

Pillar Axiom[®] 500



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Table of Contents

Preface

Part I: Introduction to Cabling Pillar Axiom 500 Systems

Sheet 1 About This Reference.	10
Cautions and Warnings.	10
Supported Hardware Components.	10
Sheet 2 Introduction to Cabling the Storage System Fabric (SSF).	11
About Cabling a Pillar Axiom System.	11
Different Versions of Hardware Components.	11
About Cable Labels.	12

Part II: Cabling Pillar Axiom 500 Systems Using One Slammer and SATA Brick Only

Sheet 3 Cabling Example: 1-Slammer System Using SATA Bricks.	13
Sample Wiring Diagram for a 1x6 System Using SATA Bricks.	13
Notes on the 1x6 SATA Wiring Diagram.	14
Sheet 4 Cabling Block Diagram: A 1-Slammer System.	15
Block Diagram for a 1x32 System Using SATA Bricks.	15
Notes on the 1x32 Block Diagram.	15
Sheet 5 High Density Rack Configuration Using 230 V, 30 A Power.	16
Hardware Component Mapping in Racks Having 230 V, 30 A PDUs.	16
Notes on Component Mapping within Racks Having 230 VAC, 30 A PDUs.	16
Sheet 6 High Density Rack Configuration Using Four PDUs or 3-Phase Power.	18
Hardware Component Mapping in Racks Having Four PDUs or 3-Phase PDUs.	18
Notes on Component Mapping within Racks Having Four PDUs or 3-Phase PDUs.	19
Sheet 7 SSF Cable Connection List (Slammer Plus Bricks 1–8).	20
Cable the Slammer and SATA Bricks 1–8.	20
Notes on Cabling SATA Bricks 1–8.	20
Sheet 8 SSF Cable Connection List (Bricks 9–16).	22
Cable SATA Bricks 9–16.	22
Notes on Cabling SATA Bricks 9–16.	22
Sheet 9 SSF Cable Connection List (Bricks 17–24).	23
Cable SATA Bricks 17–24.	23
Notes on Cabling SATA Bricks 17–24.	23
Sheet 10 SSF Cable Connection List (Bricks 25–32).	24
Cable SATA Bricks 25–32.	24
Notes on Cabling SATA Bricks 25–32.	24
Sheet 11 PMI Cable Connection List and Schematic.	25
Cable the PMI Connections in a 1-Slammer System.	25
Schematic of PMI Ethernet Connections in a 1-Slammer System.	25

Part III: Cabling Pillar Axiom 500 Systems Using Two Slammers and SATA Bricks Only

Sheet 12 Cabling Example: 2-Slammer System Using SATA Bricks.	26
Sample Wiring Diagram for a 2x2 System Using SATA Bricks.	26
Notes on the 2x2 Wiring Diagram for SATA Bricks.	27
Sheet 13 Cabling Block Diagram: A 2-Slammer System.	28
Block Diagram for a 2x64 System Using SATA Bricks.	28
Notes on the 2x64 Block Diagram for SATA Bricks.	28
Sheet 14 Cable Connection List (Slammers Plus Bricks 1–8).	30
Cable the Slammers and SATA Bricks 1–8.	30
Notes on Cabling SATA Bricks 1–8.	30
Sheet 15 SSF Cable Connection List (Bricks 9–16).	32
Cable SATA Bricks 9–16.	32
Notes on Cabling SATA Bricks 9–16.	32
Sheet 16 Cable Connection List (Bricks 17–24).	33
Cable SATA Bricks 17–24.	33
Notes on Cabling SATA Bricks 17–24.	33

Sheet 17 Cable Connection List (Bricks 25 and Up)	34
Cable SATA Bricks 25–32.	34
Notes on Cabling SATA Bricks 25–32.	34
Cabling Configurations of More Than 32 SATA Bricks.	34
Sheet 18 PMI Cable Connection List and Schematic.	36
Cable the PMI Connections in a 2-Slammer System.	36
Schematic of PMI Ethernet Connections in a 2-Slammer System.	36
Sheet 19 Schematic of a SATA Brick Cascade (String).	37
Diagram of Stringing SATA Bricks.	37
Notes on Stringing Bricks.	37
Part IV: Cabling Pillar Axiom 500 Systems Using One or Two Slammers and FC Bricks	
Sheet 20 Cabling Example: 1-Slammer System Using FC Bricks.	38
Sample Wiring Diagram for a 1x4 System Using Fibre Channel Bricks.	38
Notes on the 1x4 Wiring Diagram for FC Bricks.	38
Sheet 21 Cabling Block Diagram: A 1-Slammer System Using FC Bricks.	40
Block Diagram for a 1x8 System Using Fibre Channel Bricks.	40
Notes on the 1x8 Block Diagram for FC Bricks.	40
Cable the Slammer and FC Bricks.	40
Sheet 22 Cabling Block Diagram: A 2-Slammer System Using FC Bricks.	42
Block Diagram for a 2x16 System Using Fibre Channel Bricks.	42
Notes on the 2x16 Wiring Diagram for FC Bricks.	42
Cable the Slammers and FC Bricks.	43
Sheet 23 Cabling Example: Mix of Fibre Channel and SATA Bricks.	44
Sample Wiring Diagram for a Mix of Brick Types.	44
Notes on the Wiring Diagram for a Mix of Brick Types.	44
Sheet 24 Cabling Block Diagram: A 1-Slammer System Using FC and SATA Bricks.	45
Block Diagram for a 1x16 System Using Fibre Channel and SATA Bricks.	45
Notes on the 1x16 Block Diagram for FC and SATA Bricks.	45
Block Diagram for Expanding an Initial Configuration of FC Bricks.	46
Notes for Adding SATA Bricks to a Set of FC Bricks.	46
Sheet 25 Cabling Block Diagram: A 2-Slammer System Using FC and SATA Bricks.	48
Block Diagram for a 2x24 System Using Fibre Channel and SATA Bricks.	48
Notes on the 2x24 Block Diagram for FC and SATA Bricks.	48
Cable the SATA and Fibre Channel Bricks.	49
Part V: Cabling Pillar Axiom 500 Systems Using Three Slammers	
Sheet 26 Cross Connections for 3-Slammer Systems.	50
Cross Connecting Three Slammers.	50
Sheet 27 Brick Connections for 3-Slammer Systems.	52
Block Diagram: Connecting Bricks to Three Slammers.	52
Cable the Slammers and Bricks.	53
Sheet 28 PMI Connections for 3-Slammer Systems.	55
Schematic of PMI Ethernet Connections in a 3-Slammer System.	55
Cable the PMI Connections in a 3-Slammer System.	55
Part VI: Cabling Pillar Axiom 500 Systems Using Four Slammers	
Sheet 29 Cross Connections for Four Slammers.	57
Cross Connecting Four Slammers.	57
Sheet 30 Connections for 32 Bricks in 4-Slammer Systems.	59
Block Diagram: Connecting Four Slammers to 32 Bricks.	59
Cable 32 Bricks to Four Slammers.	60
Sheet 31 Connections for 64 Bricks in a 4-Slammer System.	62
Block Diagram: Connecting Four Slammers to 64 Bricks.	62
Cable 64 Bricks to Four Slammers.	63
Sheet 32 PMI Connections for 4-Slammer Systems.	65
Schematic of PMI Ethernet Connections in a 4-Slammer System.	65
Cable the PMI Connections in a 4-Slammer System.	65
Part VII: Appendixes	
Appendix A Swapping SSF Cables When Expanding a System.	67
Appendix B Summary of Cabling Rules.	69
Index.	71

List of Figures

Figure 1 SATA RAID controller versions.	12
Figure 2 FC cable label sample.	12
Figure 3 Sample cabling for a 1x6 system (SATA Bricks only).	13
Figure 4 Cabling block diagram for a 1x32 system (SATA Bricks only).	15
Figure 5 High-density rack configuration with 230 v, 30 A PDUs (1-Slammer system).	16
Figure 6 High-density rack configuration with four PDUs (1-Slammer system).	18
Figure 7 Alternate high-density rack configuration with 3-phase PDUs.	19
Figure 8 PMI Ethernet schematic (1-Slammer system).	25
Figure 9 Sample cabling for a 2-Slammer system (SATA Bricks only).	26
Figure 10 Cabling block diagram for 2x64 systems (SATA Bricks only).	28
Figure 11 PMI Ethernet schematic (2-Slammer system).	36
Figure 12 Generalized cascade of three SATA Bricks.	37
Figure 13 Sample cabling for 1x4 systems with FC Bricks.	38
Figure 14 Cabling block diagram for 1-Slammer systems with FC Bricks.	40
Figure 15 Cabling block diagram for 2-Slammer systems with FC Bricks.	42
Figure 16 Sample cabling for an FC RAID Brick, an FC Expansion Brick, and two SATA Bricks.	44
Figure 17 Cabling block diagram for 1-Slammer systems with FC and SATA Bricks.	45
Figure 18 Cabling block diagram for expanding 1-Slammer systems with SATA Bricks.	46
Figure 19 Cabling block diagram for 2-Slammer systems with full complement of FC Bricks and eight SATA Bricks.	48
Figure 20 Cross connections for a 3-Slammer configuration	50
Figure 21 Connecting a 3-Slammer configuration to 32 Bricks.	52
Figure 22 PMI Ethernet schematic (3-Slammer system).	55
Figure 23 Cross connections for a 4-Slammer configuration.	57
Figure 24 Connecting a 4-Slammer configuration to 32 Bricks.	59
Figure 25 Connecting Bricks 17 through 32 to the existing strings.	61
Figure 26 Connecting a 4-Slammer configuration to 64 Bricks.	62
Figure 27 PMI Ethernet schematic (4-Slammer system).	65

List of Tables

Table 1 Additional information resources.	7
Table 2 Special typography used to mark certain content.	8
Table 3 Contacts at Pillar Data Systems.	8
Table 4 Brick configuration limits.	11
Table 5 FC cable connections for the Slammer and the first and second sets of four SATA Bricks.	20
Table 6 FC cable connections for the third and fourth sets of four SATA Bricks (1-Slammer system).	22
Table 7 FC cable connections for the fifth and sixth sets of four SATA Bricks (1-Slammer system).	23
Table 8 FC cable connections for the seventh and eighth sets of four SATA Bricks (1-Slammer system).	24
Table 9 Cable connections for the PMI (1-Slammer system).	25
Table 10 Rack space requirements for a 16-Brick system: 54 U (two racks).	28
Table 11 Rack space requirements for a 32-Brick system: 92 U (three racks).	29
Table 12 FC cable connections for two Slammers and the first set of eight SATA Bricks.	30
Table 13 FC cable connections for the second set of eight SATA Bricks (2-Slammer system).	32
Table 14 FC cable connections for the third set of eight SATA Bricks (2-Slammer system).	33
Table 15 FC cable connections for the fourth set of eight SATA Bricks (2-Slammer system).	34
Table 16 Cabling configurations having more than 32 SATA Bricks.	34
Table 17 Ethernet cable connections for PMI (2-Slammer system).	36
Table 18 FC cable connections for one Slammer and eight FC Bricks.	41
Table 19 FC cable connections for two Slammers and 16 FC Bricks.	43
Table 20 3-Slammer cross connection configuration	51
Table 21 Cable connections for three Slammers and 16 Bricks.	53
Table 22 Connections for additional Bricks.	54
Table 23 Ethernet cable connections for PMI (3-Slammer system).	56
Table 24 4-Slammer cross connection configuration.	58
Table 25 Cable connections for four Slammers and 16 Bricks.	60
Table 26 Cable connections for four Slammers and 32 Bricks.	63
Table 27 Ethernet cable connections for PMI (4-Slammer system).	66
Table 28 Swapping Slammer cables that cross connect PIMs.	67
Table 29 Swapping head-of-string Brick cables.	68

Preface

Audience

This documentation is intended for service technicians, field engineers, and other individuals who install, maintain, and troubleshoot Pillar Axiom storage systems.

You should have the necessary skills and experience in using:

- Computer hardware and its operation.
- Electrostatic discharge (ESD) procedures.

To perform any of the following tasks, you should also have a basic understanding and working knowledge of Pillar Axiom systems:

- Cable the Storage System Fabric (SSF) and private management interface (PMI) easily.
- Enhance the throughput of an existing system by adding and cabling one or more Slammer storage controllers into an existing system.
- Enhance the capacity of an existing system by adding and cabling one or more Brick storage enclosures into an existing system.

Before You Read This Reference

Being familiar with certain other Pillar Axiom technical documentation helps you succeed in the use of this guide.

In addition to this reference, review the late-breaking information described in the Pillar Axiom *Customer Release Notes*. That information includes important information that was not available at the time this reference was published, including:

- Slammer and Brick configuration limits
- Network requirements
- Known issues
- Errata for technical documents, including this reference

How This Reference Is Organized

This reference provides reference information for cabling the Storage System Fabric (SSF), a private interconnect among the Bricks and Slammers in a Pillar Axiom 500 storage system.

The reference is divided into seven major parts:

- Part I provides an introduction to cabling the private interconnect.
- Part II provides cabling examples, block diagrams, and port-to-port cabling connections for 1-Slammer systems configured with serial ATA (SATA) Bricks.
- Part III provides cabling examples, block diagrams, and port-to-port cabling connections for 2-Slammer systems configured with SATA Bricks.
- Part IV provides cabling examples, block diagrams, and port-to-port cabling connections for 1 and 2-Slammer systems configured with Fibre Channel (FC) Bricks.
- Part V provides cabling examples, block diagrams, and port-to-port cabling connections for 3-Slammer systems.
- Part VI provides cabling examples, block diagrams, and port-to-port cabling connections for 4-Slammer systems.
- Part VII provides three appendixes that provide:
 - Connection lists that show required cable swaps when adding additional Slammers to a system.
 - Brick limits for different power distribution unit (PDU) and Slammer configurations.
 - General cabling rules.

Related Documentation

Table 1 Additional information resources

Description	Title	Part number
Instructions for installing Pillar Axiom 500 hardware components into Pillar and non-Pillar racks and for expanding these systems by adding Bricks and Slammers.	<i>Pillar Axiom 500 Advanced Hardware Installation Guide</i>	4420-00082-0400
Removal and insertion instructions for Pillar Axiom 500 FRUs.	<i>Pillar Axiom 500 Service Guide</i>	4420-00033-0500

Access Documentation

Pillar Data Systems technical documentation (including installation, service, cabling, integration, and administration guides) are available from several sources.

Pillar Axiom GUI After logging in to the AxiomONE Storage Services Manager on the Pilot, navigate to **Support > Technical Documentation** and click on the document of interest.

Web sites

- [Technical documents](http://www.pillardata.com/techdocs) (<http://www.pillardata.com/techdocs>)
- [Customer support portal](https://support.pillardata.com/login.do) (<https://support.pillardata.com/login.do>)

After logging in to the web site, click on **Documents** in the left navigation pane, and then click the appropriate category in the expanded list. Click on the document of interest.

Product CD-ROM Insert the Technical Documentation CD-ROM that came with your Pillar Axiom storage system into the CD player in a computer. Open the DocMenu PDF and click on the document of interest.

Tip: To search all technical documents on the CD-ROM, click the **Search all PDFs** icon in the top right corner. In the Search dialog, enter the word or phrase for which you would like to search.

Typographical Conventions

Table 2 Special typography used to mark certain content

Convention	Meaning
<i>italics</i>	Within normal text, words in italics indicate: <ul style="list-style-type: none"> • A reference to a book title. • New terms and emphasized words. • Command variables.
monospace	Indicates one of the following, depending on the context: <ul style="list-style-type: none"> • The name of a file or the path to the file. • <i>Output</i> displayed by the system on the command line.
monospace (bold)	<i>Input</i> provided by an administrator on the command line.
>	Indicates a menu item or a navigation path in a graphical user interface (GUI). For example, "Click Storage > Clone LUNs " means to click the Clone LUNs link on the Storage page in the graphical user interface (GUI).

Pillar Contacts

Table 3 Contacts at Pillar Data Systems

For help with...	Contact...
Error messages, usage questions, and other support issues	US and Canada: 877-4PILLAR (1-877-474-5527) Europe: +800 PILLAR FS (+800 74 55 27 37) Asia Pacific: +1-408-518-4515 South Africa: +0 800 980 400 Have your system serial number ready. support@pillardata.com Customer support portal (https://support.pillardata.com/login.do)
Training (custom or packaged)	Training and Education (http://www.pillardata.com/support-education/training/)
Sales and general contact information	Company contacts (http://www.pillardata.com/company/contact)

Pillar Welcomes Your Comments

Pillar is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by emailing us at docs@pillardata.com. Please include the title and part number of your document with your feedback:

Pillar Axiom 500 SSF Cabling Reference

part number 4420-00085-0400


Part I: Introduction to Cabling Pillar Axiom 500 Systems


SHEET 1


About This Reference

Cautions and Warnings

Hazard signal words conform to the American National Standards Institute (ANSI) Z535.4-1998 meanings.

 **Caution** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury or data loss.


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

 **Danger** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

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

Supported Hardware Components

Pillar Data Systems supports only Pillar-supplied parts on a Pillar Axiom storage system.

 **Caution** Hardware that does not conform to Pillar specifications or is not a Pillar-supplied part voids the warranty and may compromise data integrity. For Pillar hardware specifications, refer to the *Pillar Axiom Service Guide* for your system.

SHEET 2

Introduction to Cabling the Storage System Fabric (SSF)

About Cabling a Pillar Axiom System

Storage System Fabric (SSF) cabling information in this reference supports the following Pillar Axiom 500 configurations:

- 1 Pilot
- 1 to 4 Slammers
- 2 to 64 Bricks

The collection of Bricks is organized into one or more Brick strings. A *string* is defined as:

A set of Brick storage enclosures connected one to another and to two ports on a particular Slammer. Any given Brick in a string is connected to an upstream Brick or, for the head of the string, to two Slammer control units (CUs).

Table 4 defines the maximum Brick configuration for a system. The maximum depends on the number of Slammers in the system. The maximum configurations are given in terms of width (the number of strings), depth (the number of Bricks for each string), and the maximum number of Bricks that the system supports.

Table 4 Brick configuration limits

Number of Slammers	Maximum number of strings	Maximum number of Bricks in a string	Maximum number of Bricks in the system
1	4	8	32
2	8	8	64
3	8	8	64
4	16	8	64

Brick storage enclosures used in Pillar Axiom storage systems can be based on Fibre Channel (FC) or Serial ATA (SATA) hard disk drive (HDD) technology. These types of Bricks can be mixed within the same system.

Alternatively, SATA Bricks can contain solid state drives (SSDs). SSD and HDD SATA Bricks can be mixed in the same system. SSD SATA Bricks, however, *cannot* be mixed in the same system with FC Bricks.

Important! Contact the Pillar World Wide Customer Support Center for any newly available, time-sensitive information regarding cabling.

Different Versions of Hardware Components

Pillar Axiom storage systems support several versions of hardware to which the Storage System Fabric (SSF) cables connect.

SATA RAID controllers are located in Bricks. The cabling of these controllers depends on the version of the controller.

SATA RAID controllers come in two types:

- Version 1 (legacy) controllers have *one set of four* Fibre Channel (FC) ports and appear in the GUI as type SATA.
- Version 2 controllers have *two pair* of FC ports and appear in the GUI as type SATA V2.

Because version 1 and version 2 SATA controllers use different internal communication protocols, these two types of SATA controller cannot co-exist in the same Brick chassis. In other words, you cannot use a version 2 SATA controller to replace a legacy version 1 controller. A Pillar Axiom system can, however, contain a mix of version 1 and version 2 SATA Bricks.

Figure 1 SATA RAID controller versions



Legend

- 1 Version 1 SATA controller.
- 2 Version 2 SATA controller.
- 3 SATA Bricks.

Note: A Brick contains two homogeneous CUs: Both CUs contain either version 1 or version 2 SATA RAID controllers.

Additionally, the cabling of the Fibre Channel fabric among the Brick control units (CUs) and the Slammers differs, depending on the version of SATA controller in the Brick.

Note: This reference provides cabling diagrams and various notes to guide you in the cabling of the different versions of SATA RAID controllers.

About Cable Labels

The FC cables that provide the pathways for the Storage System Fabric (SSF) are labeled at each end using a label such as that in the figure below. The label wraps around the cable and sticks to itself in a way that provides a colored flag with printed information. The printing is duplicated at each end of the label so it can be read from either side.

Figure 2 FC cable label sample



The colored flag identifies the port into which the end of the cable with the label connects. The color of the label matches the color of the port label on the Slammer or Brick chassis.

The encoding within the colored flag has the following meanings:

- *SLM-1* is Slammer 1.
- *CU-0* is control unit 0 of that Slammer.
- *FS-4* is the port number of that control unit.

The white section of the label contains two pieces of information:

- First line—the port information for the other end of the cable, formatted the same as above. This information is useful for debugging.
 - *BRX-1* is Brick 1.
 - *CU-0* is control unit 0 of that Brick.
 - *FC-2* is the port number of that control unit.
- Second line—the cable number. This cable number is the same at both ends of the cable and is useful when tracing the other end of a loose cable in a cabinet.

Part II: Cabling Pillar Axiom 500 Systems Using One Slammer and SATA Brick Only

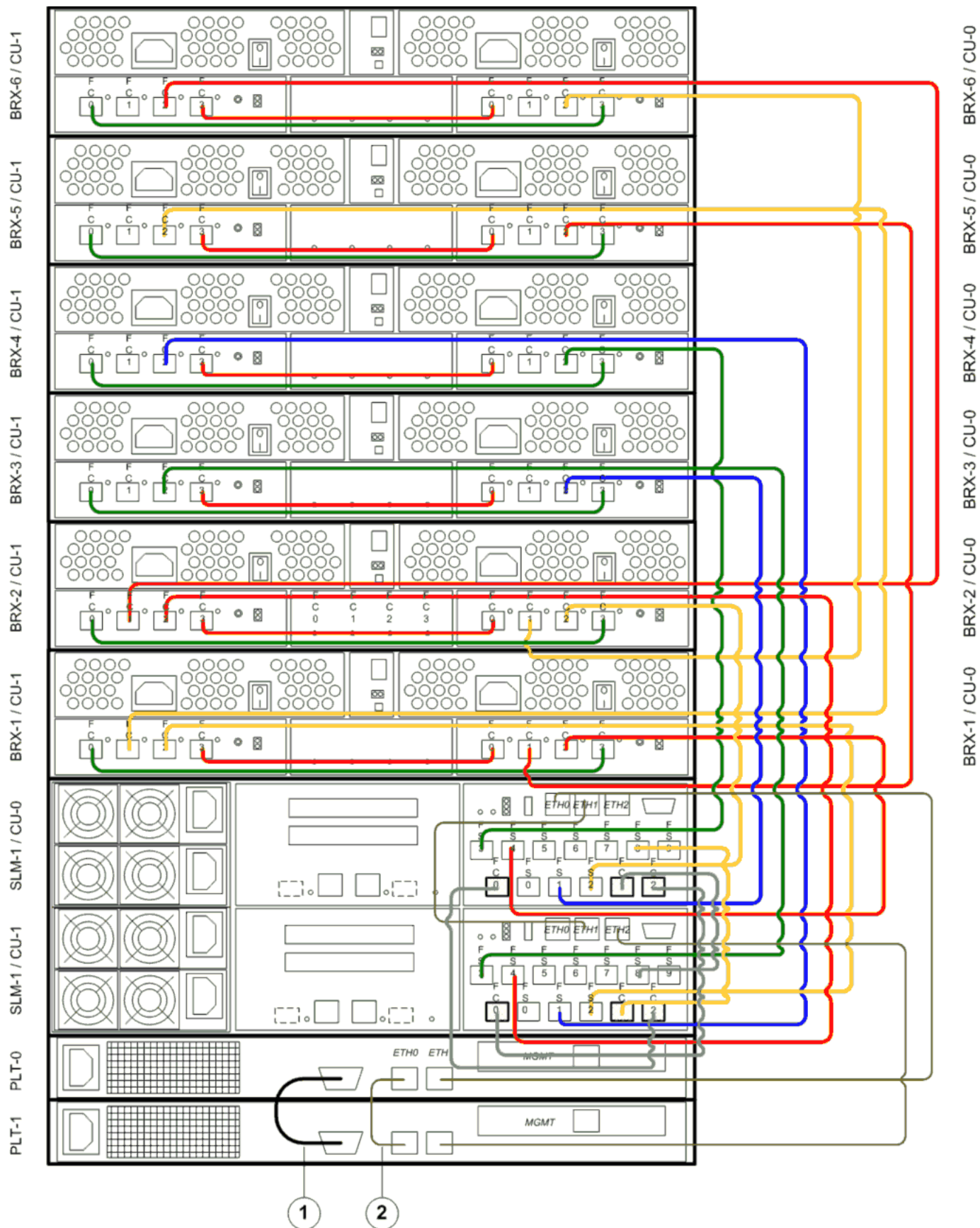
SHEET 3

Cabling Example: 1-Slammer System Using SATA Bricks

Sample Wiring Diagram for a 1x6 System Using SATA Bricks

The figure below is an example of cabling a Pillar Axiom 500 system. The scheme shown is for a hardware configuration of one Slammer and six Bricks that use version 1 SATA RAID controllers.

Figure 3 Sample cabling for a 1x6 system (SATA Bricks only)



Legend

- 1 Serial null-modem cable.
- 2 Cross connect the ports that support the Intelligent Platform Management Interface (IPMI). These ports are labeled ETH-0.

The above diagram shows the logical connections, not the physical layout of the cables.

Notes on the 1x6 SATA Wiring Diagram

To cable version 2 SATA Bricks, use the same port connections as those shown in the diagram.

When cabling the fabric, be aware of the following facts:

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

SHEET 4

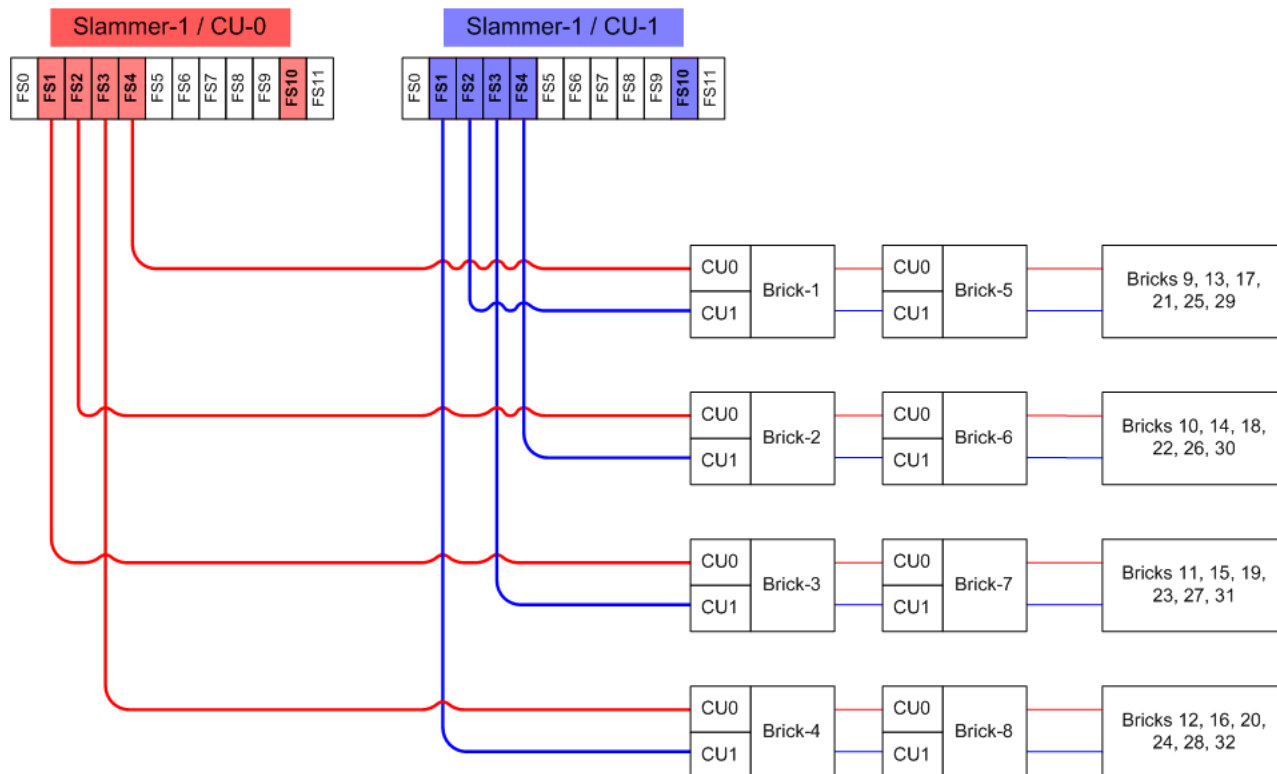
Cabling Block Diagram: A 1-Slammer System

Block Diagram for a 1x32 System Using SATA Bricks

The figure below illustrates the stringing of 32 Bricks in a one-Slammer Pillar Axiom 500 system. The scheme shown in this figure maps four Brick strings, each string being eight Bricks deep.

Important! The following block diagram is for reference only. Actual cabling information is provided in [Table 5](#).

Figure 4 Cabling block diagram for a 1x32 system (SATA Bricks only)



For information on the cross connections between the two control units of each Brick, see the FC-0 to FC-3 cross connections specified in [Table 5](#).

