the Next button to configure administrator accounts, unless you have already completed this step.

Configure Administrator Accounts

To create an administrator account:

1 Enter administrator account details, including Login name, Role, and Password. For Roles, choose from:

   • Administrator 1 to perform all configuration, management, and monitoring tasks.
   
   • Administrator 2 to perform all tasks except:
     • Create and manage File Servers and administrator accounts.
     • Modify global, SNMP, and NDMP settings.
     • Modify software or hardware configurations.
     • Shut down the system.
     • Monitor to display system information only. This administrator cannot modify the configuration but can modify administrator account attributes.

2 Click the Next button. The Configuration Wizard displays a configuration summary.

3 Click the Finish button to implement the configuration. You do not need to restart the system.
Install Axiom Path Manager (SAN Only)

To operate your SAN system, you may optionally install the Pillar Axiom Path Manager drivers and software, which:

- Ensure your operating system does not interpret multiple paths as multiple disk drives.
- Provide path failover.
- Streamline system management.

**Important!** Configure the LUNs before you install the Axiom Path Manager software.

Complete the procedures in the appropriate *Pillar Axiom Path Manager Installation Guide* to install the Pillar Axiom Path Manager driver and software.
Add a New Brick

When adding Bricks, use Guided Maintenance.

Use the following procedure to add new Bricks.

1. When you are ordering new Bricks, refer to Chapter 5, Connect Power Cables, to determine if you need additional power distribution units (PDUs) and to devise a cabling plan that specifies to which PDU outlet each Brick power cable connects.

2. Before the Bricks arrive, work out where you will install each Brick and PDU. Add Bricks above the Slammer(s) until they reach the top rack unit, and then start at the top of the next rack and work down. PDUs go at the bottom of the rack.

3. Install any new PDUs as described in Install Power Distribution Units.

4. Install the new Bricks as described in Install a Brick.

5. Refer to Chapter 4, Connect Data Cables for information about how to cable bricks. You do not need to power the Axiom system down to cable additional Brick unless you are also adding a Slammer. Run all the cables so that you can remove any components without disconnecting a cable.

6. Make sure the power switches on the back of the new Bricks are off before connecting the power cables.

7. Run the power cables and plug them into the PDUs according to the cabling plan devised in step 1.

8. Verify seating on all disk drives by pressing on each one to make sure it is fully seated. They are seated correctly if they do not go in any further and none stick out more than the others.
9 Make sure the Pillar Axiom system is powered on and all the new cables are in place. It is important that the system be running when you power on a new Brick so that the system can detect and integrate the Brick.

10 Add power to one new Brick. You do not power on the next Brick until the current Brick is successfully integrated. Power on the Bricks connected directly to a Slammer first, then those that are connected to the first group of Bricks, and so on.

11 When prompted by an Administrator Action in the GUI, accept the new Brick.

12 Verify from the GUI that the new Brick’s capacity is added to the total system capacity.

13 After you complete the Administrator action to accept this Brick and you have verified correct RAID Controller firmware version repeat Step 10 through Step 12 for each new Brick.

14 When all Bricks are powered on and RAID controller firmware version verified, check all LEDs for green indication. See Verify Status LEDs.

Notes:

- Go to the Software Module page of the Support tab. There should be only one “Brick Firmware” entry, which is for the RAID controller. (It is OK to have more than one entry for “Brick Disk Drive Firmware.”)

- If the RAID controller firmware is not updated, perform a system restart and recheck with PDSquery.

- If the RAID controller firmware still did not update, power off and then power on the system and recheck with PDSquery.

- If the new Brick’s capacity is not added to the total system capacity, there was an error adding the Brick. Disconnect the Brick from the system, accept the Administrator action to remove the Brick, and attempt the operation again.
Add a New Slammer

We do not recommend adding a Slammer to an Axiom system while the system is in normal running status.

If the existing racks are full, you need additional racks and may have to move some Bricks to accommodate a second Slammer. See the hardware map in Component Placement for more information.

To perform the pre-installation check:

1. Inventory the Slammer and installation components to make sure you have the correct cables and mounting hardware.

2. Before beginning the installation, check the status of the system to ensure that it is in proper status, as follows:
   - All Fibre Channel Status LEDs on Slammer and Brick ports with connectors inserted are steady green, not amber or flashing green.
   - The System Summary Status in the GUI is green for all components.
   - No background tasks are running.
   - There are no outstanding Administrator Actions.
   - No file systems or SAN LUNs are offline, degraded, or in conservative mode.

3. Perform a `PDSquery -v` and check the output for correct status of all components.

4. Collect a full System Information File and download it in the event it is needed by technical support if the upgrade fails to complete successfully. Optionally, clear the log files with `supporttool PerformClearLogs`.

To install the Slammer:

1. Place the Axiom system in Shutdown Status with the GUI or command line interface (CLI) and verify that the system has successfully shut down.

2. Physically add the new Slammer to the system, as described in Install a Slammer.

3. Connect the Ethernet and Fibre Channel cables following the instructions in Chapter 4, Connect Data Cables.

4. Attach the Slammer power connections to separate PDUs as shown in Chapter 5, Connect Power Cables.
5 Restart the Pillar Axiom system. Carefully observe the System Health Status to ensure that the Slammers proceed through startup and achieve a normal status.

6 Check that the system recognizes the new Slammer. That is, the system adds it to the configuration and performs a successful startup to normal status, with any firmware updates to the Slammer CU completing successfully.

7 Perform a `PDSquery -v` to check the status and revisions of the Slammer and the Slammer and Brick Fibre Channel (FC) ports.

8 Check the Fibre Channel status LEDs on all ports on all Slammers and Bricks. If there is a FC cable connected, the associated port status LED should be solid green and not amber or blinking green.
APPENDIX A

Slammer LED Startup Progress Codes

Introduction to LED Startup Codes

When a Slammer is powered on, it goes through a sequence of actions. Generally, the time to finish these actions for a new installation is about 20 minutes.

Notes:

• The time to start up your system may be shorter or longer, depending the configuration of Slammers and Bricks and a number of other factors.

• Slammers cannot complete the startup sequence without the Pilot being powered on and functioning.

• While a Slammer performs startup diagnostics and then waits for its runtime image to download from the Pilot:
  • The Fault LED (FLT) is off.
  • The Activity LED (ACT) is green and blinks fast.
  • The Status LED (ST) is green and blinks slowly.

During the remainder of the startup, FLT and ACT are off while ST slowly blinks amber once each second. During this time, the GUI shows the Slammer to be in "booting 0xnnnn" status while the Pilot initializes the Slammer’s data services components.

When the Slammer successfully completes the startup sequence, ST is steady green.
Tip: If the front bezel Fault (FLT) LED is on steady and no other fault indicators on the Slammer are lit, the bezel may not be properly seated. Slammers always light FLT when the bezel is off.

• If the Slammer halts during startup, the three LEDs on the back of the chassis (FLT, ACT, and ST) or the three LEDs on the bezel (Status, Activity, and Fault) help you identify where the Slammer halted in the startup sequence.

**LED Startup Codes**

The Slammer bezel has Fault, Status, and Activity LEDs that can display various colors and blink rates. These LEDs also appear on the private interface module at the back of the Slammer chassis, and are labeled FLT (Fault), ACT (Activity), and ST (Status).

These LEDs can:

• Be green or amber.
• Be on or off.
• Be steady, with no blinks.
• Blink rapidly—slightly more than two blinks per sec (2.375 hz).
• Blink slowly—one blink per 1.5 sec (0.67 hz).

The configuration of all three LEDs can be translated into a 3-digit progress code. Use this code to identify the cause of failure in the table at the end of this section.

The first digit of a startup progress code is determined by the color and blink rate of the FLT LED. Use the information in the following table to determine the first digit of this code.

<table>
<thead>
<tr>
<th>LED color</th>
<th>Blink rate</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Off</td>
<td>0</td>
</tr>
<tr>
<td>Amber</td>
<td>Steady</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Rapid</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Slow</td>
<td>3</td>
</tr>
</tbody>
</table>
The second digit of the startup progress code is determined by the color and blink rate of the Activity LED. Use the information in the following table to determine the second digit of this code.

### Table 20 Code translation for the Activity LED

<table>
<thead>
<tr>
<th>LED color</th>
<th>Blink rate</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Off</td>
<td>0</td>
</tr>
<tr>
<td>Amber</td>
<td>Steady</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Rapid</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Slow</td>
<td>4</td>
</tr>
<tr>
<td>Green</td>
<td>Steady</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Rapid</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Slow</td>
<td>6</td>
</tr>
</tbody>
</table>

The third digit of the startup progress code is determined by the color and blink rate of the Status LED. Use the information in the following table to determine the third digit of this code.

