

Fujitsu SPARC M12-2S

Installation Guide



Manual Code: C120-0023-11EN
June 2021

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Preface

This document describes methods of installing and setting up the SPARC M12-2S from Oracle or Fujitsu. The document assumes that the system has already been unpacked.

Fujitsu SPARC M12 is sold as SPARC M12 by Fujitsu in Japan.
Fujitsu SPARC M12 and SPARC M12 are identical products.

Audience

This document is designed for system administrators with advanced knowledge of computer networks and Oracle Solaris, the service engineers who are in charge of system maintenance, and field engineers.

Related Documentation

All documents for your server are available online at the following locations.

- Sun Oracle software-related documents (Oracle Solaris, etc.)
<https://docs.oracle.com/en/>
- Fujitsu documents
Global site
<https://www.fujitsu.com/global/products/computing/servers/unix/sparc/downloads/manuals/>
Japanese site
<https://www.fujitsu.com/jp/products/computing/servers/unix/sparc/downloads/manual/>

The following table lists documents related to SPARC M12 systems.

Manual Names (*1)

Fujitsu SPARC M12 Product Notes

Fujitsu SPARC M12 Quick Guide

*Fujitsu SPARC M12 Getting Started Guide (*2)*

*Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Important Legal and Safety Information (*2)*

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Safety and Compliance Guide

Software License Conditions for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Security Guide

Fujitsu SPARC Servers/SPARC Enterprise/PRIMEQUEST Common Installation Planning Manual

Fujitsu SPARC M12-1 Installation Guide

Fujitsu SPARC M12-2 Installation Guide

Fujitsu SPARC M12-2S Installation Guide

Fujitsu SPARC M12 PCI Card Installation Guide

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide

*Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 RCIL User Guide (*3)*

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF MIB and Trap Lists

Fujitsu SPARC M12-1 Service Manual

Fujitsu SPARC M12-2/M12-2S Service Manual

Crossbar Box for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Service Manual

PCI Expansion Unit for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Service Manual

Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Glossary

External USB-DVD Drive user guide

*1 The listed manuals are subject to change without notice.

*2 Printed manuals are provided with the product.

*3 This document applies specifically to the SPARC M12/M10 and FUJITSU ETERNUS disk storage system.

Notes on Safety

Read the following documents thoroughly before using or handling the SPARC M12.

- *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Important Legal and Safety Information*
- *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Safety and Compliance Guide*

Text Conventions

This manual uses the following fonts and symbols to express specific types of information.

Font/Symbol	Meaning	Example
AaBbCc123	What you type, when contrasted with on-screen computer output. This font is used to indicate an example of command input.	XSCF> adduser jsmith
AaBbCc123	The names of commands, files, and directories; on-screen computer output. This font is used to indicate an example of command output in the frame.	XSCF> showuser -P User Name: jsmith Privileges: useradm auditadm
<i>Italic</i>	Indicates the name of a reference manual.	See the <i>Fujitsu SPARC M12-2S Installation Guide</i> .
" "	Indicates the names of chapters, sections, items, buttons, or menus.	See "Chapter 2 Network Connection."

Command Syntax in the Text

While the XSCF commands have a section number of (8) or (1), it is omitted from the text.

For details on the commands, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual*.

Syntax of the Command-Line Interface (CLI)

The command syntax is as follows:

- A variable that requires the input of a value is in Italics.
- An optional element is enclosed in [].
- A group of options for an optional keyword is enclosed in [] and delimited by |.

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Chapter 1

Understanding the Installation Flow

This chapter describes the required workflows for installation of the SPARC M12-2S and the PCI expansion unit, broken up into the following sections. For the overviews, configurations, and specifications of the SPARC M12-2S and PCI expansion unit, see the *Fujitsu SPARC M12 Quick Guide*.

- [Workflows for the SPARC M12-2S](#)
- [Workflow at Expansion With the PCI Expansion Unit](#)

1.1 Workflows for the SPARC M12-2S

The SPARC M12-2S is a 4U-size chassis that can be configured with up to 2 CPUs (12 cores per CPU). Employing the building block method, the system can be expanded in phases from the 1BB configuration to up to the 16BB configuration. This section separates the workflows into one used with a single SPARC M12-2S and one used with two or more SPARC M12-2S systems in a building block configuration.

Table 1-1 Building Block Configurations of the SPARC M12-2S

Item	Without Expansion Rack	With Expansion Rack
Mounting rack	Mounted in a 19 inch rack	Mounted in an expansion rack
Number of configurations	Up to 4BB configurations	From 2BB to 16BB configurations (*1)
Chassis connection method	Direct connections between chassis	Connections via crossbar box

*1 An expansion rack can be used to mount 2BB or larger configurations. Two expansion racks are required for 9BB or larger configurations.

1.1.1 1BB Configuration

The 1BB configuration uses only one SPARC M12-2S.

This section describes the workflow from installation of the SPARC M12-2S and the PCI expansion unit, which is an option mounted for the SPARC M12-2S, to the initial system settings. The initial system settings are implemented before system startup, and they include the XSCF setup, CPU Activation setting, and physical partition configuration. Skip the steps for the PCI expansion unit if it is not to be installed.

By clicking a reference enclosed in " " to display a section, you can see the details of the respective step. Italic font is used to indicate the name of a reference manual other than this manual.

Table 1-2 Workflow for the 1BB Configuration

Step (Work Time (*1))	Work Description	Reference	
Installation work (approx. 40 minutes (*2))			
1	Check the latest information available in the <i>Fujitsu SPARC M12 Product Notes</i> .	<i>Fujitsu SPARC M12 Product Notes</i>	Required
2	Before installing the system, check the safety precautions, system specifications, and necessary conditions for installation.	" Chapter 2 Planning and Preparing for System Installation "	Required
3	Prepare the necessary tools/information for installation.	" 3.1 Preparing the Necessary Tools/Information for Installation "	Required
4	Confirm the delivered components.	" 3.2.1 Confirming the Delivered Components of the SPARC M12-2S "	Required
		" 3.2.2 Confirming the Delivered Components of the PCI Expansion Unit "	Optional
5	Install the rack.	See the manual for each rack.	Required
6	Mount the SPARC M12-2S in the rack.	" 3.4.1 Mounting the SPARC M12-2S in a Rack "	Required
7	If there is a PCI expansion unit, mount it in the rack.	" 3.4.2 Mounting the PCI Expansion Unit in a Rack "	Optional
8	If there are optional components, mount them in the SPARC M12-2S or PCI expansion unit.	" 3.5.1 Mounting Optional Components in the SPARC M12-2S "	Optional (*3)
		" 3.5.2 Mounting Optional Components in the PCI Expansion Unit "	Optional
9	Connect the serial cable and LAN cables to the SPARC M12-2S. Attach the core to the power cord, and connect the power cord to the power supply unit.	" 5.1 Connecting Cables to the SPARC M12-2S "	Required

Table 1-2 Workflow for the 1BB Configuration (*continued*)

Step (Work Time (*1))	Work Description	Reference	
10	If there is a PCI expansion unit, connect the link cables and management cable to the PCI expansion unit. Attach the core to the power cord, and connect the power cord to the power supply unit.	"5.2 Connecting Cables to the PCI Expansion Unit"	Optional (*4)
Initial diagnosis (approx. 45 minutes)			
11	Connect the system management terminal to the SPARC M12-2S, and turn on the input power.	"6.1 Connecting the System Management Terminal" "6.2.2 Turning On the Input Power and Starting the XSCF"	Required
12	Log in to the XSCF of the SPARC M12-2S. Confirm the XCP firmware version, and set the altitude and time.	"6.3 Logging In to the XSCF" "6.4 Confirming the XCP Firmware Version" "6.5 Checking the Altitude Setting" "6.6 Setting the Time"	Required
13	Perform the initial diagnosis test on the hardware.	"6.7 Performing a Diagnosis Test"	Required
14	Check the status of mounted components.	"6.8 Checking the Component Status"	Required
Initial system settings (approx. 80 minutes)			
15	Set the password policy.	"7.1 Setting the Password Policy"	Required
16	Set a user account and password.	"7.2 Setting a User Account and Password"	Required
17	Configure the Telnet or SSH service.	"7.3 Configuring the Telnet/SSH Service"	Required
18	Configure the HTTPS service.	"7.4 Configuring the HTTPS Service"	Required
19	Configure the XSCF network.	"7.5 Configuring the XSCF Network"	Required
20	When duplicating memory, configure memory mirroring.	"7.6 Configuring Memory Mirroring"	Optional
21	Create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
22	Assign the SPARC M12-2S (physical system board (PSB)) to a physical partition.	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"	Required
23	Clear the difference between the system time and physical partition (PPAR) time.	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"	Required
24	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Required (*5)

Table 1-2 Workflow for the 1BB Configuration (*continued*)

Step (Work Time (*1))	Work Description	Reference	
25	Assign CPU core resources to the physical partition.	"7.11 Assigning CPU Core Resources"	Required
26	Confirm the start/stop of the physical partition and the connection of the console.	"7.12.1 Checking the Start and Stop of a Physical Partition (PPAR)"	Required
27	Either use the preinstalled Oracle Solaris as is or reinstall it. (Note)	"7.13 Installing Oracle Solaris"	Required
28	Save XSCF setting information and logical domain configuration information.	"7.14 Saving Configuration Information"	Required (*6)

*1 Average work time

*2 The time required for mounting optional components and installing the PCI expansion unit is not included.

*3 If the optional components (CPU module, memory, internal storage (HDD/SSD), and PCI card) are ordered together with the SPARC M12-2S, they are mounted in the SPARC M12-2S before shipment.

*4 In Japan, the link card is mounted in the SPARC M12-2S before shipment. Outside Japan, the supplied link card is shipped with the PCI expansion unit.

*5 One CD-ROM disk containing a CPU Activation certificate is provided with the system. The key for CPU Activation ordered together with the SPARC M12-2S is registered to the system before shipment.

*6 If you have started Oracle Solaris and changed the configuration of a logical domain, save the logical domain configuration information.

Note - Oracle Solaris has been preinstalled in the SPARC M12-2S. According to the purpose, either use the preinstalled Oracle Solaris as is or reinstall it. When reinstalling Oracle Solaris, check the latest information on the supported Oracle Solaris versions and SRU in the *Fujitsu SPARC M12 Product Notes*.

1.1.2 Direct Connections Between Chassis for Up to the 4BB Configuration

A configuration with direct connections between chassis directly connects each SPARC M12-2S with crossbar cables and XSCF cables (XSCF BB control cables and XSCF DUAL control cables). This configuration can be expanded to up to the 4BB configuration.

This section describes the workflow from installation of the SPARC M12-2S (up to the 4BB configuration) and the PCI expansion unit, which is an option mounted for the SPARC M12-2S, to the initial system settings.

The initial system settings are the settings implemented before system startup, and they include the XSCF setup, CPU Activation setting, and physical partition configuration. Skip the steps for the PCI expansion unit if it is not to be installed.

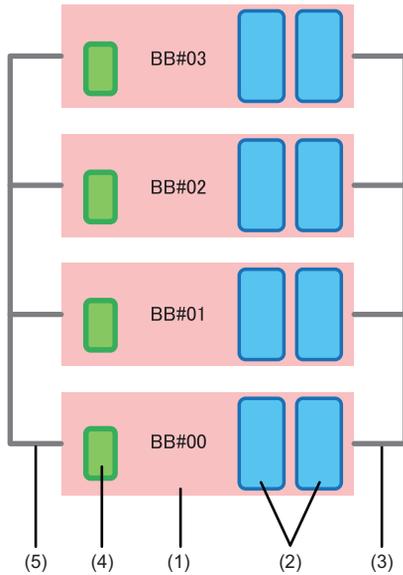
Note - The two types of crossbar cables are crossbar cables (optical) and crossbar cables (electrical). Each type is used exclusively. Cables simply described as "crossbar cables" refer to both crossbar cables (optical) and crossbar cables (electrical).

Note - Generally, there is no problem when the physical partition number for a physical partition being configured matches any of the existing SPARC M12-2S IDs (BB-IDs) in the system.

However, if you anticipate that the system may be reduced after operation starts, you need to consider the appropriate physical partition number for that case when determining the physical partition number. This is because any physical partition with a physical partition number that is the same as the BB-ID of the SPARC M12-2S to be removed must be stopped at the time of reduction.

Before configuring a physical partition, be sure to see "Chapter 4 Configuring a Physical Partition" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* and check the recommended method of configuring a physical partition.

Figure 1-1 Direct Connections Between Chassis



Number in Figure	Description
1	SPARC M12-2S
2	Crossbar unit
3	Crossbar cable
4	XSCF unit
5	XSCF BB control cable and XSCF DUAL control cable

The number shown after BB# is the ID (BB-ID) identifying the SPARC M12-2S. The BB-IDs of the SPARC M12-2S are set, starting at 00.

By clicking a reference in " " to display a section, you can see the details of the respective step. Italic font is used to indicate the name of a reference manual other than this manual.

Table 1-3 Workflow for Direct Connections Between Chassis (Up to the 4BB Configuration)

Step (Work Time (*1))	Work Description	Reference	
Installation work (approx. 160 minutes (*2))			
1	Check the latest information available in the <i>Fujitsu SPARC M12 Product Notes</i> .	<i>Fujitsu SPARC M12 Product Notes</i>	Required
2	Before installing the system, check the safety precautions, system specifications, and necessary conditions for installation.	"Chapter 2 Planning and Preparing for System Installation"	Required
3	Prepare the necessary tools/information for installation.	"3.1 Preparing the Necessary Tools/Information for Installation"	Required
4	Confirm the delivered components.	"3.2.1 Confirming the Delivered Components of the SPARC M12-2S"	Required
		"3.2.2 Confirming the Delivered Components of the PCI Expansion Unit"	Optional
5	Install the rack.	See the manual for each rack.	Optional
6	Mount the SPARC M12-2S in the rack.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Optional
7	If there is a PCI expansion unit, mount it in the rack.	"3.4.2 Mounting the PCI Expansion Unit in a Rack"	Optional
8	If there are optional components, mount them in the SPARC M12-2S or PCI expansion unit.	"3.5.1 Mounting Optional Components in the SPARC M12-2S"	Optional (*3)
		"3.5.2 Mounting Optional Components in the PCI Expansion Unit"	Optional
9	Set the IDs required for identifying the multiple units of SPARC M12-2S.	"4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S"	Required
10	Connect the XSCF BB control cable and the XSCF DUAL control cable to each SPARC M12-2S.	"4.2 Connecting XSCF Cables"	Required
11	Connect the crossbar cable to each SPARC M12-2S.	"4.3 Connecting Crossbar Cables"	Required
12	Connect the serial cable and LAN cables to each SPARC M12-2S. Attach the core to the power cord, and connect the power cord to the power supply unit.	"5.1 Connecting Cables to the SPARC M12-2S"	Required
13	If there is a PCI expansion unit, connect the link cables and management cable to the PCI expansion unit. Attach the core to the power cord, and connect the power cord to the power supply unit.	"5.2 Connecting Cables to the PCI Expansion Unit"	Optional (*4)

Table 1-3 Workflow for Direct Connections Between Chassis (Up to the 4BB Configuration) (*continued*)

Step (Work Time (*1))	Work Description	Reference	
14	Store the connected cables in the rack.	"5.4 Storing Cables"	Required
Initial diagnosis (approx. 45 minutes)			
15	Connect the system management terminal to the SPARC M12-2S that is the master XSCF.	"6.1 Connecting the System Management Terminal"	Required
16	Confirm that an identification ID (BB-ID) is set to each SPARC M12-2S.	"6.2.1 Checking the BB-ID Settings"	Required
17	Turn on the input power.	"6.2.2 Turning On the Input Power and Starting the XSCF"	Required
18	Log in to the master XSCF of the SPARC M12-2S. Confirm the XCP firmware version, and set the altitude and time.	"6.3 Logging In to the XSCF" "6.4 Confirming the XCP Firmware Version" "6.5 Checking the Altitude Setting" "6.6 Setting the Time"	Required
19	Perform the initial diagnosis test on the hardware.	"6.7 Performing a Diagnosis Test"	Required
20	Check the status of mounted components.	"6.8 Checking the Component Status"	Required
Initial system settings (approx. 100 minutes)			
21	Set the password policy.	"7.1 Setting the Password Policy"	Required
22	Set a user account and password.	"7.2 Setting a User Account and Password"	Required
23	Configure the Telnet or SSH service.	"7.3 Configuring the Telnet/SSH Service"	Required
24	Configure the HTTPS service.	"7.4 Configuring the HTTPS Service"	Required
25	Configure the XSCF network.	"7.5 Configuring the XSCF Network"	Required
26	When duplicating memory, configure memory mirroring.	"7.6 Configuring Memory Mirroring"	Optional
27	Create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
28	Assign the SPARC M12-2S (physical system board (PSB)) to a physical partition.	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"	Required
29	Clear the difference between the system time and physical partition (PPAR) time.	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"	Required
30	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Required (*5)

Table 1-3 Workflow for Direct Connections Between Chassis (Up to the 4BB Configuration) (continued)

Step (Work Time (*1))	Work Description	Reference	
31	Assign CPU resources to the physical partition.	"7.11 Assigning CPU Core Resources"	Required
32	Confirm the start/stop of the physical partition and the connection of the console.	"7.12.1 Checking the Start and Stop of a Physical Partition (PPAR)"	Required
33	Either use the preinstalled Oracle Solaris as is or reinstall it. (Note)	"7.13 Installing Oracle Solaris"	Required
34	Save XSCF setting information and logical domain configuration information.	"7.14 Saving Configuration Information"	Required (*6)

*1 Average work time for the 4BB configuration

*2 The time required for mounting optional components and installing the PCI expansion unit is not included.

*3 If the optional components (CPU module, memory, internal storage (HDD/SSD), and PCI card) are ordered together with the SPARC M12-2S, they are mounted in the SPARC M12-2S before shipment.

*4 In Japan, the link card is mounted in the SPARC M12-2S before shipment. Outside Japan, the supplied link card is shipped with the PCI expansion unit.

*5 One CD-ROM disk containing a CPU Activation certificate is provided with the system. The key for CPU Activation ordered together with the SPARC M12-2S is registered to the system before shipment.

*6 If you have started Oracle Solaris and changed the configuration of a logical domain, save the logical domain configuration information.

Note - Oracle Solaris has been preinstalled in the SPARC M12-2S. According to the purpose, either use the preinstalled Oracle Solaris as is or reinstall it.
To reinstall Oracle Solaris, install the latest Oracle VM Server for SPARC. For the latest information on the supported Oracle Solaris versions and SRU, see the *Fujitsu SPARC M12 Product Notes*.

1.1.3 Connections via a Crossbar Box (With an Expansion Rack)

The connections via a crossbar box are in a configuration connecting units of the SPARC M12-2S to each other through crossbar cables and XSCF cables (XSCF BB control cables and XSCF DUAL control cables). This can be expanded to up to the 16BB configuration.

The crossbar box is mounted in the expansion rack. In the expansion rack, a dedicated receptacle box for supplying power, crossbar cables, and XSCF cables are mounted in addition to the crossbar box.

This section describes a building block configuration using a crossbar box. Also described is the flow from installation of the optional PCI expansion unit, which will be connected to the SPARC M12-2S, to the initial setting of the system.

The initial system settings are the settings implemented before system startup, and they include the XSCF setup, CPU Activation setting, and physical partition configuration. Skip the steps for the PCI expansion unit if it is not to be installed.

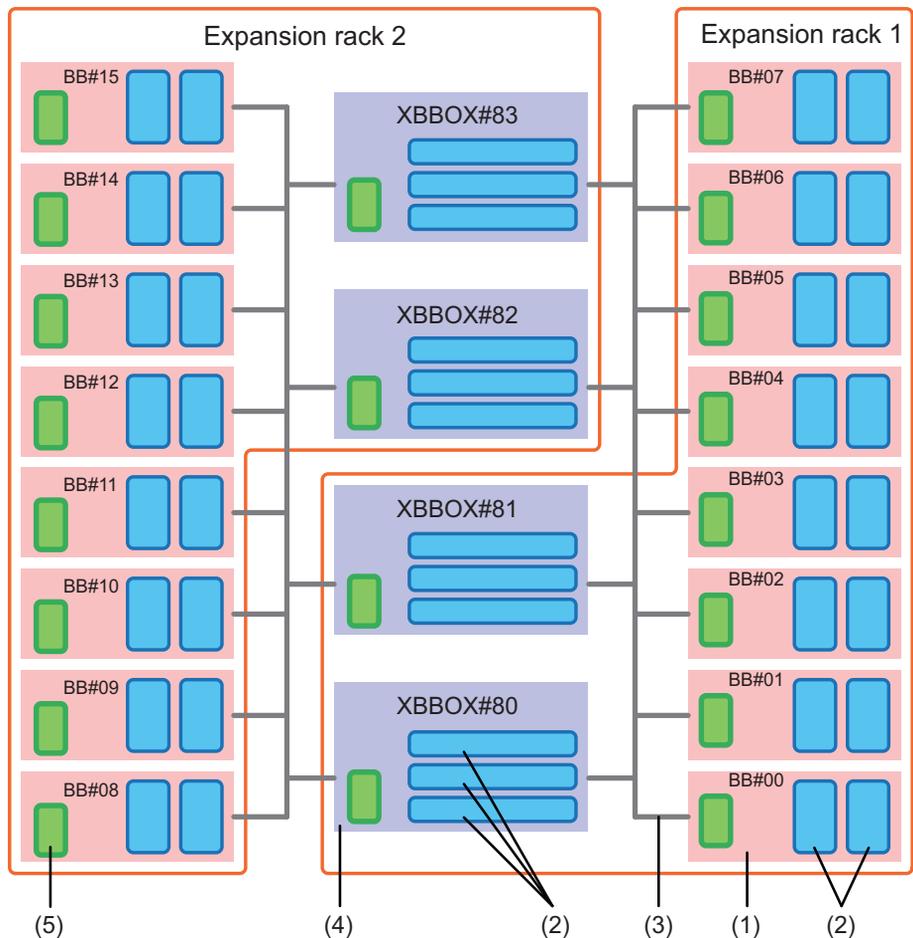
Note - The crossbar cables used for connections via a crossbar box are crossbar cables (optical).

Note - Generally, there is no problem when the physical partition number for a physical partition being configured matches any of the existing SPARC M12-2S IDs (BB-IDs) in the system.

However, if you anticipate that the system may be reduced after operation starts, you need to consider the appropriate physical partition number for that case when determining the physical partition number. This is because any physical partition with a physical partition number that is the same as the BB-ID of the SPARC M12-2S to be removed must be stopped at the time of reduction.

Before configuring a physical partition, be sure to see "Chapter 4 Configuring a Physical Partition" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* and check the recommended method of configuring a physical partition.

Figure 1-2 Case of Connections via a Crossbar Box



Number in Figure	Description
1	SPARC M12-2S
2	Crossbar unit
3	Crossbar cable, XSCF BB control cable, XSCF DUAL control cable
4	Crossbar box
5	XSCF unit

The number shown after BB# or XBOX# is the ID (BB-I). BB-IDs are set in order from 00 for the SPARC M12-2S and from 80 for a crossbar box.

By clicking a reference in " " to display a section, you can see the details of the respective step. Italic font is used to indicate the name of a reference manual other than this manual.

Table 1-4 Workflow for Connections via a Crossbar Box

Step (Work Time (*1))	Work Description	Reference	
Installation work (approx. 59 minutes/280 minutes (*2))			
1	Check the latest information available in the <i>Fujitsu SPARC M12 Product Notes</i> .	<i>Fujitsu SPARC M12 Product Notes</i>	Required
2	Before installing the system, check the safety precautions, system specifications, and necessary conditions for installation.	"Chapter 2 Planning and Preparing for System Installation"	Required
3	Prepare the necessary tools/information for installation.	"3.1 Preparing the Necessary Tools/Information for Installation"	Required
4	Confirm the delivered components.	"3.2.1 Confirming the Delivered Components of the SPARC M12-2S"	Required
		"3.2.3 Confirming the Delivered Components of the Expansion Rack"	Required
		"3.2.2 Confirming the Delivered Components of the PCI Expansion Unit"	Optional
5	Install the rack.	See the manual for each rack. "3.3.2 Fastening the Rack"	Required
6	Connect expansion rack 1 and expansion rack 2.	"3.3.3 Coupling Racks"	Required (*3)
7	Mount the PCI expansion unit in the rack.	"3.4.2 Mounting the PCI Expansion Unit in a Rack"	Optional
8	If there are optional components, mount them in the SPARC M12-2S or PCI expansion unit.	"3.5.1 Mounting Optional Components in the SPARC M12-2S"	Optional (*4)
		"3.5.2 Mounting Optional Components in the PCI Expansion Unit"	Optional (*4)

Table 1-4 Workflow for Connections via a Crossbar Box (continued)

Step (Work Time (*1))	Work Description	Reference	
9	Set up the IDs necessary for identifying each SPARC M12-2S chassis and crossbar box chassis.	"4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S"	Required
10	Connect the XSCF cable to the crossbar box mounted in expansion rack 1.	"4.2.2 XSCF Cable Connections via a Crossbar Box"	Required (*3)
11	Connect the crossbar cable to the chassis.	"4.3.2 Crossbar Cable Connections via a Crossbar Box"	Required
12	Connect serial cables and power cords to crossbar boxes.	"5.3 Connecting Cables to the Crossbar Box"	Required (*5)
13	Connect the GbE LAN cable and power cord to the SPARC M12-2S.	"5.1 Connecting Cables to the SPARC M12-2S"	Required (*5)
14	If there is a PCI expansion unit, connect the link cables and management cable to the PCI expansion unit. Attach the core to the power cord, and connect the power cord to the power supply unit.	"5.2 Connecting Cables to the PCI Expansion Unit"	Optional (*6)
Initial diagnosis (approx. 117 minutes/151 minutes)			
15	Connect the system management terminal to the crossbar box that works as the master XSCF.	"6.1 Connecting the System Management Terminal"	Required
16	Confirm that an identification ID (BB-ID) is set to each SPARC M12-2S chassis and crossbar box chassis.	"6.2.1 Checking the BB-ID Settings"	Required
17	Turn on the input power.	"6.2.2 Turning On the Input Power and Starting the XSCF"	Required
18	Log in to the master XSCF of the SPARC M12-2S. Confirm the XCP firmware version, and set the altitude and time.	"6.3 Logging In to the XSCF" "6.4 Confirming the XCP Firmware Version" "6.5 Checking the Altitude Setting" "6.6 Setting the Time"	Required
19	Perform the initial diagnosis test on the hardware.	"6.7 Performing a Diagnosis Test"	Required
20	Check the status of mounted components.	"6.8 Checking the Component Status"	Required
Initial system settings (approx. 130 minutes/200 minutes)			
21	Set the password policy.	"7.1 Setting the Password Policy"	Required
22	Set a user account and password.	"7.2 Setting a User Account and Password"	Required
23	Configure the telnet or SSH service.	"7.3 Configuring the Telnet/SSH Service"	Required

Table 1-4 Workflow for Connections via a Crossbar Box (continued)

Step (Work Time (*1))	Work Description	Reference	
24	Configure the HTTPS service.	"7.4 Configuring the HTTPS Service"	Required
25	Configure the XSCF network.	"7.5 Configuring the XSCF Network"	Required
26	When duplicating memory, configure memory mirroring.	"7.6 Configuring Memory Mirroring"	Optional
27	Create a PPAR configuration list (PCL).	"7.7 Creating a PPAR Configuration List"	Required
28	Assign the building block (physical system board (PSB)) to the physical partition.	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"	Required
29	Clear the difference between the system time and physical partition (PPAR) time.	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"	Required
30	Add a CPU Activation key to the system.	"7.10 Registering a CPU Activation Key"	Required (*7)
31	Assign CPU resources to the physical partition.	"7.11 Assigning CPU Core Resources"	Required
32	Confirm the start/stop of the physical partition and the connection of the console.	"7.12.1 Checking the Start and Stop of a Physical Partition (PPAR)"	Required
33	Either use the preinstalled Oracle Solaris as is or reinstall it. (Note)	"7.13 Installing Oracle Solaris"	Required
34	Save XSCF setting information and logical domain configuration information.	"7.14 Saving Configuration Information"	Required (*8)

*1 Average work time for the 8BB configuration/16BB configuration. The work time is shown in the order of 8BB configuration and 16BB configuration.

*2 The time required for mounting optional components and installing the PCI expansion unit is not included.

*3 Necessary only when expansion rack 2 is used.

*4 If the optional components and the chassis are ordered together, the components are mounted in the chassis before shipment. If the optional components and the PCI expansion unit are ordered together, the components are mounted in the PCI expansion unit before shipment.

*5 The power cord between each chassis and receptacle box (PDU) is generally connected before shipment.

*6 The link card is mounted in the SPARC M12-2S before shipment.

*7 One CD-ROM disk containing a CPU Activation certificate is provided with the system. Or, the CPU Activation key has been registered to the system before shipment.

*8 If you have started Oracle Solaris and changed the configuration of a logical domain, save the logical domain configuration information.

Note - Oracle Solaris has been preinstalled in the SPARC M12-2S. According to the purpose, either use the preinstalled Oracle Solaris as is or reinstall it.
To reinstall Oracle Solaris, install the latest Oracle VM Server for SPARC. For the latest information on the supported Oracle Solaris versions and SRU, see the *Fujitsu SPARC M12 Product Notes*.

1.2 Workflow at Expansion With the PCI Expansion Unit

The PCI expansion unit is a 2U chassis with 11 PCIe slots, and it can connect to the SPARC M12-2S. At expansion with the PCI expansion units, mount a link card in the SPARC M12-2S.

Table 1-5 Maximum Number of SPARC M12-2S Link Cards That Can Be Mounted

Maximum Number of Link Cards That Can be Mounted (Locations Where Link Cards Can be Mounted)
1 CPU: 4 (slots #1, #3, #5, and #7)
2 CPUs: 8 (slots #0, #1, #2, #3, #4, #5, #6, and #7)

Note - The maximum number varies depending on the configuration and the firmware/OS versions. For details on the link card mounting rules, see "Chapter 3 PCI Card Mounting Rules for the SPARC M12-2S" in the *Fujitsu SPARC M12 PCI Card Installation Guide*.

Note - Before expansion with the PCI expansion unit, check the logical domain configuration. If the logical domain configuration is other than the factory default, save the logical domain configuration to the XSCF and the information of the logical domain configuration to an XML file. For a detailed procedure, see "1.7.3 How to Save/Restore the Logical Domain Configuration Information and the OpenBoot PROM Environment Variable" in the *PCI Expansion Unit for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Service Manual*.

This section describes the workflow from the installation of the PCI expansion unit to the status check of PCI expansion unit components while the system is stopped.

By clicking a reference enclosed in " " to display a section, you can see the details of the respective step. Italic font is used to indicate the name of a reference manual other than this manual.

Table 1-6 Workflow at Expansion With the PCI Expansion Unit

Step (Work Time (*1))	Work Description	Reference	
Installation work (approx. 38 minutes (*2))			
1	Check the latest information available in the <i>Fujitsu SPARC M12 Product Notes</i> .	<i>Fujitsu SPARC M12 Product Notes</i>	Required
2	Before installing the system, check the safety precautions, system specifications, and necessary conditions for installation.	"Chapter 2 Planning and Preparing for System Installation"	Required
3	Prepare the necessary tools/information for installation.	"3.1 Preparing the Necessary Tools/Information for Installation"	Required

Table 1-6 Workflow at Expansion With the PCI Expansion Unit (*continued*)

Step (Work Time (*1))	Work Description	Reference	
4	Confirm the delivered components.	"3.2.2 Confirming the Delivered Components of the PCI Expansion Unit"	Required
5	Install the rack.	See the manual for each rack.	Required (*3)
6	Mount the PCI expansion unit in the rack.	"3.4.2 Mounting the PCI Expansion Unit in a Rack"	Required
7	Mount the link card in the SPARC M12-2S.	"12.4 Installing a PCIe Card" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
8	If there is a PCIe card, mount it in the PCI expansion unit.	"3.5.2 Mounting Optional Components in the PCI Expansion Unit" "Chapter 3 PCI Card Mounting Rules for the SPARC M12-2S" in the <i>Fujitsu SPARC M12 PCI Card Installation Guide</i>	Optional (*4)
9	Connect the link cables and management cable to the PCI expansion unit. Attach the core to the power cord, and connect the power cord to the power supply unit.	"5.2 Connecting Cables to the PCI Expansion Unit"	Required
Initial diagnosis (approx. 45 minutes)			
10	Connect the system management terminal to the SPARC M12-2S that is the master XSCF.	"6.1 Connecting the System Management Terminal"	Required
11	Turn on the input power.	"6.2.2 Turning On the Input Power and Starting the XSCF"	Required
12	Log in to the master XSCF.	"6.3 Logging In to the XSCF"	Required
13	Perform the initial diagnosis test on the hardware.	"6.7 Performing a Diagnosis Test"	Required
14	Check the status of mounted components.	"6.8 Checking the Component Status"	Required

*1 Average work time

*2 The time required for mounting PCIe cards is not included.

*3 This is not necessary if the PCI expansion unit is installed in an empty space in the installed rack.

*4 PCIe cards ordered together with the PCI expansion unit are mounted in the PCI expansion unit before shipment.

Chapter 2

Planning and Preparing for System Installation

This chapter describes what should be checked when planning the installation of the SPARC M12-2S and the PCI expansion unit. Before installation, you need to understand the system configuration and obtain all the prerequisite condition information for installation.

- [Safety Precautions](#)
- [Items Requiring Confirmation Before Installation](#)
- [Confirming the Physical Specifications of the System](#)
- [Confirming Rack Specifications](#)
- [Checking Environmental Conditions](#)
- [Checking Acoustic Noise Levels](#)
- [Checking Cooling Conditions](#)
- [Checking the Power Input Type](#)
- [Preparing Power Supply Facilities](#)
- [Checking External Interface Port Specifications](#)
- [Checking the Functions of the Operation Panel](#)

2.1 Safety Precautions

This section describes precautions regarding installation of the SPARC M12-2S and the PCI expansion unit. Be sure to follow the precautions below when performing installation work. Failure to do so may lead to damage to the device or a malfunction.

- Follow all the stated precautions, warnings, and instructions for the SPARC M12-2S and PCI expansion unit.
- The SPARC M12-2S and the PCI expansion unit is not suitable for use in locations where children are likely to be present. Therefore, care should be taken to place the device in an environment away from children.
- Do not insert any foreign object into the openings of the SPARC M12-2S and PCI expansion unit. Any object that touches a high-voltage part or causes a component

to short circuit may lead to fire or electric shock.

- Contact a service engineer for inspection of the SPARC M12-2S and the PCI expansion unit.

Safety precautions when working with electricity

- Confirm that the voltage and frequency of your input power supply match the electric rating described on the system name plate label affixed on the server.
- Make sure to wear a wrist strap when handling the internal storage (HDD/SSD), CPU memory unit (upper/lower unit), memory, or other printed circuit boards.
- Make sure to use grounded power outlets.
- Do not make mechanical or electrical modifications to the chassis. We do not take responsibility for regulatory compliance of a modified chassis.
- Do not disconnect a power cord from the SPARC M12-2S or PCI expansion unit while it is still powered on.
- This product is also designed for an IT power system with the phase-to-phase voltage 230 V. (For use in Norway)

Safety precautions regarding racks

- The rack must be secured to the floor, ceiling, or nearest frame.
- The quakeresistant options kit may be supplied with the rack. The use of the quakeresistant options kit prevents the rack from toppling over when the chassis is pulled out from the rack for installation or maintenance.
- In the following cases, a safety evaluation must be performed by a service engineer before installation or maintenance.
 - If the quakeresistant options kit is not supplied and the rack is not secured to the floor with bolts, a service engineer confirms the safety of the rack, such as by verifying that it does not topple over when the SPARC M12-2S and the PCI expansion unit are pulled out from the rack.
 - If the rack is mounted on a raised floor, the service engineer confirms that the floor can withstand the load when the chassis is pulled out from the rack. Secure the rack to the concrete floor beneath the raised floor by using the original mounting kit that serves this purpose.
- If multiple units of the SPARC M12-2S and the PCI expansion unit are mounted in the rack, perform maintenance on one unit at a time.
- If the SPARC M12-2S is mounted and used in a general rack, remove all of the SPARC M12-2S(s) from the rack when relocating the rack within the room or building or to another building depending on the customer's situation, or when changing the system configuration and changing the installation location due to expansion or reduction.
After moving and securing the general rack to the new location, mount each SPARC M12-2S.

For a system using an expansion rack, when moving the rack, you do not need to remove any SPARC M12-2S.

Safety precautions regarding installation work

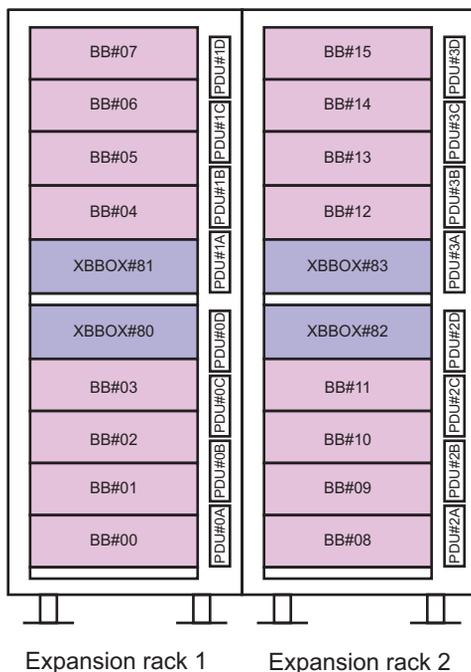
- With this chassis installed in a closed or multi-unit rack assembly, the ambient temperature inside the rack operating environment may be greater than the ambient room temperature. Therefore, consideration must be given to installing the chassis in an environment compatible with the manufacturer's maximum rated ambient temperature.
 - Consideration of air-conditioning adjustments, such as air circulation, is needed to prevent the ambient temperature inside the rack from exceeding the maximum ambient operating temperature of this chassis.
 - Maximum ambient operating temperature of this chassis: 35°C
- The installation of the chassis in a rack should allow sufficient airflow for the chassis to operate safely.
 - This chassis has ventilation slits at the front and rear of the chassis.
 - To prevent overheating, do not cover or close these ventilation slits.
- The mounting of the chassis in the rack should not create any hazardous condition due to uneven mechanical loading. To keep the entire rack stable, secure the rack to the wall or floor by suitable means.
 - Be careful not to injure yourself or others when installing the chassis in the rack.
 - Do not install this chassis in the rack if it may make the entire rack unstable.
 - Weight of this chassis in the maximum configuration:
 - Model SP-2HBB (SPARC M12-2S): 60 kg
 - Model SP-PCI-BOX (SPARC PCI-BOX): 22 kg
- If the chassis is supplied power from a power strip or the service outlet of another chassis, it may overload the power strip or the power cord of the other chassis.
 - Confirm that the power strip or the power cord of the service outlet exceeds the combined ratings of all the equipment to which it supplies power.
 - Electrical ratings of this chassis:
 - Model SP-2HBB (SPARC M12-2S): 200-240 VAC, 17.6-14.7 A, 50/60 Hz, single phase (8.8-7.4 A per input, maximum 4 inputs)
 - Model SP-PCI-BOX (SPARC PCI-BOX): 100-120/200-240 VAC, 5.0-4.2/2.5-2.1 A, 50/60 Hz, single phase (maximum 2 inputs)
- Be sure to securely ground all the equipment mounted in the rack. Pay particular attention when the power supply is not directly connected from the distribution panel (e.g., when power strips are used).



Caution - If all the power cords of this chassis are connected to one power strip, a high leakage current may flow through the grounding wire of the power strip. Be sure to connect the grounding wire before connecting the power supply. If the power strip is not directly connected to a branch circuit, a power strip with a locking plug must be used.

- Install this equipment such that it is near a wall and a power outlet is easily accessible.

Figure 2-1 Rack Configuration (in the Case of 16BB)



2.2 Items Requiring Confirmation Before Installation

This section describes the items that you need to confirm before installing the SPARC M12-2S. Before starting installation work, confirm that the requirements in [Table 2-1](#) have been met.

Table 2-1 List of Items Requiring Confirmation Before Installation

Check Item		Check Column
System configuration	- Has the system configuration been determined?	[]
	- Has the required rack space been confirmed?	[]
	- Has the number of racks been decided?	[]

Table 2-1 List of Items Requiring Confirmation Before Installation (*continued*)

Check Item		Check Column
Training	- Have the system administrator and operators attended the required training courses?	[]
Installation location	- Has the system installation location been determined?	[]
	- Does the placement of each chassis meet the service area requirements?	[]
	- Have the chassis been placed so that their air intakes do not take in exhaust from other equipment?	[]
	- Have the rack installation requirements been met?	[]
Access route	- Has the access route for the rack been secured?	[]
Environmental conditions	- Does the installation location meet the temperature and humidity conditions?	[]
	- Can the environmental conditions at the installation location be adequately maintained and controlled?	[]
	- Have security measures been established for the installation location?	[]
	- Does the installation location have sufficient fire extinguishing equipment?	[]
Power supply facilities	- Do you know the voltage available for the racks where the SPARC M12-2S, the PCI expansion unit, and peripherals will be mounted?	[]
	- Are the power supply facilities sufficient for the SPARC M12-2S, the PCI expansion unit, monitors, and peripherals?	[]
	- Are the power supply facilities within an appropriate distance from the racks?	[]
Network specifications	- Do you have the necessary information for network connections?	[]
CPU Activation	- Has the amount of resources to be used during initial installation been determined?	[]
	- Have the required CPU Activations been ordered?	[]

2.3

Confirming the Physical Specifications of the System

This section describes the physical specifications of the system that require confirmation before installation. Confirm that the installation location meets these requirements.

2.3.1 Size and Weight

Table 2-2 lists the sizes and weights of the SPARC M12-2S and PCI expansion unit.

Table 2-2 Physical Specifications of the SPARC M12-2S and PCI Expansion Unit

Item	SPARC M12-2S	Expansion Rack	PCI Expansion Unit
Height	175 mm (6.9 in.) (4U)	2000 mm (78.7 in.)	86 mm (3.4 in.) (2U)
Width	440 mm (17.3 in.)	700 mm (27.6 in.)	440 mm (17.3 in.)
Depth	800 mm (31.5 in.)	1050 mm (41.3 in.)	750 mm (29.5 in.)
Weight	60 kg	780 kg	22 kg

2.4 Confirming Rack Specifications

Use a rack that meets the specified conditions for using the SPARC M12-2S with the 1BB configuration or using the SPARC M12-2S with direct connections between chassis.

In the case where the SPARC M12-2S is used with connections via a crossbar box, you need to order the expansion rack in which the crossbar box is to be mounted. There are two types of expansion racks depending upon the expandability, namely expansion rack 1 and expansion rack 2. You need to order expansion rack 1 for a configuration of up to 8 units, and further add expansion rack 2 for a configuration of 9 to 16 units.

This section describes the items that must be confirmed to use a rack

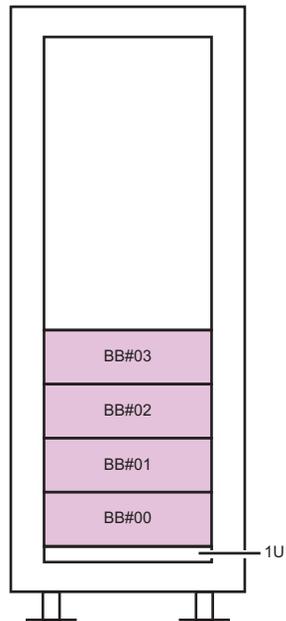
2.4.1 Mounting Conditions for General Racks

1BB configuration/4BB configuration with direct connections between chassis

The SPARC M12-2S and the PCI expansion unit are designed to be mounted in a 19 inch rack.

If the SPARC M12-2S units are connected by crossbar cables, mount the units side by side in a rack with no gap between them.

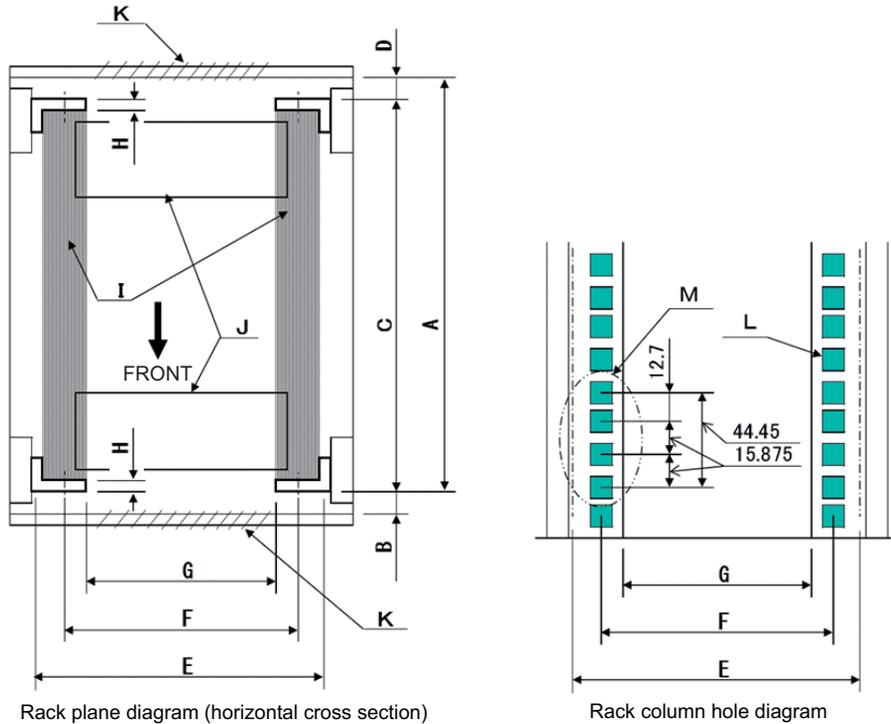
Figure 2-2 Chassis Mounting Locations (Corresponding to BB-IDs) for the 4BB Configuration



Note - Since, during SPARC M12-2S maintenance, the cable support at the rear of the chassis moves underneath the chassis, do not mount anything on the lowest shelf (1U) of the rack.

For mounting in a third-party rack, it is the customer's responsibility to confirm that the rack specifications match the specifications and requirements for the SPARC M12-2S (see [Figure 2-3](#) and [Table 2-3](#)).

Figure 2-3 Dimensional Drawings for Third-Party Rack Checks



Note - The dimensions shown in the conditions do not include any protrusions.

Table 2-3 Third-Party Rack Checklist

Description	Condition	Letter in Figure
Rack type/Compliance standards	Equipment rack/EIA standard-compliant	--
Dimension between rear door (inside) and front column	SPARC M12-2S: At least 908 mm (35.7 in.) PCI expansion unit: At least 848 mm (33.4 in.)	A
Dimension between front door (inside) and front column	SPARC M12-2S: At least 32 mm (1.3 in.) PCI expansion unit: At least 24 mm (0.9 in.)	B
Dimension between front and rear columns	Within adjustment range of rack mount kit Adjustment range of mount kit for each server SPARC M12-2S: 630 mm (24.8 in.) to 840 mm (33.1 in.) PCI expansion unit: 630 mm (24.8 in.) to 840 mm (33.1 in.)	C

Table 2-3 Third-Party Rack Checklist (*continued*)

Description	Condition	Letter in Figure
Dimension between rear door (inside) and rear column	SPARC M12-2S: At least 158 mm (6.2 in.) PCI expansion unit: At least 158 mm (6.2 in.)	D
Front panel mounting space of chassis	At least 483 mm (19.0 in.)	E
Distance between left and right chassis attachment holes (common to front and rear columns)	465 mm (18.3 in.)	F
Distance between left and right columns (common to front and rear columns)	At least 450 mm (17.7 in.)	G
Column thickness	2 mm (0.08 in.) to 2.5 mm (0.1 in.)	H
Structures other than columns	Rack has no structures between front and rear columns	I
Cable hatch	Rack has hatch on bottom surface, rear door, or elsewhere	J
Area of door vent openings	Front door: At least 73% of door area Rear door: At least 73% of door area	K
Size of attachment holes (common to front and rear columns)	Square hole with sides longer than 9.2 mm (0.36 in.) and up to 9.8 mm (0.38 in.) (*1), or M6 screw hole	L
Vertical pitch of chassis attachment holes (common to front and rear columns)	EIA standards, universal pitch	M
Door opening angle	Door opens to 130°	--
Strength	Rack has necessary strength/load capacity for mounting chassis	--
Grounding	Rack and units can be grounded	--
Toppling prevention measures	Rack can be prevented from toppling over	--
Earthquake resistance measures	Earthquake resistance measures can be implemented for rack	--

*1 If the SPARC M12-2S or PCI expansion unit has square holes with sides of length 9.0 mm (0.35 in.) to 9.2 mm (0.36 in.), a separate rack mount kit must be ordered.

- **Mounting on the lowest shelf of the rack**

For the SPARC M12-2S, the cable support at the rear of the chassis can move underneath the chassis during maintenance, so do not mount anything on the lowest shelf (1U) of the rack. (See [Figure 2-2](#))

- **Relocation**

Depending on the customer's situation, if the SPARC M12-2S is mounted and used in a general rack, remove every SPARC M12-2S from the rack at the following

time. Remove all of them when relocating the rack within the room or building or to another building, or when changing the system configuration and changing the installation location due to expansion or reduction.

After moving and securing the general rack to the new location, mount each SPARC M12-2S.

- **Other conditions**

In addition to structural conditions, the following condition must be taken into consideration.

- Install the rack while taking into consideration the cooling inside the chassis so that the temperature of the products mounted in the rack meets the temperature conditions. For details, see "[2.5 Checking Environmental Conditions.](#)"

Particularly, make sure that exhaust from the chassis does not re-enter the chassis through the air intakes. This requires measures such as covering the front and rear of empty spaces inside the rack.

2.4.2 Installation Area for a General Rack

Service areas

Service area requirements vary depending on the rack used.

When mounting the SPARC M12-2S and the PCI expansion unit in the designated rack, see the examples of service areas in [Figure 2-4](#) and [Figure 2-5](#). The rack width depends on the rack used.

When using a rack other than the designated rack, see the manual for the rack used.

Figure 2-4 Example of SPARC M12-2S Service Areas (Top View)

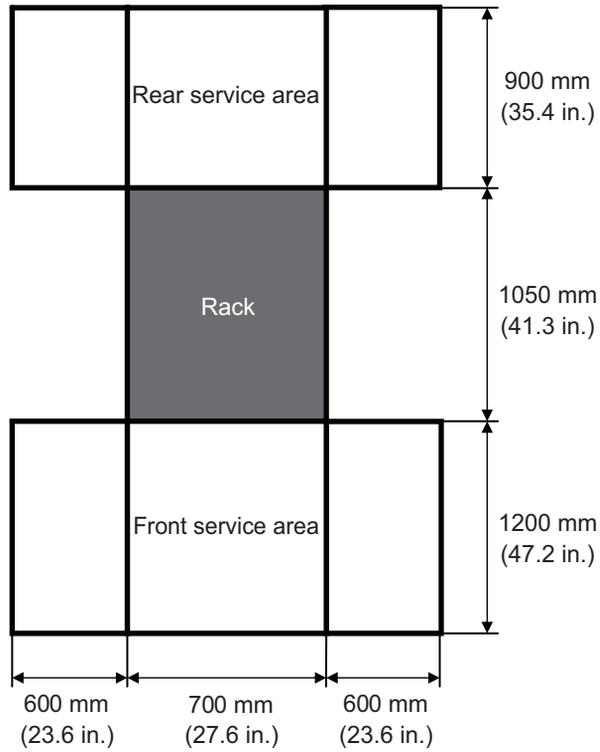
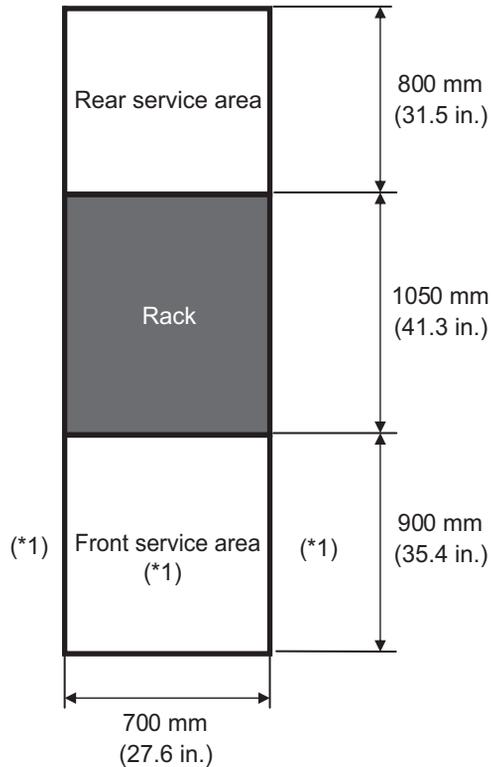


Figure 2-5 Example of PCI Expansion Unit Service Areas (Top View)



*1 To mount the PCI expansion unit in the rack, an area with a depth of 1,200 mm (47.2 in.) is required in front of the rack, and areas with a width of 600 mm (23.6 in.) are required on both the left and right sides of the front service area. If there is a possibility that the PCI expansion unit will be added later, secure an area with a depth of 1,200 mm (47.2 in.) in front of the rack and areas with a width of 600 mm (23.6 in.) on both the left and right sides of the front service area.

2.4.3 Mounting Conditions for Expansion Rack

Building block configuration (connections via a crossbar box)

The dedicated power distribution unit (PDU), crossbar box (XBBOX), and crossbar cable are mounted in the dedicated rack (expansion rack) for shipment.

Figure 2-6 indicates the mounting position of the chassis.

Figure 2-6 Front View of Chassis Mounting Locations (Corresponding to BB-IDs) for the 16BB Configuration

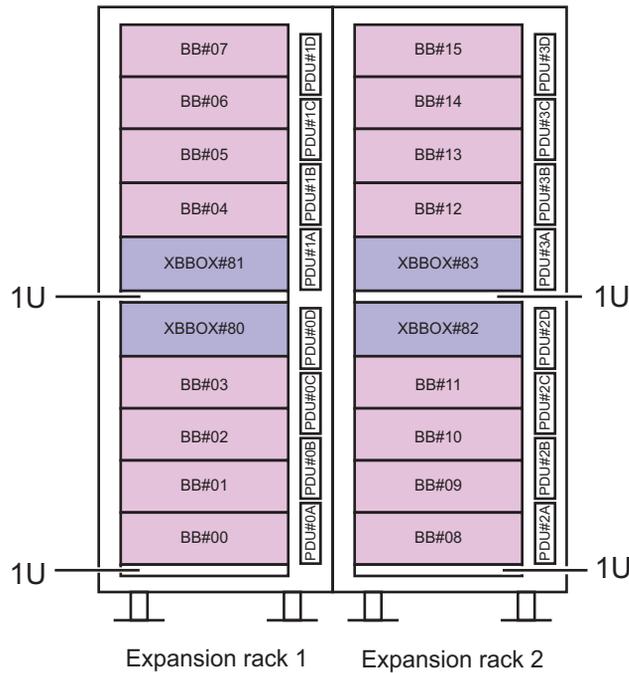


Figure 2-7 Cage Nut Locations

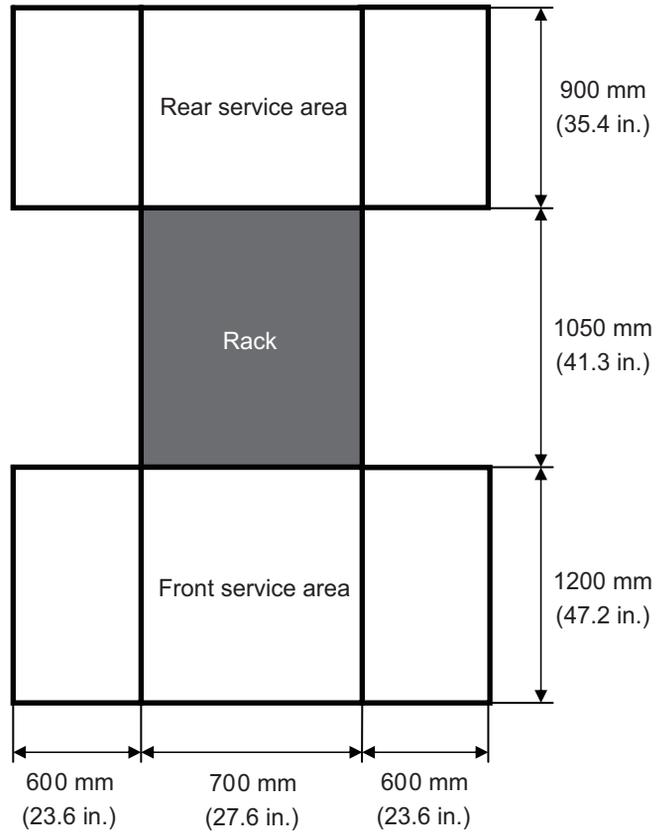
U	Expansion Rack 1	Expansion Rack 2	Cage Nut Location	
			Front Supporting Column	Rear Supporting Column
42	M12-2S (#07)	M12-2S (#15)	41U top	40U center
41			40U bottom	39U center
40			39U center	
39				
38	M12-2S (#06)	M12-2S (#14)	37U top	36U center
37			36U bottom	35U center
36			35U center	
35				
34	M12-2S (#05)	M12-2S (#13)	33U top	32U center
33			32U bottom	31U center
32			31U center	
31				
30	M12-2S (#04)	M12-2S (#12)	29U top	28U center
29			28U bottom	27U center
28			27U center	
27				
26	XB-B0X (#81)	XB-B0X (#83)	25U top	24U center
25			24U bottom	23U center
24			23U center	
23				
22	Blank plate	Blank plate	--	--
21	XB-B0X (#80)	XB-B0X (#82)	20U top	19U center
20			19U bottom	18U center
19			18U center	
18				
17	M12-2S (#03)	M12-2S (#11)	16U top	15U center
16			15U bottom	14U center
15			14U center	
14				
13	M12-2S (#02)	M12-2S (#10)	12U top	11U center
12			11U bottom	10U center
11			10U center	
10				
9	M12-2S (#01)	M12-2S (#09)	8U top	7U center
8			7U bottom	6U center
7			6U center	
6				
5	M12-2S (#00)	M12-2S (#08)	4U top	3U center
4			3U bottom	2U center
3			2U center	
2				
1	Blank plate	Blank plate	--	--

The numbers shown in parentheses are BB-IDs.

2.4.4 Installation Area for Expansion Rack

Confirm that the service areas (areas for maintenance) shown by [Figure 2-8](#) are assured.

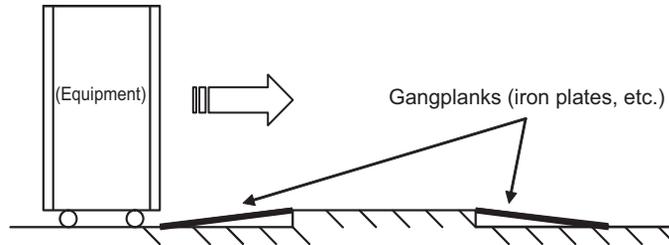
Figure 2-8 Example of Expansion Rack Service Areas (Top View)



*1 Simplified packaging means covered only by a plastic sheet, etc. and not packed in a crate or cardboard.

- The expansion rack is shipped with a SPARC M12-2S and crossbar box mounted in the rack. When it is difficult to install the packaged product, open the package as necessary and install it.
- When there are steps in the access route, gangplanks may be required.

Figure 2-10 Example of Using Gangplanks



- Since the maximum weight of the expansion rack is about 960 kg with packaging and 780 kg without packaging, confirm beforehand that there is no problem with the access route.
Example: Floor condition of access route
Confirm that the floor has sufficient load bearing, and that the casters do not sink into the floor nor get caught on the floor.
- When installing this device on an upper or lower floor, confirm beforehand that an elevator is available and has sufficient load bearing for the weight of the device.
- When installing this device, push on the lower half of the rack to prevent toppling. Depending on the devices mounted in this rack, the center of gravity may be high. Also, do not to push from the side. That may cause the rack to topple over.
- Since pushing the air inlet portion near the center of the front door may cause deformation of the door, push at the corner of the door.
- Carrying the main product mounted in the rack from a cold location to a warm room will cause condensation inside the product.
Control the room temperature so that the temperature rise per hour does not exceed 15°C (59°F) to prevent condensation. Concerning the development of condensation, see the following table.

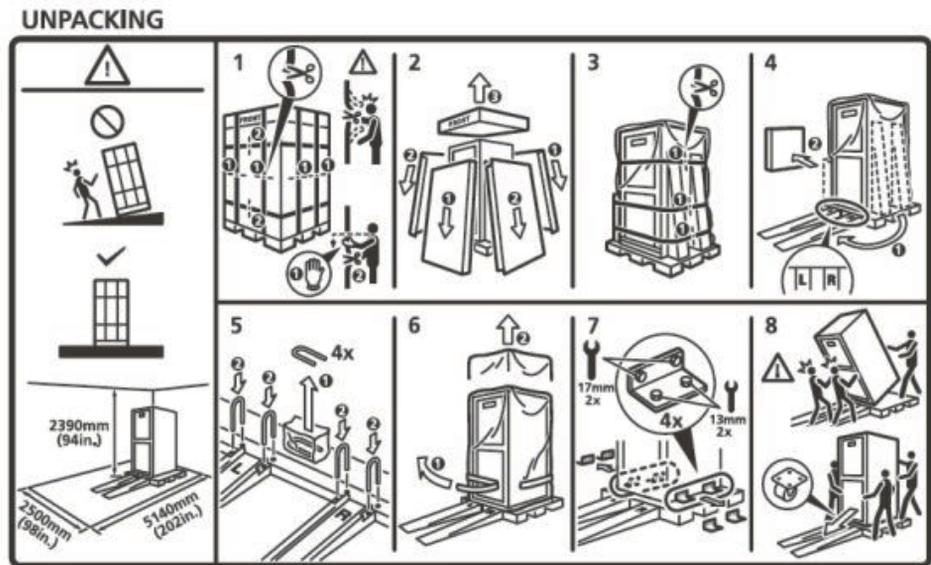
Table 2-4 Unit Temperature and Condensation Development

	Room Temperature °C (°F)							Remarks	
	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)		
Relative humidity (%)	20	-7	-5	-3	1	5	9	13	Example: When the room temperature is 25°C (77°F) and the temperature of the unit is 17°C (63°F) or lower, condensation will develop.
	40	-3	2	7	11	16	20	24	
	60	3	8	13	17	22	26	31	
	80	7	12	17	22	26	31	-	
	90	9	13	19	24	29	34	-	

- When using general packaging, pay attention when opening the packaging. Follow the next procedure to open the rack packaging. This work is unnecessary for simplified packaging.

 - a. Place the packaged rack at flat location. The necessary service area is displayed on the packaging box. Refer to the diagram and select a service area.
 - b. Cut the PP bands fastening the packaging materials with scissors etc. When cutting PP bands, beware that the band can snap back and cause injury. Make sure to work at a height lower than your head, and hold down a PP band with one hand when cutting.
 - c. Remove the packaging materials.
 - d. Fasten the ramp at the specified location. The fastening location is displayed on the packaging box.
Secure the ramps firmly with the four supplied U-shaped brackets. When the fastening is not sufficient, the rack may become unstable when the rack is removed from the palette, which is dangerous.
 - e. Remove the plastic bag around the rack.
 - f. Remove four brackets fastening the rack and palette using a spanner or box wrench (size 13 or 17).
 - g. Dismount the rack from the palette. Perform this work with three or more persons. Do not stand in front of the moving direction of the rack. It is dangerous when the rack is unstable.

Figure 2-11 Opening Procedure for General Packaging



2.5 Checking Environmental Conditions

This section describes the environmental conditions for the SPARC M12-2S and PCI expansion unit. The server can be installed at locations that meet the environmental conditions listed in [Table 2-5](#).

Note -When designing environmental control systems such as air conditioning facilities, confirm that the air taken in by the SPARC M12-2S and the PCI expansion unit meets the requirements specified in this section.

The environmental conditions described in [Table 2-5](#) reflect test results from the SPARC M12-2S and PCI expansion unit. The optimal conditions represent the recommended environment in operation. The component failure rate may increase substantially when the system operates for prolonged periods in an environment that is at or close to the operation-time (in operation) limit values, or when the system is installed in an environment that is at or close to the non-operation-time (not in operation) limit values. To minimize the occurrence of system downtime due to a component failure, set the temperature and humidity within the optimal condition range.

The following conditions must be met to prevent overheating:

- Neither warm air nor hot air blows directly on the front of the rack
- Neither warm air nor hot air blows directly on the front panels of the SPARC

M12-2S and PCI expansion unit

Table 2-5 Environmental Conditions

Item	In Operation	Not in Operation	Optimal Condition
Ambient temperature	5°C to 35°C (41°F to 95°F)	- When unpacked 0°C to 50°C (32°F to 122°F) - When still packed -25°C to 60°C (-4°F to 140°F)	21°C to 23°C (70°F to 74°F)
Relative humidity (*1)	- When installed in server room 20% RH to 80% RH - When installed in office (*2) 20% RH to 80% RH	- When installed in server room 8% RH to 80% RH - When installed in office (*2) 8% RH to 80% RH	45% RH or higher but less than 50% RH
Maximum wet-bulb temperature	- When installed in server room 26°C (78.8°F) - When installed in office (*2) 29°C (84.2°F)	- When installed in server room 27°C (80.6°F) - When installed in office (*2) 29°C (84.2°F)	
Altitude limit (*3)	0 m to 3,000 m (0 ft. to 10,000 ft.)	0 m to 12,000 m (0 ft. to 40,000 ft.)	
Temperature conditions	- When installed at 0 m to 500 m (0 ft. to 1,640 ft.) 5°C to 35°C (41°F to 95°F) - When installed at 500 m to 1,000 m (1,644 ft. to 3,281 ft.) 5°C to 33°C (41°F to 91.4°F) - When installed at 1,000 m to 1,500 m (3,284 ft. to 4,921 ft.) 5°C to 31°C (41°F to 87.8°F) - When installed at 1,500 m to 3,000 m (4,925 ft. to 9,843 ft.) 5°C to 29°C (41°F to 84.2°F)		

*1 No condensation is assumed regardless of temperature and humidity conditions.

*2 Only the PCI expansion unit can be installed in an office. Install the SPARC M12-2S in a dedicated room such as a server room.

*3 All the altitudes indicate heights above sea level.

2.5.1 Ambient Temperature

To maintain system reliability and operator comfort, the optimal ambient temperature is 21°C to 23°C (70°F to 74°F). This temperature range makes it easy to maintain the relative humidity. While the system is operating within this range, even a failure of the air conditioning facilities does not cause it to suddenly stop.

2.5.2 Ambient Relative Humidity

To process data safely, the optimal ambient relative humidity is 45% or higher but less than 50%. The benefits of operating in the optimum range are as follows.

- The system can be protected from corrosion issues caused by high humidity.
- Even a failure of the air conditioning facilities does not cause the system to suddenly stop.
- Failures and malfunctions caused by electrostatic discharge can be prevented.

A relative humidity that is too low is conducive to generating a static electricity discharge. The resulting intermittent interference may cause a failure or temporary malfunction.

Electrostatic discharge is more likely to occur and harder to eliminate at locations with a relative humidity below 35%. Electrostatic discharge becomes a critical issue when the relative humidity falls below 30%. The set optimal relative humidity range is stricter than the guidelines applied to indoor locations with more relaxed environmental conditions such as general office environments. However, if the server is installed in a server room, this condition is not difficult to meet because server rooms utilize highly efficient moisture-proof materials and have fewer ventilation cycles.

2.5.3 Contaminant Conditions

[Table 2-6](#) lists the acceptable reference values for contaminants with regard to the SPARC M12-2S.

Table 2-6 Acceptable Reference Values for Contaminants

Contaminant	Acceptable Reference Value
Hydrogen sulfide (H ₂ S)	7.1 ppb or less
Sulfurous acid gas (sulfur oxide) (SO ₂)	37 ppb or less
Hydrogen chloride (HCl)	6.6 ppb or less
Chlorine (Cl ₂)	3.4 ppb or less
Hydrogen fluoride (HF)	3.6 ppb or less
Nitrogen dioxide (nitrogen oxide) (NO ₂)	52 ppb or less
Ammonia (NH ₃)	420 ppb or less
Ozone (O ₃)	5 ppb or less
Oil vapor	0.2 mg/m ³ or less
Dust	0.15 mg/m ³ or less

Table 2-6 Acceptable Reference Values for Contaminants (*continued*)

Contaminant	Acceptable Reference Value
Seawater (salt damage)	Do not install out at sea or within 500 m (1,640.4 ft.) of the seashore. (However, this does not apply if air conditioning facilities do not use outside air.)

2.6 Checking Acoustic Noise Levels

Table 2-7 shows the acoustic noise levels of the SPARC M12-2S.

The acoustic noise levels provided in Table 2-7 are measured based on the following conditions.

Measurement environment: ISO 7779 compliant

Ambient temperature: 23°C

Table 2-7 Acoustic Noise Levels of the SPARC M12-2S

Acoustic Noise Level	CPU Configuration	In Operation	When Idle
Sound power level	1 CPU	8.2 B	7.7 B
	2 CPUs	8.5 B	7.7 B
Sound pressure level	1 CPU	64 dB	61 dB
	2 CPUs	68 dB	61 dB

2.7 Checking Cooling Conditions

This section describes the cooling conditions for the SPARC M12-2S. Note the following conditions when installing the system:

- The air conditioning facilities for the room meet the cooling conditions of the entire system
- The air conditioning facilities have control functions for preventing excessive temperature changes

Table 2-8 lists the cooling conditions for the SPARC M12-2S and PCI expansion unit.

Table 2-8 Cooling Conditions

Configuration	Input Voltage	Maximum Heat Dissipation	Maximum Exhaust Airflow
SPARC M12-2S	200 to 240 VAC	11,610 kJ/hr (11,000 BTU/hr)	15.9m ³ /min
Configuration including only expansion rack 1 (*1)	200 to 240 VAC (*2)	4,876 kJ/hr (4,622 BTU/hr)	29.8 m ³ /min
	200 to 240 VAC (*3)	4,876 kJ/hr (4,622 BTU/hr)	
	380 to 415 VAC (*4)	4,876 kJ/hr (4,622 BTU/hr)	
Configuration including expansion rack 2 (*1)	200 to 240 VAC (*2)	6,316 kJ/hr (5,988 BTU/hr)	29.8 m ³ /min
	200 to 240 VAC (*3)	6,316 kJ/hr (5,988 BTU/hr)	
	380 to 415 VAC (*4)	6,316 kJ/hr (5,988 BTU/hr)	
PCI expansion unit	100 to 120 VAC	1,005 kJ/hr (953 BTU/hr)	4.5 m ³ /min
	200 to 240 VAC	972 kJ/hr (921 BTU/hr)	

*1 The SPARC M12-2S is not mounted.

*2 Value for the single-phase power feed model

*3 Value for the three-phase delta power feed model

*4 Value for the three-phase star power feed model

The SPARC M12-2S is designed to function in an environment with natural convection airflow.

The following requirements must be followed to meet the environmental specifications.

- Ensure sufficient airflow for the entire system
The SPARC M12-2S and the PCI expansion unit are equipped with a cooling function for front-to-rear cooling. Each chassis has air vents on the front. Exhaust is expelled from the rear of each chassis. The SPARC M12-2S uses internal fans whose airflow reaches the maximum exhaust airflow shown in [Table 2-8](#) under normal operating conditions.

Example: 15.9 m³ (561.5 ft.³) per minute for each SPARC M12-2S unit

- Ensure that the temperature at the intake parts of the SPARC M12-2S and PCI expansion unit does not exceed the limit value
Other devices mounted in the rack must not cause the temperature at the intake part of any chassis to exceed the limit value. This limit value assumes, for the environmental conditions, that the SPARC M12-2S and the PCI expansion unit operate with the rack door closed.

2.8 Checking the Power Input Type

This section describes the power input types that can be used with the SPARC M12-2S. To prevent serious accidents, confirm that the power supply facilities can supply sufficient redundant power to the system.

In addition, we recommend installing a circuit breaker for each power cord for stable device operation. If multiple power cords are connected to one circuit breaker, multiple power supply units will be affected when the circuit breaker cuts off power.

The server can use the following power input types:

- Redundant Configuration of Power Supply Units
- Dual power feed
- Three-phase power feed
- Uninterruptible power supply (UPS) connection (optional)
- Power distribution unit connection

2.8.1 Redundant Configuration of Power Supply Units

The SPARC M12-2S has power supply units in a 2+2 redundant configuration as standard. If failures occur in two power supply units, the system can still continue to operate with the remaining two power supply units. However, if a failure occurs in the external power supply, the system stops.

Figure 2-12 and Figure 2-13 show power supply systems with redundant power supply connections.

When connecting the power cords to the same power supply, make sure to connect each power cord to the circuit breaker in a one-to-one manner.

Figure 2-12 Power Supply System With Redundant Power Supply Connections

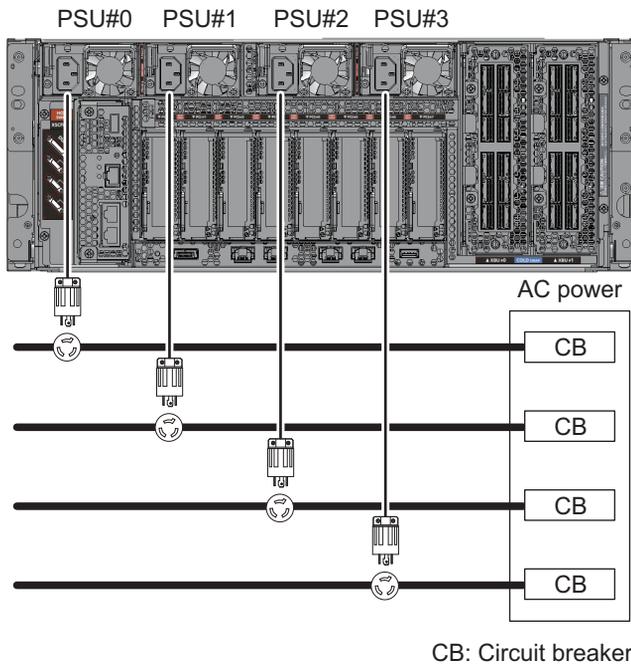
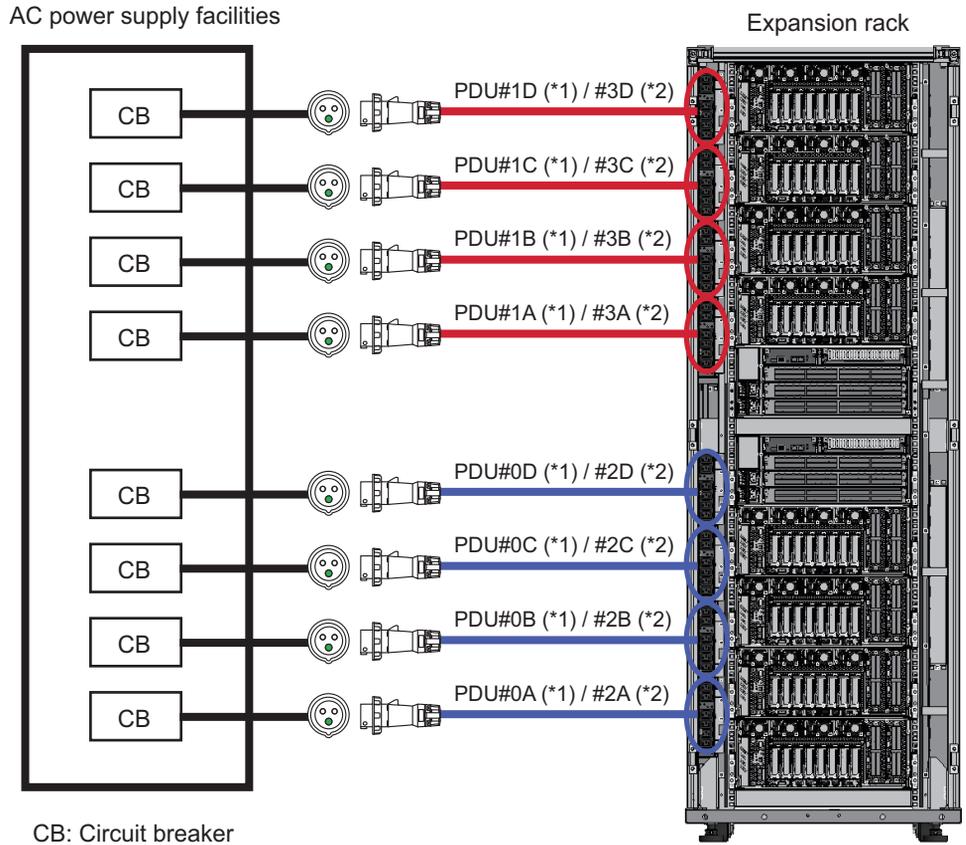


Figure 2-13 Power Supply System With Redundant Power Supply Connections (Expansion Rack)



*1 In expansion rack 1

*2 In expansion rack 2

Note - The system consumes no power when there is no device connected to the PDU outlets. For the wiring of power cords within the expansion rack, see [Figure 2-23](#).

2.8.2 Dual Power Feed

Dual power feed is an option for receiving power feeds from two external power supplies. If a failure occurs in one external power supply, the system can still continue to operate with the other external power supply.

Figure 2-14 and Figure 2-15 show power supply systems with dual power feed.

For dual system connections, connect the pairs of power cords to the input power supplies on the separate systems.

One of the systems is PSU#0 and PSU#1, and the other is PSU#2 and PSU#3.

Figure 2-14 Power Supply Systems With Dual Power Feed

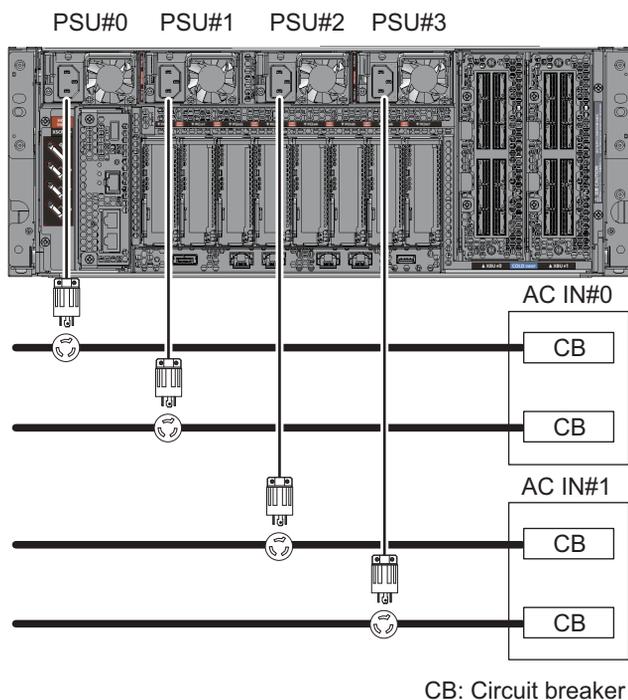
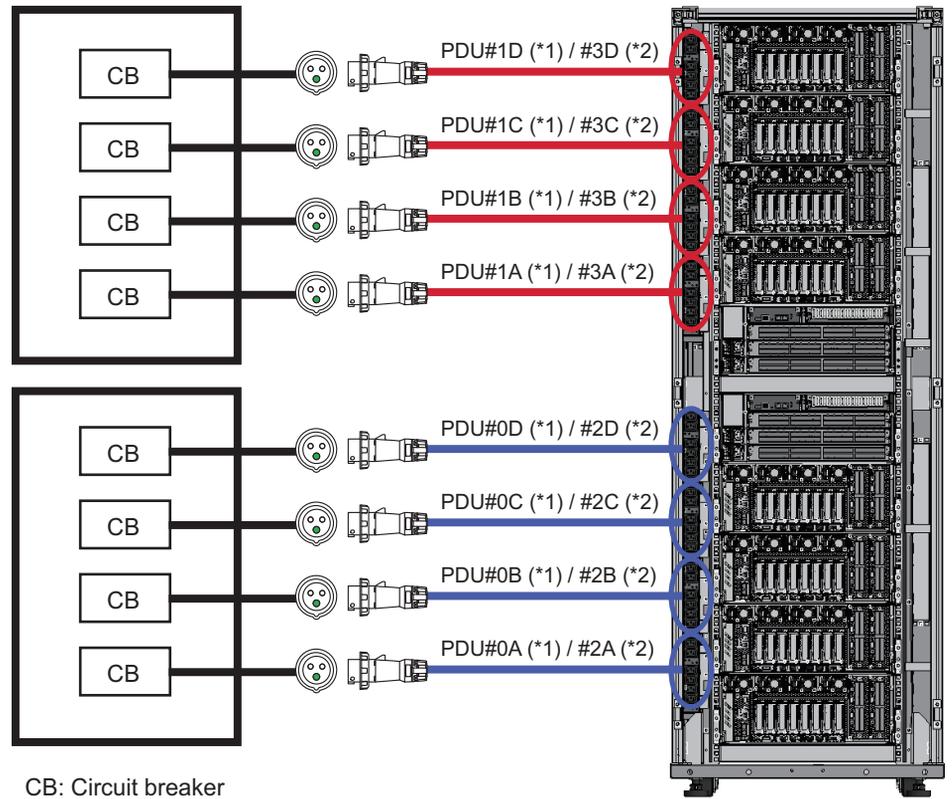


Figure 2-15 Power Supply System With Dual Power Feed (Expansion Rack)

AC power supply facilities



*1 In expansion rack 1

*2 In expansion rack 2

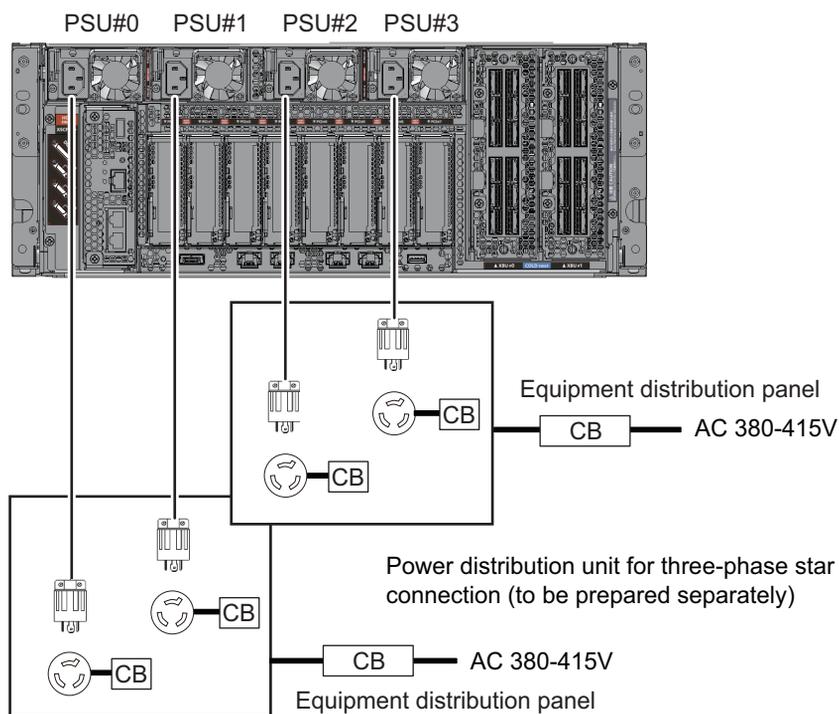
Note - The system consumes no power when there is no device connected to the PDU outlets. For the wiring of power cords within the expansion rack, see [Figure 2-23](#).