Notes on the 1x32 Block Diagram

- Single Slammer systems support a maximum of four Brick strings.
- For the Pillar Axiom 500, a string may contain up to eight Bricks.
- The order that Bricks are to be added to a system that has one Slammer storage controller (NAS or SAN) is illustrated in [Figure 4](#).
- The minimum configuration includes BRX-1 and BRX-2. Add subsequent Bricks so that load imbalance between Fibre Channel (FC) switches and FC loops is minimized. Add Bricks to strings so that the number of Bricks in any string differs by no more than two between the longest and the shortest string.
- This reference uses (and Pillar recommends) a Brick scalability strategy that includes the following points:
 - First connect all four Brick strings to the Slammers using one Brick before building onto the end of any string.
 - Add additional Bricks using the connectivity illustrated in [Figure 4](#). The cable connections are defined in the tables beginning with [Table 5](#). See also: [Figure 12](#).
- The cabling scheme illustrated in [Figure 4](#) conforms to the following conventions:
 - Slammers**
 - On single Slammer systems, FC-0 on one control unit (CU) connects to FC-2 on the other CU.
 - FC-1 on one CU connects to FS-8 on the other CU.
 - FS-1, FS-2, FS-3, and FS-4 are used for Brick connections.
 - On systems with two or more Slammers, FC-0 connects to FS-7.
 - On systems with two or more Slammers, FC-2 connects to FS-9.
 - On 3-Slammer systems, FS-4 and FS-5 are reserved for Slammer (FC) to switch connections.
 - On 3-Slammer and larger systems, FS-6 is reserved for the cascade (switch-to-switch) connection.
 - Bricks**
 - FC-0 is connected to FC-3 of the opposite CU on the same Brick.
 - FC-1 connects to FC-2 in the same CU of a downstream Brick.
 - FC-2 connects to a Slammer FS port or to FC-1 in the same CU of an upstream Brick.
- The configuration of systems upgraded in the field may differ somewhat from those built in the factory.

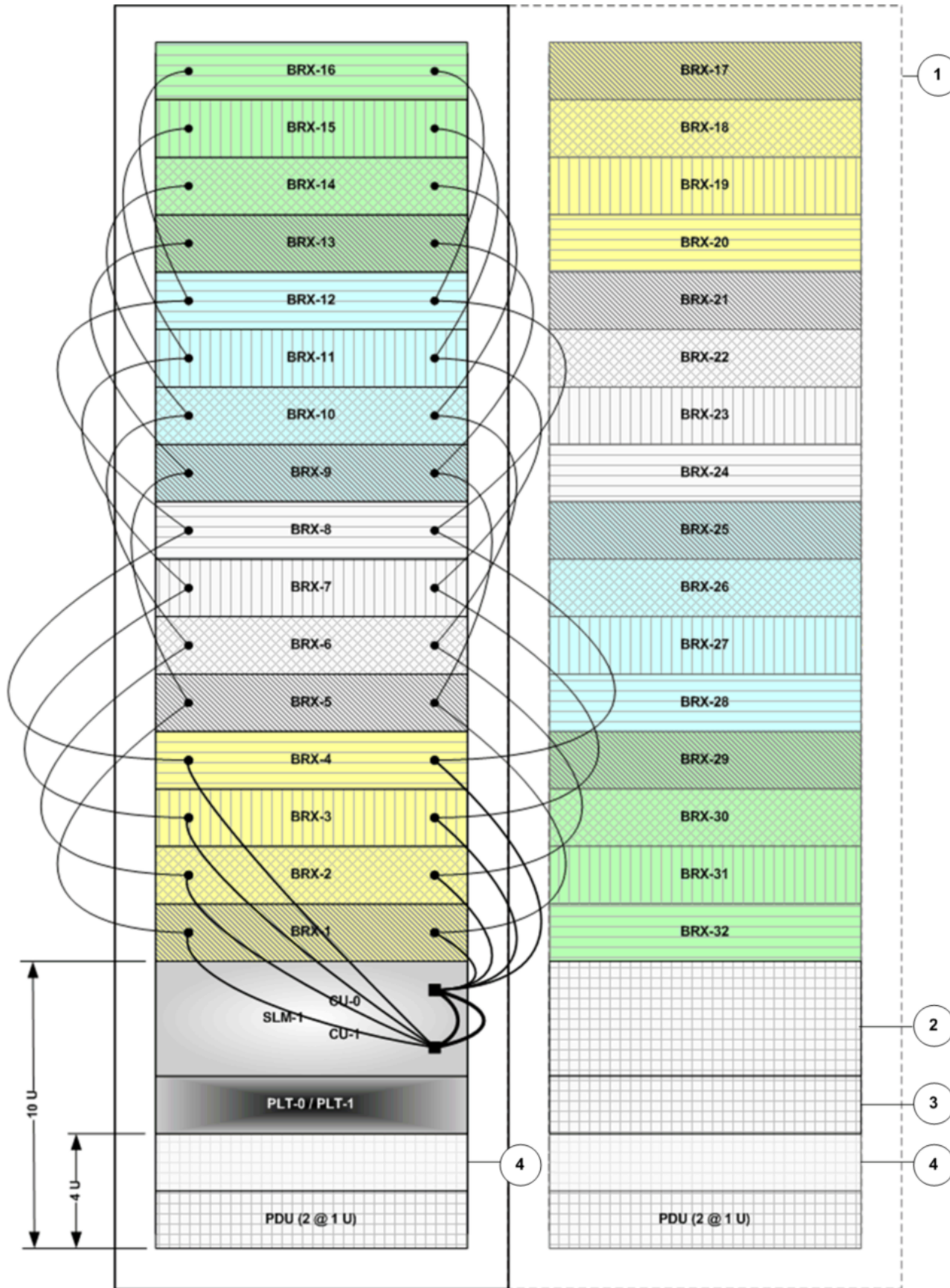
SHEET 5

High Density Rack Configuration Using 230 V, 30 A Power

Hardware Component Mapping in Racks Having 230 V, 30 A PDUs

The figure below illustrates a high-density configuration using 230 VAC, 30 A power distribution units (PDUs).

Figure 5 High-density rack configuration with 230 v, 30 A PDUs (1-Slammer system)



Legend

- 1 Optional second rack. Cabling is not shown for this rack. To cable this rack, follow the connection specifications in [Table 7](#).
- 2 Reserved for second Slammer.
- 3 Reserved.
- 4 A minimum of 2 U of clear space is needed between the PDU and the Pilot chassis to allow access to and routing of power cords.

Notes on Component Mapping within Racks Having 230 VAC, 30 A PDUs

- This configuration may require disruption to service when expanding the system. For example, to add a second Slammer to the first rack, providing the rack has 12 or fewer Bricks installed, a disruptive upgrade is

required. The second Slammer would be installed in place of BRX-1 and BRX-2. Contact the World Wide Customer Support Center for detailed instructions in such a scenario.

- Two rack units are reserved at the bottom of the rack for PDUs. Running the full rack with two 1 U PDUs requires 230 VAC, 30 A per circuit. This configuration also requires use of multi-leg power cords, such as a "Y" cord, to utilize the available space efficiently.
- All PDUs mount with the circuit breaker accessible from the back of the rack.
- The cable paths that are shown indicate only internal Storage System Fabric (SSF) Fibre Channel (FC) connectivity. Specific ports are not shown.
- This drawing shows an arrangement of Bricks so that the 6.6 ft (2 m) interconnect cables can be utilized throughout the configuration for all needed connections.

Tip: Dress all cables to the right side of the rack (when viewed from the back) to facilitate FRU replacement with a minimum number of cable disconnections.

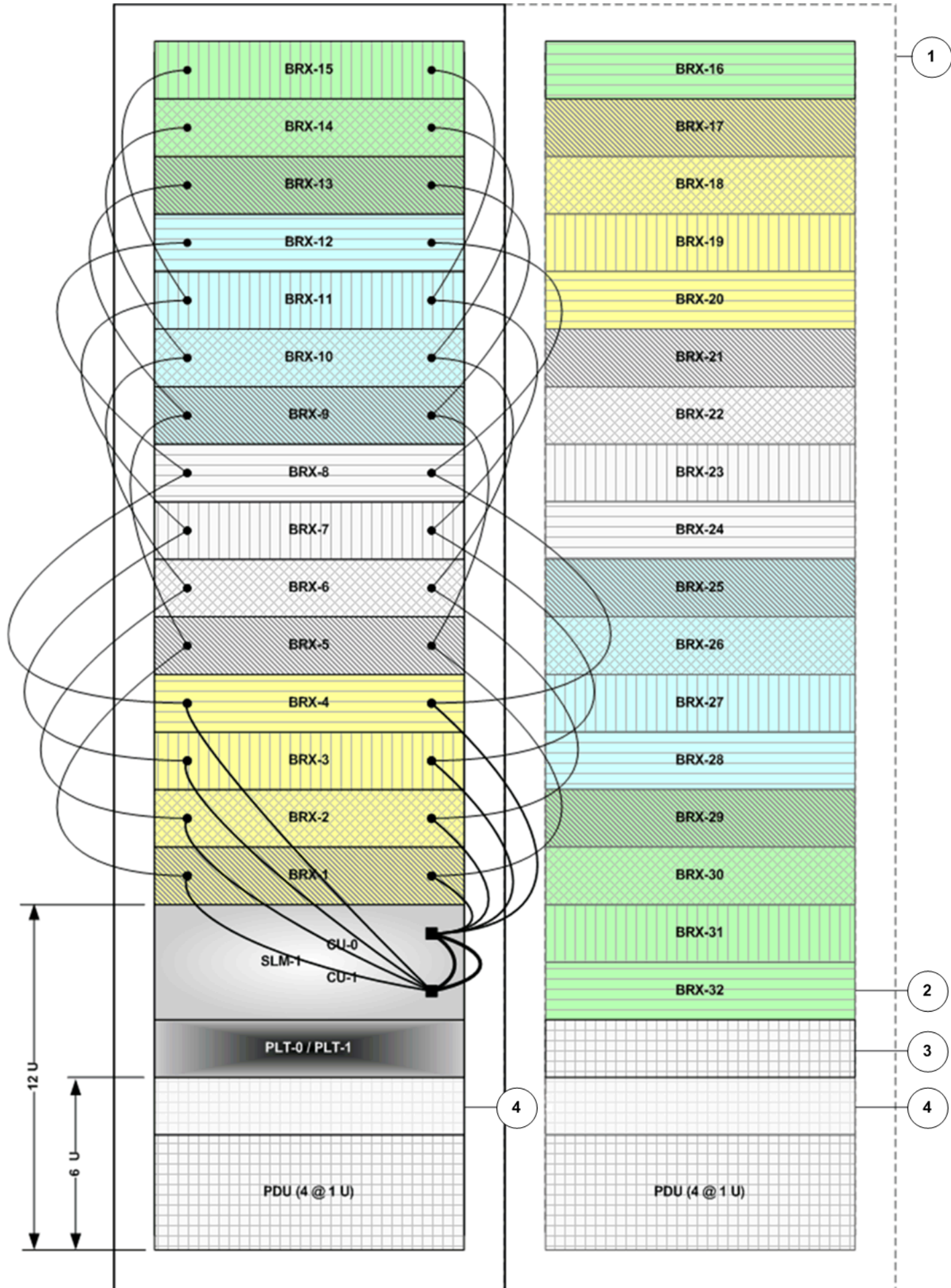
SHEET 6

High Density Rack Configuration Using Four PDUs or 3-Phase Power

Hardware Component Mapping in Racks Having Four PDUs or 3-Phase PDUs

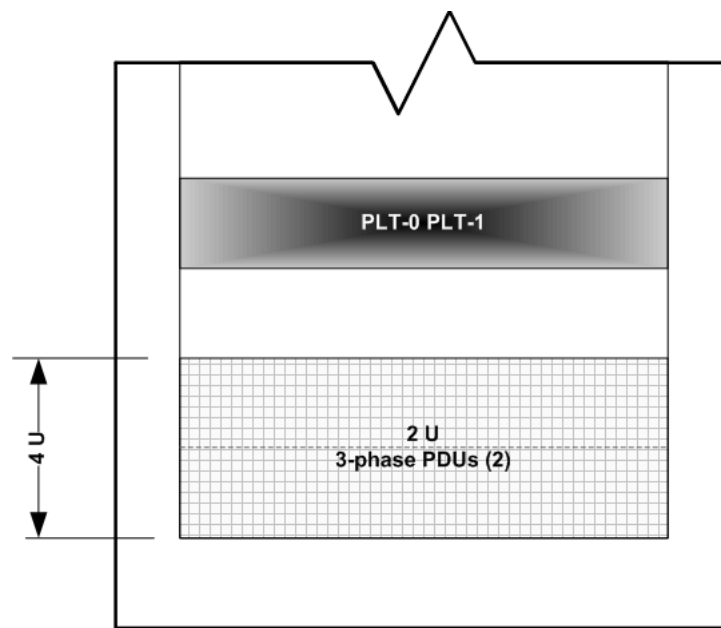
The following two figures illustrate high-density configurations using four power distribution units (PDUs) or 3-phase PDUs.

Figure 6 High-density rack configuration with four PDUs (1-Slammer system)



- Legend**
- 1 Optional second rack. Cabling is not shown for this rack. To cable this rack, follow the connection specifications in [Table 5](#).
 - 2 If you install a second Slammer, install it in place of BRX-32 and the reserved space immediately below.
 - 3 Reserved.
 - 4 A minimum of 2 U of clear space is needed between the PDU and the Pilot chassis to allow access to and routing of power cords.

Figure 7 Alternate high-density rack configuration with 3-phase PDUs



Notes on Component Mapping within Racks Having Four PDUs or 3-Phase PDUs

- 3-phase power distribution units (PDUs) mount with the circuit breaker accessible at the front.
- Four rack units (RU) are reserved at the bottom of the rack for PDUs. These PDUs mount with their circuit breakers accessible from the back of the rack.
- If you add a second Slammer, you may need to re-cable the Bricks. Re-cabling is best done with a disruptive upgrade.

SHEET 7

SSF Cable Connection List (Slammer Plus Bricks 1–8)

Cable the Slammer and SATA Bricks 1–8

The table below specifies all Fibre Channel (FC) cables and their connections for the Slammer and the first and second sets of four SATA Bricks in a 1-Slammer system. All such interconnections are part of the Storage System Fabric (SSF).

Table 5 FC cable connections for the Slammer and the first and second sets of four SATA Bricks

Slammer-to-Slammer Connections		Brick Connections			
From:	To:	Cable	From	To	Cable Length
Chassis / CU / Port	Chassis / CU / Port		Chassis / CU / Port	Chassis / CU / Port	
SLM-1 / CU-0 FC-1	SLM-1 / CU-1 FS-8				
SLM-1 / CU-1 FC-1	SLM-1 / CU-0 FS-8				
SLM-1 / CU-0 FC-0	SLM-1 / CU-1 FC-2				
SLM-1 / CU-1 FC-0	SLM-1 / CU-0 FC-2				
Brick Connections					
For BRX-1:					
		CBL-101	SLM-1 / CU-0 FS-4	BRX-1 / CU-0 FC-2	2
		CBL-102	SLM-1 / CU-1 FS-2	BRX-1 / CU-1 FC-2	2
			BRX-1 / CU-0 FC-0	BRX-1 / CU-1 FC-3	0.5
			BRX-1 / CU-1 FC-0	BRX-1 / CU-0 FC-3	0.5
For BRX-2:					
		CBL-103	SLM-1 / CU-0 FS-2	BRX-2 / CU-0 FC-2	2
		CBL-104	SLM-1 / CU-1 FS-4	BRX-2 / CU-1 FC-2	2
			BRX-2 / CU-0 FC-0	BRX-2 / CU-1 FC-3	0.5
			BRX-2 / CU-1 FC-0	BRX-2 / CU-0 FC-3	0.5
For BRX-3:					
		CBL-105	SLM-1 / CU-0 FS-1	BRX-3 / CU-0 FC-2	2
		CBL-106	SLM-1 / CU-1 FS-3	BRX-3 / CU-1 FC-2	2
			BRX-3 / CU-0 FC-0	BRX-3 / CU-1 FC-3	0.5
			BRX-3 / CU-1 FC-0	BRX-3 / CU-0 FC-3	0.5
For BRX-4:					
		CBL-107	SLM-1 / CU-0 FS-3	BRX-4 / CU-0 FC-2	2
		CBL-108	SLM-1 / CU-1 FS-1	BRX-4 / CU-1 FC-2	2
			BRX-4 / CU-0 FC-0	BRX-4 / CU-1 FC-3	0.5
			BRX-4 / CU-1 FC-0	BRX-4 / CU-0 FC-3	0.5
The first set of four Bricks is directly connected to Slammer FS ports.					
The second set of four Bricks is connected to the first set.					
For BRX-5:					
		CBL-109	BRX-1 / CU-0 FC-1	BRX-5 / CU-0 FC-2	2
		CBL-110	BRX-1 / CU-1 FC-1	BRX-5 / CU-1 FC-2	2
			BRX-5 / CU-0 FC-0	BRX-5 / CU-1 FC-3	0.5
			BRX-5 / CU-1 FC-0	BRX-5 / CU-0 FC-3	0.5
For BRX-6:					
		CBL-111	BRX-2 / CU-0 FC-1	BRX-6 / CU-0 FC-2	2
		CBL-112	BRX-2 / CU-1 FC-1	BRX-6 / CU-1 FC-2	2
			BRX-6 / CU-0 FC-0	BRX-6 / CU-1 FC-3	0.5
			BRX-6 / CU-1 FC-0	BRX-6 / CU-0 FC-3	0.5
For BRX-7:					
		CBL-113	BRX-3 / CU-0 FC-1	BRX-7 / CU-0 FC-2	2
		CBL-114	BRX-3 / CU-1 FC-1	BRX-7 / CU-1 FC-2	2
			BRX-7 / CU-0 FC-0	BRX-7 / CU-1 FC-3	0.5
			BRX-7 / CU-1 FC-0	BRX-7 / CU-0 FC-3	0.5
For BRX-8:					
		CBL-115	BRX-4 / CU-0 FC-1	BRX-8 / CU-0 FC-2	2
		CBL-116	BRX-4 / CU-1 FC-1	BRX-8 / CU-1 FC-2	2
			BRX-8 / CU-0 FC-0	BRX-8 / CU-1 FC-3	0.5
			BRX-8 / CU-1 FC-0	BRX-8 / CU-0 FC-3	0.5

Install for a 2 Brick System

Install for a 3 Brick System

Install for a 4 Brick System

Install for a 5 Brick System

Install for a 6 Brick System

Install for a 7 Brick System

Install for an 8 Brick System

Notes on Cabling SATA Bricks 1–8

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).

- Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
- Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)
- The Storage System Fabric (SSF) cabling scheme is based on the following conventions:
 - Slammers and Bricks (all chassis) are numbered starting with 1.
 - Designators within Slammer and Brick chassis are numbered from 0 (zero), as in CU-0, FC-0, and so on.
 - The Pilot has two CUs: PLT-0 and PLT-1.
- SSF cabling for 1-Slammer systems is based on the following principles:
 - Slammers:**
 - FC-0 connects to FC-2 (on the same Slammer, but opposite CU).
 - FC-1 connects to FS-8 (on the same Slammer, but opposite CU).
 - FS-1, FS-2, FS-3, and FS-4 are used for Brick connections.
 - Bricks:**
 - FC-0 connects to FC-3 of the opposite CU on the same Brick.
 - FC-1 connects to a FC-2 of a downstream Brick.
 - FC-2 connects to a Slammer FS port or to FC-1 of an upstream Brick.
- In addition to the FC cables identified in [Table 5](#), install the private management interface (PMI) cables specified in [Table 9](#).
- To cable additional Bricks into a 1-Slammer system, see [Table 6](#).

SHEET 8

SSF Cable Connection List (Bricks 9–16)

Cable SATA Bricks 9–16

To install these Bricks, install all cables specified in the following tables and in the following order:

- 1 [Table 5: FC cable connections for the Slammer and the first and second sets of four SATA Bricks.](#)
- 2 The appropriate cables in the table below (depending on the number of Bricks in your configuration).

The table below specifies all Fibre Channel (FC) cables and their connections for the third and fourth sets of four Bricks. These interconnections extend the Storage System Fabric (SSF).

Table 6 FC cable connections for the third and fourth sets of four SATA Bricks (1-Slammer system)

Cable	From Chassis / CU / Port	To Chassis / CU / Port	Cable Length (M)
For BRX-9:			
CBL-117	BRX-5 / CU-0 FC-1	BRX-9 / CU-0 FC-2	2
CBL-118	BRX-5 / CU-1 FC-1	BRX-9 / CU-1 FC-2	2
	BRX-9 / CU-0 FC-0	BRX-9 / CU-1 FC-3	0.5
	BRX-9 / CU-1 FC-0	BRX-9 / CU-0 FC-3	0.5
For BRX-10:			
CBL-119	BRX-6 / CU-0 FC-1	BRX-10 / CU-0 FC-2	2
CBL-120	BRX-6 / CU-1 FC-1	BRX-10 / CU-1 FC-2	2
	BRX-10 / CU-0 FC-0	BRX-10 / CU-1 FC-3	0.5
	BRX-10 / CU-1 FC-0	BRX-10 / CU-0 FC-3	0.5
For BRX-11:			
CBL-121	BRX-7 / CU-0 FC-1	BRX-11 / CU-0 FC-2	2
CBL-122	BRX-7 / CU-1 FC-1	BRX-11 / CU-1 FC-2	2
	BRX-11 / CU-0 FC-0	BRX-11 / CU-1 FC-3	0.5
	BRX-11 / CU-1 FC-0	BRX-11 / CU-0 FC-3	0.5
For BRX-12:			
CBL-123	BRX-8 / CU-0 FC-1	BRX-12 / CU-0 FC-2	2
CBL-124	BRX-8 / CU-1 FC-1	BRX-12 / CU-1 FC-2	2
	BRX-12 / CU-0 FC-0	BRX-12 / CU-1 FC-3	0.5
	BRX-12 / CU-1 FC-0	BRX-12 / CU-0 FC-3	0.5
The fourth set of Bricks is connected to the third set of Bricks:			
For BRX-13:			
CBL-125	BRX-9 / CU-0 FC-1	BRX-13 / CU-0 FC-2	2
CBL-126	BRX-9 / CU-1 FC-1	BRX-13 / CU-1 FC-2	2
	BRX-13 / CU-0 FC-0	BRX-13 / CU-1 FC-3	0.5
	BRX-13 / CU-1 FC-0	BRX-13 / CU-0 FC-3	0.5
For BRX-14:			
CBL-127	BRX-10 / CU-0 FC-1	BRX-14 / CU-0 FC-2	2
CBL-128	BRX-10 / CU-1 FC-1	BRX-14 / CU-1 FC-2	2
	BRX-14 / CU-0 FC-0	BRX-14 / CU-1 FC-3	0.5
	BRX-14 / CU-1 FC-0	BRX-14 / CU-0 FC-3	0.5
For BRX-15:			
CBL-129	BRX-11 / CU-0 FC-1	BRX-15 / CU-0 FC-2	2
CBL-130	BRX-11 / CU-1 FC-1	BRX-15 / CU-1 FC-2	2
	BRX-15 / CU-0 FC-0	BRX-15 / CU-1 FC-3	0.5
	BRX-15 / CU-1 FC-0	BRX-15 / CU-0 FC-3	0.5
For BRX-16:			
CBL-131	BRX-12 / CU-0 FC-1	BRX-16 / CU-0 FC-2	2
CBL-132	BRX-12 / CU-1 FC-1	BRX-16 / CU-1 FC-2	2
	BRX-16 / CU-0 FC-0	BRX-16 / CU-1 FC-3	0.5
	BRX-16 / CU-1 FC-0	BRX-16 / CU-0 FC-3	0.5

Notes on Cabling SATA Bricks 9–16

To cable additional Bricks into a 1-Slammer system, see [Table 7](#).

SHEET 9

SSF Cable Connection List (Bricks 17–24)

Cable SATA Bricks 17–24

To install these Bricks, install all cables specified in the following tables and in the following order:

- 1 Table 5: FC cable connections for the Slammer and the first and second sets of four SATA Bricks.
- 2 Table 6: FC cable connections for the third and fourth sets of four SATA Bricks (1-Slammer system).
- 3 The appropriate cables in the table below (depending on the number of Bricks in your configuration).

The table below specifies all Fibre Channel (FC) cables and their connections for the fifth and sixth set of four Bricks. These interconnections extend the Storage System Fabric (SSF).

Table 7 FC cable connections for the fifth and sixth sets of four SATA Bricks (1-Slammer system)

Cable	From Chassis / CU / Port	To Chassis / CU / Port	Cable Length (M)
For BRX-17:			
CBL-133	BRX-13 / CU-0 FC-1	BRX-17 / CU-0 FC-2	2
CBL-134	BRX-13 / CU-1 FC-1	BRX-17 / CU-1 FC-2	2
	BRX-17 / CU-0 FC-0	BRX-17 / CU-1 FC-3	0.5
	BRX-17 / CU-1 FC-0	BRX-17 / CU-0 FC-3	0.5
For BRX-18:			
CBL-135	BRX-14 / CU-0 FC-1	BRX-18 / CU-0 FC-2	2
CBL-136	BRX-14 / CU-1 FC-1	BRX-18 / CU-1 FC-2	2
	BRX-18 / CU-0 FC-0	BRX-18 / CU-1 FC-3	0.5
	BRX-18 / CU-1 FC-0	BRX-18 / CU-0 FC-3	0.5
For BRX-19:			
CBL-137	BRX-15 / CU-0 FC-1	BRX-19 / CU-0 FC-2	2
CBL-138	BRX-15 / CU-1 FC-1	BRX-19 / CU-1 FC-2	2
	BRX-19 / CU-0 FC-0	BRX-19 / CU-1 FC-3	0.5
	BRX-19 / CU-1 FC-0	BRX-19 / CU-0 FC-3	0.5
For BRX-20:			
CBL-139	BRX-16 / CU-0 FC-1	BRX-20 / CU-0 FC-2	2
CBL-140	BRX-16 / CU-1 FC-1	BRX-20 / CU-1 FC-2	2
	BRX-20 / CU-0 FC-0	BRX-20 / CU-1 FC-3	0.5
	BRX-20 / CU-1 FC-0	BRX-20 / CU-0 FC-3	0.5
The sixth set of Bricks is connected to the fifth set of Bricks:			
For BRX-21:			
CBL-141	BRX-17 / CU-0 FC-1	BRX-21 / CU-0 FC-2	2
CBL-142	BRX-17 / CU-1 FC-1	BRX-21 / CU-1 FC-2	2
	BRX-21 / CU-0 FC-0	BRX-21 / CU-1 FC-3	0.5
	BRX-21 / CU-1 FC-0	BRX-21 / CU-0 FC-3	0.5
For BRX-22:			
CBL-143	BRX-18 / CU-0 FC-1	BRX-22 / CU-0 FC-2	2
CBL-144	BRX-18 / CU-1 FC-1	BRX-22 / CU-1 FC-2	2
	BRX-22 / CU-0 FC-0	BRX-22 / CU-1 FC-3	0.5
	BRX-22 / CU-1 FC-0	BRX-22 / CU-0 FC-3	0.5
For BRX-23:			
CBL-145	BRX-19 / CU-0 FC-1	BRX-23 / CU-0 FC-2	2
CBL-146	BRX-19 / CU-1 FC-1	BRX-23 / CU-1 FC-2	2
	BRX-23 / CU-0 FC-0	BRX-23 / CU-1 FC-3	0.5
	BRX-23 / CU-1 FC-0	BRX-23 / CU-0 FC-3	0.5
For BRX-24:			
CBL-147	BRX-20 / CU-0 FC-1	BRX-24 / CU-0 FC-2	2
CBL-148	BRX-20 / CU-1 FC-1	BRX-24 / CU-1 FC-2	2
	BRX-24 / CU-0 FC-0	BRX-24 / CU-1 FC-3	0.5
	BRX-24 / CU-1 FC-0	BRX-24 / CU-0 FC-3	0.5

Notes on Cabling SATA Bricks 17–24

To cable additional Bricks into a 1-Slammer system, see Table 8.

SHEET 10

SSF Cable Connection List (Bricks 25–32)

Cable SATA Bricks 25–32

To install these Bricks, install all cables specified in the following tables and in the following order:

- 1 [Table 5: FC cable connections for the Slammer and the first and second sets of four SATA Bricks.](#)
- 2 [Table 6: FC cable connections for the third and fourth sets of four SATA Bricks \(1-Slammer system\).](#)
- 3 [Table 7: FC cable connections for the fifth and sixth sets of four SATA Bricks \(1-Slammer system\).](#)
- 4 The appropriate cables in the table below (depending on the number of Bricks in your configuration).

The table below specifies all Fibre Channel (FC) cables and their connections for the seventh and eighth set of four Bricks. These interconnections extend the Storage System Fabric (SSF).

