



iSeries

iSeries Server 270, 800, 810, 820, 825, 830, 840, 870,  
890, SB2, and SB3 Hardware Problem Analysis and  
Isolation

*Version 5 Release 2*

SY44-5914-01







@server

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**Note**

Before using the information and the product it supports, be sure to read the information in “Notices” on page 493.

**Third Edition (August 2002)**

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# Analyze hardware problems

*For use by authorized service providers.*

This information is intended to provide authorized IBM service providers with complete instructions for locating, diagnosing, and repairing problems on system Models 270, 800, 810, 820, 825, 830, 840, 870, 890, SB2, and SB3.

Before using this information and the product it supports, be sure to read the information in Safety and environmental notices.

## **What's new for V5R2**

Highlights the changes and improvements made to the Analyze hardware problems topic.

## **Print this topic**

Provides access to a hardcopy version of the Analyze hardware problems topic.

## **“Start problem analysis” on page 2**

This topic serves as the starting point for all service actions. You will be directed on where and how to begin diagnosing your problem. This topic also includes procedures for problems that occur without a system reference code (SRC), such as a system that will not power on.

## **System reference codes**

This topic uses a system reference code on the problem summary form to find a list of possible failing items or point to additional isolation procedures (if available). System reference codes (SRCs) can appear on the control panel, the Product Activity Log (PAL), the Main Storage Dump Manager display, or on various displays within DST or SST.

## **“Problem isolation” on page 61**

This topic will guide you through diagnosing the problem and determining which field replaceable unit (FRU) needs replacing, if any.

## **Remove and replace procedures**

The remove and replace procedures will help you to exchange field replaceable units (FRUs).

## **Part locations and listings**

This topic contains information on part locations and addresses, part assembly diagrams, and a FRU part listing with descriptions and part numbers.

## **Data recovery and general information**

This topic contains procedures for recovering from disk unit failures as well as general information about various system attributes and functions.

## **Forms**

This topic contains various forms to assist you in using the Analyze hardware problems information.

## **Terminology**

Find definitions to many concepts and terms used throughout this information.

## **Related information**

This topic contains links to manuals (in PDF format), Web sites, and Information Center topics that relate to the Analyze hardware topic.

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## Start problem analysis

*For use by authorized service providers.*

Starting problem analysis is the gateway through which all service actions should be performed. Use the “Starting point for all problems” to begin diagnosing your problem.

“Starting point for all problems”

“Use the service action log” on page 7

“Use the product activity log” on page 9

“Use the problem log” on page 9

“Handle problems for non-critical resources” on page 11

“Analyze intermittent problems” on page 11

“Analyze IPL problems” on page 18

“Analyze power problems” on page 31

## Starting point for all problems

*For use by authorized service providers.*

Use this page to begin all problem analysis. Before you start problem analysis, you may want to review information available in the in the *iSeries<sup>(TM)</sup> Service Functions* book. For details, see Links to helpful *iSeries<sup>(TM)</sup> Service Functions* topics (See page 7) below.

Perform the following to begin problem analysis:

**Note:** Use the Help Key text that is available through these procedures for additional information.

1. Ensure that the system operator has collected all the necessary information for the reported problem. If not, work with them to collect the information by referring to the Problem reporting page in the Troubleshooting and service topic in Information Center.
2. Record the IPL type and mode before starting this service call.

**Note:** When you complete this service call, return the system to this IPL type and mode or to the IPL type and mode specified by the customer.

### **DANGER**


<p><b>To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)</b></p>
--

3. All systems have a minimum of one logical partition. The first partition is the Primary partition. You must determine if the system has multiple logical partitions or only the Primary partition. Go to Determine if the system has logical partitions before continuing with this procedure.

Does this system have multiple logical partitions?

- **Yes:** Continue with the next step to check for configuration changes and missing resources in the logical partition (primary or secondary) that reported the problem.
- **No:** Continue with the next step to look for configuration changes and missing resources in the Primary partition.

4. Can you get to SST or DST for the partition with the problem (Primary or a logical secondary)?

- **No:** Go to step 6 (See page 3).
  - **Yes:** Many system problems occur after changing the system configuration or installing or changing a program. If the configuration has been changed, or if a program has been installed or changed, verify that everything is correct by performing the next step.
5. Check for missing or failed hardware by performing the following:
    - a. On the command line, enter the Start System Service Tools command:  
STRSST  
If you cannot get to SST, select DST. See Dedicated Service Tools (DST) in the *iSeries<sup>TM</sup> Service Functions* .
    - b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
    - c. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
    - d. Select the function keys for failed or non-reporting resources.
    - e. Continue with the next step.
  6. Use the tables below to find the type of problem, and symptom. Then, follow the action given in the What to do column.


The following types of problems are covered below:

- Intermittent problems (See page 3)
- DST/SST functions are available on the Primary system console (console of the Primary partition) (See page 3)
- The system is not operational (See page 4)
- Problem with a secondary partition (See page 4)
- Problem with a guest partition (See page 5)
- Time-of-day problem (See page 5)
- Obvious physical symptom (See page 5)
- Operations Console, or the remote control panel (See page 6)
- Processor or memory problem (See page 6)
- Bus problem (See page 7)
- You cannot find the symptom in this page (See page 7)

**Table 1. Intermittent problems**

Symptom	What you should do:
You suspect an intermittent problem.	Go to “Analyze intermittent problems” on page 11.



**Table 2. DST/SST functions are available on the Primary system console (console of the Primary partition)**

Symptom	What you should do:
<ul style="list-style-type: none"> <li>• There is a system reference code or message.</li> <li>• The customer reports reduced system function.</li> <li>• There is a system performance problem.</li> <li>• There are failing, missing, or inoperable system resources.</li> </ul>	<p>Go to “Use the service action log” on page 7.</p> <p><b>Note:</b> On most systems with multiple partitions, it is common to have one or more “Missing or Non-reporting” system bus resource’s under Hardware Service Manager. See Hardware Service Manager in the <i>iSeries<sup>TM</sup> Service Functions</i>  for details.</p>
There is an SRC displayed in function 5 on the control panel.	Go to “Analyze power problems” on page 31.


**Table 3. The system is not operational**

Symptom	What you should do:
There is an IPL problem, the system attention light is on, and blocks of data appear for 5 seconds at a time before moving to the next block of data for 5 seconds, and so on until 5 seconds of a blank control panel appears at which time the cycle repeats.	These blocks of data are functions 11 through 13. The first data block after the blank screen is function 11, the second block is function 12, and so on. Use this information to fill out Problem summary form information. Then, perform "SP-PIP42" on page 214.
You have a power problem, the system or an attached unit will not power on or will not power off, or there is an SRC in function 5 (05-1xxx-xxxx).	Go to "Analyze power problems" on page 31.
There is an SRC in function 11 and the system attention light is on.	Go to System reference codes.
There is an IPL problem (the system attention light is off) and there is no SRC in function 5.	Go to "Analyze IPL problems" on page 18.
There is a "Device Not Found" message during an install from an alternate installation device.	Go to "TU-PIP6" on page 234.
System operations have stopped or the system is in a loop (the system attention light is off).	Go to "System hangs or loops (no SRC)" on page 26.

**Table 4. Problem with the secondary partition on a system that has multiple logical partitions**

Symptom	What you should do:
There is a B2xx xxxx SRC on the Work with Partition Status screen of the Primary console.	Go to System reference codes.
One or more of the following was reported: <ul style="list-style-type: none"> <li>The console of a secondary partition was lost or is <b>not</b> functioning.</li> <li>There is an SRC on the panel of an I/O expansion tower owned by a secondary partition.</li> <li>You suspect a power problem with resources owned by a secondary partition.</li> <li>There is an IPL problem with a secondary partition and there is an SRC on the Work with Partition Status screen of the Primary or secondary partition.</li> <li>The secondary partition's operations have stopped or the partition is in a loop and there is an SRC on the Work with Partition Status screen of the Primary or secondary console.</li> </ul>	<ul style="list-style-type: none"> <li>Search the Primary partition's service action log. Go to "Use the service action log" on page 7.</li> <li>If you don't find an entry in the Service Action Log of the Primary partition then record the partition's SRC from the Work with Partition Status screen of the Primary partition's console. See <i>iSeries<sup>(TM)</sup> Service Functions</i> . Use that SRC and go to System Reference Codes.</li> </ul> <p>Perform service from the secondary partition unless instructed to move to another partition.</p>
The partition's console is functioning <b>and</b> in the Work with partition status screen in the Primary partition or secondary partition, the state of the partition is "Failed" or "Unit Attn" and there is a system reference code. See <i>iSeries<sup>(TM)</sup> Service Functions</i>  .	Use the partition's SRC. From the partition's console search for that SRC in the partition's Service Action Log. Go to "Use the service action log" on page 7.
One or more of the following was reported: <ul style="list-style-type: none"> <li>There is an IPL problem with the secondary partition and there is <b>no</b> SRC displayed in the Work with Partition Status screen.</li> <li>The partition's operations have stopped or the partition is in a loop and there is <b>no</b> SRC displayed in the Work with Partition Status screen.</li> </ul>	Go to "Logical partition hangs or loops (no SRC)" on page 28.



Symptom	What you should do:
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> <li>• There is a system reference code or message on the partition's console.</li> <li>• The customer reports reduced function in the partition.</li> <li>• There is a partition performance problem.</li> <li>• There are failing, missing, or inoperable resources.</li> </ul>	<p>From the partition's console search the partition's Service Action Log. Go to "Use the service action log" on page 7.</p> <p><b>Note:</b> On most systems with multiple partitions, it is common to have one or more "Missing or Non-reporting" system bus resource's under Hardware Service Manager.</p> <p>See <i>iSeries<sup>(TM)</sup> Service Functions</i>  for details.</p>
<p>There is a "Device Not Found" message during an install from an alternate installation device.</p>	<p>Go to "TU-PIP6" on page 234.</p>

**Table 5. Problem with a guest partition**

**Note:** These are reported from the operating system (other than OS/400<sup>(R)</sup>) running in a guest partition or reported from the hosting partition of a guest partition. See the definitions for guest partition and hosting partition in the Terminology page.

Symptom	What you should do:
<p>Is the problem appearing from a guest operating system? To determine if the system has guest partitions, see Determine if the system has guest partitions.</p>	<p>If there are Service Action Log (SAL) entries in the Primary partition or the hosting partition, work these problems first.</p>
<p>Is the problem appearing in the hosting partition of a guest partition? To determine if a partition is a guest partition, see Determine if the system has guest partitions or ask the customer if the problem is appearing in the hosting partition for a guest partition.</p>	<p>To determine the hosting partition for a guest partition see Determine if the system has guest partitions.</p> <p>If there are no SAL entries in the Primary partition and no SAL entries in the Hosting partition, then, contact your next level of support.</p>

**Table 6. Time-of-day problem**

Symptom	What you should do:
<p>System clock loses or gains more than 1 sec/day when the system is connected to utility power.</p>	<p>Replace the service processor. See the symbolic FRU "SVCPROC" on page 464.</p>
<p>System clock loses or gains more than 1 sec/day when the system is disconnected from utility power.</p>	<p>Replace the time-of-day battery on the service processor. For service processor location information, see Locations and addresses for the model on which you are working. The associated table will direct you to the remove and replace procedure.</p>

**Table 7. There is an obvious physical symptom**

Symptom	What you should do:
<p>A light or display on the system unit control panel or on a FC 507x system unit expansion, a FC 508x storage expansion unit, a FC 506x PCI expansion unit control panel, or (in Models 820, 830, SB2, and SB3 only, a FC 9251 base I/O tower is <b>not</b> working correctly.</p>	<p>Perform "SPCN PIP20" on page 222.</p>
<p>A light or display on the control panel of the FC 504x system unit expansion is not working correctly.</p>	<p>Perform SPCN-PIP4 in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.</p>
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> <li>• Noise</li> <li>• Smoke</li> <li>• Odor</li> </ul>	<p>Go to System safety inspection.</p>

Symptom	What you should do:
A part is broken or damaged.	Go to the Type, model, and part number list to get the part number.  Then, go to the Remove and replace procedures to exchange the part.

**Table 8. Problem with the Operations Console or the remote control panel**

Symptom	What you should do:
The System <b>Remote</b> Control Panel is <b>not</b> working properly.	Perform “Operations Console-PIP2” on page 149.
The Operations Console will not connect or there is an SRC code of A6xx5001 (B6xx5001), A6xx5004 (B6xx5004), or A6xx5007 (B6xx5007) and the system attention light is on.	Perform “Operations Console-PIP1” on page 147.

**Table 9. Processor or memory problem**

Symptom	What you should do:
<p>The system has a processor or memory problem.</p> <p>For Models 270, 820, 830, 840, SB2, and SB3: An SRC displayed on the Control Panel starts with B427, B437, B467, or B4FF.</p> <p>For Models 800, 810, 825, 870, and 890: An SRC displayed on the Control Panel starts with B4FF, B427, B428, or B448.</p>	<p>If the system shows an SRC in the Service Action Log, look at the failing items identified in the Service Action Log view. Replace any hardware FRUs or go to any symbolic FRUs. To replace hardware, go to Locations and addresses for the model you are working on.</p> <p><b>Note:</b> The priority code is the fifth digit of the SRC. They are:</p> <ul style="list-style-type: none"> <li>• <b>Mandatory:</b> (The unit reference code starts with a 4) You should replace all mandatory failing items before the next IPL.</li> <li>• <b>High:</b> (The unit reference code starts with an 8) This part has a high probability of resolving the problem. Replace high priority failing items in order, one at a time with an IPL in between.</li> <li>• <b>Low:</b> (The unit reference code starts with a C) This part has a low probability of resolving the problem. Replace low priority failing items after replacement of mandatory and high priority items.</li> </ul> <p>If a Service Action Log is not available, use the SRC on the control panel and go to the appropriate System reference code table:</p> <ul style="list-style-type: none"> <li>– For Models 270 and 820, see B427</li> <li>– For Models 800 and 810, see B427</li> <li>– For Model 825, see B428</li> <li>– For Models 830 and SB2, see B437</li> <li>– For Models 840 and SB3, see B467</li> <li>– For Models 870 and 890, see B448</li> <li>– If any system fails to IPL due to a processor failure, there will be a B4FF SRC in the control panel, see B4FF.</li> </ul>

**Table 10. Bus problem**





Symptom	What you should do:
<p>The system has detected a bus problem. An SRC of the form B600 69xx will be displayed on the Control Panel.</p> <p>Bus errors will not prevent a system from completing an IPL, though bus errors are logged during an IPL. Though it is possible for a bus error to bring a system or partition down, most of the time the system or partition will be functioning and the error will be logged in the Service Action Log.</p>	<p>If the system shows an SRC in the Service Action Log, look at the failing items identified in the Service Action Log view.</p> <p>If possible failing hardware can be identified, the Service Action Log will list hardware FRUs to be replaced. If hardware FRUs can not be identified, the Service Action Log will list procedures designed to isolate failing hardware.</p> <p>Perform any symbolic FRUs or Bus problem isolation procedures (Bus PIPs) listed in the Service Action Log. To replace hardware, go to Locations and addresses for the system or tower on which you are working.</p> <p>If a Service Action Log is not available, use the SRC on the control panel and go to the appropriate B600 System reference code table.</p>

**Table 11. You cannot find the symptom in this page**

Symptom	What you should do:
<p>You cannot find the symptom in this page.</p> <p><b>Note:</b> Information about a 940x frame and devices in the frame can be found in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.</p>	<p>Go to “Use the service action log.”</p>

### Links to helpful iSeries<sup>™</sup> Service Functions topics

Before you start problem analysis, you may find it helpful to review the following information available in the iSeries<sup>™</sup> Service Functions information:


- To understand how the system and its devices connect together: see System Architecture and Configuration .
- To understand SRC definition and formats and how they appear: see System Reference Code (SRC) Information .
- To understand how the control panel works: see Control Panel Functions .
- Also, review supplemental RPQ pages.
- If the Verification of System Password Failed display appears during IPL, see System Password .

### Use the service action log

*For use by authorized service providers.*

Perform the following procedure to search for an entry in the Service Action Log that matches the time, SRC, or resource of the reported problem.

1. On the command line, enter the Start System Service Tools command:  
STRSST

If you cannot get to SST, use function 21 to get to DST. See Dedicated Service Tools (DST) in the *iSeries<sup>™</sup> Service Functions* . **Do not IPL the system to get to DST.**

2. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
3. Select **Start a Service Tool** → **Hardware Service Manager** → **Work with service action log**.
4. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
5. Search for an entry that matches one or more conditions of the problem:
  - SRC
  - Resource
  - Time
  - FRU list
6. Perform the following:
  - Choose **Display the failing item information** to display the SAL entry.
  - Use the **Additional Details** function to switch between part descriptions and part locations information.


All new entries in the Service Action Log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom. The information displayed in the date and time fields are the date and time for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

7. Did you find an entry in the Service Action Log?
  - **Yes:** Continue with the next step.
  - **No:** Is the OS/400<sup>(R)</sup> operating system available?
    - **Yes:** Go to “Use the problem log” on page 9.  
**This ends the procedure.**
    - **No:** Go to “Handle problems for non-critical resources” on page 11.  
**This ends the procedure.**
8. Was the entry isolated (does the letter “Y” appear in the Isolated column)?
  - **No:** Go to the System reference code list. Use the SRC that is indicated in the log to find the correct SRC table and unit reference code. Perform all actions in the **Description/Action** column before exchanging failing items.  
**Note:** When exchanging failing items, the part numbers and locations found in the Service Action Log entry should be used.  
**This ends the procedure.**
  - **Yes:** Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.  
**Notes:**
    - Some failing items are required to be exchanged in groups until the problem is solved.
    - Other failing items are flagged as mandatory exchange and must be exchanged before the service action is complete, even if the problem appears to have been repaired.
    - Use the “Part Action Code” field in the SAL display to determine if failing items are to be replaced in groups or as mandatory exchanges.
    - Unless the “Part Action Code” of a FRUs indicates group or mandatory exchange, exchange the failing items one at a time until the problem is repaired. Use the help function to determine the meaning of Part Action Codes.
9. Perform the following to help resolve the problem:
  - a. For failing items, refer to the “Failing items” on page 249 page.
  - b. For symbolic FRUs, see the Symbolic FRUs page.

- c. To display location information, choose the function key for **Additional details**. If location information is available, go to the Locations and addresses page for the model you are working on to determine what remove and replace procedure to perform.
  - d. If the failing item is Licensed Internal Code, contact your next level of support for the correct PTF to apply.
10. After exchanging an item, go to Verify the repair.
  11. Once the problem has been resolved, close the log entry by selecting **Close a NEW entry** on the Service Actions Log Report display.  
**This ends the procedure.**

## Use the product activity log

*For use by authorized service providers.*

1. Find an entry in the product activity log for the symptom you are using to locate the problem.
  - a. On the command line, enter the Start System Service Tools command:  
STRSST  
If you cannot get to SST, select DST (see Dedicated Service Tools (DST) in the *iSeries Service Functions*  ).  
**Note:** Do not IPL the system to get to DST.
  - b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
  - c. From the System Service Tools display, select **Start a Service Tool** → **Product activity log** → **Analyze log**.
  - d. On the Select Subsystem Data display, select the option to view **All Logs**.  
**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.
  - e. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
  - f. Search the entries on the Log Analysis Report display.  
**Note:** For example, a 6380 Tape Unit error would be identified as follows:  
**System Reference Code:** 6380CC5F  
**Class:** Perm  
**Resource Name:** TAP01
2. Find an SRC from the product activity log that best matches the time and type of the problem the customer reported.  
Did you find an SRC that matches the time and type of problem the customer reported?
  - **Yes:** Go to System reference codes and use the SRC information to correct the problem.  
**This ends the procedure.**
  - **No:** Contact your next level of support.  
**This ends the procedure.**

## Use the problem log

*For use by authorized service providers.*

Find and analyze a Problem Log entry that relates to the problem reported.

**Note:** For on-line problem analysis (WRKPRB), ensure that you are logged on with QSRV authority. During problem isolation, this will allow access to test procedures that are not available under any other log-on.

1. On the command line, enter the Work with Problems command:  
WRKPRB

**Note:** Use F4 to change the WRKPRB parameters to select and sort on specific problem log entries that match the problem. Also, F11 displays the dates and times the problems were logged by the system.

Was an entry that relates to the problem found?

**Note:** If the WRKPRB function was not available answer NO.

- **Yes:** Continue with the next step.
- **No:** Go to “Handle problems for non-critical resources” on page 11.  
**This ends the procedure.**

2. Select the problem entry by moving the cursor to the problem entry option field and entering option 8 to work with the problem.

Is Analyze Problem (option 1) available on the Work with Problem display?

- **No:** Perform the following:
  - a. Return to the initial problem log display (F12).
  - b. Select the problem entry by moving the cursor to the problem entry option field and selecting the option to display details.
  - c. Select the function key to display possible causes.  
**Note:** If this function key is not available, use the customer reported symptom string for customer perceived information about this problem. Then, go to “Use the product activity log” on page 9.
  - d. Use the list of possible causes as the FRU list and go to step 5 (**See page 10**).
- **Yes:** Run Analyze Problem (option 1) from the Work with Problem display.

**Notes:**

- a. For SRCs starting with 6112 or 9337, use the SRC and go to the System reference code list.
- b. If the message on the display directs you to use SST (System Service Tools), go to “COMM-PIP1” on page 103.

Was the problem corrected by the analysis procedure?

- **No:** Continue with the next step.
- **Yes: This ends the procedure.**

3. Did problem analysis send you to another entry point in the service information?

- **No:** Continue with the next step.
- **Yes:** Go to the entry point indicated by problem analysis.  
**This ends the procedure.**

4. Was the problem isolated to a list of failing items?

- **Yes:** Continue with the next step.
- **No:** Go to “Handle problems for non-critical resources” on page 11.  
**This ends the procedure.**

5. Exchange the failing items one at a time until the problem is repaired.

**Notes:**

- a. For failing items, see “Failing items” on page 249, and symbolic FRUs, see Symbolic FRUs.
- b. When exchanging FRUs, go to the Remove and replace procedures. If you are exchanging a disk unit, go to the Recovery procedures.
- c. After exchanging an item, go to Verify the repair.

Has the problem been resolved?

- **No:** Contact your next level of support.  
**This ends the procedure.**
- **Yes: This ends the procedure.**

## Handle problems for non-critical resources

*For use by authorized service providers.*

1. Is there an SRC in an 8-character format available on the Problem Summary form?  
**Note:** If the operator has not filled out the problem summary form, go to the problem reporting procedure in the Operator's Guide for the operating system in use.
  - **No:** Continue with the next step.
  - **Yes:** Go to System reference codes.  
**This ends the procedure.**
2. Does the problem involve a workstation resource?
  - **No:** Continue with the next step.
  - **Yes:** Do the following:
    - Check that the workstation is operational.
    - Verify that the cabling and addressing for the workstation is correct.
    - Perform any actions indicated in the system operator message.If you need further assistance, contact your next level of support.  
**This ends the procedure.**
3. Does the problem involve a removable media resource?
  - **No:** Continue with the next step.
  - **Yes:** Go to "Use the product activity log" on page 9 to resolve the problem.  
**This ends the procedure.**
4. Does the problem involve a communications resource?
  - **No:** Contact your next level of support.  
**This ends the procedure.**
  - **Yes:** Are there any system operator messages that indicate a communications-related problem has occurred?
    - **No:** Contact your next level of support.  
**This ends the procedure.**
    - **Yes:** Perform any actions indicated in the system operator message. If you need further assistance, contact your next level of support.  
**This ends the procedure.**

## Analyze intermittent problems

*For use by authorized service providers.*

An **intermittent problem** is a problem that occurs for a short time, and then goes away. The problem may not occur again until some time in the future, if at all. Intermittent problems cannot be made to appear again easily.

Some examples of intermittent problems are:

- A system reference code (SRC) appears on the control panel (the System Attention light is on) but disappears when you power off, then power on the system. An entry does not appear in the Product Activity Log.
- An entry appears in the problem log when you use the Work with Problems (WRKPRB) command. For example, the FC 5032 I/O Card Unit becomes powered off, but starts working again when you power it on.
- The workstation I/O processor is in a hang condition but starts working normally when you enter the Vary Configuration command (VRYCFG \*CTL RESET(\*YES)).

The following pages are included here:

- “Use this intermittent problem section,” to begin analyzing an intermittent problem
- “Correct intermittent problems”
- “General intermittent problem checklist” on page 13
- “How to analyze the intermittent problem” on page 16
- “Intermittent symptoms” on page 16
- “Failing area INT-PIPs” on page 17

## Use this intermittent problem section

*For use by authorized service providers.*

The following danger notice always applies in this intermittent section:

### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### Special tools and equipment

You must make all ac voltage measurements with a meter that measures true root mean square (RMS) voltage. The Fluke\*\* multimeter present in most IBM tool kits measures true RMS voltage. You can also use Fluke 8060A, 8600A, or equal meters.

You can get equipment for the following conditions from your branch office or installation planning representative:

- If you suspect that the air at the system site is too hot or too cold, you need a thermometer to check the temperature.
- If you suspect the moisture content of the air at the system site is too low or too high, use a wet/dry bulb to check the humidity. See “General intermittent problem checklist” on page 13 for more information.
- If you need to check ac receptacles for correct wiring, you need an ECOS\*\* tester, Model 1023-100, or equivalent tester. The tester lets you quickly check the receptacles. If you cannot find a tester, use an analog multimeter instead. Do not use a digital multimeter.
- To send data with a Licensed Internal Code Trouble Report (LICTR), you need a blank tape for a storage dump. Since you cannot predict when you might need a blank tape, you should always keep a blank tape available.

### How to use this section

Follow the steps in this procedure to correct an intermittent problem.

1. Read all of the information in “Correct intermittent problems” before you attempt to correct an intermittent problem. Then continue with the next step of this procedure.
2. Perform ALL steps in the “General intermittent problem checklist” on page 13. Then return to this step of this procedure and answer the following question.

Did you correct the intermittent problem?

- **No:** Go to “How to analyze the intermittent problem” on page 16.  
**This ends the procedure.**
- **Yes: This ends the procedure.**

### Correct intermittent problems

*For use by authorized service providers.*



An intermittent problem can show many different symptoms, so it may be difficult for you to determine the real cause without completely analyzing the failure. To help with this analysis, you should determine as many symptoms as possible.

- The complete SRC and unit reference code (URC) information is necessary to determine the exact failing area and the probable cause.
- Product Activity Log information can provide time and device relationships.
- Information on environmental conditions when the failure occurred can be helpful (for example, an electrical storm occurring when the failure happened).

**Note:** If you suspect that an intermittent problem is occurring, increase the log sizes to the largest sizes possible. Select the **Product activity log** option on the Start a Service Tool display (see "Product Activity Log" in the *iSeries Service Functions* information).

### Types of intermittent problems

There are four major types of intermittent problems:

- **Code (PTFs)**
  - Licensed Internal Code
  - OS/400 (operating system)
  - Licensed program products
  - Other application software
- **Configuration**
  - Non-supported hardware that is used on the system
  - Non-supported system configurations
  - Non-supported communication networks
  - Model and feature upgrades that are not performed correctly
  - Moving of down-level hardware from other systems to the iSeries server
  - Incorrectly configured or incorrectly cabled devices
- **Environment**
  - Power line disturbance—for example, reduced voltage (sag), a pulse, a surge, or total loss of voltage on the incoming ac voltage line
  - Power line transient—for example, a lightning strike
  - Electrical noise (constant or intermittent)
  - Defective grounding or a ground potential difference
  - Mechanical vibration
- **Intermittent hardware failure**

### General intermittent problem checklist

*For use by authorized service providers.*

The following steps have been successful in correcting intermittent problems on the iSeries server. Performing these steps removes the known causes of most intermittent problems. Therefore, it is important that you perform all of these steps. Some customers have a high availability requirement for the iSeries server (such as 24 hours a day, 7 days a week). It is very important that you perform all the steps in this checklist to ensure that the system can meet this availability requirement.

1. Discuss the problem with the customer. Look for the following symptoms:
  - An SRC or reference code that goes away when you power off the system, then power on the system.
  - Repeated failure patterns that you cannot explain. For example, the problem occurs at the same time of day or on the same day of the week. Look for some type of pattern.

- Failures that started after system installation
  - Failures that occurred during customer usage.
  - Failures that started after recent service or customer actions, system upgrade, addition of I/O devices, new software, or program temporary fix (PTF) installation.
  - Failures occurring only during high system usage.
  - Failures occur when people are close to the system or machines are attached to the system.
2. Recommend that the customer install the latest cumulative PTF package, since code PTFs have corrected many problems that seem to be hardware failures.

The customer can order the latest cumulative PTF package electronically through Electronic Customer Support or by calling the IBM Software Support Center.

Review the service recommendations in the Preventive Service Planning (PSP) listing for any additional HIPER (high impact pervasive) PTFs. This information is available from the IBM Software Support Center and are ordered electronically through Electronic Customer Support using the Send PTF Order command (SNDPTFORD). The Information Center at <http://www.ibm.com/eserver/series/infocenter> information contains a chapter on working with PTFs.


3. Review the latest hardware service information for symptoms that are related to the problem.  
Ask your next level of support for the latest information available.
4. If you have not already done so, use the maintenance package to see the indicated actions for the symptom described by the customer. Attempt to perform the on-line problem analysis procedure first. If this is not possible, such as when the system is down, go to “Starting point for all problems” on page 2.

Use additional diagnostic tools, if necessary, and attempt to cause the problem to occur again.

**Note:** Ensure that the service information you are using is at the same level as the operating system. For example, do not use Version 3 Release 1 manuals when servicing a system with software at Version 3 Release 6 level.

5. Check the site for the following environmental conditions:
  - a. Any electrical noise that matches the start of the intermittent problems. Ask the customer such questions as:
    - Have any external changes or additions, such as building wiring, air conditioning, or elevators been made to the site?
    - Has any arc welding occurred in the area?
    - Has any heavy industrial equipment, such as cranes, been operating in the area?
    - Have there been any thunderstorms in the area?
    - Have the building lights become dim?
    - Has any equipment been relocated, especially computer equipment?

If there was any electrical noise, find its source and prevent the noise from getting into the system.

- b. Site temperature and humidity conditions that are compatible with system specifications. See Environment reference in the Plan for hardware and software topic. This information is also available in the Plan for hardware and software  book under the Planning reference topic. Acceptable operating conditions are:
      - Temperature: 10 degrees C to 37.8 degrees C (50 degrees; F to 100 degrees F)
      - Humidity: 8% to 80% relative humidity

The best operating conditions are:

- Temperature: 23 degrees C (73 degrees F)
  - Humidity: 40% to 60% relative humidity
- c. Poor air quality in the computer room:

- Look for dust on top of objects. Dust particles in the air cause poor electrical connections and may cause disk unit failures.
  - Smell for unusual odors in the air. Some gases can corrode electrical connections.
- d. Any large vibration (caused by thunder, an earthquake, an explosion, or road construction) that occurred in the area at the time of the failure.
- Note:** A failure that is caused by vibration is more probable if the iSeries server is on a raised floor.
6. Ensure that all ground connections are tight. These items reduce the effects of electrical noise. Check the ground connections by doing the following:
- a. Look in the system installation information for instructions on how to connect the ground straps to the frame bar and the correct hardware to use. The hardware is part of the ship group kit.
  - b. Ensure that a star washer is between the head of the screw and the ground strap.
  - c. Make sure the screw is tight. Check by holding the ground strap and attempting to turn it counter-clockwise around the screw. If the screw loosens, tighten it so that it does not.
  - d. Measure the resistance between a conductive place on the frame to building ground or to earth ground. The resistance must be 1.0 ohm or less.
7. All cables that leave each frame must be fastened to the bottom bar of each frame with a cable tie or clamp.
- Ensure that you pull the cable ties tight enough to fasten the cable to the frame bar tightly. A loose cable can be accidentally pulled with enough force to unseat the logic card in the frame to which the cable is attached. If the system is powered on, the logic card could be destroyed.
8. Where required, ensure that ferrite cores and their covers are installed on both ends of all IPI-3 signal cables (DFCI cables) that leave the frame. The ferrite core can be installed up to 15 cm (6 inches) from the connector; the recommended distance is 8.5 cm (3.4 inches).
- The ferrite core is part 62X1146. The cover for the ferrite core is part 6495272.
- Note:** If the IPI-3 signal cables do not leave the frame, ensure that they do not hang below the bottom of the frame. If they do, tie them up inside the frame.
9. Ensure that all workstation and communications cables meet IBM specifications:
- All connections are tight.
  - Any twinaxial cables that are not attached to devices must be removed.
  - The lengths and numbers of connections in the cables must be correct.
  - Ensure that lightning protection is installed on any twinaxial cables that enter or leave the building.
10. Review the following:
- a. Service entries. Determine what service actions were performed on the system (see the Problem summary form).
  - b. Entries in the problem log (WRKPRB). Look for problems that were reported to the user.
  - c. Entries in the Product Activity Log. Look for a pattern:
    - SRCs on multiple input/output processors (IOP) occurring at the same time
    - SRCs that have a common “time of day” or “day of week” pattern
    - Log is wrapping (hundreds of recent entries and no older entries)
 Check the Product Activity Log sizes and increase them if they are smaller than recommended.
  - d. Entries in the history log (Display Log (DSPL0G)). Look for a change that matches the start of the intermittent problems.
  - e. Your records and the service log. Ensure that the latest engineering changes are installed on the system and on all system I/O devices.
11. Ensure that the hardware configuration is correct and that the model configuration rules have been followed. Use the **Display hardware configuration** service function (under SST or DST) to check for any missing or failed hardware.

12. Was a manufacturing engineering service (MES), system upgrade, feature, or any other field bill of material or feature field bill of material installed just before the intermittent problems started occurring?
  - **No:** Continue with the next step.
  - **Yes:** Review the installation instructions to ensure that each step was performed correctly. Then continue with the next step of this procedure.
13. Is the problem associated with a storage device?
  - **No:** Continue with the next step.
  - **Yes:** Ensure that the customer is using the correct storage device cleaning procedures and good storage media. Then continue with the next step of this procedure.
14. Ensure that all the items in Preventive maintenance (PM) are being performed regularly. Perform the following to help prevent intermittent thermal checks:
  - Ensure that the AMDs on all disk units, tape units, and power supplies are working.
  - Exchange all air filters as recommended.
15. If necessary, review the intermittent problems with your next level of support and installation planning representative.
 

Ensure that all installation planning checks were made on the system. Because external conditions are constantly changing, the site may need to be checked again.

**This ends the procedure.**

## How to analyze the intermittent problem

*For use by authorized service providers.*

Use this procedure to begin analyzing an intermittent problem.

1. Is a reference code associated with the intermittent problem?
  - **No:** Continue with the next step.
  - **Yes:** Go to the System reference code list, and find the reference code. If the actions in the system reference code tables do not correct the intermittent problem, return here and continue with the next step.
2. Is a symptom associated with the intermittent problem?
  - **No:** Continue with the next step.
  - **Yes:** Go to “Intermittent symptoms.” If it does not correct the intermittent problem, return here and continue with the next step.
3. Go to “Failing area INT-PIPs” on page 17. If it does not correct the intermittent problem, return here and continue with the next step.
4. Send the data you have collected to your next level of support so that an Authorized Program Analysis Report (APAR) or a Licensed Internal Code Trouble Report (LICTR) can be written.
 

**This ends the procedure.**

## Intermittent symptoms

*For use by authorized service providers.*

Use the table below to find the symptom and description of the intermittent problem. Then perform the corresponding intermittent problem isolation procedures (INT-PIPs) (which begin at “Intermittent PIPs” on page 108).

Although an INT-PIP may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the INT-PIPs shown for the symptom.

**Table 1. Intermittent symptoms**

Symptom	Description	INT-PIPs
System becomes powered off.	The system was operating correctly, then the system became powered off. SRC 0000 111x may occur when this happens, but the SRC information is lost if the customer performs an IPL after the failure and does not record the SRC.  <b>Notes:</b> 1. If the system has no workstation I/O processor cards, omit INT-PIP5. 2. If the system has an uninterruptable power supply, perform "INT-PIP9 Utility power and battery power units" on page 112.	"INT-PIP5 External noise on twinaxial cables" on page 109, "INT-PIP9 Utility power and battery power units" on page 112
System stops.	The system is powered on but is not operating correctly. No SRC or error code is displayed. The System Attention light is off. The Processor Activity lights may be on or off. Noise on the power-on reset line can cause the processor to stop.  <b>Note:</b> Ensure that the latest service processor PTF for your release is installed.	"INT-PIP18 PTFs not installed" on page 114
System or subsystem runs slow.	The system or the subsystem is not processing at its normal speed (for example, QBATCH).	"INT-PIP20 Performance problems" on page 115

If the symptom for the intermittent problem you have is not listed, go to "Failing area INT-PIPs."

## Failing area INT-PIPs

*For use by authorized service providers.*

Use this table only if you do not have a system reference code (SRC), or cannot find your symptom in Table 1. Intermittent symptoms (See page 16) in the Analyzing intermittent problems topic.

- Perform all of the steps in "General intermittent problem checklist" on page 13 for all failing areas. Then, continue with the next step.
- Refer to Table 1. Failing area INT-PIPs below, and perform the following:
  - Find the specific area of failure under **Failing area**.
  - Look down the column of the area of failure until you find an X.
  - Look across to the **INT-PIP** column and perform the INT-PIP indicated.
  - If the INT-PIP does not correct the intermittent problem, continue down the column of the area of failure until you have performed all of the INT-PIPs shown for the failing area.
- Although an INT-PIP may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the INT-PIPs shown for the failing area.

**Table 1. Failing area INT-PIPs**

Failing area						Intermittent PIP to perform:
Power	WSIOP	DASD MSIOP	Comm	Processor Bus	Tape optical	Perform all steps in:
X	X	X	X	X	X	"General intermittent problem checklist" on page 13

Failing area						Intermittent PIP to perform:
X	X			X		"INT-PIP5 External noise on twinaxial cables" on page 109
	X	X	X	X	X	"INT-PIP7 Electromagnetic interference (EMI)" on page 110
X						"INT-PIP9 Utility power and battery power units" on page 112
X						"INT-PIP14 Station protectors" on page 114
		X				"INT-PIP16 Licensed internal code" on page 114
X	X	X	X	X	X	"INT-PIP18 PTFs not installed" on page 114
	X	X	X	X	X	"INT-PIP20 Performance problems" on page 115

This ends the procedure.

## Analyze IPL problems

For use by authorized service providers.

Use the following table to start analyzing an IPL problem.

**Table 1. Analyze IPL problems**

Symptom	What you should do:
You cannot perform an IPL from the system control panel (no SRC).	Go to "Cannot perform IPL from the control panel (no SRC)" on page 19.
You cannot perform an IPL at a specified time (no SRC).	Go to "Cannot perform IPL at a specified time (no SRC)" on page 19.
You cannot start an IPL from a remote location (no SRC).	Go to "Cannot perform IPL from a remote location (no SRC)" on page 23.
The IPL did not complete.	Go to "System hangs or loops (no SRC)" on page 26.
The system cannot automatically perform an IPL after a local power failure occurred.	Go to "Cannot automatically perform an IPL after a power failure" on page 30.


Symptom	What you should do:
<p><b>(For system Models 830, 840, SB2, and SB3 only.)</b></p> <p>After a system power loss, the IPL function takes longer than usual.</p>	<p>Check the system product activity log for battery power unit problems.</p>

The following pages are included here

- “Cannot perform IPL from the control panel (no SRC)”
- “Cannot perform IPL at a specified time (no SRC)”
- “Cannot perform IPL from a remote location (no SRC)” on page 23
- “Cannot automatically perform an IPL after a power failure” on page 30

### Cannot perform IPL from the control panel (no SRC)

*For use by authorized service providers.*

1. Perform the following:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer’s power outlet.
2. Start an IPL by doing the following:
  - a. Select Manual mode and IPL type A or B on the control panel (see Control Panel Functions in the *iSeries Service Functions*  ).
  - b. Power on the system (see Power on/off the system and logical partitions).  
Does the IPL complete successfully?
    - **No:** Continue with the next step.
    - **Yes: This ends the procedure.**
3. Have all the units in the system become powered on that you expected to become powered on?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Analyze power problems” on page 31 and find the symptom that matches the problem.  
**This ends the procedure.**
4. Is an SRC displayed on the control panel?
  - **Yes:** Go to System Reference Codes and use the displayed SRC to correct the problem.  
**This ends the procedure.**
  - **No:** For all models, exchange the following FRUs, one at a time. Refer to the Remove and replace procedures for additional information.
    - a. SPCN card unit (see symbolic FRU “TWRCARD” on page 470)
    - b. Power Supply (see symbolic FRU “PWRSPPLY” on page 431)  
**This ends the procedure.**

### Cannot perform IPL at a specified time (no SRC)

*For use by authorized service providers.*

To correct the IPL problem, perform this procedure until you determine the problem and can perform an IPL at a specified time.

1. Perform the following:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer’s power outlet.
2. Power on the system in normal mode, (see Power on/off the system and logical partitions).  
Does the IPL complete successfully?
  - **Yes:** Continue with the next step.

- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
3. Have all the units in the system become powered on that you expected to become powered on?
- **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2 and find the symptom that matches the problem.  
**This ends the procedure.**
4. Verify the system date and time by doing the following:
- a. On the command line, enter the Display System Value command:

```
DSPSYSVAL QIPLDATTIM
```

Observe the system value parameters.

**Note:** The system value parameters are the date and time the system operator requested a timed IPL.

**Figure 1. Display for QIPLDATTIM**

```

+-----+
| Display System Value
| System: S0000000
| System value . . . . . : QIPLDATTIM
|
| Description . . . . . : Date and time to automatically IPL
|
| IPL date . . . . . : MM/DD/YY
| IPL time . . . . . : HH:MM:SS
+-----+

```

- b. On the command line, enter the Display System Value command:

```
DSPSYSVAL QDATE
```

Check the system values for the date.

**Figure 2. Display for QDATE**

```

+-----+
| Display System Value
| System: S0000000
| System value . . . . . : QDATE
|
| Description . . . . . : System date
|
| Date . . . . . : MM/DD/YY
+-----+

```

Does the operating system have the correct date?

- **Yes:** Continue with this step.
  - **No:** Set the correct date by doing the following:
    - 1) On the command line, enter the Change System Value command (CHGSYSVAL QDATE VALUE('mmddy')).
    - 2) Set the date by entering
      - mm=month
      - dd=day
      - yy=year
    - 3) Press Enter.
- c. On the command line, enter the Display System Value command:

```
DSPSYSVAL QTIME
```

Check the system values for the time.

**Figure 3. Display for QTIME**



```

+-----+
| Display System Value
| System: S0000000
| System value . . . . . : QTIME
|
| Description . . . . . : Time of day
|
| Time . . . . . : HH:MM:SS
+-----+

```

Does the operating system have the correct time?

- **Yes:** Continue with this step.
- **No:** Set the correct time by doing the following:
  - 1) On the command line, enter the Change System Value command (CHGSYSVAL QTIME VALUE('hhmmss')).
  - 2) Set the time by entering
    - hh=24 hour time clock
    - mm=minutes
    - ss=seconds
  - 3) Press Enter.

Continue with the next step.

5. Verify that the system can perform an IPL at a specified time by doing the following:
  - a. Set the time to 5 minutes past the present time by entering the Change System Value command (CHGSYSVAL SYSVAL(QIPLDATTIM) VALUE('mmdyy hhmmss')) on the command line.
    - mm = month to power on
    - dd = day to power on
    - yy = year to power on
  
    - hh = hour to power on
    - mm = minute to power on
    - ss = second to power on
  - b. Power off the system by entering the Power Down System Immediate command (PWRDWNSYS \*IMMED) on the command line.
  - c. Wait 5 minutes.

Does the IPL start at the time you specified?

- **No:** Continue with the next step.
- **Yes: This ends the procedure.**

6. Power on the system in normal mode, (see Power on/off the system and logical partitions).

Does the IPL complete successfully?

- **Yes:** Continue with the next step.
- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

7. Find an entry in the Service Action Log that matches the time, SRC, and/or resource that compares to the reported problem.

- a. On the command line, enter the Start System Service Tools command:

```
STRSST
```

If you cannot get to SST, select DST (see Accessing Dedicated Service Tools in the *iSeries Service Functions* ).

**Note:** Do not IPL the system to get to DST.

- b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
- c. Select **Start a Service Tool**—>**Hardware Service Manager**—>**Work with service action log**.

- d. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- e. Find an entry that matches one or more conditions of the problem:
  - 1) SRC
  - 2) Resource
  - 3) Time
  - 4) FRU list (choose **Display the failing item information** to display the FRU list).

**Notes:**

- a. All entries in the service action log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the time and date for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

- **No:** Continue with the next step.
- **Yes:** Go to step 9 (See page 22).

**8. DANGER**

**To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)**

Exchange the following parts one at a time (see Remove and replace procedures). After exchanging each part, go to step 5 (See page 21) to verify that the system can perform an IPL at a specified time.

**Note:** If you exchange the control panel or the SYSBKPL, you must set the correct date and time by performing step 4 (See page 20).

**Attention:** Before exchanging any part, power off the system (see Power on/off the system and logical partitions).

- SYSBKPL
- System control panel
- System control panel cable

Did the IPL complete successfully after you exchanged all of the parts listed above?

- **No:** Contact your next level of support.  
**This ends the procedure.**
- **Yes:** Continue with the next step.

**9. Was the entry isolated (is there a Y in the Isolated column)?**

- **No:** Go to System Reference Codes and use the SRC indicated in the log.  
**This ends the procedure.**
- **Yes:** Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item exchanged repaired the problem.

**Notes:**

- a. For failing items (see “Failing items” on page 249), and symbolic FRUs (see Symbolic FRUs).
- b. When exchanging FRUs, go to Remove and replace procedures. If you are exchanging a disk unit, go to Recovery procedures.
- c. After exchanging an item, go to Verify the repair.

Once the problem has been resolved, close the log entry by selecting **Close a NEW entry** on the Service Actions Log Report display.  
**This ends the procedure.**

## Cannot perform IPL from a remote location (no SRC)

*For use by authorized service providers.*

This topic includes the following sub-topics:

- “System hangs or loops (no SRC)” on page 26
- “Logical partition hangs or loops (no SRC)” on page 28

To correct the IPL problem, perform this procedure until you determine the problem and can perform a remote IPL.


1. Is the system powered on and operating?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **3 (See page 23)**.
2. On the command line, enter the Display System Value command:

```
DSPSYSVAL QRMTIPL
```

Does the operating system have the correct value of 1 for the remote power-on function?

**Figure 4. Example of remote power-on configuration display for QRMTIPL**

```
+-----+
| Display System Value
| System: S0000000
| System value . . . . . : QRMTIPL
| Description . . . . . : Remote power on and IPL
| Value . . . . . : 0 = Not allowed
| 1 = Allowed
+-----+
```

- **Yes:** Power off the system (see Power on/off the system and logical partitions). Continue with the next step.
  - **No:** Perform the following:
    - a. Change the value to 1 by entering the Change System Value command (CHGSYSVAL QRMTIPL) on the command line.
    - b. Power off the system by entering the Power Down System Immediate command (PWRDWN SYS \*IMMED) on the command line.
    - c. Select **Normal** mode on the control panel.
    - d. Verify that an IPL from a remote location completes successfully by going to step **5 (See page 24)**.
3. Verify that all external communications functions are operational, such as:
    - The customer is using the correct telephone number.
    - The telephone line is operating (dial tone).
    - The telephone line is connected or plugged in.
    - The external ECS modem is powered on.
    - The external ECS modem cable is connected or plugged into the Comm card (CCIN 2745) or its replacement.
    - The modem switches are set or jumper wires are installed for the type of communications network being used.
    - The cable connecting the modem to the communications adapter card is fastened correctly.
  4. Select **Normal** mode on the control panel if it is not already selected (see Control Panel Functions in the *iSeries Service Functions* ).

5. Perform the following:
  - a. Dial the telephone number for the system.
  - b. Wait at least two minutes for the system to answer.

**Note:** The Ring Indicator signal is used to start the remote IPL. If the caller hangs up the telephone before the system disconnects the line (indicated by the return of the dial tone), the IPL will not complete. The caller may hear other tones before the dial tone.

Was the telephone answered in two minutes?

- **Yes:** Does the IPL complete successfully?
  - **No:** Continue with the next step.
  - **Yes: This ends the procedure.**
- **No:** Continue with the next step.

6. The IPL from a remote location was not successful. The following steps show you how to start a manual IPL and how to analyze the remote IPL problem.

Select **Manual** or **Normal** mode on the control panel.

**Note:** If you want the Use Dedicated Service Tools (DST) display shown after the IPL, select **Manual** mode on the control panel.

Start an IPL by powering on the system (see Power on/off the system and logical partitions).

Does the IPL complete successfully?

- **Yes:** Continue with the next step.
- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

7. Did you verify that the operating system has the correct value of 1 for the remote power-on function in step 2 (See page 23)?

- **No:** Continue with the next step.
- **Yes:** Go to step 9 (See page 24).

8. On the command line, enter the Display System Value command:

```
DSPSYSVAL QRMTIPL
```

Does the operating system have the correct value of 1 for the remote power-on function?

**Figure 5. Example of remote power-on configuration display for QRMTIPL**

```
+-----+
| Display System Value
| System: S0000000
| System value . . . . . : QRMTIPL
| Description . . . . . : Remote power on and IPL
| Value . . . . . : 0 = Not allowed
| 1 = Allowed
+-----+
```

- **Yes:** Continue with the next step.
- **No:** Perform the following:
  - a. Change the value to 1 by entering the Change System Value command (CHGSYSVAL QRMTIPL) on the command line.
  - b. Power off the system by entering the Power Down System Immediate command (PWRDWN SYS \*IMMED) on the command line.
  - c. Select **Normal** mode on the control panel.
  - d. Verify that an IPL from a remote location completes successfully by going to step 5 (See page 24).

9. Start the communications verification function and run a cable wrap test on the suspected cable by doing the following:

- a. Enter the Verify Communications command (VFYCMN) on the command line to show the communications verification display.


**Note:** For more information on the Verify Communications command (VFYCMN), see Verification Procedures in the *iSeries Service Functions*  information.

- b. On the next display, enter the line description name for the communications line that has the remote power-on cable attached.
- c. Select **Cable test** from the display that shows a list of tests that can be performed on a communications line.
- d. Follow all instructions (such as run problem analysis or attach the wrap connector).

Did you find the communications problem using the above procedure?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
  - a. Exchange the failing item indicated (see Remove and replace procedures).
  - b. Verify that an IPL from a remote location completes successfully by going to step 5 (**See page 24**).

10. Find an entry in the Service Action Log that matches the time, SRC, and/or resource that compares to the reported problem.

- a. On the command line, enter the Start System Service Tools command (STRSST).  
If you cannot get to SST, select DST (see Accessing Dedicated Service Tools in the *iSeries Service Functions*  ).

**Note:** Do not IPL the system to get to DST.

- b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
- c. Select **Start a Service Tool** → **Hardware Service Manager** → **Work with service action log**.
- d. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
- e. Find an entry that matches one or more conditions of the problem:
  - 1) SRC
  - 2) Resource
  - 3) Time
  - 4) FRU list (choose **Display the failing item information** to display the FRU list).

**Notes:**

- a. All entries in the service action log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.
- b. The information displayed in the date and time fields are the time and date for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

- **Yes:** Was the entry isolated (is there a Y in the Isolated column)?
  - **Yes:** Go to step 12 (**See page 26**).
  - **No:** Go to System Reference Codes and use the SRC indicated in the log.  
**This ends the procedure.**
- **No:** Continue with the next step.

11. Find an entry in the Product Activity Log that matches the time, SRC, and/or resource that compares to the reported problem (see “Use the product activity log” on page 9).

Did you find an entry in the Product Activity Log?

- **Yes:** Continue with the next step.
- **No:** Exchange the following parts one at a time (see Remove and replace procedures).

## DANGER

To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)

**Attention:** Before exchanging any part, power off the system.

- Communications cable
- Communications adapter card
- Modem
- The SYSBKPL (see symbolic FRU “SYSBKPL” on page 464).

**Notes:**

- a. Attempt to perform an IPL from a remote location after exchanging each part.
- b. If you exchange the SYSBKPL, you must set the correct date and time. To set the correct date and time, perform “Cannot perform IPL at a specified time (no SRC)” on page 19, step 4 (**See page 20**).

If the remote IPL does not complete successfully after you exchange all the parts listed, ask your next level of support for assistance.

**This ends the procedure.**

12. Display the failing item information for the log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item exchanged repaired the problem.

**Notes:**

- a. See the “Failing items” on page 249 topic, and the Symbolic FRUs topic.
- b. When exchanging FRUs, go to Remove and replace procedures. If you are exchanging a disk unit, go to Recovery procedures.
- c. After exchanging an item, go to Verify the repair

Once the problem has been resolved, close the log entry.

**This ends the procedure.**

**System hangs or loops (no SRC):** You are here because:

- System operation is hung (very low processor activity indicated on the control panel with workstation input inhibited).
- System operation is in a loop (very high processor activity indicated on the control panel with workstation input inhibited).

A system hang or loop is the result of either:

- A software failure.
- Software improperly handling a hardware failure.

The purpose of this procedure is to:


1. Help you report the problem with enough error data to permit an APAR investigation to resolve the software problem.
2. Provide you with direction to identify any possible hardware failure.

Perform the following:


1. Is the system operational from at least one workstation?

- **Yes:** Work with the system operator to complete the appropriate problem handling procedures. See the Getting started with server troubleshooting page in the Troubleshooting and service topic in the iSeries Information Center.

**This ends the procedure.**

- **No:** Perform the following to collect and record the failure data (see the iSeries Service Functions  ).


**Note:** If any of the data collection steps fail, see step 2 (See page 27).

- Select **Manual** mode (see iSeries Service Functions  ).
- Select Function 25 on the control panel and press **Enter**.
- Select Function 26 on the control panel and press **Enter**.
- Select Function 50 on the control panel and press **Enter** to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
- Select Function 51 on the control panel and press **Enter**. The display shows 51\*\*.
- Select 5100 on the control panel and press **Enter**. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).
- Select 5101 on the control panel and press **Enter**. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).
- Select 5102 on the control panel and press **Enter**. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).
- Select 5103 on the control panel and press **Enter**. Record the value displayed on the control panel (second part of the address for the instruction being executed on processor 0).

**Notes:**


- 1) If the system has multiple processors, the preceding steps can be repeated for each processor by continuing the sequence with the selection of 5104 for the next processor.
- 2) When you have completed the data collection, exit the 51xx extended functions by rolling back to the 51\*\* display and pressing **Enter**.

- Include the information recorded above in the APAR data.

2. Perform the following to initiate a Main Store Dump (see Working with Storage Dumps in the *iSeries Service Functions*  ).

- Select Function 22 on the control panel and press **Enter**.
- Select Function 22 on the control panel and press **Enter** again.
- Wait for the dump to disk to complete (this may take several minutes).  
Is 0000 0000 displayed on the control panel for more than 30 seconds?


- **No:** Continue with the next step.
- **Yes:** The Main Store Dump cannot complete successfully. The Load Source IOP is in a hang condition.

Perform a Load Source IOP dump (see Working with Storage Dumps in the *iSeries Service Functions*  ). Select Function 70 on the control panel and press **Enter**.


Go to step 4 (See page 28).

3. Does the Main Store Dump complete successfully (A1xx 300x displayed)?

- **No:** Continue with the next step.
- **Yes:** Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See the Getting started with server troubleshooting page in the Troubleshooting and service topic in the iSeries Information Center.
  - Record the SRC information available in the Main Store Dump Summary.

- b. Copy the main storage dump to media (see Working with Storage Dumps in the *iSeries Service Functions*  ).

Copy the main storage dump to removable media or disk. Copying to disk is faster than copying to most types of tape devices. To successfully copy to disk, you must have enough space available in auxiliary storage to hold the main storage dump.

- c. Continue with the next step.
4. Perform the following:
    - a. Power off the system.
    - b. Power on the system in Manual mode.Does the system IPL complete to DST?
    - **No:** Continue with the next step.
    - **Yes:** Go to “Use the service action log” on page 7.  
**This ends the procedure.**
  5. Does the system stop with a reference code displayed on the control panel?
    - **No:** Continue with the next step.
    - **Yes:** Go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**
  6. Did a Missing Disk Units display appear?
    - **No:** Continue with the next step.
    - **Yes:** Go to “Use the service action log” on page 7.  
**This ends the procedure.**
  7. Did the Main Store Dump Manager display appear?
    - **No:** Contact your next level of support.  
**This ends the procedure.**
    - **Yes:** Record the SRC information available in the Main Store Dump Summary (see *iSeries Service Functions*  ). Then, go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**

**Logical partition hangs or loops (no SRC):** Use this procedure when a hanging or looping partition does not display an SRC in the Primary partition’s **Work with Partition Status** display. A logical partition operation is hung when very low processor activity is indicated on the control panel, and the workstation input is inhibited. It is in a loop when very high processor activity is indicated on the control panel, and the workstation input is inhibited. A logical partition hang or loop is the result of either:

- A software failure.
- Software improperly handling a hardware failure.

The purpose of this procedure is to:

- Help you report the problem with enough error data to permit an APAR investigation to resolve the software problem.
- Provide you with direction to identify any possible hardware failure.

It is assumed that the logical partition completed an IPL, and that at least one user successfully signed on before the condition occurred.

Perform the following:

1. Is the logical partition operational from at least one workstation?




- **Yes:** Work with the system operator to complete the appropriate problem handling procedures. See the Getting started with server troubleshooting page in the Troubleshooting and service topic in the iSeries Information Center.

**This ends the procedure.**

- **No:** Perform the steps that follow on the system's physical panel and not on the **Partition Status** display in the Primary partition. Collect and record the failure data (see the *iSeries Service*

*Functions* ).

**Note:** If any of the data collection steps fail, go to step 3 (See page 29).


- Select **Manual** mode (see Control Panel Functions in the *iSeries Service Functions* ).
- Select Function 25 on the control panel and press **Enter**.
- Select Function 26 on the control panel and press **Enter**.
- Select Function 50 on the control panel and press **Enter** to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
- Select Function 51 on the control panel and press **Enter**. The display shows 51\*\*.
- Select 5100 on the control panel and press **Enter**. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).
- Select 5101 on the control panel and press **Enter**. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).
- Select 5102 on the control panel and press **Enter**. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).
- Select 5103 on the control panel and press **Enter**. Record the value displayed on the control panel (second part of the address for the instruction being executed on processor 0).

**Notes:**

- 1) If the system has multiple processors, the preceding steps can be repeated for each processor by continuing the sequence with the selection of 5104 for the next processor.
- 2) When you have completed the data collection, exit the 51xx extended functions by rolling back to the 51\*\* display and pressing **Enter**.

Continue with the next step.


2. Go to the Primary partition's main menu.
  - Select **Work with Partitions**—>**Display Partition Information**—>**Display Partition Processing Configuration**.
  - Select option 10 and continue selecting option 10 until you determine which processor or processors failed. Record the failing processor numbers as part of the data collected for the APAR.
  - Record this information with the APAR data that you recorded earlier in this procedure.

3. Initiate a Main Store Dump (see Working with Storage Dumps in the *iSeries Service Functions* ) by performing the following:


- Go to the Primary partition's SST/DST display.
- Select **Work with Partitions**—>**Work with Partition Status**—>**More Options**—>**Force Main Store Dump**.
- Wait for the dump to disk to complete (this may take several minutes).

Is 0000 0000 displayed on the partition status screen for more than 30 seconds?

- **No:** Continue with the next step.
- **Yes:** The Main Store Dump cannot complete successfully. The Load Source IOP is in a hang condition. Perform a Load Source IOP dump (see Working with Storage Dumps in the *iSeries*


*Service Functions* . Select Function 70 on the control panel and press **Enter**.

Go to step 5 (See page 30).

4. Does the Main Store Dump complete successfully (A1xx 300x displayed on the Monitor Partition Status screen)?
  - **No:** Continue with the next step.
  - **Yes:** Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See the Getting started with server troubleshooting page in the Troubleshooting and service topic in the iSeries Information Center.
    - a. Record the SRC information available in the Main Store Dump Summary.
    - b. Copy the main storage dump to media (see Working with Storage Dumps in the *iSeries Service Functions*  ).
 

Copy the main storage dump to removable media or disk. Copying to disk is faster than copying to most types of tape devices. To successfully copy to disk, you must have enough space available in auxiliary storage to hold the main storage dump.
    - c. Continue with the next step.
5. Perform the following:
  - a. Power off the logical partition.
  - b. Power on the logical partition in Manual mode.


Does the logical partition IPL complete to DST?

  - **No:** Continue with the next step.
  - **Yes:** Go to “Use the service action log” on page 7.  
**This ends the procedure.**
6. Does the logical partition stop with a reference code displayed on the **Partition Status** screen?
  - **No:** Continue with the next step.
  - **Yes:** Go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**
7. Did a Missing Disk Units display appear?
  - **No:** Continue with the next step.
  - **Yes:** Go to “Use the service action log” on page 7.  
**This ends the procedure.**
8. Did the Main Store Dump Manager display appear?
  - **No:** Contact your next level of support.  
**This ends the procedure.**
  - **Yes:** Record the SRC information available in the Main Store Dump Summary (see *iSeries Service Functions*  ).  
Then, go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**

## Cannot automatically perform an IPL after a power failure

*For use by authorized service providers.*

1. Normal or Auto mode on the control panel must be selected when power is returned to the system.
 

Is Normal or Auto mode on the control panel selected? See *iSeries<sup>(TM)</sup> Service Functions*  .

  - **Yes:** Continue with the next step.
  - **No:** Select **Normal** or **Auto** mode on the control panel.  
**This ends the procedure.**
2. Use the Display System Value command (DSPSYSVAL) to verify that the system value under QPWRRSTIPL on the Display System Value display is equal to 1.
 

Is QPWRRSTIPL equal to 1?

  - **Yes:** Continue with the next step.

- **No:** Use the Change System Value command (CHGSYSVAL) to set QPWRRSTIPL equal to 1.  
**This ends the procedure.**
3. Exchange the following parts one at a time. See the Remove and replace procedures for the model you are working on. Also, before exchanging any part, power off the system. See Power on/off the system and logical partitions.
- For system Models 270, 800, 810, 820, and 825:
- a. System unit backplane (see symbolic FRU “SYSBKPL” on page 464)
  - b. Power supply
- For system Models 830, 840, 870, 890, SB2, and SB3: Tower card (see symbolic FRU “TWRCARD” on page 470)
- Note:** If you exchange the tower card or the system unit backplane, you must set the system date (QDATE) and time (QTIME).  
**This ends the procedure.**

## Analyze power problems

*For use by authorized service providers.*

Use the following table to begin analyzing a power problem.

