SPARC Enterprise
M4000/M5000/M8000/M9000 Servers

RCI Build Procedure

SPARC® Enterprise
M4000/M5000/M8000/M9000 Server
RCI Build Procedure

FUJITSU

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Preface

This manual explains the RCI build procedure of the SPARC Enterprise M4000/M5000/M8000/M9000 server. This manual is intended for authorized service personnel who perform maintenance work of the server or field engineers.

In this manual, the verification of the standalone operation of the server is assumed to have been completed. Read this manual together with the reference manuals cited in it.

This manual explains the following:

- Structure and Contents of This Manual
- SPARC Enterprise Mx000 Servers Documentation
- Text Conventions
- Prompt Notations
- Syntax of the Command Line Interface (CLI)

Structure and Contents of This Manual

This manual is organized as described below.

Chapter 1, "RCI Build Procedure"

Explains the initial build procedure of the Remote Cabinet Interface (RCI) in the installation work.

Appendix A, "Troubleshooting."

Explains how to deal with possible problems during the RCI setup.

SPARC Enterprise Mx000 Servers Documentation

The manuals listed below are provided for reference.

Book Titles	Manual Codes
SPARC Enterprise M4000/M5000 Servers Site Planning Guide	C120-H015
SPARC Enterprise M8000/M9000 Servers Site Planning Guide	C120-H014
SPARC Enterprise Equipment Rack Mounting Guide	C120-H016
SPARC Enterprise M4000/M5000 Servers Getting Started Guide	C120-E345
SPARC Enterprise M8000/M9000 Servers Getting Started Guide	C120-E323
SPARC Enterprise M4000/M5000 Servers Overview Guide	C120-E346
SPARC Enterprise M8000/M9000 Servers Overview Guide	C120-E324
Important Safety Information for Hardware Systems	C120-E391
SPARC Enterprise M4000/M5000 Servers Safety and Compliance Guide	C120-E348
SPARC Enterprise M8000/M9000 Servers Safety and Compliance Guide	C120-E326
External I/O Expansion Unit Safety and Compliance Guide	C120-E457
SPARC Enterprise M4000 Server Unpacking Guide	C120-E349
SPARC Enterprise M5000 Server Unpacking Guide	C120-E350
SPARC Enterprise M8000/M9000 Servers Unpacking Guide	C120-E327
SPARC Enterprise M4000/M5000 Servers Installation Guide	C120-E351
SPARC Enterprise M8000/M9000 Servers Installation Guide	C120-E328
SPARC Enterprise M4000/M5000 Servers Service Manual	C120-E352
SPARC Enterprise M8000/M9000 Servers Service Manual	C120-E330
External I/O Expansion Unit Installation and Service Manual	C120-E329
SPARC Enterprise M4000/M5000/M8000/M9000 Servers RCI Build Procedure	C120-E361
SPARC Enterprise M4000/M5000/M8000/M9000 Servers Administration Guide	C120-E331
SPARC Enterprise M4000/M5000/M8000/M9000 Servers XSCF User's Guide	C120-E332
SPARC Enterprise M4000/M5000/M8000/M9000 Servers XSCF Reference Manual	C120-E333
SPARC Enterprise M4000/M5000/M8000/M9000 Servers Dynamic Reconfiguration (DR) User's Guide	C120-E335
SPARC Enterprise M4000/M5000/M8000/M9000 Servers Capacity on Demand (COD) User's Guide	C120-E336
SPARC Enterprise M4000/M5000/M8000/M9000 Servers RCI User's Guide	C120-E360
SPARC Enterprise M4000/M5000 Servers Product Notes	Go to the Web
SPARC Enterprise M8000/M9000 Servers Product Notes	Go to the Web
External I/O Expansion Unit Product Notes	C120-E456

(a) Manuals on the Web

The latest versions of all the SPARC Enterprise Series manuals are available at the following websites:

Global Site

http://www.fujitsu.com/sparcenterprise/manual/

Japanese Site

http://primeserver.fujitsu.com/sparcenterprise/manual/

Note: Product Notes and Release Notes are available on the website only. Please check for the recent update on your product.

(b) Documentation CD

For the Documentation CD, please contact your local sales representative.

- SPARC Enterprise M4000/M5000 Servers Documentation CD (C120-E365)

- SPARC Enterprise M8000/M9000 Servers Documentation CD (C120-E364).