Table 8 FC cable connections for the seventh and eighth sets of four SATA Bricks (1-Slammer system)

Cable	From Chassis / CU / Port	To Chassis / CU / Port	Cable Length (M)
For BRX-25:			
CBL-149	BRX-21 / CU-0 FC-1	BRX-25 / CU-0 FC-2	2
CBL-150	BRX-21 / CU-1 FC-1	BRX-25 / CU-1 FC-2	2
	BRX-25 / CU-0 FC-0	BRX-25 / CU-1 FC-3	0.5
	BRX-25 / CU-1 FC-0	BRX-25 / CU-0 FC-3	0.5
For BRX-26:			
CBL-151	BRX-22 / CU-0 FC-1	BRX-26 / CU-0 FC-2	2
CBL-152	BRX-22 / CU-1 FC-1	BRX-26 / CU-1 FC-2	2
	BRX-26 / CU-0 FC-0	BRX-26 / CU-1 FC-3	0.5
	BRX-26 / CU-1 FC-0	BRX-26 / CU-0 FC-3	0.5
For BRX-27:			
CBL-153	BRX-23 / CU-0 FC-1	BRX-27 / CU-0 FC-2	2
CBL-154	BRX-23 / CU-1 FC-1	BRX-27 / CU-1 FC-2	2
	BRX-27 / CU-0 FC-0	BRX-27 / CU-1 FC-3	0.5
	BRX-27 / CU-1 FC-0	BRX-27 / CU-0 FC-3	0.5
For BRX-28:			
CBL-155	BRX-24 / CU-0 FC-1	BRX-28 / CU-0 FC-2	2
CBL-156	BRX-24 / CU-1 FC-1	BRX-28 / CU-1 FC-2	2
	BRX-28 / CU-0 FC-0	BRX-28 / CU-1 FC-3	0.5
	BRX-28 / CU-1 FC-0	BRX-28 / CU-0 FC-3	0.5
The eighth set of Bricks is connected to the seventh set of Bricks:			
For BRX-29:			
CBL-157	BRX-25 / CU-0 FC-1	BRX-29 / CU-0 FC-2	2
CBL-158	BRX-25 / CU-1 FC-1	BRX-29 / CU-1 FC-2	2
	BRX-29 / CU-0 FC-0	BRX-29 / CU-1 FC-3	0.5
	BRX-29 / CU-1 FC-0	BRX-29 / CU-0 FC-3	0.5
For BRX-30:			
CBL-159	BRX-26 / CU-0 FC-1	BRX-30 / CU-0 FC-2	2
CBL-160	BRX-26 / CU-1 FC-1	BRX-30 / CU-1 FC-2	2
	BRX-30 / CU-0 FC-0	BRX-30 / CU-1 FC-3	0.5
	BRX-30 / CU-1 FC-0	BRX-30 / CU-0 FC-3	0.5
For BRX-31:			
CBL-161	BRX-27 / CU-0 FC-1	BRX-31 / CU-0 FC-2	2
CBL-162	BRX-27 / CU-1 FC-1	BRX-31 / CU-1 FC-2	2
	BRX-31 / CU-0 FC-0	BRX-31 / CU-1 FC-3	0.5
	BRX-31 / CU-1 FC-0	BRX-31 / CU-0 FC-3	0.5
For BRX-32:			
CBL-163	BRX-28 / CU-0 FC-1	BRX-32 / CU-0 FC-2	2
CBL-164	BRX-28 / CU-1 FC-1	BRX-32 / CU-1 FC-2	2
	BRX-32 / CU-0 FC-0	BRX-32 / CU-1 FC-3	0.5
	BRX-32 / CU-1 FC-0	BRX-32 / CU-0 FC-3	0.5

Notes on Cabling SATA Bricks 25–32

The current release does not support more than 32 Bricks in 1-Slammer systems.

SHEET 11

PMI Cable Connection List and Schematic

Cable the PMI Connections in a 1-Slammer System

The table below specifies all cables and their connections for the private management interface (PMI) in all 1-Slammer systems, regardless of how many Bricks (SATA or Fibre Channel) are configured.

Table 9 Cable connections for the PMI (1-Slammer system)

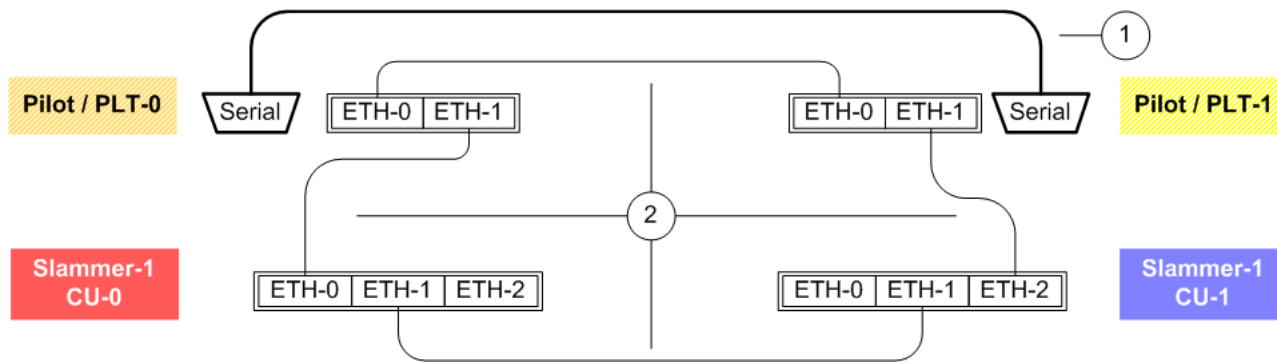
Cable	Chassis / CU / Port		Chassis / CU / Port	
CBL-60	PLT-0	ETH-0	PLT-1	ETH-0
CBL-61	PLT-0	ETH-1	SLM-1 / CU-0	ETH-0
CBL-63	PLT-1	ETH-1	SLM-1 / CU-1	ETH-2
CBL-65	SLM-1 / CU-0	ETH-1	SLM-1 / CU-1	ETH-1

In addition to the Ethernet cables, the PMI requires a null modem cable connection between the serial ports of each Pilot control unit.

Schematic of PMI Ethernet Connections in a 1-Slammer System

The schematic below illustrates the Ethernet connections for the PMI in a 1-Slammer system.

Figure 8 PMI Ethernet schematic (1-Slammer system)



- Legend**
- 1 Serial null-modem cable.
 - 2 Cat-5 Ethernet cables.

Part III: Cabling Pillar Axiom 500 Systems Using Two Slammers and SATA Bricks Only

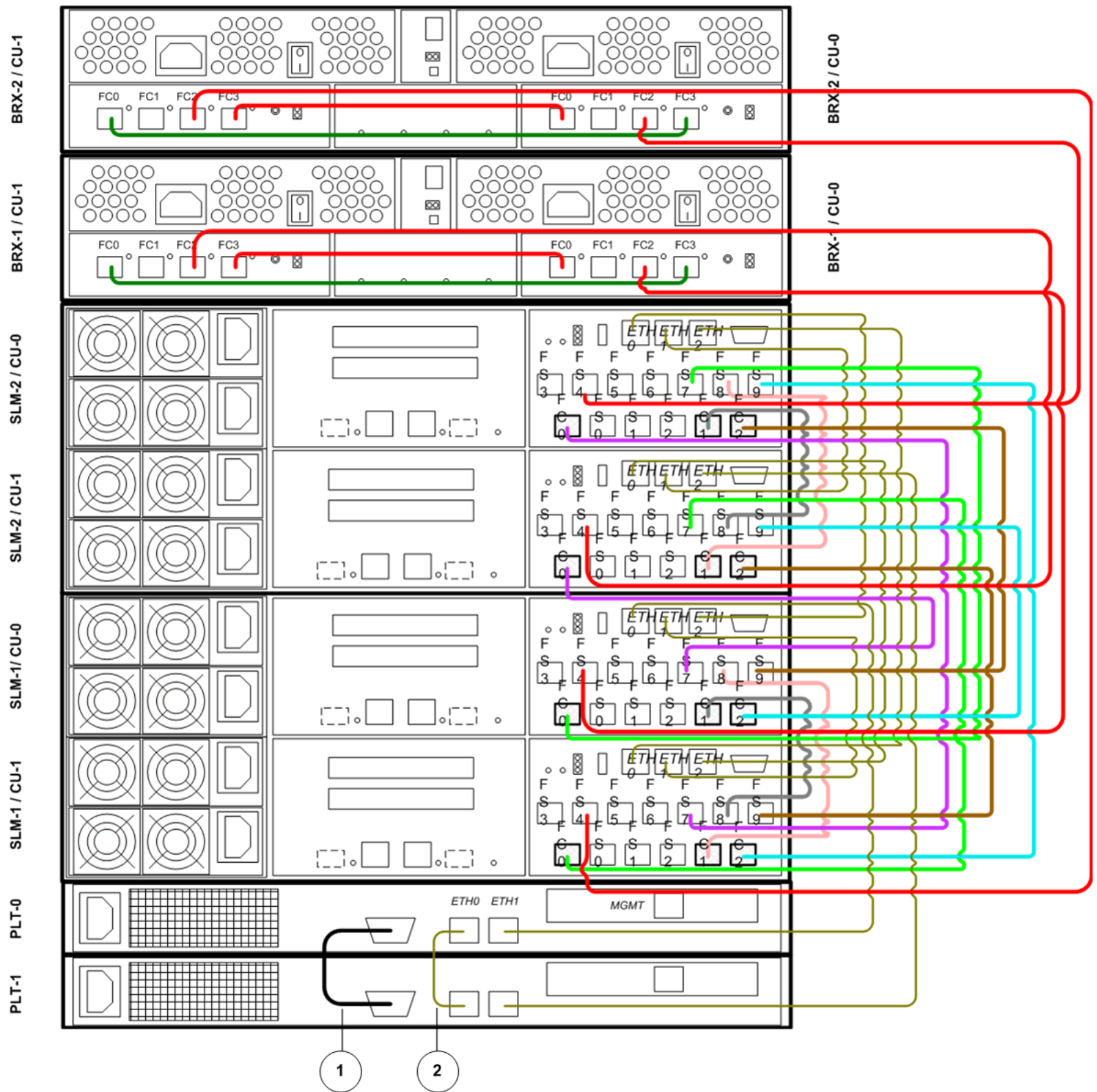
SHEET 12

Cabling Example: 2-Slammer System Using SATA Bricks

Sample Wiring Diagram for a 2x2 System Using SATA Bricks

The figure below is a conceptual example of cabling a 2-Slammer Pillar Axiom 500 system. The scheme shown is for a hardware configuration of two Slammers and two version 1 SATA Bricks.

Figure 9 Sample cabling for a 2-Slammer system (SATA Bricks only)



Legend

- 1 Serial null-modem cable.
- 2 Cross connect on the port that supports the Intelligent Platform Management Interface (IPMI). These ports are labeled ETH-0.

Note: The location of these ports on your Pilot control units may differ from this illustration.

This diagram shows the logical connections, not the physical layout of the cables.

Notes on the 2x2 Wiring Diagram for SATA Bricks

- Cabling of the Storage System Fabric (SSF) is the same for NAS and SAN Slammers. The Slammers depicted in [Figure 9](#) are NAS Slammers.
- The system configuration shown in [Figure 9](#) uses version 1 SATA RAID controllers. Version 2 SATA controllers are cabled using the same port connections.
- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)
- Color codes of the Fibre Channel (FC) cables in [Figure 9](#) are determined as follows:
 - Slammer FC-*x* to FS-*y* cable color coding follows the lowest SLM-*a*, CU-*b* port color.
 - The illustration shows a Pilot, two Slammers, and two Bricks.
 - This drawing shows only the internal cabling among the units included in the illustration. A working Pillar Axiom system would have additional connections for the following components:
 - Power
 - Customer host system (up to 32, depending on the type of network interface module used and the number of Slammers)
 - Management Ethernet connections to customer equipment (two)
 - Brick FC connections (up to 64) to support the Storage System Fabric (SSF)

SHEET 13

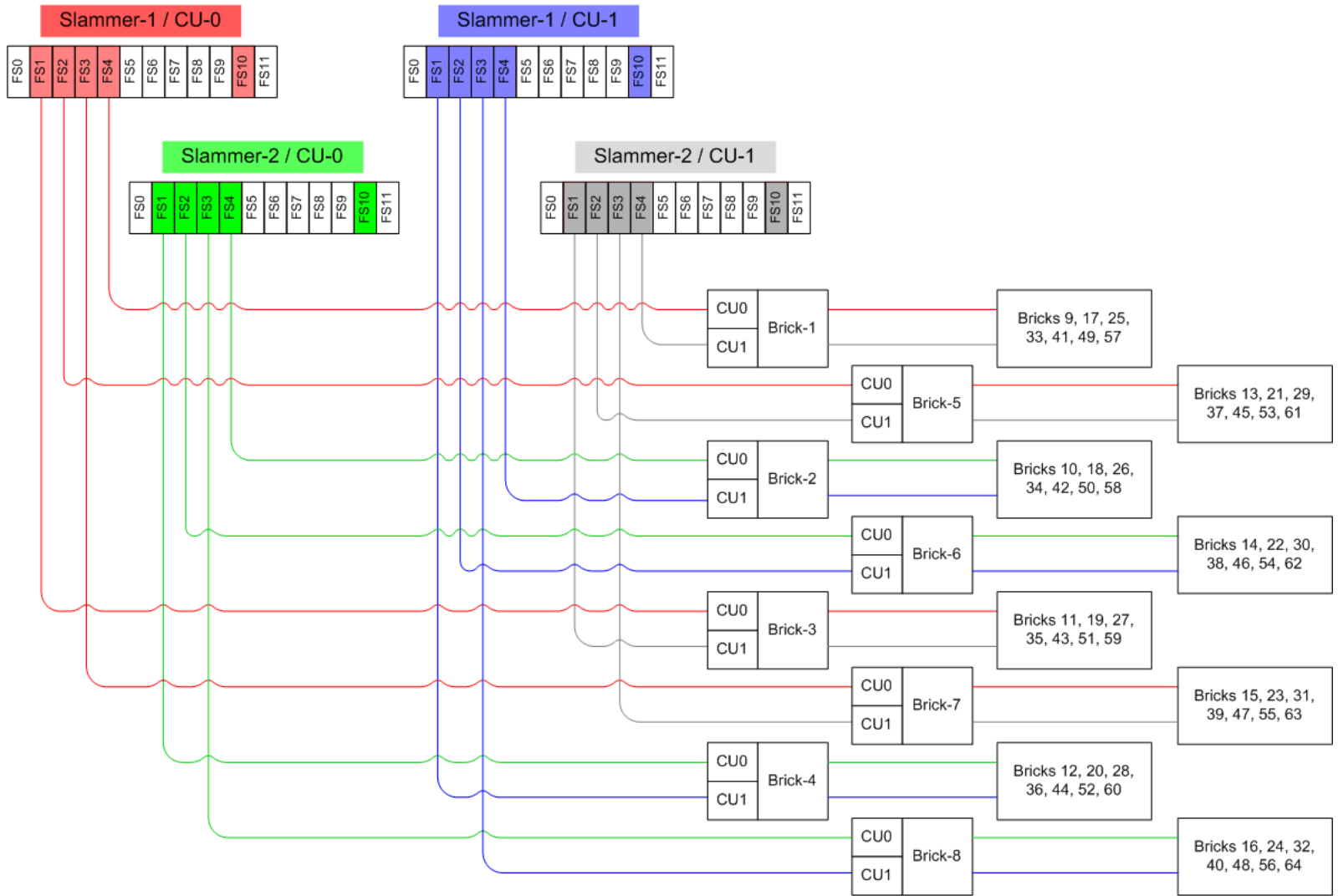
Cabling Block Diagram: A 2-Slammer System

Block Diagram for a 2x64 System Using SATA Bricks

The figure below illustrates the stringing of 64 Bricks in a 2-Slammer Pillar Axiom 500 system. The stringing scheme maps eight Brick strings, each string being eight Bricks deep.

Important! This illustration is for reference only. Actual cabling information begins with [Table 12](#).

Figure 10 Cabling block diagram for 2x64 systems (SATA Bricks only)



For information regarding the cross connections between the two control units of each Brick, see the FC-0 to FC-3 cross connections specified in [Table 12](#).

Notes on the 2x64 Block Diagram for SATA Bricks

- 2-Slammer systems contain at most eight Brick strings. For the Pillar Axiom 500, a string may contain up to eight Bricks.
- Add Bricks to strings so that the number of Bricks in any string differs by no more than two between the longest and the shortest string.
- [Figure 10](#), shows the order that Bricks are to be added to a system that has two Slammer storage controllers (NAS or SAN) and up to 64 Bricks.
- The entire Storage System Fabric (SSF) uses 2 Gb Fibre Channel (FC) patch cables throughout.
- Large 2-Slammer systems require up to four racks. Here are two examples:

Table 10 Rack space requirements for a 16-Brick system: 54 U (two racks)

Component	Height (rack units)	Quantity	Rack space
Pilot	2	1	2
Slammer	4	2	8
Brick	2	16	32
PDU	1	8	8
Clearance	2	2	4

Table 11 Rack space requirements for a 32-Brick system: 92 U (three racks)

Component	Height (rack units)	Quantity	Rack space
Pilot	2	1	2
Slammer	4	2	8
Brick	2	32	64
PDU	1	12	12
Clearance	2	3	6

- Pillar Data Systems recommends a Brick scalability strategy that includes the following points:
 - First connect all eight Brick strings to the Slammers with one Brick before building onto the end of any string.
 - Add additional Bricks using the connectivity illustrated in [Figure 10](#) and defined in the tables beginning with [Table 12](#).

See also: [Figure 12: Generalized cascade of three SATA Bricks](#).
- This arrangement of Slammer-to-Bricks connections satisfies the following criteria:
 - Each Brick has one connection to the first Slammer and one connection to the second Slammer.
 - Brick CU-0 ports are connected to Slammer CU-0 ports. Brick CU-1 ports are connected to Slammer CU-1 ports.
 - For each Brick, the two Slammer connections use the same Slammer port number but on opposite CUs.
 - Load across Slammer CUs is balanced as Bricks are added to the system.
- The configuration of systems upgraded in the field may differ somewhat from those built in the factory.

SHEET 14

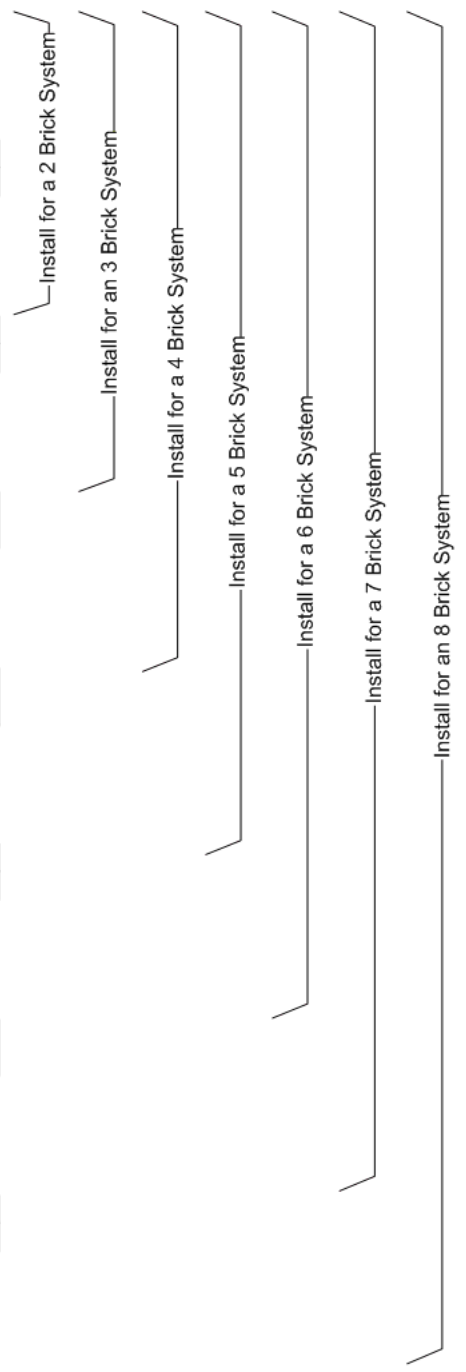
Cable Connection List (Slammers Plus Bricks 1–8)

Cable the Slammers and SATA Bricks 1–8

The table below specifies all Fibre Channel (FC) cables and their connections for the two Slammers and the first set of eight Bricks. All such interconnections are part of the Storage System Fabric (SSF).

Table 12 FC cable connections for two Slammers and the first set of eight SATA Bricks

Slammer-to-Slammer Connections		Brick Connections	
From: Chassis / CU / Port	To: Chassis / CU / Port	From: Chassis / CU / Port	To: Chassis / CU / Port
SLM-1 / CU-0 FC-0	SLM-2 / CU-0 FS-7	For BRX-1:	SLM-1 / CU-0 FS-4
SLM-1 / CU-0 FC-1	SLM-1 / CU-1 FS-8		SLM-2 / CU-1 FS-4
SLM-1 / CU-0 FC-2	SLM-2 / CU-1 FS-9		BRX-1 / CU-0 FC-0
SLM-1 / CU-1 FC-0	SLM-2 / CU-1 FS-7		BRX-1 / CU-1 FC-2
SLM-1 / CU-1 FC-1	SLM-1 / CU-0 FS-8		BRX-1 / CU-1 FC-3
SLM-1 / CU-1 FC-2	SLM-2 / CU-0 FS-9		BRX-1 / CU-0 FC-3
SLM-2 / CU-0 FC-0	SLM-1 / CU-1 FS-7	For BRX-2:	SLM-2 / CU-0 FS-4
SLM-2 / CU-0 FC-1	SLM-2 / CU-1 FS-8		SLM-1 / CU-1 FS-4
SLM-2 / CU-0 FC-2	SLM-1 / CU-0 FS-9		BRX-2 / CU-0 FC-0
SLM-2 / CU-1 FC-0	SLM-1 / CU-1 FS-7		BRX-2 / CU-1 FC-2
SLM-2 / CU-1 FC-1	SLM-2 / CU-0 FS-8		BRX-2 / CU-1 FC-3
SLM-2 / CU-1 FC-2	SLM-2 / CU-0 FS-9		BRX-2 / CU-0 FC-3
SLM-2 / CU-1 FC-0	SLM-1 / CU-0 FS-7	For BRX-3:	SLM-1 / CU-0 FS-1
SLM-2 / CU-1 FC-1	SLM-2 / CU-0 FS-8		SLM-2 / CU-1 FS-1
SLM-2 / CU-1 FC-2	SLM-1 / CU-1 FS-9		BRX-3 / CU-0 FC-0
			BRX-3 / CU-1 FC-2
			BRX-3 / CU-1 FC-3
			BRX-3 / CU-0 FC-3
		For BRX-4:	SLM-2 / CU-0 FS-1
			SLM-1 / CU-1 FS-1
			BRX-4 / CU-0 FC-0
			BRX-4 / CU-1 FC-2
			BRX-4 / CU-1 FC-3
			BRX-4 / CU-0 FC-3
		For BRX-5:	SLM-1 / CU-0 FS-2
			SLM-2 / CU-1 FS-2
			BRX-5 / CU-0 FC-0
			BRX-5 / CU-1 FC-2
			BRX-5 / CU-1 FC-3
			BRX-5 / CU-0 FC-3
		For BRX-6:	SLM-2 / CU-0 FS-2
			SLM-1 / CU-1 FS-2
			BRX-6 / CU-0 FC-0
			BRX-6 / CU-1 FC-2
			BRX-6 / CU-1 FC-3
			BRX-6 / CU-0 FC-3
		For BRX-7:	SLM-1 / CU-0 FS-3
			SLM-2 / CU-1 FS-3
			BRX-7 / CU-0 FC-0
			BRX-7 / CU-1 FC-2
			BRX-7 / CU-1 FC-3
			BRX-7 / CU-0 FC-3
		For BRX-8:	SLM-2 / CU-0 FS-3
			SLM-1 / CU-1 FS-3
			BRX-8 / CU-0 FC-0
			BRX-8 / CU-1 FC-2
			BRX-8 / CU-1 FC-3
			BRX-8 / CU-0 FC-3



Notes on Cabling SATA Bricks 1–8

- Install all cables specified, depending on the number of Bricks in the system.
- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)
- The Storage System Fabric (SSF) cabling scheme is based on the following conventions:

- Slammers and Bricks (all chassis) are numbered starting with 1.
- Designators within Slammer and Brick chassis are numbered starting from 0 (zero), as in CU-0, FC-0, and so on.
- The Pilot has two control units (CUs): PLT-0 and PLT-1.
- SSF cabling in 2-Slammer systems is based on the following principles:
 - Slammers:
 - FC-0 in one Slammer connects to FS-7 in the other Slammer. See [Table 12](#).
 - FC-1 connects to FS-8 in the opposite CU in the same Slammer.
 - FC-2 in one Slammer connects to FS-9 in the other Slammer. See [Table 12](#).
 - For version 2 Slammers, FC-3 connects to FS-10.
 - FS-1, FS-2, FS-3, and FS-4 are used for Brick connections.
 - The following connections are reserved for configurations of more than two Slammers:
 - FS-4 and FS-5 are reserved for Slammer FC-to-switch connections in 3- and 5-Slammer configurations.
 - FS-6 is reserved for the cascade (switch-to-switch) connection in 3-Slammer and larger configurations.
 - Bricks:
 - FC-0 connects to FC-3 of the opposite CU in the same Brick.
 - FC-1 connects to FC-2 in the same CU of a downstream Brick.
 - FC-2 connects to a Slammer FS port or to FC-1 in the same CU of an upstream Brick.
- In addition to the FC cables identified in [Table 12](#), install the private management interface (PMI) Ethernet cables specified in [Table 17](#).
- To cable additional Bricks into a 2-Slammer system, see [Table 13](#).

SHEET 15

SSF Cable Connection List (Bricks 9–16)

Cable SATA Bricks 9–16

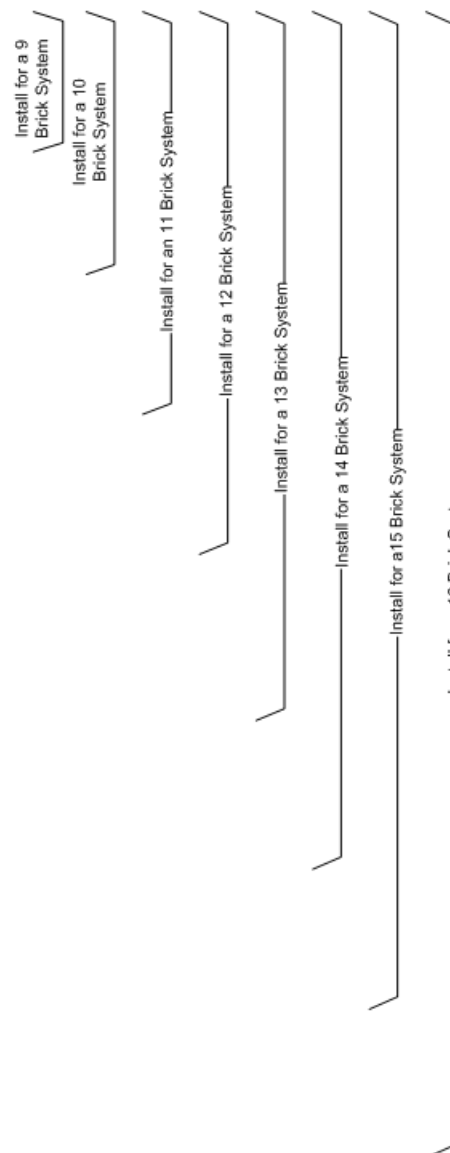
To install these Bricks, install all cables specified in the following tables and in the indicated order:

- 1 [Table 12: FC cable connections for two Slammers and the first set of eight SATA Bricks.](#)
- 2 The appropriate cables in the table below (depending on the number of Bricks in your configuration).

The table below specifies all Fibre Channel (FC) cables and their connections for the second set of eight Bricks. All such interconnections are part of the Storage System Fabric (SSF).

Table 13 FC cable connections for the second set of eight SATA Bricks (2-Slammer system)

	From Chassis / CU / Port	To Chassis / CU / Port	
For BRX-9:			
	BRX-1 / CU-0 FC-1	BRX-9 / CU-0 FC-2	2
	BRX-1 / CU-1 FC-1	BRX-9 / CU-1 FC-2	2
	BRX-9 / CU-0 FC-0	BRX-9 / CU-1 FC-3	0.5
	BRX-9 / CU-1 FC-0	BRX-9 / CU-0 FC-3	0.5
For BRX-10:			
	BRX-2 / CU-0 FC-1	BRX-10 / CU-0 FC-2	2
	BRX-2 / CU-1 FC-1	BRX-10 / CU-1 FC-2	2
	BRX-10 / CU-0 FC-0	BRX-10 / CU-1 FC-3	0.5
	BRX-10 / CU-1 FC-0	BRX-10 / CU-0 FC-3	0.5
For BRX-11:			
	BRX-3 / CU-0 FC-1	BRX-11 / CU-0 FC-2	2
	BRX-3 / CU-1 FC-1	BRX-11 / CU-1 FC-2	2
	BRX-11 / CU-0 FC-0	BRX-11 / CU-1 FC-3	0.5
	BRX-11 / CU-1 FC-0	BRX-11 / CU-0 FC-3	0.5
For BRX-12:			
	BRX-4 / CU-0 FC-1	BRX-12 / CU-0 FC-2	2
	BRX-4 / CU-1 FC-1	BRX-12 / CU-1 FC-2	2
	BRX-12 / CU-0 FC-0	BRX-12 / CU-1 FC-3	0.5
	BRX-12 / CU-1 FC-0	BRX-12 / CU-0 FC-3	0.5
For BRX-13:			
	BRX-5 / CU-0 FC-1	BRX-13 / CU-0 FC-2	2
	BRX-5 / CU-1 FC-1	BRX-13 / CU-1 FC-2	2
	BRX-13 / CU-0 FC-0	BRX-13 / CU-1 FC-3	0.5
	BRX-13 / CU-1 FC-0	BRX-13 / CU-0 FC-3	0.5
For BRX-14:			
	BRX-6 / CU-0 FC-1	BRX-14 / CU-0 FC-2	2
	BRX-6 / CU-1 FC-1	BRX-14 / CU-1 FC-2	2
	BRX-14 / CU-0 FC-0	BRX-14 / CU-1 FC-3	0.5
	BRX-14 / CU-1 FC-0	BRX-14 / CU-0 FC-3	0.5
For BRX-15:			
	BRX-7 / CU-0 FC-1	BRX-15 / CU-0 FC-2	2
	BRX-7 / CU-1 FC-1	BRX-15 / CU-1 FC-2	2
	BRX-15 / CU-0 FC-0	BRX-15 / CU-1 FC-3	0.5
	BRX-15 / CU-1 FC-0	BRX-15 / CU-0 FC-3	0.5
For BRX-16:			
	BRX-8 / CU-0 FC-1	BRX-16 / CU-0 FC-2	2
	BRX-8 / CU-1 FC-1	BRX-16 / CU-1 FC-2	2
	BRX-16 / CU-0 FC-0	BRX-16 / CU-1 FC-3	0.5
	BRX-16 / CU-1 FC-0	BRX-16 / CU-0 FC-3	0.5



Notes on Cabling SATA Bricks 9–16

To cable additional Bricks into a 2-Slammer system, see [Table 14](#).