2.8.3 Three-Phase Power Feed

Three-phase power feed is a method of receiving power feeds from a three-phase power supply rather than a single-phase power supply. The customer needs to prepare an external power distribution unit for three-phase power feed for the SPARC M12-2S. There are two types of three-phase power feed: three-phase star connection and three-phase delta connection.

Figure 2-16, Figure 2-17, and Figure 2-18 show power supply systems with three-phase power feed.

Figure 2-16 Power Supply System With Three-Phase Power Feed (Star Connection)



CB: Circuit breaker

Figure 2-17 Power Supply System With Three-Phase Power Feed (Delta Connection)

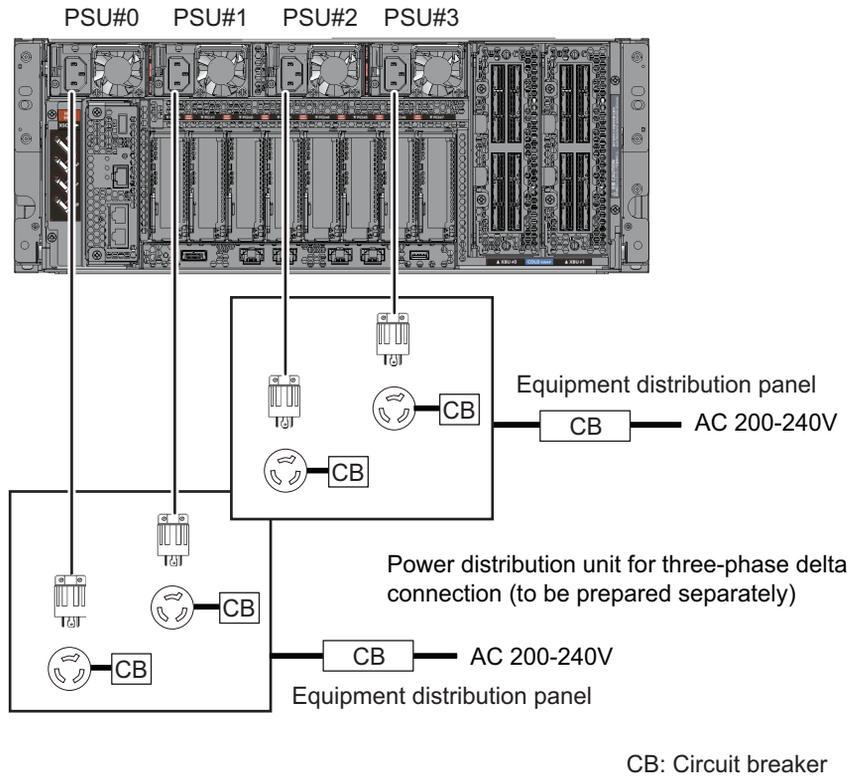
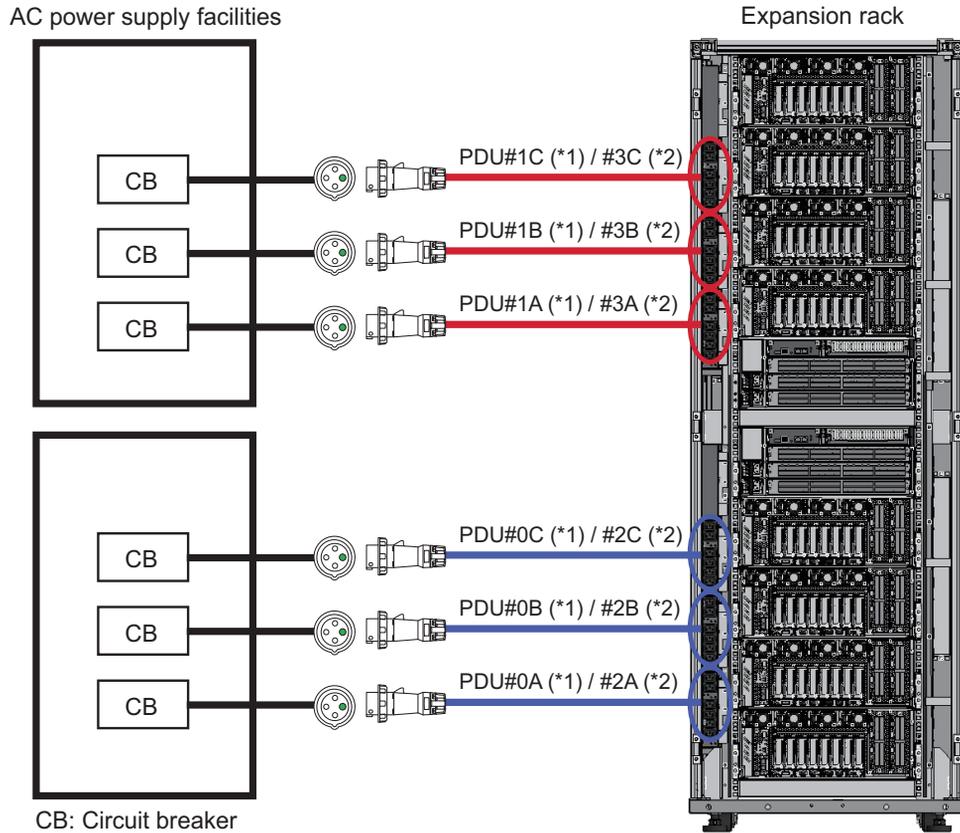


Figure 2-18 Power Supply System With Three-Phase Power Feed (Expansion Rack)



*1 In expansion rack 1
*2 In expansion rack 2

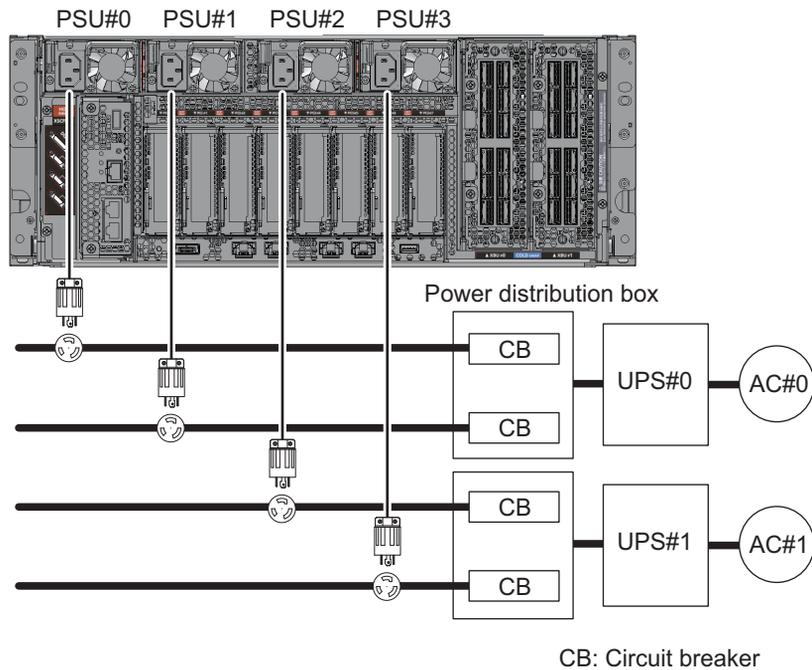
Note - The system consumes no power when there is no device connected to the PDU outlets. For the wiring of power cords within the expansion rack, see [Figure 2-24](#).

2.8.4 Uninterruptible Power Supply Connection (Optional)

Using an uninterruptible power supply (UPS) enables the stable supply of electrical power to the system in case of power failure, widespread power outage, etc. If the customer has ordered UPSs, use a separate UPS for each power supply system. Connect UPS#0 and UPS#1 to the input power supplies on the separate systems. Figure 2-19 shows power supply systems with UPS connections.

Figure 2-19 shows power supply systems with UPS connections.

Figure 2-19 Power Supply Systems With UPS Connections



2.8.5 Power Distribution Unit Connection

Figure 2-20 shows a power supply system with single-phase power feed. Figure 2-21 and Figure 2-22 show power supply systems with three-phase power feed.

Figure 2-20 Power Supply System With Single-Phase Power Feed

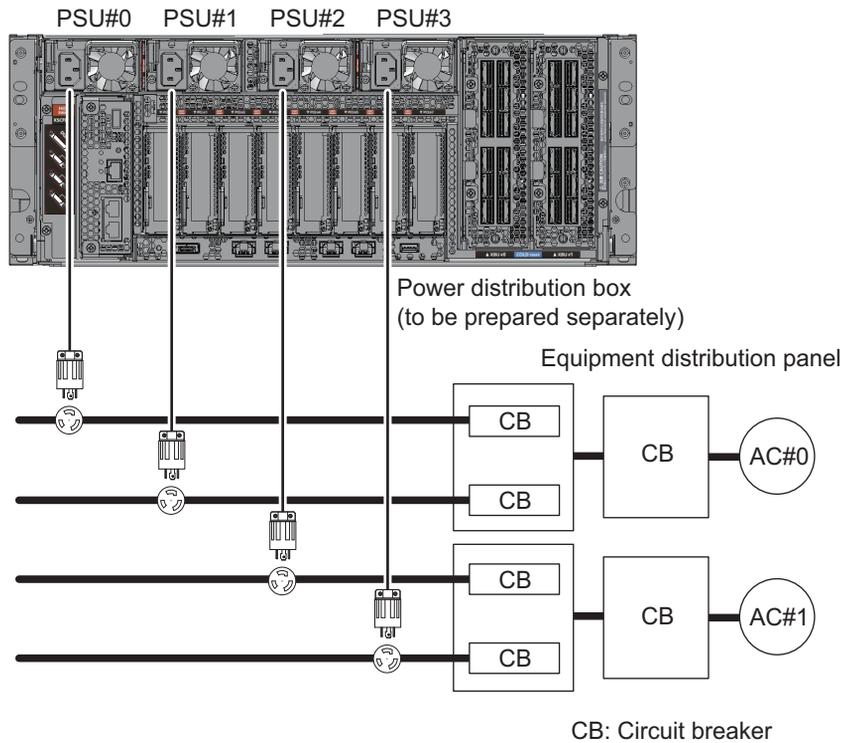
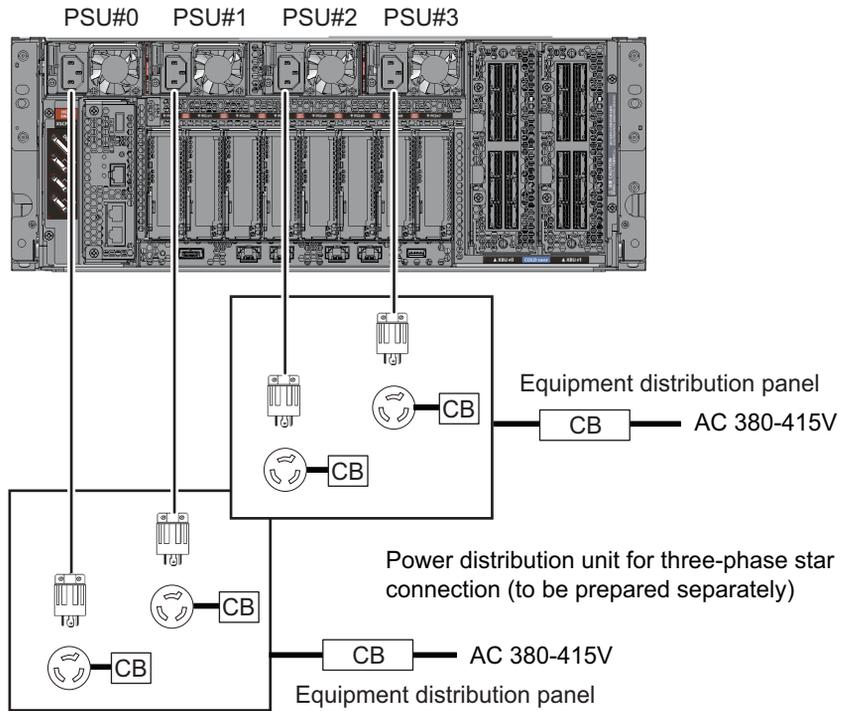
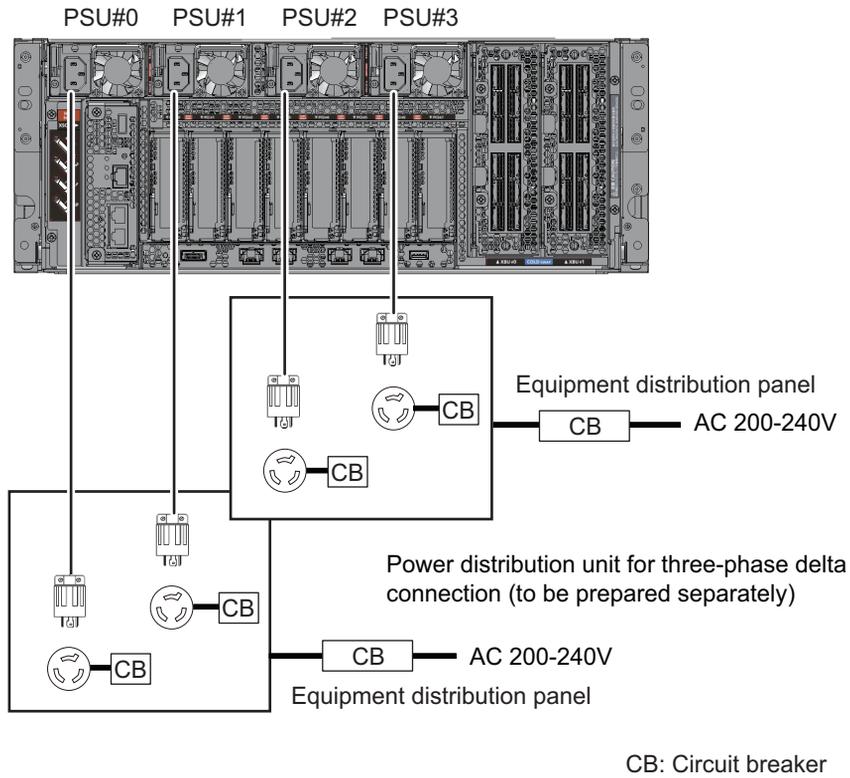


Figure 2-21 Power Supply System With Three-Phase Power Feed (Star Connection)



CB: Circuit breaker

Figure 2-22 Power Supply System With Three-Phase Power Feed (Delta Connection)



2.8.6 Internal Rack Connections of an Expansion Rack

Figure 2-23 and Figure 2-24 show the power supply systems of expansion racks.

Figure 2-23 Power Supply Connections for an Expansion Rack (Single-Phase Power Supply Connection)

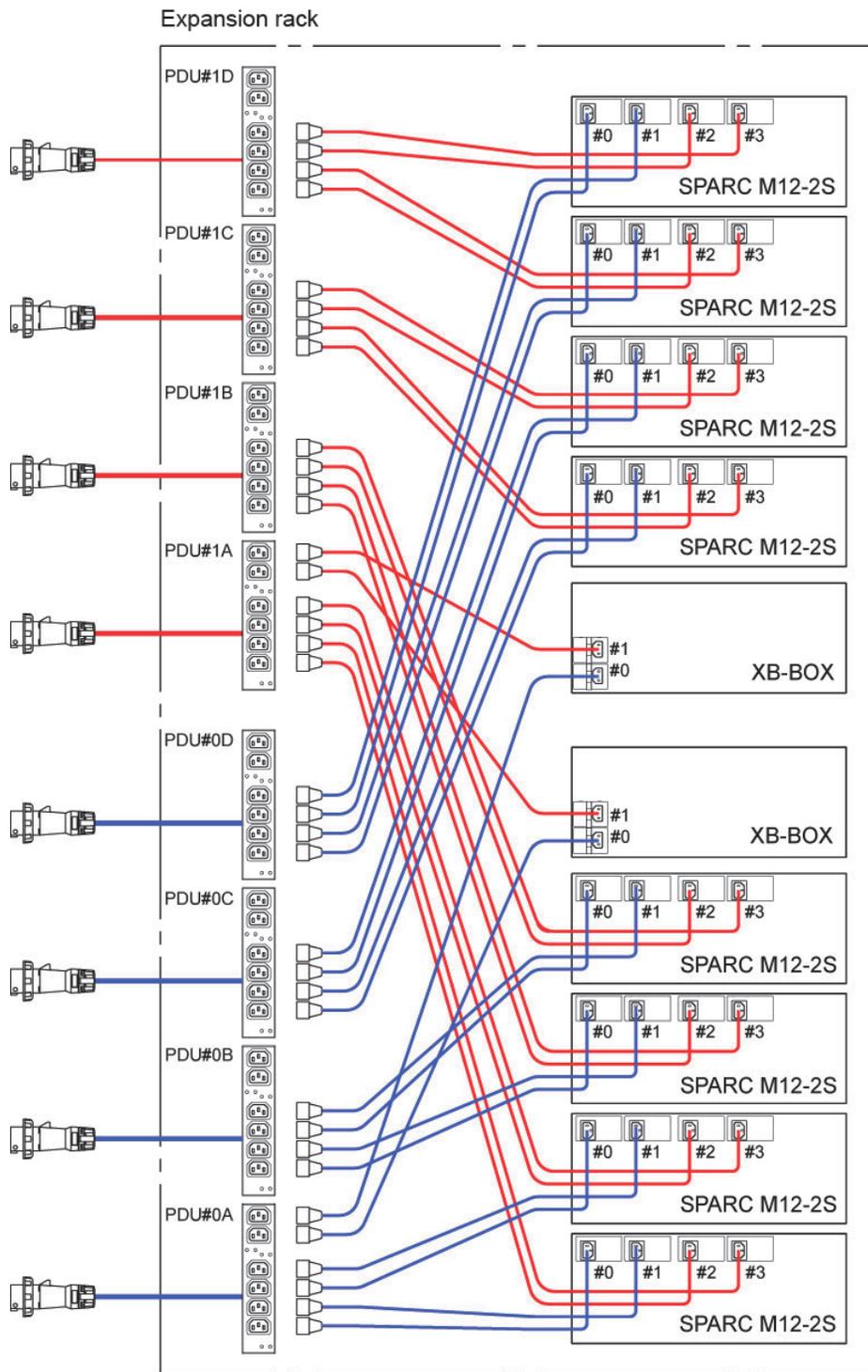
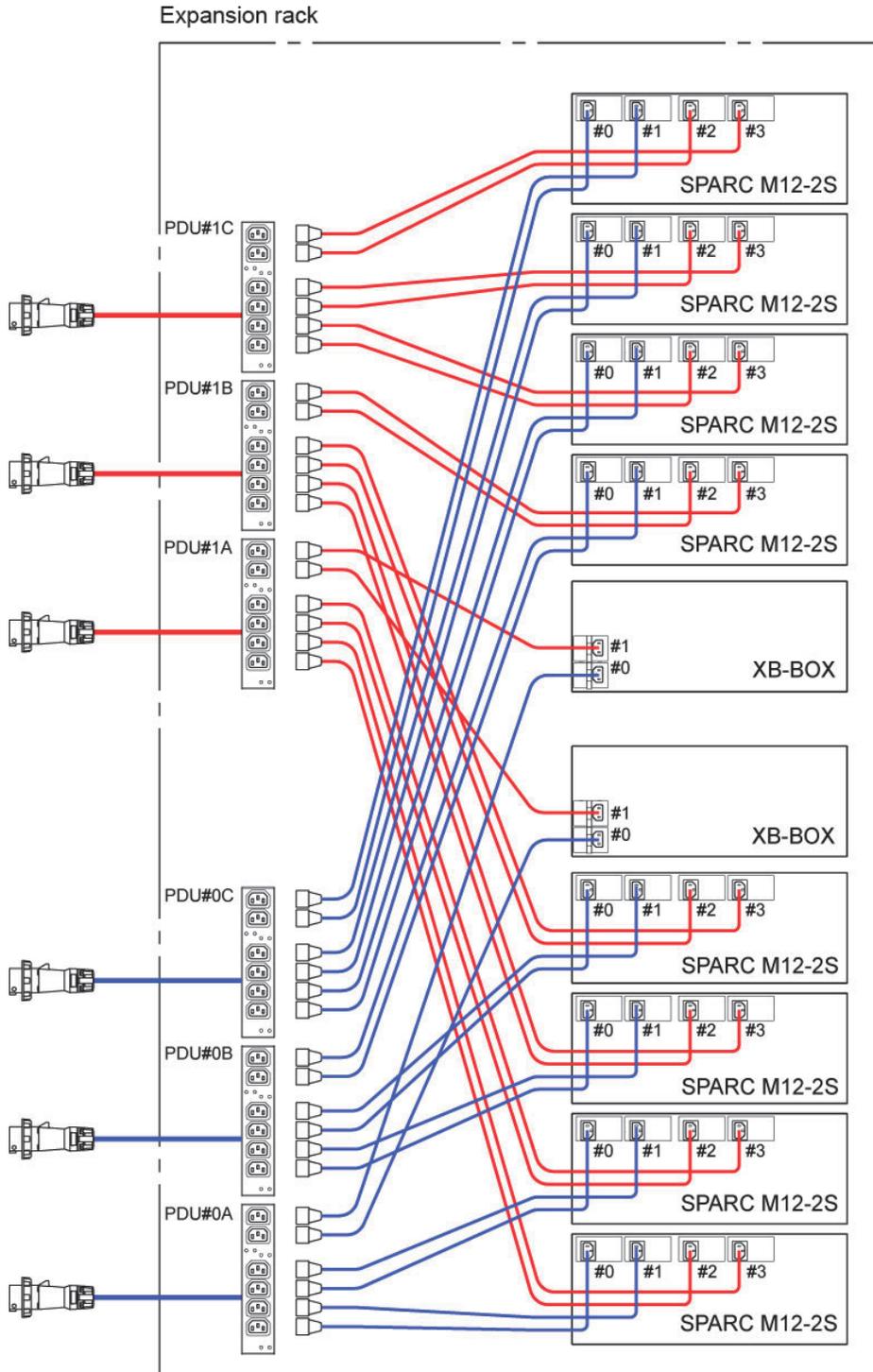


Figure 2-24 Power Supply Connections for an Expansion Rack (Three-Phase Delta Connection/Three-Phase Star Connection)



2.9 Preparing Power Supply Facilities

This section describes the electrical specifications, power cord specifications, facility power requirements, and grounding requirements of the SPARC M12-2S.

To minimize component failure rates, a stable power supply such as a dual power feed or uninterruptible power supply (UPS) must be prepared. The component failure rate is likely to be higher when the system operates in an environment with frequent power outages or an unstable power supply than in an environment where the supply of power is stable.

Electrical work and installation must be performed in accordance with the electrical regulations of the region, municipality, or country.

Note - If the system will be used in a region where an appropriate input power outlet is not available, contact a certified electrician. Have the electrician remove the connectors from each power cord and connect the power cord to a dedicated branch circuit. Check the electrical regulations of the region about installation conditions.

2.9.1 Electrical Specifications

[Table 2-9](#) to [Table 2-13](#) list the electrical specifications of the SPARC M12-2S and PCI expansion unit.

Note - The values listed in [Table 2-9](#) to [Table 2-13](#) are based on values for the maximum configurations of the SPARC M12-2S and PCI expansion unit. The actual values vary depending on the system configuration.

Table 2-9 Electrical Specifications (SPARC M12-2S)

Item	SPARC M12-2S (16 memory slots)	SPARC M12-2S (24 memory slots)
Input voltage	200 to 240 VAC	200 to 240 VAC
Number of power cords	4 (1 for each PSU)	4 (1 for each PSU)
Power cord length	Maximum length of 3.0 m (9.8 ft.)	Maximum length of 3.0 m (9.8 ft.)
Redundancy	2+2 redundant configuration	2+2 redundant configuration
Frequency	50 Hz/60 Hz, single phase	50 Hz/60 Hz, single phase
Maximum input current (*1)	16.5 A	16.8 A
Maximum power consumption	3,224 W	3,292 W
Apparent power	3,290 VA	3,359 VA
Rush current (*2)	65 A peak or less	65 A peak or less
Leakage current (*2)	3.5 mA or less	3.5 mA or less

*1 The current that flows through each power cord is a fraction of the value listed in [Table 2-9](#). In a redundant configuration, it is one-fourth the value. In a non-redundant configuration, it is up to one-half the value.

*2 The value is per power cord.

Table 2-10 Electrical Specifications (Expansion Rack: Single-Phase Feed Model) (*1)

Item	Specification	
	Expansion Rack 1 Only	Available for Expansion Rack 2
Input voltage	200 to 240 VAC	200 to 240 VAC
Number of power cords	8	8
Power cord length	4.0 m (13.1 ft.)	4.0 m (13.1 ft.)
Redundancy (*2)	1+1 redundant configuration	1+1 redundant configuration
Frequency	50 Hz/60 Hz	50 Hz/60 Hz
Maximum input current (*3)	Max. 40 A	Maximum of 40 A
Maximum input current (*4) (*5)	6.9 A	9.0 A
Maximum power consumption (*4)	1,354 W	1,754 W
Apparent power (*4)	1,382 VA	1,790 VA
Rush current (*3) (*4)	80 A peak or less	80 A peak or less
Leakage current (*3) (*4)	3.5 mA or less	3.5 mA or less

*1 This shows the value for one rack.

*2 In the case where the SPARC M12-2S is mounted in the expansion rack. When any unit other than SPARC M12-2S is mounted, the value may vary with the power connection configuration of the unit.

*3 The value is the permissible value per power cord. The actual current value depends on the rated value of the devices mounted in the expansion rack.

*4 This is the value when no SPARC M12-2S or other device is mounted in the expansion rack (only the crossbar box is mounted). Only two power cords consume power.

If the SPARC M12-2S and other devices are mounted, the current value and the number of power cords consuming power may vary.

*5 The current that flows through each power cord in a redundant configuration is half the value listed in [Table 2-10](#).

Table 2-11 Electrical Specifications (Expansion Rack: Three-Phase Feed Model) (*1)

Item	Specification	
	Expansion Rack 1 Only	Available for Expansion Rack 2
Input voltage	200 to 240 VAC	200 to 240 VAC
Number of power cords	6	6
Power cord length	4.0 m (13.1 ft.)	4.0 m (13.1 ft.)
Redundancy (*2)	1+1 redundant configuration	1+1 redundant configuration
Frequency	50 Hz/60 Hz	50 Hz/60 Hz
Maximum input current (*3)	Max. 35 A	Maximum of 35 A
Maximum input current (*4) (*5)	4.0 A	5.2 A
Maximum power consumption (*4)	1,354 W	1,754 W
Apparent power (*4)	1,382 VA	1,790 VA
Rush current (*3) (*4)	80 A peak or less	80 A peak or less
Leakage current (*3) (*4)	3.5 mA or less	3.5 mA or less

*1 This shows the value for one rack.

*2 In the case where the SPARC M12-2S is mounted in the expansion rack. When any unit other than SPARC M12-2S is mounted, the value may vary with the power connection configuration of the unit.

*3 The value is the permissible value per power cord. The actual current value depends on the rated value of the devices mounted in the expansion rack.

*4 This is the value when no SPARC M12-2S or other device is mounted in the expansion rack (only the crossbar box is mounted). Only two power cords consume power.
If the SPARC M12-2S and other devices are mounted, the current value and the number of power cords consuming power may vary.

*5 The current that flows through each power cord in a redundant configuration is half the value listed in [Table 2-11](#).

Table 2-12 Electrical Specifications (Expansion Rack: Three-Phase Star Feed Model)(*1)

Item	Specification	
	Expansion Rack 1 Only	Available for Expansion Rack 2
Input voltage	380 to 415 VAC	380 to 415 VAC
Number of power cords	6	6
Power cord length	4.0 m (13.1 ft.)	4.0 m (13.1 ft.)
Redundancy (*2)	1+1 redundant configuration	1+1 redundant configuration
Frequency	50 Hz/60 Hz	50 Hz/60 Hz
Maximum input current (*3)	Max. 24 A	Maximum of 24 A
Maximum input current (*4) (*5)	2.1 A	2.7 A
Maximum power consumption (*4)	1,354 W	1,754 W
Apparent power (*4)	1,382 VA	1,790 VA
Rush current (*3) (*4)	80 A peak or less	80 A peak or less

Table 2-12 Electrical Specifications (Expansion Rack: Three-Phase Star Feed Model)(*1) (*continued*)

Item	Specification	
	Expansion Rack 1 Only	Available for Expansion Rack 2
Leakage current (*3) (*4)	3.5 mA or less	3.5 mA or less

*1 This shows the value for one rack.

*2 In the case where the SPARC M12-2S is mounted in the expansion rack. When any unit other than SPARC M12-2S is mounted, the value may vary with the power connection configuration of the unit.

*3 The value is the permissible value per power cord. The actual current value depends on the rated value of the devices mounted in the expansion rack.

*4 This is the value when no SPARC M12-2S or other device is mounted in the expansion rack (only the crossbar box is mounted). Only two power cords consume power.
If the SPARC M12-2S and other devices are mounted, the current value and the number of power cords consuming power may vary.

*5 The current that flows through each power cord in a redundant configuration is half the value listed in [Table 2-12](#).

Table 2-13 Electrical Specifications (PCI Expansion Unit)

Item	Specification	
	Input Voltage of 100 to 120 VAC	Input Voltage of 200 to 240 VAC
Number of power cords	2 (1 for each PSU)	2 (1 for each PSU)
Power cord length	Maximum length of 3.0 m (9.8 ft.)	Maximum length of 3.0 m (9.8 ft.)
Redundancy	1+1 redundant configuration	1+1 redundant configuration
Frequency	50 Hz/60 Hz, single phase	50 Hz/60 Hz, single phase
Maximum input current (*1)	2.9 A	1.4 A
Maximum power consumption	279 W	270 W
Apparent power	284 VA	276 VA
Rush current (*2)	40 A peak or less	40 A peak or less
Leakage current (*2)	1.75 mA or less	1.75 mA or less

*1 The current that flows through each power cord in a redundant configuration is half the value listed in [Table 2-13](#).

*2 The value is per power cord.

2.9.2 Power Cord Specifications

[Table 2-14](#) and [Table 2-15](#) list the power cords and connector shapes for the SPARC M12-2S and PCI expansion unit. [Table 2-16](#) lists the power cords and connector shapes for the PDU of the expansion rack used to connect five or more SPARC M12-2S units.

Table 2-14 Power Cords and Connector Shapes (SPARC M12-2S)

Destination	Power Cord Type	Connector Shape
Japan	NEMA L6-15P 250V 15A	IEC 60320-C13
North America	NEMA L6-15P 250V 15A	IEC 60320-C13
Europe	CEE7/7	
U.K.	BS1363A	
Italy	CEI 23-16/VII	
China	GB 2099 250V	
Taiwan	CNS10917	
Korea	KSC 8305 250V	
Denmark	DEMKO 107	
Israel	SI 32	
India	IS 1293	
South Africa	SABS 164	
Argentina	IRAM2073 250V	
Australia	AS/NZS 3112	
Brazil	NBR14136 250V	
Switzerland	SEV 1011	
Other countries	IEC60309 IP44 250V 10A IEC60320-C14 250V 10A	
Common (*1) (Jumper cord)	IEC60320-C14 250V 10A	

*1 Four power cords are required per SPARC M12-2S mounted in an expansion rack: two are 1.0 m (3.3 ft.) long, and the other two are 2.0 m (6.6 ft.) long. Enough for the number of SPARC M12-2S units needs to be ordered separately.

Table 2-15 Power Cords and Connector Shapes (PCI Expansion Unit)

Destination	Power Cord Type	Connector Shape
Japan	NEMA 5-15P 125V 15A NEMA L6-15P 250V 15A	IEC 60320-C13
North America	NEMA 5-15P 125V 15A NEMA L6-15P 250V 15A IEC60320-C14 250V 10A	
Europe	CEE7/7	
U.K.	BS1363A	
Italy	CEI 23-16/VII	
China	GB 2099 250V	
Taiwan	CNS10917	
Korea	KSC 8305 250V	
Denmark	DEMKO 107	

Table 2-15 Power Cords and Connector Shapes (PCI Expansion Unit) (continued)

Destination	Power Cord Type	Connector Shape
Israel	SI 32	
India	IS 1293	
South Africa	SABS 164	
Argentina	IRAM2073 250V	
Australia	AS/NZS 3112	
Brazil	NBR14136 250V	
Switzerland	SEV 1011	
Other countries	IEC60309 IP44 250V 10A IEC60320-C14 250V 10A	

Table 2-16 Power Cord Plug Types (Expansion Rack PDU)

Destination	Power Cord Type
Common	For 200 V power - Single-phase power supply connection IEC60309 IP67 60A 2P+E - Three-phase delta connection IEC60309 IP67 60A 3P+E - Three-phase star connection IEC60309 IP44 32A 3P+N+E

Note - For chassis with plugs that have a lock function, confirm that the chassis have a 15 A overcurrent protection device. If they do not have that device, provide 15 A overcurrent protection using a circuit breaker or fuse. The plugs with a lock function are NEMA L6-15 and other plugs that are not parallel two-pole connectors with grounding electrodes.

2.9.3 Breaker Characteristics

The breaker characteristics for the SPARC M12-2S must be taken into consideration to allow the devices to be used under the right conditions. Use circuit breakers that meet the following special conditions for the distribution panel breakers for the computer equipment.

Table 2-17 shows the distribution panel breaker capacity of the computer equipment.

Table 2-17 Distribution Panel Breaker Capacity of the Computer Equipment

Device Name	Power Supply Input	Distribution Panel Capacity of Computer Equipment	
		For Japan/North America/Other Countries	For Europe
SPARC M12-2S	Single-phase 200 to 240 VAC	15 A	10 A
Expansion rack	Single-phase 200 to 240 VAC	60 A (48 A) (*1)	60 A (48 A) (*1)
Expansion rack	Three-phase (delta) 200 to 240 VAC	60 A (35 A) (*1)	60 A (35 A) (*1)
Expansion rack	Three-phase (star) 380 to 415 VAC	32 A (20 A) (*1)	32 A (20 A) (*1)
PCI expansion unit	Single-phase 100 to 120 VAC	10 A	-
	Single-phase 200 to 240 VAC	10 A	10 A

*1 The values for the expansion rack show the capacity of the plugs of the computer equipment for the PDU (rated values of the PDU are in parentheses). Have the facility administrator or a certified electrician select the distribution panel breakers for the computer equipment.

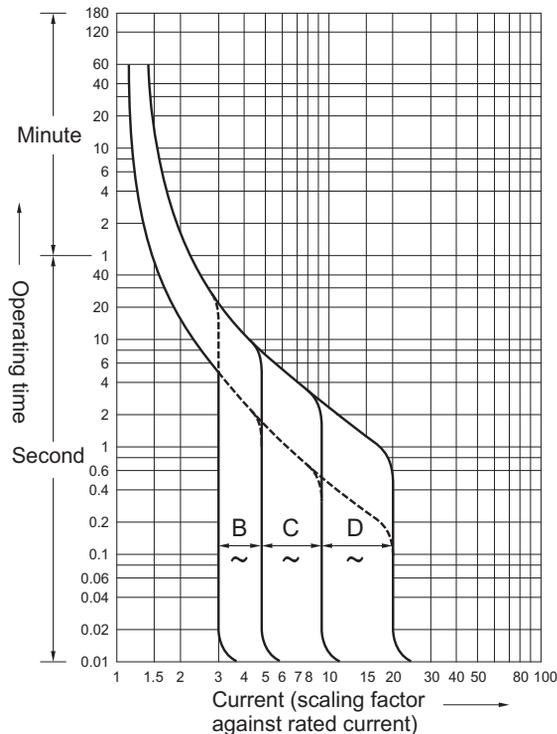
Note - If you use a power distribution unit between the distribution panel for the computer equipment and a device, use one whose breaker capacity matches the value in [Table 2-17](#) or the rated value of the device. In this case, connect the power distribution unit to a distribution panel breaker for the computer equipment with a capacity equal to or greater than the input capacity of the power distribution unit.

[Figure 2-25](#) shows the cutoff characteristics of the circuit breaker.

As the distribution panel breaker for the computer equipment, use a breaker with cutoff characteristics that have a Long-time delay type equivalent to cutoff characteristic D (IEC/EN 60898-1) shown in [Figure 2-25](#), or one with longer cutoff characteristics.

If a breaker with shorter cutoff characteristics than cutoff characteristic D is used, the breaker may cut off power earlier when the power supply unit of a device fails. In this case, input interruption occurs on multiple power supply units connected to the same system.

Figure 2-25 Distribution Panel Breaker Characteristics of the Computer Equipment



2.9.4 Grounding Requirements

Ground the SPARC M12-2S and the PCI expansion unit appropriately according to the input power type.

- For single-phase input

The components of the SPARC M12-2S and PCI expansion unit do not include a grounded (three-wire type) power cord. Order power cords that match the device. Always connect the power cords to grounded power outlets.

When using an expansion rack, be sure to use the supplied power cords.

To confirm the type of power supplied in the building, contact the facility administrator or a certified electrician.

- For three-phase input

No power cord is supplied for three-phase input. Grounded power cords must be connected from the distribution panel directly to the terminal boards of the power chassis as part of local electrical work.

When using an expansion rack, be sure to use the supplied power cords.

Although common grounding is possible with this device, grounding methods vary depending on the building where the installation is done. When grounding

devices using common grounding, make sure that grounding resistance is 10 ohms or less. Be sure to have the facility administrator or a certified electrician confirm the grounding method for the building and perform the grounding work. Also, do not connect to the IT power distribution system of a power supply facility where the neutral phase of three phases is not grounded. Otherwise, equipment may malfunction or be damaged.

2.10 Checking External Interface Port Specifications

This section provides an overview of the specifications of the external interface ports required for installation and operation of the SPARC M12-2S.

You can use the following external interface ports on the SPARC M12-2S.

XSCF unit administration port

- **Serial port**
The eXtended System Control Facility (XSCF) has one RS-232C-compliant serial port. You can monitor and control the system by connecting the system management terminal to the serial port. Functions that require TCP/IP are not available through the serial port.
- **XSCF-LAN port**
In addition to the serial port, the XSCF has two 1000BASE-T LAN ports. You can remotely monitor and control the system by configuring a system control network using a LAN port. There are two types of interfaces available: a command-line interface (XSCF shell) and a browser user interface (XSCF Web).
The XSCF-LAN ports support auto-negotiation only. Therefore, the communication speed/mode for the XSCF-LAN ports cannot be configured.
Do not make a connection with a network switch or hub until you complete the network setting for the XSCF. If a connection is made before the completion of the setting, devices connected with others may become unable to communicate, or unauthorized login by a malicious third party to the XSCF of the SPARC M12-2S may not be preventable.
- **XSCF USB port (for field engineers)**
Field engineers use this port to download information from the XSCF.
- **XSCF DUAL control port**
Use this port to connect the master XSCF and the standby XSCF.
The port implements the SP to SP communication protocol (SSCP) for the SPARC M12-2S.
- **XSCF BB control port**
The port is used to connect the master XSCF and standby XSCF to each slave XSCF. There are three ports.

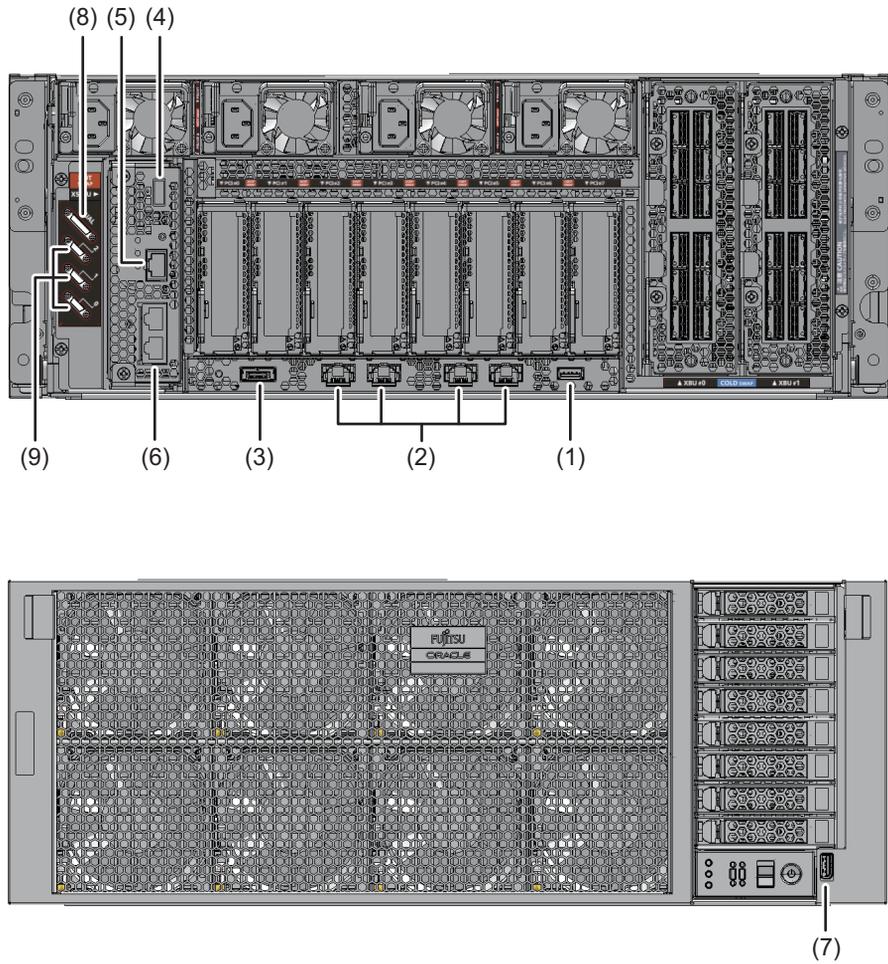
The port implements the SP to SP communication protocol (SSCP) for the SPARC M12-2S.

Other device ports

- 10 GbE LAN port
There are four ports that are used to connect Oracle Solaris to the network.
A LAN card, which is provided by the customer and mounted in a PCI Express (PCIe) slot, can also be used to connect to the network.
- SAS port
This port is used to connect an external SAS device.
- USB port
This is a general-purpose USB port. Use the port to connect an external USB DVD device, etc.

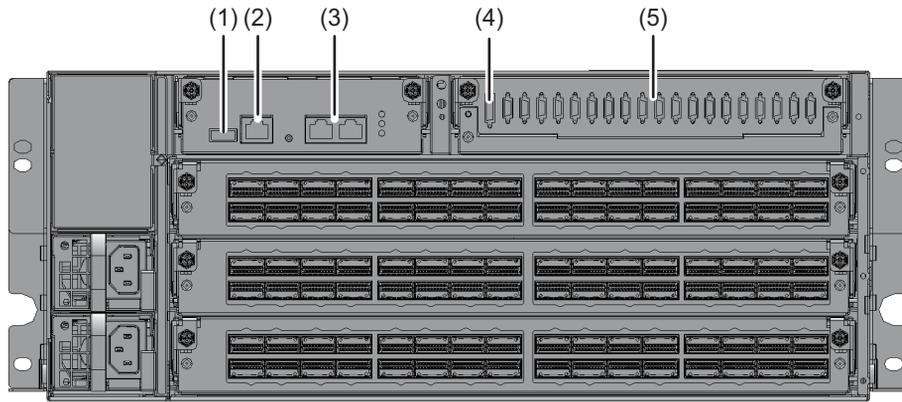
Figure 2-26 and Figure 2-27 show the locations of external interface ports on the SPARC M12-2S.

Figure 2-26 Locations of the Ports for Network Connections (SPARC M12-2S)



No.	Port	Number on Board
1, 7	USB port	2
2	10 GbE LAN port	4
3	SAS port	1
4	XSCF USB port (for field engineers)	1
5	Serial port	1
6	XSCF-LAN port	2
8	XSCF DUAL control port	1
9	XSCF BB control port	3

Figure 2-27 Locations of the Ports for Network Connections (Crossbar Box)

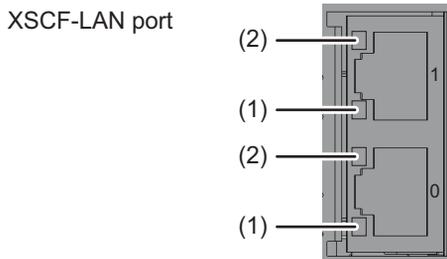


No.	Port	Number on Board
1	XSCF USB port (for field engineers)	1
2	Serial port	1
3	XSCF-LAN port	2
4	XSCF DUAL control port	1
5	XSCF BB control port	19

LAN port LEDs

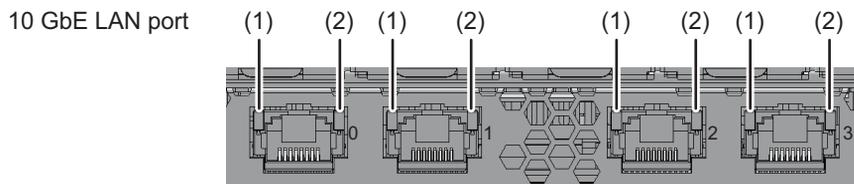
- LINK SPEED LED
 This LED indicates the communication speed of the respective XSCF-LAN ports and 10 GbE LAN ports (Figure 2-28 and Figure 2-29).
- ACT LED (green)
 This LED indicates the communication state of the respective XSCF-LAN ports and 10 GbE LAN ports (Figure 2-28 and Figure 2-29).

Figure 2-28 XSCF-LAN Port LEDs



No.	Name		Color	State	Port
1	LINK SPEED	For XSCF-LAN port	Amber	On	The communication speed is 1 Gbps.
			Green	On	The communication speed is 100 Mbps.
			-	Off	The communication speed is 10 Mbps.
2	ACT		Green	Blinking	The port is sending/receiving data.
			-	Off	The port is not sending/receiving data.

Figure 2-29 10 GbE LAN Port LEDs



No.	Name		Color	State	Port
1	LINK SPEED	For 10 GbE-LAN port	Green	On	The communication speed is 10 Gbps.
			Amber	On	The communication speed is 1 Gbps.
			-	Off	The communication speed is 100 Mbps.
2	ACT		Green	Blinking	The port is sending/receiving data.
			-	Off	The port is not sending/receiving data.

2.10.1 Network Configuration Example

Figure 2-30 and Figure 2-31 show a network configuration example. For details on network connections, see "1.3 Network Configuration" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

Figure 2-30 Network Configuration Example (SPARC M12-2S)

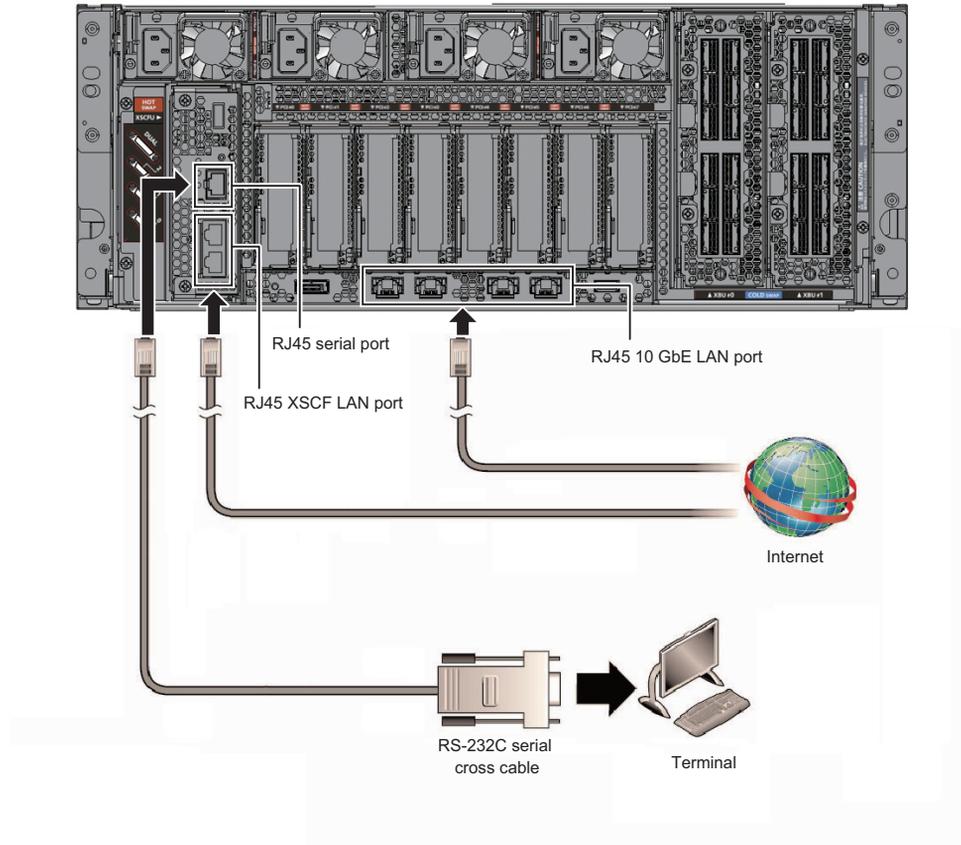
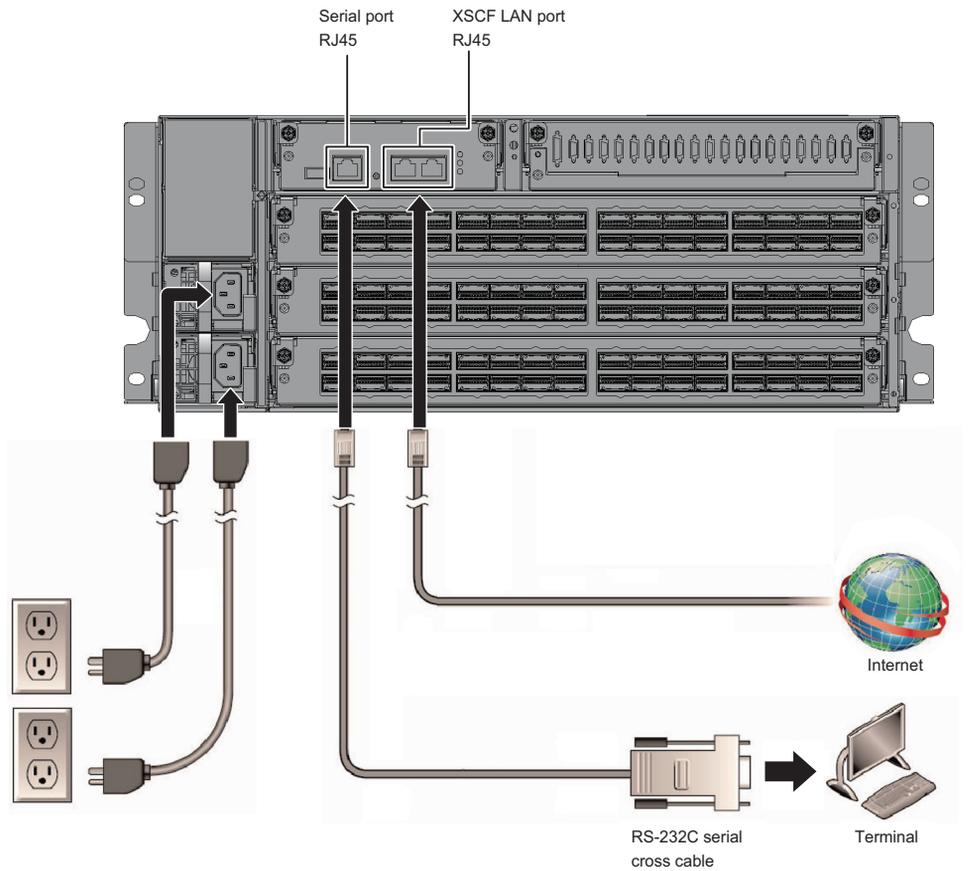


Figure 2-31 Network Configuration Example (Crossbar Box)



2.11 Checking the Functions of the Operation Panel

This section describes the functions of the operation panels mounted on the SPARC M12-2S and the crossbar box.

You can check system operation with the system display (LEDs) and operation functions on the operation panel.

Figure 2-32 shows the SPARC M12-2S operation panel, Figure 2-33 shows the operation panel of the crossbar box, and Table 2-18 shows the LEDs and switches on the operation panel.

For details on system operations not covered in the functional outline of Table 2-18, see "2.3 Understanding the OPNL Functions" in the *Fujitsu SPARC M12-2/M12-2S Service Manual*.

Note - In the building block configuration, the mode switch function and the POWER switch function are invalid on an operation panel other than the master XSCF.

Note - In the building block configuration with the crossbar box connected, all the functions of the operation panel becomes valid only on the operation panel of a crossbar box that is the master XSCF.

Figure 2-32 SPARC M12-2S Operation Panel

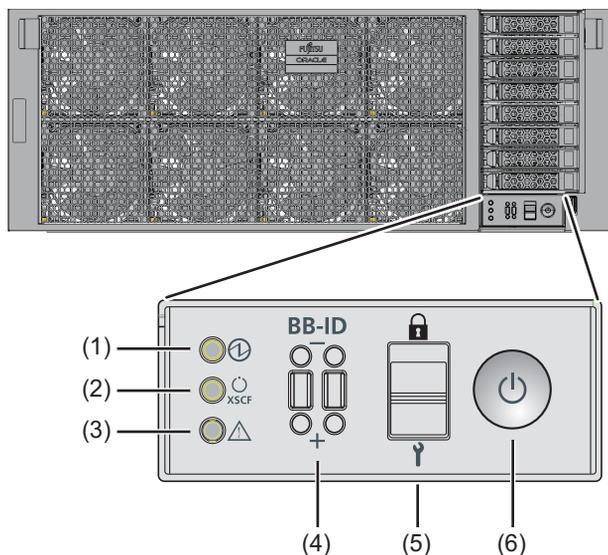


Figure 2-33 Operation Panel of a Crossbar Box

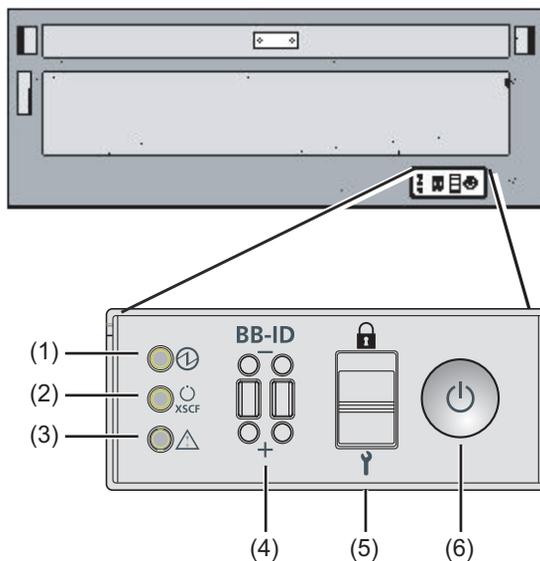


Table 2-18 LEDs and Switches on the Operation Panel

No.	LED/Switch	Functional Outline
1	POWER LED	Indicates the operating status of the system. On: The system is running. Off: The system is stopped. Blinking: The system is in the stop processing.
2	XSCF STANDBY LED	Indicates the XSCF status of the system. On: The XSCF is running. Off: The XSCF is stopped. Blinking: The XSCF is starting.
3	CHECK LED	Indicates whether the SPARC M12-2S is in an abnormal state. Off: Normal state, or no power being supplied On: Hardware has detected an error.
4	Mode switch	Sets the system operation mode.
5	BB-ID switch	Sets the ID number of the chassis.
6	POWER switch	Starts/Stops the system.

You can perform the following operations with the switches shown at (4) to (6) in [Figure 2-32](#) and [Figure 2-33](#).

▪ **BB-ID switch**

This switch sets the ID number of the SPARC M12-2S/crossbar box in the building block configuration. [Table 2-18](#) shows how to operate the BB switch. For the

setting of the BB-ID number, see "4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S."

- **Mode switch**

This switch sets the start mode for the system. You can switch between Locked mode and Service mode on the mode switch by sliding the switch.

Note - Set the mode switch to the same mode for both the master XSCF and standby XSCF. If their settings are different, an asterisk (*) is shown beside the components in the output of the showhardconf or showstatus command.

- Locked mode ()

This mode is used during normal operation.

You can turn on the power but cannot turn off the power with the POWER switch. This mechanism disables power-off in order to prevent users from turning off the power by mistake.

- Service mode ()

This mode is used during maintenance work.

You can turn off the power with the POWER switch, but the switch is inhibited from turning on the power. Maintenance with the whole system stopped is performed in Service mode.

- **POWER switch**

You can start or stop the system.

In the building block configuration, the POWER switch is available for operation only on the SPARC M12-2S/crossbar box of the master XSCF. Set the same operation mode for the master XSCF and the standby XSCF.

Chapter 3

Installing the System

This chapter describes the work of preparing for installation of the SPARC M12-2S and the PCI expansion unit, mounting a chassis in a rack, and mounting optional components.

- [Preparing the Necessary Tools/Information for Installation](#)
- [Confirming Delivered Components](#)
- [Installing the Rack](#)
- [Mounting the SPARC M12-2S and the PCI Expansion Unit in a Rack](#)
- [Mounting Optional Components](#)

3.1 Preparing the Necessary Tools/ Information for Installation

This section describes the tools and information that are required in installation. Have these prepared before starting installation work.

Table 3-1 List of Necessary Tools

Name	Use
Phillips screwdriver (#2)	Used to attach cable support brackets and mount optional components
Phillips screwdriver (#3)	Used to connect racks and attach rails to the rack supporting columns
Wrench or box wrench (M8 screws securing rack package: nominal size 13)	Used to unpack an ordinary rack package
Wrench or box wrench (M10 screws securing rack package: nominal size 17)	Used to unpack an ordinary rack package
Allen wrench (M12 screws securing top cover: nominal size 8)	Used to connect racks

Table 3-1 List of Necessary Tools (*continued*)

Name	Use
Wrench or box wrench (upper connecting screw M12: nominal size 19)	Used to connect racks
ESD mat and antistatic wrist strap	Used in the work of mounting optional components
Lifter (hydraulic or mechanical jack)	Used in the work of mounting chassis in racks
System management terminal (ASCII terminal, workstation, terminal server, patch panel connected to terminal server, etc.)	Used to connect to the XSCF and for the work of checking and configuring the XSCF firmware

3.2 Confirming Delivered Components

Here, confirm the delivered components by referring to the List of Attachments that comes with the SPARC M12-2S and the PCI expansion unit. If any item is missing, incorrect, or damaged, contact the retailer from which the product was purchased or a sales representative.

- [Confirming the Delivered Components of the SPARC M12-2S](#)
- [Confirming the Delivered Components of the PCI Expansion Unit](#)
- [Confirming the Delivered Components of the Expansion Rack](#)

3.2.1 Confirming the Delivered Components of the SPARC M12-2S

This section describes the confirmation of delivered components of the SPARC M12-2S.

1. **Confirm the delivered components by referring to the List of Attachments that comes with the SPARC M12-2S.**

[Table 3-2](#) below is a list of accessories for the SPARC M12-2S. [Table 3-3](#) is a list of accessories required for a building block configuration. The accessories may change without notice.

Table 3-2 Reference: List of Accessories for the SPARC M12-2S

Name	Quantity	Remarks
SPARC M12-2S	1	(*1)
Fujitsu SPARC M12 Getting Started Guide	1	
Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Important Legal and Safety Information	1	

Table 3-2 Reference: List of Accessories for the SPARC M12-2S (*continued*)

Name	Quantity	Remarks
CPU Activation CD-ROM	1	(*2)
Power cord	4	For 200 VAC (*3)
Core	4	Used when attached to power cord
Serial cable	1	
Rack mount kit	1 set	(*1)
Cable support	1 set	(*1)

*1 If an expansion rack is ordered together with the SPARC M12-2S, the rack is shipped with the SPARC M12-2S mounted.

*2 The disk contains the CPU Activation key information. One disk is supplied with the system.

*3 The power cord is ordered separately (required option), so it may not come with the product.

Table 3-3 List of Accessories for a Building Block Configuration (for Direct Connections Between Chassis)

Name	Quantity			Remarks
	2BB	3BB	4BB	
Crossbar cable (optical)	8	24	48	Cable connected between crossbar units Either a crossbar cable (optical) or crossbar cable (electrical) is delivered
Crossbar cable (electrical)				
XSCF BB control cable (2 m)	1	3	5	Cable connected between XSCF units
XSCF DUAL control cable	1	1	1	Cable connected between XSCF units of the master XSCF and standby XSCF

2. **Check for incomplete engagement, incomplete contact, or looseness in the mounting of internal storage (HDD/SSD). Also confirm that the PCI cassette lever is locked at the bottom.**

3.2.2 Confirming the Delivered Components of the PCI Expansion Unit

This section describes the confirmation of delivered components of the PCI expansion unit.

1. **Confirm the delivered components by referring to the List of Attachments that comes with the PCI expansion unit.**

[Table 3-4](#) below is a list of accessories for the PCI expansion unit. The accessories may change without notice.

Table 3-4 List of Accessories for the PCI Expansion Unit

Name	Quantity	Remarks
PCI expansion unit	1	
Core	2	Used when attached to power cord
Rack mount kit	1 set	
Cable support	1 set	

Table 3-5 List of Separately Ordered Components for the PCI Expansion Unit (*1)

Name	Quantity	Remarks
Power cord	2	For 100 VAC or 200 VAC
Cable to connect PCI expansion unit (optical, 10 m)	2	Select either of two types of cable
Cable to connect PCI expansion unit (electrical, 3 m)		
Management cable	1	Component of cable to connect PCI expansion unit
Link board (PCI expansion unit connected card)	1	Component of the PCI expansion unit (*2)
Link card (PCI expansion unit connected card)	1	Components of the SPARC M12-2S (*3)

*1 The separately ordered components may not come with the PCI expansion unit.

*2 This is a PCIe card to be mounted in the PCI expansion unit.

If the SPARC M12-2S is ordered at the same time as the PCI expansion unit, the card is shipped as an accessory for the SPARC M12-2S.

If the PCI expansion unit is ordered at the same time as the PCI connected card, the card is shipped mounted in the PCI expansion unit.

*3 This is a PCIe card to be mounted in the SPARC M12-2S.

If the SPARC M12-2S is ordered at the same time as the PCI expansion unit, the card is shipped mounted in the SPARC M12-2S.

If the PCI expansion unit is ordered at the same time as the PCI connected card, the card is shipped as an accessory for the PCI expansion unit.

2. **Confirm that the PCIe cassette lever is locked at the bottom.**

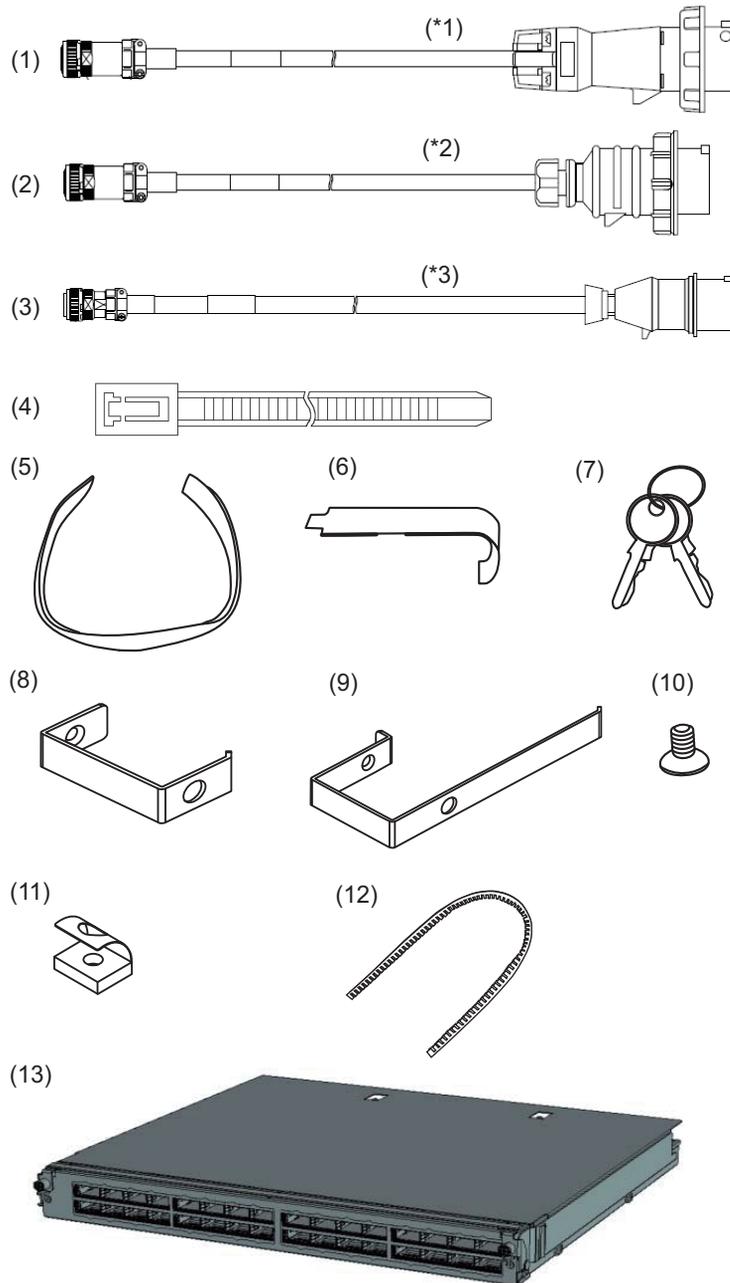
3.2.3 Confirming the Delivered Components of the Expansion Rack

The expansion rack is a dedicated rack necessary for connecting multiple SPARC M12-2S units together via a crossbar box. In the expansion rack, a dedicated receptacle box for supplying power (PDU), a crossbar box, crossbar cables, and XSCF cables are mounted as standard.

There are two types of expansion racks, namely expansion rack 1 and expansion rack 2. Expansion rack 1 is used for up to 8BB, and expansion rack 2 is used from 9BB up to 16BB configuration.

[Figure 3-1](#) is a list of accessories for expansion rack 1 and expansion rack 2. [Figure 3-2](#) is a list of connecting kit components supplied with expansion rack 2.

Figure 3-1 Accessories for Expansion Racks 1 and 2



*1 Power cord for the single-phase power feed model

*2 Power cord for the three-phase delta power feed model

*3 Power cord for the three-phase star power feed model

Table 3-6 Reference: List of Accessories for Expansion Rack 1

Number in Figure	Name	Quantity	Remarks
1 to 3	PDU power cord (for connecting PDU and customer facilities)	8 or 6	(*1)
4	Binding band	8	
5	Hook-and-loop fastener strip	1 set	
6	Cage nut attachment tool	1	
7	Key (for both front and rear doors)	2	
8	Cable holder (F)	10	
9	Cable holder (R)	2	
10	M5 flathead screw (for attaching cable holder)	12	
11	M5 core spring nut (for attaching cable holder)	12	
12	Protection bushing (for top cover opening)	3	

*1 Eight cables are supplied for the single-phase power supply, and six cables for the three-phase power supply.

Table 3-7 Reference: List of Accessories for Expansion Rack 2

Number in Figure	Name	Quantity	Remarks
1 to 3	PDU power cord (for connecting PDU and customer facilities)	8 or 6	(*1)
4	Binding band	8	
5	Hook-and-loop fastener strip	1 set	
6	Cage nut attachment tool	1	
7	Key (for both front and rear doors)	2	
8	Cable holder (F)	10	
9	Cable holder (R)	2	
10	M5 flathead screw (for attaching cable holder)	12	
11	M5 core spring nut (for attaching cable holder)	12	
12	Protection bushing (for top cover opening)	3	
13	Crossbar unit	2	(*2)
-	Connecting kit	1 set	(*3)

*1 Eight cables are supplied for the single-phase power supply, and six cables for the three-phase power supply.

*2 If this component is ordered at the same time as expansion rack 1, it is shipped mounted in a crossbar box. Otherwise, it is an accessory.

*3 This is an accessory. For details, see [Figure 3-2](#).

Figure 3-2 Connecting Kit Components

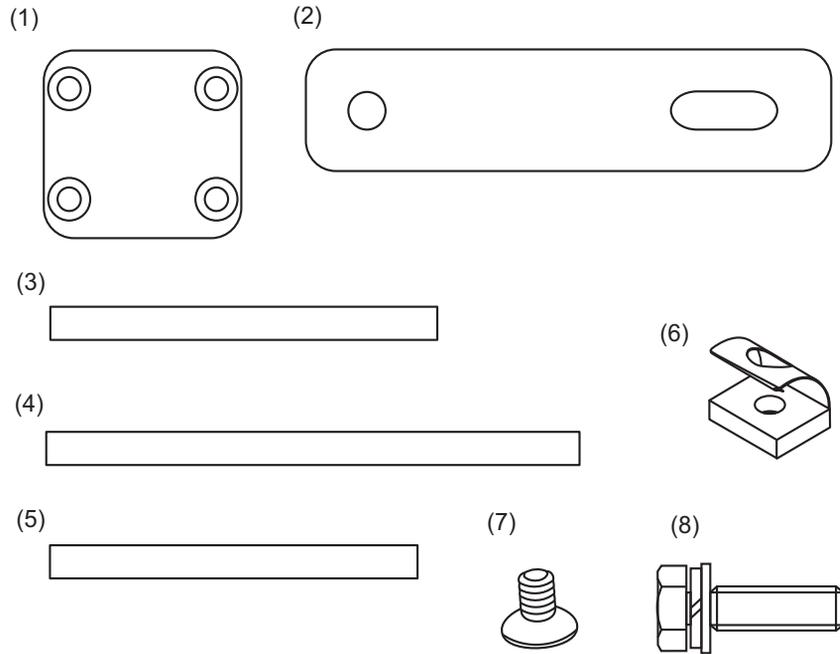


Table 3-8 Reference: List of Connecting Kit Components

Number in Figure	Name	Quantity	Remarks
1	Lower coupling bracket	2	
2	Upper coupling bracket	2	
3	Horizontal coupling seal 1	1	Length: 880 mm (34.6 in.)
4	Vertical coupling seal 1	2	Length: 1000 mm (39.4 in.)
5	Vertical coupling seal 2	2	Length: 860 mm (33.9 in.)
6	M6 core spring nut	8	For connecting lower part
7	M6 flathead screw	8	For connecting lower part
8	M12 hexagon head bolt	4	For connecting upper part

3.3 Installing the Rack

The expansion rack is shipped with a SPARC M12-2S and crossbar box mounted in the rack. Furthermore, a power distribution unit (PDU), crossbar cables, and XSCF

BB control cables are also laid out in the rack before shipment.

Here the method of installing the expansion rack and the linkage procedure are described. For the installation method for racks other than the expansion rack, see the manual of each rack.

3.3.1 Connecting the Power Cords to the Power Distribution Units of an Expansion Rack

This section describes the procedure for connecting the power cords to the power distribution units (PDUs) of an expansion rack (referred to below as the rack).

1. **Turn off the circuit breaker switches (CB switches) on the PDUs.**

Open the rear door of the rack, and pull out all the CB switches on the PDUs.

When pulled out, a CB switch is turned off. When pushed in, the switch is turned on.

A PDU has six CB switches (A in [Figure 3-3](#)).

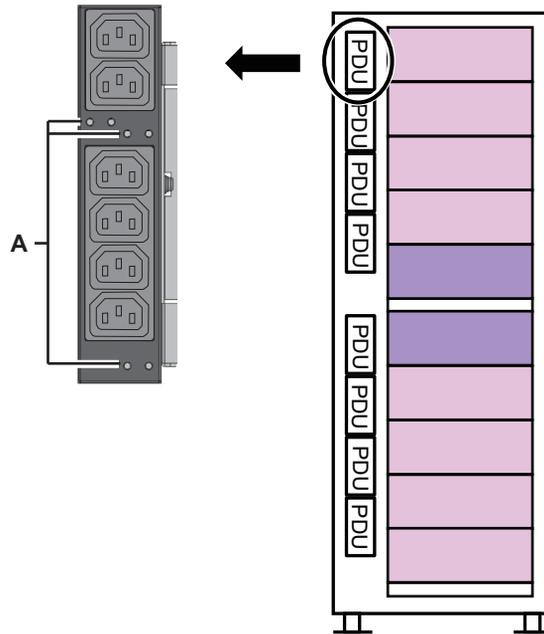
In each expansion rack, the number of CB switches on a PDU is as follows.

- Single-phase power feed:
8 PDUs mounted per rack, so 6 CB switches x 8 PDUs = total of 48 CB switches
- Three-phase power feed:
6 PDUs mounted per rack, so 6 CB switches x 6 PDUs = total of 36 CB switches

(Though the number of mounted PDUs is different for three-phase feed, the CB switch locations on the PDUs are the same.)

Keep the CB switches turned off until you turn them on in "[6.2.2 Turning On the Input Power and Starting the XSCF](#)."

Figure 3-3 Locations of the CB Switches on the PDUs

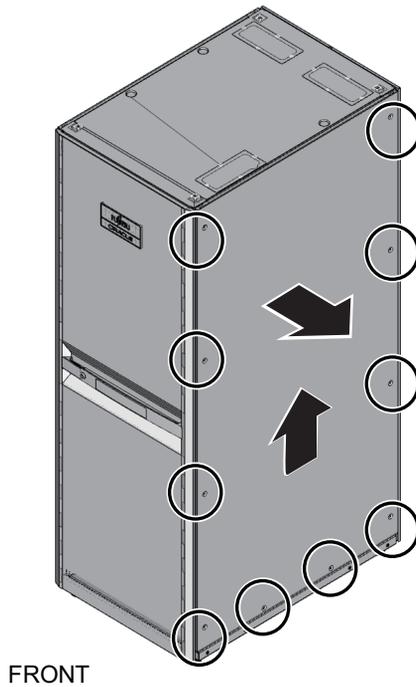


2. **Remove the side plate on the right side as viewed from the front of the rack.**
 - a. Remove the 10 screws securing the side plate.
 - b. Remove the side plate by lifting it up.
The side plate is secured by the bracket on the top of the rack.
The side plate is released by lifting it up about 20 to 30 mm.

Note - Be careful when removing the side plate because it weighs about 13 kg.

Remarks - Expansion rack 2 does not have the side plate.

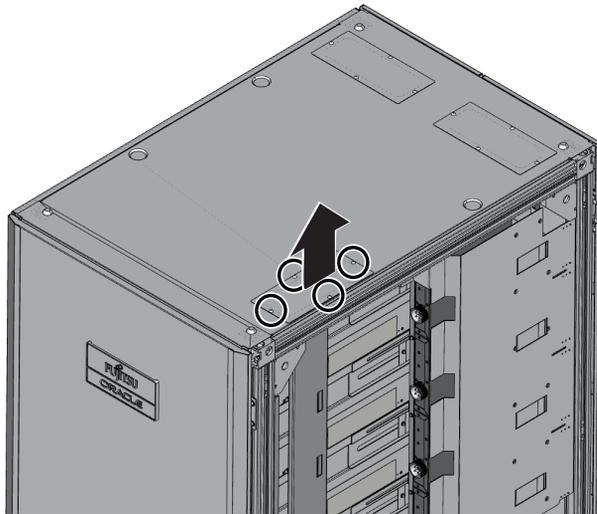
Figure 3-4 Removing the Side Plate



3. **Connect the power cords.**
The wiring of the power cords may run from above the rack or below the rack. Perform this work by following the corresponding procedure.
Wiring the power cords from above the rack (ceiling side)
 - a. Remove the four screws securing the top cover of the rack.
 - b. Remove the top cover by lifting it up.

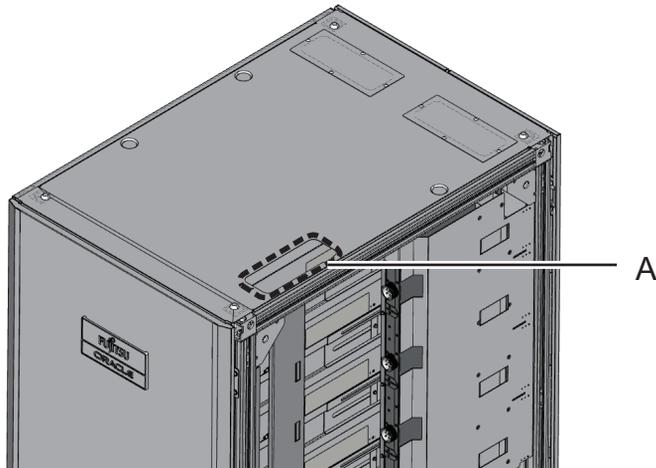
Note - Be careful because work on the top cover section is done high off the ground. Never do anything dangerous such as putting your foot on the rack, which would be very dangerous.

Figure 3-5 Removing the Top Cover



c. Fit the protection bushing (A in [Figure 3-6](#)) in the top opening of the rack.

Figure 3-6 Fitting in the Protection Bushing

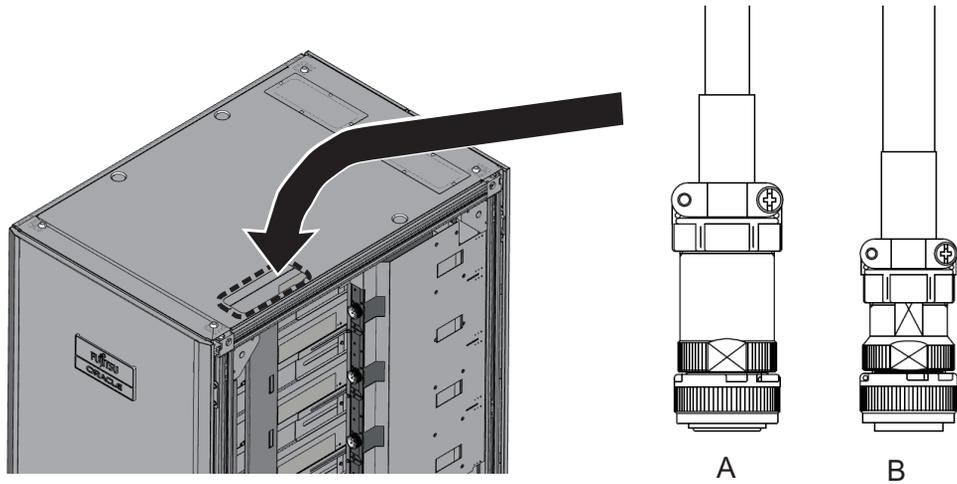


d. Insert the PDU connection side of the power cords through the top opening of the rack.

A in [Figure 3-7](#) represents the power cord for single-phase power feed and three-phase delta power feed.

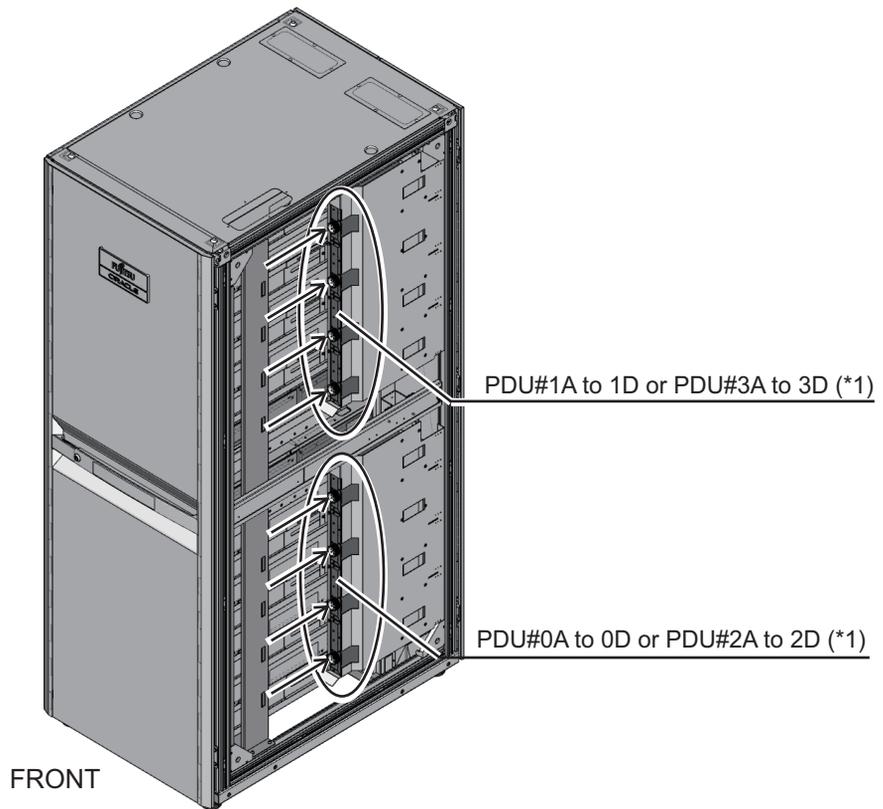
B in [Figure 3-7](#) represents the power cord for three-phase star power feed.

Figure 3-7 Inserting Power Cords



- e. Connect the power cords to the PDUs.
Each cable has an attached label showing the connection destination. Each PDU also has an indicator. So, match it with the right cable to connect the cable. For the PDU mounting locations, see [Figure 3-8](#).

Figure 3-8 Connecting Power Cords

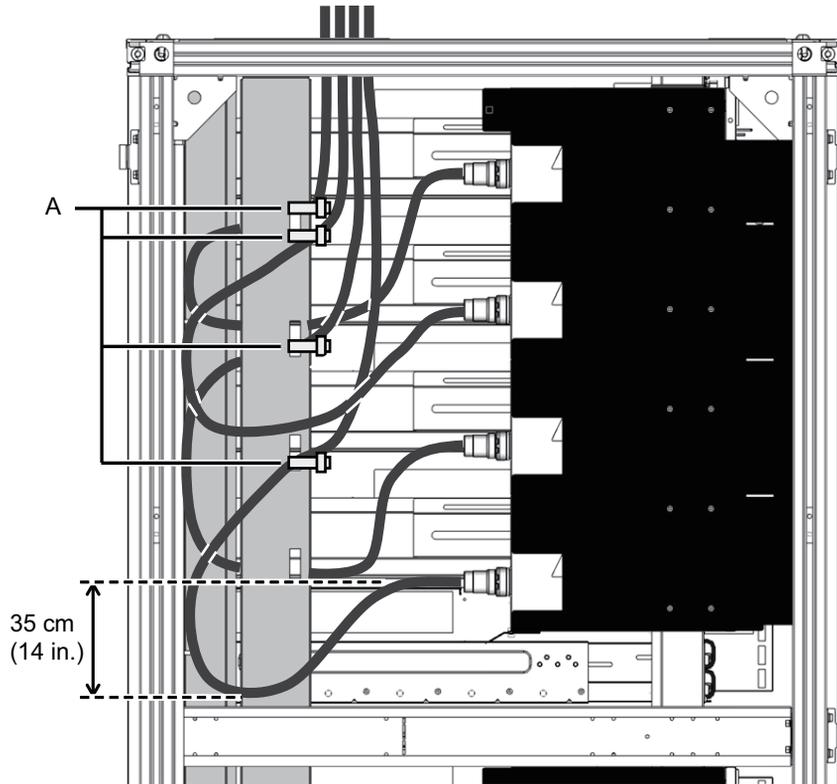


*1 PDU#0 and PDU#1 are for expansion rack 1. PDU#2 and PDU#3 are for expansion rack 2.