(c) Manual included on the Enhanced Support Facility x.x CD-ROM disk

Remote maintenance service

Book Titles	Manual Codes
Enhanced Support Facility User's Guide for REMCS	C112-B067

(d) Provided in system

Man page of the XSCF

Note: The man page can be referenced on the XSCF Shell, and it provides the same content as the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers XSCF Reference Manual*.

(e) Solaris Operating System-related manuals

http://docs.sun.com

(f) Information on Using the RCI function

For information on using the RCI function, refer to the *SPARC Enterprise M4000/M5000/M8000/M9000 Servers RCI Build Procedure* (This manual) and *SPARC Enterprise M4000/M5000/M8000/M9000 Servers RCI User's Guide* provided on the website.

Text Conventions

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

Typeface or symbol	Meaning	Example
`AaBbCc123`	What you type, when contrasted with on-screen computer output. This font represents the example of command input in the frame.	XSCF> `adduser jsmith`

`AaBbCc123`	The names of commands, files, and directories; on-screen computer output. This font represents the example of command input in the frame.	XSCF> `showuser -p`
		`User Name:  jsmith`
		`Privileges: useradm`
		`            auditadm`

Italic	Indicates the name of a reference manua	See the *XSCF User's Guide.*
" "	Indicates names of chapters, sections, items, buttons, or menus	See Chapter 2, "Preparation for Installation."

Prompt Notations

The notation used for prompts in this manual is shown below.Syntax of the Command Line Interface (CLI)

Shell	Prompt notation
XSCF	XSCF>
C shell	machine-name%
C shell superuser	machine-name#
Bourne shell and Korn shell	$
Bourne shell and Korn shell super-users	#
OpenBoot PROM	ok

Syntax of the Command Line Interface (CLI)

The command syntax is described below.

Command syntax

The command syntax is as follows:

- A variable that requires input of a value is enclosed in < >.
- An optional element is enclosed in [ ].
- A group of options for an optional keyword is enclosed in [ ] and delimited by |.
- A group of options for a mandatory keyword is enclosed in {} and delimited by |.
- The command syntax is shown in a frame.

  Example

  ```
  XSCF> showuser -a
  ```

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Contents

Figures

Tables

CHAPTER 1 RCI Build Procedure

This chapter explains the following items regarding the initial build procedure of the Remote Cabinet Interface (RCI) in the installation work.

- RCI Overview
- RCI command
- RCI Setup

1.1   RCI Overview

RCI is an interface to connect RCI Host (general name for main units supporting RCI and for RCI I/O units).

In this manual, a base cabinet and an I/O unit that support the RCI are referred to as an RCI Host and an RCI I/O unit, respectively. Furthermore, RCI Hosts and RCI I/O units are generally referred to as RCI device.

To connect RCI I/O units or to use the RCI asynchronous monitoring functions for an FJ cluster, a setup using the RCI setup commands is required in addition to the connection with RCI cables.

1.1.1   Overview of RCI connection

There are two types of main unit: midrange servers equipped with one RCI and high-end servers equipped with two RCIs.

I/O units include units equipped with one RCI and units equipped with two RCIs.

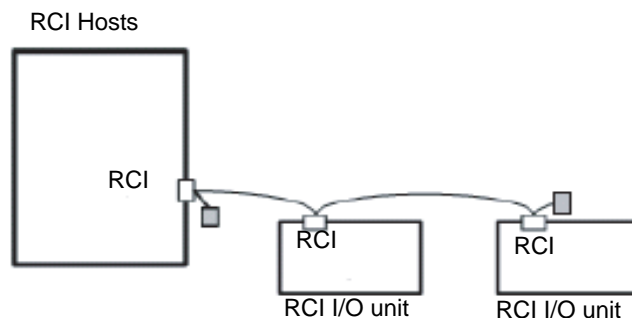The following figures show different RCI connection patterns:
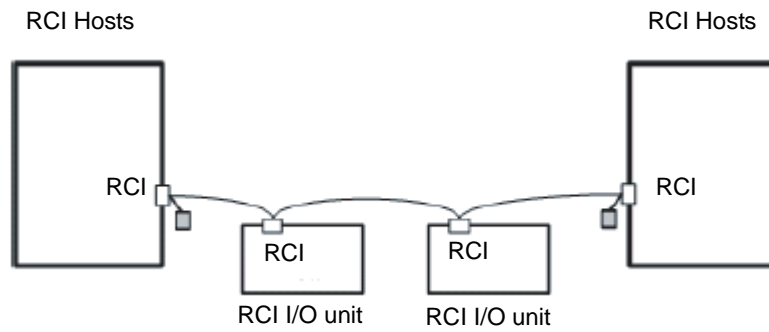