SHEET 16

Cable Connection List (Bricks 17–24)

Cable SATA Bricks 17–24

To install these Bricks, install all cables specified in the following tables and in the indicated order:

- 1 [Table 12: FC cable connections for two Slammers and the first set of eight SATA Bricks.](#)
- 2 [Table 13: FC cable connections for the second set of eight SATA Bricks \(2-Slammer system\).](#)
- 3 Depending on the number of Bricks in your configuration, the appropriate cables in the table below.

The table below specifies all Fibre Channel (FC) cables and their connections for the third set of eight Bricks. All such interconnections are part of the Storage System Fabric (SSF).

Table 14 FC cable connections for the third set of eight SATA Bricks (2-Slammer system)

	From Chassis / CU / Port	To Chassis / CU / Port	
For BRX-17:			
	BRX-9 / CU-0 FC-1	BRX-17 / CU-0 FC-2	2
	BRX-9 / CU-1 FC-1	BRX-17 / CU-1 FC-2	2
	BRX-17 / CU-0 FC-0	BRX-17 / CU-1 FC-3	0.5
	BRX-17 / CU-1 FC-0	BRX-17 / CU-0 FC-3	0.5
For BRX-18:			
	BRX-10 / CU-0 FC-1	BRX-18 / CU-0 FC-2	2
	BRX-10 / CU-1 FC-1	BRX-18 / CU-1 FC-2	2
	BRX-18 / CU-0 FC-0	BRX-18 / CU-1 FC-3	0.5
	BRX-18 / CU-1 FC-0	BRX-18 / CU-0 FC-3	0.5
For BRX-19:			
	BRX-11 / CU-0 FC-1	BRX-19 / CU-0 FC-2	2
	BRX-11 / CU-1 FC-1	BRX-19 / CU-1 FC-2	2
	BRX-19 / CU-0 FC-0	BRX-19 / CU-1 FC-3	0.5
	BRX-19 / CU-1 FC-0	BRX-19 / CU-0 FC-3	0.5
For BRX-20:			
	BRX-12 / CU-0 FC-1	BRX-20 / CU-0 FC-2	2
	BRX-12 / CU-1 FC-1	BRX-20 / CU-1 FC-2	2
	BRX-20 / CU-0 FC-0	BRX-20 / CU-1 FC-3	0.5
	BRX-20 / CU-1 FC-0	BRX-20 / CU-0 FC-3	0.5
For BRX-21:			
	BRX-13 / CU-0 FC-1	BRX-21 / CU-0 FC-2	2
	BRX-13 / CU-1 FC-1	BRX-21 / CU-1 FC-2	2
	BRX-21 / CU-0 FC-0	BRX-21 / CU-1 FC-3	0.5
	BRX-21 / CU-1 FC-0	BRX-21 / CU-0 FC-3	0.5
For BRX-22:			
	BRX-14 / CU-0 FC-1	BRX-22 / CU-0 FC-2	2
	BRX-14 / CU-1 FC-1	BRX-22 / CU-1 FC-2	2
	BRX-22 / CU-0 FC-0	BRX-22 / CU-1 FC-3	0.5
	BRX-22 / CU-1 FC-0	BRX-22 / CU-0 FC-3	0.5
For BRX-23:			
	BRX-15 / CU-0 FC-1	BRX-23 / CU-0 FC-2	2
	BRX-15 / CU-1 FC-1	BRX-23 / CU-1 FC-2	2
	BRX-23 / CU-0 FC-0	BRX-23 / CU-1 FC-3	0.5
	BRX-23 / CU-1 FC-0	BRX-23 / CU-0 FC-3	0.5
For BRX-24:			
	BRX-16 / CU-0 FC-1	BRX-24 / CU-0 FC-2	2
	BRX-16 / CU-1 FC-1	BRX-24 / CU-1 FC-2	2
	BRX-24 / CU-0 FC-0	BRX-24 / CU-1 FC-3	0.5
	BRX-24 / CU-1 FC-0	BRX-24 / CU-0 FC-3	0.5

Notes on Cabling SATA Bricks 17–24

To cable additional SATA Bricks into a 2-Slammer system, see [Table 15](#).

SHEET 17

Cable Connection List (Bricks 25 and Up)

Cable SATA Bricks 25–32

To install these Bricks, install all cables specified in the following tables and in the indicated order:

- 1 [Table 12: FC cable connections for two Slammers and the first set of eight SATA Bricks.](#)
- 2 [Table 13: FC cable connections for the second set of eight SATA Bricks \(2-Slammer system\).](#)
- 3 [Table 14: FC cable connections for the third set of eight SATA Bricks \(2-Slammer system\).](#)
- 4 Depending on the number of Bricks in your configuration, the appropriate cables in the table below.

The table below specifies all Fibre Channel (FC) cables and their connections for the fourth set of eight SATA Bricks. All such interconnections are part of the Storage System Fabric (SSF).

Table 15 FC cable connections for the fourth set of eight SATA Bricks (2-Slammer system)

	From	To	
	Chassis / CU / Port	Chassis / CU / Port	
For BRX-25:			
	BRX-17 / CU-0 FC-1	BRX-25 / CU-0 FC-2	2
	BRX-17 / CU-1 FC-1	BRX-25 / CU-1 FC-2	2
	BRX-25 / CU-0 FC-0	BRX-25 / CU-1 FC-3	0.5
	BRX-25 / CU-1 FC-0	BRX-25 / CU-0 FC-3	0.5
For BRX-26:			
	BRX-18 / CU-0 FC-1	BRX-26 / CU-0 FC-2	2
	BRX-18 / CU-1 FC-1	BRX-26 / CU-1 FC-2	2
	BRX-26 / CU-0 FC-0	BRX-26 / CU-1 FC-3	0.5
	BRX-26 / CU-1 FC-0	BRX-26 / CU-0 FC-3	0.5
For BRX-27:			
	BRX-19 / CU-0 FC-1	BRX-27 / CU-0 FC-2	2
	BRX-19 / CU-1 FC-1	BRX-27 / CU-1 FC-2	2
	BRX-27 / CU-0 FC-0	BRX-27 / CU-1 FC-3	0.5
	BRX-27 / CU-1 FC-0	BRX-27 / CU-0 FC-3	0.5
For BRX-28:			
	BRX-20 / CU-0 FC-1	BRX-28 / CU-0 FC-2	2
	BRX-20 / CU-1 FC-1	BRX-28 / CU-1 FC-2	2
	BRX-28 / CU-0 FC-0	BRX-28 / CU-1 FC-3	0.5
	BRX-28 / CU-1 FC-0	BRX-28 / CU-0 FC-3	0.5
For BRX-29:			
	BRX-21 / CU-0 FC-1	BRX-29 / CU-0 FC-2	2
	BRX-21 / CU-1 FC-1	BRX-29 / CU-1 FC-2	2
	BRX-29 / CU-0 FC-0	BRX-29 / CU-1 FC-3	0.5
	BRX-29 / CU-1 FC-0	BRX-29 / CU-0 FC-3	0.5
For BRX-30:			
	BRX-22 / CU-0 FC-1	BRX-30 / CU-0 FC-2	2
	BRX-22 / CU-1 FC-1	BRX-30 / CU-1 FC-2	2
	BRX-30 / CU-0 FC-0	BRX-30 / CU-1 FC-3	0.5
	BRX-30 / CU-1 FC-0	BRX-30 / CU-0 FC-3	0.5
For BRX-31:			
	BRX-23 / CU-0 FC-1	BRX-31 / CU-0 FC-2	2
	BRX-23 / CU-1 FC-1	BRX-31 / CU-1 FC-2	2
	BRX-31 / CU-0 FC-0	BRX-31 / CU-1 FC-3	0.5
	BRX-31 / CU-1 FC-0	BRX-31 / CU-0 FC-3	0.5
For BRX-32:			
	BRX-24 / CU-0 FC-1	BRX-32 / CU-0 FC-2	2
	BRX-24 / CU-1 FC-1	BRX-32 / CU-1 FC-2	2
	BRX-32 / CU-0 FC-0	BRX-32 / CU-1 FC-3	0.5
	BRX-32 / CU-1 FC-0	BRX-32 / CU-0 FC-3	0.5

Notes on Cabling SATA Bricks 25–32

2-Slammer systems support configurations of up to 64 Bricks. To cable additional SATA Bricks into a 2-Slammer system, continue cabling them using the pattern illustrated in [Table 16](#).

Cabling Configurations of More Than 32 SATA Bricks

Table 16 Cabling configurations having more than 32 SATA Bricks

To cable this Brick...	Connect it to this Brick...	To cable this Brick...	Connect it to this Brick...
BRX-33	BRX-25	BRX-49	BRX-41

Table 16 Cabling configurations having more than 32 SATA Bricks (continued)

To cable this Brick...	Connect it to this Brick...	To cable this Brick...	Connect it to this Brick...
BRX-34	BRX-26	BRX-50	BRX-42
BRX-35	BRX-27	BRX-51	BRX-43
BRX-36	BRX-28	BRX-52	BRX-44
BRX-37	BRX-29	BRX-53	BRX-45
BRX-38	BRX-30	BRX-54	BRX-46
BRX-39	BRX-31	BRX-55	BRX-47
BRX-40	BRX-32	BRX-56	BRX-48
BRX-41	BRX-33	BRX-57	BRX-49
BRX-42	BRX-34	BRX-58	BRX-50
BRX-43	BRX-35	BRX-59	BRX-51
BRX-44	BRX-36	BRX-60	BRX-52
BRX-45	BRX-37	BRX-61	BRX-53
BRX-46	BRX-38	BRX-62	BRX-54
BRX-47	BRX-39	BRX-63	BRX-55
BRX-48	BRX-40	BRX-64	BRX-56

See also:

[Figure 10: Cabling block diagram for 2x64 systems \(SATA Bricks only\).](#)

[Figure 12: Generalized cascade of three SATA Bricks.](#)

SHEET 18

PMI Cable Connection List and Schematic

Cable the PMI Connections in a 2-Slammer System

The table below specifies all Ethernet cables and their connections for the private management interface (PMI) in all 2-Slammer systems, regardless of how many Bricks are configured.

Table 17 Ethernet cable connections for PMI (2-Slammer system)

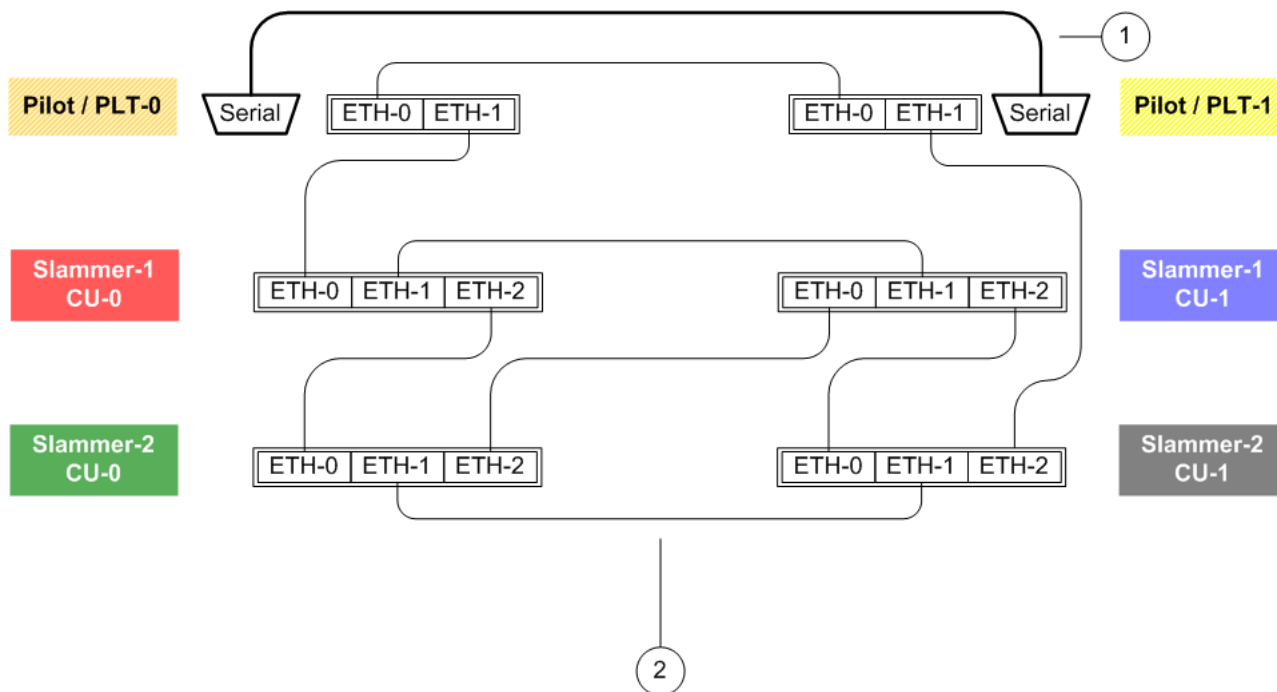
From chassis / CU / port	To chassis / CU / port
PLT-0 ETH0	PLT-1 ETH0
PLT-0 ETH1	SLM-1 / CU-0 / ETH0
PLT-1 ETH1	SLM-2 / CU-1 / ETH2
SLM-1 / CU-0 / ETH1	SLM-1 / CU-1 / ETH1
SLM-1 / CU-0 / ETH2	SLM-2 / CU-0 / ETH0
SLM-1 / CU-1 / ETH2	SLM-2 / CU-1 / ETH0
SLM-2 / CU-0 / ETH1	SLM-2 / CU-1 / ETH1
SLM-2 / CU-0 / ETH2	SLM-1 / CU-1 / ETH0

In addition to the Ethernet cables, PMI requires a null modem cable connection between the serial ports of each Pilot control unit.

Schematic of PMI Ethernet Connections in a 2-Slammer System

The schematic below illustrates the Ethernet connections for the private management interface (PMI) in a 2-Slammer system.

Figure 11 PMI Ethernet schematic (2-Slammer system)



- Legend**
- 1 Serial null-modem cable.
 - 2 Cat-5 Ethernet cables.

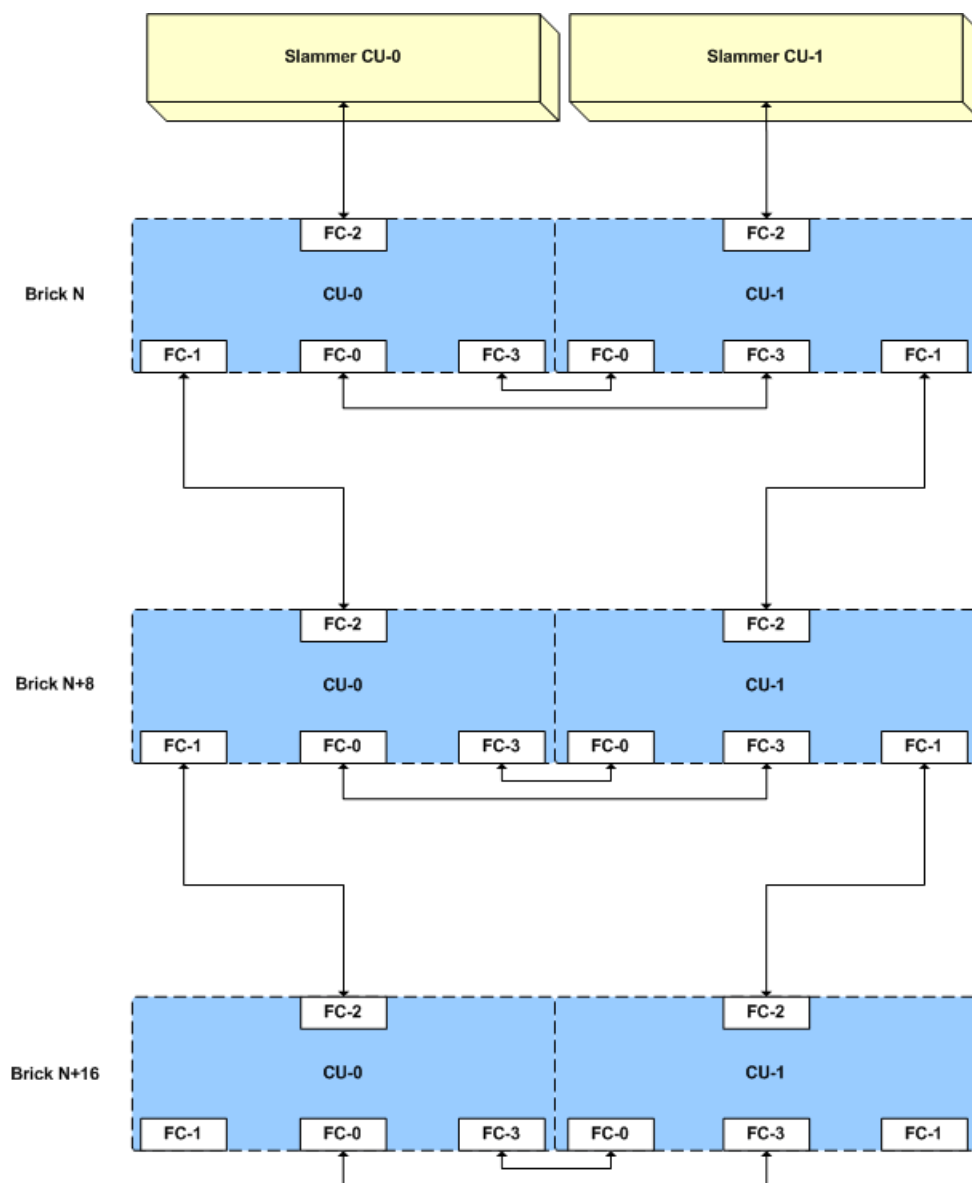
SHEET 19

Schematic of a SATA Brick Cascade (String)

Diagram of Stringing SATA Bricks

The figure below illustrates the general scheme to cascade (or string) SATA Bricks (N can have a value from 1 to 8).

Figure 12 Generalized cascade of three SATA Bricks



Notes on Stringing Bricks

This schematic applies *only* to SATA Bricks. For a schematic showing an intermix of SATA and Fibre Channel (FC) Bricks, see:

- [Figure 13: Sample cabling for 1x4 systems with FC Bricks.](#)
- [Figure 16: Sample cabling for an FC RAID Brick, an FC Expansion Brick, and two SATA Bricks.](#)

Part IV: Cabling Pillar Axiom 500 Systems Using One or Two Slammers and FC Bricks

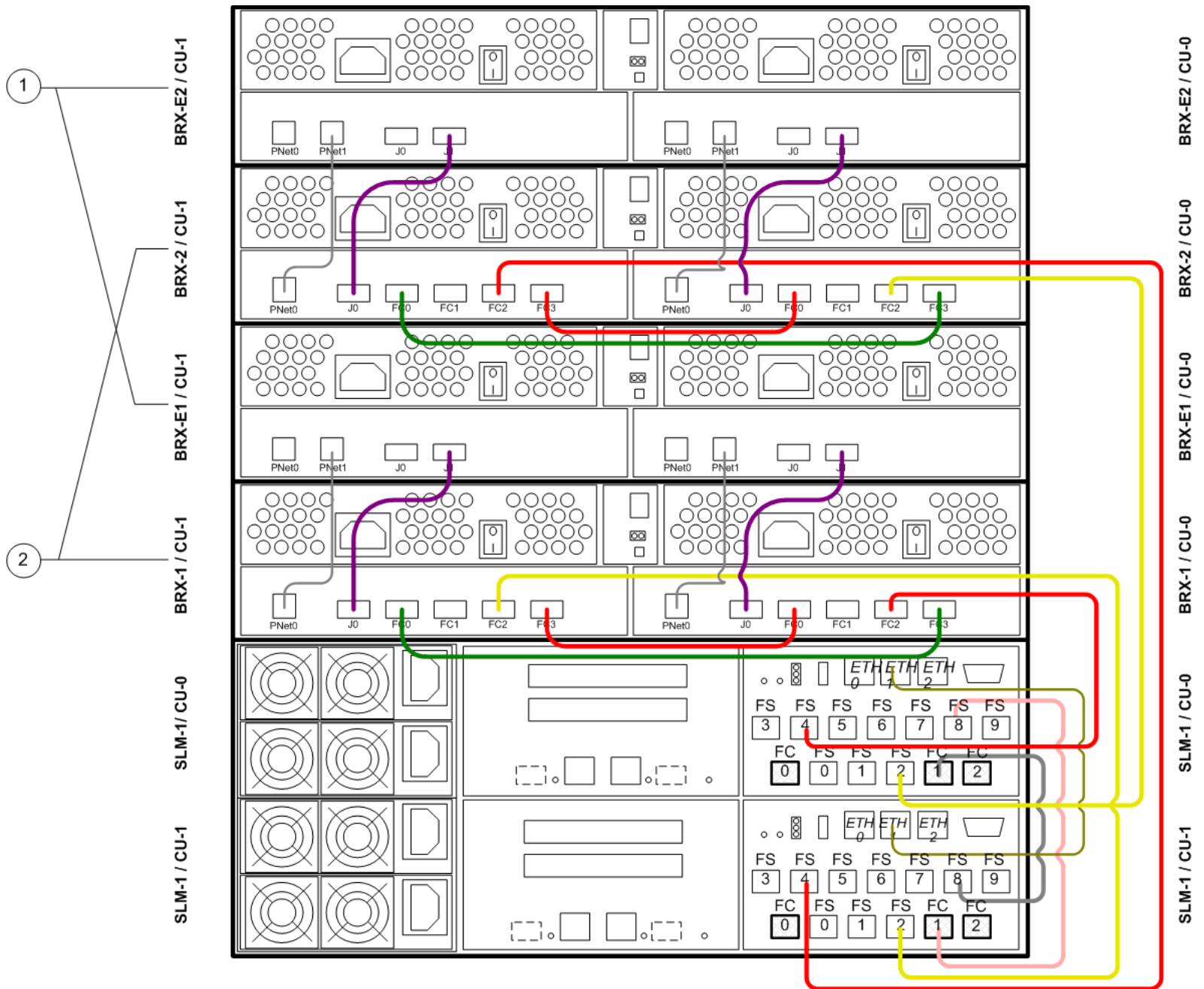
SHEET 20

Cabling Example: 1-Slammer System Using FC Bricks

Sample Wiring Diagram for a 1x4 System Using Fibre Channel Bricks

The figure below is a conceptual example of cabling Fibre Channel (FC) Brick storage enclosures. It defines the Slammer-to-Brick connections and the Brick-to-Brick connections required to connect FC Bricks to a Slammer. This principle applies regardless how many Slammers comprise the Pillar Axiom system.

Figure 13 Sample cabling for 1x4 systems with FC Bricks



- Legend**
- 1 Typical FC Expansion Brick.
 - 2 Typical FC RAID Brick.

Notes on the 1x4 Wiring Diagram for FC Bricks

- [Figure 13](#) shows the logical connections, not the physical layout of the cables.
- The Slammer depicted in [Figure 13](#) is a NAS Slammer. Storage System Fabric (SSF) cabling is the same for NAS and SAN Slammers. Also, a Pilot management controller is not shown but is needed to complete the Pillar Axiom system.
- Brick strings consist of SATA Bricks, FC Bricks, or a combination of the two. FC RAID Bricks can exist alone or be paired with one FC Expansion Brick.
- FC RAID Bricks are identified with a tag such as BRX-*n*. The *n* value indicates the order of adding this FC Brick to the system, when counting all FC RAID and SATA Bricks on the system.

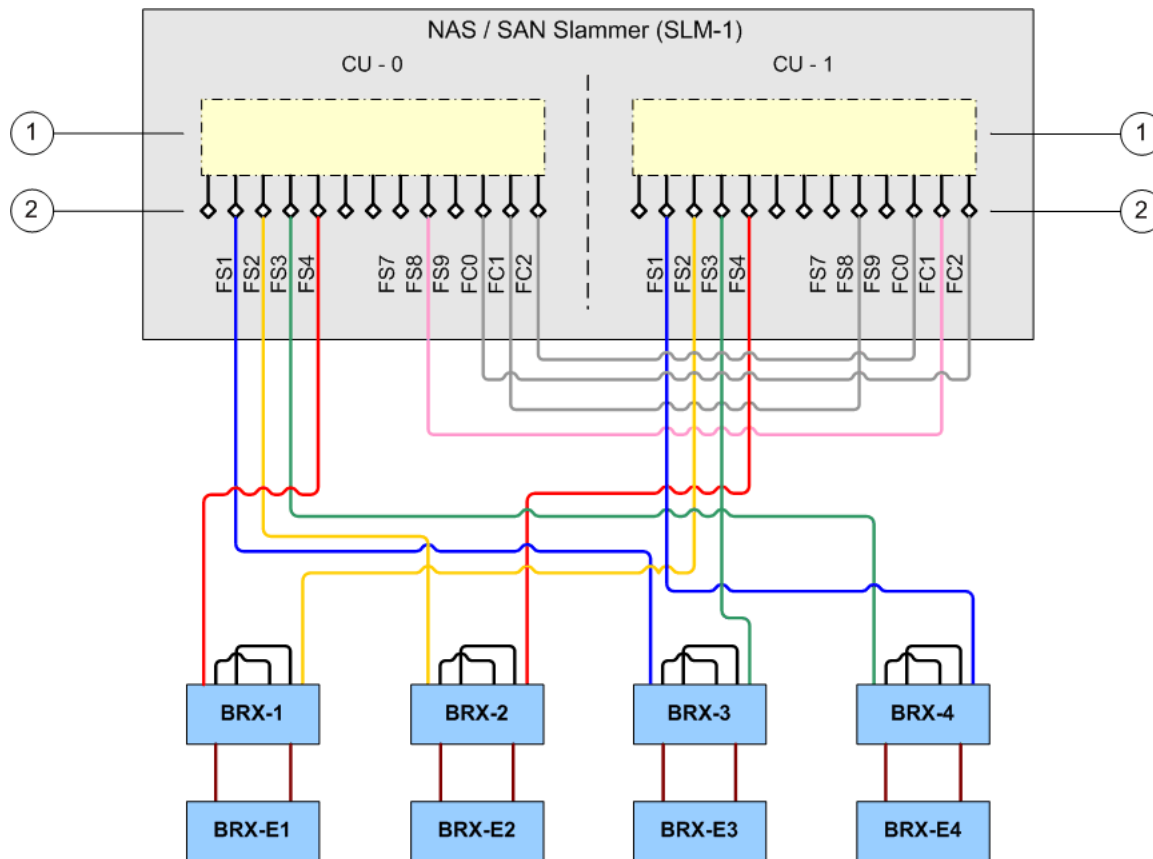
- FC Expansion Bricks are designated as BRX- E_n . The n value indicates the order of adding the Brick to the system, when counting all Expansion Bricks on the system.
- Color codes of the FC cables in [Figure 13](#) are defined as follows:
 - Slammer FC- x to FS- y cable color coding follows the lowest SLM- a , CU- b port color.
 - PNet cables are gray.
- [Figure 13](#) shows only the internal cabling among the units included in the illustration. A working Pillar Axiom system would have additional connections for the following components:
 - Power.
 - Customer host system.
 - Private management interface (PMI) Ethernet connections to the Pilot.
 - Management Ethernet connections to customer equipment.
 - Additional Brick FC connections to support the Storage System Fabric (SSF).
- Slammer-to-Slammer and Slammer-to-Pilot connections are defined beginning in the following sections:
 - [Cabling Example: 1-Slammer System Using SATA Bricks.](#)
 - [Cabling Example: 2-Slammer System Using SATA Bricks.](#)

Cabling Block Diagram: A 1-Slammer System Using FC Bricks

Block Diagram for a 1x8 System Using Fibre Channel Bricks

The figure below illustrates the stringing of eight Fibre Channel (FC) Bricks in a 1-Slammer Pillar Axiom 500 system. The stringing scheme maps four Brick strings, each being two Bricks deep.

Figure 14 Cabling block diagram for 1-Slammer systems with FC Bricks



Legend	1 Private interconnect module (PIM).	2 Ports (◊) on the PIM.
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Important! This illustration is for reference only and does not show the RJ-45 cables that interconnect the FC RAID and FC Expansion Brick pairs.

Notes on the 1x8 Block Diagram for FC Bricks

- In [Figure 14](#), FC RAID Bricks are at the head of the string (first row). FC Expansion Bricks are in the second row.
- [Figure 14](#) shows the order that Bricks are to be added to a system.
- 1-Slammer systems contain at most four Brick strings.
- A FC Brick string is limited to four FC Bricks (zero or one FC Expansion Brick for each FC RAID Brick).
- SATA Bricks containing hard disk drives (HDDs) can be added to a FC Brick string.
- SATA Bricks containing solid state drives (SSDs) cannot be used on systems that contain FC Bricks.
- Install all FC and Ethernet cables for Slammer-to-Slammer and Slammer-to-Pilot connections. For 1-Slammer systems, see:
 - [Table 5: FC cable connections for the Slammer and the first and second sets of four SATA Bricks.](#)
 - [Table 9: Cable connections for the PMI \(1-Slammer system\).](#)
- Install Slammer-to-Brick and Brick-to-Brick connections according to the specifications in [Table 18](#).
- FC Bricks use 2 Gb FC patch cables.

Cable the Slammer and FC Bricks

The table below specifies all FC cables and their connections for the Slammer and the eight FC Bricks (four FC RAID Bricks and four FC Expansion Bricks). All such interconnections are part of the Storage System Fabric (SSF).