### Table 21 Code translation for the Status LED

<table>
<thead>
<tr>
<th>LED color</th>
<th>Blink rate</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Off</td>
<td>0</td>
</tr>
<tr>
<td>Amber</td>
<td>Steady</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Rapid</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Slow</td>
<td>4</td>
</tr>
<tr>
<td>Green</td>
<td>Steady</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Rapid</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Slow</td>
<td>6</td>
</tr>
</tbody>
</table>
For example, the following LED configuration represents a progress code of 111, which means that the simple memory test failed on the Slammer:

- FLT—steady amber
- ACT—steady amber
- ST—steady amber

The table below describes the meaning of the startup progress codes as indicated by the LEDs.

Note: The software modules in the table below are defined as follows:

- Boot Block is a software module that contains initialization routines, which include Preferred and Alternate Boot Page validation.
- MPOST is manufacturing POST and is for testing the motherboard.
- Preferred Boot Page is the preferred runtime start-up code.
- Alternate Boot Page is the safe (or backup) start-up code. Both the Preferred Boot Page and the Alternate Boot Page are alternately updateable in the field. The Alternate Boot Page should ensure that the Slammer can start up even when the Preferred Boot Page is corrupted.
<table>
<thead>
<tr>
<th>Code</th>
<th>Software module</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0 0</td>
<td>Boot Block</td>
<td>CPU did not start to fetch code yet.</td>
</tr>
<tr>
<td>0 5 6</td>
<td>The Slammer control unit (CU) PROM has completed startup diagnostics and is waiting for the software to be downloaded from the Pilot.</td>
<td></td>
</tr>
<tr>
<td>1 0 2</td>
<td></td>
<td>Ready to initialize memory.</td>
</tr>
<tr>
<td>1 1 0</td>
<td></td>
<td>Installed memory is unsupported.</td>
</tr>
<tr>
<td>1 0 3</td>
<td></td>
<td>Ready to initialize DQS settings.</td>
</tr>
<tr>
<td>1 1 1</td>
<td></td>
<td>Simple memory test failed.</td>
</tr>
<tr>
<td>1 0 4</td>
<td></td>
<td>Ready to check preferred boot page CRC. If CRC is OK, control transfers to preferred boot page; otherwise, alternate boot page CRC is checked. If CRC is OK, control transfers to alternate boot page; otherwise, start-up will fail.</td>
</tr>
<tr>
<td>1 1 2</td>
<td></td>
<td>Boot page CRC failed.</td>
</tr>
<tr>
<td>1 6 3</td>
<td></td>
<td>Starting up from alternate boot page.</td>
</tr>
<tr>
<td>1 6 2</td>
<td>Start-up failed - both boot pages failed their CRC checks.</td>
<td></td>
</tr>
<tr>
<td>1 1 3</td>
<td></td>
<td>Shadow RAM failed.</td>
</tr>
<tr>
<td>2 4 2</td>
<td>MPOST/Monitor</td>
<td>MPOST is ready to load.</td>
</tr>
<tr>
<td>2 3 6</td>
<td></td>
<td>Ready to start loader monitor.</td>
</tr>
<tr>
<td>2 4 0</td>
<td></td>
<td>Ready to continue starting up after loader monitor.</td>
</tr>
</tbody>
</table>
Table 22 Slammer LED startup codes (continued)

<table>
<thead>
<tr>
<th>Code</th>
<th>Software module</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 0 0</td>
<td>Preferred or Alternate Boot Page</td>
<td>Current boot page started to execute.</td>
</tr>
<tr>
<td>2 0 4</td>
<td></td>
<td>Ready to initialize IDT.</td>
</tr>
<tr>
<td>2 0 6</td>
<td></td>
<td>Ready to initialize NMI handler.</td>
</tr>
<tr>
<td>2 1 0</td>
<td></td>
<td>Ready to initialize COM1 serial port.</td>
</tr>
<tr>
<td>2 1 2</td>
<td></td>
<td>Ready to initialize CMS hardware.</td>
</tr>
<tr>
<td>2 1 4</td>
<td></td>
<td>Ready to initialize fan controller.</td>
</tr>
<tr>
<td>2 1 6</td>
<td></td>
<td>Ready to start CPU 2.</td>
</tr>
<tr>
<td>2 0 2</td>
<td></td>
<td>Prepare to reset CPU 1 to reconfigure CPU 2.</td>
</tr>
<tr>
<td>2 3 0</td>
<td></td>
<td>Ready to initialize PCI devices.</td>
</tr>
<tr>
<td>2 4 4</td>
<td></td>
<td>Ready to check memory configuration.</td>
</tr>
<tr>
<td>2 4 6</td>
<td></td>
<td>Current memory configuration does not match</td>
</tr>
<tr>
<td></td>
<td></td>
<td>configuration in EEPROM.</td>
</tr>
<tr>
<td>2 5 0</td>
<td></td>
<td>Current memory configuration does not match</td>
</tr>
<tr>
<td></td>
<td></td>
<td>initial configuration in CMOS.</td>
</tr>
<tr>
<td>2 5 2</td>
<td></td>
<td>Memory DIMMs are different.</td>
</tr>
<tr>
<td>2 5 4</td>
<td></td>
<td>Failed to read memory configuration from EEPROM.</td>
</tr>
<tr>
<td>2 5 6</td>
<td></td>
<td>Ready to do full memory test.</td>
</tr>
<tr>
<td>2 6 0</td>
<td></td>
<td>Full memory test failed.</td>
</tr>
<tr>
<td>3 6 6</td>
<td></td>
<td>Downloading and starting up application image.</td>
</tr>
<tr>
<td>3 X X</td>
<td></td>
<td>LED startup progress code reserved for the OS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(where X is not 6).</td>
</tr>
</tbody>
</table>

Once the Slammer reaches state 3XX, where the FLT LED is blinking slowly, all
further control of the startup process is managed by the Pilot. When the Pilot
assumes control of the Slammer, the status LED begins blinking slowly amber
until the software components are all successfully brought online.
APPENDIX B

Safety Statements

Introduction to Safety Statements

For the Pillar Axiom storage system, this appendix lists safety statements to provide specific warning and cautionary notices about the electrical and weight properties that are associated with an Axiom system and its hardware components.

Safety Statements

The following safety statements include all hazard notices, in all pertinent languages.

Important! Procedures listed in the body of this document assume that the electrical characteristics of the power supply to which Axiom components are connected comply with the technical specifications for those components.

For electrical characteristics of Axiom components, see Axiom Hardware Specifications in Appendix C.

Warning Notices

This hazard symbol means warning. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards that are involved with electrical circuitry and be familiar with standard practices for preventing accidents.
**Table 23  Electrical warning in other languages**

<table>
<thead>
<tr>
<th>Language</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvää vaaroista ja tavanomaisista onnettomuksien ehkäisykeinoista.</td>
</tr>
<tr>
<td>Attention</td>
<td>Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.</td>
</tr>
<tr>
<td>Aviso</td>
<td>Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes.</td>
</tr>
<tr>
<td>Advertencia</td>
<td>Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes.</td>
</tr>
</tbody>
</table>
Table 23 Electrical warning in other languages  (continued)

|---------|-------------------------------------------------------------------------------------------------|

**WARNING** Do not work on the system or connect or disconnect cables during periods of lightning activity.

**WARNING** When removing a power supply, do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.

**WARNING** The power supply cord is used as the main disconnect device. Ensure that the socket outlet is located or installed near the equipment and is easily accessible.

**WARNING** When working on a chassis or near power supplies, use extreme caution because line voltages may be present within the chassis.

**WARNING** Ultimate disposal of this product should be handled according to all national laws and regulations.

**WARNING** Some equipment is connected to power lines. Before you work on this equipment, remove all jewelry that contains metal. Such jewelry includes rings, necklaces, and watches. Metal objects heat up when connected to power and ground. Hot metal objects can cause serious burns or weld the metal object to the terminals.

**WARNING** Only qualified personnel should install or replace this equipment.

**WARNING** Secure all power cabling when you install this unit to avoid disturbing field-wiring connections.

**WARNING** Do not overload the circuit when you connect components to the power supply.
Appendix B Safety Statements

**WARNING**

A voltage mismatch can cause equipment damage and may pose a fire hazard. If the voltage indicated on the label differs from the power outlet voltage, *do not connect the chassis to that receptacle.*

**WARNING**

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

**WARNING**

Incorrect connection of this equipment to a general purpose outlet could result in a hazardous situation.