- f. Secure all the power cords to the column, with the supplied binding bands (A in [Figure 3-9](#)).
When securing them, allow an extra length of about 35 cm (14 in.) in each power cord.

Remarks - [Figure 3-9](#) shows single-phase power feed. The required lengths are the same as for three-phase power feed.

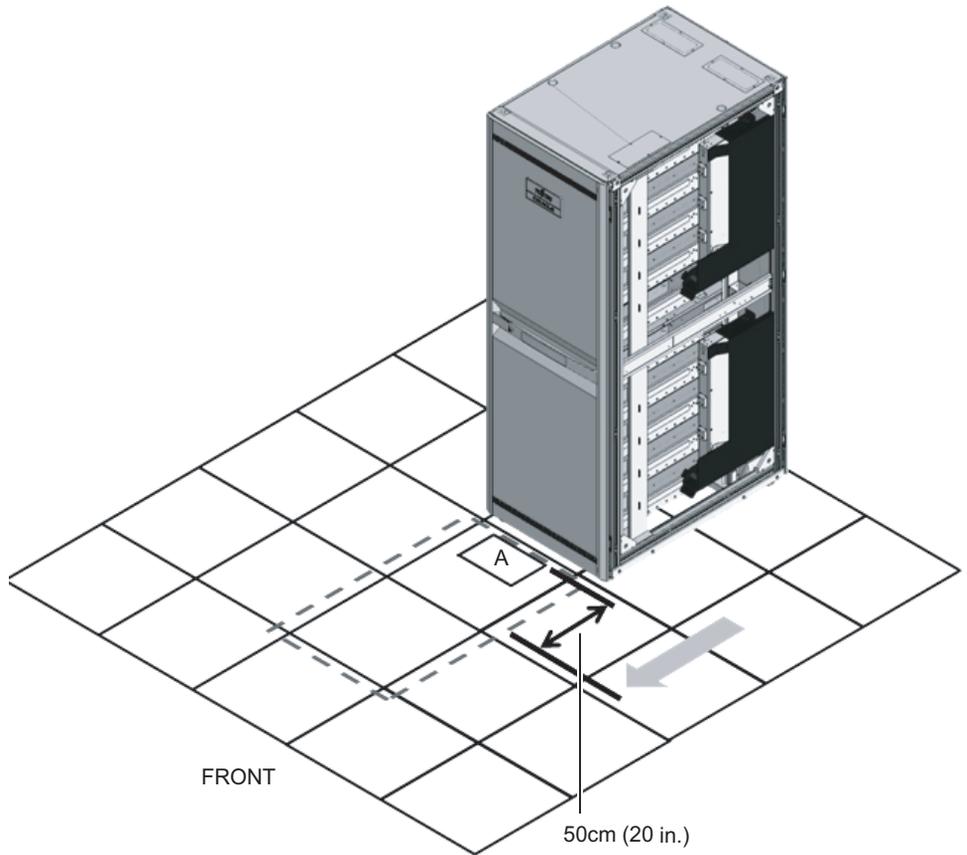
Figure 3-9 Securing Power Cords



Wiring the power cords from below the rack (floor side)

- a. Move the rack forward 50 cm (20 in.) from the power cord opening (A in [Figure 3-10](#)).

Figure 3-10 Moving the Rack

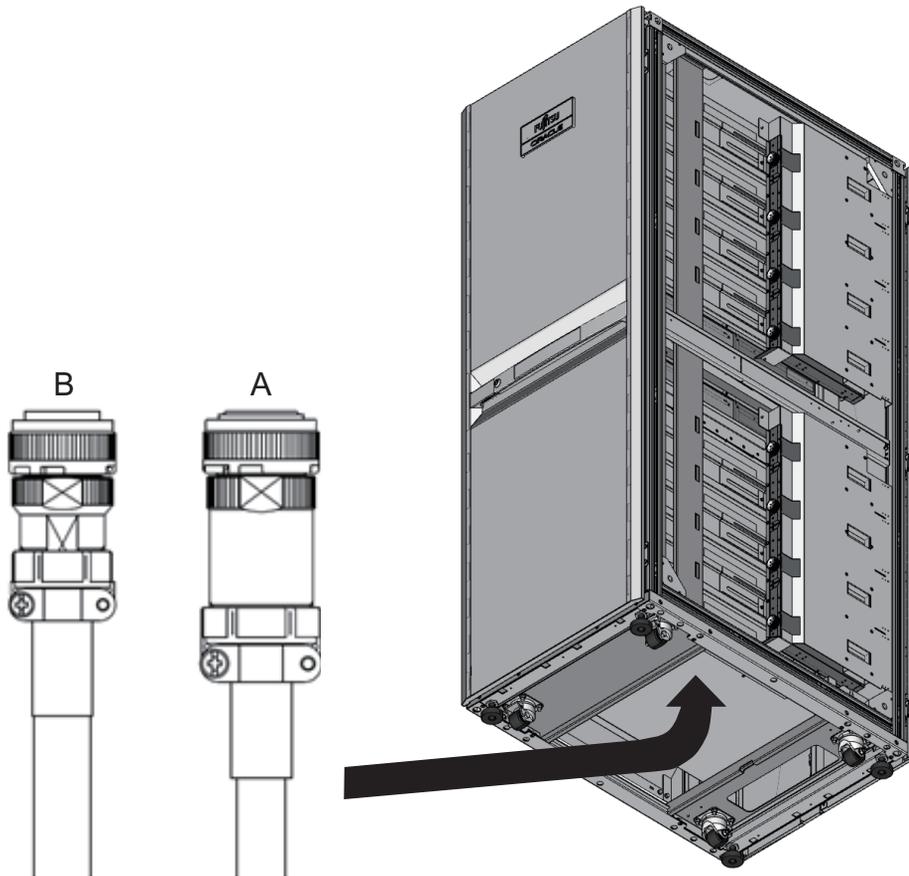


b. Draw in the PDU connection side of the power cords into the rack through the power cord opening.

A in [Figure 3-11](#) represents the power cord for single-phase power feed and three-phase delta power feed.

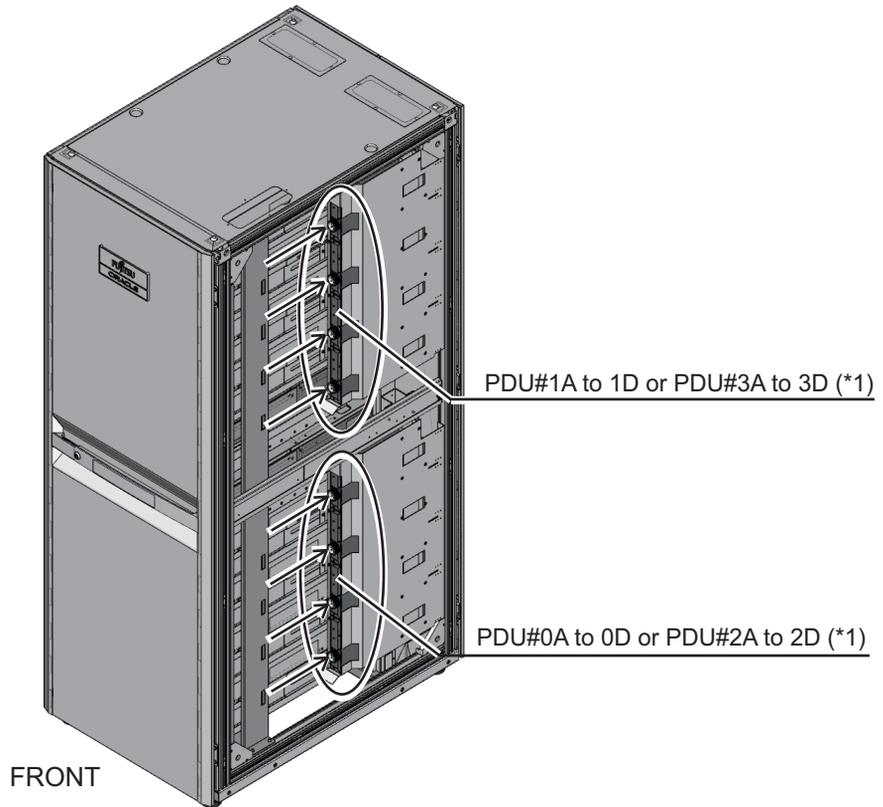
B in [Figure 3-11](#) represents the power cord for three-phase star power feed.

Figure 3-11 Drawing in Power Cords



- c. Connect the power cords to the PDUs.
Each cable has an attached label showing the connection destination. Each PDU also has an indicator. So, match it with the right cable to connect the cable. For the PDU mounting locations, see [Figure 3-12](#).

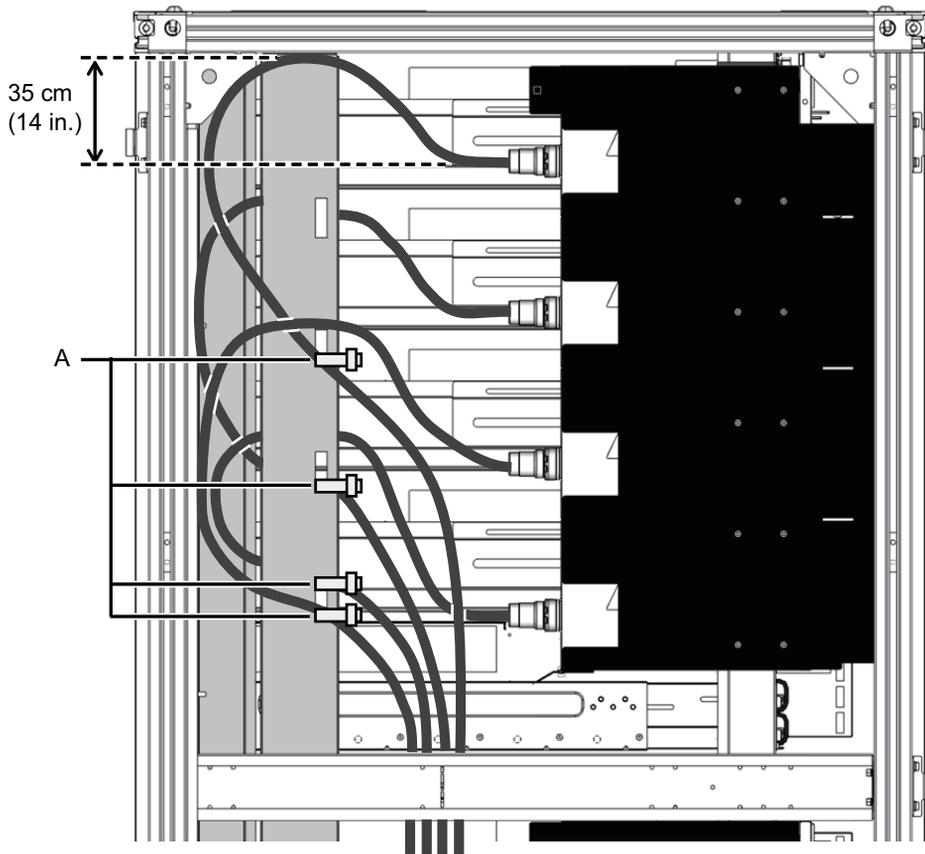
Figure 3-12 Connecting Power Cords



*1 PDU#0 and PDU#1 are for expansion rack 1. PDU#2 and PDU#3 are for expansion rack 2.

- d. Secure all the power cords to the column, with the supplied binding bands (A in [Figure 3-13](#)).
When securing them, allow an extra length of about 35 cm (14 in.) in each power cord.

Figure 3-13 Securing Power Cords



Remarks - Figure 3-13 shows single-phase power feed. The required lengths are the same as for three-phase power feed.

4. **Attach the side plate that was removed in step 2.**
Attach the plate by reversing the removal procedure of step 2. Move the rack as appropriate into position for attaching the side plate.
5. **Move the rack to the installation location.**

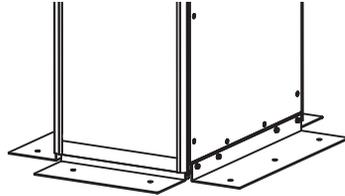
3.3.2 Fastening the Rack

When installing the rack, regardless of whether it will be fastened and anchored to the building, be sure to adjust the leveling feet as described below for installation. Keep the rack horizontal with the leveling feet, and be sure to keep the casters above the floor level by about 2 mm (0.1 in.). Do not let the casters support the weight of the rack.

When installing the rack in a fixed manner

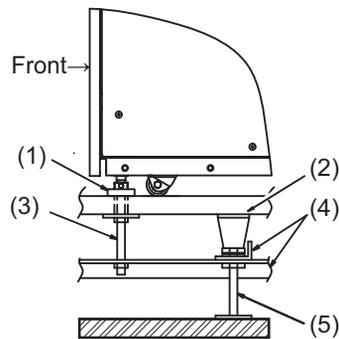
- Fastening with the quakeresistant options kit
Install the quakeresistant options kit around the rack (front/rear, left/right), using the holes of the quakeresistant kit to fasten the rack to the slab (building floor surface). The quakeresistant options kit needs to be ordered separately.

Figure 3-14 Fastening With the Quakeresistant Options Kit



- Fastening Using a Leveling Foot
Using the screw hole of size M20, depth 17 mm (0.7 in.), provided at the bottom face of a leveling foot of the rack, fasten the rack to the slab (building floor surface).

Figure 3-15 Example of Fastening With a Leveling Foot



Number in Figure	Description
1	Leveling foot
2	Free-access floor
3	Bolt (M20)
4	Frame
5	Supporting column

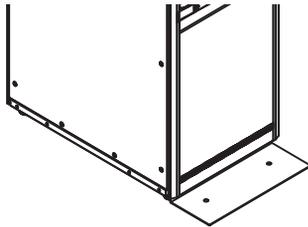
When installing the rack in a non-fixed manner

- Installing using the toppling-prevention stabilizer

Note - Attach the stabilizer as a measure to prevent the rack from toppling over during system maintenance. For installation without the rack fixed in place, be sure to install the stabilizer before installation.

The image of installing it on the rack is as follows.

Figure 3-16 Installation Image of L-Type Stabilizer



Warning - For a non-fixed installation of a rack, order the stabilizer and be sure to attach it. If you pull out the chassis inside the rack before installing the stabilizer, the rack may topple over.

3.3.3 Coupling Racks

When there is expansion rack 2, couple the racks together. When coupling the racks, couple rack 2 to rack 1, which has already been installed.



Warning - Turn off all the circuit breaker switches (CB switches) of expansion rack 1 when adding an expansion rack. Otherwise, there is a risk of electric shock or machine failure.



Caution - Make sure that two or more workers perform the work for connecting the racks. Otherwise injury may occur. When working on the upper portion of the rack, you may need to stand on a stepladder. Beware of falling down. When coupling the racks, do not put your foot on the rack. Before starting the work, confirm that expansion rack 1 is at a complete stop.

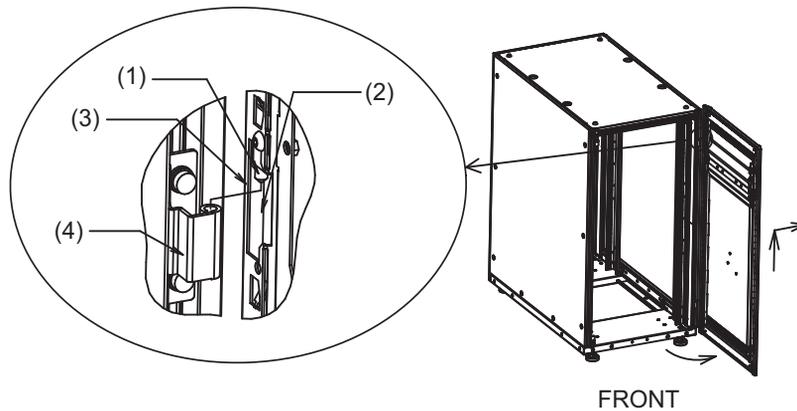
In this section, the procedure to couple expansion rack 2 to the right side of expansion rack 1 is described.

1. **Confirm that all the coupling kit components supplied with expansion rack 2 are ready for use.**
2. **Remove the front doors of expansion rack 1 and expansion rack 2.**
 - a. Open each door by about 90 degrees.
 - b. Lift the door to take out the hinge (pin) on the rack main unit, and remove the door by sliding the door horizontally.



Caution - When attaching or removing a door, be careful not to catch your finger, etc. in the gap between the door and rack. Bending is restricted by the opening angle at the part with the notch for the front door hinge, so the door may be difficult to slide horizontally for removal.

Figure 3-17 Removing the Front Door



Number in Figure	Description
1	Hinge on door
2	Part with notch for hinge
3	Bending restricted by opening angle
4	Hinge on main unit

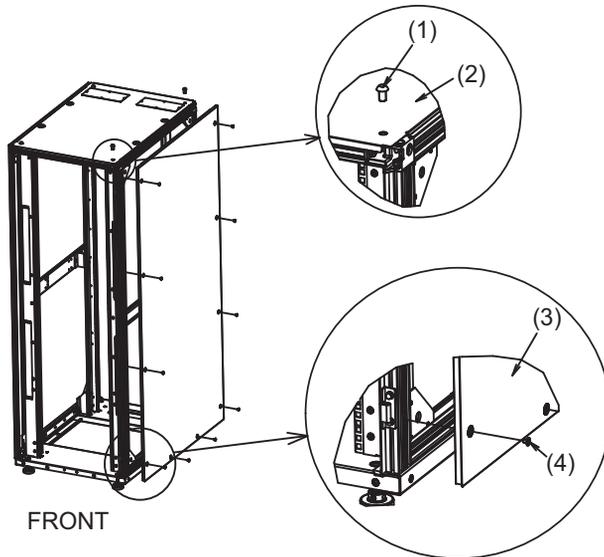
3. **Remove the rear doors of expansion rack 1 and expansion rack 2.**
 - a. Open the door by about 90 degrees.
 - b. Lift the door to take out the hinge (pin) on the rack main unit, and remove the door by sliding the door horizontally.
4. **Remove the fastening screws from the top cover for expansion rack 1, and remove the side panel.**
 - a. Using an Allen wrench, remove the two M12 screws fastening the top cover at the front and rear on the right side, the side to be coupled. The removed screws will not be used.

- b. Remove the 10 screws fastening the side panel, and remove the side panel.

Note - Always pay attention to your safety when working in high places, such as on the top cover. Also, avoid putting your foot or weight on the rack, as this is very dangerous.

Note - Be careful when removing the side plate because it weighs about 13 kg.

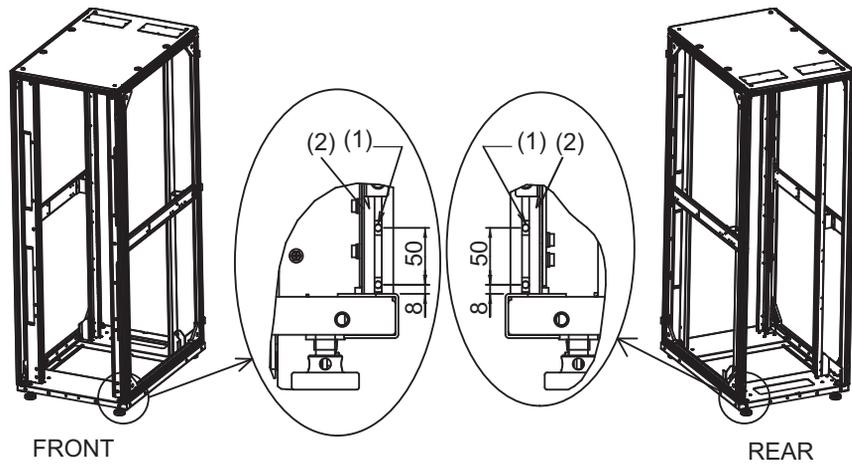
Figure 3-18 Removing the Side Plate



Number in Figure	Description
1	M12 screw
2	Top cover
3	Side panel
4	Screw

5. **Attach M6 core spring nuts at the front and rear of expansion rack 1.**
 - a. Attach two pieces of M6 core spring nuts to the lower portion of the vertical pillar on the coupling side of the rack front (right side as seen from the front).
 - b. Attach two pieces of M6 core spring nuts to the lower portion of the vertical pillar on the coupling side of the rack rear (left side as seen from the rear).

Figure 3-19 Attaching the Core Spring Nuts



Number in Figure	Description
1	M6 core spring nut
2	Vertical pillar

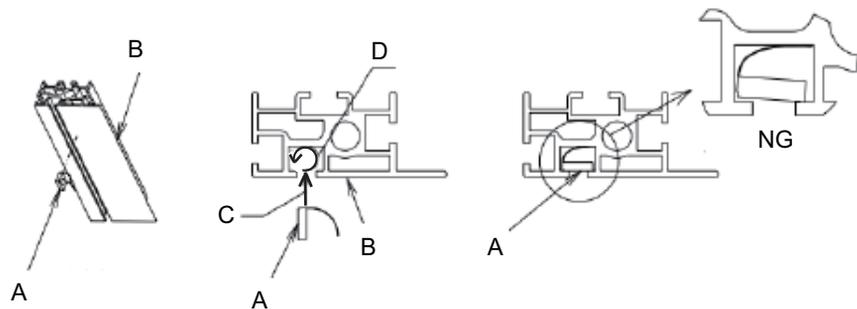
■ **Procedure for attaching core spring nuts**

See [Figure 3-20](#) for this work.

- a. After inserting the core spring nut A in the groove of vertical pillar B in the direction of C, rotate in the direction of D. This work can be done more easily by using the tip of a pen or thin flathead screwdriver.
- b. Confirm that the core spring nut is not tilted in the groove of the aluminum frame.

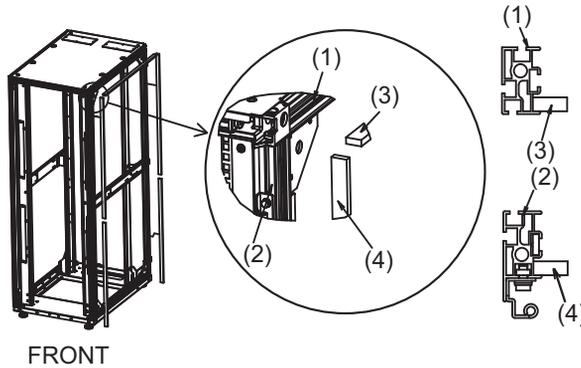
Note - Check whether the screw section of the core spring nuts can be seen from outside of the groove.

Figure 3-20 Attaching the Core Spring Nuts



6. **Affix the coupling seals.**
 - a. Affix vertical coupling seal 1 and vertical coupling seal 2 to the vertical pillars at the front and rear on the right side of expansion rack 1. Either one may be affixed in the higher position.
See (4) of [Figure 3-21](#) for the position of affixing.
 - b. Affix the horizontal coupling seal to the horizontal pillar at the upper right of expansion rack 1.
See (3) of [Figure 3-21](#) for the position of affixing.

Figure 3-21 Affixing the Coupling Seals



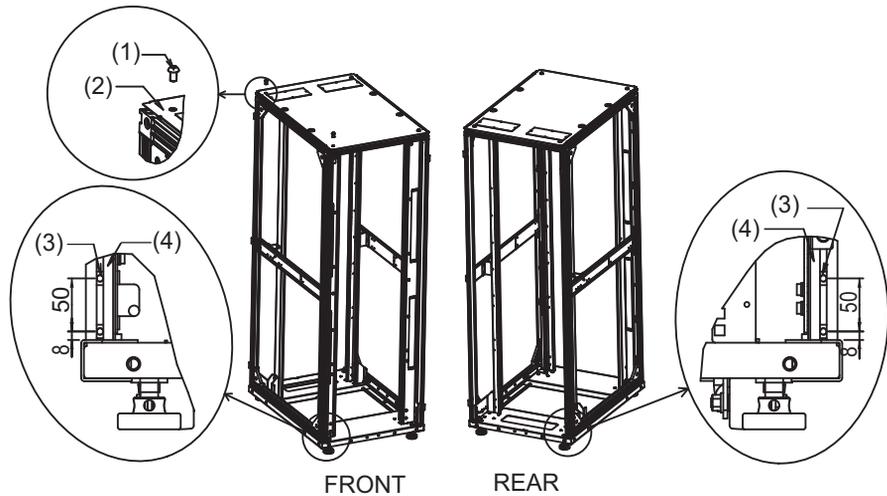
Number in Figure	Description
1	Horizontal pillar
2	Vertical pillar
3	Horizontal coupling seal
4	Vertical coupling seal

7. **After removing the fastening screws from the top cover of expansion rack 2, attach M6 core spring nuts at the front and rear of the rack.**
 - a. Using a hexagon wrench, remove the two M12 screws fastening the top cover at the front and rear on the left side, the side to be coupled.

Note - Always pay attention to your safety when working in high places, such as on the top cover. Also, avoid putting your foot or weight on the rack, as this is very dangerous.

- b. Attach two M6 core spring nuts to the lower part of the vertical pillar on the coupling side at the front of the rack (left side as seen from the front).
- c. Attach two M6 core spring nuts at the lower part of the vertical pillar on the coupling side at the rear of the rack (right side as seen from the rear).

Figure 3-22 Attaching the Core Spring Nuts (Expansion Rack 2 Side)



Number in Figure	Description
1	M12 screw
2	Top cover
3	M6 core spring nut
4	Vertical pillar

8. **Align the heights of expansion rack 2 and expansion rack 1.**
 - a. Place expansion rack 2 to the side of expansion rack 1.
 - b. Adjust the leveling feet of expansion rack 2 to align the heights of the two racks.
9. **Attach the upper and lower coupling brackets.**
 - a. Align the upper coupling bracket on the top covers of expansion rack 1 and rack 2, and temporarily attach it with M12 hexagon bolts.

Note - Confirm that the heights of expansion racks 1 and 2 are aligned. If not aligned, adjust with the leveling feet.

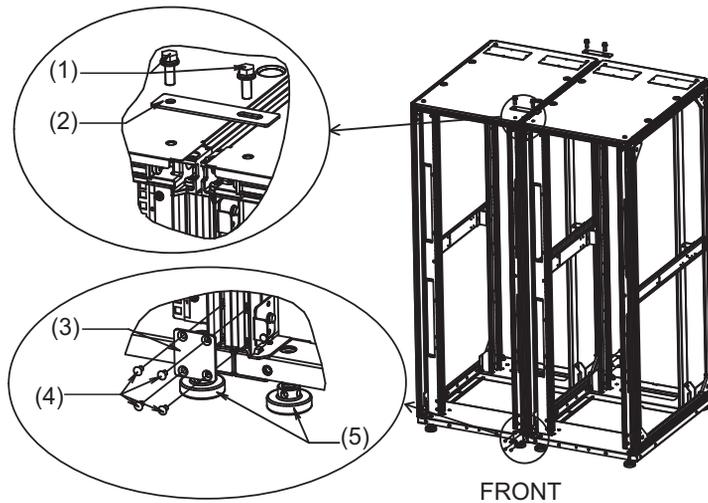
Note - Always pay attention to your safety when working in high places, such as on the top cover. Also, avoid putting your foot or weight on the rack, as this is very dangerous.

Note - If a coupling seal protrudes or is recessed when you align expansion racks 1 and 2, adjust it by pulling or pushing it with your fingers.

Note - Before attaching the coupling brackets, check the packing condition of the cables stored in the expansion rack 2. It may be impossible to pull out the cables that pass across the racks after the coupling brackets are fixed. As needed, unpack the cables that pass across the racks, and pass them to expansion rack 1 (see 4.2.2 and 4.3.2) so that they can be taken out. For unpacking and the location of the packed cables, see "4.3.2 Crossbar Cable Connections via a Crossbar Box."

- b. In steps 5 and 7, use the M6 core spring nuts attached to the pillars at the front and rear of the rack, to fasten the lower coupling bracket with M6 countersunk screws.
- c. Finally tighten the M12 hexagon bolts to secure the temporarily attached upper coupling bracket.

Figure 3-23 Attaching the Coupling Brackets



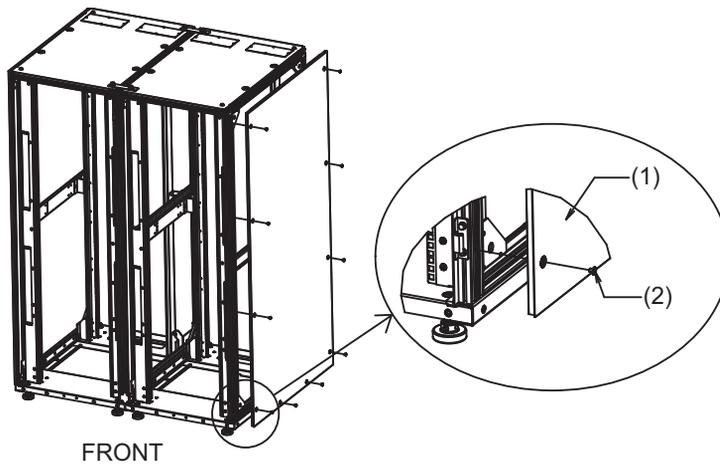
Number in Figure	Description
1	M12 hexagon bolts
2	Upper coupling bracket
3	Lower coupling bracket
4	M6 countersunk screw
5	Leveling foot

10. Attach the side panel to expansion rack 2.

Attach the ten screws removed from the side panel of expansion rack 1 to the side panel of expansion rack 1.

Note - Be careful when attaching the side plate because it weighs about 13 kg.

Figure 3-24 Attaching the Side Panel



Number in Figure	Description
1	Side panel
2	Screw

11. **Attach the front and rear doors of expansion rack 1 and expansion rack 2.**
The work is completed after the front and rear doors are attached.

3.4 Mounting the SPARC M12-2S and the PCI Expansion Unit in a Rack

This section describes the procedures for mounting the SPARC M12-2S and the PCI expansion unit in a 19 inch rack.

The method of securing the rails differs depending on the rack type. As described in this section, the methods of securing them differ between the racks with supporting columns having square holes and the racks with supporting columns having M6 screw holes.

For rack details, see the manual for the rack used.

If the chassis has already been mounted in the rack, go to "[3.5 Mounting Optional Components](#)."

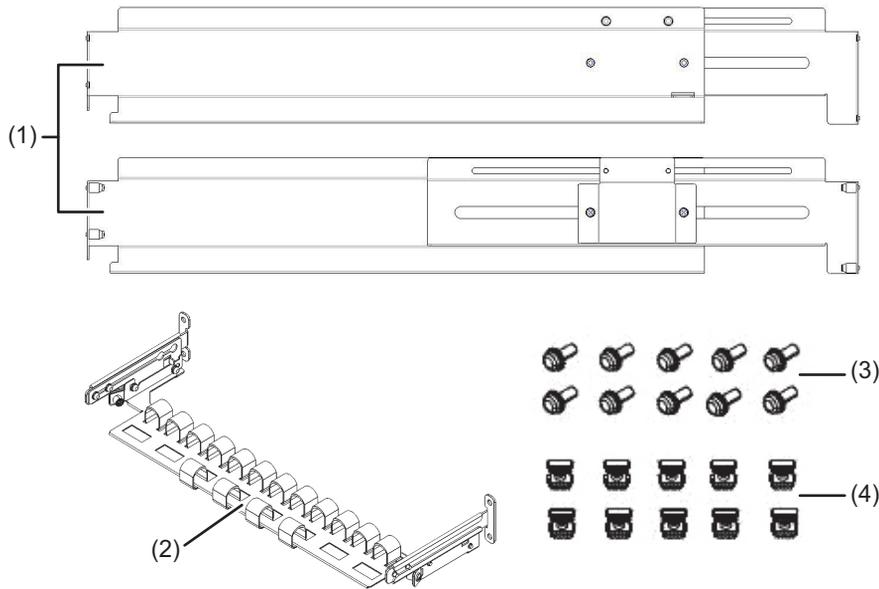
For the rack mounting procedures of the SPARC M12-2S and PCI expansion unit, see the following sections:

- [Mounting the SPARC M12-2S in a Rack](#)
- [Mounting the PCI Expansion Unit in a Rack](#)

3.4.1 Mounting the SPARC M12-2S in a Rack

1. **Confirm that the rack mount kit supplied with the SPARC M12-2S is complete.**

Figure 3-25 Rack Mount Kit



Number in Figure	Name	Quantity	Remarks
1	Rail	2	Bilaterally symmetrical shape
2	Cable support	1	
3	M6 screw	10	
4	Cage nut	10	

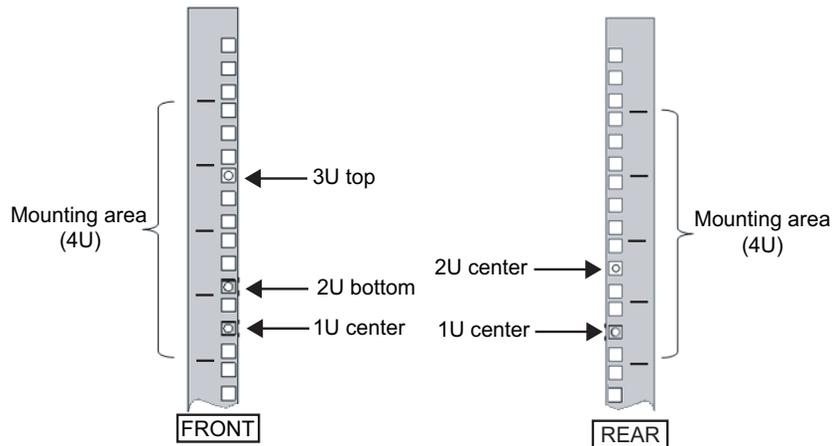
2. **Confirm that the rack is secured in place to prevent the rack from toppling over.**
3. **Confirm the SPARC M12-2S mounting location in the rack. If necessary, mark the location on the supporting columns.**
The mounting locations have been predetermined for the building block configurations. See [Figure 2-2](#) in "2.4.1 Mounting Conditions for General Racks."
4. **Step 4 differs depending on the shape of the supporting column holes of the rack. Perform the work appropriate to the shape of the supporting column holes of the rack.**

■ **For racks with supporting columns having square holes**

Attach cage nuts to the left and right supporting columns of the rack.

- Attachment locations in the front supporting columns: (From the bottom) 1U center, 2U bottom, and 3U top
- Attachment locations in the rear supporting columns: (From the bottom) 1U center and 2U center

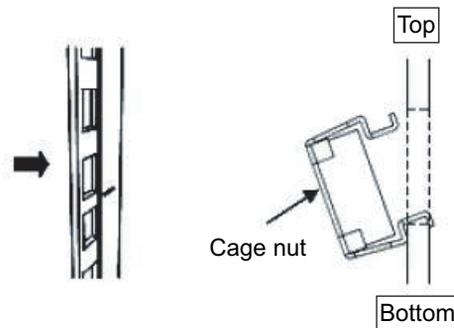
Figure 3-26 Cage Nut Attachment Locations in the Supporting Columns of the Rack



- a. Attach cage nuts from the inside of the rack.
Orient the hooks of the cage nut vertically.
Hook the hook at one end of a cage nut into a cage nut attachment hole of the rack.

Figure 3-27 shows a cage nut hooked on the lower part of a hole.

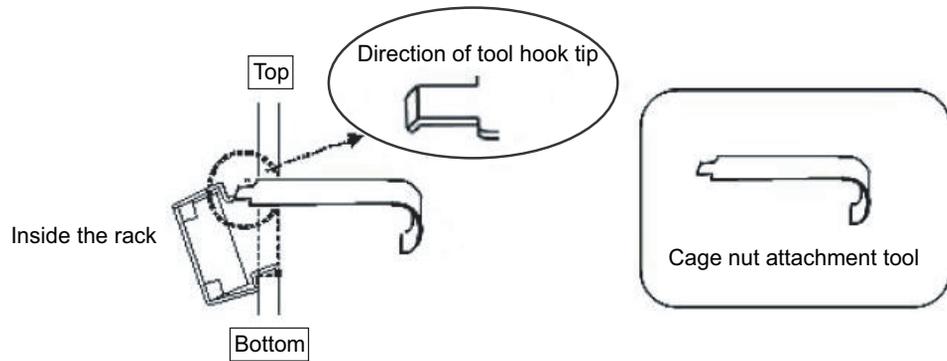
Figure 3-27 Orientation of the Cage Nut Lips



- b. From the front, insert the hook tip of the supplied cage nut attachment tool

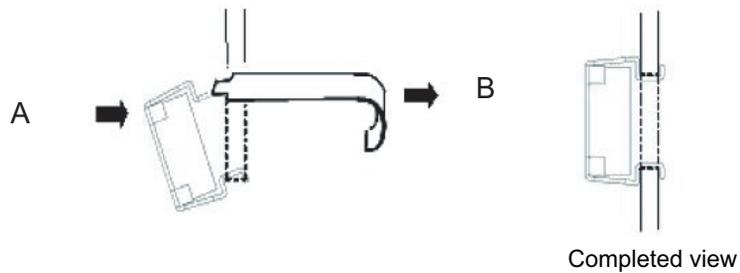
through the cage nut attachment hole, and engage it with the other lip of the cage nut.

Figure 3-28 Using the Cage Nut Attachment Tool



- c. Pull the tool forward to attach the cage nut.
Push in direction A while simultaneously pulling in direction B as shown in [Figure 3-29](#).

Figure 3-29 Attaching a Cage Nut

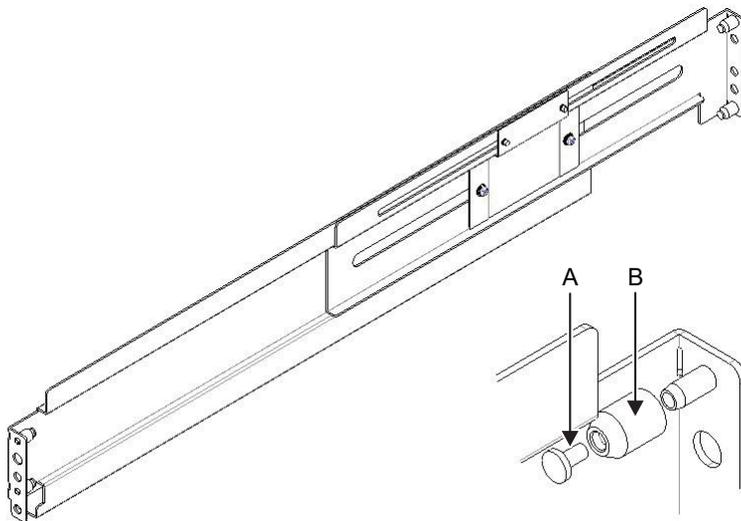


▪ **For supporting columns with M6 screw holes**

Remove the pins at the front and rear of the rail.

- a. Remove the screw (A in [Figure 3-30](#)) securing the rail pin.
- b. Remove the pin (B in [Figure 3-30](#)).
- c. Remove pins from the left and right rails in the same manner.
- d. Store the removed pins and screws (total for each rail: 8) for future use when the SPARC M12-2S is moved.

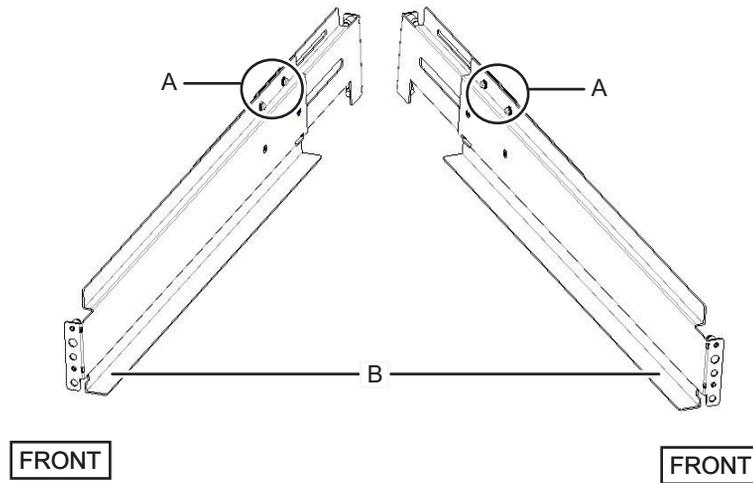
Figure 3-30 Removing a Rail Pin



5. **Loosen the two screws attached to the side of rail (A in [Figure 3-31](#)) and confirm that the brackets at the front and rear can slide.**

Note - Do not remove the screws.

Figure 3-31 Orientation for Attaching the Rails



6. **Attach the rail to the rack.**

Arrange it so that the two loosened screws (A in [Figure 3-31](#)) are situated at the back and the shelf (B in [Figure 3-31](#)) is on the bottom.

- a. From the front of the rack, insert the rail protrusions into 2U top and 1U top in the front supporting column of the rack.
- b. Pull out the rail to as far as the depth of the rack.
- c. Insert the rail protrusions into 2U top and 1U bottom in the rear supporting column of the rack.
- d. Secure the rail with one M6 screw to the front supporting column of the rack. The fixing point is 2U bottom.
- e. Attach the other rail in the same manner.

Note - After loosening the screws, hold the rail level with both hands. If the rail tilts, it may stretch.

Figure 3-32 Attaching the Rails: Locations of Protrusions

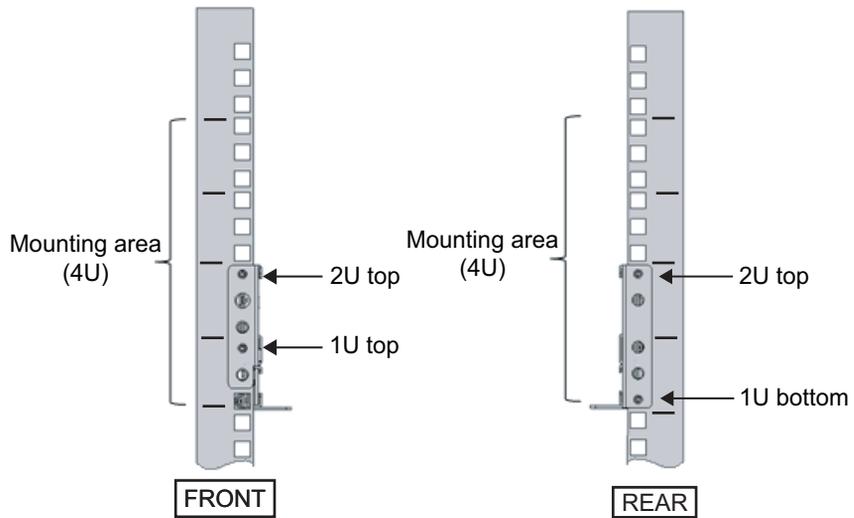
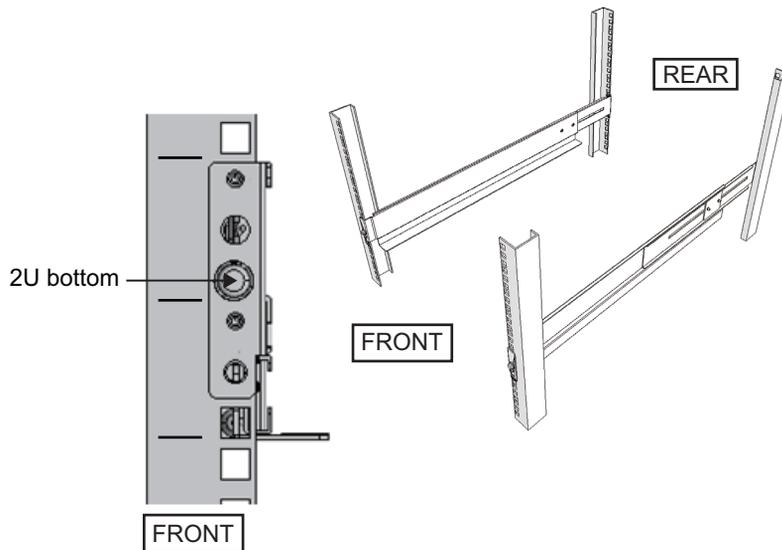
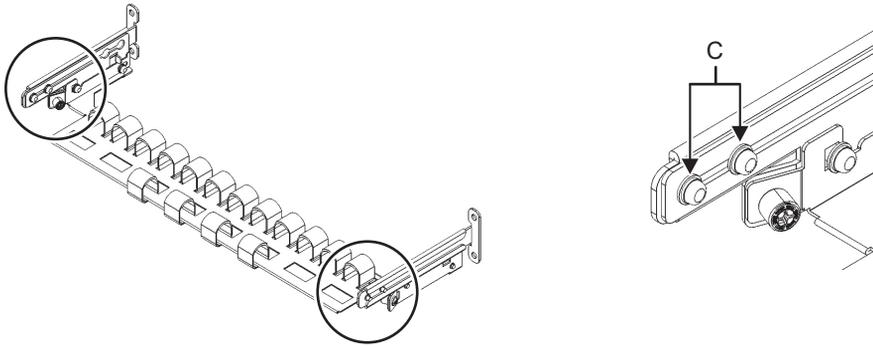


Figure 3-33 Attaching the Rails: Fixing Point of the Screw



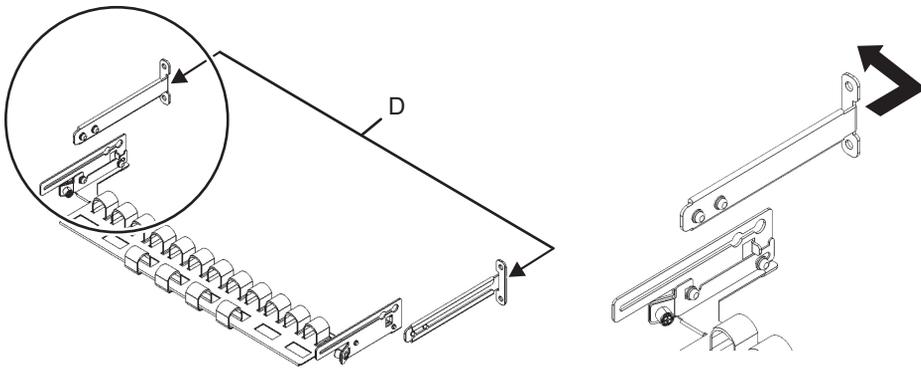
7. **Attach the cable support fixing brackets to the rear supporting columns of the rack.**
 - a. Loosen the four screws (C in [Figure 3-34](#)) from the inside of the cable support.

Figure 3-34 Removing the Cable Support Fixing Brackets (1)



b. Slide the cable support fixing brackets (D in [Figure 3-35](#)) to remove them.

Figure 3-35 Removing the Cable Support Fixing Brackets (2)



c. From the rear of the rack, secure the rails and cable support fixing brackets (D) with two M6 screws to the rear supporting columns of the rack. The fixing points are 1U center and 2U center.

Figure 3-36 Attaching the Cable Support Brackets

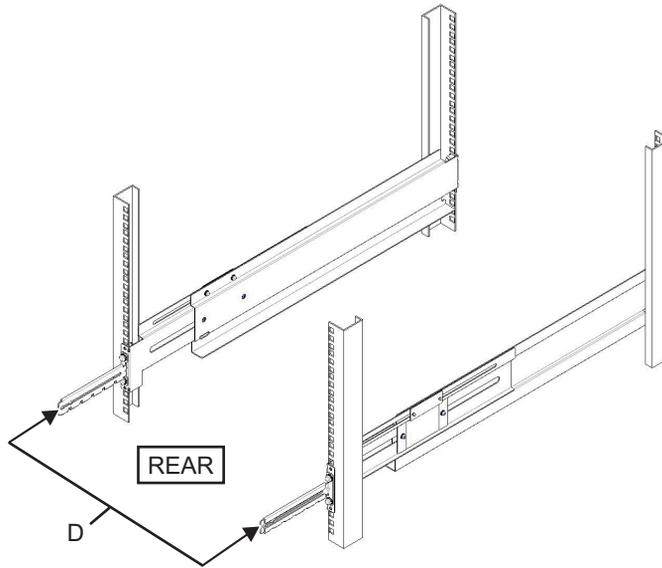
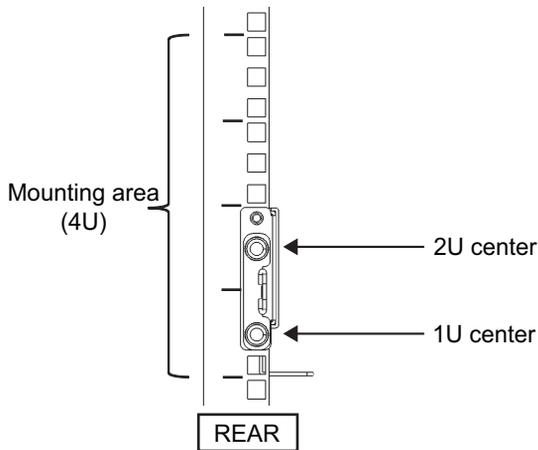


Figure 3-37 Securing a Cable Support Fixing Bracket and Rail

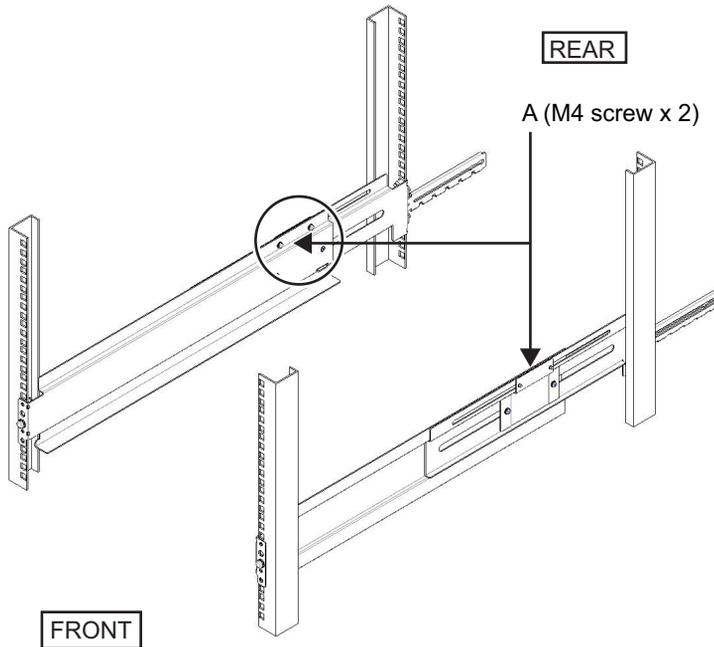


- d. After attaching the cable support fixing brackets, confirm that the rack door can close.

Note - If the door cannot close because a cable support fixing bracket or the cable support protrudes from the rear of the rack, do not attach the cable support bracket. However, secure the rail to the rack with two M6 screws.

8. **Secure the rail sides by tightening the two M4 screws loosened in step 5 (A in [Figure 3-38](#)).**

Figure 3-38 Securing the Sides of Rails With Screws



9. **Mount the SPARC M12-2S in the rack.**

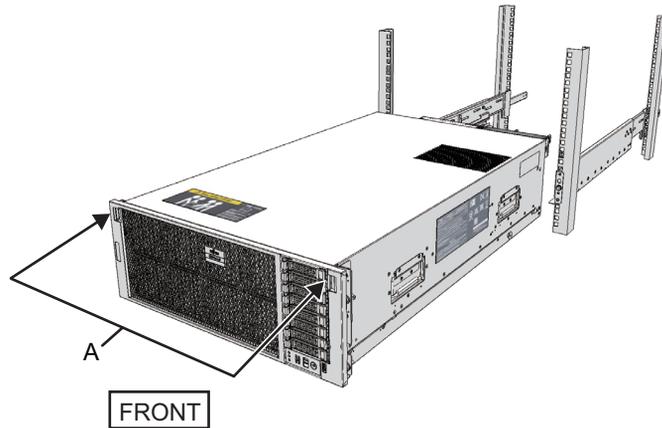
Mount the SPARC M12-2S from the front of the rack.



Caution - The SPARC M12-2S weighs 60 kg. Mount the chassis in the rack with four or more people working together. Alternatively, use a lifter such as a hydraulic or mechanical jack.

- a. When using a lifter, secure it horizontally.
- b. Lift the chassis to the mounting location with the lifter or manually.
- c. Put the rear part of the chassis on the flanges of the rails.
- d. Slide the chassis into the rack. At this time, store the handle on the side of the chassis.
- e. Insert the chassis all the way to store it inside the rack.

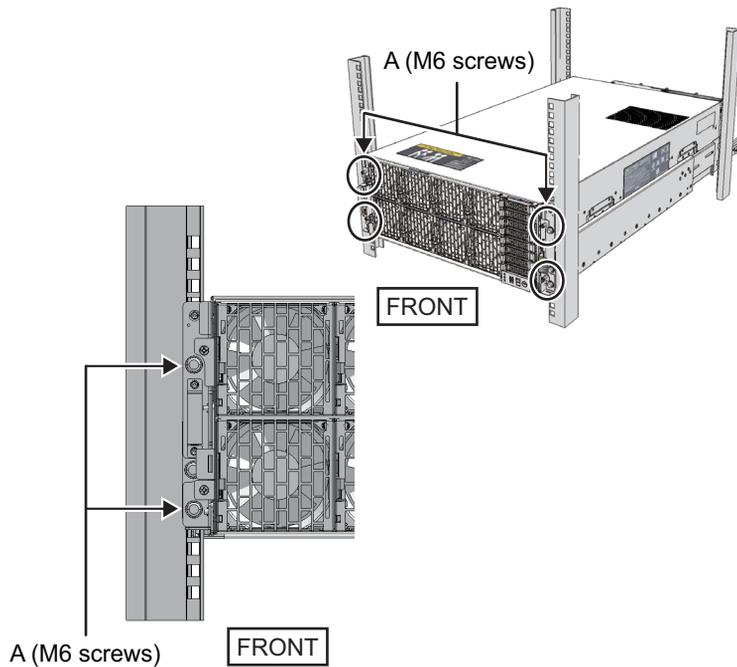
Figure 3-39 Mounting in the Rack



10. **Secure the SPARC M12-2S to the rack.**
 - a. Push out the left and right slide locks on the front cover (A in [Figure 3-39](#)) to release the locks, and remove the front cover.
 - b. Tighten the four M6 screws at four locations on the front of the chassis (A in [Figure 3-40](#)) to secure it to the rack.
 - c. Insert the left and right hooks on the inside of the bottom of the front cover into the grooves at the bottom front of the chassis to attach the front cover.

Note - A label with the serial number of the SPARC M12-2S is affixed to the front cover. Be sure to attach the front cover to the corresponding chassis.

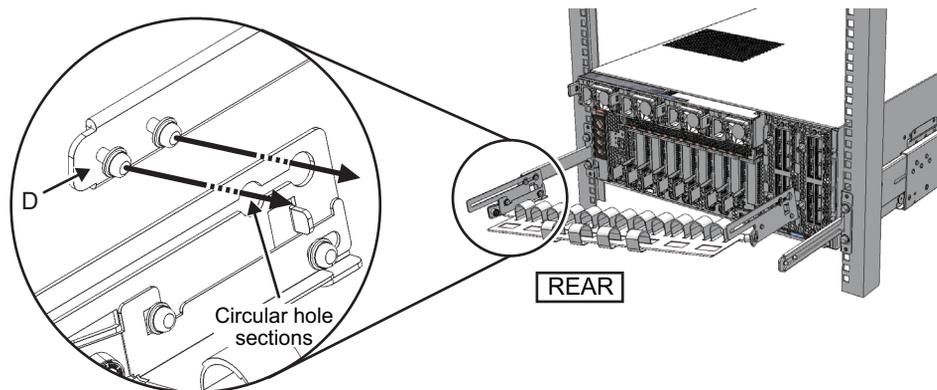
Figure 3-40 Securing the SPARC M12-2S



11. **Attach the cable support.**

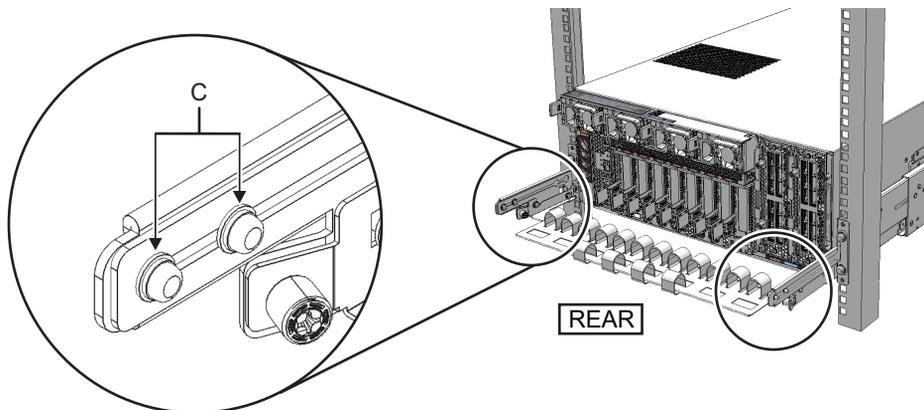
- a. Tilt the cable support to align the circular holes at the rear of the groove with the two screws of a cable support fixing bracket (D in [Figure 3-41](#)), and attach it. Level the cable support. Then, align the circular holes on the other side with the two screws, and attach it.

Figure 3-41 Attaching the Cable Support (1)



- b. Slide the cable support all the way in, and tighten the four screws (C in [Figure 3-42](#)).

Figure 3-42 Attaching the Cable Support (2)



Note - If the dimension between the front and rear columns of the rack is less than 740 mm, secure the cable support without sliding it all the way in. The fixing location varies depending on the dimension between the front and rear columns of the rack. Based on [Figure 3-43](#), align the scale marks (E in [Figure 3-43](#)) (spacing: 10 mm) on the cable support with the screws (F in [Figure 3-43](#)) of the fixing brackets to secure the cable support.

Figure 3-43 Attaching the Cable Support (3)

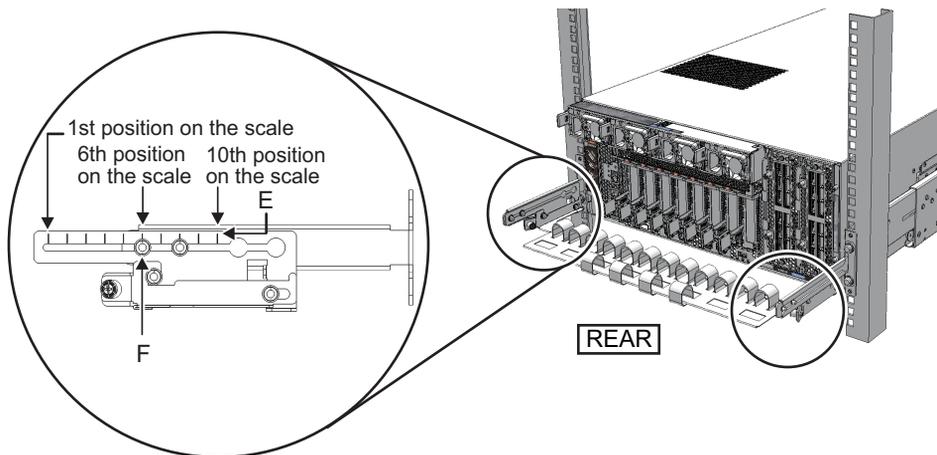


Table 3-9 Dimensions Between the Front and Rear Columns and Scale Positions

Dimension Between Front and Rear Columns (mm)	Scale Position
740	1st
730	2nd
720	3rd
710	4th
700	5th
690	6th
680	7th
670	8th
660	9th
650	10th

Note - If you have difficulty laying a thick cable into the cable support, move the cable support forward to a fixing point that makes the work easier.

- c. Close the rear door of the rack, and confirm that the cable support does not interfere. If the cable support interferes with the rear door, remove the cable support. Even if you remove the cable support, leave the rails secured to the rack with the two M6 screws.
12. **Detach the hook-and-loop fastener strips on the cable support.**
The detached hook-and-loop fastener strips are the four (A in [Figure 3-44](#)) on the right side as viewed from the rear of the chassis.

Figure 3-44 Detaching the Hook-and-Loop Fastener Strips (SPARC M12-2S)

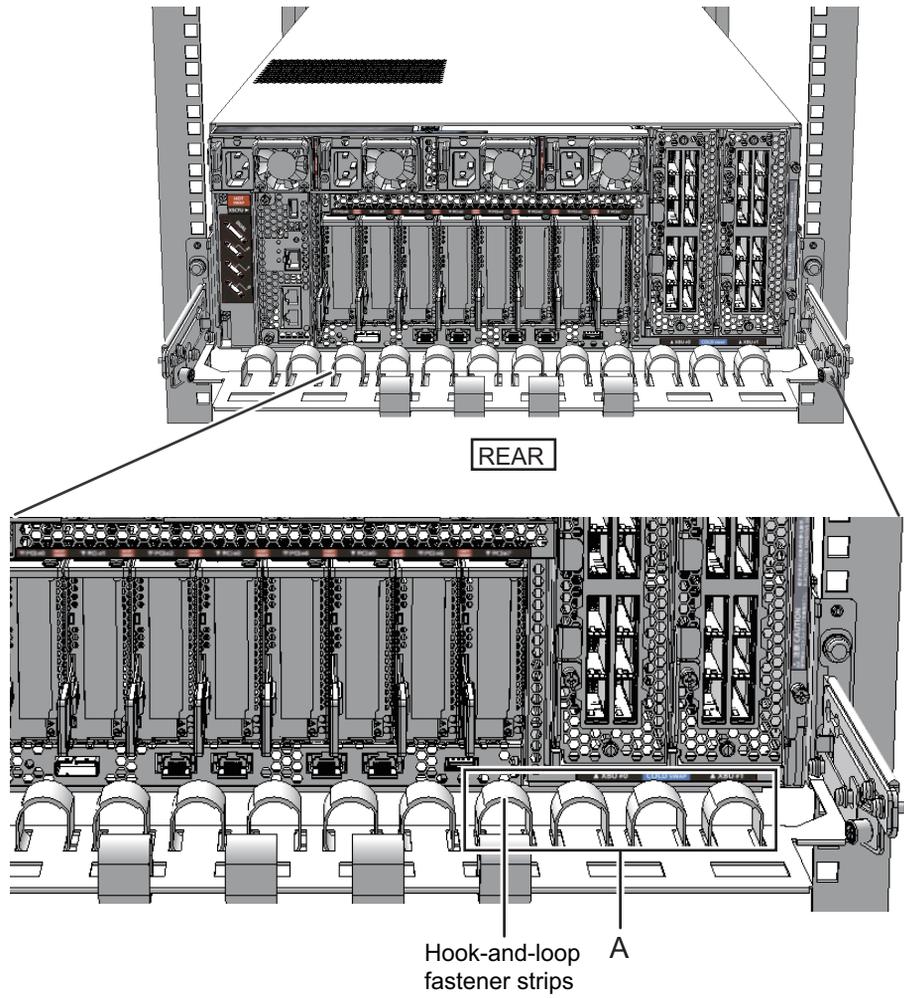


Figure 3-45 SPARC M12-2S Mounting Completed (Front)

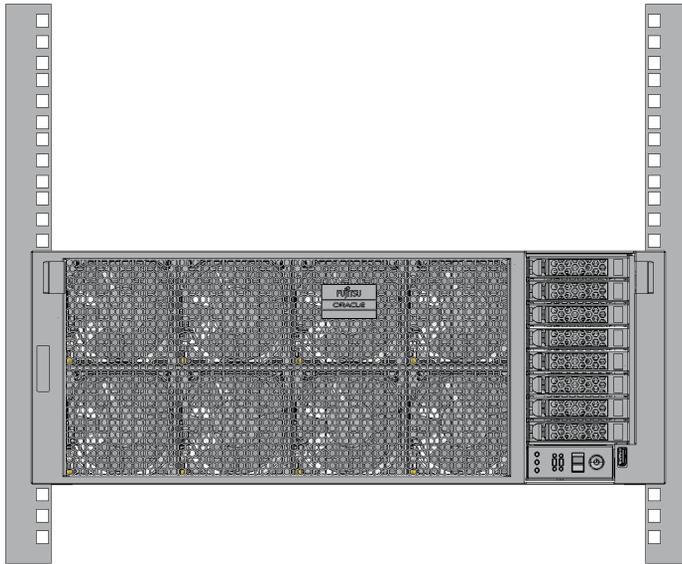
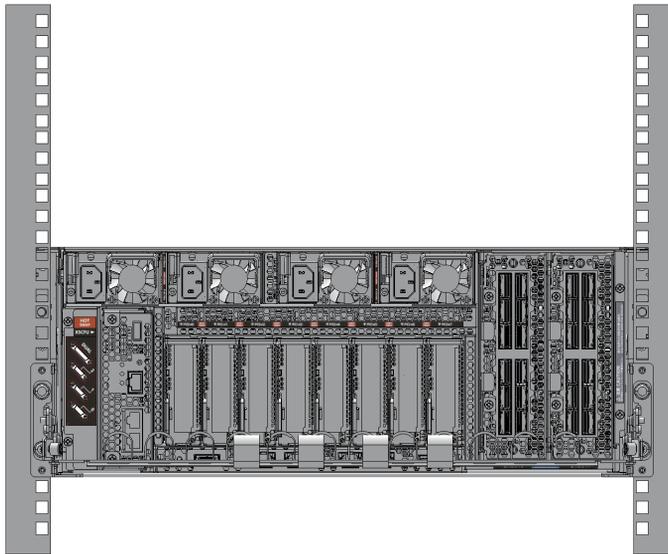


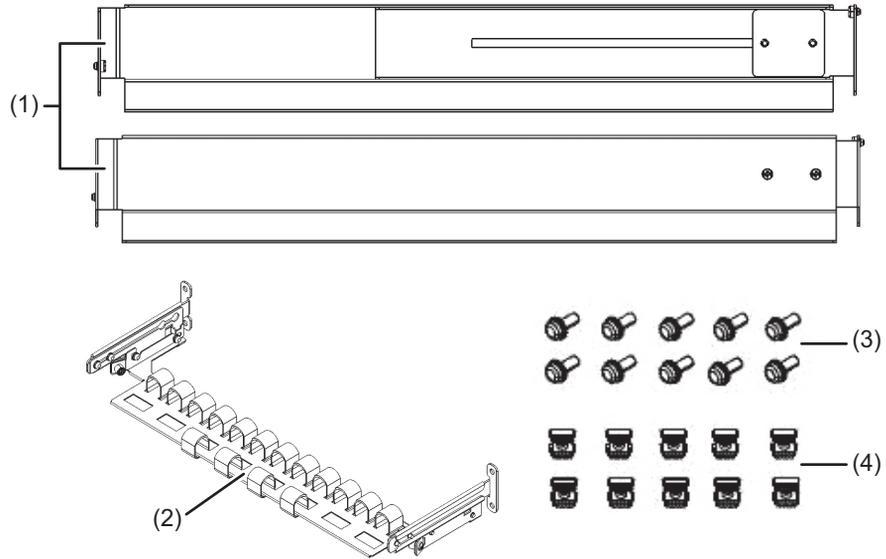
Figure 3-46 SPARC M12-2S Mounting Completed (Rear)



3.4.2 Mounting the PCI Expansion Unit in a Rack

1. **Confirm that the rack mount kit supplied with the PCI expansion unit is complete.**

Figure 3-47 Rack Mount Kit



Number in Figure	Name	Quantity	Remarks
1	Rail	2	Bilaterally symmetrical shape
2	Cable support	1	
3	M6 screw	10	
4	Cage nut	10	

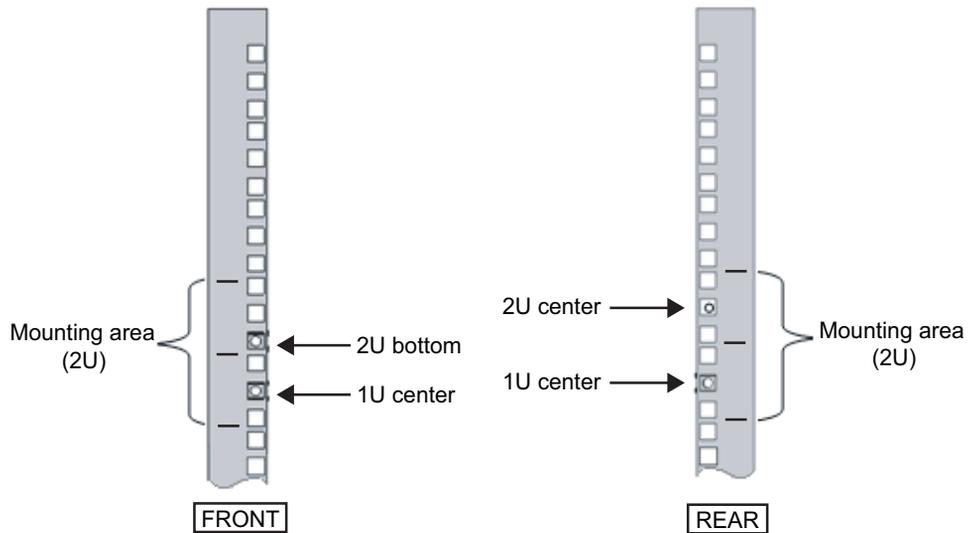
2. **Confirm that the rack is secured in place to prevent the rack from toppling over.**
3. **Step 3 differs depending on the shape of the supporting column holes of the rack. Perform the work appropriate to the shape of the supporting column holes of the rack.**

- **For racks with supporting columns having square holes**

Attach cage nuts to the left and right supporting columns of the rack.

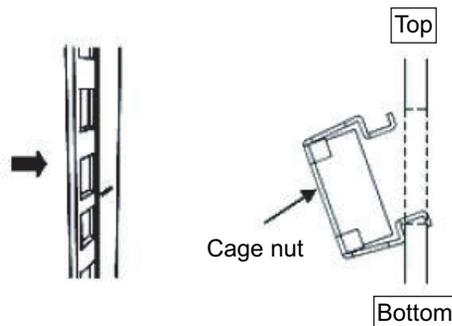
- Attachment locations in the front supporting columns: (From the bottom) 1U center and 2U bottom
- Attachment locations in the rear supporting columns: (From the bottom) 1U center and 2U center

Figure 3-48 Cage Nut Attachment Locations in the Supporting Columns of the Rack



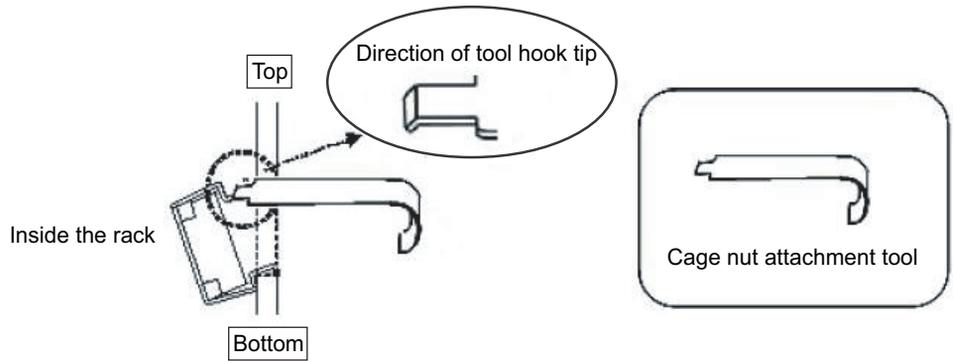
- Attach cage nuts from the inside of the rack. Orient the hooks of the cage nut vertically. Hook the hook at one end of a cage nut into a cage nut attachment hole of the rack. [Figure 3-49](#) shows a cage nut hooked on the lower part of a hole.

Figure 3-49 Orientation of the Cage Nut Lips



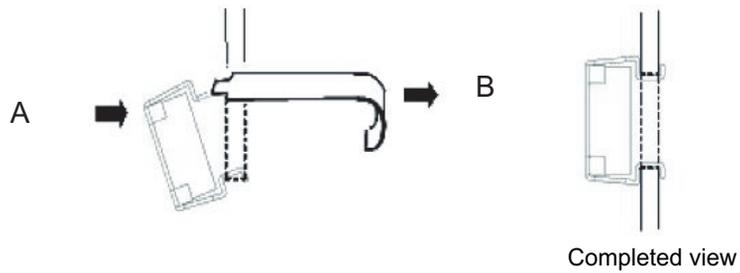
- From the front, insert the hook tip of the supplied cage nut attachment tool through the cage nut attachment hole, and engage it with the other lip of the cage nut.

Figure 3-50 Using the Cage Nut Attachment Tool



- c. Pull the tool forward to attach the cage nut. Push in direction A while simultaneously pulling in direction B as shown in [Figure 3-51](#).

Figure 3-51 Attaching a Cage Nut

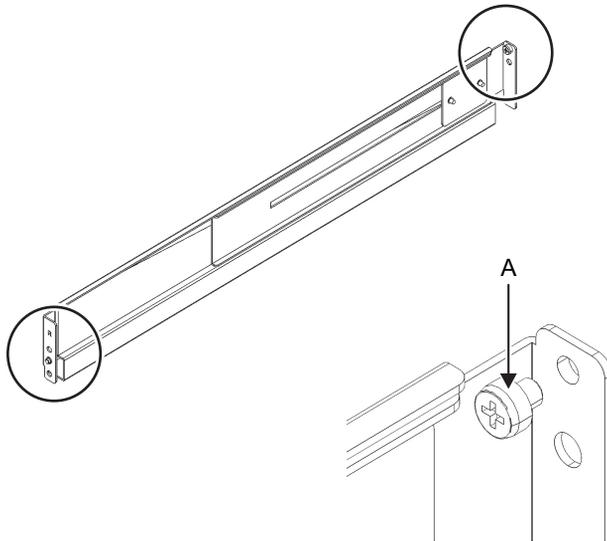


▪ **For supporting columns with M6 screw holes**

Remove the pins at the front and rear of the rail.

- a. Remove the pins (A in [Figure 3-52](#)) at the front and rear of the left and right rails.
- b. Store the removed pins (four pins in total) for future use when the PCI expansion unit is moved.

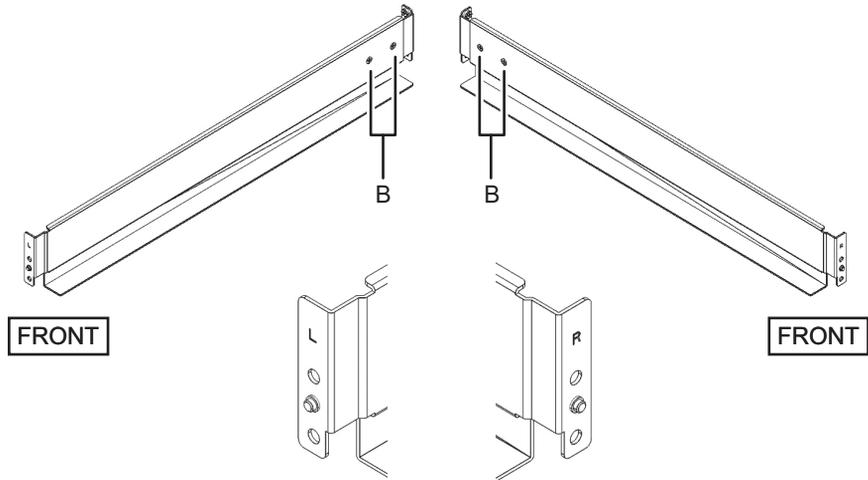
Figure 3-52 Removing a Rail Pin



4. **Loosen the two screws (B in [Figure 3-53](#)) from the side of the rail.**

Note - After loosening the screws, hold the rail level with both hands. If the rail tilts, it may stretch.

Figure 3-53 Screws on the Sides of Rails



5. **Attach the rail to the rack.**

The letter [R] on a side of a rail indicates that the side is the front right side, and [L] indicates that the side is the front left side.

This step differs depending on the shape of the supporting column holes of the rack. Perform the work appropriate to the shape of the supporting column holes of the rack.

■ **For racks with supporting columns having square holes**

- a. From the rear of the rack, insert the rail protrusion into 1U top in the front supporting column of the rack.
- b. Pull out the rail to as far as the depth of the rack.
- c. Insert the rail protrusion into 2U top in the rear supporting column of the rack.
- d. Secure the rail with one M6 screw to the front supporting column of the rack. The fixing point is 2U bottom.
- e. Attach the other rail in the same manner.

Figure 3-54 Attaching the Rail: Locations of Protrusions (for Supporting Columns Having Square Holes)

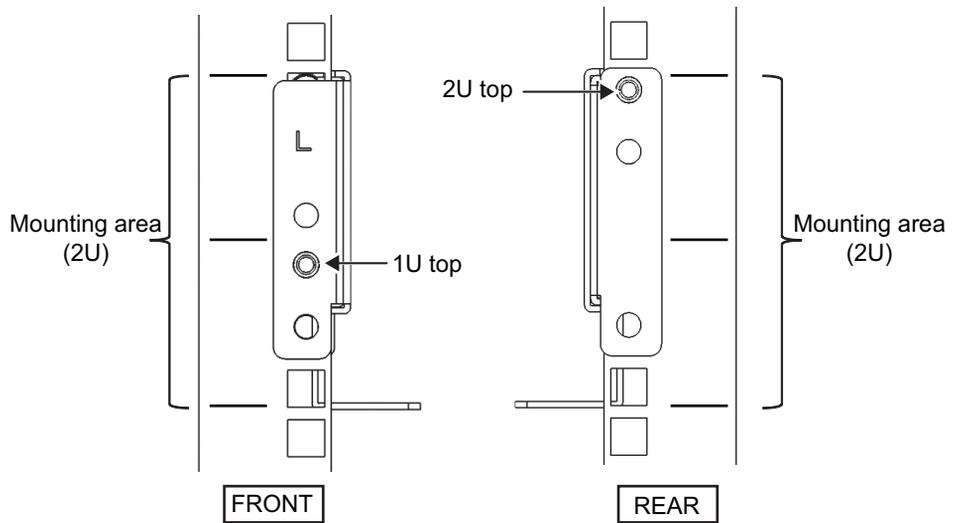
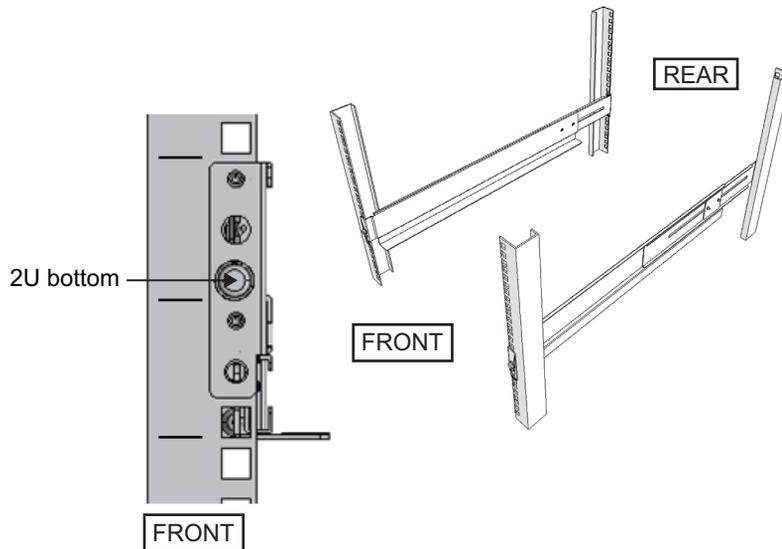


Figure 3-55 Attaching the Rails: Fixing Point of the Screw (for Supporting Columns Having Square Holes)



- **For supporting columns with M6 screw holes**

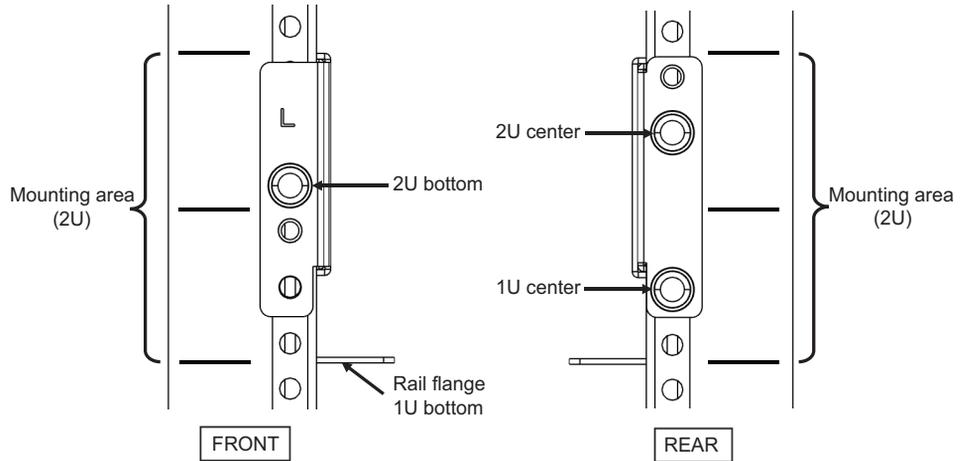
This work requires a total of two workers in front of and behind the rack because the rails have no protrusions and cannot be temporarily secured.

 - a. From the front of the rack, vertically align the rail flange with 1U bottom in the front supporting column of the rack.
 - b. Secure the rail with one M6 screw to the front supporting column of the rack.

The fixing location is 2U bottom.

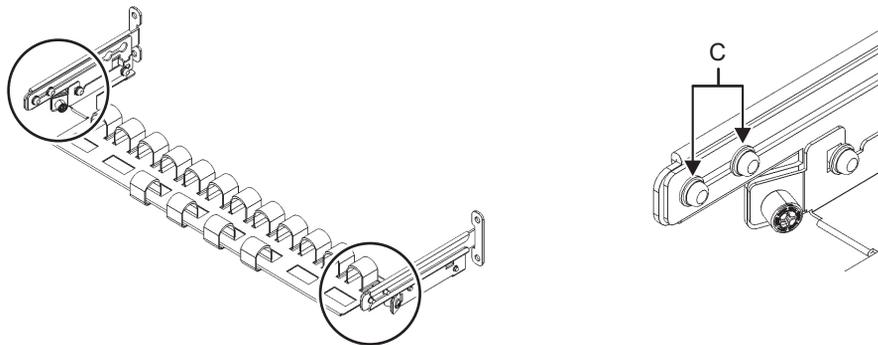
- c. Pull out the rail to as far as the depth of the rack.
- d. Secure the rail with two M6 screws to the rear supporting column of the rack. The fixing locations are 1U center and 2U center.