Figure 1.1 Basic configuration
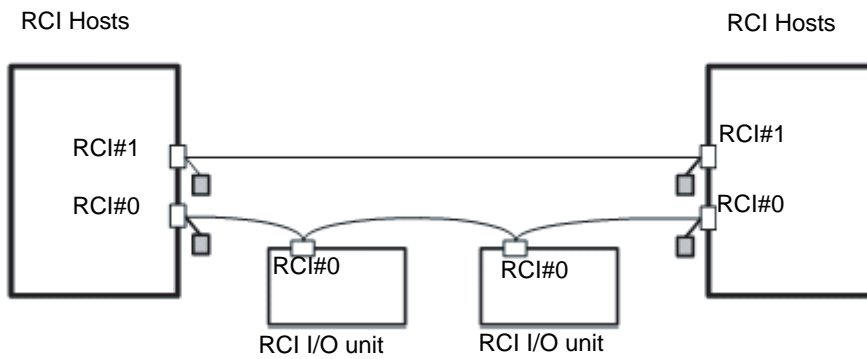
Figure 1.2 Cluster configuration

Figure 1.3 Duplicated configuration

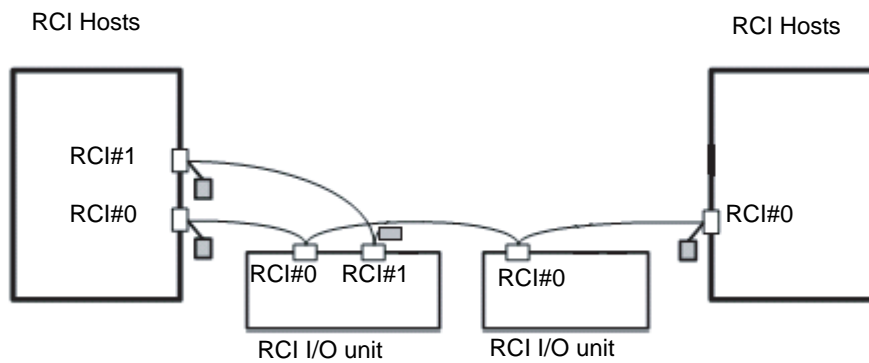

Figure 1.4 Mixture of duplicated and unduplicated configurations

1.2   RCI command

RCI commands are used to display RCI configuration information and set node addresses.

To connect I/O units equipped with RCI ports, a setup using RCI commands is required in addition to the connection with RCI cables.

Remarks: When you use the terminal function of the External power controller, perform the setrcic command and confirm setting or connection of the External power controller. For details of the setrcic command, see the RCI User's Guide or man page.

1.2.1   Command list

The RCI commands are explained below.

Table 1.1 Command list

Command	Function
setrci -c stat	Displays RCI configuration information. This command is used after the RCI setup to verify that the settings of the host and I/O units have been made correctly.
setrci -c init	Initializes the RCI configuration information. If other host units are connected through the RCI, the RCI settings must be initialized on each host unit. You can use this command if the system is powered off.
setrci -c set [host_no]	Sets up an RCI Host node. Before this command can be executed, the RCI settings must already have been initialized. host_noÅF Integer numbers from 1 to 32 are assigned in this order.
setrci -c initconfig	Assigns an RCI address to an I/O unit connected via RCI. Before this command can be executed, the RCI Host node settings must already have been made.
setrci -c addconfig	Makes the RCI settings for the case that a host unit or an I/O unit is added.

1.3   RCI Setup

This section explains the RCI setup for the following cases:

● New setup for a single RCI Host and two RCI I/O units
● New setup of two RCI Hosts
● When an RCI I/O unit is added later
● When a RCI Host is added later

Remarks: Please refer to Appendix A, "Troubleshooting." when there is a problem at RCI setup.