**WARNING**

Bricks have two power supply cords and Slammers have four. To reduce the risk of electric shock, disconnect all power supply cords to these components before you open their top covers.

**WARNING**

The Axiom storage system operates at high voltages. To protect against physical harm, power off the system whenever possible during installation.

**WARNING**

Never block the inlet and outlet holes in the chassis components. Sufficient air circulation is required for the components to operate properly and to avoid a fire hazard. Do not push objects of any kind into the ventilation holes. Such action could result in fire or electrical shock. Keep all liquids away from hardware components.

**WARNING**

Ensure that component distribution in the rack is balanced. Follow the hardware placement map to ensure this balance. Uneven distribution can cause hazardous instability. The rack must have stabilization plates or anti-tip brackets installed so the rack does not tip when you install a component.

**Lightning Activity Warning**

**WARNING**

Do not work on the system or connect or disconnect cables during periods of lightning activity.
Appendix B Safety Statements

Table 24 Lightning warning in other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Tijdens onweer dat gepaard gaat met bliksem, dient u niet aan het systeem te werken of kabels aan te sluiten of te ontkoppelen.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Älä työskentele järjestelmän parissa äläkää yhdistä tai irrota kaapeleita ukkosilmalla.</td>
</tr>
<tr>
<td>Attention</td>
<td>Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.</td>
</tr>
<tr>
<td>Warnung</td>
<td>Arbeiten Sie nicht am System und schließen Sie keine Kabel an bzw. trennen Sie keine ab, wenn es gewittert.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>Non lavorare sul sistema o collegare oppure scollegare i cavi durante un temporale con fulmini.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Utfor aldri arbeid på systemet, eller koble kabler til eller fra systemet når det tordner eller lyner.</td>
</tr>
<tr>
<td>Aviso</td>
<td>Não trabalhe no sistema ou ligue e desligue cabos durante períodos de mau tempo (trovoada).</td>
</tr>
<tr>
<td>Advertencia</td>
<td>No operar el sistema ni conectar o desconectar cables durante el transcurso de descargas eléctricas en la atmósfera.</td>
</tr>
<tr>
<td>Warning</td>
<td>Vid åska skall du aldrig utföra arbete på systemet eller ansluta eller koppla loss kablar.</td>
</tr>
</tbody>
</table>

Power Supply Warning

When removing a power supply, do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.

Table 25 Power supply warning in other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>U dient de voeding niet aan te raken zolang het netsnoer aangesloten is. Bij systemen met een stroomschakelaar zijn er lijsnpanningen aanwezig in de voeding, zelfs wanneer de stroomschakelaar uitgeschakeld is en het netsnoer aangesloten is. Bij systemen zonder een stroomschakelaar zijn er lijsnpanningen aanwezig in de voeding wanneer het netsnoer aangesloten is.</td>
</tr>
</tbody>
</table>
| Safety Statements | Varoitus | Älä kosketa virtalähdeettä virtajohdon ollessa kytettyä.
Varinkatkaisimella varustetuissa järjestelmissä on virtalähteen sisällä jäljellä verkkojännite, vaikka varinkatkaisin on katkaistu- asennossa virtajohdon ollessa kytettyä. Järjestelmissä, joissa ei ole varinkatkaisinta, on virtalähteestä jäljellä verkkojännite, kun virtajohto on kytettyä. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attention</td>
<td>Ne pas toucher le bloc d'alimentation quand le cordon d'alimentation est branché. Avec les systèmes munis d'un commutateur marche-arrêt, des tensions de ligne sont présentes dans l'alimentation quand le cordon est branché, même si le commutateur est à l'arrêt. Avec les systèmes sans commutateur marche-arrêt, l'alimentation est sous tension quand le cordon d'alimentation est branché.</td>
</tr>
<tr>
<td></td>
<td>Warnung</td>
<td>Berühren Sie das Netzgerät nicht, wenn das Netzkabel angeschlossen ist. Bei Systemen mit Netzschalter liegen Leitungsspannungen im Netzgerät vor, wenn das Netzkabel angeschlossen ist, auch wenn das System ausgeschaltet ist. Bei Systemen ohne Netzschalter liegen Leitungsspannungen im Netzgerät vor, wenn das Netzkabel angeschlossen ist.</td>
</tr>
<tr>
<td></td>
<td>Avvertenza</td>
<td>Non toccare l'alimentatore se il cavo dell'alimentazione è collegato. Per i sistemi con un interruttore di alimentazione, tensioni di linea sono presenti all'interno dell'alimentatore anche quando l'interruttore di alimentazione è in posizione di disattivazione (off), se il cavo dell'alimentazione è collegato. Per i sistemi senza un interruttore tensioni di linea sono presenti all'interno dell'alimentatore quando il cavo di alimentazione è collegato.</td>
</tr>
<tr>
<td></td>
<td>Advarsel</td>
<td>Berør ikke strømforsyningsenheten når strømledningen er tilkoblet. I systemer som har en strømbryter, er det spenning i strømforsyningsenheten selv om strømbryteren er slått av og strømledningen er tilkoblet. Når det gjelder systemer uten en strømbryter, er det spenning i strømforsyningsenheten når strømledningen er tilkoblet.</td>
</tr>
<tr>
<td></td>
<td>Aviso</td>
<td>Não toque na unidade abastecedora de energia quando o cabo de alimentação estiver ligado. Em sistemas com interruptor, a corrente eléctrica estará presente na unidade abastecedora, sempre que o cabo de alimentação de energia estiver ligado, mesmo quando o interruptor se encontrar desligado. Para sistemas sem interruptor, a tensão eléctrica dentro da unidade abastecedora só estará presente quando o cabo de alimentação estiver ligado.</td>
</tr>
</tbody>
</table>

Table 25  Power supply warning in other languages  (continued)
Appendix B Safety Statements

Table 25  Power supply warning in other languages  (continued)

| Advertencia | No tocar la fuente de alimentación mientras el cable esté enchufado. En sistemas con interruptor de alimentación, hay voltajes de línea dentro de la fuente, incluso cuando el interruptor esté en Apagado (OFF) y el cable de alimentación enchufado. En sistemas sin interruptor de alimentación, hay voltajes de línea en la fuente cuando el cable está enchufado. |
| Warning | Vidrör inte strömförsörjningsenheten när nätsladden är ansluten. För system med strömbrytare finns det nätspänning i strömförsörjningsenheten även när strömmen har slagits av men nätsladden är ansluten. För system utan strömbrytare finns det nätspänning i strömförsörjningsenheten när nätsladden är ansluten. |

Main Power Disconnect Warning

WARNING The power supply cord is used as the main disconnect device. Ensure that the socket outlet is located or installed near the equipment and is easily accessible.

Table 26  Power disconnect warning in other languages

| Attention | Le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée à proximité de l'équipement et être facile d'accès. |

Installation Warning

WARNING Read the installation instructions before you connect the system to its power source.

Table 27  Install instructions warning in other languages

| Waarschuwing | Raadpleeg de installatie-aanwijzingen voordat u het systeem met de voeding verbindt. |
| Varoitus | Lue asennusohjeet ennen järjestelmän yhdistämistä virtalähteeseen. |
| Attention | Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation. |
Power Disconnect Warning

When working on a chassis or near power supplies, follow the Guided Maintenance procedures in the AxiomONE Storage Services Manager for instructions on how to work with and around power supplies. Use extreme caution because line voltages may be present within the chassis.