**Table 1. Start analyzing power problems**

Symptom	What you should do
There may or may not be a system reference code (SRC) displayed on the control panel.	In addition to function 11, SRCs can also appear in function 5. Look at function 5 and record the SRC shown. Go to (1xxx) System Power Control Network (SPCN) Reference Codes and find the reference code. Integrated xSeries <sup>(TM)</sup> Server for iSeries <sup>(TM)</sup> frames will <b>only</b> have the frame number flashing on the failing unit’s SPCN card assembly, which is visible after removing the cover.
The system attention light is off, function 5 SRCs can exist without an attention light when function 11 through 19 is displayed on the panel.	Look at function 5 and record the SRC shown. Go to (1xxx) System Power Control Network (SPCN) Reference Codes of this manual and find the reference code. (Function 5 is not selectable when function 5 SRCs do not exist.)
System unit does not become powered on.	Go to “Cannot power on system unit (no SRC).”
The system or secondary frame does not become powered off.	Go to “System or secondary frame cannot be powered off” on page 41.
The system does not remain powered on during a loss of incoming ac voltage and has an uninterruptible power supply installed.	Go to <i>AS/400 CPM/UPS Safety Manual</i> and one of: <ul style="list-style-type: none"> <li>• <i>AS/400<sup>(R)</sup> CPM/UPS User’s Guide (English, French, German, Spanish, Italian)</i></li> <li>• <i>AS/400<sup>(R)</sup> CPM/UPS User’s Guide (Japanese, Korean, Chinese, Simplified Chinese)</i></li> <li>• <i>AS/400<sup>(R)</sup> CPM/UPS User’s Guide (Portuguese, Turkish, Danish, Dutch, Norwegian)</i></li> </ul>
The secondary frame or unit does not power on.	Go to “Cannot power on secondary frame or unit (no SRC)” on page 43.

## Cannot power on system unit (no SRC)

*For use by authorized service providers.*

Perform this procedure until you correct the problem and you can power on the system.

Follow the instructions for the model you are working on:

- Models 270, 800, 810, 820, 825 (See page 32)
- Models 830, 840, SB2, or SB3 (See page 34)
- Models 870 and 890 (See page 38)

## Instructions for Models 270, 800, 810, 820, and 825

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

1. Attempt to power on the system. See Power on/off the system and logical partitions.  
Does the system power on, and is the Power Ready light on continuously?  
**Note:** The Power Ready light blinks at the slower one blink per two second rate while powered off, and at the faster one blink per second rate during a normal power-on sequence. It should not blink at the faster rate for more than one minute.
  - **No:** Continue with the next step.
  - **Yes:** Go to step **14 (See page 34)**.
2. Are there any characters displayed on the control panel? (A scrolling dot may be visible as a character.)
  - **No:** Continue with the next step.
  - **Yes:** Go to step **5 (See page 33)**.
3. Are the mainline ac power cables from the power supply, power distribution unit, or external uninterruptible power supply at the customer's ac power outlet connected and seated correctly at both ends?
  - **Yes:** Continue with the next step.
  - **No:** Connect the mainline ac power cables correctly at both ends and go to step **1 (See page 32)**.
4. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Verify that the uninterruptible power supply is powered on (if it is installed).
- b. Disconnect the ac power cable or ac power jumper cable from the system's ac power connector at the power supply.
- c. Use a multimeter to measure the ac voltage at the customer's ac power cable or ac power jumper cable at the system power supply end.

**Note:** Some system models have more than one mainline ac power cable or ac power jumper cable. For these models, disconnect all the mainline ac power cables or ac power jumper cables and measure the ac voltage at all ac power supply cables before answering the following question.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

- **No:** Go to step **6 (See page 33)**.
- **Yes:** Perform the following:
  - a. Power off the system.
  - b. Disconnect the power cable.
  - c. Continue with the next step.

5. Exchange the following parts in the system unit, one at time. After exchanging a part, reconnect the mainline ac power cables to the power outlet and attempt to power on the system. If the system powers on, the FRU you exchanged is the failing item. If the system does not power on, exchange the next part in the list. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.
  - a. System unit control panel card (see symbolic FRU “CTLPNL” on page 323) and cables
  - b. SPCN card (see symbolic FRU “TWRCARD” on page 470)
  - c. Power supply (see symbolic FRU “PWRSPPLY” on page 431)  
**This ends the procedure.**
6. Are you working on a power distribution unit with tripped breakers?
  - **No:** Continue with the next step.
  - **Yes:** Reset the tripped power distribution breaker, and go to the power problem procedure for the unit that is connected to the tripped breaker.  
**This ends the procedure.**
7. Does the system have an external uninterruptible power supply installed?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **10 (See page 33)**.
8. Use a multimeter to measure the ac voltage at the external uninterruptible power supply outlets. Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the ac power jumper cable - part as installed.  
**This ends the procedure.**
9. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cables from the external uninterruptible power supply.
- b. Use a multimeter to measure the ac voltage at the external uninterruptible power supply end of the mainline ac power cables.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

- **No:** Continue with the next step.
- **Yes:** The uninterruptible power supply (UPS) needs service: - For 9910 type UPS Call IBM Service Support. For all other UPS call the UPS provider. Go to step **11 (See page 34)** to verify system.

10. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cable from the customer’s ac power outlet.
- b. Use a multimeter to measure the ac voltage at the customer’s ac power outlet.

**Note:** Some system models have more than one mainline ac power cable. For these models, disconnect all the mainline ac power cables and measure the ac voltage at all ac power outlets before answering the following question.


Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

- **Yes:** Exchange the mainline ac power cable. Then, go to step **1 (See page 32)**.
- **No:** Inform the customer that the ac voltage at the power outlet is not correct and reconnect the mainline ac power cables to the power outlet when the ac voltage at the power outlet is correct.  
**This ends the procedure.**

11. Perform the following to bypass the uninterruptible power supply unit:
  - a. Power down your system and the uninterruptible power supply unit.
  - b. Remove the 9-pin D-shell signal cable (p/n 17G1768) used between the uninterruptible power supply and the system.
  - c. Remove the power jumper cords used between the uninterruptible power supply and the attached devices.
  - d. Remove the country or region specific power cord used from the uninterruptible power supply to the wall outlet.
  - e. Use the correct power cord (that is, use the original country or region specific power cord shipped with your system and connect it to the power inlet on the system).  
**Note:** Plug the other end of this cord into a compatible wall outlet.
  - f. Attempt to power on the system.

Does the system power on?

- **Yes:** Continue with the next step.
- **No:** Go to step 4 (See page 32).

12. Display the selected IPL mode on the system unit control panel (see *iSeries Service Functions* ). Is the selected mode the same mode the customer was using when the power-on failure occurred?

- **No:** Go to step 14 (See page 34).
- **Yes:** Continue with the next step.

13. Is a function 11 SRC displayed on the system unit control panel?

- **No:** Go to step 15 (See page 34).
- **Yes:** Go to “Starting point for all problems” on page 2.

**This ends the procedure.**

14. Perform the following:

- a. Power off the system.
- b. Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
- c. Attempt to power on the system.

Does the system power on?

- **Yes:** Continue with the next step.
- **No:** Exchange the system unit control panel card. See Remove and replace procedures.

**This ends the procedure.**

15. Continue the IPL. Does the IPL complete successfully?

- **Yes:** **This ends the procedure.**
- **No:** Go to “Starting point for all problems” on page 2.

**This ends the procedure.**

### Instructions for Models 830, 840, SB2, and SB3

1. Attempt to power on the system. See Power on/off the system and logical partitions. Does the system power on?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 11 (See page 37).
2. Are there any characters displayed on the control panel? (A scrolling dot may be visible as a character.)
  - **No:** Continue with the next step.
  - **Yes:** Go to step 10 (See page 36).

### 3. DANGER

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cable from the customer's ac power outlet.
- b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

**Note:** Some system models have more than one mainline ac power cable. For these models, disconnect all the mainline ac power cables and measure the ac voltage at all ac power outlets before answering the following question.

Is the ac voltage from 200 V ac to 240 V ac ?

- **Yes:** Continue with the next step.
- **No:** Perform the following:
  - a. Inform the customer that the ac voltage at the power outlet is not correct.
  - b. Reconnect the mainline ac power cables to the power outlet when the ac voltage at the power outlet is correct.

**This ends the procedure.**

4. Are the mainline ac power cables from the ac module or charger unit to the customer's ac power outlet connected and seated correctly at both ends?
  - **Yes:** Perform the following:

**DANGER**

**Dangerous voltage being measured. (RSFTD005)**

- a. Disconnect the mainline ac power cables from the ac module or battery charger unit.
- b. Use a multimeter to measure the ac voltage at the ac module or battery charger unit end of the mainline ac power cables.

Continue with the next step.

- **No:** Perform the following:
  - a. Connect the mainline ac power cables correctly at both ends.
  - b. Go to step 1 (**See page 34**).

5. Is the ac voltage from 200 V ac to 240 V ac?

- **Yes:** Continue with the next step.
- **No:** Perform the following:
  - a. Exchange the mainline ac power cable.
  - b. Go to step 1 (**See page 34**).

6. Is the frame with the problem a FC 8079(001), 9074 or 9079?

- **Yes:** Go to step 8 (**See page 36**).
- **No:** Continue with the next step.

7. Perform the following:

- a. Disconnect the mainline ac power cable from the customer's ac power outlet.

**Note:** On Model 840 and SB3 disconnect both mainline ac power cables.

- b. Exchange one of the following FRUs:

**Attention:** Disconnecting or removing the 2620 or 2628 cryptographic I/O processor for any reason causes the loss of the master encryption key. Read Cryptographic I/O processor before disconnecting or removing the cryptographic I/O processor.

- System unit control panel card (see symbolic FRU "CTLPNL" on page 323)
- SPCN card (see symbolic FRU "TWRCARD" on page 470)

- AC module (see symbolic FRU “ACMODUL” on page 268) or battery charger unit (see symbolic FRU “BATCHGR” on page 285)
  - System unit control panel cable
  - Power supply (see symbolic FRU PWRSPPLY). With a new unit, replace one of the power supplies 1, 2, 3, or 4 as installed until the failing unit is found.
  - System unit SPCN frame to frame cable
  - System unit backplane (see symbolic FRU “BACKPLN” on page 284)
- c. Reconnect the mainline ac power cables to the power outlet.
- d. Attempt to power on the system.
- e. If the system powers on, the FRU you exchanged is the failing item.
- f. If the system does not power on, repeat steps **7a (See page 35)** through **7f (See page 36)**, and exchange the next FRU in the list. If the system does not power on after exchanging all of the FRUs in the list, ask your next level of support for assistance.

**This ends the procedure.**

- **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

1. Disconnect the ac power jumper cables from the ac module or battery charger unit.
2. Use a multimeter to measure the DC voltage (from battery charger) or ac voltage (from ac module) at the outlets to the power supplies.

Is the DC voltage from 145 V DC to 259 V DC for the battery charger unit, or 200 V ac to 240 V ac for the ac module (dual line cord)?

- **Yes:** Continue with the next step.
- **No:** Exchange the battery charger unit (see symbolic FRU “BATCHGR” on page 285) or ac module (see symbolic FRU “ACMODUL” on page 268).

**This ends the procedure.**

- **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

1. Connect the ac power jumper cables to the battery charger or ac module.
2. Disconnect the ac power jumper cable at the power supplies.
3. Use a multimeter to measure the DC voltage (battery charger) or ac voltage (ac module) at the power jumper cables input to the power supplies.

Is the DC voltage from 145 V DC to 259 V DC (200 V ac to 240 V ac for dual line cord units) for each power jumper cable?

- **No:** Exchange the power jumper cable.  
**This ends the procedure.**
- **Yes:** Exchange the following parts one at a time.
  - SPCN card unit (see symbolic FRU “TWRCARD” on page 470).
  - Display unit (see symbolic FRU “CTLPNL” on page 323).
  - Power supply (see symbolic FRU “PWRSPPLY” on page 431). With a new unit, replace one of the power supplies 1, 2, 3, or 4 until the failing unit is found.

**This ends the procedure.**

- Perform the following:

1. Power off the system.



2. Ensure the keystick is inserted and select **Manual** mode on the system unit control panel.
3. Attempt to power on the system.

Does the system power on?

- **Yes:** Continue with the next step.
- **No:** Go to step 7 (**See page 35**).

- Perform the following:

1. Power off the system.
2. Display the selected IPL mode on the system unit control panel. Is the selected mode the same mode the customer was using when the power-on failure occurred?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 13 (**See page 37**).

- Perform the following:

1. Power off the system.
2. Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
3. Attempt to power on the system.

Does the system power on?

- **No:** Exchange the system unit control panel card (see the Remove and replace procedures).  
**This ends the procedure.**
- **Yes:** Continue with the next step.

- Is a function 11 SRC displayed on the system unit control panel?

- **No:** Continue with the next step.
- **Yes:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

- Is the Power Ready light on continuously?

**Note:** The Power Ready light blinks at a 1 second rate during a normal power-on sequence. It should not blink for more than 1 minute.

- **Yes:** Continue with the next step.
- **No:** Perform the following:

1. Disconnect the mainline ac power cable from the customer’s ac power outlet.
2. Exchange one of the following FRUs:
  - SPCN card (see symbolic FRU “TWRCARD” on page 470)
  - ac module (see symbolic FRU “ACMODUL” on page 268) or battery charger unit (see symbolic FRU “BATCHGR” on page 285)
  - System unit control panel card (see symbolic FRU “CTLPNL” on page 323)
3. Reconnect the mainline ac power cable to the power outlet.
4. Attempt to power on the system.
5. If the system powers on, the FRU you exchanged is the failing item.

6. If the system does not power on, repeat steps 14a (**See page 37**) through 14f (**See page 37**) and exchange the next FRU in the list. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

**This ends the procedure.**

- Is there more than one frame on the system?

- **Yes:** Continue with the next step.
- **No:** Go to step 17 (**See page 38**).

- Do all of the frames on the system become powered on?

- **Yes:** Continue with the next step.
  - **No:** Go to “Cannot power on secondary frame or unit (no SRC)” on page 43.  
**This ends the procedure.**
- Continue the IPL. Does the IPL complete successfully?
- **Yes: This ends the procedure.**
  - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

## Instructions for Models 870 and 890

### DANGER

**To prevent the system from powering on automatically during the service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)**

**Note:** The uninterruptible power supply may take between 5-10 minutes for ac power output to return after an outage without manually pressing the uninterruptible power supply power on button.

1. Ensure that the red switch on the front of the EPO panel is in the ON position, and, if there is no external EPO cable, that the internal toggle switch to the ROOM EPO BYPASS on the bottom of the EPO panel is set to the left.

2. Attempt to power on the system. (See Power on/off the system and logical partitions.)

Does the system power on, and is the Power Ready light on continuously?

**Note:** The Power Ready light blinks at the slower one blink per two second rate while powered off, and at the faster one blink per second rate during a normal power-on sequence. It should not blink at the faster rate for more than one minute.

- **No:** Continue with the next step.
  - **Yes:** Go to step 13 (See page 40).
3. Are there any characters displayed on the control panel? (A scrolling dot may be visible as a character.)
    - **No:** Continue with the next step.
    - **Yes:** Go to step 11 (See page 40).
  4. Are the mainline ac power cables from the power supply, power distribution unit, or external uninterruptible power supply at the customer’s ac power outlet connected and seated correctly at both ends?
    - **Yes:** Continue with the next step.
    - **No:** Connect the mainline ac power cables correctly at both ends and go to step 2 (See page 38).
  5. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Verify that the uninterruptible power supply is powered on (if it is installed).
- b. Disconnect the ac power cable or ac power jumper cable from the system’s ac power connector at the power supply.
- c. Use a multimeter to measure the ac voltage at the customer’s ac power cable or ac power jumper cable at the system power supply end.

**Note:** Some system models have more than one mainline ac power cable or ac power jumper cable. For these models, disconnect all the mainline ac power cables or ac power jumper cables and measure the ac voltage at all ac power supply cables before answering the following question.

Is the ac voltage from 180 V ac to 254 V ac (3 PH), 342 V ac to 440 V ac (3PH), 432 V ac to 508 V ac (3PH), 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?

- **Yes:** Go to step **11 (See page 40)**.
  - **No:** Continue with the next step.
6. Are you working on a power distribution unit with tripped breakers?
- **No:** Continue with the next step.
  - **Yes:** Reset the tripped power distribution breaker, and go to the power problem procedure for the unit that is connected to the tripped breaker.  
**This ends the procedure.**
7. Does the system have an external uninterruptible power supply installed?
- **Yes:** Continue with the next step.
  - **No:** Go to step **10 (See page 39)**.
8. Use a multimeter to measure the ac voltage at the external uninterruptible power supply outlets. Is the ac voltage from 180 V ac to 254 V ac (3 PH), 342 V ac to 440 V ac (3PH), 432 V ac to 508 V ac (3PH), 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?
- **No:** Continue with the next step.
  - **Yes:** Exchange the ac power jumper cable - part as installed.  
**This ends the procedure.**
9. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cables from the external uninterruptible power supply.
- b. Use a multimeter to measure the ac voltage at the external uninterruptible power supply end of the mainline ac power cables.

Is the ac voltage from 180 V ac to 254 V ac (3 PH), 342 V ac to 440 V ac (3PH), 432 V ac to 508 V ac (3PH), 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?

- **No:** Continue with the next step.
- **Yes:** The uninterruptible power supply needs service: - For 9910 type UPS Call IBM Service Support. For all other UPS call the UPS provider. Go to step **16 (See page 40)** to verify system.

10. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- a. Disconnect the mainline ac power cable from the customer's ac power outlet.
- b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

**Note:** Some system models have more than one mainline ac power cable. For these models, disconnect all the mainline ac power cables and measure the ac voltage at all ac power outlets before answering the following question.

Is the ac voltage from 180 V ac to 254 V ac (3 PH), 342 V ac to 440 V ac (3PH), 432 V ac to 508 V ac (3PH), 200 V ac to 240 V ac, or from 100 V ac to 127 V ac? from 100 V ac to 127 V ac?

- **Yes:** Exchange the mainline ac power cable. Then, go to step **2 (See page 38)**.

- **No:** Inform the customer that the ac voltage at the power outlet is not correct and reconnect the mainline ac power cables to the power outlet when the ac voltage at the power outlet is correct.  
**This ends the procedure.**
11. Perform the following:
    - a. Power off the system.
    - b. Disconnect the power cable.
    - c. Exchange the following parts in the system unit, one at time. After exchanging a part, reconnect the mainline ac power cables to the power outlet and attempt to power on the system. If the system powers on, the FRU you exchanged is the failing item. If the system does not power on, exchange the next part in the list. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.
      - System unit control panel card and cables (see symbolic FRU “CTLPNL” on page 323).
      - SPCN card (see symbolic FRU “TWRCARD” on page 470).
      - Power supply (see symbolic FRU “PWRSPPLY” on page 431).**This ends the procedure.**
  12. Display the selected IPL mode on the system unit control panel (see *iSeries Service Functions* occurred?). Is the selected mode the same mode the customer was using when the power-on failure occurred?
    - **No:** Go to step **14 (See page 40)**.
    - **Yes:** Continue with the next step.
  13. Perform the following:
    - a. Power off the system.
    - b. Select the mode on the system unit control panel the customer was using when the power-on failure occurred.
    - c. Attempt to power on the system.

Does the system power on?

    - **Yes:** Go to step **15 (See page 40)**.  
**This ends the procedure..**
    - **No:** Exchange the system unit control panel card. (See Remove and replace procedures).  
**This ends the procedure.**
  14. Is a function 11 SRC displayed on the system unit control panel?
    - **Yes:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  15. Continue the IPL. Does the IPL complete successfully?
    - **Yes:** **This ends the procedure.**
    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
  16. Perform the following to bypass the uninterruptible power supply unit:
    - a. Power down your system and the uninterruptible power supply unit.
    - b. Remove the 9-pin D-shell signal cable (p/n 17G1768) used between the uninterruptible power supply and the system.
    - c. Remove the power jumper cords used between the uninterruptible power supply and the attached devices.
    - d. Remove the country or region specific power cord used from the uninterruptible power supply to the wall outlet.
    - e. Use the correct power cord (that is, use the original country or region specific power cord shipped with your system and connect it to the power inlet on the system).

**Note:** Plug the other end of this cord into a compatible wall outlet.

f. Attempt to power on the system.

Does the system power on?

- **Yes:** Go to step 12 (See page 40).
- **No:** Go to step 5 (See page 38).

## System or secondary frame cannot be powered off

*For use by authorized service providers.*

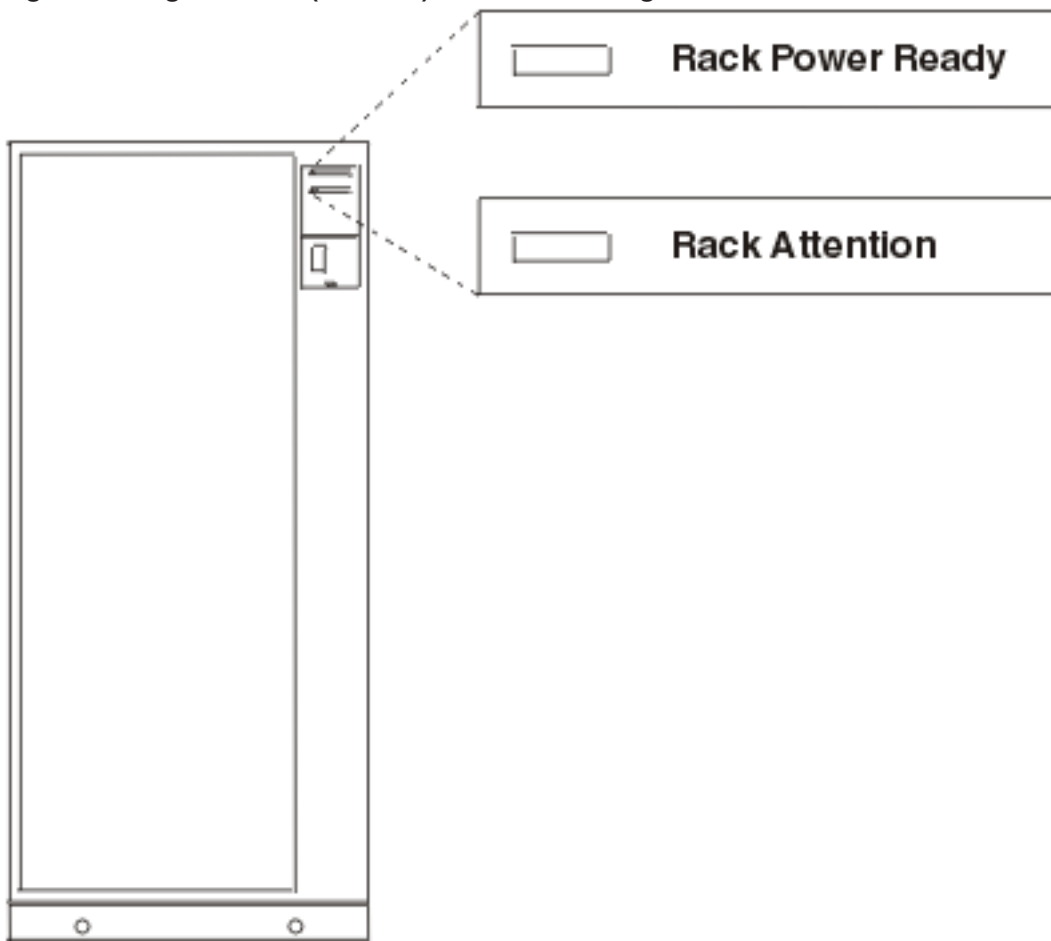
Use this procedure to analyze a failure of the normal command and control panel procedures to power off the system unit or a secondary frame.

**Attention:** To prevent loss of data, ask the customer to verify that no interactive jobs are running before you perform this procedure.

1. Is the power-off problem on a secondary frame with Stage 2 hardware?

**Note:** Stage 2 frames (FC 9309) have a rack attention light on the frame control panel.

**Figure 1. Stage 2 frame (FC 9309) rack attention light**



FV2A176-2

- **Yes:** Go to "System or Rack Cannot Become Powered Off" in the FC 504x Problem Analysis and Repair and Parts information (SY44-4934-00).  
**This ends the procedure.**

- **No:** Continue with the next step.

2. Is the power off problem on the system unit?

- **No:** Continue with the next step.
  - **Yes:** Go to step 4 (See page 42).
3. Ensure that the SPCN cables that connect the frames are connected and seated correctly at both ends. Does the frame power off, and is the Power On light off?
- **Yes: This ends the procedure.**
  - **No:** Choose from the following options:
    - For system Models 270, 800, 810, 820, or 825: Go to step 5 (See page 42).
    - For system Models 830, 840, 870, 890, SB2, and SB3: Go to step 7 (See page 42).
4. Power off the system (see Power on/off the system and logical partitions), and then return here. Does the system unit or frame power off, and is the Power On light off?
- **No:** Continue with the next step.
  - **Yes:** The system is not responding to normal power off procedures, which could indicate a Licensed Internal Code problem. Ask your next level of support for assistance.  
**This ends the procedure.**
5. Is the frame that will not power off part of a shared I/O tower loop?
- **Yes:** Continue with the next step.
  - **No:** Go to step 7 (See page 42).
6. The frame will only power off under certain conditions:
- If the frame is in private mode it should power off with the system unit that is connected by the SPCN frame-to-frame cable.
  - If the frame is in switchable mode it should power off if the "owning" system is powered off or is powering off, and the system unit that is connected by the SPCN frame-to-frame cable is powered off or is powering off.

Does the frame power off?

- **No:** Continue with the next step.
  - **Yes: This ends the procedure.**
7. Ensure there are no jobs running on the system, and verify that the battery power unit or interruptible power supply is not powering the system unit or frame.
8. Choose from the following options:
- For system Models 830, 840, 870, 890, SB2, or SB3, continue with the next step.
  - For system Models 270, 800, 810, 820, or 825, perform the following:
    - a. Remove the system ac power cord from the external uninterruptible power supply or customer's ac power outlet if external uninterruptible power supply is not installed. On a Model 270 with a 7104, or a Model 800 or 810 with 7116 system unit expansion attached, disconnect both the system ac line cord and the expansion unit ac line cord.
    - b. Exchange the following FRUs in the system unit or frame one at a time (see the Remove and replace procedures for the model you are working on).
      - If the system unit is failing:
        - Power supply (see symbolic FRU "PWRSPPLY" on page 431)
        - System SPCN card (see symbolic FRU "TWRCARD" on page 470)
        - System control panel (see symbolic FRU "CTLPNL" on page 323)
        - Control panel cable
      - If a secondary frame is failing:
        - Power supply (see symbolic FRU "PWRSPPLY" on page 431)
        - Expansion SPCN card (see symbolic FRU "TWRCARD" on page 470)
        - The SPCN card (see symbolic FRU "TWRCARD" on page 470) in the frame preceding the frame that will not power off

- Battery charger unit (see symbolic FRU “BATCHGR” on page 285), if installed
  - The SPCN frame-to-frame cable
- This ends the procedure.**
- c. For system Models 830, 840, 870, 890, SB2, or SB3, perform the following:
- 1) If installed, remove the battery power unit (see the Remove and replace procedures for the model or FC that you are working on).
  - 2) Be sure there are no jobs running on the system. Disconnect the mainline ac power cable or, on systems with dual line cords, disconnect both of the mainline ac power cables. (On the Models 870 and 890 processor towers, you can use the UEPO to power off when normal power off procedures fail.)
  - 3) Exchange the following FRUs in the system unit or frame one at a time (see the Remove and replace procedures):
    - If the system unit or FC 9079, FC 9094 base I/O tower is failing:
      - SPCN card (see symbolic FRU “TWRCARD” on page 470)
      - Control panel (see symbolic FRU “CTLPNL” on page 323)
      - Control panel cable
    - If the Model 840, 870, 890, or SB3 processor tower is failing:
      - SPCN card (see symbolic FRU “TWRCARD” on page 470)
      - Control panel (see symbolic FRU “CTLPNL” on page 323)
      - Control panel cable
      - Power controller (see symbolic FRU “BPCPWR” on page 287) - Models 870 and 890 only
      - Power VS/comm cable - Models 870 and 890 only
    - If a secondary frame is failing:
      - The SPCN card (see symbolic FRU “TWRCARD” on page 470) or the battery charger unit (see symbolic FRU “BATCHGR” on page 285) in the frame that will not power off.
      - The SPCN card (see symbolic FRU “TWRCARD” on page 470) in the frame preceding the frame that will not power off.
      - The SPCN frame-to-frame cable.
- This ends the procedure.**

## Cannot power on secondary frame or unit (no SRC)

*For use by authorized service providers.*

You are here because of a secondary frame or unit that cannot become powered on, and may be displaying a 1xxx-C62E.

Follow the instructions for the model you are working on:

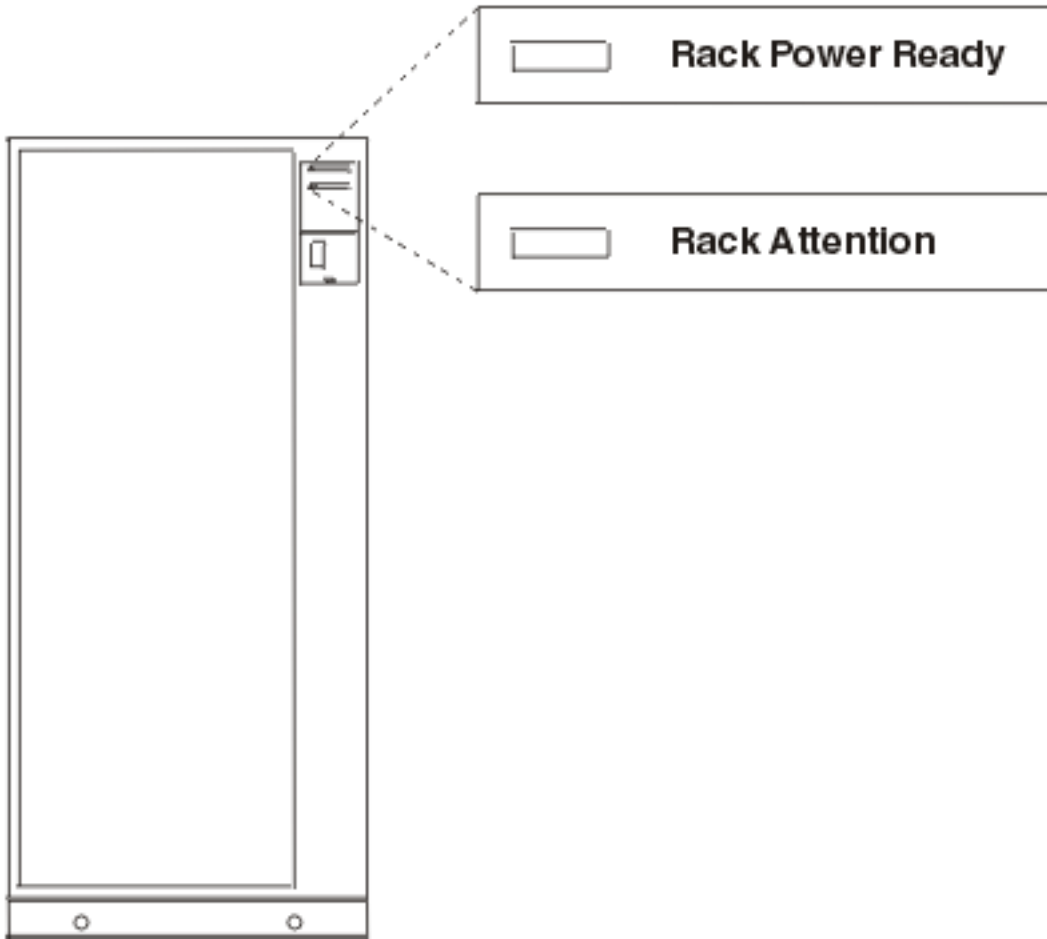
- Models 270, 820, 830, 840, SB2, and SB3 (See page 43)
- Models 800, 810, 825, 870, and 890 (See page 56)

### Instructions for Models 270, 820, 830, 840, SB2, and SB3

1. Does the frame that cannot become powered on contain a 3490 or a 3590 tape unit?
  - **No:** Continue with the next step.
  - **Yes:** Go to the service information for the specific tape unit to analyze the problem.

**This ends the procedure.**
2. Is the secondary frame a Stage 2 frame (FC 9309)?

**Note:** Stage 2 frames (FC 9309) have a Rack Attention light on the frame control panel.




RV2A176-2

- **Yes:** Continue with the next step.
  - **No:** Go to step **22 (See page 50)**.
3. Starting from J15 or J16 on the system unit, go to the first frame in the frame interconnect cable sequence on which one of the following conditions is present:
- The Power Ready light is off.
  - The Power Ready light is blinking.
  - A frame-mounted unit displays a power reference code of 1xxx xx2E.

Is the Power Ready light blinking?


- **No:** Continue with the next step.
- **Yes:** A normal power-on sequence may be in process. If any Power Ready light is blinking for more than 1 minute, exchange the power control compartment (PCC) on the frame with the blinking light.

**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site , depending on the secondary frame you are working on.

**This ends the procedure.**

4. Is the Attention light on or blinking?
- **No:** Continue with the next step.
  - **Yes:** Go to step **15 (See page 46)**.
5. Does a frame-mounted unit display a power reference code of 1xxx xx2E?



- **No:** Continue with the next step.
- **Yes:** Exchange the PCC in the failing frame.  
**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  , depending on the secondary frame you are working on.

**This ends the procedure.**

- Is the Unit Emergency Power Off (UEPO) switch on the secondary frame set to the On position?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 9 (See page 45).
- Perform the following:
  - Check with the customer to determine why the UEPO switch is set to the Off position.
  - Set the UEPO switch to the On position.
  - Power on the system. Do all of the frames on the system become powered on?
    - **Yes:** Continue with the next step.
    - **No:** Go to “Starting point for all problems” on page 2 for frames that do not become powered on.
- Continue the IPL (see Initial Program Load (IPL) Information in the *iSeries<sup>TM</sup> Service Functions*



Does the IPL complete successfully?

- **Yes:** You have corrected the problem. Select the mode on the control panel that the customer wants.  
**This ends the procedure.**
- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

- Is the mainline ac power cable from J12 on the PCC to the customer’s ac power outlet connected and seated correctly at both ends?  
**Note:** J12 may not be present on machines in some countries.
  - **No:** Continue with the next step.
  - **Yes:** Go to step 11 (See page 45).
- Perform the following:
  - Power off the system (see Power on/off the system and logical partitions).
  - Set circuit breaker CB1 on the PCC to the O (off) position.
  - Connect the mainline ac power cable correctly at both ends.  
**Note:** The connectors shown may not be present on machines in some countries.
  - Set circuit breaker CB1 to the I (on) position.
  - Power on the system (see Power on/off the system and logical partitions). Does the failing frame become powered on?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 18 (See page 47).
- Perform the following:

**DANGER**

Dangerous voltage being measured. (RSFTD005)
--

- Power off the system.


b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

- **Yes:** Continue with the next step.
- **No:** Inform the customer that the ac voltage at the power outlet is not correct.  
**This ends the procedure.**

12. Is circuit breaker CB1 on the PCC of the failing frame set to the I (on) position?


- **No:** Set circuit breaker CB1 on the PCC to the I (on) position. Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time:
  - PCC
  - Frame control panel
  - Frame control panel cable

**Note:** See the Remove and replace procedures page, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site , depending on the secondary frame you are working on.

**This ends the procedure.**

13. Power on the system. Does CB1 remain in the I (on) position?

- **Yes:** Continue with the next step.
- **No:** Exchange the power control compartment.

**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site , depending on the secondary frame you are working on.

**This ends the procedure.**

14. Does the failing frame become powered on?

- **No:** Continue with the next step.
- **Yes: This ends the procedure.**


15. Is the Attention light blinking?

**Note:** This may be a normal condition during a power-on sequence.

- **Yes:** Go to step **17 (See page 46)**.
- **No:** Continue with the next step.

16. The Attention light is on. This may be a normal condition. Does the Attention light remain on for more than 1 minute?

- **No: This ends the procedure.**
- **Yes:** Exchange the following FRUs one at a time:
  - PCC
  - AC module
  - Frame control panel
  - SPCN frame-to-frame cable

**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site , depending on the secondary frame you are working on.

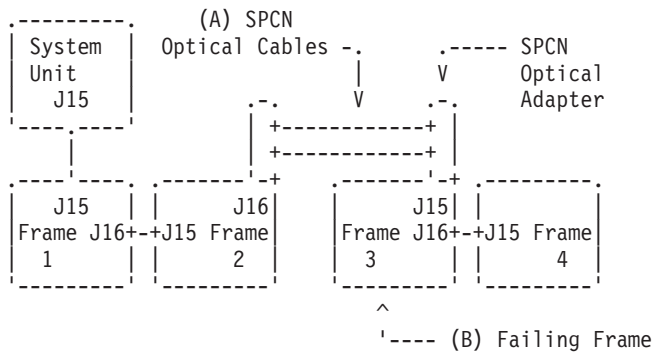
**This ends the procedure.**

17. Does the Attention light continue to blink for more than 1 minute?


- **Yes:** Continue with the next step.

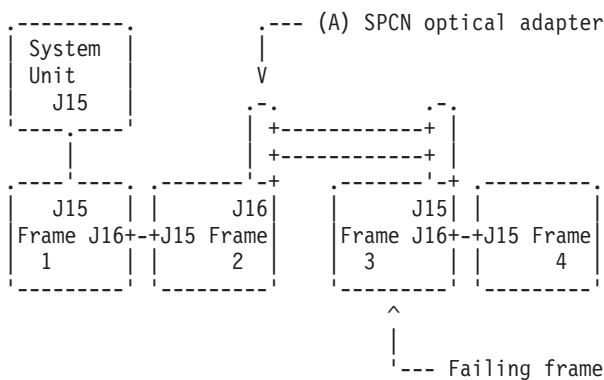
- **No: This ends the procedure.**

18. Do SPCN optical cables **A** connect the failing frame **B** to the preceding frame in the string?



- **No: Go to step 20 (See page 48).**
- **Yes:** Remove the SPCN optical adapter **A** from the preceding frame in the string that cannot become powered on.

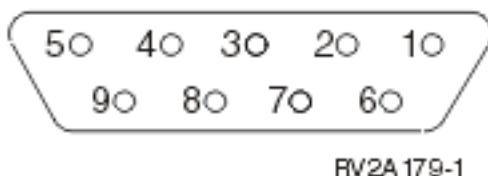
**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site , depending on the secondary frame you are working on.





Continue with the next step.

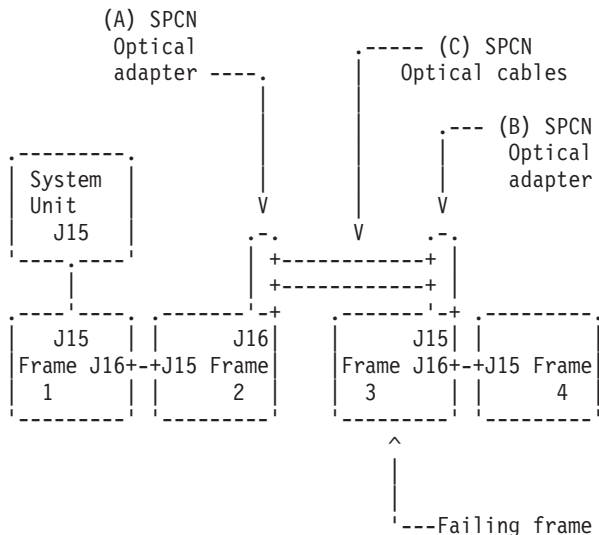
19. Perform the following:

- Connect the negative lead of a multimeter to the system frame ground.
  - Connect the positive lead of a multimeter to pin 2 of J16 on the PCC, AC module, or SPCN card in the frame from which you removed the SPCN optical adapter in step 18 (See page 47).
- Note:** If you are working on a system unit, the cable may be connected to either J15 or J16. Use an insulated probe or jumper when performing the voltage readings.
- Note the voltage reading on pin 2.
  - Move the positive lead of the multimeter to pin 3 of J16 on the PCC.
  - Note the voltage reading on pin 3.



Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

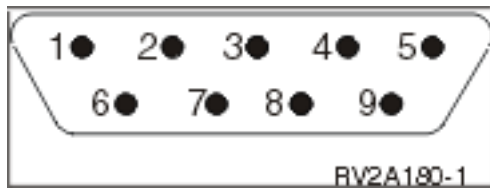
- **No:** Exchange the power control compartment, AC module, or SPCN card (BKSPCN or TWRCARD) in the frame from which you removed the SPCN optical adapter.  
**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  , depending on the secondary frame you are working on.  
**This ends the procedure.**
- **Yes:** Exchange the following FRUs, one at a time.  
**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  , depending on the secondary frame you are working on.
  - PCC in the failing frame (first frame with a failure indication).
  - PCC, AC module, or SPCN card (BKSPCN or TWRCARD) in the preceding frame in the string.
  - SPCN optical adapter A in the preceding frame in the string.
  - SPCN optical adapter B in the failing frame.
  - SPCN optical cables C between the preceding frame in the string and the failing frame.



**This ends the procedure.**


20. Perform the following:
  - a. Power off the system.
  - b. Disconnect the SPCN frame-to-frame cable from J15 on the PCC of the first secondary frame that cannot become powered on.
  - c. Connect the negative lead of a multimeter to the system frame ground.
  - d. Connect the positive lead of the multimeter to pin 2 of the SPCN cable.  
**Note:** Use an insulated probe or jumper when performing the voltage readings.
  - e. Note the voltage reading on pin 2.
  - f. Move the positive lead of the multimeter to pin 3 of the SPCN cable.

- g. Note the voltage reading on pin 3.



Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time. See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  , depending on the secondary frame you are working on.

- PCC in the failing frame.
- PCC, AC module or SPCN panel card in the preceding frame in the frame string.
- SPCN frame-to-frame cable.

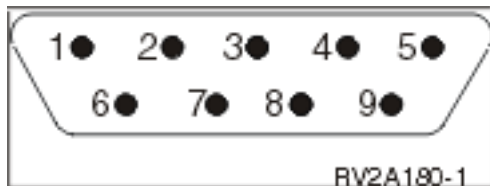
**This ends the procedure.**

21. Perform the following:

- Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
- Disconnect the SPCN cable from J16 on the PCC, AC module, or SPCN card.
- Connect the negative lead of a multimeter to the frame ground.
- Connect the positive lead of a multimeter to pin 2 of J16.

**Note:** Use an insulated probe or jumper when performing the voltage readings.


- Note the voltage reading on pin 2.
- Move the positive lead of the multimeter to pin 3 of J16.
- Note the voltage reading on pin 3.



Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **No:** Exchange the power control compartment, AC module, or SPCN card (BKSPCN or TWRCARD) from which you disconnected the SPCN cable earlier in this step.


**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair*

*and Parts* manual on the V5R1 Supplemental Manuals web site  , depending on the secondary frame you are working on.

**This ends the procedure.**

- **Yes:** Exchange the SPCN frame to frame cable power control compartment, AC module, or SPCN card in the frame from which you removed the SPCN optical adapter.

**Note:** See the Remove and replace procedures topic, or the *FC 504x Problem Analysis and Repair and Parts* information (SY44-4934-00), or the *Migrated Expansion Tower Problem Analysis, Repair*

*and Parts* manual on the V5R1 Supplemental Manuals web site  , depending on the secondary frame you are working on.

**This ends the procedure.**

22. Is the frame that will not power on part of a shared I/O tower loop?
- **Yes:** Continue with the next step.
  - **No:** Go to step 24 (See page 50).
23. The failing frame can only be powered on by the system unit that is connected to it by the SPCN frame-to-frame cable.
- Is the system unit powered on?
- **No:** Continue with the next step.
  - **Yes:** Go to step 25 (See page 50).
24. Power on the system unit.
- Does the failing frame power on?
- **No:** Continue with the next step.
  - **Yes: This ends the procedure.**
25. Starting from J15 or J16 on the system unit, go to the first frame or unit in the frame interconnect cable sequence that does not power on.
- Is the failing unit an xSeries<sup>(TM)</sup> Server Tower?
- **Yes:** Go to step 27 (See page 50).
  - **No:** Continue with the next step.
26. Is the background light for the Data display on the control panel on, is the power on LED blinking, or are there any characters displayed on the control panel?
- Note:** The background light is a dim yellow light in the Data area on the control panel.
- **No:** Go to step 29 (See page 50).
  - **Yes:** Go to step 44 (See page 53).
27. Is the green power LED on the xSeries<sup>(TM)</sup> Server Tower control panel blinking?
- **Yes:** Continue with the next step.
  - **No:** Go to step 29 (See page 50).
28. Remove the top cover from the xSeries<sup>(TM)</sup> Server Tower. Is the two digit display on the Integrated xSeries<sup>(TM)</sup> Adapter card (CCIN 2689) blinking slowly?
- **Yes:** Go to step 49 (See page 55).
  - **No:** Replace the following:
    - See symbolic FRU “TWRCARD” on page 470
    - See symbolic FRU “ALTMANL” on page 277.**This ends the procedure.**
29. Use a multimeter to measure the ac voltage at the customer’s ac power outlet.

**DANGER**

<b>Dangerous voltage being measured. (RSFTD005)</b>
---

- Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?
- **Yes:** Continue with the next step.
  - **No:** Inform the customer that the ac voltage at the power outlet is not correct.  
**This ends the procedure.**
30. Is the mainline ac power cable from the failing unit to the customer’s ac power outlet connected and seated correctly at both ends?
- Note:** Some systems have more than one mainline ac power cable. For these systems, check both power cables when answering the following questions.
- **Yes:** Continue with the next step.
  - **No:** Connect the mainline ac power cable correctly at both ends.  
**This ends the procedure.**

31. Perform the following:

**DANGER**

**Dangerous voltage being measured. (RSFTD005)**

- a. Disconnect the mainline ac power cable from the failing unit.
- b. Use a multimeter to measure the ac voltage at the end of the mainline ac power cable of the failing unit.

Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?

- **No:** Continue with the next step.
- **Yes:** Go to step **33 (See page 51)**.

32. Are you working on a Power Distribution Unit with tripped breakers? See Locations — Power Distribution Unit (PDU).

- **No:** Exchange the mainline ac power cable or Power Distribution Unit (as installed).  
**This ends the procedure.**
- **Yes:** Reset the tripped power distribution breaker, and go to the power problem procedure for the unit that is connected to the tripped breaker.  
**This ends the procedure.**

33. Is the failing unit an xSeries<sup>(TM)</sup> Server Tower?

- **No:** Continue with the next step.
- **Yes:** See symbolic FRU “ALTMANL” on page 277.  
**This ends the procedure.**

34. Does the frame you are working on have an AC module with a docking lead screw installed?

- **Yes:** Continue with the next step.
- **No:** Go to step **36 (See page 51)**.

35. Is the AC module lead screw seated correctly (clockwise)? (See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  , depending on the secondary frame you are working on.)

- **Yes:** Exchange the AC module. See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals

web site  , depending on the secondary frame you are working on.

**This ends the procedure.**

- **No:** Seat the AC module leadscrew correctly (clockwise) and reconnect the mainline ac power cable to the AC module.  
**This ends the procedure.**

36. Does the frame you are working on have ac power jumper cables installed? (ac power jumper cables connect from the battery charger unit, internal uninterruptible power supply, or AC module to the power supplies.)

- **Yes:** Continue with the next step.
- **No:** Exchange the following parts one at a time.
  - SPCN card unit (see symbolic FRU “TWRCARD” on page 470).
  - Control Panel (“CTLPNL” on page 323).
  - Power supply. If more than one power supply is present, install the new power supply in each position until the failing unit is found. See Locations and addresses for the model you are working on.**This ends the procedure.**

37. Are the ac power jumper cables from the battery charger unit, internal uninterruptible power supply, or Power Distribution Unit to the power supplies connected and seated correctly at both ends?

- **Yes:** Continue with the next step.
- **No:** Connect the ac power jumper cables correctly at both ends.  
**This ends the procedure.**

38. Are you working on a frame with an internal uninterruptible power supply? (FC 5033, 5034, or 5035 type)

- **No:** Continue with the next step.
- **Yes:** Go to step **41 (See page 52)**.

39. Perform the following:

**DANGER**

<b>Dangerous voltage being measured. (RSFTD005)</b>
---

- Disconnect the ac power jumper cables from the battery charger unit AC module or Power Distribution Unit.
- Use a multimeter to measure the DC voltage at the battery charger unit outlets, or ac voltage at the AC module or Power Distribution Unit to the power supplies.

Is the DC voltage from 145 V dc to 259 V dc (200 V ac to 240 V ac for dual line cord units and power distribution units) for the battery charger unit?

- **Yes:** Continue with the next step.
- **No:** Exchange the following (as installed):
  - Battery charger unit (see symbolic FRU “BATCHGR” on page 285)
  - AC module (see Locations and addresses)
  - Power Distribution Unit

**This ends the procedure.**

40. Perform the following:

**DANGER**

<b>Dangerous voltage being measured. (RSFTD005)</b>
---

- Connect the ac power jumper cables to the battery charger unit, AC module, or power distribution unit.
- Disconnect the ac power jumper cable at the power supplies.
- Use a multimeter to measure the DC voltage of the power jumper cables input to the power supplies.

Is the DC voltage from 145 V dc to 259 V dc (200 V ac to 240 V ac for dual line cord units and Power Distribution Units) for each power jumper cable?

- **No:** Exchange the power jumper cable.  
**This ends the procedure.**
- **Yes:** Exchange the following parts one at a time:
  - SPCN card unit (see symbolic FRU “TWRCARD” on page 470).
  - Control Panel (see symbolic FRU “CTLPNL” on page 323).
  - Power supply. If more than one power supply is present, install the new power supply in each position until the failing unit is found. See Locations and addresses for the model you are working on.

**This ends the procedure.**

41. Use a multimeter to measure the ac voltage at the internal uninterruptible power supply outlets to the power supplies. Is the ac voltage from 200 V ac to 240 V ac?

- **No:** Continue with the next step.
- **Yes:** Go to step **44 (See page 53)**.



42. Perform the following:
  - a. Check the uninterruptible power supply breakers to ensure that they are in the On position.
  - b. Check the battery connectors to ensure that they are seated
  - c. Check the transformer connector to ensure that it is seated correctly.
  - d. Use a multimeter to measure the ac voltage at the internal uninterruptible power supply outlets to the power supplies.

Is the ac voltage from 200 V ac to 240 V ac?

- **Yes:** Continue with the next step.
- **No:** Exchange the following parts one at a time (see Type, model, and part number list for part numbers).
  - Uninterruptible power supply battery unit - part 04N5379 (minimum voltage 12.5V each)
  - Uninterruptible power supply base unit
  - Uninterruptible power supply unit signal cable SIG7 - part 44H8027
  - Uninterruptible power supply transformer unit - part 44H7786

Continue with the next step.

43. Perform the following:
  - a. Disconnect the mainline ac power cable from the customer's ac power outlet.
  - b. Exchange one of the following FRUs:
    - SPCN card (see symbolic FRU "TWRCARD" on page 470)
    - Power supply (see symbolic FRU "PWRSPPLY" on page 431)
    - System unit card enclosure
  - c. Reconnect the mainline ac power cables to the power outlet.
  - d. Attempt to power on the system.
  - e. If the system powers on, the FRU you exchanged is a failing item. If the system does not power on, repeat steps **43a (See page 53)** through **43e (See page 53)** and exchange the next FRU in the list.
  - f. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

**This ends the procedure.**

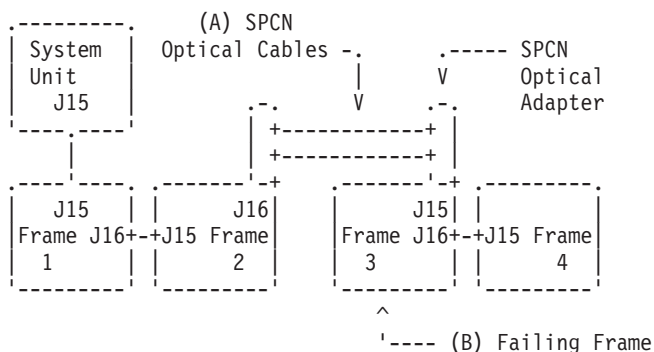
44. Is there an SRC displayed on the control panel for the frame that does not power on?

- **Yes:** Continue with the next step.
  - **No:** Replace the SPCN card (see symbolic FRU "TWRCARD" on page 470).
- This ends the procedure.**

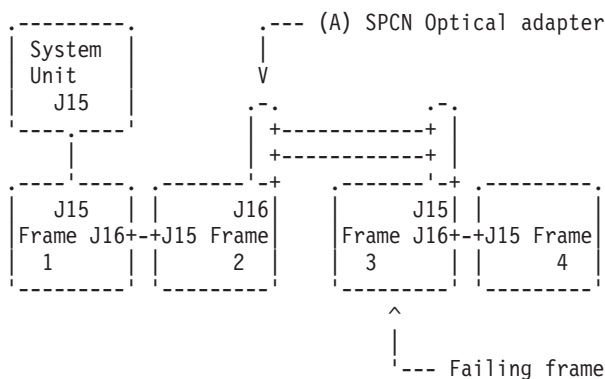
45. Is the SRC 1xxx xx2E?

- **Yes:** Continue with the next step.
- **No:** Go to "Starting point for all problems" on page 2.

46. Do SPCN optical cables **A** connect the failing frame **B** to the preceding frame in the string?

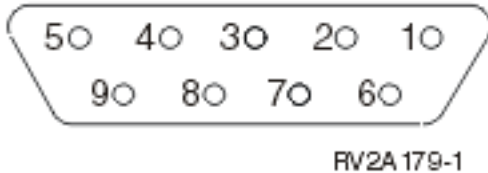


- **No:** Go to step 48 (See page 55).
- **Yes:** Remove the SPCN optical adapter **A** from the preceding frame in the string that cannot become powered on. See Remove and replace procedures in the Repair and Parts information for the system.




47. Perform the following:

- Connect the negative lead of a multimeter to the system frame ground.
- Connect the positive lead of a multimeter to pin 2 of J16 on the ac module or SPCN card in the frame from which you removed the SPCN optical adapter in step 46 (See page 53).  
**Note:** If you are working on a system unit, the cable may be connected to either J15 or J16. Use an insulated probe or jumper when performing the voltage readings.
- Note the voltage reading on pin 2.
- Move the positive lead of the multimeter to pin 3 of J16 on the AC module or SPCN card.
- Note the voltage reading on pin 3.



Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **No:** Exchange the AC module or SPCN card (see symbolic FRU “BKSPCN” on page 286 for the system, or see symbolic FRU “TWRCARD” on page 470 in the frame from which you removed the SPCN optical adapter. See the Remove and replace procedures topic, or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals

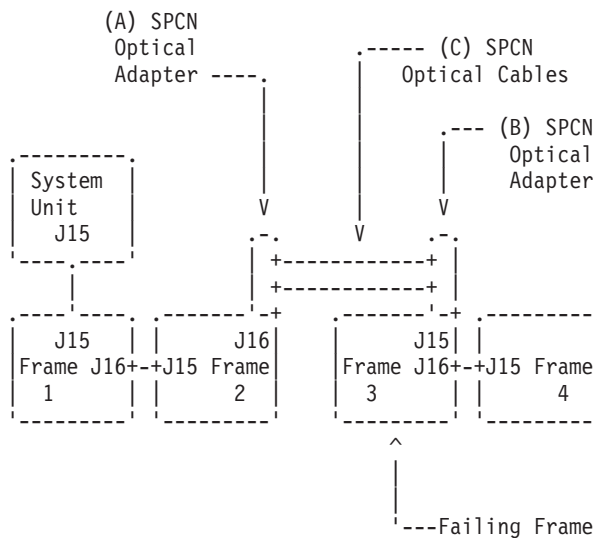
web site , depending on the secondary frame you are working on.

**This ends the procedure.**

- **Yes:** Exchange the following FRUs, one at a time. See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site , depending on the secondary frame you are working on.

- AC module or SPCN card (see symbolic FRU “TWRCARD” on page 470) in the failing frame (first frame with a failure indication)
- AC module or SPCN card (see symbolic FRU “BKSPCN” on page 286 or “TWRCARD” on page 470) in the preceding frame in the string
- SPCN optical adapter A in the preceding frame in the string
- SPCN optical adapter B in the failing frame
- SPCN optical cables C between the preceding frame in the string and the failing frame.



**This ends the procedure.**

48. Does the SPCN frame-to-frame cable coming from the system unit connect to J15 on the secondary frame (where the power on light is off or the frame control panel displays a power reference code of 1xxx xxxx)?

- **Yes:** Continue with the next step.
- **No:** Connect the SPCN frame-to-frame cable coming from the system unit to J15 of the secondary frame.

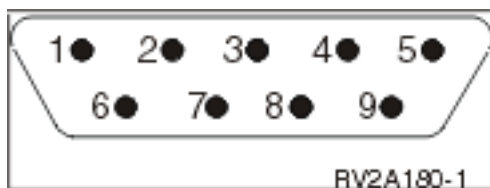
**This ends the procedure.**

49. Perform the following:

- a. Power off the system.
- b. Disconnect the SPCN frame-to-frame cable from J15 on the AC module or SPCN card of the first frame or unit that cannot become powered on.
- c. Connect the negative lead of a multimeter to the system frame ground.
- d. Connect the positive lead of the multimeter to pin 2 of the SPCN cable.

**Note:** Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of the SPCN cable.
- g. Note the voltage reading on pin 3.



Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs, one at a time. See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site , depending on the secondary frame you are working on.

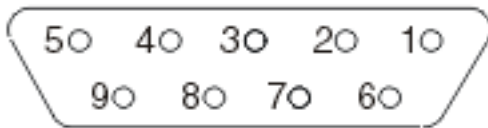
- AC module or SPCN card (see symbolic FRU “TWRCARD” on page 470) in the failing frame or unit.
- AC module or SPCN card (see symbolic FRU “BKSPCN” on page 286 or see symbolic FRU “TWRCARD” on page 470) in the preceding frame in the frame string.

- SPCN frame-to-frame cable.

**This ends the procedure.**


50. Perform the following:

- Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
- Disconnect the SPCN cable from J16 on the AC module or SPCN card.
- Connect the negative lead of a multimeter to the system frame ground.
- Connect the positive lead of a multimeter to pin 2 of J16 on the AC module or SPCN card.  
**Note:** Use an insulated probe or jumper when performing the voltage readings.
- Note the voltage reading on pin 2.
- Move the positive lead of the multimeter to pin 3 of J16 on the AC module or SPCN card.
- Note the voltage reading on pin 3.



RV2A 179-1

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **No:** Exchange the AC module or SPCN card (see symbolic FRU “TWRCARD” on page 470) from which you disconnected the SPCN cable earlier in this step. See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site , depending on the secondary frame or unit you are working on.

**This ends the procedure.**

- **Yes:** Exchange the following FRUs, one at a time. See the Remove and replace procedures topic, or the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site , depending on the secondary frame you are working on.

- SPCN frame-to-frame cable
- AC module or SPCN card (see symbolic FRU “TWRCARD” on page 470) in the failing frame or unit
- AC module or SPCN card (see symbolic FRU “TWRCARD” on page 470) in the preceding frame of the frame string

**This ends the procedure.**

### Instructions for Models 800, 810, 825, 870, and 890

- Is the unit that does not power on a shared unit that is switched to the system unit that does not have a frame to frame cable attached to it?
  - **No:** Continue with the next step.
  - **Yes:** The secondary unit that is switched to the system unit that does not have a frame-to-frame cable attached to it **MUST** be switched to the system unit with a frame-to-frame cable attached to it to service it. Do this and continue with the next step.
- Power on the system.
- Starting from J15 or J16 on the system unit, go to the first unit in the unit interconnect cable sequence that does not power on.
- Is the background light for the Data display on the control panel on, the power on LED blinking, or are there any characters displayed on the control panel?

**Note:** The background light is a dim (yellow) light in the Data area on the control panel.

- **Yes:** Go to step 15 (See page 58).  
**DANGER**

**Dangerous voltage being measured. (RSFTD005)**

- **No:** Use a multimeter to measure the ac voltage at the customer's ac power outlet. Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?
  - **No:** Inform the customer that the ac voltage at the power outlet is not correct.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
- 5. Is the mainline ac power cable from the AC module, battery charger, power supply or power distribution unit to the customer's ac power outlet connected and seated correctly at both ends?
  - **No:** Connect the mainline ac power cable correctly at both ends.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
- 6. **DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- Disconnect the mainline ac power cable from the AC module, battery charger, power supply or power distribution unit.
  - Use a multimeter to measure the ac voltage at the AC module, battery charger, power supply or power distribution unit end of the mainline ac power cable. Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?
    - **Yes:** Go to step 9 (See page 57).
    - **No:** Continue with the next step.
- Are you working on a power distribution unit with tripped breakers?
    - **Yes:** Reset the tripped power distribution breaker and go to the power problem procedure for the unit that is connected to the tripped breaker.
    - **No:** Continue with the next step.
  - Exchange the mainline ac power cable or power distribution unit (as installed).  
**This ends the procedure.**
  - Does the unit you are working on have ac power jumper cables installed? (ac power jumper cables connect from the AC module, battery charger unit, or the power distribution unit to the power supplies.)
    - **No:** Go to step 14 (See page 58).
    - **Yes:** Continue with the next step.
  - Are the ac power jumper cables from the AC module, battery charger unit, or power distribution unit to the power supplies connected and seated correctly at both ends?
    - **No:** Connect the ac power jumper cables correctly at both ends.  
**This ends the procedure.**
    - **Yes:** Continue with the next step.
  - DANGER**

**Dangerous voltage being measured. (RSFTD005)**

Perform the following:

- Disconnect the ac power jumper cables from the battery charger unit AC module or power distribution unit.

- b. Use a multimeter to measure the DC voltage at the battery charger unit outlets or ac voltage at the AC module and power distribution unit to the power supplies.

Is the DC voltage from 145 V dc to 259 V dc for the battery charger unit or 200 V ac to 240 V ac for dual line cord units and power distribution units?

- **No:** Exchange the following (as installed):
  - Battery charger unit (see symbolic FRU “BATCHGR” on page 285)
  - AC module (see Type, model, and part number list)
  - Power distribution unit**This ends the procedure.**
- **Yes:** Continue with the next step.

## 12. DANGER

<b>Dangerous voltage being measured. (RSFTD005)</b>
---

Perform the following:

- a. Connect the ac power jumper cables to the AC module, battery charger unit, or power distribution unit.
- b. Disconnect the ac power jumper cable at the power supplies.
- c. Use a multimeter to measure the DC voltage of the power jumper cables input to the power supplies.

Is the DC voltage from 145 V dc to 259 V dc (200 V ac to 240 V ac for dual line cord units and power distribution units) for each power jumper cable?

- **No:** Exchange the power jumper cable.  
**This ends the procedure.**
- **Yes:** Continue with the next step.

## 13. Exchange the following parts one at a time.

- SPCN card unit (see symbolic FRU “TWRCARD” on page 470).
- Display unit (see symbolic FRU “CTLPNL” on page 323).
- Power supply (see Type, model, and part number list), with a new unit, replace one of the power supplies 1, 2, or 3 until the failing unit is found.