Figure 3-56 Attaching the Rails: Fixing Points of the Screws (for Supporting Columns Having M6 Screw Holes)



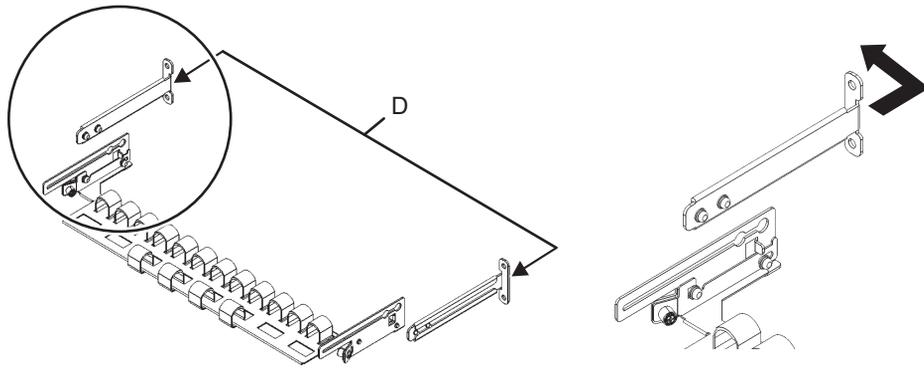
6. **Attach the cable support fixing brackets to the rear supporting columns of the rack.**
 - a. Loosen the four screws (C in Figure 3-57) from the inside of the cable support.

Figure 3-57 Removing the Cable Support Fixing Brackets (1)



- b. Slide the cable support fixing brackets (D in Figure 3-58) to remove them.

Figure 3-58 Removing the Cable Support Fixing Brackets (2)



- c. From the rear of the rack, secure the rails and cable support fixing brackets (D) with two M6 screws to the rear supporting columns of the rack. The fixing points are 1U center and 2U center.

Figure 3-59 Attaching the Cable Support Brackets

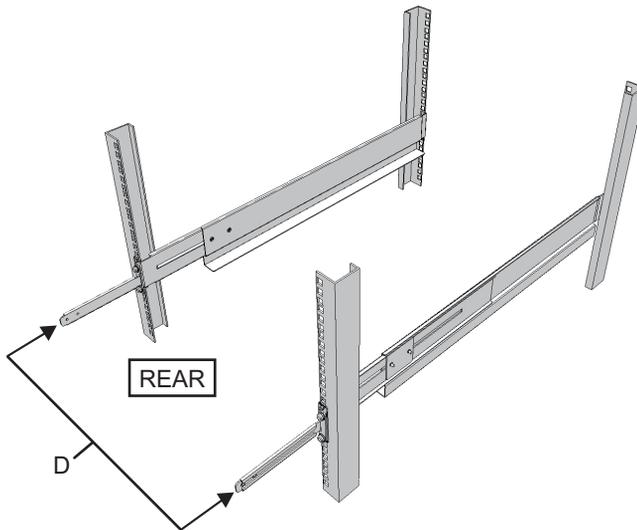
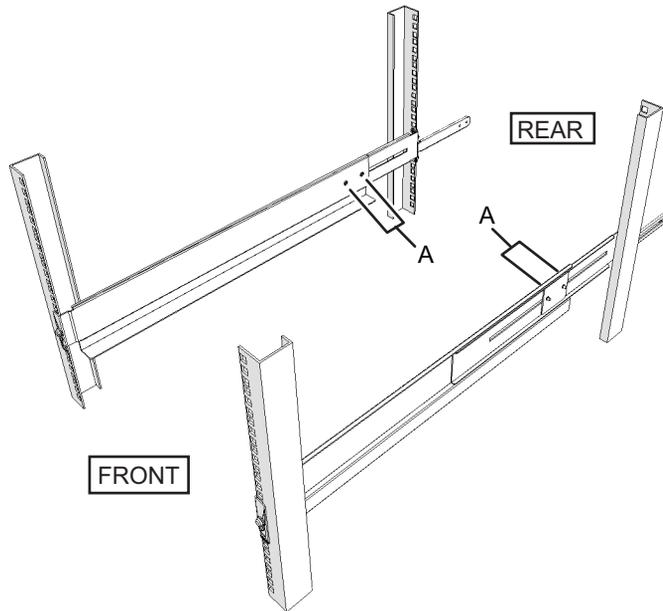


Figure 3-61 Securing the Sides of Rails With Screws



8. **Mount the PCI expansion unit in the rack.**

Mount the PCI expansion unit from the front of the rack.

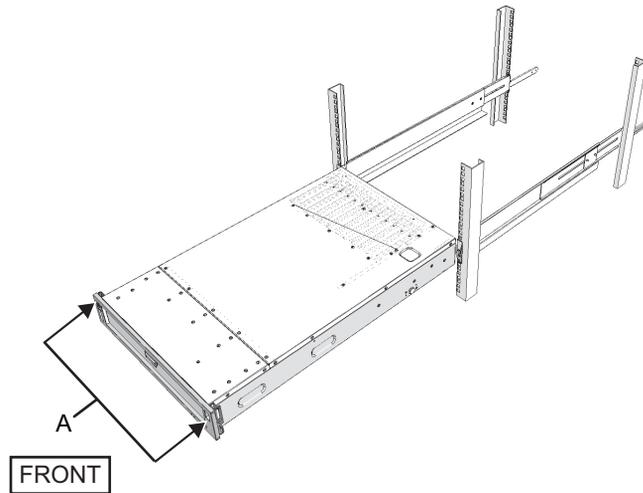


Caution - The PCI expansion unit weighs 22 kg. Exercise thorough caution when mounting it in the rack.

Note - Mount the PCI expansion unit in the rack with two or more people working together. Alternatively, use a lifter.

- a. When using a lifter, secure it horizontally.
- b. Lift the chassis to the mounting location with the lifter or manually.
- c. Put the rear part of the chassis on the flanges of the rails.
- d. Slide the PCI expansion unit into the rack. At this time, confirm that the PCI expansion unit sits on the rails.
- e. Insert the PCI expansion unit all the way to store it inside the rack.

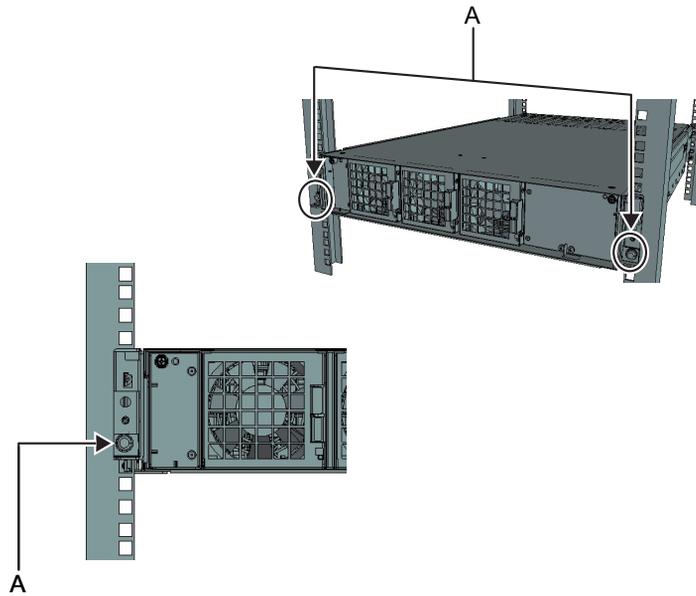
Figure 3-62 Mounting in the Rack



9. **Secure the PCI expansion unit in the rack.**
 - a. Push out the left and right slide locks on the front cover (A in [Figure 3-62](#)) to release the locks, and remove the front cover.
 - b. Tighten the two M6 screws at two locations on the front of the PCI expansion unit (A in [Figure 3-63](#)) to secure it to the rack.
 - c. Insert the left and right hooks on the inside of the bottom of the front cover into the grooves at the bottom front of the PCI expansion unit to attach the front cover.

Note - A label with the serial number of the PCI expansion unit is affixed to the front cover. Be sure to attach the front cover to the corresponding PCI expansion unit.

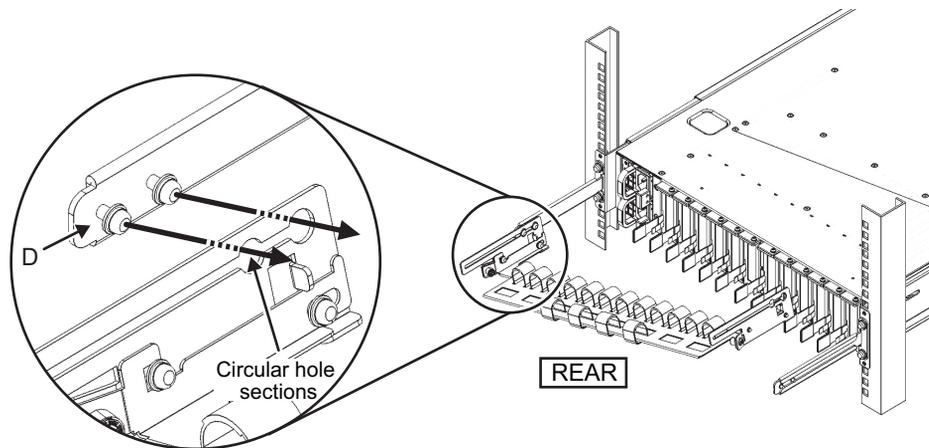
Figure 3-63 Securing the PCI Expansion Unit



10. **Attach the cable support.**

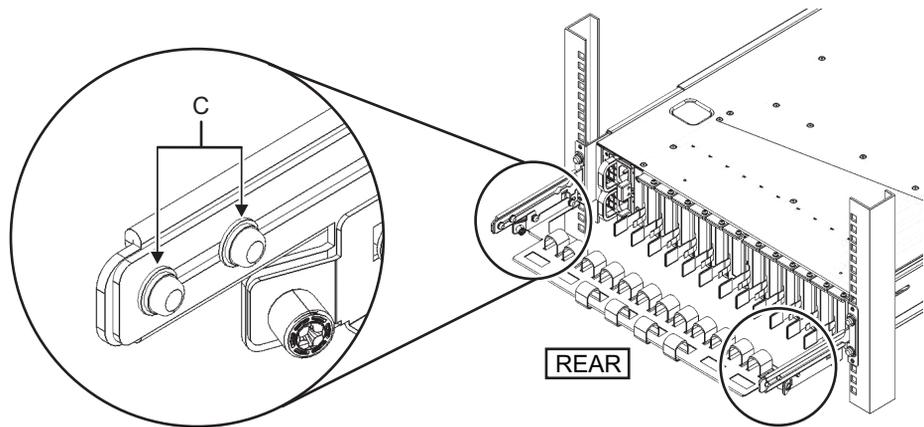
- a. Tilt the cable support to align the circular holes at the rear of the groove with the two screws of a cable support fixing bracket (D in [Figure 3-64](#)), and attach it. Level the cable support. Then, align the circular holes on the other side with the two screws, and attach it.

Figure 3-64 Attaching the Cable Support (1)



- b. Slide the cable support all the way in, and tighten the four screws (C in [Figure 3-65](#)).

Figure 3-65 Attaching the Cable Support (2)



Note - If the dimension between the front and rear columns of the rack is less than 740 mm, secure the cable support without sliding it all the way in. The fixing location varies depending on the dimension between the front and rear columns of the rack. Based on [Figure 3-66](#), align the scale marks (E in [Figure 3-66](#)) (spacing: 10 mm) on the cable support with the screws (F in [Figure 3-66](#)) of the fixing brackets to secure the cable support.

Figure 3-66 Attaching the Cable Support (3)

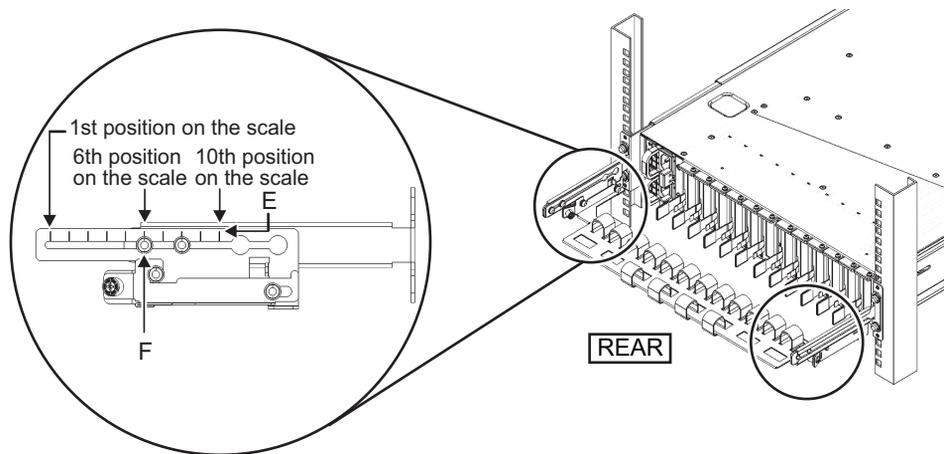


Table 3-10 Dimensions Between the Front and Rear Columns and Scale Positions

Dimension Between Front and Rear Columns (mm)	Scale Position
740	1st
730	2nd
720	3rd
710	4th
700	5th
690	6th
680	7th
670	8th
660	9th
650	10th

Note - If you have difficulty laying a thick cable into the cable support, move the cable support forward to a fixing point that makes the work easier.

- c. Close the rear door of the rack, and confirm that the cable support does not interfere. If the cable support interferes with the rear door, remove the cable support. Even if you remove the cable support, leave the rails secured to the rack with the two M6 screws.

Figure 3-67 Cable Support Attachment Completed

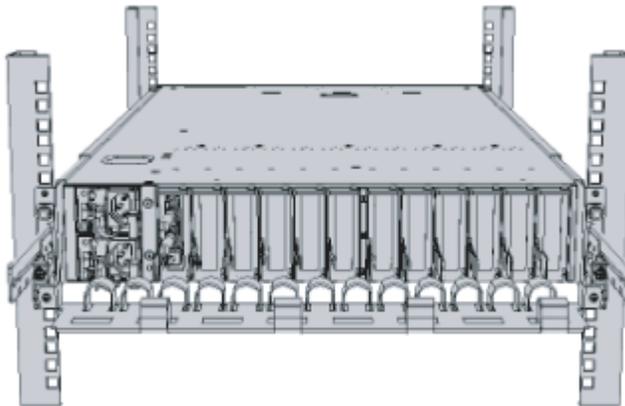
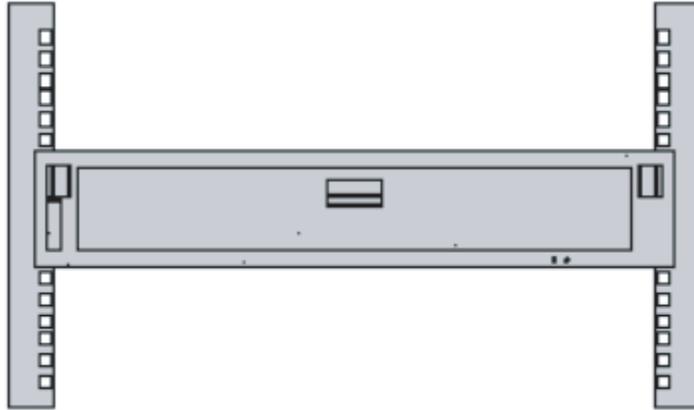


Figure 3-68 PCI Expansion Unit Mounting Completed



3.5 Mounting Optional Components

This section describes the procedures for mounting optional components such as memory and PCIe cards.

If optional components are ordered together with the SPARC M12-2S or the PCI expansion unit, they are shipped mounted in the SPARC M12-2S or the PCI expansion unit. If the optional components are ordered separately, they will need to be mounted on site. Mount optional components after mounting the SPARC M12-2S or the PCI expansion unit in the rack.

- [Mounting Optional Components in the SPARC M12-2S](#)
- [Mounting Optional Components in the PCI Expansion Unit](#)

3.5.1 Mounting Optional Components in the SPARC M12-2S

The following table lists the optional components and references for the SPARC M12-2S. For detailed procedures, see the *Fujitsu SPARC M12-2/M12-2S Service Manual*, and perform work accordingly. All the references in the table can be found in the *Fujitsu SPARC M12-2/M12-2S Service Manual*.

Table 3-11 List of Optional Components and References for the SPARC M12-2S

Optional Component Name	Reference
Memory	"Chapter 17 Maintaining the CPU Memory Unit and Memory"
Internal storage (HDD/SSD)	"Chapter 15 Maintaining Internal Storage"
PCIe card Link card	"Chapter 12 Maintaining PCIe Cards"

3.5.2 Mounting Optional Components in the PCI Expansion Unit

The following table lists the optional components and references for the PCI expansion unit. For detailed procedures, see the *PCI Expansion Unit for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Service Manual*, and perform work accordingly. All the references in the table can be found in the *PCI Expansion Unit for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Service Manual*.

Table 3-12 List of Optional Components and References for the PCI Expansion Unit

Optional Component Name	Reference
PCIe card	"Chapter 8 Maintaining the PCI Express Cards"

Setting the SPARC M12-2S in a Building Block Configuration

This chapter describes the procedures for setting the necessary IDs and connecting cables for a building block configuration with SPARC M12-2S units connected together.

- [Setting the ID \(BB-ID\) Identifying the SPARC M12-2S](#)
- [Connecting XSCF Cables](#)
- [Connecting Crossbar Cables](#)
- [Storing Crossbar Cables](#)

4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S

This section describes the setting of the ID (referred to below as BB-ID) required for identifying each of multiple SPARC M12-2S units in the system.

Set BB-IDs sequentially from 00.

See the following and check the SPARC M12-2S mounting locations and BB-ID setting values.

- Direct connections between chassis: See [Figure 2-2](#) in "[2.4.1 Mounting Conditions for General Racks](#)."

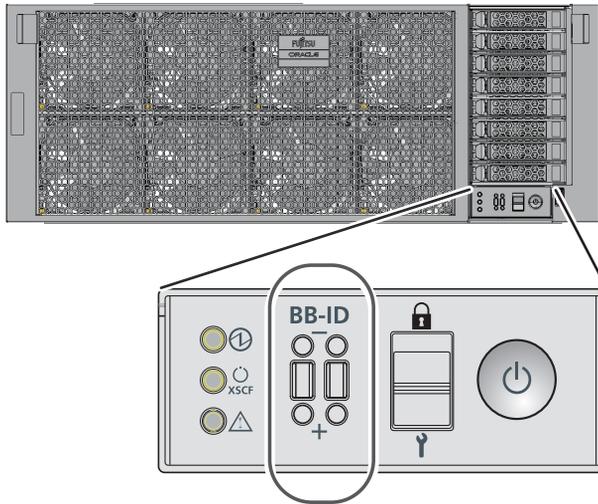
Note - The default BB-ID value is 00. There are cases where each BB-ID is set by the factory at the time of shipping. A BB-ID has been set for any chassis that is shipped mounted in a rack.

Note - When setting the SPARC M12-2S used as a standalone unit in a building block configuration, execute the `restoredefaults -c factory -r activation` command of the XSCF to return to the factory defaults before setting a BB-ID. The defaults include the CPU Activation key information.

1. **Set a BB-ID for the SPARC M12-2S.**
Set the BB-ID by operating the BB-ID switch on the operation panel on the front of the chassis. Set BB-IDs sequentially from 00 to 15 for the SPARC M12-2S.

- a. Confirm that the set BB-ID for the SPARC M12-2S mounted at the very bottom of the rack (BB#00) is 00.
If it is not 00, set it to 00 with a thin, pointed instrument.
- b. Next, set 01 for the BB-ID of the SPARC M12-2S mounted second from the bottom of the rack (BB#01).
- c. Sequentially set BB-IDs for all the SPARC M12-2S units while checking their mounting locations in the rack.

Figure 4-1 BB-ID Switch of the SPARC M12-2S



2. **Confirm the BB-ID setting for the crossbar box.**
The BB-ID for the crossbar box is set at the time of factory shipment. In this step, confirm the mounting position of the crossbar box and also confirm that BB-ID is set sequentially from 80 to 83.
If the setting has been made otherwise, operate the BB-ID switch located on the operation panel at the front panel of the crossbar box to correct the setting.

4.2 Connecting XSCF Cables

This section describes how to connect the XSCF cables connecting XSCF units. There are two types of XSCF cables: XSCF DUAL control cable and XSCF BB control cable.

4.2.1 XSCF Cable Connection for Direct Connections Between Chassis

Each cable has an attached label showing the connection destination port. Connect the cable to the port corresponding to the label. All ports for the cable connections are on the rear of the chassis. For port locations and examples of the appearance of the label, see [Figure 4-2](#) and [Figure 4-3](#).

Figure 4-2 XSCF Port Locations (SPARC M12-2S Rear Panel Side)

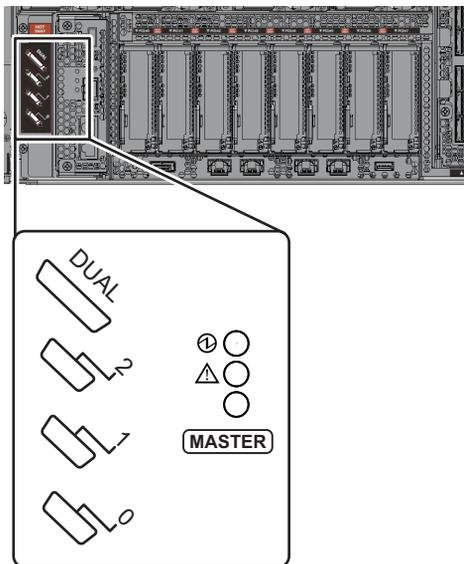
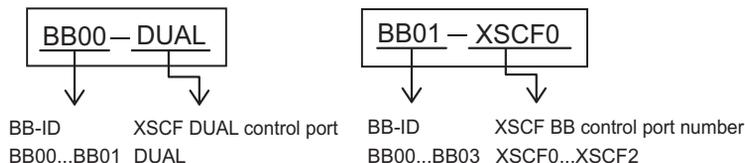


Figure 4-3 Examples of the Appearance of an XSCF Cable Label



For each configuration, "[Appendix B Cable Connection Information on Building Block Configurations](#)" provides a cable routing diagram of connections and a cable list.

1. **Connect the XSCF DUAL control cable between the XSCF of BB#00 and the XSCF of BB#01.**
 - a. Connect the XSCF DUAL cable from the XSCF DUAL control port of BB#00 to the XSCF DUAL control port of BB#01.
The XSCF DUAL control ports are marked DUAL.

2. **For the 2BB or greater configuration, connect an XSCF BB control cable between the XSCF of BB#00 and the XSCF of BB#01.**
 - a. Connect the cable from port 0 of BB#00 to port 0 of BB#01.

The XSCF BB control ports are marked 0, 1, and 2 from bottom to top.
3. **For the 3BB or greater configuration, connect XSCF BB control cables to XSCF ports of BB#02, in addition to the connection of step 2.**
 - a. Connect the cable from port 1 of BB#00 to port 0 of BB#02.
 - b. Connect the cable from port 1 of BB#01 to port 1 of BB#02.
4. **For the 4BB configuration, connect XSCF BB control cables to XSCF ports of BB#03, in addition to the connections of steps 2 and 3.**
 - a. Connect the cable from port 2 of BB#00 to port 0 of BB#03.
 - b. Connect the cable from port 2 of BB#01 to port 1 of BB#03.
5. **Store the XSCF DUAL control cable and XSCF BB control cables, connected as described in steps 1 to 4, in an empty space at the right side as viewed from the rear of the rack.**

4.2.2 XSCF Cable Connections via a Crossbar Box

In the case of connections via a crossbar box, the expansion rack will be shipped with the SPARC M12-2S and crossbar box mounted in it. The XSCF cable for connecting XSCF units together will also be shipped connected to them. The connection work is not necessary for a system of up to the 8BB configuration since it has only one expansion rack.

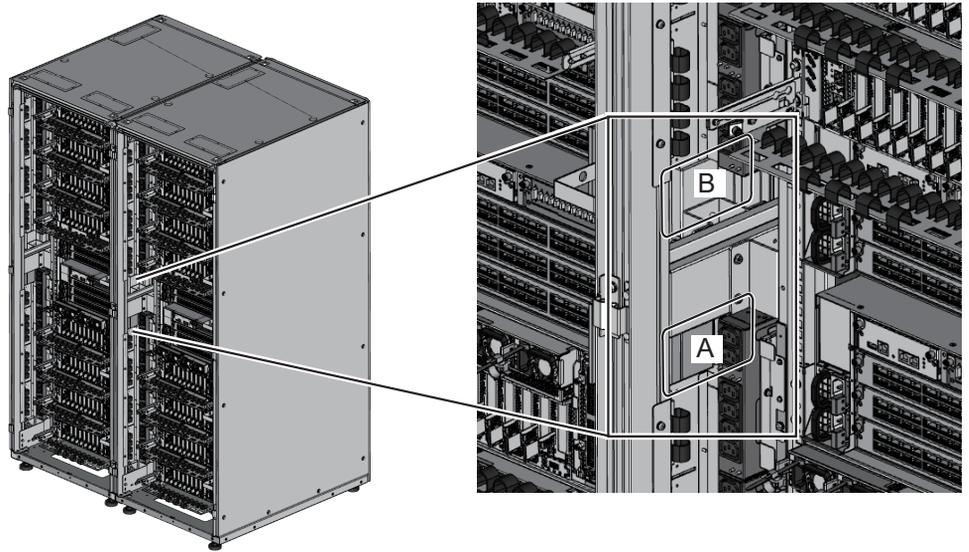
Since two expansion racks are used for the configuration of 9BB or more, the XSCF cable interconnecting the racks need to be connected. This section describes how to connect the cables interconnecting the racks.

Cables that pass between racks are secured to expansion rack 2. Wire cables from expansion rack 2 to expansion rack 1 and connect them to the respective ports. For each configuration, "[Appendix B Cable Connection Information on Building Block Configurations](#)" provides a cable routing diagram of connections ([Figure 4-5](#)) and a cable list.

1. **Pass the XSCF BB control cables stored in expansion rack 2 through the upper side of the connecting part of the racks. (B in [Figure 4-4](#))**

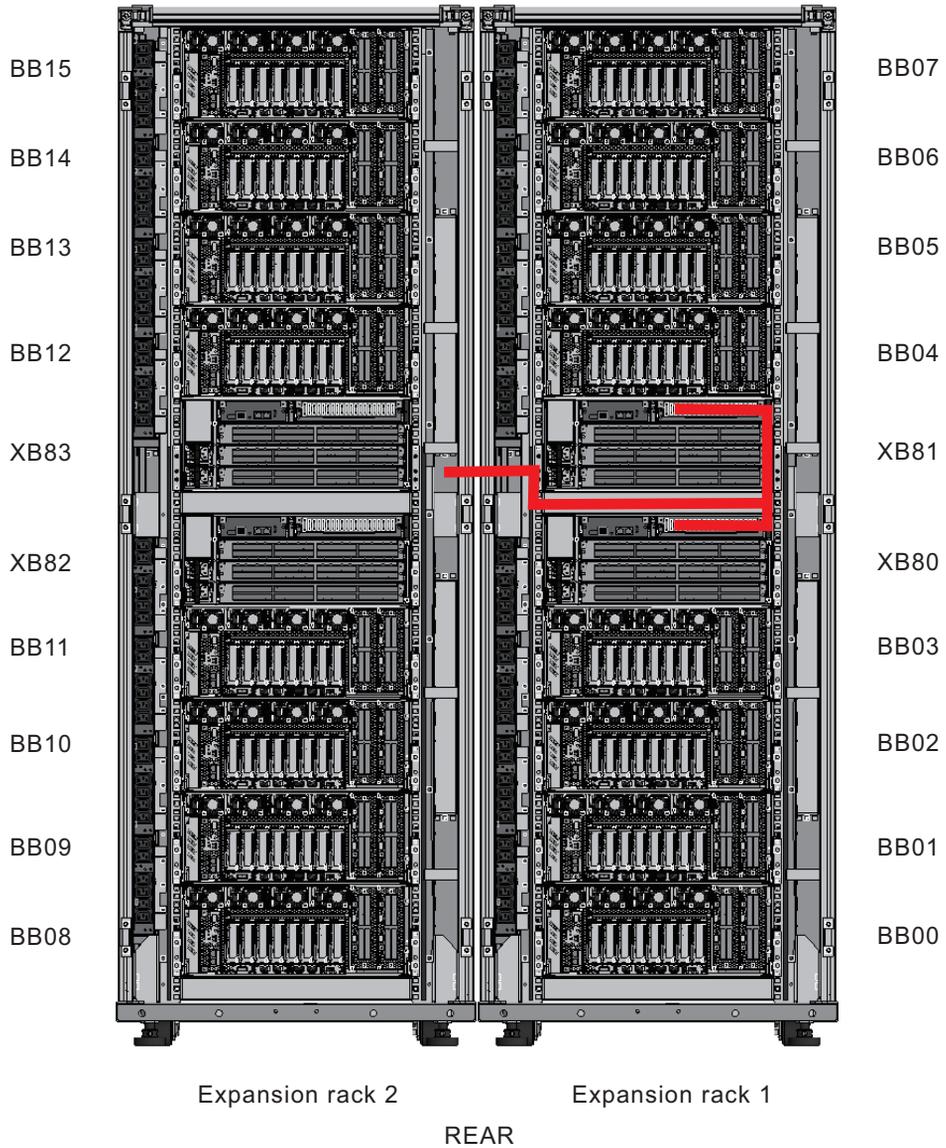
When wiring the cables, use the supplied hook-and-loop fastener strips to bundle them.

Figure 4-4 Locations for Passing Cables Between the Racks



2. **Connect the XSCF BB control cables.**
Each cable has an attached label showing the connection destination port.
Connect the cable to the port corresponding to the label.
3. **Check the connection of the XSCF DUAL control cable.**
Confirm that the cable is connected between the XSCF DUAL control port of XBBOX#80 and the XSCF DUAL control port of XBBOX#81.

Figure 4-5 Cable Wiring Diagram



4.3 Connecting Crossbar Cables

This section describes how to connect the crossbar cables connecting crossbar units.

4.3.1 Crossbar Cable Connection for Direct Connections Between Chassis

Although the connection route varies depending on the BB configuration, the connection method is the same.

Each cable has an attached label showing the connection destination port. Connect the cable to the port corresponding to the label.

Since one port number is assigned to each pair of ports, connect crossbar cables in pairs.

For the port locations, see [Figure 4-6](#), and for an example of the appearance of the label, see [Figure 4-7](#).

Note that the given example assumes the 2BB configuration. For the connection order, cable routing diagram, and cable list for each configuration, see "[Appendix B Cable Connection Information on Building Block Configurations](#)."

1. **Check the labels of the crossbar cables, and bind the cables with hook-and-loop fastener strips.**
 - Bind eight crossbar cables (optical) into one bundle with fastener strips.
 - Sort crossbar cables (electrical) by their connection to XBU#1 or XBU#0. At each of these destinations, bind four cables into one bundle with fastener strips.

Note - After connecting all the cables, store them in the rack. This procedure is described in "[4.4 Storing Crossbar Cables](#)." Do not perform the procedure now.

Figure 4-6 Crossbar Unit Port Numbers (SPARC M12-2S side)

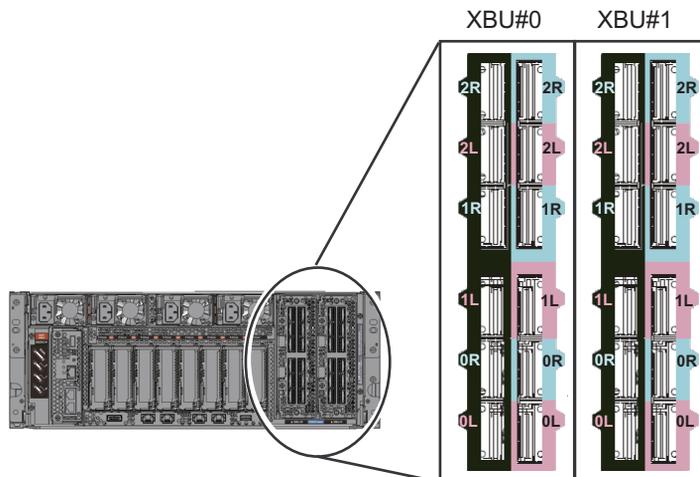
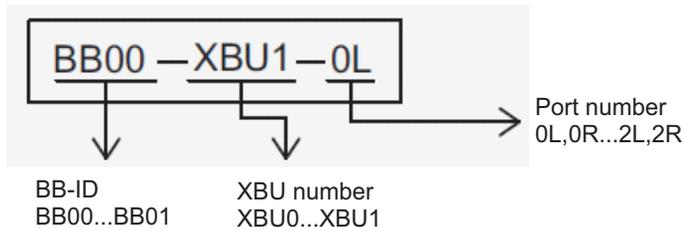


Figure 4-7 Example of the Appearance of a Crossbar Cable Label



2. **Connect crossbar cables to the crossbar unit.**

Connect the crossbar cables to the locations of crossbar unit ports shown on the label.

Hold the connector of the crossbar cable, and insert it straight into the opening. Do not hold the cable or its pull-tab part when inserting it.

Note - If you insert a connector with the pull-tab pulled, the connector may be damaged.

Note - There are three types of crossbar cable (optical). Connect crossbar cables of the same type to the same port numbers. You can distinguish the type of crossbar cable by the pull-tab shape (A in [Figure 4-8](#) or [Figure 4-9](#)).

Figure 4-8 Crossbar Cable (Optical) Shape and Pull-Tab

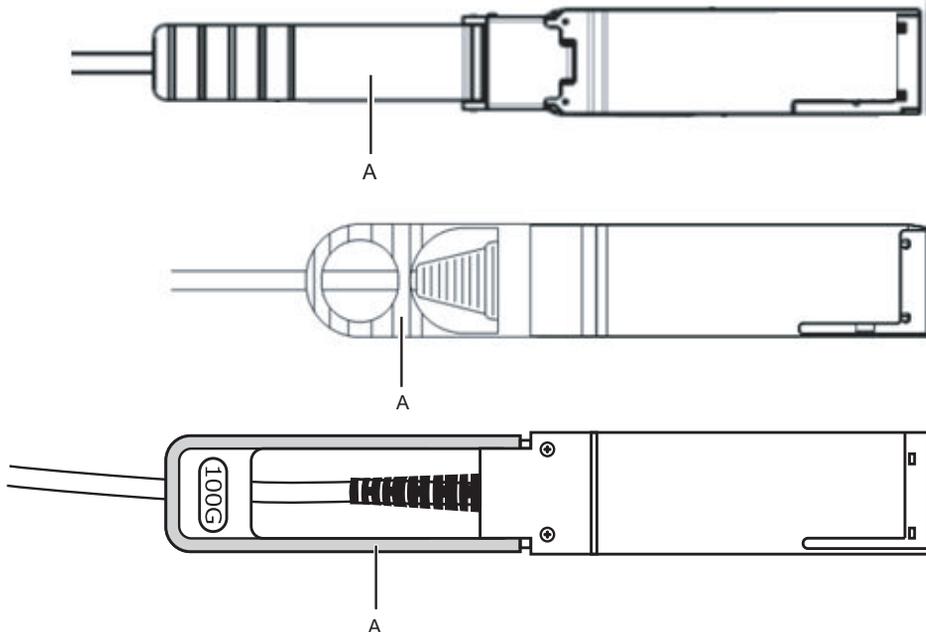
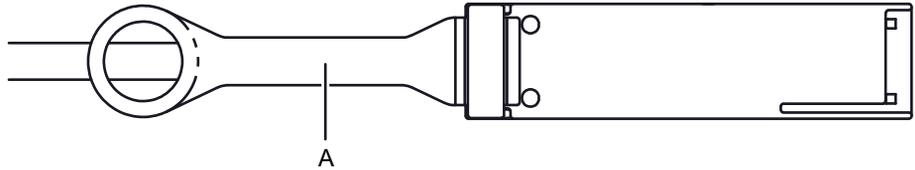


Figure 4-9 Crossbar Cable (Electrical) Shape and Pull-Tab



3. **Connect the crossbar cables between XBU#1 of BB#00 and XBU#1 of BB#01.**
 - a. Connect the 0L ports (pink) of XBU#1.
 - b. Connect the 0L ports (black) of XBU#1.
 - c. Connect the 0R ports (light blue) of XBU#1.
 - d. Connect the 0R ports (black) of XBU#1.
4. **Connect the crossbar cables between XBU#0 of BB#00 and XBU#0 of BB#01.**
 - a. Connect the 0L ports (pink) of XBU#0.
 - b. Connect the 0L ports (black) of XBU#0.
 - c. Connect the 0R ports (light blue) of XBU#0.
 - d. Connect the 0R ports (black) of XBU#0.
5. **Confirm that the crossbar cables are correctly and firmly connected.**

With the crossbar cables connected to their ports, push in each cable while holding the joint (A in [Figure 4-10](#) or [Figure 4-11](#)) at the base of the crossbar cable connector.

Note - A loose crossbar cable connection may, on rare occasions, cause an error due to poor connection. After connecting a crossbar cable, push it in again so that it is tightly in place to prevent any improper connection. Do not hold only the cable when performing the work at this time. Otherwise, the cable may bend out of shape.

Figure 4-10 Part to Hold When Checking a Crossbar Cable (Optical) Connection

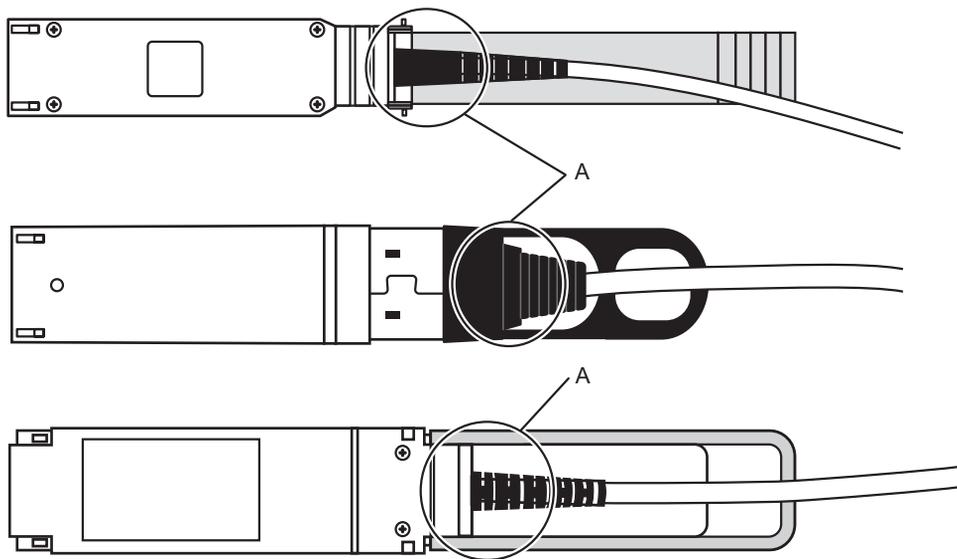
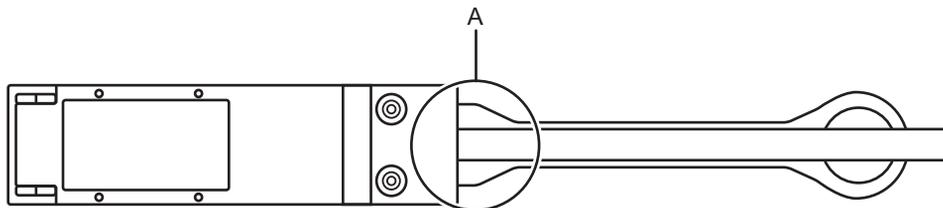


Figure 4-11 Part to Hold When Checking a Crossbar Cable (Electrical) Connection



4.3.2 Crossbar Cable Connections via a Crossbar Box

Like the wiring of the XSCF cable, the crossbar cable is shipped connected to the SPARC M12-2S and the crossbar box.

In the 9BB configuration or over, wire the crossbar cable interconnecting racks from expansion rack 2 to expansion rack 1 and connect them to the respective ports.

Each cable has an attached label showing the connection destination port. Connect the cable to the port corresponding to the label.

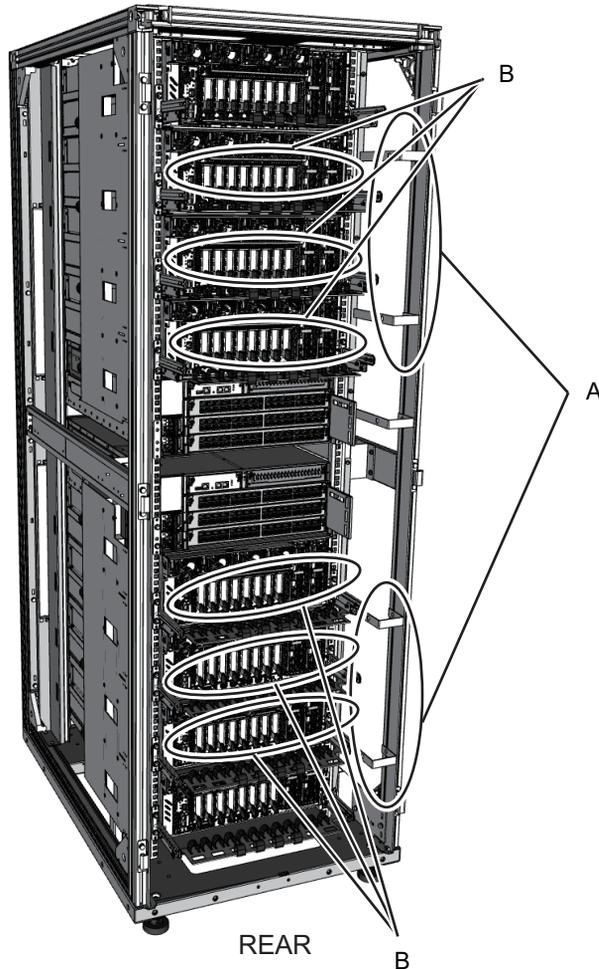
Since one port number is assigned to each pair of ports, connect crossbar cables (optical) in pairs.

For the cable routes, see [Figure 4-14](#).

When laying the cables, use the supplied hook-and-loop fastener strips to bundle them as appropriate.

1. **Unpack the cables that will pass between the racks.**
Using a hook-and-loop fastener, nylon band, or the like, the cables are tied to the side (A in [Figure 4-12](#)) or rear (B in [Figure 4-12](#)) of a rack with their connectors wrapped in a bag.
 - a. Remove the cable connectors from the parts fixing them to the rack.
 - b. Unwrap the cable connectors.

Figure 4-12 Cable storage locations in expansion rack 2



2. **Pass the crossbar cables unwrapped in step 1 between the upper and lower PDUs on the connecting part of the racks.**
Pass the crossbar cables connecting BB#00 to BB#03 and XB#80 through the lower side of the connecting part (A in [Figure 4-13](#)).
Pass the crossbar cables connecting BB#04 to BB#07 and XB#81 through the upper side of the connecting part (B in [Figure 4-13](#)).

Figure 4-13 Locations for Passing Cables Between the Racks

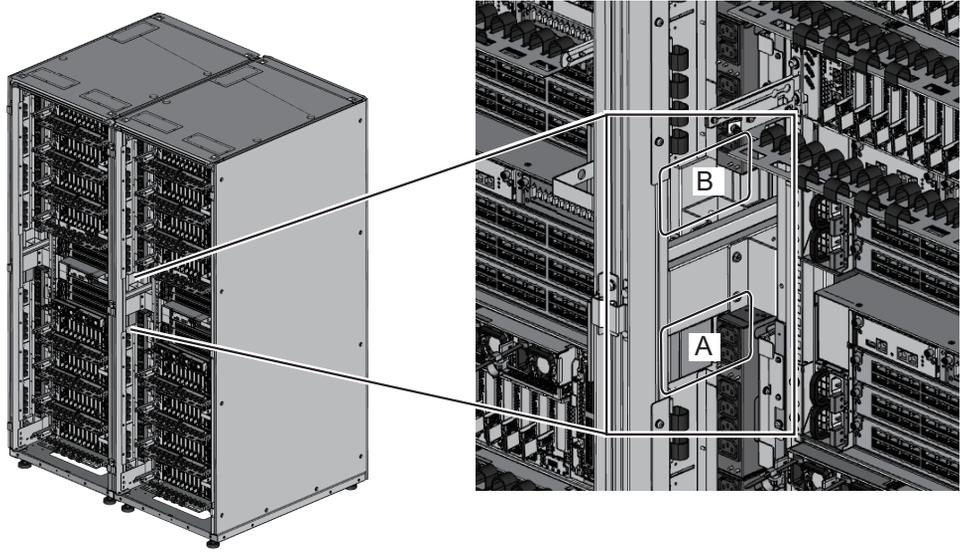
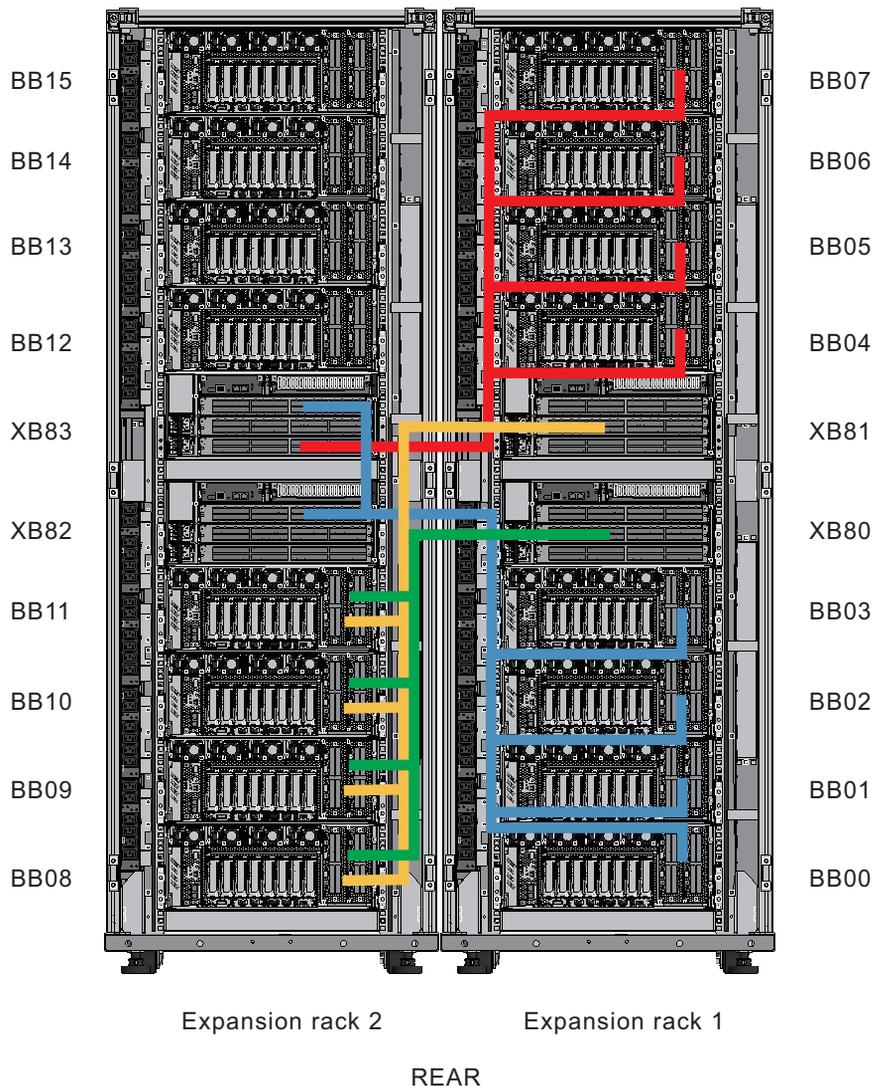


Figure 4-14 Cable Wiring Diagram



3. **Connect the crossbar cables to crossbar boxes.**

The crossbar cables are laid in a bundle for each chassis. Connect cables without changing how they are laid.

Each cable has an attached label showing the connection destination port. Connect the cable to the port corresponding to the label.

Since one port number is assigned to each pair of ports, connect crossbar cables (optical) in pairs.

For the port locations, see [Figure 4-16](#) and [Figure 4-17](#), and for an example of the appearance of the label, see [Figure 4-18](#).

Hold the connector of the crossbar cable, and insert it straight into the opening. Do not hold the cable or its pull-tab part when inserting it.

Note - If you insert a connector with the pull-tab pulled, the connector may be damaged.

Note - There are two types of crossbar cable (optical). Connect crossbar cables of the same type to the same port numbers.
You can distinguish the type of crossbar cable by the pull-tab shape (A in [Figure 4-15](#)).

Figure 4-15 Crossbar Cable (Optical) Shape and Pull-Tab

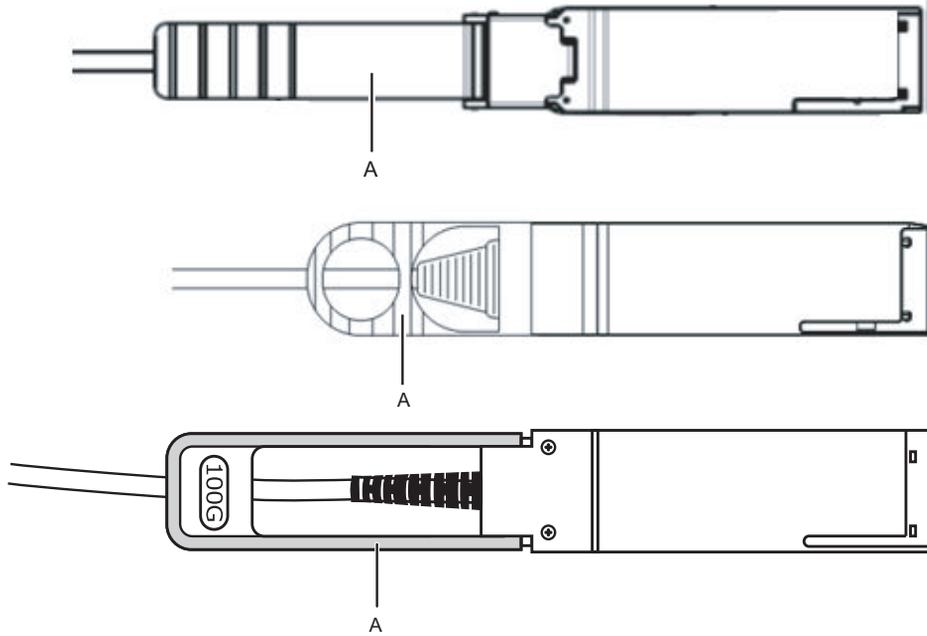


Figure 4-16 Crossbar Unit Port Numbers (SPARC M12-2S side)

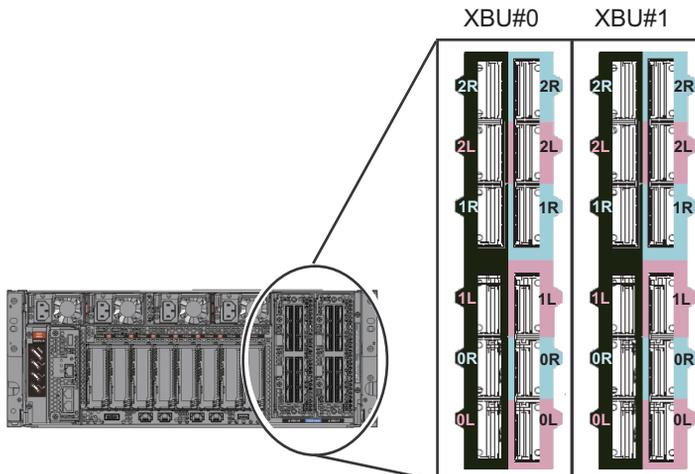


Figure 4-17 Crossbar Unit Port Numbers (Crossbar Box Side)

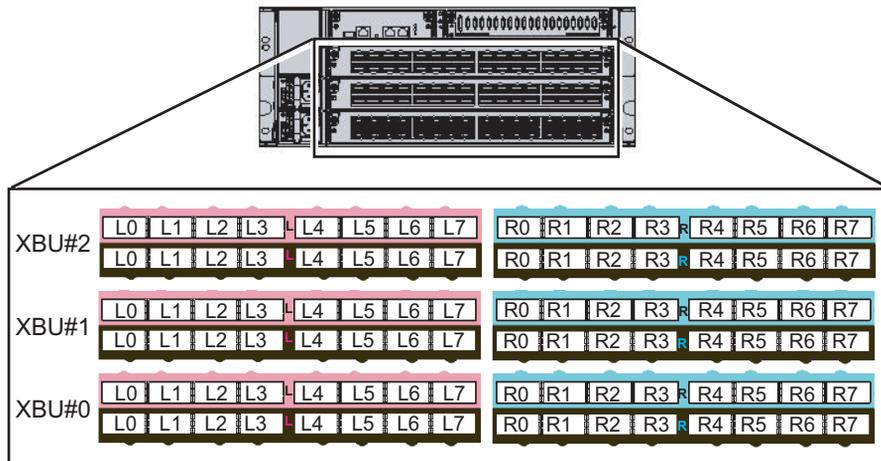
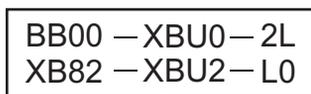


Figure 4-18 Example of the Appearance of a Crossbar Cable Label



BB-ID - XBU number - Port number
 (BB00...BB15) - (XBU0...XBU1) - (0L,0R...2L,2R)

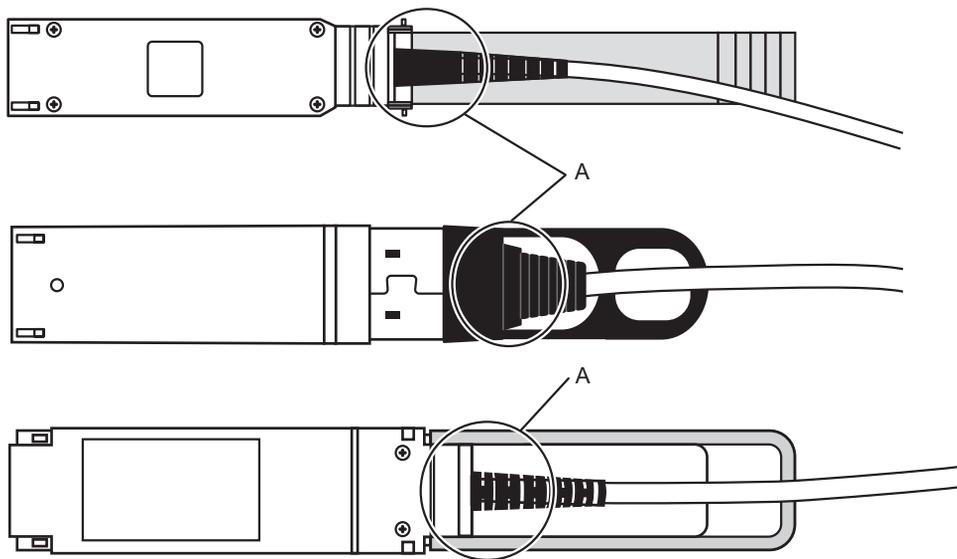
BB-ID - XBU number - Port number
 (XB80...XB83) - (XBU0...XBU2) - (L0,R0...L7,R7)

Note - The label shows both the cable connection destination and the unit connected by the cable.

4. **Confirm that the crossbar cables are correctly and firmly connected.**
 With the crossbar cables connected to their ports, push in each cable while holding the joint (A in [Figure 4-19](#)) at the base of the crossbar cable connector.

Note - A loose crossbar cable connection may, on rare occasions, cause an error due to poor connection. After connecting a crossbar cable, push it in again so that it is tightly in place to prevent any improper connection. Do not hold only the fiber optic cable when performing the work at this time. Otherwise, the fiber optic cable may bend out of shape.

Figure 4-19 Part to Hold When Checking a Crossbar Cable (Optical) Connection



4.3.3 Changing Crossbar Cables

When subsequently adding expansion rack 2, you need to change the connections of crossbar cables. This work is not necessary during the initial installation.

1. **Mount a crossbar unit in XBBOX#80/#81.**
 - a. Remove the one screw (B in [Figure 4-20](#)) securing the blank panel.
 - b. Remove the blank panel (A in [Figure 4-20](#)) from slot #2, where the crossbar unit is to be installed.
 - c. Insert the crossbar unit into slot #2. The crossbar unit is supplied with expansion rack 2.
 - d. Close the left and right levers of the crossbar unit, and tighten two screws (A in [Figure 4-21](#)).

Figure 4-20 Removing the Blank Panel

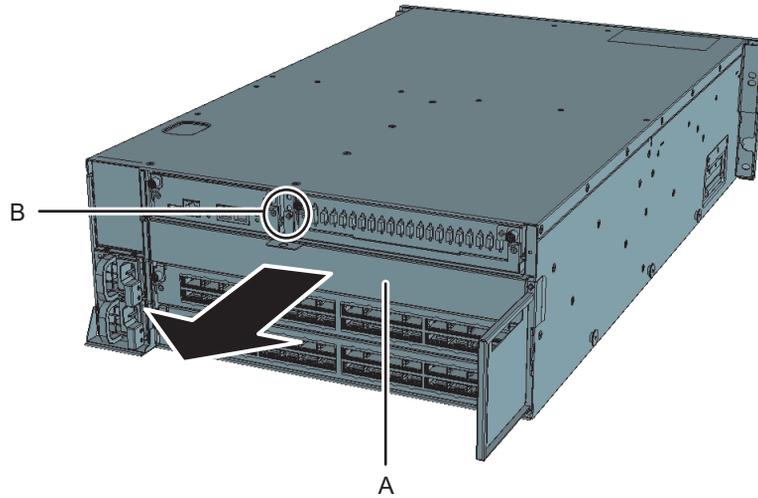
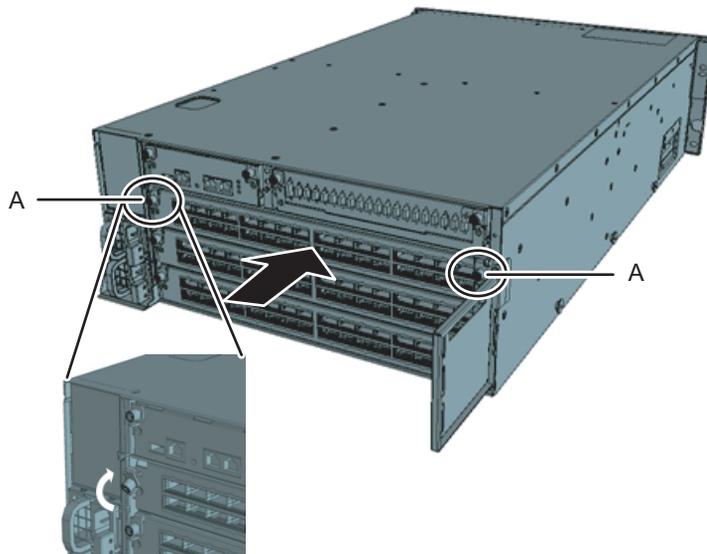


Figure 4-21 Mounting the Crossbar Unit



2. **Move the crossbar cables of XBBOX#80/#81.**
 - a. Remove the crossbar cables from L4 to L7 and from R4 to R7 of XBU#1 (see [Figure 4-22](#)). Hold the pull-tab (A in [Figure 4-23](#)) of the crossbar cable, and pull it straight in the direction of the arrow to remove the cable.

Note - Do not pull it out with a hold on the cable. Doing so prevents the connector lock from being completely released, causing damage.

Figure 4-22 Moving Cables of XBBOX#80/#81

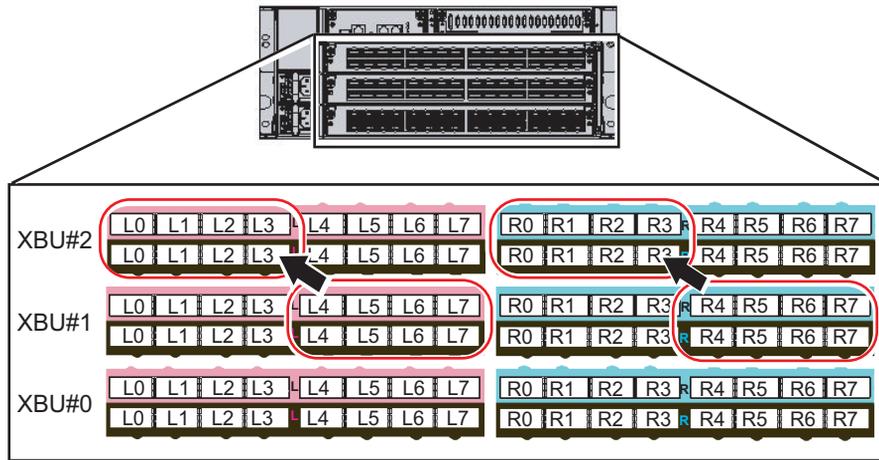
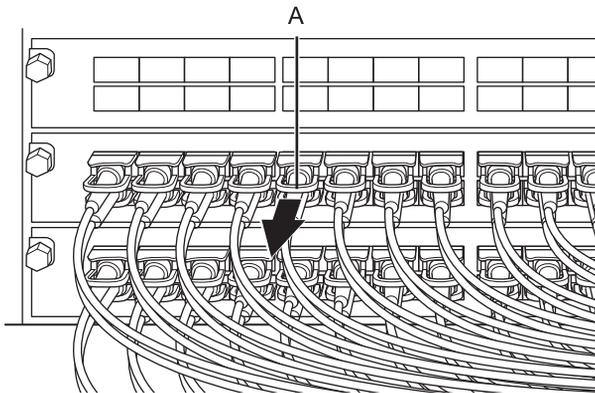


Figure 4-23 Crossbar Cable Pull-Tab and Pulling Direction



b. Replace the labels on the removed cables. The replacement labels are supplied with expansion rack 2. Referring to [Table 4-1](#), replace the labels.

Table 4-1 Label Replacement Table

Before Change			After Change	
XB80-XBU1-L4	Pink	->	XB80-XBU2-L0	Pink
XB80-XBU1-L4	Black	->	XB80-XBU2-L0	Black
XB80-XBU1-L5	Pink	->	XB80-XBU2-L1	Pink
XB80-XBU1-L5	Black	->	XB80-XBU2-L1	Black

Table 4-1 Label Replacement Table (*continued*)

Before Change			After Change	
XB80-XBU1-L6	Pink	->	XB80-XBU2-L2	Pink
XB80-XBU1-L6	Black	->	XB80-XBU2-L2	Black
XB80-XBU1-L7	Pink	->	XB80-XBU2-L3	Pink
XB80-XBU1-L7	Black	->	XB80-XBU2-L3	Black
XB80-XBU1-R4	Light blue	->	XB80-XBU2-R0	Light blue
XB80-XBU1-R4	Black	->	XB80-XBU2-R0	Black
XB80-XBU1-R5	Light blue	->	XB80-XBU2-R1	Light blue
XB80-XBU1-R5	Black	->	XB80-XBU2-R1	Black
XB80-XBU1-R6	Light blue	->	XB80-XBU2-R2	Light blue
XB80-XBU1-R6	Black	->	XB80-XBU2-R2	Black
XB80-XBU1-R7	Light blue	->	XB80-XBU2-R3	Light blue
XB80-XBU1-R7	Black	->	XB80-XBU2-R3	Black
XB81-XBU1-L4	Pink	->	XB81-XBU2-L0	Pink
XB81-XBU1-L4	Black	->	XB81-XBU2-L0	Black
XB81-XBU1-L5	Pink	->	XB81-XBU2-L1	Pink
XB81-XBU1-L5	Black	->	XB81-XBU2-L1	Black
XB81-XBU1-L6	Pink	->	XB81-XBU2-L2	Pink
XB81-XBU1-L6	Black	->	XB81-XBU2-L2	Black
XB81-XBU1-L7	Pink	->	XB81-XBU2-L3	Pink
XB81-XBU1-L7	Black	->	XB81-XBU2-L3	Black
XB81-XBU1-R4	Light blue	->	XB81-XBU2-R0	Light blue
XB81-XBU1-R4	Black	->	XB81-XBU2-R0	Black
XB81-XBU1-R5	Light blue	->	XB81-XBU2-R1	Light blue
XB81-XBU1-R5	Black	->	XB81-XBU2-R1	Black
XB81-XBU1-R6	Light blue	->	XB81-XBU2-R2	Light blue
XB81-XBU1-R6	Black	->	XB81-XBU2-R2	Black
XB81-XBU1-R7	Light blue	->	XB81-XBU2-R3	Light blue
XB81-XBU1-R7	Black	->	XB81-XBU2-R3	Black

- c. Connect crossbar cables to L0 to L3 and to R0 to R3 of XBU#2.
 Mount the cables according to the labels.
 Hold the connector of the crossbar cable, and insert it straight into the opening.
 Do not hold the cable or its pull-tab part when inserting it.

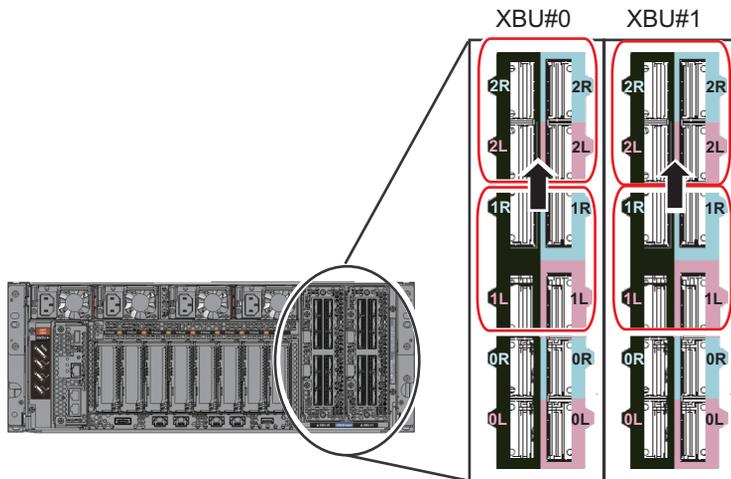
Note - If you insert a connector with the pull-tab pulled, the connector may be damaged.

Note - There are three types of crossbar cable (optical). Connect crossbar cables of the same type to the same port numbers. You can distinguish the type of crossbar cable by the pull-tab shape (A in [Figure 4-15](#)).

Note - A loose crossbar cable connection may, on rare occasions, cause an error due to poor connection. After connecting a crossbar cable, push it in again so that it is tightly in place to prevent any improper connection. Do not hold only the fiber optic cable when performing the work at this time. Otherwise, the fiber optic cable may bend out of shape. For details, see step 4 in "4.3.2 Crossbar Cable Connections via a Crossbar Box."

3. **Move the crossbar cables of BB#04 to BB#07.**
 - a. Remove the crossbar cables from 1L and 1R of XBU#0/XBU#1.

Figure 4-24 Moving BB#07 Cables from BB#04



- b. Replace the labels on the removed cables. The replacement labels are supplied with expansion rack 2. Referring to [Table 4-2](#), replace the labels.

Table 4-2 Label Replacement Table

Before Change			After Change	
BB04-XBU0-1L	Pink	->	BB04-XBU0-2L	Pink
BB04-XBU0-1L	Black	->	BB04-XBU0-2L	Black
BB04-XBU0-1R	Light blue	->	BB04-XBU0-2R	Light blue
BB04-XBU0-1R	Black	->	BB04-XBU0-2R	Black
BB04-XBU1-1L	Pink	->	BB04-XBU1-2L	Pink
BB04-XBU1-1L	Black	->	BB04-XBU1-2L	Black

Table 4-2 Label Replacement Table (*continued*)

Before Change			After Change	
BB04-XBU1-1R	Light blue	->	BB04-XBU1-2R	Light blue
BB04-XBU1-1R	Black	->	BB04-XBU1-2R	Black
BB05-XBU0-1L	Pink	->	BB05-XBU0-2L	Pink
BB05-XBU0-1L	Black	->	BB05-XBU0-2L	Black
BB05-XBU0-1R	Light blue	->	BB05-XBU0-2R	Light blue
BB05-XBU0-1R	Black	->	BB05-XBU0-2R	Black
BB05-XBU1-1L	Pink	->	BB05-XBU1-2L	Pink
BB05-XBU1-1L	Black	->	BB05-XBU1-2L	Black
BB05-XBU1-1R	Light blue	->	BB05-XBU1-2R	Light blue
BB05-XBU1-1R	Black	->	BB05-XBU1-2R	Black
BB06-XBU0-1L	Pink	->	BB06-XBU0-2L	Pink
BB06-XBU0-1L	Black	->	BB06-XBU0-2L	Black
BB06-XBU0-1R	Light blue	->	BB06-XBU0-2R	Light blue
BB06-XBU0-1R	Black	->	BB06-XBU0-2R	Black
BB06-XBU1-1L	Pink	->	BB06-XBU1-2L	Pink
BB06-XBU1-1L	Black	->	BB06-XBU1-2L	Black
BB06-XBU1-1R	Light blue	->	BB06-XBU1-2R	Light blue
BB06-XBU1-1R	Black	->	BB06-XBU1-2R	Black
BB07-XBU0-1L	Pink	->	BB07-XBU0-2L	Pink
BB07-XBU0-1L	Black	->	BB07-XBU0-2L	Black
BB07-XBU0-1R	Light blue	->	BB07-XBU0-2R	Light blue
BB07-XBU0-1R	Black	->	BB07-XBU0-2R	Black
BB07-XBU1-1L	Pink	->	BB07-XBU1-2L	Pink
BB07-XBU1-1L	Black	->	BB07-XBU1-2L	Black
BB07-XBU1-1R	Light blue	->	BB07-XBU1-2R	Light blue
BB07-XBU1-1R	Black	->	BB07-XBU1-2R	Black

- c. Connect crossbar cables to 2L and 2R of XBU#0/XBU#1.
 Mount the cables according to the labels.
 Connect crossbar cables to the crossbar unit.
 Hold the connector of the crossbar cable, and insert it straight into the opening.
 Do not hold the cable or its pull-tab part when inserting it.

Note - If you insert a connector with the pull-tab pulled, the connector may be damaged.

Note - A loose crossbar cable connection may, on rare occasions, cause an error due to poor connection. After connecting a crossbar cable, push it in again so that it is tightly in place to prevent any improper connection. Do not hold only the fiber optic cable when performing the work at this time. Otherwise, the fiber optic cable may bend out of shape. For details, see step 4 in ["4.3.2 Crossbar Cable Connections via a Crossbar Box."](#)

4.4 Storing Crossbar Cables

This section describes the procedure for storing the cables connected to the SPARC M12-2S in a rack.

The procedures for storing the cables in the rack are described separately for the rack widths of 700 mm and 600 mm. Check your rack before performing this work. Store the cables properly according to the rack used.

Note - This work is not necessary for an expansion rack since crossbar cables (optical) and XSCF cables are stored in the rack at the time of shipment.

4.4.1 When the Rack Width is 700 mm

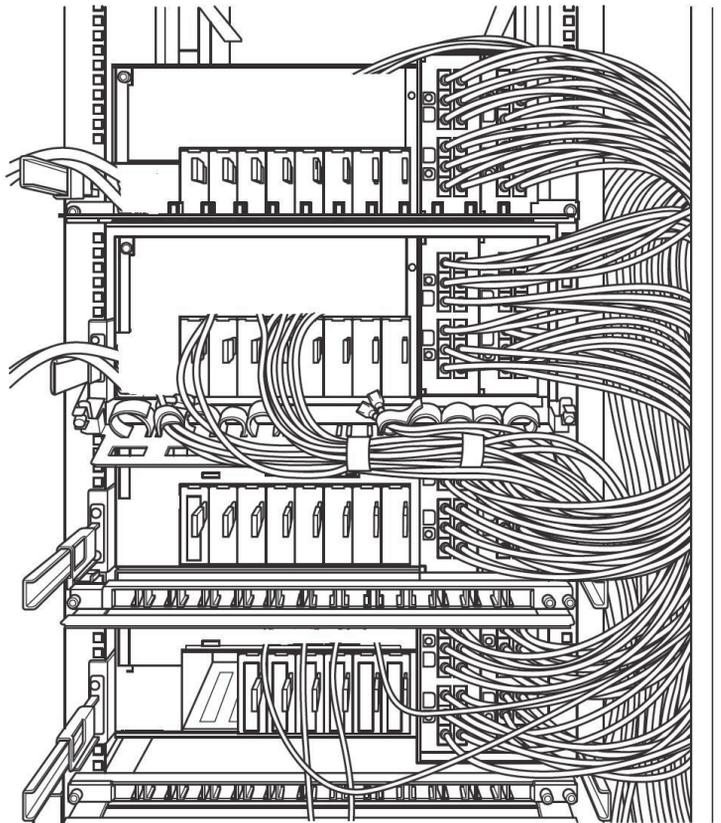
In a rack with a width of 700 mm (27.6 in.), place the crossbar cables together at the right side as viewed from the rear of the rack.

- **Storing crossbar cables (optical) when connected**
 1. **Store the crossbar cables (optical) in an empty space at the right side as viewed from the rear of the rack.**

- **Storing crossbar cables (electrical) when connected**
 1. **Store the crossbar cables (electrical) in an empty space at the right side as viewed from the rear of the rack.**

The connected cables fit neatly when stored in units of four.

Figure 4-25 Example of cable storage (4BB configuration)



4.4.2 When the Rack Width is 600 mm

In a rack with a width of 600 mm (23.6 in.), there is not enough space for storing crossbar cables at the sides of the rack. You need to distribute cables appropriately and bundle them together.

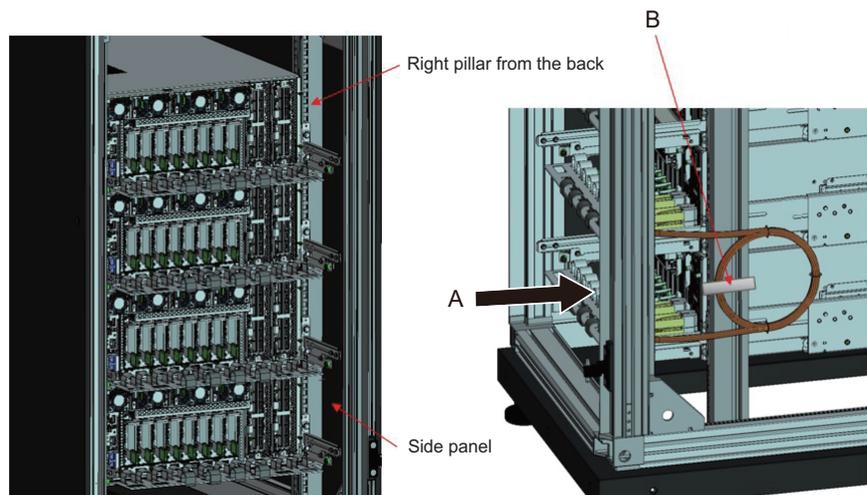
This section describes the recommended method of storing the cables.

■ Storing crossbar cables (optical) when connected

1. **Store the crossbar cables (optical) in an empty space at the right side as viewed from the rear of the rack.**
 - a. Insert them in the gap between the pillar at the rear right side of the device and the side panel of the rack. (A in [Figure 4-26](#))
 - b. Fasten them with a hook-and-loop fastener strip to the pillar at the rear right side of the device. (B in [Figure 4-26](#))
 - c. Repeat this work for all connected crossbar cables (optical).

Note - When the work of storing the bundled cables is difficult, perform work from the rear of the rack. [Figure 4-26](#) illustrates how the work is seen from the side. However, since the rack has a side panel, working from the side is not possible.

Figure 4-26 Cable Storing Method (When the Rack Width is 600 mm)

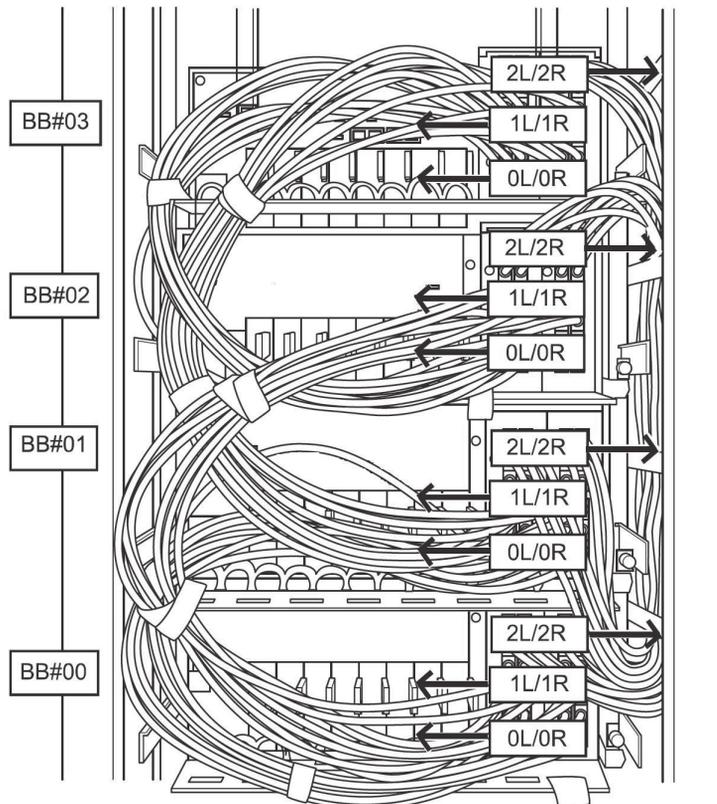


■ **Connected crossbar cables (electrical) in the 4BB configuration**

For the 4BB configuration, place the crossbar cables (electrical) connected to the 2L/2R ports of XBU#0/#1 together at the right side as viewed from the rear of the rack. Place cables other than the crossbar cables (electrical) together at the left side as viewed from the rear of the rack.

1. **Place the crossbar cables (electrical) connected to the 0L/0R and 1L/1R ports of each XBU together at the left side as viewed from the rear of the rack.**
2. **Secure the crossbar cables (electrical) bundled together on the left side to the cable support with hook-and-loop fastener strips.**
3. **Place the crossbar cables (electrical) connected to the 2L/2R ports of each XBU together at the right side as viewed from the rear of the rack.**
4. **If a cable holder is supplied for the rack used, secure the crossbar cables (electrical) bundled together on the right side to the cable holder in the rack.**

Figure 4-27 Example of cable storage (4BB configuration)

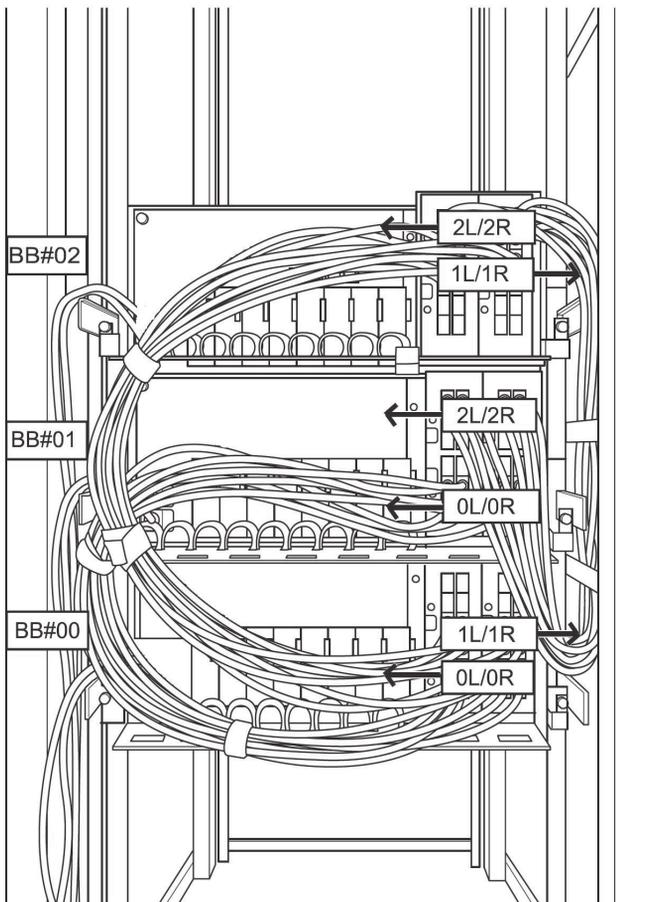


■ **Connected crossbar cables (electrical) in the 3BB configuration**

For the 3BB configuration, place the crossbar cables (electrical) connected to the 1L/1R ports of XBU#0/#1 together at the right side as viewed from the rear of the rack. Place cables other than the crossbar cables (electrical) together at the left side as viewed from the rear of the rack.

1. **Place the crossbar cables (electrical) connected to the 0L/0R and 2L/2R ports of each XBU together at the left side as viewed from the rear of the rack.**
2. **Secure the crossbar cables (electrical) bundled together on the left side to the cable support with hook-and-loop fastener strips.**
3. **Place the crossbar cables (electrical) connected to the 1L/1R ports of each XBU together at the right side as viewed from the rear of the rack.**
4. **If a cable holder is supplied for the rack used, secure the crossbar cables (electrical) bundled together on the right side to the cable holder in the rack.**

Figure 4-28 Example of cable storage (3BB configuration)



Connecting Cables to the SPARC M12-2S and the PCI Expansion Unit

This chapter describes the procedures for connecting the power cords, serial cable, and network cables to the SPARC M12-2S and the PCI expansion unit. The ports for the connections are on the rear of the SPARC M12-2S and the PCI expansion unit. For a description of each port, see "2.10 Checking External Interface Port Specifications."

- [Connecting Cables to the SPARC M12-2S](#)
- [Connecting Cables to the PCI Expansion Unit](#)
- [Connecting Cables to the Crossbar Box](#)
- [Storing Cables](#)

5.1 Connecting Cables to the SPARC M12-2S

This section describes the procedure for connecting the serial cable, network cables, and power cords to the SPARC M12-2S.

1. **Connect the serial cable supplied with the SPARC M12-2S from the serial port of the XSCF unit (A in [Figure 5-1](#)) to the system management terminal.**

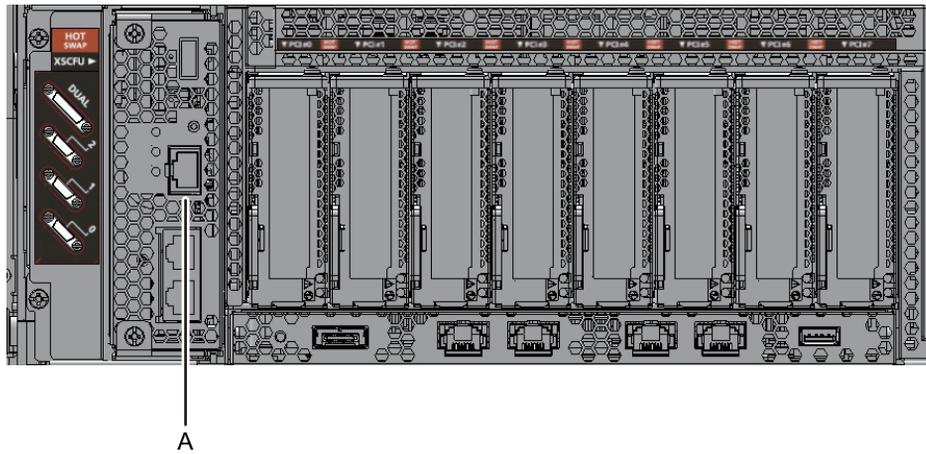
In a building block configuration, the system operates with batch operations by the master XSCF. Connect the serial cable to the master XSCF.

Note - In a building block configuration, BB#00 is usually the master XSCF, and BB#01 is the standby XSCF.

If the master is switched, BB#01 becomes the master XSCF, and BB#00 becomes the standby XSCF.