Warning Statement for Norway and Sweden

Table 28 Warnings for Norway and Sweden

<table>
<thead>
<tr>
<th>Advarsel</th>
<th>Apparatet skal kobles til en jordet stikkontakt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>Apparaten skal anslutas till jordat nättag.</td>
</tr>
</tbody>
</table>
Restricted Access Area Warning

This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

Table 29 Restricted access warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Dit toestel is bedoeld voor installatie op plaatsen met beperkte toegang. Een plaats met beperkte toegang is een plaats waar toegang slechts door servicepersoneel verkregen kan worden door middel van een speciaal instrument, een slot en sleutel, of een ander veiligheidsmiddel, en welke beheerd wordt door de overheidsinstantie die verantwoordelijk is voor de locatie.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Tämä laite on tarkoitettu asennettavaksi paikkaan, johon pääsy on rajoitetta. Päikka, johon pääsy on rajoitetta, tarkoittaa paikkaa, johon vain huoltohenkilöstö pääsee jonkin erikoistyökalun, lukkoon sopivan avaimen tai jonkin muun turvalaitteen avulla ja joka on paikasta vastuussa olevien toimivaltaisten henkilöiden valvoma.</td>
</tr>
<tr>
<td>Attention</td>
<td>Cet appareil est à installer dans des zones d'accès réservé. Ces dernières sont des zones auxquelles seul le personnel de service peut accéder en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité. L'accès aux zones de sécurité est sous le contrôle de l'autorité responsable de l'emplacement.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>Questa unità deve essere installata in un'area ad accesso limitato. Un'area ad accesso limitato è un'area accessibile solo a personale di assistenza tramite un'attrezzo speciale, lucchetto, o altri dispositivi di sicurezza, ed è controllata dall'autorità responsabile della zona.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Denne enheten er laget for installasjon i områder med begrenset adgang. Et område med begrenset adgang gir kun adgang til servicepersonale som bruker et spesielt verkøy, lås og nøkkel, eller en annen sikkerhetsanordning, og det kontrolleres av den autoriteten som er ansvarlig for området.</td>
</tr>
</tbody>
</table>
## Table 29 Restricted access warning for other languages (continued)

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviso</td>
<td>Esta unidade foi concebida para instalação em áreas de acesso restrito. Uma área de acesso restrito é uma área à qual apenas tem acesso o pessoal de serviço autorizado, que possua uma ferramenta, chave e fechadura especial, ou qualquer outra forma de segurança. Esta área é controlada pela autoridade responsável pelo local.</td>
</tr>
<tr>
<td>Advertencia</td>
<td>Esta unidad ha sido diseñada para instalarse en áreas de acceso restringido. Área de acceso restringido significa un área a la que solamente tiene acceso el personal de servicio mediante la utilización de una herramienta especial, cerradura con llave, o algún otro medio de seguridad, y que está bajo el control de la autoridad responsable del local.</td>
</tr>
<tr>
<td>Warning</td>
<td>Denna enhet är avsedd för installation i områden med begränsat tillträde. Ett område med begränsat tillträde får endast tillträdes av servicepersonal med ett speciellt verktyg, lås och nyckel, eller annan säkerhetsanordning, och kontrolleras av den auktoritet som ansvarar för området.</td>
</tr>
</tbody>
</table>

## Product Disposal Warning

**WARNING** Ultimate disposal of this product should be handled according to all national laws and regulations.

## Table 30 Product disposal warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Dit produkt dient volgens alle landelijke wetten en voorschriften te worden afgedankt.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Tämän tuotteen lopullisesta hävittämisestä tulee huolehtia kaikkia valtakunnallisia lakeja ja säännöksiä noudattaen.</td>
</tr>
<tr>
<td>Attention</td>
<td>La mise au rebut définitive de ce produit doit être effectuée conformément à toutes les lois et réglementations en vigueur.</td>
</tr>
<tr>
<td>Warnung</td>
<td>Dieses Produkt muß den geltenden Gesetzen und Vorschriften entsprechend entsorgt werden.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>L'eliminazione finale di questo prodotto deve essere eseguita osservando le normative italiane vigenti in materia.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Endelig disponering av dette produktet må skje i henhold til nasjonale lover og forskrifter.</td>
</tr>
</tbody>
</table>
Jewelry Removal Warning

Some equipment is connected to power lines. Before you work on this equipment, remove all jewelry that contains metal. Such jewelry includes rings, necklaces, and watches. Metal objects heat up when connected to power and ground. Hot metal objects can cause serious burns or weld the metal object to the terminals.

Table 31 Jewelry removal warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviso</td>
<td>A descartagem final deste produto deverá ser efectuada de acordo com os regulamentos e a legislação nacional.</td>
</tr>
<tr>
<td>Advertencia</td>
<td>El desecho final de este producto debe realizarse según todas las leyes y regulaciones nacionales.</td>
</tr>
<tr>
<td>Varning</td>
<td>Slutlig kassering av denna produkt bör skötas i enlighet med landets alla lagar och föreskrifter.</td>
</tr>
<tr>
<td>Waarschuwing</td>
<td>Alvorens aan apparatuur te werken die met elektrische leidingen is verbonden, sieraden (inclusief ringen, kettingen en horloges) verwijderen. Metalen voorwerpen worden warm wanneer ze met stroom en aarde zijn verbonden, en kunnen ernstige brandwonden veroorzaken of het metalen voorwerp aan de aansluitklemmen lassen.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Ennen kuin työskentelet voimavirtajohtoihin kytkettyjen laitteiden parissa, ota pois kaikki korut (sormukset, kaulakorut ja kellot mukaan lukien). Metalliesineet kuumenevat, kun ne ovat yhteydessä sähkövirran ja maan kanssa, ja ne voivat aiheuttaa vakavia palovammoja tai hitsata metalliesineet kiinni liitännapoihin.</td>
</tr>
<tr>
<td>Attention</td>
<td>Avant d'accéder à cet équipement connecté aux lignes électriques, ôter tout bijou (anneaux, colliers et montres compris). Lorsqu'ils sont branchés à l'alimentation et reliés à la terre, les objets métalliques chauffent, ce qui peut provoquer des blessures graves ou souder l'objet métallique aux bornes.</td>
</tr>
</tbody>
</table>
### Appendix B Safety Statements

#### Table 31 Jewelry removal warning for other languages (continued)

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>Vor der Arbeit an Geräten, die an das Netz angeschlossen sind, jeglichen Schmuck (einschließlich Ringe, Ketten und Uhren) abnehmen. Metallgegenstände erhitzen sich, wenn sie an das Netz und die Erde angeschlossen werden, und können schwere Verbrennungen verursachen oder an die Anschlußklemmen angeschweißt werden.</td>
</tr>
<tr>
<td>Italian</td>
<td>Prima di intervenire su apparecchiature collegate alle linee di alimentazione, togliersi qualsiasi monile (inclusi anelli, collane, braccialetti ed orologi). Gli oggetti metallici si riscaldano quando sono collegati tra punti di alimentazione e massa: possono causare ustioni gravi oppure il metallo può saldarsi ai terminali.</td>
</tr>
<tr>
<td>Norwegian</td>
<td>Fjern alle smykker (inkludert ringar, halskjeder og klokker) før du skal arbeide på utstyr som er koblet til kraftledninger. Metallgjenstander som er koblet til kraftledninger og jord blir svært varme og kan forårsake alvorlige brannskader eller smelte fast til polene.</td>
</tr>
<tr>
<td>Portuguese</td>
<td>Antes de trabalhar em equipamento que esteja ligado a linhas de corrente, retire todas as jóias que estiver a usar (incluindo anéis, fios e relógios). Os objectos metálicos aquecerão em contacto com a corrente e em contacto com a ligação à terra, podendo causar queimaduras graves ou ficarem soldados aos terminais.</td>
</tr>
<tr>
<td>Spanish</td>
<td>Antes de operar sobre equipos conectados a líneas de alimentación, quitarse las joyas (incluidos anillos, collares y relojes). Los objetos de metal se calientan cuando se conectan a la alimentación y a tierra, lo que puede ocasionar quemaduras graves o que los objetos metálicos queden soldados a los bornes.</td>
</tr>
<tr>
<td>Swedish</td>
<td>Tag av alla smycken (inklusive ringar, halsband och armbandsur) innan du arbetar på utrustning som är kopplad till kraftledningar. Metallobjekt hettas upp när de kopplas ihop med ström och jord och kan förorsaka allvarliga brännskador; metallobjekt kan också sammansvetsas med kontaktarna.</td>
</tr>
</tbody>
</table>

## Qualified Personnel Warning

**WARNING** Only qualified personnel should install or replace this equipment.
### Table 32 Qualified personnel warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.</td>
</tr>
<tr>
<td>Avertissement</td>
<td>Tout installation ou remplacement de l’appareil doit être réalisé par du personnel qualifié et compétent.</td>
</tr>
<tr>
<td>Achtung</td>
<td>Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.</td>
</tr>
<tr>
<td>Aviso</td>
<td>Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.</td>
</tr>
<tr>
<td>Atención</td>
<td>Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.</td>
</tr>
<tr>
<td>Warning</td>
<td>Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.</td>
</tr>
</tbody>
</table>

### Warning Statement for Finland

Table 33 Warnings for Finland

| Varoitus | Alleviates ja suojaalkitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. |

### Warning Statement for Sweden

Table 34 Warnings for Sweden

| Warning | Osynlig laserstrålning när denna del är öppen och förregleringen är urkopplad. Rikta inte blicken in mot strålen. |
Power Cabling Warning

⚠️ WARNING ⚠️ Secure all power cabling when you install this unit to avoid disturbing field-wiring connections.