Table 18 FC cable connections for one Slammer and eight FC Bricks

Case 1: Single Slammer -- all FC Bricks			
From	To		
Chassis / CU / Port	Chassis / CU / Port		
For BRX-1:			
SLM-1 / CU-0 FS-4	BRX-1 / CU-0 FC-2		
SLM-1 / CU-1 FS-2	BRX-1 / CU-1 FC-2		
BRX-1 / CU-0 FC-0	BRX-1 / CU-1 FC-3		
BRX-1 / CU-1 FC-0	BRX-1 / CU-0 FC-3		
For BRX-E1:			
BRX-1 / CU-0 J0	BRX-E1 / CU-0 J1		
BRX-1 / CU-1 J0	BRX-E1 / CU-1 J1		
BRX-1 / CU-0 PNet-0	BRX-E1 / CU-0 PNet-1		RJ-45 cable
BRX-1 / CU-1 PNet-0	BRX-E1 / CU-1 PNet-1	RJ-45 cable	
For BRX-2:			
SLM-1 / CU-0 FS-2	BRX-2 / CU-0 FC-2		
SLM-1 / CU-1 FS-4	BRX-2 / CU-1 FC-2		
BRX-2 / CU-0 FC-0	BRX-2 / CU-1 FC-3		
BRX-2 / CU-1 FC-0	BRX-2 / CU-0 FC-3		
For BRX-E2:			
BRX-2 / CU-0 J0	BRX-E2 / CU-0 J1		
BRX-2 / CU-1 J0	BRX-E2 / CU-1 J1		
BRX-2 / CU-0 PNet-0	BRX-E2 / CU-0 PNet-1	RJ-45 cable	
BRX-2 / CU-1 PNet-0	BRX-E2 / CU-1 PNet-1	RJ-45 cable	
For BRX-3:			
SLM-1 / CU-0 FS-1	BRX-3 / CU-0 FC-2		
SLM-1 / CU-1 FS-3	BRX-3 / CU-1 FC-2		
BRX-3 / CU-0 FC-0	BRX-3 / CU-1 FC-3		
BRX-3 / CU-1 FC-0	BRX-3 / CU-0 FC-3		
For BRX-E3:			
BRX-3 / CU-0 J0	BRX-E3 / CU-0 J1		
BRX-3 / CU-1 J0	BRX-E3 / CU-1 J1		
BRX-3 / CU-0 PNet-0	BRX-E3 / CU-0 PNet-1	RJ-45 cable	
BRX-3 / CU-1 PNet-0	BRX-E3 / CU-1 PNet-1	RJ-45 cable	
For BRX-4:			
SLM-1 / CU-0 FS-3	BRX-4 / CU-0 FC-2		
SLM-1 / CU-1 FS-1	BRX-4 / CU-1 FC-2		
BRX-4 / CU-0 FC-0	BRX-4 / CU-1 FC-3		
BRX-4 / CU-1 FC-0	BRX-4 / CU-0 FC-3		
For BRX-E4:			
BRX-4 / CU-0 J0	BRX-E4 / CU-0 J1		
BRX-4 / CU-1 J0	BRX-E4 / CU-1 J1		
BRX-4 / CU-0 PNet-0	BRX-E4 / CU-0 PNet-1	RJ-45 cable	
BRX-4 / CU-1 PNet-0	BRX-E4 / CU-1 PNet-1	RJ-45 cable	

When cabling the fabric, be aware of the following facts:

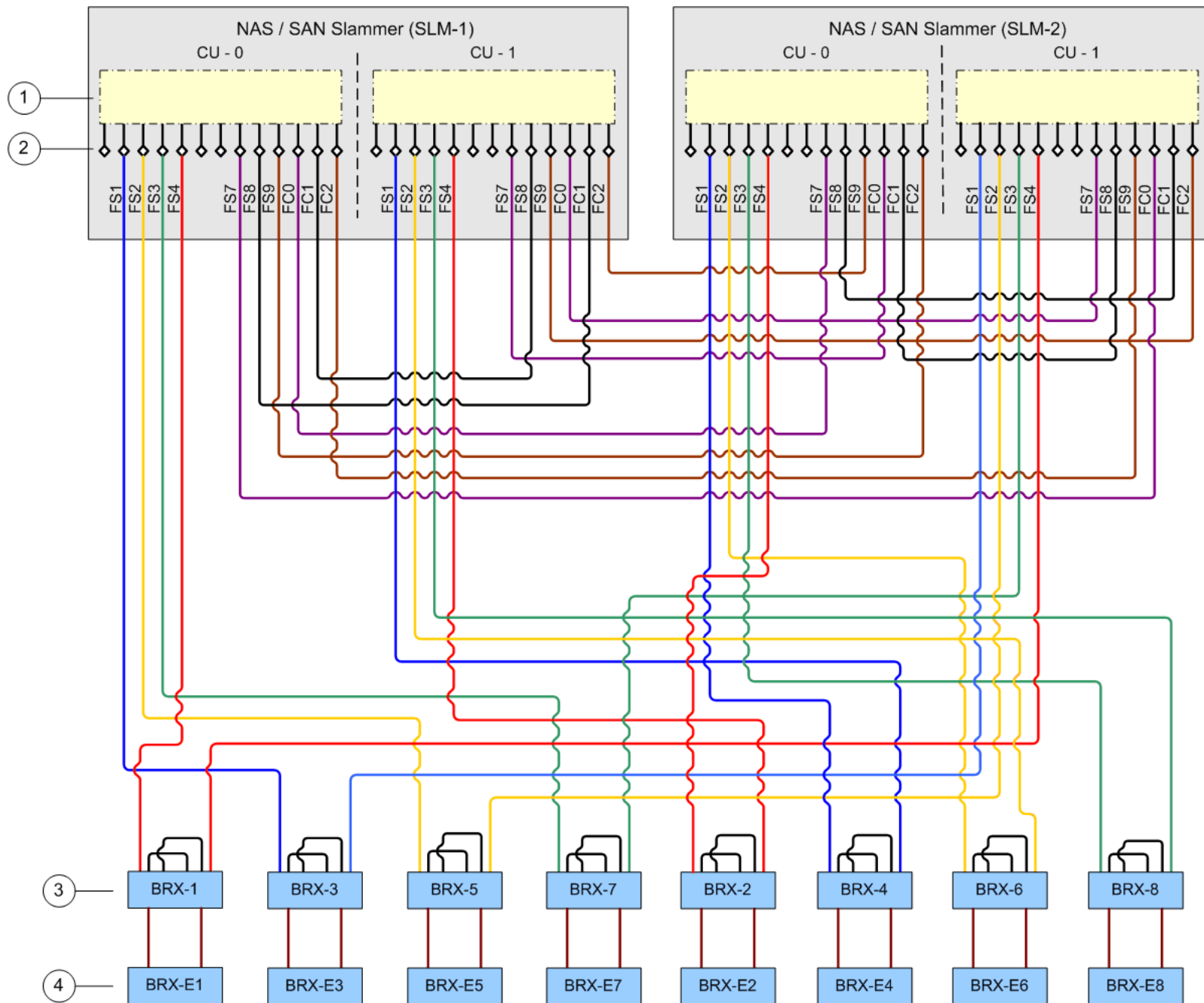
- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

Cabling Block Diagram: A 2-Slammer System Using FC Bricks

Block Diagram for a 2x16 System Using Fibre Channel Bricks

The figure below illustrates the stringing of 16 Fibre Channel (FC) Bricks in a 2-Slammer Pillar Axiom 500 system. The stringing scheme maps eight Brick strings, each being two Bricks deep.

Figure 15 Cabling block diagram for 2-Slammer systems with FC Bricks



Legend	1 Private interconnect module (PIM).	3 FC RAID Bricks.
	2 Ports (◊) on the PIM.	4 FC Expansion Bricks.

Important! This illustration is for reference only.

Notes on the 2x16 Wiring Diagram for FC Bricks

- 2-Slammer systems contain at most eight Brick strings.
- A 2x16 system consisting entirely of Fibre Channel (FC) Bricks requires two 42 U racks. Because FC Bricks require slightly more power than do SATA Bricks, a single rack (containing a Pilot and two Slammers) can support only 13 FC Bricks.
- A FC Brick string is limited to four FC RAID Bricks.
- A FC Expansion Brick must connect to a FC RAID Brick.
- Install all FC and Ethernet cables for Slammer-to-Slammer and Slammer-to-Pilot connections. For 2-Slammer systems, see:
 - [Table 12: FC cable connections for two Slammers and the first set of eight SATA Bricks.](#)
 - [Table 17: Ethernet cable connections for PMI \(2-Slammer system\).](#)
- Install Slammer-to-Brick and Brick-to-Brick connections according to the drawing in [Figure 15](#).

- FC RAID Bricks are at the head of the string (first row) in both figures. FC Expansion Bricks are in the second row.
- [Figure 15](#) shows the order that Bricks are to be added to a system.
- The entire Storage System Fabric (SSF) uses 2 Gbs FC patch cables throughout.

Cable the Slammers and FC Bricks

The table below specifies all FC cables and their connections for two Slammers and the 16 FC Bricks (eight FC RAID Bricks and eight FC Expansion Bricks). All such interconnections are part of the Storage System Fabric (SSF).

Table 19 FC cable connections for two Slammers and 16 FC Bricks

Case 2:	Two Slammers—all FC Bricks				
	From	To			
	Chassis / CU / Port	Chassis / CU / Port			
For BRX-1:	SLM-1 / CU-0 FS-4	BRX-1 / CU-0 FC-2			
	SLM-2 / CU-1 FS-4	BRX-1 / CU-1 FC-2			
	BRX-1 / CU-0 FC-0	BRX-1 / CU-1 FC-3			
	BRX-1 / CU-1 FC-0	BRX-1 / CU-0 FC-3			
For BRX-E1:	BRX-1 CU-0 J0	BRX-E1 / CU-0 J1			
	BRX-1 CU-1 J0	BRX-E1 / CU-1 J1			
	BRX-1 CU-0 Pnet-0	BRX-E1 / CU-0 Pnet-1	RJ-45 cable		
	BRX-1 CU-1 Pnet-0	BRX-E1 / CU-1 Pnet-1	RJ-45 cable		
For BRX-2:	SLM-2 / CU-0 FS-4	BRX-2 / CU-0 FC-2			
	SLM-1 / CU-1 FS-4	BRX-2 / CU-1 FC-2			
	BRX-2 / CU-0 FC-0	BRX-2 / CU-1 FC-3			
	BRX-2 / CU-1 FC-0	BRX-2 / CU-0 FC-3			
For BRX-E2:	BRX-2 CU-0 J0	BRX-E2 / CU-0 J1			
	BRX-2 CU-1 J0	BRX-E2 / CU-1 J1			
	BRX-2 CU-0 Pnet-0	BRX-E2 / CU-0 Pnet-1	RJ-45 cable		
	BRX-2 CU-1 Pnet-0	BRX-E2 / CU-1 Pnet-1	RJ-45 cable		
For BRX-3:	SLM-1 / CU-0 FS-1	BRX-3 / CU-0 FC-2			
	SLM-2 / CU-1 FS-1	BRX-3 / CU-1 FC-2			
	BRX-3 / CU-0 FC-0	BRX-3 / CU-1 FC-3			
	BRX-3 / CU-1 FC-0	BRX-3 / CU-0 FC-3			
For BRX-E3:	BRX-3 CU-0 J0	BRX-E3 / CU-0 J1			
	BRX-3 CU-1 J0	BRX-E3 / CU-1 J1			
	BRX-3 CU-0 Pnet-0	BRX-E3 / CU-0 Pnet-1	RJ-45 cable		
	BRX-3 CU-1 Pnet-0	BRX-E3 / CU-1 Pnet-1	RJ-45 cable		
For BRX-4:	SLM-2 / CU-0 FS-1	BRX-4 / CU-0 FC-2			
	SLM-1 / CU-1 FS-1	BRX-4 / CU-1 FC-2			
	BRX-4 / CU-0 FC-0	BRX-4 / CU-1 FC-3			
	BRX-4 / CU-1 FC-0	BRX-4 / CU-0 FC-3			
For BRX-E4:	BRX-4 CU-0 J0	BRX-E4 / CU-0 J1			
	BRX-4 CU-1 J0	BRX-E4 / CU-1 J1			
	BRX-4 CU-0 Pnet-0	BRX-E4 / CU-0 Pnet-1	RJ-45 cable		
	BRX-4 CU-1 Pnet-0	BRX-E4 / CU-1 Pnet-1	RJ-45 cable		
For BRX-5:	SLM-1 / CU-0 FS-2	BRX-5 / CU-0 FC-2			
	SLM-2 / CU-1 FS-2	BRX-5 / CU-1 FC-2			
	BRX-5 / CU-0 FC-0	BRX-5 / CU-1 FC-3			
	BRX-5 / CU-1 FC-0	BRX-5 / CU-0 FC-3			
For BRX-E5:	BRX-5 CU-0 J0	BRX-E5 / CU-0 J1			
	BRX-5 CU-1 J0	BRX-E5 / CU-1 J1			
	BRX-5 CU-0 Pnet-0	BRX-E5 / CU-0 Pnet-1	RJ-45 cable		
	BRX-5 CU-1 Pnet-0	BRX-E5 / CU-1 Pnet-1	RJ-45 cable		
For BRX-6:	SLM-2 / CU-0 FS-2	BRX-6 / CU-0 FC-2			
	SLM-1 / CU-1 FS-2	BRX-6 / CU-1 FC-2			
	BRX-6 / CU-0 FC-0	BRX-6 / CU-1 FC-3			
	BRX-6 / CU-1 FC-0	BRX-6 / CU-0 FC-3			
For BRX-E6:	BRX-6 CU-0 J0	BRX-E6 / CU-0 J1			
	BRX-6 CU-1 J0	BRX-E6 / CU-1 J1			
	BRX-6 CU-0 Pnet-0	BRX-E6 / CU-0 Pnet-1	RJ-45 cable		
	BRX-6 CU-1 Pnet-0	BRX-E6 / CU-1 Pnet-1	RJ-45 cable		
For BRX-7:	SLM-1 / CU-0 FS-3	BRX-7 / CU-0 FC-2			
	SLM-2 / CU-1 FS-3	BRX-7 / CU-1 FC-2			
	BRX-7 / CU-0 FC-0	BRX-7 / CU-1 FC-3			
	BRX-7 / CU-1 FC-0	BRX-7 / CU-0 FC-3			
For BRX-E7:	BRX-7 CU-0 J0	BRX-E7 / CU-0 J1			
	BRX-7 CU-1 J0	BRX-E7 / CU-1 J1			
	BRX-7 CU-0 Pnet-0	BRX-E7 / CU-0 Pnet-1	RJ-45 cable		
	BRX-7 CU-1 Pnet-0	BRX-E7 / CU-1 Pnet-1	RJ-45 cable		
For BRX-8:	SLM-2 / CU-0 FS-3	BRX-8 / CU-0 FC-2			
	SLM-1 / CU-1 FS-3	BRX-8 / CU-1 FC-2			
	BRX-8 / CU-0 FC-0	BRX-8 / CU-1 FC-3			
	BRX-8 / CU-1 FC-0	BRX-8 / CU-0 FC-3			
For BRX-E8:	BRX-8 CU-0 J0	BRX-E8 / CU-0 J1			
	BRX-8 CU-1 J0	BRX-E8 / CU-1 J1			
	BRX-8 CU-0 Pnet-0	BRX-E8 / CU-0 Pnet-1	RJ-45 cable		
	BRX-8 CU-1 Pnet-0	BRX-E8 / CU-1 Pnet-1	RJ-45 cable		

When cabling the fabric, be aware of the following facts:

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

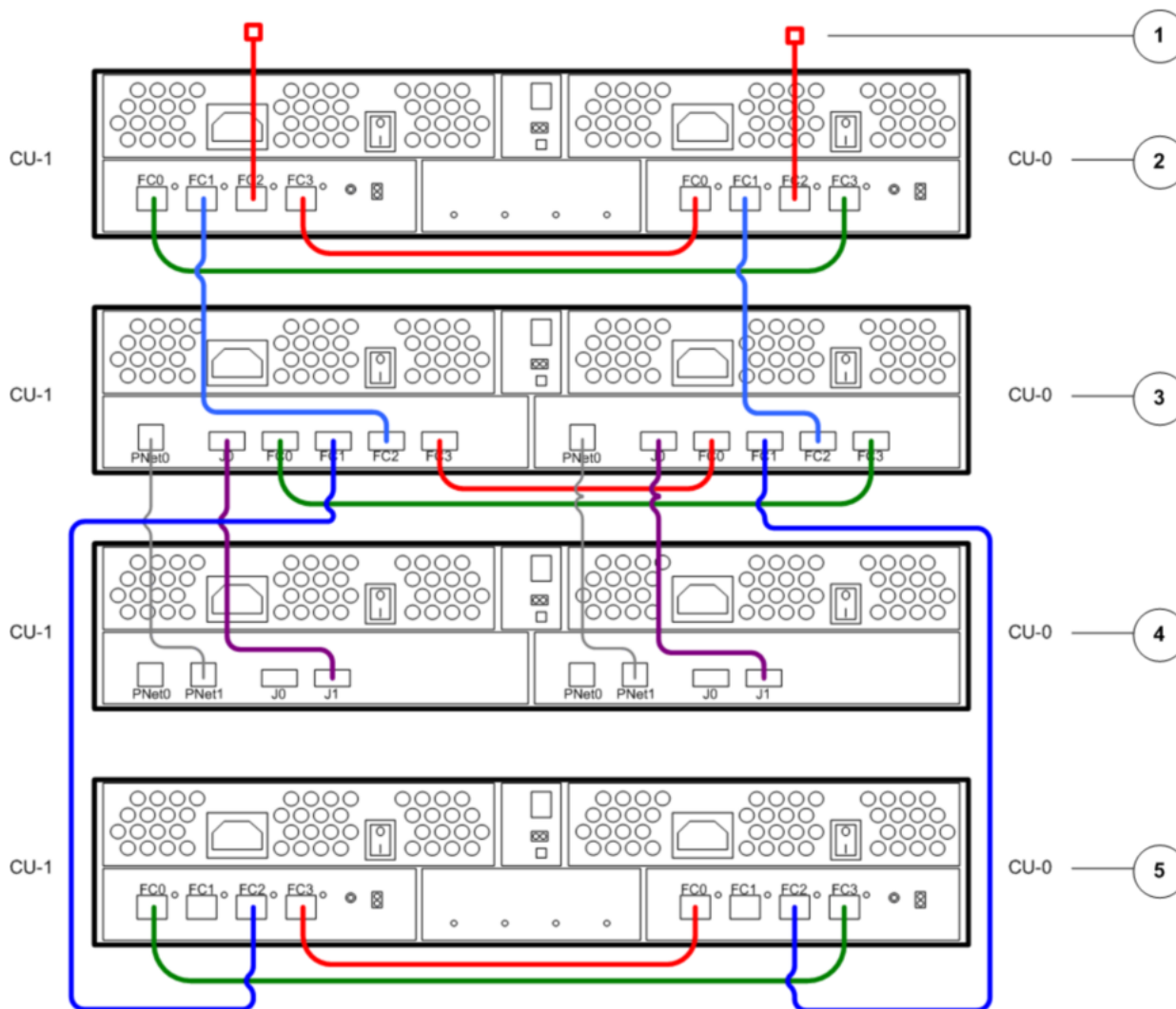
Cabling Example: Mix of Fibre Channel and SATA Bricks

Sample Wiring Diagram for a Mix of Brick Types

The figure below is a conceptual example of cabling a mix of Fibre Channel (FC) and version 1 SATA Brick storage enclosures. This figure defines the Brick-to-Brick connections required to connect such a mix.

Caution Before you mix FC and SATA Bricks, contact the World Wide Customer Support Center for the best practice approach.

Figure 16 Sample cabling for an FC RAID Brick, an FC Expansion Brick, and two SATA Bricks



Legend	
1	Connection to a Slammer or an upstream Brick.
2	Upstream SATA Brick (version 1).
3	FC RAID Brick.
4	FC Expansion Brick.
5	Downstream SATA Brick (version 1).

Important! This illustration is for reference only.

Notes on the Wiring Diagram for a Mix of Brick Types

- SATA Bricks containing solid-state drives (SSDs) cannot be mixed with FC Bricks. However, SATA Bricks containing hard disk drives (HDDs) can be mixed with FC Bricks.
- The cabling of version 2 SATA Bricks is the same as the cabling shown in [Figure 16](#).
- [Figure 16](#) shows a single FC RAID Brick fully connected:
 - Upstream to a SATA Brick.
 - Downstream to an FC Expansion Brick.
 - Downstream to another SATA Brick.
- When adding Bricks to systems in the field, FC Bricks may be added onto SATA Brick strings and SATA Bricks may be added onto FC Brick strings. [Figure 16](#) illustrates how to cable for both scenarios.

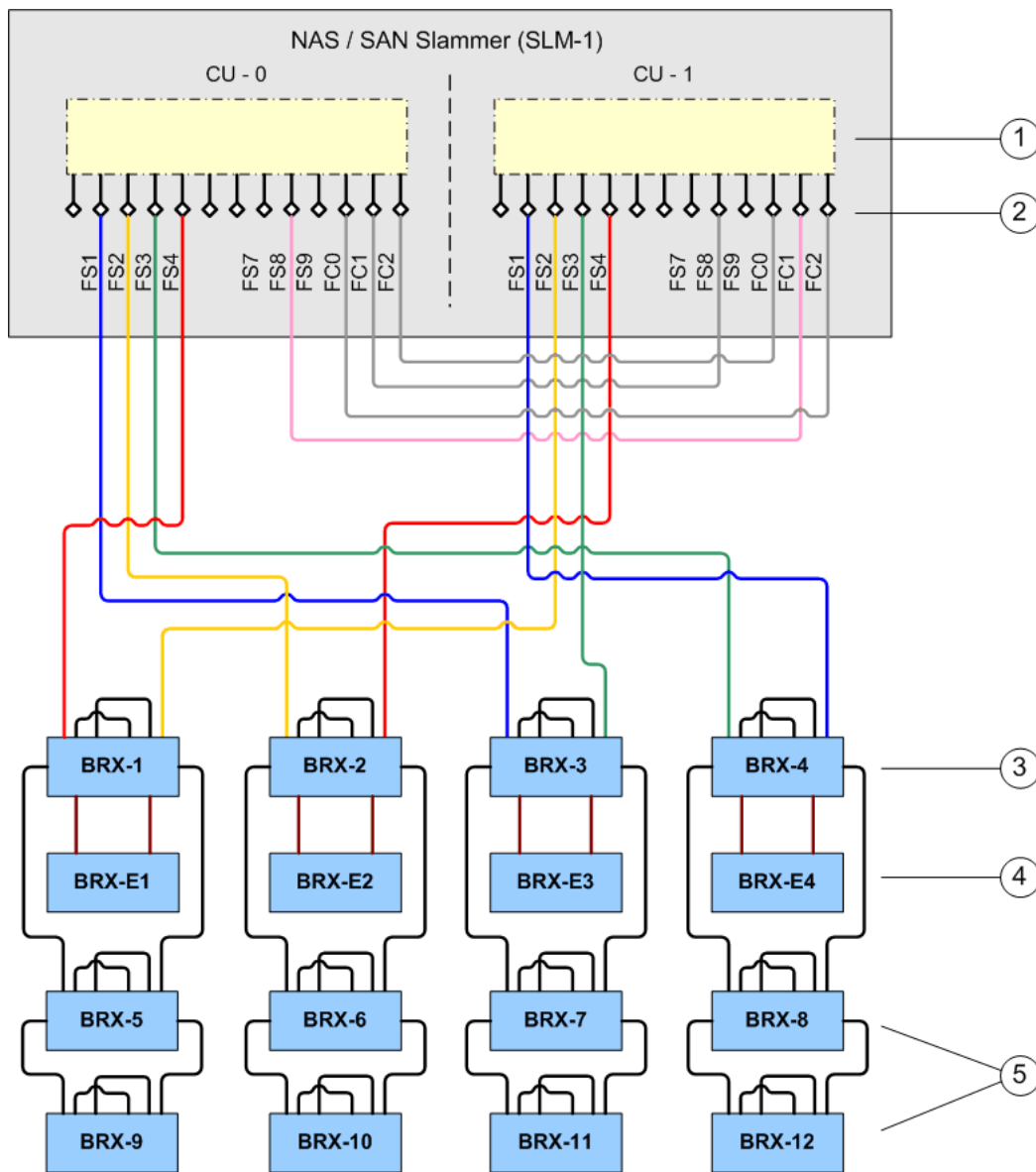
Cabling Block Diagram: A 1-Slammer System Using FC and SATA Bricks

Block Diagram for a 1x16 System Using Fibre Channel and SATA Bricks

The figure below illustrates the stringing of a full complement of eight Fibre Channel (FC) Bricks and eight SATA Bricks in a one-Slammer Pillar Axiom system. The stringing scheme maps four Brick strings, each being four Bricks deep.

Caution Before you mix FC and SATA Bricks, contact the World Wide Customer Support Center for the best practice approach.

Figure 17 Cabling block diagram for 1-Slammer systems with FC and SATA Bricks



Legend	
1 Private interconnect module (PIM).	4 FC Expansion Bricks.
2 A port (◊) on the private interconnect module.	5 SATA Bricks containing hard disk drives (HDDs).
3 FC RAID Bricks.	

Important! This illustration is for reference only.

Notes on the 1x16 Block Diagram for FC and SATA Bricks

- SATA Bricks containing solid-state drives (SSDs) cannot be mixed with Fibre Channel (FC) Bricks. SATA Bricks containing hard disk drives (HDDs), however, can be mixed with FC Bricks.
- Figure 17 represents how a mix of FC and HDD-based SATA Bricks would be built in manufacturing.
- A 1x16 system consisting entirely of FC Bricks requires two 42 U racks. Because FC Bricks require slightly more power than do SATA Bricks, a single rack can support only 15 FC Bricks.
- Bricks should be added to strings so that the number of Bricks in any string differs by no more than two between the longest and the shortest string.
- For the Pillar Axiom 500, a string may contain up to eight Bricks.
- A FC Brick string is limited to four FC RAID Bricks.
- A FC Expansion Brick must connect to a FC RAID Brick.

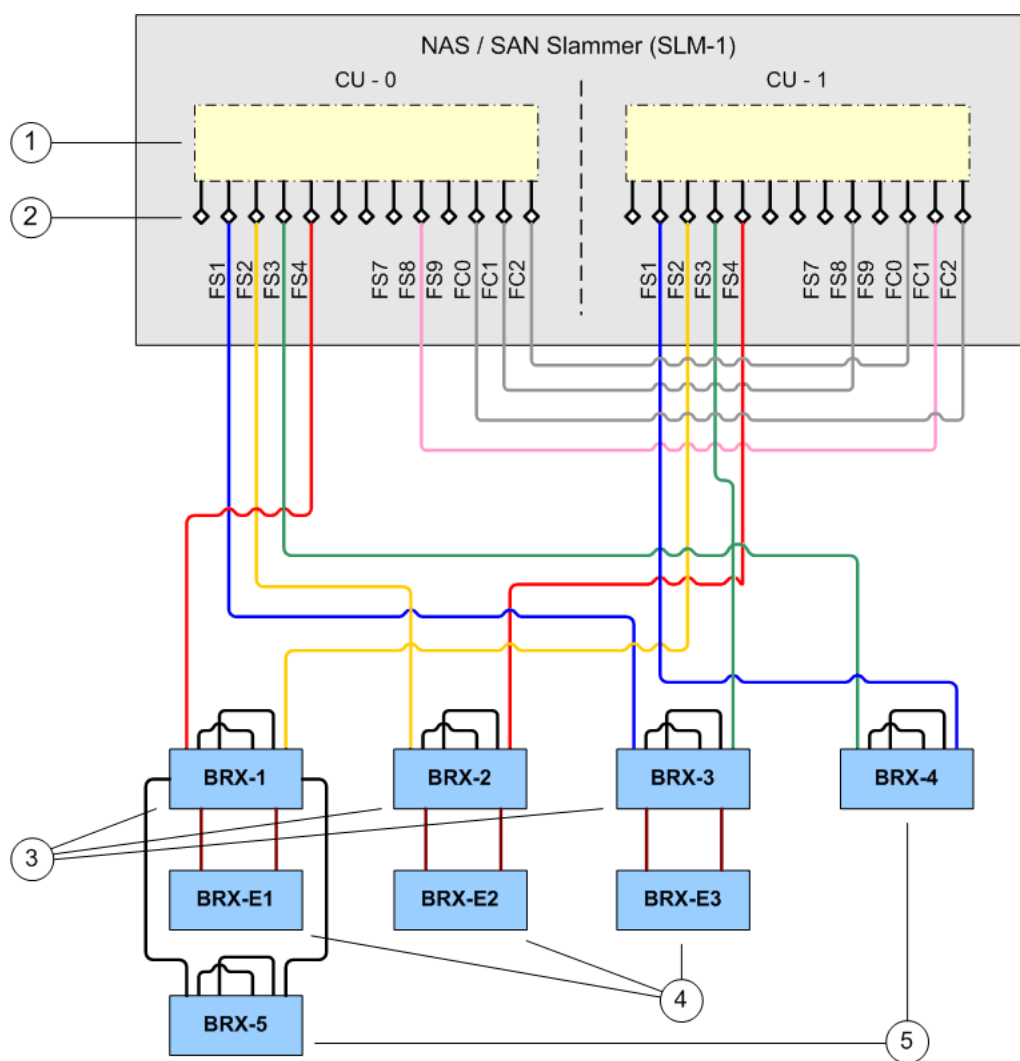
- The ports used for adding FC RAID Bricks and SATA Bricks progress in the same sequence. Doing so allows a consistent connection pattern for both FC and SATA Bricks.
- Install all FC and Ethernet cables for Slammer cross connections and Slammer-to-Pilot connections:
 - [Table 5: FC cable connections for the Slammer and the first and second sets of four SATA Bricks.](#)
 - [Table 9: Cable connections for the PMI \(1-Slammer system\).](#)
- Install Slammer-to-Brick and Brick-to-Brick connections, in this order:
 - First, FC Brick connections, which are defined in [Table 18](#).
 - Then, SATA Brick connections, which are defined in [Table 5](#).
- As shown in [Figure 17](#), FC RAID Bricks are in the first row while FC Expansion Bricks are in the second row.
- The entire Storage System Fabric (SSF) uses 2 Gb FC patch cables throughout.
- The configuration of systems upgraded in the field may differ somewhat from those built in the factory.