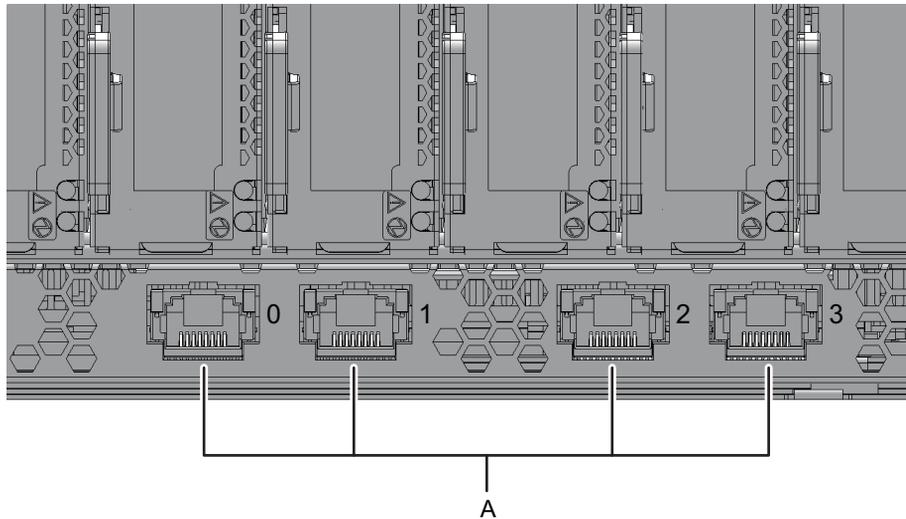
Note - In a building block configuration with connections through crossbar boxes, the system operates with batch operations by the master XSCF of the crossbar box. No serial cables are connected to SPARC M12-2S.

Figure 5-1 Serial Port Location



2. **Connect a LAN cable of Category 6 or higher from a 10 GbE port (A in Figure 5-2) to the network switch or hub.**
The 10 GbE ports are used for the user network. These ports connect devices such as another server, another PC, and a UPS via the network switch or hub.

Figure 5-2 10 GbE Port Locations



3. **If a PCIe card is mounted, connect a LAN cable and I/O cable to the respective ports on the PCIe card.**
4. **Secure the cables to the cable support.**
While leaving extra length, secure the cables connected to the PCIe card to the cable support.
5. **Attach a core to each supplied power cord, and connect the cord to a power**

supply unit.

The work in this step differs depending on the rack where the SPARC M12-2S is mounted.

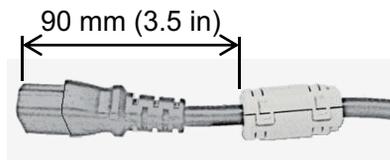
Perform the work appropriate to the rack type.

■ Mounting in a general rack

- a. Insert the power cord so that it fits into the groove of the core. Pinch the core closed until its latch is secured.

Attach the core at a location 90 mm (3.5 in) from the end of the power cord connector. (See [Figure 5-3](#))

Figure 5-3 Core Attachment Location (for a General Rack)



- b. Connect the power cord to the power supply unit (A in [Figure 5-6](#)). Secure the power cord with a cable clamp.

■ Mounting in an expansion rack

- a. Insert the power cord so that it fits into the groove of the core. Pinch the core closed until its latch is secured.

Attach the core at a location 90 mm (3.5 in) from the end of the power cord connector. (See [Figure 5-4](#))

- b. Affix destination labels to the power cords.

Labels are affixed on the top panel of the crossbar box XBBOX#80 or XBBOX#82 at the rear of the expansion rack. (See [Figure 5-5](#).)

Affix labels with the same indications to both ends of each power cord.

First affix the text part of a label to the power cord, and then wrap the label around the cord.

For the label orientation and locations for affixing the labels, see [Figure 5-4](#).

For lists for affixing labels, see "B.6 Power Cord Connections in Expansion Racks."

Figure 5-4 Attached Core and Affixed Label Locations

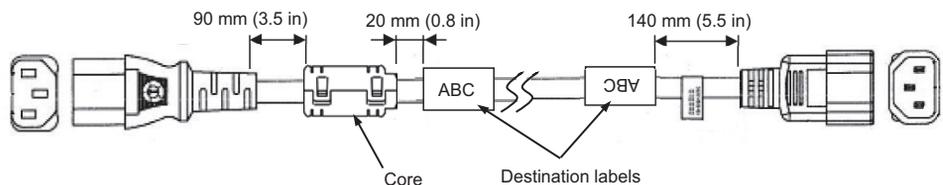
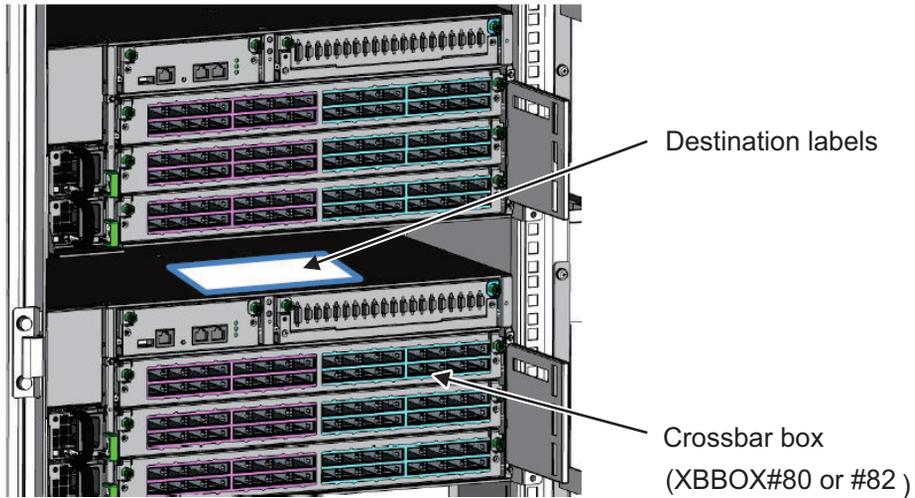


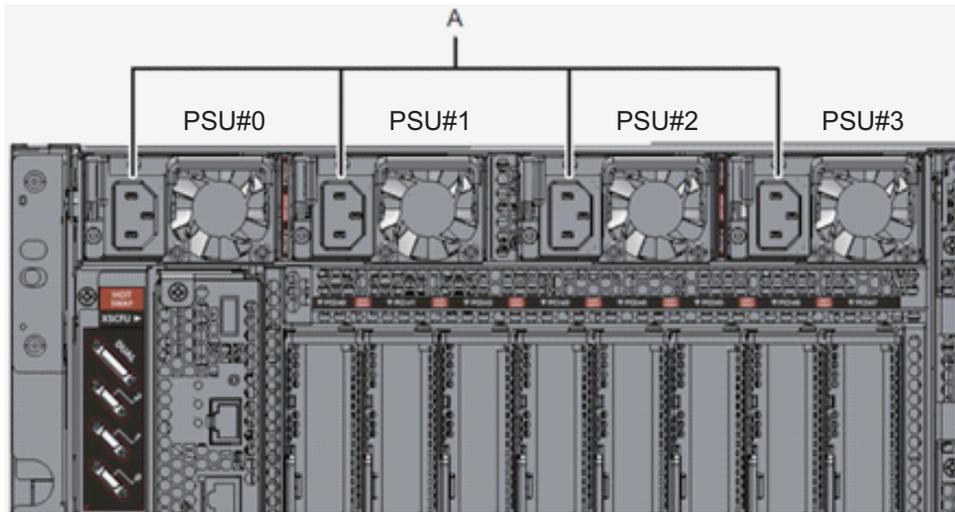
Figure 5-5 Destination Label Storage Location: Top Panel of the Lower Crossbar Box



Rear of expansion rack

- c. Connect the power cords to the power supply units (A in [Figure 5-6](#)) according to the destination labels. Secure the power cord with a cable clamp.

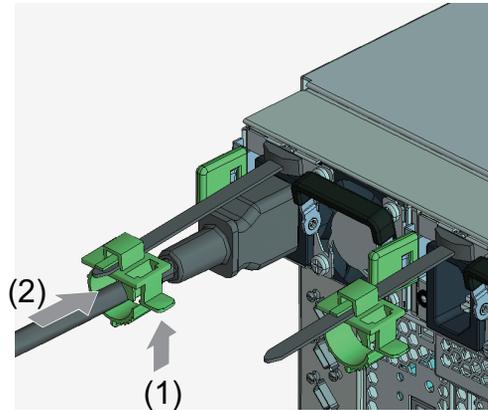
Figure 5-6 Power Supply Unit Locations



2. **Secure every power cord with a cable clamp.** Tighten the cable clamp until it holds the power cord tightly in place. ((1) in [Figure 5-7](#))

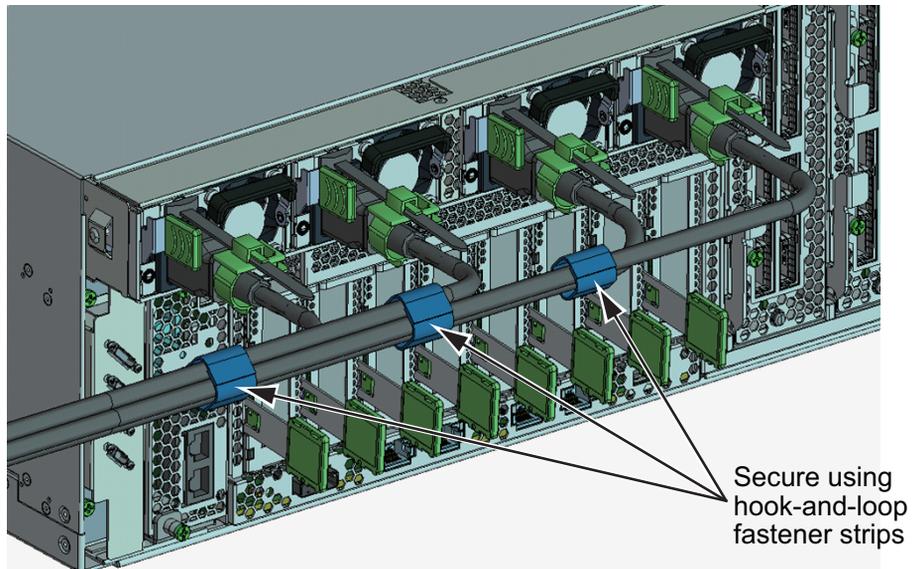
Move the cable clamp to the base of the connector. ((2) in Figure 5-7)

Figure 5-7 Securing Power Cords



3. **While pulling the power cords toward the left side at the rear, gather them together, and bundle them with hook-and-loop fastener strips.**
Ensure that the power cords do not hang in front of the PCIe cards under the power supply units.

Figure 5-8 Bundling Power Cords



4. **Secure a sufficient extra length of cord from the power supply unit to the bundling point of each power cord.**
In order to perform active maintenance on the power supply unit, the power cord must have the extra length.

Figure 5-9 Securing the Extra Length for Power Cords

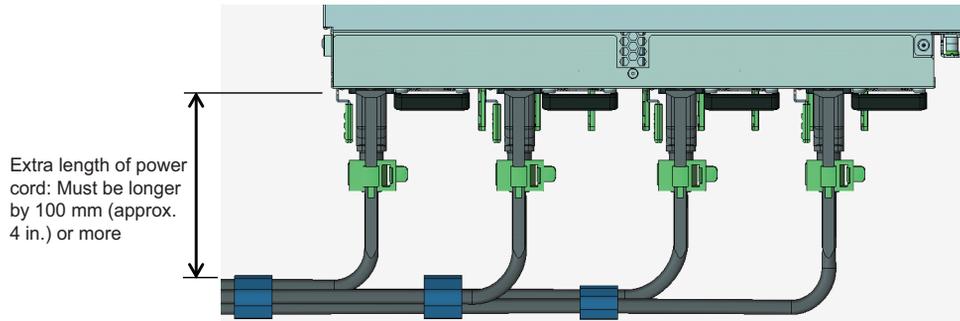
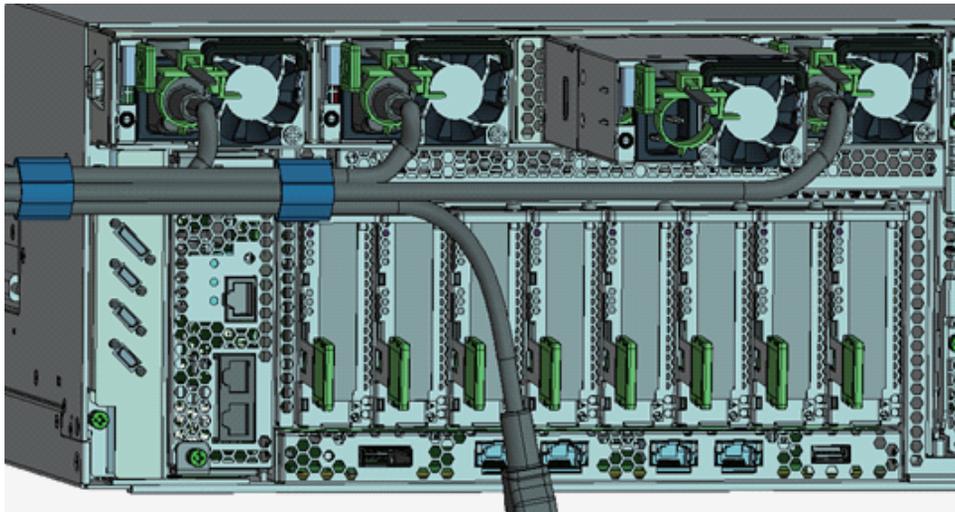


Figure 5-10 Reference: Example of Active Maintenance of a Power Supply Unit



5.2 Connecting Cables to the PCI Expansion Unit

This section describes the procedure for connecting the management cable, link cables, and power cords to the PCI expansion unit.

1. **Connect the management cable.**

Connect the link board of the PCI expansion unit and the link card of the SPARC M12-2S by using the management cable. (See A in [Figure 5-12](#) and A in [Figure 5-13](#).)

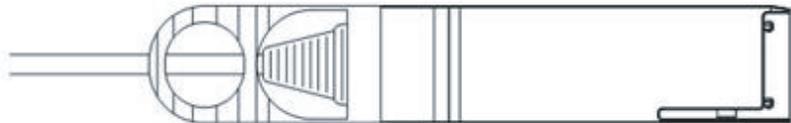
2. **Connect link cables.**

Connect the cables such that the port indications on the link card and link board match the labels on the cables.

Each port on the link card and link board is color-coded and numbered. Connect the port to the corresponding port of the same color and number.

Note - The two link cables are the same. The labels on both ends of each cable have the same indications. When laying the cables, check their connections to confirm that the ends of the cables connected to the link card and link board are at the same locations as shown on the labels.

Figure 5-11 Link Cable (Optical) Shape



- Connect one end of a link cable to the port (B in [Figure 5-12](#)) on the link board of the PCI expansion unit.
- Connect the other end to the port (B in [Figure 5-13](#)) on the link card of the SPARC M12-2S.
- Connect one end of the other link cable to the port (C in [Figure 5-12](#)) on the link board of the PCI expansion unit.
- Connect the other end to the port (C in [Figure 5-13](#)) on the link card of the SPARC M12-2S.

Note - The two ports have the same shape and so may be incorrectly connected. Check the labels at both ends of each cable to confirm that the cable is connected to the correct ports. Hold the connector of the link cable (electrical) or link cable (optical), and insert it straight into the opening. Do not hold the cable or its pull-tab part when inserting it.

Figure 5-12 Link Cable and Management Cable Connections (PCI Expansion Unit Side)

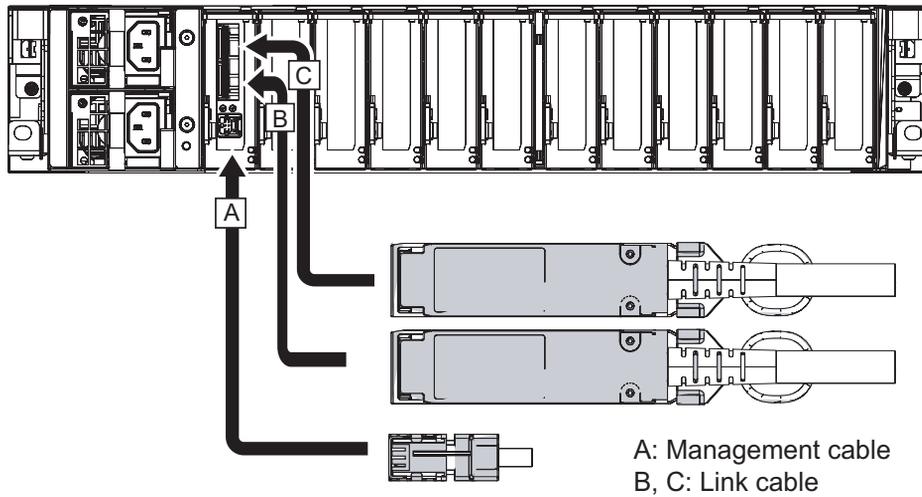
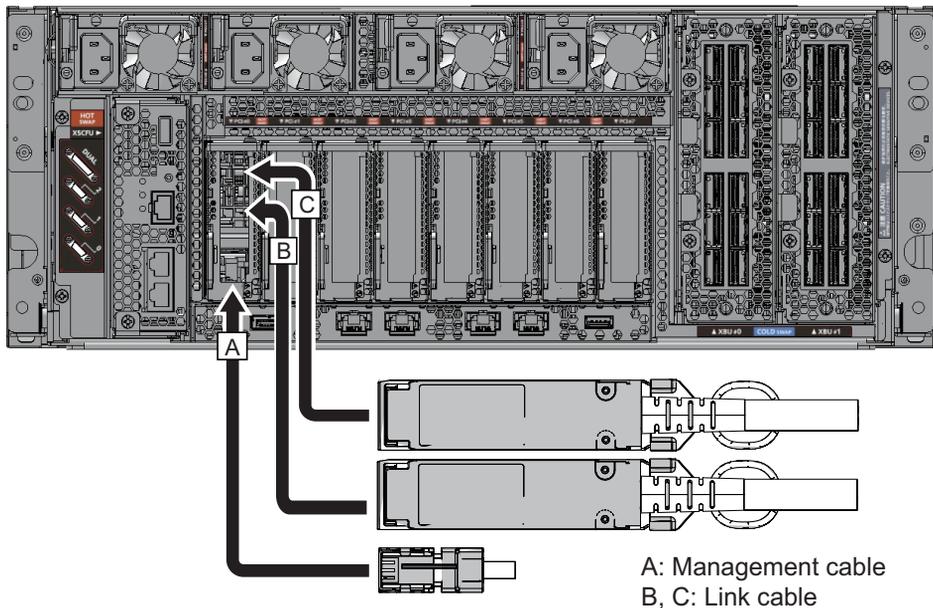


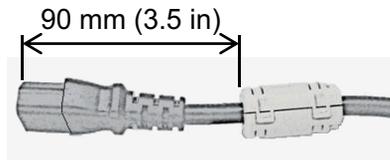
Figure 5-13 Link Cable and Management Cable Connections (SPARC M12-2S Side)



3. **If a PCIe card is mounted, connect a LAN cable and I/O cable to the respective ports on the PCIe card.**
4. **Secure the cables to the cable support.**
While leaving extra length, secure the cables connected to the PCIe card to the cable support.

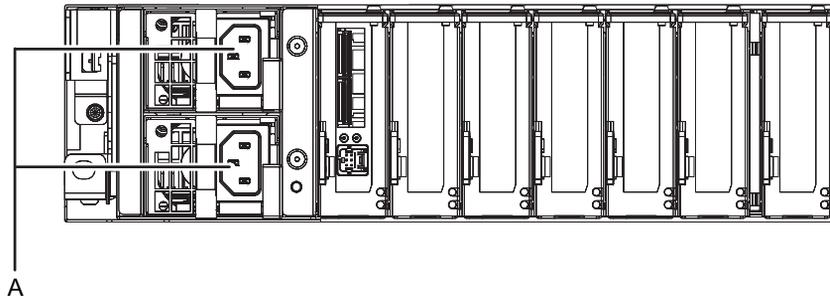
5. **Attach a core to each supplied power cord, and connect the cord to a power supply unit.**
 - a. Insert the power cord so that it fits into the groove of the core. Pinch the core closed until its latch is secured.
Attach the core at a location 90 mm (3.5 in) from the end of the power cord connector. (See [Figure 5-14](#).)

Figure 5-14 Core Attachment Location



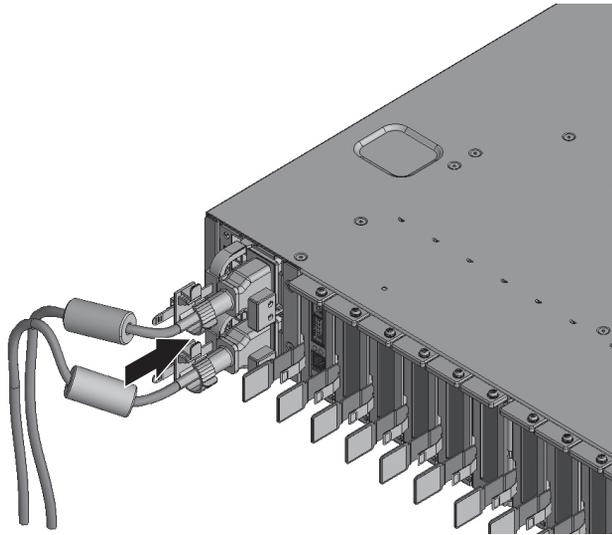
- b. Insert the power cord plug all the way straight into the power supply unit (A in [Figure 5-15](#)). (See [Figure 5-16](#).)

Figure 5-15 Location of the Power Unit of the PCI Expansion Unit



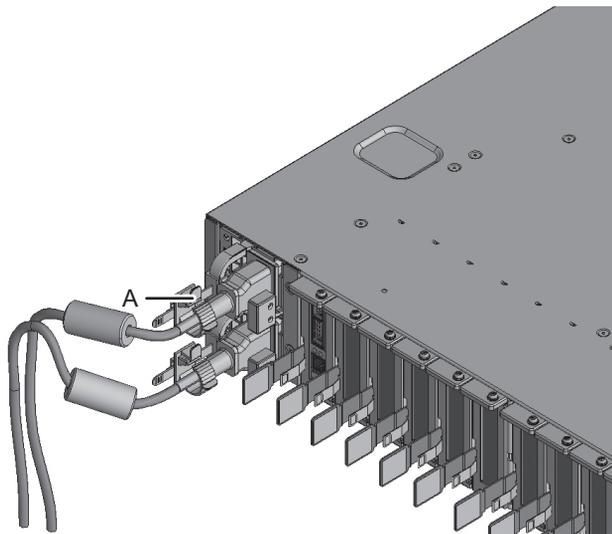
Note - Do not connect to an outlet at this point.

Figure 5-16 Inserting Power Cord



- c. Secure the power cord with a cable clamp.
After locking each clasp (A in [Figure 5-17](#)), push the cable clamp toward the front of the chassis to firmly secure the clamp.

Figure 5-17 Locking the Cable Clamp



5.3

Connecting Cables to the Crossbar Box

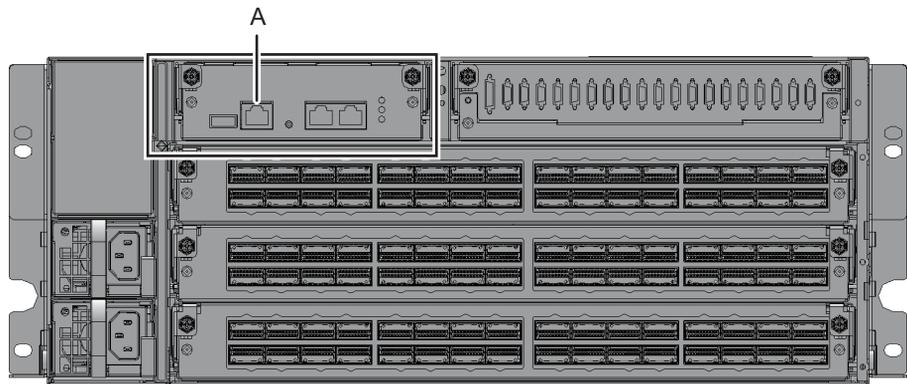
This section describes the procedure for connecting the serial cable to the crossbar box.

1. **Connect the serial cable supplied with the chassis from the serial port of the XSCF unit (A in Figure 5-18) to the system management terminal.**
In a building block configuration, the batch operation is performed in the chassis of the master XSCF. Connect the serial cable to the master XSCF.

Note - In a building block configuration with connections through crossbar boxes, XBBOX#80 is usually the master XSCF, and XBBOX#81 is the standby XSCF. If the master is switched, XBBOX#81 becomes the master XSCF, and XBBOX#80 becomes the standby XSCF.

Note - In a building block configuration connected via crossbar box, no serial cables are connected to the SPARC M12-2S.

Figure 5-18 Serial Port Location on a Crossbar Box



2. **Confirm that the power cords of the SPARC M12-2S and crossbar box are connected to the PDU of the expansion rack.**
The power cords of the SPARC M12-2S and crossbar box are shipped connected to the PDU of the expansion rack.
When the SPARC M12-2S has been mounted at the installation site, connect the power cords to the PDU at this point.
3. **Confirm that the CB switch attached to the PDU of the expansion rack is off.**
When pulled out, the CB switch is turned off. When pushed in, the switch is turned on.

For the locations of the CB switches on the PDUs, see A in [Figure 3-3](#) in "3.3.1 Connecting the Power Cords to the Power Distribution Units of an Expansion Rack."

5.4 Storing Cables

This section describes the procedure for storing the cables connected in "5.1 Connecting Cables to the SPARC M12-2S" and "5.2 Connecting Cables to the PCI Expansion Unit" in a rack.

1. **Hang the power cords from the left side as viewed from the rear of the rack.**

According to the following procedure, connect the power cords of the SPARC M12-2S mounted in the expansion rack to the PDUs, and lay the power cords.

 - a. Connect the power cords to the PDUs as instructed by the destination labels (see [Figure 5-20](#)).

See the power supply system diagram appropriate to your power input type in "2.8 Checking the Power Input Type" about the placements of PDUs and their connections with the respective SPARC M12-2S to connect the power cords.

For the SPARC M12-2S and PDU locations to connect with the power cords, see [Figure 5-19](#).

Figure 5-19 Power Cord Wiring Diagram

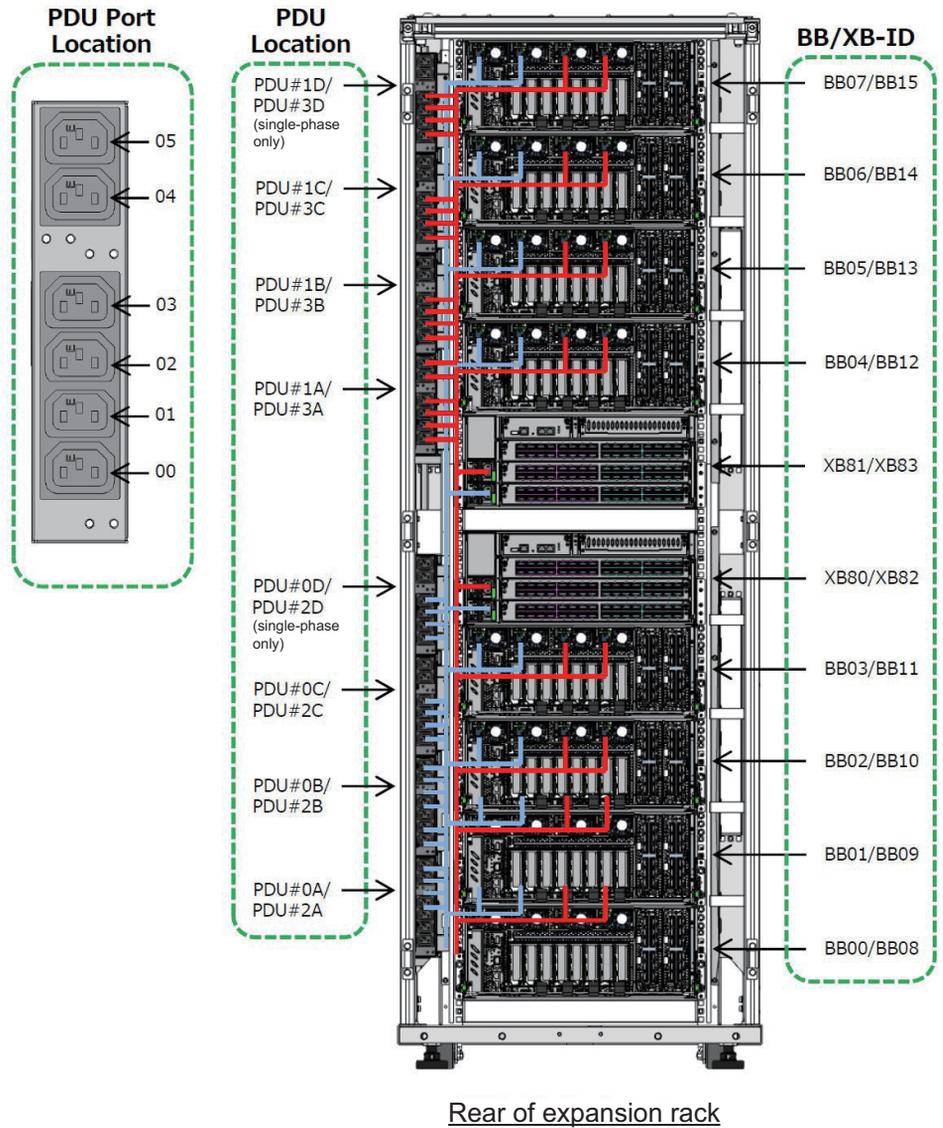
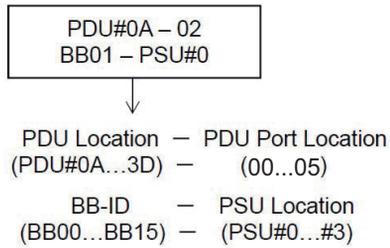


Figure 5-20 Example of the Appearance of a Power Cord Label



- b. Use the space between a SPARC M12-2S and PDU to lay the extra length of power cords after wiring, and use the supplied hook-and-loop fastener strips to bundle them.
2. **Regarding the cables connected to PCIe cards, secure them to the cable support and store them at either the right or left of the rack.**

Performing an Initial System Diagnosis

This chapter describes the procedures for connecting the system management terminal, turning on the input power, and checking components. For details on the XSCF commands executed in each step, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual*.

- [Connecting the System Management Terminal](#)
- [Turning On the Input Power and Starting the XSCF](#)
- [Logging In to the XSCF](#)
- [Confirming the XCP Firmware Version](#)
- [Checking the Altitude Setting](#)
- [Setting the Time](#)
- [Performing a Diagnosis Test](#)
- [Checking the Component Status](#)

6.1 Connecting the System Management Terminal

This section describes the procedures for checking the terminal software settings of the system management terminal and connecting the system management terminal to the serial port of the XSCF unit.

1. **Confirm that the terminal software for connecting the system management terminal has the following setting values.**

Table 6-1 Terminal Software Setting Values

Setting Item	Value
Baud rate	9600
Data length	8 bits
Parity	None
STOP bit	1 bit
Flow control	None
Delay	Other than 0

2. **Confirm that the system management terminal is connected to the serial port of the XSCF unit.**

For a building block configuration, confirm that the terminal is connected to the serial port of the master XSCF.

Note - For direct connections between chassis, BB#00 is usually the master XSCF, and BB#01 is the standby XSCF. In the case of connections via a crossbar box, XBBOX#80 is usually the master XSCF, and XBBOX#81 is the standby XSCF. If the master is switched, BB#01 becomes the master XSCF, and BB#00 becomes the standby XSCF. For the mounting locations of BB#00 and BB#01, see [Figure 2-2](#) in "2.4.1 Mounting Conditions for General Racks."

6.2 Turning On the Input Power

This section describes the procedures for connecting the power cords to outlets, turning on the input power, and starting the XSCF.

6.2.1 Checking the BB-ID Settings

Confirm that the BB-IDs are set properly before turning on the input power.

Note - If a BB-ID is not set or incorrectly set when the input power is turned on, the XSCF does not start normally. Therefore, confirm that the BB-ID settings are correct.

1. **Check the BB-IDs on the operation panel on the front of the SPARC M12-2S chassis.**

Confirm that BB-IDs 00 to 15 are set sequentially.

2. **Check the BB-IDs on the operation panel on the front of the crossbar box chassis.**

Confirm that BB-IDs 80 to 83 are set sequentially.

To set a BB-ID, see "[4.1 Setting the ID \(BB-ID\) Identifying the SPARC M12-2S.](#)"

6.2.2 Turning On the Input Power and Starting the XSCF

1. **Set the mode switch on the operation panel to the Service position. For a building block configuration, set the mode switch to the Service position for both the master XSCF and standby XSCF.**

The Service position is indicated by a wrench icon. The Locked position is indicated by a lock icon.

Remarks - In a building block configuration with direct connections between chassis, turn the mode switches of BB-ID#00 and BB-ID#01 to Service mode. In a building block configuration with connections via a crossbar box, turn the mode switches of BB-ID#80 and BB-ID#81 to Service mode.

Note - Set the mode switch to the same mode for both the master XSCF and standby XSCF. If their settings are different, an asterisk (*) is shown beside the components in the output of the showhardconf or showstatus command.

Figure 6-1 Mode Switch on the SPARC M12-2S Operation Panel

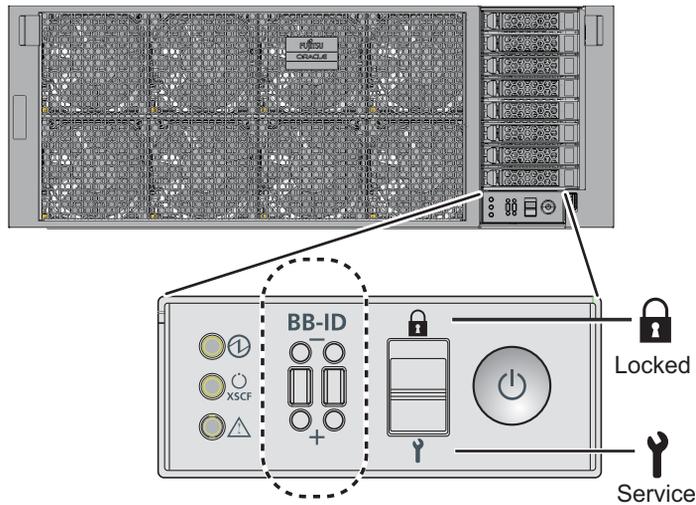
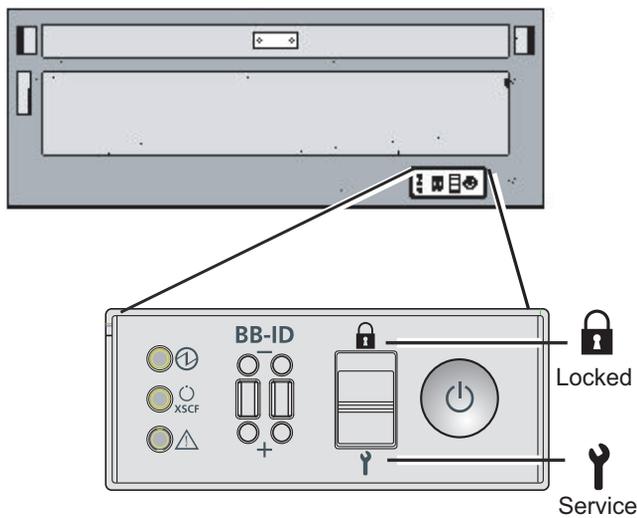


Figure 6-2 Mode Switch on the Operation Panel of a Crossbar Box



2. **Confirm that the power cord connector is connected to a power supply unit of the SPARC M12-2S.**
3. **Connect the power cord plug to an outlet.**

If the outlet has a circuit breaker, turn on the circuit breaker switch.

For an expansion rack, push in all the CB switches on the PDUs. When pushed in, a CB switch is turned on. When pulled out, the switch is turned off.

For the locations of the CB switches on the PDUs, see A in [Figure 3-3](#) in "3.3.1 Connecting the Power Cords to the Power Distribution Units of an Expansion Rack."
4. **Check the XSCF unit LEDs.**
 - a. The CHECK LED of the XSCF unit goes on for an instant immediately after the input power is turned on.
 - b. The READY LED of the XSCF unit flashes during XSCF initialization and stays on after the initialization completes.
 - c. For a building block configuration, the MASTER LED of only the XSCF unit of the master XSCF goes on.

Note - In a building block configuration with direct connections between chassis, BB#00 is the master XSCF. In a building block configuration with connections via a crossbar box, BB#80 works as the chassis of the master XSCF. If the MASTER LED of BB#00 or BB#80 does not turn on, the master chassis may have been switched. Check the MASTER LED of the XSCF of BB#01 or BB#81. If it has been switched, connect the system management terminal to the chassis whose MASTER LED is on.

Figure 6-3 SPARC M12-2S Rear Side

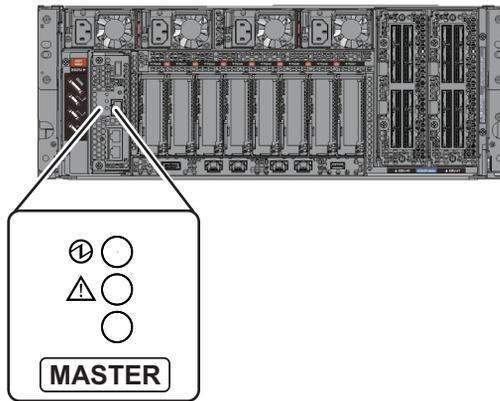
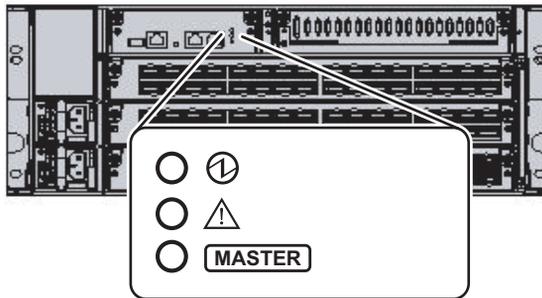


Figure 6-4 Rear View of a Crossbar Box



6.3 Logging In to the XSCF

This section describes the procedure for logging in to the XSCF by using the default XSCF user account.

Log in to the XSCF by using the default user account and authentication method until a user account appropriate to the user environment is registered for you. The default user privileges are `useradm` and `platadm`.

Remarks - `platadm` is mainly used to manage the whole system. `useradm` is mainly used to manage user accounts. For details on the user privilege types and the privileges, see [Table 7-3](#).

1. **After the system management terminal displays "SCF_READY", press the [Enter] key.**
2. **After the login prompt appears, enter "default" for the login name.**

```
login: default
```

3. **After a message prompting operation of the mode switch appears, operate the mode switch on the operation panel as follows.**
 - a. Switch the mode switch on the operation panel to the Locked position, and press the RETURN key.

```
Change the panel mode switch to Locked and press return...  
Omitted
```

- b. Leave the switch in that position for at least 5 seconds.

```
Leave it in that position for at least 5 seconds.
```

- c. Return the mode switch to the Service position, and press the RETURN key.

```
Change the panel mode switch to Service and press return...  
Omitted
```

Note - Complete this switching operation of the mode switch in 1 minute or less. If the operation exceeds 1 minute, login authentication times out.

4. **Confirm that the system management terminal displays the XSCF shell prompt.**

```
XSCF>
```

Note - The following message may be output after login for a building block configuration: "XSCF firmware update now in progress. BB#xx,please wait for XSCF firmware update complete." If so, the update is automatically matching XCP firmware versions. Execute the showlogs monitor command, confirm the message "XCP firmware version synchronization completed," and then perform the next work.

6.4 Confirming the XCP Firmware Version

This section describes the procedure for confirming the XCP firmware version.

1. **Execute the version command, and confirm that the firmware version of each SPARC M12-2S matches.**

The command comprehensively displays the XCP firmware version.

In the case of the building block configuration, the versions of the master XSCF and standby XSCF can be checked.

Confirm that the version of the XCP firmware on each SPARC M12-2S matches the version on the master XSCF.

The following example shows the XCP firmware version of each SPARC M12-2S in a building block configuration.

```
XSCF> version -c xcp
BB#00-XSCF#0 (Master)
XCP0 (Current): xxxx
XCP1 (Reserve): xxxx
BB#01-XSCF#0 (Standby)
XCP0 (Current): xxxx
XCP1 (Reserve): xxxx
BB#02-XSCF#0
XCP0 (Current): xxxx
XCP1 (Reserve): xxxx
BB#03-XSCF#0
XCP0 (Reserve): xxxx
XCP1 (Current): xxxx
```

2. **If the version of the XCP firmware on any SPARC M12-2S unit is different, execute the `flashupdate -c sync` command to synchronize the XCP firmware version on the SPARC M12-2S unit.**

Synchronize the XCP firmware version with the version of the master XSCF.

```
XSCF> flashupdate -c sync
XCP update is started. [3600sec]
 0..... 30..... 60..... 90.....120.....150.....180.....
210.....240.....
270.....300.....330.....360.....390.....420.....450.....480.....
510.....
```

3. **Confirm that the version of the XCP firmware on each SPARC M12-2S matches the version on the master XSCF.**
4. **Execute the `version` command, and confirm that the XCP firmware version of each SPARC M12-2S matches.**

```
XSCF> version -c xcp
BB#00-XSCF#0 (Master)
XCP0 (Current): xxxx
XCP1 (Reserve): xxxx
BB#01-XSCF#0 (Standby)
XCP0 (Current): xxxx
XCP1 (Reserve): xxxx
BB#02-XSCF#0
XCP0 (Current): xxxx
XCP1 (Reserve): xxxx
BB#03-XSCF#0
XCP0 (Reserve): xxxx
```

6.5 Checking the Altitude Setting

This section describes the procedure for checking and setting the altitude of the installation location.

The factory default setting is 0 m. Check the setting value, and change it as needed.

Note - Setting the altitude in the system makes it possible to detect abnormal intake temperatures early. If the altitude of the installation location is unknown, set a high altitude. Abnormal temperatures can be detected from abnormal CPU temperatures, for example, even if no altitude is set in the system. This prevents critical damage to the system.

1. **Execute the `showaltitude` command.**

The following example displays the value of the system altitude setting. The factory default setting is 0 m.

```
XSCF> showaltitude
0m
```

2. **If the altitude setting is correct, skip step 2 and subsequent steps. To change the altitude, execute the `setaltitude` command.**

The setting is in units of 100 m, and values less than 100 m are rounded up.

- Example: If the altitude of the installation location is 80 m, the setting is 100 m.
- If it is 150 m, the setting is 200 m.

The following example sets the altitude to 100 m.

```
XSCF> setaltitude -s altitude=100
100m
```

3. **Execute the `rebootxscf` command to reflect the setting. If you are also changing the setting values described in "6.6 Setting the Time," you can skip step 3 and subsequent steps because the XSCF is rebooted.**

Executing the `rebootxscf` command disconnects the XSCF session.

The following example reboots all the XSCFs and automatically selects "y" for the confirmation message.

```
XSCF> rebootxscf -y -a
The XSCF will be reset. Continue? [y|n] :y
```

Note - If -a is specified, the command reboots the XSCF of every SPARC M12-2S. If you want to reset a specific SPARC M12-2S, specify -b bb_id.

4. **Log in to the XSCF again.**
For details, see "6.3 Logging In to the XSCF."

6.6 Setting the Time

This section describes the procedure for setting the system date and time. The date and time in the factory default settings are set to coordinated universal time (UTC). If you want to display the time in local time (e.g., JST), first set the time zone, and then check and set the time.

1. **Execute the showtimezone command to check the time zone.**
The following example displays the factory default setting (UTC).

```
XSCF> showtimezone -c tz
UTC
```

2. **To set the time zone, execute the settimezone command, and check which time zones can be set.**
If you do not want to set the time zone, skip steps 2 and 3.
The following example displays a partial list of time zones that can be set.

```
XSCF> settimezone -c settz -a
Africa/Abidjan
Africa/Accra
Africa/Addis_Ababa
Africa/Algiers
Africa/Asmara
Africa/Asmera
Africa/Bamako
Africa/Bangui
.
.
```

3. **To set the time zone, execute the settimezone command.**
The following example sets the time zone to "Asia/Tokyo."

```
XSCF> settimezone -c settz -s Asia/Tokyo
Asia/Tokyo
```

Note - In the building block configuration, time zone setting may take time to complete. Synchronization between the master XSCF and the standby XSCF is performed. Wait till the

XSCF prompt appears.

4. **Execute the showdate command to display the XSCF time.**

If you have set the time zone, the command displays the time in local time (e.g., JST).

The following example displays the current time in the local time zone.

```
XSCF> showdate
Tue Sep 20 14:53:00 JST 2016
```

5. **Execute the setdate command. Even if the time is correct, make sure to execute this.**

Setting the date and time reboots the XSCF.

The following example sets the local time (JST) to 16:59:00 September 20, 2016.

```
XSCF> setdate -s 092016592016.00
Tue Sep 20 16:59:00 JST 2016
The XSCF will be reset. Continue? [y|n] :y
Tue Sep 20 7:59:00 UTC 2016
XSCF>
```

Note - If the reboot is canceled, the XSCF does not reflect the setting values even when the reboot is by the rebootxscf command.

6. **Log in to the XSCF again.**

For details, see "[6.3 Logging In to the XSCF.](#)"

7. **Execute the showtimezone command.**

Confirm that it shows the set time zone.

```
XSCF> showtimezone -c tz
Asia/Tokyo
```

8. **Execute the showdate command.**

Confirm that it shows the set time.

```
XSCF> showdate
Tue Sep 20 16:59:00 JST 2016
```

6.7 Performing a Diagnosis Test

This section describes the procedure for performing an initial diagnosis of hardware before system startup.

Note - The SPARC M12-2S is powered on and off during the diagnosis test. A CPU Activation key does not need to have been registered for power-on during the diagnosis test at this point.

1. **Execute the testsb command.**

The testsb command performs an initial diagnosis of hardware.

During the diagnosis, the SPARC M12-2S is powered on and off. By specifying options, you can check whether HDD/SSD/PCIe cards are mounted. You can also check the crossbar cable connections in a building block configuration.

The following example performs an initial diagnosis and connection I/O check of the SPARC M12-2S.

<Description of options specified>

-v: Additionally displays detailed messages of the initial diagnosis

-p: Executes the "probe-scsi-all" command of OpenBoot PROM and displays the results while a diagnosis is being processed. If the PCI expansion unit is connected, the execution results of the ioxadm -v list command of the XSCF are displayed.

-s: Executes the "show-devs" command of OpenBoot PROM and displays the results while a diagnosis is being processed. If the PCI expansion unit is connected, the execution results of the ioxadm -v list command of the XSCF are displayed.

-a: Diagnoses all the mounted hardware resources

-y: Automatically responds with "y" to a query

```
XSCF> testsb -a -v -p -s
Initial diagnosis is about to start, Continue?[y|n] :y
PSB power on sequence started.
POST Sequence 01 Banner
LSB#00: POST 5.6.0 (2016/08/25 09:01)
LSB#01: POST 5.6.0 (2016/08/25 09:01)
:
<<Displayed execution results of "probe-scsi-all">>
/pci@8d00/pci@4/pci@0/pci@0/scsi@0

FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.00.00

Target a
  Unit 0   Encl Serv device   FUJITSU  BBEXP           0d32
  SASAddress 500000e0e0b001bd  PhyNum 14
```

```
/pci@8900/pci@4/pci@0/pci@0/scsi@0
```

```
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.00.00
```

```
Target a
```

```
Unit 0 Disk TOSHIBA AL13SEB600 3702 1172123568 Blocks, 600 GB  
SASDeviceName 50000395881893e0 SASAddress 50000395881893e2 PhyNum 0
```

```
Target b
```

```
Unit 0 Encl Serv device FUJITSU BBEXP 0d32  
SASAddress 500000e0e0b001bd PhyNum 14
```

```
:
```

```
<<Displayed execution results of "show-devs">>
```

```
/pci-performance-counters@8f00
```

```
/pci-performance-counters@8e00
```

```
/pci-performance-counters@8d00
```

```
:
```

```
<<Displayed execution results of "ioxadm versionlist" and "ioxadm -v list">>
```

```
-----
```

```
---
```

```
[PCIBOX Versions]
```

PCIBOX	Ver	Link	Ver
Info			
PCIBOX#2001	5220	BB#00-PCI#04	5220
equal			

```
-----
```

```
---
```

```
[PCIBOX Informations]
```

Location	Type	FW Ver	Serial Num	Part Num
	State			
PCIBOX#2001	PCIBOX	-	2121212001	
	On			
PCIBOX#2001/PSU#1	PSU	-	FEJD1201000169	
CA01022-0750-D/		On		
PCIBOX#2001/IOB	IOBOARD	5220	PP122300JW	
CA20365-B66X 007AF		On		
PCIBOX#2001/LINKBD	BOARD	-	PP123300TR	
CA20365-B60X 001AA		On		
PCIBOX#2001/FANBP	FANBP	-	PP120904SY	
CA20365-B68X 004AC		On		
BB#00-PCI#04	CARD	5220	PP13490467	
CA20365-B59X 013AD/9999999		On		

```
-----
```

```
---
```

```
PSB power off sequence started. [1200sec]
```

```
0..... 30..... 60..... 90end
```

```
PSB powered off.
```

```
PSB Test Fault
```

```
-----
```

```
00-0 Passed Normal
```

```
01-0 Passed Normal
```

```
XSCF>
```

2. Check the execution results of "probe-scsi-all" to confirm that all mounted internal storage (HDD/SSD) is identified.

3. **Check the execution results of "show-devs" to confirm that all mounted PCIe cards are recognized.**
4. **If a PCI expansion unit is connected, you can confirm the serial number and firmware version number of the PCI expansion unit from the execution results of "ioxadm -v list".**
5. **Confirm that "Passed" and "Normal" appear for BB#00 (PSB 00-0) in the results of the initial diagnosis.**

If the results display anything other than the above, see "[Appendix A Troubleshooting](#)."

6.8 Checking the Component Status

This section describes the procedure for checking the configuration, status, and quantities of the mounted field replaceable units (FRUs).

1. **Execute the showhardconf command.**

The command displays all the FRUs mounted in the SPARC M12-2S and PCI expansion unit and the status of the FRUs. However, it does not display the status of I/O-related components such as PCIe cards and PCI expansion units while the system power is off.

Example: Displayed for the SPARC M12-2S

```
XSCF> showhardconf -M
SPARC M12-2S;
+ Serial:PZ51618006; Operator_Panel_Switch:Service;
+ System_Power:Off; System_Phase:Cabinet Power Off;
BB#00 Status:Normal; Role:Master; Ver:300ah; Serial:PZ51618006;
+ FRU-Part-Number:CA20369-B17X 003AB/9999999          ;
+ Power_Supply_System: ;
+ Memory_Size:256 GB;
CMUL Status:Normal; Ver:1101h; Serial:PP1617010W  ;
+ FRU-Part-Number:CA07855-D201 A1 /9999999          ;
+ Memory_Size:128 GB; Type: C ;
CPU#0 Status:Normal; Ver:4241h; Serial:00000063;
+ Freq:4.250 GHz; Type:0x30;
+ Core:12; Strand:8;
.
.
(Omitted)
```

2. **Confirm that no FRU has an asterisk (*) displayed in front of it.**

The asterisk (*) is a mark indicating the abnormal state of a FRU, where an error or degradation occurred.

If a failure has occurred in any unit, see "[A.2.2 Checking the Contents of Logs](#)" and "[A.2.3 Checking Information on a Component Where a Failure or Degradation Occurred](#)."

3. Execute the showhardconf -u command.

The command displays the quantities of mounted FRUs. However, it does not display the quantities of I/O-related components such as PCIe cards and PCI expansion units while the system power is off.

Example: Displayed for the SPARC M12-2S

```
XSCF> showhardconf -u
SPARC M12-2S; Memory_Size:192 GB;
```

FRU	Quantity
BB	2
CMUL	2
Type:C	(2)
CPU	2
Freq:4.250 GHz;	(2)
MEM	16
Type:81; Size: 8 GB;	(16)
CMUU	1
Type:C	(1)
CPU	1
Freq:4.250 GHz;	(1)
MEM	8
Type:81; Size: 8 GB;	(8)
PCICARD	0
LINKCARD	0
PCIBOX	0
IOB	0
LINKBOARD	0
PCI	0
FANBP	0
PSU	0
FAN	0
XBU	4
Type:C	(4)
XSCFU	2
Type:A	(2)
OPNL	2
Type:A	(2)
PSUBP	2
Type:C	(2)
PSU	8
Type:C	(8)
FANU	16
HDDBP	2
XBBOX	0
XBU	0
XSCFU	0
OPNL	0
XBBPU	0
XSCFIFU	0
PSU	0
FANU	0

4. **Execute the showlogs error command.**

Confirm that no error is displayed. If an error is displayed, see "[A.2.2 Checking the Contents of Logs.](#)"

If an error is displayed for a system with a 3BB configuration or larger, see "[Table A-1 List of Problem Case Examples.](#)"

```
XSCF> showlogs error
```

5. **Execute the showstatus command.**

When there is no problem, the command displays nothing.

If a failure has occurred in any unit, an asterisk (*) and the unit status are displayed. See "[A.2.3 Checking Information on a Component Where a Failure or Degradation Occurred.](#)"

```
XSCF> showstatus
```

6. **To implement the initial system settings, go to "[Chapter 7 Making the Initial System Settings.](#)" Otherwise, log out of the XSCF.**

Making the Initial System Settings

This chapter describes the initial settings that must be implemented before system startup.

For details on the XSCF commands executed in each step, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual*.

- [Setting the Password Policy](#)
- [Setting a User Account and Password](#)
- [Configuring the Telnet/SSH Service](#)
- [Configuring the HTTPS Service](#)
- [Configuring the XSCF Network](#)
- [Configuring Memory Mirroring](#)
- [Creating a PPAR Configuration List](#)
- [Assigning/Releasing a Physical System Board \(PSB\) for a Physical Partition \(PPAR\)](#)
- [Synchronizing the Physical Partition \(PPAR\) Time and XSCF Time](#)
- [Registering a CPU Activation Key](#)
- [Assigning CPU Core Resources](#)
- [Starting and Stopping a Physical Partition \(PPAR\)](#)
- [Installing Oracle Solaris](#)
- [Saving Configuration Information](#)

7.1 Setting the Password Policy

Passwords have limitations such as length and character type. Those password attributes conform to rules called the password policy.

The current password policy applies to every user account that is created. For this reason, check the current password policy, and adjust the password policy as needed before creating any user account.

1. **Execute the showpasswordpolicy command to check the password policy.**

```
XSCF> showpasswordpolicy
Mindays: 0
Maxdays: 99999
Warn: 7
Inactive: -1
Expiry: 0
Retry: 3
Difok: 3
Minlen: 9
Dcredit: 1
Ucredit: 1
Lcredit: 1
Ocredit: 1
Remember: 3
```

Table 7-1 Contents Displayed by the showpasswordpolicy Command

Display Item	Description
Mindays	Minimum number of days after a password change before the next time that the password can be changed. 0 indicates that the password can be changed anytime.
Maxdays	Maximum number of days that a password is valid
Warn	Number of days after a password expiration warning is issued before the password actually expires
Inactive	Number of days after the password expiration time before the account is locked out. The default value is -1. The value of -1 means that the account is not locked after the password expires.
Expiry	Number of days that the account remains valid. The default value is 0. The value of 0 means that the account does not expire.
Retry	Number of permitted retries to change a password
Difok	Number of characters to be included in the new password but are not included in the old password
Minlen	Minimum acceptable password length
Dcredit	A password that contains numeric characters can be shorter than the minimum acceptable password length (Minlen). The decreased number of characters is up to the number of numeric characters included in the password. Here, you can set the maximum value for this decrease.
Ucredit	A password that contains uppercase characters can be shorter than the minimum acceptable password length (Minlen). The decreased number of characters is up to the number of uppercase characters included in the password. Here, you can set the maximum value for this decrease.

Table 7-1 Contents Displayed by the showpasswordpolicy Command (*continued*)

Display Item	Description
Lcredit	A password that contains lowercase characters can be shorter than the minimum acceptable password length (Minlen). The decreased number of characters is up to the number of lowercase characters included in the password. Here, you can set the maximum value for this decrease.
Ocredit	A password that contains non-alphanumeric characters can be shorter than the minimum acceptable password length (Minlen). The decreased number of characters is up to the number of non-alphanumeric characters included in the password. Here, you can set the maximum value for this decrease.
Remember	Number of passwords to be stored in the password history

2. **Execute the setpasswordpolicy command to set the password policy.**

The setpasswordpolicy command sets the password policy with the following options.

Table 7-2 setpasswordpolicy Command Options

Option	Password Policy
-n	Mindays
-M	Maxdays
-w	Warn
-i	Inactive
-e	Expiry
-y	Retry
-k	Difok
-m	Minlen
-d	Dcredit
-u	Ucredit
-l	Lcredit
-o	Ocredit
-r	Remember

The example below specifies the following:

- A retry count of up to 3
- A password length of 6 characters or more when the password contains 2 numeric characters. A password length of 8 characters or more when the password does not contain numeric characters
- An expiration time of 60 days
- 15 days ahead as the start date for warnings before the password expires
- 3 as the number of passwords to remember

```
XSCF> setpasswordpolicy -y 3 -m 8 -d 2 -u 0 -l 0 -o 0 -M 60 -w 15 -r 3
```

3. **Execute the showpasswordpolicy command, and confirm the settings.**

```
XSCF> showpasswordpolicy  
Mindays:          0  
Maxdays:         60  
Warn:             15  
Inactive:         -1  
Expiry:           0  
Retry:            3  
Difok:            1  
Minlen:           8  
Dcredit:          2  
Ucredit:          0  
Lcredit:          0  
Ocredit:          0  
Remember:         3
```

7.2 Setting a User Account and Password

Set a user account and password appropriate to the use environment, and assign a user privilege to the user account. Be sure to register at least one user account having the platadm and useradm user privileges.

1. **Execute the adduser command to add a user account.**

The following example specifies jsmith for the user account name. If -u is not specified, a UID is automatically assigned.

```
XSCF> adduser jsmith
```

The following example adds a user account with a UID specified.

```
XSCF> adduser -u 359 jsmith
```

2. **Execute the password command, and specify a password.**

```
XSCF> password jsmith
Password:
Retype new password:
passwd: password updated successfully
XSCF>
```

Note - When a user with the useradm privilege executes the command, the user can set the password of another user account regardless of the value specified in the setpasswordpolicy(8) command.

The following example specifies 60 days for the expiration time and 15 days ahead as the start date for warnings before the password expires.

```
XSCF> password -M 60 -w 15 jsmith
```

3. **Execute the setprivileges command to assign a user privilege to the user account.**

The setprivileges command can set the following as user privileges for the entire system.

Table 7-3 User Privileges

User Privilege	Overview	Description of Privilege
platadm	Manage the whole system.	<ul style="list-style-type: none"> - Can perform all hardware operations for the system. - Can manipulate all XSCF settings except those requiring the useradm and XSCF audit privileges. - Can add/delete hardware in a PPAR. - Can perform power operations for a physical partition. - Can refer to all of the status of the server.
useradm	Manage user accounts.	<ul style="list-style-type: none"> - Can create, delete, enable, and disable user accounts. - Can change user passwords and password profiles. - Can change user privileges.
auditop	Refer to the audit status.	<ul style="list-style-type: none"> - Can refer to the XSCF audit status and audit methods.
auditadm	Control auditing.	<ul style="list-style-type: none"> - Can control XSCF auditing. - Can delete XSCF audit methods.
fieldeng	Allow use by field engineers.	<ul style="list-style-type: none"> - Permits field engineers to only be able to perform maintenance work and change device configurations.

The following example specifies useradm and platadm for the user account.

```
XSCF> setprivileges jsmith useradm platadm
```

Note - The setprivileges command assigns the user privilege of the specified operand. To add a new user privilege to a user account already assigned a user privilege, specify the existing user privilege too.

4. Execute the showuser command to check information on a created user account.

```
XSCF> showuser -l
User Name:          jsmith
UID:                359
Status:             Enabled
Minimum:            0
Maximum:            60
Warning:            15
Inactive:           -1
Last Change:        May 22, 2016
Password Expires:   Jul 21, 2016
Password Inactive:  Never
```

Account Expires:	Never
Privileges:	useradm platadm

Note - Considering maintenance work, be sure to prepare a field engineer (FE) user account that has the fieldeng user privilege.

In addition to the fieldeng user privilege, we recommend that the system administrator create accounts with the platadm, useradm, and auditadm user privileges.

7.3 Configuring the Telnet/SSH Service

To use the XSCF shell terminal and the control domain console of the specified physical partition, use Telnet or SSH.

SSH and Telnet can be concurrently enabled. However, a Telnet connection is not based on a secure connection protocol. We recommend disabling Telnet when SSH is enabled.

7.3.1 Configuring the Telnet Service

This section describes how to configure the Telnet service.

1. **Execute the `showtelnet` command to display the Telnet setting.**

The following example displays the Telnet service setting. The factory default setting is "disabled".

```
XSCF> showtelnet
Telnet status: disabled
```

2. **Execute the `settelnet` command to configure the Telnet service.**

The following example specifies that the Telnet service be enabled.

```
XSCF> settelnet -c enable
Continue? [y|n] :y
```

3. **Execute the `showtelnet` command, and confirm that the Telnet setting is "enabled".**

```
XSCF> showtelnet
Telnet status: enabled
```

7.3.2 Configuring the SSH Service

1. **Execute the showssh command to display the SSH settings.**

The following example displays the SSH service settings. The factory default setting is "disabled".

```
XSCF> showssh
SSH status: disabled
RSA key:
DSA key:
```

2. **Execute the setssh command to configure the SSH service.**

The following example specifies that the SSH service be enabled.

```
XSCF> setssh -c enable
Continue? [y|n] :y
```

3. **Execute the showssh command to display the host key and fingerprint.**

A host key is generated when you enable the SSH service for the first time.

```
XSCF> showssh
SSH status: enabled
RSA key:
ssh-rsa
AAAAB3NzaC1yc2EAAAABIWAAAIEAt0IG3wfpQnGr51znS9XtzwhCBBb/UU0LN08S
i1UXE6j+avlxdy7AFqBf1wGxLF+Tx5pTa6HuZ8o8yUBbDZVJAAAAFQCfKPxarV+/
5qzK4A43Qaigkqu/6QAAAIBMLQl22G8pwibESrh5JmOhSxpLz13P26ksI8qPr+7B
xmjLR0k=
Fingerprint:
1024 e4:35:6a:45:b4:f7:e8:ce:b0:b9:82:80:2e:73:33:c4
/etc/ssh/ssh_host_rsa_key.pub
DSA key:
ssh-dss
AAAAB3NzaC1kc3MAAACBAJSy4GxD7Tk4fxFvyW1D0NUDqZQPYP3PuY2IG7QC4BQ1k
ewDnblB8/JEqI+8pnfbWzmOWU37KHL19OEYNv6v+WZT6RELU5Pyb8F16uq96L8Q
DMswF1ICMZgrn+i1JNStr6r8KDJfwoQMmK0eeDFj2mL40NOvaLQ83+rRwW6Ny/yF
1Rgv6PUUpUqRLw4Verb+uOfmPRpe6/kb4z++1Ohtp
WI9bay6CK0nrFRok+z54ez7BrDFBQVuNZx9PyEFezJG9ziEYVUag/23LIAiLxxBm
W9pqa/WxC21Ja4RQVN3009kmVwAAAIaON1LR/9Jdd7yyG18+Ue7eBBJHrCA0pkSz
vfz2FFj5XUzQBdabh5p5Rwz+1vriawFIZI9j2uhM/3HQdrvYSVBEedMjaasF9hB6T
/uFwP8yqtJf6Y9GdjBAhWuH8F13pX4BtvK9IeldqCscnOuu0e2r1UoI6GICMr64F
L0YYBSwfbwLiz6PSA/yKQe23dwfkSfcwQZNq/5pThGPi3tob5Qev2KCK2OyEDMCA
OvVlMhqHuPNpX+hE19nPdBFGzQ==
Fingerprint:
1024 9e:39:8e:cb:8a:99:ff:b4:45:12:04:2d:39:d3:28:15
/etc/ssh/ssh_host_dsa_key.pub
```

7.4 Configuring the HTTPS Service

The HTTPS service settings are intended for use of XSCF Web with a connection to the XSCF-LAN and for use of a Web browser window. Use the settings described here to enable/disable and use HTTPS. HTTPS is disabled by default in these systems. The XSCF Web console with HTTPS can be a secure console.

Note - We recommend enabling https for the maintenance work of collecting an XSCF log and updating the XCP firmware.

Note - The self-signed certificate expires after 10 years. If the Web server certificate has expired or you are changing the Web server certificate, configure the HTTPS service again.

1. **Execute the `showhttps` command to display the HTTPS service settings.**
The following example displays an HTTPS service setting. The factory default setting is "disabled".

```
XSCF> showhttps
HTTPS status: disabled
```

2. **Execute the `sethttps` command to configure HTTPS.**
The following example enables the HTTPS service.

```
XSCF> sethttps -c enable
The web serverkey or web server certificate which has been
signed by an external certification authority does not exist.
Created self-signed certificate for HTTPS service.Continue?
[y|n] :y
```

If there is neither a Web server secret key nor a self-signed Web server certificate, the command with "enable" specified automatically configures self-signing, generates a Web server secret key, creates a Web server certificate, and enables HTTPS to complete this work at one time.

3. **Execute the `showhttps` command, and confirm that the HTTPS setting has changed to "enabled".**

```
XSCF> showhttps
HTTPS status: enabled
Server key: installed in Apr 24 12:34:56 JST 2016
CA key: installed in Apr 24 12:00:34 JST 2016
CA cert: installed in Apr 24 12:00:34 JST 2016
CSR:
-----BEGIN CERTIFICATE REQUEST-----
MIIBwjCCASsCAQAwgYExCzAJBgNVBAYTAmpqMQ4wDAYDVQQIEWVzdGF0ZTERMA8G
A1UEBxMIbG9jYWxpdkHkxFTATBgNVBAoTDG9yZ2FuaXphdGlvbjEPMA0GA1UECxMG
b3JnYW5pMQ8wDQYDVQQDEWZjb21tb24xFTJAUBgkqhkiG9w0BCQEWB2VlLm1haWww
```

```

gZ8wDQYJKoZIhvcNAQEBBQADgY0AMIGJAoGBAJ5D57X/k42LcipTbWzV2GrxaVM
5GEyx3bdBW8/7WZhd3uiZ9+AN1vRAuw/YYy7I/pAD+NQJesBcBjuyj9x+IiJ19F
MrI5fR8pOIyVwOdbMPCar09rrU45bVeZhTyi+uQOdWLoX/Dhq0fm2BpYuh9WukT5
pTEg+2dABg8UdHmNAGMBAAGgADANBgkqhkiG9w0BAQQFAAOBgQAux1jH3dyB6Xho
PgBuVIakDzIKEPipK9qQfC57YI43uRBGRubu0AHEcLVue5yTu6G5SxHTCq07tV5g
38UHSg5Kqy9QuWHWMrI/hxm0kQ4gBpApjNb6F/B+ngBE3j/thGbEuvJb+0wbycvu
5jrhB/ZV9k8X/MbDOxSx/U5nF+Zuyw==
-----END CERTIFICATE REQUEST-----

```

7.5 Configuring the XSCF Network

The XSCF network settings consist of XSCF network interface settings, such as for the XSCF-LAN and the protocol for SP to SP communication (SSCP), routing settings, and DNS-related settings. For details on the purpose and configuration of the XSCF network, see "3.9.1 Using Services Through the XSCF Network" to "3.9.5 Understanding the IP Addresses that are Set with SSCP" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

Table 7-4 lists the setting items related to the XSCF network and the corresponding XSCF shell commands.

Here, set the essential items in the table. This manual does not describe cases about setting optional items. See "3.9 Configuring the XSCF Network" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

Table 7-4 Setting Items Related to the XSCF Network

Setting Item	Implemented As Initial Setting?	Reference	Related Command
Host name/domain name	Optional	"7.5.1 Setting an XSCF Host Name and Domain Name"	sethostname showhostname
XSCF network IP address	Implemented	"7.5.2 Setting an Ethernet (XSCF-LAN) IP Address"	setnetwork shownetwork
- XSCF-LAN		"7.5.3 Setting a Takeover IP Address"	setsscp
- Net mask		"7.5.4 Setting an SSCP IP Address"	showsscp
- Takeover IP address			
- SSCP			
Adding/Deleting a network route	Implemented	"7.5.5 Setting the Routing"	setroute showroute
- Destination IP address			
- Gateway			
- Net mask			
Adding/Deleting a DNS	Optional	"3.9.13 Setting the DNS for the XSCF" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide</i> .	setnameserver shownameserver
- Name server			
- Search path			

Table 7-4 Setting Items Related to the XSCF Network (*continued*)

Setting Item	Implemented As Initial Setting?	Reference	Related Command
IP packet filtering rule	Optional	"3.9.14 Setting the IP Packet Filtering Rules for the XSCF Network" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide</i> .	setpacketfilters showpacketfilters
Applying the network	Implemented	"7.5.6 Applying Network Settings"	applynetwork rebootxscf

7.5.1 Setting an XSCF Host Name and Domain Name

1. **Execute the `showhostname` command to display host names.**

The following example displays the factory default settings.

```
XSCF> showhostname -a
bb#00:localhost.localdomain
bb#01:localhost.localdomain
```

2. **Execute the `sethostname` command to set a host name.**

For *xscfu*, specify the SPARC M12-2S for which a host name is set up.

For *hostname*, specify the host name to be set for the master XSCF and standby XSCF.

- In the case of SPARC M12-2S (without crossbar box): bb#00, bb#01
- In the case of SPARC M12-2S (with crossbar box): xbbox#80, xbbox#81

```
XSCF> sethostname xscfu hostname
```

The following example sets the host name scf0-hostname for BB#00 and the host name scf1-hostname for BB#01.

```
XSCF> sethostname bb#00 scf0-hostname
XSCF> sethostname bb#01 scf1-hostname
```

The following example sets the host name scf0-hostname for XBBOX#80 and the host name scf1-hostname for XBBOX#81.

```
XSCF> sethostname xbbox#80 scf0-hostname
XSCF> sethostname xbbox#81 scf1-hostname
```

The following example sets the domain name example.com for the master XSCF and standby XSCF.

```
XSCF> sethostname -d example.com
```

7.5.2 Setting an Ethernet (XSCF-LAN) IP Address

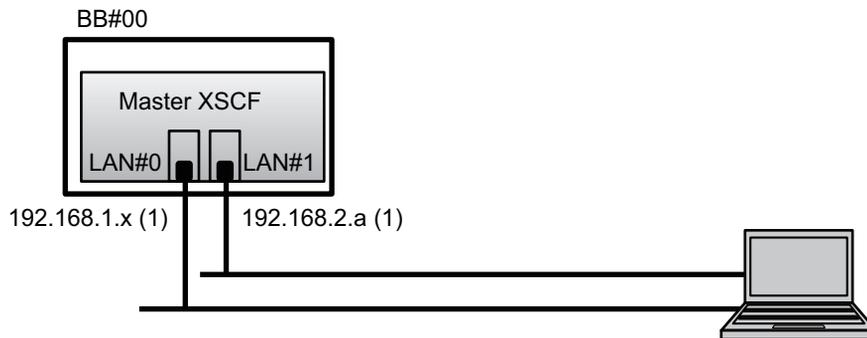
The XSCF-LAN is a LAN established for user access to the XSCF. Two XSCF-LAN ports can be used, depending on the network configuration.

1BB configuration

In the systems with one XSCF, set either or both of the following IP addresses:

- XSCF-LAN#0 of BB#00
- XSCF-LAN#1 of BB#00

Figure 7-1 Example of XSCF-LAN Settings



Remarks - Configure the XSCF-LAN#0 and XSCF-LAN#1 ports such that they are on different subnets. (See (1) in [Figure 7-1](#).)

1. **Execute the setnetwork command with network interface information specified.**
The following example sets the IP addresses and net masks for XSCF-LAN#0 and XSCF-LAN#1 of BB#00 to enable them.

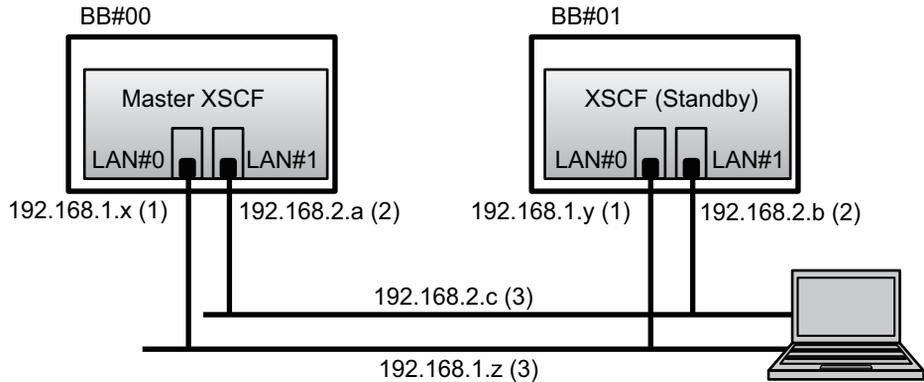
```
XSCF> setnetwork bb#00-lan#0 -m 255.255.255.0 192.168.1.x  
XSCF> setnetwork bb#00-lan#1 -m 255.255.255.0 192.168.2.a
```

2BB configuration or larger (direct connections between chassis for up to the 4BB configuration)

In the systems with multiple XSCFs, first set each XSCF-LAN IP address on the master XSCF side, and then set the XSCF-LAN IP address on the standby XSCF.

- XSCF-LAN#0 of BB#00 (master XSCF)
- XSCF-LAN#1 of BB#00 (master XSCF)
- XSCF-LAN#0 of BB#01 (standby XSCF)
- XSCF-LAN#1 of BB#01 (standby XSCF)

Figure 7-2 Example of XSCF-LAN Settings



Remarks - For XSCF LAN ports with the same number, set addresses on the same subnet.

- Configure XSCF-LAN#0 of BB#00 and XSCF-LAN#0 of BB#01 on the same subnet. (See (1) in [Figure 7-2](#).)
- Configure XSCF-LAN#1 of BB#00 and XSCF-LAN#1 of BB#01 on the same subnet. (See (2) in [Figure 7-2](#).)

Remarks - Set different network addresses for the IP addresses of XSCF-LAN#0 and XSCF-LAN#1.

- Configure XSCF-LAN#0 of BB#00 and XSCF-LAN#1 of BB#00 on different subnets. (See (1) and (2) in [Figure 7-2](#).)
- Configure XSCF-LAN#0 of BB#01 and XSCF-LAN#1 of BB#01 on different subnets. (See (1) and (2) in [Figure 7-2](#).)

Remarks - Set one takeover IP address for each pair of XSCF-LAN#0 and XSCF-LAN#1. (See (3) in [Figure 7-2](#).)

For the setting, do as described in "[7.5.3 Setting a Takeover IP Address](#)."

1. **Execute the `setnetwork` command with network interface information specified.**
The following example sets the IP addresses and net masks for XSCF-LAN#0 and XSCF-LAN#1 of BB#00 and BB#01 to enable them.

```
XSCF> setnetwork bb#00-lan#0 -m 255.255.255.0 192.168.1.x
XSCF> setnetwork bb#01-lan#0 -m 255.255.255.0 192.168.1.y
XSCF> setnetwork bb#00-lan#1 -m 255.255.255.0 192.168.2.a
XSCF> setnetwork bb#01-lan#1 -m 255.255.255.0 192.168.2.b
```

2BB configuration or larger (with crossbar box):

In the systems with multiple XSCFs, first set each XSCF-LAN IP address on the master XSCF side, and then set the XSCF-LAN IP address on the standby XSCF.

Remarks - For XSCF LAN ports with the same number, set addresses on the same subnet.
- Configure XSCF-LAN#0 of XBBOX#80 and XSCF-LAN#0 of XBBOX#81 on the same subnet.
- Configure XSCF-LAN#1 of XBBOX#80 and XSCF-LAN#1 of XBBOX#81 on the same subnet.

Remarks - Set different network addresses for the IP addresses of XSCF-LAN#0 and XSCF-LAN#1.
- Configure XSCF-LAN#0 of XBBOX#80 and XSCF-LAN#1 of XBBOX#80 on different subnets.
- Configure XSCF-LAN#0 of XBBOX#81 and XSCF-LAN#1 of XBBOX#81 on different subnets.

Remarks - Set one takeover IP address for each pair of XSCF-LAN#0 and XSCF-LAN#1. For the setting, execute by "7.5.3 [Setting a Takeover IP Address.](#)"

1. **Execute the setnetwork command with network interface information specified.**
The following example sets the IP addresses and net masks for XSCF-LAN#0 and XSCF-LAN#1 of XBBOX#80 and XBBOX#81 and enables them.

```
XSCF> setnetwork xbbox#80-lan#0 -m 255.255.255.0 192.168.1.x
XSCF> setnetwork xbbox#81-lan#0 -m 255.255.255.0 192.168.1.y
XSCF> setnetwork xbbox#80-lan#1 -m 255.255.255.0 192.168.2.a
XSCF> setnetwork xbbox#81-lan#1 -m 255.255.255.0 192.168.2.b
```

7.5.3 Setting a Takeover IP Address

You can set a takeover IP address (virtual IP address) for a system that consists of multiple SPARC M12-2S units and has multiple XSCFs.

The setting of the takeover IP address enables takeover of the IP address after master-and-standby switching in cases of XSCF failover. By using the takeover IP address, users can always connect to the master XSCF without any need to pay attention to XSCF switching.

After setting the respective IP addresses for XSCF-LAN#0 and XSCF-LAN#1, as described in "7.5.2 [Setting an Ethernet \(XSCF-LAN\) IP Address,](#)" set one takeover IP address for each pair of XSCF-LAN#0 and XSCF-LAN#1. (See [Figure 7-2](#))

1. **Set the takeover IP address of XSCF-LAN#0 or XSCF-LAN#1.**
The following example sets the takeover IP address 192.168.1.z and net mask 255.255.255.0 for XSCF-LAN#0, and the takeover IP address 192.168.2.c and net mask 255.255.255.0 for XSCF-LAN#1.

```
XSCF> setnetwork lan#0 -m 255.255.255.0 192.168.1.z
XSCF> setnetwork lan#1 -m 255.255.255.0 192.168.2.c
```

7.5.4 Setting an SSCP IP Address

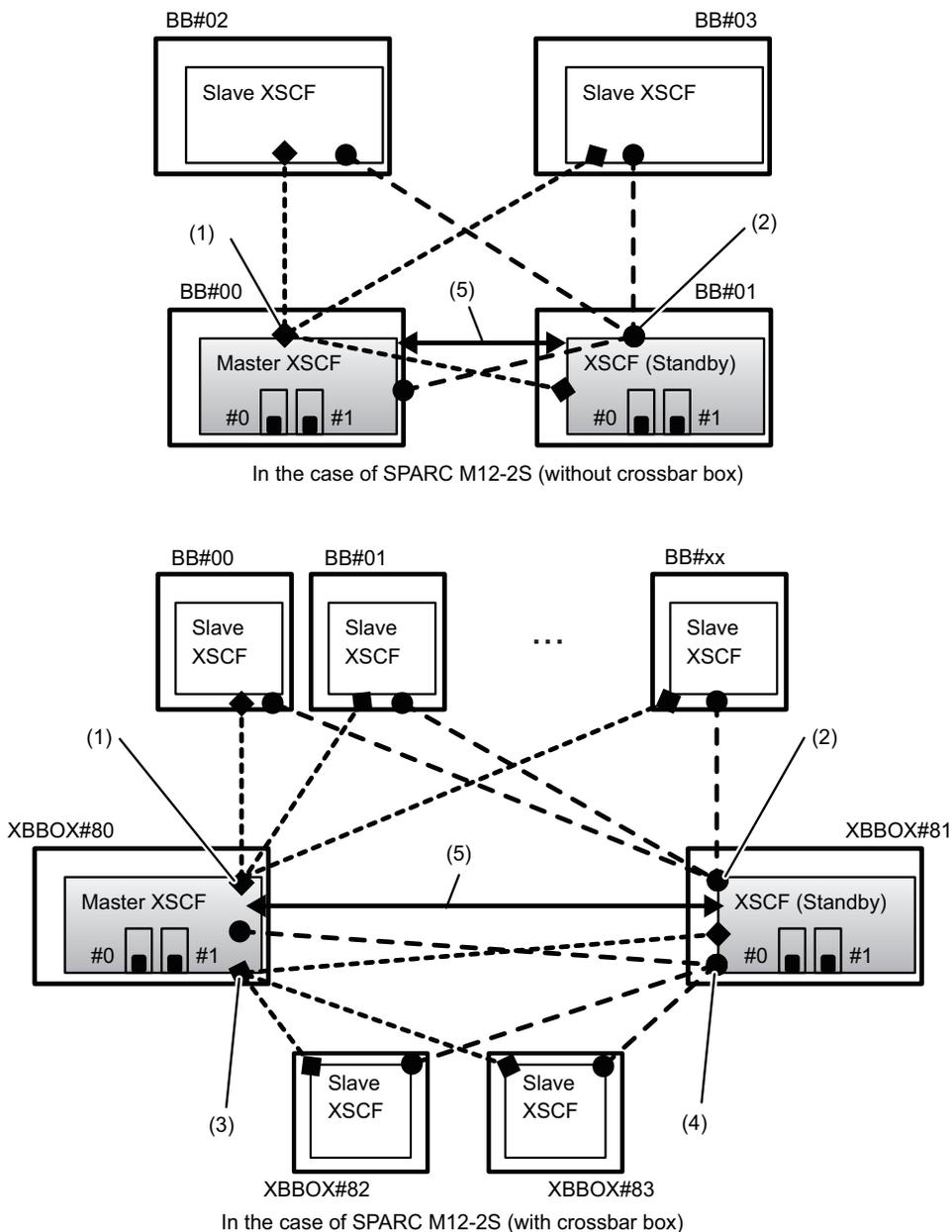
For a system that consists of multiple SPARC M12-2S units and has multiple XSCFs, a network is configured between the XSCFs to enable mutual monitoring of states and exchange of system information. The interface protocol of this network is referred to as the protocol for SP to SP communication (SSCP).

The IP addresses used in this SSCP network are set by default. However, if the XSCF-LAN IP addresses and the default SSCP IP addresses have overlapping network addresses, other values must be set for the SSCP IP addresses. For details on SSCP IP addresses, see "3.9.5 Understanding the IP Addresses that are Set with SSCP" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

The IP addresses used with SSCP are classified and set in the following groups. These groups are distinguished by their SSCP link network IDs. At least two IP addresses need to be set for the same SSCP port.