Table 35  Power cabling warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Zet alle stroomkabels vast wanneer dit toestel wordt geïnstalleerd om te voorkomen dat de verbindingen van de veldbedrading worden verstoord.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Kiinnitä kaikki voimakaapelit tiukkaan tätä laitetta asentaessasi, jotta vältät ketään johdinkytkentöjen vioittumista.</td>
</tr>
<tr>
<td>Attention</td>
<td>Lors de l'installation de cet appareil, fixer tous les câbles d'alimentation pour éviter de provoquer des perturbations aux raccordements des câblages propres au site.</td>
</tr>
<tr>
<td>Warnung</td>
<td>Bei der Installation dieser Einheit die Netzverkabelung befestigen, um die Störung von Feldkabelanschlüssen zu vermeiden.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>In fase di installazione dell'unità, assicurare tutti i cablaggi di alimentazione per evitare di alterare i collegamenti degli avvolgimenti di campo.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Når denne enheten installeres, må alle kraftledninger sikres for å unngå at feltkabel koblingene forstyrrer.</td>
</tr>
<tr>
<td>Aviso</td>
<td>Para evitar problemas com as ligações de rede de campanha, prenda todos os cabos de corrente quando instalar esta unidade.</td>
</tr>
<tr>
<td>Advertencia</td>
<td>Sujetar todo el cableado de alimentación cuando se instale este equipo para evitar que se mezcle con las conexiones del cableado &quot;in situ&quot;.</td>
</tr>
<tr>
<td>Warning</td>
<td>Fäst allt starkströmsgablage vid installation av denna enhet så att fältkopplingen inte rubbas.</td>
</tr>
</tbody>
</table>

Supply Circuit Warning

⚠️ WARNING ⚠️ Do not overload the circuit when you connect components to the power supply.
Appendix B Safety Statements

Table 36 Supply circuit warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Let erop dat de toestellen op voedingscircuits worden aangesloten zonder het vermogen van de bedrading te overschrijden.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Laiteyksiköt on yhdistettävä huolellisesti syöttöpiiriin niin, että johdot eivät ole ylikuormitettuja.</td>
</tr>
<tr>
<td>Avertissement</td>
<td>Veillez à bien connecter les unités au circuit d'alimentation afin de ne pas surcharger les connections.</td>
</tr>
<tr>
<td>Achtung</td>
<td>Beim Anschließen der Geräte an das Stromnetz ist darauf zu achten, daß die Schaltverbindungen nicht überlastet werden.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>Fare attenzione quando si collegano le unità al circuito di alimentazione, per non sovraccaricare i cablaggi.</td>
</tr>
<tr>
<td>Advarsel</td>
<td>Vær nøye med å koble enheter til strømforsyningskretsen slik at ledningene ikke overbelastes.</td>
</tr>
<tr>
<td>Aviso</td>
<td>Deverá ter precaução ao ligar unidades ao circuito de fornecimento de energia, para não sobrecarregar a instalação.</td>
</tr>
<tr>
<td>Atención</td>
<td>Poner mucho cuidado al conectar los equipos al circuito de alimentación a fin de no sobrecargar el cableado.</td>
</tr>
<tr>
<td>Warning</td>
<td>Var noga vid anslutning av enheter till matarströmkretsen så att ledningarna inte överbelastas.</td>
</tr>
</tbody>
</table>

Voltage Mismatch Warning

A voltage mismatch can cause equipment damage and may pose a fire hazard. If the voltage indicated on the label differs from the power outlet voltage, do not connect the chassis to that receptacle.

Table 37 Voltage mismatch warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Aansluiting op een verkeerd voedingsvoltaged kan beschadiging van de apparatuur veroorzaken en tot brandgevaar leiden. Het chassis mag niet aangesloten worden als de spanning die op het label staat aangegeven, anders is dan de spanning van het stopcontact.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Erisuuruiisten jännitteiden yhdistäminen voi aiheuttaa laitevaurion ja tulipalon vaaran. Jos tarraan merkitty jännite eroaa pistorasian jännitteestä, älä yhdistä asennuspohjaa pistorasiaan.</td>
</tr>
</tbody>
</table>
SELV Circuit Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.
<table>
<thead>
<tr>
<th>Language</th>
<th>SELV circuit warning for other languages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Om elektrische schokken te vermijden, mogen veiligheids circuits met extra lage spanning (genaamd SELV = Safety Extra-Low Voltage) niet met telefoonnetwerkspanning (TNV) circuits verbonden worden. LAN (Lokaal netwerk) poorten bevatten SELV circuits en WAN (Regionaal netwerk) poorten bevatten TNV circuits. Sommige LAN en WAN poorten gebruiken allebei RJ-45 connectors. Ga voorzichtig te werk wanneer u kabels verbindt.</td>
</tr>
<tr>
<td>Attention</td>
<td>Pour éviter une électrocution, ne raccordez pas les circuits de sécurité basse tension (Safety Extra-Low Voltage ou SELV) à des circuits de tension de réseau téléphonique (Telephone Network Voltage ou TNV). Les ports du réseau local (LAN) contiennent des circuits SELV et les ports du réseau longue distance (WAN) sont munis de circuits TNV. Certains ports LAN et WAN utilisent des connecteurs RJ-45. Raccordez les câbles en prenant toutes les précautions nécessaires.</td>
</tr>
<tr>
<td>Avvertenza</td>
<td>Per evitare scosse elettriche, non collegare circuiti di sicurezza a tensione molto bassa (SELV) ai circuiti a tensione di rete telefonica (TNV). Le porte LAN contengono circuiti SELV e le porte WAN contengono circuiti TNV. Alcune porte LAN e WAN fanno uso di connettori RJ-45. Fare attenzione quando si collegano cavi.</td>
</tr>
</tbody>
</table>
Table 38 SELV circuit warning for other languages (continued)

<table>
<thead>
<tr>
<th>Language</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviso</td>
<td>Para evitar choques eléctricos, no conecte os circuitos de tensão SELV aos circuitos de rede telefónica TNV. As portas LAN contêm circuitos SELV e as portas WAN contêm circuitos TNV. Algumas portas LAN e WAN usam conectores RJ-45. Tenha o devido cuidado ao conectar os cabos.</td>
</tr>
<tr>
<td>Advertencia</td>
<td>Para evitar la sacudida eléctrica, no conectar circuitos de seguridad de voltaje muy bajo (SELV) con circuitos de voltaje de red telefónica (TNV). Los puertos de redes de área local (LAN) contienen circuitos SELV, y los puertos de redes de área extendida (WAN) contienen circuitos TNV. En algunos casos, tanto los puertos LAN como los WAN usan conectores RJ-45. Proceda con precaución al conectar los cables.</td>
</tr>
</tbody>
</table>

Incorrect Connection Warning

⚠️ WARNING ⚠️ Incorrect connection of this equipment to a general purpose outlet could result in a hazardous situation.

Table 39 Connection warning for other languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waarschuwing</td>
<td>Incorrecte aansluiting van deze of aangesloten apparatuur op een stopcontact voor algemene doeleinden kan een gevaarlijke situatie tot gevolg hebben.</td>
</tr>
<tr>
<td>Varoitus</td>
<td>Tämän laitteen tai siihen liitettyjen laitteiden virheetlinen yleispistorasiaan voi aiheuttaa vaaratilanteen.</td>
</tr>
<tr>
<td>Attention</td>
<td>Un branchement incorrect de cet équipement ou de l'équipement branché à une prise d'usage général peut créer une situation dangereuse.</td>
</tr>
<tr>
<td>Warnung</td>
<td>Inkorrektes Anschließen von diesem oder damit verbundenen Geräten an einer Allzwecksteckdose kann eine Gefahrensituation verursachen.</td>
</tr>
</tbody>
</table>
Caution Notices

**CAUTION**

It is required that, if interconnecting equipment resides within more than one equipment rack, these racks should be at the same ground potential.

**CAUTION**

When handling any electronic device, be sure to take electrostatic discharge (ESD) precautions. The minimum requirement is a properly grounded antistatic wrist strap and grounding wire.

**CAUTION**

If removal of a FRU or blanking plate leaves a hole, block the hole quickly with a blanking plate or by installing a replacement FRU. Failure to do this can disrupt airflow and seriously reduce cooling.

**CAUTION**

Ambient temperature within the rack may be greater than that of the room. With regard to the maximum rated ambient for Axiom components, do not reduce the amount of airflow that is required for safe operation.
Never block the ventilation holes in a chassis. Sufficient air circulation is required for the internal components to operate properly and to prevent the possibility of fire. Do not push objects of any kind into the ventilation holes. Such action could result in fire or electrical shock. Keep all liquids away from Axiom components.