Block Diagram for Expanding an Initial Configuration of FC Bricks

The figure below illustrates how to expand an initial configuration of Fibre Channel (FC) Bricks using SATA Bricks. This example shows the result of a system that has an initial configuration of three FC Bricks, which is then expanded by adding two SATA Bricks.

Note: An acceptable alternate configuration for the SATA addition would connect BRX-5 to BRX-4 to improve balance across the Slammer ports.

Figure 18 Cabling block diagram for expanding 1-Slammer systems with SATA Bricks



Legend	1 Private interconnect module (PIM).	4 FC Expansion Bricks.
	2 Ports (◊) on the private interconnect module.	5 SATA Bricks.
	3 FC RAID Bricks.	

Important! This illustration is for reference only.

Notes for Adding SATA Bricks to a Set of FC Bricks

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).

- Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
- Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)
- The total number of Bricks supported in a system is specified in the *Pillar Axiom Customer Release Notes*.
- The total number of Bricks (both FC and SATA) in any string is limited to eight.

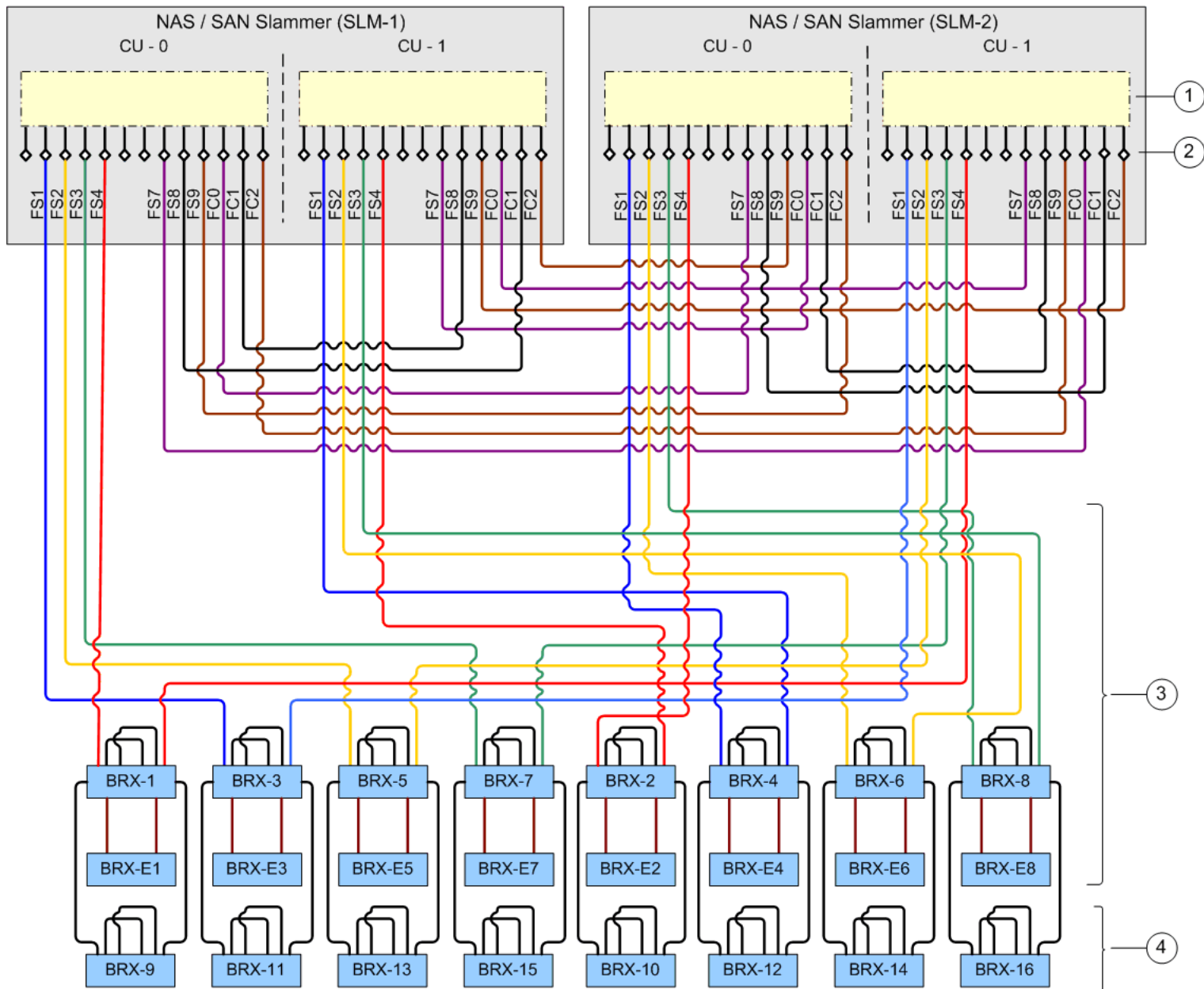
Cabling Block Diagram: A 2-Slammer System Using FC and SATA Bricks

Block Diagram for a 2x24 System Using Fibre Channel and SATA Bricks

The figure below illustrates the stringing of a full complement of eight Fibre Channel (FC) Brick pairs (one RAID Brick plus one Expansion Brick) to eight SATA Bricks in a 2-Slammer Pillar Axiom 500 system. The stringing scheme maps eight Brick strings, each being three Bricks deep.

Caution Before you mix FC and SATA Bricks, contact the World Wide Customer Support Center for the best practice approach.

Figure 19 Cabling block diagram for 2-Slammer systems with full complement of FC Bricks and eight SATA Bricks



Legend	1 Private interconnect module (PIM).	3 FC RAID Brick and Expansion Brick pair connections (closest to the Slammers).
	2 Ports (◊) on the PIM.	4 SATA Brick connections.

Important! This illustration is for reference only.

Notes on the 2x24 Block Diagram for FC and SATA Bricks

- Bricks should be added to strings so that the number of Bricks in any string differs by no more than two between the longest and the shortest string.
- For the Pillar Axiom 500, a string may contain up to eight SATA Bricks.
- A FC Brick string is limited to four FC RAID Bricks.
- A FC Expansion Brick must connect to a FC RAID Brick.
- Figure 19 illustrates a 2x24 system that includes just eight SATA Bricks. A 2-Slammer system can support up to 64 Bricks (a combination of SATA and FC).
- The entire Storage System Fabric (SSF) uses 2 Gb FC patch cables throughout.
- The configuration of systems upgraded in the field may differ somewhat from those built in the factory.
- For complete information on cabling rules, see [Summary of Cabling Rules](#).

Cable the SATA and Fibre Channel Bricks

When cabling the fabric, be aware of the following:

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

1 Install all Ethernet cables for Slammer-to-Pilot connections.

See [Table 17](#).

2 Install all FC cables for Slammer control unit (CU) cross connections.

See [Table 12](#).

3 Install all Slammer-to-SATA Brick connections.

See [Table 12](#).

4 If any of the SATA Bricks identified in the first row of [Figure 19](#) (BRX-1 through BRX-8) are not installed, connect the corresponding FC RAID Brick to the Slammer ports.

To determine which Slammer ports to use, see [Table 19](#).

5 Install the FC Expansion Bricks.

See [Table 19](#).

Part V: Cabling Pillar Axiom 500 Systems Using Three Slammers

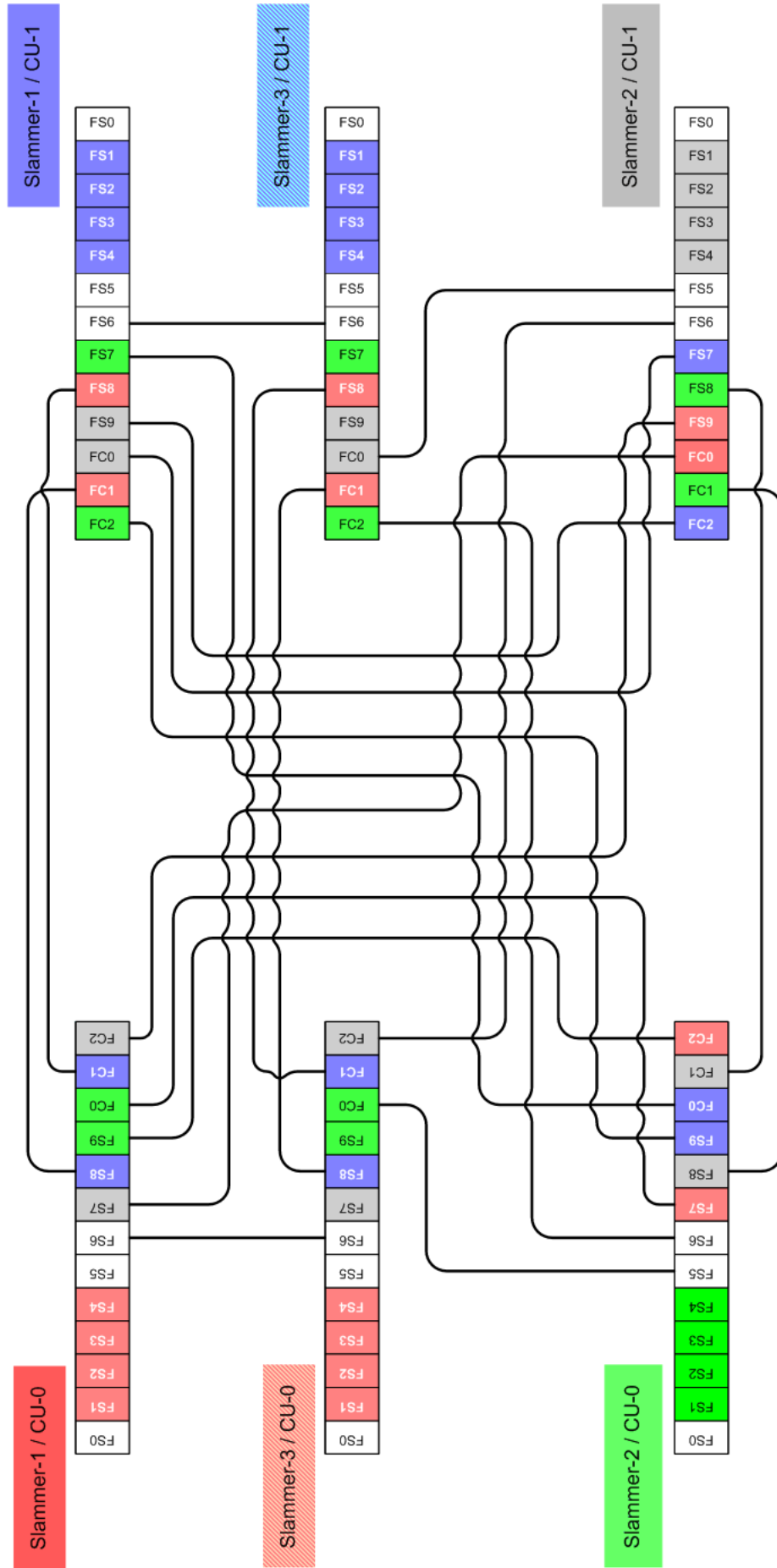
SHEET 26

Cross Connections for 3-Slammer Systems

Cross Connecting Three Slammers

This block diagram illustrates how to cable the Slammer cross connections in a 3-Slammer configuration.

Figure 20 Cross connections for a 3-Slammer configuration



The following table defines, cable by cable, the control unit (CU) cross connections among the PIMs that are contained in the three Slammers. The Slammer CU-to-Slammer CU connections correspond to [Figure 20](#). The Slammer-to-Brick connections correspond to [Figure 21](#).

Table 20 3-Slammer cross connection configuration

From Chassis / CU / Port	To Chassis / CU / Port
SLM-1 / CU-0 FC-0	SLM-2 / CU-0 FS-7
SLM-1 / CU-0 FC-1	SLM-1 / CU-1 FS-8
SLM-1 / CU-0 FC-2	SLM-2 / CU-1 FS-9
SLM-1 / CU-1 FC-0	SLM-2 / CU-1 FS-7
SLM-1 / CU-1 FC-1	SLM-1 / CU-0 FS-8
SLM-1 / CU-1 FC-2	SLM-2 / CU-0 FS-9
SLM-2 / CU-0 FC-0	SLM-1 / CU-1 FS-7
SLM-2 / CU-0 FC-1	SLM-2 / CU-1 FS-8
SLM-2 / CU-0 FC-2	SLM-1 / CU-0 FS-9
SLM-2 / CU-1 FC-0	SLM-1 / CU-0 FS-7
SLM-2 / CU-1 FC-1	SLM-2 / CU-0 FS-8
SLM-2 / CU-1 FC-2	SLM-1 / CU-1 FS-9
SLM-3 / CU-0 FC-0	SLM-2 / CU-0 FS-5
SLM-3 / CU-0 FC-1	SLM-3 / CU-1 FS-8
SLM-3 / CU-0 FC-2	SLM-2 / CU-1 FS-6
SLM-3 / CU-0 FS-6	SLM-1 / CU-0 FS-6
SLM-3 / CU-1 FC-0	SLM-2 / CU-1 FS-5
SLM-3 / CU-1 FC-1	SLM-3 / CU-0 FS-8
SLM-3 / CU-1 FC-2	SLM-2 / CU-0 FS-6
SLM-3 / CU-1 FS-6	SLM-1 / CU-1 FS-6

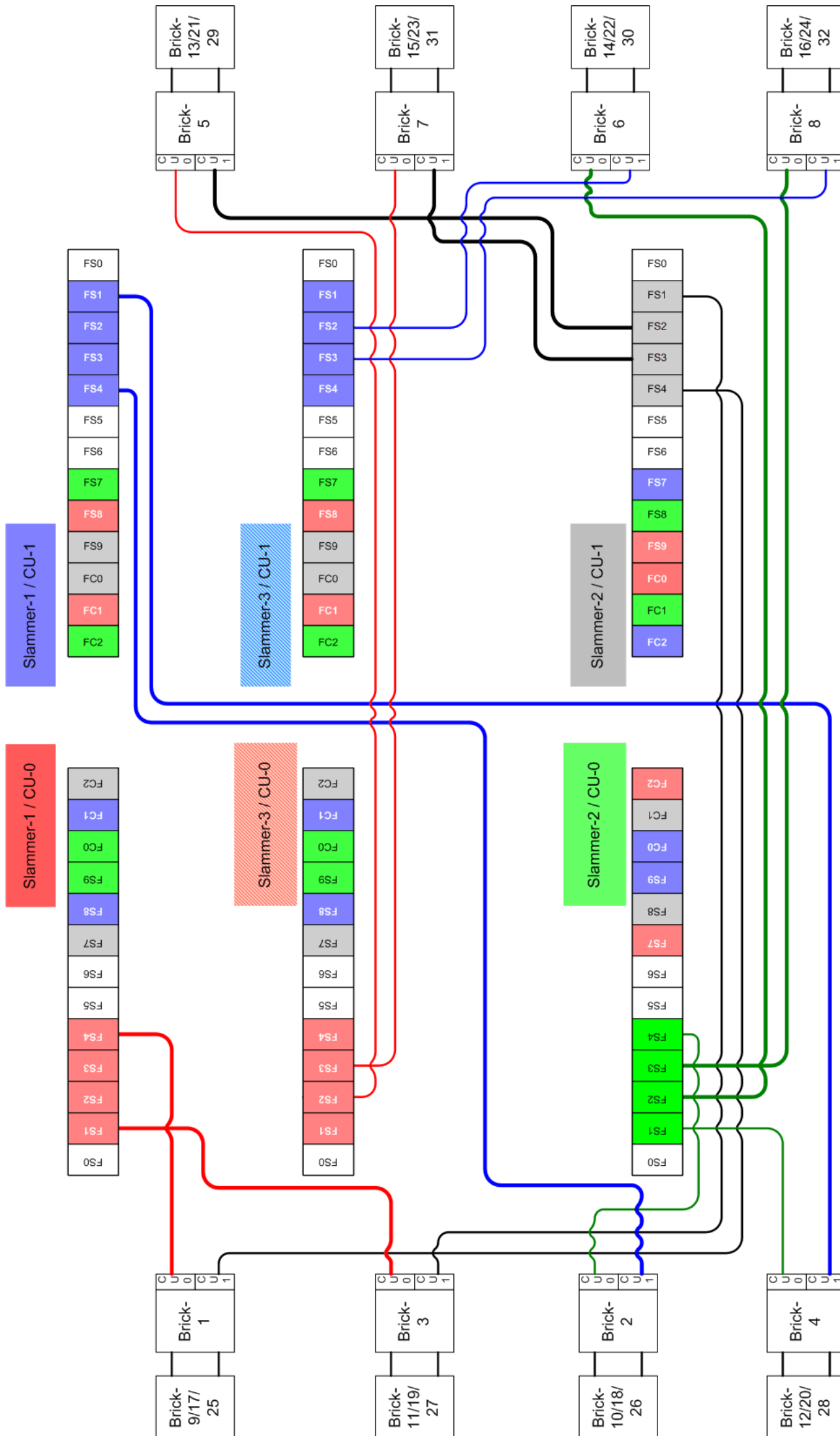
SHEET 27

Brick Connections for 3-Slammer Systems

Block Diagram: Connecting Bricks to Three Slammers

This diagram illustrates how to connect Brick strings to the Slammers and Bricks to Bricks in a 3-Slammer, 32-Brick (8-string) configuration.

Figure 21 Connecting a 3-Slammer configuration to 32 Bricks



Cable the Slammers and Bricks

These tables define the Brick connections in 3-Slammer configurations, cable by cable.

The Slammer-to-Brick and Brick-to-Brick connections identified below correspond to [Figure 21](#).

Table 21 Cable connections for three Slammers and 16 Bricks

BRX-1:	SLM-1 / CU-0 FS-4	BRX-1 / CU-0 FC-2
	SLM-2 / CU-1 FS-4	BRX-1 / CU-1 FC-2
	BRX-1 / CU-0 FC-0	BRX-1 / CU-1 FC-3
	BRX-1 / CU-1 FC-0	BRX-1 / CU-0 FC-3
BRX-2:	SLM-2 / CU-0 FS-4	BRX-2 / CU-0 FC-2
	SLM-1 / CU-1 FS-4	BRX-2 / CU-1 FC-2
	BRX-2 / CU-0 FC-0	BRX-2 / CU-1 FC-3
	BRX-2 / CU-1 FC-0	BRX-2 / CU-0 FC-3
BRX-3:	SLM-1 / CU-0 FS-1	BRX-3 / CU-0 FC-2
	SLM-2 / CU-1 FS-1	BRX-3 / CU-1 FC-2
	BRX-3 / CU-0 FC-0	BRX-3 / CU-1 FC-3
	BRX-3 / CU-1 FC-0	BRX-3 / CU-0 FC-3
BRX-4:	SLM-2 / CU-0 FS-1	BRX-4 / CU-0 FC-2
	SLM-1 / CU-1 FS-1	BRX-4 / CU-1 FC-2
	BRX-4 / CU-0 FC-0	BRX-4 / CU-1 FC-3
	BRX-4 / CU-1 FC-0	BRX-4 / CU-0 FC-3
BRX-5:	SLM-3 / CU-0 FS-2	BRX-5 / CU-0 FC-2
	SLM-2 / CU-1 FS-2	BRX-5 / CU-1 FC-2
	BRX-5 / CU-0 FC-0	BRX-5 / CU-1 FC-3
	BRX-5 / CU-1 FC-0	BRX-5 / CU-0 FC-3
BRX-6:	SLM-2 / CU-0 FS-2	BRX-6 / CU-0 FC-2
	SLM-3 / CU-1 FS-2	BRX-6 / CU-1 FC-2
	BRX-6 / CU-0 FC-0	BRX-6 / CU-1 FC-3
	BRX-6 / CU-1 FC-0	BRX-6 / CU-0 FC-3
BRX-7:	SLM-3 / CU-0 FS-3	BRX-7 / CU-0 FC-2
	SLM-2 / CU-1 FS-3	BRX-7 / CU-1 FC-2
	BRX-7 / CU-0 FC-0	BRX-7 / CU-1 FC-3
	BRX-7 / CU-1 FC-0	BRX-7 / CU-0 FC-3
BRX-8:	SLM-2 / CU-0 FS-3	BRX-8 / CU-0 FC-2
	SLM-3 / CU-1 FS-3	BRX-8 / CU-1 FC-2
	BRX-8 / CU-0 FC-0	BRX-8 / CU-1 FC-3
	BRX-8 / CU-1 FC-0	BRX-8 / CU-0 FC-3
BRX-9:	BRX-1 / CU-0 FC-1	BRX-9 / CU-0 FC-2
	BRX-1 / CU-1 FC-1	BRX-9 / CU-1 FC-2
	BRX-9 / CU-0 FC-0	BRX-9 / CU-1 FC-3
	BRX-9 / CU-1 FC-0	BRX-9 / CU-0 FC-3
BRX-10:	BRX-2 / CU-0 FC-1	BRX-10 / CU-0 FC-2
	BRX-2 / CU-1 FC-1	BRX-10 / CU-1 FC-2
	BRX-10 / CU-0 FC-0	BRX-10 / CU-1 FC-3
	BRX-10 / CU-1 FC-0	BRX-10 / CU-0 FC-3
BRX-11:	BRX-3 / CU-0 FC-1	BRX-11 / CU-0 FC-2
	BRX-3 / CU-1 FC-1	BRX-11 / CU-1 FC-2
	BRX-11 / CU-0 FC-0	BRX-11 / CU-1 FC-3
	BRX-11 / CU-1 FC-0	BRX-11 / CU-0 FC-3
BRX-12:	BRX-4 / CU-0 FC-1	BRX-12 / CU-0 FC-2
	BRX-4 / CU-1 FC-1	BRX-12 / CU-1 FC-2
	BRX-12 / CU-0 FC-0	BRX-12 / CU-1 FC-3
	BRX-12 / CU-1 FC-0	BRX-12 / CU-0 FC-3
BRX-13:	BRX-5 / CU-0 FC-1	BRX-13 / CU-0 FC-2
	BRX-5 / CU-1 FC-1	BRX-13 / CU-1 FC-2
	BRX-13 / CU-0 FC-0	BRX-13 / CU-1 FC-3
	BRX-13 / CU-1 FC-0	BRX-13 / CU-0 FC-3
BRX-14:	BRX-6 / CU-0 FC-1	BRX-14 / CU-0 FC-2
	BRX-6 / CU-1 FC-1	BRX-14 / CU-1 FC-2
	BRX-14 / CU-0 FC-0	BRX-14 / CU-1 FC-3
	BRX-14 / CU-1 FC-0	BRX-14 / CU-0 FC-3
BRX-15:	BRX-7 / CU-0 FC-1	BRX-15 / CU-0 FC-2
	BRX-7 / CU-1 FC-1	BRX-15 / CU-1 FC-2
	BRX-15 / CU-0 FC-0	BRX-15 / CU-1 FC-3
	BRX-15 / CU-1 FC-0	BRX-15 / CU-0 FC-3
BRX-16:	BRX-8 / CU-0 FC-1	BRX-16 / CU-0 FC-2
	BRX-8 / CU-1 FC-1	BRX-16 / CU-1 FC-2
	BRX-16 / CU-0 FC-0	BRX-16 / CU-1 FC-3
	BRX-16 / CU-1 FC-0	BRX-16 / CU-0 FC-3

The following notes will help you successfully cable the system:

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

Connect additional Bricks beyond the 16 explicitly defined in the preceding table by following the pattern shown for Bricks 9 through 16. The Brick numbers in each string are shown in [Figure 21](#) and in the following table:

Table 22 Connections for additional Bricks

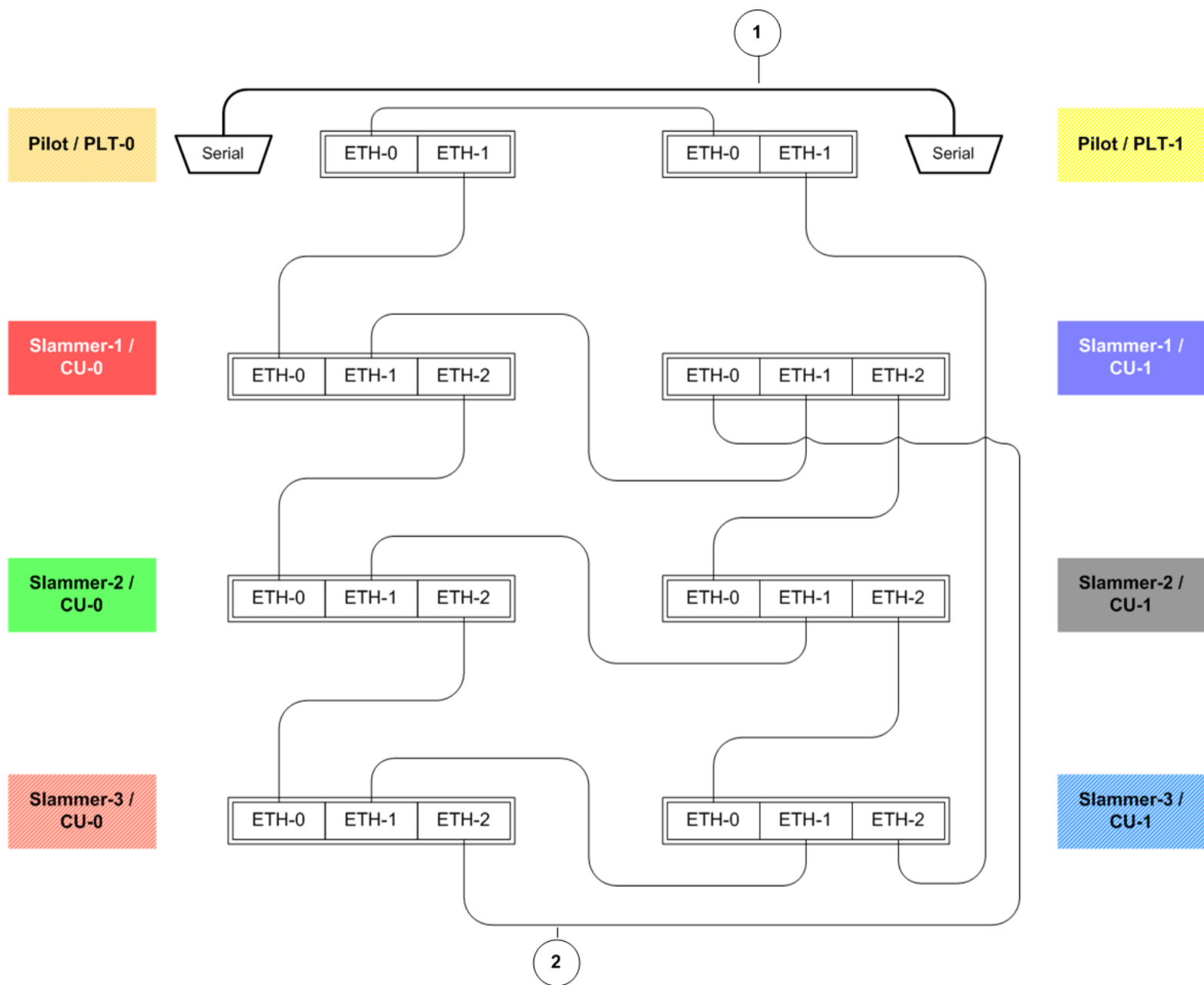
Head of string	Second Brick	Third Brick	Fourth Brick
BRX-1	BRX-9	BRX-17	BRX-25
BRX-2	BRX-10	BRX-18	BRX-26
BRX-3	BRX-11	BRX-19	BRX-27
BRX-4	BRX-12	BRX-20	BRX-28
BRX-5	BRX-13	BRX-21	BRX-29
BRX-6	BRX-14	BRX-22	BRX-30
BRX-7	BRX-15	BRX-23	BRX-31
BRX-8	BRX-16	BRX-24	BRX-32

PMI Connections for 3-Slammer Systems

Schematic of PMI Ethernet Connections in a 3-Slammer System

This schematic illustrates the Pilot-to-Slammer and Slammer-to-Slammer connections comprising the private management interface (PMI) in a 3-Slammer system.

Figure 22 PMI Ethernet schematic (3-Slammer system)



- Legend**
- 1 Null modem cable.
 - 2 Cat-5 Ethernet cables.

Cable the PMI Connections in a 3-Slammer System

This table defines how to connect the Cat-5 Ethernet cables between the Pilot and the Slammers and among the Slammers themselves in a 3-Slammer system.

Table 23 Ethernet cable connections for PMI (3-Slammer system)

	From	To
	Chassis / CU / Port	Chassis / CU / Port
	PLT-0 ETH0	PLT-1 ETH0
	PLT-0 ETH1	SLM-1 / CU-0 ETH0
	PLT-1 ETH1	SLM-3 / CU-1 ETH2
	SLM-1 / CU-0 ETH1	SLM-1 / CU-1 ETH1
	SLM-1 / CU-0 ETH2	SLM-2 / CU-0 ETH0
	SLM-1 / CU-1 ETH2	SLM-2 / CU-1 ETH0
	SLM-2 / CU-0 ETH1	SLM-2 / CU-1 ETH1
	SLM-2 / CU-0 ETH2	SLM-3 / CU-0 ETH0
	SLM-2 / CU-1 ETH2	SLM-3 / CU-1 ETH0
	SLM-3 / CU-0 ETH1	SLM-3 / CU-1 ETH1
	SLM-3 / CU-0 ETH2	SLM-1 / CU-1 ETH0

In addition to the Ethernet cables, PMI requires a null modem cable connection between the serial ports of each Pilot control unit.