- **Group with the master XSCF and the XSCF of each BB:**
SSCP link network ID 0 (See (1) in [Figure 7-3](#).)
- **Group with the standby XSCF and the XSCF of each BB:**
SSCP link network ID 1 (See (2) in [Figure 7-3](#).)
- **Group with the master XSCF and the XSCF of each XBBOX:**
SSCP link network ID 2 (See (3) in [Figure 7-3](#).)
- **Group with the standby XSCF and the XSCF of each XBBOX:**
SSCP link network ID 3 (See (4) in [Figure 7-3](#).)
- **Group with the master XSCF and standby XSCF:**
SSCP link network ID 4 (See (5) in [Figure 7-3](#).)

Figure 7-3 XSCF Network (SSCP)



1. **Execute the showsscp command to display SSCP address information.**
The following example displays information on all SSCP addresses on the SPARC M12-2S in the 4BB configuration.

```
XSCF> showsscp -a
SSCP network ID:0 address 169.254.1.0
SSCP network ID:0 netmask 255.255.255.248
```

```

Location Address
-----
bb#00-if#0 169.254.1.1
bb#01-if#0 169.254.1.2
bb#02-if#0 169.254.1.3
bb#03-if#0 169.254.1.4
SSCP network ID:1 address 169.254.1.8
SSCP network ID:1 netmask 255.255.255.248
Location Address
-----
bb#00-if#1 169.254.1.9
bb#01-if#1 169.254.1.10
bb#02-if#1 169.254.1.11
bb#03-if#1 169.254.1.12
SSCP network ID:2 address 169.254.1.16
SSCP network ID:2 netmask 255.255.255.252
Location Address
-----
bb#00-if#2 169.254.1.17
bb#01-if#2 169.254.1.18

```

2. Set an SSCP IP address (if needed).

The IP addresses used in this SSCP network are set by default. However, if the XSCF-LAN IP addresses and the default SSCP IP addresses have overlapping network addresses, then use `setsscp` to change the SSCP IP addresses.

The following example sets, in interactive mode, the SSCP addresses and net masks of the SSCP link network for the SPARC M12-2S in the 4BB configuration, with chassis directly interconnected.

```

XSCF> setsscp
How many BB[4] > 4
SSCP network ID:0 address [169.254.1.0 ] > 10.1.1.0
SSCP network ID:0 netmask [255.255.255.248] > 255.255.255.0
bb#00-if#0 address [10.1.1.1 ] > [Enter]key
bb#01-if#0 address [10.1.1.2 ] > [Enter]key
bb#02-if#0 address [10.1.1.3 ] > [Enter]key
bb#03-if#0 address [10.1.1.4 ] > [Enter]key

SSCP network ID:1 address [169.254.1.8 ] > 10.2.1.0
SSCP network ID:1 netmask [255.255.255.248] > 255.255.255.0
bb#00-if#1 address [10.2.1.1 ] > [Enter]key
bb#01-if#1 address [10.2.1.2 ] > [Enter]key
bb#02-if#1 address [10.2.1.3 ] > [Enter]key
bb#03-if#1 address [10.2.1.4 ] > [Enter]key

SSCP network ID:2 address [169.254.1.16 ] >
SSCP network ID:2 netmask [255.255.255.252] >
bb#00-if#2 address [169.254.1.17 ] > [Enter]key
bb#01-if#2 address [169.254.1.18 ] > [Enter]key

```

7.5.5 Setting the Routing

1. **Execute the showroute command to display the routing environment.**

```
XSCF> showroute -a
Destination      Gateway          Netmask          Flags  Interface
Destination      Gateway          Netmask          Interface
```

2. **Execute the setroute command to set the default gateway.**

For *-n address*, specify the IP address that is the routing information destination. If 0.0.0.0 is specified in *address*, the command sets the default routing information.

For *-g address*, specify the gateway address used in routing.

For *interface*, specify the network interface to be set. You can specify it as follows depending on the system configuration:

- In the case of SPARC M12-2S (without crossbar box): bb#00-lan#0, bb#00-lan#1, bb#01-lan#0, bb#01-lan#1
- In the case of SPARC M12-2S (with crossbar box): xbbox#80-lan#0, xbbox#80-lan#1, xbbox#81-lan#0, xbbox#81-lan#1

```
XSCF> setroute -c add -n address -g address interface
```

The following example adds the default gateway IP address 192.168.1.1 for XSCF-LAN#0 of BB#00.

```
XSCF> setroute -c add -n 0.0.0.0 -g 192.168.1.1 bb#00-lan#0
```

7.5.6 Applying Network Settings

To complete configuration of the network, settings must be reflected and the XSCF must be rebooted. The XSCF reboot disconnects the XSCF session, so log in again.

1. **Execute the applynetwork command on the XSCF shell.**

Executing the command will display network settings. You can confirm that the settings are done.

```
XSCF> applynetwork
The following network settings will be applied:
bb#00 hostname      :scf0-hostname
bb#01 hostname      :scf1-hostname
DNS domain name     :example.com

interface           :bb#00-lan#0
```

```

status          :up
IP address      :192.168.1.x
netmask        :255.255.255.0
route          :-n 0.0.0.0 -m 0.0.0.0 -g 192.168.1.1

interface      :bb#00-lan#1
status         :down
IP address     :192.168.2.a
netmask       :255.255.255.0
route         :-n 0.0.0.0 -m 0.0.0.0 -g 192.168.2.1

```

Omitted

Continue? [y|n] :**y**

Please reset the all XSCFs by `rebootxscf` to apply the network settings.

Please confirm that the settings have been applied by executing `showhostname`, `shownetwork`, `showroute`, `showsscp` and `shownameserver` after rebooting the all XSCFs.

2. **Execute the `rebootxscf` command to reboot the XSCF and complete the settings.**

```

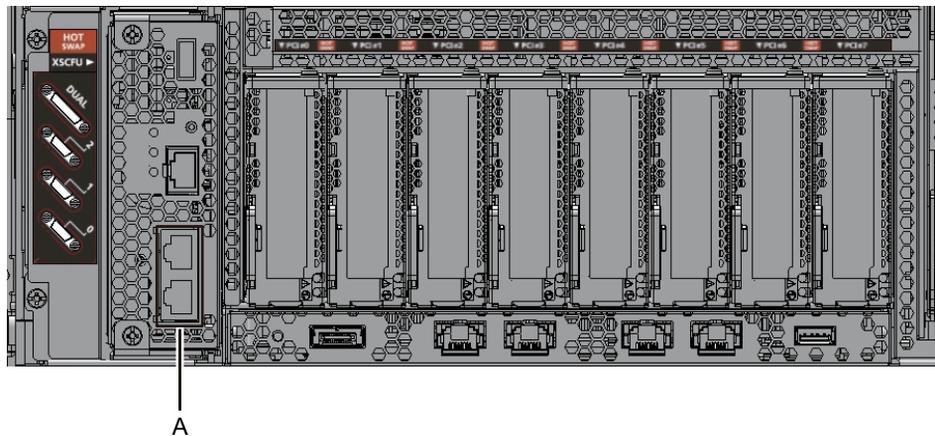
XSCF> rebootxscf -a
The XSCF will be reset. Continue? [y|n] :y

```

Executing the command will disconnect the XSCF.

3. **Connect a LAN cable of Category 5 or higher to an XSCF-LAN port (A in [Figure 7-4](#)) via the system control network.**

Figure 7-4 Location of XSCF-LAN Ports



The setting work from this step can be done through an XSCF-LAN connection too.

To switch from a serial connection to an XSCF-LAN connection, connect to the

XSCF by specifying its IP address on a PC connected to the XSCF-LAN, and log in again.

4. **Execute the `showhostname`, `shownetwork`, `showsscp`, and `showroute` commands again to display the network settings, and confirm the new network information.**

7.6 Configuring Memory Mirroring

This section describes how to configure memory mirroring.

Note - Configuring memory mirroring is optional.

Note - To configure memory mirroring, you need the building block (BB) of the target SPARC M12-2S not to be incorporated into a physical partition, or you need to power off the incorporated physical partition.

The SPARC M12-2S supports memory mirroring configuration to protect data through memory duplication. Data reliability increases, but the amount of available memory is halved.

The memory access controller controls writing of data to memory and reading of data from memory. The SPARC M12-2S configures the mirroring by grouping the memory controlled by two memory access controllers into a set.

Note - The memory grouped together in a mirroring group must all have the same capacity and be the same rank.

1. **Execute the `showfru` command to check memory mirror mode.**
Memory mirror mode is not set in the factory default settings.

```
XSCF> showfru -a
Device  Location  Memory Mirror Mode
sb      00-0
  cpu    00-0-0    no
  cpu    00-0-2    no
```

2. **Execute the `setupfru` command, and set memory mirror mode to configure mirroring.**

```
XSCF> setupfru [[-q] -{y|n}] -c function=mode device location
```

To configure memory mirroring, specify `-c mirror=yes`.

For device, specify the devices making up the mirroring configuration. To

configure memory mirroring for all the CPUs mounted in the specified BB, specify `sb`. To configure it only for the specified CPU, specify `cpu`.

For location, specify the location of the target device.

To specify `sb`, use the PSB number format (`xx-0`). For `xx`, specify the BB-ID.

To specify `cpu`, use the `xx-0-z` format. For `xx`, specify the BB-ID. For `z`, specify 0 or 2 as the CPU chip number.

The following example sets all the CPUs mounted on PSB 00-0 to memory mirror mode.

```
XSCF> setupfru -c mirror=yes sb 00-0
```

```
Notice:
```

```
- Logical domain config_name will be set to "factory-default".
```

```
Memory mirror mode setting will be changed, Continue? [y|n] :y
```

3. Execute the `showfru` command to check the set memory mirror mode.

```
XSCF> showfru -a
```

Device	Location	Memory Mirror Mode
sb	00-0	
cpu	00-0-0	yes
cpu	00-0-2	yes

7.7 Creating a PPAR Configuration List

This section describes how to create a PPAR configuration list.

Note - Generally, there is no problem when the physical partition number for a physical partition being configured matches any of the existing SPARC M12-2S IDs (BB-IDs) in the system.

However, if you anticipate that the system may be reduced after operation starts, you need to consider the appropriate physical partition number for that case when determining the physical partition number. This is because any physical partition with a physical partition number that is the same as the BB-ID of the SPARC M12-2S to be removed must be stopped at the time of reduction.

Before configuring a physical partition, be sure to see "Chapter 4 Configuring a Physical Partition" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* and check the recommended method of configuring a physical partition.

The PPAR configuration list defines the following information required for configuring a physical partition (PPAR):

- The number of the physical system board (PSB) of the building block that

configures PPAR and the corresponding logical system board (LSB) number

- Degradation range (configuration policy)
- Hardware resource information

For the SPARC M12-2S, the PPAR configuration list is not set. Set the PPAR configuration list and the configuration policy (which specifies the degradation range for an error detected in an initial diagnosis of hardware).

Use the `showpcl` command to check the PPAR configuration list, and use the `setpcl` command to set the list. For an explanation of the `setpcl` command options, see the `setpcl` command manual page or the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual*.

With SPARC M12-2S, one SPARC M12-2S unit is treated as one building block (BB). This single building block or the combination of multiple building blocks are used to configure the physical partition (PPAR).

In the building block configuration system, one PPAR or multiple PPARs can be configured. In this case, one building block is treated as a physical system board (PSB) by the firmware. One PPAR is defined by assigning the number of the PSB that shows which building block is used and the number of the corresponding logical system board (LSB).

1. **Execute the `showpcl` command to check the PPAR configuration list.**

The factory default settings do not have a set PPAR configuration list.

```
XSCF> showpcl -p 0
PPAR-ID      LSB      PSB      Status
```

2. **Execute the `setpcl` command to create a PPAR configuration list.**

The following example maps the BB-ID (PSB 00-0) to LSB 0 of physical partition 0 (PPAR-ID 0).

```
XSCF> setpcl -p 0 -a 0=00-0
```

The following example maps BB#01 (PSB 01-0), BB#02 (PSB 02-0), and BB#03 (PSB 03-0) to LSB 0, LSB 1, and LSB 2 of physical partition 1 (PPAR-ID 1), respectively.

```
XSCF> setpcl -p 1 -a 0=01-0 1=02-0 2=03-0
```

3. **Execute the `setpcl` command to set the configuration policy for all physical partitions as a whole.**

```
XSCF> setpcl -p ppar_id -s policy=value
```

For `value`, specify `fru` (a part, such as a CPU or memory), `BB` (physical system board (PSB)), or `system` (all physical partitions as a whole) as the degradation

unit. The default setting is fru.

The following example sets the configuration policy to "All physical partitions" for physical partitions 0 and 1.

```
XSCF> setpcl -p 0 -s policy=system
XSCF> setpcl -p 1 -s policy=system
```

4. **Execute the showpcl command to check the PPAR configuration list that has been set.**

The following example assumes the 1BB configuration with the SPARC M12-2S.

```
XSCF> showpcl -a -v
PPAR-ID  LSB   PSB   Status  No-Mem  No-IO  Cfg-policy
00
        00   00-0   Powered Off
        01   -
        02   -
        03   -
:
```

7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)

7.8.1 Assigning a Physical System Board (PSB) to a Physical Partition (PPAR)

Assign the physical system board (PSB) defined for a PPAR configuration list to a physical partition (PPAR).

1. **Execute the showboards command to check the physical system board (PSB) status.**

Bbs are displayed under the PSB section in the format of xx-0. xx is the BB-ID.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test      Fault
-----
00-0 SP              Unavailable n    n    n    Unknown Normal
01-0 SP              Unavailable n    n    n    Unknown Normal
02-0 SP              Unavailable n    n    n    Unknown Normal
03-0 SP              Unavailable n    n    n    Unknown Normal
```

2. **Execute the addboard command to assign the physical system board (PSB) to the physical partition.**

The following example adds BB#00 (PSB 00-0) to physical partition 0 (PPAR-ID 0).

```
XSCF> addboard -c assign -p 0 00-0
PSB#00-0 will be assigned to PPAR-ID 0. Continue?[y|n] :y
```

The following example adds BB#01 (PSB 01-0), BB#02 (PSB 02-0), and BB#03 (PSB 03-0) to physical partition 1 (PPAR-ID 1).

```
XSCF> addboard -c assign -p 1 01-0 02-0 03-0
PSB#01-0 will be assigned to PPAR-ID 1. Continue?[y|n] :y
PSB#02-0 will be assigned to PPAR-ID 1. Continue?[y|n] :y
PSB#03-0 will be assigned to PPAR-ID 1. Continue?[y|n] :y
```

3. **Execute the showboards command to check the physical system board (PSB) status.**

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test      Fault
-----
00-0 00(00)      Assigned  n    n    n    Unknown Normal
01-0 01(00)      Assigned  n    n    n    Unknown Normal
02-0 01(01)      Assigned  n    n    n    Unknown Normal
03-0 01(02)      Assigned  n    n    n    Unknown Normal
```

7.8.2 Releasing a Specific Physical System Board (PSB) From a Physical Partition (PPAR)

Release the physical system board (PSB) defined for a PPAR configuration list from the physical partition (PPAR).

1. **Execute the showboards command to check the physical system board (PSB) status.**

BBs are displayed under the PSB section in the format of xx-0. xx is the BB-ID.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB)  Assignment  Pwr  Conn  Conf  Test  Fault
-----
00-0  00(00)         Assigned    n    n    n    Unknown Normal
01-0  01(00)         Assigned    n    n    n    Unknown Normal
02-0  01(01)         Assigned    n    n    n    Unknown Normal
03-0  01(02)         Assigned    n    n    n    Unknown Normal
```

2. **Execute the deleteboard command to release the physical system board (PSB) from the physical partition.**

The following example releases BB#02 (PSB 02-0) and BB#03 (PSB 03-0) when the PPAR is already powered off.

```
XSCF> deleteboard -c unassign 02-0 03-0
PSB#02-0 will be unassigned from PPAR immediately. Continue?[y/n] :y
PSB#03-0 will be unassigned from PPAR immediately. Continue?[y/n] :y
```

3. **Execute the showboards command to check the physical system board (PSB) status.**

```
XSCF> showboards -a
PSB  PPAR-ID(LSB)  Assignment  Pwr  Conn  Conf  Test  Fault
-----
00-0  00(00)         Assigned    n    n    n    Unknown Normal
01-0  01(00)         Assigned    n    n    n    Unknown Normal
02-0  01(01)         Unavailable n    n    n    Unknown Normal
03-0  01(02)         Unavailable n    n    n    Unknown Normal
```

7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time

This section describes the procedure for clearing the difference between the XSCF time, which is the system time, and the physical partition (PPAR) time.

The XSCF keeps the time difference from the physical partition. With each change by the setdate command to the XSCF time, the difference is updated with the difference between the physical partition time and the changed XSCF time.

1. **Execute the showdate command to display the XSCF time.**

If you have set the time zone, the command displays the local time.

The following example displays the current time in the local time zone.

```
XSCF> showdate
Tue Sep 20 14:53:00 JST 2016
```

2. **Confirm that the set XSCF time is correct. To change the date and time, execute the setdate command.**

For details, see "6.6 Setting the Time."

3. **Execute the showdateoffset command to check the time difference between the XSCF system time and physical partition time.**

The following example displays the difference between the system time and the time of PPAR-ID 0.

```
XSCF> showdateoffset -p 0
PPAR-ID Domain Date Offset
00         0 sec
```

4. **Unless the time difference in step 3 was 0 seconds, execute the resetdateoffset command to initialize the difference between the XSCF system time and the time of the physical partition.**

The time of each physical partition is set to the XSCF system time at the next physical partition startup.

```
XSCF> resetdateoffset -p 0
Clear the offset of PPAR-ID 0? [y|n] :y
XSCF>
```

7.10 Registering a CPU Activation Key

7.10.1 CPU Activation Key Application Conditions

- The CPU Activation key can be registered to SPARC M12-2S as one core as a unit. If a CPU Activation is ordered together with the SPARC M12-2S, the system is shipped with a registered CPU Activation key.
After registering a CPU Activation key by using the XSCF, you need to assign CPU core resources to each partition.
- A single CPU Activation key cannot be registered to multiple SPARC M12-2S systems at the same time.
- Once registered to a SPARC M12-2S system, a CPU Activation key can be deleted from that system and then registered again with another SPARC M12-2S. The CPU Activation key must only be moved between SPARC M12-2S systems.
- The number/type of software licenses used with the registered CPU cores differs depending on the software. It is the responsibility of the customer to confirm that proper software licenses are installed for the addition of registered CPU cores.

7.10.2 Checking a CPU Activation Key

1. **Execute the `showcodactivation` command to check the CPU Activation key information.**

In the following example, no CPU Activation key has been installed.

In this case, perform the work in ["7.10.3 Registering a CPU Activation Key."](#)

```
XSCF> showcodactivation
Index   Description Count
-----

```

In the following example, a CPU Activation key has already been installed.

To register an additional CPU Activation key, go to ["7.10.3 Registering a CPU Activation Key."](#) Otherwise, go to ["7.11 Assigning CPU Core Resources."](#)

```
XSCF> showcodactivation
Index   Description Count
-----
      0 PROC                1

```

7.10.3 Registering a CPU Activation Key

CPU Activation keys are provided on the CD-ROM labeled "M12-2S CPU Activation ." Have the CD-ROM on hand before registering a CPU Activation key.

The CPU Activation keys are contained in text files in the "ACTIVATION_KEY" folder on the CD-ROM. A file for registering the keys as a batch (XXXXXX_XX.TXT) and another for registering them one at a time (XXXXXX_XX_001.TXT, etc.) are provided. Use either file according to the situation.

The methods of registering a CPU Activation key with the system are as follows: specify and register the CPU Activation key file; or copy and paste the CPU Activation key contents.

How to specify and register a CPU Activation key file

1. **Copy the "ACTIVATION_KEY" information from the CPU Activation key CD-ROM to a USB device.**
2. **Connect the USB device to the USB connector (where "MAINTENANCE ONLY" is printed) on the XSCF unit panel (rear panel) of the master XSCF.**
3. **Register the CPU Activation key by executing the `addcodactivation` command from the storage location of the key.**

The following example specifies the "XXXXXX_XX.TXT" file on a USB device to

register a CPU Activation key.

```
XSCF> addcodactivation -F file:///media/usb_msd/XXXXX_XX.TXT
Above Key will be added, Continue?[y|n]: y
..... done.
successfully added Activation Key count : 10.
```

4. **Execute the showcodactivation command, and confirm that the CPU Activation key is registered with the system.**

```
XSCF> showcodactivation
Index   Description Count
-----
0 PROC 1
1 PROC 1
2 PROC 1
3 PROC 1
4 PROC 1
```

How to copy and paste the CPU Activation key contents

1. **Insert the CPU Activation key CD-ROM into the system administration terminal.**
2. **Open the ACTIVATION_KEY folder on the CD-ROM.**
3. **Open the relevant file (XXXX_XX_001.TXT), and copy the contents of the key.**
4. **Execute the addcodactivation command to register a CPU Activation key.**
Specify the CPU Activation key by enclosing it in double quotation marks. You can enter the CPU Activation key by copying and pasting all of its contents.
Enter "y" for the confirmation message.

The following example registers a CPU Activation key for one CPU core.

```
XSCF> addcodactivation "Product: SPARC M12-x
SequenceNumber: xxxx
Cpu: noExpiration 1
Text-Signature-SHA256-RSA2048:
PSSrElBrse/r69AVSVFd38sT6AZm2bxeUDdPQHkbtXgvZPsrtYguqiNUieB+mTDC
nC2ZwUq/JjogeMpsgd8awSphnJkpbud/87PkP4cUvz/sCPv5xM5M/J+94a3vvEh
IhfmafMvhnvpLvS1Umm6iypOXMASHPjKwQrt1qvSNwYAYwO0mGXLCUNggamQ4dm
3K3taCYr7WmEEWauT+H9k84bRTKI1SkePdRuBTrtzUoDRJ2oY3IM6M1/9tRYOMGH
BSr0n0kS0Hf15hspsbpWTZwozuSayXOSgOZf+su04mri77VisyrfEGpnY053Ye3N
b1GckFx1RH27FdVHiB2H0A=="
Above Key will be added, Continue?[y|n]: y
```

5. **Execute the showcodactivation command, and confirm that the CPU Activation key is registered with the system.**

```
XSCF> showcodactivation
Index   Description Count
-----
0 PROC 1
```

At this point, CPU core resources are not yet ready for use on Oracle Solaris. To make CPU core resources ready for use, go to "7.11 [Assigning CPU Core Resources](#)" to assign them to a physical partition.

7.11 Assigning CPU Core Resources

After registering a CPU Activation key with the system, set the number of CPU Activations in a physical partition, and assign CPU core resources.

1. **Execute the `setcod` command interactively to set the number of CPU Activations in a physical partition and assign CPU core resources.**
For *ppar_id*, specify a PPAR-ID.

```
XSCF> setcod -p ppar_id -s cpu
```

The following example interactively assigns four CPU core resources to the physical partition.

```
XSCF> setcod -p 0 -s cpu
PROC Permits installed: 4 cores
PROC Permits assigned for PPAR 0 (4 MAX) [Permanent 0cores]
Permanent [0]:4

PROC Permits assigned for PPAR will be changed.

PROC Permits assigned for PPAR 0 : 0 -> 4

Continue? [y|n] : y

Completed.
XSCF>
```

2. **Execute the `showcod` command, and confirm the number of assigned CPU Activations.**
The following example assigns four CPU core resources to physical partition 0.

```
XSCF> showcod -v -s cpu
PROC Permits installed : 4 cores
PROC Permits assigned for PPAR 0: 4 [Permanent 4cores]
XSCF>
```

7.12 Starting and Stopping a Physical Partition (PPAR)

7.12.1 Checking the Start and Stop of a Physical Partition (PPAR)

Check the start and stop of a physical partition (PPAR). For the initial settings, change the auto-boot? setting to "false" so that Oracle Solaris does not automatically boot immediately after the start of the physical partition.

1. **Execute the `setpparparam` command to change setting of the OpenBoot PROM environment variable `auto-boot?`.**

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? false"
OpenBoot PROM variable bootscript will be changed.
Continue? [y|n] :y
```

2. **Execute the `poweron` command to start the physical partition.**

```
XSCF> poweron -p 0
PPAR-IDs to power on:00
Continue? [y|n]:y
00:Powering on
*Note*
This command only issues the instruction to power-on.
The result of the instruction can be checked by the
"showpparprogress".
```

Note - It takes about 25 minutes for the SPARC M12-2S with the 4BB configuration to start a physical partition.

3. **Execute the `showpparprogress` command.**

You can check the progress, in the midst of processing, between physical partition power-on and up to before the start of POST.

Confirm that the command displays "The sequence of power control is completed." and ends.

Note - Oracle Solaris does not start automatically because the auto-boot? setting is false.

```

XSCF> showpparprogress -p 0
PPAR Power On Preprocessing PPAR#0 [ 1/12]
PPAR Power On               PPAR#0 [ 2/12]
XBBOX Reset                 PPAR#0 [ 3/12]
PSU On                      PPAR#0 [ 4/12]
CMU Reset Start            PPAR#0 [ 5/12]
XB Reset 1                 PPAR#0 [ 6/12]
XB Reset 2                 PPAR#0 [ 7/12]
XB Reset 3                 PPAR#0 [ 8/12]
CPU Reset 1                PPAR#0 [ 9/12]
CPU Reset 2                PPAR#0 [10/12]
Reset released             PPAR#0 [11/12]
CPU Start                  PPAR#0 [12/12]
The sequence of power control is completed.
XSCF>

```

- Execute the `showdomainstatus` command, and confirm that status is "OpenBoot Running".

```

XSCF> showdomainstatus -p 0
Logical Domain Name      Status
primary                  OpenBoot Running
XSCF>

```

- Execute the console command to connect to the console of the specified physical partition.
The `auto-boot?` setting is false, so you can confirm the start up to the `ok` prompt.

```

XSCF> console -p 0
Console contents may be logged.
Connect to PPAR-ID 0?[y|n] :y [Enter]key

{0} ok

```

- Press the `[Enter]` key. Then, press the `[#]` (default value for the escape symbol) and `[.]` (period) keys to move from the console to the XSCF shell.

```

{0} ok #.
exit from console.
XSCF>

```

- Execute the `poweroff` command to stop the physical partition.

```

XSCF> poweroff -p 0
PPAR-IDs to power off :00
Continue? [y|n] :y
00 : Powering off

*Note*

```

```
This command only issues the instruction to power-off.  
The result of the instruction can be checked by the  
"showpparprogress".
```

8. **Execute the showpparprogress command, and confirm that the command displays "The sequence of power control is completed." and ends.**

```
XSCF> showpparprogress -p 0  
PPAR Power Off PPAR#0 [ 1/ 3]  
CPU Stop      PPAR#0 [ 2/ 3]  
PSU Off       PPAR#0 [ 3/ 3]  
The sequence of power control is completed.  
XSCF>
```

7.12.2 Starting All Physical Partitions (PPARs)

This section describes the operation procedure to start all physical partitions (PPARs) at the time of expansion/reduction.

1. **Execute the showpparstatus command to check the running status of physical partitions.**
In the following example, the physical partitions from PPAR-ID#0 to PPAR-ID#3 are stopped.

```
XSCF> showpparstatus -a  
PPAR-ID      PPAR Status  
00           Powered Off  
01           Powered Off  
02           Powered Off  
03           Powered Off
```

2. **Execute the poweron command to start all the physical partitions.**
The following example starts all the PPARs.

```
XSCF> poweron -a  
PPAR-IDs to power on:00,01,02,03  
Continue? [y|n]:y  
00:Powering on  
01:Powering on  
02:Powering on  
03:Powering on  
  
*Note*  
This command only issues the instruction to power-on.  
The result of the instruction can be checked by the  
"showpparprogress".  
  
XSCF> showpparprogress -p 0
```

```

PPAR Power Off          PPAR#0 [ 1/ 3]
CPU Stop                PPAR#0 [ 2/ 3]
PSU Off                 PPAR#0 [ 3/ 3]
The sequence of power control is completed.

```

3. **Check the running status of physical partitions.**

Confirm that the status of the started PPARs is "Running".

The following example confirms that all the PPARs have started.

```

XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Running
01           Running
02           Running
03           Running

```

7.12.3 Starting a Specific Physical Partition (PPAR)

This section describes the operation procedure to start a specific physical partition (PPAR) at the time of expansion/reduction.

1. **Execute the showpparstatus command to check the running status of physical partitions.**

In the following example, the physical partitions from PPAR-ID#0 to PPAR-ID#3 are stopped.

```

XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Powered Off
01           Powered Off
02           Powered Off
03           Powered Off

```

2. **Execute the poweron command to start a physical partition.**

The following example specifies PPAR-ID#0.

```

XSCF> poweron -p 0
PPAR-IDs to power on:00
Continue? [y|n]:y
00:Powering on

*Note*
  This command only issues the instruction to power-on.
  The result of the instruction can be checked by the
  "showpparprogress".

XSCF> showpparprogress -p 0
PPAR Power Off          PPAR#0 [ 1/ 3]

```

```
CPU Stop                PPAR#0    [ 2/ 3 ]
PSU Off                 PPAR#0    [ 3/ 3 ]
The sequence of power control is completed.
```

3. **Check the running status of physical partitions.**

Confirm that the status of the started PPAR is "Running".

In the following example, the PPAR with the specified PPAR-ID is running.

```
XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Running
01           Powered Off
02           Powered Off
03           Powered Off
```

7.12.4 Stopping All Physical Partitions (PPARs)

This section describes the operation procedure to stop all physical partitions (PPARs) at the time of expansion/reduction.

1. **Execute the showboards command to check the SPARC M12-2S running status.**

```
XSCF> showboards -a
PSB  PPAR-ID(LSB)  Assignment  Pwr  Conn  Conf  Test  Fault
-----
00-0 00(00)      Assigned   y    y     y     Passed Normal
01-0 01(01)      Assigned   y    y     y     Passed Normal
02-0 01(01)      Assigned   y    y     y     Passed Normal
03-0 01(01)      Assigned   y    y     y     Passed Normal
```

2. **Execute the showpparstatus command to check the running status of physical partitions.**

```
XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Running
01           Running
02           Running
03           Running
```

3. **Execute the poweroff command to stop all the physical partitions.**

The following example stops all the PPARs.

```
XSCF> poweroff -a
PPAR-IDs to power off :00,01,02,03
Continue? [y|n] :y
00 : Powering off
```

```
01 : Powering off
02 : Powering off
03 : Powering off
```

Note

This command only issues the instruction to power-off. The result of the instruction can be checked by the "showpparprogress".

```
XSCF> showpparprogress -p 0
PPAR Power Off          PPAR#0 [ 1/ 3]
CPU Stop                PPAR#0 [ 2/ 3]
PSU Off                 PPAR#0 [ 3/ 3]
The sequence of power control is completed.
```

4. Check the running status of physical partitions.

Confirm that the status of the stopped PPARs is "Powered Off".

The following example confirms that all the PPARs have stopped.

```
XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Powered Off
01           Powered Off
02           Powered Off
03           Powered Off
```

7.12.5 Stopping a Specific Physical Partition (PPAR)

This section describes the operation procedure to stop a specific physical partition (PPAR) at the time of expansion/reduction.

1. Execute the showboards command to check the SPARC M12-2S running status.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB)  Assignment  Pwr  Conn  Conf  Test  Fault
-----
00-0 00(00)       Assigned    y    y    y    Passed Normal
01-0 01(01)       Assigned    y    y    y    Passed Normal
02-0 01(01)       Assigned    y    y    y    Passed Normal
03-0 01(01)       Assigned    y    y    y    Passed Normal
```

2. Execute the showpparstatus command to check the running status of physical partitions.

```
XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Running
01           Running
```

```
02          Running
03          Running
```

3. **Execute the poweroff command to stop a physical partition.**
The following example specifies PPAR-ID#0.

```
XSCF> poweroff -p 0
PPAR-IDs to power off :00
Continue? [y|n] :y
00 : Powering off

*Note*
  This command only issues the instruction to power-off.
  The result of the instruction can be checked by the
  "showpparprogress".

XSCF> showpparprogress -p 0
PPAR Power Off          PPAR#0    [ 1/ 3]
CPU Stop                PPAR#0    [ 2/ 3]
PSU Off                 PPAR#0    [ 3/ 3]
The sequence of power control is completed.
```

4. **Check the running status of physical partitions.**
Confirm that the status of the stopped PPAR is "Powered Off".
The following example confirms that the PPAR with the specified PPAR-ID has stopped.

```
XSCF> showpparstatus -a
PPAR-ID      PPAR Status
00           Powered Off
01           Running
02           Running
03           Running
```

7.13 Installing Oracle Solaris

Oracle Solaris has been preinstalled on the SPARC M12-2S. You can configure the system efficiently by using this preinstalled OS. According to the purpose, either use the preinstalled Oracle Solaris as is or reinstall it.

When using the preinstalled Oracle Solaris

1. **Execute the showpparparam command to check the set value of the OpenBoot PROM environment variable auto-boot?.**
The set value is "false" in the following example.

```
XSCF> showpparparam -p 0 -c auto-boot
auto-boot? :false
```

2. **If the value is "false," execute the setpparparam command to change the setting of the OpenBoot PROM environment variable auto-boot? to "true."**

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? true"
OpenBoot PROM variable bootscript will be changed.
Continue? [y|n] :y
```

3. **Execute the poweron command to start the physical partition.**

```
XSCF> poweron -p 0
PPAR-IDs to power on:00
Continue? [y|n]:y
00:Powering on
*Note*
This command only issues the instruction to power-on.
The result of the instruction can be checked by the
"showpparprogress".
```

4. **Execute the console command to switch to the console.**
When the connection is switched to console, a message is displayed.

```
XSCF> console -p 0
Console contents may be logged.
Connect to PPAR-ID 0?[y|n] :y
POST Sequence Complete.
```

5. **The OS setting screen is displayed and you need to proceed with the setting in the interactive mode.**

Table 7-5 shows the Oracle Solaris parameters in the initial configuration settings. You can also change the parameter settings later.

Table 7-5 Configuration Parameters of the Oracle Solaris OS (Example for Oracle Solaris 11.3)

Parameter	Description
Language	Select a number from the displayed list of languages.
Locale	Select a number from the displayed list of locales.
Terminal Type	Select the terminal type corresponding to the terminal device used.
Network?	Select "Yes."
Multiple Network Interfaces	To configure a predetermined network interface, select the interface. If it is unknown, select the beginning of the list.
DHCP?	Select either "Yes" or "No," depending on the network environment used.

Table 7-5 Configuration Parameters of the Oracle Solaris OS (Example for Oracle Solaris 11.3) (*continued*)

Parameter	Description
Host Name	Enter the host name of the server.
IP Address	Enter the IP address of this Ethernet interface.
Subnet?	Select either "Yes" or "No," depending on the network environment used.
Subnet Netmask	If the answer for Subnet? is "Yes," enter the net mask of the subnet in the network environment used.
IPv6?	Specify whether to use IPv6. If it is unknown, select "No" to configure the Ethernet interface for IPv4.
Security Policy	Select either the standard UNIX security (No) or Kerberos security (Yes). If it is unknown, select "No."
Confirm	Check the information on the screen, and change it as needed. Otherwise, continue.
Name Service	Select a name service according to the network environment used. A prompt appears when a name service other than "None" is selected. The prompt asks for the entry of configuration information for the added name service.
NFSv4 Domain Name	Select a type of domain name configuration according to the environment used. If it is unknown, select "Use the NFSv4 domain derived by the system."
Time Zone (Continent)	Select the relevant continent.
Time Zone (Country or Region)	Select the relevant country or region.
Time Zone	Select a time zone.
Date and Time	Accept the default date and time, or change the values.
root Password	Enter the root password twice. This password is used for the super-user account of the Oracle Solaris OS on this server.

6. Configure the logical domains.

The *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* presents a logical domain configuration example in "Chapter 3 Operations for Domain Configuration." For a detailed procedure, see the Oracle VM Server for SPARC manual for the version used. For details on the functions provided only by the SPARC M12-2S, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

When reinstalling Oracle Solaris

When reinstalling Oracle Solaris, check the latest information on the supported Oracle Solaris versions and SRU in the *Fujitsu SPARC M12 Product Notes*.

1. **Set the PPAR so that the preinstalled Oracle Solaris is not booted.**
 - a. Execute the showpparam command to confirm that the set value of the

OpenBoot PROM environment variable auto-boot? is "false."

```
XSCF> showpparparam -p 0 -c auto-boot
auto-boot? :false
```

- b. If the value is "true," execute the setpparparam command to change the setting of the OpenBoot PROM environment variable auto-boot?.

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? false"
OpenBoot PROM variable bootscript will be changed.
Continue? [y|n] :y
```

2. Execute the poweron command to start the system.

```
XSCF> poweron -a
PPAR-IDs to power on:00
Continue? [y|n]:y
00:Powering on
*Note*
This command only issues the instruction to power-on.
The result of the instruction can be checked by the
"showpparprogress".
```

3. Execute the console command to connect to the console.

After POST is completed (which takes a few minutes), the ok prompt appears.

```
XSCF> console -p 0
Console contents may be logged.
Connect to PPAR-ID 0?[y|n] :y [Enter]key

{0} ok
```

4. See the Oracle Solaris manual for the version used, and install Oracle Solaris.

5. Execute the setpparparam command to change the set value of the OpenBoot PROM environment variable auto-boot? to "true."

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? true"
OpenBoot PROM variable bootscript will be changed.
Continue? [y|n] :y
```

6. Configure the logical domains.

The *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* presents a logical domain configuration example in "Chapter 3 Operations for Domain Configuration." For a detailed procedure, see the Oracle VM Server for SPARC manual for the version used. For details on the functions provided only by the SPARC M12-2S, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

7.14 Saving Configuration Information

7.14.1 Saving Logical Domain Configuration Information

If you have changed the configuration of a logical domain, execute the `ldm add-spconfig` command to save the logical domain information to the XSCF. In this way, the logical domain configuration is the same at the next system startup. If you do not save the logical domain configuration information, the domain will start with the previous configuration information the next time that the physical partition starts.

1. **Switch from the XSCF shell to the control domain console of the target physical partition.**
2. **Execute the `ldm list-spconfig` command to display the currently saved logical domain configuration information.**

```
primary# ldm list-spconfig
```

3. **Execute the `ldm add-spconfig` command to save the logical domain status as configuration information.**
The following example shows that the file named `ldm_set1` is the save destination.

```
primary# ldm add-spconfig ldm_set1
```

4. **Execute the `ldm list-spconfig` command, and confirm that the configuration information was saved correctly.**
5. **Save the logical domain configuration information to an XML file.**
To prepare for an unexpected system failure, save the logical domain configuration information to an XML file, and save it outside the system too.

For details on how to save the configuration information on logical domains to an XML file, see "10.12 Saving/Restoring Logical Domain Configuration Information in an XML File" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 System Operation and Administration Guide*.

7.14.2 Saving XSCF Setting Information

Save XSCF setting information.

This section describes procedures for making settings via a network to save XSCF setting information and for saving the setting information to a USB device.

For details on how to restore the setting information, see "10.10 Saving/Restoring XSCF Settings Information" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10*

- **Specifying the target directory and saving the setting information via a network**

1. **Specify the target directory and the output file name, and execute the dumpconfig command.**

```
XSCF> dumpconfig ftp://server/backup/backup-sca-ff2-16.txt
```

2. **Confirm the identification information at the beginning of the saved configuration file when the data transfer has completed.**

- **Saving the setting information to a USB device at the master XSCF**

1. **Connect a USB device to a USB port on the XSCF unit panel (rear panel) of the master XSCF.**
2. **Specify the name of the output file for the local USB device on the XSCF, and execute the dumpconfig command.**

```
XSCF> dumpconfig file:///media/usb_msd/backup-file.txt
```

3. **After the data transfer has completed, remove the USB device from the USB port.**
4. **Confirm the identification information at the beginning of the saved configuration file.**

- **Configuration file format**

The saved configuration file has the following format:

- File name: User-specified name
- File format: base64 encoding text

Expanding a System With a Building Block Configuration

This chapter describes the procedure for expansion with the SPARC M12-2S in a system with a building block configuration.

- [Points of Concern During Expansion](#)
- [Preparation for Expansion](#)
- [SPARC M12-2S Expansion Work](#)
- [Incorporating the SPARC M12-2S to be Added](#)
- [Initial Diagnosis of the SPARC M12-2S to be Added](#)

8.1 Points of Concern During Expansion

Before expansion with the SPARC M12-2S, check the following items.

- If the SPARC M12-2S is mounted and used in a general rack, remove every SPARC M12-2S from the rack when moving to a different installation location. See "[Safety precautions regarding racks](#)" in "[2.1 Safety Precautions](#)."
- Before expansion with the SPARC M12-2S, save the system setting information using the `dumpconfig` command. To reset the configuration to the original settings, you can restore the saved setting information to the XSCF by using the `restoreconfig` command.
- Before expansion with the SPARC M12-2S, execute the `showcodusage` command to check the number of CPU Activations registered in the entire system. If the number of CPU Activations registered in the system is insufficient for the number of added CPU cores, a CPU Activation must be purchased. You will need to execute the `addcodactivation` command to add the CPU Activation key to the system. For details on adding a CPU Activation key, see "[7.10.3 Registering a CPU Activation Key](#)."
- Executing the `addfru` command for expansion automatically updates firmware to match firmware versions. The update matches the version on the master XSCF, so we recommend updating the XCP firmware on the master XSCF to the latest version in advance.

- To perform expansion with the SPARC M12-2S connected together with the PCI expansion unit and also set enable/disable for the direct I/O function of the PCI expansion unit, first execute the `setpciboxdio` command to set enable/disable. Then, execute the `addboard` command to incorporate them into a physical partition. When you have changed the setting of the direct I/O function, do not restart the logical domains until you execute the `ldm add-spconfig` command to save the logical domain configuration in the XSCF.
- To add the SPARC M12-2S with 64 GB DIMMs mounted, see "Notes on Memory" in the latest version of the *Fujitsu SPARC M12 Product Notes*.
- When adding the SPARC M12-2S, do not connect multiple units at a time but repeat the steps from executing the `addfru` command to the on-going `addfru` step to add one at a time.
- When the system configuration changes from a multiple-BB configuration to the 1BB configuration, the system setting information for each removed SPARC M12-2S will be cleared and reset to the factory defaults. Before removing the SPARC M12-2S, save the system setting information using the `dumpconfig` command. To reset the configuration to the original settings, you can restore the saved setting information to the XSCF by using the `restoreconfig` command.
- When expanding from 4BB (direct connection between chassis) to 8BB configuration, you need to newly install expansion rack 1.
The master chassis will change from the SPARC M12-2S to the crossbar box mounted in the expansion rack. Before adding the expansion rack, the existing SPARC M12-2S need to be disconnected from the system.

Multiple units cannot be disconnected from the system at the same time by the `initbb` command. Do this work one unit at a time.
- For the initialization of the SPARC M12-2S of the master XSCF, perform that work at the end. Execute the `restoredefaults -c factory -r activation` command to return to the factory defaults, including the CPU Activation key information. Perform this work with a serial connection to the master XSCF. The key must be reinstalled at initial setup of the XSCF after expansion.
- The serial number of the SPARC M12-2S of either the master XSCF or standby XSCF is used as the system serial number. If the serial number of the standby chassis is being used as the system serial number, the `initbb` command cannot release the standby SPARC M12-2S. In this case, execute the `switchscf` command to switch the master XSCF.
- When expanding from 8BB configuration to 9BB or a higher configuration, you need to newly install expansion rack 2. For details of expansion racks, see "[2.4 Confirming Rack Specifications](#)." In addition, special attention is required because crossbar cables need to be laid all over again.

Notes on use of dynamic reconfiguration (PPAR DR) for the physical partition

Note - When using the dynamic reconfiguration function for the physical partition (PPAR DR), check the contents of "2.5 Dynamic Reconfiguration Conditions and Settings" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* beforehand.

- **When incorporating a PSB into a physical partition with the addboard command**
The PPAR DR function is enabled by default.
The addboard command with the -c configure option specified cannot incorporate a PSB into a physical partition where the PPAR DR function is disabled.

8.2 Preparation for Expansion

This section describes the preparation for expansion with the SPARC M12-2S.

Before starting the expansion work, make sure to see ["8.1 Points of Concern During Expansion."](#)

8.2.1 Preparing the Necessary Tools

The preparation work is the same as that for initial installation. Confirm the contents as shown below.

- Tools to use: ["3.1 Preparing the Necessary Tools/Information for Installation"](#)
- Confirmation of deliverables: ["3.2.1 Confirming the Delivered Components of the SPARC M12-2S"](#) and [Table 8-1](#)

[Table 8-1](#) lists components that must be added during expansion of direct connections between chassis in a configuration of up to the 4BB configuration.

Table 8-1 Components for Connection of Two to Four Devices (Direct Connections Between Chassis)

No.	Expansion Pattern	Name	Quantity
1	Expanding from the 1BB configuration to the 2BB configuration	Crossbar cable	8
		XSCF BB control cable	1
		XSCF DUAL control cable	1
2	Expanding from the 2BB configuration to the 3BB configuration	Crossbar cable	16
		XSCF BB control cable	2
3	Expanding from the 3BB configuration to the 4BB configuration	Crossbar cable	24
		XSCF BB control cable	2

The configuration when two or more SPARC M12-2S units are added has a corresponding combination of the components shown above. Components in [Table 8-1](#) are not necessary when two to four devices in the BB configuration are mounted into the expansion rack in the connection via a crossbar box.

When expanding to 5BB or a higher configuration, you need to introduce the expansion rack.

Expanding to up to 8BB configuration, you need to introduce expansion rack 1.

When expanding to 9BB to 16BB configuration, you need to introduce expansion rack 2 in addition to expansion rack 1.

Items necessary for expansion such as dedicated power distribution unit (PDU), crossbar box, and cables are provided in the expansion rack. For the components of expansion rack 1 and rack 2, see "3.2.3 [Confirming the Delivered Components of the Expansion Rack.](#)"

8.2.2 Confirming the Expansion Configurations

Using the *Fujitsu SPARC M12-2/M12-2S Service Manual*, confirm the expansion configurations to be worked on.

SPARC M12-2S expansion has three expansion configurations, which depend on the system operation status at the SPARC M12-2S incorporation destination, as described below.

Table 8-2 Expansion Configurations

Expansion Configuration	Description
Active expansion	Method of expanding while the physical partition (PPAR) that is the incorporation destination is operating (Oracle Solaris is running) (*1)
Inactive expansion	Method of expanding after only the physical partition that is the incorporation destination is stopped (Oracle Solaris is stopped)
System-stopped expansion	Method of expanding after all the physical partitions are stopped

*1 This uses physical partition dynamic reconfiguration (PPAR DR).

8.3 SPARC M12-2S Expansion Work

This section describes the expansion work procedures for the SPARC M12-2S. Perform expansion work with the *Fujitsu SPARC M12-2S Installation Guide* (this document) and the *Fujitsu SPARC M12-2/M12-2S Service Manual*.

8.3.1 Active Expansion

This section describes the method to expand while the target physical partition (PPAR) is running. Perform the work in accordance with the procedure of the reference.

Table 8-3 Active Expansion Flow

Procedure	Work Description	Reference	
1	Confirm the flow of active expansion.		Required
2	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
3	Turn the mode switch of OPNL to Service mode.	"2.11 Checking the Functions of the Operation Panel"	Required
4	Add a CPU Activation key to the system.	"7.10.3 Registering a CPU Activation Key"	Optional
5	Execute the showsscp command to check the SSCP IP address. Execute the setsscp command as needed to set the IP address.	"7.5.4 Setting an SSCP IP Address"	Optional
6	Execute the addfru command to incorporate an added SPARC M12-2S into a building block configuration. The work of incorporation includes the following: <ul style="list-style-type: none"> - Mounting the SPARC M12-2S in a rack - Setting an ID number (BB-ID) - Connecting a crossbar cable - Connecting the XSCF BB control cable and XSCF DUAL control cable - Connecting the LAN cable and power cords 	"8.4 Incorporating the SPARC M12-2S to be Added"	Required
7	Perform the initial diagnosis on the added SPARC M12-2S and confirm the cables.	"8.5 Initial Diagnosis of the SPARC M12-2S to be Added"	Required
8	Confirm the configuration of the added SPARC M12-2S.	"6.8 Checking the Component Status"	Required
9	Turn the mode switch of OPNL to Locked mode.	"2.11 Checking the Functions of the Operation Panel"	Required
10	Configure the XSCF network. The setting is unnecessary when expanding with multiple units (BB#02 or later).	"7.5.2 Setting an Ethernet (XSCF-LAN) IP Address" "7.5.3 Setting a Takeover IP Address"	Optional
11	To configure memory mirroring for the added SPARC M12-2S, set memory mirror mode.	"7.6 Configuring Memory Mirroring"	Optional
12	Execute the setpctl command to create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
13	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Optional

Table 8-3 Active Expansion Flow (continued)

Procedure	Work Description	Reference	
14	Set the number of CPU Activations in the physical partition and assign CPU core resources.	"7.11 Assigning CPU Core Resources"	Optional
15	Confirm that there is no problem with the added SPARC M12-2S.	"10.5.3 Checking the FRU Status After Maintenance" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
16	Incorporate SPARC M12-2S into the physical partition.	"10.6.1 Incorporating the SPARC M12-2S Into the Physical Partition Using PPAR DR" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
17	Assign the resources of the added SPARC M12-2S to the logical domain.	"3.2 Operations and Commands Related to Logical Domain Configurations" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required

8.3.2 Inactive Expansion

This section describes the method for SPARC M12-2S expansion by stopping the target physical partition (PPAR). Perform the work in accordance with the procedure of the reference.

Table 8-4 Inactive Expansion Flow

Procedure	Work Description	Reference	
1	Confirm the flow of inactive expansion.		Required
2	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
3	Turn the mode switch of OPNL to Service mode.	"2.11 Checking the Functions of the Operation Panel"	Required
4	Stop the physical partition to be incorporated.	"7.12.5 Stopping a Specific Physical Partition (PPAR)"	Required
5	Add a CPU Activation key to the system.	"7.10.3 Registering a CPU Activation Key"	Optional
6	Execute the showsscp command to check the SSCP IP address. Execute the setsscp command as needed to set the IP address.	"7.5.4 Setting an SSCP IP Address"	Optional

Table 8-4 Inactive Expansion Flow (continued)

Procedure	Work Description	Reference	
7	Execute the addfru command to incorporate an added SPARC M12-2S into a building block configuration. The work of incorporation includes the following: <ul style="list-style-type: none"> - Mounting the SPARC M12-2S in a rack - Setting an ID number (BB-ID) - Connecting a crossbar cable - Connecting the XSCF BB control cable and XSCF DUAL control cable - Connecting the LAN cable and power cords 	"8.4 Incorporating the SPARC M12-2S to be Added"	Required
8	Perform the initial diagnosis on the added SPARC M12-2S.	"8.5 Initial Diagnosis of the SPARC M12-2S to be Added"	Required
9	Confirm the configuration of the added SPARC M12-2S.	"6.8 Checking the Status of Components"	Required
10	Turn the mode switch of OPNL to Locked mode.	"2.11 Checking the Functions of the Operation Panel"	Required
11	Configure the XSCF network. The setting is unnecessary when expanding with multiple units (BB#02 or later).	"7.5.2 Setting an Ethernet (XSCF-LAN) IP Address" "7.5.3 Setting a Takeover IP Address"	Optional
12	To configure memory mirroring for the added SPARC M12-2S, set memory mirror mode.	"7.6 Configuring Memory Mirroring"	Optional
13	Execute the setppl command to create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
14	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Optional
15	Set the number of CPU Activations in the physical partition and assign CPU core resources.	"7.11 Assigning CPU Core Resources"	Optional
16	Assign the SPARC M12-2S (physical system board (PSB)) to a physical partition.	"7.8.1 Assigning a Physical System Board (PSB) to a Physical Partition (PPAR)"	Required
17	Power on the physical partition of the added SPARC M12-2S.	"7.12.3 Starting a Specific Physical Partition (PPAR)"	Required
18	Confirm the system running status.	"10.5.3 Checking the FRU Status After Maintenance" in the <i>Fujitsu SPARC M12-2/ M12-2S Service Manual</i>	Required
19	Assign the resources of the added SPARC M12-2S to the logical domain.	"3.2 Operations and Commands Related to Logical Domain Configurations" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required

8.3.3 System-Stopped Expansion

This section describes the method of expanding by stopping all physical partitions. Perform the work in accordance with the procedure of the reference.

Table 8-5 System-Stopped Expansion Flow

Procedure	Work Description	Reference	
1	Confirm the flow of system-stopped expansion.		Required
2	Turn off the power of all physical partitions.	"7.12.4 Stopping All Physical Partitions (PPARs)"	Required
3	Turn the mode switch of OPNL to Service mode. (*1)	"2.11 Checking the Functions of the Operation Panel"	Required
4	Remove all power cords from SPARC M12-2S.	"9.8.2 Removing the Power Cords" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
5	To add the SPARC M12-2S, mount it in the rack.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Required
6	Perform ID setting and cable connection to realize the building block configuration.	"Chapter 4 Setting the SPARC M12-2S in a Building Block Configuration"	Required
7	Connect the LAN cable and power cord to the chassis to be added.	"5.1 Connecting Cables to the SPARC M12-2S" "5.4 Storing Cables"	Required
8	Log in to the master XSCF, and perform a system diagnosis.	"6.1 Connecting the System Management Terminal" "6.3 Logging In to the XSCF" (*2) To reboot the XSCF firmware on all XSCFs: "rebootxscf(8)" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual</i> (Example: rebootxscf -a) "6.4 Confirming the XCP Firmware Version" "6.7 Performing a Diagnosis Test" "6.8 Checking the Component Status"	Required
9	Turn the mode switch of OPNL to Locked mode. (*3)	"2.11 Checking the Functions of the Operation Panel"	Required
10	Configure the XSCF network. The setting is unnecessary when expanding with multiple units (BB#02 or later).	"7.5.2 Setting an Ethernet (XSCF-LAN) IP Address"	Optional
11	To configure memory mirroring for the added SPARC M12-2S, set memory mirror mode.	"7.6 Configuring Memory Mirroring"	Optional

Table 8-5 System-Stopped Expansion Flow (*continued*)

Procedure	Work Description	Reference	
12	Execute the setpcl command to create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
13	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Optional
14	Set the number of CPU Activations in the physical partition and assign CPU core resources.	"7.11 Assigning CPU Core Resources"	Optional
15	Assign the SPARC M12-2S (physical system board (PSB)) to a physical partition.	"7.8.1 Assigning a Physical System Board (PSB) to a Physical Partition (PPAR)"	Required
16	Power on all physical partitions.	"7.12.2 Starting All Physical Partitions (PPARs)"	Required
17	Confirm the system running status.	"10.5.3 Checking the FRU Status After Maintenance" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
18	Assign the resources of the added SPARC M12-2S to the logical domain.	"3.2 Operations and Commands Related to Logical Domain Configurations" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required

*1 Also turn the OPNL mode switch of the SPARC M12-2S to be added to Service mode.

*2 If the XCP firmware version of the maintenance part is different from that of the existing system, the following message appears after login to the XSCF: "XSCF firmware update now in progress. BB#xx, please wait for XSCF firmware update complete." The update automatically matches XCP firmware versions. Version matching takes time. Execute the showlogs monitor command to confirm that the message "XCP update has been completed" is displayed, which indicates the completion of the XCP firmware update.

*3 Also turn the OPNL mode switch of the added SPARC M12-2S to Locked mode.

8.3.4 Adding Expansion Racks

This section describes the installation procedure for expansion of direct connections between chassis in a configuration of up to the 4BB configuration to connections through crossbar boxes by adding an expansion rack.

To move the SPARC M10-4S to an expansion rack, stop the entire system and then perform the work.

Before starting the work, be sure to see "8.1 Points of Concern During Expansion."

Table 8-6 Workflow of Adding Expansion Racks

Procedure	Work Description	Reference	
1	Confirm the system status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required

Table 8-6 Workflow of Adding Expansion Racks (*continued*)

Procedure	Work Description	Reference	
2	Change a multiple-BB configuration into 1BB configurations and release their connections.	"9.7 Removing the SPARC M12-2S" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*1)
3	Install an expansion rack.	"3.2.3 Confirming the Delivered Components of the Expansion Rack" "3.3 Installing the Rack"	Required
4	Mount SPARC M12-2S on the expansion rack.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Required (*2)
5	Connect serial cables and power cords to crossbar boxes.	"5.3 Connecting Cables to the Crossbar Box"	Required
6	Set the ID of the added SPARC M12-2S.	"4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S"	Required (*3)
7	Connect the system management terminal to the crossbar box of the master XSCF, and then perform an initial diagnosis of the system.	"6.1 Connecting the System Management Terminal" "6.3 Logging In to the XSCF" "6.4 Confirming the XCP Firmware Version" "6.7 Performing a Diagnosis Test" "6.8 Checking the Component Status"	Required
8	Set the password policy.	"7.1 Setting the Password Policy"	Required
9	Set a user account and password.	"7.2 Setting a User Account and Password"	Required
10	Configure the Telnet or SSH service.	"7.3 Configuring the Telnet/SSH Service"	Required
11	Configure the HTTPS service.	"7.4 Configuring the HTTPS Service"	Required
12	Configure the XSCF network.	"7.5 Configuring the XSCF Network"	Required
13	When duplicating memory, configure memory mirroring.	"7.6 Configuring Memory Mirroring"	Optional
14	Create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
15	Assign the SPARC M12-2S (physical system board (PSB)) to a physical partition.	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"	Required
16	Clear the difference between the system time and physical partition (PPAR) time.	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"	Required
17	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Required (*4)
18	Assign CPU core resources to the physical partition.	"7.11 Assigning CPU Core Resources"	Required
19	Confirm the start/stop of the physical partition and the connection of the console.	"7.12.1 Checking the Start and Stop of a Physical Partition (PPAR)"	Required

Table 8-6 Workflow of Adding Expansion Racks (*continued*)

Procedure	Work Description	Reference	
20	Save XSCF setting information and logical domain configuration information.	"7.14 Saving Configuration Information"	Required
*1 When initializing the last 1BB configuration (SPARC M12-2S of the master XSCF), execute the <code>restoredefault -c factory -r</code> activation command to return to the factory defaults.			
*2 Crossbar cables and XSCF BB control cables are already laid in the expansion rack. The work here is to connect the cables to each port of the mounted chassis. Connect the cables according to the instructions written on the labels. See the cable connection diagram and the cable list. "B.4 From the 2BB Configuration to 8BB Configuration (Connections via a Crossbar Box)" and "B.5 From the 9BB Configuration to 16BB Configuration (Connections via a Crossbar Box)"			
*3 Set the BB-ID of the added SPARC M12-2S. You do not need to change the existing SPARC M12-2S BB-IDs.			
*4 One CD-ROM disk containing a CPU Activation certificate is provided with the system. The key for CPU Activation ordered together with the SPARC M12-2S is registered to the system before shipment.			

8.3.5 Adding Expansion Racks

This section describes the procedure to add expansion rack 2 onto expansion rack 1. Stop the entire system and then perform the work because you will be connecting expansion racks 1 and 2, connecting cables that pass between the racks, and doing other such tasks.

Before starting the work, be sure to see "8.1 Points of Concern During Expansion."

Table 8-7 Adding Expansion Racks

Procedure	Work Description	Reference	
1	Execute the <code>showsscp</code> command to check the SSCP IP address. Execute the <code>setsscp</code> command as needed to set the IP address.	"7.5.4 Setting an SSCP IP Address"	Optional
2	Turn off the power of all physical partitions.	"7.12.4 Stopping All Physical Partitions (PPARs)"	Required
3	Turn off all the CB switches on the PDUs of expansion rack 1.	A in Figure 3-3 in "3.3.1 Connecting the Power Cords to the Power Distribution Units of an Expansion Rack"	Required
4	Connect the power cord to the PDU mounted in expansion rack 2.	"3.3.1 Connecting the Power Cords to the Power Distribution Units of an Expansion Rack"	Required
5	Connect expansion rack 1 and expansion rack 2.	"3.3.3 Coupling Racks"	Required
6	Fix expansion rack 2 in place.	"3.3.2 Fastening the Rack"	Required
7	Add a crossbar unit to the crossbar boxes (BB#80, BB#81) mounted in expansion rack 1.	"Chapter 12 Maintaining the Crossbar Units" in the <i>Crossbar Box for Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Service Manual</i>	Required

Table 8-7 Adding Expansion Racks (*continued*)

Procedure	Work Description	Reference	
8	Mount the target SPARC M12-2S in the expansion rack.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Required
9	Reattach the labels of the crossbar cables, and replace the cables.	"4.3.3 Changing Crossbar Cables"	Required
10	Connect the crossbar cables and XSCF BB control cables to each chassis.	"B.5 From the 9BB Configuration to 16BB Configuration (Connections via a Crossbar Box)"	Required (*1)
11	Connect the crossbar cables and XSCF BB control cables that pass between the racks.	"4.2 Connecting XSCF Cables" "4.3 Connecting Crossbar Cables"	Required
12	Set a BB-ID for the SPARC M12-2S.	"4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S"	Required
13	Connect LAN cables to the chassis mounted in expansion rack 2, which has been added. If a PCIe card is mounted, connect a LAN cable and I/O cable to the respective ports on the PCIe card.	"5.1 Connecting Cables to the SPARC M12-2S"	Required
14	Connect the serial cable to the crossbar box of the master XSCF. Also, confirm that all the power cords are connected.	"5.3 Connecting Cables to the Crossbar Box"	Required
15	Connect the system management terminal to the crossbar box of the master XSCF, and then perform an initial diagnosis of the system.	"6.1 Connecting the System Management Terminal" "6.3 Logging In to the XSCF" "6.4 Confirming the XCP Firmware Version" "6.7 Performing a Diagnosis Test" "6.8 Checking the Component Status"	Required
16	When duplicating memory, configure memory mirroring.	"7.6 Configuring Memory Mirroring"	Optional
17	Create a PPAR configuration list.	"7.7 Creating a PPAR Configuration List"	Required
18	Assign the SPARC M12-2S (physical system board (PSB)) to a physical partition.	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"	Required
19	Clear the difference between the system time and physical partition (PPAR) time.	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"	Required
20	Register a CPU Activation key with the system.	"7.10 Registering a CPU Activation Key"	Required
21	Assign CPU core resources to the physical partition.	"7.11 Assigning CPU Core Resources"	Required
22	Confirm the start/stop of the physical partition and the connection of the console.	"7.12.1 Checking the Start and Stop of a Physical Partition (PPAR)"	Required

Table 8-7 Adding Expansion Racks (*continued*)

Procedure	Work Description	Reference	
23	Confirm the system running status.	"10.5.3 Checking the FRU Status After Maintenance" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
24	Reconfigure the logical domains.	"3.2 Operations and Commands Related to Logical Domain Configurations" in the <i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required

*1 Crossbar cables and XSCF BB control cables are already laid in the expansion rack. The work here is to connect the cables to each port of the mounted chassis. Connect the cables according to the instructions written on the labels.

8.4 Incorporating the SPARC M12-2S to be Added

This chapter describes the procedure for adding the SPARC M12-2S to a building block configuration.

For details on the commands used here, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 XSCF Reference Manual* of the XCP version used.

1. **Execute the `addfru` command and add the SPARC M12-2S by following the message.**

Note - When no IP addresses of SSCP have been set up, an error will occur.

Note - Multiple chassis cannot be specified by the `addfru` command. Do the expansion work one unit at a time.

Note - When the `addfru` command is executed, the version of the firmware on the SPARC M12-2S to be added will automatically be aligned with that of the firmware of SPARC M12-2 where the master XSCF is running. We recommend updating the XCP firmware on the master XSCF to the latest version in advance.

In the following example, BB#1 is added.

- a. Select the BB to be added. Here BB#1 is selected.
- b. Select the FRU(BB) to be added. Here BB itself is selected.
- c. Select the BB to be added.
- d. Enter [a] for add.

```

XSCF> addfru
-----
Maintenance/Addition Menu
Please select the chassis including added FRU.

No. FRU          Status
-----
1 /BB#0          Normal
2 /BB#1          Unmount
3 /BB#2          Unmount
4 /BB#3          Unmount
-----

Select [1-4|c:cancel] :2

Maintenance/Addition Menu
Please select the BB or a type of FRU to be added.

1. BB itself
2. PSU (Power Supply Unit)
-----

Select [1,2|c:cancel] :1

Maintenance/Addition Menu
Please select a FRU to be added.

No. FRU Status
-----
1 /BB#1    Unmount
-----

Select [1|b:back] :1
You are about to add BB#1.
Do you want to continue?[a:add|c:cancel] :a
Please execute the following steps:
1) After the added device is connected with the system,
please turn on the breaker of the BB#1.
2) Please select[f:finish] :

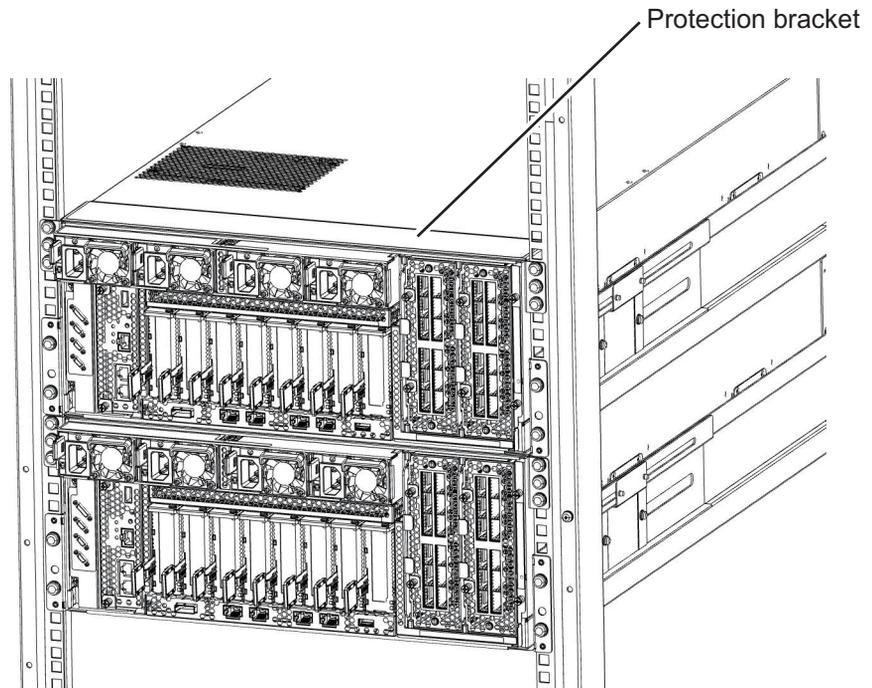
```

2. **Mount the target SPARC M12-2S in the rack.**
 - a. During the execution of the command, the following message may appear: "1) After the added device is connected with the system, please turn on the breaker of the BB#1." If it appears, stay away from the command operation temporarily.
 - b. Mount the target SPARC M12-2S.
For details, see ["3.4.1 Mounting the SPARC M12-2S in a Rack."](#)
 - c. Set the ID for identifying the added SPARC M12-2S.
For details, see ["4.1 Setting the ID \(BB-ID\) Identifying the SPARC M12-2S."](#)
 - d. Connect the XSCF BB control cable and crossbar cable to the added SPARC M12-2S.
For details, see ["4.2 Connecting XSCF Cables"](#) and ["4.3 Connecting Crossbar Cables."](#)
After the cables are connected, connect the power cord and start the XSCF. Confirm that the READY LED of the XSCFU is blinking at this time.

Note - When adding the SPARC M12-2S to the existing expansion rack, you need to remove the protection bracket at the space of the mounting destination and the blank plates (four plates). The blank plate is fastened with two M6 screws. The protection bracket is fastened with six M6 screws.

Store the removed blank plates and M6 screws for future use when the SPARC M12-2S is removed. After adding the SPARC M12-2S, install the protection bracket and M6 screws at their original locations, for future use when the expansion rack is moved.

Figure 8-1 Protection Bracket



3. **Return to the command execution screen of the master XSCF and enter [f].**

```
2) Please select[f:finish] :f
```

```
Waiting for BB#1 to enter install state.  
[This operation may take up to 20 minute(s)]  
(progress scale reported in seconds)  
0..... 30.... done
```

```
Waiting for BB#1 to enter ready state.  
[This operation may take up to 45 minute(s)]  
(progress scale reported in seconds)  
0..... 30..... 60... done
```

4. **Skip the diagnosis of the SPARC M12-2S to be added and complete the addfru command.**

- a. Enter [c] for cancel.
- b. Enter [y] for yes and skip the diagnosis processing for the BB to be added.
- c. When the message "The addition of BB#1 has completed." is displayed, enter [f].
- d. Finally, entering [c] to complete the addfru command.

```

Do you want to start to diagnose BB#1?[s:start|c:cancel] :c

Diagnostic tests are about to be skipped.
Running diagnostic tests are strongly recommended before using
BB#1.
Are you sure you want to skip testing?[y:yes|n:no] :y

[Warning:007]
Running diagnostic tests on BB#1 is strongly recommended
after addfru has completed.
The addition of BB#1 has finished.[f:finish] :f

-----
Maintenance/Addition Menu
Please select the chassis including added FRU.

No.  FRU                Status
---  -
 1  /BB#0                Normal
 2  /BB#1                Normal
 3  /BB#2                Unmount
 4  /BB#3                Unmount
-----

Select [1-4|c:cancel] :c

```

8.5 Initial Diagnosis of the SPARC M12-2S to be Added

Here, an initial diagnosis is performed on the added SPARC M12-2S.

Note - For system-stopped expansion, perform the procedure in "[6.7 Performing a Diagnosis Test](#)," not this procedure.

1. **Execute the testsb command to perform a diagnosis on the hardware.**
 For XX-Y, specify the PSB number of the diagnosis target. XX=BB-ID and Y=0 are the fixed settings.
 An initial diagnosis of the PSB that is the diagnosis target and confirmation of connected I/O are performed.

<Description of options specified>

- v: Displays the detailed message of the hardware diagnosis.
- p: Displays the storage connected to SPARC M12-2S.
- s: Displays the device tree.
- y: Automatically responds with "y".

```
XSCF> testsb -v -p -s -y XX-Y
```

The following example performs a diagnosis for the added BB#01.

```
XSCF> testsb -v -p -s -y 01-0
Initial diagnosis is about to start, Continue?[y|n] :y
PSB#01-0 power on sequence started.
```

For a command display example and a check of the results, see ["6.7 Performing a Diagnosis Test."](#)

2. **Perform a diagnosis to check whether there is any connection error in the connected cables.**

Execute the diagxbu command to check the cables.

-b: XX specifies the added BB-ID.

-p: YY specifies the PPAR-ID of the incorporation destination.

-t: YY specifies the BB-ID of every SPARC M12-2S contained in the PPAR of the incorporation destination.

(1) The PPAR that is the incorporation destination is running (active expansion)

```
XSCF> diagxbu -y -b xx -p yy
```

In the following example, a diagnosis is performed between the added BB#1 and the PPAR#0 of the incorporation destination.

```
XSCF> diagxbu -y -b 01 -p 00
XBU diagnosis is about to start, Continue?[y|n] :y
Power on sequence started. [7200sec]
0..... 30..... 60..end
XBU diagnosis started. [7200sec]
0..... 30..... 60..... 90.....120.....150.....180.....210.....240...../
270.....300.....330.....360.....390.....420.....450.....480.....510.....\
540.....570.....600.....630.....660.....690.....720.....750.....780.....\
810.....840.....870.....900.....930..end
completed.
Power off sequence started. [1200sec]
0..... 30..... 60..... 90.....120.....150.....180.end
```

completed.

Note

Please confirm the error of XBU by "showlogs error".
In addition, please confirm the degraded of XBU by "showstatus".

(2) The PPAR that is the incorporation destination is stopped (inactive expansion)

```
XSCF> diagxbu -y -b 03 -t 01 -t 02
```

In the following example, a diagnosis is performed on the added BB#03 and on BB#01 and BB#02 contained in PPAR#1, which is the incorporation destination.

```
XSCF> showpcl -p 1
PPAR-ID  LSB   PSB   Status
01                Powered Off
          00    01-0
          01    02-0
XSCF> diagxbu -y -b 03 -t 01 -t 02
XBU diagnosis is about to start, Continue?[y|n] :y
Power on sequence started. [7200sec]
 0..... 30..... 60..... 90..end
XBU diagnosis started. [7200sec]
 0..... 30..... 60..... 90.....120.....150.....180.....210.....240.....|
270.....300.....330.....360.....390.....420...end
completed.
Power off sequence started. [1200sec]
 0..... 30..... 60..... 90.....120end
completed.

*Note*
Please confirm the error of XBU by "showlogs error".
In addition, please confirm the degraded of XBU by "showstatus".
```

Reducing a System With a Building Block Configuration

This chapter describes the procedure for removing the SPARC M12-2S from a system with a building block configuration.

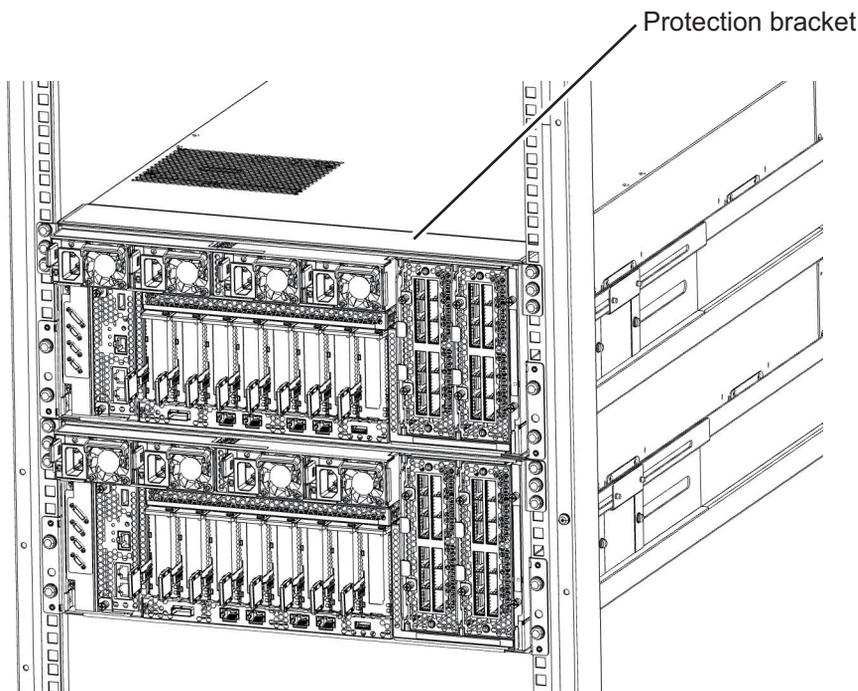
- [Points of Concern During Reduction](#)
- [Preparation for Reduction](#)
- [SPARC M12-2S Reduction Work](#)

9.1 Points of Concern During Reduction

Before reduction by removing the SPARC M12-2S, check the following items.

Remarks - When removing the SPARC M12 targeted for reduction from the existing expansion rack in order to use it as a different system, you need to remove the protection bracket at the space of the mounting destination and the blank plates (four plates). The blank plate is fastened with two M6 screws. The protection bracket is fastened with six M6 screws. Store the removed blank plates and M6 screws for future use when the SPARC M12-2S is removed. Install the protection bracket and M6 screws at their original locations for future use when the expansion rack is moved.

Figure 9-1 Protection Bracket



- If the SPARC M12-2S is mounted and used in a general rack, remove every SPARC M12-2S from the rack when moving to a different installation location. See "[Safety precautions regarding racks](#)" in "[2.1 Safety Precautions](#)."
- If you stop a PPAR and reduce the SPARC M12-2S belonging to the PPAR, logical domain configuration information switches to factory-default the next time the PPAR is powered on.
In that case, reconfigure the logical domains by referring to the logical domain configuration information in the XML file saved at the system configuration time.
- The physical partition number must match the BB-ID of one of the SPARC M12-2S units in the system.
Therefore, when there is a physical partition with the same number as the BB-ID of the SPARC M12-2S to be removed, be sure to stop that physical partition before reducing the unit.
Reconfigure the physical partition with a different physical partition number because it will not be possible to use the physical partition as the system will not be using the reduced SPARC M12-2S.
- Multiple units cannot be released from the system at the same time by the `initbb` command. Do this work on one unit at a time.
- For the initialization of the SPARC M12-2S of the master XSCF, perform that work at the end.
Execute the `restoredefaults -c factory -r activation` command to return to the factory defaults, including the CPU Activation key information. Perform this work with a serial connection to the master XSCF.

To expand another system with a removed SPARC M12-2S, you need to reinstall the CPU Activation key during the initial setup of the XSCF after the expansion.

- The serial number of the SPARC M12-2S of either the master XSCF or standby XSCF is used as the system serial number. If the serial number of the standby SPARC M12-2S is being used as the system serial number, the `initbb` command cannot release the standby SPARC M12-2S. In this case, execute the `switchscf` command to switch the master XSCF.

Notes on use of dynamic reconfiguration (PPAR DR) for the physical partition

Note - When using the dynamic reconfiguration function for the physical partition (PPAR DR), check the contents of "2.5 Dynamic Reconfiguration Conditions and Settings" in the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide* beforehand.

- The PPAR DR function is enabled by default.
The command with the `-c unassign` or `-c disconnect` option specified cannot release a BB (PSB) from a physical partition where the PPAR DR function is disabled, while the physical partition is operating.
- When disconnecting a building block from a physical partition by specifying a physical system board (PSB), specify the `-c unassign` option in the `deleteboard` command. After being released from the physical partition by the command with the `-c unassign` option specified, the PSB enters the system board pool.
- When the PSB is targeted for release from the physical partition, the free resources in the physical partition are used to move the logical domains that use the resources of the PSB.
According to the status of these free resources, you can specify the method of securing the resources used to move the logical domains by specifying the `-m` option of the `deleteboard` command.

The following shows the functions when the `-m` option of the `deleteboard` command is specified.

- `-m unbind=none` is specified

Obtains resources for the move from available resources. When the command cannot secure the resources, it causes the release to fail.

- `-m unbind=resource` is specified

Obtains resources for the move from available resources. If even those resources are insufficient, it secures resources from each logical domain.

- `-m unbind=shutdown` is specified

Obtains resources for the move from available resources. If even those resources are insufficient, it secures resources from each logical domain. If the resources are still insufficient, it shuts down any one of the logical domains.

9.2 Preparation for Reduction

This section describes the preparation for reduction with the SPARC M12-2S. Before starting reduction work, be sure to see "9.1 [Points of Concern During Reduction](#)."

9.2.1 Preparing the Necessary Tools

The tools used for reduction with the SPARC M12-2S are the same as those for initial installation. See "3.1 [Preparing the Necessary Tools/Information for Installation](#)."

9.2.2 Confirming the Reduction Configuration

This section describes the reduction mode confirmation work using *Fujitsu SPARC M12-2/M12-2S Service Manual*.

SPARC M12-2S reduction has three reduction configurations, which depend on the system operation status, as described below.

Table 9-1 Reduction Configurations

Reduction Configuration	Description
Active reduction	Method of reducing while the physical partition (PPAR) is operating (Oracle Solaris is running) (*1)
Inactive reduction	Method of reducing after only the physical partition containing the SPARC M12-2S to be removed is stopped (Oracle Solaris is stopped)
System-stopped reduction	Method of reducing after all the physical partitions are stopped

*1 This uses physical partition dynamic reconfiguration (DR).

9.3 SPARC M12-2S Reduction Work

This section describes the reduction work procedures for the SPARC M12-2S. Perform reduction work with the *Fujitsu SPARC M12-2S Installation Guide* (this document) and the *Fujitsu SPARC M12-2/M12-2S Service Manual*.

9.3.1 Active Reduction

This section describes the method of reducing while the target physical partition

(PPAR) is running. Do this work by following the reference procedures.

Note - If the serial number of the chassis targeted for reduction is being used as the system serial number, the `initbb` command cannot be used to release the chassis. In this case, execute the `switchscf` command to switch the master XSCF.

Table 9-2 Active Reduction Flow

Procedure	Work Description	Reference	
1	Confirm the flow of active reduction work.		Required
2	Confirm the running status of the system from the master XSCF.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
3	Check the I/O device usage status of the SPARC M12-2S to be removed.	"9.2.2 Checking the Assignment Status of I/O Devices" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
4	Check the HDD/SSD usage status of the SPARC M12-2S to be removed.	"9.2.3 Checking the Usage of the HDD/SSD" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
5	Confirm the assignment status of CPU core resources to the logical domains.	<i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required
6	Confirm the assignment status of memory resources to the logical domains.	<i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required
7	Release the assignment of I/O resources to logical domains of the SPARC M12-2S to be removed.	"9.3 Releasing I/O Resources From a Logical Domain" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
8	Release the I/O devices of the SPARC M12-2S to be removed, from the system.	"9.4 Enabling the Removal of Hardware" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
9	Release the assignment of CPU core resources to logical domains.	<i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required (*1)
10	Release the assignment of memory resources to logical domains.	<i>Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide</i>	Required (*1)
11	Confirm that the SPARC M12-2S to be removed is in a releasable state.	"9.2 Checking the Operation Status and Resource Usage Status of Oracle Solaris" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
12	Release the SPARC M12-2S from the physical partition.	"9.4.3 Dynamically Releasing the SPARC M12-2S From the Physical Partition" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required

Table 9-2 Active Reduction Flow (*continued*)

Procedure	Work Description	Reference	
13	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
14	Confirm the system running status after the release of SPARC M12-2S.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*1)
15	Save the logical domain configuration information.	"9.1.1 Saving Logical Domain Configuration Information" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
16	Turn the OPNL mode switch to Service mode.	"2.11 Checking the Functions of the Operation Panel"	Required
17	Release the SPARC M12-2S to be removed, from the building block configuration.	"9.7 Removing the SPARC M12-2S" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*2)(*4)
18	Turn the OPNL mode switch to Locked mode.	"2.11 Checking the Functions of the Operation Panel"	Required
19	Remove the chassis targeted for reduction. When removing from the rack, follow the reverse procedure of mounting.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Required (*3)(*4)

*1 Set the logical domains again as necessary. For details, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide*.

*2 Before executing the `initbb` command, you need to confirm the chassis serial number from the system board to be released by executing the `showhardconf` command.

*3 The removed SPARC M12-2S will be at the factory default status after the execution of the `initbb` command. If you want to use it as another system, see "1.1 Workflows for the SPARC M12-2S" to perform installation.

*4 To disconnect expansion rack 2, it is necessary to remove the cables interconnecting the racks. In addition, disconnect expansion rack 1 and expansion rack 2 if necessary.

9.3.2 Inactive Reduction

This section describes the method of reducing by stopping the target physical partition (PPAR). Perform the work in accordance with the procedure of the reference. Before starting the work, be sure to see "9.1 Points of Concern During Reduction."