Ensure that component weight distribution in the rack is balanced. Uneven weight distribution can cause hazardous instability. The rack should have stabilization feet or brackets installed, or have another means that does not allow the rack to tip when you service it. At a minimum, we recommend that you install stabilization brackets on the rear feet of the rack because the rack is front-heavy.

Slammers weigh 100 lb (45.4 kg). To handle them safely, use an appropriate number of persons.

Qualified personnel are advised to exercise great care at all times when they work on an Axiom system. Remember to:

- Remove rings, watches, or other jewelry and neckties before you begin any procedure.
- Use caution near fan assemblies; the moving parts can change speed unexpectedly.
- Use the correct tools for the job.
- Keep all paperwork up to date, complete, and accurate.

The sum of the ratings of the components that plug into the PDU must be less than 80% of the current and power ratings of the PDU. Similarly, the current rating of the PDU must be less than 80% of the rating for the building supply circuit.

A Brick weighs up to 65 lb (29.5 kg). For safe handling, use two people to lift it.
APPENDIX C

Hardware Specifications

Introduction to Hardware Specifications

Hardware specifications (sometimes called data sheets):

- Describe the system’s operating environment.
- List the agency approvals.
- List physical attributes of the Axiom system and its hardware components.

Axiom Hardware Specifications

An Axiom storage system is an assembly of the following components, all of which are described in this appendix:

- One Pilot management controller.
  For details, see Pilot Hardware Specifications.
- One or two Slammer storage controllers.
  For details, see Slammer Hardware Specification.
- Two to 16 Brick storage enclosures.
  For details, see Brick Hardware Specification.
Axiom Hardware Specifications

• One to four PDUs per rack, the number of which depends on power inlet characteristics and the number of components in each rack.
  For details, see Axiom PDU Hardware Specification.

• One or two racks, the number of which depends on the configuration of Slammers and Bricks.
  For details, see Pillar Rack Hardware Specification.

A Pillar Axiom storage system has the characteristics that are described on the following pages.

System Power Requirements

Axiom systems require one of the power inputs shown below. The voltage and frequency show minimum and maximum values.

• 100-120 V, 47-63 Hz, 20 A
• 200-240 V, 47-63 Hz, 20 A
• 100-120 V, 47-63 Hz, 30 A
• 200-240 V, 47-63 Hz, 30 A
• 230 V, 16 A or 32 A (Europe)
• Wye-connected 3-phase:
  • USA: 199-217 V, 47-63 Hz, 30 A
  • Europe: 380-415 V, 47-63 Hz, 16 A

The total power required by a rack depends on the number and type of hardware that is in the rack.

System Environmentals

Table 40  System altitude specifications

<table>
<thead>
<tr>
<th>Mode</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>operational</td>
<td>-200 to 10,000 ft (-61 to 3048 m)</td>
</tr>
<tr>
<td>nonoperational</td>
<td>-200 to 40,000 ft (-61 to 12,192 m)</td>
</tr>
</tbody>
</table>
Table 41 System temperature and humidity specifications

<table>
<thead>
<tr>
<th>Mode</th>
<th>Temperature</th>
<th>Non-condensing Humidity</th>
<th>Max wet bulb temperature</th>
<th>Gradient</th>
</tr>
</thead>
<tbody>
<tr>
<td>operational</td>
<td>+41 to 104º F</td>
<td>10–85%</td>
<td>86º F</td>
<td>36º F/hr</td>
</tr>
<tr>
<td></td>
<td>(5 to 40º C) up to 7000 ft</td>
<td>10%/hr gradient</td>
<td>(30º C)</td>
<td>(20º C/hr)</td>
</tr>
<tr>
<td>nonoperational</td>
<td>-40 to 158º F</td>
<td>5–95%</td>
<td>104º F</td>
<td>54º F/hr</td>
</tr>
<tr>
<td></td>
<td>(-40 to 70º C)</td>
<td></td>
<td>(40º C)</td>
<td>(30º C/hr)</td>
</tr>
</tbody>
</table>

Note: For Bricks that have five-platter disk drives, the maximum ambient operational temperature from 7000 ft to 10,000 ft is 95º F (35º C).

Acoustics for an Axiom system that comprises the following components were tested to ISO 7779 by standard specifications:

- One Pilot
- One NAS Slammer
- Three Bricks

Such a system generates an acoustic level that is no greater than 70 dBA.

Table 42 System acoustics specification

**Acoustic level (tested to ISO7779)**

Does not exceed 6.5 Bels under normal conditions, which is:

- 73.4º F (23º C) ambient
- all fans operational
- no fault conditions

The acoustic level will increase under fault conditions.

Table 43 System random vibration specifications

<table>
<thead>
<tr>
<th>Mode</th>
<th>Force</th>
<th>Frequency</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>operational</td>
<td>0.1 G RMS</td>
<td>3–100 hz (X, Y, and Z axis)</td>
<td>15 min</td>
</tr>
<tr>
<td>nonoperational</td>
<td>Administered using the Telcordia GR-63 CORE test specifications. Tested with the rack inside a shipping crate.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
System Regulatory Agency Compliance

Agency approvals are based on a system that consists of:

• One Pilot.
• Two NAS Slammers.
• Twelve Bricks.

This section identifies:

• Regulatory Agency Compliances
• FCC Warning Statement
• European Union Compliance Statement

Regulatory Agency Compliances

The Axiom storage system complies with the following regulatory agency requirements.

Table 44 Safety, quality, and environmental standards

<table>
<thead>
<tr>
<th>Logo</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logo</td>
<td>Standard</td>
</tr>
<tr>
<td></td>
<td>FCC (United States). This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:</td>
</tr>
<tr>
<td></td>
<td>(1) This device may not cause harmful interference.</td>
</tr>
<tr>
<td></td>
<td>(2) This device must accept any interference that may be received, including interference that may cause undesired operation.</td>
</tr>
<tr>
<td>CB Scheme by IEC60950, First Edition</td>
<td>Conformite Europeenne /DoC</td>
</tr>
<tr>
<td>UL and CSA under UL (cUL)</td>
<td>TUV/GS</td>
</tr>
</tbody>
</table>
Pillar Data Systems offers customers a recycle program to properly dispose of surplus products and products that have reached their end of life. Equipment that is returned to Pillar through this program is disposed of in an environmentally safe manner using processes that comply with the WEEE (EU Directive on Waste Electrical and Electronic Equipment) regulations. Pillar provides (on request) documentation about product disposition when the recycling process is complete. Upon request, Pillar also provides a Certificate of Destruction, which releases the customer from further liability for the equipment returned through the Recycle program.

Customers should contact Pillar customer service department for information on the logistics and location(s) of the approved recycle facilities.

Pillar Data Systems objectives are to ensure that our high product quality and reliability standards are met through the processes that have been verified and approved. This is achieved through ISO 9001:2000 and the development and deployment of Pb-free solder qualification guidelines for components (RoHS), interconnects, and PCB, PCA reliability. Pillar will continue to work with industry consortia to define common qualification criteria. Pillar will apply Pb-free solder technologies to product designs as required by legislation.

<table>
<thead>
<tr>
<th>Logo</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Pillar Logo" /></td>
<td>Pillar Data Systems offers customers a recycle program to properly dispose of surplus products and products that have reached their end of life. Equipment that is returned to Pillar through this program is disposed of in an environmentally safe manner using processes that comply with the WEEE (EU Directive on Waste Electrical and Electronic Equipment) regulations. Pillar provides (on request) documentation about product disposition when the recycling process is complete. Upon request, Pillar also provides a Certificate of Destruction, which releases the customer from further liability for the equipment returned through the Recycle program. Customers should contact Pillar customer service department for information on the logistics and location(s) of the approved recycle facilities.</td>
</tr>
<tr>
<td><img src="image2.png" alt="RoHS logo" /></td>
<td>Pillar Data Systems objectives are to ensure that our high product quality and reliability standards are met through the processes that have been verified and approved. This is achieved through ISO 9001:2000 and the development and deployment of Pb-free solder qualification guidelines for components (RoHS), interconnects, and PCB, PCA reliability. Pillar will continue to work with industry consortia to define common qualification criteria. Pillar will apply Pb-free solder technologies to product designs as required by legislation.</td>
</tr>
<tr>
<td></td>
<td>ISO 9001:2000 Registered manufacturing process</td>
</tr>
</tbody>
</table>
Table 45  EM emissions and immunity

<table>
<thead>
<tr>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CISPR 22-A</td>
</tr>
<tr>
<td>• EN55022 Class A radiated and conducted emissions (100V/240V)</td>
</tr>
<tr>
<td>• EN55024 Immunity:</td>
</tr>
<tr>
<td>• EN 61000-3-2</td>
</tr>
<tr>
<td>• EN 61000-3-3</td>
</tr>
<tr>
<td>• EN 61000-4-2 ESD: ±4 kV contact, ±8 kV air touch</td>
</tr>
<tr>
<td>• EN 61000-4-3 Radiated immunity (within the limits that are listed in our technical specifications)</td>
</tr>
<tr>
<td>• EN 61000-4-4 Electrical fast transients/burst: ±1 kV AC, ±0.5 kV I/O</td>
</tr>
<tr>
<td>• EN 61000-4-5 Surges ±1 kV differential mode, ±2 kV common mode</td>
</tr>
<tr>
<td>• EN 61000-4-6 Conducted immunity: 3 V</td>
</tr>
<tr>
<td>• EN 61000-4-8</td>
</tr>
<tr>
<td>• EN 61000-4-11 Supply dips and interruptions: 30% and 100%</td>
</tr>
<tr>
<td>• VCCI (Japan):</td>
</tr>
</tbody>
</table>
|   この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。     VCCI 〜A

FCC Warning Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.
You can determine if your equipment causes interference by turning it off. If the interference stops, it was probably caused by the equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits that are controlled by different circuit breakers or fuses.)