Part VI: Cabling Pillar Axiom 500 Systems Using Four Slammers

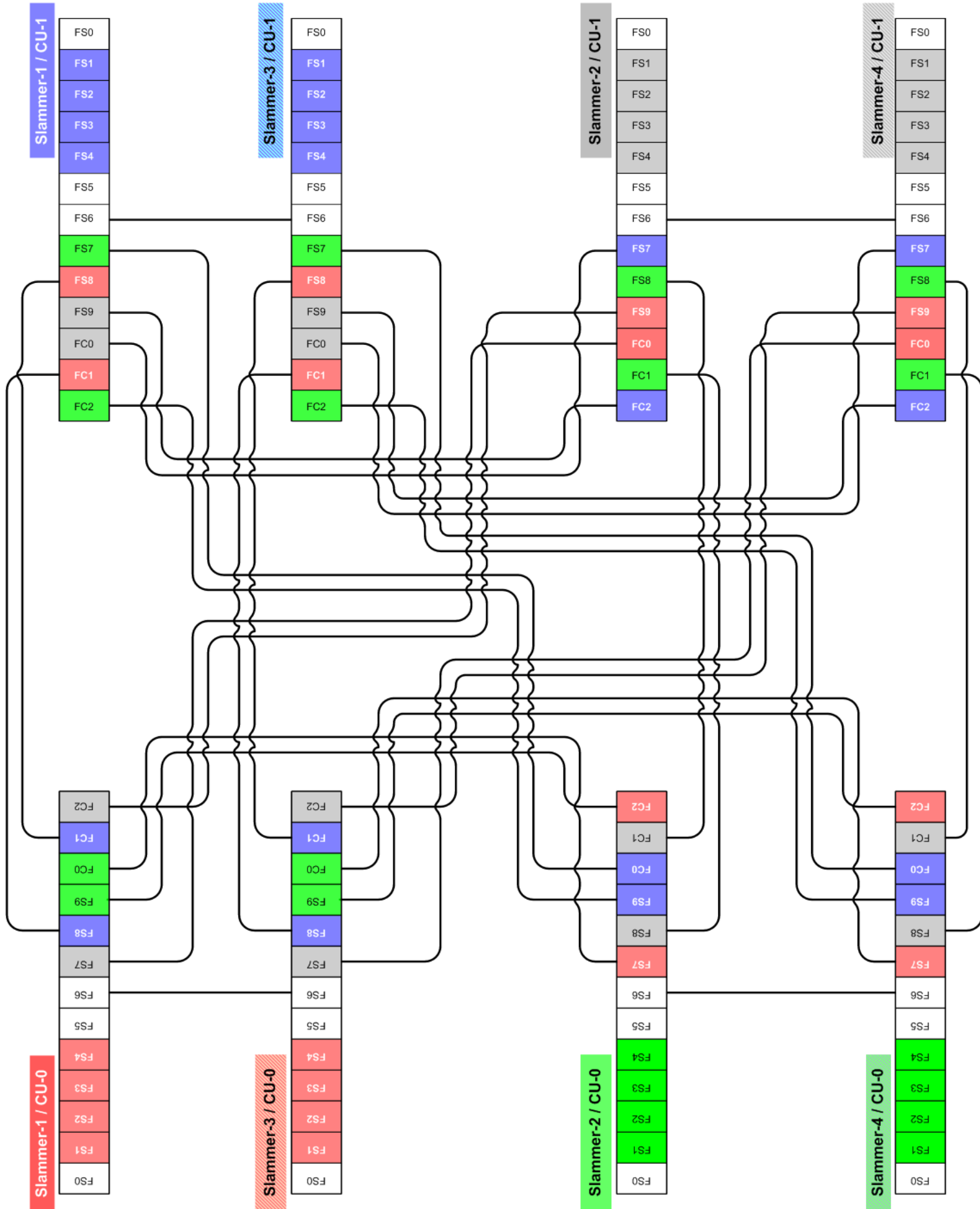
SHEET 29

Cross Connections for Four Slammers

Cross Connecting Four Slammers

This diagram illustrates how to cable the Slammer cross-connections in a 4-Slammer configuration.

Figure 23 Cross connections for a 4-Slammer configuration



The following table defines the control unit (CU) cross connections among four Slammers, cable by cable.

The Slammer-CU-to-Slammer-CU connections identified in the following table correspond to Figure 23. The Slammer-to-Brick connections identified below correspond to Figure 24 (8-string) and Figure 26 (16-string).

Table 24 4-Slammer cross connection configuration

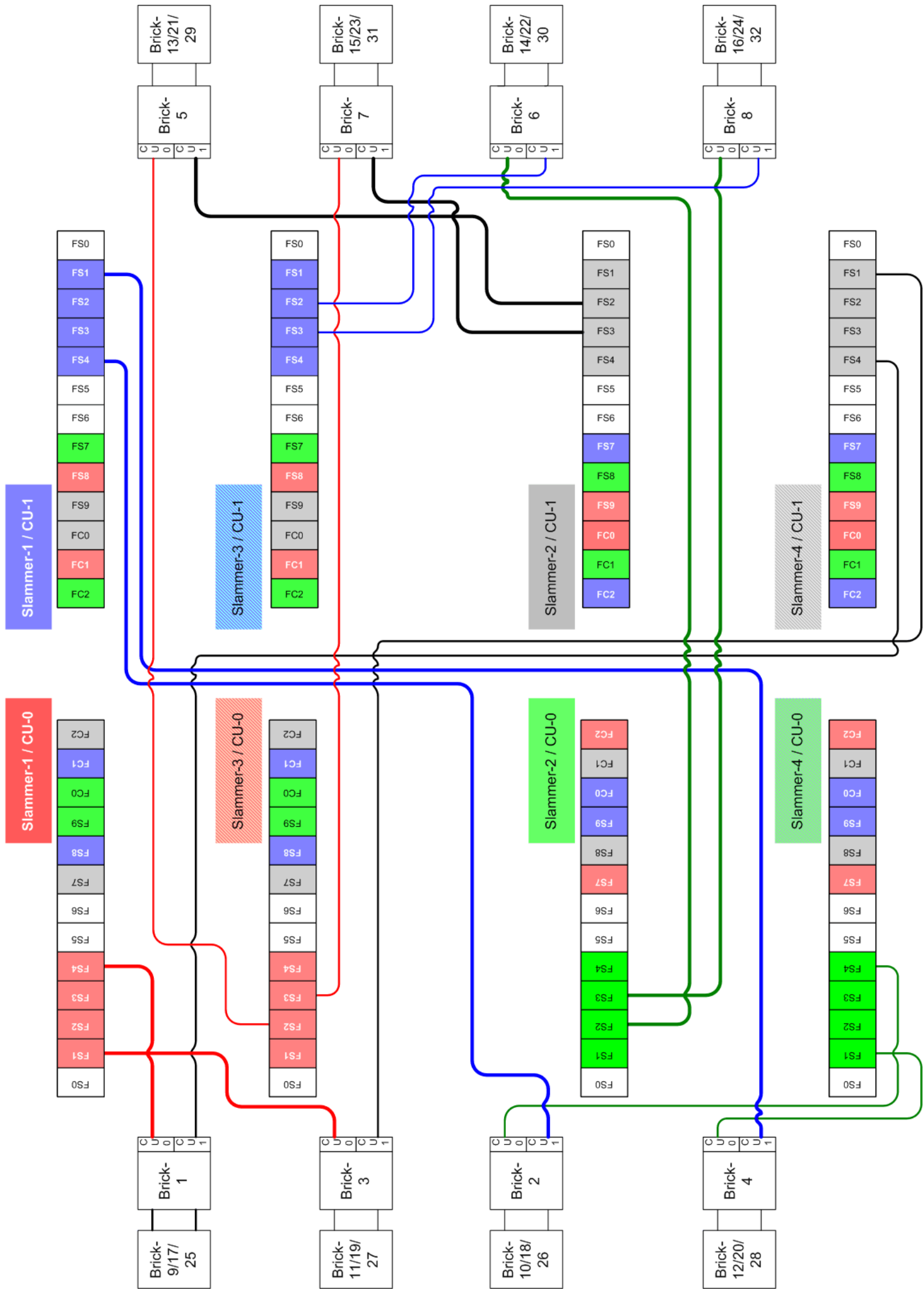
Chassis / CU / Port	Chassis / CU / Port
SLM-1 / CU-0 FC-0	SLM-2 / CU-0 FS-7
SLM-1 / CU-0 FC-1	SLM-1 / CU-1 FS-8
SLM-1 / CU-0 FC-2	SLM-2 / CU-1 FS-9
SLM-1 / CU-1 FC-0	SLM-2 / CU-1 FS-7
SLM-1 / CU-1 FC-1	SLM-1 / CU-0 FS-8
SLM-1 / CU-1 FC-2	SLM-2 / CU-0 FS-9
SLM-2 / CU-0 FC-0	SLM-1 / CU-1 FS-7
SLM-2 / CU-0 FC-1	SLM-2 / CU-1 FS-8
SLM-2 / CU-0 FC-2	SLM-1 / CU-0 FS-9
SLM-2 / CU-1 FC-0	SLM-1 / CU-0 FS-7
SLM-2 / CU-1 FC-1	SLM-2 / CU-0 FS-8
SLM-2 / CU-1 FC-2	SLM-1 / CU-1 FS-9
SLM-3 / CU-0 FC-0	SLM-4 / CU-0 FS-7
SLM-3 / CU-0 FC-1	SLM-3 / CU-1 FS-8
SLM-3 / CU-0 FC-2	SLM-4 / CU-1 FS-9
SLM-3 / CU-0 FS-6	SLM-1 / CU-0 FS-6
SLM-3 / CU-1 FC-0	SLM-4 / CU-1 FS-7
SLM-3 / CU-1 FC-1	SLM-3 / CU-0 FS-8
SLM-3 / CU-1 FC-2	SLM-4 / CU-0 FS-9
SLM-3 / CU-1 FS-6	SLM-1 / CU-1 FS-6
SLM-4 / CU-0 FC-0	SLM-3 / CU-1 FS-7
SLM-4 / CU-0 FC-1	SLM-4 / CU-1 FS-8
SLM-4 / CU-0 FC-2	SLM-3 / CU-0 FS-9
SLM-4 / CU-0 FS-6	SLM-2 / CU-0 FS-6
SLM-4 / CU-1 FC-0	SLM-3 / CU-0 FS-7
SLM-4 / CU-1 FC-1	SLM-4 / CU-0 FS-8
SLM-4 / CU-1 FC-2	SLM-3 / CU-1 FS-9
SLM-4 / CU-1 FS-6	SLM-2 / CU-1 FS-6

Connections for 32 Bricks in 4-Slammer Systems

Block Diagram: Connecting Four Slammers to 32 Bricks

This diagram illustrates the connection of Brick strings to the Slammers and Bricks to Bricks in a 4-Slammer, 32-Brick (8-string) configuration.

Figure 24 Connecting a 4-Slammer configuration to 32 Bricks



Note: Eight strings is recommended for configurations of up to 16 Bricks but is optional for larger systems.

Important! This illustration is for reference only.

Cable 32 Bricks to Four Slammers

These tables specify, cable by cable, how to connect Brick strings to the Slammers and Bricks to Bricks in a 4-Slammer, 32 Brick (8-string) configuration.

These SSF cabling tables correspond to the diagram in [Figure 24](#).

Table 25 Cable connections for four Slammers and 16 Bricks

BRX-1:	SLM-1 / CU-0 FS-4	BRX-1 / CU-0 FC-2
	SLM-4 / CU-1 FS-4	BRX-1 / CU-1 FC-2
	BRX-1 / CU-0 FC-0	BRX-1 / CU-1 FC-3
	BRX-1 / CU-1 FC-0	BRX-1 / CU-0 FC-3
BRX-2:	SLM-4 / CU-0 FS-4	BRX-2 / CU-0 FC-2
	SLM-1 / CU-1 FS-4	BRX-2 / CU-1 FC-2
	BRX-2 / CU-0 FC-0	BRX-2 / CU-1 FC-3
	BRX-2 / CU-1 FC-0	BRX-2 / CU-0 FC-3
BRX-3:	SLM-1 / CU-0 FS-1	BRX-3 / CU-0 FC-2
	SLM-4 / CU-1 FS-1	BRX-3 / CU-1 FC-2
	BRX-3 / CU-0 FC-0	BRX-3 / CU-1 FC-3
	BRX-3 / CU-1 FC-0	BRX-3 / CU-0 FC-3
BRX-4:	SLM-4 / CU-0 FS-1	BRX-4 / CU-0 FC-2
	SLM-1 / CU-1 FS-1	BRX-4 / CU-1 FC-2
	BRX-4 / CU-0 FC-0	BRX-4 / CU-1 FC-3
	BRX-4 / CU-1 FC-0	BRX-4 / CU-0 FC-3
BRX-5:	SLM-3 / CU-0 FS-2	BRX-5 / CU-0 FC-2
	SLM-2 / CU-1 FS-2	BRX-5 / CU-1 FC-2
	BRX-5 / CU-0 FC-0	BRX-5 / CU-1 FC-3
	BRX-5 / CU-1 FC-0	BRX-5 / CU-0 FC-3
BRX-6:	SLM-2 / CU-0 FS-2	BRX-6 / CU-0 FC-2
	SLM-3 / CU-1 FS-2	BRX-6 / CU-1 FC-2
	BRX-6 / CU-0 FC-0	BRX-6 / CU-1 FC-3
	BRX-6 / CU-1 FC-0	BRX-6 / CU-0 FC-3
BRX-7:	SLM-3 / CU-0 FS-3	BRX-7 / CU-0 FC-2
	SLM-2 / CU-1 FS-3	BRX-7 / CU-1 FC-2
	BRX-7 / CU-0 FC-0	BRX-7 / CU-1 FC-3
	BRX-7 / CU-1 FC-0	BRX-7 / CU-0 FC-3
BRX-8:	SLM-2 / CU-0 FS-3	BRX-8 / CU-0 FC-2
	SLM-3 / CU-1 FS-3	BRX-8 / CU-1 FC-2
	BRX-8 / CU-0 FC-0	BRX-8 / CU-1 FC-3
	BRX-8 / CU-1 FC-0	BRX-8 / CU-0 FC-3
BRX-9:	BRX-1 / CU-0 FC-1	BRX-9 / CU-0 FC-2
	BRX-1 / CU-1 FC-1	BRX-9 / CU-1 FC-2
	BRX-9 / CU-0 FC-0	BRX-9 / CU-1 FC-3
	BRX-9 / CU-1 FC-0	BRX-9 / CU-0 FC-3
BRX-10:	BRX-2 / CU-0 FC-1	BRX-10 / CU-0 FC-2
	BRX-2 / CU-1 FC-1	BRX-10 / CU-1 FC-2
	BRX-10 / CU-0 FC-0	BRX-10 / CU-1 FC-3
	BRX-10 / CU-1 FC-0	BRX-10 / CU-0 FC-3
BRX-11:	BRX-3 / CU-0 FC-1	BRX-11 / CU-0 FC-2
	BRX-3 / CU-1 FC-1	BRX-11 / CU-1 FC-2
	BRX-11 / CU-0 FC-0	BRX-11 / CU-1 FC-3
	BRX-11 / CU-1 FC-0	BRX-11 / CU-0 FC-3
BRX-12:	BRX-4 / CU-0 FC-1	BRX-12 / CU-0 FC-2
	BRX-4 / CU-1 FC-1	BRX-12 / CU-1 FC-2
	BRX-12 / CU-0 FC-0	BRX-12 / CU-1 FC-3
	BRX-12 / CU-1 FC-0	BRX-12 / CU-0 FC-3
BRX-13:	BRX-5 / CU-0 FC-1	BRX-13 / CU-0 FC-2
	BRX-5 / CU-1 FC-1	BRX-13 / CU-1 FC-2
	BRX-13 / CU-0 FC-0	BRX-13 / CU-1 FC-3
	BRX-13 / CU-1 FC-0	BRX-13 / CU-0 FC-3
BRX-14:	BRX-6 / CU-0 FC-1	BRX-14 / CU-0 FC-2
	BRX-6 / CU-1 FC-1	BRX-14 / CU-1 FC-2
	BRX-14 / CU-0 FC-0	BRX-14 / CU-1 FC-3
	BRX-14 / CU-1 FC-0	BRX-14 / CU-0 FC-3
BRX-15:	BRX-7 / CU-0 FC-1	BRX-15 / CU-0 FC-2
	BRX-7 / CU-1 FC-1	BRX-15 / CU-1 FC-2
	BRX-15 / CU-0 FC-0	BRX-15 / CU-1 FC-3
	BRX-15 / CU-1 FC-0	BRX-15 / CU-0 FC-3
BRX-16:	BRX-8 / CU-0 FC-1	BRX-16 / CU-0 FC-2
	BRX-8 / CU-1 FC-1	BRX-16 / CU-1 FC-2
	BRX-16 / CU-0 FC-0	BRX-16 / CU-1 FC-3
	BRX-16 / CU-1 FC-0	BRX-16 / CU-0 FC-3

The following notes will help you successfully cable the system:

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:
 - PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
 - Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
 - When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

Additional Bricks beyond the 16 explicitly defined above are to be connected following the pattern for Bricks 9 through 16 above. The Brick numbers in each string are shown in the following figure, which corresponds to the diagram in [Figure 24](#).

Figure 25 Connecting Bricks 17 through 32 to the existing strings

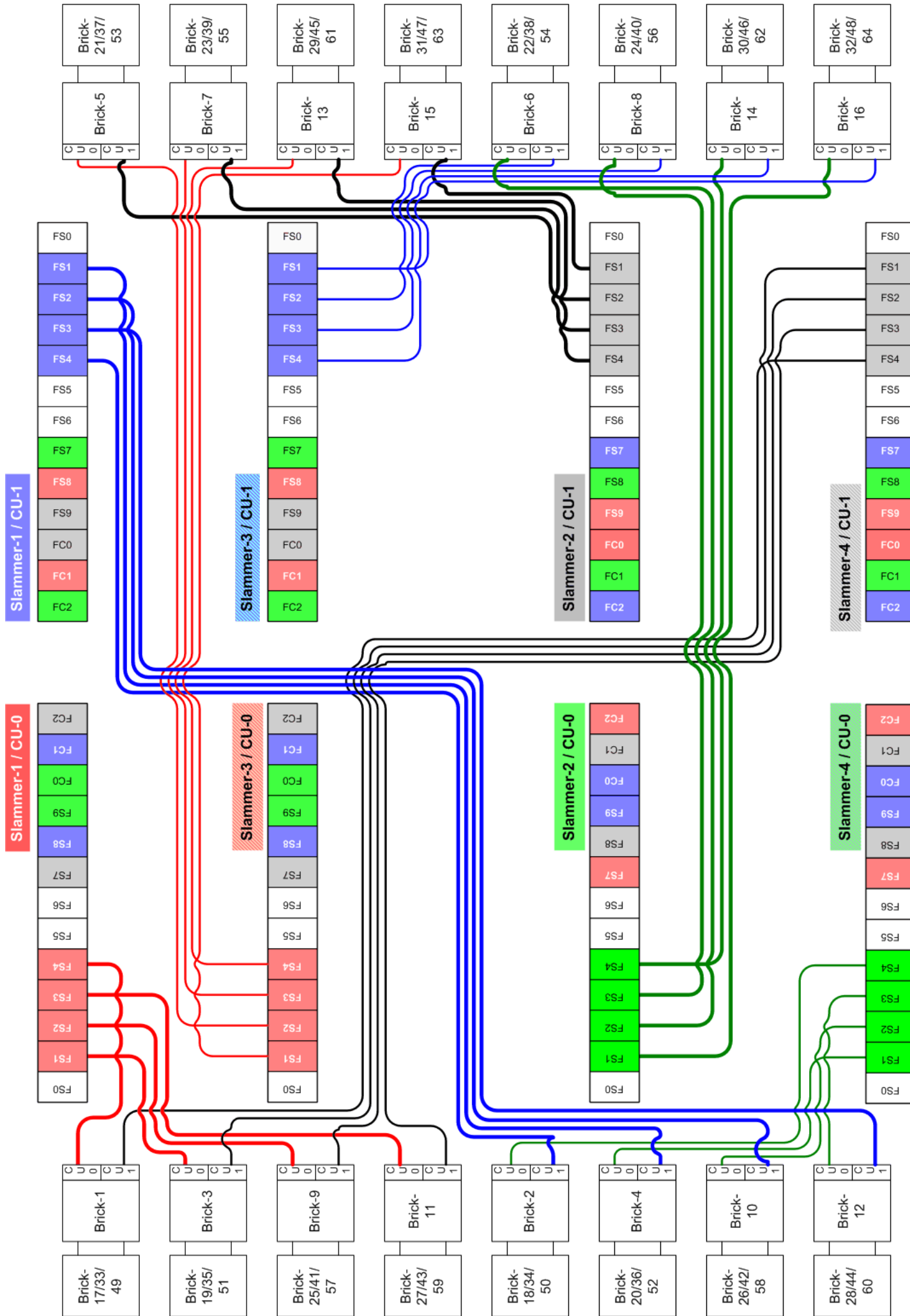
Brx- 1	9	17	25
Brx- 2	10	18	26
Brx- 3	11	19	27
Brx- 4	12	20	28
Brx- 5	13	21	29
Brx- 6	14	22	30
Brx- 7	15	23	31
Brx- 8	16	24	32

Connections for 64 Bricks in a 4-Slammer System

Block Diagram: Connecting Four Slammers to 64 Bricks

This diagram illustrates how to connect Brick strings to the Slammers and Bricks to Bricks in a 4-Slammer, 64 Brick (16-string) configuration.

Figure 26 Connecting a 4-Slammer configuration to 64 Bricks



Note: Using 16 strings is optional but recommended for configurations above 32 Bricks.

Important! This illustration is for reference only.

Cable 64 Bricks to Four Slammers

These tables specify, cable by cable, how to connect Brick strings to the Slammers and Bricks to Bricks in a 4-Slammer, 32-Brick (8-string) configuration.

These SSF cabling figures correspond to the diagram in [Figure 24](#).

Table 26 Cable connections for four Slammers and 32 Bricks

BRX-1:	SLM-1 / CU-0 FS-4	BRX-1 / CU-0 FC-2
	SLM-4 / CU-1 FS-4	BRX-1 / CU-1 FC-2
	BRX-1 / CU-0 FC-0	BRX-1 / CU-1 FC-3
	BRX-1 / CU-1 FC-0	BRX-1 / CU-0 FC-3
BRX-2:	SLM-4 / CU-0 FS-4	BRX-2 / CU-0 FC-2
	SLM-1 / CU-1 FS-4	BRX-2 / CU-1 FC-2
	BRX-2 / CU-0 FC-0	BRX-2 / CU-1 FC-3
	BRX-2 / CU-1 FC-0	BRX-2 / CU-0 FC-3
BRX-3:	SLM-1 / CU-0 FS-1	BRX-3 / CU-0 FC-2
	SLM-4 / CU-1 FS-1	BRX-3 / CU-1 FC-2
	BRX-3 / CU-0 FC-0	BRX-3 / CU-1 FC-3
	BRX-3 / CU-1 FC-0	BRX-3 / CU-0 FC-3
BRX-4:	SLM-4 / CU-0 FS-1	BRX-4 / CU-0 FC-2
	SLM-1 / CU-1 FS-1	BRX-4 / CU-1 FC-2
	BRX-4 / CU-0 FC-0	BRX-4 / CU-1 FC-3
	BRX-4 / CU-1 FC-0	BRX-4 / CU-0 FC-3
BRX-5:	SLM-3 / CU-0 FS-2	BRX-5 / CU-0 FC-2
	SLM-2 / CU-1 FS-2	BRX-5 / CU-1 FC-2
	BRX-5 / CU-0 FC-0	BRX-5 / CU-1 FC-3
	BRX-5 / CU-1 FC-0	BRX-5 / CU-0 FC-3
BRX-6:	SLM-2 / CU-0 FS-2	BRX-6 / CU-0 FC-2
	SLM-3 / CU-1 FS-2	BRX-6 / CU-1 FC-2
	BRX-6 / CU-0 FC-0	BRX-6 / CU-1 FC-3
	BRX-6 / CU-1 FC-0	BRX-6 / CU-0 FC-3
BRX-7:	SLM-3 / CU-0 FS-3	BRX-7 / CU-0 FC-2
	SLM-2 / CU-1 FS-3	BRX-7 / CU-1 FC-2
	BRX-7 / CU-0 FC-0	BRX-7 / CU-1 FC-3
	BRX-7 / CU-1 FC-0	BRX-7 / CU-0 FC-3
BRX-8:	SLM-2 / CU-0 FS-3	BRX-8 / CU-0 FC-2
	SLM-3 / CU-1 FS-3	BRX-8 / CU-1 FC-2
	BRX-8 / CU-0 FC-0	BRX-8 / CU-1 FC-3
	BRX-8 / CU-1 FC-0	BRX-8 / CU-0 FC-3
BRX-9:	SLM-1 / CU-0 FS-2	BRX-9 / CU-0 FC-2
	SLM-4 / CU-1 FS-2	BRX-9 / CU-1 FC-2
	BRX-9 / CU-0 FC-0	BRX-9 / CU-1 FC-3
	BRX-9 / CU-1 FC-0	BRX-9 / CU-0 FC-3
BRX-10:	SLM-4 / CU-0 FS-2	BRX-10 / CU-0 FC-2
	SLM-1 / CU-1 FS-2	BRX-10 / CU-1 FC-2
	BRX-10 / CU-0 FC-0	BRX-10 / CU-1 FC-3
	BRX-10 / CU-1 FC-0	BRX-10 / CU-0 FC-3
BRX-11:	SLM-1 / CU-0 FS-3	BRX-11 / CU-0 FC-2
	SLM-4 / CU-1 FS-3	BRX-11 / CU-1 FC-2
	BRX-11 / CU-0 FC-0	BRX-11 / CU-1 FC-3
	BRX-11 / CU-1 FC-0	BRX-11 / CU-0 FC-3
BRX-12:	SLM-4 / CU-0 FS-3	BRX-12 / CU-0 FC-2
	SLM-1 / CU-1 FS-3	BRX-12 / CU-1 FC-2
	BRX-12 / CU-0 FC-0	BRX-12 / CU-1 FC-3
	BRX-12 / CU-1 FC-0	BRX-12 / CU-0 FC-3
BRX-13:	SLM-3 / CU-0 FS-4	BRX-13 / CU-0 FC-2
	SLM-2 / CU-1 FS-4	BRX-13 / CU-1 FC-2
	BRX-13 / CU-0 FC-0	BRX-13 / CU-1 FC-3
	BRX-13 / CU-1 FC-0	BRX-13 / CU-0 FC-3
BRX-14:	SLM-2 / CU-0 FS-4	BRX-14 / CU-0 FC-2
	SLM-3 / CU-1 FS-4	BRX-14 / CU-1 FC-2
	BRX-14 / CU-0 FC-0	BRX-14 / CU-1 FC-3
	BRX-14 / CU-1 FC-0	BRX-14 / CU-0 FC-3
Fo BRX-15:	SLM-3 / CU-0 FS-1	BRX-15 / CU-0 FC-2
	SLM-2 / CU-1 FS-1	BRX-15 / CU-1 FC-2
	BRX-15 / CU-0 FC-0	BRX-15 / CU-1 FC-3
	BRX-15 / CU-1 FC-0	BRX-15 / CU-0 FC-3
BRX-16:	SLM-2 / CU-0 FS-1	BRX-16 / CU-0 FC-2
	SLM-3 / CU-1 FS-1	BRX-16 / CU-1 FC-2
	BRX-16 / CU-0 FC-0	BRX-16 / CU-1 FC-3
	BRX-16 / CU-1 FC-0	BRX-16 / CU-0 FC-3
BRX-17:	BRX-1 / CU-0 FC-1	BRX-17 / CU-0 FC-2
	BRX-1 / CU-1 FC-1	BRX-17 / CU-1 FC-2
	BRX-17 / CU-0 FC-0	BRX-17 / CU-1 FC-3
	BRX-17 / CU-1 FC-0	BRX-17 / CU-0 FC-3
BRX-18:	BRX-2 / CU-0 FC-1	BRX-18 / CU-0 FC-2
	BRX-2 / CU-1 FC-1	BRX-18 / CU-1 FC-2
	BRX-18 / CU-0 FC-0	BRX-18 / CU-1 FC-3
	BRX-18 / CU-1 FC-0	BRX-18 / CU-0 FC-3
BRX-19:	BRX-3 / CU-0 FC-1	BRX-19 / CU-0 FC-2
	BRX-3 / CU-1 FC-1	BRX-19 / CU-1 FC-2
	BRX-19 / CU-0 FC-0	BRX-19 / CU-1 FC-3
	BRX-19 / CU-1 FC-0	BRX-19 / CU-0 FC-3
BRX-20:	BRX-4 / CU-0 FC-1	BRX-20 / CU-0 FC-2
	BRX-4 / CU-1 FC-1	BRX-20 / CU-1 FC-2
	BRX-20 / CU-0 FC-0	BRX-20 / CU-1 FC-3
	BRX-20 / CU-1 FC-0	BRX-20 / CU-0 FC-3
BRX-21:	BRX-5 / CU-0 FC-1	BRX-21 / CU-0 FC-2
	BRX-5 / CU-1 FC-1	BRX-21 / CU-1 FC-2
	BRX-21 / CU-0 FC-0	BRX-21 / CU-1 FC-3
	BRX-21 / CU-1 FC-0	BRX-21 / CU-0 FC-3
BRX-22:	BRX-6 / CU-0 FC-1	BRX-22 / CU-0 FC-2
	BRX-6 / CU-1 FC-1	BRX-22 / CU-1 FC-2
	BRX-22 / CU-0 FC-0	BRX-22 / CU-1 FC-3
	BRX-22 / CU-1 FC-0	BRX-22 / CU-0 FC-3
BRX-23:	BRX-7 / CU-0 FC-1	BRX-23 / CU-0 FC-2
	BRX-7 / CU-1 FC-1	BRX-23 / CU-1 FC-2
	BRX-23 / CU-0 FC-0	BRX-23 / CU-1 FC-3
	BRX-23 / CU-1 FC-0	BRX-23 / CU-0 FC-3
BRX-24:	BRX-8 / CU-0 FC-1	BRX-24 / CU-0 FC-2
	BRX-8 / CU-1 FC-1	BRX-24 / CU-1 FC-2
	BRX-24 / CU-0 FC-0	BRX-24 / CU-1 FC-3
	BRX-24 / CU-1 FC-0	BRX-24 / CU-0 FC-3
BRX-25:	BRX-9 / CU-0 FC-1	BRX-25 / CU-0 FC-2
	BRX-9 / CU-1 FC-1	BRX-25 / CU-1 FC-2
	BRX-25 / CU-0 FC-0	BRX-25 / CU-1 FC-3
	BRX-25 / CU-1 FC-0	BRX-25 / CU-0 FC-3
BRX-26:	BRX-10 / CU-0 FC-1	BRX-26 / CU-0 FC-2
	BRX-10 / CU-1 FC-1	BRX-26 / CU-1 FC-2
	BRX-26 / CU-0 FC-0	BRX-26 / CU-1 FC-3
	BRX-26 / CU-1 FC-0	BRX-26 / CU-0 FC-3
BRX-27:	BRX-11 / CU-0 FC-1	BRX-27 / CU-0 FC-2
	BRX-11 / CU-1 FC-1	BRX-27 / CU-1 FC-2
	BRX-27 / CU-0 FC-0	BRX-27 / CU-1 FC-3
	BRX-27 / CU-1 FC-0	BRX-27 / CU-0 FC-3
BRX-28:	BRX-12 / CU-0 FC-1	BRX-28 / CU-0 FC-2
	BRX-12 / CU-1 FC-1	BRX-28 / CU-1 FC-2
	BRX-28 / CU-0 FC-0	BRX-28 / CU-1 FC-3
	BRX-28 / CU-1 FC-0	BRX-28 / CU-0 FC-3
BRX-29:	BRX-13 / CU-0 FC-1	BRX-29 / CU-0 FC-2
	BRX-13 / CU-1 FC-1	BRX-29 / CU-1 FC-2
	BRX-29 / CU-0 FC-0	BRX-29 / CU-1 FC-3
	BRX-29 / CU-1 FC-0	BRX-29 / CU-0 FC-3
BRX-30:	BRX-14 / CU-0 FC-1	BRX-30 / CU-0 FC-2
	BRX-14 / CU-1 FC-1	BRX-30 / CU-1 FC-2
	BRX-30 / CU-0 FC-0	BRX-30 / CU-1 FC-3
	BRX-30 / CU-1 FC-0	BRX-30 / CU-0 FC-3
BRX-31:	BRX-15 / CU-0 FC-1	BRX-31 / CU-0 FC-2
	BRX-15 / CU-1 FC-1	BRX-31 / CU-1 FC-2
	BRX-31 / CU-0 FC-0	BRX-31 / CU-1 FC-3
	BRX-31 / CU-1 FC-0	BRX-31 / CU-0 FC-3
BRX-32:	BRX-16 / CU-0 FC-1	BRX-32 / CU-0 FC-2
	BRX-16 / CU-1 FC-1	BRX-32 / CU-1 FC-2
	BRX-32 / CU-0 FC-0	BRX-32 / CU-1 FC-3
	BRX-32 / CU-1 FC-0	BRX-32 / CU-0 FC-3