**This ends the procedure.**

## 14. Perform the following:

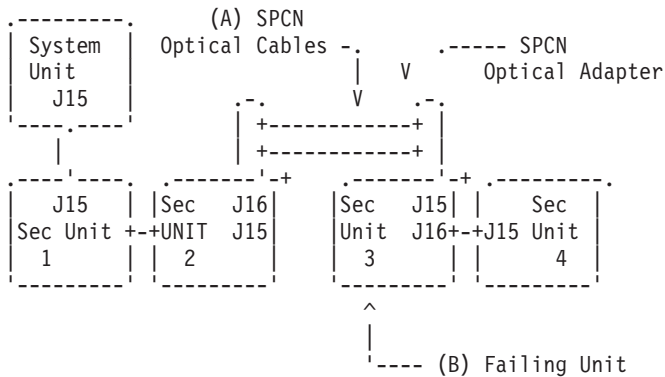
- a. Disconnect the mainline ac power cable from the customer’s ac power outlet.
- b. Exchange one of the following FRUs:
  - SPCN card (see symbolic FRU “TWRCARD” on page 470)
  - Power supply (see Type, model, and part number list)
  - System unit card enclosure
- c. Reconnect the mainline ac power cables to the power outlet.
- d. Attempt to power on the system.
- e. If the system powers on, the FRU you exchanged is the failing item. If the system does not power on, repeat this step, exchanging the next FRU in the list.
- f. If the system does not power on after exchanging all the FRUs in the list, ask your next level of support for assistance.

**This ends the procedure.**

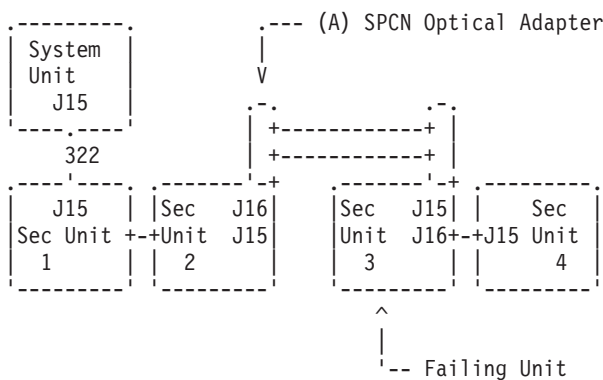
## 15. Is there an SRC displayed on the control panel for the unit that does not power on?

- **No:** Replace the SPCN card (see symbolic FRU “TWRCARD” on page 470)  
**This ends the procedure.**
- **Yes:** Continue with the next step.

16. Is the SRC 1xxx xx2E?
  - **No:** Go to “Starting point for all problems” on page 2.
  - **Yes:** Continue with the next step.
17. Do SPCN optical cables A connect the failing unit B to the preceding unit in the string?
  - **No:** Go to step 19 (See page 59).
  - **Yes:** Continue with the next step.



18. Remove the SPCN optical adapter A from the preceding frame in the string that cannot become powered on. See Remove and replace procedures for the system.



19. Perform the following:
  - a. Connect the negative lead of a multimeter to the system frame ground.
  - b. Connect the positive lead of a multimeter to pin 2 of J16 in the unit from which you removed the SPCN optical adapter in the previous step of this procedure.

**Notes:**

- If you are working on a system unit, the cable may be connected to either J15 or J16.
- Use an insulated probe or jumper when performing the voltage readings.

20. Note the voltage reading on pin 2.
21. Move the positive lead of the multimeter to pin 3 of J16 on the AC module or SPCN card.
22. Note the voltage reading on pin 3.

Figure 7. J16 on AC module

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

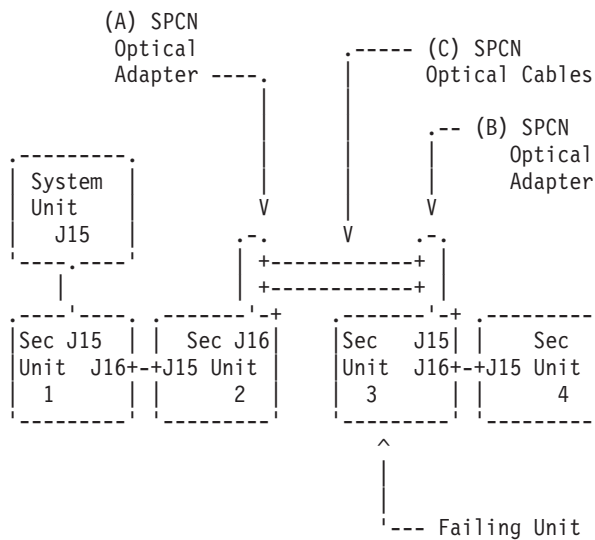
- **No:** Exchange SPCN card (see symbolic FRU “TWRCARD” on page 470) in the unit from which you removed the SPCN optical adapter (see the Remove and replace procedures for the secondary unit you are working on).

**This ends the procedure.**

- **Yes:** Continue with the next step.

23. Exchange the following FRUs, one at a time (see the Remove and replace procedures).

- SPCN card (see symbolic FRU “TWRCARD” on page 470) in the failing unit (first frame with a failure indication)
- SPCN card (see symbolic FRU “TWRCARD” on page 470) in the preceding unit in the string
- SPCN optical adapter A in the preceding unit in the string
- SPCN optical adapter B in the failing unit
- SPCN optical cables C between the preceding unit in the string and the failing unit



**This ends the procedure.**

24. Does the SPCN frame-to-frame cable coming from the system unit connect to J15 on the secondary unit (where the power on light is off or the unit control panel displays a power reference code of 1xxx xxxx)?
  - **No:** Correct the connection by connecting the SPCN frame-to-frame cable coming from the system unit to J15 of the secondary unit.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
25. Perform the following:
  - a. Power off the system.
  - b. Disconnect the SPCN frame-to-frame cable from J15 connector of the first unit that cannot become powered on.
  - c. Connect the negative lead of a multimeter to the system frame ground.
  - d. Connect the positive lead of the multimeter to pin 2 of the SPCN cable.  
**Note:** Use an insulated probe or jumper when performing the voltage readings.
  - e. Note the voltage reading on pin 2.
  - f. Move the positive lead of the multimeter to pin 3 of the SPCN cable.
  - g. Note the voltage reading on pin 3.

Figure 8. SPCN cable connector. (RV2A180-1)

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **Yes:** Exchange the following FRUs, one at a time (see Remove and replace procedures).
  - SPCN card (see symbolic FRU “TWRCARD” on page 470) in the failing unit.
  - SPCN card (see symbolic FRU “TWRCARD” on page 470) in the preceding unit in the unit string.
  - SPCN frame-to-frame cable.

**This ends the procedure.**



- **No:** Continue with the next step.
26. Perform the following:
- a. Follow the SPCN frame-to-frame cable back to the preceding unit in the string.
  - b. Disconnect the SPCN cable from J16 connector.
  - c. Connect the negative lead of a multimeter to the system frame ground.
  - d. Connect the positive lead of a multimeter to pin 2 of J16 connector.
- Note:** Use an insulated probe or jumper when performing the voltage readings.
- e. Note the voltage reading on pin 2.
  - f. Move the positive lead of the multimeter to pin 3 of J16 connector.
  - g. Note the voltage reading on pin 3.

Figure 9. J16 connector (RV2A179-1)

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **Yes:** Exchange the following FRUs, one at a time (see the Remove and replace procedures).
  - SPCN frame-to-frame cable
  - SPCN card (see symbolic FRU “TWRCARD” on page 470) in the failing unit
  - SPCN card (see symbolic FRU “TWRCARD” on page 470) in the preceding unit of the unit string

**This ends the procedure.**
- **No:** Exchange the SPCN card (see symbolic FRU “TWRCARD” on page 470) from the unit which you disconnected the SPCN cable in the previous step of this procedure. See the Remove and replace procedures.
 

**This ends the procedure.**

## Problem isolation

*For use by authorized service providers.*

This topic will help you identify and isolate the problem the system is experiencing. You will then be directed how to resolve the issue.

Symbolic field replaceable units (FRUs), failing items (FIs), and Bus problem isolation procedures (PIPs) will use the terms “partition” and “logical partition” to indicate any single partition in a system which has multiple partitions. If the system you are working on does not have multiple partitions, then the terms refer to the primary partition.

The following sub-topics are included:

- “Problem isolation procedures (PIPs)”
- “Failing items” on page 249
- Symbolic FRUs

## Problem isolation procedures (PIPs)

*For use by authorized service providers.*

**Bus, high-speed link (HSL) PIPs**

**Communications PIPs**

**Disk unit PIP**

**Intermittent PIPs**

**Licensed internal code (LIC) PIPs**

**Logical partition (LPAR) PIP**

**Operations console PIPs**

**Power PIPs**

**Storage device I/O processor (SDIOP) PIPs**

**Service processor PIPs**

**SPCN PIPs**

**Tape unit PIPs**

**Twinaxial workstation I/O processor PIP**

**Workstation adapter PIP**

**Workstation adapter console PIP**

## **Bus, high-speed link (HSL) PIPs**

*For use by authorized service providers.*

Symbolic FRUs, failing items (FIs), and Bus PIPs will use the terms *partition* and *logical partition* to indicate any single partition in a system that has multiple partitions. If the system you are working on does not have multiple partitions, then the terms refer to the primary partition.

Migrated SPD busses from earlier iSeries<sup>(TM)</sup> servers are not allowed to have empty IOP card positions between IOPs. SPD busses are numbered from 0004 through 0017 in hexadecimal as they appear in the SRCs (see “Breaking down the SRC” on page 63 in this page). Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRCs) that provide incorrect FRU information. To determine if there are any card gaps, select the Display card gap information function key from the Hardware Service Manager display. If there are gaps, correct the situation.

Read all safety notices before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system before removing, exchanging, or installing a field-replaceable unit (FRU).

**Attention:** To prevent overheating problems, do not remove any SPD (book) card completely from the card enclosure unless you install an airflow card in its place.

### **DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

This page includes the following:

- “Breaking down the SRC”: defines the fields of the SRC and their corresponding Control Panel function.
- “DSA breakdown”: helps you determine a part position and item from the Direct Select Address (DSA).
- “Card positions” on page 65: contains the card positions for the model you are working on.
- “Converting from HSL loop number to port labels on the system unit or processor tower” on page 72

**Breaking down the SRC:** This table defines the fields of the SRC and their corresponding Control Panel function. Word 7 of the SRC allows you to determine the correct Bus number, bus type, multi-adapter bridge number, multi-adapter bridge function number and logical card number from the Direct Select Address (DSA). Physical card slot labels and card positions for PCI busses are determined by using the DSA and the appropriate system unit or expansion tower card position table. See “Card positions” on page 65 in this page.

**Table 1. SRC breakdown**

SRC word	Control panel function	Panel function characters	Format	Description
1	11	1-8	B600 uuuu	uuuu = unit reference code (69xx)
1-extended SRC information	11	9-16	iiii	Frame ID of the failing resource
1-extended SRC information	11	17-24	ffff	Frame location
1-extended SRC information	11	25-32	bbbb	Board position
2	12	1-8	MIGVEP62	See Hardware SRC formats for details.
3	12	9-16	cccc cccc	Component reference code
4	12	17-24	pppp pppp	Programming reference code
5	12	25-32	qqqq qqqq	Program reference code high order qualifier
6	13	1-8	qqqq qqqq	Program reference code low order qualifier
7	13	9-16	BBBB Ccbb	Bus, card, board Direct Select Addresses (DSA). See “DSA breakdown” below. If BBBB is greater than or equal to 0100, then the BBBB value is the HSL loop number.
8	13	17-24	TTTT MMMM	Type and model of failing item (if non-zero)
9	13	25-32	uuuu uuuu	Unit address (if non-zero)



**DSA breakdown:** Follow the instructions below to determine a part position and item from the Direct Select Address (DSA).

1. Break down the DSA into the bus number, the multi-adapter bridge number, and the multi-adapter bridge function number as shown in the Table 2. DSA breakdown (See page 64) below.
2. Use the System Configuration List or Hardware Service Manager (HSM) to determine if the bus is located in the system unit or an I/O tower.

3. Refer to the “Card positions” on page 65 in this page to search for the bus number, the multi-adapter bridge number, and the multi-adapter bridge function number that matches the system unit or I/O tower type where the bus is located.

**Table 2. DSA breakdown**

The DSA format is: BBBB Ccbb (bb is not used). BBBB=Bus number, Cc=Card identifier

Bus number	The bus type is:	C = The multi-adapter bridge number	c = The multi-adapter bridge function number
0001	PCI	1	0 through 7
0001	PCI	2	0 through 7
0001	PCI	7	0
0002 through 0003	PCI	1	0 through 7
0002 through 0003	PCI	2	0 through 7
0004 through 0016	SPD	Logical card number. See the Bus Overview section in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .	Logical card number. See the Bus Overview section in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .
0017 through 00FF	PCI	1	0 through 7
0018 through 00FF	PCI	2	0 through 7
0100	HSL loop number 256 (decimal)	N/A	N/A
0101	HSL loop number 257 (decimal)	N/A	N/A
0102	HSL loop number 258 (decimal)	N/A	N/A
0103	HSL loop number 259 (decimal)	N/A	N/A
0104	HSL loop number 260 (decimal)	N/A	N/A
0105	HSL loop number 261 (decimal)	N/A	N/A
0106	HSL loop number 262 (decimal)	N/A	N/A
0107	HSL loop number 263 (decimal)	N/A	N/A
0108	HSL loop number 264 (decimal)	N/A	N/A
0109	HSL loop number 265 (decimal)	N/A	N/A
010A	HSL loop number 266 (decimal)	N/A	N/A
010B	HSL loop number 267 (decimal)	N/A	N/A
010C	HSL loop number 268 (decimal)	N/A	N/A

Bus number	The bus type is:	C = The multi-adapter bridge number	c = The multi-adapter bridge function number
010D	HSL loop number 269 (decimal)	N/A	N/A

**Card positions:** Use the table that contains the model you are working with.

- Models 270 and 820 (See page 65)
- Models 800, 810, and 825 (See page 66)
- Model 830/SB2 (FC 9074), Model 840/SB3 (FC 9079) (See page 67)
- Models 870 and 890 (FC 9094 and FC 8094), FC 5094, FC 5088 or FC 0588, and FC 8094) (See page 67)
- FC 5074, 5079 Expansion I/O Towers, and FC 5078/0578 PCI Expansion Unit (See page 70)
- FC 5075 Expansion I/O Tower (See page 71)
- FC 5095 Expansion I/O Tower (See page 71)
- External xSeries<sup>(R)</sup> Server, iSeries<sup>(TM)</sup> Adapter — Machine Type 1519 (See page 72)

**Servicing notes:**

- Service FC 5079 towers as two independent FC 5074 towers.
- Service FC 8094 towers as a FC 9094 Base I/O Tower on the bottom and a FC 5094 on the top.
- Service FC 5294 towers as two independent FC 5094 towers.

**Table 3. Card positions for Models 270 and 820**

Model number	Bus number in DSA	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
270 (All)	001	1	0	Embedded IOP	MB1
270 (All)	001	1	1	PCI IOP or IOA card	C07 (32 bit)
270 (All)	001	1	2	PCI IOP or IOA card	C01 (32 bit)
270 (All)	001	1	3	PCI IOP or IOA card	C06 (32 bit)
270 (All)	001	1	4	PCI IOP or IOA card	C05 (32 bit)
270 (All)	001	1	5	PCI IOP or IOA card	C04 (32 bit)
270 (All)	001	1	6	PCI IOP or IOA card	C03 (32 bit)
270 (All)	001	1	7	PCI IOP or IOA card	C02 (32 bit)
270 (All)	001	1	F	Multi-adapter bridge	MB1
270 (All)	001	7	0	Service processor	MB1
820 (All)	001	1	0	Embedded IOP	MB1
820 (All)	001	1	1	PCI IOP or IOA card	C06 (32 bit)
820 (All)	001	1	2	PCI IOP or IOA card	C05 (32 bit)
820 (All)	001	1	3	PCI IOP or IOA card	C04 (32 bit)
820 (All)	001	1	4	PCI IOP or IOA card	C03 (64 bit)
820 (All)	001	1	6	PCI IOP or IOA card	C02 (32 bit)
820 (All)	001	1	7	PCI IOP or IOA card	C01 (32 bit)
820 (All)	001	1	F	Multi-adapter bridge	MB1
820 (All)	001	7	0	Service processor	MB1

**Table 4. Card position for Models 800, 810 and 825**

Model number	Bus number in DSA	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
800, 810	0001	1	0	Embedded IOP	MB1
800, 810	0001	1	1	PCI IOP or IOA card	C07 (32 bit)
800, 810	0001	1	2	PCI IOP or IOA card	C01 (32 bit)
800, 810	0001	1	3	PCI IOP or IOA card	C06 (32 bit)
800, 810	0001	1	4	PCI IOP or IOA card	C05 (32 bit)
800, 810	0001	1	5	PCI IOP or IOA card	C04 (32 bit)
800, 810	0001	1	6	PCI IOP or IOA card	C03 (32 bit)
800, 810	0001	1	7	PCI IOP or IOA card	C02 (32 bit)
800, 810	0001	1	F	Multi-adapter bridge	MB1
800, 810	0001	7	0	Service processor	MB1
825	001	2	0	PCI IOP	C07
825	001	2	1	PCI IOP	C07
825	001	2	2	Embedded Ethernet IOA	CB1
825	001	2	3	Unused	CB1
825	001	2	4	PCI IOP or IOA card	C06
825	001	2	5	PCI IOP or IOA card	C06
825	001	2	6	PCI IOP or IOA card	C05
825	001	2	7	PCI IOP or IOA card	C05
825	001	2	F	Multi-adapter bridge	CB1
825	001	7	0	Service processor	CB1
825	002	2	0	PCI IOP or IOA card	C12
825	002	2	1	PCI IOP or IOA card	C12
825	002	2	2	PCI IOP or IOA card	C11
825	002	2	3	PCI IOP or IOA card	C11
825	002	2	4	Unused	CB1
825	002	2	5	Unused	CB1
825	002	2	6	IOA card	C10
825	002	2	7	IOA card	C10
825	002	2	F	Multi-adapter bridge	MB1
825	003	2	0	PCI IOP or IOA card	C04
825	003	2	1	PCI IOP or IOA card	C04
825	003	2	2	PCI IOP or IOA card	C03
825	003	2	3	PCI IOP or IOA card	C03
825	003	2	4	PCI IOP or IOA card	C02
825	003	2	5	PCI IOP or IOA card	C02
825	003	2	6	IOA card	C01
825	003	2	7	IOA card	C01
825	003	2	F	Multi-adapter bridge	MB1

**Table 5. Card positions for Models 830/SB2 - FC 9074 Base I/O Tower, and Models 840/SB3 - FC 9079 Base I/O Tower**

<b>Bus number</b>	<b>Multi-adapter bridge number in DSA</b>	<b>Multi-adapter bridge function number in DSA</b>	<b>Item DSA points to:</b>	<b>Position label and PCI data width</b>
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C01 (64 bit)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C02 (64 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C03 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C04 (64 bit)
xxxx (assigned by LIC)	1	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C05 (64 bit/INS)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C06 (32 bit)
xxxx (assigned by LIC)	1	3	PCI IOP or IOA card	C07 (32 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C09 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C10 (64 bit)
xxxx (assigned by LIC)	1	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	2	0	PCI IOP or IOA card	C11 (64 bit/INS)
xxxx (assigned by LIC)	2	2	PCI IOP or IOA card	C12 (32 bit)
xxxx (assigned by LIC)	2	3	PCI IOP or IOA card	C13 (32 bit)
xxxx (assigned by LIC)	2	4	PCI IOP or IOA card	C14 (64 bit)
xxxx (assigned by LIC)	2	6	PCI IOP or IOA card	C15 (64 bit)
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1

**Table 6. Card positions for Models 870 and 890 - Base I/O Tower (FC 9094 and FC 8094 bottom unit), FC 5094, FC 5088 or FC 0588, and FC 8094 (top unit) Expansion I/O Unit (For FC 5094 and 8094, see Servicing notes (See page 65) above)**

<b>Bus number</b>	<b>Multi-adapter bridge number in DSA</b>	<b>Multi-adapter bridge function number in DSA</b>	<b>Item DSA points to:</b>	<b>Position label and PCI data width</b>
001 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)	7	0	Service processor (FC 9074, FC 9079 only)	CB1
<ul style="list-style-type: none"> <li>• 001 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	0 and 1	PCI IOP or IOA card	C01
<ul style="list-style-type: none"> <li>• 001 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	2 and 3	PCI IOP or IOA card	C02
<ul style="list-style-type: none"> <li>• 001 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	4 and 5	PCI IOP or IOA card	C03
<ul style="list-style-type: none"> <li>• 001 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	6 and 7	IOA card	C04
<ul style="list-style-type: none"> <li>• 001 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	F	Multi-adapter bridge	CB1
<ul style="list-style-type: none"> <li>• 0002 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	0 and 1	PCI IOP or IOA card	C05



<b>Bus number</b>	<b>Multi-adapter bridge number in DSA</b>	<b>Multi-adapter bridge function number in DSA</b>	<b>Item DSA points to:</b>	<b>Position label and PCI data width</b>
<ul style="list-style-type: none"> <li>• 0002 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	2	PCI IOP or IOA card	C06
<ul style="list-style-type: none"> <li>• 0002 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	3	PCI IOP or IOA card	C07
<ul style="list-style-type: none"> <li>• 0002 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	4 and 5	PCI IOP or IOA card	C08
<ul style="list-style-type: none"> <li>• 0002 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	6 and 7	IOA card	C09
<ul style="list-style-type: none"> <li>• 0002 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	F	Multi-adapter bridge	CB1
<ul style="list-style-type: none"> <li>• 0003 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	0 and 1	PCI IOP or IOA card	C11
<ul style="list-style-type: none"> <li>• 0003 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>• Otherwise: xxxx (assigned by LIC)</li> </ul>	2	2	PCI IOP or IOA card	C12

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
<ul style="list-style-type: none"> <li>0003 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>Otherwise: xxxx (assigned by LIC)</li> </ul>	2	3	PCI IOP or IOA card	C13
<ul style="list-style-type: none"> <li>0003 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>Otherwise: xxxx (assigned by LIC)</li> </ul>	2	4 and 5	PCI IOP or IOA card	C14
<ul style="list-style-type: none"> <li>0003 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>Otherwise: xxxx (assigned by LIC)</li> </ul>	2	6 and 7	IOA card	C14
<ul style="list-style-type: none"> <li>0003 - Models 870 and 890 Base I/O Tower only (FC 9094 and FC 8094 bottom unit)</li> <li>Otherwise: xxxx (assigned by LIC)</li> </ul>	2	F	Multi-adapter bridge	CB1

**Table 7. Card positions for FC 5074, 5079 I/O Expansion Towers, and FC 5078/0578 PCI Expansion Unit (for FC 5079 see Servicing notes (See page 65) above)**

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C01 (64 bit)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C02 (64 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C03 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C04 (64 bit)
xxxx (assigned by LIC)	1	F	PCI IOP or IOA card	CB1
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C05 (64 bit/INS)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C06 (32 bit)
xxxx (assigned by LIC)	1	3	PCI IOP or IOA card	C07 (32 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C09 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C10 (64 bit)
xxxx (assigned by LIC)	1	F	Multi-adapter bridge	CB1

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	2	0	PCI IOP or IOA card	C11 (64 bit/INS)
xxxx (assigned by LIC)	2	2	PCI IOP or IOA card	C12 (32 bit)
xxxx (assigned by LIC)	2	3	PCI IOP or IOA card	C13 (32 bit)
xxxx (assigned by LIC)	2	4	PCI IOP or IOA card	C14 (64 bit)
xxxx (assigned by LIC)	2	6	PCI IOP or IOA card	C15 (64 bit)
xxxx (assigned by LIC)	2	F	PCI IOP or IOA card	CB1

**Table 8. Card positions for FC 5075 I/O Expansion Tower**

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	1	0	Embedded IOP	CB1
xxxx (assigned by LIC)	1	1	PCI IOP or IOA card	C01 (32 bit)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C02 (64 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C03 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C04 (64 bit)
xxxx (assigned by LIC)	1	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C05 (64 bit)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C06 (64 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C07 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C08 (64 bit)
xxxx (assigned by LIC)	1	F	Multi-adapter bridge	CB1

**Table 9. Card positions for FC 5095 I/O Expansion Tower**

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	2	0 and 1	PCI IOP	C01
xxxx (assigned by LIC)	2	2 and 3	PCI IOP or IOA card	C02
xxxx (assigned by LIC)	2	4 and 5	PCI IOP or IOA card	C03
xxxx (assigned by LIC)	2	6 and 7	IOA card	C04
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	2	Not used	Not used	C05

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	2	0 and 1	PCI IOP	C06
xxxx (assigned by LIC)	2	2 and 3	PCI IOP or IOA card	C07
xxxx (assigned by LIC)	2	6 and 7	IOA card	C08
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1

**Table 10. Card positions for the External xSeries<sup>(TM)</sup> Server, iSeries<sup>(TM)</sup> Adapter — Machine Type 1519**

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position
xxxx	1	Other than F	Embedded IOP	Follow the HSL cables
xxxx	1	F	Multi-adapter bridge	Follow the HSL cables

**Converting from HSL loop number to port labels on the system unit or processor tower:** Use the table for the model you are working with.

- Models 270, 800, 810, 820, and 825 (See page 72)
- Models 830/SB2, 840/SB3, 870, and 890 (See page 73)

**Table 11. Loop number to NIC port location labels for Models 270, 800, 810, 820, and 825**

Decimal loop number	Hexadecimal loop number	System model	NIC's FRU position	HSL port labels on system unit or processor tower
257	0101	270	MB1	"A0" and "A1" located on the back of the system unit.
256	0100	270, 800, 810	<ul style="list-style-type: none"> <li>• Record the processor feature code (characters 5 thru 8 of function 20 on the control panel.</li> <li>• Use the processor feature code and Locations - Model 270 or Locations - Models 800 and 810 to determine if loop 256 is embedded internally or has external HSL ports</li> </ul>	<ul style="list-style-type: none"> <li>• No HSL ports when loop 256 is an internal loop embedded in the system unit backplane.</li> <li>• "A0" and "A1" when loop 256 has external HSL ports.</li> </ul>
256	0100	820	M03	"A0" and "A1" located on the back of the system unit.
256	0100	825	CB1	HSL ports A0 and A1 in card position C09.
257	0101	825	CB1	HSL ports B0 and B1 in card position C08.

Decimal loop number	Hexadecimal loop number	System model	NIC's FRU position	HSL port labels on system unit or processor tower
258	0102	825	MB1	HSL ports C0 and C1.

**Table 12. Loop number to NIC port location labels for Models 830/SB2, 840/SB3, 870, and 890**

Decimal loop number	Hexadecimal loop number	System model	NIC's FRU position	HSL port labels on system unit or processor tower
256	0100	830 and SB2	M06	<ul style="list-style-type: none"> <li>"A0" located in the primary I/O unit on the HSL I/O bridge card in position C08.</li> <li>"A1" located on the back of the primary I/O unit under the NIC's FRU.</li> </ul>
256	0100	840 and SB3	M17	"A0" and "A1" on the NIC card in position M17
256	0100	Models 870 and 890	M41	"C0" and "C1" on the NIC card in position M41
257	0101	830 and SB2	M06	"B0" and "B1" located on the NIC card in position M06
257	0101	840 and SB3	M17	"B0" and "B1" located on the NIC card in position M17
257	0101	Models 870 and 890	M41	"D0" and "D1" located on the NIC card in position M41
258	0102	830 and SB2	M06	"C0" and "C1" on the NIC card in position M06
258	0102	840 and SB3	M17	"C0" and "C1" on the NIC card in position M17
258	0102	Models 870 and 890	M40	"A0" and "A1" on the NIC card in position M40
259	0103	830 and SB3	M06	"D0" and "D1" on the NIC card in position M06
259	0103	840 and SB3	M17	"D0" and "D1" on the on the NIC card in position M17
259	0103	Models 870 and 890	M40	"B0" and "B1" on the NIC card in position M40
260	0104	840 and SB3	M17	"E0" and "E1" on the NIC card in position M17
260	0104	Models 870 and 890	M30	"C0" and "C1" on the NIC card in position M30
261	0105	840 and SB3	M17	"F0" and "F1" on the NIC card in position M17
261	0105	Models 870 and 890	M30	"D0" and "D1" on the NIC card in position M30
262	0106	840 and SB3	M17	"G0" and "G1" on the NIC card in position M17
262	0106	Models 870 and 890	M39	"A0" and "A1" on the NIC card in position M39
263	0107	840 and SB3	M17	"H0" and "H1" on the NIC card in position M17
263	0107	Models 870 and 890	M39	"B0" and "B1" on the NIC card in position M39
264	0108	Models 870 and 890	M40	"C0" and "C1" on the NIC card in position M40
265	0109	Models 870 and 890	M40	"D0" and "D1" on the NIC card in position M40

Decimal loop number	Hexadecimal loop number	System model	NIC's FRU position	HSL port labels on system unit or processor tower
266	010A	Models 870 and 890	M30	"A0" and "A1" on the NIC card in position M30
267	010B	Models 870 and 890	M30	"B0" and "B1" on the NIC card in position M30
268	010C	Models 870 and 890	M39	"C0" and "C1" on the NIC card in position M39
269	010D	Models 870 and 890	M39	"D0" and "D1" on the NIC card in position M39

For models 830/SB2, see Figure 4. Network Interface Controller (NIC) port locations in the Locations - Models 830, SB2 page.

For models 840/SB3, see Figure 5. Network Interface Controller (NIC) port locations in the Locations - Models 840, SB3 page.

### Bus-PIP procedures:

#### Bus-PIPs:

- Bus-PIP 1
- Bus-PIP 2
- Bus-PIP 3
- Bus-PIP 5
- Bus-PIP 6
- Bus-PIP 7
- Bus-PIP 8
- Bus-PIP 9
- Bus-PIP 10
- Bus-PIP 11

#### Bus-PIPs for migrated towers

“Bus PIP CNSL01” on page 77

#### HSL Bus-PIPs:

- Bus-PIP HSL01
- Bus-PIP HSL02
- Bus-PIP HSL03
- Bus-PIP HSL04
- Bus-PIP HSL05
- Bus-PIP HSL06
- Bus-PIP HSL07
- Bus-PIP HSL08

#### IOP Bus-PIPs:

- “Bus PIP IOP-01, IOP reset” on page 89
- “Bus PIP IOP-02, Isolate to failing I/O adapter resource” on page 90

- “Bus PIP IOP-03” on page 92

**Multi-adapter bridge (MAB) PIPs:**

- Bus-PIP MAB-02
- Bus-PIP MAB-03
- Bus-PIP MAB-04

**“Bus PIP PCIBUS-PIP1” on page 99**

**“Bus PIP verify - RA” on page 101**

**rzar5bp8.htm”>Bus-PIP VERIFY - RA**

**Bus-PIP1:** *For use by authorized service providers.*

You will need to perform BUS-PIP1 on an SPD Migrated Tower. Go to “Bus-PIPs for migrated towers” on page 77 for more information.

**Bus-PIP2:** *For use by authorized service providers.*

You will need to perform Bus-PIP2 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” on page 77 for more information.

**Bus-PIP3:** *For use by authorized service providers.*

You will need to perform Bus-PIP3 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” on page 77 for more information.

**Bus-PIP5:** *For use by authorized service providers.*

Use this procedure to identify a failing I/O adapter card controlled by the IOP processor that you are performing isolation on.

Follow the instructions for the model you are working on:

- Models 270, 820, 830, 840, SB2, and SB3 (See page 75)
- Models 800, 810, 825, 870, and 890 (See page 76)

**Instructions for Models 270, 820, 830, 840, SB2, and SB3**

1. Do you have a frame ID from the Service Action Log (SAL)?
  - **No:** Continue with the next step.
  - **Yes:** Is the frame that you are working on a FC 5033, 5034, 5035, 5076 or 5077?
    - **Yes:** Go to step 4 (**See page 76**).
    - **No:** The I/O processor is in a system unit or I/O tower other than an SPD Migrated Tower. Perform “Bus PIP IOP-02, Isolate to failing I/O adapter resource” on page 90. If Bus PIP IOP-02 directs you to return to this procedure, then return to the procedure which sent you here. **This ends the procedure.**
2. Do you have a Direct Select Address (DSA)?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Obtain the bus number by performing **one** of the following steps:
      - Record the Direct Select Address (DSA) which is word 7 from the SAL display. The bus number is the 4-leftmost characters.

- Search the Product Activity Log (PAL) for the SRC that sent you here, and select **Display** —> **Additional information**. The DSA is word 7 of the SRC, and the bus number is the 4-leftmost characters.
  - Get the SRC from either the control panel or the main store dump display. The DSA is word 7 of the SRC and the bus number is the 4-leftmost characters.
- b. Record the bus number, then continue with the next step of this procedure.
3. Determine if the I/O processor is in an SPD Migrated Tower. Examine the Bus number (BBBB) in the Direct Select Address (DSA) of the SRC. See “Breaking down the SRC” on page 63 for help in locating the DSA and the bus number.
- Is the bus number in the SRC greater than or equal to 0004 AND less than or equal to 0017 (hexadecimal), or 4 through 23 (decimal)?
- **Yes:** Continue with the next step.
  - **No:** The I/O processor is in a system unit or I/O tower other than an SPD Migrated Tower. Perform “Bus PIP IOP-02, Isolate to failing I/O adapter resource” on page 90. If Bus PIP IOP-02 directs you to return to this procedure, then return to the procedure which sent you here.  
**This ends the procedure.**
4. The I/O processor is in an SPD migrated tower. You will need to perform Bus-PIP5 for SPD migrated towers. Go to “Bus-PIPs for migrated towers” on page 77.  
**This ends the procedure.**

#### **Instructions for Models 800, 810, 825, 870, and 890**

1. If you do not have a frame ID from either the Service Action Log (SAL) or a Direct Select Address (DSA), perform the following:
- a. Obtain the bus number by performing one of the following:
    - Record the Direct Select Address (DSA), which is word 7 from the SAL display. The bus number is the 4 leftmost characters.
    - Search the Product Activity Log (PAL) for the SRC that sent you here, and select **Display** —> **Additional information**. The DSA is word 7 of the SRC, and the bus number is the 4 leftmost characters.
    - Get the SRC from either the control panel or the main store dump display. The DSA is word 7 of the SRC and the bus number is the 4 leftmost characters.
  - b. Record the bus number, then continue with the next step of this procedure.
2. The I/O processor is in a system unit or I/O tower. Perform “Bus PIP IOP-02, Isolate to failing I/O adapter resource” on page 90, which will help you isolate to a failing I/O adapter resource. If Bus PIP IOP-02 directs you to return to this procedure, then return to the procedure which sent you here.  
**This ends the procedure.**

#### **procedure.**

**Bus-PIP6:** *For use by authorized service providers.*

You will need to perform Bus-PIP6 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” on page 77 for more information.

**Bus-PIP7:** *For use by authorized service providers.*

You will need to perform Bus-PIP7 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” on page 77 for more information.

**Bus-PIP8:** *For use by authorized service providers.*

You will need to perform Bus-PIP8 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” on page 77 for more information.



**Bus-PIP9:** For use by authorized service providers.

You will need to perform Bus-PIP9 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” for more information.

**Bus-PIP10:** For use by authorized service providers.

You will need to perform Bus-PIP10 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” for more information.

**Bus-PIP11:** For use by authorized service providers.

You will need to perform Bus-PIP11 on an SPD migrated tower. Go to “Bus-PIPs for migrated towers” for more information.


**Bus-PIPs for migrated towers:** For use by authorized service providers.


The failure is in a migrated tower.

SPD migrated towers are connected with a high-speed link and have bus numbers 0004 through 0017 (hexadecimal) or 4 through 23 (decimal).

Use Hardware Service Manager (HSM), the System Configuration Listing, or visually inspect the SPD migrated I/O tower to determine the feature code of the tower. Record the tower’s feature code number.

You will need the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1


Supplemental Manuals web site  to continue. Go to Bus PIP Entry Point in the Bus Problem Isolation Procedures section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the

V5R1 Supplemental Manuals web site  . Follow the instructions to get to the Bus-PIP that you were sent there to perform using the migrated tower feature code that you recorded.

**Bus PIP CNSL01:** For use by authorized service providers.

Use this procedure to exchange the I/O processor for the system or partition console.

1. Does the system have multiple partitions?
  - **No:** Go to step **8 (See page 78)**.
  - **Yes:** Is the problem on a secondary partition?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **8 (See page 78)**.
2. Can the customer power off the partition at this time?
  - **Yes:** Power down the partition from the Primary partition’s Work with partition status display. Then, continue with the next step.
  - **No:** The IOP controlling the partition’s console may be controlling other critical resources. The partition must be powered off to exchange this IOP. Perform this procedure when the customer is able to power down the partition from the Primary partition’s Work with partition status display. Then, continue with the next step.
3. Determine the logical address and the frame ID of the console IOP using the following steps:
  - a. In SST/DST, select **Work with System Partitions** —> **Display partition information** —> **Display allocated I/O resources**.
  - b. Page down until you find the console IOP for the partition that you are working with.
  - c. Select **Display logical address**.
  - d. Record the bus, card and board logical address for the console’s IOP.

- e. Go to HSM in the Primary partition, and select **Logical hardware resources** —> **System bus resources** —> **Display detail** for each system bus on the Logical Hardware Resources on System Bus display until you find the bus with the same bus number you recorded for the IOP.
  - f. For the system bus that you found, select **Associated packaging resource(s)**.
  - g. Record the frame ID in the "Frame ID" column.
4. Record the frame type/feature by using the frame ID and system configuration listing OR locate the frame with that ID and record the frame type/feature.
  5. Choose one of the following options:
    - **For Models 800, 810, 825, 870, and 890:** Continue with the next step.
    - **For Models 270, 820, 830, 840, SB2, and SB3:** Is the bus number that you recorded for the IOP between 4 and 23 (in decimal)?
      - **Yes:** Perform Bus PIP CNSL01 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .  
**This ends the procedure.**
      - **No:** Continue with the next step.
  6. Determine and record the card location of the IOP by going to the "Bus, high-speed link (HSL) PIPs" on page 62 and locating the card position table for the frame type/feature you recorded in the previous step. Then, continue with the next step.
  7. Exchange the IOP in that card position by performing the following steps:
    - a. Refer to Locations and addresses, and select the frame type/feature that you recorded.
    - b. Go to the FRU locations and failing items table for the frame type/feature that you recorded.
    - c. Locate the card position in the FRU locations and failing items table and use the remove and replace procedure identified for that card location.
    - d. Power on the secondary partition.  
**This ends the procedure.**
  8. The problem is in the Primary partition of a system with one or more partitions. Choose from the following options:
    - **For Models 270 and 820:** The console IOP is embedded in the system unit backplane. Exchange the system unit backplane using symbolic FRU "SYSBKPL" on page 464. Then, power on the system.  
**This ends the procedure.**
    - **For Models 800 and 810:** The console IOP is embedded in the system unit backplane. Exchange the system unit backplane using symbolic FRU "SYSBKPL" on page 464. Then, power on the system.  
**This ends the procedure.**
    - **For Model 825:** The console IOP is in slot C09. Exchange the Network Interface Controller (NIC) Card. See Locations - Model 825 for location information, diagrams, and links to remove and replace procedures.  
**This ends the procedure.**
    - **For Models 830, 840, SB2, and SB3:** The console IOP is in the base I/O tower for the system unit. Exchange the IOP in card position C01.
      - For Model 830 systems, the IOP is in card location C01 of the FC 9074 base I/O tower in frame 1 of the system unit. To see where the IOP is located in the system unit, and determine the CCIN and remove and replace procedure for the IOP, locate card position C01 in the FRU locations and failing components table in Locations — Models 830, SB2 system unit with FC 9074 Base I/O Tower. Then, power on the system.  
**This ends the procedure.**
      - For Model 840 systems, the IOP is in card location C01 of the FC 9079 base I/O tower in frame 1 of the system unit towers. To see where the IOP is located in the base I/O tower, and to determine the CCIN and remove and replace procedure for the IOP, locate card position C01 in

the FRU locations and failing components table in Locations — Models 840, SB3 system unit with processor tower and FC 9079 Base I/O Tower. Then, power on the system.

**This ends the procedure.**

- **For Models 870 or 890:** The console IOP is in the base I/O tower for the system unit. Exchange the IOP in card position C01 and then, power on the system. See Locations - Models 870 and 890 with an FC 9094 Base I/O Tower for locations information, diagrams, and links to remove and replace procedures.

**This ends the procedure.**

**Bus PIP HSL-01:** *For use by authorized service providers.*

Bus PIP HSL-01, high-speed link - Failure isolation.

Use this procedure to isolate a failure in an HSL loop using HSM or the SAL.

**Note:** During this procedure, you will be disconnecting and reconnecting cables. If errors concerning missing resources occur, such as disk units and HSL failures, ignore them. Missing resources will report in again when the loop reinitializes.

*Main task:*

1. Before powering down any system unit or I/O tower, work with the customer to end all subsystems in all of the partitions using each partition's console.
2. **From the Primary partition**, IPL the system to DST. Do **not** use function 21!
3. Be sure all I/O towers and system units on the loop are powered on. If some frames were powered off, determine whether the HSL link error was cleared up when the frames were powered back on. If the error was cleared up, go to Verify the repair. If a frame cannot become powered on, see the "Cannot power on frame" on page 81 subtask in this document, then continue with the next step of the Main task.
4. Access the SAL entry for this error, the FRUs should be listed there. Look for part numbers and descriptions for the FRUs containing the HSL port for two frames. There should also be a FRU for the cable between them. The locations information for the FRUs is the location of the failed ports on the failed link.

If this information is not in the SAL, see "Manually detecting the failed link" on page 81 subtask in this document, then continue with the next step of the Main task.

5. If the cable connecting the failed ports is an optical cable, clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT\_CLN" on page 407. If that clears up the error, go to Verify the repair. If not, continue with the next step.
6. There are now three cases to consider, continue with the appropriate branch:
  - "The ports on both ends of the failed link are in a system unit."
  - "The port on one end of the failed link is in a system unit and the port on the other end is in an I/O tower" on page 80.
  - "The ports on both ends of the failed link are in an I/O tower" on page 80.

*The ports on both ends of the failed link are in a system unit:*

1. There may be failed hardware that will report a different error on the other system unit. Work any other HSL problems in the SAL on the other system unit. If the failed link error was cleared up when another HSL error was corrected, go to Verify the repair.
2. Replace the cable between the two system unit ports on the failed link. If the error was cleared up by exchanging the cable, go to Verify the repair. If not, continue with the next step.
3. Exchange the FRU containing the HSL port on the failed link in one of the system units (usually the quickest and easiest to replace). If the error was cleared up by exchanging the FRU containing the HSL port, go to Verify the repair.

4. Exchange the FRU containing the HSL port on the failed link in the other system unit. If the error was cleared up by exchanging the HSL port on the failed link, Verify the repair.
5. If you are working on a system Model 800, 810, 825, 870, or 890, then use symbolic FRU “BUSCBL1, BUSCBL2, BUSCBL3, or BUSCBLx” on page 292. For all other systems, use symbolic FRU “SIRGCBL” on page 453 to replace other cable related items that may be on either frame, such as interposer cards and cable wraps. If the error was cleared up by exchanging these items, go to Verify the repair.
6. If the error still persists, call your next level of support for further instruction.

*The port on one end of the failed link is in a system unit and the port on the other end is in an I/O tower:*

1. Switch the two bus cables on the I/O tower's failed port, so that the cable that was connected to port 1 will now be in port 0, and the cable that was connected to port 0 will now be in port 1.  
**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.
2. Refresh the port status for the first failing resource by doing the “Refresh the port status” on page 82 subtask in this document, then continue with the next step.
3. If the port on the system unit that failed is now working, use the symbolic FRU “SIIOADP” on page 450 to exchange the HSL I/O bridge card in the I/O tower. Go to Verify the repair.
4. Switch the cables back to their original positions.  
**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.
5. Exchange the cable between the two ports on the failed link. If the error was cleared up by exchanging the cable, go to Verify the repair.
6. Exchange the HSL FRU that contains the failing port in the system unit. If the error was cleared up by exchanging the HSL port on the failed link, go to Verify the repair.
7. If you are working on a system Model 800, 810, 825, 870, or 890, then use symbolic FRU “BUSCBL1, BUSCBL2, BUSCBL3, or BUSCBLx” on page 292. For all other systems, use the symbolic FRU “SIRGCBL” on page 453 to replace other cable-related items that may be on either frame, such as interposer cards and cable wraps. If the error was cleared up by exchanging these items, go to Verify the repair. If the error still has not cleared up, call your next level of support for further instructions.

*The ports on both ends of the failed link are in an I/O tower:*

1. Switch the two bus cables on the first I/O tower's failed port so that the cable that was connected to port 1 will now be in port 0, and the cable that was connected to port 0 will now be in port 1.  
**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.
2. Refresh the port status for the first failing resource by doing the “Refresh the port status” on page 82 subtask in this document, then continue with the next step.
3. If the port on the I/O tower on which you did NOT switch cables is now working, use the symbolic FRU “SIIOADP” on page 450 to exchange the HSL I/O bridge card in the I/O tower on which you DID switch the cables. Go to Verify the repair.
4. Switch the cables back to their original positions.  
**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

5. Switch the two bus cables on the second I/O tower's failed port so that the cable that was connected to port 1 will now be in port 0, and the cable that was connected to port 0 will now be in port 1.  
**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.
6. Refresh the port status for the first failing resource by doing the "Refresh the port status" on page 82 subtask in this document, then continue with the next step.
7. If the port on the I/O tower on which you did NOT switch cables is now working, use the symbolic FRU "SIIOADP" on page 450 to exchange the HSL I/O bridge card in the I/O tower on which you DID switch the cables. Go to Verify the repair.
8. Switch the cables back to their original positions.  
**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.
9. Exchange the cable between the two ports on the failed link. Go to Verify the repair.
10. If you are working on a system Model 800, 810, 825, 870, or 890, then use symbolic FRU "BUSCBL1, BUSCBL2, BUSCBL3, or BUSCBLx" on page 292. For all other systems, use the symbolic FRU "SIRGCBL" on page 453 to replace other cable related items that may be on either frame, such as interposer cards and cable wraps. If the error was cleared up by exchanging these items, go to Verify the repair. If the error still has not been cleared up, call your next level of support for further instructions.

*Cannot power on frame:*

- If one or more of the frames in the loop cannot become powered on, work the errors related to powering on the frames before continuing with this bus error.
- If a frame still cannot become powered on, re-configure the HSL loop without the I/O towers and system units that cannot be powered on, allowing the loop to complete.
- If the error was cleared up when the frames were powered back on or removed from the loop, go to Verify the repair.
- If the error persists when the frames were powered back on, or removed from the loop, continue from where you left off in the "Main task" on page 79.

*Manually detecting the failed link:*

1. Get the loop number from the SRC if you do not already have it. The loop number is a hexadecimal number in word 7 of the SRC. If you are working with the SRC in the PAL, then the loop number is the 4 leftmost characters of the DSA in word 7 (BBBB). Use the "DSA breakdown" on page 63 (in the "Bus, high-speed link (HSL) PIPs" on page 62 overview section) to convert the hexadecimal loop number to decimal format before continuing with this procedure.  
 If you are working from the Service Action Log (SAL), the loop number should be displayed in the FRU description area in decimal format.
2. Sign on to SST or DST (if you have not already done so). Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Select **Resources associated with loop** for the HSL loop with the failed link. The HSL bridges will be displayed under the loop.
4. Select **Display detail** for the loop with the failed link.
5. Select **Follow leading port** until a port with a "failed" status is found. Note the resource name at the leading port with a failed status, and the type-model and serial number for the resource with the failed status.
6. Select **Follow leading port** one more time and note all the information for the resource name with a failed trailing port.

7. Select **Display system information** and note the power controlling system. This info may be needed for concurrent replacement at a later time.
8. Select **Cancel** twice to return to the previous screen.
9. Go to each resource name (found above) and select **Associated packaging resource(s)**. This gives the description of the failing item and the frame ID.
10. Select **Display detail** to find the part number and location associated with the possible failing item.

*Refresh the port status:*

1. Wait one minute, and then sign on to SST or DST (if you have not already done so).
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Move the cursor to the HSL loop that you want to examine and select **Display detail** → **Include non-reporting resources**.
4. If the status of the "Leading port to next resource" is "operational", select **Follow leading port**. Continue to select **Follow leading port** until the status of the "Leading port to next resource" is "failed."
5. Select **Cancel** → **Refresh** → **Display detail** for the failing resource you are checking. Note any change in the status for the resource.

**Bus PIP HSL-02:** *For use by authorized service providers.*

Bus PIP HSL-02, Use HSM to examine the HSL loop to find *failing* resources.

Use this procedure to determine the status of HSL ports in the loop.

1. Make a copy of HSL link status diagnosis form. You will be directed to fill in specific areas of the table.
2. Sign on to SST or DST (if you have not already done so).
3. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
4. Select **Include non-reporting resources**. Move the cursor to the HSL loop that you want to examine and select **Display detail**.
5. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected. Record the resource name, type-model, and serial number, if it has not been previously recorded.
6. Is the status of the "Leading port to next resource" "operational"?
  - **Yes:** Select **Follow Leading Port**. Then, continue with the next step.
  - **No:** You have found the first "failed" link. You will be directed to find the other "failed" link. Go to step **8 (See page 82)**.
7. Is the resource name the same name that you recorded for the NIC in step **5 (See page 82)**?
  - **No:** The display that appears shows the status of the HSL ports for the next I/O Bridge resource on the loop. Go to step **6 (See page 82)**.
  - **Yes:** You have followed the HSL links around the loop and back to the NIC on the system. You did not find a failed link. Return to the procedure that sent you here.  
**This ends the procedure.**
8. Find the information for the *first* failing resource using the following steps:
  - a. Record the information as the *first* failing resource on the link.
  - b. Record the resource name, card type-model, and part number.
  - c. In HSL link status diagnosis form, record the link status of each port in column **A** for the first failing link. Circle 'Internal' if the port is designated as internal.
  - d. Select **Cancel** to return to the Work with High-speed link (HSL) resources display.

- e. For the loop with the failure, select **Resources associated with loop**.
  - f. For the HSL I/O Bridge with the resource name that you recorded, select **Associated packaging resources**.
  - g. Record the frame ID and card position. Record this information for the *first* failing link in HSL link status diagnosis form.
  - h. Select **Display detail**, and record the card position for the *first* failing resource.
9. Find the information for the other (*second*) failing resource by following these steps:
    - a. Record this information as the *second* failing resource on the link.
    - b. Select **Cancel**—>**Cancel** to return to the Logical hardware associated with HSL loops display.
    - c. Move the cursor to the HSL I/O Bridge with the name of the first failing resource, and select **Display detail**—>**Include non-reporting resources**.
    - d. Follow the failed port by doing the following:
      - If the leading port is failed, select **Follow leading port**.
      - If the trailing port is failed, select **Follow trailing port**.
    - e. You have located the *second* failing resource on the link.
    - f. Record the resource name, card type-model, and part number.
    - g. In HSL link status diagnosis form, record the link status of each port in column **A** for the *second* failing link. Circle 'Internal' if the port is designated as internal.
    - h. Select **Cancel** to return to the Logical hardware associated with HSL loops display.
    - i. Select **Include non-reporting resources**—>**Associated packaging resources** for the HSL I/O Bridge or Network Interface Controller (NIC) with the resource name that you recorded for the *second failed* resource.
    - j. Record the frame ID (if present), card position, and port. Record this information for the *second* failing link in HSL link status diagnosis form.
    - k. Select **Display detail** and record the card position for the *second* failing resource.
  10. Have you repeated steps **2 (See page 82)** through **9 (See page 83)** for a second time during this procedure?
    - **No:** Do the *first* failing link and the *second* failing link have the same frame ID?
      - **No:** Continue with the next step to determine if the HSL cable connectors between the *first* and *second* failing resources are properly seated and cleaned.
      - **Yes:** Return to the procedure which sent you here.  
**This ends the procedure.**
    - **Yes:** Return to the procedure that sent you here.  
**This ends the procedure.**
  11. Disconnect the cable at the frame ID, card position, and port that you recorded for the *first* failing resource.
  12. Is the connection an optical link?
    - **No:** Wait at least 30 seconds, and then continue with the next step.
    - **Yes:** Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT\_CLN" on page 407. Then, continue with the next step.
  13. Reconnect the cable to the port.
 

**Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. If you do not, the link will fail and you must disconnect and reconnect it again. If the connector screws are not tightened errors will occur on the link and it will fail.
  14. Disconnect the cable at the frame ID, card position, and port that you recorded for the *second* failing resource.
  15. Is the connection an optical link?

- **No:** Wait at least 30 seconds and then continue with the next step.
  - **Yes:** Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT\_CLN" on page 407. Then, continue with the next step.
16. Reconnect the cable to the port.
- Attention:** You must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. If you do not the link will fail and you must disconnect and reconnect again. If the connector screws are not tightened errors will occur on the link and it will fail.
17. Wait one minute to allow the changes to be detected by LIC.
18. Determine if the link has become "*operational*" by repeating steps 2 (See page 82) through 9 (See page 83) for a **second** time. There is no need to duplicate any information you have already recorded.
- Return to the procedure that sent you here, when you are directed to do so in steps 2 (See page 82) through 9 (See page 83).
- This ends the procedure.**

**Bus PIP HSL-03:** For use by authorized service providers.

Bus PIP HSL-03, Use HSM to examine the HSL Loop to find *failing* items.

Use this procedure to determine the status of HSL links in the loop.

1. Sign on to SST or DST.
2. Select **Start a service tool** —> **Hardware service manager** —> **Logical hardware resources** —> **High-speed link resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Display detail** —> **Include non-reporting resources**. The display that appears shows the port status of the HSL controller for the loop that you selected.
4. Record the resource name, type-model, and serial number, if it has not been previously recorded.
5. Is the status of the "*Leading port to next resource*" "*operational*?
  - **Yes:** Select **Follow leading port**. Then, continue with the next step.
  - **No:** You have found the first "*failed*" resource in the link. You will be directed to find the other "*failed*" resource on this link. Go to step 8 (See page 84).
6. Record the HSL resource name, type-model, part number, and port.
7. Is the resource name the same name that you recorded for the HSL controller in step 4 (See page 84)?
  - **No:** The display that appears is showing the status of the HSL ports for the next I/O adapter resource on the loop. Go to step 5 (See page 84) of this procedure.
  - **Yes:** You have followed the HSL links around the loop and back to the HSL controller on the system. You did not find a "*failed*" link. Return to the procedure that sent you here.  
**This ends the procedure.**
8. Find and record the information for the "*first*" failing resource using the following steps:
  - a. Record the resource name, card type-model, part number, and port.
  - b. Select **Cancel** to return to the Work with system interconnect resources display.
  - c. Select **Resources associated with ring** for the loop with the failure.
  - d. Select **Associated packaging resources** for the HSL I/O adapter with the resource name that you recorded.
  - e. Record the frame ID, card position, and port. Record this information for the "*first*" failing link in HSL link status diagnosis form.
  - f. Select **Display detail** and record the card position for the "*first*" failing resource.
9. Find and record the information for the other (*second*) failing resource using the following steps:



- a. Select **Cancel** to return to the Logical hardware associated with HSL ring display.
  - b. For the HSL I/O adapter with the name of the "*first*" failing resource, select **Display detail** → **Follow leading port**. You have located the "*second*" failing resource on the link.
  - c. Record the resource name, card type-model, part number, port.
  - d. Select **Cancel** to return to the Logical hardware associated HSL rings display.
  - e. Select **Associated packaging resources** for the HSL I/O adapter with the resource name that you recorded for the "*second*" failed resource.
  - f. Record the frame ID, card position, and port. Record this information for the "*second*" failing link in HSL link status diagnosis form.
  - g. Select **Display detail**, and record the card position for the "*second*" failing resource.
10. Have you repeated steps **1 (See page 84)** through **9 (See page 84)** for a **second** time during this procedure?
- **Yes:** Return to the procedure that sent you here.  
**This ends the procedure.**
  - **No:** Does the "*first*" failing resource and the "*second*" failing resource have the same frame ID?
    - **Yes:** Return to the procedure that sent you here.  
**This ends the procedure.**
    - **No:** Perform the following to determine if the HSL cable connectors between the *first* and *second* failing resources are properly seated and clean:
      - a. Disconnect the cable at the frame ID, card position, and port that you recorded for the "*first*" failing resource, then wait 30 seconds and reconnect it.  
**Attention:** You must fully connect the cable and tighten the connector's screws within **30 seconds** of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and it will fail.
      - b. Disconnect the cable at the frame ID, card position, and port that you recorded for the "*second*" failing resource, then wait 30 seconds and reconnect it. See the 30 second attention notice in step **10a (See page 85)**.
      - c. Refresh the port status by doing the following:
        - 1) Wait 1 minute.
        - 2) Select **Cancel**→**Refresh**.

Determine if the link has become "*operational*" by repeating steps **1 (See page 84)** through **9 (See page 84)** for a **second** time, returning to the procedure that sent you here when directed.

You **may** see a 6982 indicating that the loop went open and then a 6985 indicating that the loop recovered.

**This ends the procedure.**

**Bus PIP HSL-04:** For use by authorized service providers.

Bus PIP HSL-04, Use HSM to examine the HSL Loop to find a *failing I/O Bridge* resource.

1. Sign on to SST or DST.
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Select **Include non-reporting resources**. Move the cursor to the HSL loop that you want to examine and select **Display detail**. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected.
4. Record the resource name, type-model, and serial number, if it has not been previously recorded.
5. Is the status of the "*Leading port to next resource*" "*operational*"?
  - **Yes:** Select **Follow Leading Port**. Then, continue with the next step.

- **No:** You have found the first half of a "failing" link. Choose from the following options:
    - If this is your **first** time through steps 1 through 7, go to step **8 (See page 86)**.
    - If this is your **second** time through steps 1 through 7, go to step **9 (See page 86)**
6. Record the HSL resource name, type-model, part number, and port.
  7. Is the resource name the same name that you recorded for the NIC in step **4 (See page 85)**?
    - **No:** The display that appears is showing the status of the HSL ports for the next I/O Bridge resource on the loop. Go to step **5 (See page 85)**.
    - **Yes:** You have followed the HSL links around the loop and back to the NIC on the system. You did not find a failed link. Return to the procedure that sent you here.  
**This ends the procedure.**
  8. Follow the steps in the Clean and properly seat the cables (See page 86) procedure below.
  9. Choose from the following options:
    - If the status of the "Leading port to next resource" has become "operational", the problem has been corrected. Return to the procedure that sent you here.
    - If the status is still not "operational", continue with the next step.
  10. If the resource type (shown near the top of the screen, just below the bus number) is an HSL I/O Bridge, then, perform the Collect the resource information (See page 86) procedure below. Then, continue with the next step.
  11. Select **Follow leading port** to move to the resource with the failed link on the trailing port. If that resource is an HSL I/O Bridge, then perform the Collect the resource information (See page 86) procedure below. Then, return to the procedure that sent you here.  
**This ends the procedure.**

### Collect the resource information

Find the information for the *failing HSL I/O Bridge* using the following steps:

1. Record the resource name, card type-model, part number, and port.
2. Select **Cancel** to return to the Work with high-speed link (HSL) resources display.
3. Select **Resources associated with loop** for the loop with the failure.
4. Select **Associated packaging resources** for the HSL I/O Bridge with the resource name that you recorded.
5. Record the frame ID.
6. Select **Display detail** and record the card position.
7. Go to step **11 (See page 86)**.

### Clean and properly seat the cables

Determine if the HSL cable connectors for this HSL I/O Bridge are properly seated and clean:

1. Disconnect the cable labeled port 0 at the frame ID of the *HSL I/O bridge*.
2. Is the connection an optical link?
  - **No:** Wait at least 30 seconds, and then continue with the next step.
  - **Yes:** Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT\_CLN" on page 407. Then, continue with the next step.
3. Reconnect the cable to the port.  
**Attention:** You must fully connect the cable and tighten the connector's screws within **30 seconds** of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and it will fail.
4. Disconnect the cable labeled port 1 at the frame ID of the *HSL I/O Bridge*.

5. Is the connection an optical link?
  - **No:** Wait at least 30 seconds, and then continue with the next step.
  - **Yes:** Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT\_CLN" on page 407. Then, continue with the next step.
6. Reconnect the cable to the port. You must fully connect the cable and tighten the connector's screws within **30 seconds** of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and it will fail.
7. Refresh the port status by doing the following:
  - a. Wait 1 minute.
  - b. Select **Cancel** → **Refresh** → **Display detail for the failing resource**.
8. Then, determine if the link has become "operational" by repeating steps **1** (See page 85) through **7** a second time.

**Bus PIP HSL-05:** *For use by authorized service providers.*

Bus PIP HSL-05, Use HSM to record the configuration and status of the loop.

1. Make a copy of the HSL loop configuration and status form. You will be directed to fill in specific areas of the table. Fill in the HSL loop number directly above the table.
2. Sign on to SST or DST.
3. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
4. Select **Include non-reporting resources**. Move the cursor to the HSL loop that you want to examine, and select **Display detail**. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected.
5. Fill in the System and Loop Number in the heading of the HSL Loop Configuration and Status Form. In the first row of the table, fill in the following:
  - Resource Type: Located under the HSL Loop Number. Either HSL I/O Bridge resource (if the type is Bridge) or HSL Loop resource (if the type is NIC) will be listed.
  - Resource Name: Located in the top section of the information.
  - Status and Port information for both the leading and trailing port (to/from the next resource).
6. Select **F8** to move to the next resource in the HSL Loop. Record the same information you recorded in the previous step in the next row of the table. Continue to select **F8** and record loop resource information until you arrive at the resource you started with (the resource name will match the one in the first row).
7. Determine the Frame ID for any resources with a failed link on either the Leading Port or the Trailing Port:
  - a. Exit back to the Work with high-speed link (HSL) resources display.
  - b. Move the cursor to the loop you are working on and select **Resources associated with the loop**.
  - c. Move the cursor to the resource name you need to investigate. Select **Associated Packaging Resources**. The Frame ID will be given on that display.
8. When you have recorded the resource information for the loop and determined the frames with failed ports, return to the procedure that sent you here.  
**This ends the procedure.**

**Bus PIP HSL-06:** *For use by authorized service providers.*

Bus PIP HSL-06, Use HSM to examine the HSL Loop to determine if other systems are connected to the loop.

1. Sign on to SST or DST (if you have not already done so).

2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Resources associated with loop**.
4. Search for Remote HSL NICs on the loop.  
Are there any Remote HSL NICs on the loop?
  - **Yes:** You have determined that there **are** other systems connected to this loop.  
**This ends the procedure.**
  - **No:** You have determined that there are **not** any other systems connected to this loop.  
**This ends the procedure.**

**Bus PIP HSL-07:** For use by authorized service providers.

Starting with a frame ID, for a frame connected to an HSL loop, use this procedure to determine if there is another frame with the same frame ID on the loop. This is possible when more than one system is connected to an HSL loop.