1.3.1   New setup for a single RCI Host and two RCI I/O units
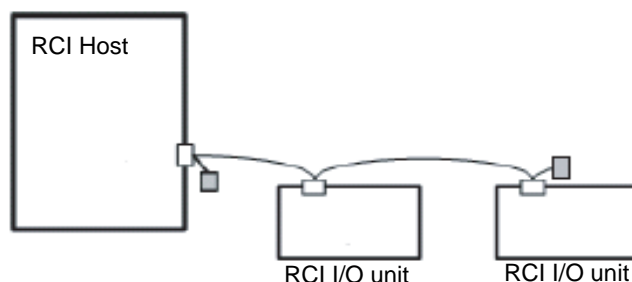
Figure 1.5 New setup for a single RCI Host and two RCI I/O units

1 Log in to the XSCF Shell.

2 Execute the setrci -c stat command to display the RCI status.

```
XSCF> setrci -c stat
HOST
 address 000f7fff
 Inactive
The command completed successfully
```

3 Verify that the RCI address is 000f7fff.

Remarks: 000f7fff is the default value of the RCI address. If the default value is not set, execute the setrci -c init command to initialize the value.
If the system is powered off, you can use the setrci -c init command.

```
XSCF> setrci -c init
The command completed successfully
```

4 Connect the main unit and I/O units with RCI cables (see Figure 1.5).

Connect an RCI branching connector to each of the RCI ports, and connect them with RCI cables by using a daisy-chain connection.

Connect an RCI terminating resistor to the branching connector at either end of the RCI connection. Refer to Section 1.3.5, "Connection of RCI."

5 Turn on the AC input to all the RCI device which are in the RCI connection.

6 Execute the setrci -c set command to make the settings of the host node.

Since the main unit is the first unit, host_no is 1.

```
XSCF> setrci -c set 1
The command completed successfully
```

7 Execute the setrci -c initconfig command to configure the RCI.

```
XSCF> setrci -c initconfig
The command completed successfully
```

8 Execute the setrci -c stat command to display the RCI status.

```
XSCF> setrci -c stat
HOST
 address 000101ff
 Active
LIST
 address    pwr alm  I/F  sys-phase  ctgry  dev-cls sub-cls tm-out
 000101ff  OFF  -   ACT  power-off  host   0001    0b      -
 003001ff  OFF  -   ACT  power-off  disk   0400    04      -
 003002ff  OFF  -   ACT  power-off  disk   0400    04      -

The command completed successfully
```

9 Verify that all the RCI device in the RCI connection are incorporated.
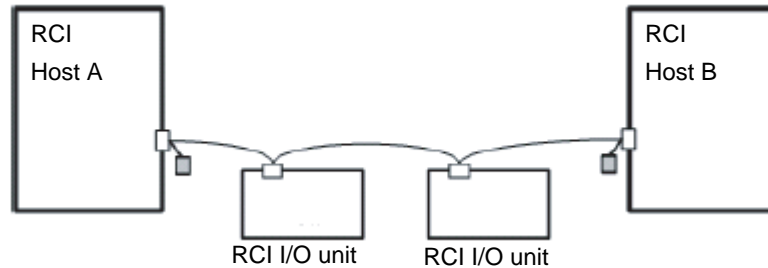
1.3.2   New setup of two RCI Hosts

Figure 1.6 New setup of two RCI Hosts

1 Log in to the XSCF Shell.

2 On main unit A, execute the setrci -c stat command to display the RCI status.

```
XSCF> setrci -c stat
HOST
 address 000f7fff
 Inactive
The command completed successfully
```

3 Verify that the RCI address is 000f7fff.

Remarks: 000f7fff is the default value of the RCI address. If the default value is not
         set, execute the setrci -c init command to initialize the value.
         If the system is powered off, you can use the setrci -c init command.

```
XSCF> setrci -c init
The command completed successfully
```

4 In a similar manner, display the RCI status of main unit B to verify that the RCI address is 000f7fff.

5 Connect the main unit and I/O units with RCI cables (see Figure 1.6).
Connect an RCI branching connector to each of the RCI ports, and connect them with RCI cables by using a daisy-chain connection.
Connect an RCI terminating resistor to the branching connector at either end of the RCI connection. Refer to Section 1.3.5, "Connection of RCI."