Changes or modifications that are not expressly approved by the party that is responsible for compliance could void the user’s authority to operate the equipment.

**European Union Compliance Statement**

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electro-magnetic compatibility. The manufacturer cannot accept responsibility for any failure to satisfy the protection requirements that result from a non-recommended modification of the product.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The Limits for Class A equipment were derived for residential environments to provide reasonable protection against interference with licensed communication equipment.

A Declaration of Conformity with the requirements of the Directive has been signed by Pillar Data Systems, 2840 Junction Avenue, San Jose, CA 95134.

The following standards were applied:

1. Emissions: EN55022 (Class A radiated and conducted, 110v/240v)
2. EMC: EN55024 (immunity):
   - EN 61000-3-2
   - EN 61000-3-3
Appendix C Hardware Specifications

- EN 61000-4-2 ESD: ±4 kV contact, ±8 kV air touch
- EN 61000-4-3 Radiated immunity (within the limits that are listed in our technical specifications)
- EN 61000-4-4 Electrical fast transients/burst: ±1 kV AC, ±0.5 kV I/O
- EN 61000-4-5 Surges ±1 kV differential mode, ±2 kV common mode
- EN 61000-4-6 Conducted immunity: 3 V
- EN 61000-4-11 Supply dips and interruptions: 30% and 100%

System Packaging and Transportation

Packaging meets the following requirements:

- For packages under 150 lb—International Safe Transit Association (ISTA 2A) Procedures 1 and 2.
- For packages over 150 lb—Network Equipment Building System (NEBS) core standards.
  GR-63-CORE, Packaged Equipment Shock (4.3.1), Office Vibration (4.4.3) and Transportation Vibration (4.4.4).

System Warranty

Hardware components in an Axiom storage system are covered by a three-year warranty.

Pilot Hardware Specifications

A Pilot is an active management and provisioning front end as well as the administrator interface to an Axiom storage system.
Pilot Dimensions and Weight

Table 46  Pilot dimensions and weight (both control units)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>3.5 in (8.9 cm); 2U</td>
</tr>
<tr>
<td>Width</td>
<td>17.7 in (45.0 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>24 in (61.0 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>40 lb (18.1 kg)</td>
</tr>
</tbody>
</table>

Pilot Power Characteristics

Table 47  Pilot power characteristics (per control unit)

<table>
<thead>
<tr>
<th>Power characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>47–63 Hz</td>
</tr>
<tr>
<td>AC voltage</td>
<td>100–240 V</td>
</tr>
<tr>
<td>Current draw</td>
<td>1.6 A at 115 V</td>
</tr>
<tr>
<td></td>
<td>0.8 A at 230 V</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>150 VA</td>
</tr>
<tr>
<td>Max heat dissipation</td>
<td>750 BTU/hr</td>
</tr>
<tr>
<td>AC plug type</td>
<td>2 IEC 320 connection</td>
</tr>
</tbody>
</table>

Pilot Regulatory Agency Compliance

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is may cause harmful interference, in which case the user must correct the interference at his own expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D’INSTALLATION AVANT DE RACCORDER AU RESEAU.

Table 48  Pilot safety and quality standards

<table>
<thead>
<tr>
<th>Logo</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FCC (United States). This device complies with FCC Rules Part 15 for a class B digital device.</td>
</tr>
<tr>
<td><img src="image" alt="CE" /></td>
<td>Conformite Europeenne /DoC</td>
</tr>
</tbody>
</table>

Pilot Packaging and Transportation

Packaging meets the following requirements:

- For packages under 150 lb—International Safe Transit Association (ISTA 2A) Procedures 1 and 2.
• For packages over 150 lb—Network Equipment Building System (NEBS) core standards.
  GR-63-CORE, Packaged Equipment Shock (4.3.1), Office Vibration (4.4.3) and Transportation Vibration (4.4.4).

Slammer Hardware Specification

Slammers are fully redundant controllers within an Axiom storage system. A Slammer can be ordered as either a SAN or a NAS front end.

Slammer Dimensions and Weight

Table 49  Slammer dimensions and weight

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>7 in (17.78 cm); 4U</td>
</tr>
<tr>
<td>Width</td>
<td>17.72 in (45 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>26 in (66 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>100 lb (45.4 kg)</td>
</tr>
</tbody>
</table>

Slammer Power Characteristics

Table 50  Slammer power characteristics

<table>
<thead>
<tr>
<th>Power characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>47–63 Hz</td>
</tr>
<tr>
<td>AC voltage</td>
<td>100–120V / 200–240V</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>720 VA</td>
</tr>
<tr>
<td>Current draw (combined for both control units)</td>
<td>6.4 A at 115 V, 3.2 A at 230 V</td>
</tr>
</tbody>
</table>
Table 50 Slammer power characteristics (continued)

<table>
<thead>
<tr>
<th>Power characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max heat dissipation</td>
<td>2220 BTU/hr</td>
</tr>
<tr>
<td>AC plug type</td>
<td>Four IEC 320 C13 connection</td>
</tr>
</tbody>
</table>

Slammer Regulatory Agency Compliance

Axiom Slammers comply with the following regulatory agency requirements.

Table 51 Slammer safety and quality standards

<table>
<thead>
<tr>
<th>Logo</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FCC (United States). This device complies with FCC Rules Part 15. Operation</td>
</tr>
<tr>
<td></td>
<td>is subject to the following two conditions:</td>
</tr>
<tr>
<td></td>
<td>(1) This device may not cause harmful interference and</td>
</tr>
<tr>
<td></td>
<td>(2) This device must accept any interference that maybe received, including</td>
</tr>
<tr>
<td></td>
<td>interference that may cause undesired operation.</td>
</tr>
<tr>
<td></td>
<td>CB Scheme by IECEE standard IEC 60950, Third Edition (1999)</td>
</tr>
<tr>
<td></td>
<td>Conformite Europeenne /DoC</td>
</tr>
<tr>
<td></td>
<td>UL and CSA under UL (cUL)</td>
</tr>
<tr>
<td></td>
<td>TUV/GS</td>
</tr>
<tr>
<td></td>
<td>ISO 9001:2000 Registered manufacturing process</td>
</tr>
</tbody>
</table>
Slammer Packaging and Transportation

Packaging meets the following requirements:

• For packages under 150 lb—International Safe Transit Association (ISTA 2A) Procedures 1 and 2.

• For packages over 150 lb—Network Equipment Building System (NEBS) core standards.

  GR-63-CORE, Packaged Equipment Shock (4.3.1), Office Vibration (4.4.3) and Transportation Vibration (4.4.4).
Brick Hardware Specification

A Brick is a high-performance disk subsystem with an optimized, proprietary RAID controller.

Brick Dimensions and Weight

Table 53 Brick dimensions and weight

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>3.5 in (8.89 cm); 2U</td>
</tr>
<tr>
<td>Width</td>
<td>17.72 in (45 cm)</td>
</tr>
<tr>
<td>Depth</td>
<td>22 in (55.88 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>65 lb (29.5 kg)</td>
</tr>
</tbody>
</table>

Brick Power Characteristics

Table 54 Brick power characteristics

<table>
<thead>
<tr>
<th>Power characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>47–63 Hz</td>
</tr>
<tr>
<td>AC voltage</td>
<td>100–120V / 200–240V</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>267 VA</td>
</tr>
<tr>
<td>Current draw</td>
<td>2.667 A at 115 V&lt;br&gt;1.233 A at 230 V</td>
</tr>
<tr>
<td>Max heat dissipation</td>
<td>1370 BTU/hr</td>
</tr>
<tr>
<td>AC plug type</td>
<td>Two IEC 320 connections</td>
</tr>
</tbody>
</table>
Brick Regulatory Agency Compliance

Axiom Bricks comply with the following regulatory agency requirements.