Table 9-3 Inactive Reduction Flow

Procedure	Work Description	Reference	
1	Confirm the flow of inactive reduction work.		Required
2	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
3	Check the I/O device usage status of the SPARC M12-2S to be removed.	"9.2.2 Checking the Assignment Status of I/O Devices" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
4	Check the HDD/SSD usage status of the SPARC M12-2S to be removed.	"9.2.3 Checking the Usage of the HDD/SSD" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
5	Release the assignment of I/O resources to logical domains of the SPARC M12-2S to be removed.	"9.3 Releasing I/O Resources From a Logical Domain" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Optional (*1)
6	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*2)
7	Save the logical domain configuration information.	"9.1.1 Saving Logical Domain Configuration Information" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
8	Turn off the power of the physical partition containing the SPARC M12-2S to be removed.	"7.12.5 Stopping a Specific Physical Partition (PPAR)"	Required
9	Turn the OPNL mode switch to Service mode.	"2.11 Checking the Functions of the Operation Panel"	Required
10	Release the SPARC M12-2S to be removed, from the building block configuration.	"7.8.2 Releasing a Specific Physical System Board (PSB) From a Physical Partition (PPAR)" "9.7 Removing the SPARC M12-2S" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*3)(*5)
11	Turn the OPNL mode switch to Locked mode.	"2.11 Checking the Functions of the Operation Panel"	Required
12	Turn on the power of the physical partition containing the SPARC M12-2S to be removed.	"7.12.3 Starting a Specific Physical Partition (PPAR)"	Required
13	Confirm the system running status after the release of SPARC M12-2S.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*2)

Table 9-3 Inactive Reduction Flow (*continued*)

Procedure	Work Description	Reference	
14	Save the logical domain configuration information.	"9.1.1 Saving Logical Domain Configuration Information" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
15	Remove the chassis targeted for reduction. When removing from the rack, follow the reverse procedure of mounting.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Required (*4)(*5)

*1 When the reduction of SPARC M12-2S gives no impact to logical domains, this is not necessary.

*2 Reconfigure the logical domains as necessary. For details, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide*.

*3 Before executing the `initbb` command, you need to confirm the chassis serial number from the system board to be released by executing the `showhardconf` command.

*4 The removed SPARC M12-2S will be at the factory default status after the execution of the `initbb` command. If you want to use it as another system, see "1.1 Workflows for the SPARC M12-2S" to perform installation.

*5 To disconnect expansion rack 2, it is necessary to remove the cables interconnecting the racks. In addition, disconnect expansion rack 1 and expansion rack 2 if necessary.

9.3.3 System-Stopped Reduction

This section describes the method of reducing by stopping all physical partitions. Perform the work in accordance with the procedure of the reference.

Before starting the work, be sure to see "9.1 Points of Concern During Reduction."

Table 9-4 System-Stopped Reduction Flow

Procedure	Work Description	Reference	
1	Confirm the flow of system-stopped reduction work.		Required
2	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
3	Check the I/O device usage status of the SPARC M12-2S to be removed.	"9.2.2 Checking the Assignment Status of I/O Devices" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
4	Check the HDD/SSD usage status of the SPARC M12-2S to be removed.	"9.2.3 Checking the Usage of the HDD/SSD" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
5	Release the assignment of I/O resources to logical domains of the SPARC M12-2S to be removed.	"9.3 Releasing I/O Resources From a Logical Domain" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Optional (*1)

Table 9-4 System-Stopped Reduction Flow (*continued*)

Procedure	Work Description	Reference	
6	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*2)
7	Save the logical domain configuration information.	"9.1.1 Saving Logical Domain Configuration Information" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
8	Turn off the power of all physical partitions.	"7.12.4 Stopping All Physical Partitions (PPARs)"	Required
9	Turn the OPNL mode switch to Service mode.	"2.11 Checking the Functions of the Operation Panel"	Required
10	Release the SPARC M12-2S to be removed, from the building block configuration.	"7.8.2 Releasing a Specific Physical System Board (PSB) From a Physical Partition (PPAR)" "9.7 Removing the SPARC M12-2S" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*3)(*5)
11	Turn the OPNL mode switch to Locked mode.	"2.11 Checking the Functions of the Operation Panel"	Required
12	Turn on the power of all physical partitions.	"7.12.2 Starting All Physical Partitions (PPARs)"	Required
13	Confirm the system running status.	"9.2.1 Checking the Operation Status of Physical Partitions and Logical Domains" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required (*2)
14	Save the logical domain configuration information.	"9.1.1 Saving Logical Domain Configuration Information" in the <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i>	Required
15	Remove the chassis targeted for reduction. When removing from the rack, follow the reverse procedure of mounting.	"3.4.1 Mounting the SPARC M12-2S in a Rack"	Required (*4)(*5)

*1 When the reduction of SPARC M12-2S gives no impact to logical domains, this is not necessary.

*2 Reconfigure the logical domains as necessary. For details, see the *Fujitsu SPARC M12 and Fujitsu M10/SPARC M10 Domain Configuration Guide*.

*3 Before executing the `initbb` command, you need to confirm the chassis serial number from the system board to be released by executing the `showhardconf` command.

*4 The removed SPARC M12-2S will be at the factory default status after the execution of the `initbb` command. If you want to use it as another system, see "1.1 Workflows for the SPARC M12-2S" to perform installation.

*5 To disconnect expansion rack 2, it is necessary to remove the cables interconnecting the racks. In addition, disconnect expansion rack 1 and expansion rack 2 if necessary.

Troubleshooting

This appendix describes the corrective actions for problems that may occur during SPARC M12-2S installation work.

- [Understanding the Usual Problems and Their Corrective Actions](#)
- [Understanding Commands for Troubleshooting](#)
- [How to Restore a BB-ID From an Incorrect Setting](#)

A.1 Understanding the Usual Problems and Their Corrective Actions

If system operation is not normal during installation work, you may wonder whether there was a failure. In such cases, inspect the following items and take corrective measures accordingly.

Table A-1 List of Problem Case Examples

Case	Possible Cause	Corrective Action
The input power cannot be turned on.	The power cord is disconnected.	Connect the power cord correctly.
	The breaker on the distribution board is turned off.	Turn on the breaker.
The system management terminal does not display the login prompt.	The serial cable is not connected to the serial port.	Connect the serial cable correctly to the serial port on the rear of the SPARC M12-2S. See Figure 5-1 in " 5.1 Connecting Cables to the SPARC M12-2S. " For a building block configuration, connect the serial cable to the serial port of the SPARC M12-2S whose MASTER LED of the XSCF unit is lit.

Table A-1 List of Problem Case Examples (*continued*)

Case	Possible Cause	Corrective Action
	After a connection is established for the serial connection to the XSCF, the [Enter] key must be pressed.	After the serial connection is established, press the [Enter] key. See "6.3 Logging In to the XSCF."
	There are cases where the XSCF shell prompt does not appear after the console command was executed to terminate the previous established serial connection.	If the XSCF shell prompt does not appear, enter "#." to move from the console to the XSCF shell.
The sethostname command changed the host name of the XSCF, but this change was not reflected.	This is because the applynetwork command was not executed after the sethostname command was executed.	After changing the host name with the sethostname command, execute the applynetwork command, and reboot the XSCF with the rebootxscf command.
After the input power is turned on, the MASTER LED on every SPARC M12-2S is lit.	BB-IDs have not been set.	Initialize each SPARC M12-2S to the factory default settings, and change the BB-IDs to the correct settings. See "A.3.1 BB-IDs Not Set (BB-ID 00)."
The XCP firmware version check displays only BB#00.	BB-IDs have not been set.	Initialize each SPARC M12-2S to the factory default settings, and change the BB-IDs to the correct settings. See "A.3.1 BB-IDs Not Set (BB-ID 00)."
The XCP firmware version check displays only BB#00 and BB#01 even though the configuration has at least three BBs.	The BB-IDs of BB#00 and BB#01 are reversed.	Initialize BB#00 and BB#01 to the factory default settings, and change the BB-IDs to the correct settings. See "A.3.3 Mistaken Settings for BB#00 and BB#01."
The XCP firmware version check does not display BB#03 even though the configuration has four BBs.	BB#03 has the wrong BB-ID setting.	Change the BB-ID to the correct setting. See "A.3.2 Mistaken Settings for BB-IDs Other Than BB#00 or BB#01."
The component status check (by the showhardconf command) of a building block configuration displays only BB#00.	The XSCF BB control cables between the SPARC M12-2S units are incorrectly connected.	Check messages by using the showlogs command. See "A.2.2 Checking the Contents of Logs."
"Failed" appears in the results of a diagnosis test performed on a building block configuration.	The crossbar cables between the SPARC M12-2S units are incorrectly connected.	Check messages by using the showlogs command. See "A.2.2 Checking the Contents of Logs."

Table A-1 List of Problem Case Examples (*continued*)

Case	Possible Cause	Corrective Action
The following errors are displayed by the showlogs error command executed in a system with the 3BB configuration or larger: - BB control cable detected unexpected - Cannot communicate with the other XSCF	The XSCF BB control cable is not completely in contact, or the cable is faulty.	Connect the XSCF BB control cable correctly. If the error is still displayed after you confirm the connection, replace the cable.

A.2 Understanding Commands for Troubleshooting

This section describes the XSCF shell commands used to check detailed error information and the system status.

A.2.1 Checking the Component Status

Use the showhardconf command to check the status of each field replaceable unit (FRU). The displayed information is as follows:

- Current configuration and status
- Quantities of mounted FRUs by FRU type, such as CPU, memory, and PCIe card
- Physical partition (PPAR) information
- PCI expansion unit information (displayed only when the power to the physical partition is on)
- PCIe card information (displayed only when the power to the physical partition is on)

showhardconf command

Use the showhardconf command to check the system hardware configuration and the status of each component.

A displayed asterisk (*) indicates the fault location of a unit where a failure or degradation occurred.

Status displays the following statuses.

- **Failed:** Non-operational status of the relevant component due to failure
- **Degraded:** A part of the unit has failed, but the unit continues in operation.
- **Deconfigured:** Including its components on the lower layers, the unit is in a normal condition, but it has been degraded due to the influence of a failure or

degradation of another unit.

- **Maintenance:** Maintenance work in progress. The addfru command, replacefru command, or initbb command is in operation.
- **Normal:** Normal status

Example: Displayed for the SPARC M12-2S

```
XSCF> showhardconf -M
SPARC M12-2S;
+ Serial:PZ51618006; Operator_Panel_Switch:Service;
  *1 System serial number
+ System_Power:Off; System_Phase:Cabinet Power Off;
BB#00 Status:Normal; Role:Master; Ver:300ah; Serial:PZ51618006;
      *1 SPARC M12-2S serial number
+ FRU-Part-Number:CA20369-B17X 003AB/9999999          ;
+ Power_Supply_System: ;
+ Memory_Size:256 GB;
CMUL Status:Normal; Ver:1101h; Serial:PP1617010W ;
  + FRU-Part-Number:CA07855-D201 A1 /9999999          ;
  + Memory_Size:128 GB; Type: C ;
CPU#0 Status:Normal; Ver:4241h; Serial:00000063;
  + Freq:4.250 GHz; Type:0x30;
  + Core:12; Strand:8;
MEM#00A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D7204;
  + Type:83; Size:16 GB;
MEM#01A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6CC7;
  + Type:83; Size:16 GB;
MEM#02A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6CCB;
  + Type:83; Size:16 GB;
MEM#03A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6CC5;
  + Type:83; Size:16 GB;
MEM#04A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6C70;
  + Type:83; Size:16 GB;
MEM#05A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6C89;
  + Type:83; Size:16 GB;
MEM#06A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6CC4;
  + Type:83; Size:16 GB;
MEM#07A Status:Normal;
  + Code:ce8002M393A2K40BB1-CRC 00-316D6CB7;
  + Type:83; Size:16 GB;
CMUU Status:Normal; Ver:1101h; Serial:PP1617011E ;
  + FRU-Part-Number:CA07855-D401 A1 /9999999          ;
  + Memory_Size:128 GB; Type: C ;
CPU#0 Status:Normal; Ver:4241h; Serial:00000031;
  + Freq:4.250 GHz; Type:0x30;
  + Core:12; Strand:8;
MEM#00A Status:Normal;
```

```

+ Code:ce8002M393A2K40BB1-CRC      00-316D5B24;
+ Type:83; Size:16 GB;
MEM#01A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D6724;
+ Type:83; Size:16 GB;
MEM#02A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D5B25;
+ Type:83; Size:16 GB;
MEM#03A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D66DE;
+ Type:83; Size:16 GB;
MEM#04A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D6559;
+ Type:83; Size:16 GB;
MEM#05A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D5A7A;
+ Type:83; Size:16 GB;
MEM#06A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D5A82;
+ Type:83; Size:16 GB;
MEM#07A Status:Normal;
+ Code:ce8002M393A2K40BB1-CRC      00-316D5ADC;
+ Type:83; Size:16 GB;
XBU#0 Status:Normal; Ver:1101h; Serial:PP16150083 ;
+ FRU-Part-Number:CA20369-B18X 001AA/9999999 ;
+ Type: C ;
XBU#1 Status:Normal; Ver:1101h; Serial:PP16150082 ;
+ FRU-Part-Number:CA20369-B18X 001AA/9999999 ;
+ Type: C ;
XSCFU Status:Normal; Ver:0101h; Serial:PP161401KP ;
+ FRU-Part-Number:CA20369-B08X 002AB/9999999 ;
+ Type: A ;
OPNL Status:Normal; Ver:0101h; Serial:PP1615002R ;
+ FRU-Part-Number:CA20365-B35X 005AC/7060922 ;
+ Type: A ;
PSUBP Status:Normal; Ver:1101h; Serial:PP161501EC ;
+ FRU-Part-Number:CA20369-B17X 003AB/9999999 ;
+ Type: C ;
PSU#0 Status:Normal; Ver:303242h; Serial:HWCD1622000551;
+ FRU-Part-Number:CA01022-0850/7334651 ;
+ Power_Status:ON; AC:200 V; Type: C ;
PSU#1 Status:Normal; Ver:303242h; Serial:HWCD1622000586;
+ FRU-Part-Number:CA01022-0850/7334651 ;
+ Power_Status:ON; AC:200 V; Type: C ;
PSU#2 Status:Normal; Ver:303242h; Serial:HWCD1622000524;
+ FRU-Part-Number:CA01022-0850/7334651 ;
+ Power_Status:ON; AC:200 V; Type: C ;
PSU#3 Status:Normal; Ver:303242h; Serial:HWCD1622000496;
+ FRU-Part-Number:CA01022-0850/7334651 ;
+ Power_Status:ON; AC:200 V; Type: C ;
FANU#0 Status:Normal; Type: C ;
FANU#1 Status:Normal; Type: C ;
FANU#2 Status

```

showhardconf -u command

Use the showhardconf command with the -u option to display the quantity of each type of mounted field replaceable unit.

The CPU modules are displayed with the operating frequency, and the memory units are displayed with the capacity per memory. If the option is omitted, the command displays the current configuration information, status information, and physical partition (PPAR) information for each field replaceable unit.

Example: Displayed for the SPARC M12-2S

```
XSCF> showhardconf -u
SPARC M12-2S; Memory_Size:256 GB;
```

FRU	Quantity
BB	1
CMUL	1
Type:C	(1)
CPU	1
Freq:4.250 GHz;	(1)
MEM	8
Type:83; Size:16 GB;	(8)
CMUU	1
Type:C	(1)
CPU	1
Freq:4.250 GHz;	(1)
MEM	8
Type:83; Size:16 GB;	(8)
PCICARD	0
LINKCARD	0
PCIBOX	0
IOB	0
LINKBOARD	0
PCI	0
FANBP	0
PSU	0
FAN	0
XBU	2
Type:C	(2)
XSCFU	1
Type:A	(1)
OPNL	1
Type:A	(1)
PSUBP	1
Type:C	(1)
PSU	4
Type:C	(4)
FANU	8
HDDBP	1
XBBOX	0
XBU	0
XSCFU	0
OPNL	0
XBBPU	0
XSCFIFU	0
PSU	0
FANU	0

A.2.2 Checking the Contents of Logs

Use the showlogs command to check error logs.

showlogs command

The showlogs command displays the specified log. By default, the command displays the log in chronological order from the oldest time stamp. You can specify the following logs.

On individual systems, specify the type of log to display from the collected logs. You can specify one of the following:

- **error:** Error log
- **power:** Power log
- **event:** Event log
- **monitor:** Monitoring message log

On individual SPARC M12-2S chassis, specify the type of log to display from the collected logs.

- **env:** Temperature history

On individual physical partitions (PPARs), specify the type of log to display from the collected logs. You can specify one of the following:

- **console:** Console message log
- **panic:** Panic message log
- **ipl:** IPL message log

Example: Display example where an XSCF cable is incorrectly connected

```
XSCF> showlogs error
Date: Sep 29 16:35:09 JST 2016
Code: 80000000-003bff0000ff0000ff-01a100040000000000000000
Status: Alarm                               Occurred: Sep 29 16:35:01.895 JST 2016
FRU: /BB#1
Msg: BB control cable detected unexpected
```

Example: Display example where crossbar cables are incorrectly connected as shown in [Figure A-1](#)

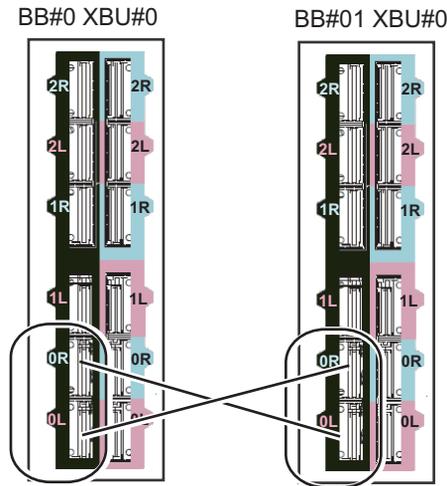
```
XSCF> showlogs error
Date: Nov 08 11:01:37 JST 2012
Code: 10000008-007cff0000ff0000ff-019204310000000000000000
Status: Information                         Occurred: Nov 08 11:01:32.813 JST 2012
FRU: /BB#1/XBU#0/CBL#0R
Msg: Cable connection test failure
Date: Nov 08 11:01:38 JST 2012
Code: 10000008-007cff0000ff0000ff-019204310000000000000000
Status: Information                         Occurred: Nov 08 11:01:32.839 JST 2012
FRU: /BB#1/XBU#0/CBL#0L
Msg: Cable connection test failure
Date: Nov 08 11:01:43 JST 2012
```

```

Code: 10000008-007cff0000ff0000ff-019204310000000000000000
Status: Information          Occurred: Nov 08 11:01:33.411 JST 2012
FRU: /BB#0/XBU#0/CBL#0R
Msg: Cable connection test failure
Date: Nov 08 11:01:44 JST 2012
Code: 10000008-007cff0000ff0000ff-019204310000000000000000
Status: Information          Occurred: Nov 08 11:01:33.617 JST 2012
FRU: /BB#0/XBU#0/CBL#0L
Msg: Cable connection test failure

```

Figure A-1 Incorrect 0L and 0R Cable Connections (Reversed Cable Connections)



A.2.3 Checking Information on a Component Where a Failure or Degradation Occurred

Use the `showstatus` command to check information on a degraded unit among the FRUs composing the system.

`showstatus` command

The command displays information on each unit where a failure has occurred and the units on higher layers, from among the field replaceable units composing the system. The mark indicating the status (*) appears at the beginning of the line of the displayed unit. Status displays the unit status.

- **Status:** Description
- **Faulted:** Non-operational status of the relevant component due to failure
- **Degraded:** A part of the unit has failed, but the unit continues in operation.
- **Deconfigured:** Including its components on the lower layers, the unit is in a normal condition, but it has been degraded due to the influence of a failure or

degradation of another unit.

- **Maintenance:** Maintenance work in progress. The `addfru` command, `replacefru` command, or `initbb` command is in operation.

Example: Display example where a CPU and memory of the CPU memory unit (lower) of BB#00 are degraded because of a failure

```
XSCF> showstatus
  BB#00;
    CMUL Status:Normal;
*      CPU#0 Status:Faulted;
*      MEM#00A Status:Faulted;
```

A.2.4 Checking Diagnosis Results

Use the `testsb` command to perform an initial diagnosis on the specified hardware. Use the `diagxbu` command to diagnose the crossbar cables and crossbar units connected to the specified SPARC M12-2S.

`testsb` command

The `testsb` command diagnoses the configuration of the specified physical system board (PSB) and the operation of each device mounted on the PSB. After completing the diagnosis, the command displays the results. You can also check the diagnosis results with the display of "Test" and "Fault" by the `showboards` command.

The displayed diagnosis results from `testsb` are as follows:

- **PSB:** BB identification number displayed in the format of `xx-0` (`xx` is the BB-ID)
- **Test:** Initial diagnosis status of the physical system board (PSB)
 - Unmount: The PSB cannot be recognized because it is not mounted or has failed.
 - Unknown: The PSB has not been diagnosed.
 - Testing: The initial diagnosis is in progress.
 - Passed: The initial diagnosis ended normally.
 - Failed: A failure occurred in the initial diagnosis.
- **Fault:** Degradation status of the physical system board (PSB)
 - Normal: The PSB is normal.
 - Degraded: The physical system board (PSB) can operate but has a degraded component.
 - Faulted: The physical system board (PSB) is not operating because a failure occurred or it cannot be controlled because of a communication failure.

Example: Execution example for the SPARC M12-2S in the 1BB configuration (normal end), including execution of `show-devs` and `probe-scsi-all`

```

XSCF> testsb -v -p -s -a -y
Initial diagnosis is about to start, Continue?[y/n] :y
PSB power on sequence started.
POST Sequence 01 Banner
LSB#00: POST 5.6.0 (2016/08/25 09:01)
Omitted
  <<Displayed execution results of "probe-scsi-all">>
/pci@8500/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00
Target a
  Unit 0   Encl Serv device   FUJITSU  BBEXP           1303
  SASAddress 500000e0e0b0003d  PhyNum 14
/pci@8100/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00
Target a
  Unit 0   Disk   TOSHIBA  AL13SEB600      3703      1172123568 Blocks, 600 GB
  SASDeviceName 50000396f8120490  SASAddress 50000396f8120492  PhyNum 0
Target b
  Unit 0   Encl Serv device   FUJITSU  BBEXP           1303
  SASAddress 500000e0e0b0003d  PhyNum 14
  <<Displayed execution results of "show-devs">>
Omitted
/pci@8700/pci@4
/pci@8700/pci@4/pci@0
/pci@8700/pci@4/pci@0/pci@10
/pci@8600/pci@4
/pci@8600/pci@4/pci@0
/pci@8600/pci@4/pci@0/pci@10
/pci@8600/pci@4/pci@0/pci@1
/pci@8500/pci@4
/pci@8500/pci@4/pci@0
/pci@8500/pci@4/pci@0/pci@1
/pci@8500/pci@4/pci@0/pci@0
/pci@8500/pci@4/pci@0/pci@0/scsi@0
/pci@8500/pci@4/pci@0/pci@0/scsi@0/disk
/pci@8500/pci@4/pci@0/pci@0/scsi@0/tape
/pci@8400/pci@4
/pci@8400/pci@4/pci@0
/pci@8400/pci@4/pci@0/pci@1
/pci@8400/pci@4/pci@0/pci@0
/pci@8400/pci@4/pci@0/pci@0/network@0,1
/pci@8400/pci@4/pci@0/pci@0/network@0
/pci@8300/pci@4
/pci@8300/pci@4/pci@0
/pci@8300/pci@4/pci@0/pci@9
/pci@8300/pci@4/pci@0/pci@8
/pci@8200/pci@4
/pci@8200/pci@4/pci@0
/pci@8200/pci@4/pci@0/pci@9
/pci@8200/pci@4/pci@0/pci@8
/pci@8100/pci@4
/pci@8100/pci@4/pci@0
/pci@8100/pci@4/pci@0/pci@11
/pci@8100/pci@4/pci@0/pci@1
/pci@8100/pci@4/pci@0/pci@0

```

```

/pci@8100/pci@4/pci@0/pci@1/usb@0
/pci@8100/pci@4/pci@0/pci@1/usb@0/hub@5
/pci@8100/pci@4/pci@0/pci@1/usb@0/hub@1
/pci@8100/pci@4/pci@0/pci@0/scsi@0
/pci@8100/pci@4/pci@0/pci@0/scsi@0/disk
/pci@8100/pci@4/pci@0/pci@0/scsi@0/tape
/pci@8000/pci@4
/pci@8000/pci@4/pci@0
/pci@8000/pci@4/pci@0/pci@11
/pci@8000/pci@4/pci@0/pci@0
/pci@8000/pci@4/pci@0/pci@0/network@0,1
/pci@8000/pci@4/pci@0/pci@0/network@0
Omitted
PSB   Test      Fault
----  -
00-0  Passed    Normal
XSCF>

```

Example: Execution example for the SPARC M12-2S in the 3BB configuration (normal end), including execution of show-devs and probe-scsi-all

```

XSCF> testsb -v -p -s -a -y
Initial diagnosis is about to start, Continue?[y|n] :y
PSB power on sequence started.
LSB#01: POST 5.6.0 (2016/08/25 09:01)
POST Sequence 01 Banner
LSB#00: POST 5.6.0 (2016/08/25 09:01)
LSB#02: POST 5.6.0 (2016/08/25 09:01)
POST Sequence 02 CPU Check
POST Sequence 03 CPU Register
POST Sequence 04 STICK Increment
POST Sequence 05 Extended Instruction
POST Sequence 06 MMU
POST Sequence 07 Memory Initialize
POST Sequence 08 MSCAN
POST Sequence 09 Cache
POST Sequence 0A Interrupt Queue
POST Sequence 0B Floating Point Unit
POST Sequence 0C Encryption
POST Sequence 0D Random number
POST Sequence 0E Cacheable Instruction
POST Sequence 0F Softint
POST Sequence 10 CPU Cross Call
POST Sequence 11 CMU-CH
POST Sequence 12 PCI-CH
POST Sequence 13 TOD
POST Sequence 14 MBC Check Before STICK Diag
POST Sequence 15 STICK Stop
POST Sequence 16 STICK Start
POST Sequence 17 CPU Speed Control
POST Sequence 18 SX
POST Sequence 19 RT
POST Sequence 1A RT/SX NC
POST Sequence 1B RT/SX Interrupt

```

POST Sequence 1C CPU Status Check
POST Sequence 1D System Configuration
POST Sequence 1E System Status Check
POST Sequence 1F Prepare To Start Hypervisor
POST Sequence Complete.

Omitted

SPARC M12-2S, No Keyboard
Copyright (c) 1998, 2016, Oracle and/or its affiliates. All rights reserved.
OpenBoot 4.38.5, 762.5000 GB memory available, Serial #268906560.
[3.0.7]
Ethernet address b0:99:28:a0:87:40, Host ID: 90073040.

<Execution results of probe-scsi-all command>

/pci@9500/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00

Target a

Unit 0 Encl Serv device FUJITSU BBEXP 1303
SASAddress 500000e0e0b00c7d PhyNum 14

*** LSB#03**

/pci@9100/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00

*** 600-GB HDD mounted in slot#0 and slot#1**

Target a

Unit 0 Disk TOSHIBA AL13SEB600 3703 1172123568 Blocks, 600 GB
SASDeviceName 50000396f8120534 SASAddress 50000396f8120536 PhyNum 0

Target b

Unit 0 Disk TOSHIBA AL13SEB900AL14SE 3702 1758174768 Blocks, 900 GB
SASDeviceName 50000396880125e9 SASAddress 50000396880125ea PhyNum 1

Target c

Unit 0 Encl Serv device FUJITSU BBEXP 1303
SASAddress 500000e0e0b00c7d PhyNum 14

/pci@8d00/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00

Target a

Unit 0 Encl Serv device FUJITSU BBEXP 1303
SASAddress 500000e0e0b0063d PhyNum 14

/pci@8900/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00

Target a

Unit 0 Disk TOSHIBA AL13SEB600 3703 1172123568 Blocks, 600 GB
SASDeviceName 50000396f812051c SASAddress 50000396f812051e PhyNum 0

Target b

Unit 0 Disk TOSHIBA AL13SEB600 3703 1172123568 Blocks, 600 GB
SASDeviceName 50000396c828404c SASAddress 50000396c828404e PhyNum 1

Target c

Unit 0 Encl Serv device FUJITSU BBEXP 1303
SASAddress 500000e0e0b0063d PhyNum 14

/pci@8500/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00

Target a

Unit 0 Encl Serv device FUJITSU BBEXP 1303
SASAddress 500000e0e0b00ffd PhyNum 14

/pci@8100/pci@4/pci@0/pci@0/scsi@0
FCode Version 1.00.56, MPT Version 2.00, Firmware Version 20.00.07.00

Target a

```

Unit 0   Disk   TOSHIBA  AL13SEB600          3703    1172123568 Blocks, 600 GB
SASDeviceName 50000396f8120524 SASAddress 50000396f8120526 PhyNum 0
Target b
Unit 0   Disk   TOSHIBA  AL13SEB600AL14SE 3702    1172123568 Blocks, 600 GB
SASDeviceName 5000039678332c01 SASAddress 5000039678332c02 PhyNum 1
Target c
Unit 0   Encl Serv device   FUJITSU  BBEXP          1303
SASAddress 500000e0e0b00ffd PhyNum 14

```

<Execution results of show-devs command>

```

/pci@9700/pci@4
/pci@9700/pci@4/pci@0
/pci@9700/pci@4/pci@0/pci@10
/pci@9700/pci@4/pci@0/pci@10/network@0,1
/pci@9700/pci@4/pci@0/pci@10/network@0
/pci@9600/pci@4
/pci@9600/pci@4/pci@0
/pci@9600/pci@4/pci@0/pci@10
/pci@9600/pci@4/pci@0/pci@1
/pci@9500/pci@4
/pci@9500/pci@4/pci@0
/pci@9500/pci@4/pci@0/pci@1
/pci@9500/pci@4/pci@0/pci@0
/pci@9500/pci@4/pci@0/pci@0/scsi@0
/pci@9500/pci@4/pci@0/pci@0/scsi@0/disk
/pci@9500/pci@4/pci@0/pci@0/scsi@0/tape
/pci@9400/pci@4
/pci@9400/pci@4/pci@0
/pci@9400/pci@4/pci@0/pci@1
/pci@9400/pci@4/pci@0/pci@0
/pci@9400/pci@4/pci@0/pci@0/network@0,1
/pci@9400/pci@4/pci@0/pci@0/network@0
/pci@9300/pci@4
/pci@9300/pci@4/pci@0
/pci@9300/pci@4/pci@0/pci@9
/pci@9300/pci@4/pci@0/pci@8
/pci@9300/pci@4/pci@0/pci@8/network@0,3
/pci@9300/pci@4/pci@0/pci@8/network@0,2
/pci@9300/pci@4/pci@0/pci@8/network@0,1
/pci@9300/pci@4/pci@0/pci@8/network@0
/pci@9200/pci@4
/pci@9200/pci@4/pci@0
/pci@9200/pci@4/pci@0/pci@9
/pci@9200/pci@4/pci@0/pci@8
/pci@9100/pci@4
/pci@9100/pci@4/pci@0
/pci@9100/pci@4/pci@0/pci@11
/pci@9100/pci@4/pci@0/pci@1
/pci@9100/pci@4/pci@0/pci@0
/pci@9100/pci@4/pci@0/pci@1/usb@0
/pci@9100/pci@4/pci@0/pci@1/usb@0/hub@5
/pci@9100/pci@4/pci@0/pci@1/usb@0/hub@1
/pci@9100/pci@4/pci@0/pci@0/scsi@0
/pci@9100/pci@4/pci@0/pci@0/scsi@0/disk
/pci@9100/pci@4/pci@0/pci@0/scsi@0/tape

```

```
/pci@9000/pci@4
/pci@9000/pci@4/pci@0
/pci@9000/pci@4/pci@0/pci@11
/pci@9000/pci@4/pci@0/pci@0
/pci@9000/pci@4/pci@0/pci@0/network@0,1
/pci@9000/pci@4/pci@0/pci@0/network@0
/pci@8f00/pci@4
/pci@8f00/pci@4/pci@0
/pci@8f00/pci@4/pci@0/pci@10
/pci@8f00/pci@4/pci@0/pci@10/network@0,1
/pci@8f00/pci@4/pci@0/pci@10/network@0
/pci@8e00/pci@4
/pci@8e00/pci@4/pci@0
/pci@8e00/pci@4/pci@0/pci@10
/pci@8e00/pci@4/pci@0/pci@1
/pci@8d00/pci@4
/pci@8d00/pci@4/pci@0
/pci@8d00/pci@4/pci@0/pci@1
/pci@8d00/pci@4/pci@0/pci@0
/pci@8d00/pci@4/pci@0/pci@0/scsi@0
/pci@8d00/pci@4/pci@0/pci@0/scsi@0/disk
/pci@8d00/pci@4/pci@0/pci@0/scsi@0/tape
/pci@8c00/pci@4
/pci@8c00/pci@4/pci@0
/pci@8c00/pci@4/pci@0/pci@1
/pci@8c00/pci@4/pci@0/pci@0
/pci@8c00/pci@4/pci@0/pci@0/network@0,1
/pci@8c00/pci@4/pci@0/pci@0/network@0
/pci@8b00/pci@4
/pci@8b00/pci@4/pci@0
/pci@8b00/pci@4/pci@0/pci@9
/pci@8b00/pci@4/pci@0/pci@8
/pci@8b00/pci@4/pci@0/pci@8/network@0,3
/pci@8b00/pci@4/pci@0/pci@8/network@0,2
/pci@8b00/pci@4/pci@0/pci@8/network@0,1
/pci@8b00/pci@4/pci@0/pci@8/network@0
/pci@8a00/pci@4
/pci@8a00/pci@4/pci@0
/pci@8a00/pci@4/pci@0/pci@9
/pci@8a00/pci@4/pci@0/pci@8
/pci@8900/pci@4
/pci@8900/pci@4/pci@0
/pci@8900/pci@4/pci@0/pci@11
/pci@8900/pci@4/pci@0/pci@1
/pci@8900/pci@4/pci@0/pci@0
/pci@8900/pci@4/pci@0/pci@1/usb@0
/pci@8900/pci@4/pci@0/pci@1/usb@0/hub@5
/pci@8900/pci@4/pci@0/pci@1/usb@0/hub@1
/pci@8900/pci@4/pci@0/pci@0/scsi@0
/pci@8900/pci@4/pci@0/pci@0/scsi@0/disk
/pci@8900/pci@4/pci@0/pci@0/scsi@0/tape
/pci@8800/pci@4
/pci@8800/pci@4/pci@0
/pci@8800/pci@4/pci@0/pci@11
/pci@8800/pci@4/pci@0/pci@0
```

```
/pci@8800/pci@4/pci@0/pci@0/network@0,1
/pci@8800/pci@4/pci@0/pci@0/network@0
/pci@8700/pci@4
/pci@8700/pci@4/pci@0
/pci@8700/pci@4/pci@0/pci@10
/pci@8700/pci@4/pci@0/pci@10/network@0,1
/pci@8700/pci@4/pci@0/pci@10/network@0
/pci@8600/pci@4
/pci@8600/pci@4/pci@0
/pci@8600/pci@4/pci@0/pci@10
/pci@8600/pci@4/pci@0/pci@1
/pci@8500/pci@4
/pci@8500/pci@4/pci@0
/pci@8500/pci@4/pci@0/pci@1
/pci@8500/pci@4/pci@0/pci@0
/pci@8500/pci@4/pci@0/pci@0/scsi@0
/pci@8500/pci@4/pci@0/pci@0/scsi@0/disk
/pci@8500/pci@4/pci@0/pci@0/scsi@0/tape
/pci@8400/pci@4
/pci@8400/pci@4/pci@0
/pci@8400/pci@4/pci@0/pci@1
/pci@8400/pci@4/pci@0/pci@0
/pci@8400/pci@4/pci@0/pci@0/network@0,1
/pci@8400/pci@4/pci@0/pci@0/network@0
/pci@8300/pci@4
/pci@8300/pci@4/pci@0
/pci@8300/pci@4/pci@0/pci@9
/pci@8300/pci@4/pci@0/pci@8
/pci@8300/pci@4/pci@0/pci@8/network@0,3
/pci@8300/pci@4/pci@0/pci@8/network@0,2
/pci@8300/pci@4/pci@0/pci@8/network@0,1
/pci@8300/pci@4/pci@0/pci@8/network@0
/pci@8200/pci@4
/pci@8200/pci@4/pci@0
/pci@8200/pci@4/pci@0/pci@9
/pci@8200/pci@4/pci@0/pci@8
/pci@8100/pci@4
/pci@8100/pci@4/pci@0
/pci@8100/pci@4/pci@0/pci@11
/pci@8100/pci@4/pci@0/pci@1
/pci@8100/pci@4/pci@0/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@1
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@10
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@8
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@1
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0/pci@11
/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/pci@0/pci@11/pci@0/pci@10
<a>/pci@8100/pci@4/pci@0/pci@11/pci@0/pci@0/pci@0/pci@0/pci@1/p
```

diagxbu command

diagxbu is a command that diagnoses the crossbar units mounted in the specified SPARC M12-2S and the crossbar cables connected to the crossbar units.

To execute the diagxbu command, you need to specify the BB-ID of the SPARC M12-2S where the diagnosis begins, and also the BB-ID of the SPARC M12-2S connected as the communication destination.

If the diagnosis results show that a failure occurred in the crossbar cables and crossbar units, you can check it with the showlog error command. Also, if a crossbar unit is degraded, you can check it with the showstatus command.

The two ways of using diagxbu are as follows: specify the BB-ID of the cable connection destination; or specify the PPAR-ID of the cable connection destination.

- How to specify the BB-ID of the cable connection destination
If a physical system board (PSB) in the SPARC M12-2S connected by crossbar cables has not been incorporated into a physical partition (PPAR), or if the power to the incorporating physical partition is off, specify the BB-ID of the cable connection destination.
 - `bb_id`: Enter the BB-ID of the SPARC M12-2S where the diagnosis begins.
 - `target_bb`: Enter the BB-ID of the SPARC M12-2S connected by the crossbar cables (multiple BB_IDs can be specified).

```
XSCF> diagxbu -y -b bb_id -t target_bb
```

- How to specify the PPAR-ID of the cable connection destination
If the physical system board (PSB) in the SPARC M12-2S connected by crossbar cables has been incorporated into a physical partition and the power to the physical partition is on, specify the PPAR_ID of the cable connection destination.
 - `bb_id`: Enter the BB-ID of the SPARC M12-2S where the diagnosis begins.
 - `ppar_id`: Enter the PPAR_ID of the SPARC M12-2S connected by crossbar cables (only one PPAR_ID can be specified).

```
XSCF> diagxbu -y -b bb_id -p ppar_id
```

Example: Diagnosis of the crossbar cables and crossbar units between BB-ID 0 and BB-ID 1

```
XSCF> diagxbu -y -b 0 -t 1
XBU diagnosis is about to start, Continue?[y|n] :y
Power on sequence started. [7200sec]
0..... 30.end
XBU diagnosis started. [7200sec]
0..... 30..... 60..... 90.....120.....150.....180.....210.....240.....|
270.....300.....330.....360.....390.....420.....450.....480.....510.....|
540.....570.....600.....630.....660.....690.....720.....750...end
completed.
Power off sequence started. [1200sec]
```

```
0..... 30..... 60....end
completed.
*Note*
Please confirm the error of XBU by "showlogs error".
In addition, please confirm the degraded of XBU by "showstatus".
XSCF> showboards -a
PSB PPAR-ID(LSB) Assignment Pwr Conn Conf Test Fault
-----
00-0 00(00) Assigned n n n Passed Normal
01-0 01(00) Assigned n n n Passed Normal
02-0 02(00) Assigned n n n Passed Normal
03-0 03(00) Assigned n n n Passed Normal
XSCF>
```

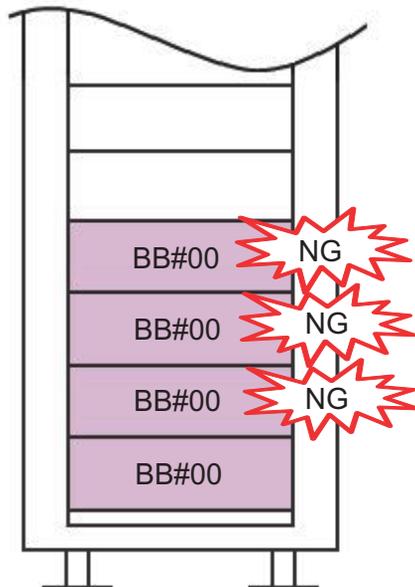
A.3 How to Restore a BB-ID From an Incorrect Setting

If a BB has an incorrectly set BB-ID, it does not start up normally when the input power is turned on. This section describes the procedures for restoring BB-IDs.

A.3.1 BB-IDs Not Set (BB-ID 00)

If all BB-IDs have been left at 00 without being appropriately set when the input power is turned on, restore them according to the following procedure.

Figure A-2 BB-IDs Left at 00 Without Being Set



1. **Connect the system management terminal to the serial port on the rear of the SPARC M12-2S.**
2. **Log in to the XSCF by using the default user account and authentication method.**
For details, see "6.3 Logging In to the XSCF."
3. **Execute the `restoredefaults -c factory` command to return the entire system to the factory default settings.**

```
XSCF> restoredefaults -c factory
```

WARNING:

If this system does not have BACK UP, this command will set all the user settable XSCF configuration parameters to their default value as they were set when the system was shipped out. Furthermore, this command will delete all logs in the intended chassis XSCF.

Check the man page of this command before you run it.

Continue?[yes/no](default no):**yes**

You must check the following points.

1. Have the ability to power cycle the system.
2. Have access to the serial console and hold the serial console of the XSCF to confirm the completion of the command.

If you answer "yes" this command will HALT the XSCF when it completes. You will need to power cycle the system after the XSCF BOOT STOP.

Do you really want to continue?

Continue?[yes/no](default no):yes

The initialization of XSCF will be started.

XSCF : all data clear (exclude SYSTEM ID data)

BACK UP : all data clear (exclude SYSTEM ID data)

XSCF will be automatically rebooted. Afterwards, XSCF will be initialized.

Continue?[yes/no](default no):yes

Disabling IDIAG prompt complete

Setting FRUID-ROM to writable complete

Clear BB-ID complete

Backup common DB complete

Syncing file systems... complete

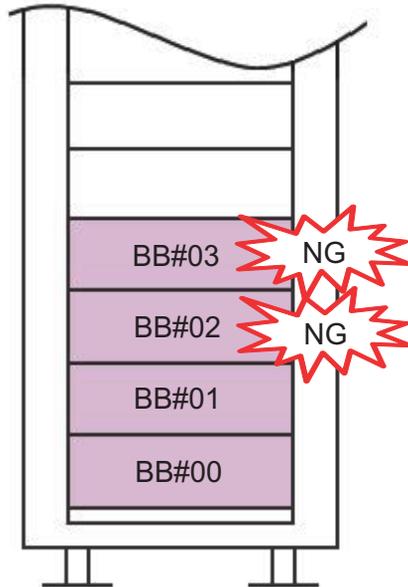
XSCF shutdown request was completed.

4. **Confirm that all LEDs on the operation panel are off.**
5. **Remove the power cords from the power supply units.**
6. **Change the BB-IDs to the correct settings.**
For details, see "[4.1 Setting the ID \(BB-ID\) Identifying the SPARC M12-2S.](#)"
7. **Perform steps 1 to 6 for every SPARC M12-2S.**
8. **Connect the power cords of every SPARC M12-2S to the power supply units.**
9. **Connect the system management terminal to the serial port of the master XSCF.**
10. **Proceed with work by returning to "[6.3 Logging In to the XSCF.](#)"**

A.3.2 Mistaken Settings for BB-IDs Other Than BB#00 or BB#01

If the settings of BB-IDs other than BB#00 or BB#01 are incorrect when the input power is turned on, restore them according to the following procedure.

Figure A-3 Mistaken Settings for BB-IDs Other Than BB#00 or BB#01

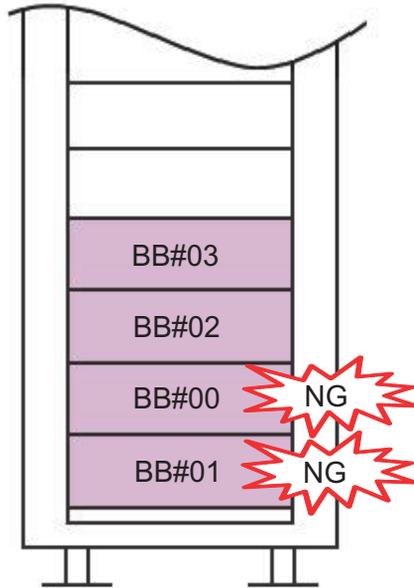


1. **Remove the power cords of every SPARC M12-2S from the power supply units.**
2. **Change the BB-IDs to the correct settings.**
For details, see ["4.1 Setting the ID \(BB-ID\) Identifying the SPARC M12-2S."](#)
3. **Connect the power cords of every SPARC M12-2S to the power supply units.**
4. **Connect the system management terminal to the serial port of the master XSCF.**
5. **Proceed with work by returning to ["6.3 Logging In to the XSCF."](#)**

A.3.3 Mistaken Settings for BB#00 and BB#01

If the settings of BB#00 and BB#01 are incorrect when the input power is turned on, restore them according to the following procedure.

Figure A-4 Mistaken Settings for the BB-IDs of BB#00 and BB#01



1. **Remove the power cords of every SPARC M12-2S from the power supply units.**
2. **Disconnect the XSCF BB control cables and XSCF DUAL control cable of BB#00 and BB#01.**
3. **Connect the system management terminal to the serial port of BB#00, and connect the power cords to the power supply units.**
4. **Log in to the XSCF by using the default user account and authentication method.**
For details, see "[6.3 Logging In to the XSCF.](#)"
5. **Execute the `restoredefaults -c factory` command to return the entire system to the factory default settings.**

```
XSCF> restoredefaults -c factory
```

```
WARNING:
```

```
  If this system does not have BACK UP, this command will set  
  all the user  
  settable XSCF configuration parameters to their default value  
  as they
```

were set when the system was shipped out.
Furthermore, this command will delete all logs in the intended chassis XSCF.

Check the man page of this command before you run it.

Continue?[yes/no] (default no): **yes**

You must check the following points.

1. Have the ability to power cycle the system.
2. Have access to the serial console and hold the serial console of the XSCF to confirm the completion of the command.

If you answer "yes" this command will HALT the XSCF when it completes.

You will need to power cycle the system after the XSCF BOOT STOP.

Do you really want to continue?

Continue?[yes/no] (default no): yes

The initialization of XSCF will be started.

XSCF : all data clear (exclude SYSTEM ID data)

BACK UP : all data clear (exclude SYSTEM ID data)

XSCF will be automatically rebooted. Afterwards, XSCF will be initialized.

Continue?[yes/no] (default no): yes

Disabling IDIAG prompt complete

Setting FRUID-ROM to writable complete

Clear BB-ID complete

Backup common DB complete

Syncing file systems... complete

XSCF shutdown request was completed.

6. **Confirm that all LEDs on the operation panel are off.**
7. **Remove the power cords from the power supply units.**
8. **Change the BB-ID to the correct setting.**
For details, see "[4.1 Setting the ID \(BB-ID\) Identifying the SPARC M12-2S.](#)"
9. **Perform steps 3 to 8 for BB#01.**
10. **Connect the XSCF BB control cables and XSCF DUAL control cable of BB#00 and BB#01.**
11. **Connect the power cords of every SPARC M12-2S to the power supply units.**
12. **Connect the system management terminal to the serial port of the master XSCF.**
13. **Proceed with work by returning to "[6.3 Logging In to the XSCF.](#)"**

Appendix B

Cable Connection Information on Building Block Configurations

This appendix provides cable connection routing diagrams and cable configuration lists for each building block configuration.

- [2BB Configuration \(Direct Connections Between Chassis\)](#)
- [3BB Configuration \(Direct Connections Between Chassis\)](#)
- [4BB Configuration \(Direct Connections Between Chassis\)](#)
- [From the 2BB Configuration to 8BB Configuration \(Connections via a Crossbar Box\)](#)
- [From the 9BB Configuration to 16BB Configuration \(Connections via a Crossbar Box\)](#)
- [Power Cord Connections in Expansion Racks](#)

B.1 2BB Configuration (Direct Connections Between Chassis)

The numbers enclosed in parentheses in [Figure B-1](#) indicate the connection order. For details, see [Table B-1](#).

Figure B-1 Crossbar Cable Connection Diagram

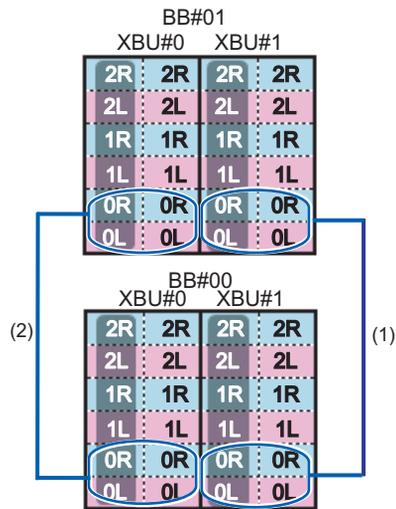


Table B-1 Crossbar Cable Correspondence Table

Connection Order	Connector 1	Connector 2	Remarks
1	BB00-XBU1-0L (pink)	BB01-XBU1-0L (pink)	BB#00 - BB#01
	BB00-XBU1-0L (black)	BB01-XBU1-0L (black)	
	BB00-XBU1-0R (light blue)	BB01-XBU1-0R (light blue)	
	BB00-XBU1-0R (black)	BB01-XBU1-0R (black)	
2	BB00-XBU0-0L (pink)	BB01-XBU0-0L (pink)	
	BB00-XBU0-0L (black)	BB01-XBU0-0L (black)	
	BB00-XBU0-0R (light blue)	BB01-XBU0-0R (light blue)	
	BB00-XBU0-0R (black)	BB01-XBU0-0R (black)	

Figure B-2 XSCF Cable Connection Diagram

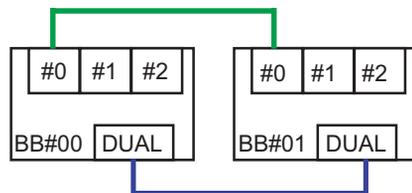


Table B-2 XSCF Cable Correspondence Table

Connected Chassis	Connector 1	Connector 2
BB#00 - BB#01	BB00-DUAL	BB01-DUAL
	BB00-XSCF0	BB01-XSCF0

B.2 3BB Configuration (Direct Connections Between Chassis)

The numbers enclosed in parentheses in [Figure B-3](#) indicate the connection order. For details, see [Table B-3](#).

Figure B-3 Crossbar Cable Connection Diagram

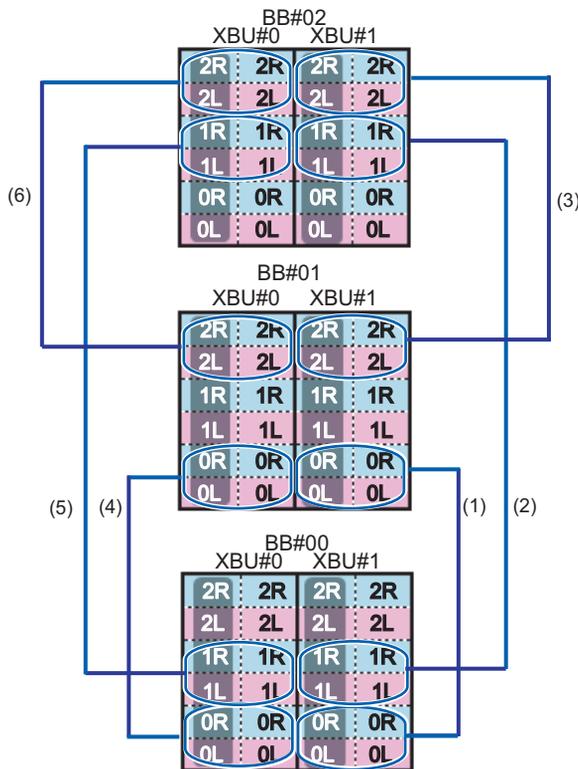


Table B-3 Crossbar Cable Correspondence Table

Connection Order	Connector 1	Connector 2	Remarks
1	BB00-XBU1-0L (pink)	BB01-XBU1-0L (pink)	BB#00 - BB#01
	BB00-XBU1-0L (black)	BB01-XBU1-0L (black)	
	BB00-XBU1-0R (light blue)	BB01-XBU1-0R (light blue)	
	BB00-XBU1-0R (black)	BB01-XBU1-0R (black)	
2	BB00-XBU1-1L (pink)	BB02-XBU1-1L (pink)	BB#00 - BB#02
	BB00-XBU1-1L (black)	BB02-XBU1-1L (black)	

Table B-3 Crossbar Cable Correspondence Table (*continued*)

Connection Order	Connector 1	Connector 2	Remarks
3	BB00-XBU1-1R (light blue)	BB02-XBU1-1R (light blue)	BB#01 - BB#02
	BB00-XBU1-1R (black)	BB02-XBU1-1R (black)	
	BB01-XBU1-2L (pink)	BB02-XBU1-2L (pink)	
	BB01-XBU1-2L (black)	BB02-XBU1-2L (black)	
	BB01-XBU1-2R (light blue)	BB02-XBU1-2R (light blue)	
	BB01-XBU1-2R (black)	BB02-XBU1-2R (black)	
4	BB00-XBU0-0L (pink)	BB01-XBU0-0L (pink)	BB#00 - BB#01
	BB00-XBU0-0L (black)	BB01-XBU0-0L (black)	
	BB00-XBU0-0R (light blue)	BB01-XBU0-0R (light blue)	
	BB00-XBU0-0R (black)	BB01-XBU0-0R (black)	
5	BB00-XBU0-1L (pink)	BB02-XBU0-1L (pink)	BB#00 - BB#02
	BB00-XBU0-1L (black)	BB02-XBU0-1L (black)	
	BB00-XBU0-1R (light blue)	BB02-XBU0-1R (light blue)	
	BB00-XBU0-1R (black)	BB02-XBU0-1R (black)	
6	BB01-XBU0-2L (pink)	BB02-XBU0-2L (pink)	BB#01 - BB#02
	BB01-XBU0-2L (black)	BB02-XBU0-2L (black)	
	BB01-XBU0-2R (light blue)	BB02-XBU0-2R (light blue)	
	BB01-XBU0-2R (black)	BB02-XBU0-2R (black)	

Figure B-4 XSCF Cable Connection Diagram

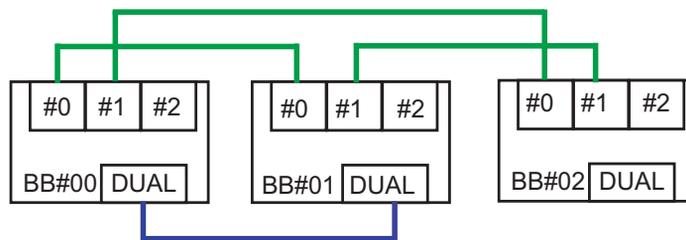


Table B-4 XSCF Cable Correspondence Table

Connected Chassis	Connector 1	Connector 2
BB#00 - BB#01	BB00-DUAL	BB01-DUAL
	BB00-XSCF0	BB01-XSCF0
BB#00 - BB#02	BB00-XSCF1	BB02-XSCF0
BB#01 - BB#02	BB01-XSCF1	BB02-XSCF1

B.3 4BB Configuration (Direct Connections Between Chassis)

The numbers enclosed in parentheses in [Figure B-5](#) indicate the connection order. For details, see [Table B-5](#).

Figure B-5 Crossbar Cable Connection Diagram

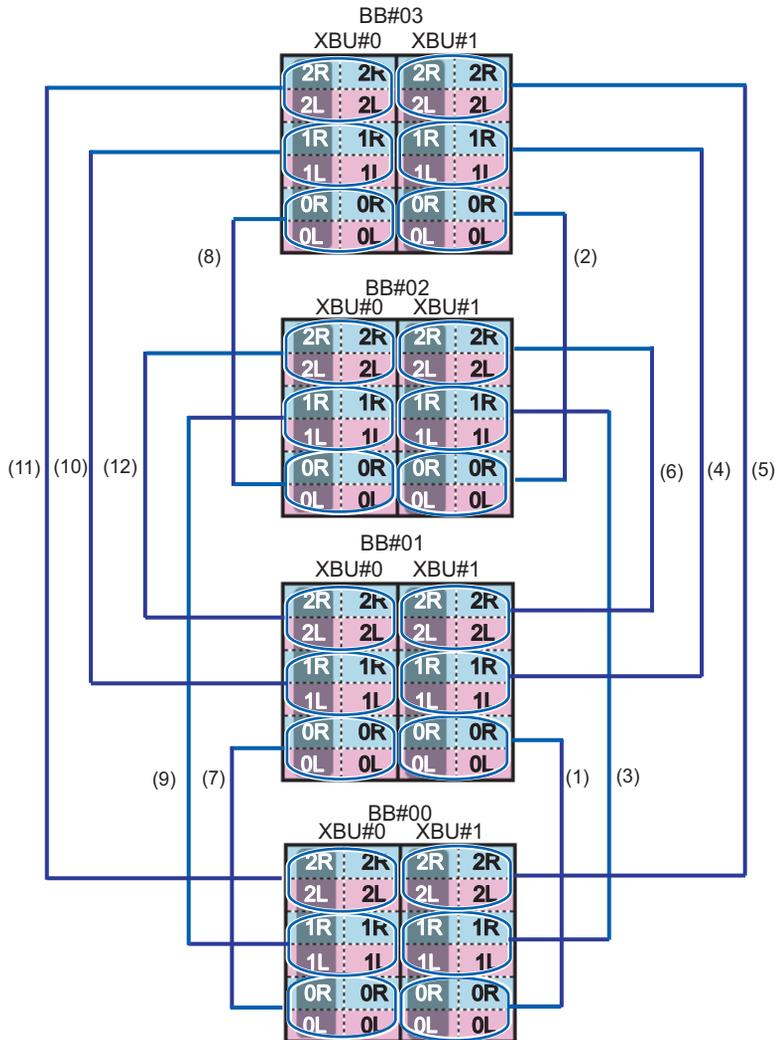


Table B-5 Crossbar Cable Correspondence Table

Connection Order	Connector 1	Connector 2	Remarks
1	BB00-XBU1-0L (pink)	BB01-XBU1-0L (pink)	BB#00 - BB#01
	BB00-XBU1-0L (black)	BB01-XBU1-0L (black)	
	BB00-XBU1-0R (light blue)	BB01-XBU1-0R (light blue)	
	BB00-XBU1-0R (black)	BB01-XBU1-0R (black)	
2	BB02-XBU1-0L (pink)	BB03-XBU1-0L (pink)	BB#02 - BB#03
	BB02-XBU1-0L (black)	BB03-XBU1-0L (black)	
	BB02-XBU1-0R (light blue)	BB03-XBU1-0R (light blue)	
	BB02-XBU1-0R (black)	BB03-XBU1-0R (black)	
3	BB00-XBU1-1L (pink)	BB02-XBU1-1L (pink)	BB#00 - BB#02
	BB00-XBU1-1L (black)	BB02-XBU1-1L (black)	
	BB00-XBU1-1R (light blue)	BB02-XBU1-1R (light blue)	
	BB00-XBU1-1R (black)	BB02-XBU1-1R (black)	
4	BB01-XBU1-1L (pink)	BB03-XBU1-1L (pink)	BB#01 - BB#03
	BB01-XBU1-1L (black)	BB03-XBU1-1L (black)	
	BB01-XBU1-1R (light blue)	BB03-XBU1-1R (light blue)	
	BB01-XBU1-1R (black)	BB03-XBU1-1R (black)	
5	BB00-XBU1-2L (pink)	BB03-XBU1-2L (pink)	BB#00 - BB#03
	BB00-XBU1-2L (black)	BB03-XBU1-2L (black)	
	BB00-XBU1-2R (light blue)	BB03-XBU1-2R (light blue)	
	BB00-XBU1-2R (black)	BB03-XBU1-2R (black)	
6	BB01-XBU1-2L (pink)	BB02-XBU1-2L (pink)	BB#01 - BB#02
	BB01-XBU1-2L (black)	BB02-XBU1-2L (black)	
	BB01-XBU1-2R (light blue)	BB02-XBU1-2R (light blue)	
	BB01-XBU1-2R (black)	BB02-XBU1-2R (black)	
7	BB00-XBU0-0L (pink)	BB01-XBU0-0L (pink)	BB#00 - BB#01
	BB00-XBU0-0L (black)	BB01-XBU0-0L (black)	
	BB00-XBU0-0R (light blue)	BB01-XBU0-0R (light blue)	
	BB00-XBU0-0R (black)	BB01-XBU0-0R (black)	
8	BB02-XBU0-0L (pink)	BB03-XBU0-0L (pink)	BB#02 - BB#03
	BB02-XBU0-0L (black)	BB03-XBU0-0L (black)	
	BB02-XBU0-0R (light blue)	BB03-XBU0-0R (light blue)	
	BB02-XBU0-0R (black)	BB03-XBU0-0R (black)	
9	BB00-XBU0-1L (pink)	BB02-XBU0-1L (pink)	BB#00 - BB#02
	BB00-XBU0-1L (black)	BB02-XBU0-1L (black)	

Table B-5 Crossbar Cable Correspondence Table (*continued*)

Connection Order	Connector 1	Connector 2	Remarks
	BB00-XBU0-1R (light blue)	BB02-XBU0-1R (light blue)	
	BB00-XBU0-1R (black)	BB02-XBU0-1R (black)	
10	BB01-XBU0-1L (pink)	BB03-XBU0-1L (pink)	BB#01 - BB#03
	BB01-XBU0-1L (black)	BB03-XBU0-1L (black)	
	BB01-XBU0-1R (light blue)	BB03-XBU0-1R (light blue)	
	BB01-XBU0-1R (black)	BB03-XBU0-1R (black)	
11	BB00-XBU0-2L (pink)	BB03-XBU0-2L (pink)	BB#00 - BB#03
	BB00-XBU0-2L (black)	BB03-XBU0-2L (black)	
	BB00-XBU0-2R (light blue)	BB03-XBU0-2R (light blue)	
	BB00-XBU0-2R (black)	BB03-XBU0-2R (black)	
12	BB01-XBU0-2L (pink)	BB02-XBU0-2L (pink)	BB#01 - BB#02
	BB01-XBU0-2L (black)	BB02-XBU0-2L (black)	
	BB01-XBU0-2R (light blue)	BB02-XBU0-2R (light blue)	
	BB01-XBU0-2R (black)	BB02-XBU0-2R (black)	

Figure B-6 XSCF Cable Connection Diagram

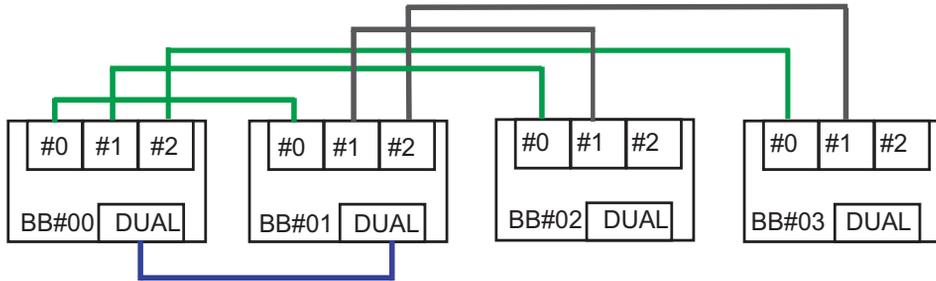


Table B-6 XSCF Cable Correspondence Table

Connected Chassis	Connector 1	Connector 2
BB#00 - BB#01	BB00-DUAL	BB01-DUAL
	BB00-XSCF0	BB01-XSCF0
BB#00 - BB#02	BB00-XSCF1	BB02-XSCF0
BB#00 - BB#03	BB00-XSCF2	BB03-XSCF0
BB#01 - BB#02	BB01-XSCF1	BB02-XSCF1
BB#01 - BB#03	BB01-XSCF2	BB03-XSCF1

B.4 From the 2BB Configuration to 8BB Configuration (Connections via a Crossbar Box)

Figure B-7 Crossbar Cable Correspondence Diagram

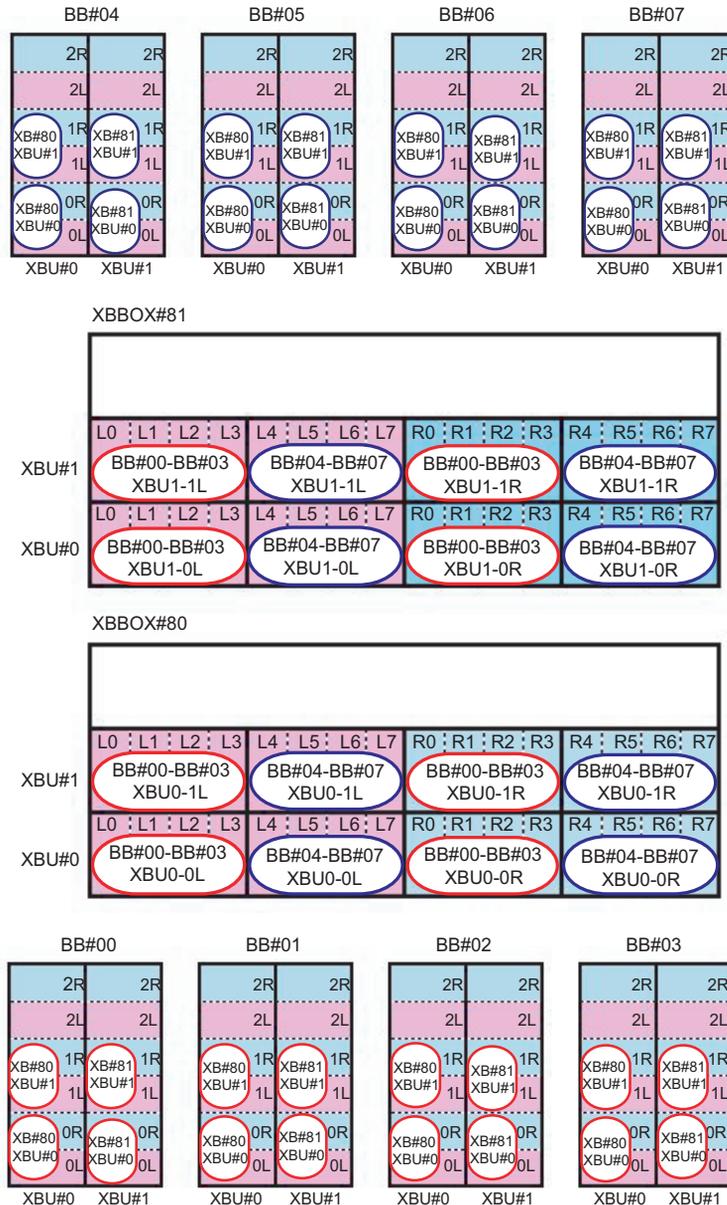


Table B-7 Crossbar Cable Correspondence Table (0 System)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#00 - XBB0X#80	BB00-XBU0-0L (pink)	XB80-XBU0-L0 (pink)
	BB00-XBU0-0L (black)	XB80-XBU0-L0 (black)
	BB00-XBU0-0R (light blue)	BB80-XBU0-R0 (light blue)
	BB00-XBU0-0R (black)	XB80-XBU0-R0 (black)
	BB00-XBU0-1L (pink)	XB80-XBU1-L0 (pink)
	BB00-XBU0-1L (black)	XB80-XBU1-L0 (black)
	BB00-XBU0-1R (light blue)	XB80-XBU1-R0 (light blue)
	BB00-XBU0-1R (black)	XB80-XBU1-R0 (black)
BB#01 - XBB0X#80	BB01-XBU0-0L (pink)	XB80-XBU0-L1 (pink)
	BB01-XBU0-0L (black)	XB80-XBU0-L1 (black)
	BB01-XBU0-0R (light blue)	XB80-XBU0-R1 (light blue)
	BB01-XBU0-0R (black)	XB80-XBU0-R1 (black)
	BB01-XBU0-1L (pink)	XB80-XBU1-L1 (pink)
	BB01-XBU0-1L (black)	XB80-XBU1-L1 (black)
	BB01-XBU0-1R (light blue)	XB80-XBU1-R1 (light blue)
	BB01-XBU0-1R (black)	XB80-XBU1-R1 (black)
BB#02 - XBB0X#80	BB02-XBU0-0L (pink)	XB80-XBU0-L2 (pink)
	BB02-XBU0-0L (black)	XB80-XBU0-L2 (black)
	BB02-XBU0-0R (light blue)	XB80-XBU0-R2 (light blue)
	BB02-XBU0-0R (black)	XB80-XBU0-R2 (black)
	BB02-XBU0-1L (pink)	XB80-XBU1-L2 (pink)
	BB02-XBU0-1L (black)	XB80-XBU1-L2 (black)
	BB02-XBU0-1R (light blue)	XB80-XBU1-R2 (light blue)
	BB02-XBU0-1R (black)	XB80-XBU1-R2 (black)
BB#03 - XBB0X#80	BB03-XBU0-0L (pink)	XB80-XBU0-L3 (pink)
	BB03-XBU0-0L (black)	XB80-XBU0-L3 (black)
	BB03-XBU0-0R (light blue)	XB80-XBU0-R3 (light blue)
	BB03-XBU0-0R (black)	XB80-XBU0-R3 (black)
	BB03-XBU0-1L (pink)	XB80-XBU1-L3 (pink)
	BB03-XBU0-1L (black)	XB80-XBU1-L3 (black)
	BB03-XBU0-1R (light blue)	XB80-XBU1-R3 (light blue)
	BB03-XBU0-1R (black)	XB80-XBU1-R3 (black)
BB#04 - XBB0X#80	BB04-XBU0-0L (pink)	XB80-XBU0-L4 (pink)
	BB04-XBU0-0L (black)	XB80-XBU0-L4 (black)

Table B-7 Crossbar Cable Correspondence Table (0 System) *(continued)*

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#05 - XBB0X#80	BB04-XBU0-0R (light blue)	XB80-XBU0-R4 (light blue)
	BB04-XBU0-0R (black)	XB80-XBU0-R4 (black)
	BB04-XBU0-1L (pink)	XB80-XBU1-L4 (pink)
	BB04-XBU0-1L (black)	XB80-XBU1-L4 (black)
	BB04-XBU0-1R (light blue)	XB80-XBU1-R4 (light blue)
	BB04-XBU0-1R (black)	XB80-XBU1-R4 (black)
	BB05-XBU0-0L (pink)	XB80-XBU0-L5 (pink)
	BB05-XBU0-0L (black)	XB80-XBU0-L5 (black)
	BB05-XBU0-0R (light blue)	XB80-XBU0-R5 (light blue)
	BB05-XBU0-0R (black)	XB80-XBU0-R5 (black)
	BB05-XBU0-1L (pink)	XB80-XBU1-L5 (pink)
	BB05-XBU0-1L (black)	XB80-XBU1-L5 (black)
	BB05-XBU0-1R (light blue)	XB80-XBU1-R5 (light blue)
	BB05-XBU0-1R (black)	XB80-XBU1-R5 (black)
BB#06 - XBB0X#80	BB06-XBU0-0L (pink)	XB80-XBU0-L6 (pink)
	BB06-XBU0-0L (black)	XB80-XBU0-L6 (black)
	BB06-XBU0-0R (light blue)	XB80-XBU0-R6 (light blue)
	BB06-XBU0-0R (black)	XB80-XBU0-R6 (black)
	BB06-XBU0-1L (pink)	XB80-XBU1-L6 (pink)
	BB06-XBU0-1L (black)	XB80-XBU1-L6 (black)
	BB06-XBU0-1R (light blue)	XB80-XBU1-R6 (light blue)
	BB06-XBU0-1R (black)	XB80-XBU1-R6 (black)
BB#07 - XBB0X#80	BB07-XBU0-0L (pink)	XB80-XBU0-L7 (pink)
	BB07-XBU0-0L (black)	XB80-XBU0-L7 (black)
	BB07-XBU0-0R (light blue)	XB80-XBU0-R7 (light blue)
	BB07-XBU0-0R (black)	XB80-XBU0-R7 (black)
	BB07-XBU0-1L (pink)	XB80-XBU1-L7 (pink)
	BB07-XBU0-1L (black)	XB80-XBU1-L7 (black)
	BB07-XBU0-1R (light blue)	XB80-XBU1-R7 (light blue)
	BB07-XBU0-1R (black)	XB80-XBU1-R7 (black)

Table B-8 Crossbar Cable Correspondence Table (1 System)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#00 - XBBOX#81	BB00-XBU1-0L (pink)	XB81-XBU0-L0 (pink)
	BB00-XBU1-0L (black)	XB81-XBU0-L0 (black)
	BB00-XBU1-0R (light blue)	XB81-XBU0-R0 (light blue)
	BB00-XBU1-0R (black)	XB81-XBU0-R0 (black)
	BB00-XBU1-1L (pink)	XB81-XBU1-L0 (pink)
	BB00-XBU1-1L (black)	XB81-XBU1-L0 (black)
	BB00-XBU1-1R (light blue)	XB81-XBU1-R0 (light blue)
	BB00-XBU1-1R (black)	XB81-XBU1-R0 (black)
BB#01 - XBBOX#81	BB01-XBU1-0L (pink)	XB81-XBU0-L1 (pink)
	BB01-XBU1-0L (black)	XB81-XBU0-L1 (black)
	BB01-XBU1-0R (light blue)	XB81-XBU0-R1 (light blue)
	BB01-XBU1-0R (black)	XB81-XBU0-R1 (black)
	BB01-XBU1-1L (pink)	XB81-XBU1-L1 (pink)
	BB01-XBU1-1L (black)	XB81-XBU1-L1 (black)
	BB01-XBU1-1R (light blue)	XB81-XBU1-R1 (light blue)
	BB01-XBU1-1R (black)	XB81-XBU1-R1 (black)
BB#02 - XBBOX#81	BB02-XBU1-0L (pink)	XB81-XBU0-L2 (pink)
	BB02-XBU1-0L (black)	XB81-XBU0-L2 (black)
	BB02-XBU1-0R (light blue)	XB81-XBU0-R2 (light blue)
	BB02-XBU1-0R (black)	XB81-XBU0-R2 (black)
	BB02-XBU1-1L (pink)	XB81-XBU1-L2 (pink)
	BB02-XBU1-1L (black)	XB81-XBU1-L2 (black)
	BB02-XBU1-1R (light blue)	XB81-XBU1-R2 (light blue)
	BB02-XBU1-1R (black)	XB81-XBU1-R2 (black)
BB#03 - XBBOX#81	BB03-XBU1-0L (pink)	BB02-XBU1-2L (pink)
	BB03-XBU1-0L (black)	XB81-XBU0-L3 (black)
	BB03-XBU1-0R (light blue)	XB81-XBU0-R3 (light blue)
	BB03-XBU1-0R (black)	XB81-XBU0-R3 (black)
	BB03-XBU1-1L (pink)	XB81-XBU1-L3 (pink)
	BB03-XBU1-1L (black)	XB81-XBU1-L3 (black)
	BB03-XBU1-1R (light blue)	XB81-XBU1-R3 (light blue)
	BB03-XBU1-1R (black)	XB81-XBU1-R3 (black)
BB#04 - XBBOX#81	BB04-XBU1-0L (pink)	XB81-XBU0-L4 (pink)
	BB04-XBU1-0L (black)	XB81-XBU0-L4 (black)

Table B-8 Crossbar Cable Correspondence Table (1 System) *(continued)*

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#05 - XBBOX#81	BB04-XBU1-0R (light blue)	XB81-XBU0-R4 (light blue)
	BB04-XBU1-0R (black)	XB81-XBU0-R4 (black)
	BB04-XBU1-1L (pink)	XB81-XBU1-L4 (pink)
	BB04-XBU1-1L (black)	XB81-XBU1-L4 (black)
	BB04-XBU1-1R (light blue)	XB81-XBU1-R4 (light blue)
	BB04-XBU1-1R (black)	XB81-XBU1-R4 (black)
	BB05-XBU1-0L (pink)	XB81-XBU0-L5 (pink)
	BB05-XBU1-0L (black)	XB81-XBU0-L5 (black)
	BB05-XBU1-0R (light blue)	XB81-XBU0-R5 (light blue)
	BB05-XBU1-0R (black)	XB81-XBU0-R5 (black)
	BB05-XBU1-1L (pink)	XB81-XBU1-L5 (pink)
	BB05-XBU1-1L (black)	XB81-XBU1-L5 (black)
	BB05-XBU1-1R (light blue)	XB81-XBU1-R5 (light blue)
	BB05-XBU1-1R (black)	XB81-XBU1-R5 (black)
BB#06 - XBBOX#81	BB06-XBU1-0L (pink)	XB81-XBU0-L6 (pink)
	BB06-XBU1-0L (black)	XB81-XBU0-L6 (black)
	BB06-XBU1-0R (light blue)	XB81-XBU0-R6 (light blue)
	BB06-XBU1-0R (black)	XB81-XBU0-R6 (black)
	BB06-XBU1-1L (pink)	XB81-XBU1-L6 (pink)
	BB06-XBU1-1L (black)	XB81-XBU1-L6 (black)
	BB06-XBU1-1R (light blue)	XB81-XBU1-R6 (light blue)
	BB06-XBU1-1R (black)	XB81-XBU1-R6 (black)
BB#07 - XBBOX#81	BB07-XBU1-0L (pink)	XB81-XBU0-L7 (pink)
	BB07-XBU1-0L (black)	XB81-XBU0-L7 (black)
	BB07-XBU1-0R (light blue)	XB81-XBU0-R7 (light blue)
	BB07-XBU1-0R (black)	XB81-XBU0-R7 (black)
	BB07-XBU1-1L (pink)	XB81-XBU1-L7 (pink)
	BB07-XBU1-1L (black)	XB81-XBU1-L7 (black)
	BB07-XBU1-1R (light blue)	XB81-XBU1-R7 (light blue)
	BB07-XBU1-1R (black)	XB81-XBU1-R7 (black)

Figure B-8 XSCF Cable Connection Diagram

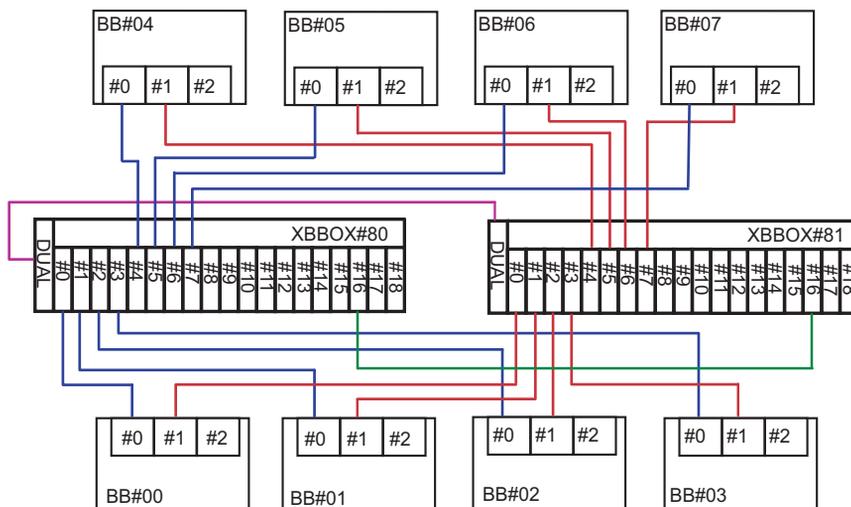
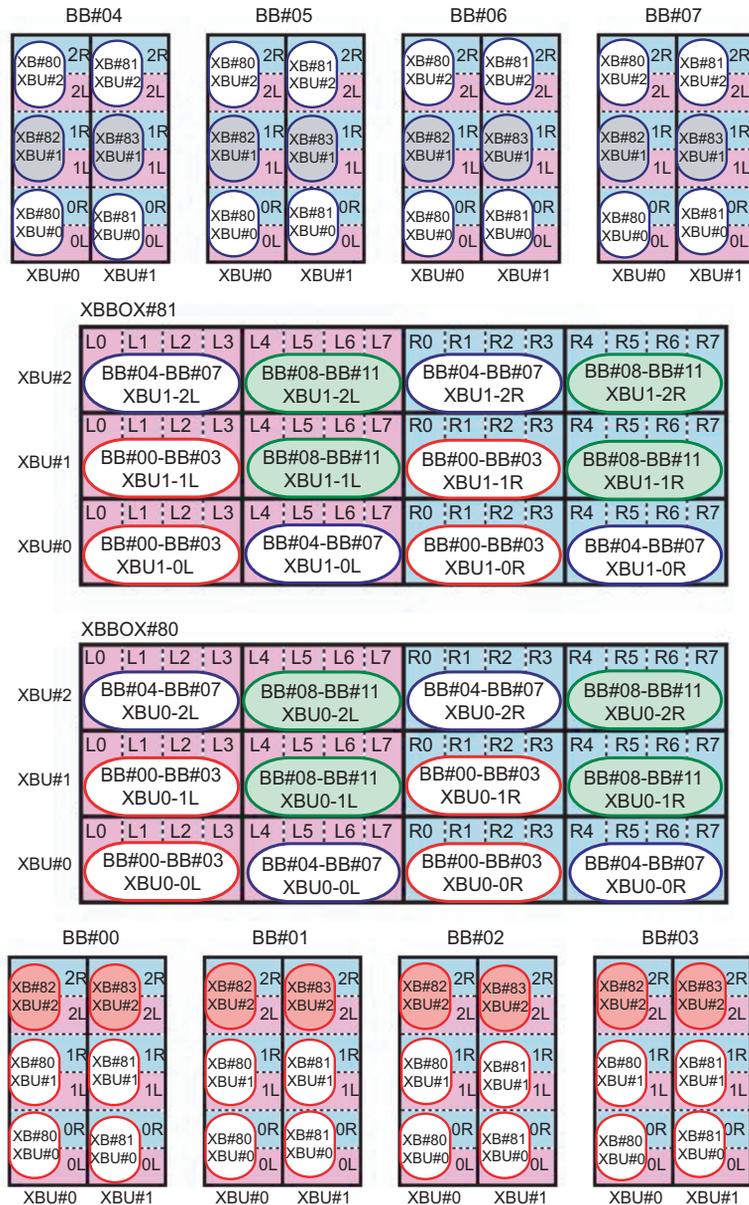


Table B-9 XSCF Cable Correspondence Table

Connected Chassis	Connector 1	Connector 2
XBBOX#80 - XBBOX#81	XB80 - DUAL	XB81 - DUAL
BB#00 - XBBOX#80	BB00 - XSCF0	XB80 - XSCF0
BB#01 - XBBOX#80	BB01 - XSCF0	XB80-XSCF1
BB#02 - XBBOX#80	BB02 - XSCF0	XB80 - XSCF2
BB#03 - XBBOX#80	BB03 - XSCF0	XB80 - XSCF3
BB#04 - XBBOX#80	BB04 - XSCF0	XB80 - XSCF4
BB#05 - XBBOX#80	BB05 - XSCF0	XB80 - XSCF5
BB#06 - XBBOX#80	BB06 - XSCF0	XB80 - XSCF6
BB#07 - XBBOX#80	BB07 - XSCF0	XB80 - XSCF7
BB#00 - XBBOX#81	BB00 - XSCF1	XB81 - XSCF0
BB#01 - XBBOX#81	BB01 - XSCF1	XB81 - XSCF1
BB#02 - XBBOX#81	BB02 - XSCF1	XB81 - XSCF2
BB#03 - XBBOX#81	BB03 - XSCF1	XB81 - XSCF3
BB#04 - XBBOX#81	BB04 - XSCF1	XB81 - XSCF4
BB#05 - XBBOX#81	BB05 - XSCF1	XB81 - XSCF5
BB#06 - XBBOX#81	BB06 - XSCF1	XB81 - XSCF6
BB#07 - XBBOX#81	BB07 - XSCF1	XB81 - XSCF7
XBBOX#80 - XBBOX#81	XB80 - XSCF16	XB81 - XSCF16

B.5 From the 9BB Configuration to 16BB Configuration (Connections via a Crossbar Box)

Figure B-9 Crossbar Cable Correspondence Diagram (Expansion Rack 1 Side)



Note - The filled parts in the figure indicate cables across racks. Refer to the correspondence tables in [Table B-14](#) and [Table B-15](#).