6 Turn on the AC input to all the RCI device which are in the RCI connection.

7 On main unit A, execute the setrci -c set command to make the settings of the host node.
Since main unit A is the first unit, host_no is 1.

```
XSCF> setrci -c set 1
The command completed successfully
```

8 On main unit B, execute the setrci -c set command to make the settings of the host node.
Since main unit B is the second unit, host_no is 2.

```
XSCF> setrci -c set 2
The command completed successfully
```

9 On main unit A, execute the setrci -c initconfig command to configure the RCI.

```
XSCF> setrci -c initconfig
The command completed successfully
```

10 Execute the setrci -c addconfig command on main unit B to expand the RCI configuration.

```
XSCF> setrci -c addconfig
The command completed successfully
```

11 Display the RCI status by executing the setrci -c stat command on main unit A.

```
XSCF> setrci -c stat
HOST
 address 000101ff
 Active
LIST
 address  pwr alm  I/F  sys-phase  ctgry  dev-cls sub-cls tm-out
 000101ff OFF  -   ACT  --         host   0001    0b      -
 000102ff OFF  -   ACT  --         host   0001    0b      -
 003001ff OFF  -   ACT  --         disk   0400    04      -
 003002ff OFF  -   ACT  --         disk   0400    04      -
The command completed successfully
```

12 Verify that all the RCI device in the RCI connection are incorporated.

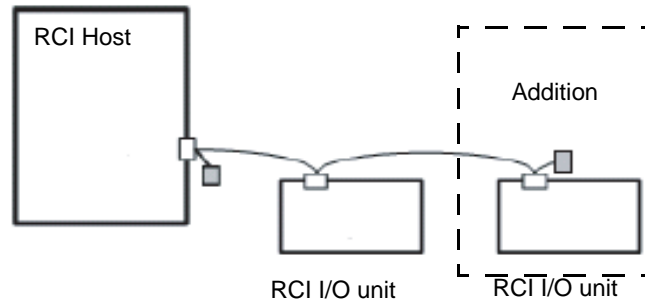## 1.3.3   When an RCI I/O unit is added later

Figure 1.7 When an RCI I/O unit is added later

1 Connect the I/O unit to be added with an RCI cable by using a daisy-chain connection (see Figure 1.7).
Connect an RCI branching connector to the RCI port, and then connect it with an RCI cable by using a daisy-chain connection.
Connect an RCI terminating resistor to the branching connector at either end of the RCI connection. Refer to Section 1.3.5, "Connection of RCI."

2 Turn on the AC input to all the units which are in the RCI connection.

3 Log in to the XSCF Shell.

4 Execute the setrci -c addconfig command to configure the RCI.

```
XSCF> setrci -c addconfig
The command completed successfully
```

5 Execute the setrci -c stat command to display the RCI status.

```
XSCF> setrci -c stat
HOST
 address 000101ff
 Active
LIST
 address  pwr alm  I/F  sys-phase   ctgry  dev-cls sub-cls tm-out
 000101ff OFF  -   ACT   --         host   0001    0a      -
 003001ff OFF  -   ACT   --         disk   0400    04      -
 003002ff OFF  -   ACT   --         disk   0400    04      -
The command completed successfully
```

6 Verify that the added I/O unit is incorporated.
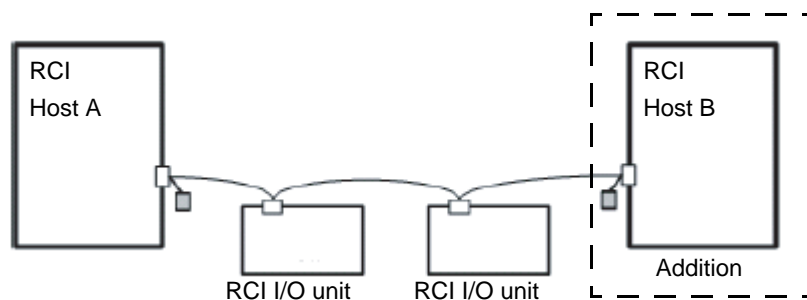
1.3.4   When a RCI Host is added later

Figure 1.8 When a RCI Hosts is added later

1 Log in to the XSCF Shell.

2 On main unit B, which is to be added, execute the setrci -c stat command to display the RCI status.

```
XSCF> setrci -c stat
HOST
 address 000f7fff
 Inactive
The command completed successfully
```

3 Verify that the RCI address is 000f7fff.

Remarks: 000f7fff is the default value of the RCI address. If the default value is not set, execute the setrci -c init command to initialize the value.
If the system is powered off, you can use the setrci -c init command.

```
XSCF> setrci -c init
The command completed successfully
```

4 Connect main unit B, which is to be added, with an RCI cable (see Figure 1.8).
Connect an RCI branching connector to each of the RCI ports, and connect them with RCI cables by using a daisy-chain connection.
Connect an RCI terminating resistor to the branching connector at either end of the RCI connection. Refer to Section 1.3.5, "Connection of RCI."