1. Sign on to SST or to DST if you have not already done so.
2. Select **Start a service tool**→**Hardware service manager**→**Logical hardware resources**→**High-speed link (HSL) resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Resources associated with loop**→**Include non-reporting resources**. The display that appears shows the loop resource and all the "HSL I/O Bridge" and all the "Remote HSL NIC" resources connected to the loop.
4. Perform the following for each HSL I/O Bridge resource on the display:
  - a. Move the cursor to the HSL I/O Bridge resource and select **Associated packaging resource(s)**.
  - b. Compare the frame ID on the display with the frame ID (in hexadecimal format) that you are looking to find (Ignore leading zeros).
  - c. Are the frame IDs the same?
    - **No:** Select **Cancel** to return to the Logical Hardware Associated With HSL Loops display. Continue with the next step.
    - **Yes:** Perform the following steps:
      - 1) Record the resource name and the Type-Model of the HSL I/O Bridge with the frame ID for possible use later.
      - 2) Select **Display Detail** and record the "SPCN system serial number". The SPCN system serial number is the serial number of the system unit that controls the power subsystem on the frame (it connects to the frame with an SPCN cable).
      - 3) Select **Cancel** to return to the Packaging Resources Associated with a Logical Resource display.
      - 4) Select **Cancel** to return to the Logical Hardware Associated With HSL Loops display. Continue with the next step.
5. Repeat step 4 (**See page 88**) for each HSL I/O Bridge under the loop. Then, continue with the next step in this procedure.
6. Did you find more than one HSL I/O Bridge with the same frame ID?
  - **No:** There is only one frame on the loop with the frame ID you are working with. Return to the procedure that sent you here.  
**This ends the procedure.**
  - **Yes:** You have recorded the resource name, the Type-Model, and the Power Controlling system of every frame on the loop that matches the frame ID that you are looking to find.  
**This ends the procedure.**

**Bus PIP HSL-08:** For use by authorized service providers.

Starting with the frame ID and HSL port location label for one end of an HSL cable, determine the frame ID and port location label for the other end.

1. Sign on to SST or to DST if you have not already done so.
2. Select **Start a Service Tool** → **Hardware Service Manager** → **Logical Hardware Resources** → **High Speed Link (HSL) Resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Resources associated with loop** → **Include non-reporting resources**. The display that appears shows the loop resource and all the "HSL I/O Bridge" and all the "Remote HSL NIC" resources connected to the loop.
4. Perform the following for each of the HSL I/O Bridge resources listed until you are directed to do otherwise.
  - a. Move the cursor to the HSL I/O Bridge resource and select **Associated packaging resource(s)**.
  - b. Compare the frame ID on the display with the frame ID (in hexadecimal format) that you are looking to find (Ignore leading zeros).

Are the frame IDs the same?

    - **Yes:** Continue with the next step.
    - **No:** Select **Cancel** to return to the Logical Hardware Associated with HSL Loops display. Continue with the next step, repeating it for each HSL I/O Bridge under the loop, until you are directed to do otherwise.
5. Perform the following:
  - a. Select **Associated logical resource(s)**.
  - b. Move the cursor to the HSL I/O Bridge resource and select **Display detail**.
  - c. Examine the *Leading port* and *Trailing port* information. Search the display for the HSL port location label that you recorded prior to starting this procedure. If the label is part of the information for the *Leading port*, then select **Follow leading port**. If the label is part of the information for the *Trailing port*, then select **Follow trailing port**.
  - d. Perform the step below that matches the function you selected in the previous step:
    - If you selected **Follow leading port**, then examine the display for the *Trailing port* information. Record, on the worksheet that you are using, the HSL port location label shown on the "*Trailing port from previous resource*" line. Record this information as the "*To HSL Port Label*".
    - If you selected **Follow trailing port**, then examine the display for the *Leading port* information. Record, on the worksheet that you are using, the HSL port location label on the "*Leading port to next resource*" line. Record this information as the "*To HSL Port Label*".
  - e. Record the "*Link type*" (Copper or Optical) on the worksheet that you are using in the field describing the cable type.
  - f. Record the resource name on the display.
  - g. Select **Cancel** → **Cancel** → **Cancel** to return to the *Logical Hardware Associated With HSL Loops* display.
  - h. Move the cursor to the resource with the resource name you recorded in step **5f** (See page 89).
  - i. Select **Associated packaging resource(s)**.
  - j. Record the frame ID on the worksheet that you are using for the "*To Frame ID*".
  - k. Return to the procedure that sent you here.

**This ends the procedure.**

**Bus PIP IOP-01, IOP reset:** *For use by authorized service providers.*

Use this procedure to reset an IOP.

**Attention:** When the IOP reset is performed, all resources controlled by the IOP will be reset. Perform the IOP reset only if the customer has verified that the IOP reset can be performed at this time.

1. Go to the SST/DST display in the partition which reported the problem. Use STRSST if OS/400 is running, use **function 21** if STRSST does not work, or IPL the partition to DST.
2. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
3. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
4. Page forward until you find the IOP that you want to reset. For help in identifying the IOP from the Direct Select Address (DSA) in the SRC, see “Breaking down the SRC” on page 63.
5. Verify that the IOP are correct by matching the resource name(s) on the display with the resource name(s) in the Service Action Log (SAL) for the problem you are working on.
6. Move the cursor to the IOP that you want to reset, and select **I/O Debug** → **Reset IOP** → **IPL IOP**. **This ends the procedure.**

**Bus PIP IOP-02, Isolate to failing I/O adapter resource:** *For use by authorized service providers.*

Use this procedure to isolate a failing I/O adapter under an IOP. The procedure will iterate through each IOA under the IOP, powering each one off, and then resetting the IOP. This process will be repeated until the failing IOA is isolated.

1. If the system is not IPLed, will it IPL to DST?
  - **No:** Perform “Bus PIP IOP-03” on page 92. **This ends the procedure.**
  - **Yes :** From the SAL display for the SRC, record the count. Continue with the next step.
2. Go to the SST/DST display in the partition which reported the problem. Use STRSST if OS/400 is running, use **function 21** if STRSST does not work, or IPL the partition to DST.
3. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
4. Select **Start a service tool**→**Hardware service manager**→**Logical hardware resources**→**System bus resources**.
5. Is there a resource name logged in the SAL entry?
  - **No:** Do you have a location for the I/O processor?
    - **No:** Record word 7 (the Direct Select Address (DSA)) of the SRC from the SAL display. Then, continue with the next step.
    - **Yes:** Go to step **9** (See page 91).
  - **Yes:** Go to step **11** (See page 91).
6. Return to the HSM System bus resources display.
7. Locate the I/O processor by performing the following:
  - a. Select **Display detail**.
  - b. Compare the DSA from word 7 with the bus, card, board information for the IOP.
 

**Note:** The card information on the HSM display is in decimal format. You must convert the decimal card information in to hexadecimal format to match the DSA format.

Decimal format	Hexadecimal format
16	10
17	11
18	12
19	13
20	14
21	15
22	16
23	17

- c. Repeat this step until you find the IOP with the same DSA.
8. Select **Cancel**, and then go to step **12** (See page 91).
9. Locate the I/O processor in HSM by performing the following for each IOP:
  - a. Select **Associated packaging resource(s)**—>**Display detail**.
  - b. Repeat until you find the IOP with the same location.
10. Select **Cancel**—>**Cancel** and go to step **12** (See page 91).
11. Page forward until you find the multi-adapter bridge and IOP where the problem exists. Verify that the multi-adapter bridge and IOP are correct by matching the resource name(s) on the display with the resource name(s) in the Service Action Log (SAL) for the problem that you are working on.
12. For the IOP that you are working on, select **Resources associated with IOP** (if the I/O adapters are not already displayed).
13. If there is an IOA that is listed in any state other than "operational", then perform steps **14** (See page 91) through **17** (See page 91) , starting with the disabled IOA by moving the cursor to the disabled IOA. Otherwise, move the cursor to the first IOA that is assigned to the IOP.
14. Select **Associated packaging resource(s)**—>**Concurrent maintenance**—>**Power off domain**.  
Record the Frame ID and Location of the slot you are powering off. Did the domain power off successfully?
  - **No:** Choose from the following options:
    - If only one IOA was listed as failing, power down the system and replace the IOA. Re-IPL the system. If a different SRC occurred, go to "Starting point for all problems" on page 2 and work that SRC. If there was no SRC, go to Verify the repair.
    - If there were multiple failed IOAs and concurrent maintenance did not work on one, then move to the next failed IOA and repeat step **14** (See page 91) through **17** (See page 91).
    - If concurrent maintenance does not work for multiple failed IOAs, this procedure will not be able to identify a failing I/O adapter. Return to the procedure that sent you here.
  - **Yes:** Perform "Bus PIP IOP-01, IOP reset" on page 89, and then return here and continue with the next step.
15. Did the IOP reset and IPL successfully?
  - **No:** This procedure will not be able to identify a *failing* I/O adapter. Return to the procedure that sent you here.  
**This ends the procedure.**
  - **Yes:** Check for the same failure that sent you to this procedure. Check the system control panel, the SAL for the partition that reported the problem, or the Work with partition status display for the partition that reported the problem. In the SAL, the count will increase if the SRC occurred again. Continue with the next step.
16. Did the same SRC occur after the IOP was reset and IPL'd?
  - **No:** Go to step **18** (See page 92).
  - **Yes:** Perform the following steps:
    - a. Go to the Hardware Service Manager display.
    - b. Go to Packaging Hardware Resources.
    - c. Power on the IOA by selecting **Power on domain**.
    - d. Reassign the IOA to the IOP.
    - e. Return to the HSL resource display, showing the IOP and associated resources.
    - f. Continue with the next step.
17. Is there any other IOA, assigned to the IOP, that you have not already powered off and on?
  - **No:** Go to step **20** (See page 92).

- **Yes:** Move the cursor to another IOA assigned to the IOP, choosing IOAs with a status of "unknown" or "disabled" before moving on to IOAs with a status of "operational." Go to step 14 (See page 91).
18. The failing IOA is located. Exchange the I/O adapter that you just powered off. Use the location you recorded in step 14 to locate the IOA.
  19. Power on the IOA that you just exchanged.  
Does the same SRC that sent you to this procedure still occur?
    - **Yes:** The IOA is **not** the failing item. Remove the IOA and reinstall the original IOA. Continue with the next step.
    - **No:** You have exchanged the failing IOA. Go to "Bus PIP verify - RA" on page 101.  
**This ends the procedure.**
  20. No failing IOAs were identified. Return to the procedure that sent you here.  
**This ends the procedure.**

**Bus PIP IOP-03:** For use by authorized service providers.

Use this procedure to isolate a failing PCI I/O adapter card from an SRC.

**Attention:** The removal and replacement of all FRUs in this procedure must be performed using dedicated maintenance.

1. Determine the "PCI bridge set" (multi-adapter bridge domain) by performing the following:
  - a. Record the bus number (BBBB), the multi-adapter bridge number (C) and the multi-adapter bridge function number (c) from the Direct Select Address (DSA). See "Breaking down the SRC" on page 63 for help in determining these values.
  - b. Use the bus number that you recorded and the "System Configuration Listing" or ask the customer to determine what frame the bus is in.
  - c. Record the frame type where the bus is located.
  - d. The **PCI bridge set** is the group of card positions controlled by the same multi-adapter bridge on the bus that you recorded. Use the "System Configuration Listing", the card position table for the frame type that you recorded, the bus number, and the multi-adapter bridge number to determine the PCI bridge set where the failure occurred. Refer to the "Card positions" on page 65 (located in the Bus PIP Overview topic) to locate the card position table for the frame type that you recorded.
  - e. Print out the Installed features in a PCI bridge set form.
  - f. Using the card position table, record the PCI bridge set card positions, and multi-adapter bridge function numbers on the form.
  - g. Examine the PCI bridge set in the frame and record the information on the form for all of the positions with IOP and IOA cards installed in them.
  - h. The IOP with a failing IOA is in the card position that matches the multi-adapter bridge function number that you recorded in the DSA. In the "IOP" or "IOA" column of the form, write the word "DSA" next to the IOP that is identified in the DSA.
  - i. Using the form, start at the card position for the IOP in the DSA and search down the "IOP" or "IOA" column (increasing multi-adapter bridge function numbers) and mark each IOA with an "X" until you hit the next IOP or the bottom of the column. The IOAs that you marked with "X" are all under the control of the IOP that is indicated in the DSA.
2. Did the SRC appear on the system control panel or the system console? (This would happen if the system does not have multiple partitions, or if the failure occurred in the Primary partition of a system with multiple partitions.)
  - **No:** Continue with the next step.
  - **Yes:** This procedure will instruct you to power off and power on the system or partition with the problem. Perform that function as you would normally power off and power on the system. Continue with step 4 (See page 93).



3. When this procedure instructs you to power on the system or partition, power off or power on **only** the partition that reported the problem by selecting **Work with system partitions** under SST/DST. Then, from the Primary partition, use HSM concurrent maintenance to power off the card positions that you are instructed to work with. The remove and replace procedures for those positions will guide you through the HSM concurrent maintenance functions. Use this procedure to find the correct remove and replace procedure for each card position that you are instructed to work with.
4. Power off the system or partition.
5. Remove all of the IOAs that you marked with an "X" in Installed features in a PCI bridge set form. Be sure to record the card position of each IOA so that you can reinstall it in the same position later. To determine the remove and replace procedures for the IOAs, locate the IOA card positions in the FRU locations and failing items table for the frame type that you recorded. FRU locations and failing items tables are in Locations and addresses.
6. Power on the system or partition.  
Does the SRC or failure that sent you to this procedure occur?
  - **Yes:** Continue with the next step.
  - **No:** Power off the system or partition. Go to step **12** (See page 93).
7. Perform the following:
  - a. Power off the system or partition.
  - b. Exchange the IOP that is indicated in the DSA. Be sure to record the card position of the IOPs so that you can reinstall it in the same position later. To determine the remove and replace procedure for the IOP, locate the IOP's card position in the FRU locations and failing items table for the frame type you recorded. FRU locations and failing items tables are in Locations and addresses.
  - c. Power on the system or partition.  
Does the SRC or failure that sent you to this procedure occur?
    - **No:** Power off the system or partition and continue with the next step.
    - **Yes:** Go to step **18** (See page 94).
8. Install all of the IOAs that you removed in step **5** (See page 93). Be sure to install them in their original positions.
9. Power on the system or partition.  
Does the SRC or failure that sent you to this procedure occur?
  - **Yes:** Power off the system or partition. Then, continue with the next step.
  - **No:** Perform "Bus PIP verify - RA" on page 101.  
**This ends the procedure.**
10. Remove all of the IOAs that you marked with an "X" in Installed features in a PCI bridge set form. Be sure to record the card position of each IOA so that you can reinstall it in the same position later.
11. Remove the IOP that you exchanged and install the original IOP in its original position.
12. Reinstall, in its original position, one of the IOA adapters that you removed.
13. Power on the system or partition.  
Does the SRC or failure that sent you to this procedure occur?
  - **Yes:** The I/O adapter card that you just installed is the failing FRU. Continue with the next step.
  - **No:** Power off the system or partition. Repeat step **12** (See page 93) for another one of the I/O adapter cards that you removed.  
If you have reconnected all of the I/O adapters and the SRC or failure that sent you to this procedure does not occur, the problem is intermittent.  
**This ends the procedure.**
14. Power off the system or partition.
15. Exchange the I/O adapter card that you last installed. Be sure to install the new I/O adapter card in the same position.
16. Power on the system or partition.

Does the SRC or failure that sent you to this procedure occur?

- **No:** Power off the system or partition. Then, continue with the next step.
- **Yes:** Call your next level of support.  
**This ends the procedure.**

17. Reinstall, in their original positions, the remaining I/O adapter cards that you removed.

Does the SRC or failure that sent you to this procedure occur?

- **Yes:** Call your next level of support.  
**This ends the procedure.**
- **No:** Does a different SRC occur?
  - **Yes:** Follow the service procedures for the new SRC. Start with “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **No:** Perform “Bus PIP verify - RA” on page 101.  
**This ends the procedure.**

18. The problem is the multi-adapter bridge. Power off the system or partition.

19. Determine which FRU contains the multi-adapter bridge which controls the IOP in the DSA by performing the following:

- a. Locate the card position table for the frame type that you recorded. Refer to the “Card positions” on page 65 (located in the Bus PIP Overview topic) to locate the card position table for the frame type that you recorded.
- b. Using the multi-adapter bridge number that you recorded, search for the multi-adapter bridge function number “F” in the card position table to determine the card position of the multi-adapter bridge’s FRU.

20. Is the multi-adapter bridge’s FRU, a FRU that you have already exchanged?

- **No:** Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure. Then, continue with the next step.
- **Yes:** Call your next level of support.  
**This ends the procedure.**

21. Exchange the card multi-adapter bridge’s FRU at the card position that you determined for it. To determine the remove and replace procedure for the multi-adapter bridge’s FRU, locate the FRU’s card position in the FRU locations and failing items table for the frame type that you recorded. FRU locations and failing items tables are in Locations and addresses.

22. Install the original IOP in its original position.

23. Install all of the other IOPs and IOAs in to their original positions. Do **not** install the IOAs that you were instructed to remove in step 5 (See page 93).

24. Power on the system or partition.

Does the SRC or failure that sent you to this procedure occur?

- **No:** Install all of the IOAs that you removed in step 5 (See page 93). Be sure to install them in their original positions. Then, continue with the next step.
- **Yes:** Call your next level of support.  
**This ends the procedure.**

25. Power on the system or partition.

Does the SRC or failure that sent you to this procedure occur?

- **No:** **This ends the procedure.**
- **Yes:** Call your next level of support.  
**This ends the procedure.**

**Bus PIP MAB-02:** For use by authorized service providers.

Use this procedure to determine if the multi-adapter bridge is failing when the symbolic FRU PIOCARD is in the failing item list, with other failing items that have a multi-adapter bridge as a component. The procedure will start with the failing item list for the SRC that sent you here. It will determine if PIOCARD should be removed from the failing item list that you are working in.

Use the Service Action Log (SAL) to check for other errors under the same multi-adapter bridge using the following steps:

1. Were you able to obtain a location for the PIOCARD FRU from the SAL?
  - **No:** Find the SRC in the SAL and record the Direct Select Address (DSA) in word 7. See “Breaking down the SRC” on page 63 to find the DSA in the SRC. Then, continue with the next step.
  - **Yes:** Go to step 5 (See page 95).
2. Record the Bus number (**BBBB** part) of the DSA and the Multi-adapter bridge number of the DSA. The multi-adapter bridge number is the first character of the card identifier part (**Cc**) in the DSA. See “Breaking down the SRC” on page 63 to find the DSA in the SRC.
3. Go to “Bus PIP PCIBUS-PIP1” on page 99 to determine the location of the PCI I/O Card in the failing item list. Return here and continue with the next step.
4. Using the card position table for the frame or I/O tower type that you recorded in “Bus PIP PCIBUS-PIP1” on page 99. Determine which of the card positions within the frame or I/O tower are controlled by the same multi-adapter bridge that is controlling the PCI I/O card for which you determined the location in step 3 (See page 95). See “Card positions” on page 65 in the Bus-PIP overview. A card position is controlled by the same multi-adapter bridge if it has the same bus number and multi-adapter bridge number as the PCI I/O Card that you located in step 3 (See page 95). Record the card position and the DSA from the card position table for each card position that is controlled by the same multi-adapter bridge.
5. Look in the service action log (SAL), see “Use the service action log” on page 7. Look for other failures in the same frame that are located in any of the card positions that you recorded in step 4 (See page 95) or that are listed in the SAL with the PIOCARD FRU.
6. Are there any other failures within the same frame that correspond with any of the card positions that you recorded in step 4 (See page 95) or that are listed in the SAL with the PIOCARD FRU?
  - **No:** Use the failing item list that you were using when you started this procedure.
  - **Yes:** The multi-adapter bridge is failing. Remove symbolic FRU PIOCARD from the list of failing items, it is not the failing FRU.

**Bus PIP MAB-03:** *For use by authorized service providers.*

BUS PIP MAB-03: Isolate to failing multi-adapter bridge resource

Use this procedure to isolate a failing I/O processor or I/O adapter under a multi-adapter bridge. The procedure will iterate through each IOP under the multi-adapter bridge, powering each one off, and then resetting the multi-adapter bridge. This process will be repeated until the failing part is isolated.

1. Does the system IPL to DST?
  - **Yes:** Go to the SST/DST display in the partition which reported the problem. Use STRSST if OS/400 is running, use function 21 if STRSST does not work, or IPL the partition to DST. Then, continue with the next step.
  - **No:** Perform “Bus PIP MAB-04” on page 97.  
**This ends the procedure.**
2. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
3. Select **Start a service tool** —> **Hardware service manager** —> **Logical hardware resources** —> **System bus resources**.
4. Page forward until you find the multi-adapter bridge where the problem was reported. For help in identifying the multi-adapter bridge from the Direct Select Address (DSA) in the SRC, see Hardware

SRC formats. Verify that the multi-adapter bridge is the correct one by matching the resource name on the display with the resource name in the Service Action Log (SAL) for the problem that you are working on.

5. Select **Include non-reporting resources**.
6. Move the cursor to the first IOP under the multi-adapter bridge.
7. For each IOP that is under the multi-adapter bridge that you are working on, select **Associated packaging resource(s)** → **Display detail**.
8. Record the location of the I/O processor (IOP).
9. Select **Cancel** → **Cancel**.
10. Select **Resources associated with IOP**.
11. For each I/O adapter under the IOP, perform the following:
  - a. Select **Associated packaging resource(s)** → **Display detail**.
  - b. Record the location.
12. Power off the frame or tower. See Power on/off the system and logical partitions.
13. Remove one of the IOPs and all of its IOAs.
14. Power on the frame or tower. See Power on/off the system and logical partitions.
15. Check for the same failure which brought you to this procedure. Check the system control panel, the Service Action Log (SAL) for the partition which reported the problem, or the Work with partition status display for the partition that reported the problem.
16. Did the same SRC appear after the frame or tower was powered on?
  - **Yes:** Power on the frame or tower. Then, continue with the next step.
  - **No:** Go to step **19** (See page 96).
17. Return to the System bus resources display showing the multi-adapter bridge and the associated resources.
18. Is there another IOP under the multi-adapter bridge?
  - **No:** Go to step **21** (See page 96).
  - **Yes:** Go to step **12** (See page 96).
19. The failing IOP is located. The failing item is either the I/O processor or one of the I/O adapters that it controls. Reinstall the IOP and I/O adapters that you just removed. Perform “Bus PIP IOP-02, Isolate to failing I/O adapter resource” on page 90. If Bus PIP IOP-02 does not identify a failing I/O Adapter then return here and continue with the next step in this procedure.
20. Exchange the I/O Processor that you identified in step **19** (See page 96).

Power on the frame or tower.

Does the same SRC that sent you to this procedure occur?

  - **No:** The failing item was the IOP that you just exchanged. Reinstall all of the other IOPs and I/O adapters that you removed during this procedure. Go to “Bus PIP verify - RA” on page 101.
  - **Yes:** The failing item is the FRU containing the multi-adapter bridge which controls this IOP. Go to step **22** (See page 96).
21. No failing IOPs. The failing item is the FRU containing the multi-adapter bridge which controls this IOP.
22. Power off the system unit or I/O tower that you are working in.
23. Exchange the FRU containing the multi-adapter bridge using the symbolic FRU “MA\_BRDG” on page 363.
24. Power on the system unit or I/O tower that you are working in.

Does the same SRC that sent you to this procedure occur?

- **No:** The failing item was the multi-adapter bridge FRU that you just exchanged. Reinstall all of the other IOPs and I/O adapters that you removed during this procedure. Go to “Bus PIP verify - RA” on page 101.  
**This ends the procedure.**
- **Yes:** Contact your next level of support.  
**This ends the procedure.**

**Bus PIP MAB-04:** For use by authorized service providers.

Use this procedure to isolate a failing PCI I/O processor card from an SRC, when the system or logical partition will not IPL.

**Attention:** The remove and replace procedure of all FRUs in this procedure must be performed using “Dedicated Maintenance”.

1. Determine the “PCI bridge set” (multi-adapter bridge domain) by performing the following:
  - a. Record the bus number (BBBB), the multi-adapter bridge number (C) and the multi-adapter bridge function number (c) from the Direct Select Address (DSA) in word 7 of the SRC in the SAL entry. See “Breaking down the SRC” on page 63 for help in determining these values.
  - b. Use the bus number that you recorded and the “System Configuration Listing” or ask the customer to determine what frame the bus is in.
  - c. Record the frame type where the bus is located.
  - d. The **PCI bridge set** is the group of card positions controlled by the same multi-adapter bridge on the bus that you recorded. Use the “System Configuration Listing”, the card position table for the frame type that you recorded, the bus number, and the multi-adapter bridge number to determine the PCI bridge set where the failure occurred. Refer to the “Card positions” on page 65 (located in the Bus PIP Overview topic) to locate the card position table for the frame type that you recorded.
  - e. Print out the Installed features in a PCI bridge set form to use in the following steps.
  - f. Using the card position table, record the PCI bridge set card positions and multi-adapter bridge function numbers in the form.
  - g. Examine the PCI bridge set in the frame, and record the information in the form for all of the positions with IOP and IOA cards installed in them.
  - h. In the form, start at the top row and search down the “IOP” or “IOA” column (increasing multi-adapter bridge function numbers) and mark each IOP with an “X” until you hit the bottom of the column. The IOPs that you marked with “X” are all under the control of the multi-adapter bridge indicated in the DSA.
2. Did the SRC appear on the system control panel or the system console? (This would happen if the system does not have multiple partitions or if the failure occurred in the Primary partition of a system with multiple partitions.)
  - **No:** When this procedure instructs you to power off and power on the system or partition, power off or power on **only** the partition that reported the problem by selecting **Work with system partitions** under SST/DST. Then, from the Primary partition, use HSM concurrent maintenance to power off the card positions that you are instructed to work with. The remove and replace procedures for those positions will guide you through the HSM concurrent maintenance functions. This procedure will guide you to the correct remove and replace procedure for each card position that you are instructed to work with. Continue with the next step.
  - **Yes:** This procedure instructs you to power off and power on the system or partition with the problem. Perform that function as you would normally power off and power on the system. Continue with the next step.
3. Power off the system or partition.
4. Remove all the IOPs you marked with an “X” and all the IOAs in the form. Be sure to record the card position of each IOP and IOA so that you can reinstall it in the same position later. To determine the

remove and replace procedures for the IOPs and IOAs, locate the card positions in the FRU locations and failing items table for the frame type you recorded. FRU locations and failing items tables are in Locations and addresses.

5. Power on the system or partition.

Does the SRC or failure that sent you to this procedure occur?

- **No:** Continue with the next step.
- **Yes:** The problem is the multi-adapter bridge. Continue with step **12** (See page 98).

6. Starting at the empty card position with the lowest multi-adapter bridge function number from the form, reinstall, in their original positions, one of the IOPs and all the IOAs between it and the next IOP.

7. Power on the system or partition. Does the SRC or failure that sent you to this procedure occur?

- **Yes:** The I/O processor card that you just installed is the failing FRU. Continue with the next step.
- **No:** Power off the system or partition. Repeat step **6** (See page 98) for another one of the I/O processor cards that you removed.

If you have reconnected all of the IOPs and the SRC or failure that sent you to this procedure does not occur, the problem is intermittent.

**This ends the procedure.**

8. Power off the system or partition.

9. Exchange the I/O processor card you last installed. Be sure to install the new I/O processor card in the same position.

10. Power on the system or partition.

Does the SRC or failure that sent you to this procedure occur?

- **No:** Power off the system or partition. Then, continue with the next step.
- **Yes:** Remove the IOP that you just installed and replace the original IOP in its original position. Perform “Bus PIP IOP-03” on page 92.

**This ends the procedure.**

11. Reinstall, in their original positions, the remaining IOP and IOA cards that you removed.

Does the SRC or failure that sent you to this procedure occur?

- **Yes:** Call your next level of support.  
**This ends the procedure.**
- **No:** Does a different SRC occur?
  - **Yes:** Follow the service procedures for the new SRC. Start with “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **No:** Perform “Bus PIP verify - RA” on page 101.  
**This ends the procedure.**

12. Power off the system or partition.

13. Determine which FRU contains the multi-adapter bridge which controls the IOP in the DSA by performing the following:

- a. Locate the card position table for the frame type that you recorded. Refer to the “Card positions” on page 65 (located in the Bus PIP Overview topic) to locate the card position table for the frame type that you recorded.
- b. Using the multi-adapter bridge number that you recorded, search for the multi-adapter bridge function number “F” in the card position table to determine the card position of the multi-adapter bridge’s FRU.

14. Is the multi-adapter bridge’s FRU a FRU that you have already exchanged?

- **No:** Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure. Then, continue with the next step.

- **Yes:** Call you next level of support.  
**This ends the procedure.**
15. Exchange the card multi-adapter bridge's FRU at the card position that you determined for it. To determine the remove and replace procedure for the multi-adapter bridge's FRU, locate the FRU's card position in the FRU locations and failing items table for the frame type that you recorded. FRU locations and failing items tables are in Locations and addresses.
  16. Install all IOPs and IOAs in their original positions.
  17. Power on the system or partition.  
Does the SRC or failure that sent you to this procedure occur?
    - **No:** Perform "Bus PIP verify - RA" on page 101.  
**This ends the procedure.**
    - **Yes:** Call your next level of support.  
**This ends the procedure.**

**Bus PIP PCIBUS-PIP1:** For use by authorized service providers.

PCIBUS-PIP1: PCI Adapter Card Position Procedure.

1. If you were sent to this procedure with a specific Direct Select Address (DSA), then use it. Otherwise, use the DSA in word 7 of the B6xx SRC, see "Breaking down the SRC" on page 63 (in the Bus PIP overview topic) for help in locating the DSA.
2. Perform the following:
  - a. Record the bus number value, BBBB, in the DSA. See "DSA breakdown" on page 63 (in the Bus PIP overview topic) for help in locating the BBBB value in the DSA. You **must convert** the BBBB value **to decimal**.
  - b. Search for the decimal bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing item. From the Hardware Service Manager screen select **Logical Hardware Resources** —> **System Bus resources**. Move the cursor to a system bus object and select **Display Detail**. Do this for each bus until you find the bus on which you are working.
  - c. Record the frame or tower type.
3. Record the Cc value in the DSA. See "DSA breakdown" on page 63 for help in locating the Cc value in the DSA.
4. Is the Cc value greater than 00?
  - **No:** The multi-adapter bridge and the multi-adapter function number are not identified. Record that the multi-adapter bridge is not identified in the DSA. The card slot cannot be identified using the DSA. Go to step **8** (See page 99).
  - **Yes:** Is the right-most character of the Cc value 'F'?
    - **No:** Continue with the next step.
    - **Yes:** Only the multi-adapter bridge number is identified. Record the multi-adapter bridge number (the leftmost character of the Cc value) for later use. The card slot cannot be identified using the DSA. Go to step **8** (See page 99).
5. Is SST/DST available?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **12** (See page 100).
6. Use the "Card positions" on page 65 (located in the Bus PIP Overview topic) with the BBBB and Cc values that you recorded to identify the card position. Use the card position table that matches the frame or I/O tower type that you recorded.
7. Return to the procedure, Failing Item, or symbolic FRU that sent you here.  
**This ends the procedure.**
8. Perform the following:

- a. Sign onto SST or to DST if you have not already done so.
- b. Select **Start a service tool**—>**Hardware service manager**—>**Logical Hardware Resources**—>**System bus resources**.
- c. Put the bus number in the System bus(es) to work with field. Then, select **Include non-reporting resources**, and examine the display.

Is there more than one multi-adapter bridge connected to the bus resource you are working with?

- **Yes:** Continue with the next step.
- **No:** Go to step 11 (See page 100).

9. Was there a multi-adapter bridge number identified in the Cc value of the DSA?

- **Yes:** Continue with the next step.
- **No:** From the Logical Hardware Resources on System Bus display, examine the status of all the resources under the bus, looking for a "failed" resource.
  - To examine the status of the IOAs, select **Resources associated with IOP** for each IOP under the bus.
  - To determine the card position of a *failed* resource, select **Associated packaging resource(s)**—>**Display detail** and record the frame ID, card position, and part number.

Return to the procedure that sent you here.

**This ends the procedure.**

10. Search for the multi-adapter bridge number that is identified in the DSA by moving the cursor to each Multi-adapter Bridge resource and selecting **Display detail**. Convert the System card value to hexadecimal (it is displayed in decimal format). The hexadecimal System card value is the Cc address of the multi-adapter bridge. When you find the multi-adapter bridge resource, where the multi-adapter bridge number (the leftmost character of the hexadecimal Cc value) matches the multi-adapter bridge number that you recorded from the DSA, then you have located the multi-adapter bridge identified in the DSA.

11. From the Logical Hardware Resources on System Bus display, examine the status of all the resources under the multi-adapter bridge, looking for a "failed" resource.

- To examine the status of the IOAs, select **Resources associated with IOP** for each IOP under the multi-adapter bridge.
- To determine the card position of a *failed* resource, select **Associated packaging resource(s)**—>**Display detail** and record the frame ID, card position, and part number.

Did you find any failed resources?

- **Yes:** One of the failing resources that you located is the problem. Return to the procedure that sent you here.

**This ends the procedure.**

- **No:** Use the System Configuration Listing and the "Card positions" on page 65 (located in the Bus PIP Overview topic) for the frame type that you recorded, to determine which card positions may have the "failing" card. If you recorded that the multi-adapter bridge was identified in the Cc (the leftmost character of the Cc value), then the "Card positions" on page 65 will identify which card slots (PCI Bridge set) are controlled by the multi-adapter bridge that is identified in the Cc value. If the multi-adapter bridge was not identified in the Cc value (the leftmost character is '0') then the "Card positions" on page 65 will identify which cards slots are controlled by the buss (BBBB value) that is identified in the DSA. Return to the procedure that sent you here.

**This ends the procedure.**

12. Perform the following:

- a. Convert the hexadecimal Cc value in the DSA into a decimal value. You will be searching for the decimal value in HSM where it will be called "System card".
- b. Sign on to SST or to DST if you have not already done so.
- c. Select **Start a Service Tool**—>**Hardware Service Manager**—>**Logical Hardware Resources**—>**System Bus Resources**.




- d. Search for the "System Bus" resource identified in the BBBB field of the DSA, by moving the cursor to each "System Bus" resource and selecting **Display detail**. Do this until you locate the bus number that matches the decimal bus number value that you recorded from the DSA. Record the resource name of the bus for later use.
  - e. From the Logical Hardware Resources on System Bus display, select **Include non-reporting resources**.
13. From the Logical Hardware Resources on System Bus display, examine all of the IOP and IOA resources under the bus. Look for a "System card" value that matches the decimal value of the Cc that you converted to decimal in step 12 (See page 100). Perform the following to display the "System card" value for each of the IOP and IOA resources:
- To examine the IOP resources:
    - a. Select **Associated packaging resource(s)→Display detail**. The "System card" value of the IOP will be shown on the display.
    - b. If the "System card" value matches the decimal value of the Cc, then you have located the failing resource. Record the frame ID, card position and part number, and then return to the procedure which sent you here. Otherwise, continue to examine all the IOP and IOA resources on the bus.
  - To examine the IOA resources:
    - a. Move the cursor to an IOP resource and select **Resources associated with IOP→Associated packaging resource(s)→Display detail**. The "System card" value of the IOA will be shown on the display.
    - b. If the "System card" value matches the decimal value of the Cc, then you have located the failing resource. Record the frame ID, card position and part number, and then return to the procedure which sent you here. Otherwise, continue to examine all the IOP and IOA resources on the bus.


Have you examined all the IOP and IOA resources under the bus?

- **No:** Repeat step 13 (See page 101).
- **Yes:** Did you locate a resource with a "System card" value that matches the decimal Cc value from step 12 (See page 100)?
  - **Yes:** Record the frame ID, card position and part number of the resource. Return to the procedure that sent you here.  
**This ends the procedure.**
  - **No:** You will not be able to locate the card using DST. Go to step 6 (See page 99) to locate the card.

**Bus PIP verify - RA:** For use by authorized service providers.

Use this procedure to verify a repair for the high-speed link, for a system PCI bus, or for a multi-adapter bridge. Within this procedure, the terms "system" and "logical partition" are interchangeable when used individually.

1. Perform this procedure from the logical partition you were in when you were sent to this procedure. To determine which logical partition owns an I/O resource, or to locate the console of a secondary partition, see Logical Partitions in the *iSeries Service Functions*  book.
2. If you previously powered off a system or logical partition, or an expansion tower during this service action, then you need to power it off again.
3. Install all cards, cables, and hardware, ensuring that all connections are tight. You can use the system configuration list to verify that the cards are installed correctly.
4. Power on any expansion tower, logical partition or system unit that was powered off during the service action. Is one of the following true?
  - If the system or a logical partition was powered off during the service action, does the IPL complete successfully to the IPL or does Install the System display?

- If an expansion tower was powered off during the service action, does the expansion tower power on complete successfully?
  - If any IOP or IOA card locations were powered off using concurrent maintenance during the service action, do the slots power on successfully?
  - If you exchanged a FRU that should appear as a resource or resources to the system, such as an IOA, or I/O bridge, does the new FRU's resource appear in HSM as operational?
    - **Yes:** Continue with the next step.
    - **No:** Verify that you have followed the power off, remove and replace, and power-on procedures correctly. When you are sure that you have followed the procedures correctly, then exchange the next FRU in the list. If there are no more FRUs to exchange, then contact your next level of support.
5. Does the system/logical partition have mirrored protection? If you are not sure, select **Yes**.
- **Yes:** From the Dedicated Service Tools (DST) display, select **Work with disk units**, and resume mirrored protection for all units that have a suspended status. See Work with Disk Unit Recovery in the *iSeries Service Functions*  book. Then, continue with the next step.
  - **No:** Continue with the next step.
6. From the Start a Service Tool display, select **Hardware service manager**, and look for the I/O processors that have a failed or missing status.
- Are all I/O processor cards operational?
- Note:** Ignore any IOPs that are listed with a status of *not connected*.
- **No:** Display the logical hardware resource information for the non-operational I/O processors. For all I/O processors and I/O adapters that are failing; record the bus number (BBBB), board (bb) and card information (Cc). Continue with the next step.
  - **Yes:** Go to step **10 (See page 102)**.
7. Perform the following:
- a. Return to the Dedicated Service Tools (DST) display.
  - b. Display the Product Activity Log.
  - c. Select **All logs** and search for an entry with the same bus, board, and card address information as the non-operational I/O processor. Do not include informational or statistical entries in your search. Use only entries that occurred during the last IPL.
- Did you find an entry for the SRC that sent you to this procedure?
- **No:** Continue with the next step.
  - **Yes:** Ask your next level of support for assistance.  
**This ends the procedure.**
8. Did you find a B600 6944 SRC that occurred during the last IPL?
- **Yes:** Continue with the next step.
  - **No:** A different SRC is associated with the non-operational I/O processor. Go to the System reference code list and look up the new SRC to correct the problem.  
**This ends the procedure.**
9. Is there a B600 xxxx SRC that occurred during the last IPL other than the B600 6944 and informational SRCs?
- **Yes:** Use the other B600 xxxx SRC to determine the problem. Go to the System reference code list and look up the new SRC to correct the problem.  
**This ends the procedure.**
  - **No:** You connected an I/O processor in the wrong card position. Use the system configuration list to compare the cards. When you have corrected the configuration, go to the start of this procedure to verify the bus repair.  
**This ends the procedure.**
10. Use the hardware service manager function to print the system configuration list.

Are there any configuration mismatches?

- **No:** Continue with the next step.
- **Yes:** Ask your next level of support for assistance.  
**This ends the procedure.**

11. You have verified the repair of the system bus.

- a. If for this service action only an expansion tower was powered off or only the concurrent maintenance function was used for an IOP or IOA, then go to step **12 (See page 103)**.
- b. Otherwise, perform the following to return the system to the customer:

- 1) Power off the system/logical partition.

- 2) Select the operating mode with which the customer was originally running .

If the system was powered off, select the mode on the system control panel. If a secondary partition was powered off, select the mode on the Work with Partition Status display under

DST. See the *iSeries Service Functions*  book.

- 3) Power on the system/logical partition.

12. If the system has logical partitions and the entry point SRC was B600 xxxx, then check for related problems in other logical partitions that could have been caused by the failing part. See the *iSeries*

*Service Functions*  book.

**This ends the procedure.**

## Communications PIP

*For use by authorized service providers.*

This topic contains the procedure necessary to isolate a communications failure. Please heed the following warnings when using this procedure.

### DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

### DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)


### DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

### DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

**COMM-PIP1:** Read the warning notices above before working on a system.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions.
2. To determine which communications hardware to test, use the SRC from the problem summary form, or problem log, For details on line description information, see the Starting a Trace section of Work with Communications Trace in the *iSeries Service Functions*  information.
3. Perform the following:
  - a. Vary off the resources.
  - b. On the Start a Service Tool display, select **Hardware service manager** —> **Logical hardware resources** —> **System bus resources** —> **Resources associated with IOP** for the attached IOPs in the list until you display the suspected failing hardware.
  - c. Select **Verify** on the hardware you want to test. The **Verify** option may be valid on the IOP, IOA, or port resource. When it is valid on the IOP resource, any replaceable memory will be tested. Communications IOAs are tested by using the **Verify** option on the port resource.
4. Run the IOA/IOP test(s). This may include any of the following:

- Adapter internal test
- Adapter wrap test (requires adapter wrap plug - available from IBM or your hardware service provider).
- Processor internal test
- Memory test
- Serial/parallel port test

Does the IOA/IOP test(s) complete successfully?

- **No:** The problem is in the IOA or IOP. If a verify test identified a failing memory module, replace the memory module. On multiple card combinations, exchange the IOA card before exchanging the IOP card. Exchange the failing hardware (see the Remove and replace procedures).  
**This ends the procedure.**
  - **Yes:** The IOA/IOP is good. Do NOT replace the IOA/IOP. Continue with the next step.
5. Before running tests on modems or network equipment, the remaining local hardware should be verified. Since the IOA/IOP test(s) have completed successfully, the remaining local hardware to be tested is the external cable.  
Is the IOA adapter type 2838, with a UTP (unshielded twisted pair) external cable?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 8 (See page 104).
  6. Is the RJ-45 connector on the external cable correctly wired according to the EIA/TIA-568A standard? That is,
    - Pins 1 and 2 using the same twisted pair,
    - Pins 3 and 6 using the same twisted pair,
    - Pins 4 and 5 using the same twisted pair,
    - Pins 7 and 8 using the same twisted pair.
    - **Yes:** Continue with the next step.
    - **No:** Replace the external cable with correctly wired cable.  
**This ends the procedure.**
  7. Do the Line Speed and Duplex values of the line description (DSPLINETH) match the corresponding values for the network device (router, hub or switch) port?
    - **No:** Change the Line Speed and/or Duplex value for either the line description or the network device (router, hub or switch) port.  
**This ends the procedure.**
    - **Yes:** Go to step 9 (See page 105).
  8. Is the cable wrap test option available as a *Verify* test option for the hardware you are testing?

- **No:** The communications IOA/IOP is not the failing item. One of the following could be causing the problem.
  - External cable.
  - The network.
  - Any system or device on the network
  - The configuration of any system or device on the network.
  - Intermittent problems on the network.
  - A new SRC - go to “Starting point for all problems” on page 2 or ask your next level of support for assistance.

Work with the customer or your next level of support to correct the problem.

**This ends the procedure.**

- **Yes:** Verify the external cable by running the cable wrap test. A wrap plug is required to perform the test. This plug is available from IBM or your hardware service provider. Wrap plug part numbers can be found in Table 3. Cleaning, testing, and miscellaneous parts in the Type, model, and part number list page.

Does the cable wrap test complete successfully?

- **Yes:** Continue with the next step.
- **No:** The problem is in the cable. Exchange the cable.

**This ends the procedure.**

9. All the local hardware is good. This completes the local hardware verification. The communications IOA/IOP and/or external cable is not the failing item.

One of the following could be causing the problem:

- The network
- Any system or device on the network
- The configuration of any system or device on the network
- Intermittent problems on the network
- A new SRC - go to “Starting point for all problems” on page 2, or ask your next level of support for assistance

Work with the customer or your next level of support to correct the problem.

**This ends the procedure.**

## Disk unit PIP

*For use by authorized service providers.*

This page contains the procedure to isolate a failure in a disk unit.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

**DU-PIP3:** Use this procedure to determine the system reference code (SRC), which is used to isolate a problem and to determine the failing device.

**Note:** When exchanging a disk unit, go to the Recovery procedures.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions.
2. Look in the Service action log (see “Use the service action log” on page 7) for other errors logged at or around the same time as the 310x SRC. If no entries appear in the service action log, use the product activity log (see “Use the product activity log” on page 9). Use the other SRCs to correct the

problem (see System reference codes) before performing an IPL. Contact your next level of support as necessary for assistance with SCSI bus problem isolation. If the problem is not corrected, continue with the next step.

3. Perform an IPL to dedicated service tool (DST) (see Dedicated Service Tools (DST) in the *iSeries*

*Service Functions*  information).

Does an SRC appear on the control panel?

- **No:** Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 5 (See page 106).
- **Yes:** Go to step 6 (See page 106).

4. Does one of the following messages appear in the list?


- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode

- **No:** Continue with the next step.
- **Yes:** Select option 5, press **F11**, and then press **Enter** to display the details.

If all of the reference codes are 0000, go to “LIC-PIP11” on page 123 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 (See page 106) and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

5. Does the Display Failing System Bus display appear?

- **No:** Look at all the Product activity logs by selecting **Product activity log** under DST (see Dedicated Service Tools (DST) in the *iSeries Service Functions*  information). If there is more than one SRC logged, use an SRC that is logged against the IOP or IOA.

Is an SRC logged as a result of this IPL?

- **Yes:** Continue with the next step.
- **No:** You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the System reference code tables). If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.

**This ends the procedure.**

- **Yes:** Use the reference code that is displayed under *Reference Code* to correct the problem.

**This ends the procedure.**

6. Record the SRC on the Problem summary form (see Problem summary form).

Is the SRC the same one that sent you to this procedure?

- **Yes:** Continue with the next step.
- **No:** Go to “Starting point for all problems” on page 2 to correct the problem.

**This ends the procedure.**

7. Perform the following:

- a. Power off the system or expansion tower. See Power on/off the system and logical partitions.
- b. See “Failing items” on page 249 to find the devices identified by FI code FI01106.
- c. Disconnect one of the disk units, (other than the load-source disk unit), the tape units, or the optical storage units that are identified by FI code FI01106. Slide it partially out of the system.

**Note:** Do not disconnect the load-source disk unit, although FI code FI01106 may identify it.

8. Power on the system or the expansion tower that you powered off.

Does an SRC appear on the control panel?

- **No:** Continue with the next step.
  - **Yes:** Go to step **12** (See page 107).
9. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear with one of the following listed?
- Missing disk units in the configuration
  - Missing mirror protection disk units in the configuration
  - Device parity protected units in exposed mode
    - **Yes:** Continue with the next step.
    - **No:** Go to step **11** (See page 107).
10. Select option **5**, press **F11**, and then press **Enter** to display details.  
Does an SRC appear in the Reference Code column?
- **No:** Continue with the next step.
  - **Yes:** Go to step **12** (See page 107).
11. Look at all the Product activity logs by selecting **Product activity log** under DST.  
Is an SRC logged as a result of this IPL?
- **Yes:** Continue with the next step.
  - **No:** The last device you disconnected is the failing item. Exchange the failing device and reconnect the devices that were disconnected previously.  
**Note:** Before exchanging a disk drive, you should attempt to save customer data (see the Recovery procedures).  
**This ends the procedure.**
12. Record the SRC on the Problem summary form (see Problem summary form).  
Is the SRC the same one that sent you to this procedure?
- **No:** Continue with the next step.
  - **Yes:** The last device you disconnected is not the failing item.
    - a. Leave the device disconnected and go to step **7** (See page 106) to continue isolation.
    - b. If you have disconnected all devices that are identified by FI code FI01106 except the load-source disk unit, reconnect all devices. Then, go to step **15** (See page 107).
13. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear with one of the following listed?
- Missing disk units in the configuration
  - Missing mirror protection disk units in the configuration
  - Device parity protected units in exposed mode
    - **Yes:** Continue with the next step.
    - **No:** Use the reference code to correct the problem.  
**This ends the procedure.**
14. Select option **5**, press **F11**, and then press **Enter** to display details.  
Are all the reference codes 0000?
- **No:** Use the reference code to correct the problem.  
**This ends the procedure.**
  - **Yes:** The last device you disconnected is the failing item.
    - a. Reconnect all devices except the failing item.
    - b. Before exchanging a disk unit, go to the disk unit Remove and replace procedure for the model you are working on.  
**This ends the procedure.**
15. Was disk unit 1 (the load-source disk unit) a failing item that FI code FI01106 identified?

- **Yes:** The failing items that FI code FI01106 identified are not failing. The load-source disk unit may be failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the System reference code tables). If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.  
**This ends the procedure.**
- **No:** The failing items that FI code FI01106 identified are not failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the System reference code tables). If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.  
**This ends the procedure.**

## Intermittent PIPs

*For use by authorized service providers.*

Use these procedures to correct an intermittent problem, if other problem analysis steps or tables sent you here. Only perform the procedures that apply to your system.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

### Intermittent PIP procedures:

- INT-PIP3 External noise on AC voltage lines**
- INT-PIP5 External noise on twinaxial cables**
- INT-PIP7 Electromagnetic interference (EMI)**
- INT-PIP8 Grounding**
- INT-PIP9 Utility power and battery power units**
- INT-PIP14 Station protectors**
- INT-PIP16 Licensed internal code (LIC)**
- INT-PIP18 PTFs not installed**
- INT-PIP20 Performance problems**
- INT-PIP24 Service processor data collection**

***INT-PIP3 External noise on ac voltage lines:*** *For use by authorized service providers.*

Electrical noise on incoming ac voltage lines can cause various system failures. The most common source of electrical noise is lightning.



## DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

1. Ask the customer if an electrical storm was occurring at the time of the failure. This determines if lightning could have caused the failure.

Could lightning have caused the failure?

- **Yes:** Determine if lightning protection devices are installed on the incoming ac voltage lines where they enter the building. There must be a dedicated ground wire from the lightning protection devices to earth ground.

Are lightning protection devices installed?

- **Yes:** Continue with the next step.
- **No:** Lightning may have caused the intermittent problem. Recommend that the customer install lightning protection devices to prevent this problem from recurring.

**This ends the procedure.**

- **No:** Continue with the next step.

2. Have an **installation planning representative** perform the following:

- a. Connect a recording ac voltage monitor to the incoming AC voltage lines of the units that contain the failing devices with reference to ground.
- b. Set the voltage monitor to start recording at a voltage slightly higher than the normal incoming ac voltage.

Does the system fail again with the same symptoms?

- **Yes:** Look at the recording and see if the voltage monitor recorded any noise when the failure occurred.

Did the monitor record any noise when the failure occurred?

- **Yes:** Review with the customer what was happening external to the system when the failure occurred. This may help you to determine the source of the noise. Discuss with the customer what to do to remove the noise or to prevent it from affecting the iSeries server.

**This ends the procedure.**

- **No:** Perform the next INT-PIP listed in the *INT-PIP* column.

**This ends the procedure.**

- **No:** **This ends the procedure.**

**INT-PIP5 External noise on twinaxial cables:** *For use by authorized service providers.*

## DANGER

**To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)**

## DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

Electrical noise on twinaxial cables that are not installed correctly may affect the twinaxial workstation I/O processor card. Examples of this include open shields on twinaxial cables, and station protectors that are not being installed where necessary.

1. Check for the following on the system:
  - There must be no more than 11 connector breaks in a twinaxial cable run.
  - Station protectors must be installed (in pairs) where a cable enters or leaves a building.
  - There can only be two station protectors for each twinaxial run.
  - There is a maximum of seven devices (with addresses 0-6) for each cable run.
  - There is a maximum cable length of 1524 meters (5000 feet) for each port.
  - All cable runs must be ended (terminated).
  - Disconnect all twinaxial cables that are not used.
  - Remove any cause of electrical noise in the twinaxial cables.
  - All workstations must be grounded.
2. See chapter 9 in the *iSeries Technical Information Manual SY44-0008*, and use it to check for any cable problems.
3. For more information, see the *IBM 5250 Information Display Systems — Planning and Site Preparation Guide, GA21-9337*.  
**This ends the procedure.**

**INT-PIP7 Electromagnetic interference (EMI):** For use by authorized service providers.

Use this procedure to lessen the effects of electrical noise on the system.

1. Ensure that air flow cards are installed in all full-size card slots and adapter card slots that are not used.
2. Keep all cables away from sources of electrical interference, such as ac voltage lines, fluorescent lights, arc welding equipment, and radio frequency (RF) induction heaters. These sources of electrical noise can cause the system to become powered off.
3. If you have an expansion unit, ensure that the cables that attach the system unit to the expansion unit are seated correctly.  
**Note:** If the failures occur when people are close to the system or machines that are attached to the system, the problem may be electrostatic discharge (ESD).
4. Have an **installation planning representative** use a radio frequency (RF) field intensity meter to determine if there is an unusual amount of RF noise near the iSeries server. You can also use it to help determine the source of the noise.  
**This ends the procedure.**

**INT-PIP8 Grounding:** For use by authorized service providers.

Use this procedure to ensure that the system is electrically grounded correctly.

## DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

1. Have an **installation planning representative** or an electrician (when necessary), perform the following steps.
2. Power off the iSeries server and the power network branch circuits before performing this procedure.
3. Read *Electrical Safety for IBM Service Representatives, S229-8124*.
4. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
5. Check *all* system receptacles to ensure that each one is wired correctly. This includes receptacles for the server and all equipment that attaches to the server, including workstations. Do this to determine

if a wire with primary voltage on it is swapped with the ground wire, causing an electrical shock hazard. Use the procedures for checking receptacles in *Electrical Safety for IBM Service Representatives*, S229-8124.

6. For each unit, check continuity from a conductive area on the frame to the ground pin on the plug. Do this at the end of the mainline ac power cable. The resistance must be 0.1 ohm or less.
7. Ground continuity must be present from each unit receptacle to an effective ground. Therefore, check the following:

- The ac voltage receptacle for each unit must have a ground wire connected from the ground terminal on the receptacle to the ground bar in the power panel.
- The ground bars in all branch circuit panels must be connected with an insulated ground wire to a **ground point**, which is defined as follows:
  - The nearest available metal cold water pipe, only if the pipe is effectively grounded to the earth (see *National Electric Code* Section 250-81, in the United States).
  - The nearest available steel beams in the building structure, only if the beam is effectively grounded to the earth.
  - Steel bars in the base of the building or a metal ground ring that is around the building under the surface of the earth.
  - A ground rod in the earth (see *National Electric Code* Section 250-83, in the United States).

**Note:** For installations in the United States only, by National Electrical Code standard, if more than one of the preceding grounding methods are used, they must be connected together electrically. See *National Electric Code* Section 250, for more information on grounding.

- The grounds of all separately derived sources (uninterruptable power supply, service entrance transformer, system power module, motor generator) must be connected to a **ground point** as defined above.
- The service entrance ground bar must connect to a **ground point** as defined above.
- All ground connections **must be tight**.
- Check continuity of the ground path for each unit that is using an ECOS tester, Model 1023-100. Check continuity at each unit receptacle, and measure to the **ground point** as defined above. The total resistance of each ground path must be 1.0 ohm or less. If you cannot meet this requirement, check for faults in the ground path.
- Conduit is sometimes used to meet wiring code requirements. If conduit is used, the branch circuits must still have a green (or green and yellow) wire for grounding as stated above.

**Note:** The ground bar and the neutral bar must never be connected together in branch circuit power panels.

The ground bar and the neutral bar in the power panels that make up the electrical power network for the server must be connected together. This applies to the first electrically isolating unit that is found in the path of electrical wiring from the server to the service entrance power panel. This isolating unit is sometimes referred to as a **separately derived source**. It can be an uninterruptable power supply, the system power module for the system, or the service entrance transformer. If the building has none of the above isolating units, the ground bar and the neutral bar must be connected together in the service entrance power panel.

8. Look inside all power panels to ensure the following:
  - There is a separate ground wire for each unit.
  - The green (or green and yellow) ground wires are connected only to the ground bar.
  - The ground bar inside each power panel is connected to the frame of the panel.
  - The neutral wires are connected only to the neutral bar.
  - The ground bar and the neutral bar are not connected together, except as stated in step 7 (See page 111) of this procedure.

9. For systems with more than one unit, the ground wire for each must not be connected from one receptacle to the next in a string. Each unit must have its own ground wire, which goes to the power source.
10. The grounding wires must be insulated with green (or green and yellow) wire at least equal in size to the phase wires. The grounding wires also should be as short as possible.
11. If extension-mainline power cables or multiple-outlet power strips are used, they must have a three-wire cable. One of the wires must be a ground conductor. The ground connector on the plug must not be removed. This applies to any extension mainline power cables or multiple-outlet power strips that are used on the server. It also applies for attaching devices such as personal computers, workstations, and modems.

**Note:** Check all extension-mainline power cables and multiple-outlet power strips with an ECOS tester and with power that is applied. Ensure that no wires are crossed (for example, a ground wire crossed with a wire that has voltage on it).

12. For a diagram of grounding in a typical power distribution system, see Appendix C in the *Physical Planning Reference*.  
**This ends the procedure.**

**INT-PIP9 Utility power and battery power units:** For use by authorized service providers.

Use this procedure to check the ac electrical power for the system.

## DANGER

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**

1. Have an **installation planning representative** or an electrician (when necessary), perform the following steps.
2. Power off the iSeries system and the power network branch circuits before performing this procedure.
3. Read *Electrical Safety for IBM Service Representatives*, S229-8124.
4. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
5. Check **ALL** system receptacles to ensure that each is wired correctly. This includes receptacles for the iSeries system and all equipment that attaches to the iSeries system-including workstations. Do this to determine if a wire with primary voltage on it has been swapped with the ground wire, causing an electrical shock hazard. Use the procedures for checking receptacles in *Electrical Safety for IBM Service Representatives*, S229-8124.
6. When three-phase voltage is used to provide power to the iSeries system, correct balancing of the load on each phase is important. Each unit in the iSeries system uses only two of the three phases. Therefore, the units should be connected so that all three phases are used equally. Use the following as a guide to help balance the phases:
  - Connect a unit across phases A and B
  - Connect a unit across phases B and C
  - Connect a unit across phases A and C
  - Continue in this sequence for additional units
7. The power distribution neutral must return to the "separately derived source" through an insulated wire that is the same size as the phase wire or larger.

**Note:** "Separately derived source" is defined in "INT-PIP8 Grounding" on page 110, step 8 (See page 111).
8. The iSeries system and its attached equipment should be the only units that are connected to the power distribution network that the system gets its power.

9. The equipment that is attached to the iSeries system, such as workstations and printers, must be attached to the power distribution network for the system when possible.
10. Each unit in the iSeries system must have a circuit breaker that controls only the ac voltage to that unit. No other equipment may get its ac voltage from the same circuit breaker.
11. Check all circuit breakers in the network that supply ac power to the iSeries system as follows:
  - Ensure that the circuit breakers are installed tightly in the power panel and are not loose.
  - Feel the front surface of each circuit breaker to detect if it is warm. A warm circuit breaker may be caused by:
    - The circuit breaker that is not installed tightly in the power panel
    - The contacts on the circuit breaker that is not making a good electrical connection with the contacts in the power panel.
    - A defective circuit breaker.
    - A circuit breaker of a smaller current rating than the current load which is going through it.
    - Devices on the branch circuit which are using more current than their rating.
12. Equipment that uses a large amount of current, such as: Air conditioners, copiers, and FAX machines, should not receive power from the same branch circuits as the system or its workstations. Also, the wiring that provides ac voltage for this equipment should not be placed in the same conduit as the ac voltage wiring for the iSeries system. The reason for this is that this equipment generates ac noise pulses. These pulses can get into the ac voltage for the iSeries system and cause intermittent problems.
13. Measure the ac voltage to each unit to ensure that it is in the normal range.  
Is the voltage outside the normal range?
  - **No:** Continue with the next step.
  - **Yes:** Contact the customer to have the voltage source returned to within the normal voltage range.
14. ***The remainder of this procedure is only for an iSeries system that is attached to a separately derived source.***

Some examples of separately derived sources are an uninterruptable power supply, a motor generator, a service entrance transformer, and a system power module.

The ac voltage system must meet all the requirements that are stated in this procedure and also all of the following:

**Notes:**

- a. The following applies to an uninterruptable power supply, but it can be used for any separately derived source.
- b. System upgrades **must not** exceed the power requirements of your derived source.

The uninterruptable power supply must be able to supply the peak repetitive current that is used by the system and the devices that attach to it. The uninterruptable power supply can be used over its maximum capacity if it has a low peak repetitive current specification, and the uninterruptable power supply is already fully loaded. Therefore, a de-rating factor for the uninterruptable power supply must be calculated to allow for the peak-repetitive current of the complete system. To help you determine the de-rating factor for an uninterruptable power supply, use the following:

**Note:** The peak-repetitive current is different from the "surge" current that occurs when the iSeries system is powered on.

The de-rating factor equals the crest factor multiplied by the RMS load current divided by the peak load current where the:

- Crest factor is the peak-repetitive current rating of the uninterruptable power supply that is divided by the RMS current rating of the uninterruptable power supply. If you do not know the crest factor of the uninterruptable power supply, assume that it is 1.414.
- RMS load current is the steady state RMS current of the iSeries system as determined by the power profile.

- Peak load current is the steady state peak current of the iSeries system as determined by the power profile.  
For example, if the de-rating factor of the uninterruptable power supply is calculated to be 0.707, then the uninterruptable power supply must not be used more than 70.7% of its kVA-rated capacity. If the kVA rating of the uninterruptable power supply is 50 kVA, then the maximum allowable load on it is 35.35 kVA (50 kVA multiplied by 0.707).

When a three-phase separately derived source is used, correct balancing of the load as specified in step 6 (See page 112) is **critical**. If the load on any one phase of an uninterruptable power supply is more than the load on the other phases, the voltage on all phases may be reduced.

15. If the system is attached to an uninterruptable power supply or motor generator, then check for the following:
  - The system and the attached equipment should be the only items that are attached to the uninterruptable power supply or motor generator. Equipment such as air conditioners, copiers, and FAX machines should not be attached to the same uninterruptable power supply, or motor generator that the system is attached.
  - The system unit console and the Electronic Customer Support modem must get ac voltage from the same uninterruptable power supply or motor generator to which the system is attached.  
**This ends the procedure.**


**INT-PIP14 Station protectors:** For use by authorized service providers.

Station protectors must be installed on all twinaxial cables that leave the building in which the iSeries server is located. This applies even if the cables go underground, through a tunnel, through a covered outside hallway, or through a skyway. Station protectors help prevent electrical noise on these cables from affecting the iSeries server.