Table B-10 Crossbar Cable Correspondence Table (0 System of Expansion Rack 1)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#00 - XBB0X#80	BB00-XBU0-0L (pink)	XB80-XBU0-L0 (pink)
	BB00-XBU0-0L (black)	XB80-XBU0-L0 (black)
	BB00-XBU0-0R (light blue)	BB80-XBU0-R0 (light blue)
	BB00-XBU0-0R (black)	XB80-XBU0-R0 (black)
	BB00-XBU0-1L (pink)	XB80-XBU1-L0 (pink)
	BB00-XBU0-1L (black)	XB80-XBU1-L0 (black)
	BB00-XBU0-1R (light blue)	XB80-XBU1-R0 (light blue)
	BB00-XBU0-1R (black)	XB80-XBU1-R0 (black)
BB#01 - XBB0X#80	BB01-XBU0-0L (pink)	XB80-XBU0-L1 (pink)
	BB01-XBU0-0L (black)	XB80-XBU0-L1 (black)
	BB01-XBU0-0R (light blue)	XB80-XBU0-R1 (light blue)
	BB01-XBU0-0R (black)	XB80-XBU0-R1 (black)
	BB01-XBU0-1L (pink)	XB80-XBU1-L1 (pink)
	BB01-XBU0-1L (black)	XB80-XBU1-L1 (black)
	BB01-XBU0-1R (light blue)	XB80-XBU1-R1 (light blue)
	BB01-XBU0-1R (black)	XB80-XBU1-R1 (black)
BB#02 - XBB0X#80	BB02-XBU0-0L (pink)	XB80-XBU0-L2 (pink)
	BB02-XBU0-0L (black)	XB80-XBU0-L2 (black)
	BB02-XBU0-0R (light blue)	XB80-XBU0-R2 (light blue)
	BB02-XBU0-0R (black)	XB80-XBU0-R2 (black)
	BB02-XBU0-1L (pink)	XB80-XBU1-L2 (pink)
	BB02-XBU0-1L (black)	XB80-XBU1-L2 (black)
	BB02-XBU0-1R (light blue)	XB80-XBU1-R2 (light blue)
	BB02-XBU0-1R (black)	XB80-XBU1-R2 (black)
BB#03 - XBB0X#80	BB03-XBU0-0L (pink)	XB80-XBU0-L3 (pink)
	BB03-XBU0-0L (black)	XB80-XBU0-L3 (black)
	BB03-XBU0-0R (light blue)	XB80-XBU0-R3 (light blue)
	BB03-XBU0-0R (black)	XB80-XBU0-R3 (black)
	BB03-XBU0-1L (pink)	XB80-XBU1-L3 (pink)
	BB03-XBU0-1L (black)	XB80-XBU1-L3 (black)
	BB03-XBU0-1R (light blue)	XB80-XBU1-R3 (light blue)

Table B-10 Crossbar Cable Correspondence Table (0 System of Expansion Rack 1)
(continued)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#04 - XBB0X#80	BB03-XBU0-1R (black)	XB80-XBU1-R3 (black)
	BB04-XBU0-0L (pink)	XB80-XBU0-L4 (pink)
	BB04-XBU0-0L (black)	XB80-XBU0-L4 (black)
	BB04-XBU0-0R (light blue)	XB80-XBU0-R4 (light blue)
	BB04-XBU0-0R (black)	XB80-XBU0-R4 (black)
	BB04-XBU0-2L (pink)	XB80-XBU2-L0 (pink)
	BB04-XBU0-2L (black)	XB80-XBU2-L0 (black)
	BB04-XBU0-2R (light blue)	XB80-XBU2-R0 (light blue)
BB#05 - XBB0X#80	BB04-XBU0-2R (black)	XB80-XBU2-R0 (black)
	BB05-XBU0-0L (pink)	XB80-XBU0-L5 (pink)
	BB05-XBU0-0L (black)	XB80-XBU0-L5 (black)
	BB05-XBU0-0R (light blue)	XB80-XBU0-R5 (light blue)
	BB05-XBU0-0R (black)	XB80-XBU0-R5 (black)
	BB05-XBU0-2L (pink)	XB80-XBU2-L1 (pink)
	BB05-XBU0-2L (black)	XB80-XBU2-L1 (black)
	BB05-XBU0-2R (light blue)	XB80-XBU2-R1 (light blue)
BB#06 - XBB0X#80	BB05-XBU0-2R (blue)	XB80-XBU2-R1 (black)
	BB06-XBU0-0L (pink)	XB80-XBU0-L6 (pink)
	BB06-XBU0-0L (black)	XB80-XBU0-L6 (black)
	BB06-XBU0-0R (light blue)	XB80-XBU0-R6 (light blue)
	BB06-XBU0-0R (black)	XB80-XBU0-R6 (black)
	BB06-XBU0-2L (pink)	XB80-XBU2-L2 (pink)
	BB06-XBU0-2L (black)	XB80-XBU2-L2 (black)
	BB06-XBU0-2R (light blue)	XB80-XBU2-R2 (light blue)
BB#07 - XBB0X#80	BB06-XBU0-2R (black)	XB80-XBU2-R2 (black)
	BB07-XBU0-0L (pink)	XB80-XBU0-L7 (pink)
	BB07-XBU0-0L (black)	XB80-XBU0-L7 (black)
	BB07-XBU0-0R (light blue)	XB80-XBU0-R7 (light blue)
	BB07-XBU0-0R (black)	XB80-XBU0-R7 (black)
	BB07-XBU0-2L (pink)	XB80-XBU2-L3 (pink)
	BB07-XBU0-2L (black)	XB80-XBU2-L3 (black)
	BB07-XBU0-2R (light blue)	XB80-XBU2-R3 (light blue)
	BB07-XBU0-2R (black)	XB80-XBU2-R3 (black)

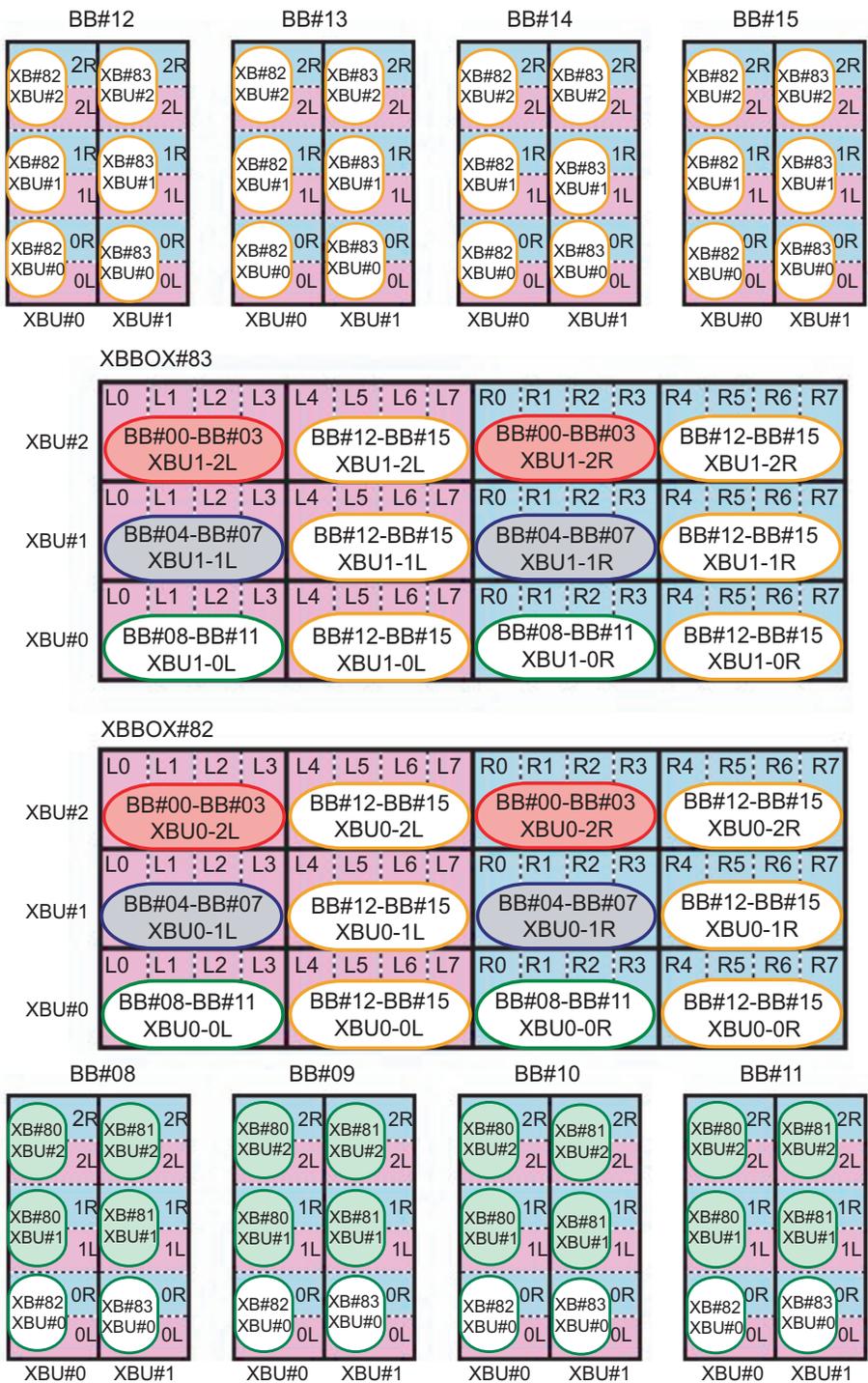
Table B-11 Crossbar Cable Correspondence Table (1 System of Expansion Rack 1)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#00 - XBB0X#81	BB00-XBU1-0L (pink)	XB81-XBU0-L0 (pink)
	BB00-XBU1-0L (black)	XB81-XBU0-L0 (black)
	BB00-XBU1-0R (light blue)	XB81-XBU0-R0 (light blue)
	BB00-XBU1-0R (black)	XB81-XBU0-R0 (black)
	BB00-XBU1-1L (pink)	XB81-XBU1-L0 (pink)
	BB00-XBU1-1L (black)	XB81-XBU1-L0 (black)
	BB00-XBU1-1R (light blue)	XB81-XBU1-R0 (light blue)
	BB00-XBU1-1R (black)	XB81-XBU1-R0 (black)
BB#01 - XBB0X#81	BB01-XBU1-0L (pink)	XB81-XBU0-L1 (pink)
	BB01-XBU1-0L (black)	XB81-XBU0-L1 (black)
	BB01-XBU1-0R (light blue)	XB81-XBU0-R1 (light blue)
	BB01-XBU1-0R (black)	XB81-XBU0-R1 (black)
	BB01-XBU1-1L (pink)	XB81-XBU1-L1 (pink)
	BB01-XBU1-1L (black)	XB81-XBU1-L1 (black)
	BB01-XBU1-1R (light blue)	XB81-XBU1-R1 (light blue)
	BB01-XBU1-1R (black)	XB81-XBU1-R1 (black)
BB#02 - XBB0X#81	BB02-XBU1-0L (pink)	XB81-XBU0-L2 (pink)
	BB02-XBU1-0L (black)	XB81-XBU0-L2 (black)
	BB02-XBU1-0R (light blue)	XB81-XBU0-R2 (light blue)
	BB02-XBU1-0R (black)	XB81-XBU0-R2 (black)
	BB02-XBU1-1L (pink)	XB81-XBU1-L2 (pink)
	BB02-XBU1-1L (black)	XB81-XBU1-L2 (black)
	BB02-XBU1-1R (light blue)	XB81-XBU1-R2 (light blue)
	BB02-XBU1-1R (black)	XB81-XBU1-R2 (black)
BB#03 - XBB0X#81	BB03-XBU1-0L (pink)	BB02-XBU1-2L (pink)
	BB03-XBU1-0L (black)	XB81-XBU0-L3 (black)
	BB03-XBU1-0R (light blue)	XB81-XBU0-R3 (light blue)
	BB03-XBU1-0R (black)	XB81-XBU0-R3 (black)
	BB03-XBU1-1L (pink)	XB81-XBU1-L3 (pink)
	BB03-XBU1-1L (black)	XB81-XBU1-L3 (black)
	BB03-XBU1-1R (light blue)	XB81-XBU1-R3 (light blue)
	BB03-XBU1-1R (black)	XB81-XBU1-R3 (black)
BB#04 - XBB0X#81	BB04-XBU1-0L (pink)	XB81-XBU0-L4 (pink)
	BB04-XBU1-0L (black)	XB81-XBU0-L4 (black)

Table B-11 Crossbar Cable Correspondence Table (1 System of Expansion Rack 1)
(continued)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#05 - XBB0X#81	BB04-XBU1-0R (light blue)	XB81-XBU0-R4 (light blue)
	BB04-XBU1-0R (black)	XB81-XBU0-R4 (black)
	BB04-XBU1-2L (pink)	XB81-XBU2-L0 (pink)
	BB04-XBU1-2L (black)	XB81-XBU2-L0 (black)
	BB04-XBU1-2R (light blue)	XB81-XBU2-R0 (light blue)
	BB04-XBU1-2R (black)	XB81-XBU2-R0 (black)
	BB05-XBU1-0L (pink)	XB81-XBU0-L5 (pink)
	BB05-XBU1-0L (black)	XB81-XBU0-L5 (black)
	BB05-XBU1-0R (light blue)	XB81-XBU0-R5 (light blue)
	BB05-XBU1-0R (black)	XB81-XBU0-R5 (black)
	BB05-XBU1-2L (pink)	XB81-XBU2-L1 (pink)
	BB05-XBU1-2L (black)	XB81-XBU2-L1 (black)
	BB05-XBU1-2R (light blue)	XB81-XBU2-R1 (light blue)
	BB05-XBU1-2R (black)	XB81-XBU2-R1 (black)
BB#06 - XBB0X#81	BB06-XBU1-0L (pink)	XB81-XBU0-L6 (pink)
	BB06-XBU1-0L (black)	XB81-XBU0-L6 (black)
	BB06-XBU1-0R (light blue)	XB81-XBU0-R6 (light blue)
	BB06-XBU1-0R (black)	XB81-XBU0-R6 (black)
	BB06-XBU1-2L (pink)	XB81-XBU2-L2 (pink)
	BB06-XBU1-2L (black)	XB81-XBU2-L2 (black)
	BB06-XBU1-2R (light blue)	XB81-XBU2-R2 (light blue)
	BB06-XBU1-2R (black)	XB81-XBU2-R2 (black)
BB#07 - XBB0X#81	BB07-XBU1-0L (pink)	XB81-XBU0-L7 (pink)
	BB07-XBU1-0L (black)	XB81-XBU0-L7 (black)
	BB07-XBU1-0R (light blue)	XB81-XBU0-R7 (light blue)
	BB07-XBU1-0R (black)	XB81-XBU0-R7 (black)
	BB07-XBU1-2L (pink)	XB81-XBU2-L3 (pink)
	BB07-XBU1-2L (black)	XB81-XBU2-L3 (black)
	BB07-XBU1-2R (light blue)	XB81-XBU2-R3 (light blue)
	BB07-XBU1-2R (black)	XB81-XBU2-R3 (black)

Figure B-10 Crossbar Cable Correspondence Diagram (Expansion Rack 2 Side)



Note - The filled parts in the figure indicate cables across racks. Refer to the correspondence tables in [Table B-14](#) and [Table B-15](#).

Table B-12 Crossbar Cable Correspondence Table (0 System of Expansion Rack 2)

Connection Between Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#08 - XBB0X#82	BB08 - XBU0 - 0L (pink)	XB82 - XBU0 - L0 (pink)
	BB08 - XBU0 - 0L (black)	XB82 - XBU0 - L0 (black)
	BB08 - XBU0 - 0R (light blue)	XB82 - XBU0 - R0 (light blue)
	BB08 - XBU0 - 0R (black)	XB82 - XBU0 - R0 (black)
BB#09 - XBB0X#82	BB09 - XBU0 - 0L (pink)	XB82 - XBU0 - L1 (pink)
	BB09 - XBU0 - 0L (black)	XB82 - XBU0 - L1 (black)
	BB09 - XBU0 - 0R (light blue)	XB82 - XBU0 - R1 (light blue)
	BB09 - XBU0 - 0R (black)	XB82 - XBU0 - R1 (black)
BB#10 - XBB0X#82	BB10 - XBU0 - 0L (pink)	XB82 - XBU0 - L2 (pink)
	BB10 - XBU0 - 0L (black)	XB82 - XBU0 - L2 (black)
	BB10 - XBU0 - 0R (light blue)	XB82 - XBU0 - R2 (light blue)
	BB10 - XBU0 - 0R (black)	XB82 - XBU0 - R2 (black)
BB#11 - XBB0X#82	BB11 - XBU0 - 0L (pink)	XB82 - XBU0 - L3 (pink)
	BB11 - XBU0 - 0L (black)	XB82 - XBU0 - L3 (black)
	BB11 - XBU0 - 0R (light blue)	XB82 - XBU0 - R3 (light blue)
	BB11 - XBU0 - 0R (black)	XB82 - XBU0 - R3 (black)
BB#12 - XBB0X#82	BB12 - XBU0 - 0L (pink)	XB82 - XBU0 - L4 (pink)
	BB12 - XBU0 - 0L (black)	XB82 - XBU0 - L4 (black)
	BB12 - XBU0 - 0R (light blue)	XB82 - XBU0 - R4 (light blue)
	BB12 - XBU0 - 0R (black)	XB82 - XBU0 - R4 (black)
	BB12 - XBU0 - 1L (pink)	XB82 - XBU1 - L4 (pink)
	BB12 - XBU0 - 1L (black)	XB82 - XBU1 - L4 (black)
	BB12 - XBU0 - 1R (light blue)	XB82 - XBU1 - R4 (light blue)
	BB12 - XBU0 - 1R (black)	XB82 - XBU1 - R4 (black)
	BB12 - XBU0 - 2L (pink)	XB82 - XBU2 - L4 (pink)
	BB12 - XBU0 - 2L (black)	XB82 - XBU2 - L4 (black)
	BB12 - XBU0 - 2R (light blue)	XB82 - XBU2 - R4 (light blue)
	BB12 - XBU0 - 2R (black)	XB82 - XBU2 - R4 (black)
BB#13 - XBB0X#82	BB13 - XBU0 - 0L (pink)	XB82 - XBU0 - L5 (pink)
	BB13 - XBU0 - 0L (black)	XB82 - XBU0 - L5 (black)
	BB13 - XBU0 - 0R (light blue)	XB82 - XBU0 - R5 (light blue)

Table B-12 Crossbar Cable Correspondence Table (0 System of Expansion Rack 2)
(continued)

Connection Between Chassis	SPARC M12-2S Side	Crossbar Box Side
	BB13 - XBU0 - 0R (black)	XB82 - XBU0 - R5 (black)
	BB13 - XBU0 - 1L (pink)	XB82 - XBU1 - L5 (pink)
	BB13 - XBU0 - 1L (black)	XB82 - XBU1 - L5 (black)
	BB13 - XBU0 - 1R (light blue)	XB82 - XBU1 - R5 (light blue)
	BB13 - XBU0 - 1R (black)	XB82 - XBU1 - R5 (black)
	BB13 - XBU0 - 2L (pink)	XB82 - XBU2 - L5 (pink)
	BB13 - XBU0 - 2L (black)	XB82 - XBU2 - L5 (black)
	BB13 - XBU0 - 2R (light blue)	XB82 - XBU2 - R5 (light blue)
	BB13 - XBU0 - 2R (black)	XB82 - XBU2 - R5 (black)
BB#14 - XBB0X#82	BB14 - XBU0 - 0L (pink)	XB82 - XBU0 - L6 (pink)
	BB14 - XBU0 - 0L (black)	XB82 - XBU0 - L6 (black)
	BB14 - XBU0 - 0R (light blue)	XB82 - XBU0 - R6 (light blue)
	BB14 - XBU0 - 0R (black)	XB82 - XBU0 - R6 (black)
	BB14 - XBU0 - 1L (pink)	XB82 - XBU1 - L6 (pink)
	BB14 - XBU0 - 1L (black)	XB82 - XBU1 - L6 (black)
	BB14 - XBU0 - 1R (light blue)	XB82 - XBU1 - R6 (light blue)
	BB14 - XBU0 - 1R (black)	XB82 - XBU1 - R6 (black)
	BB14 - XBU0 - 2L (pink)	XB82 - XBU2 - L6 (pink)
	BB14 - XBU0 - 2L (black)	XB82 - XBU2 - L6 (black)
	BB14 - XBU0 - 2R (light blue)	XB82 - XBU2 - R6 (light blue)
	BB14 - XBU0 - 2R (blue)	XB82 - XBU2 - R6 (blue)
BB#15 - XBB0X#82	BB15 - XBU0 - 0L (pink)	XB82 - XBU0 - L7 (pink)
	BB15 - XBU0 - 0L (black)	XB82 - XBU0 - L7 (black)
	BB15 - XBU0 - 0R (light blue)	XB82 - XBU0 - R7 (light blue)
	BB15 - XBU0 - 0R (black)	XB82 - XBU0 - R7 (black)
	BB15 - XBU0 - 1L (pink)	XB82 - XBU1 - L7 (pink)
	BB15 - XBU0 - 1L (black)	XB82 - XBU1 - L7 (black)
	BB15 - XBU0 - 1R (light blue)	XB82 - XBU1 - R7 (light blue)
	BB15 - XBU0 - 1R (black)	XB82 - XBU1 - R7 (black)
	BB15 - XBU0 - 2L (pink)	XB82 - XBU2 - L7 (pink)
	BB15 - XBU0 - 2L (black)	XB82 - XBU2 - L7 (black)
	BB15 - XBU0 - 2R (light blue)	XB82 - XBU2 - R7 (light blue)
	BB15 - XBU0 - 2R (black)	XB82 - XBU2 - R7 (black)

Table B-13 Crossbar Cable Correspondence Table (1 System of Expansion Rack 2)

Connection Between Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#08 - XBB0X#83	BB08 - XBU1 - 0L (pink)	XB83 - XBU0 - L0 (pink)
	BB08 - XBU1 - 0L (black)	XB83 - XBU0 - L0 (black)
	BB08 - XBU1 - 0R (light blue)	XB83 - XBU0 - R0 (light blue)
	BB08 - XBU1 - 0R (black)	XB83 - XBU0 - R0 (black)
BB#09 - XBB0X#83	BB09 - XBU1 - 0L (pink)	XB83 - XBU0 - L1 (pink)
	BB09 - XBU1 - 0L (black)	XB83 - XBU0 - L1 (black)
	BB09 - XBU1 - 0R (light blue)	XB83 - XBU0 - R1 (light blue)
	BB09 - XBU1 - 0R (black)	XB83 - XBU0 - R1 (black)
BB#10 - XBB0X#83	BB10 - XBU1 - 0L (pink)	XB83 - XBU0 - L2 (pink)
	BB10 - XBU1 - 0L (black)	XB83 - XBU0 - L2 (black)
	BB10 - XBU1 - 0R (light blue)	XB83 - XBU0 - R2 (light blue)
	BB10 - XBU1 - 0R (black)	XB83 - XBU0 - R2 (black)
BB#11 - XBB0X#83	BB11 - XBU1 - 0L (pink)	XB83 - XBU0 - L3 (pink)
	BB11 - XBU1 - 0L (black)	XB83 - XBU0 - L3 (black)
	BB11 - XBU1 - 0R (light blue)	XB83 - XBU0 - R3 (light blue)
	BB11 - XBU1 - 0R (black)	XB83 - XBU0 - R3 (black)
BB#12 - XBB0X#83	BB12 - XBU1 - 0L (pink)	XB83 - XBU0 - L4 (pink)
	BB12 - XBU1 - 0L (black)	XB83 - XBU0 - L4 (black)
	BB12 - XBU1 - 0R (light blue)	XB83 - XBU0 - R4 (light blue)
	BB12 - XBU1 - 0R (black)	XB83 - XBU0 - R4 (black)
	BB12 - XBU1 - 1L (pink)	XB83 - XBU1 - L4 (pink)
	BB12 - XBU1 - 1L (black)	XB83 - XBU1 - L4 (black)
	BB12 - XBU1 - 1R (light blue)	XB83 - XBU1 - R4 (light blue)
	BB12 - XBU1 - 1R (black)	XB83 - XBU1 - R4 (black)
	BB12 - XBU1 - 2L (pink)	XB83 - XBU2 - L4 (pink)
	BB12 - XBU1 - 2L (black)	XB83 - XBU2 - L4 (black)
	BB12 - XBU1 - 2R (light blue)	XB83 - XBU2 - R4 (light blue)
	BB12 - XBU1 - 2R (black)	XB83 - XBU2 - R4 (black)
BB#13 - XBB0X#83	BB13 - XBU1 - 0L (pink)	XB83 - XBU0 - L5 (pink)
	BB13 - XBU1 - 0L (black)	XB83 - XBU0 - L5 (black)
	BB13 - XBU1 - 0R (light blue)	XB83 - XBU0 - R5 (light blue)
	BB13 - XBU1 - 0R (black)	XB83 - XBU0 - R5 (black)
	BB13 - XBU1 - 1L (pink)	XB83 - XBU1 - L5 (pink)
BB13 - XBU1 - 1L (black)	XB83 - XBU1 - L5 (black)	

Table B-13 Crossbar Cable Correspondence Table (1 System of Expansion Rack 2)
(continued)

Connection Between Chassis	SPARC M12-2S Side	Crossbar Box Side
	BB13 - XBU1 - 1R (light blue)	XB83 - XBU1 - R5 (light blue)
	BB13 - XBU1 - 1R (black)	XB83 - XBU1 - R5 (black)
	BB13 - XBU1 - 2L (pink)	XB83 - XBU2 - L5 (pink)
	BB13 - XBU1 - 2L (black)	XB83 - XBU2 - L5 (black)
	BB13 - XBU1 - 2R (light blue)	XB83 - XBU2 - R5 (light blue)
	BB13 - XBU1 - 2R (black)	XB83 - XBU2 - R5 (black)
BB#14 - XBB0X#83	BB14 - XBU1 - 0L (pink)	XB83 - XBU0 - L6 (pink)
	BB14 - XBU1 - 0L (black)	XB83 - XBU0 - L6 (black)
	BB14 - XBU1 - 0R (light blue)	XB83 - XBU0 - R6 (light blue)
	BB14 - XBU1 - 0R (black)	XB83 - XBU0 - R6 (black)
	BB14 - XBU1 - 1L (pink)	XB83 - XBU1 - L6 (pink)
	BB14 - XBU1 - 1L (black)	XB83 - XBU1 - L6 (black)
	BB14 - XBU1 - 1R (light blue)	XB83 - XBU1 - R6 (light blue)
	BB14 - XBU1 - 1R (black)	XB83 - XBU1 - R6 (black)
	BB14 - XBU1 - 2L (pink)	XB83 - XBU2 - L6 (pink)
	BB14 - XBU1 - 2L (black)	XB83 - XBU2 - L6 (black)
	BB14 - XBU1 - 2R (light blue)	XB83 - XBU2 - R6 (light blue)
	BB14 - XBU1 - 2R (black)	XB83 - XBU2 - R6 (black)
BB#15 - XBB0X#83	BB15 - XBU1 - 0L (pink)	XB83 - XBU0 - L7 (pink)
	BB15 - XBU1 - 0L (black)	XB83 - XBU0 - L7 (black)
	BB15 - XBU1 - 0R (light blue)	XB83 - XBU0 - R7 (light blue)
	BB15 - XBU1 - 0R (black)	XB83 - XBU0 - R7 (black)
	BB15 - XBU1 - 1L (pink)	XB83 - XBU1 - L7 (pink)
	BB15 - XBU1 - 1L (black)	XB83 - XBU1 - L7 (black)
	BB15 - XBU1 - 1R (light blue)	XB83 - XBU1 - R7 (light blue)
	BB15 - XBU1 - 1R (black)	XB83 - XBU1 - R7 (black)
	BB15 - XBU1 - 2L (pink)	XB83 - XBU2 - L7 (pink)
	BB15 - XBU1 - 2L (black)	XB83 - XBU2 - L7 (black)
	BB15 - XBU1 - 2R (light blue)	XB83 - XBU2 - R7 (light blue)
	BB15 - XBU1 - 2R (black)	XB83 - XBU2 - R7 (black)

Table B-14 Crossbar Cable Correspondence Table (Cables Between Racks)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#00 - XBB0X#82	BB00 - XBU0 - 2L (pink)	XB82 - XBU2 - L0 (pink)
	BB00 - XBU0 - 2L (black)	XB82 - XBU2 - L0 (black)
	BB00 - XBU0 - 2R (light blue)	XB82 - XBU2 - R0 (light blue)
	BB00 - XBU0 - 2R (black)	XB82 - XBU2 - R0 (black)
BB#00 - XBB0X#83	BB00 - XBU1 - 2L (pink)	XB83 - XBU2 - L0 (pink)
	BB00 - XBU1 - 2L (black)	XB83 - XBU2 - L0 (black)
	BB00 - XBU1 - 2R (light blue)	XB83 - XBU2 - R0 (light blue)
	BB00 - XBU1 - 2R (black)	XB83 - XBU2 - R0 (black)
BB#01 - XBB0X#82	BB01 - XBU0 - 2L (pink)	XB82 - XBU2 - L1 (pink)
	BB01 - XBU0 - 2L (black)	XB82 - XBU2 - L1 (black)
	BB01 - XBU0 - 2R (light blue)	XB82 - XBU2 - R1 (light blue)
	BB01 - XBU0 - 2R (black)	XB82 - XBU2 - R1 (black)
BB#01 - XBB0X#83	BB01 - XBU1 - 2L (pink)	XB83 - XBU2 - L1 (pink)
	BB01 - XBU1 - 2L (black)	XB83 - XBU2 - L1 (black)
	BB01 - XBU1 - 2R (light blue)	XB83 - XBU2 - R1 (light blue)
	BB01 - XBU1 - 2R (black)	XB83 - XBU2 - R1 (black)
BB#02 - XBB0X#82	BB02 - XBU0 - 2L (pink)	XB82 - XBU2 - L2 (pink)
	BB02 - XBU0 - 2L (black)	XB82 - XBU2 - L2 (black)
	BB02 - XBU0 - 2R (light blue)	XB82 - XBU2 - R2 (light blue)
	BB02 - XBU0 - 2R (black)	XB82 - XBU2 - R2 (black)
BB#02 - XBB0X#83	BB02 - XBU1 - 2L (pink)	XB83 - XBU2 - L2 (pink)
	BB02 - XBU1 - 2L (black)	XB83 - XBU2 - L2 (black)
	BB02 - XBU1 - 2R (light blue)	XB83 - XBU2 - R2 (light blue)
	BB02 - XBU1 - 2R (black)	XB83 - XBU2 - R2 (black)
BB#03 - XBB0X#82	BB03 - XBU0 - 2L (pink)	XB82 - XBU2 - L3 (pink)
	BB03 - XBU0 - 2L (black)	XB82 - XBU2 - L3 (black)
	BB03 - XBU0 - 2R (light blue)	XB82 - XBU2 - R3 (light blue)
	BB03 - XBU0 - 2R (black)	XB82 - XBU2 - R3 (black)
BB#03 - XBB0X#83	BB03 - XBU1 - 2L (pink)	XB83 - XBU2 - L3 (pink)
	BB03 - XBU1 - 2L (black)	XB83 - XBU2 - L3 (black)
	BB03 - XBU1 - 2R (light blue)	XB83 - XBU2 - R3 (light blue)
	BB03 - XBU1 - 2R (black)	XB83 - XBU2 - R3 (black)
BB#04 - XBB0X#82	BB04 - XBU0 - 1L (pink)	XB82 - XBU1 - L0 (pink)
	BB04 - XBU0 - 1L (black)	XB82 - XBU1 - L0 (black)

Table B-14 Crossbar Cable Correspondence Table (Cables Between Racks) *(continued)*

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#04 - XBB0X#83	BB04 - XBU0 - 1R (light blue)	XB82 - XBU1 - R0 (light blue)
	BB04 - XBU0 - 1R (black)	XB82 - XBU1 - R0 (black)
	BB04 - XBU1 - 1L (pink)	XB83 - XBU1 - L0 (pink)
	BB04 - XBU1 - 1L (black)	XB83 - XBU1 - L0 (black)
	BB04 - XBU1 - 1R (light blue)	XB83 - XBU1 - R0 (light blue)
BB#05 - XBB0X#82	BB04 - XBU1 - 1R (black)	XB83 - XBU1 - R0 (black)
	BB05 - XBU0 - 1L (pink)	XB82 - XBU1 - L1 (pink)
	BB05 - XBU0 - 1L (black)	XB82 - XBU1 - L1 (black)
	BB05 - XBU0 - 1R (light blue)	XB82 - XBU1 - R1 (light blue)
BB#05 - XBB0X#83	BB05 - XBU0 - 1R (black)	XB82 - XBU1 - R1 (black)
	BB05 - XBU1 - 1L (pink)	XB83 - XBU1 - L1 (pink)
	BB05 - XBU1 - 1L (black)	XB83 - XBU1 - L1 (black)
	BB05 - XBU1 - 1R (light blue)	XB83 - XBU1 - R1 (light blue)
BB#06 - XBB0X#82	BB05 - XBU1 - 1R (black)	XB83 - XBU1 - R1 (black)
	BB06 - XBU0 - 1L (pink)	XB82 - XBU1 - L2 (pink)
	BB06 - XBU0 - 1L (black)	XB82 - XBU1 - L2 (black)
	BB06 - XBU0 - 1R (light blue)	XB82 - XBU1 - R2 (light blue)
BB#06 - XBB0X#83	BB06 - XBU0 - 1R (black)	XB82 - XBU1 - R2 (black)
	BB06 - XBU1 - 1L (pink)	XB83 - XBU1 - L2 (pink)
	BB06 - XBU1 - 1L (black)	XB83 - XBU1 - L2 (black)
	BB06 - XBU1 - 1R (light blue)	XB83 - XBU1 - R2 (light blue)
BB#07 - XBB0X#82	BB06 - XBU1 - 1R (black)	XB83 - XBU1 - R2 (black)
	BB07 - XBU0 - 1L (pink)	XB82 - XBU1 - L3 (pink)
	BB07 - XBU0 - 1L (black)	XB82 - XBU1 - L3 (black)
	BB07 - XBU0 - 1R (light blue)	XB82 - XBU1 - R3 (light blue)
BB#07 - XBB0X#83	BB07 - XBU0 - 1R (black)	XB82 - XBU1 - R3 (black)
	BB07 - XBU1 - 1L (pink)	XB83 - XBU1 - L3 (pink)
	BB07 - XBU1 - 1L (black)	XB83 - XBU1 - L3 (black)
	BB07 - XBU1 - 1R (light blue)	XB83 - XBU1 - R3 (light blue)
	BB07 - XBU1 - 1R (black)	XB83 - XBU1 - R3 (black)

Table B-15 Crossbar Cable Correspondence Table (Cables Between Racks)

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#08 - XBB0X#80	BB08 - XBU0 - 1L (pink)	XB80 - XBU1 - L4 (pink)
	BB08 - XBU0 - 1L (black)	XB80 - XBU1 - L4 (black)
	BB08 - XBU0 - 1R (light blue)	XB80 - XBU1 - R4 (light blue)
	BB08 - XBU0 - 1R (black)	XB80 - XBU1 - R4 (black)
	BB08 - XBU0 - 2L (pink)	XB80 - XBU2 - L4 (pink)
	BB08 - XBU0 - 2L (black)	XB80 - XBU2 - L4 (black)
	BB08 - XBU0 - 2R (light blue)	XB80 - XBU2 - R4 (light blue)
	BB08 - XBU0 - 2R (black)	XB80 - XBU2 - R4 (black)
BB#08 - XBB0X#81	BB08 - XBU1 - 1L (pink)	XB81 - XBU1 - L4 (pink)
	BB08 - XBU1 - 1L (black)	XB81 - XBU1 - L4 (black)
	BB08 - XBU1 - 1R (light blue)	XB81 - XBU1 - R4 (light blue)
	BB08 - XBU1 - 1R (black)	XB81 - XBU1 - R4 (black)
	BB08 - XBU1 - 2L (pink)	XB81 - XBU2 - L4 (pink)
	BB08 - XBU1 - 2L (black)	XB81 - XBU2 - L4 (black)
	BB08 - XBU1 - 2R (light blue)	XB81 - XBU2 - R4 (light blue)
	BB08 - XBU1 - 2R (black)	XB81 - XBU2 - R4 (black)
BB#09 - XBB0X#80	BB09 - XBU0 - 1L (pink)	XB80 - XBU1 - L5 (pink)
	BB09 - XBU0 - 1L (black)	XB80 - XBU1 - L5 (black)
	BB09 - XBU0 - 1R (light blue)	XB80 - XBU1 - R5 (light blue)
	BB09 - XBU0 - 1R (black)	XB80 - XBU1 - R5 (black)
	BB09 - XBU0 - 2L (pink)	XB80 - XBU2 - L5 (pink)
	BB09 - XBU0 - 2L (black)	XB80 - XBU2 - L5 (black)
	BB09 - XBU0 - 2R (light blue)	XB80 - XBU2 - R5 (light blue)
	BB09 - XBU0 - 2R (black)	XB80 - XBU2 - R5 (black)
BB#09 - XBB0X#81	BB09 - XBU1 - 1L (pink)	XB81 - XBU1 - L5 (pink)
	BB09 - XBU1 - 1L (black)	XB81 - XBU1 - L5 (black)
	BB09 - XBU1 - 1R (light blue)	XB81 - XBU1 - R5 (light blue)
	BB09 - XBU1 - 1R (black)	XB81 - XBU1 - R5 (black)
	BB09 - XBU1 - 2L (pink)	XB81 - XBU2 - L5 (pink)
	BB09 - XBU1 - 2L (black)	XB81 - XBU2 - L5 (black)
	BB09 - XBU1 - 2R (light blue)	XB81 - XBU2 - R5 (light blue)
	BB09 - XBU1 - 2R (black)	XB81 - XBU2 - R5 (black)
BB#10 - XBB0X#80	BB10 - XBU0 - 1L (pink)	XB80 - XBU1 - L6 (pink)
	BB10 - XBU0 - 1L (black)	XB80 - XBU1 - L6 (black)

Table B-15 Crossbar Cable Correspondence Table (Cables Between Racks) *(continued)*

Connected Chassis	SPARC M12-2S Side	Crossbar Box Side
BB#10 - XBB0X#81	BB10 - XBU0 - 1R (light blue)	XB80 - XBU1 - R6 (light blue)
	BB10 - XBU0 - 1R (black)	XB80 - XBU1 - R6 (black)
	BB10 - XBU0 - 2L (pink)	XB80 - XBU2 - L6 (pink)
	BB10 - XBU0 - 2L (black)	XB80 - XBU2 - L6 (black)
	BB10 - XBU0 - 2R (light blue)	XB80 - XBU2 - R6 (light blue)
	BB10 - XBU0 - 2R (black)	XB80 - XBU2 - R6 (black)
	BB10 - XBU1 - 1L (pink)	XB81 - XBU1 - L6 (pink)
	BB10 - XBU1 - 1L (black)	XB81 - XBU1 - L6 (black)
	BB10 - XBU1 - 1R (light blue)	XB81 - XBU1 - R6 (light blue)
	BB10 - XBU1 - 1R (black)	XB81 - XBU1 - R6 (black)
	BB10 - XBU1 - 2L (pink)	XB81 - XBU2 - L6 (pink)
	BB10 - XBU1 - 2L (black)	XB81 - XBU2 - L6 (black)
	BB10 - XBU1 - 2R (light blue)	XB81 - XBU2 - R6 (light blue)
	BB10 - XBU1 - 2R (black)	XB81 - XBU2 - R6 (black)
BB#11 - XBB0X#80	BB11 - XBU0 - 1L (pink)	XB80 - XBU1 - L7 (pink)
	BB11 - XBU0 - 1L (black)	XB80 - XBU1 - L7 (black)
	BB11 - XBU0 - 1R (light blue)	XB80 - XBU1 - R7 (light blue)
	BB11 - XBU0 - 1R (black)	XB80 - XBU1 - R7 (black)
	BB11 - XBU0 - 2L (pink)	XB80 - XBU2 - L7 (pink)
	BB11 - XBU0 - 2L (black)	XB80 - XBU2 - L7 (black)
	BB11 - XBU0 - 2R (light blue)	XB80 - XBU2 - R7 (light blue)
	BB11 - XBU0 - 2R (black)	XB80 - XBU2 - R7 (black)
BB#11 - XBB0X#81	BB11 - XBU1 - 1L (pink)	XB81 - XBU1 - L7 (pink)
	BB11 - XBU1 - 1L (black)	XB81 - XBU1 - L7 (black)
	BB11 - XBU1 - 1R (light blue)	XB81 - XBU1 - R7 (light blue)
	BB11 - XBU1 - 1R (black)	XB81 - XBU1 - R7 (black)
	BB11 - XBU1 - 2L (pink)	XB81 - XBU2 - L7 (pink)
	BB11 - XBU1 - 2L (black)	XB81 - XBU2 - L7 (black)
	BB11 - XBU1 - 2R (light blue)	XB81 - XBU2 - R7 (light blue)
	BB11 - XBU1 - 2R (black)	XB81 - XBU2 - R7 (black)

Figure B-11 XSCF Cable Connection Diagram

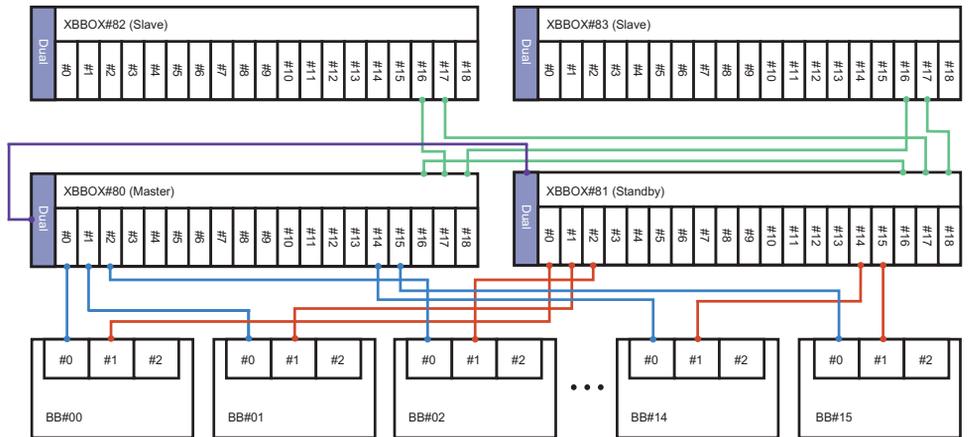


Table B-16 XSCF Cable Correspondence Table

Connected Chassis	Connector 1	Connector 2
XBBOX#80 - XBBOX#81	XB80 - DUAL	XB81 - DUAL
BB#00 - XBBOX#80	BB00 - XSCF0	XB80 - XSCF0
BB#01 - XBBOX#80	BB01 - XSCF0	XB80 - XSCF1
BB#02 - XBBOX#80	BB02 - XSCF0	XB80 - XSCF2
BB#03 - XBBOX#80	BB03 - XSCF0	XB80 - XSCF3
BB#04 - XBBOX#80	BB04 - XSCF0	XB80 - XSCF4
BB#05 - XBBOX#80	BB05 - XSCF0	XB80 - XSCF5
BB#06 - XBBOX#80	BB06 - XSCF0	XB80 - XSCF6
BB#07 - XBBOX#80	BB07 - XSCF0	XB80 - XSCF7
BB#08 - XBBOX#80	BB08 - XSCF0	XB80 - XSCF8
BB#09 - XBBOX#80	BB09 - XSCF0	XB80 - XSCF9
BB#10 - XBBOX#80	BB10 - XSCF0	XB80 - XSCF10
BB#11 - XBBOX#80	BB11 - XSCF0	XB80 - XSCF11
BB#12 - XBBOX#80	BB12 - XSCF0	XB80 - XSCF12
BB#13 - XBBOX#80	BB13 - XSCF0	XB80 - XSCF13
BB#14 - XBBOX#80	BB14 - XSCF0	XB80 - XSCF14
BB#15 - XBBOX#80	BB15 - XSCF0	XB80 - XSCF15
BB#00 - XBBOX#81	BB00 - XSCF1	XB81 - XSCF0
BB#01 - XBBOX#81	BB01 - XSCF1	XB81 - XSCF1
BB#02 - XBBOX#81	BB02 - XSCF1	XB81 - XSCF2
BB#03 - XBBOX#81	BB03 - XSCF1	XB81 - XSCF3

Table B-16 XSCF Cable Correspondence Table (continued)

Connected Chassis	Connector 1	Connector 2
BB#04 - XBBOX#81	BB04 - XSCF1	XB81 - XSCF4
BB#05 - XBBOX#81	BB05 - XSCF1	XB81 - XSCF5
BB#06 - XBBOX#81	BB06 - XSCF1	XB81 - XSCF6
BB#07 - XBBOX#81	BB07 - XSCF1	XB81 - XSCF7
BB#08 - XBBOX#81	BB08 - XSCF1	XB81 - XSCF8
BB#09 - XBBOX#81	BB09 - XSCF1	XB81 - XSCF9
BB#10 - XBBOX#81	BB10 - XSCF1	XB81 - XSCF10
BB#11 - XBBOX#81	BB11 - XSCF1	XB81 - XSCF11
BB#12 - XBBOX#81	BB12 - XSCF1	XB81 - XSCF12
BB#13 - XBBOX#81	BB13 - XSCF1	XB81 - XSCF13
BB#14 - XBBOX#81	BB14 - XSCF1	XB81 - XSCF14
BB#15 - XBBOX#81	BB15 - XSCF1	XB81 - XSCF15
XBBOX#80 - XBBOX#81	XB80 - XSCF16	XB81 - XSCF16
XBBOX#80 - XBBOX#82	XB80 - XSCF17	XB82 - XSCF16
XBBOX#80 - XBBOX#83	XB80 - XSCF18	XB83 - XSCF16
XBBOX#81 - XBBOX#82	XB81 - XSCF17	XB82 - XSCF17
XBBOX#81 - XBBOX#83	XB81 - XSCF18	XB83 - XSCF17

B.6 Power Cord Connections in Expansion Racks

Single-phase power supply connections

For a connection diagram, see [Figure 2-23](#).

For connection lists, see [Table B-17](#) and [Table B-18](#).

Table B-17 Correspondence Table for Expansion Rack 1 (BB#00 to BB#07, Single-Phase Power Supply Connections)

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
BB#00 - PDU#0A/PDU#1A	PDU#0A-00, BB00-PSU#0	PDU#0A-00, BB00-PSU#0	PSU#0 system
	PDU#0A-01, BB00-PSU#1	PDU#0A-01, BB00-PSU#1	PSU#0 system
	PDU#1A-00, BB00-PSU#2	PDU#1A-00, BB00-PSU#2	PSU#1 system

Table B-17 Correspondence Table for Expansion Rack 1 (BB#00 to BB#07, Single-Phase Power Supply Connections) *(continued)*

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
BB#01 - PDU#0A/PDU#1A	PDU#1A-01, BB00-PSU#3	PDU#1A-01, BB00-PSU#3	PSU#1 system
	PDU#0A-02, BB01-PSU#0	PDU#0A-02, BB01-PSU#0	PSU#0 system
	PDU#0A-03, BB01-PSU#1	PDU#0A-03, BB01-PSU#1	PSU#0 system
	PDU#1A-02, BB01-PSU#2	PDU#1A-02, BB01-PSU#2	PSU#1 system
BB#02 - PDU#0B/PDU#1B	PDU#1A-03, BB01-PSU#3	PDU#1A-03, BB01-PSU#3	PSU#1 system
	PDU#0B-00, BB02-PSU#0	PDU#0B-00, BB02-PSU#0	PSU#0 system
	PDU#0B-01, BB02-PSU#1	PDU#0B-01, BB02-PSU#1	PSU#0 system
	PDU#1B-00, BB02-PSU#2	PDU#1B-00, BB02-PSU#2	PSU#1 system
BB#03 - PDU#0B/PDU#1B	PDU#1B-01, BB02-PSU#3	PDU#1B-01, BB02-PSU#3	PSU#1 system
	PDU#0B-02, BB03-PSU#0	PDU#0B-02, BB03-PSU#0	PSU#0 system
	PDU#0B-03, BB03-PSU#1	PDU#0B-03, BB03-PSU#1	PSU#0 system
	PDU#1B-02, BB03-PSU#2	PDU#1B-02, BB03-PSU#2	PSU#1 system
BB#04 - PDU#0C/PDU#1C	PDU#1B-03, BB03-PSU#3	PDU#1B-03, BB03-PSU#3	PSU#1 system
	PDU#0C-00, BB04-PSU#0	PDU#0C-00, BB04-PSU#0	PSU#0 system
	PDU#0C-01, BB04-PSU#1	PDU#0C-01, BB04-PSU#1	PSU#0 system
	PDU#1C-00, BB04-PSU#2	PDU#1C-00, BB04-PSU#2	PSU#1 system
BB#05 - PDU#0C/PDU#1C	PDU#1C-01, BB04-PSU#3	PDU#1C-01, BB04-PSU#3	PSU#1 system
	PDU#0C-02, BB05-PSU#0	PDU#0C-02, BB05-PSU#0	PSU#0 system
	PDU#0C-03, BB05-PSU#1	PDU#0C-03, BB05-PSU#1	PSU#0 system
	PDU#1C-02, BB05-PSU#2	PDU#1C-02, BB05-PSU#2	PSU#1 system
BB#06 - PDU#0D/PDU#1D	PDU#1C-03, BB05-PSU#3	PDU#1C-03, BB05-PSU#3	PSU#1 system
	PDU#0D-00, BB06-PSU#0	PDU#0D-00, BB06-PSU#0	PSU#0 system
	PDU#0D-01, BB06-PSU#1	PDU#0D-01, BB06-PSU#1	PSU#0 system
	PDU#1D-00, BB06-PSU#2	PDU#1D-00, BB06-PSU#2	PSU#1 system
BB#07 - PDU#0D/PDU#1D	PDU#1D-01, BB06-PSU#3	PDU#1D-01, BB06-PSU#3	PSU#1 system
	PDU#0D-02, BB07-PSU#0	PDU#0D-02, BB07-PSU#0	PSU#0 system
	PDU#0D-03, BB07-PSU#1	PDU#0D-03, BB07-PSU#1	PSU#0 system
	PDU#1D-02, BB07-PSU#2	PDU#1D-02, BB07-PSU#2	PSU#1 system
	PDU#1D-03, BB07-PSU#3	PDU#1D-03, BB07-PSU#3	PSU#1 system

Table B-18 Correspondence Table for Expansion Rack 2 (BB#08 to BB#15, Single-Phase Power Supply Connections)

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
BB#08 - PDU#2A/PDU#3A	PDU#2A-00, BB08-PSU#0	PDU#2A-00, BB08-PSU#0	PSU#0 system
	PDU#2A-01, BB08-PSU#1	PDU#2A-01, BB08-PSU#1	PSU#0 system
	PDU#3A-00, BB08-PSU#2	PDU#3A-00, BB08-PSU#2	PSU#1 system
	PDU#3A-01, BB08-PSU#3	PDU#3A-01, BB08-PSU#3	PSU#1 system
BB#09 - PDU#2A/PDU#3A	PDU#2A-02, BB09-PSU#0	PDU#2A-02, BB09-PSU#0	PSU#0 system
	PDU#2A-03, BB09-PSU#1	PDU#2A-03, BB09-PSU#1	PSU#0 system
	PDU#3A-02, BB09-PSU#2	PDU#3A-02, BB09-PSU#2	PSU#1 system
	PDU#3A-03, BB09-PSU#3	PDU#3A-03, BB09-PSU#3	PSU#1 system
BB#10 - PDU#2B/PDU#3B	PDU#2B-00, BB10-PSU#0	PDU#2B-00, BB10-PSU#0	PSU#0 system
	PDU#2B-01, BB10-PSU#1	PDU#2B-01, BB10-PSU#1	PSU#0 system
	PDU#3B-00, BB10-PSU#2	PDU#3B-00, BB10-PSU#2	PSU#1 system
	PDU#3B-01, BB10-PSU#3	PDU#3B-01, BB10-PSU#3	PSU#1 system
BB#11 - PDU#2B/PDU#3B	PDU#2B-02, BB11-PSU#0	PDU#2B-02, BB11-PSU#0	PSU#0 system
	PDU#2B-03, BB11-PSU#1	PDU#2B-03, BB11-PSU#1	PSU#0 system
	PDU#3B-02, BB11-PSU#2	PDU#3B-02, BB11-PSU#2	PSU#1 system
	PDU#3B-03, BB11-PSU#3	PDU#3B-03, BB11-PSU#3	PSU#1 system
BB#12 - PDU#2C/PDU#3C	PDU#2C-00, BB12-PSU#0	PDU#2C-00, BB12-PSU#0	PSU#0 system
	PDU#2C-01, BB12-PSU#1	PDU#2C-01, BB12-PSU#1	PSU#0 system
	PDU#3C-00, BB12-PSU#2	PDU#3C-00, BB12-PSU#2	PSU#1 system
	PDU#3C-01, BB12-PSU#3	PDU#3C-01, BB12-PSU#3	PSU#1 system
BB#13 - PDU#2C/PDU#3C	PDU#2C-02, BB13-PSU#0	PDU#2C-02, BB13-PSU#0	PSU#0 system
	PDU#2C-03, BB13-PSU#1	PDU#2C-03, BB13-PSU#1	PSU#0 system
	PDU#3C-02, BB13-PSU#2	PDU#3C-02, BB13-PSU#2	PSU#1 system
	PDU#3C-03, BB13-PSU#3	PDU#3C-03, BB13-PSU#3	PSU#1 system
BB#14 - PDU#2D/PDU#3D	PDU#2D-00, BB14-PSU#0	PDU#2D-00, BB14-PSU#0	PSU#0 system
	PDU#2D-01, BB14-PSU#1	PDU#2D-01, BB14-PSU#1	PSU#0 system
	PDU#3D-00, BB14-PSU#2	PDU#3D-00, BB14-PSU#2	PSU#1 system
	PDU#3D-01, BB14-PSU#3	PDU#3D-01, BB14-PSU#3	PSU#1 system
BB#15 - PDU#2D/PDU#3D	PDU#2D-02, BB15-PSU#0	PDU#2D-02, BB15-PSU#0	PSU#0 system
	PDU#2D-03, BB15-PSU#1	PDU#2D-03, BB15-PSU#1	PSU#0 system
	PDU#3D-02, BB15-PSU#2	PDU#3D-02, BB15-PSU#2	PSU#1 system
	PDU#3D-03, BB15-PSU#3	PDU#3D-03, BB15-PSU#3	PSU#1 system

Three-phase delta power supply connections/Three-phase star power supply connections

For a connection diagram, see [Figure 2-24](#).

For connection lists, see [Table B-19](#) and [Table B-20](#).

Table B-19 Correspondence Table for Expansion Rack 1 (BB#00 to BB#07, Three-Phase Power Supply Connections)

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
BB#00 - PDU#0A/PDU#1A	PDU#0A-00, BB00-PSU#0	PDU#0A-00, BB00-PSU#0	PSU#0 system
	PDU#0A-01, BB00-PSU#1	PDU#0A-01, BB00-PSU#1	PSU#0 system
	PDU#1A-00, BB00-PSU#2	PDU#1A-00, BB00-PSU#2	PSU#1 system
	PDU#1A-01, BB00-PSU#3	PDU#1A-01, BB00-PSU#3	PSU#1 system
BB#01 - PDU#0A/PDU#1A	PDU#0A-02, BB01-PSU#0	PDU#0A-02, BB01-PSU#0	PSU#0 system
	PDU#0A-03, BB01-PSU#1	PDU#0A-03, BB01-PSU#1	PSU#0 system
	PDU#1A-02, BB01-PSU#2	PDU#1A-02, BB01-PSU#2	PSU#1 system
BB#02 - PDU#0B/PDU#1B	PDU#1A-03, BB01-PSU#3	PDU#1A-03, BB01-PSU#3	PSU#1 system
	PDU#0B-00, BB02-PSU#0	PDU#0B-00, BB02-PSU#0	PSU#0 system
	PDU#0B-01, BB02-PSU#1	PDU#0B-01, BB02-PSU#1	PSU#0 system
BB#03 - PDU#0B/PDU#1B	PDU#1B-00, BB02-PSU#2	PDU#1B-00, BB02-PSU#2	PSU#1 system
	PDU#1B-01, BB02-PSU#3	PDU#1B-01, BB02-PSU#3	PSU#1 system
	PDU#0B-02, BB03-PSU#0	PDU#0B-02, BB03-PSU#0	PSU#0 system
	PDU#0B-03, BB03-PSU#1	PDU#0B-03, BB03-PSU#1	PSU#0 system
BB#04 - PDU#0B/PDU#1B	PDU#1B-02, BB03-PSU#2	PDU#1B-02, BB03-PSU#2	PSU#1 system
	PDU#1B-03, BB03-PSU#3	PDU#1B-03, BB03-PSU#3	PSU#1 system
	PDU#0B-04, BB04-PSU#0	PDU#0B-04, BB04-PSU#0	PSU#0 system
BB#05 - PDU#0C/PDU#1C	PDU#0B-05, BB04-PSU#1	PDU#0B-05, BB04-PSU#1	PSU#0 system
	PDU#1B-04, BB04-PSU#2	PDU#1B-04, BB04-PSU#2	PSU#1 system
	PDU#1B-05, BB04-PSU#3	PDU#1B-05, BB04-PSU#3	PSU#1 system
	PDU#0C-00, BB05-PSU#0	PDU#0C-00, BB05-PSU#0	PSU#0 system
BB#06 - PDU#0D/PDU#1D	PDU#0C-01, BB05-PSU#1	PDU#0C-01, BB05-PSU#1	PSU#0 system
	PDU#1C-00, BB05-PSU#2	PDU#1C-00, BB05-PSU#2	PSU#1 system
	PDU#1C-01, BB05-PSU#3	PDU#1C-01, BB05-PSU#3	PSU#1 system
BB#06 - PDU#0D/PDU#1D	PDU#0C-02, BB06-PSU#0	PDU#0C-02, BB06-PSU#0	PSU#0 system
	PDU#0C-03, BB06-PSU#1	PDU#0C-03, BB06-PSU#1	PSU#0 system
	PDU#1C-02, BB06-PSU#2	PDU#1C-02, BB06-PSU#2	PSU#1 system
	PDU#1C-03, BB06-PSU#3	PDU#1C-03, BB06-PSU#3	PSU#1 system

Table B-19 Correspondence Table for Expansion Rack 1 (BB#00 to BB#07, Three-Phase Power Supply Connections) *(continued)*

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
BB#07 - PDU#0D/PDU#1D	PDU#0C-04, BB07-PSU#0	PDU#0C-04, BB07-PSU#0	PSU#0 system
	PDU#0C-05, BB07-PSU#1	PDU#0C-05, BB07-PSU#1	PSU#0 system
	PDU#1C-04, BB07-PSU#2	PDU#1C-04, BB07-PSU#2	PSU#1 system
	PDU#1C-05, BB07-PSU#3	PDU#1C-05, BB07-PSU#3	PSU#1 system

Table B-20 Correspondence Table for Expansion Rack 2 (BB#08 to BB#15, Three-Phase Power Supply Connections)

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
BB#08 - PDU#2A/PDU#3A	PDU#2A-00, BB08-PSU#0	PDU#2A-00, BB08-PSU#0	PSU#0 system
	PDU#2A-01, BB08-PSU#1	PDU#2A-01, BB08-PSU#1	PSU#0 system
	PDU#3A-00, BB08-PSU#2	PDU#3A-00, BB08-PSU#2	PSU#1 system
	PDU#3A-01, BB08-PSU#3	PDU#3A-01, BB08-PSU#3	PSU#1 system
BB#09 - PDU#2A/PDU#3A	PDU#2A-02, BB09-PSU#0	PDU#2A-02, BB09-PSU#0	PSU#0 system
	PDU#2A-03, BB09-PSU#1	PDU#2A-03, BB09-PSU#1	PSU#0 system
	PDU#3A-02, BB09-PSU#2	PDU#3A-02, BB09-PSU#2	PSU#1 system
	PDU#3A-03, BB09-PSU#3	PDU#3A-03, BB09-PSU#3	PSU#1 system
BB#10 - PDU#2B/PDU#3B	PDU#2B-00, BB10-PSU#0	PDU#2B-00, BB10-PSU#0	PSU#0 system
	PDU#2B-01, BB10-PSU#1	PDU#2B-01, BB10-PSU#1	PSU#0 system
	PDU#3B-00, BB10-PSU#2	PDU#3B-00, BB10-PSU#2	PSU#1 system
	PDU#3B-01, BB10-PSU#3	PDU#3B-01, BB10-PSU#3	PSU#1 system
BB#11 - PDU#2B/PDU#3B	PDU#2B-02, BB11-PSU#0	PDU#2B-02, BB11-PSU#0	PSU#0 system
	PDU#2B-03, BB11-PSU#1	PDU#2B-03, BB11-PSU#1	PSU#0 system
	PDU#3B-02, BB11-PSU#2	PDU#3B-02, BB11-PSU#2	PSU#1 system
	PDU#3B-03, BB11-PSU#3	PDU#3B-03, BB11-PSU#3	PSU#1 system
BB#12 - PDU#2B/PDU#3B	PDU#2B-04, BB12-PSU#0	PDU#2B-04, BB12-PSU#0	PSU#0 system
	PDU#2B-05, BB12-PSU#1	PDU#2B-05, BB12-PSU#1	PSU#0 system
	PDU#3B-04, BB12-PSU#2	PDU#3B-04, BB12-PSU#2	PSU#1 system
	PDU#3B-05, BB12-PSU#3	PDU#3B-05, BB12-PSU#3	PSU#1 system
BB#13 - PDU#2C/PDU#3C	PDU#2C-00, BB13-PSU#0	PDU#2C-00, BB13-PSU#0	PSU#0 system
	PDU#2C-01, BB13-PSU#1	PDU#2C-01, BB13-PSU#1	PSU#0 system
	PDU#3C-00, BB13-PSU#2	PDU#3C-00, BB13-PSU#2	PSU#1 system
	PDU#3C-01, BB13-PSU#3	PDU#3C-01, BB13-PSU#3	PSU#1 system
BB#14 - PDU#2C/PDU#3C	PDU#2C-02, BB14-PSU#0	PDU#2C-02, BB14-PSU#0	PSU#0 system

Table B-20 Correspondence Table for Expansion Rack 2 (BB#08 to BB#15, Three-Phase Power Supply Connections) (*continued*)

Connected Chassis - PDU	SPARC M12-2S Side	PDU Side	Remarks
	PDU#2C-03, BB14-PSU#1	PDU#2C-03, BB14-PSU#1	PSU#0 system
	PDU#3C-02, BB14-PSU#2	PDU#3C-02, BB14-PSU#2	PSU#1 system
	PDU#3C-03, BB14-PSU#3	PDU#3C-03, BB14-PSU#3	PSU#1 system
BB#15 - PDU#2C/PDU#3C	PDU#2C-04, BB15-PSU#0	PDU#2C-04, BB15-PSU#0	PSU#0 system
	PDU#2C-05, BB15-PSU#1	PDU#2C-05, BB15-PSU#1	PSU#0 system
	PDU#3C-04, BB15-PSU#2	PDU#3C-04, BB15-PSU#2	PSU#1 system
	PDU#3C-05, BB15-PSU#3	PDU#3C-05, BB15-PSU#3	PSU#1 system

Appendix C

Setup Command Workflow

This appendix describes the workflow of the XSCF commands executed in installation of the SPARC M12-2S.

For details, see the linked sections listed in [Table C-1](#).

Table C-1 XSCF Setup Command Examples

XSCF Command Example	Description	Mandatory?	Linked Section
Making the initial system settings			
version -c xcp	Displays the XCP firmware version	Yes	"6.4 Confirming the XCP Firmware Version"
flashupdate -c sync	Updates the XCP firmware version to synchronize the XCP firmware on any SPARC M12-2S that has a different version	Yes	"6.4 Confirming the XCP Firmware Version"
showaltitude	Displays the system altitude setting	Yes	"6.5 Checking the Altitude Setting"
setaltitude -s altitude=100	Sets the altitude Example: The system altitude is set to 100 m.	Optional	"6.5 Checking the Altitude Setting"
rebootxscf -y -a	Reboots the XSCF	Optional (*1)	"6.5 Checking the Altitude Setting"
showtimezone -c tz	Displays the XSCF time zone	No	"6.6 Setting the Time"
settimezone -c settz -a	Lists the time zones that can be set	No	"6.6 Setting the Time"
settimezone -c settz -s Asia/Tokyo	Sets the time zone Example: "Asia/Tokyo" is set.	Yes	"6.6 Setting the Time"
showdate	Displays the XSCF clock date and time	Yes	"6.6 Setting the Time"
setdate -s 102016592012.00	Sets the XSCF clock date and time Example: 16:59:00 on 2012/10/20 in local time (JST) is set.	Yes	"6.6 Setting the Time"
testsb -v -p -s -a -y	Initial diagnosis of hardware	Yes	"6.7 Performing a Diagnosis Test"
showhardconf -M	Displays information on each FRU	Yes	"6.8 Checking the Component Status"

Table C-1 XSCF Setup Command Examples (*continued*)

XSCF Command Example	Description	Mandatory?	Linked Section
showhardconf -u	Displays the number of mounted units by FRU	No	"6.8 Checking the Component Status"
showlogs error	Displays an error log	Yes	"6.8 Checking the Component Status"
showstatus	Displays information on a degraded unit	Yes	"6.8 Checking the Component Status"
Creating an XSCF user			
showpasswordpolicy	Displays the password policy settings	No	"7.1 Setting the Password Policy"
setpasswordpolicy -y 3 -m 8 -d 2 -u 0 -l 0 -o 0 -M 60 -w 15 -r 3	Sets the system password policy Example: - A retry count of up to 3 - A password length of 6 characters or more when the password contains 2 numeric characters. A password length of 8 characters or more when the password does not contain numeric characters - An expiration time of 60 days - 15 days ahead as the start date for warnings before the password expires - 3 as the number of passwords to remember	Yes	"7.1 Setting the Password Policy"
adduser jsmith	Creates a user account	Yes	"7.2 Setting a User Account and Password"
password jsmith	Sets a password	Yes	"7.2 Setting a User Account and Password"
setprivileges jsmith useradm platadm	Assigns a user privilege	Yes	"7.2 Setting a User Account and Password"
showuser -l	Checks information on a created user account	No	"7.2 Setting a User Account and Password"
Configuring the Telnet/SSH/HTTPS service			
showtelnet	Displays the Telnet service status	No	"7.3.1 Configuring the Telnet Service"
settelnet -c enabled	Starts the Telnet service	Optional	"7.3.1 Configuring the Telnet Service"
showssh	Displays SSH service information	No	"7.3.2 Configuring the SSH Service"
setssh -c enabled	Starts the SSH service	Optional	"7.3.2 Configuring the SSH Service"
setssh -c genhostkey	Generates a host key	Optional	"7.3.2 Configuring the SSH Service"

Table C-1 XSCF Setup Command Examples (*continued*)

XSCF Command Example	Description	Mandatory?	Linked Section
showhttps	Displays the HTTPS service status	No	"7.4 Configuring the HTTPS Service"
sethttps -c enable	Starts the HTTPS service	Optional	"7.4 Configuring the HTTPS Service"
Configuring the XSCF network			
showhostname -a	Displays the set host names of the master chassis and the chassis with the standby XSCF	No	"7.5.1 Setting an XSCF Host Name and Domain Name"
sethostname bb#00 scf0-hostname	Sets a host name Example: The host name "scf0-hostname" is set for BB#00.	Optional	"7.5.1 Setting an XSCF Host Name and Domain Name"
sethostname -d example.com	Sets a DNS domain name Example: The domain name "example.com" is set.	Optional	"7.5.1 Setting an XSCF Host Name and Domain Name"
setnetwork bb#00-lan#0 -m 255.255.255.0 192.168.1.10	Configures an XSCF-LAN network interface Example: The IP address 192.168.1.10 and the net mask 255.255.255.0 are set for XSCF-LAN#0 of BB#00.	Yes	"7.5.2 Setting an Ethernet (XSCF-LAN) IP Address"
setnetwork lan#0 -m 255.255.255.0 192.168.1.12	Sets a takeover IP address Example: The takeover IP address 192.168.1.12 and the net mask 255.255.255.0 are set for XSCF-LAN#0.	Yes	"7.5.3 Setting a Takeover IP Address"
showsscp -a	Displays the SSCP link setting values	No	"7.5.4 Setting an SSCP IP Address"
setsscp	Assigns an IP address to an SSCP link	Optional	"7.5.4 Setting an SSCP IP Address"
showroute -a	Displays routing information	No	"7.5.5 Setting the Routing"
setroute -c add -n 0.0.0.0 -g 192.168.1.1 bb#00-lan#0	Sets routing information Example: The default gateway IP address 192.168.1.1 is added to XSCF-LAN#0 of BB#00.	Yes	"7.5.5 Setting the Routing"
applynetwork	Applies XSCF network information to the XSCF	Yes	"7.5.6 Applying Network Settings"
rebootxscf -a	Reboots the XSCF	Yes	"7.5.6 Applying Network Settings"
Setting memory mirror mode			
showfru -a	Displays the set information for all devices	Optional	"7.6 Configuring Memory Mirroring"

Table C-1 XSCF Setup Command Examples (*continued*)

XSCF Command Example	Description	Mandatory?	Linked Section
setupfru -c mirror=yes sb 00-0	Sets the memory mounted on a physical system board (PSB) to mirror mode Example: All CPUs under PSB 00-0 are set to memory mirror mode.	Optional	"7.6 Configuring Memory Mirroring"
Configuring a physical partition			
showpcl -p 0	Displays the PPAR configuration list	Yes	"7.7 Creating a PPAR Configuration List"
setpcl -p 0 -a 0=00-0	Registers a physical system board (PSB) in a physical partition configuration list Example: Physical system board 00-0 is mapped to logical system board 0 of physical partition 0.	Yes	"7.7 Creating a PPAR Configuration List"
setpcl -p 0 -s policy=system	Sets the configuration policy Example: The configuration policy is set to "All physical partitions" for physical partition 0.	Optional	"7.7 Creating a PPAR Configuration List"
showboards -a	Displays information on all mounted physical system boards (PSBs)	Yes	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"
addboard -c assign -p 0 00-0	Assigns a physical system board (PSB) to a physical partition Example: Physical system board (PSB) 00-0 is added to physical partition 0.	Yes	"7.8 Assigning/Releasing a Physical System Board (PSB) for a Physical Partition (PPAR)"
Synchronizing the physical partition time with the XSCF time			
showdate	Displays the XSCF clock date and time	Yes	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"
setdate -s 102016592016.00	Sets the XSCF clock date and time Example: 16:59:00 on 2016/10/20 in local time (JST) is set.	Yes	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"
showdateoffset -p 0	Displays the difference between the XSCF time and the physical partition time	Yes	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"
resetdateoffset -p 0	Resets the difference between the XSCF time and the physical partition time	Yes	"7.9 Synchronizing the Physical Partition (PPAR) Time and XSCF Time"
Configuring CPU Activation			
showcodactivation	Displays the CPU Activation key information	Yes	"7.10.2 Checking a CPU Activation Key"

Table C-1 XSCF Setup Command Examples (*continued*)

XSCF Command Example	Description	Mandatory?	Linked Section
addcodactivation -F file:///media/usb_msd/ XXXXX_XX.TXT	Adds a CPU Activation key Example: The "XXXXX_XX.TXT" file on a USB device is specified to register a CPU Activation key.	Yes	"7.10.3 Registering a CPU Activation Key"
setcod -p 0 -s cpu	Assigns CPU core resources to a physical partition	Yes	"7.11 Assigning CPU Core Resources"
showcod -v -s cpu	Checks the number of assigned CPU Activations	Yes	"7.11 Assigning CPU Core Resources"
Starting and stopping a physical partition			
setpparparam -p 0 -s bootscript "setenv auto-boot? false"	Changes the setting of auto-boot?, which is an OpenBoot PROM environment variable	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
poweron -a	Starts a physical partition	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
showpparprogress -p 0	Displays the physical partition status Example: The progress between PPAR-ID 0 power-on and the start of POST is displayed in the midst of processing.	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
showdomainstatus -p 0	Displays the logical domain status Example: The status of all logical domains on PPAR-ID 0 is displayed.	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
console -p 0	Connects to the control domain console of a physical partition (PPAR)	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
poweroff -a	Stops a physical partition	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
showpparprogress -p 0	Displays the physical partition status	Yes	"7.12 Starting and Stopping a Physical Partition (PPAR)"
Saving configuration information			
ldm add-spconfig ldm_set1 (*2)	Saves logical domain configuration information after a logical domain configuration change Example: It is saved with the file name ldm_set1.	Yes	"7.14.1 Saving Logical Domain Configuration Information"
dumpconfig file:///media/ usb_msd/backup-file.txt or dumpconfig ftp://<ftp_ server>/backup/ backupsca-ff2-16.txt	Saves XSCF setting information to a USB device Saves it via a network	Yes	"7.14.2 Saving XSCF Setting Information"

*1 If you execute the setdate command after setting the altitude, you can skip rebootxscf because the XSCF is automatically rebooted after the command is executed.

*2 The ldm add-spconfig command is a command of Oracle VM Server for SPARC.

Appendix D

Installation Procedure Checklist

This section contains a checklist of the required steps from SPARC M12-2S installation to initial diagnosis to ensure that the device setup is complete and the device is ready for use.

You can customize this checklist according to your user environment, and use it in combination with the workflow in [Table 1-2](#) as appropriate for the configuration in use.

- [From Installation of the 1BB Configuration to Initial Diagnosis](#)
- [From Installation to Initial Diagnosis of a Configuration With Direct Connections Between Chassis](#)

D.1 From Installation of the 1BB Configuration to Initial Diagnosis

Table D-1 Work Descriptions and References (1BB Configuration)

Work Description	Check	Checked By	Installation Guide Reference
1. Before installing the system, check the safety precautions, system specifications, and necessary conditions for installation.	[]		"Chapter 2 Planning and Preparing for System Installation"
2. Prepare the necessary tools/information for installation.	[]		"3.1 Preparing the Necessary Tools/Information for Installation"
3. Confirm the delivered components.	[]		"3.2.1 Confirming the Delivered Components of the SPARC M12-2S"
	[]		"3.2.2 Confirming the Delivered Components of the PCI Expansion Unit"
4. Install the rack.	[]		"2.4.1 Mounting Conditions for General Racks"
5. Mount the SPARC M12-2S in the rack.	[]		"3.4.1 Mounting the SPARC M12-2S in a Rack"

Table D-1 Work Descriptions and References (1BB Configuration) (continued)

Work Description	Check	Checked By	Installation Guide Reference
6. If there is a PCI expansion unit, mount it in the rack.	[]		"3.4.2 Mounting the PCI Expansion Unit in a Rack"
7. After mounting the SPARC M12-2S, confirm the complete contact (complete engagement) of the internal storage, fan unit, and PCI cassettes. At this time, confirm that the PCI cassette lever is locked.	[]		
8. If there are optional internal components, mount them in the SPARC M12-2S and the PCI expansion unit. (For details, see the service manual.)	[]		"3.5.1 Mounting Optional Components in the SPARC M12-2S" "3.5.2 Mounting Optional Components in the PCI Expansion Unit" <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i> "Chapter 12 Maintaining PCIe Cards" "Chapter 15 Maintaining Internal Storage" "Chapter 17 Maintaining the CPU Memory Unit and Memory"
9. Connect the serial cable and LAN cables to the SPARC M12-2S. Attach the core to the power cord, and connect the power cord to the power supply unit.	[]		"5.1 Connecting Cables to the SPARC M12-2S"
10. Connect the link cables and management cable to the PCI expansion unit and the SPARC M12-2S. Attach the core to the power cord, and connect the power cord to the PCI expansion unit.	[]		"5.2 Connecting Cables to the PCI Expansion Unit"
11. Store the cables connected to the SPARC M12-2S in the rack. Check the rack in use, and store them in a way that is appropriate for the rack.	[]		"5.4 Storing Cables" "4.4.1 When the Rack Width is 700 mm" "4.4.2 When the Rack Width is 600 mm"
12. Connect the system management terminal to the SPARC M12-2S.	[]		"6.1 Connecting the System Management Terminal"
13. Turn on the input power, and check the status from the LED display on the XSCF unit.	[]		"6.2.2 Turning On the Input Power and Starting the XSCF"
14. Log in to the XSCF.	[]		"6.3 Logging In to the XSCF"
15. Check the version of the XCP firmware.	[]		"6.4 Confirming the XCP Firmware Version"
16. Set the altitude.	[]		"6.5 Checking the Altitude Setting"
17. Set the time.	[]		"6.6 Setting the Time"
18. Perform the initial diagnosis test. (*1)	[]		"6.7 Performing a Diagnosis Test"

Table D-1 Work Descriptions and References (1BB Configuration) (*continued*)

Work Description	Check	Checked By	Installation Guide Reference
19. Confirm that each component is normally recognized and that no errors occur.	[]		"6.8 Checking the Component Status"

*1 The probe-scsiall command and the show-devs command are displayed as command options in the diagnosis test. Confirm that the capacity and number of mounted disk units and the mounting locations and device names of the PCIe cards are correct.

D.2 From Installation to Initial Diagnosis of a Configuration With Direct Connections Between Chassis

Table D-2 Work Descriptions and References (Direct Connections Between Chassis)

Work Description	Check	Checked By	Installation Guide Reference
1. Before installing the system, check the safety precautions, system specifications, and necessary conditions for installation.	[]		"Chapter 2 Planning and Preparing for System Installation"
2. Prepare the necessary tools/information for installation.	[]		"3.1 Preparing the Necessary Tools/Information for Installation"
3. Confirm the delivered components. When setting up the BB configuration at the delivery site, confirm the set BB-ID on the operation panel. (*1)	[]		"3.2.1 Confirming the Delivered Components of the SPARC M12-2S"
	[]		"3.2.2 Confirming the Delivered Components of the PCI Expansion Unit"
4. Install the rack.	[]		"2.4.1 Mounting Conditions for General Racks"
5. Mount the SPARC M12-2S in the rack.	[]		"3.4.1 Mounting the SPARC M12-2S in a Rack"
6. If there is a PCI expansion unit, mount it in the rack.	[]		"3.4.2 Mounting the PCI Expansion Unit in a Rack"
7. After mounting the SPARC M12-2S, confirm the complete contact (complete engagement) of the internal storage, fan unit, and PCI cassettes. At this time, confirm that the PCI cassette lever is locked.	[]		

Table D-2 Work Descriptions and References (Direct Connections Between Chassis) (*continued*)

Work Description	Check	Checked By	Installation Guide Reference
8. If there are optional components, mount them in the SPARC M12-2S and the PCI expansion unit. (For details, see the service manual.)	[]		"3.5.1 Mounting Optional Components in the SPARC M12-2S" "3.5.2 Mounting Optional Components in the PCI Expansion Unit" <i>Fujitsu SPARC M12-2/M12-2S Service Manual</i> "Chapter 12 Maintaining PCIe Cards" "Chapter 15 Maintaining Internal Storage" "Chapter 17 Maintaining the CPU Memory Unit and Memory"
9. Check the identification ID of each SPARC M12-2S.	[]		"Chapter 4 Setting the SPARC M12-2S in a Building Block Configuration" "4.1 Setting the ID (BB-ID) Identifying the SPARC M12-2S"
10. Connect the XSCF BB control cable and the XSCF DUAL control cable to each SPARC M12-2S.			"4.2 Connecting XSCF Cables"
11. Connect the crossbar cable to each SPARC M12-2S.			"4.4 Storing Crossbar Cables"
12. Connect the serial cable (*2) and LAN cables to the SPARC M12-2S. Attach the core to the power cord, and connect the power cord to the power supply unit.	[]		"5.1 Connecting Cables to the SPARC M12-2S"
13. Connect the link cables and management cable to the PCI expansion unit and the SPARC M12-2S. Attach the core to the power cord, and connect the power cord to the PCI expansion unit.	[]		"5.2 Connecting Cables to the PCI Expansion Unit"
14. Store the cables connected to the SPARC M12-2S in the rack. Check the rack in use, and store them in a way that is appropriate for the rack.	[]		"5.4 Storing Cables" "4.4.1 When the Rack Width is 700 mm" "4.4.2 When the Rack Width is 600 mm"
15. Connect the system management terminal to the SPARC M12-2S of the master XSCF.	[]		"6.1 Connecting the System Management Terminal"
16. Check the BB-ID setting.	[]		"6.2.1 Checking the BB-ID Settings"
17. Turn on the input power, and check the status from the LED display on the XSCF unit.	[]		"6.2.2 Turning On the Input Power and Starting the XSCF"
18. Log in to the master XSCF.	[]		"6.3 Logging In to the XSCF"
19. Check the version of the XCP firmware.	[]		"6.4 Confirming the XCP Firmware Version"

Table D-2 Work Descriptions and References (Direct Connections Between Chassis) (*continued*)

Work Description	Check	Checked By	Installation Guide Reference
20. Set the altitude.	[]		"6.5 Checking the Altitude Setting"
21. Set the time.	[]		"6.6 Setting the Time"
22. Perform the initial diagnosis test. (*3)	[]		"6.7 Performing a Diagnosis Test"
23. Confirm that each component is normally recognized and that no errors occur.	[]		"6.8 Checking the Component Status"

*1 Be sure to confirm the set BB-ID on the SPARC M12-2S operation panel before connecting and powering on the SPARC M12-2S with a BB configuration at the delivery site. The BB-ID will not be updated if only the BB-ID on the operation panel is changed. Be sure to connect the SPARC M12-2S with the set BB-ID on the operation panel.

*2 Connect the serial cable to the serial port of the SPARC M12-2S operating as the master XSCF.

*3 The probe-scsiall command and the show-devs command are displayed as command options in the diagnosis test. Confirm that the capacity and number of mounted disk units and the mounting locations and device names of the PCIe cards are correct.