5 Turn on the AC input to all the RCI device which are in the RCI connection.

6 On main unit B, execute the setrci -c set command to make the settings of the host node.
Since the main unit is the second unit, host_no is 2.

```
XSCF> setrci -c set 2
The command completed successfully
```

7 Execute the setrci -c addconfig command on main unit B to expand the RCI configuration.

```
XSCF> setrci -c addconfig
The command completed successfully
```

8 Display the RCI status by executing the setrci -c stat command on main unit A.

```
XSCF> setrci -c stat
HOST
 address 000102ff
 Active
LIST
 address   pwr alm I/F   sys-phase  ctgry dev-cls sub-cls tm-out
 000101ff OFF  -  ACT   --         host  0001  0b    -
 000102ff OFF  -  ACT   --         host  0001  0b    -
 003001ff OFF  -  ACT   --         disk  0400  04    -
 003002ff OFF  -  ACT   --         disk  0400  04    -
The command completed successfully
```

9 Verify that the added main unit is incorporated.

1.3.5   Connection of RCI

According to the following procedure, connect different units with RCI cables by using a daisy-chain connection.

1 Prepare RCI branching connectors and RCI terminating resistors.
All of them are supplied with the main unit.

2 Connect the main unit and I/O units with RCI cables (see Figure 1.9 and Figure 1.10.)
  1   Connect the RCI branching connector (1) to the RCIport on an XSCF unit of the main unit.
  2   Connect the RCI branching connector and the RCI port of an I/O unit with an RCI cable (2) by using a daisy-chain connection.

Remarks: Up to 32 RCIs including the RCI main unit can be connected. Use the repeater function of the external power controller to extend the cable length used and to increase the number of connected RCI device. Note that the maximum RCI cable length is 150 meters.

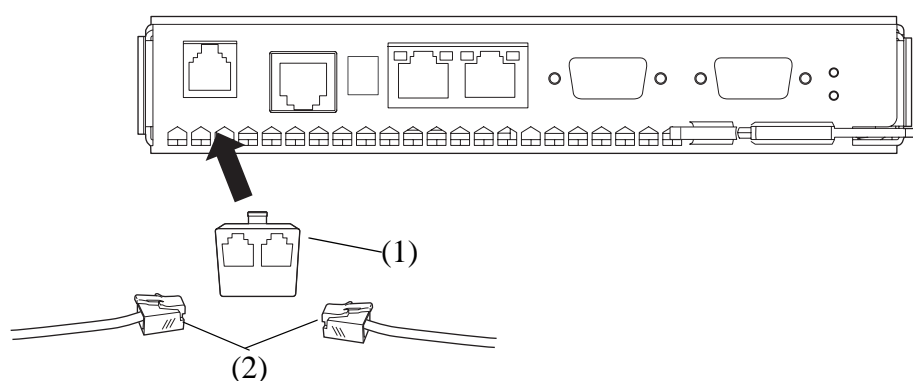Remarks: The external power controller is included in the number of RCI device

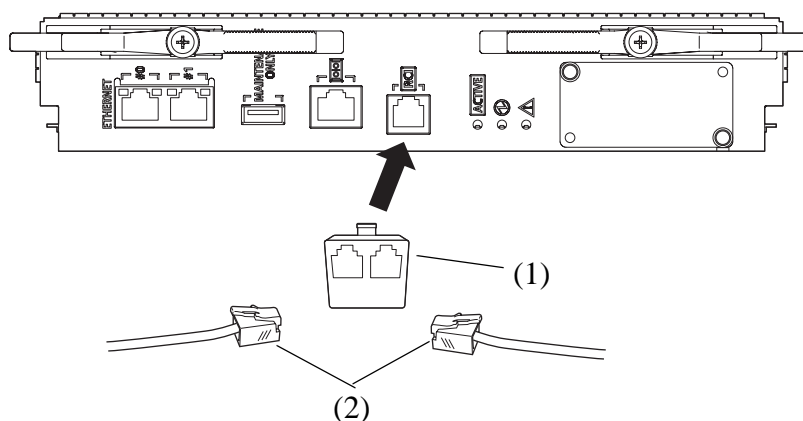Figure 1.9 RCI branching connector connection of a midrange server

Figure 1.10 RCI branching connector connection of a high-end server

3   Connect the RCI terminating resistor to the branching connector that is at the end of the RCI connection.

Appendix A Troubleshooting

This appendix explains how to deal with possible problems during the RCI setup.