The following notes will help you successfully cable the system:

- Private interconnect module (PIM) and serial ATA (SATA) RAID controller connections:

- PIMs and SATA RAID controllers both use HSSDC2 (high-speed serial data connection) type connections.
- Version 2 SATA RAID controllers use SFP (small form-factor pluggable) type connections.
- When connecting a version 1 component to a version 2 component, use a hybrid HSSDC2-to-SFP adapter cable.
- Cable lengths:
 - The cable lengths for Slammer-to-Brick connections are 6.56 ft (2.0 m).
 - Cable lengths for Brick-to-Brick (FC-1 to FC-2) connections are also 6.56 ft (2.0 m).
 - Cable lengths for cross connections (FC-0 to FC-3) between Brick control units (CUs) depend on the Brick type:
 - Version 1 Bricks: 1.64 ft (0.5 m)
 - Version 2 Bricks: 3.28 ft (1.0 m)

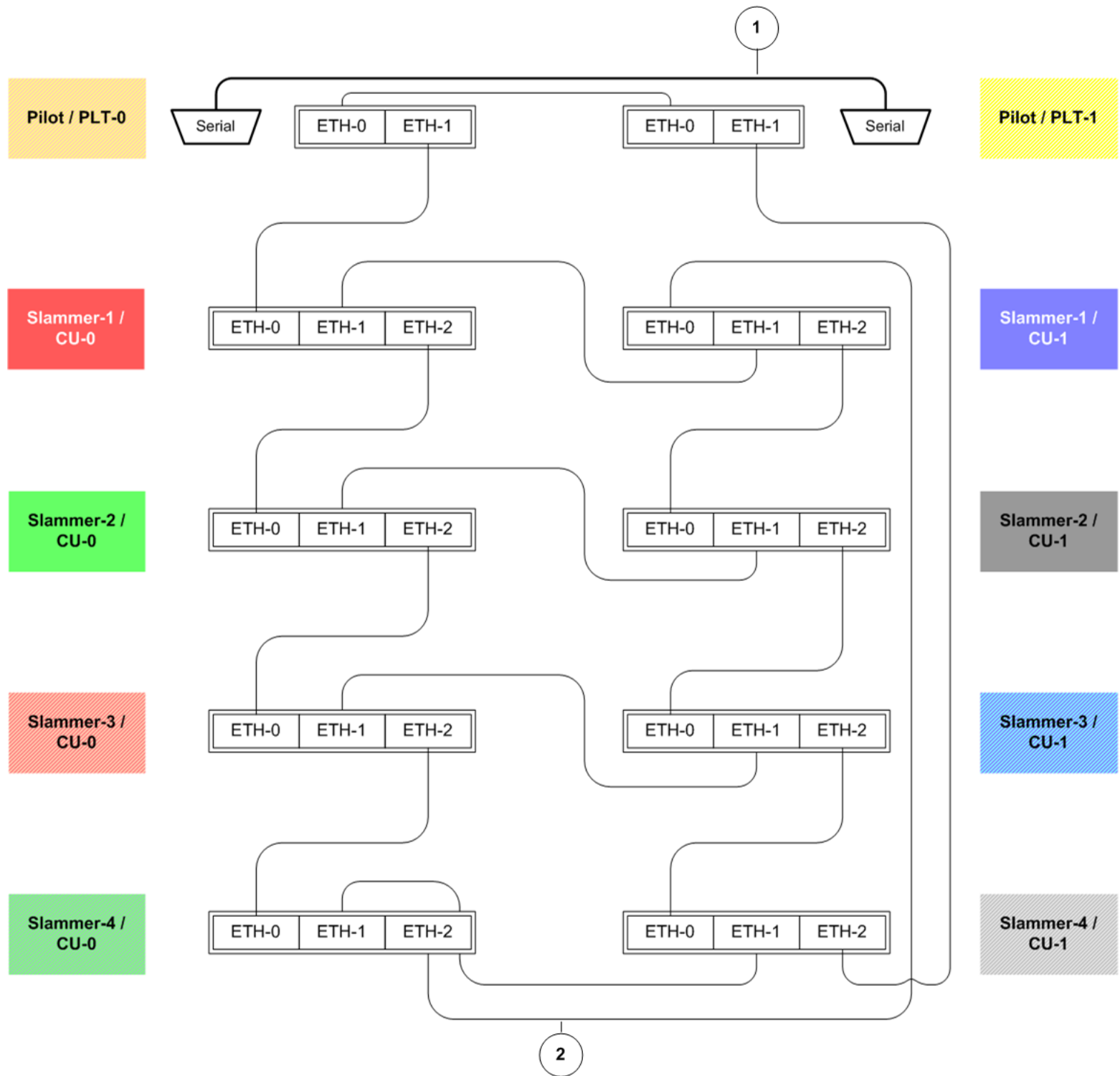
Note: Additional Bricks beyond the 32 explicitly defined above are to be connected following the pattern shown for Bricks 17 through 32. The Brick numbers in each string are shown in the diagram in [Figure 26](#).

PMI Connections for 4-Slammer Systems

Schematic of PMI Ethernet Connections in a 4-Slammer System

This schematic illustrates the Pilot-to-Slammer and Slammer-to-Slammer connections comprising the private management interface in a 4-Slammer system.

Figure 27 PMI Ethernet schematic (4-Slammer system)



- Legend**
- 1 Null modem cable.
 - 2 Cat-5 Ethernet cables.

Cable the PMI Connections in a 4-Slammer System

This table defines how to connect the Cat-5 Ethernet cables between the Pilot and the Slammers and among the Slammers themselves in a 4-Slammer system.

Table 27 Ethernet cable connections for PMI (4-Slammer system)

	From	To
	Chassis / CU / Port	Chassis / CU / Port
	PLT-0 ETH0	PLT-1 ETH0
	PLT-0 ETH1	SLM-1 / CU-0 ETH0
	PLT-1 ETH1	SLM-4 / CU-1 ETH2
	SLM-1 / CU-0 ETH1	SLM-1 / CU-1 ETH1
	SLM-1 / CU-0 ETH2	SLM-2 / CU-0 ETH0
	SLM-1 / CU-1 ETH2	SLM-2 / CU-1 ETH0
	SLM-2 / CU-0 ETH1	SLM-2 / CU-1 ETH1
	SLM-2 / CU-0 ETH2	SLM-3 / CU-0 ETH0
	SLM-2 / CU-1 ETH2	SLM-3 / CU-1 ETH0
	SLM-3 / CU-0 ETH1	SLM-3 / CU-1 ETH1
	SLM-3 / CU-0 ETH2	SLM-4 / CU-0 ETH0
	SLM-3 / CU-1 ETH2	SLM-4 / CU-1 ETH0
	SLM-4 / CU-0 ETH1	SLM-4 / CU-1 ETH1
	SLM-4 / CU-0 ETH2	SLM-1 / CU-1 ETH0

In addition to the Ethernet cables, PMI requires a null modem cable connection between the serial ports of each Pilot control unit.

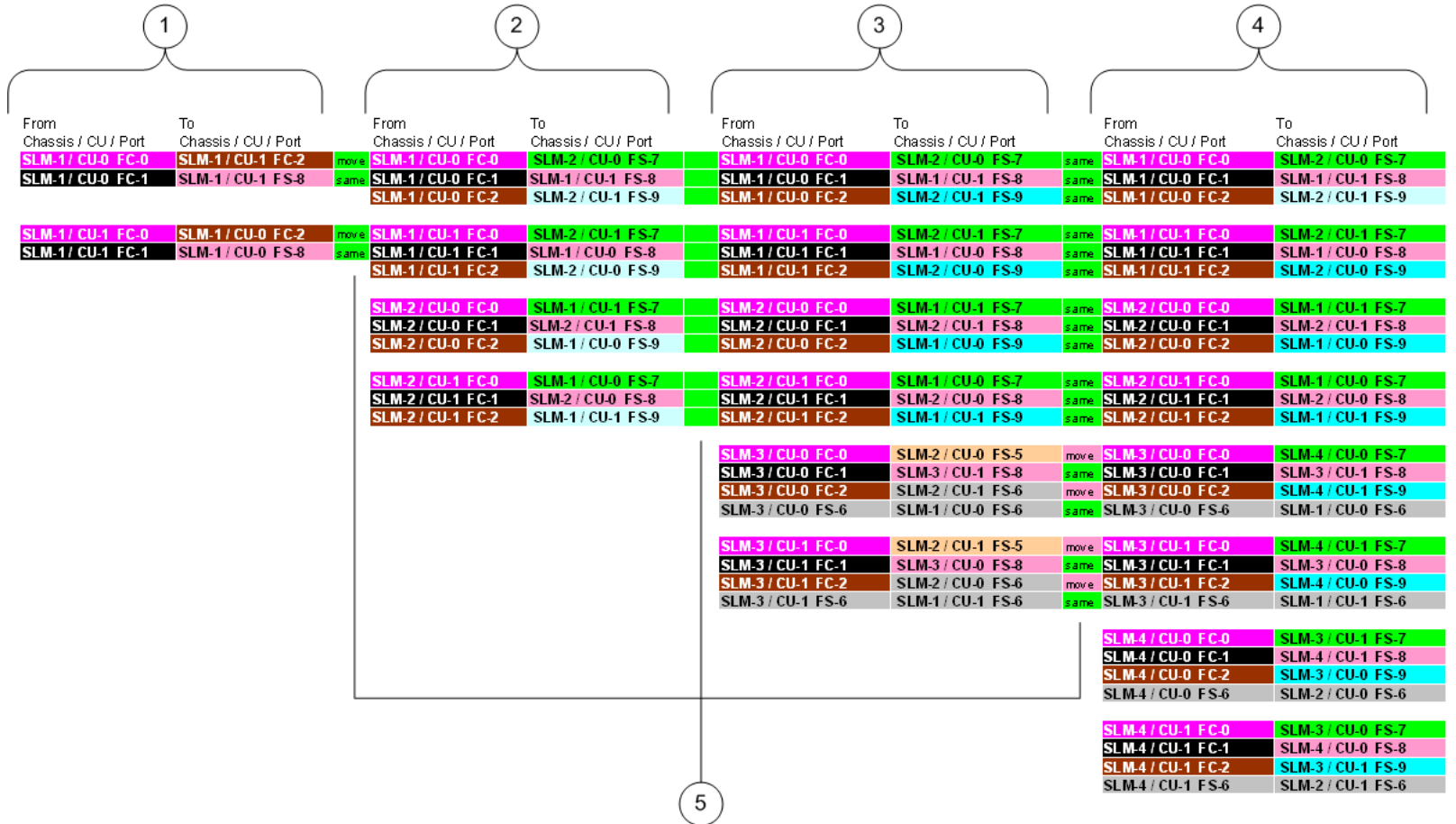
Part VII: Appendixes

APPENDIX A

Swapping SSF Cables When Expanding a System

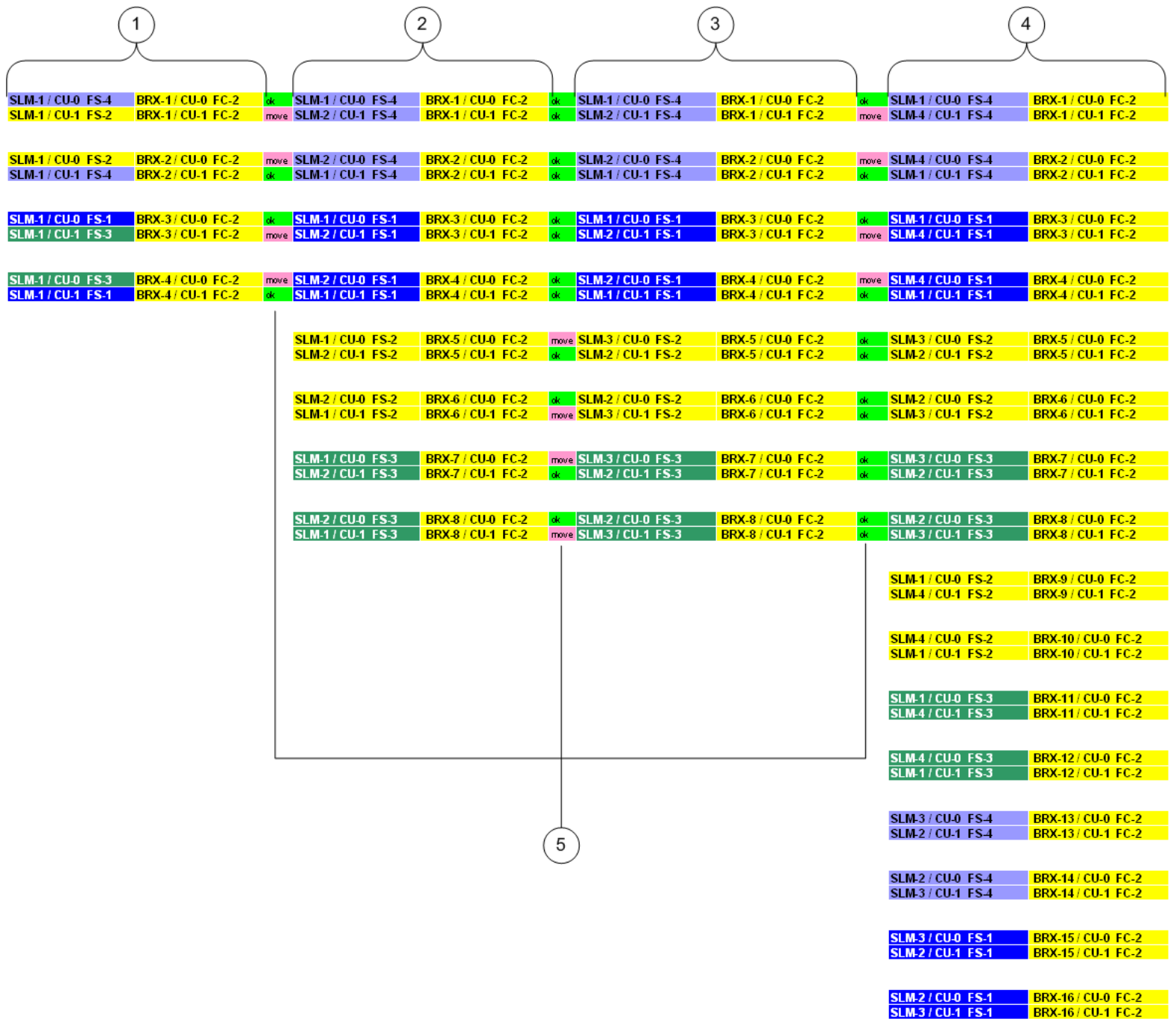
When adding an additional Slammer to a Pillar Axiom system, you need to move some Fibre Channel (FC) cables to different ports on the private interconnect module (PIM).

Table 28 Swapping Slammer cables that cross connect PIMs



Legend	
1	First Slammer.
2	Second Slammer.
3	Third Slammer.
4	Fourth Slammer.
5	Move the red FC cables when expanding the system to the next larger configuration.

Table 29 Swapping head-of-string Brick cables



Legend

- 1 First Slammer.
- 2 Second Slammer.
- 3 Third Slammer.
- 4 Fourth Slammer.
- 5 Move the red FC cables when expanding the system to the next larger configuration.

APPENDIX B

Summary of Cabling Rules

These cabling rules describe fundamental principles that need to be applied when cabling Fibre Channel (FC) and SATA Bricks in a Pillar Axiom storage system.

Important! FC Bricks and SATA Bricks containing solid state drives (SSDs) are not supported in the same system configuration.

Brick Strings

- A string is a collection of Bricks connected together. The head of the string connects to two Slammer ports. Each of the other Bricks in the string are connected to the previous Brick in the string.
- Strings contain combinations of FC RAID Bricks, FC Expansion Bricks, and SATA Bricks.
- A string may contain up to eight SATA Bricks.
- A string may contain up to four FC RAID Bricks.
- 1-Slammer systems have at most four strings. 2 and 3-Slammer systems have at most eight strings. 4-Slammer systems have at most 8 strings.
- Systems that have been upgraded by adding an additional Slammer can run with the number of strings appropriate to the prior configuration.

Adding Bricks to Strings

- Add Bricks to strings so that the number of Bricks in any string differs by no more than two between the longest and the shortest strings.
- When adding SATA or FC RAID Bricks to a string, attach them to the last SATA or FC RAID Brick on that string.
- When adding SATA Bricks to a Pillar Axiom system that previously had only FC Bricks, add all the SATA Bricks before you respond to the **Media Placement Recommendations Administrator Action** item.

Connecting Bricks to Slammers

- SATA and FC RAID Bricks can connect to the private interconnect module (PIM) ports in Slammers.
- FC RAID Bricks and SATA Bricks can also be connected to other Bricks, which directly or indirectly connect to Slammer ports.
- FC RAID Bricks use Slammer ports in the same order as the scheme for connecting SATA Bricks. This scheme fosters balance among the strings while maintaining predictable assignment of Bricks to strings. A given Brick will always be on a particular string with particular Slammer ports. The same cable labels are used for SATA and FC RAID Bricks.

Use of Brick Network Ports

- Brick CU-0 upstream ports are connected to Slammer CU-0 ports or the CU-0 downstream ports of another Brick; likewise, Brick CU-1 ports are connected to Slammer CU-1 ports or Brick CU-1 ports.
- FC Expansion Bricks are connected to FC RAID Bricks using the J0, J1, and Pnet ports. The current release restricts FC Brick deployment to zero or one FC Expansion Brick on each FC RAID Brick.

Fibre Channel Brick Connections

- FC RAID Bricks can be configured alone or in pairs of one FC RAID Brick and one FC Expansion Brick.
- FC RAID Bricks, including pairs of RAID and Expansion Bricks, may be added to a running system as long as they are cabled within the rack, powered on, and have completed initialization prior to connecting them to the existing configuration.

Tip: After RAID controllers finish initializing, scrubbing normally starts on the disk drives. Scrubbing causes all the disk drive LEDs to blink rapidly.

Important! When adding pairs of FC RAID and Expansion Bricks, cable all the links between the new Bricks, power them up, allow them to initialize, and then add the links to the previously running system.

Multi-Slammer Brick Connections

- In 3 and 4 Slammer configurations, each Brick must connect to the Slammers as follows:
 - 3-Slammer configuration: Connect to Slammer 1 or Slammer 3 *and* to Slammer 2.
 - 4-Slammer configuration: Connect to Slammer 1 or Slammer 2 *and* to Slammer 3 or Slammer 4.

Tip: To maximize performance and avoid having a Slammer control unit traverse an inter-switch link to get to the Brick, be sure the above conditions are met.

**Factory
Configurations**

- Systems upgraded in the field may have a configuration different from those built in the factory.
- For systems built at the factory, strings that mix SATA Bricks and FC Bricks will have the FC RAID Bricks closest to the Slammer. Field upgrades may differ—newly added Bricks can be connected to the last FC RAID or SATA Brick at the end of existing strings.

Index

- A**
 - additional resources 7
 - audience 7
- B**
 - block diagram, cabling
 - 1-Slammer systems
 - expanding with FC Bricks 46
 - FC & SATA Bricks 45
 - FC Bricks 40
 - SATA Bricks 15
 - 2-Slammer systems
 - FC & SATA Bricks 48
 - FC Bricks 42
 - SATA Bricks 28
 - 3-Slammer systems 52
 - 4-Slammer systems
 - 32 Brick configuration 59
 - 64 Brick configuration 62
 - book organization 7
 - Brick storage enclosures
 - cabling rules summary 69
 - cascade schematic 37
 - scalability strategy 15
 - string definition 11
 - string port mapping 37
 - versions of SATA controller 11
- C**
 - cable connections (Ethernet)
 - 1-Slammer systems 25
 - 2-Slammer systems 36
 - 3-Slammer systems 55
 - 4-Slammer systems 65
 - cable connections (Fibre Channel)
 - block diagram, cabling, FC & SATA Brick
 - 1-Slammer systems 45
 - 2-Slammer systems 48
 - block diagram, cabling, FC Brick
 - 1-Slammer systems 40
 - 2-Slammer systems 42
 - 3-Slammer systems 52
 - 4-Slammer systems (32 Bricks) 59
 - 4-Slammer systems (64 Bricks) 62
 - block diagram, cabling, SATA Brick
 - 1-Slammer systems 15
 - 2-Slammer systems 28
 - 3-Slammer systems 52
 - 4-Slammer systems (32 Bricks) 59
 - 4-Slammer systems (64 Bricks) 62
 - block diagram, expanding with FC Bricks 46
 - Bricks 01-08, SATA
 - 1-Slammer systems 20
 - 2-Slammer systems 30
 - Bricks 09-16, SATA
 - 1-Slammer systems 22
 - 2-Slammer systems] 32
 - Bricks 17-24, SATA
 - 1-Slammer systems 23
 - 2-Slammer systems 33
 - Bricks 25-32, SATA
 - 1-Slammer systems 24
 - 2-Slammer systems 34
 - Bricks 32-64, SATA
 - 2-Slammer systems 34
 - casading Bricks
 - 2-Slammer systems 37
 - FC Bricks
 - 1-Slammer systems 40
 - 2-Slammer systems 43
 - sample cabling with SATA Bricks 44
 - sample cabling without SATA 38
 - sample cabling
 - 1-Slammer systems 13
 - 2-Slammer systems 26
 - FC & SATA Bricks 44
 - FC Bricks without SATA 28
 - Slammer cross connections
 - 1 Slammer 20
 - 2 Slammers 30
 - 3 Slammers 50
 - 4 Slammers 57
 - Slammer to FC Bricks 40
 - Slammer to SATA Bricks 20
 - Slammer-to-Brick connections
 - 3 Slammers 53
 - 4 Slammers 60, 63
 - swapping cables when expanding 67
 - cable labels, FC 12
 - cabling rules summary 69
 - casading Bricks 37
 - caution signal words 10
 - cautions
 - unsupported hardware 10
 - components, Pillar Axiom hardware
 - supported hardware 10
 - configuration, rack
 - using 230 V, 20 A PDUs 16
 - using 3-phase PDUs 18
 - using four PDUs 18
 - contact information 8
 - conventions
 - typographical 8
 - cross connections
 - 1 Slammer 20
 - 2 Slammers 30
 - 3 Slammers 50
 - 4 Slammers 57
- D**
 - danger signal words 10
 - documentation
 - hazard signal words 10
 - related to cabling 7
 - documents, accessing 8
 - dresssing SSF cables 16
- E**
 - education programs 8
 - Ethernet connections
 - 1-Slammer systems PMI 25
 - 2-Slammer systems PMI 36
 - 3-Slammer systems PMI 55
 - 4-Slammer systems PMI 65
 - expanding a system
 - cable swaps 67
 - with FC Bricks 46
 - experience, required 7
- F**
 - FC & SATA Bricks
 - block diagram, cabling
 - 1-Slammer systems 45
 - sample cabling 44
 - FC Bricks
 - block diagram for expanding a system 46
 - cabling
 - 1-Slammer systems 40
 - 2-Slammer systems 43
 - sample cabling
 - with SATA Bricks 44
 - without SATA Bricks 38
 - Fibre Channel Bricks
 - cabling rules summary 69
- H**
 - hardware, Pillar Axiom
 - supported components 10
 - help
 - online 8
- I**
 - Intelligent Platform Management Interface (IPMI) cabling, Pilot
 - 1-Slammer systems 13
 - 2-Slammer systems 26

3-Slammer systems *55*
4-Slammer systems *65*

L

labels, FC cable *12*

M

mixed Brick types

 cabling block diagrams

 1-Slammer system *45*

 2-Slammer system *48*

 connection rules *69*

multiple racks

 using 230 V, 20 A PDUs *16*

 using four PDUs or 3-phase power *18*

O

online documents *8*

online help *8*

organization, book *7*

P

Pillar Data Systems support site *8*

Pilot cabling

 1-Slammer systems *13*

 2-Slammer systems *26*

 3-Slammer systems *55*

 4-Slammer systems *65*

port mapping, Brick

 in strings *37*

private management interface (PMI)

 1-Slammer systems

 cabling *25*

 schematic *25*

 2-Slammer systems

 cabling *36*

 schematic *36*

 3-Slammer systems

 cabling *55*

 schematic *55*

 4-Slammer systems

 cabling *65*

 schematic *65*

product support *8*

R

rack configuration

 using 230 V, 20 A PDUs *16*

 using 3-phase PDUs *18*

 using four PDUs *18*

rack space requirements

 2-Slammer systems

 16 Bricks *28*

 32 Bricks *29*

related books *7*

requisite reading *7*

S

sales information *8*

sample cabling

 1-Slammer systems *13*

 2-Slammer systems *26*

 FC Bricks

 with SATA Bricks *44*

 without SATA Bricks *38*

SATA RAID controllers, Brick

 versions *11*

scalability strategy, Brick *15*

 cascade schematic *37*

 list of points

 2-Slammer systems *29*

Slammer storage controllers

 Brick connections

 1 Slammer *20*

 2 Slammers *30*

 3 Slammers *53*

 4 Slammers *60, 63*

 cross connect

 1 Slammer *20*

 2 Slammers *30*

 3 Slammers *50*

 4 Slammers *57*

Slammer-to-Brick connections

 1 Slammer *20*

 2 Slammers *30*

 3 Slammers *53*

 4 Slammers *60, 63*

SSF.

See Storage System Fabric (SSF).

Storage System Fabric (SSF)

 cabling

 1-Slammer systems *20*

 2-Slammer systems *30*

 3-Slammer systems *53*

 4-Slammer systems *60, 63*

 cabling rules summary *69*

 dressing the FC cables *16*

 FC Brick cabling

 1-Slammer systems *40*

 2-Slammer systems *43*

 swapping cables when expanding *67*

strings, Brick

 cabling rules *69*

 definition *11*

 port mapping *37*

supported hardware components *10*

swapping cables when expanding a system *67*

T

technical documents, accessing *8*

technical support *8*

training programs *8*

typographical conventions *8*

W

warning signal words *10*