1. Look at the Product Activity Log to determine what workstations are associated with the failure.
2. Determine if station protectors are installed on the twinaxial cables to the failing workstations.  
Are station protectors installed on the twinaxial cables to the failing workstations?
  - **Yes:** Perform the next INT-PIP listed in the *INT-PIP* column.  
**This ends the procedure.**
  - **No:** You may need to install station protectors on the twinaxial cables to the failing workstations. See chapter 9, section F in the *iSeries Technical Information Manual*, SY44-0008, for additional information on station protectors.  
**This ends the procedure.**

**INT-PIP16 Licensed internal code:** For use by authorized service providers.

Sometimes a dump of main storage is needed to analyze the problem. The data on the dump is analyzed at the iSeries server factory to determine the cause of the problem and how to correct it.

1. Copy the main storage dump to tape. See Copying a Main Storage Dump in the *iSeries Service Functions*  book.
2. Ask your next level of support to determine if a Licensed Internal Code trouble report (LICTR) needs to be written.  
**This ends the procedure.**

**INT-PIP18 PTFs not installed:** For use by authorized service providers.

One or more PTFs may be available to correct this specific problem.

1. Ensure that all PTFs that relate to the problem have been installed.  
**Note:** Ensure that the latest IOP PTF has been installed before you exchange an IOP card.
2. Ask your next level of support for more information.  
**This ends the procedure.**

**INT-PIP20 Performance problems:** For use by authorized service providers.

This procedure analyzes system performance problems.

Look at the Product Activity Log and determine if any hardware errors occurred at the same time that the performance problem occurred. Did any hardware problems occur at the same time that the performance problem occurred?

- **Yes:** Correct the hardware errors.

**This ends the procedure.**

- **No:** The performance problems are not related to hardware. Perform the following:

1. Ask the customer if they have asked software level one support for any software PTFs that relate to this problem.
2. Recommend that the customer install a cumulative PTF package if they have not done so in the past three months.
3. Inform the customer that performance could possibly be improved by having a system engineer analyze the conditions.
4. Inform the customer that IBM has a Performance Tools Licensed Program Product (5728-PT1) for sale. This helps determine the areas of the system that need tuning.

**This ends the procedure.**

**INT-PIP24 Service processor data collection:** For use by authorized service providers.

The service processor reported a suspected intermittent problem. It is important that you collect data for this problem so that the problem can be corrected. Use this procedure to collect the data.

There are three different ways the system can display the SRC. Please follow the instructions for the correct display method, defined as follows:

- If this SRC is displayed in the system error log, then record all of the SRC data words, save all of the error log data and contact your next level of support to submit an APAR.
- If the control panel is displaying SRC data words scrolling automatically through control panel functions 11, 12 and 13, and the control panel user interface buttons are not responding, then perform "SP-PIP42" on page 214 instead of using this procedure.
- If the SRC is displayed at the control panel, and the control panel user interface buttons respond normally, then record all of the SRC words.

Do not perform an IPL until you perform a storage dump of the service processor. To get a storage dump of the service processor, perform the following:

1. Record the complete system reference code (SRC) (functions 11 through 13 and 20) on the Problem summary form (see Problem summary form).
2. To start a storage dump of the service processor, do the following:
  - a. Select control panel function **25** and press **Enter**.
  - b. Select control panel function **26** and press **Enter** to enable functions 54 through 70.
  - c. Select function **70** (CFIOP Storage Dump) on the control panel and press **Enter**.
  - d. Wait for the completion SRC or control panel function 01 display to appear on the control panel.
3. Perform the following:
  - a. Power off the system (see Power on/off the system and logical partitions).
  - b. Power on the system in Manual mode.
  - c. Wait for the system to complete the IPL to dedicated service tool (DST) (the control panel SRCs go beyond C6xx 4103).

Is a display shown on the console?


- **Yes:** Continue with the next step.

- **No:** The problem is not intermittent.

If you were sent here from System Reference Codes, return there and follow the procedure for a problem that is not intermittent.

If the problem continues, replace the service processor hardware (SYMBOLIC FRU = "SVCPROC" on page 464).

**This ends the procedure.**

4. The problem is intermittent. Save the IOP dump to tape (see Working with Storage Dumps in the *iSeries Service Functions*  information).
5. Complete the IPL.
6. Go to the "General intermittent problem checklist" on page 13 in "Analyze intermittent problems" on page 11 to find available program temporary fixes (PTFs) for this problem. Follow the steps to find and apply a PTF for this problem (see the PTF summary list to find PTFs with this SRC symptom). Then return here and answer the following question.

Did you find and apply a PTF for this problem?

- **Yes: This ends the procedure.**

- **No:** Ask your next level of support for assistance and provide the following:

- The complete SRC you recorded in this procedure
- The service processor dump to tape you obtained in step 4 (See page 116) of this procedure
- All known system symptoms:
  - How often the intermittent problem occurs
  - System environment (IPL, certain applications)
  - If necessary, other SRCs that you suspect relate to the problem
- Information needed to write an LICTR (see Authorized Program Analysis Report (APAR) in the

*iSeries Service Functions*  information)

**This ends the procedure.**

## Licensed Internal Code (LIC) PIPs

*For use by authorized service providers.*

Use this section to isolate Licensed Internal Code (LIC) reference code problems.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### DANGER


**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**



## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:



- Power on/off the system and logical partitions
- IPL Type, Mode, and Speed options in the *iSeries Service Functions*  information.

### Licensed Internal Code (LIC) PIP procedures:

- “LIC-PIP1”
- “LIC-PIP3” on page 118
- “LIC-PIP4” on page 119
- “LIC-PIP7” on page 120
- “LIC-PIP8” on page 123
- “LIC-PIP11” on page 123
- “LIC-PIP12” on page 134
- “LIC-PIP13” on page 138

**LIC-PIP1:** For use by authorized service providers.

LIC detected an IOP programming problem. You will need to gather data to determine the cause of the problem. If using **OptiConnect**, and the IOP is connected to another system, then collect this information from both systems. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.






1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Is the system operational: Did the SRC come from the Service Action Log, Product Activity Log, problem log, or system operator message?
  - **Yes:** Is this a x6xx5121 SRC?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 4 (See page 117).
  - **No:** Go to step 9 (See page 118).
3. If the IOP has DASD attached to it, then the IOP dump is in SID87 (or SID187 if the DASD is mirrored). Copy the IOP dump. See Working with Storage Dumps in the *iSeries<sup>(TM)</sup> Service Functions*  information.
4. Print the Product Activity Log, including any IOP dumps, to removable media for the day which the problem occurred. Select the option to obtain HEX data.
5. Use the “Licensed Internal Code log” service function under DST/SST to copy the LIC log entries to removable media for the day that the problem occurred.
6. Copy the system configuration list. See Printing the System Configuration List in the *iSeries<sup>(TM)</sup> Service Functions*  information.
7. Provide the dumps to IBM<sup>(R)</sup> Service Support.
8. Check the Logical Hardware Resource STATUS field using Hardware Service Manager. If the status is not *Operational* then IPL the IOP using the I/O Debug option. Ignore resources with a status of *not connected*.

To IPL a failed IOP, the following command can be used: VRYCFG CFGOBJ(XXXX) CFGTYPE(\*CTL) STATUS(\*RESET) or use DST/SST Hardware Service Manager.

If the IPL does not work:








- Check the Service Action Log for new SRC entries. See “Use the service action log” on page 7. Use the new SRC and go to the System reference codes topic.
- If there are no new SRCs in the Service Action Log, go to “Bus-PIP1” on page 75.

**This ends the procedure.**

9. Has the system stopped but the DST console is still active: Did the SRC come from the Main Storage Dump manager screen on the DST console?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **15** (See page 118).
10. Complete a Problem Summary Form using the information in words 1-9 from the control panel, or from the DST Main Storage Dump screen. See Reporting the Error in the *iSeries<sup>(TM)</sup> Service Functions*  information.
11. The system has already taken a partial main storage dump for this SRC and automatically re-IPLed to DST. See Automatic Main Storage Dump in the *iSeries<sup>(TM)</sup> Service Functions*  information.
12. Copy the main storage dump to tape. See Working with Storage Dumps in the *iSeries<sup>(TM)</sup> Service Functions*  information.
13. When the dump is completed, the system will re-IPL automatically. Sign on to DST or SST. Obtain the data in steps **3** (See page 117), **4** (See page 117), **5** (See page 117), and **6** (See page 117).
14. Provide the dumps to IBM<sup>(R)</sup> Service Support.  
**This ends the procedure.**
15. Has the system stopped with an SRC at the control panel?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **2** (See page 117).
16. Complete a Problem Summary Form using the information in words 1-9 from the control panel, or from the DST Main storage dump screen. See Reporting the Error in the *iSeries<sup>(TM)</sup> Service Functions*  information.
17. Do **NOT** power off the system. Perform a manual IPL to DST, and start the Main storage dump manager service function.
18. Copy the main storage dump to tape. See Working with Storage Dumps in the *iSeries<sup>(TM)</sup> Service Functions*  information.
19. Obtain the data in steps **3** (See page 117), **4** (See page 117), **5** (See page 117), and **6** (See page 117).
20. Re-IPL the system.
21. Has the system stopped with an SRC at the control panel?
  - **Yes:** Use the new SRC and go to the System reference codes topic.  
**This ends the procedure.**
  - **No:** Provide the dumps to IBM<sup>(R)</sup> Service Support.  
**This ends the procedure.**

**LIC-PIP3:** For use by authorized service providers.

Dedicated service tools (DST) found a permanent program error, or a hardware failure occurred. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.



1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Does URC 50FF occur?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 4 (See page 119) of this procedure.
3. Perform a main storage dump, then perform an IPL by doing the following:
  - a. Perform a main storage dump (see Working with Storage Dumps in the *iSeries Service Functions*  information).
  - b. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).
  - c. When the IPL has completed, the system console should be at the DST display. If the DST display does not appear on the system console, go to “Bus-PIP1” on page 75. Otherwise, go to step 7 (See page 119) of this procedure.
4. Perform a main storage dump, then perform an IPL by doing the following:
  - a. Perform a main storage dump (see Working with Storage Dumps in the *iSeries Service Functions*  information).
  - b. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).  
Does a display appear?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 7 (See page 119) of this procedure.
5. If the problem is in the Primary partition, exchange the first workstation I/O processor card on bus 1 (see Remove and replace procedures). If the problem is in the secondary partition, exchange the I/O processor card for the console of the secondary partition. To locate a secondary partition’s console and workstation I/O processor, see the *iSeries Service Functions* .
6. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).  
Is the IPL or Install the System display shown?
  - **Yes:** Continue with the next step.
  - **No:** Ask your next level of support for assistance and report the problem.  
**This ends the procedure.**
7. Copy the main storage dump to removable media (see Working with Storage Dumps in the *iSeries Service Functions*  information).
8. Report a Licensed Internal Code problem to your next level of support.  
**This ends the procedure.**


**LIC-PIP4:** For use by authorized service providers.


The IPL service function ended. Dedicated service tools (DST) was in the disconnected status or lost communications with the IPL console because of a console failure and could not communicate with the user. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.

2. Select function **21** (Make DST Available) on the control panel and press **Enter** to start DST again. Does the DST Sign On display appear?

- **Yes:** Perform the following (see Dedicated Service Tools (DST) in the *iSeries Service Functions*  information):
  - a. Select **Start a Service Tool**—>**Licensed Internal Code log**.
  - b. Perform a dump of the Licensed Internal Code log to tape (see Start a Service Tool in the *iSeries Service Functions*  information).
  - c. Return here and continue with the next step of this procedure.
- **No:** Continue with the next step.


3. Perform a main storage dump (see Working with Storage Dumps in the *iSeries Service Functions*  information).

4. Copy the main storage dump to removable media (see Working with Storage Dumps in the *iSeries Service Functions*  information).

5. Report a Licensed Internal Code problem to your next level of support.  
**This ends the procedure.**

**LIC-PIP7:** For use by authorized service providers.

The system detected a problem while communicating with a specific I/O processor. The problem could be caused by Licensed Internal Code, the I/O processor card, or by bus hardware. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Did a previous procedure have you power off the system, perform an IPL in Manual mode, **and** is the system in Manual mode now?
  - **No:** Perform the following:
    - a. Power off the system (see Power on/off the system and logical partitions).
    - b. Select **Manual** mode on the control panel (see IPL Type, Mode, and Speed Options in the *iSeries Service Functions*  ).
    - c. Power on the system.
    - d. Continue with the next step.
  - **Yes:** Continue with the next step.

3. Does the SRC that sent you to this procedure appear on the control panel?


- **No:** Continue with the next step.
- **Yes:** Use the information in the SRC to determine the card direct select address. If the SRC is B6006910, you can use the last 8 characters of the top 16 character line of function 13 (word 7) to find the card direct select address in BBBBCcbb format.

**BBBB** Bus number  
**Cc** Card direct select address  
**bb** board address

Go to step **11** (See page 122).

4. Does the console display indicate a problem with missing disks?


- **Yes:** Continue with the next step.
- **No:** Go to step **6** (See page 121) of this procedure.

5. Perform the following:
  - a. Go to the DST main menu.
  - b. On the DST sign-on display, enter the DST full authority user ID and password (see Dedicated Service Tools in the *iSeries Service Functions*  information).
  - c. Select **Start a service tool**—>**Hardware service manager**.
  - d. Check for the SRC in the service action log (see “Use the service action log” on page 7).
  - e. Did you find the same SRC that sent you to this procedure?
    - **No:** Perform the following:
      - 1) Return to the DST main menu.
      - 2) Perform an IPL and return to the Display Missing Disk Units display.
      - 3) Go to “LIC-PIP11” on page 123.  
**This ends the procedure.**
    - **Yes:** Note the date and time for that SRC. Go to the Product Activity Log and search all logs to find the same SRC.  
When you have found the SRC, go to step 9 (See page 121).
6. Does the SRC that sent you to this procedure appear on the console or on the alternative console?
  - **No:** Does the IPL complete successfully to the IPL or Install the System display?
    - **Yes:** Continue with the next step.
    - **No:** A different SRC occurred. Go to System Reference Codes and use the new SRC to correct the problem.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
7. Perform the following:
  - a. Use the full-authority password to sign on to DST.
  - b. Search *All logs* in the product activity log looking for references of SRC B600 5209 and the SRC that sent you to this procedure.  
**Note:** Search only for SRCs that occurred during the last IPL.Did you find B600 5209 or the same SRC that sent you to this procedure?
  - **No:** Did you find a different SRC than the one that sent you to this procedure?
    - **Yes:** Continue with the next step.
    - **No:** The problem appears to be intermittent. Ask your next level of support for assistance.  
**This ends the procedure.**
  - **Yes:** Go to step 10 (See page 121).
8. Use the new SRC to correct the problem. See System Reference Codes.  
**This ends the procedure.**
9. Use **F11** to move through alternative views of the log analysis displays until you find the card position and frame ID of the failing IOP associated with the SRC.  
Was the card position and frame ID available, **and** did this information help you find the IOP?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 12 (See page 122) of this procedure.
10. Perform the following:
  - a. Display the report for the log entry of the SRC that sent you to this procedure.
  - b. Display the additional information for the entry.
  - c. If the SRC is B6006910, use characters 9-16 of the top 16 character line of function 13 (word 7) to find the card direct select address in BBBBCcbb format.

**BBBB** Bus number  
**Cc** Card direct select address  
**bb** board address

11. Use the BBBBCcbb information and refer to Locations and addresses to determine the failing IOP and its location.
12. Go to “Bus-PIP5” on page 75 to isolate an I/O adapter problem on the IOP you just identified. If that procedure fails to isolate the problem, return here and continue with the next step.
13. Is the I/O processor card you identified in step **9** (See page 121) or step **11** (See page 122) the CFIOF?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the failing CFIOF card (see Remove and replace procedures).  
**Note:** You will be prompted for the system serial number. Ignore any error messages regarding system configuration that appear during the IPL. Go to step **16** (See page 122).
14. Perform the following:
  - a. Power off the system.
  - b. Remove the IOP card.
  - c. Power on the system.Does the SRC that sent you to this procedure appear on the control panel or appear as a new entry in the service action log or product activity log?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Power off the system.
    - b. Install the IOP card you just removed.
    - c. Go to “Bus-PIP1” on page 75.  
**This ends the procedure.**
15. Perform the following:
  - a. Power off the system.
  - b. Exchange the failing IOP card.
16. Power on the system.  
Does the SRC that sent you to this procedure appear on the control panel, on the console, or on the alternative console?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **18** (See page 122) of this procedure.
17. Does a different SRC appear on the control panel, on the console, or on the alternative console?
  - **No:** On the IPL or Install the System display, check for the SRC in the service action log (see “Use the service action log” on page 7).  
Did you find the same SRC that sent you to this procedure?
    - **Yes:** Continue with the next step.
    - **No:** Go to “Bus PIP verify - RA” on page 101.  
**This ends the procedure.**
  - **Yes:** Go to System Reference Codes and use the new SRC to correct the problem.  
**This ends the procedure.**
18. Perform the following:
  - a. Power off the system.
  - b. Remove the IOP card you just exchanged and install the original card.
  - c. Go to “Bus-PIP1” on page 75.  
**This ends the procedure.**

19. Ask your next level of support for assistance and report a Licensed Internal Code problem. You may be asked to verify that all PTFs have been applied.

If you are asked to perform the following, see the *iSeries Service Functions*  information:

- Copy the main storage dump from disk to tape or diskette, see Working with Storage Dumps.
- Print the product activity log, see Product Activity Log.
- Copy the IOP storage dump to removable media, see Working with Storage Dumps.

**This ends the procedure.**


**LIC-PIP8:** For use by authorized service providers.

Licensed Internal Code detected an operating system program problem. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service*

*Functions*  information).

Does the same SRC occur?

- **No:** Does the same URC appear on the console?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 4 (See page 123).
  - **Yes:** Go to step 5 (See page 123).
3. Does a different SRC occur, or does a different URC appear on the console?
    - **No:** Select **Perform an IPL** on the IPL or Install the System display to complete the IPL. Is the problem intermittent?
      - **Yes:** Continue with the next step.
      - **No: This ends the procedure.**
    - **Yes:** Use the new SRC or reference code to correct the problem (see System Reference Codes). If the procedure for the new SRC sends you back to this procedure, go to step 4 (See page 123). **This ends the procedure.**
  4. Copy the main storage dump to removable media (see Working with Storage Dumps in the *iSeries Service Functions*  information).
  5. Report a Licensed Internal Code problem to your next level of support. **This ends the procedure.**

**LIC-PIP11:** For use by authorized service providers.


Use this procedure to isolate a system **STARTUP** failure in the initial program load (IPL) mode. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.

*How to find the cause code:*


1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Were you given a cause code by another procedure?
  - **No:** Continue with the next step.
  - **Yes:** Use the cause code given by the other procedure. Then, go to step 4 (See page 124).
3. Look at the Data display characters in word 3. You can obtain these characters by either:

- Looking at word 3 on the Problem summary form that was filled out earlier.
  - Selecting characters 9-16 of the top 16 character line of function 12 (word 3).
4. Refer to the 4 leftmost characters of word 3, which are the **cause code**. Then, find the cause code and isolation instructions below.

0001: Disk configuration is missing.


1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).  
Does the Disk Configuration Error Report display appear?
  - **Yes:** Continue with the next step.
  - **No:** The IPL completed successfully.  
**This ends the procedure.**
2. Is Missing Disk Configuration information displayed?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 1 (See page 124) for cause code 0002.
3. On the Missing Disk Configuration display, perform the following:
  - a. Select option **5**—>**Display Detailed Report**—>**Work with disk units**—>**Work with disk unit recovery**—>**Recover Configuration**.
  - b. Follow the instructions on the display. After the disk configuration is recovered, the system automatically performs an IPL.  
**This ends the procedure.**

0002: Disk units are missing from the disk configuration.


Data from the control panel can be used to find information about the missing disk unit. See System Reference Code (SRC) Information in the *iSeries<sup>(TM)</sup> Service Functions* .

1. Did you enter this procedure because all the devices listed on the Display Missing Units display (reached from the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display) have a reference code of 0000?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 19 (See page 126).
2. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?
  - **No:** Continue with the next step.
  - **Yes:** Ignore SRC A600 5090. Continue with the disk unit exchange recovery procedure (see Disk service support in Recovery procedures).  
**This ends the procedure.**
3. Use words 1-9 from the information recorded on the Problem summary form to determine the disk unit that is missing from the configuration:
  - Characters 1-8 of the bottom 16 character line of function 12 (word 4) contain the IOP direct select address.
  - Characters 1-8 of the top 16 character line of function 13 (word 6) contains the disk unit type, level and model number.
  - Characters 9-16 of the top 16 character line of function 13 (word 7) contains the disk unit serial number.  
**Note:** For 2105 and 9337 disk units, the 5 rightmost characters of word 7 contain the disk unit serial number.
  - Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the number of missing disk units.





- Are the problem disk units 432x, 660x or 671x disk units?
- **No:** Continue with the next step.
  - **Yes:** Go to step 5 (See page 125).
4. Attempt to get all devices attached to the MSIOP to Ready status by performing the following:
- a. The MSIOP address (MSIOP Direct Select Address) to use is characters 1-8 of the bottom 16 character line of function 12 (word 4).
  - b. Verify the following and correct if necessary before continuing with step 10 (See page 125).
    - All cable connections are made correctly and are tight.
    - All storage devices have the correct signal bus address, as indicated in the system configuration list.
    - All storage devices are powered on and ready.
5. Did you enter this procedure because there was an entry in the Service Action Log which has the reference code B6005090?
- **Yes:** Continue with the next step.
  - **No:** Go to step 10 (See page 125).
6. Are customer jobs running on the system now?
- **Yes:** Continue with the next step.
  - **No: Attention:** Ensure that the customer is not running any jobs before continuing with this procedure. Then, go to step 10 (See page 125).
7. Select **System Service Tools (SST)**—>**Work with disk units**—>**Display disk configuration**—>**Display disk configuration status**.
- Are any disk units missing from the configuration (indicated by an asterisk \*)?
- **Yes:** Continue with the next step.
  - **No: This ends the procedure.**
8. Do all of the disk units that are missing from the configuration have a status of "Suspended"?
- **Yes:** Continue with the next step.
  - **No: Attention:** Ensure that the customer is not running any jobs before continuing with this procedure. Go to step 10 (See page 125).
9. Use the Service Action Log to determine if there are any entries for the missing disk units (see "Use the service action log" on page 7).
- Are there any entries in the Service Action Log for the missing disk units that were logged since the last IPL?
- **Yes:** Use the information in the Service Action Log, and go to the SRC information for the specific disk unit in System Reference Codes. Perform the action indicated for the unit reference code. **This ends the procedure.**
  - **No:** Go to step 20 (See page 126).
10. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries*<sup>(TM)</sup> *Service Functions*  information).
- Does the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear?
- **Yes:** Continue with the next step.
  - **No:** The IPL completed successfully. **This ends the procedure.**
11. Does one of the following messages appear in the list?
- Missing disk units in the configuration
  - Missing mirror protected disk units in the configuration
  - **Yes:** Continue with the next step.

- **No:** Go to step **15** (See page 126).
12. Select option **5**. Do the missing units have device parity protected status? (Device parity protection status is indicated by "DPY/" as the first four characters of the status.)
- **Yes:** Continue with the next step.
  - **No:** Go to step **14** (See page 126).
13. Is the status DPY/Active?
- **Yes:** Continue with the next step.
  - **No:** Use the Service Action Log to determine if there are any entries for the missing disk units or the IOA/IOP controlling them. (see "Use the service action log" on page 7).  
**This ends the procedure.**
14. Press **F11**, and press **Enter** to display the details.  
Do all of the disk units listed on the display have a reference code of 0000?
- **Yes:** Do all of the IOPs or devices listed on the display have a reference code of 0000?
    - **No:** Use the IOP reference code shown on the display and go to System Reference Codes. Perform the action indicated for the reference code.  
**This ends the procedure.**
    - **Yes:** Go to step **19** (See page 126).
  - **No:** Use the disk unit reference code shown on the display and go to the SRC information for the specific disk unit in System Reference Codes. Perform the action indicated for the unit reference code.  
**This ends the procedure.**
15. Does the following message appear in the list?  
Unknown load-source status
- **Yes:** Continue with the next step.
  - **No:** Go to step **17** (See page 126).
16. Select option **5**, press **F11**, and then press **Enter** to display the details.  
Does the Assign Missing Load Source Disk display appear?
- **No:** Continue with the next step.
  - **Yes:** Press **Enter** to assign the missing load-source disk unit.  
**This ends the procedure.**
17. Does the following message appear in the list?  
Load source failure
- **Yes:** Continue with the next step.
  - **No:** The IPL completed successfully.  
**This ends the procedure.**
18. Select option **5**, press **F11**, and then press **Enter** to display the details.
19. The number of failing disk unit facilities (actuators) is the number of disk units displayed. A disk unit has a *Unit* number greater than zero.  
Find the failing disk unit by type, model, serial number, or address displayed on the console.
20. Is the failing disk unit a 9337?
- **No:** Continue with the next step.
  - **Yes:** Go to step **25** (See page 127).
21. Is there more than one failing disk device attached to the IOA or MSIOP?
- **Yes:** Continue with the next step.
  - **No:** Go to step **23** (See page 127).
22. Are all the disk devices that are attached to the IOA or MSIOP failing? (If the disk units are using mirrored protection, select **Display Disk Status** to find out.)


- **No:** Continue with the next step.
  - **Yes:** Go to step **24** (See page 127).
23. Go to the service information for the specific disk unit listed below and perform the action indicated. Then return here and answer the question below the listed disk units.
- **9337 disk unit:** Go to the Starting Problem Analysis section of the 9337 Service Information.
  - **2105 disk units:** Use SRC 3002 in (2105) Disk Unit Reference Codes and exchange the FRUs shown one at a time.
  - **432x, 660x, 671x disk units:** Use SRC 3002 in (432x, 660x, 671x, 673x) Disk Unit Reference Codes and exchange the FRUs shown one at a time.
- Did the disk unit service information correct the problem?
- **No:** Continue with the next step.
  - **Yes: This ends the procedure.**
24. Exchange the IOA or MSIOP (see Remove and replace procedures).  
If exchanging the IOA or MSIOP did not correct the problem, use the original SRC and exchange the failing items, starting with the highest probable cause of failure. If the failing item list contains FI codes, see “Failing items” on page 249 to help determine parts and locations.  
**This ends the procedure.**
25. Use Hardware Service Manager to display logical resources connected to the MSIOP (see Hardware Service Manager in the *iSeries<sup>TM</sup> Service Functions* ).
26. Are all the disk devices that are attached to the MSIOP failing?
- **Yes:** Is there more than one controller attached to the MSIOP?
    - **Yes:** Go to step **24** (See page 127).
    - **No:** Go to step **23** (See page 127).
  - **No:** Continue with the next step.
27. Are all disk units attached to one controller missing?
- **Yes:** Use the device documentation to correct the problem. Exchange the disk unit controller.  
**This ends the procedure.**
  - **No:** Go to step **23** (See page 127).

*0004:* Some disk units are unprotected but configured into a mirrored ASP. These units were originally DPY protected but protection was disabled.

Perform the following:

1. Select **DST** using Function 21 (see Control Panel Functions in the *iSeries<sup>TM</sup> Service Functions*  information).
2. Select **Work with disk units** and take the actions to protect the system.  
If you do not know what actions to take, select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>TM</sup> Service Functions*  information).  
When the Disk configuration error report appears, the recovery actions are listed in the Help text for the error message “Unprotected disk units in a mirrored ASP”.  
**This ends the procedure.**

*0005:* A disk unit using parity protection is operating in exposed mode.


1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>TM</sup> Service Functions*  information).
2. Choose from the following options:
  - If the same reference code appears, ask your next level of support for assistance.

- If no reference code appears and the IPL completes successfully, the problem is corrected.
- If a different reference code appears, use it to correct the problem (see System Reference Codes).  
**This ends the procedure.**


0006: There are new devices attached to the system that do not have Licensed Internal Code installed. Ask your next level of support for assistance.

**This ends the procedure.**

0007: Some of the configured disk units have device parity protection disabled when the system expected device parity protection to be enabled.

1. Are the disk units part of a 9337 subsystem?
  - **No:** Continue with the next step.
  - **Yes:** If the protection was stopped without using the **Stop device parity protection** option in DST, use the 9337 device documentation and follow the manual process to enable device parity protection.
2. Select DST using Function **21** (see Control Panel Functions in the *iSeries<sup>(TM)</sup> Service Functions*  information).
3. Correct the problem by doing the following:
  - a. Select **Work with disk units**—>**Work with disk unit recovery**—>**Correct device parity protection**.
  - b. Follow the online instructions.  
**This ends the procedure.**

0008: A disk unit has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number or address given in words 4-7 (see Service Reference Code (SRC) Information in the *iSeries<sup>(TM)</sup> Service Functions* ).
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.

432x 102E, 660x 102E, 671x 102E (see System Reference Codes)

9337 7xx0, 8xx0, Dxx0, Exx0 (x can be a number from 0 through 8)


**This ends the procedure.**

0009: The procedure to restore a disk unit from the tape unit did not complete. Continue with the disk unit exchange recovery procedure (see Disk service support in Recovery procedures).

**This ends the procedure.**


000A: There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

Perform the following:


1. Select DST using Function **21** (see Control Panel Functions in the *iSeries<sup>(TM)</sup> Service Functions*  information).
2. On the Service Tools display, select **Start a Service Tool**—>**Product activity log**—>**Analyze log**.
3. On the Select Subsystem Data display, select the option to view **All Logs**.  
**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.
4. Use the defaults on the Select Analysis Report Options display by pressing **Enter**.

5. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
6. Go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**

000B: Some system IOPs require cache storage be reclaimed.

1. Select DST using Function **21** (see Control Panel Functions in the *iSeries<sup>(TM)</sup> Service Functions*  information).
2. Reclaim the cache adapter card storage (see Reclaim IOP cache storage).  
**Note:** The system operator may want to restore data from the most recent saved tape after you complete the repair.  
**This ends the procedure.**

000C: One of the mirror protected disk units has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number or address given in words 4-7 (see System Reference Code (SRC) Information in the *iSeries<sup>(TM)</sup> Service Functions* ).
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.

432x 102E, 660x 102E, 671x 102E (see System Reference Codes)

9337 7xx0, 8xx0, Dxx0, Exx0 (x can be a number from 0 through 8)


**This ends the procedure.**

000D: The system disk capacity has been exceeded.

For more information about disk capacity, see *iSeries<sup>(TM)</sup> Handbook*, GA19-5486-20.


**This ends the procedure.**

000E: Start compression failure.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).
2. Correct the problem by doing the following:
  - a. Select **Work with disk units**—>**Work with disk unit recovery**—>**Recover from start compression failure**.
  - b. Follow the on-line instructions.  
**This ends the procedure.**

0010: The disk configuration has changed.

The operating system must be installed again, and all customer data must be restored.

1. Select **Manual** mode on the control panel (see *iSeries<sup>(TM)</sup> Service Functions* ).
2. Perform an IPL to reinstall the operating system.
3. The customer must restore all data from the latest system backup.  
**This ends the procedure.**

0011: The serial number of the control panel does not match the system serial number.

1. Select **Manual** mode on the control panel (see *iSeries<sup>(TM)</sup> Service Functions* ).

2. Perform an IPL. You will be prompted for the system serial number.  
**This ends the procedure.**

0012: The operation to write the vital product data (VPD) to the control panel failed.

Exchange the multiple function I/O processor card (see Remove and replace procedures). For the location of the card, see Locations and addresses.

**This ends the procedure.**


0015: The mirrored load-source disk unit is missing from the disk configuration.

Go to step 1 (See page 124) for cause code 0002.

0016: A mirrored protected disk unit is missing.

Wait 6 minutes. If the same reference code appears, go to step 1 (See page 124) for cause code 0002.

0017: One or more disk units have a lower level of mirrored protection than originally configured.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).
2. Review the detailed display, which shows the new and the previous levels of mirrored protection.  
**This ends the procedure.**

0018: Load-source configuration problem.


The load-source disk unit is using mirrored protection and is configured at an incorrect address.

Ensure that the load-source disk unit is in device location 1.

**This ends the procedure.**


0019: One or more disk units were formatted incorrectly.

The system will continue to operate normally. However, it will not operate at optimum performance. To repair the problem, perform the following:

1. Record the unit number and serial number of the disk unit that is formatted incorrectly.
2. Sign on to DST (see Dedicated Service Tools (DST) in the *iSeries<sup>(TM)</sup> Service Functions*  information).
3. Select **Work with disk units**—>**Work with disk unit configuration**—>**Remove unit from configuration**.
4. Select the disk unit you recorded earlier in this procedure.
5. Confirm the option to remove data from the disk unit. This step may take a long time because the data must be moved to other disk units in the auxiliary storage pool (ASP).
6. When the remove function is complete, select **Add unit to configuration**.
7. Select the disk unit you recorded earlier in this procedure.
8. Confirm the add. The disk unit is formatted during functional operation.  
**This ends the procedure.**

001A: The load-source disk unit data is down-level.

The load-source disk unit is mirror protected. The system is using the load-source disk unit that does not have the current level of data.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).

Does the Disk Configuration Error Report display appear?

- **Yes:** Does a "Load source failure" message appear in the list?
  - **Yes:** Continue with the next step.
  - **No:** The system is now using the correct load-source.  
**This ends the procedure.**
- **No:** The system is now using the correct load-source.  
**This ends the procedure.**

2. Select option **5**, press **F11**, and then press **Enter** to display details.

The load-source type, model, and serial number information that the system needs is displayed on the console.

Is the load-source disk unit (displayed on the console) attached to an MSIOP that cannot be used for a load-source?


- **Yes:** Continue with the next step.
- **No:** The load-source disk unit is missing. Go to step **1** (See page 124) for cause code 0002.

3. Is the system configured for remote load-source protection?

- **No:** Move the load-source disk unit to the load-source MSIOP.  
**This ends the procedure.**
- **Yes:** Go to Recover remote load source.

*001C:* The disk units that are needed to update the system configuration are missing.

Perform an IPL by doing the following:

1. Select **Manual** mode on the control panel.
2. Perform an IPL (see Initial Program Load (IPL) Information in the *iSeries<sup>(TM)</sup> Service Functions*  information) to determine the cause of the problem.  
**This ends the procedure.**

*001D:*

1. Is the Disk Configuration Attention Report, or the Disk Configuration Warning Report displayed?
  - **Yes:** Continue with the next step.
  - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
2. On the Bad Load Source Configuration message line, select **5**, and press **Enter** to rebuild the load-source configuration information. If there are other types of warnings, select option **5** on the warnings, and correct the problem.  
**This ends the procedure.**

*001E:* The load-source data must be restored.



Go to Recovery procedures.

**This ends the procedure.**

*001F:* Licensed Internal Code was installed on the wrong disk unit of the load-source mirrored pair.

The system performed an IPL on a load source that may not contain the same level of Licensed Internal Code that was installed on the other load source. The type, model, and address of the active device are displayed in words 4-7 of the SRC.

1. Choose from the following options:

- a. If the load-source disk unit in position 1 contains the correct level of Licensed Internal Code, perform the following:
  - 1) Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).  
Is the Disk Configuration Attention Report or Disk Configuration Warning Report displayed?
    - **Yes:** Select option **5** on the Incorrect Licensed Internal Code Install message line. When the Display Incorrect Licensed Internal Code Install display appears on the console, press **Enter**.
    - **No:** The system is now using the correct load source.  
**This ends the procedure.**
- b. If the load-source disk unit in position 1 of the system unit does **not** contain the correct level of Licensed Internal Code, restore the Licensed Internal Code to the disk unit in position 1 of the system unit (see Utilities to Install and Restore Licensed Internal Code in the *iSeries<sup>(TM)</sup> Service Functions*  information).  
**This ends the procedure.**

0020: The system appears to be a one disk unit system.


Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*



information).

**This ends the procedure.**


0021: The system password verification failed.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).
2. When prompted, enter the correct system password. If the correct system password is not available perform the following:
  - a. Select **Bypass the system password**.
  - b. Have the customer contact the marketing representative immediately to order a new system password from IBM<sup>(R)</sup>.  
**This ends the procedure.**

0022: A different compression status was expected on a reporting disk unit.

Accept the warning. The reported compression status will be used as the current compression status.  
**This ends the procedure.**


0023: There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system. The system is capable of IPLing in this state.

1. Select DST using Function **21** (see Control Panel Functions in the *iSeries<sup>(TM)</sup> Service Functions*  information).
2. On the Service Tools display, select **Start a Service Tool**—>**Product activity log**—>**Analyze log**.
3. On the Select Subsystem Data display, select the option to view All Logs.  
**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.
4. Use the defaults on the Select Analysis Report Options display by pressing **Enter**.




5. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
6. Go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**


0024: The system type or system unique ID needs to be entered.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries*<sup>(TM)</sup> *Service Functions*  information).
2. When prompted, enter the correct system type or system unique ID.  
**This ends the procedure.**

0025: Hardware Resource Information Persistence disabled.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries*<sup>(TM)</sup> *Service Functions*  information).
2. Contact your next level of support for instructions on how to enable the Hardware Resource Information Persistence function.  
**This ends the procedure.**

0026: A disk unit is incorrectly configured for an LPAR system.

1. Select **Manual** mode and perform an IPL to DST (see Performing an IPL to DST in the *iSeries*<sup>(TM)</sup> *Service Functions*  information).
2. On the Service Tools display, select **Start a Service Tool**—>**Product activity log**—>**Analyze log**—>.
3. On the Select Subsystem Data display, select the option to view All Logs.  
**Note:** You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.
4. Use the defaults on the Select Analysis Report Options display by pressing **Enter**.
5. Search the entries on the Log Analysis Report display for system reference codes (B6xx 53xx) that are associated with the error.
6. Go to System Reference Codes and use the SRC information to correct the problem.  
**This ends the procedure.**

0031: A problem was detected with the installation of Licensed Internal Code service displays. The cause may be defective media, the installation media being removed too early, a device problem or a Licensed Internal Code problem.

- Ask your next level of support for assistance. Characters 13-16 of the top 16 character line of function 12 (4 rightmost characters of word 3) contain information regarding the install error.
- For more information about the install error, see the "LIC Install Debug Information" chapter in the *iSeries*<sup>(TM)</sup> *Licensed Internal Code Diagnostic Aids - Volume 1*.
- If the customer does not require the service displays to be in the national language, you may be able to continue by performing another system IPL.  
**This ends the procedure.**

0033: System model not supported.

This model of hardware does not support the System Licensed Internal Code version and release that is being used. Use a supported version and release of the System Licensed Internal Code.  
**This ends the procedure.**

0034: Insufficient main storage capacity.

There is not enough main storage capacity. For details about how much more capacity is required, see the "Insufficient Main Storage Capacity" screen, which is displayed when the system is IPLed in manual mode. Typically, this error occurs when you have moved memory between logical partitions, and one partition no longer has a sufficient amount of main storage.

**This ends the procedure.**


*0099:* A Licensed Internal Code program error occurred. Ask your next level of support for assistance.

**This ends the procedure.**

**LIC-PIP12:** *For use by authorized service providers.*


Use this procedure to isolate an Independent Auxiliary Storage Pool (IASP) vary on failure. Message CPDB8E0 occurred if the user attempted to vary on the IASP. Read the "Licensed Internal Code (LIC) PIPs" on page 116 before continuing with this procedure.

*How to find the cause code:*

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Were you given a cause code by another procedure?
  - **No:** Continue with the next step.
  - **Yes:** Use the cause code given by the other procedure. Then, go to step 4 (See page 134) of this procedure.
3. Look at the characters in word 3. You can obtain these characters by doing the following:
  - a. On the command line, enter **STRSST** (the Start System Service Tools) command. If you cannot get to SST, use function 21 to get to DST. See Dedicated Service Tools (DST) in the *iSeries Service Functions* . Do not IPL the system to get to DST.
  - b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
  - c. Select **Start a Service Tool** → **Hardware Service Manager** → **Work with service action log**.
  - d. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the user attempted to vary on the IASP.
  - e. Search for a B6005094 system reference code that occurred at the time the user attempted to vary on the IASP. Display the failing item information for this entry.
  - f. Select the function key for **Additional details**.
  - g. The 4 leftmost characters of word 3 is the cause code to be used in this procedure.
4. Find the **cause code** below.

*0002:* Disk units are missing from the IASP disk configuration.

1. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?
  - **No:** Continue with the next step.
  - **Yes:** Ignore SRC A600 5094.  
Continue with the disk unit exchange recovery procedure. See "Disk Service Support" in Recovery procedures.  
**This ends the procedure.**
2. Use words 1-9 from the information in the Service Action Log to determine the disk unit that is missing from the configuration:
  - Word 4 contains the IOP direct select address.
  - Word 5 contains the unit address.
  - Word 6 contains the disk unit type, level and model number.
  - Word 7 contains the disk unit serial number.

- Word 8 contains the number of missing disk units.
- Are the problem disk units 432x, 660x, or 671x Disk Units?
- **Yes:** Continue with the next step.
  - **No:** Attempt to get all devices attached to the IOP to Ready status by performing the following:
    - a. The IOP address (IOP Direct Select Address) to use is Word 4.
    - b. Verify the following, and correct if necessary:
      - Ensure all cable connections are made correctly and are tight.
      - Ensure the configuration within the device is correct.
      - Ensure all storage devices are powered on and ready.
    - c. Continue with the next step.
3. Perform the following:  
 Select **System Service Tools (SST)** → **Work with disk units** → **Display disk configuration** → **Display disk configuration status**.  
 Are any disk units missing-indicated with an asterisk (\*)- from the IASP configuration?
- **Yes:** Continue with the next step.
  - **No: This ends the procedure.**
4. Use the Service Action Log to determine if there are any entries other than B6xx 5094 for the missing disk units or the IOA or IOP that is controlling them. See “Use the service action log” on page 7.  
 Are there any entries in the Service Action Log other than B6xx 5094 for the missing disk units or the IOA or IOP that is controlling them?
- **No:** Continue with the next step.
  - **Yes:** Use the information in the Service Action Log to solve the problem. See “Use the service action log” on page 7.  
**This ends the procedure.**
5. Did you enter this procedure because there was a B6xx 5094 cause code of 0030?
- **No:** Continue with the next step.
  - **Yes:** Work with the customer to recover the unknown configuration source disk unit.  
 Use a workstation with iSeries Navigator installed to select the disk pool with the problem, and then select **Recover unknown configuration source** for this disk pool.  
**This ends the procedure.**
6. Use Hardware Service Manager to display logical resources connected to the IOP. See Hardware Service Manager in the *iSeries Service Functions*  information.
7. Is every device attached to the IOP failing?
- **Yes:** Is there more than one storage IOA attached to the IOP?
    - **Yes:** Exchange the IOP. Use the IOP direct select address from step 2 (See page 134) to find the location. See Locations and addresses.  
**This ends the procedure.**
    - **No:** Go to step 9 (See page 136) of this procedure.
  - **No:** Are all of the disk units that are attached to one IOA missing?
    - **No:** Continue with the next step.
    - **Yes:** Exchange the IOA. Use the IOP direct select address and the first character of the unit address from step 2 (See page 134) to find the location. See Locations and addresses.  
**This ends the procedure.**
8. Go to the service information for the specific disk unit that is listed below and perform the action indicated. Then return here and answer the following question.
- **2105 Disk Units:** Use SRC 3002 in (2105) Disk Unit Reference Codes and exchange the FRUs shown one at a time.

- **432x, 660x, 671x Disk Units:** Use SRC 3002 in (432x, 660x, 671x, 673x) Disk Unit Reference Codes and exchange the FRUs shown one at a time.

Did the disk unit service information correct the problem?

- **No:** Continue with the next step.
- **Yes: This ends the procedure.**

9. Perform the following:

- Exchange the IOA. Use the IOP direct select address and the first character of the unit address from step 2 (See page 134) to find the location. See Locations and addresses.
- If exchanging the IOA does not correct the problem, exchange the IOP. Use the IOP direct select address from step 2 (See page 134) to find the location. See Locations and addresses.
- If exchanging the IOP does not correct the problem, exchange the failing items in the following FRU list starting with the first item in the list.
  - FI01140
  - BACKPLN
  - FI00580
  - AJDG301

**This ends the procedure.**

*0004:* Some disk units are unprotected but configured into a mirrored IASP. These units were originally DPY protected but protection was disabled.

Direct the customer to take the actions necessary to start protection on these disk units.

**This ends the procedure.**

*0007:* Some of the configured disk units have device parity protection disabled when the system expected device parity protection to be enabled.


- Select **Manual** mode and perform an IPL to DST. See Dedicated Service Tools (DST) in the *iSeries*

*Service Functions*  information.

- Correct the problem by doing the following:

- Select **Work with disk units** → **Work with disk unit recovery** → **Correct device parity protection mismatch.**
  - Follow the on-line instructions.
- This ends the procedure.**

*0008:* A disk unit has no more alternate sectors to assign.

- Determine the failing unit by type, model, serial number or address given in words 4-7. See System Reference Code (SRC) Information in the *iSeries Service Functions*  information.
- See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.

432x 102E, 660x 102E, 671x 102E (see System Reference Codes).

**This ends the procedure.**

*0009:* The procedure to restore a disk unit from the tape unit did not complete.

Continue with the disk unit exchange recovery procedure. See "Disk Service Support" in Recovery procedures.

**This ends the procedure.**

*000A:* There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

Use the Service Action Log to find system reference codes associated with the missing disk units by changing the From: Date and Time on the Select Timeframe display to a date and time prior to when the user attempted to vary on the IASP. For information on how to use the Service Action Log, see “Use the service action log” on page 7.

**This ends the procedure.**

000B: Some system IOPs require cache storage be reclaimed.


1. Start SST.
  2. Reclaim the cache adapter card storage by performing the following:
    - a. Select **Work with disk units** → **Work with disk unit recovery** → **Reclaim IOP Cache Storage**.
    - b. Follow the on-line instructions to reclaim cache storage.
    - c. After you complete the repair, the system operator may want to restore data from the most recently saved tape.
- This ends the procedure.**

000D: The system disk capacity has been exceeded.

For more information about disk capacity, see the *iSeries Handbook*.

**This ends the procedure.**

000E: Start compression failure.

1. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*  information.
  2. Correct the problem by doing the following:
    - a. Select **Work with disk units** → **Work with disk unit recovery** → **Recover from start compression failure**.
    - b. Follow the on-line instructions.
- This ends the procedure.**

002C: A Licensed Internal Code program error occurred.

Ask your next level of support for assistance.

**This ends the procedure.**

002D: The IASP configuration source disk unit data is down-level.

The system is using the IASP configuration source disk unit that does **not** have the current level of data.

Work with the customer to recover the configuration. On a workstation with iSeries Navigator installed, select the disk pool with the problem, and then select **Recover configuration**.

**This ends the procedure.**

002E: The Independent ASP is assigned to another system or a Licensed Internal Code program error occurred.

Work with the customer to check other systems to determine if the Independent ASP has been assigned to it. If the Independent ASP has not been assigned to another system, ask your next level of support for assistance.

**This ends the procedure.**

002F: The system version and release are at a different level than the IASP version and release.

The system version and release must be upgraded to be the same as the system version and release in which the IASP was created.

**This ends the procedure.**

0030: The mirrored IASP configuration source disk unit has a disk configuration status of *unknown* and is missing from the disk configuration.

Go to step 1 (See page 134) for cause code 0002.

0032: A Licensed Internal Code program error occurred.

Ask your next level of support for assistance.

**This ends the procedure.**

0099: A Licensed Internal Code program error occurred.

Ask your next level of support for assistance.

**This ends the procedure.**

**LIC-PIP13:** *For use by authorized service providers.*

A disk unit seems to have stopped communicating with the system. The system has stopped normal operation until the cause of the disk unit failure is found and corrected. Read the “Licensed Internal Code (LIC) PIPs” on page 116 before continuing with this procedure.

If the disk unit that stopped communicating with the system has **mirrored protection active**, normal operation of the system stops for 1 to 2 minutes. Then, the system suspends mirrored protection for that disk unit and continues normal operation. See Recovery procedures for more information on systems with mirrored protection.

**Note: Do not power off the system using the white button or Function 08 when performing this procedure.** If this procedure or other PIPs referenced by this procedure direct you to IPL or Power Off the system, perform a Main Store Dump or Function 03 IPL if additional dump information is not needed.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Was a Problem summary form completed for this problem?
  - **No:** Continue with the next step.
  - **Yes:** Use the Problem summary form information, and go to step 4 (See page 138).
3. Fill out a Problem summary form using the information from words 1 through 9 from the control panel. It is important that all the words of the SRC be written on the Problem Summary Form.
4. Recovery from a device command time out may have caused the communications loss condition (indicated by an SRC on the control panel). This communications loss condition has the following symptoms:
  - The A6xx SRC does not increment within 2 minutes.
  - The system continues to run normally after it recovers from the communications loss condition and the SRC is cleared from the control panel.Does the communication loss condition have the above symptoms?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 6 (See page 139).
5. Verify that all Licensed Internal Code PTFs have been applied to the system. Apply any Licensed Internal Code PTFs that have not been applied to the system.

Does the intermittent condition continue?

- **Yes:** Print all product activity logs. Print the LIC LOGs with a major code of 1000. Provide your next level of support with this information.  
**This ends the procedure.**
  - **No: This ends the procedure.**
6. Are characters 7-8 of the top 16 character line of function 12 (2 rightmost characters of word 2) equal to 13 or 17?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **10** (See page 139).
  7. Use the word 1 through 9 information recorded on the Problem summary form to determine the disk unit that stopped communicating with the system:
    - Characters 9-16 of the top 16 character line of function 12 (word 3) contain the IOP direct select address.
    - Characters 1-8 of the bottom 16 character line of function 12 (word 4) contains the unit address.
    - Characters 1-8 of the top 16 character line of function 13 (word 6) may contain the disk unit type, level and model number.
    - Characters 13-16 of the top 16 character line of function 13 (4 rightmost characters of word 7) may contain the disk unit reference code.
    - Characters 1-8 of the bottom 16 character line of function 13 (word 8) may contain the disk unit serial number.

**Note:** For 2105 and 9337 Disk Units, characters 4-8 of the bottom 16 character line of function 13 (5 rightmost characters of word 8) contain the disk unit serial number.
  8. Is the disk unit a 9337?
    - **No:** Continue with the next step.
    - **Yes:** Go to step **21** (See page 141).
  9. Is the disk unit reference code 0000?
    - **Yes:** Determine the IOP type by using characters 9-12 of the bottom 16 character line of function 13 (4 leftmost characters of word 9). Find the unit reference code table for the IOP type in System Reference Codes. Determine the unit reference code by using characters 13-16 of the bottom 16 character line of function 13 (4 rightmost characters of word 9). Perform problem analysis for the unit reference code.  
**This ends the procedure.**
    - **No:** Using the information from step **7** (See page 139), find the table for the indicated disk unit type in System Reference Codes. Perform problem analysis for the disk unit reference code.  
**This ends the procedure.**
  10. Are characters 7-8 of the top 16 character line of function 12 (the two rightmost characters of word 2) equal to 27?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **16** (See page 140).
  11. Use the word 1 through 9 information recorded on the Problem summary form to determine the disk unit that stopped communicating with the system:
    - Characters 9-16 of the top 16 character line of function 12 (word 3) contain the IOP direct select address.
    - Characters 1-8 of the bottom 16 character line of function 12 (word 4) contains the disk unit address
    - Characters 9-16 of the bottom 16 character line of function 12 (word 5) contains the disk unit type, level and model number.
    - Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the disk unit serial number.

**Note:** For 2105 and 9337 Disk Units, characters 4-8 of the bottom 16 character line of function 13 (5 rightmost characters of word 8) contain the disk unit serial number.

- Characters 13-16 of the bottom 16 character line of function 13 (4 rightmost characters of word 9) contain the disk unit reference code.

12. Is the disk unit a 9337?

- **Yes:** Go to step **21** (See page 141).
- **No:** Is the disk unit reference code 0000?
  - **No:** Continue with the next step.
  - **Yes:** Find the table for the indicated disk unit type in System Reference Codes. Then, find unit reference code (URC) 3002 in the table, and exchange the FRUs for that URC, one at a time.

**Note:** Do not perform any other PIPs that are associated with URC 3002.

**This ends the procedure.**

13. Are characters 9-16 of the bottom 16 character line of function 13 (word 9) B6xx 51xx?

- **Yes:** Use the B6xx table in the System Reference Codes. Perform problem analysis for the 51xx unit reference code.

**This ends the procedure.**

- **No:** Continue with the next step.

14. The disk unit has device parity protection if the disk unit model number is equal to "070" or greater. The disk unit model number is characters 14-16 of the bottom 16 character line of function 12 (word 5).

Is the model number equal to "070" or greater?

- **No:** Using the information from step **11** (See page 139), find the table for the indicated disk unit type in System Reference Codes. Perform problem analysis for the disk unit reference code.

**This ends the procedure.**

- **Yes:** Continue with the next step.

15. The disk unit has device parity protection. Perform the following:

- a. Perform function 3 to IPL the system to DST. Ignore any error messages that appear during the IPL.
- b. Look for a Service Action Log entry since the last IPL, and use it to fix the problem. See "Use the service action log" on page 7. If a B6xx 5090 SRC occurred since the last IPL, look for other SRC entries and take action on them first.

**This ends the procedure.**

16. Are the 2 rightmost characters of word 2 on the Problem summary form equal to 62?

- **Yes:** Are characters 9-16 of the top 16 character line of function 12 (word 3) equal to 00010004?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **19** (See page 141).
- **No:** Use the information in characters 9-16 of the bottom 16 character line of function 13 (word 9) and go to System Reference Codes. Use this information instead of the information in word 1 for the reference code.

**This ends the procedure.**

17. Are characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) equal to 0000?

- **No:** Continue with the next step.
- **Yes:** Go to step **20** (See page 141).

18. Disk information available in this step is:

- Characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) contain the disk unit reference code.
- Characters 1-8 of the top 16 character line of function 13 (word 6) contains the disk unit address.



- Characters 9-16 of the top 16 character line of function 13 (word 7) contain the IOP direct select address.
- Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the disk unit type, level and model number.

Are characters 1-4 of the bottom 16 character line of function 13 (4 leftmost characters of word 8) equal to 9337?

- **No:** Find the table for the disk unit type (characters 1-4 of the bottom 16 character line of function 13 - 4 leftmost characters of word 8) in System Reference Codes, and use characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) as the unit reference code.

**This ends the procedure.**

- **Yes:** Go to step 21 (See page 141).

19. Are characters 9-16 of the top 16 character line of function 12 (word 3) equal to 0002000D?

- **Yes:** Continue with the next step.
- **No:** Use the information in characters 9-16 of the bottom 16 character line of function 13 (word 9), instead of the information in word 1 for the reference code, and go to System Reference Codes.
  - Characters 1-8 of the top 16 character line of function 13 (word 6) may contain the disk unit address.
  - Characters 9-16 of the top 16 character line of function 13 (word 7) may contain the IOP direct select address.
  - Characters 1-8 of the bottom 16 character line of function 13 (word 8) may contain the disk unit type, level and model number.

**This ends the procedure.**

20. Disk information available in this step is:

- Characters 1-8 of the top 16 character line of function 13 (word 6) contains the disk unit address.
- Characters 9-16 of the top 16 character line of function 13 (word 7) contain the IOP direct select address.
- Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the disk unit type, level and model number.

Are characters 1-4 of the bottom 16 character line of function 13 (4 leftmost characters of word 8) equal to 9337?

- **No:** Find the table for the disk unit type (characters 1-4 of the bottom 16 character line of function 13 (4 leftmost characters of word 8) in System Reference Codes and use 3002 as the unit reference code. Exchange the FRUs for URC 3002 one at a time.

**This ends the procedure.**

- **Yes:** Continue with the next step.

21. The disk unit that stopped communicating with the system is a 9337 Disk Unit.

22. Locate the IOP using the IOP address (see Locations and addresses).

**Note:** If the IOP is located in a 504x rack, see SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.

Using the IOP type (identified by the label on the IOP), and the device address, find the location of the device (see Locations and addresses).

Does the 9337 Disk Unit Data display contain the value 9337 xxxx?

**Note:** xxxx can be any hexadecimal value from 0000 to FFFF.

- **No:** Continue with the next step.
- **Yes:** Use the service information for the specific disk unit to analyze the status of the failing unit.

**This ends the procedure.**


23. Set the power switch on the failing 9337 disk unit to the Off position, then to the On position.


After 4 minutes, does the 9337 Data display contain the value \*xxx?

- **Yes:** Continue with the next step.
  - **No:** Go to step **25** (See page 142).
24. Does the system continue normal operation in 3 to 4 minutes?
- **No:** Go to step **26** (See page 142).
  - **Yes:** Go to step **28** (See page 142).
25. When the 9337 Disk Unit Data display contains the value B000, the disk unit has reached a ready status, but the system has not taken the ready status messages.  
Does the 9337 Disk Unit Data display contain the value B000 in less than 4 minutes?
- **Yes:** Continue with the next step.
  - **No:** Use the service information for the specific disk unit to analyze the status of the failing unit.  
**This ends the procedure.**
26. Perform the following:
- a. Check the cable connections between all of the units on the storage device I/O processor card that is connected to the failing unit.
  - b. Correct any loose connections and ensure that the terminating plug is installed tightly.
  - c. Check the address switches on the backs of all of the units connected to the magnetic storage I/O processor card that is connected to the failing disk unit.
- Notes:**
- 1) If the device does not have address switches, continue with the next step of this procedure if you are servicing one of these units.
  - 2) Ensure that each address switch displays the correct number. See the system configuration list. The latest level printout should be stored, ask the customer for this data.
- d. If two or more address switches display the same number, change the address number of one or more units so that each address switch displays the correct number (see the system configuration list).
  - e. For each unit that had its address switch changed, set the unit Power switch off, then on again.
27. Does the system continue normal operation in 3 to 4 minutes?
- **No:** Set the Power switch on the disk unit to the Off position, then to the On position.  
Does the system continue normal operation in 3 to 4 minutes?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **29** (See page 142).
  - **Yes:** Continue with the next step.
28. Intermittent equipment checks may have caused this problem.  
Display the system product activity log and look for entries that contain unit reference codes or IOP reference codes that may need action.  
You can read a unit reference code history from the disk controller service panel.  
**This ends the procedure.**
29. Fill out a Problem summary form using the information from words 1 through 9 from the control panel.  
Are characters 5-8 of the top 16 character line of function 11 (4 rightmost characters of word 1) on the Problem Summary Form the same as on the Problem Summary Form filled out in step **3** (See page 138)?
- **Yes:** Continue with the next step.
  - **No:** A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see System Reference Codes).  
**This ends the procedure.**
30. Are words 3 - 9 on the Problem summary form the same as on the Problem Summary Form filled out in step **3** (See page 138)?
- **Yes:** Continue with the next step.

- **No:** A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see System Reference Codes).  
**This ends the procedure.**
31. Are characters 13-16 of the bottom 16 character line of function 13 (4 rightmost characters of word 9) on the Problem Summary Form you filled out in step 29 (See page 142) equal to 0000?
- **Yes:** Continue with the next step.
  - **No:** Return to System Reference Codes. Analyze the problem using the data in characters 9-16 of the bottom 16 character line of function 13 (word 9) on the Problem Summary Form in place of the data in word 1, which originally sent you to this procedure.  
**This ends the procedure.**
32. Go to the analyzing problems procedures in the service information for the specific disk unit to analyze the status of the failing unit. Then return here and answer the following question.  
Did the service information for the specific disk unit correct the problem?
- **No:** Continue with the next step.
  - **Yes: This ends the procedure.**
33. A manual reset of the IOP may clear the attention SRC. Perform the steps in the following table:

Primary partition steps	Secondary partition steps
1. Select <b>Manual</b> mode on the control panel. 2. Select Function <b>25</b> and press <b>Enter</b> . 3. Select Function <b>26</b> and press <b>Enter</b> . 4. Select Function <b>67</b> and press <b>Enter</b> to reset the IOP. 5. Select Function <b>25</b> and press <b>Enter</b> to disable the service functions on the control panel.	1. From the SST/DST screen select <b>Work With Partitions</b> —> <b>Work With Partition Status</b> . 2. Select Function <b>23</b> More Options. 3. Select option <b>59</b> for the logical partition that you are working in. 4. Select the IOP for debug. 5. Select <b>Reset I/O Processor</b> . 6. Return to the Partition Status display.

- Does an SRC occur?
- **Yes:** Continue with the next step.
  - **No: This ends the procedure.**
34. Force a dump of main storage, then perform an IPL by doing the following:
- a. Select **Manual** mode on the control panel.
  - b. Select function **22** (Main Storage Dump) on the control panel.
  - c. Press **Enter** to force a dump of main storage to the load-source disk unit.
  - d. When SRC A100 300x occurs, the dump is complete.
  - e. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>TM</sup> Service Functions*  information).
- Does a different SRC occur, or does a display appear on the console showing reference codes.
- **No:** Continue with the next step.
  - **Yes:** Use the new SRC or the URC displayed on the console and go to System Reference Codes to correct the problem.  
**This ends the procedure.**
35. Does the same SRC occur?
- **No:** The problem is intermittent.
    - a. Print the system product activity log for the magnetic storage subsystem and print the LIC LOGs with a major code of 1000.

- b. Copy the main storage dump to removable media (see Working with Storage Dumps in the *iSeries<sup>(TM)</sup> Service Functions*  information).
- c. Provide your next level of support with this information.

**This ends the procedure.**

- **Yes:** Use the SRC information from the original failure and return to System Reference Codes. Analyze the problem using the data in characters 9-16 of the bottom 16 character line of function 13 (word 9) on the Problem Summary Form in place of word 1.

**This ends the procedure.**

## Logical partition (LPAR) PIP

*For use by authorized service providers.*

Use this page to identify logical partition (LPAR) configuration conditions and the associated corrective actions.

**LPAR-PIP01:** Use this procedure to identify Logical Partition (LPAR) configuration conditions and their associated corrective actions.

1. Is there **only one** B6005311 error logged, and is it against the load source device for the partition, in either the Primary or a secondary partition?
  - **Yes:** Is the reporting partition the Primary partition?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 3 (See page 144).
  - **No:** Go to step 4 (See page 144).
2. Was the load source disk unit migrated from another partition within the same system?
  - **Yes:** Is this load source device intended to be the load source for the Primary partition?
    - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions**—>**Recover configuration data**—>**Accept load source disk unit**.  
**This ends the procedure.**
    - **No:** Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.  
**This ends the procedure.**
  - **No:** The load source disk unit has not changed. Contact your next level of support.  
**This ends the procedure.**
3. The reporting partition is a secondary partition.  
Since the last IPL of the reporting partition, have one of the following occurred?
  - Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
  - Has the system serial number been changed?
  - Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?
  - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions**—>**Recover configuration data**—>**Accept load source disk unit**  
**This ends the procedure.**
  - **No:** Contact your next level of support.  
**This ends the procedure.**
4. Are there **multiple** B600 5311 SRCs logged in the same partition?
  - **Yes:** Continue with the next step.
  - **No:** None of the conditions in this procedure have been met, call your next level of support.  
**This ends the procedure.**

5. Is the resource for **one** of the B600 5311 SRCs the load source device and are **all** of the other B600 5311 entries for resources which are non-configured disk units?