- In the Case Where Setrci Command Ended Abnormally and Displayed "Operation Failed Error Status: XX"
- In the Case Where RCI Status of RCI Host Changes From ACTIVE to INACTIVE

A.1 In the Case Where Setrci Command Ended Abnormally and Displayed "Operation Failed Error Status: XX"

When the RCI construction by the setrci command ended abnormally and "Operation failed error status: XX" is displayed, the displayed error status code, explanation, and remedy pattern are described to the following table.

Table A.1 The Error Status Code and Explanation

Code	Explanation	Remedy pattarn
00	Detected the duplicate RCI address.	Pattern A
01	RCI address of current unit is not configured or false.	Pattern B
02	Detected the duplicate RCI address of RCI host, or detected the undefined RCI address.	Pattern C
03	RCI address of current unit is not configured.	Pattern B
04	Over maximum entry of RCI table.	Pattern D
05	Detected anomaly in RCI table receiving.	Pattern C
06	Detected anomaly in RCI table sending.	Pattern C
07	Receiving status check from undefined RCI device.	Pattern C
08	Detected the loss of RCI master.	Pattern C
09	Detected anomaly of RCI table.	Pattern C
0a	Synchronous time out of RCI table.	Pattern C
0b	Synchronous retry out of RCI table.	Pattern C
0c	Detected anomaly of RCI table.	Pattern C
0d	Failed the version check of RCI table.	Pattern C
0e	Detected anomaly of RCI table.	Pattern C
0f	Detected anomaly in synchronous with RCI Neuron chip.	Pattern E

Table A.1 The Error Status Code and Explanation

Code	Explanation	Remedy pattarn
20	Detected the duplicate RCI address in RCI I/O unit (Expansion file unit, External power controller).	Pattern C
30	Detected the duplicate RCI address in RCI I/O unit (Line selector switch).	Pattern F
fd	RCI construction cannot be constructed, or it was cancelled.	Pattern G
fe	Other RCI unit is constructing the RCI network.	Pattern A
ff	RCI setup procedure is false.	Pattern A

Remedy pattarn

● Pattern A

1   Check the RCI setup procedure, the RCI address value and the connection.

    1   Check the setting of the RCI address and the duplicate of the RCI address by setrci -c stat command.

    2   Check whether the othr RCI host that doesn't execute the RCI initialization is connected.

2   In the case of anomaly, retry RCI setup in correct procedure.

● Pattern B

1   Check the RCI address value of current unit by setrci -c stat command.

2   In the case of anomaly, retry RCI setup in correct procedure.

● Pattern C

1   Check the RCI address value of current unit and other unit by setrci -c stat command.

2   In the case of anomaly, retry RCI setup in correct procedure.

● Pattern D

1   Check whether 95 and more units of RCI I/O unit (include the External power controller) are not connected.

2   When 95 and more units are connected, change the connection configuration to 94 and less units (include the External power controller), and retry RCI setup.

● Pattern E

1   Replace the XSCF board.

2   After the replacement of the XSCF unit, retry RCI setup.

● Pattern F

1   Check whether RCI address value of the Line selector switch is not duplicated.

2   If the duplicate, change the RCI address of the Line selector switch, and retry RCI setup. To change the RCI address of the Line selector switch, refer to its manuals.

● Pattern G

Check the state of XSCF, and execute either of the following operations.

When XSCF reboot or redundancy are working, execute the setrci command after these are completed.

If the above-mentioned doesn't correspond, retry the setrci command.

A.2 In the Case Where RCI Status of RCI Host Changes From ACTIVE to INACTIVE

Remarks: When this problem has occurred, do not replace the XSCF unit because it is not a failure of the XSCF unit.

This problem is occurred by the mistake of the RCI construction procedure and the RCI connection.

t occurrs when the same RCI address is set and constructed, or, when connecting with the RCI network of the construction of the RCI host that has not been initialized.

Confirm whether to correspond to this problem. The procedure is the following:

1 Excute showlogs command, and check whether RCI configuration conflict is generated in error log.

2 When that message was generated, check the RCI establishment procedure, the RCI address value and the connection.

3 In the case of anomaly, correct the RCI address or the connection of relevant device according to the change procedure of each device.

4 Refer to Chapter 1.3.4, "When a RCI Host is added later" and retry RCI establishment.

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