Table 55  Brick safety and quality standards

<table>
<thead>
<tr>
<th>Logo</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FCC (United States). This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:</td>
</tr>
<tr>
<td></td>
<td>(1) This device may not cause harmful interference and</td>
</tr>
<tr>
<td></td>
<td>(2) This device must accept any interference that maybe received, including interference that may cause undesired operation.</td>
</tr>
<tr>
<td></td>
<td>Conformite Europeenne /DoC</td>
</tr>
<tr>
<td></td>
<td>UL and CSA under UL (cUL)</td>
</tr>
<tr>
<td></td>
<td>TUV/GS</td>
</tr>
<tr>
<td></td>
<td>ISO 9001:2000 Registered manufacturing process</td>
</tr>
</tbody>
</table>

Table 56  Brick EM emissions and immunity

<table>
<thead>
<tr>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CISPR 22-A</td>
</tr>
<tr>
<td>• EN55022 Class A radiated and conducted emissions (110v/220v)</td>
</tr>
<tr>
<td>• EN55024 Immunity:</td>
</tr>
<tr>
<td>• EN 61000-3-2</td>
</tr>
<tr>
<td>• EN 61000-3-3</td>
</tr>
<tr>
<td>• EN 61000-4-2 ESD: ±4 kV contact, ±8 kV air</td>
</tr>
<tr>
<td>• EN 61000-4-3 Radiated immunity (within the limits that are listed in our technical specifications)</td>
</tr>
<tr>
<td>• EN 61000-4-4 Electrical fast transients/burst: ±1 kV AC, ±0.5 kV I/O</td>
</tr>
<tr>
<td>• EN 61000-4-5 Surges ±1 kV differential mode, ±2 kV common mode</td>
</tr>
<tr>
<td>• EN 61000-4-6 Conducted immunity: 3 V</td>
</tr>
<tr>
<td>• EN 61000-4-11 Supply dips and interruptions: 30% and 100%</td>
</tr>
</tbody>
</table>
Brick Packaging and Transportation

Packaging meets the following requirements:

- For packages under 150 lb—International Safe Transit Association (ISTA 2A) Procedures 1 and 2.
- For packages over 150 lb—Network Equipment Building System (NEBS) core standards.

GR-63-CORE, Packaged Equipment Shock (4.3.1), Office Vibration (4.4.3) and Transportation Vibration (4.4.4).
### Axiom PDU Hardware Specification

If you install non-Pillar PDUs, they must meet the Pillar Data Systems PDU specification, as outlined below.

#### Table 57  PDU specifications

<table>
<thead>
<tr>
<th>Criteria</th>
<th>20 amp</th>
<th>30 amp</th>
</tr>
</thead>
</table>
| Form factor               | EIA Rack Mountable  
1 U high (1.75 in, 4.45 cm)  
< 8 in (20.3 cm) deep      | EIA Rack Mountable  
1 U high (1.75 in, 4.45 cm)  
< 8 in (20.3 cm) deep      |
| Receptacles               | C13, 12 receptacles min. Mounted on rear of chassis (opposite circuit breakers). | C13, 12 receptacles min. Mounted on rear of chassis (opposite circuit breakers). |
| Inlet cable               | 15 ft (4.572 m) min  
Plug options: L6-20P, L5-20P | 15 ft (4.572 m) min  
Plug options: L6-30P, L5-30P |
| Voltage input             | 100–240 VAC                                                           | 100–240 VAC                                                           |
| Voltage output            | 100–240 VAC                                                           | 100–240 VAC                                                           |
| Circuit breakers          | Two, 10 A ea. Each circuit breaker controls half of the outlet receptacles. | Two, 15 A ea. Each circuit breaker controls half of the outlet receptacles. |
| Receptacle retention device | All receptacles have a plug retention device.                         | All receptacles have a plug retention device.                         |
| Inlet cable retention device | If a detachable inlet cable is provided, a cable retention device is included. | NA                                                                    |
| EMI/RFI filter            | Common Mode Insertion Loss 10 db @ 1 MHz, Differential Mode 30 db @ 1 MHz. MHz/db - .15/6, .50 | Common Mode Insertion Loss 10 db @ 1 MHz, Differential Mode 30 db @ 1 MHz. MHz/db - .15/6, .50 |
| Surge suppression         | 270 VAC                                                               | 320 VAC                                                               |
Appendix C Hardware Specifications

Pillar Rack Hardware Specification

A Pillar 42 U rack contains:

- One Pilot.
- One or two NAS or SAN Slammers.
- Two to 15 Bricks. The exact number of Bricks depends on the number of Slammers in the rack.
- Two to four power distribution units.

Table 58 Rack specifications for an Axiom system

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Pillar 42 U</th>
<th>Non-Pillar 42 U (minimum requirements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (inside)</td>
<td>42 U 73.6 in (187 cm)</td>
<td>42 U 73.6 in (187 cm)</td>
</tr>
</tbody>
</table>
| Width (inside)      | 17.7 in (45 cm) | • 19 in (48.26 cm) panel  
|                     |               | • 17.7 in (45 cm) rail-to-rail |
| Height (outside)    | 78.7 in (199.9 cm) | NA |
| Width               | • 23.8 in (60.48 cm) overall  
|                     | • 17.7 in (45 cm) rail-to-rail  
|                     | • 19 in (48.26 cm) panel | NA |
| Depth (inside)      | • 35 in (88.9 cm)  
|                     | • 26–30 in (66–76.2 cm) rail-to-rail | • 35 in (88.9 cm) overall  
|                     |               | • 26–30 in (66–76.2 cm) rail-to-rail |
| Front door          | • Vented     
|                     | • Light-tint Plexiglas  
|                     | • 1.5 in (3.81 cm) deep  
|                     | • Lockable  
|                     | • Open left/right  
|                     | • 1 in (2.54 cm) clearance between front vertical channel and inside of frame |
| Rear door           | • Vented     
|                     | • Lockable  
|                     | • Open left/right |
| Sides               | • Solid       
|                     | • Removable  
|                     | • Lockable  
|                     | • 1 in (2.54 cm) between side and frame | Vented  
|                     | NA |

Pillar Data Systems Confidential

Pillar Rack Hardware Specification
The center of gravity of a populated Pillar 42 U rack is toward the front. The threshold tilt angle depends on whether the front or rear of the rack faces down the slope:

- Front faces downward: 12° maximum slope.
- Rear faces downward: 24° maximum slope.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Pillar 42 U</th>
<th>Non-Pillar 42 U (minimum requirements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical channels</td>
<td>• Square- or round-hole unthreaded</td>
<td>• EIA spacing</td>
</tr>
<tr>
<td></td>
<td>• 26 in (66 cm) apart</td>
<td>• Front-to-rear mounting</td>
</tr>
<tr>
<td>Vents</td>
<td>• Front and back doors</td>
<td>• Cage nuts</td>
</tr>
<tr>
<td></td>
<td>• Top</td>
<td>• Square or round EIA-standard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mounting holes preferred</td>
</tr>
<tr>
<td>PDU</td>
<td>• 4 PDUs</td>
<td>• Redundant power</td>
</tr>
<tr>
<td></td>
<td>• 90–240 VAC, 50-60 Hz</td>
<td>• 90–240 VAC, 50-60 Hz</td>
</tr>
<tr>
<td></td>
<td>• 20-30 A</td>
<td>• 8350 watts</td>
</tr>
<tr>
<td></td>
<td>• 42 C13 outlets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Horizontal mount</td>
<td></td>
</tr>
<tr>
<td>Heat dissipation</td>
<td>28,500 BTU/hr</td>
<td>28,500 BTU/hr</td>
</tr>
<tr>
<td>Frame gauge</td>
<td></td>
<td>12-14</td>
</tr>
<tr>
<td>Loaded weight</td>
<td>1505 lb (683 kg)</td>
<td>1505 lb (683 kg)</td>
</tr>
<tr>
<td>Topple angle when fully loaded and</td>
<td>• 12° when front of rack faces downward</td>
<td>NA</td>
</tr>
<tr>
<td>stationary</td>
<td>• 24° when rear of rack faces downward</td>
<td></td>
</tr>
</tbody>
</table>
Figure 70 Maximum tilt angles for stationary Pillar 42 U racks
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