**Note:** To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *iSeries Service Functions* information.

- **Yes:** Is the partition that is reporting the error the **Primary** partition?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 7 (See page 145).
  - **No:** Go to step 8 (See page 145).
6. Was the load source disk unit migrated from another partition within the same system?
- **Yes:** Is this load source device intended to be the load source for the Primary partition?
    - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions—>Recover configuration data—>Accept load source disk unit**  
**This ends the procedure.**
    - **No:** Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.  
**This ends the procedure.**
  - **No:** The load source disk unit has not changed. Contact your next level of support.  
**This ends the procedure.**
7. The reporting partition is a secondary partition.  
Since the last IPL of the reporting partition, have one of the following occurred:
- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
  - Has the system serial number been changed?
  - Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?
  - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions—>Recover configuration data—>Accept load source disk unit**  
**This ends the procedure.**
  - **No:** Contact your next level of support.  
**This ends the procedure.**
8. One or more B600 5311 SRCs have been logged in the same partition.  
Do all of the B600 5311 errors have a resource which is a non-configured disk unit in the partition?
- Note:** To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *iSeries Service Functions* information.
- **Yes:** Continue with the next step.
  - **No:** None of the conditions in this procedure have been met, call your next level of support.  
**This ends the procedure.**
9. Were any disk unit resources associated with the B600 5311 SRCs added to the partition, since the last IPL of this partition?
- **No:** Continue with the next step.
  - **Yes:** Perform the following to clear non-configured disk unit configuration data:
    - a. Go to SST/DST in the partition and select **Work with system partitions—>Recover configuration data—>Clear non-configured disk unit configuration data.**
    - b. Select each unit in the list which is new to the system and press **Enter.**
    - c. Continue the system IPL.  
**This ends the procedure.**

10. None of the resources that are associated with the B600 5311 SRCs are disk units that were added to the partition since the last IPL of the partition.  
Has a scratch install recently been performed on the partition that is reporting the error(s)?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **13** (See page 146).
11. If a scratch install was not performed, was the clear configuration data option recently used to discontinue LPAR use?
  - **Yes:** Continue with the next step.
  - **No:** The **Clear configuration data** option was not used. Contact your next level of support.  
**This ends the procedure.**
12. Perform the following to clear non-configured disk unit configuration data:
  - a. Go to SST/DST in the partition and select **Work with system partitions**—>**Recover configuration data**—>**Clear non-configured disk unit configuration data**.
  - b. Select each unit in the list which is new to the system and press **Enter**.
  - c. Continue the system IPL.  
**This ends the procedure.**
13. Was the load source device previously mirrored before the scratch install?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **15** (See page 146).
14. Perform the following to clear the old configuration data from the disk unit that was mirroring the old load source disk
  - a. Go to SST/DST in the partition and select **Work with system partitions**—>**Recover configuration data**—>**Clear non-configured disk unit configuration data**.
  - b. Select the former load source mirror in the list and press **Enter**.
15. Is the Primary partition reporting the B600 5311 error(s)?
  - **No:** **This ends the procedure.**
  - **Yes:** Does the customer want multiple partitions on the system?
    - **No:** **This ends the procedure.**
    - **Yes:** Use the **Recover primary partition configuration data** option to retrieve the LPAR configuration data from other devices in the system.
      - a. Go to SST/DST in the primary partition and select **Work with system partitions**—>**Recover configuration data**—>**Recover primary partition configuration data**. The system will perform an automatic IPL.
      - b. Verify the information that appears.
        - The device should be a former load source device from a secondary partition.
        - The time and date should reflect a time when that partition was active. It should be more recent than the last change to the logical partition configuration.

## Operations Console PIPs

*For use by authorized service providers.*

### For direct cable only.

This topic contains the procedures necessary to isolate a failure with the iSeries Operations Console.

The following symptoms can be caused by iSeries Operations Console failing to connect:

- One of the following SRCs:
  - A6xx 5001 or B6xx 5001

- A6xx 5004 or B6xx 5004
- A6xx 5007 or B6xx 5007
- A6xx 5008 or B6xx 5008
- The status in the iSeries Operations Console window remains "Connecting console".

The following symptoms can be caused by a defective remote control panel cable:

- Remote control panel (hung) System control panel functions.
- SRC 0000 DDDD with attention light on the system panel.
- Remote control panel accepts mode selections, however the system does not respond.
- The remote control panel does not function.
- The status in the iSeries Operations Console window remains "Connecting console".

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

#### **DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

#### **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

#### **DANGER**

**To prevent the system from powering on automatically during service procedures, select Manual or Secure mode on the system unit control panel. (RSFTD214)**

#### **Operations Console PIP procedures:**

##### **Operations Console PIP1**

##### **Operations Console PIP2**

##### **Operations Console PIP3**

***Operations Console-PIP1:*** For use by authorized service providers.

Use this procedure to isolate an Operations Console failure. This PIP only works with cable-connected configurations. It is not valid for network or dial connected configurations. Read the "Operations Console PIPs" on page 146 before continuing with this procedure.

The following symptoms can be caused by iSeries Operations Console failing to connect:

- One of the following SRCs:
  - A6xx 5001 or B6xx 5001
  - A6xx 5004 or B6xx 5004

- A6xx 5007 or B6xx 5007
  - A6xx 5008 or B6xx 5008
- The status in the iSeries Operations Console window remains "Connecting console".
    1. If the system has logical partitions, perform this procedure only from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
    2. Ensure that the 2745 (or 2742 for v5r2 or later) or 2771 (or 2793 for v5r2 or later) IOA is installed into the correct position:
      - For the Models 270, 800, and 810 - **C07**
      - For the Models 820 and 825 - **C06**
      - For Models 830, 840, 870, 890, SB2, and SB3 - **C02**
    3. Ensure the Operations Console cable, P/N 97H7557, is connected to the left connector on the adapter card. Push in the cable connector and tighten the thumbscrews.
    4. Verify the other end of the Operations Console cable is connected to the system unit console (PC) serial port. Push in the cable connector and tighten the thumbscrews. Note: If the PC has a 9-pin connector, you need to use the 9 to 25 pin adapter, part number 46G0298, that was shipped with the system.
    5. The following steps will use the Windows application Hyperterminal to determine if there is connectivity between the system unit console (PC) and the iSeries server:
    6. Use one of the following paths to start Hyperterminal:
      - Select **Start** → **Programs** → **Accessories** → **Hyperterminal**.
      - Select **Start** → **Programs** → **Communications** → **Hyperterminal**.
    7. Is the Hyperterminal present?
      - **Yes**: Continue with the next step.
      - **No**: Install the Hyperterminal (you will need the install media for the operating system used on the PC):
        - a. Choose from the following options:
          - 1) If you have an install CD, place it into the CD drive, and wait for the program to begin. Then, close the window. If the program did not automatically start, or the install media is not a CD, continue with the next step.
          - 2) If you do not have an install media, perform the following:
            - a) Click **Start** → **Settings** → **Control Panel**.
            - b) Double-click **Add/Remove Programs**.
            - c) Click either **Windows Setup** or **Windows NT Setup**, depending on the operating system.
            - d) Click **Communications** → **Details**.
            - e) Select the **Hyperterminal** check box.
            - f) Click **OK** → **Apply**.
        - b. Follow the on-line instructions. If a window appears in which you can replace a newer file with an older one, click **Yes** to keep the newer file.
        - c. Follow one of these paths to start Hyperterminal.
          - Click **Start** → **Programs** → **Accessories** → **Hyperterminal**.
          - Click **Start** → **Programs** → **Communications** → **Hyperterminal**.
    8. In Hyperterminal, enter a name, and click **OK**.
    9. Under Connect using, select the comm port being used for the console. It may be listed as COMn (where n is the communications port number) or direct to COMn. Then, click **OK**.



10. In the Bits per second field, select **9600** and then click **OK**. Failure to set the speed to 9600 will result in all garbage for text and you will not see the desired results of this test. The Hyperterminal window will open and should show Connected in the lower left corner of the window. You may also get garbage characters, +++ATH0, or nothing at all.
11. Click **Disconnect** (handset raised above the telephone) in the toolbar.
12. Click **File** —> **Properties**.
13. Click the **Settings** tab —> **ASCII Setup**.
14. Select the following checkboxes:
  - Send line ends with line feeds
  - Echo typed characters locally
  - Append line feeds to incoming line ends
  - Wrap lines that exceed terminal width
15. Click **OK** —> **OK**.
16. At the system's control panel, or use the remote control panel if installed with Operations Console, perform a function **25**, then a function **26** to gain access to the extended (upper) functions.
17. Perform a function **65**. This may or may not result with information going to the Hyperterminal window or SRC D1008065 being displayed at the control panel.
18. Perform a function **66**. This may or may not result with information going to the Hyperterminal window or SRC D1008066 being displayed at the control panel.
19. In uppercase, type **NEGOTIATE** and press **Enter**.
20. Wait at least 30 seconds. If no data is returned, repeat the previous step.
21. If there is full connectivity between the PC and the iSeries server, a valid modem speed will be returned. If no data was returned, there is no connectivity and you should replace each of the following items, one at a time, and repeat this test:
  - Operations Console cable, P/N 97H7557
  - 2745 IOA
  - 2771 IOA
22. If replacing the IOA did not fix the problem, there is probably something wrong with the PC or the Operations Console setup which will require support from someone with Operations Console software training to resolve.  
**This ends the procedure.**

**Operations Console-PIP2:** *For use by authorized service providers.*

Use this procedure to isolate a failure with the remote control panel. This PIP only works with cable-connected configurations. It is not valid for network or dial connected configurations. Read the "Operations Console PIPs" on page 146 before continuing with this procedure.

The following symptoms can be caused by a defective remote control panel cable:

- Remote control panel (hung) System control panel functions.
  - SRC 0000 DDDD with attention light on the system panel.
- Note:** This SRC can also show up temporarily for valid reasons. It is only a problem if the SRC remains constant.
- Remote control panel accepts mode selections, however the system does not respond.
  - The remote control panel does not function.
  - The status in the iSeries Operations Console window remains "Connecting remote control panel".
1. Ensure the remote control panel cable is connected to the Debug port on the rear of the iSeries server. The system end of the cable is the one with a missing pin in the cable's connector. The other end of the cable is connected to an EPP-capable parallel port on the PC. Push in the cable connector and tighten the thumbscrews at each end.

**Note:** The parallel port must be EPP 1.9 compliant, though not all PC manufacturers allow the port to be dedicated to that setting. To determine this setting, check with the PC manufacturer.

2. Ensure that the Operations Console has an active connection.
3. If the system has logical partitions, perform this procedure only from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
4. Is the status in the iSeries Operations Console window "Connecting console" or did you get a message indicating the connection to the LCS failed?
  - **No:** Is the status in the iSeries Operations Console window any of the following: "Connecting remote control panel", "Remote control panel unavailable", "Connected", "Pending authorization", "Connecting remote control panel", "Remote control panel connection to xxxxxx failed. Do you want to try again?"
    - **No:** Continue with the next step.
    - **Yes:** Replace the remote control panel cable. Inspect the internal cable to the Debug port for problems and replug the cable or replace if needed.  
**This ends the procedure.**
  - **Yes:** The remote control panel will not work until a connection to the LCS is established. Correct the problem and establish a connection. You may use "Operations Console-PIP1" on page 147 for assistance in determining if the PC and iSeries server have connectivity.  
**This ends the procedure.**
5. Did the remote control panel window open? Be certain to look behind any open windows or in the task bar for it.
  - **Yes:** Did the remote control panel window display any Function/Data, or either the Power or a Mode indicator green?
    - **Yes:** The console may not have control at this time, and the remote control panel may be in read-only mode. Get control at the console and try an operation again. If the remote control panel is still unresponsive replace the remote control panel cable. You may require support from someone with Operations Console software training to resolve.  
**This ends the procedure.**
    - **No:** Replace the remote control panel cable.  
**This ends the procedure.**
  - **No:** Verify that iSeries Operations Console is configured to use the remote control panel. If it is then you will require support from someone with Operations Console software training to resolve.  
**This ends the procedure.**

**Operations Console-PIP3:** *For use by authorized service providers.*

Use this procedure to isolate an Operations Console bringup failure when the SRC on the panel is A6xx5008 or B6xx5008. If you are not using the Operations Console, see A6005004. This PIP only works with cable-connected and LAN configurations. It is not valid for dial connected configurations. Read the "Operations Console PIPs" on page 146 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Is the SRC on the panel A6xx5008 or B6xx5008?
  - **Yes:** Are you connecting Operations Console using the ASYNC adapter?
    - **Yes:** Continue with the next step.
    - **No:** You are connecting using a LAN adapter. Go to step 6 (See page 151).
  - **No:** **This ends the procedure.**
3. Are words 17, 18, and 19 all equal to 00000000?
  - **No:** Is word 17 equal to 00000001?

- **No:** Continue with the next step.
  - **Yes:** The ASYNC adapter was not detected. Ensure that the ASYNC adapter card is installed, or replace the IOA and try again.  
**This ends the procedure.**
  - **Yes:** Report the problem to your next level of support.  
**This ends the procedure.**
4. Is word 17 equal to 00000002?
- **No:** Is word 17 equal to 00000003?
    - **No:** Continue with the next step.
    - **Yes:** The cable that was detected does not have the correct cable ID. Word 18 contains the card position. Word 19 contains the cable ID. Locate the ASYNC adapter card in this card position, and verify that the correct cable is attached, or replace the cable.  
**This ends the procedure.**
    - **Yes:** On the ASYNC adapter card that was found, no cable was detected. Word 18 contains the card position. Locate the ASYNC adapter card in this card position, and ensure that the external cable is attached.  
Install or replace the external cable.  
**This ends the procedure.**
5. Is word 17 equal to 00000004?
- **No:** Report the problem to you next level of support.  
**This ends the procedure.**
  - **Yes:** Operations Console failed to make a connection because the port is already being used. Word 18 contains the card position. Disconnect the active communications session and try using the resource again.  
**This ends the procedure.**
6. Are words 13, 14 and 15 all equal to 00000000?
- **No:** Is word 13 equal to 00000002?
    - **No:** Continue with the next step.
    - **Yes:** The LAN hardware failed to activate. Replace the LAN IOA being used.  
**This ends the procedure.**
  - **Yes:** Report the problem to you next level of support.  
**This ends the procedure.**
7. Is word 13 equal to 00000003?
- **Yes:** A hardware error occurred. Word 14 contains the error code, (example: 53001A80). Word 15 contains the card position.  
Is the error code equal to 53001A80?
    - **Yes:** The network cable is not attached to the LAN adapter, the cable is defective, or the network is not operational.  
**This ends the procedure.**
    - **No:** The LAN adapter hardware is not operational. Replace the hardware and try again.  
**This ends the procedure.**
  - **No:** Continue with the next step.
8. Is word 13 equal to 00000004?
- **No:** Is word 13 equal to 00000005?
    - **No:** Report the problem to your next level support.  
**This ends the procedure.**
    - **Yes:** IP information was received from the console. Word 14 contains the received IP address. Verify the configuration data for the client (PC) or verify the configuration for the network.  
**This ends the procedure.**

- **Yes:** The console did not respond. Word 14 contains the number of attempts made. Word 15 contains the card position. The system is inserted into the network but there is no connection to the client (PC). Verify the configuration for the network at the system and client; verify the configuration of Operations Console.  
**This ends the procedure.**

## **Power PIPs**

*For use by authorized service providers.*

This section contains the procedures necessary to isolate a failure in the system power. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

### **DANGER**

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### **DANGER**

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

### **DANGER**

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

### **Power PIP procedures:**

**“Power PIP3” on page 153**

**“Power PIP4” on page 153**

**“Power PIP5” on page 158**

**“Power PIP6” on page 160**

**“Power PIP7” on page 166**

**“Power PIP8” on page 168**

**“Power PIP9” on page 172**

**“Power PIP11” on page 175**

**Power PIP3:** For use by authorized service providers.

Use this procedure to isolate a failure in the system power. You will be testing the battery power unit for correct operation. Read the “Power PIPs” on page 152 for important safety information before servicing the system.

**Attention:** Disconnecting or removing the 2620 or 2628 cryptographic I/O processor causes the loss of the master encryption key.

1. If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Ensure that the battery power unit is installed and that there was no system power loss for the last eight hours by checking the message log for CPF1816. If the message log shows that a power loss occurred in the last 8 hours, the battery may not be at full charge and the test may fail. To check the message log, perform the following:
  - a. Enter the command **DSPLOG QHST**
  - b. Press **F4** (prompt).
  - c. Fill in the time and date. (The *time date* parameter that you use should be for the last 8-hour period.) For the United States, the format is **hhmmss mmdyy**.

**Note:** The output may be printed (\*PRINT) or displayed. The default (\*) is to display.

3. Ensure that all user programs are ended.
4. Perform the following:
  - a. Ensure the keystick is inserted and select **Manual** mode on the control panel.
  - b. Select function **21** (Make DST Available) on the control panel.
  - c. Press **Enter**.
  - d. Enter the password on the DST Sign On display. You need the customer password to get to the Use Dedicated Service Tools (DST) display.
5. Select **Start a Service Tool** → **Hardware service manager** → **System Power Control Network** → and press **Enter**.
6. Select **Test Battery Interface** by entering **7** under the *OPT* column on the line for the correct unit (**not** the line for the frame).
7. Press **Enter** to confirm your selection.

Does the battery test complete with no problems found?

- **Yes:** Approximately 24 hours from now, the system will perform a battery capacity test. When the battery capacity test completes successfully, the battery power unit test is complete.
- **No:** Exchange the following, one at a time. See the Remove and replace procedures or the remove and replace procedures in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*

manual on the V5R1 Supplemental Manuals web site  .

- a. Battery power unit (see symbolic FRU “BATRY” on page 285).
- b. Battery charger unit (see symbolic FRU “BATCHGR” on page 285) or uninterruptible power supply (see symbolic FRU “UPSUNIT” on page 476), as installed.
- c. The SPCN card (see symbolic FRU “TWRCARD” on page 470).
- d. Backplane (see symbolic FRU “BACKPLN” on page 284).

**This ends the procedure.**

**Power PIP4:** For use by authorized service providers.

A system unit power supply load fault is occurring. Read the “Power PIPs” on page 152 for important safety information before servicing the system.

Follow the instructions for the Model you are working on:

- Model 270 (See page 154)
- Models 800 and 810 (See page 156)

### Instructions for Model 270

1. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Verify that your system unit power supply is functioning properly.
  - a. Disconnect the ac power cable to the system unit you are working on. On a **Model 270 with a 7104 system unit expansion** attached, disconnect both the system unit line cord and the expansion unit line cord.
  - b. Disconnect all the connectors from the power supply.
  - c. Reconnect the ac power cable(s).
  - d. Use an instrument to push and hold the button adjacent to the LED on the system unit power supply. If the LED shows a slow blink or a steady green light, then the power supply is functioning normally. Do not replace it.
  - e. Reconnect the cables to your power supply and proceed with the next step.
3. Perform the following:
  - a. Disconnect the ac power cable to the system unit you are working on. On a **Model 270 with a 7104 system unit expansion** attached, disconnect both the system unit line cord and the expansion unit line cord.
  - b. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the system unit you are working on by sliding them partially out of the unit. See the Remove and replace procedures for the model you are working on.
  - c. Remove and label all cards installed.
  - d. Reconnect the ac power cable(s) to the unit you are working on.
  - e. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step 7 (See page 155).

4. Perform the following:
  - a. Remove one of the air moving devices (AMDs) from the system unit that was not previously removed during this procedure. (Disregard a AMD SRC if it occurs during this step.)
  - b. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The AMD you removed in this step is the failing item.  
**This ends the procedure.**

5. Have you removed all of the AMDs one at a time?
  - **No:** Perform the following:
    - a. Power off the system.
    - b. Install the AMD that was removed in step 4 (See page 154) in the original location.
    - c. Repeat step 4 (See page 154).
  - **Yes:** Install all the AMDs and continue with the next step.
6. Perform the following:
  - a. Power off the system.

- b. Remove the power supply from the system unit and replace it with the new one.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Perform the following:
  - a. Remove the new power supply that was installed in step 6 (See page 154) and reinstall the original power supply.
  - b. Replace the backplane. See symbolic FRU “BACKPLN” on page 284.

**This ends the procedure.**

- **No:** The power supply that was removed earlier in this step was the failing item.  
**This ends the procedure.**

7. Perform the following:
  - a. Reinstall all of the cards you removed in step 2 (See page 154).
  - b. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step 9 (See page 155).

8. Perform the following:
  - a. Power off the system.
  - b. Disconnect one of the cards you reinstalled in step 7 (See page 155).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Have you disconnected all the cards?
  - **No:** Repeat this step.
  - **Yes:** Install all parts removed in this procedure and go to “Starting point for all problems” on page 2.

**This ends the procedure.**

- **No:** Exchange the last card you disconnected in this step. See the Remove and replace procedures for the model you are working on.

**This ends the procedure.**

9. Perform the following:
  - a. Power off the system.
  - b. Reconnect all of the I/O devices (tape, diskette, or disk units) that you disconnected in step 2 (See page 154).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The system is working. The problem seems to be intermittent.

**This ends the procedure.**

10. Perform the following:
  - a. Power off the system.
  - b. Disconnect one of the I/O devices (tape, diskette, or disk units) that you connected in step 9 (See page 155).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Have you disconnected all the I/O devices?

- **No:** Repeat this step.
- **Yes:** Install all parts removed in this procedure and go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
- **No:** Exchange the last I/O device you disconnected in this step. See the Remove and replace procedures for the model you are working on.  
**This ends the procedure.**

### Instructions for Models 800 and 810

1. If the system has logical partitions, perform this procedure only from the primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Verify that your system unit power supply is functioning properly:
  - a. Disconnect the ac power cable from the system unit you are working on. On a system Model 800 or 810 with FC 7116, disconnect both the system unit line cord and the expansion unit line cord.
  - b. Disconnect all of the connectors from the power supply.
  - c. Reconnect the ac power cable(s).
  - d. Using an appropriate instrument, push and hold down the button adjacent to the LED on the system unit power supply. Does the power supply (green) LED number 1, next to the switch button, blink slowly or show a steady green light?
    - **No:** Replace the power supply. See symbolic FRU “PWRSPPLY” on page 431.  
**This ends the procedure.**
    - **Yes:** The power supply is functioning normally. Continue with the next step.
3. Perform the following:
  - a. Disconnect the ac power cable from the unit you are working on. On a system Model 800 or 810 with an FC 7116, disconnect both the system unit line cord and the expansion unit line cord.
  - b. Reconnect the connectors to your power supply that you removed in the previous step.
  - c. Disconnect all of the I/O devices (tape, diskette, optical, and disk units) by sliding them partially out of the system unit. See the Remove and replace procedures for the model you are working on.
  - d. Remove and label all cards that are installed in the system unit.
  - e. Reconnect the ac power cable(s) to the unit you are working on.
  - f. Power on the system.

Does a power reference code occur?

  - **No:** Go to step 7 (See page 157).
  - **Yes:** Continue with the next step.
4. Perform the following:
  - a. Remove one of the AMDs from the system unit that was not previously removed during this procedure. Disregard an AMD SRC if it occurs during this step.
  - b. Power on the system.

Does a power reference code occur?

  - **No:** The AMD you removed in this step is the failing item.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
5. Have you removed all of the AMDs one at a time?
  - **Yes:** Install all of the AMDs, and continue with the next step.
  - **No:** Perform the following:
    - a. Power off the system.



- b. Install the AMD that you removed in step 4 (See page 156) into its original location.
  - c. Repeat step 4 (See page 156).
6. Perform the following:
  - a. Power off the system.
  - b. Remove the power supply from the system unit and replace it with the new one.
  - c. Power on the system.

Does a power reference code occur?

  - **No:** The power supply you just removed is the failing item.  
**This ends the procedure.**
  - **Yes:** Perform the following:
    - a. Remove the new power supply that you just installed in this step and reinstall the original power supply.
    - b. Replace the backplane. See symbolic FRU "BACKPLN" on page 284.  
**This ends the procedure.**
7. Perform the following:
  - a. Reinstall all of the cards you removed in step 2 (See page 156) of this procedure.
  - b. Power on the system. Does a power reference code appear?
    - **No:** Go to step 10 (See page 157).
    - **Yes:** Continue with the next step.
8. Perform the following:
  - a. Power off the system.
  - b. Disconnect one of the cards you reinstalled in the previous step.
  - c. Power on the system.

Does a power reference code occur?

  - **No:** Exchange the last card you disconnected in this step. See the Remove and replace procedures for the model you are working on.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
9. Have you disconnected all of the cards?
  - **Yes:** Install all of the parts you removed in this procedure and go to the "Starting point for all problems" on page 2.  
**This ends the procedure.**
  - **No:** Repeat step 8 (See page 157).
10. Perform the following:
  - a. Power off the system.
  - b. Reconnect all of the I/O devices (tape, diskette, optical, or disk units) you disconnected in step 2 (See page 156).
  - c. Power on the system.

Does a power reference code occur?

  - **No:** The system is working. The problem seems to be intermittent. See "Analyze intermittent problems" on page 11.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
11. Perform the following:
  - a. Power off the system.

- b. Disconnect one of the I/O devices (tape, diskette, optical, or disk units) you connected in step 10 (See page 157).
- c. Power on the system.

Does a power reference code occur?

- **No:** Exchange the last I/O device you disconnected in this step. See the Remove and replace procedures for the model you are working on.  
**This ends the procedure.**
- **Yes:** Continue with the next step.

12. Have you disconnected all of the I/O devices?

- **Yes:** Install all parts you removed in this procedure and go to the “Starting point for all problems” on page 2.  
**This ends the procedure.**
- **No:** Repeat step 11 (See page 157).

**Power PIP5:** For use by authorized service providers.

A power supply overcurrent/load fault is occurring. Read the “Power PIPs” on page 152 information for important safety information before servicing the system.

1. If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Perform the following:
  - a. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit you are working on by sliding them partially out of the unit see the Remove and replace procedures).
  - b. Remove and label all cards installed except the processor and memory cards.
  - c. Reconnect the ac power cable to the unit you are working on.
  - d. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step 10 (See page 159).

3. Perform the following:

- a. Power off the system.
- b. Remove from the system one of the air moving devices (AMDs) that was not previously removed during this procedure. (Disregard an AMD SRC if it occurs during this step.)
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The AMD you removed in this step is the failing item.  
**This ends the procedure.**

4. Have you removed all of the AMDs one at a time?

- **No:** Perform the following:
  - a. Power off the system.
  - b. Install the AMD that was removed in step 3 (See page 158) to its original locations.
  - c. Repeat step 3 (See page 158).
- **Yes:** Install all of the AMDs and continue with the next step.

5. Perform the following:

- a. Power off the system.

- b. Remove one of the memory cards that was not previously removed in this procedure and replace it with the new one.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The memory card that was removed in this step was the failing item.  
**This ends the procedure.**

6. Have all of the memory cards been swapped out with a new unit?

- **No:** Perform the following:
  - a. Remove the new memory card that was installed in step 5 (See page 158) and replace the original memory card.
  - b. Repeat step 5 (See page 158).
- **Yes:** Continue with the next step.

7. Perform the following:

- a. Power off the system.
- b. Remove the processor card and replace it with the new one.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The processor card was the failing item.  
**This ends the procedure.**

8. Perform the following:

- a. Power off the system.
- b. Remove one of the power supplies that was not previously removed in this procedure and replace it with the new one.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The power supply that was removed was the failing item.  
**This ends the procedure.**

9. Have all of the power supplies been swapped out with a new unit?

- **No:** Perform the following:
  - a. Remove the new power supply that was installed in step 8 (See page 159) and replace the original power supply.
  - b. Repeat step 8 (See page 159).
- **Yes:** Replace the "BACKPLN" on page 284.  
**This ends the procedure.**

10. Perform the following:

- a. Power off the system.
- b. Reinstall all of the cards you removed in step 2 (See page 158).
- c. Reconnect the ac power cable to the unit you are working on.
- d. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step 13 (See page 160).

11. Perform the following:

- a. Power off the system.
- b. Disconnect one of the cards you connected in step **10** (See page 159).
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last card you disconnected in this step (see Remove and replace procedures).  
**This ends the procedure.**

12. Have you disconnected all the cards?

- **No:** Repeat step **11** (See page 159).
- **Yes:** Install all the parts you removed in this procedure and go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

13. Perform the following:

- a. Power off the system.
- b. Reconnect all of the I/O devices (tape, diskette, optical, or disk units) that you disconnected in step **2** (See page 158).
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No: This ends the procedure.**

14. Perform the following:

- a. Power off the system.
- b. Disconnect one of the I/O devices (tape, diskette, optical, or disk units) that you connected in step **13** (See page 160).
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Have you disconnected all of the I/O devices?
  - **No:** Repeat step **14** (See page 160).
  - **Yes: This ends the procedure.**
- **No:** Exchange the last I/O device you disconnected in this step (see Remove and replace procedures).  
**This ends the procedure.**

**Power PIP6:** *For use by authorized service providers.*

A power supply is reporting a load fault. Read the “Power PIPs” on page 152 for important safety information before servicing the system.

Follow the instructions for the model you are working on:

- Models 270, 820, 830, 840, SB2, and SB3 (See page 160)
- Models 800, 810, 825, 870, and 890 (See page 164)

### **Instructions for Models 270, 820, 830, 840, SB2 and SB3**

1. If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Perform the following:

- a. Power off the frame or system that you are working on. Frames with FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit that you are working on by sliding them partially out of the unit. See the Remove and replace procedures for the model you are working on.
- c. Remove and label all of the cards that are installed in the PCI card area.
- d. Power on the frame or system that you are working on. Frames with FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **10** (See page 162).

3. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Remove all power supplies except first one in order (P00 or P01).
- c. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Go to step **5** (See page 161).

4. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Reconnect the next power supply, in order, that you removed in **3** (See page 161).
- c. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **No:** Repeat this step until all power supplies have been reconnected.  
**This ends the procedure.**
- **Yes:** Exchange the power supply that you reconnected in this step.  
**This ends the procedure.**

5. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Remove the the power supply left installed in step **3b** (See page 161).
- c. Reconnect the next power supply in order installed.
- d. Power on the frame or system that you are working on. Frames with an FC 5078 or 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.

- **No:** Exchange the first power supply in order left installed in step **3b** (See page 161).  
**This ends the procedure.**

6. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Remove one of the air moving devices (AMDs) from the system that was not previously removed during this procedure. Disregard an AMD SRC if it occurs during this step.
- c. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached- reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The AMD that you removed in this step is the failing item.  
**This ends the procedure.**

7. Have you removed all of the AMDs one at a time?

- **Yes:** Install all of the AMDs and continue with the next step.
- **No:** Perform the following:
  - a. Power off the frame or system that you are working on. (Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
  - b. Install the AMD that was removed in step **6** (See page 162) in the original location.
  - c. Repeat step **6** (See page 162).

8. Perform the following:

- a. Remove the power cable from one of the lower DASD backplanes that was not previously removed.
- b. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Replace the DASD backplane that the power cable was removed from in this step. See symbolic FRU “DEVBPLN” on page 325.  
**This ends the procedure.**

9. Is a second lower DASD backplane installed?

- **Yes:** Repeat step **8** (See page 162).
- **No:** Replace the following one at a time:
  - a. DASD backplane upper (CCIN 283C or 28CB), see symbolic FRU “DEVBPLN” on page 325.
  - b. System unit backplane, see symbolic FRU “SYSBKPL” on page 464.
  - c. I/O tower, see symbolic FRU “TWRCARD” on page 470.  
**This ends the procedure.**

10. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the ac modules.
- b. Reinstall all of the cards that you removed in step **2** (See page 160).
- c. Reconnect the ac power cable to the unit that you are working on.

- d. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **13** (See page 163).

11. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Disconnect one of the cards that you connected in step **10** (See page 162).
- c. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last card that you disconnected in this step. See the Remove and replace procedures for the model you are working on.

**This ends the procedure.**

12. Have you disconnected all the cards?

- **Yes:** Continue with the next step.
- **No:** Repeat step **11** (See page 163).

13. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.
- b. Reconnect all of the I/O devices (tape, diskette, or disk units) that you disconnected in step **2** (See page 160).
- c. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the AC input/battery charger, or at the AC modules.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No: This ends the procedure.**

14. Perform the following:

- a. Power off the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - trace and remove the **lower** frame power supply ac jumper cables at the ac input/battery charger, or at the AC modules.
- b. Disconnect all of the I/O devices (tape, diskette, or disk units) that you connected in step **13** (See page 163).
- c. Reconnect one of the I/O devices (tape, diskette, or disk units) that you disconnected in step **14b** (See page 163).
- d. Power on the frame or system that you are working on. Frames with an FC 5078 or FC 0578 attached - reconnect the **lower** frame power supply ac jumper cables at the ac input/battery charger, or at the AC modules.

Does a power reference code occur?

- **No:** Continue with the next step.

- **Yes:** Exchange the last I/O device you reconnected in this step. See the Remove and replace procedures for the model you are working on.  
**This ends the procedure.**

15. Have you reconnected all the I/O devices?

- **Yes: This ends the procedure.**
- **No:** Repeat steps **14a** (See page 163), **14c** (See page 163), and **14d** (See page 163).

### Instructions for Models 800, 810, 825, 870, and 890

1. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Perform the following:
  - a. Power off the unit you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
  - b. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit that you are working on by sliding them partially out of the unit. See the Remove and replace procedures for the model you are working on.
  - c. Remove and label all of the cards that are installed in the PCI card area.
  - d. Power on the unit you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **12** (See page 165) .

3. Perform the following:

- a. Power off the unit you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
- b. Remove all power supplies except the first one, in order. The first one will be P00 or P01 depending on the installed configuration.
- c. Power on the unit that you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **5** (See page 164).

**This ends the procedure.**

4. Perform the following:

- a. Power off the unit that you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
- b. Remove the power supply that was left installed in step 3b.
- c. Reconnect the next power supply in order (P01 or P02).
- d. Power on the unit that you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** frame power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **No:** Exchange the power supply removed in step 4b.  
**This ends the procedure.**
- **Yes:** Go to step **6** (See page 165).

5. Perform the following:

- a. Power off the unit that you are working on. Units with FC 5088 or FC 0588 attached - trace and remove the lower unit power supply ac jumper cables at the power supplies.



- b. Reconnect the next power supply in order.
- c. Power on the unit that you are working on. Units with FC 5088 or FC 0588 attached - reconnect the lower frame power supply ac jumper cables at the power supplies.)

Does a power reference code occur?

- **Yes:** Exchange the power supply reconnected in this step.  
**This ends the procedure.**
- **No:** Repeat this step until all power supplies have been reconnected.  
**This ends the procedure.**

6. Perform the following:

- a. Remove one of the AMDs from the unit you are working on that was not previously removed during this procedure. Disregard an AMD SRC if it occurs during this step.
- b. Power on the unit that you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The AMD that you removed in this step is the failing item.  
**This ends the procedure.**

7. Have you removed all of the AMDs, one at a time?

- **No:** Continue with the next step.
- **Yes:** Install all of the AMDs and continue with step **9** (See page 165).

8. Perform the following:

- a. Power off the unit you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
- b. Install the AMD that was removed in step **6** (See page 165) in the original location.
- c. Go to step **6** (See page 165).

9. Perform the following:

- a. Remove the power cable from one of the lower DASD backplanes that was not previously removed.
- b. Power on the unit you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Replace the DASD backplane that the power cable was removed from in this step, see symbolic FRU "DEVBPLN" on page 325.

10. Is a second lower DASD backplane installed?

- **No:** Continue with the next step.
- **Yes:** Go to step **9** (See page 165).

11. Replace the following one at a time:

- DASD backplane upper, see symbolic FRU "DEVBPLN" on page 325.
- System unit backplane, see symbolic FRU "SYSBKPL" on page 464.
- I/O Tower, see symbolic FRU "TWRCARD" on page 470.  
**This ends the procedure.**

12. Perform the following:

- a. Power off the unit you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
- b. Reinstall all of the cards that you removed in step **2** (See page 164).
- c. Reconnect the ac power cable to the unit that you are working on.

- d. Power on the unit you are working on. Units with an FC 5088 or FC 0588 attached - reconnect lower unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **15** (See page 166).

13. Perform the following:

- a. Power off the unit you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove lower unit power supply ac jumper cables at the power supplies.
- b. Disconnect one of the cards that you connected in step **12** (See page 165).
- c. Power on the unit you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last card that you disconnected in this step. See the Remove and replace procedures for the model you are working on.

14. Have you disconnected all the cards?

- **Yes:** Continue with the next step.
- **No:** Repeat step **13** (See page 166).

15. Perform the following:

- a. Power off the unit you are working on. Units with an FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
- b. Reconnect all of the I/O devices (tape, diskette, or disk units) that you disconnected in step 2 of this procedure.
- c. Power on the unit you are working on. Units with an FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No: This ends the procedure.**

16. Perform the following:

- a. Power off the unit you are working on. Units with FC 5088 or FC 0588 attached - trace and remove the **lower** unit power supply ac jumper cables at the power supplies.
- b. Disconnect all of the I/O devices (tape, diskette, or disk units) that you connected in step 15b.
- c. Reconnect one of the I/O devices (tape, diskette, or disk units) that was not connected previously in this step.
- d. Power on the unit you are working on. Units with FC 5088 or FC 0588 attached - reconnect the **lower** unit power supply ac jumper cables at the power supplies.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Exchange the last I/O device that you reconnected in this step. See the Remove and replace procedures for the model you are working on.

17. Have you reconnected all the I/O devices?

- **Yes: This ends the procedure.**
- **No:** Repeat steps **16a** (See page 166), **16c** (See page 166), and **16d** (See page 166).

**Power PIP7:** For use by authorized service providers.

A power supply is reporting a load fault. Read the “Power PIPs” on page 152 for important safety information before servicing the system.

1. If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Perform the following:
  - a. Power off the system.
  - b. Remove and label all cards **except** Processors and M06 installed in the Processor backplane area. See Models 830/SB2 with FC 9074 - Cards (dedicated).  
**Note:** Remove the internal HSL cable (SIGC73) that connects from location -C08 to backplane -MB1 before sliding out the processor tray.
  - c. Reconnect the ac power cable to the unit you are working on.
  - d. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step 9 (See page 168).

3. Perform the following:
  - a. Power off the system.
  - b. Remove power supply PP2.
  - c. Power on the system.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Go to step 5 (See page 167).

4. Perform the following:
  - a. Power off the system.
  - b. Reconnect power supply PP2 that you removed in step 3 (See page 167).
  - c. Power on the system.

Does a power reference code occur?

- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
- **Yes:** Exchange the power supply PP2 reconnected in this step.  
**This ends the procedure.**

5. Perform the following:
  - a. Power off the system.
  - b. Remove power supply PP1.
  - c. Reconnect power supply PP2.
  - d. Power on the system.

Does a power reference code occur?

- **Yes:** Is the SRC 1xxx-2602 or 2604?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 8 (See page 168).
- **No:** Exchange the power supply PP1.  
**This ends the procedure.**

6. Perform the following:
  - a. Reconnect power supply PP1.

- b. Remove one of the AMDs from the system that was not previously removed during this procedure. (Disregard an AMD SRC if it occurs during this step.)
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Have you removed all of the AMDs one at a time?
  - **No:** Continue with the next step.
  - **Yes:** Install all the AMDs and continue with step **8** (See page 168).
- **No:** The AMD that you removed in this step is the failing item.  
**This ends the procedure.**

7. Perform the following:

- a. Power off the system.
- b. Install the AMD that was removed in step **6** (See page 167) in the original location.
- c. Go to step **6b** (See page 168).

8. Replace the following one at a time:

- V/S communication cable (SIG72) CB1 to CEC enclosure.
- Network Interface Controller/Clock Card M06.
- Processor backplane location MB1 (see symbolic FRU “SYSBKPL” on page 464 ), and processor (location M03 or M04).

**This ends the procedure.**

9. Perform the following:

- a. Reinstall one of the cards that you removed in step **2** (See page 167), in the following order:
  - M01
  - M02
  - M05
- b. Reconnect the ac power cable to the unit that you are working on.
- c. Power on the system.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Exchange the last card that you reinstalled in this step.  
**This ends the procedure.**

10. Have you reconnected all the cards?

- **Yes:** Replace the following one at a time:
  - V/S communication cable (SIG72) CB1 to CEC enclosure.
  - Network Interface Controller/Clock Card M06.
  - Processor backplane location MB1 (see symbolic FRU “SYSBKPL” on page 464 ), and processor (location M03 or M04).

**This ends the procedure.**

11. **No:** Repeat step **9** (See page 168), reinstalling next card.

**Power PIP8:** *For use by authorized service providers.*

A power supply fault or load fault has occurred in a FC 5078, FC 0578, FC 5088, or FC 0588. Read the “Power PIPs” on page 152 for important safety information before servicing the system. For location information, see Locations - FC 5078, FC 0578 or Locations - FC 5088, FC 0588.

Follow the instructions for the model you are working on:

- Models 270, 820, 830, 840, SB2, and SB3 (See page 169)
- Models 800, 810, 825, 870, and 890 (See page 170)

## Instructions for Models 270, 820, 830, 840, SB2, and SB3

1. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. With the system powered on, power off the frame that you are working on by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies. See the Expansion unit power procedure.
3. Remove and label all cards installed in the PCI backplane area.
4. Power on the frame by reconnecting the ac power cables to the unit that you are working on.  
Does a power reference code occur?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 11 (See page 170).
5. Is the SRC 1xxx 2603?
  - **No:** Continue with the next step.
  - **Yes:** Replace the PCI backplane. See symbolic FRU "TWRCARD" on page 470.  
**This ends the procedure.**
6. Perform the following:
  - a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, FC 0588 power supplies.
  - b. Remove power supply P01.
  - c. Remove the B01 assembly from the original power supply, and install it on the new power supply.
  - d. Install the new power supply P01.
  - e. Power on the frame by reconnecting the ac power cables to the unit that you are working on.  
Does a power reference code occur?
    - **Yes:** Continue with the next step.
    - **No:** The Power supply P01 that you removed in this step is the failing item.  
**This ends the procedure.**
7. Perform the following:
  - a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
  - b. Remove the new power supply P01 and replace it with the original power supply P01, after switching the B01 assembly back to the original supply.
  - c. Remove power supply P02.
  - d. Remove the B02 assembly from the original power supply P02 and install it on the new power supply.
  - e. Install the new power supply P02.
  - f. Power on the frame by reconnecting the ac power cables to the unit that you are working on.  
Does a power reference code occur?
    - **Yes:** Continue with the next step.
    - **No:** The Power supply P02 that you removed in this step is the failing item.  
**This ends the procedure.**
8. Perform the following:
  - a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
  - b. Remove the new power supply P02 and remove the B02 assembly.
  - c. Replace it with the original P02 and a new B02 assembly.
  - d. Install power supply P02.

e. Power on the frame by reconnecting the ac power cables to the unit that you are working on.  
Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The B02 assembly that you removed in this step is the failing item.

**This ends the procedure.**

9. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Remove power supply P02. Remove the new B02 assembly and replace it with the original B02 assembly.
- c. Install power supply P02.
- d. Remove power supply P01. Remove the B01 assembly and replace it with a new B01 assembly.
- e. Install power supply P01.
- f. Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The B01 assembly that you removed in this step is the failing item.

**This ends the procedure.**

10. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Remove power supply P01, and remove the new B01 assembly. Replace it with the original B01 assembly.
- c. Install power supply P01.
- d. Replace the following FRUs one at a time:
  - Control panel (see symbolic FRU “CTLPNL” on page 323).
  - PCI backplane assembly location CB1 (see symbolic FRU “TWRCARD” on page 470).

**This ends the procedure.**

11. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Reinstall one of the cards that you removed in step 3 (See page 169).
- c. Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Exchange the last card that you reinstalled in this step.

**This ends the procedure.**

12. Have you reinstalled all of the cards?

- **Yes:** Replace the PCI backplane assembly in location CB1 (see symbolic FRU “TWRCARD” on page 470).

**This ends the procedure.**

- **No:** Repeat step 11 (See page 170), reinstalling the next card.

### **Instructions for Models 800, 810, 825, 870, and 890**

1. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.

2. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Remove and label all cards installed in the PCI backplane area.
- c. Reconnect the ac power cable to the unit.
- d. Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Did a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step 8 (See page 172).

3. Is the SRC 1xxx 2603?

- **No:** Continue with the next step.
- **Yes:** Replace the PCI backplane (see symbolic FRU “TWRCARD” on page 470).  
**This ends the procedure.**

4. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Remove power supply P01.
- c. Remove the B01 assembly from the original power supply and install it on the new power supply.
- d. Install the new power supply P01.
- e. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The power supply P01 that you removed in this step is the failing item.  
**This ends the procedure.**

5. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Remove the new power supply P01 and replace it with the original power supply P01, after switching the B01 assembly back to the original power supply.
- c. Remove power supply P02.
- d. Remove the B02 assembly from the original power supply P02 and install it on the new power supply.
- e. Install the new power supply P02.
- f. Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The power supply P02 that you removed in this step is the failing item.  
**This ends the procedure.**

6. Perform the following:

- a. Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- b. Remove the new power supply P02 and remove the B02 assembly. Replace it with the original P02 and a new B02 assembly.
- c. Install power supply P02.
- d. Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Does a system reference code occur?

- **Yes:** Continue with the next step.

- **No:** The B02 assembly that you removed in this step is the failing item.  
**This ends the procedure.**

7. Perform the following:

- Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- Remove power supply P02 and remove the new B02 assembly. Replace it with the original B02 assembly. Reinstall power supply P02.
- Remove power supply P01. Remove the B01 assembly and replace it with a new B01 assembly. Reinstall power supply P01.
- Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Does a power reference code occur?

- **No:** The B01 assembly that you removed in this step is the failing item.  
**This ends the procedure.**

- **Yes:** Perform the following:

- Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- Remove power supply P01 and remove the new B01 assembly. Replace it with the original B01 assembly.
- Install power supply P01.
- Replace the following FRUs one at a time:
  - Control panel (see symbolic FRU “CTLPNL” on page 323).
  - PCI backplane assembly location CB1 (see symbolic FRU “TWRCARD” on page 470).

**This ends the procedure.**

8. Perform the following:

- Power off the frame that you are working on, by removing the line cords at the FC 5078, FC 0578, FC 5088, and FC 0588 power supplies.
- Reinstall one of the cards that you removed in step 2 (See page 170).
- Power on the frame by reconnecting the ac power cables to the unit that you are working on.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Exchange the last card that you reinstalled in this step.  
**This ends the procedure.**

9. Have you reinstalled all of the cards?

- **No:** Repeat step 8 (See page 172), reinstalling the next card.
- **Yes:** Replace the PCI backplane assembly in location CB1, (see symbolic FRU “TWRCARD” on page 470).  
**This ends the procedure.**

**Power PIP9:** For use by authorized service providers.

A power supply load fault is occurring in a system expansion unit or I/O tower. Read the “Power PIPs” on page 152 for important safety information before servicing the system.

- If the system has logical partitions, perform this procedure only from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
- Is the SRC 1xxx 1B11, 1B12, 1B13, 1B14, 1B16, 1B17, 2602, or 2604?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 16 (See page 175).



3. Perform the following:
  - a. Power off the system.
  - b. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the expansion unit or I/O tower you are working on by sliding them partially out of the unit (see Remove and replace procedures).
  - c. Remove and label all cards installed in the PCI card area.
  - d. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **10** (See page 174).

4. Perform the following:
  - a. Power off the system.
  - b. Remove one of the air moving devices (AMDs) from the expansion unit or I/O tower that was not previously removed during this procedure. (Disregard an AMD SRC if it occurs during this step.)
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The AMD you removed in this step is the failing item.  
**This ends the procedure.**

5. Have you removed all of the AMDs one at a time?

- **No:** Perform the following:
  - a. Power off the system.
  - b. Install the AMD that was removed in step **4** (See page 173) in the original location.
  - c. Repeat step **4** (See page 173).
- **Yes:** Install all the AMDs and continue with the next step.

6. Perform the following:

- a. Power off the system.
- b. Remove the expansion unit or I/O tower power supply cables, that was not previously removed from one of the DASD backplanes.
- c. Power on the system.

Does a power reference code occur?

- **No:** The DASD backplane that was disconnected in this step is the failing item.  
**This ends the procedure.**
- **Yes:** Continue with the next step.

7. Have you disconnected the power cables from each of the DASD backplanes one at a time?

- **Yes:** Continue with the next step.
- **No:** Repeat step **6** (See page 173).

8. Perform the following:

- a. Power off the system.
- b. Remove a power supply that was not previously removed and replace it with the new one.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The power supply that was removed in this step was the failing item.  
**This ends the procedure.**

9. Have you removed all of the power supplies one at a time?
- **Yes:** Perform the following:
    - a. Remove the new power supply that was installed in step **8** (See page 173), and reinstall the original power supply.
    - b. Replace the BACKPLN (see symbolic FRU “BACKPLN” on page 284).

**This ends the procedure.**
  - **No:** Remove the new power supply that was installed in step **8** (See page 173), and reinstall the original power supply. Then, repeat step **8** (See page 173).

10. Perform the following:
- a. Power off the system.
  - b. Reinstall all of the cards you removed in step **3** (See page 173).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Go to step **13** (See page 174).

11. Perform the following:
- a. Power off the system.
  - b. Disconnect one of the cards you connected in step **10** (See page 174).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last card you disconnected in this step (see Remove and replace procedures).

**This ends the procedure.**

12. Have you disconnected all the cards?
- **No:** Repeat step **11** (See page 174).
  - **Yes:** Reinstall all the parts and go to “Analyze power problems” on page 31.

**This ends the procedure.**

13. Perform the following:
- a. Power off the system.
  - b. Reconnect all of the I/O devices (tape, diskette, or disk units) that you disconnected in step **3** (See page 173).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** **This ends the procedure.**

14. Perform the following:
- a. Power off the system.
  - b. Disconnect one of the I/O devices you connected in step **13** (See page 174).
  - c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last I/O device you disconnected in this step (see Remove and replace procedures).

**This ends the procedure.**

15. Have you disconnected all the I/O devices?

- **No:** Repeat step **14** (See page 174).
  - **Yes:** Reinstall all the parts and go to “Analyze power problems” on page 31.  
**This ends the procedure.**
16. Perform the following:
- a. Power off the system.
  - b. Disconnect one of the disk units in the frame you are working on: FC 7104, or FC 7116 system unit expansion (DB2, DB3), FC 5075 (DB1), or FC 5095 I/O tower (DB1, DB2).
  - c. Power on the system.
- Does a power reference code occur?
- **Yes:** Continue with the next step.
  - **No:** Exchange the last disk unit you disconnected in this step (see Remove and replace procedures).  
**This ends the procedure.**
17. Have you disconnected all the disk units?
- **No:** Repeat step **16** (See page 175).
  - **Yes:** Replace the following FRUs, see Locations and addresses for the model you are working on.
    - Backplane CB1 (FC 5075, 5095)
    - Power supply P01
    - Power supply P02**This ends the procedure.**

**Power PIP11:** For use by authorized service providers.

You are here because of a power-on problem on a dual line cord system. To correct the problem, perform this procedure until you can power on the system. The following steps are for the system unit, unless other instructions are given. Read the “Power PIPs” on page 152 for important safety information before servicing the system.

## DANGER

**Dangerous voltage being measured. (RSFTD005)**

Follow the instructions for the model you are working on:

- Models 270, 800, 810, 820, or 825 (See page 175)
- Models 830, 840, 870, 890, SB2, or SB3 (See page 182)

### POWER PIP11 instructions for Models 270, 800, 810, 820, or 825

1. If an uninterruptible power supply is installed, verify that it is powered on before proceeding.
2. Is the SRC 1xxx-00AC, 1500, 1510, 1520 or 1530?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
3. Are all the frames and units powered on?
  - **Yes:** Go to step **8 (See page 178)**.
  - **No:** On the frame or unit that does not power on, perform the following (SRC 1xxx-00AC may be displayed):
    - a. Disconnect the ac line cords from both ac line cord frame connectors.
    - b. Use a multimeter to measure the ac voltage at both ac line cords (frame connector’s end).

Is the ac voltage from 200 V ac to 240 V ac? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.

- **Yes:** Continue with the next step.
- **No:** Go to step 7 (See page 177).

4. Are you working on a Model 800, 810, 820, or 825 system, or an FC 5075, FC 5078, FC 0578, FC 5088, FC 0588, FC 5095, FC 0595 I/O expansion?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
  - a. Reconnect the ac line cord(s).
  - b. Verify the system fails to power on.
  - c. Exchange the failing power supply found in the table for the model you are working on.

**Table 1. Failing power supply for Model 820**

See Locations — Model 820

Reference code	Position
00AC	Replace P01-P03 until the failing unit is found.
1510	P01
1520	P02
1530	P03

**Table 2. Failing power supply for Model 825**

See Locations — Model 825

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P01
1520	P02

**Table 3. Failing power supply for FC 5075**

See Locations — FC 5075 Expansion I/O Tower

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P01
1520	P02

**Table 4. Failing power supply for FC 5078, FC 0578, FC 5088, or FC 0588**

See Locations — FC 5078, FC 0578 Expansion I/O Unit or Locations — FC 5088, FC 0588 Expansion I/O Unit

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P02
1520	P01

**Table 5. Failing power supply for FC 5095, FC 0595**

See Locations — FC 5095, FC 0595 Expansion I/O Tower

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P01
1520	P02

**This ends the procedure.**

5. Perform the following:
    - a. Reconnect the ac line cord to AC module/battery charger.
    - b. Remove the ac jumper cable at the power supply. See Table 6 (See page 177) below.
    - c. Use a multimeter to measure the ac voltage at the jumper cable power supply end.
- Is the ac voltage from 200 V ac to 240 V ac?
- **No:** Continue with the next step.
  - **Yes:** Exchange the failing power supply found in the table for the model you are working on.

**Table 6. Failing power supply for FC 5074, FC 5079, or FC 5094 (dual line cord)**

See the following for locations and part number information:

- Locations — FC 5074 Expansion I/O Tower
- Locations — FC 5079 Expansion I/O Tower
- Locations — FC 5094 Expansion I/O Tower

Reference code	Position
00AC	Replace P00-P03 until the failing unit is found.
1500	P00
1510	P01
1520	P02
1530	P03

**Note:** Do **not** install power supplies P00 and P01 AC jumper cables on the same AC input module.

**This ends the procedure.**

6. Perform the following:
  - a. Disconnect the ac jumper cable at the AC module/battery charger output end.
  - b. Use a multimeter to measure the ac voltage at the AC module/battery charger output end.

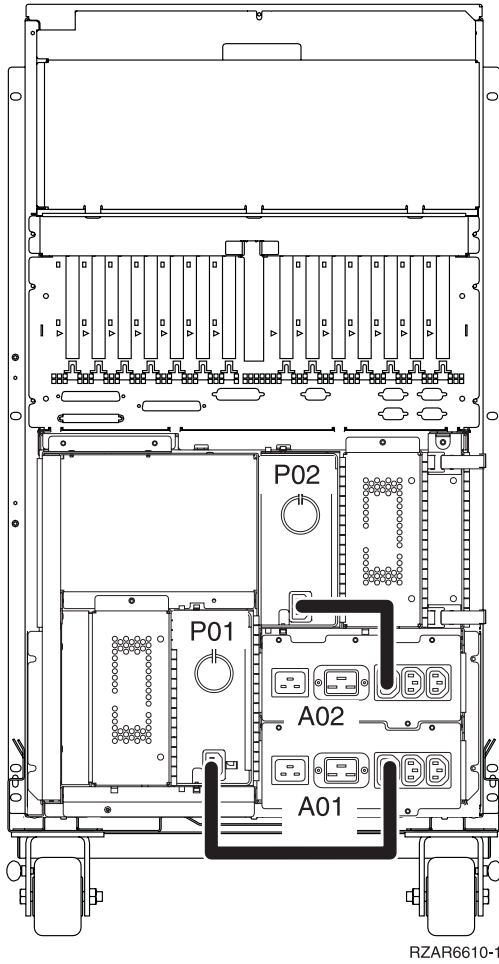
Is the ac voltage from 200 V ac to 240 V ac?

- **Yes:** Exchange the ac jumper cable.  
**This ends the procedure.**
  - **No:** Exchange one of the following:
    - AC module:
      - FC 5094 (see Type, model, and part number list for part number.)
      - FC 5074 and FC 5079 (see Locations and Addresses for part number)
    - Battery charger (see Type, model, and part number list for part number.)
- This ends the procedure.**

7. Perform the following:
    - a. Disconnect the ac line cords from the customer's ac power outlet.
    - b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.
- Is the ac voltage from 200 V ac to 240 V ac? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.

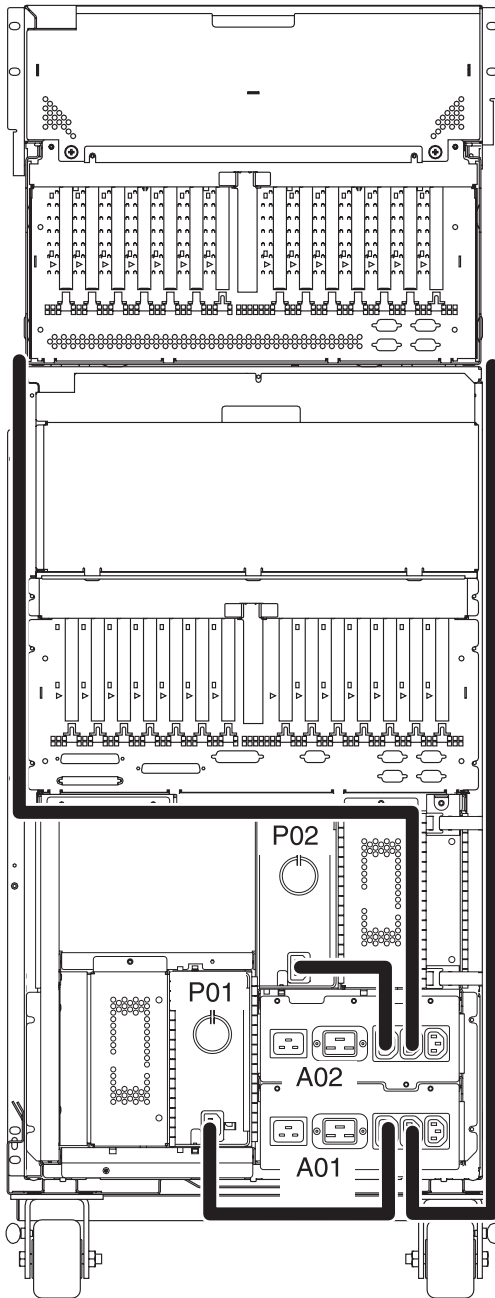
- **Yes:** Exchange the failing ac line cord.  
**This ends the procedure.**
  - **No:** Perform the following:
    - a. Inform the customer that the ac voltage at the power outlet is not correct.
    - b. Reconnect the ac line cords to the power outlet.  
**This ends the procedure.**
8. Is the SRC 1xxx-00AC?
- **No:** Continue with the next step.
  - **Yes :** On a Model 825, the 00AC reference code can be caused by the cover on the processor enclosure not being installed (see Locations - Model 825), or a faulty interlock switch assembly (see the Model 825 - Interlock switch remove and replace procedure, and the Type, model, and part number list for the part number). For other Models or FCs, exchange the tower card on the failing frame (see symbolic FRU “TWRCARD” on page 470).  
**This ends the procedure.**
9. Perform the following for SRC 1xxx-1500, 1510, 1520, or 1530:
- a. Determine the following locations:
    - Model 820 with dual line cord (See Locations — Model 820):
      - (SRC 1xxx 1510, 1520): ac line cord 1.
      - (SRC 1xxx 1530): ac line cord 2.
    - Model 825 with dual line cord (See Locations — Model 825):
      - (SRC 1xxx 1510): line cord 1
      - (SRC 1xxx 1520): line cord 2.
    - FC 5074, FC 5079 (See Locations - FC 5074 Expansion I/O Tower or Locations - FC 5079 Expansion I/O Tower):
      - (SRC 1xxx 1510): the ac jumper cord connected to P01 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to P02 and the AC module.
    - FC 5078, FC 0578 (See Locations - FC 5078, FC 0578 Expansion I/O Tower and Figure 2 (See page 179)):
      - (SRC 1xxx 1510): the ac jumper cord connected to P02 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to P01 and the AC module.
    - FC 5088, FC 0588 (See Locations — FC 5088, FC 0588 Expansion I/O Tower and Figure 2 (See page 179)):
      - (SRC 1xxx 1510): the ac jumper cord connected to power supply P02 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to power supply P01 and the AC module.
    - FC 5095, FC 0595 (See Locations - 5095, 0595 Expansion I/O Tower)
      - (SRC 1xxx 1510): ac line cord 1.
      - (SRC 1xxx 1520): ac line cord 2
    - FC 5094, FC 9094 (See Figure 1 (See page 178) below)
      - (SRC 1xxx 1500): the ac jumper cord connected to P00 and the AC module.
      - (SRC 1xxx 1510): the ac jumper cord connected to P01 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to P02 and the AC module.
      - (SRC 1xxx 1530): the ac jumper cord connected to P03 and the AC module.

**Figure 1. Dual line cord drawing for FC 5094 and FC 9094**



RZAR6610-1

**Figure 2. Dual line cord drawing for an FC 5078, FC 0578, FC 5088, or FC 0588 installed on an FC 5094 or FC 9094**



RZAQ4511-1

- b. Locate the ac line cord on the External Power Connector, or the ac jumper cord for the SRC you are working on.

**Attention:** Do not disconnect the other system line cord when powered on.

- c. Continue with the next step.

•

10. Perform the following:

- a. For the SRC you are working on, disconnect the ac line cord from the External Power Connector, or ac jumper cord to the power supply.
- b. Use a multimeter to measure the ac voltage at the External Power Connector end of the ac line cord, or to the power supply end of the ac jumper cord.

Is the ac voltage from 200 V ac to 240 V ac? (On FC 5095 the ac voltage may also be 100 V to 127 V ac.)



- **No:** Continue with the next step.
- **Yes:** Exchange the failing power supply:

**Table 7. Failing power supply for Model 820**

See Locations — Model 820

Reference code	Position
00AC	Replace P01-P03 until the failing unit is found.
1510	P01
1520	P02
1530	P03

**Table 8. Failing power supply for Model 825**

See Locations - Model 825

**Note:** These reference codes can be caused by the cover on the processor enclosure not being installed (see Locations - Model 825 ), or a faulty interlock switch assembly (see the Model 825 - Interlock switch remove and replace procedure, and the Type, model, and part number list for the part number).

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found
1510	P01
1520	P02

**Table 9. Failing power supply for FC 5074, FC 5079 (dual line cord)**

See Locations — FC 5074 Expansion I/O Tower, or Locations — FC 5079 Expansion I/O Tower

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P01
1520	P02

**Table 10. Failing power supply for FC 5094 and FC 9094 (dual line cord)**

See Locations - FC 5094 Expansion I/O Tower

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1500	P00
1510	P01
1520	P02
1530	P03

**Table 11. Failing power supply for FC 5078, FC 0578, FC 5088, or FC 0588**

See Locations — FC 5078, FC 0578 Expansion I/O Unit, or Locations — FC 5088, FC 0588 Expansion I/O Unit

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P02
1520	P01

**Table 12. Failing power supply for FC 5095 and FC 0595**  
See Locations — FC 5095, FC 0595 Expansion I/O Tower

Reference code	Position
00AC	Replace P01-P02 until the failing unit is found.
1510	P02
1520	P01

**This ends the procedure.**

11. Perform the following:
  - a. Disconnect the ac line cords from the power outlet.
  - b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.  
Is the ac voltage from 200 V ac to 240 V ac? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.
    - **Yes:** Exchange the failing ac line cord or ac jumper cord.  
**This ends the procedure.**
    - **No:** Perform the following:
      - a. Inform the customer that the ac voltage at the power outlet is not correct.
      - b. Reconnect the ac line cords to the power outlet after the ac voltage at the power outlet is correct.  
**This ends the procedure.**

**POWER PIP11 instructions for Models 830, 840, 870, 890, SB2, and SB3**

1. Are the ac line cords from the failing tower or unit to the customer's ac power outlet connected and seated correctly at both ends?
  - **Yes:** Is the SRC 1xxx-00AC?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 5 (**See page 183**).
  - **No:** Connect the ac line cords correctly at both ends.  
**This ends the procedure.**
2. Is the SRC 1xxx-00AC with the system powered on?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the SPCN card - see Symbolic FRU "TWRCARD" on page 470.  
**This ends the procedure.**
3. Perform the following:
  - a. Disconnect the ac line cords from the customer's ac power outlets.
  - b. Use a multimeter to measure the ac voltage at the customer's ac power outlets.  
Is the ac voltage from 200 V ac to 240 V ac or (for Models 870 or 890 processor units) 432 V ac to 508 V ac?
    - **Yes:** Continue with the next step.
    - **No:** Perform the following:
      - a. Inform the customer that the ac voltage at the power outlet is not correct.
      - b. Reconnect the ac line cords to the power outlet after the ac voltage at the power outlet is correct.  
**This ends the procedure.**
4. Perform the following:
  - a. Reconnect the ac line cords to the power outlet.
  - b. Disconnect the ac line cords from both AC modules or unit connectors.

- c. Use a multimeter to measure the ac voltage at both ac power cables.  
Is the ac voltage from 200 V ac to 240 V ac or (for Models 870 or 890 processor units) 432 V ac to 508 V ac?
- **No:** Exchange the failing ac line cords.  
**This ends the procedure.**
  - **Yes:** Exchange AC module 1 and 2 when the correct ac voltage is present.
    - Model 840/SB3 - USA (see Locations and addresses )
    - Model 840/SB3 - World Trade 1PH (see Locations and addresses )
    - FC 5074, FC 5079, FC 9074, FC 9079 (see Locations and addresses )
    - FC 5094 or FC 9094 (see Type, model, and part number list for part number.)**This ends the procedure.**
5. Is the SRC 1xxx-01AC?
- **No:** Continue with the next step.
  - **Yes:** Perform the following
    - a. See Locations and addresses for the model you are working on to determine the location of AC module A01.
    - b. Locate the ac line cord that connects to AC module A01.  
**Attention:** Do not disconnect the other system line cord when powered on.
    - c. Go to step 7 (**See page 183**).
6. Is the SRC 1xxx-02AC?
- **Yes:** Perform the following:
    - a. See Locations and addresses for the model you are working on to determine the location of AC module A03.
    - b. Locate the ac line cord that connects to AC module A03.  
**Attention:** Do not disconnect the other system line cord when powered on.
    - c. Continue with the next step.
  - **No:** Go to step 9 (**See page 184**).
7. Perform the following:
  - a. Disconnect the ac line cord found in step 5 (See page 183) or 6 (See page 183) from the AC module.
  - b. Use a multimeter to measure the ac voltage at the AC module end of the ac line cord.  
Is the ac voltage from 200 V ac to 240 V ac?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the failing AC module A01 for SRC 01AC, or AC module A03 for 02AC (see Locations and addresses ).  
**This ends the procedure.**
8. Perform the following:
  - a. Disconnect the ac line cord from the customer's ac power outlet.
  - b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.  
Is the ac voltage from 200 V ac to 240 V ac?
  - **Yes:** Exchange the failing ac line cord.  
**This ends the procedure.**
  - **No:** Perform the following:
    - a. Inform the customer that the ac voltage at the power outlet is not correct.
    - b. Reconnect the ac line cords to the power outlet after the ac voltage at the power outlet is correct.  
**This ends the procedure.**

9. Is the SRC 1xxx-1510 or 1910?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. See Locations and addresses for the model you are working on to determine the location of power supply P01 (SRC 1xxx 1510) or PP1 (SRC 1xxx 1910), and the AC module it is connected to.
    - b. Locate the ac line cord that connects to this AC module.  
**Attention:** Do not disconnect the other system line cord when powered on.
    - c. Go to step **12**.

10. Is the SRC 1xxx-1520 or 1920?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. See Locations and addresses for the model you are working on to determine the location of Power supply P02 (SRC 1xxx 1520) or PP2 (SRC 1xxx 1920) and the AC module it is connected to.
    - b. Locate the ac line cord that connects to this AC module.  
**Attention:** Do not disconnect the other system line cord when powered on.
    - c. Go to step **12** .

11. Perform the following for SRC 1xxx-1500, 1510, 1520, or 1530:
- a. Determine the following AC module locations:
    - FC 5074, FC 5079 (See Locations - FC 5074 Expansion I/O Tower or Locations - FC 5079 Expansion I/O Tower):
      - (SRC 1xxx 1510): the ac jumper cord connected to P01 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to P02 and the AC module.
    - FC 5078, FC 0578 (See Locations - FC 5078, FC 0578 Expansion I/O Tower):
      - (SRC 1xxx 1510): the ac jumper cord connected to P02 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to P01 and the AC module.
    - FC 5088, FC 0588 (See Locations — FC 5088, FC 0588 Expansion I/O Tower):
      - (SRC 1xxx 1510): the ac jumper cord connected to power supply P02 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to power supply P01 and the AC module.
    - FC 5095, FC 0595 (See Locations - 5095, 0595 Expansion I/O Tower)
      - (SRC 1xxx 1510): ac line cord 1
      - (SRC 1xxx 1520): ac line cord 2.
    - FC 5094 (See Locations - 5094 Expansion I/O Tower)
      - (SRC 1xxx 1500): the ac jumper cord connected to P00 and the AC module.
      - (SRC 1xxx 1510): the ac jumper cord connected to P01 and the AC module.
      - (SRC 1xxx 1520): the ac jumper cord connected to P02 and the AC module.
      - (SRC 1xxx 1530): the ac jumper cord connected to P03 and the AC module.
  - b. Continue with the next step.

12. Perform the following:

**DANGER**

**Dangerous voltage being measured. (RSFTD005)**

- a. Disconnect the ac line cord identified in the previous step from the AC module.
- b. Use a multimeter to measure the ac voltage at the AC module end of the ac line cord.

Is the ac voltage from 200 V ac to 240 V ac? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.

- **No:** Continue with the next step.
- **Yes:** Go to step 14 (See page 185).

13. Perform the following:

- Disconnect the ac line cord from the customer's ac power outlet.
- Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Is the ac voltage from 200 V ac to 240 V ac? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.

- **Yes:** Exchange the failing ac line cord.
- **No:** Perform the following:
  - Inform the customer that the ac voltage at the power outlet is not correct.
  - Reconnect the ac line cords to the power outlet after the ac voltage at the power outlet is correct.

**This ends the procedure.**

14. Perform the following:

- Reconnect the ac line cords to the AC module.
- Disconnect the ac power jumper cables from the AC module output.
- Use a multimeter to measure the ac voltage at the AC module outlets to the power supplies.

Is the ac voltage from 200 V ac to 240 V ac? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.

- **No:** Exchange the AC module:
  - FC 5074, FC 5079, FC 9074, FC 9079 (see Locations and addresses )
  - FC 5094 or FC 9094 (see Type, model, and part number list for part number.)

**This ends the procedure.**

- **Yes:** Perform the following:

- Connect the ac power jumper cables to the AC module.
- Disconnect the ac power jumper cable at the power supplies.
- Use a multimeter to measure the ac voltage to the power jumper cables input to the power supplies.

Is the ac voltage from 200 V ac to 240 V ac for each power jumper cable? On a FC 5095 the ac voltage may also be 100 V to 127 V ac.

- **Yes:** Exchange the power supply - see symbolic FRU "PWRSPPLY" on page 431.

**This ends the procedure.**

- **No:** Exchange the power jumper cable.

**This ends the procedure.**

## Storage device I/O processor (SDIOP) PIPs

*For use by authorized service providers.*

Use these procedures to isolate a failure in the multiple function I/O card.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

## DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

## DANGER


To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

**Attention:** Disconnecting the J15 and J16 cables will not prevent the system unit from powering on.

Read and understand the following service procedures before using this section:

- Power on/off the system and logical partitions
- Initial Program Load (IPL) Information in the *iSeries Service Functions*  information.
- Determining the Load Source Disk and Alternate IPL Device in the system Problem Analysis Book.

### SDIOP PIP procedures:

SDIOP-PIP1

SDIOP-PIP13

SDIOP-PIP16

SDIOP-PIP17

SDIOP-PIP18

SDIOP-PIP19

SDIOP-PIP20

SDIOP-PIP21

SDIOP-PIP22

SDIOP-PIP23

SDIOP-PIP25

SDIOP-PIP26

SDIOP-PIP27

SDIOP-PIP28

**SDIOP-PIP29**

**SDIOP-PIP30**

**SDIOP-PIP31**

**SDIOP-PIP32**

**SDIOP-PIP33**

**SDIOP-PIP34**

**SDIOP-PIP40**

**SDIOP-PIP41**

### **Storage device I/O card FRU locations**


**SDIOP-PIP1:** *For use by authorized service providers.*

Use this procedure to perform an IPL to dedicated service tool (DST) to determine if the same reference code occurs. If a new reference code occurs, more analysis may be possible with the new reference code. If the same reference code occurs, you are instructed to exchange the failing items.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Was the IPL performed from disk (Type A or Type B)?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 5 (See page 188).
3. Perform the following:
  - a. Ensure that the IPL media is the correct version and level that are needed for the system model.
  - b. Ensure that the media is not physically damaged.
  - c. Choose from the following options to clean the IPL media:
    - If it is cartridge type optical media (for example, DVD), do not attempt to clean the media.
    - If it is non-cartridge type media (for example, CD-ROM), wipe the disc in a straight line from the inner hub to the outer rim. Use a soft, lint-free cloth or lens tissue. Always handle the disc by the edges to avoid finger prints.
    - If it is tape, clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit.
4. Perform a Type D IPL in **Manual** mode.

Does a system reference code (SRC) appear on the control panel?

  - **Yes:** Is the SRC the same one that sent you to this procedure?
    - **Yes:** You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the System reference code list. If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.  
**This ends the procedure.**
    - **No:** A different SRC occurred. Use the new SRC to correct the problem (see “Starting point for all problems” on page 2).  
**This ends the procedure.**
  - **No:** Go to step 8 (See page 188).

5. Perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*  information.
- Does an SRC appear on the control panel?
- **No:** Continue with the next step.
  - **Yes:** Go to step 9 (See page 188).
6. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
- **No:** Continue with the next step.
  - **Yes:** Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
    - If all of the reference codes are 0000, go to “LIC-PIP11” on page 123 and use cause code 0002.
    - If any of the reference codes are not 0000, go to step 9 (See page 188), and use the reference code that is not 0000.
- Note:** Use the characters in the *Type* column to find the correct reference code table.
7. Look at the product activity log. See “Use the product activity log” on page 9 for details).
- Is an SRC logged as a result of this IPL?
- **Yes:** Continue with the next step.
  - **No:** The problem cannot be isolated any more. Use the original SRC and exchange the failing items. Start with the highest probable cause of failure (see the failing item list for this reference code in System reference code list and Remove and replace procedures). If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.
- This ends the procedure.**
8. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
- **No:** Look at the product activity log. See “Use the product activity log” on page 9 for details.
- Is an SRC logged as a result of this IPL?
- **Yes:** Continue with the next step.
  - **No:** The problem is corrected.
- This ends the procedure.**
- **Yes:** Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
    - If all of the reference codes are 0000, go to “LIC-PIP11” on page 123 and use cause code 0002.
    - If any of the reference codes are not 0000, go to step 9 (See page 188), and use the reference code that is not 0000.
- Note:** Use the characters in the *Type* column to find the correct reference code table.
9. Record the SRC on the Problem summary form (see Problem summary form).
- Are the SRC and unit reference code (URC) the same ones that sent you to this procedure?
- **Yes:** Continue with the next step.
  - **No:** Use the new SRC or reference code to correct the problem. See the System reference code list.
- This ends the procedure.**
10. Perform the following:
- a. Power off the system or expansion tower (see Power on/off the system and logical partitions).
  - b. Exchange the FRUs in the failing item list for the SRC you have now. Start with the highest probable cause of failure (see the failing item list for this reference code in the System reference



code list and Remove and replace procedures). Perform the remaining steps of this procedure after you exchange each FRU until you determine the failing FRU.

**Note:** If you exchange a disk unit, do not attempt to save customer data until instructed to do so in this procedure.

11. Power on the system or the expansion tower.

Does an SRC appear on the control panel?

- **No:** Continue with the next step.
- **Yes:** Go to step **13** (See page 189).

12. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?

- **No:** Look at the product activity log. See “Use the product activity log” on page 9 for details.

Is an SRC logged as a result of this IPL?

- **Yes:** Continue with the next step.
- **No:** The last FRU you exchanged was failing.

**Note:** Before exchanging a disk unit, you should attempt to save customer data. Go to Disk unit under Remove and replace procedures before exchanging a disk unit.

**This ends the procedure.**

- **Yes:** Select option **5**, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
  - If all of the reference codes are 0000, go to “LIC-PIP11” on page 123 and use cause code 0002.
  - If any of the reference codes are not 0000, go to step **9** (See page 188), and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

13. Record the SRC on the Problem summary form (see Problem summary form).

Is the SRC the same one that sent you to this procedure?

- **No:** Is the SRC B100 4504 or B100 4505 and have you exchanged disk unit 1 in the system unit, or are all the reference codes on the console 0000?

- **Yes:** The last FRU you exchanged was failing.

**Note:** Before exchanging a disk unit, you should attempt to save customer data. Go to Disk unit under Remove and replace procedures before exchanging a disk unit. **This ends the procedure.**

- **No:** Use the new SRC or reference code to correct the problem. See System reference code list.

**This ends the procedure.**

- **Yes:** The last FRU you exchanged is not the failing FRU. Go to step **10** (See page 188) to continue FRU isolation.


**SDIOP-PIP13:** For use by authorized service providers.

Use this procedure to isolate problems on the interface between the I/O card and the storage devices when the I/O card is the most probable failing item.

The unit reference code (part of the SRC that sent you to this procedure) indicates the SCSI bus that has the problem:

Unit reference code (URC)	SCSI bus
3100	0
3101	1

Unit reference code (URC)	SCSI bus
3102	2
3103	3

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you performing an IPL from removable media (IPL type D) when the error occurred?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.  
**This ends the procedure.**
3. Look in the service action log (see “Use the service action log” on page 7) for other errors logged at or around the same time as the 310x SRC. If no entries appear in the service action log, use the product activity log (see “Use the product activity log” on page 9). Use the other SRCs to correct the problem (see the System reference codes topic) before performing an IPL. Contact your next level of support as necessary for assistance with SCSI bus problem isolation. If the problem is not corrected, continue with the next step.
4. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>TM</sup> Service Functions*  information). Does an SRC appear on the control panel?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 6 (See page 190).
5. Does one of the following displays appear on the console?
  - Disk Configuration Error Report
  - Disk Configuration Attention Report
  - Disk Configuration Warning Report
  - Display Unknown Mirrored Load-Source Status
  - Display Load-Source Failure
    - **Yes:** Are all of the reference codes 0000? On some of the displays, you must press **F11** to display reference codes.
      - **No:** Continue with the next step. Use the reference code that is not 0000.
      - **Yes:** Go to “LIC-PIP11” on page 123 and use cause code 0002.  
**This ends the procedure.**
    - **No:** Look at the product activity log (see “Use the product activity log” on page 9 for details).  
Is an SRC logged as a result of this IPL?
      - **Yes:** Continue with the next step.
      - **No:** You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the System reference codes) topic. If the failing item list contains FI codes, see the “Failing items” on page 249 topic to help determine part numbers and location in the system.  
**This ends the procedure.**
6. Is the SRC the same one that sent you to this procedure?
  - **Yes:** Continue with the next step.
  - **No:** Record the SRC on the Problem summary form. Then, go to the System reference codes topic to correct the problem.  
**This ends the procedure.**
7. Perform the following:

- a. Power off the system or the expansion tower (see Power on/off the system and logical partitions).
- b. Find the I/O card identified in the failing item list.
- c. Remove the I/O card and install a new I/O card (see Remove and replace procedures). This item has the highest probability of being the failing item.
- d. Power on the system or the expansion tower.

Does an SRC appear on the control panel?

- **No:** Continue with the next step.
- **Yes:** Go to step **11** (See page 191).

8. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Attention Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure
- **Yes:** Does the Display Unknown Mirrored Load-Source Status display appear on the console?

**Note:** On some of these displays, you must press **F11** to display reference codes.

- **Yes:** Continue with the next step.
- **No:** Are all of the reference codes 0000?
  - **No:** Go to step **11** (See page 191), and use the reference code that is not 0000.
  - **Yes:** Go to “LIC-PIP11” on page 123 and use cause code 0002.

**This ends the procedure.**

- **No:** Go to step **10** (See page 191).

9. Is the reference code the same one that sent you to this procedure?

- **No:** Either a new reference code occurred, or the reference code is 0000. There may be more than one problem.

The original I/O card may be failing, but it must be installed in the system to continue problem isolation.

Install the original I/O card by doing the following:

- a. Power off the system or the expansion tower (see Power on/off the system and logical partitions).
- b. Remove the I/O card you installed in step **7** (See page 190) and install the original I/O card.

**Note:** Do not power on the system or the expansion tower now.

A device connected to the I/O card could be the failing item. Go to “SDIOP-PIP16” on page 192, step **9** (See page 193) to continue isolating the problem.

**This ends the procedure.**

- **Yes:** Go to step **12** (See page 191).

10. Look at the product activity log (see “Use the product activity log” on page 9 for details).

Is an SRC logged as a result of this IPL?

- **Yes:** Continue with the next step.
- **No:** The I/O card, which you removed in step **7** (See page 190), is the failing item.

**This ends the procedure.**

11. Is the SRC or reference code the same one that sent you to this procedure?

- **Yes:** Continue with the next step.
- **No:** Record the SRC on the Problem summary form. Then, go to the System reference codes topic to correct the problem.

**This ends the procedure.**

12. The original I/O card is not the failing item. Install the original I/O card by doing the following:

- a. Power off the system or the expansion tower (see Power on/off the system and logical partitions).
- b. Remove the I/O card you installed in step 7 (See page 190) of this procedure and install the original I/O card.

**Note:** Do not power on the system or the expansion tower now.

A device connected to the I/O card could be the failing item. Go to “SDIOP-PIP16,” step 9 (See page 193) to continue isolating the problem.


**This ends the procedure.**

**SDIOP-PIP16:** For use by authorized service providers.

Use this procedure to isolate failing devices that are identified by FI codes FI01105, FI01106, and FI01107.

During this procedure, you will remove devices that are identified by the FI code, and then you will perform an IPL to determine if the symptoms of the failure have disappeared, or changed. You should not remove the load-source disk until you have shown that the other devices are not failing. Removing the load-source disk can change the symptom of failure, although it is not the failing unit.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Use the Hardware Service Manager (HSM) verify function (use DST or SST), and verify that all tape and optical units attached to the SCSI bus (identified by FI01105, FI01106, or FI01107) are operating

correctly. See Verification Procedures in the *iSeries Service Functions*  information.

**Note:** Do not IPL the system to get to DST.


3. Choose from the following options:
  - If verification was successful for all tape and optical units, then go to step 5 (See page 192).
  - If any tape or optical device could not be verified, or if it failed verification, then exchange the failing item. See the Remove and replace procedures, and continue with the next step.
4. Use the Hardware Service Manager (HSM) verify function (use SST or DST) and verify that the exchanged item is operating correctly. See the Verification Procedures in the *iSeries Service*

*Functions*  information.

Was the verification successful?

- **No:** Replace the exchanged device with the original. See the Remove and replace procedures, and continue with the next step.
- **Yes:** The newly exchanged tape or optical device was the failing item.

**This ends the procedure.**

5. Perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*  information.

Does an SRC appear on the control panel?

- **No:** Continue with the next step.
- **Yes:** Go to step 8 (See page 193).

6. Does one of the following displays appear on the console?
  - Disk Configuration Error Report
  - Disk Configuration Attention Report
  - Disk Configuration Warning Report
  - Display Unknown Mirrored Load-Source Status
  - Display Load-Source Failure

**Note:** On some of these displays, you must press **F11** to display reference codes. The characters under Type are the same as the 4 leftmost characters of word 1. The characters under Reference Code are the same as the 4 rightmost characters of word 1.

- **Yes:** Are all of the reference codes 0000?
  - **No:** Go to step **8** (See page 193), and use the reference code that is not 0000.
  - **Yes:** Go to “LIC-PIP11” on page 123 and use cause code 0002.

**This ends the procedure.**

- **No:** Continue with the next step.

7. Look at the Product Activity Log. See “Use the product activity log” on page 9 for details.

Is a reference code logged as a result of this IPL?

- **Yes:** Continue with the next step.
- **No:** You cannot continue isolating the problem. Use the original reference code and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in System reference codes. If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.

**This ends the procedure.**

8. Is the SRC or reference code the same one that sent you to this procedure?

- **Yes:** Continue with the next step.
- **No:** Record the SRC or reference code on the Problem summary form. Then, go to System reference codes to correct the problem.

**This ends the procedure.**

9. Isolate the failing device by doing the following:

- a. Power off the system or the expansion tower if it is powered on. See Power on/off the system and logical partitions.
- b. Go to “Failing items” on page 249 to find the devices identified by FI code FI01105, FI01106, or FI01107 in the failing item list.
- c. Disconnect one of the devices that are identified by the FI code, other than the load-source disk unit.

**Note:** The tape, or optical units should be the first devices to be disconnected, if they are attached to the SCSI bus identified by FI01105, FI01106, or FI01107.

- d. Go to step **11** (See page 193).

10. Continue to isolate the possible failing items by doing the following:

- a. Power off the system or the expansion tower. See Power on/off the system and logical partitions.
- b. Disconnect the next device that is identified by FI codes FI01105, FI01106, or FI01107 in the FRU list. See the note in step **8** (See page 193). Do not disconnect disk unit 1 (load-source disk) until you have disconnected all other devices and the load-source disk is the last device that is identified by these FI codes.

11. Power on the system or the expansion tower.

Does an SRC appear on the control panel?

- **No:** Continue with the next step.
- **Yes:** Go to step **14** (See page 194).

12. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Attention Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

**Note:** On some of these displays, you must press **F11** to display reference codes. The characters under Type are the same as the 4 leftmost characters of word 1. The characters under Reference Code are the same as the 4 rightmost characters of word 1.

- **No:** Look at the Product Activity Log. See “Use the product activity log” on page 9 for details. Is a reference code logged as a result of this IPL?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **14** (See page 194).
- **Yes:** Go to step **14** (See page 194).

13. You are here because the IPL completed successfully. The last device you disconnected is the failing item.

Is the failing item a disk unit?

- **No:** Exchange the failing item and reconnect the devices you disconnected previously. See the Remove and replace procedures.

**This ends the procedure.**

- **Yes:** Exchange the failing FRU. Before exchanging a disk drive, you should attempt to save customer data. Go to Start disk service here before exchanging a disk unit.

**This ends the procedure.**

14. Is the SRC or reference code the same one that sent you to this procedure?

- **Yes:** Continue with the next step.
- **No:** Record the SRC or reference code on the Problem summary form. Then, go to step **16** (See page 194).

15. The last device you disconnected is not failing.

Have you disconnected all the devices that are identified by FI codes FI01105, FI01106, or FI01107 in the FRU list?

- **Yes:** Replace the device backplane or backplanes associated with the devices you removed in the earlier steps. If the device backplane does not fix the problem, then you cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in System reference codes. If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.

**This ends the procedure.**

- **No:** Leave the device disconnected and return to step **9** (See page 193) to continue isolating the possible failing items.

16. Is the SRC B1xx 4504, and have you disconnected the load-source disk unit? (The load-source disk unit is disconnected by disconnecting disk unit 1.)

- **No:** Does one of the following displays appear on the console, and are all reference codes 0000?
  - Disk Configuration Error Report
  - Disk Configuration Attention Report
  - Disk Configuration Warning Report
  - Display Unknown Mirrored Load-Source Status
  - Display Load-Source Failure

**Note:** On some of these displays, you must press **F11** to display reference codes. The characters under Type are the same as the 4 leftmost characters of word 1. The characters under Reference Code are the same as the 4 rightmost characters of word 1.

- **Yes:** Continue with the next step.
- **No:** A new SRC or reference code occurred. Go to System reference codes to correct the problem.

**This ends the procedure.**

- **Yes:** Continue with the next step.

17. The last device you disconnected may be the failing item. Exchange the last device you disconnected. See the Remove and replace procedures.
 

**Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to Start disk service here before exchanging a disk unit.

Was the problem corrected by exchanging the last device you disconnected?

  - **No:** Continue with the next step.
  - **Yes: This ends the procedure.**
18. Reconnect the devices you disconnected previously in this procedure.
19. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in System reference codes. Do not exchange the FRU that you exchanged in this procedure. If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.
 

**This ends the procedure.**

**SDIOP-PIP17:** For use by authorized service providers.

Use this procedure to isolate problems that are associated with SCSI bus configuration errors and device task initialization failures.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Were you performing an IPL from removable media (IPL type D) when the error occurred?
  - **No:** Perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*



information).

Does an SRC appear on the control panel?

- **No:** Continue with the next step.
  - **Yes:** Go to step 5 (See page 196).
- **Yes:** Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.
3. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
    - **Yes:** Does one of the following messages appear in the list?
      - Missing disk units in the configuration
      - Missing mirror protection disk units in the configuration
      - Device parity protected units in exposed mode.
      - **No:** Continue with the next step.
      - **Yes:** Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
        - If all of the reference codes are 0000, go to “LIC-PIP11” on page 123 and use cause code 0002.
        - If any of the reference codes are not 0000, go to step 5 (See page 196), and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

      - **No:** Continue with the next step.
  4. Look at the product activity log (see “Use the product activity log” on page 9 for details). Is an SRC logged as a result of this IPL?
    - **Yes:** Continue with the next step.

- **No:** You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the System Reference Codes) topic. If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.

**This ends the procedure.**

5. Record the SRC on the Problem summary form (see Problem summary form).

Is the SRC the same one that sent you to this procedure?

- **Yes:** Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device.

Is the device unit reference code **3020**, **3021**, **3022**, or **3023**?

– **Yes:** Continue with the next step.

– **No:** Go to step 7 (See page 196).

- **No:** A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Starting point for all problems” on page 2).

**This ends the procedure.**

6. A unit reference code of **3020**, **3021**, **3022**, or **3023** indicates that there is a problem on an I/O card SCSI bus. The problem can be caused by a device that is attached to the I/O card that:

- Is not supported.
- Does not match system configuration rules. For example, there are too many devices that are attached to the bus.
- Is failing.

Perform the following:

- Look at the characters on the control panel Data display or the Problem Summary Form for characters 9 - 16 of the top 16 character line of function 12 (word 3).  
Use the format BBBB-Cc-bb (BBBB = bus, Cc = card, bb = board) to determine the card slot location for the I/O card (see Locations and addresses).
- The unit reference code indicates the SCSI bus that has the problem:

URC	SCSI Bus
3020	0
3021	1
3022	2
3023	3

- To find the bus and device locations, see Locations and addresses.
- Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

**Note:** If configuration is not the problem, a device on the SCSI bus may be failing.

- If you need to perform isolation on the SCSI bus, go to “SDIOP-PIP16” on page 192.

**This ends the procedure.**

7. The possible failing items are FI codes **FI01105** (90%) and **FI01112** (10%). Find the device unit address from the SRC (see SRC address formats). Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

Is the device given support on your system?

- **Yes:** Perform the following:

a. Exchange the device.

b. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*





information).

Does this correct the problem?

- **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
- **Yes: This ends the procedure.**
- **No:** Perform the following:
  - a. Remove the device.
  - b. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*



information).

Does this correct the problem?

- **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
- **Yes: This ends the procedure.**

**SDIOP-PIP18:** For use by authorized service providers.

Use this procedure to isolate problems that are associated with SCSI bus configuration errors and device task initialization failures.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.

2. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).

Does an SRC appear on the control panel?

- **No:** Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 4 (See page 197).
- **Yes:** Go to step 5 (See page 198).

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.
  - **No:** Continue with the next step.
  - **Yes:** Select option **5**, press **F11**, and then press **Enter** to display the details. Choose from the following options:
    - If all of the reference codes are 0000, go to “LIC-PIP11” on page 123 and use cause code 0002.
    - If any of the reference codes are not 0000, go to step 5 (See page 198), and use the reference code that is not 0000.

**Note:** Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log (see “Use the product activity log” on page 9 for details).

Is an SRC logged as a result of this IPL?

- **Yes:** Continue with the next step.
- **No:** You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in System Reference Codes). If the failing item list contains FI codes, see “Failing items” on page 249 to help determine part numbers and location in the system.

**This ends the procedure.**

5. Record the SRC on the Problem summary form (see Problem summary form).

Is the SRC the same one that sent you to this procedure?

- **Yes:** Continue with the next step.
- **No:** A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see “Starting point for all problems” on page 2).

**This ends the procedure.**

6. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device.

Is the device unit reference code 3020?

- **Yes:** A device reference code of 3020 indicates that a device is attached to the addressed I/O card. Either it is not supported, or it does not match system configuration rules. For example, there are too many devices that are attached to the bus. Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

**Note:** Use the unit address and the physical address in the SRC to help you with this comparison. If configuration is not the problem, a device on the SCSI bus may be failing. Use FI code FI00884 to help find the failing device. If you need to perform isolation on the SCSI bus, go to “SDIOP-PIP16” on page 192.

**This ends the procedure.**

- **No:** Continue with the next step.


7. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).

Find the device unit address from the SRC. Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

Is the device given support on your system?

- **Yes:** Perform the following:

- a. Exchange the device.

- b. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).

Does this correct the problem?

- **No:** Ask your next level of support for assistance.

**This ends the procedure.**

- **Yes: This ends the procedure.**

- **No:** Perform the following:

- a. Remove the device.

- b. Perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).


Does this correct the problem?

- **No:** Ask your next level of support for assistance.

**This ends the procedure.**



- **Yes: This ends the procedure.**

**SDIOP-PIP19:** For use by authorized service providers.

You were sent to this procedure from Unit reference code (URC) 9010, 9011, or 9013. If the failing item is in a migrated tower, use the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to fix the problem. Otherwise, contact your next level of support for assistance.

**SDIOP-PIP20:** For use by authorized service providers.

Use this procedure to isolate the problem when two or more devices are missing from a disk array. You were sent to this procedure from URC 9020 or 9021.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Access SST/DST by doing one of the following:
  - If you can enter a command at the console, access system service tools (SST) (see System Service Tools (SST) in the iSeries<sup>™</sup> Service Functions information).
  - If you cannot enter a command at the console, perform an IPL to DST (see Performing an IPL to DST in the iSeries Service Functions information).
  - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Have any other I/O card or device SRCs (other than a 902F SRC) occurred at about the same time as this error?
  - **No:** Has the I/O card, or have the devices been repaired or reconfigured recently?
    - **Yes:** Continue with the next step.
    - **No:** Contact your next level of support for assistance.  
**This ends the procedure.**
  - **Yes:** Use the other I/O card or device SRCs to correct the problem (see System Reference Codes).  
**This ends the procedure.**
4. Did you perform a D IPL to get to DST?
  - **No:** Access the Product Activity Log and display the SRC that sent you here and view the "Additional Information" to record the formatted log information. Record all devices that are missing from the disk array. These are the array members that have both a present address of 0 and an expected address that is not 0.  
**Note:** There may be more than one Product Activity Log entry with the same Log ID. Access any additional entries by pressing the enter key from the "Display Detail Report for Resource" screen. View the "Additional Information" for each entry to record the formatted log information.  
For example: There may be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array.  
Continue with the next step of this procedure.
  - **Yes:** A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see More Information from Hexadecimal Reports in the *iSeries Service Functions* . Record all devices that are missing from the disk array. These are the array members that have both a present address of 0 and an expected address that is not 0.  
**Note:** There may be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array. In order to interpret the hexadecimal information for these additional disk units, see More Information from Hexadecimal Reports in the *iSeries Service Functions* .

5. There are three possible ways to correct the problem:
  - a. Find the missing devices and install them in the correct physical locations in the system. If you can find the missing devices and want to continue with this repair option, then continue with the next step.
  - b. Stop the disk array that contains the missing devices.
 

**Attention:** Customer data may be lost.

If you want to continue with this repair option, go to step **7** (See page 200).
  - c. Initialize and format the remaining members of the disk array.
 

**Attention:** Customer data will be lost.


If you want to continue with this repair option, go to step **8** (See page 200).
6. Perform the following:
  - a. Install the missing devices in the correct locations in the system (see Remove and replace procedures).
  - b. Power on the system (see Power on/off the system and logical partitions).
 

Does the IPL complete successfully?

    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
    - **Yes:** **This ends the procedure.**
7. You have chosen to stop the disk array that contains the missing devices.
 

**Attention:** Customer data may be lost.

Perform the following:

  - a. If you are not already using dedicated service tools, perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).
 

If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
  - b. Select **Work with disk units**.
 

Did you get to DST with a Type D IPL?


    - **Yes:** Continue with the next step.
    - **No:** Select **Work with disk configuration**—>**Work with device parity protection**. Then, continue with the next step.
  - c. Select **Stop device parity protection**.
  - d. Follow the on-line instructions to stop device parity protection.
  - e. Perform an IPL from disk.
 

Does the IPL complete successfully?

    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
    - **Yes:** **This ends the procedure.**
8. You have chosen to initialize and format the remaining members of the disk array.
 

**Attention:** Customer data will be lost.

Perform the following:

  - a. If you are not already using dedicated service tools, perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).
 

If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
  - b. Select **Work with disk units**.
 

Did you get to DST with a Type D IPL?



    - **Yes:** Continue with the next step.

- **No:** Select **Work with disk unit recovery** → **Disk unit problem recovery procedures**, and continue with the next step.
9. Select **Initialize and format disk unit**.
  10. Follow the online instructions to format and initialize the disk units.
  11. Perform an IPL from disk. Does the IPL complete successfully?
    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
    - **Yes:** **This ends the procedure.**

**SDIOP-PIP21:** For use by authorized service providers.

Use this procedure to determine the failing disk unit when, a disk unit is not compatible with other disk units in the disk array, or when a disk unit has failed. The disk array is running, but it is not protected.

You were sent to this procedure from a unit reference code (URC) of 9025 or 9030.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Is the device location information for this SRC available in the Service Action Log (see “Use the service action log” on page 7)?
  - **Yes:** Exchange the disk unit. See Start disk service here.  
**This ends the procedure.**
  - **No:** Continue with the next step.
3. Access SST/DST by doing one of the following:
  - If you **can** enter a command at the console, access system service tools (SST). See System Service Tools (SST) in the *iSeries Service Functions*  information.
  - If you **cannot** enter a command at the console, perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*  information.
4. Access the Product Activity Log and display the SRC that sent you here. Press the **F9** key for address information. This is the I/O card address.
 

**Note:** There may be more than one entry with the same Log ID. Entries with the same Log ID may be accessed by pressing the **Enter** key from the “Display Detail Report for Resource” screen.





Example: There may be a device specific SRC and/or an xxxx902F SRC entry in the Product Activity Log. The xxxx902F SRC will occur if there are more than 10 disk units in the array.

Continue with the next step.
5. Perform the following:
  - a. Return to the SST or DST main menu.
  - b. Select **Work with disk units** → **Display disk configuration** → **Display disk configuration status**.
  - c. On the Display disk configuration status display, look for the devices attached to the I/O card that is identified in step 4 (See page 201).
  - d. Find the device that has a status of “DPY/Unknown” or “DPY/Failed”. This is the device that is causing the problem. Show the device address by selecting **Display Disk Unit Details** → **Display Detailed Address**. Record the device address.
  - e. See Locations and addresses and find the diagram of the system unit, or the expansion unit and find the following:
    - The card slot that is identified by the I/O card direct select address
    - The disk unit location that is identified by the device address

Have you determined the location of the I/O card and disk unit that is causing the problem?

- **Yes:** Exchange the disk unit that is causing the problem. See Start disk service here.  
**This ends the procedure.**
- **No:** Ask your next level of support for assistance.  
**This ends the procedure.**

**SDIOP-PIP22:** For use by authorized service providers.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Access SST/DST by doing one of the following:
  - If you **can** enter a command at the console, access system service tools (SST) (see System Service Tools (SST) in the *iSeries Service Functions*  information).
  - If you **cannot** enter a command at the console, perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).
  - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Did you perform a D IPL to get to DST?
  - **No:** Access the Product Activity Log and display the SRC that sent you here and view the "Additional Information" to record the formatted log information. Record all the information.  
**Note:** There may be more than one Product Activity Log entry with the same Log ID. Access any additional entries by pressing the **Enter** key from the "Display Detail Report for Resource" screen. View the "Additional Information" for each entry to record the formatted log information. Example: There may be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array.  
Continue with the next step.
  - **Yes:** A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see More Information from Hexadecimal Reports in the *iSeries Service Functions*  . Record all the information.  
**Note:** There may be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array. In order to interpret the hexadecimal information for these additional disk units, see More Information from Hexadecimal Reports in the *iSeries Service Functions*  .  
Continue with the next step.
4. Ask your next level of support for assistance.  
**Note:** Your next level of support may require the error information you recorded in the previous step.  
**This ends the procedure.**

**SDIOP-PIP23:** For use by authorized service providers.




You were sent to this procedure from a unit reference code (URC) 9050. If the failing item is in a migrated tower, use the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  to fix the problem. Otherwise, contact your next level of support for assistance.

**SDIOP-PIP25:** For use by authorized service providers.

Use this procedure to isolate the problem when a device attached to the I/O card has functions that are not given support on the I/O card.

You were sent to this procedure from URC 9008.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Have any other I/O card or device SRCs occurred at about the same time as this error?
  - **Yes:** Use the other I/O card or device SRCs to correct the problem. See the System Reference Codes.  
**This ends the procedure.**
  - **No:** Has the I/O card, or have the devices been repaired or reconfigured recently?
    - **Yes:** Continue with the next step.
    - **No:** Contact your next level of support for assistance.  
**This ends the procedure.**
3. Access SST/DST by doing one of the following:
  - If you **can** enter a command at the console, access system service tools (SST) (see System Service Tools (SST) in the *iSeries<sup>TM</sup> Service Functions*  information).
  - If you **cannot** enter a command at the console, perform an IPL to DST (see Performing an IPL to DST in the *iSeries Service Functions*  information).
  - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
4. Did you perform a D IPL to get to DST?
  - **No:** Access the Product Activity Log and display the SRC that sent you here. Press the **F9** key for address information. This is the I/O card address. Then, view the "Additional Information" to record the formatted log information. Record the addresses that are not 0000 0000 for all devices listed. Continue with the next step.
  - **Yes:** Access the Product Activity Log and display the SRC that sent you here. The direct select address (DSA) of the I/O Card is in the format BBBB-Cc-bb:
    - BBBB = hexadecimal offsets 4C and 4D
    - Cc = hexadecimal offset 51
    - bb = hexadecimal offset 4FThe unit address of the I/O card is hexadecimal offset 18C through 18F.  
A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see More Information from Hexadecimal Reports in the *iSeries Service Functions*  . Record the addresses that are not 0000 0000 for all devices listed.  
Continue with the next step.
5. See Locations and addresses and find the diagram of the system unit, or the expansion unit. Then find the following:
  - The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
  - The disk unit locations that are identified by the unit addresses.Have you determined the location of the I/O card and the devices that are causing the problem?
  - **Yes:** Have one or more devices been moved to this I/O card from another I/O card?
    - **Yes:** Continue with the next step.
    - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
  - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**

6. Is the I/O card capable of supporting the devices attached, or is it in the correct mode to support the devices attached?

**Note:** For information on I/O card modes, see Storage I/O card modes and jumpers.

- **Yes:** Do you want to continue using these devices with this I/O card?

- **Yes:** Continue with the next step.

- **No:** Remove the devices from the I/O card. See Start disk service here.

**Note:** You can remove disk units without installing another disk unit, and the system continues to operate.

**This ends the procedure.**

- **No:** Either change the I/O card mode or remove the devices from the I/O card. See Start disk service here.


**Note:** You can remove disk units without installing other disk units and the system continues to operate.

**This ends the procedure.**

7. Initialize and format the disk units.

**Attention:** Data on the disk unit will be lost.

Perform the following:

- a. Access SST or DST. See Dedicated Service Tools (DST) in the *iSeries Service Functions*  information.

- b. Select **Work with disk units**.

Did you get to DST with a Type D IPL?

- **Yes:** Continue with the next step.

- **No:** Select **Work with disk unit recovery** —> **Disk unit problem recovery procedures**. Then, continue with the next step.

- c. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer. The disk unit is now ready to be added to the system configuration.

**This ends the procedure.**

**SDIOP-PIP26:** For use by authorized service providers.

Use this procedure to correct the problem when the I/O card recognizes that the attached disk unit must be initialized and formatted.

You were sent to this procedure from URC 9092.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.

2. Have any other I/O card or device SRCs occurred at about the same time as this error?

- **No:** Has the I/O card, or have the devices been repaired or reconfigured recently?

- **Yes:** Continue with the next step.

- **No:** Contact your next level of support for assistance.


**This ends the procedure.**

- **Yes:** Use the other I/O card or device SRCs to correct the problem. See the System reference codes.



**This ends the procedure.**

3. Access SST/DST by doing one of the following:

- If you **can** enter a command at the console, access system service tools (SST). See System

Service Tools (SST) in the *iSeries<sup>TM</sup> Service Functions*  information.



- If you **cannot** enter a command at the console, perform an IPL to DST (see Performing an IPL to DST in the *iSeries<sup>(TM)</sup> Service Functions*  information).
  - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
4. Did you perform a D IPL to get to DST?
- **No:** Access the Product Activity Log and display the SRC that sent you here. Press the F9 key for address information. This is the I/O card address. Then, view the "Additional Information" to record the formatted log information. Record the addresses that are not 0000 0000 for all devices listed. Continue with the next step of the procedure.
  - **Yes:** Access the Product Activity Log and display the SRC that sent you here. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:
    - BBBB = hexadecimal offsets 4C and 4D
    - Cc = hexadecimal offset 51
    - bb = hexadecimal offset 4F
 The unit address of the I/O card is hexadecimal offset 18C through 18F.  
 A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see More Information from Hexadecimal Reports in the *iSeries Service Functions* . Record the addresses that are not 0000 0000 for all devices listed.  
 Continue with the next step of this procedure.
5. See Locations and addresses and find the diagram of the system unit, or the expansion unit. Then find the following:
- The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
  - The disk unit locations that are identified by the unit addresses.
- Have you determined the location of the I/O card and the devices that are causing the problem?
- **Yes:** Have one or more devices been moved to this I/O card from another I/O card?
    - **Yes:** Continue with the next step.
    - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
  - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
6. Do you want to continue using these devices with this I/O card?
- **Yes:** Continue with the next step.
  - **No:** Remove the devices from the I/O card. See Start disk service here.  
**Note:** You can remove disk units without installing another disk unit, and the system continues to operate.  
**This ends the procedure.**
7. Initialize and format the disk units.  
**Attention:** Data on the disk unit will be lost.  
 Perform the following:
- a. Access SST or DST.
  - b. Select **Work with disk units**.  
 Did you get to DST with a Type D IPL?
    - **Yes:** Continue with the next step.
    - **No:** Select **Work with disk unit recovery** → **Disk unit problem recovery procedures**. Then, continue with the next step.

- c. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer. The disk unit is now ready to be added to the system configuration.

**This ends the procedure.**

**SDIOP-PIP27:** For use by authorized service providers.



You were sent to this procedure with a unit reference code of 9051.

**Note:** For some storage I/O adapters, the cache card is integrated and not removable.

I/O card cache data exists for a missing or failed device. The possible causes are:


- One or more disk units have failed on the I/O card.
- The cache card of the I/O card was not cleared before it was shipped as a MES to the customer. In addition, the service representative moved devices from the I/O card to a different I/O card before performing a system IPL.
- The cache card of the I/O card was not cleared before it was shipped to the customer. In addition, residual data was left in the cache card for disk units that manufacturing used to test the I/O card.
- The I/O card and cache card were moved from a different system or a different location on this system after an abnormal power off.
- One or more disk units were moved either concurrently, or they were removed after an abnormal power off.

**Note: Any Function 08 power down (including from a D-IPL) is an abnormal power off!**


1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Access SST/DST by doing one of the following:
  - If you **can** enter a command at the console, access system service tools (SST). See System Service Tools (SST) in the *iSeries Service Functions*  information.
  - If you **cannot** enter a command at the console, perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*  information.
  - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Did you perform a D IPL to get to DST?
  - **No:** Access the Product Activity Log and display the SRC that sent you here. Press the **F9** key for address information. This is the I/O card address. Then, view the "Additional Information" to record the formatted log information. Record the device types and serial numbers for those devices that show a unit address of 0000 0000. Continue with the next step.
  - **Yes:** Access the Product Activity Log and display the SRC that sent you here. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:
    - BBBB = hexadecimal offsets 4C and 4D.
    - Cc = hexadecimal offset 51
    - bb = hexadecimal offset 4F

The unit address of the I/O card is hexadecimal offset 18C through 18F.

A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see More Information from Hexadecimal Reports in


the *iSeries Service Functions*  . Record the device types and serial numbers for those devices that show a unit address of 0000 0000.

Continue with the next step.

4. See Locations and addresses and find the diagram of the system unit, or the expansion unit. Find the card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
5. Choose from the following options:
  - If the devices from step **3** (See page 206) of this procedure have never been installed on this system, go to step **6** (See page 207).
  - If the devices are not in the current system disk configuration, go to step **8** (See page 207).
  - Otherwise, the devices are part of the system disk configuration; go to step **10** (See page 207).
6. Choose from the following options:
  - If this I/O card and cache card were moved from a different system, continue with the next step.
  - Otherwise, the cache card was shipped to the customer without first being cleared. Perform the following:
    - a. Make a note of the serial number, the customer number, and the device types and their serial numbers. These were found in step **3** (See page 206).
    - b. Inform your next level of support.
    - c. Then, go to step **9** (See page 207) to clear the cache card and correct the URC 9051 problem.
7. Install both the I/O card and the cache cards back into their original locations. Then re-IPL the system. There could be data in the cache card for devices in the disk configuration of the original system. After an IPL to DST and a normal power off on the original system, the cache card will be cleared. It is then safe to move the I/O card and the cache card to another location.
8. One or more devices that are not currently part of the system disk configuration were installed on this I/O card. Either they were removed concurrently, they were removed after an abnormal power off, or they have failed. Continue with the next step.
9. Use the Reclaim IOP cache storage procedure to clear data from the cache for the missing or failed devices as follows:
  - a. Perform an IPL to DST. See Performing an IPL to DST in the *iSeries Service Functions*  information.  
If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
  - b. Reclaim the cache adapter card storage. See Reclaim IOP cache storage.
10. Choose from the following options:
  - If this I/O card and cache card were moved from a different location on this system, go to step **7** (See page 207).
  - If the devices from step **3** (See page 206) of this procedure are now installed on another I/O card, and they were moved there before the devices were added to the system disk configuration, go to step **6** (See page 207). (On an MES, the disk units are sometimes moved from one I/O card to another I/O card. This problem will result if manufacturing did not clear the cache card before shipping the MES.)
  - Otherwise, continue with the next step.
11. One or more devices that are currently part of the system disk configuration are either missing or failed, and have data in the cache card. Consider the following:
  - The problem may be because devices were moved from the I/O card concurrently, or they were removed after an abnormal power off. If this is the case, locate the devices, power off the system and install the devices on the correct I/O card.
  - If no devices were moved, look for other errors logged against the device, or against the I/O card that occurred at approximately the same time as this error. Continue the service action by using these system reference codes.


**SDIOP-PIP28:** For use by authorized service providers.

You were sent to this procedure with a unit reference code of 9052. If the failing item is in a migrated tower, use the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  to fix the problem. Otherwise, contact your next level of support for assistance.

**SDIOP-PIP29:** *For use by authorized service providers.*

You were sent to this procedure from URC 9012. The failing item is in a migrated tower. Perform SDIOP-PIP29 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  .

**SDIOP-PIP30:** *For use by authorized service providers.*

Use this procedure to correct the problem when the system cannot find the required cache data for the attached disk units.

You were sent to this procedure from URC 9050.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Remove the I/O adapter. Install the **new** replacement storage I/O adapter with the following parts installed on it:

**Note:** Label all parts (both old and new) before moving them.

- The cache directory card from the **original** storage I/O adapter. See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.
  - The removable cache card from the **original** storage I/O adapter (this applies to only some 2780 I/O adapters). See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.
  - If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see Type, model, and part number list.
3. Has a new 9010 or 9050 SRC occurred in the Service Action Log?
    - **No:** Go to step 6 (See page 6)
    - **Yes:** Continue with the next step.
  4. Was the new SRC 9050?
    - **No:** Continue with the next step.
    - **Yes:** Contact your next level of support. **This ends the procedure.**
  5. The new SRC was 9010. Reclaim the cache storage. See [\\* href="rzar5reciopc.htm">Reclaim IOP cache storage.](#)

**Note:** When an auxiliary cache I/O adapter that is connected to the storage I/O adapter logs a 9055 SRC in the Product Activity Log, the reclaim does not result in lost sectors. Otherwise, the reclaim does result in lost sectors, and the system operator might want to restore data from the most recent saved tape after you complete the repair.

6. Remove the I/O adapter. Install the **new** replacement storage I/O adapter that has the following parts installed on it:
  - The cache directory card from the **new** storage I/O adapter. See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.
  - The removable cache card from the **new** storage I/O adapter (this applies to only some 2780 I/O adapters). See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.

- If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see the Type, model, and part number list.

**This ends the procedure.**

**SDIOP-PIP31:** For use by authorized service providers.

Cache data associated with the attached devices cannot be found.

You were sent to this procedure from URC 9010.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Has the system been powered off for several days?
  - **No:** Go to step 4 (See page 4)
  - **Yes:** The cache battery pack may be depleted. Do NOT replace the I/O adapter or the cache battery pack. Reclaim the cache storage. See Reclaim IOP cache storage. Continue with the next step.
 

**Note:** When an auxiliary cache I/O adapter connected to the storage I/O adapter logs a 9055 SRC in the Product Activity Log, the reclaim does not result in lost sectors. Otherwise, the reclaim does result in lost sectors, and the system operator may want to restore data from the most recent saved tape after you complete the repair.
3. Does the IPL complete successfully?
  - **No:** Contact your next level of support. **This ends the procedure.**
  - **Yes:** **This ends the procedure.**
4. Remove the I/O adapter. Install the **new** replacement storage I/O adapter with the following parts installed on it:
 

**Note:** Label all parts (both old and new) before moving them.

  - The cache directory card from the **original** storage I/O adapter. See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.
  - The removable cache card from the **original** storage I/O adapter (this applies to only some 2780 I/O adapters). See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.
  - If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see Type, model, and part number list.
5. Has a new 9010 or 9050 SRC occurred in the Service Action Log?
  - **No:** Go to step 8 (See page 8).
  - **Yes:** Continue with the next step.
6. Was the new SRC 9050?
  - **No:** Continue with the next step.
  - **Yes:** Contact your next level of support. **This ends the procedure.**
7. The new SRC was 9010. Reclaim the cache storage. See Reclaim IOP cache storage..
 

**Note:** When an auxiliary cache I/O adapter that is connected to the storage I/O adapter logs a 9055 SRC in the Product Activity Log, the reclaim does not result in lost sectors. Otherwise, the reclaim does result in lost sectors, and the system operator might want to restore data from the most recent saved tape after you complete the repair.
8. Remove the I/O adapter. Install the **new** replacement storage I/O adapter that has the following parts installed on it:
  - The cache directory card from the **new** storage I/O adapter. See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.


- The removable cache card from the **new** storage I/O adapter (this applies to only some 2780 I/O adapters). See Type 2748, 2757, 2763, 2778, 2780, 2782, 5703 - Cache directory card.
- If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see the Type, model, and part number list.

**This ends the procedure.**

**SDIOP-PIP32:** For use by authorized service providers.

You were sent to this procedure from URC 9011.

**Attention:** There is data in the cache of this I/O card, that belongs to devices other than those that are attached. Customer data may be lost.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
2. Did you just exchange the storage I/O adapter as a result of a failure?
  - **No:** Continue with the next step.
  - **Yes:** Reclaim the cache storage (see Reclaim IOP cache storage).  
Does the IPL complete successfully?
    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
    - **Yes:** **This ends the procedure.**
3. Have the I/O cards been moved or reconfigured recently?
  - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
  - **Yes:** Perform the following:
    - a. Power off the system (see Power on/off the system and logical partitions).
    - b. Restore all I/O cards to their original position.
    - c. Select the IPL type and mode that are used by the customer (see *iSeries Service Functions*
    - d.  Power on the system.  
Does the IPL complete successfully?
      - **No:** Ask your next level of support for assistance.  
**This ends the procedure.**
      - **Yes:** **This ends the procedure.**

**SDIOP-PIP33:** For use by authorized service providers.

You were sent to this procedure from URC 9001.

The I/O processor card detected a device configuration error. The configuration sectors on the device may be incompatible with the current I/O processor card.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Has the I/O adapter been replaced with a different type of I/O adapter, or have the devices been moved from a different type of I/O adapter to this one?
  - **No:** Contact your next level of support.  
**This ends the procedure.**

- **Yes:** Continue with the next step.
3. Does the disk unit contain data that needs to be saved?
    - **Yes:** Continue with the next step.
    - **No:** Initialize and format the disk units.
 

**Attention:** Any data on the disk unit will be lost. Perform the following:

      - a. Access SST or DST.
      - b. Select **Work with disk units**.
      - c. Did you get to DST with a type D IPL?
        - **No:** Select **Work with disk unit recovery** → **Disk unit problem recovery procedures**. Then, continue with the next step.
        - **Yes:** Continue with the next step.
      - d. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display will show that the status is complete. This may take 30 minutes or longer.
      - e. The disk unit is now ready to be added to the system configuration.
 

**This ends the procedure.**
  4. The disk unit contains data that needs to be saved.
    - If the I/O adapter has been replaced with a different type of I/O adapter, reinstall the original I/O adapter. Then continue with the next step.
    - If the disk units have been moved from a different type of I/O adapter to this one, return the disk units to their original I/O adapter. Then continue with the next step.
  5. Stop parity protection on the disk units, and power down the system normally with the I/O adapter in an operational state. The I/O adapter or disk units can now be returned to the configuration at the beginning of this procedure.
 

**This ends the procedure.**

**SDIOP-PIP34:** For use by authorized service providers.

You were sent to this procedure from unit reference code (URC) 9027.

The I/O processor card detected that an array is not functional due to the present hardware configuration.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Has the I/O adapter been replaced with a different I/O adapter, or have the devices been moved from a different I/O adapter to this one?
  - **No:** Perform “SDIOP-PIP22” on page 202.
 

**This ends the procedure.**
  - **Yes:** Perform the following:
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Restore all I/O cards or devices to their original position.
    - c. Power on the system.
3. Does the IPL complete successfully?
  - **No:** Ask your next level of support for assistance.
 

**This ends the procedure.**
  - **Yes:** **This ends the procedure.**

**SDIOP-PIP40:** One of the following situations has occurred:

- The storage I/O adapter is connected to an incompatible auxiliary cache I/O adapter

- The storage I/O adapter is connected to a non-operational auxiliary cache I/O adapter

Perform the following:

1. Ensure that the SCSI cable on the last port of the storage I/O adapter is connected to the auxiliary cache I/O adapter. Do the following:
  - a. Use the location of the storage I/O adapter displayed in the Service Action Log. If the Service Action Log does not have a location, determine the address of the storage I/O adapter. See System reference code (SRC) address formats.
  - b. Determine the location of the storage I/O adapter. See Part locations and listings for the model you are working on.
  - c. Ensure that the SCSI cable on the last port of the storage I/O adapter is properly connected to an auxiliary cache I/O adapter.
  - d. Ensure that the slot power indicator is lit for the auxiliary cache I/O adapter. If it is not, use concurrent maintenance to power on the slot.
2. Ensure that the auxiliary cache I/O adapter is supported for the storage I/O adapter to which it is connected. See PCI card and Integrated xSeries Adapter card installation instructions for information about which adapters are compatible.
3. Replace the SCSI cable on the last port of the storage I/O adapter that connects to the auxiliary cache I/O adapter. See Type, model, and part number list for cable part number information. If this does not fix the problem, replace the auxiliary cache I/O adapter. This ends the procedure.

**SDIOP-PIP41:** One of the following situations has occurred:

- The auxiliary cache I/O adapter is not connected to a storage I/O adapter
- The auxiliary cache I/O adapter is connected to an incompatible storage I/O adapter
- The auxiliary cache I/O adapter is connected to a non-operational storage I/O adapter

Perform the following:

1. Ensure that the SCSI cable of the auxiliary cache I/O adapter is connected to the last port of the storage I/O adapter. Do the following:
  - a. Use the location of the storage I/O adapter displayed in the Service Action Log. If the Service Action Log does not have a location, determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats.
  - b. Determine the location of the auxiliary cache I/O adapter. See Part locations and listings for the model you are working on.
  - c. Ensure that the SCSI cable of the auxiliary cache I/O adapter is properly connected to the last port of the storage I/O adapter.
  - d. Ensure that the slot power indicator is lit for the storage I/O adapter. If it is not, use concurrent maintenance to power on the slot.
2. Ensure that the auxiliary cache I/O adapter is supported for the storage I/O adapter to which it is connected. See PCI card and Integrated xSeries Adapter card installation instructions for information about which adapters are compatible.
3. Replace the SCSI cable that connects the auxiliary cache I/O adapter to the storage I/O adapter. See Type, model, and part number list for cable part number information. If this does not fix the problem, replace the storage I/O adapter. This ends the procedure.

**Storage device I/O card FRU locations:** *For use by authorized service providers.*

Use the table below to find FRU locations. If only a type number is listed, go to the Type, model, and part number list to determine the part number. If the failing item is an FI code, see “Failing items” on page 249.

**Note:** See Locations and addresses to help find FRUs that are not in this table.



**Table 1. Storage device I/O card FRU locations**

FRU description	Location procedure
Diskette adapter (type 6146 or type 6147)	Use the location information in the service action log if it is available. If the location is not available, find the address. See SRC address formats. Use the address to find the location. See Locations and addresses.
Terminating plug	See symbolic FRU “DEVTERM” on page 325 for more information. Also, see Locations and addresses.

## Service processor PIPs

*For use by authorized service providers.*

Use this section to isolate a failure that has been detected by the service processor. This section covers the following items:

- Bus unit
- Magnetic storage I/O processor card
- Service processor card or a card in the wrong slot
- Match problems between the hardware and software
- Information needed to perform a removable media or a disk IPL from the control panel

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located. See Power on/off the system and logical partitions before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**

### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**


### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

**Attention:** When removing or installing the service processor card, failure to follow the procedures in Remove and replace procedures may damage the card, the card enclosure, or both.

Read and understand the following service procedures before using this section:

- Power on/off the system and logical partitions
- The card procedure in the Remove and replace procedures
- System unit backplane remove and replace information, including:
  - Models 270, 800, and 810 - System unit backplane (MB1)

- Model 820 - System unit backplane - MB1 and power distribution board - PB1 (PB1 and MB1 are included in the tower card)
  - Model 825 - System unit backplane - CB1
  - Models 830/SB2 with FC 9074 - System unit backplane (MB1)
  - Models 840/SB3 - System unit backplane (MB1) and regulator board (RB1)
  - Models 870 and 890 - System unit backplane
- Hardware Service Manager in the *iSeries Service Functions*  information

### Service processor PIP procedures:

“SP-PIP42”

“SP-PIP43”

“SP-PIP44” on page 220

“SP-PIP45” on page 220

**SP-PIP42:** *For use by authorized service providers.*

This procedure is for IPL failures that terminate very early in the IPL. This error path is indicated when the SRC data words scrolling automatically through control panel functions 11, 12 and 13 and the control panel user interface buttons are not responsive.

If the control panel is **NOT** scrolling through the functions 11, 12 and 13 and the control panel user interface **DOES** work, then go to “INT-PIP24 Service processor data collection” on page 115 instead of this procedure.

1. Perform this procedure by selecting **Manual** mode on the control panel.
2. Record all of the SRC data words and describe the operation that was being attempted.
3. Attempt a recovery by selecting the white button on the control panel to IPL. (The IPL mode will automatically change to attempt the recovery IPL using a different IPL mode.)

Does the control panel show the function 01 display?

- **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Attempt the white button IPL a second time.
    - b. Then, follow the service actions for the SRC you recorded in the previous step.
4. The system has now IPLed past the original error, but to prevent the error from occurring again a successful IPL to DST must be completed.  
Select an alternate IPL media with a **KNOWN GOOD** level of code. Change the IPL mode to D using control panel function 2. IPL to DST using the alternate IPL media.
  5. Did the IPL to DST complete successfully?
    - **Yes:** The service processor problem has been resolved. If this failure occurs again, the system may require a slip install of Licensed Internal Code.  
**This ends the procedure.**
    - **No:** Follow the service actions for the new SRC. Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

**SP-PIP43:** *For use by authorized service providers.*

This procedure is for IPL failures that terminate with SRC B1XX4609.

The failing item is a card, cable or card enclosure connected to bus 1 that might cause an interface failure between the service processor and the IPL load-source device.

1. Perform this procedure by selecting **Manual** mode on the control panel.
2. Record all of the SRC data words and describe the operation that was being attempted.
3. Power off the system from the control panel. Check the cables and connections between the System Unit, the load source IOP and the load-source device. Reseat cables where possible. Power on the system.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** Follow the service actions for the new SRC. Go to “Starting point for all problems” on page 2.

4. Locate the Extended Reference Code in SRC data word 3. This is the first half of the second data word in control panel function 12:

```
12
xxxxxxxEEEExxx
xxxxxxxxxxxxxxx
```

5. For EEEE values in the table below, locate the Additional Reference Code information in SRC data word 6 (AAAAAAA). This is the first word in the control panel function 13. If word 7 is non-zero, it is the DSA of the IOP being used when the error occurred (IIIIIII). If word 8 is non-zero, it is the device unit address of the load source device being used when the error occurred (DDDDDDDD). If word 9 is non-zero, it is the ID of the loadable code unit that was being retrieved from the load source when the error occurred (LLLLLLLL):

```
13
AAAAAAAIIIIIII
DDDDDDDLLLLLLL
```

6. Use the following list to get a detailed description of the error condition and a recommended service action, then, continue with the next step.

Value for EEEE	Value for AAAAAAA	Recommended Service Action:
2103	*****	No valid load source device was found.  The service processor was directed by the host OS to use the IOP at DSA IIIIIII and the load source device at address DDDDDDDD. The IOP or load source are either not on Bus 1 or they were not found. If the address for the IOP is on Bus 1, then this may indicate a problem with either the IOP at address IIIIIII, the storage IOA specified in the first nibble of DDDDDDDD or the load source itself specified in the fourth nibble of DDDDDDDD. Reseat or replace the storage IOA or load source device specified.
2107	*****	No IOP was found on Bus 1  Replace the IOP on Bus 1, or isolate a problem on that bus.

Value for EEEE	Value for AAAAAAAA	Recommended Service Action:
2108	DDD00032	A command to the IOP at DSA IIIIIIII timed out. It is not known whether the timeout was due to a problem with the IOP, with the storage IOA, with the load source device unit, or with the device interface. Reseat or replace the load source device, the storage IOA, followed by the IOP.
2108	DDD00037, DDD00038, DDD00039, DDD0003A	IPL command time out.  The load source IOP failed to respond to a Unit Reset command in the given time. The DSA of the load source IOP is in IIIIIIII (word 7), in control panel function 13. Replace the load source IOP.
2108	00300002	IPL command time out.  The load source device failed to respond to the first storage IOA in the given time. The device unit address is in DDDDDDDD (word 8). Replace the load source device unit or isolate a problem on that device interface.
2109	00240000, 00410000	Load source interface error.  The load source device failed to complete a command successfully. The device unit address is DDDDDDDD (word 8). Replace the load source device unit or isolate a problem on that device interface.
2109	DDD0003B	Load source interface error.  No IOP was found on Bus 1. Use symbolic FRU "IPLINTF" on page 350 to fix the problem.

Value for EEEE	Value for AAAAAAAA	Recommended Service Action:
2109	BFD10000	<p>Load source interface error.</p> <p>The power control logic detected a power fault associated with an IOP or IOA slot somewhere on Bus 1. The power fault may be caused by a bad slot or by a card plugged into that slot.</p> <p>First, isolate the problem to a card or slot by unplugging all cards in slots on Bus 1 other than the load source IOP and the first storage IOA and try an IPL.</p> <p>If the problem persists, move the IOP or IOA to other slots. If the problem goes away, replace the service processor. If the problem persists, replace either the IOP or IOA and retry the IPL.</p> <p>If the problem has not been isolated yet, plug each card back in one at a time and retry the IPL until the problem returns. Try an IPL with that card in another slot. If the problem returns, replace the card. Otherwise, replace the service processor.</p>
210E	*****	<p>Load source internal error.</p> <p>The load source IOP encountered an error while communicating with the load source device. The device unit address is DDDDDDDD (word 8). Use symbolic FRU "IPLINTF" on page 350 to fix the problem.</p>
2111	*****	<p>Load source device became non-operational.</p> <p>The load source IOA encountered an error while communicating with the load source device. The device unit address is in DDDDDDDD (word 8). Use symbolic FRU "IPLINTF" on page 350 to fix the problem.</p>

Value for EEEE	Value for AAAAAAAA	Recommended Service Action:
2121	*****	<p>Less data was transferred than was requested during a transfer request.</p> <p>The load source IOP or storage IOA reported that the data available for transfer was less than requested, or the data transferred was less than requested. This error most likely occurred when a command failed to complete that was issued to the load source unit address in DDDDDDDD (word 8). If DDDDDDDD (word 8) is 0, the error is most likely an interface problem between the IOP at the address in IIIIIIII (word 7), a storage IOA on the same bus, or the load source device. If the second half of word 3 is 2805, 2808, or is 20xx where xx is greater than 14, the storage IOA at the address in IIIIIIII (word 7) was attempting a DMA to mainstore when the failure occurred. Check the FRUs in the path to mainstore. Use symbolic FRU "BUS1" on page 289 to fix the problem, going directly to the correct step for the system model you are working on.</p>
2124	*****	<p>The bus unit at the address in IIIIIIII (word 7) had a fatal error. No error log data was retrieved from the unit. This error most likely occurred when a command failed to complete that was issued to the load source unit address in DDDDDDDD (word 8). If DDDDDDDD (word 8) is 0, the error is most likely an interface problem between IOP at the address in IIIIIIII (word 7) and a storage IOA on the same bus. If the second half of word 3 is 2805, 2808, or is 20xx where xx is greater than 14, the storage IOA at the address in IIIIIIII (word 7) was attempting a DMA to mainstore when the failure occurred. Check the FRUs in the path to mainstore. Additional useful information may also be available in the SRC. If AAAAAAAA (word 6) is no DDD00033 or DDD00034, it contains the CCIN and URC of the IOA reporting the error.</p>

Value for EEEE	Value for AAAAAAAA	Recommended Service Action:
212A	*****	<p>Load source device not responding.</p> <p>The load source device did not respond to the first storage IOA when queried. The load source device may not be powered on or connected correctly. Check the cabling for the load source device, or replace the load source device.</p> <p>Note that the DSA and load source address in IIIIIII (word 7) and DDDDDDDD (word 8) of the SRC reflect only the device address searched, which may normally not have a device attached. However, all valid load source addresses were searched before the SRC was displayed.</p> <p>If this is a D mode IPL and a device is present but with no media installed, this SRC could mask the expected 4607 refcode and 2127 extended refcode. Make sure the alternate device has media installed before trying anything else.</p>
212D	*****	<p>Bad error log data format.</p> <p>The load source IOP encountered an error and built an error log entry. The service processor retrieved the error log data but it was in an incorrect format. Replace the load source IOP.</p>
214x	*****	<p>Load source IOP time out.</p> <p>The load source IOP did not respond in time to a command from the service processor. Replace the load source IOP.</p>
2150	*****	<p>Load source IOA found.</p> <p>The IOP at the DSA in IIIIIII (word 7) did not find a storage IOA on Bus 1. Reseat or replace the storage IOA.</p>

Value for EEEE	Value for AAAAAAAA	Recommended Service Action:
35AE	*****	<p>Load source device not found during main storage dump.</p> <p>The service processor is directed to use the load source device during main storage dump, but no load source is found at the device address being used, or the device is not accessible by the service processor. The DSA of the load source IOP is in IIIIIII (word 7). The device unit address is DDDDDDDD (word 8). Verify the IOP DSA and device unit address are correct for the location of the load-source on this system.</p>

7. If the problem is not resolved, go to symbolic FRU "IPLINTF" on page 350.  
**This ends the procedure.**

**SP-PIP44:** Use this procedure if you have a B1xx 4682 SRC detected on a Model 825.

1. Locate the Extended Reference Code in characters 9 through 12 of the top 16 characters of Function 12:

```
12 xxxxxxxxEEEExxxx
xxxxxxxxxxxxxxxxxx
```

2. Use the following table to find the recommended service action.

**Table 1. Recommended service action for B1xx 4682 SRC on a Model 825**

Value for EEEE:	Recommended service action:
804B	<ol style="list-style-type: none"> <li>1. Replace the control panel (see symbolic FRU "CTLPNL" on page 323).</li> <li>2. Then, IPL the system.</li> <li>3. If the same error occurs again, replace the backplane (see symbolic FRU "BACKPLN" on page 284).</li> </ol>
804C	<ul style="list-style-type: none"> <li>• If a card is located in position C09: <ol style="list-style-type: none"> <li>1. Power off the system and reseat the card.</li> <li>2. Then, IPL the system.</li> <li>3. If the same error occurs again, replace the card in C09 (see Locations - Model 825)</li> <li>4. Then, IPL the system.</li> <li>5. If the same error occurs again, replace the backplane (see symbolic FRU "BACKPLN" on page 284).</li> </ol> </li> <li>• If a card is not located in position C09, replace the backplane (see symbolic FRU "BACKPLN" on page 284).</li> </ul>
804D	<ol style="list-style-type: none"> <li>1. Replace the control panel (see symbolic FRU "CTLPNL" on page 323).</li> <li>2. Then, IPL the system.</li> <li>3. If the same error occurs again, replace the backplane (see symbolic FRU "BACKPLN" on page 284).</li> </ol>

**This ends the procedure.**

**SP-PIP45:** For use by authorized service providers.

This procedure is for IPL failures that terminate with SRC B1XX4604.



1. Locate the Extended Reference Code in SRC data word 3. This is the first half of the second data word in control panel function 12:  
12  
xxxxxxxEEEExxx  
xxxxxxxxxxxxxxxx
2. For EEEE values in the table below, locate the Additional Reference Code information in SRC data word 6 (AAAAAAA). This is the first word in the control panel function 13. If word 7 is non-zero, it is the DSA of the IOP being used when the error occurred (IIIIIII). If word 8 is non-zero, it is the device unit address of the load source device being used when the error occurred (DDDDDDDD). If word 9 is non-zero, it is the ID of the loadable code unit that was being retrieved from the load source when the error occurred (LLLLLLLL):  
13  
AAAAAAIIIIIII  
DDDDDDLLLLLLLL

Use the following table to determine the recommended service action:

Value for EEEE	Recommended service action:
2107	No IOP was found on bus 1.  If word 7 of function 13 contains a valid DSA, it means that the IOP at that address is no longer responding to commands. Use symbolic FRU "IPLINTF" on page 350 to fix the problem.
2108	A command to the IOP at DSA IIIIIII timed out. It is not known whether the timeout was due to a problem with the IOP, with the storage IOA, with the load source device unit, or with the device interface. Use symbolic FRU "IPLINTF" on page 350 to fix the problem, but do not replace the HSL I/O bridge card.
2109, 2304	Load source interface error.  The service processor encountered a problem while trying to communicate with the IOP at DSA IIIIIII. The problem may be caused by another device on bus 1. Isolate a problem on that device interface. Use symbolic FRU "IPLINTF" on page 350 to fix the problem, but do not replace the HSL I/O bridge card.
210A	Load source interface error.  The service processor encountered a PCI bus error while attempting a transfer of data to mainstore. Check the FRUs in the path to the mainstore. Use symbolic FRU "BUS1" on page 289 to fix the problem, going directly to the step for the system model you are working on.

**This ends the procedure**

## System power control network (SPCN) PIPs

*For use by authorized service providers.*

This section contains the procedures necessary to isolate a failure in the system power control network (SPCN).

The C in the SRC (1xxC xxxx) indicates the problem is on the processor side. Any value other than C indicates the problem is **not** on the processor side.

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located. See Power on/off the system and logical partitions before removing, exchanging, or installing a field-replaceable unit (FRU).

## DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

## DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

### SPCN PIP procedures:

“SPCN PIP1”

“SPCN PIP10”

“SPCN PIP20”

“SPCN PIP21” on page 223

**SPCN PIP1:** For use by authorized service providers.

A power reference code requiring problem isolation has been detected. Go to “Power PIP11” on page 175 to correct the power problem.

**SPCN PIP10:** For use by authorized service providers.

A power reference code requiring problem isolation has been detected. Go to SPCN-PIP10 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web

site  .

**SPCN PIP20:** For use by authorized service providers.

Use this procedure to verify that the lights and display on the system unit and all attached expansion units are operating correctly. Read the “System power control network (SPCN) PIPs” on page 221 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Select function 04 **Lamp Test** on the control panel and press **Enter**.

3. Review the display panels on the system unit and all attached expansion units and I/O towers. The lamp test is only active on the expansion units and I/O towers for 25 seconds after you press **Enter**. Are all of the following lights on for the system unit and all attached expansion units and I/O towers?
  - Power-on light
  - Attention light
  - A five-by-seven dot pattern for the 8 or 32 character display as installed
    - **No:** Exchange the following FRUs in the failing unit one at a time (see Remove and replace procedures):
      - Control panel (see symbolic FRU “CTLPNL” on page 323)
      - Tower card (see symbolic FRU “TWRCARD” on page 470)
      - Control panel cable

**This ends the procedure.**
    - **Yes:** These control panel lights are working correctly. Continue with the next step.
4. Are there any abnormal characters or character patterns that are not SRCs or normal display mode displayed?
  - **No: This ends the procedure.**
  - **Yes:** Exchange the following FRUs in the failing unit one at a time (see Remove and replace procedures):
    - a. Control panel (see symbolic FRU “CTLPNL” on page 323)
    - b. Tower card (see symbolic FRU “TWRCARD” on page 470)
    - c. Control panel cable

**This ends the procedure.**

**SPCN PIP21:** *For use by authorized service providers.*

Use this procedure to verify that the Remote Control Panel is operating correctly.

1. If the system has logical partitions, perform this procedure from the Primary partition’s console and the system control panel. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Select function 04 **Lamp Test** on the control panel and press **Enter**.
3. Review the display panels on the system unit.
 

Are all of the following lights on?

  - Power-on light
  - Attention light
  - Manual light
  - Normal light
  - Auto light
  - Secure light
  - The 8 character display segments
    - **No:** Exchange the following FRU in the failing unit
      - Remote Control Panel cable - 04N5592
      - Operations Console Configuration cable — 97H7557

**This ends the procedure.**
    - **Yes:** The control panel lights are working correctly.
 

**This ends the procedure.**

## Tape unit PIPs

*For use by authorized service providers.*

This topic contains the procedures necessary to isolate a failure in a tape device.

In these procedures, the term *tape unit* may be any one of the following:

- An internal tape drive; this includes its electronic parts and status indicators
- An internal tape drive; this includes its tray, power regulator, and AMDs
- An external tape drive; this includes its power supply, power switch, power regulator, and AMDs

You should interpret the term *tape unit* to mean the tape drive you are working on. However, this document uses the terms *tape drive* and *enclosure* to indicate a more specific meaning.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**


### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

Read and understand the following service procedures before using this section:


- Power on/off the system and logical partitions.
- Initial Program Load (IPL) Information in the *iSeries Service Functions*  information.

### Tape unit PIP procedures:

- “TU-PIP1”
- “TU-PIP2” on page 226
- “TU-PIP3” on page 228
- “TU-PIP4” on page 230
- “TU-PIP6” on page 234
- “Tape unit self-test procedure” on page 235
- “Tape device ready conditions” on page 237

***TU-PIP1:*** *For use by authorized service providers.*

Use this procedure to isolate tape unit power problems. Read the “Tape unit PIPs” on page 224 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Is the tape unit in an external enclosure, and does the tape unit enclosure have a power switch?
  - **Yes:** Is the tape unit powered on?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **8** (See page 226).
  - **No:** Go to “TU-PIP3” on page 228.  
**This ends the procedure.**
3. Press the **Unload** switch on the front of the tape unit.  
Is a data cartridge or a tape reel present?
  - **Yes:** Attempt to remove the data cartridge or tape reel from the tape unit.  
Can you remove the data cartridge or tape reel?
    - **Yes:** Continue with the next step.
    - **No:** The tape unit is the failing part. Go to “TU-PIP3” on page 228.  
**Note:** If the tape unit is an 8mm tape drive, go to Tape cartridge - Manual removal first.  
**This ends the procedure.**
  - **No:** Continue with the next step.
4. Is the tape unit installed in an FC 5032 removable storage unit?
  - **No:** Are you working on an 8mm tape drive?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **6** (See page 225).
  - **Yes:** Go to Tape Unit PIP 5 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .  
**This ends the procedure.**
5. Is the system powered on?
  - **Yes:** Continue with the next step.
  - **No:** The 8mm tape drive cannot operate if the system is powered off and the external I/O signal cable is connected.  
Perform the following:
    - a. Disconnect the external I/O signal cable from the 8mm tape drive.
    - b. Continue with the next step.
6. Is the tape unit Power light on?
  - **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Ensure that the power cable connects tightly to the power cable connector at the back of the tape unit.
    - b. Ensure that the power cable connects to a power outlet that has the correct voltage.
    - c. Go to step **8** (See page 226).
7. Set the tape unit Power switch to the Power Off position (see Table 1. Power off and power on positions of tape unit power switches (See page 226) in this topic).  
**Note:** Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.

**Table 1. Power off and power on positions of tape unit power switches**

Operation	Power switch type	Toggle push in/out
Power off	Down	Out
Power on	Up	In

8. Set the tape unit Power switch to the Power On position (see Table 1. Power off and power on positions of tape unit power switches (See page 226) in this topic). The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:

- The Power light flashes, then remains off.
- The Power light does not go on.
- Another indication of a power problem occurs.

Does one of the above power failure conditions occur?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
  - a. Go to the service information for the specific tape device to correct the power problem.
  - b. When you have corrected the power problem, go to “TU-PIP3” on page 228.

**This ends the procedure.**

9. The tape unit is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.

Does the power-on self-test complete successfully?

- **No:** Go to the service information for the specific tape device to correct the problem. Then go to “TU-PIP3” on page 228.
- **Yes:** Go to “TU-PIP3” on page 228.

**This ends the procedure.**

**This ends the procedure.**

**TU-PIP2:** For use by authorized service providers.

Use this procedure to perform the 8mm tape drive read self-test and hardware self-test. The write test is performed in “TU-PIP3” on page 228. Read the “Tape unit PIPs” on page 224 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Press the **Unload** switch on the front of the 8mm tape drive. Is a data cartridge present?
  - **No:** Continue with the next step.
  - **Yes:** Attempt to remove the data cartridge. Can you remove the data cartridge?
    - **Yes:** Continue with the next step.
    - **No:** The tape drive is the failing part. Go to Tape cartridge - Manual removal. After removing the data cartridge, exchange the tape drive (see Removable media in Remove and replace procedures).
3. Clean the tape drive by using the cleaning cartridge (part 16G8467). If the tape drive ejects the cleaning cartridge with the Disturbance light on, a new cleaning cartridge is needed. The tape drive unloads automatically when cleaning is complete. Cleaning takes up to 5 minutes.

Is the Disturbance light on continuously?

- **No:** Continue with the next step.

- **Yes:** Repeat this step while using a new cleaning cartridge. If you are using a new cleaning cartridge and the Disturbance light does not go off, the possible failing part is the 8mm tape drive. Go to “TU-PIP3” on page 228.

**This ends the procedure.**

4. Is the Disturbance light blinking?

- **No:** Continue with the next step.
- **Yes:** Choose from the following:
  - If the 8mm tape drive is a type 6390, the possible failing part is the 6390 tape drive.
  - If the 8mm tape drive is a type 7208, the possible failing parts are:
    - a. 7208 tape drive
    - b. Power supply
    - c. AMD

Go to “TU-PIP3” on page 228.

**This ends the procedure.**

5. Perform the read self-test:

**Notes:**

- a. The 8mm tape drive read self-test and hardware self-test can take up to 5 minutes to run.
- b. The tape drive runs the read self-test first. During the read self-test, the Read-Write light blinks, and the Disturbance and Ready lights are off.

To start the read self-test and hardware self-test, insert the diagnostic cartridge (part 46G2660) into the tape drive. The following conditions indicate that the read self-test ended successfully:

- The Read-Write light stops blinking.
- The diagnostic cartridge ejects automatically.
- The three status lights go on to indicate the start of the hardware test.

Does the read self-test end successfully?

- **No:** Does the tape drive eject the diagnostic cartridge?
  - **Yes:** Continue with the next step.
  - **No:** The tape drive is the failing part.

Go to Tape cartridge - Manual removal. After removing the diagnostic cartridge, exchange the tape drive (see Removable media in Remove and replace procedures).

**This ends the procedure.**

- **Yes:** Go to step 8 (See page 228).

6. Is the Disturbance light blinking approximately four times per second?

- **No:** Continue with the next step.
- **Yes:** The possible failing part is the diagnostic cartridge (part 46G2660).
  - If this is your first time through this step, get a new diagnostic cartridge. Go to step 3 (See page 226) of this procedure to clean the tape drive again. Afterwards, run the read self-test and hardware self-test while using the new diagnostic cartridge.
  - If this is your second time through this step, the possible failing part is the 8mm tape drive. Go to “TU-PIP3” on page 228.

**This ends the procedure.**

7. The Disturbance light is blinking approximately once per second.

- If the 8mm tape drive is a type 6390, the possible failing part is the 6390 tape drive.
- If the 8mm tape drive is a type 7208, the possible failing parts are:
  - a. 7208 tape drive
  - b. Power supply
  - c. AMD

Go to "TU-PIP3."

**This ends the procedure.**

8. The tape drive runs the hardware self-test. During the hardware self-test, the three tape drive status lights are on for 15 to 30 seconds. The three status lights go off when the hardware self-test ends successfully.

Does the hardware self-test end successfully?

- **Yes:** Continue with the next step.
- **No:** When the hardware self-test does not end successfully, the following conditions occur:
  - The three status lights do not go off.
  - The Ready and Read-Write lights go off.
  - The Disturbance light blinks approximately once per second.

Possible failing parts are:

- If the 8mm tape drive is a type 6390, the possible failing part is the 6390 tape drive.
- If the 8mm tape drive is a type 7208, the possible failing parts are:
  - a. 7208 tape drive
  - b. Power supply
  - c. AMD

Go to "TU-PIP3."

**This ends the procedure.**

9. The read self-test and hardware self-test ended successfully.

Was the user's original tape identified as the probable cause of failure?

- **Yes:** Perform the following:
  - a. Mark and date the data cartridge to indicate that it failed with a permanent error.
  - b. Discard this data cartridge when:
    - Volume statistics (if available) indicate a problem with the data cartridge.
    - A total of three permanent errors have occurred with the same data cartridge.
  - c. If possible, continue operations with a new data cartridge.

Go to "TU-PIP3."

**This ends the procedure.**

- **No:** Go to "TU-PIP3."

**This ends the procedure.**

**TU-PIP3:** *For use by authorized service providers.*

You were directed here because you may need to exchange a failing part. The failing part was determined from one of the following:

- Other problem isolation procedures
- The *Failing item* column of the tape unit reference code table
- Tape unit service guide

Read the "Tape unit PIPs" on page 224 before continuing with this procedure.

**Note:** Occasionally, the system is available but not performing an alternate IPL (type D IPL). In this instance, any hardware failure of the tape unit I/O processor, or any device attached to it is not critical. With the exception of the loss of the affected devices, the system remains available.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Do you need to exchange a possible failing device?



- **No:** Do you need to exchange the tape unit I/O processor?
    - **No:** Continue with the next step.
    - **Yes:** Exchange the tape unit I/O processor (see Remove and replace procedures). When you have completed the remove and replace procedure, continue with the next step.
  - **Yes:** Perform the following:
    - For an internal tape unit, go to Removable media in Remove and replace procedures.
    - For an external tape unit, go to the remove and replace procedures in the device service information.
3. Are you working with a tape unit in the system unit or in an expansion unit?
    - **Yes:** Is the system available, and can you enter commands on the command line?
      - **No:** Continue with the next step.
      - **Yes:** Go to step 9 (See page 229).
    - **No:** Continue with the next step.
  4. Display the selected IPL type (see *iSeries Service Functions*).  
Is the displayed IPL type D?
    - **No:** Do you want to perform an alternate IPL (type D)?
      - **No:** Continue with the next step.
      - **Yes:** Go to step 6 (See page 229).
    - **Yes:** Go to step 6 (See page 229).
  5. Perform an IPL from disk by doing the following:
    - a. Power off the system (see Power on/off the system and logical partitions).
    - b. Select IPL type A in manual mode.
    - c. Power on the system.
    - d. Go to step 8 (See page 229).
  6. Place the first tape of the latest set of SAVSYS tapes or SAVSTG tapes, or the first IBM Software Distribution tape in the alternate IPL tape drive. The tape drive automatically becomes ready for the IPL operation (this may take several minutes).
  7. Perform an alternate IPL by doing the following:
    - a. Power off the system.
    - b. Select IPL type D in Manual mode.
    - c. Power on the system.
  8. The IPL may take one or more hours to complete.  
Does an unexpected SRC appear on the control panel, and is the System Attention light on?
    - **No:** Does the IPL complete successfully?
      - **Yes:** Continue with the next step.
      - **No:** Go to “Starting point for all problems” on page 2 to continue analyzing the problem.  
**This ends the procedure.**
    - **Yes:** Go to step 10 (See page 230).
  9. Perform the following to test the tape unit:
    - a. Enter  
VFYTAP  
(the Verify Tape command) on the command line.
    - b. Follow the prompts on the Verify Tape displays, then return here and answer the following question.  
  
Does the  
VFYTAP

command end successfully?

- **No:** Continue with the next step.
- **Yes: This ends the procedure.**

10. Record the SRC on the Problem summary form (see Problem summary form).

Is the SRC the same one that sent you to this procedure?

- **Yes:** You cannot continue to analyze the problem. Use the original SRC and exchange the FRUs. Begin with the FRU which has the highest percent of probable failure (see the failing item list for this reference code).  
**This ends the procedure.**
- **No:** A different SRC occurred. Use the new SRC to correct the problem (see System Reference Codes).  
**This ends the procedure.**

**TU-PIP4:** For use by authorized service providers.

Use this procedure to reset an IOP and its attached tape units. Read the "Tape unit PIPs" on page 224 before continuing with this procedure.

If disk units are attached to an IOP, you must power off the system, then power it on to reset the IOP.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Is the tape unit powered on?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Press the Unload switch on the front of the tape unit you are working on.
    - b. If a data cartridge or a tape reel is present, do not load it until you need it.
    - c. Continue with the next step of this procedure.
3. Verify the following:
  - If the external device has a power switch, ensure that it is set to the **On** position.
  - Ensure that the power and external signal cables are connected correctly.  
**Note:** For every 8mm and 1/4 inch tape unit, the I/O bus terminating plug for the SCSI external signal cable is connected internally. These devices do not need and should not have an external terminating plug.
4. Did you press the Unload switch in step 2 (See page 230)?
  - **Yes:** Can you enter commands on the command line?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 11 (See page 232).
  - **No:** Press the **Unload** switch on the front of the tape unit you are working on. If a data cartridge or a tape reel is present, do not load it until you need it. Continue with the next step of this procedure.
5. Has the tape unit operated correctly since it was installed? If you do not know, continue with the next step of this procedure.
  - **Yes:** Continue with the next step.
  - **No:** Go to step 11 (See page 232).
6. If a system message displayed an I/O processor name, a tape unit resource name, or a device name, record the name for use in the next step. You may continue without a name.  
Does the I/O processor give support to only one tape unit? If you do not know, continue with the next step of this procedure.
  - **No:** Continue with the next step.

- **Yes:** Perform the following. You must complete all parts of this step before you press **Enter**.
    - a. Enter  
WRKCFGSTS \*DEV \*TAP ASTLVL(\*INTERMED)  
  
(the Work with Configuration Status command) on the command line.
    - b. If the device is not varied off, select **Vary off** before continuing.
    - c. Select **Vary on** for the failing tape unit.
    - d. Enter  
RESET(\*YES)  
  
(the Reset command) on the command line.
    - e. Press **Enter**.  
**This ends the procedure.**
7. This step determines if the I/O processor for the tape unit gives support to other tape units or to a disk unit.
- Notes:**
- a. If you cannot determine the tape unit you are attempting to use, go to step **11** (See page 232).
  - b. System messages refer to other tape units that the I/O processor gives support to as *associated devices*.
- Enter  
WRKHDWRSC \*STG  
(the Work with Hardware Resources command) on the command line.  
Did you record an I/O processor (IOP) resource name in step **6** (See page 230)?
- **No:** Perform the following:
    - a. Select **Work with resources** for each storage resource IOP (CMB01, SIO1, and SIO2 are examples of storage resource IOPs).
    - b. Find the Configuration Description name of the tape unit you are attempting to use, and then record the Configuration Description names of all tape units that the I/O processor gives support to.
    - c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.
    - d. Continue with the next step.
  - **Yes:** Perform the following:
    - a. Select **Work with resources** for that resource.
    - b. Record the Configuration description name of all tape units for which the I/O processor provides support.
    - c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.
    - d. Continue with the next step.
8. Does the I/O processor give support to any disk unit resources?
- **No:** Continue with the next step.
  - **Yes:** The **Reset** option is not available. Go to step **11** (See page 232).
9. Does the I/O processor give support to only one tape unit?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Select **Work with configuration description** and press **Enter**.
    - b. Select **Work with status** and press **Enter**.

**Note:** You must complete the remaining parts of this step before you press **Enter** again.

- c. If the device is not varied off, select **Vary off** before continuing.
- d. Select **Vary on** for the failing tape unit.
- e. Enter  
RESET(\*YES)

(the Reset command) on the command line.

- f. Press **Enter**.  
**This ends the procedure.**

10. Perform the following:

- a. Enter  
WRKCFGSTS \*DEV \*TAP ASTLVL(\*INTERMED)

(the Work with Configuration Status command) on the command line.

- b. Select **Vary off** for the failing tape unit and associated devices (the devices you identified in step 7 (See page 231)), and then press **Enter**.

**Note:** You must complete the remaining parts of this step before you press **Enter** again.

- c. Select **Vary on** for the failing tape unit.
- d. Enter  
RESET(\*YES)

(the Reset command) on the command line.

- e. Press **Enter**.
- f. Select **Vary on** for the associated devices (tape units) you identified in step 7 (See page 231). It is not necessary to use the **Reset** option again.

Does a system message indicate that the vary on operation failed?

- **Yes:** Continue with the next step.
- **No: This ends the procedure.**

11. The **Reset** is not available, or you were not able to find the Configuration Description name when using

WRKHDWRSC \*STG

(the Work with Hardware Resources command).

You can perform an I/O processor (IOP) reset by performing an IPL of the I/O processor. All devices that are attached to the IOP will reset.

The following steps describe how to load an IOP, how to configure a tape drive, how to vary on tape devices, and how to make tape devices available.

12. Is the tape device you are working on an 8mm tape drive?

- **No:** Continue with the next step.
- **Yes:** Verify the following on the 8mm tape drive:
  - The power and external signal cables are connected correctly.
  - The Power switch is set to the On position (pushed in).

**Note:** The SCSI I/O bus terminating plug for the system-external signal cables is connected internally in the 8mm tape drive. The 8mm tape drive does not need, and must not have an external terminating plug.

Is the 8mm tape drive Power light on, and is the Disturbance light off?

- **Yes:** Continue with the next step.
- **No:** Go to “TU-PIP2” on page 226 to correct the problem.

**This ends the procedure.**

13. Is a data cartridge or a tape reel installed in the tape device?

- **No:** Continue with the next step.
  - **Yes:** Remove the data cartridge or tape reel. Continue with the next step.
14. Can you enter commands on the command line?
- **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Power off the system (see Power on/off the system and logical partitions).
    - b. Power on the system.

The system performs an IPL and resets all devices. If the tape device responds to SCSI address 7, the system configures the tape device.

**This ends the procedure.**
15. Verify that automatic configuration is on by entering  
 DSPSYSVAL QAUTOCFG
- (the Display System Value command) on the command line.
- Is the **Autoconfigure device** option set to **1**?
- **Yes:** Continue with the next step.
  - **No:** Perform the following:
    - a. Press **Enter** to return to the command line.
    - b. Set automatic configuration to On by entering  
 CHGSYSVAL QAUTOCFG '1'  
 (the Change System Value command) on the command line.  
**Note:** QAUTOCFG resets to its initial value in step **21** (See page 234)
    - c. Continue with the next step.
16. Perform the following:
- a. Enter  
 STRSST  
  
 (the Start SST command) on the command line.
  - b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
  - c. Select **Start a Service Tool**—>**Hardware Service Manager**—>**Logical Hardware Resources**—>**System Bus Resources**. The Logical Hardware Resources on System Bus display shows all of the IOPs.
  - d. Find the IOP you want to reset. You **must** ensure that no one is using any of the tape units, communication channels, or display stations that are attached to the IOP you want to reset.
- Does a "\*" indicator appear to the right of the IOP description?
- **No:** Continue with the next step.
  - **Yes:** Disk units are attached to the IOP.
- Perform the following:
- a. Press **F3** until the Exit System Service Tools display appears.
  - b. Press **Enter**.
  - c. Power off the system (see Power on/off the system and logical partitions).
  - d. Power on the system.
- The system performs an IPL and resets all devices.
- This ends the procedure.**
17. Perform the following:
- a. Select **I/O debug**—>**IPL the I/O processor**.
  - b. When the IOP reset is complete, continue with the next step of this procedure.

18. Perform the following:
  - a. Press **F12** to return to the Logical Hardware Resources on System Bus display.
  - b. Select **Resources associated with IOP** for the IOP you reset.
 Did the IOP detect the tape unit?
  - **Yes:** Continue with the next step.
  - **No:** The IOP did not detect the tape unit. Consider the following:
    - Ensure that the tape unit is powered on and that the signal cables are connected correctly. If you find and correct a power or a signal cable problem, return to step **16** (See page 233).
    - The tape unit may be failing. Go to the tape unit service information and perform the procedures for analyzing device problems. If you find and correct a tape unit problem, return to step **16** (See page 233).
    - If none of the above are true, ask your next level of support for assistance.**This ends the procedure.**
19. Press **F3** until the Exit System Service Tools display appears. Then press **Enter**.
20. Was automatic configuration Off before you performed step **15** (See page 233)?
  - **Yes:** Continue with the next step.
  - **No: This ends the procedure.**
21. Enter
 

```
CHGSYSVAL QAUTOCFG '0'
```

(the Change System Value command) on the command line to reset QAUTOCFG to its initial value.  
**This ends the procedure.**

**TU-PIP6:** *For use by authorized service providers.*

Use this procedure to isolate a Device Not Found message during installation from an alternate device. There are several possible causes:

- The alternate installation device was not correctly defined.
- The alternate installation device was not made ready.
- The alternate installation device does not contain installation media.
- The alternate installation device is not powered on.
- The alternate installation device is not connected properly.
- There is a hardware error on the alternate installation device or the attached I/O processor.

Read the “Tape unit PIPs” on page 224 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Is the device that you are using for alternate installation defined as the alternate installation device?
  - **Yes:** Is the alternate installation device ready?
    - **Yes:** Continue with the next step.
    - **No:** Make the alternate installation device ready and retry the alternate installation.  
**This ends the procedure.**
  - **No:** Correct the alternate installation device information and retry the alternate installation.  
**This ends the procedure.**
3. Is there installation media in the alternate installation device?
  - **Yes:** Is the alternate installation device an external device?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **6** (See page 235).

- **No:** Load the correct media and retry the alternate installation.  
**This ends the procedure.**
4. Is the alternate installation device powered on?
- **Yes:** Make sure that the alternate installation device is properly connected to the I/O processor or I/O adapter card.  
Is the alternate installation device properly connected?
    - **Yes:** Go to step 6 (See page 235).
    - **No:** Correct the problem and retry the alternate installation.  
**This ends the procedure.**
  - **No:** Continue with the next step.
5. Ensure that the power cable is connected tightly to the power cable connector at the back of the alternate device. Ensure that the power cable is connected to a power outlet that has the correct voltage. Set the alternate device Power switch to the Power On position.  
The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:
- The Power light flashes, then remains off.
  - The Power light does not go on.
  - Another indication of a power problem occurs.
- Does one of the above power failure conditions occur?
- **No:** The alternate device is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.  
Does the power-on self-test complete successfully?
    - **No:** Go to the service information for the specific alternate installation device to correct the problem. Then retry the alternate installation.  
**This ends the procedure.**
    - **Yes:** Retry the alternate installation.  
**This ends the procedure.**
  - **Yes:** Perform the following:
    - a. Go to the service information for the specific alternate device to correct the power problem.
    - b. When you have corrected the power problem, retry the alternate installation.  
**This ends the procedure.**
6. Was a device error recorded in the Product Activity Log?
- **No:** Contact your next level of support.  
**This ends the procedure.**
  - **Yes:** See System Reference Codes to correct the problem.  
**This ends the procedure.**

**Tape unit self-test procedure:** *For use by authorized service providers.*

The following procedure is designed to allow you to quickly perform a complete set of diagnostic tests on a 6384 or 6387 tape unit, without impacting iSeries 400 system operation. This test can also be used to verify good performance of individual tape cartridges.

Enter diagnostic mode:

1. Verify that a cartridge is not loaded in the tape unit. To unload a cartridge, press the **eject** button on the front of the tape unit. If the cartridge does not eject, refer to Tape cartridge - manual removal.
2. Press and hold the **eject** button for about 6 seconds until the amber LED starts flashing slowly, then release the button. The amber (left) LED will flash, indicating that the tape unit is waiting for a cartridge to be inserted.

Running the self-test:

1. Self-testing begins when a scratch data cartridge is inserted into the tape unit. The Ready (left) LED will flash, indicating that self-testing is in progress.

**Note:** A cartridge must be loaded within 15 seconds, otherwise, the tape unit will automatically revert back to normal operation. If necessary, return to step 1 (See page 235) to reenter diagnostic mode.

2. For fastest results, we recommend using an IBM SLR100 Test Tape (P/N 35L0967) which was originally provided with your iSeries server.

**Attention:** Use a blank cartridge that does not contain customer data. During this self-test, the cartridge will be rewritten with a test pattern and any customer data will be destroyed.

**Note:** Use a cartridge that is not write-protected. If a write-protected cartridge is inserted while the tape unit is in diagnostic mode, the cartridge will be ejected, see Incorrect cartridge (See page 236) below.

Self-testing will only be performed using a write-compatible cartridge type, and with a cartridge that is not damaged, see Incorrect cartridge (See page 236) below.

If a cleaning cartridge is inserted while the tape unit is in diagnostic mode, drive cleaning will occur and the tape unit will then return to normal operating mode. Return to step 1 (See page 235) to reenter diagnostic mode.

3. **At any time, self-testing can be stopped by pressing the eject button.** After the current operation is completed, the cartridge will be ejected and tape unit will return to normal operating mode.
4. The Ready (left) LED will continue to flash during the following:
  - The **cartridge load sequence** has a approximate duration of 30 seconds. The center LED indicates tape movement.
  - The **hardware test** has an approximate duration of 2 and 1/2 minutes. During that time, a static test is performed on tape unit electrical components. No tape motion occurs during this step.
  - The **cartridge load/unload test** has an approximate duration of 1 and 1/2 minutes. During that time, the Ready LED will continue to flash while a dynamic test is performed on tape unit mechanical components. Two cartridge load cycles are included.
  - Duration of the **write/read test** will vary, depending on what type of cartridge is loaded into the tape unit. When an SLR100 Test Tape is used, typical duration will be 5 minutes. Use of other cartridge types can increase the write/read test duration to 30-40 minutes. During this test, the Ready LED will continue to flash. The center LED indicates tape movement.

Interpreting the results:

**Test Passed:** When self-testing has completed successfully, and no problems are detected, the cartridge is unloaded from the tape unit and all LEDs are off. Proper function of both the tape unit and tape cartridge have now been verified.

**Note:** A solid amber light indicates that self-testing has completed successfully, but the tape unit requires cleaning. Clean the tape unit by inserting an IBM Dry Process Cleaning Cartridge (P/N 35L0844).

**Test Failed:** The cartridge will remain loaded inside the tape unit, and the amber LED will flash when a problem is detected with either the tape unit or cartridge.

**Note:** To isolate failure to either tape unit or cartridge, return to step 1 (See page 235) and repeat this self-test using a different scratch cartridge.

**Incorrect cartridge:** When the center (green) and right (amber) LEDs flash and a cartridge is unloaded, the tape unit has determined that an incorrect tape cartridge has been inserted, and self-testing cannot be performed. Verify that your tape cartridge is **not** one of the following:

- Write-protected
- Damaged
- Unsupported media type



- Media which is not write-compatible with tape unit.

Press the **eject** button, to end self-test and return the tape unit to normal operating mode. Then return to step 1 (See page 235) and run the self-test using another cartridge, or one which is not write-protected. **This ends the procedure.**

**Tape device ready conditions:** *For use by authorized service providers.*

All the conditions that are listed for the device, must be correct for the device to be ready. If the device is not ready, use the Action column or other instructions, and go to the service information for the specific tape device.

Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.

**Table 1. Tape device ready conditions**

Storage device	Ready description	Action
3480 or 3490	<ul style="list-style-type: none"> <li>• Power switch is set to the On position.</li> <li>• Power light is on.</li> <li>• DC Power light is on.</li> <li>• Control unit On-line switch is set to the On-line position.</li> <li>• Control unit Normal/Test switch is set to the Normal position.</li> <li>• Control unit channel Enable/Disable switch is set to the Enable position.</li> <li>• Tape unit On-line/Off-line switch is set to the On-line position.</li> <li>• Tape is loaded.</li> <li>• Tape unit displays Ready U or Ready F.</li> </ul>	See the <i>3480 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0066, or <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0124, for instructions on making the tape unit ready.
7208	<ul style="list-style-type: none"> <li>• Power switch is on (pressed).</li> <li>• Power light is on.</li> <li>• Data cartridge is inserted.</li> <li>• Ready light is on.</li> <li>• System external signal cable is connected to the type 2621 I/O processor and to the 7208 tape drive.</li> </ul> <p><b>Note:</b> The SCSI I/O bus terminating plug for the system external signal cable is connected internally in the 7208 tape drive. The 7208 tape drive does not need, and must not have, an external terminating plug.</p>	See the <i>7208 8 mm Tape Drive Operator's Manual</i> for instructions on making the tape drive ready. If you cannot make the 7208 Model 012 tape drive ready, go to "TU-PIP2" on page 226.

Storage device	Ready description	Action
9348	<ul style="list-style-type: none"> <li>• Power switch is set to the On position.</li> <li>• Power light is on.</li> <li>• Tape is loaded.</li> <li>• Status display shows 00 A002.</li> <li>• On-line light is on.</li> </ul>	See the <i>9348 Customer Information</i> manual, SA21-9567, for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the "Analyzing Problems" section of <i>9348 Tape Unit Service Information</i> , SY31-0697.

## Twinaxial workstation I/O processor PIP

*For use by authorized service providers.*

Use this page to isolate a failure which has been detected by the twinaxial workstation I/O processor. If you are using a personal computer, an emulation program must be installed and working.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located. See Power on/off the system and logical partitions before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)**

### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

### DANGER

**To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)**

### DANGER

**To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)**


### DANGER

**To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)**

**Attention:** When instructed, remove and connect cables carefully. You may damage the connectors if you use too much force.

Read and understand the following service procedures before using this section:

- Power on/off the system and logical partitions


- Determining a Primary or Alternative Console in the *iSeries<sup>TM</sup> Service Functions*  information

**TWSC-PIP1:** The workstation IOP detected an error. Read the Danger notices above before performing this procedure.


One of the following occurred:

- All of the workstations on one port are not working.
  - All of the workstations on the system are not working.
  - One of the workstations on the system is not working.
  - The reference code table instructed you to perform this procedure.
  - The Remote Operations Console is not working.
1. If you are using a Remote Operations Console, perform “Operations Console-PIP2” on page 149 before using this procedure.
  2. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions, before continuing with this procedure.
  3. Are you using a workstation adapter console?


**Note:** A personal computer (used as a console) that is attached to the system by using a console cable feature is known as a workstation adapter console. The cable (part number 46G0450, 46G0479, or 44H7504) connects the serial port on the personal computer to a communications I/O adapter on the system.

    - **No:** Continue with the next step.
    - **Yes:** Go to “WSAC-PIP1” on page 248.  
**This ends the procedure.**
  4. Is the device you are attempting to repair a personal computer (PC)?
    - **No:** Continue with the next step.
    - **Yes:** PC emulation programs operate and report system-to-PC communications problems differently. See the PC emulation information for details on error identification. Then, continue with the next step.
  5. Perform the following:
    - a. Verify that all the devices you are attempting to repair, the primary console, and any alternative consoles are powered on.
    - b. Verify that the all the devices you are attempting to repair, the primary console, and any alternative consoles have an available status. For more information on displaying the device status, see Hardware Service Manager in the *iSeries<sup>TM</sup> Service Functions*  information.
    - c. Verify that the workstation addresses of all workstations on the failing port are correct. Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information for details on how to check addresses.
    - d. Verify that the last workstation on the failing port is terminated. All other workstations on that port must not be terminated.
    - e. Ensure that the cables that are attached to the device or devices are tight and are not visibly damaged.
    - f. If there were any cable changes, check them carefully.
    - g. If all of the workstations on the system are not working, disconnect them by terminating at the console.
    - h. Verify the device operation (see the device information for instructions).
    - i. The cursor position can assist in problem analysis.

- The cursor in the upper left corner indicates a communication problem between the workstation IOP and the operating system. Perform the following to assist in problem analysis:
    - Verify that all current PTFs are loaded.
    - Ask your next level of support for assistance.

**This ends the procedure.**
  - The cursor in the upper right corner indicates a communication problem between the workstation IOP and the device. Continue with the next step.
- j. Continue with the next step.
6. Is the system powered off?
- **Yes:** Continue with the next step.
  - **No:** Go to step **9** (See page 240).
7. Perform the following:
- a. Power on the system in **Manual** mode (see "Selecting IPL Type, Mode, and Speed" in the iSeries<sup>(TM)</sup> Service Functions  information.
- b. Wait for a display to appear on the console or a reference code to appear on the control panel. Does a display appear on the console?
- **No:** Continue with the next step.
  - **Yes:** If you disconnected any devices after the console in step **5** (See page 239), perform the following:
    - a. Power off the system.
    - b. Reconnect one device.
 

**Note:** Ensure that you terminate the device you just reconnected and remove the termination from the device previously terminated.
    - c. Power on the system.
    - d. If a reference code appears on the control panel, go to step **10** (See page 241).
    - e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.
    - f. Continue to perform the initial program load (IPL).

**This ends the procedure.**
8. Does the same reference code that sent you to this procedure appear on the control panel?
- **Yes:** Continue with the next step.
  - **No:** Go to "Starting point for all problems" on page 2 for this new problem.
- This ends the procedure.**
9. Perform the following to make DST available:
- a. Ensure that **Manual** mode on the control panel is selected (see Selecting IPL Type, Mode, and Speed in the iSeries<sup>(TM)</sup> Service Functions  information.
- b. Select function 21 **Make DST Available**.
- c. Check the console and any alternative consoles for a display. Does a display appear on any of the console displays?
- **No:** Continue with the next step.
  - **Yes:** If you disconnected any devices after the console in step **5** (See page 239), perform the following:
    - a. Power off the system.
    - b. Reconnect one device.
 

**Note:** Ensure that you terminate the device you just reconnected and remove the termination from the previously terminated device.

- c. Power on the system.
  - d. If a reference code appears on the control panel, go to step **10** (See page 241).
  - e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.
  - f. Continue to perform the initial program load (IPL).  
**This ends the procedure.**
10. Ensure that the following conditions are met:
- The workstation addresses of all workstations on the failing port must be correct.  
Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information if you need help with checking addresses.
- Did you find a problem with any of the above conditions?
- **Yes:** Continue with the next step.
  - **No:** Go to step **12** (See page 241).
11. Perform the following:
- a. Correct the problem.
  - b. Select function 21 **Make DST Available**.
  - c. Check the console and any alternative consoles for a display.
- Does a display appear on any of the consoles?
- **No:** Does the same reference code appear on the control panel?
    - **Yes:** Continue with the next step.
    - **No:** Go to “Starting point for all problems” on page 2 for this new problem.  
**This ends the procedure.**
  - **Yes:** Continue to perform the IPL.  
**This ends the procedure.**
12. Is the reference code one of the following?: 0001, 0003, 0004, 0005, 0006, 0101, 0103, 0104, 0105, 0106, 5004, 5082, B000, D010, or D023.
- **No:** Continue with the next step.
  - **Yes:** Go to step **16** (See page 242).
13. Does the system have an alternative console on a second workstation IOP?
- **Yes:** Continue with the next step.
  - **No:** Go to step **15** (See page 242).
14. There is either a Licensed Internal Code problem, or there are two device failures on the workstation IOPs, consoles, or cables. The console and any alternative consoles are the most probable causes for this failure.
- See the service information for the failing display to attempt to correct the problem. If a display is connected to the system by a link protocol converter, use the link protocol converter information to attempt to correct the problem. The link protocol converter may be the failing item.
  - If you have another working display, you can exchange the console and alternative consoles and perform an IPL to attempt to correct the problem.
  - Exchange the following parts one at a time until you determine the failing item:
    - a. Console
    - b. Alternative console
    - c. Cables
    - d. Workstation IOA for the console
    - e. The multi-adapter bridge. See symbolic FRU “MA\_BRDG” on page 363.  
**This ends the procedure.**

15. The console, cables, or the workstation IOP card is the most probable causes for this failure. If the console is connected to the system by a link protocol converter, the link protocol converter is possibly the failing item. Use one or more of the following options to correct the problem:
  - a. See the service information for the failing displays for more information. If a display is connected to the system by a link protocol converter, see the link protocol converter information to attempt to correct the problem.
  - b. If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
  - c. Exchange the following parts one at a time until you determine the failing item:
    - 1) Console
    - 2) Workstation IOA
    - 3) The multi-adapter bridge. See symbolic FRU "MA\_BRDG" on page 363.
    - 4) Twinaxial attachment (cable)

**This ends the procedure.**

16. To continue problem analysis, use a port tester, part 93X2040 or 59X4262, which you may have with your tools or the customer may have one. The port tester has either two or three lights.

Is a port tester available?

- **Yes:** Continue with the next step.
- **No:** Check or exchange the cables from the system to the failing display. Did this correct the problem?
  - **Yes:** You corrected the problem.  
**This ends the procedure.**
  - **No:** Go to step **13** (See page 241).

17. To use the port tester to isolate the problem, perform the following:

**DANGER**

<b>To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)</b>
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- Verify that the port tester is operating correctly by doing a self-test. A self-test can be made at any time, even when the port tester is attached to a port or cable. Perform the following steps to do a self-test:
  - a. Move the selector switch to the center (0) position.
  - b. Push and hold the test button until all lights go on. The yellow lights should go on immediately, and the green light should go on approximately 5 seconds later. The port tester is ready for use if all lights go on.
- Leave the system power on.

18. Find the input cable to the failing console or port.

Is the failing console or the failing port attached to a protocol converter?

- **No:** Perform the following:
  - a. Disconnect the input cable from the failing console.
  - b. Connect the port tester to the input cable.
  - c. Continue with the next step.
- **Yes:** Perform the following:
  - a. Disconnect the cable that comes from the system at the protocol converter.
  - b. Connect the port tester to the cable.
  - c. Continue with the next step.

19. Perform the following:

- a. Set the selector switch on the port tester to the left (1) position for a twinaxial connection. Set the switch to the right (2) position for a twisted pair connection.

- b. Press and hold the test switch on the port tester for 15 seconds and observe the lights.
- c. Choose from the following options:
  - If the port tester has **three** lights, do the following:
    - If only the top (green) light is on, go to step **28** (See page 244).
    - If both the top (green) and center (yellow) lights are on, go to step **21** (See page 243).  
**Note:** The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.
    - If only the bottom (yellow) light is on, go to step **22** (See page 243).
    - If all lights are off, go to step **23** (See page 243).
    - If all lights are on, go to step **20** (See page 243).
  - If the port tester has **two** lights, do the following:
    - If only the top (green) light is on, go to step **28** (See page 244).
    - If only the bottom (yellow) light is on, go to step **22** (See page 243).
    - If both lights are off, go to step **23** (See page 243).
    - If both lights are on, continue with the next step.
20. The tester is in the self-test mode. Check the position of the selector switch.
  - If the selector switch is not in the correct position, go to step **19** (See page 242).
  - If the selector switch is already in the correct position, the port tester is not working correctly. Exchange the port tester, and go to step **17** (See page 242).
21. The cable you are testing has an open shield.  
**Note:** The open shield can be checked only on the cable from the twinaxial workstation attachment to the device or from device to device. Only one section of cable can be checked at a time. See the SA41-3136, Port Tester Use information.  
**This ends the procedure.**
22. The cable network is bad. The wires in the cable between the console and the twinaxial workstation attachment are reversed. Go to step **27** (See page 244).
23. Perform the following:
  - a. Find the twinaxial workstation attachment to which the failing console is attached.
  - b. Disconnect the cable from port 0 on that twinaxial workstation attachment.
  - c. Connect the port tester to port 0 on the attachment.
  - d. Set the selector switch on the port tester to the left (1) position.
24. Perform the following:
  - a. Press and hold the test switch on the port tester for 15 seconds and observe the lights.
  - b. If the port tester has **three** lights, do the following:
    - If both the top (green) and center (yellow) lights are on, continue with step **25** (See page 244).  
**Note:** The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.
    - If only the bottom (yellow) light is on, continue with step **25** (See page 244).
    - If all lights are off, continue with step **25** (See page 244).
    - If only the top (green) light is on, go to step **27** (See page 244).
    - If all lights are on, go to step **26** (See page 244).
  - c. If the port tester has **two** lights, do the following:
    - If only the top (green) light is on, go to step **27** (See page 244).
    - If only the bottom (yellow) light is on, continue with step **25** (See page 244).
    - If both lights are off, continue with step **25** (See page 244).
    - If both lights are on, go to step **26** (See page 244).

25. The test indicated that there was no signal from the system. Reconnect the cable you disconnected and perform the following:
  - a. Exchange the following parts:
    - 1) Twinaxial workstation IOA card
    - 2) The multi-adapter bridge. See symbolic FRU "MA\_BRDG" on page 363.
  - b. Power on the system to perform an IPL.  
**This ends the procedure.**
26. The tester is in the self-test mode. Check the position of the selector switch:
  - If the selector switch is not in the left (1) position, set the switch to the left (1) position. Then go to step 24 (See page 243).
  - If the selector switch is already in the left (1) position, the port tester is not working correctly. Exchange the port tester and go to step 23 (See page 243).
27. The cable to the workstation is the failing item. Cable maintenance is a customer responsibility. The cable must be repaired or exchanged. For information on correcting cable problems, refer to the Twinaxial cables page in the Plan for hardware and software, Planning reference, Cables topic. For Cabling instructions, see Print server and rack cabling instructions. Then, power on the system to perform an IPL.  
**This ends the procedure.**
28. The port tester detects most problems, but it does not always detect an intermittent problem or some cable impedance problems. The tester may indicate a good condition, although there is a problem with the workstation IOP card or cables.
  - a. If the failing display is connected to a link protocol converter, the link protocol converter is the failing item. See the link protocol converter service information to correct the problem.
  - b. Exchange the following parts:
    - 1) Console
    - 2) Twinaxial workstation IOA
    - 3) The multi-adapter bridge. See symbolic FRU "MA\_BRDG" on page 363.
    - 4) Cables
  - c. If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem. See the service information for the failing display for more information.
  - d. If exchanging the failing items did not correct the problem and the reference code was a 5002, 5082, or 50FF, there may be a Licensed Internal Code problem. Go to "LIC-PIP3" on page 118.
  - e. The problem may be caused by devices that are attached after the console on port 0.  
**This ends the procedure.**

## Workstation adapter PIP

*For use by authorized service providers.*

This topic contains the procedure necessary to isolate a failure that is detected by the workstation adapter. This procedure is used when no display is available with which to perform on-line problem analysis.

The workstation adapter detected a problem while communicating with the workstation that is used as the primary console.

**Note:** If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).



## DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)

## DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

## DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)


## DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- Power on/off the system and logical partitions
- Determining a Primary or Alternative Console in the *iSeries Service Functions*  information

**WS-PIP1: Note:** If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions.
2. Are you using a workstation adapter console (type 6A58 or 6A59)?
  - **No:** Continue with the next step.
  - **Yes:** Go to “WSAC-PIP1” on page 248.  
**This ends the procedure.**
3. Perform the following:
  - a. Select the icon on the workstation to make it the console (you may have already done this). You must save the console selection. For more information see *Local Device Configuration* and *LAN, Frame-Relay and ATM Support*.
  - b. Access dedicated service tools (DST) by performing the following:
    - 1) Select **Manual** mode on the control panel.
    - 2) Use the selection switch on the control panel to display function 21, **Make DST Available**, and press **Enter** on the control panel.
    - 3) Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

- **No:** Continue with the next step.
- **Yes:** The problem is corrected.  
**This ends the procedure.**

4. Isolate the problem to one server and one workstation (console) by doing the following:
  - a. Disconnect the power cable from the workstation.
  - b. Eliminate all workstations, cables, and connector boxes from the network except for one server, one console, two connector boxes, and one cable.
  - c. Ensure that the cables that are connected to the console, the keyboard, and the server are connected correctly and are not damaged.
5. Perform the following:
  - a. Ensure that the server console is terminated correctly.
  - b. Set the Power switch on the console to the **On** position.
  - c. Select the **SNA\*PS** icon on the console.
  - d. See the workstation information for more information.
6. Access DST by performing the following:
  - a. Select **Manual** mode on the control panel.
  - b. Use the selection switch on the control panel to display function 21, **Make DST Available**, and press **Enter** on the control panel.
  - c. Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

- **No:** Does the reference code A600 5005 appear on the control panel?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2 to correct the problem.  
**This ends the procedure.**
- **Yes:** The problem is in a cable, connector box, or device you disconnected in step 4 (See page 246) of this procedure.  
**This ends the procedure.**

7. Do you have another workstation, cable, and two connector boxes you can exchange with the workstation connected to the server?
  - **Yes:** Continue with the next step.
  - **No:** One of the following is causing the problem:
    - Workstation adapter Licensed Internal Code
    - Workstation adapter configuration
    - Workstation
    - Cable
    - Connector box
    - Workstation IOA
    - Workstation IOP

**Note:** The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

If you still have not corrected the problem, ask your next level of support for assistance.

**This ends the procedure.**
8. Repeat steps 4 (See page 246) through 7 (See page 246) of this procedure, using a different workstation, cable, and connector boxes.

Do you still have a problem?

- **Yes:** Continue with the next step.

- **No:** The problem is in the cable, connector boxes, or workstation you disconnected.  
**This ends the procedure.**


9. One of the following is causing the problem:

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation IOA
- Communications IOP

**Note:** The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

To bring up a workstation other than the console, perform the following:

- a. Connect another workstation into this network.
- b. Select **Normal** mode on the control panel.

- c. Perform an IPL (see Initial Program Load (IPL) Information in the *iSeries Service Functions*  information).

If the sign-on display appears, the following parts are good:

- Communications IOP
- Workstation IOA

**Note:** If a printer connected to this assembly is not working correctly, it may look like the display is bad. Perform a self-test on the printer to ensure that it prints correctly (see the printer service information).

If you still have not corrected the problem, ask your next level of support for assistance.

**This ends the procedure.**

## Workstation adapter console PIP

*For use by authorized service providers.*

This topic contains the procedure necessary to isolate a failure that is detected by the workstation adapter console. Use this procedure when no display is available with which to perform on-line problem analysis.

**Note:** If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Power on/off the system and logical partitions) before removing, exchanging, or installing a field-replaceable unit (FRU).

### DANGER

**To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. (RSFTD203)**

### DANGER

**To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)**

## DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)


## DANGER

To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)

## DANGER

To prevent power from switching on automatically during service procedures, select manual or secure mode on the system unit control panel or disconnect the cables that connect to J15 and J16 on the frame being serviced. (RSFTD211)

Read and understand the following service procedures before using this section:

- Power on/off the system and logical partitions
- Determining a Primary or Alternative Console in the *iSeries Service Functions*  information
- Card removal and replacement in Remove and replace procedures.
- Locations and addresses

## WSAC-PIP1

**Note:** If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions.
2. Ensure that your workstation meets the following conditions:
  - The workstation that you are using for the console is powered on.
  - The emulation program is installed and is working.
  - The input/output adapter (IOA) is installed and the workstation console cable is attached.


### Notes:

- a. Card information: Hardware that is associated with 6A59 feature is the type 2745 card.
- b. Cable information: The cable attaches directly to the IOA.

Did you find a problem with any of the conditions listed above?

- **No:** Continue with the next step.
- **Yes:** Correct the problem. Then, perform an IPL of the system.

**This ends the procedure.**

3. Perform the following to make dedicated service tool (DST) available:
  - a. If there is an alternative console, ensure that it is powered on.
  - b. Ensure that **Manual** mode on the control panel is selected (see *iSeries Service Functions*  ).
  - c. Select function 21, **Make DST Available** on the control panel, and press **Enter**.

Does a display appear on either the console or any alternative console?



- **No:** Continue with the next step.



- **Yes:** Complete the IPL. When the operating system display appears, use the Work with Problem command (WRKPRB) or Analyze Problem command (ANZPRB) to analyze and correct or report any console problems.  
**This ends the procedure.**
4. Do you have SRC A600 5001, A600 5004, A600 5007, or B075 xxxx (where xxxx is any value)?
    - **No:** Continue with the next step.
    - **Yes:** Perform the following:
      - a. Disconnect any cables that are attached to the IOA.
      - b. Install the wrap plug on the IOA. The 2745 wrap plug label is QQ.
      - c. Perform an IPL in Manual mode.
  5. Does SRC 6A59 5007 occur?
    - **No:** Continue with the next step.
    - **Yes:** One of the following is causing the problem:
      - Workstation emulation program
      - Workstation
      - Workstation console cable**This ends the procedure.**
  6. Did SRC A600 5001, A600 5004, or 6A59 5008 occur?
    - **No:** This is a new problem. Use the new reference code to correct the problem (see System Reference Codes) or ask your next level of support for assistance.  
**This ends the procedure.**
    - **Yes:** The Type 2745 workstation adapter is the failing item.  
**This ends the procedure.**




## Failing items



*For use by authorized service providers.*

Use this table to find the field replaceable unit (FRU) part numbers identified by a failing item code. If only a type number is listed, go to the Type, model, and part number list to determine the part number.






Failing item code	Description/Action
FI00015	FI00015 indicates that a local bus adapter card in a migrated tower is the failing item. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .
FI00017	This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .
FI00020	FI00020 is not supported on these models. Continue with the next FRU in the list.
FI00021	FI00021 indicates that the combined function I/O processor (CFIOP) is the failing item. Use the CFIOP type to determine the part number.
FI00022	FI00022 indicates that the Licensed Internal Code for the service processor may be the failing item. Ask your next level of support for assistance.
FI00030	FI00030 indicates a main storage card failure. Power SRC 1xxx-xxxx No FRU replacement.
FI00040	See the symbolic FRU "BACKPLN" on page 284.



Failing item code	Description/Action
FI00047	This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .
FI00050	See FI00060 (See page 250)
FI00055	FI00055 indicates that a primary optical link cable is the failing item.  This is either the optical bus cable for the bus you are working with or its paired bus cable on the optical link card.
FI00056	FI00056 indicates that any optical bus cable or a missing optical bus wrap connector is the failing item.
FI00057	FI00057 indicates that the secondary optical link cable is the failing item.  This is the optical cable that runs between the bus expansion adapter cards in two separate expansion units.
FI00060	FI00060, FI00062, and FI00065 indicate that any card, cable, or card enclosure connected to the failing SPD bus may be the failing item. This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .
FI00062	See FI00060 (See page 250).
FI00065	See FI00060 (See page 250).
FI00070	FI00070 indicates that a storage device attached to the IPL device IOP is the failing item.  Determine the IPL device that is failing by doing the following: <ol style="list-style-type: none"> <li>1. For a failing logical partition, other than the Primary partition, on systems with multiple logical partitions, go to the Work with partition status display and determine the active IPL type (source).</li> <li>2. For a failing Primary partition or for systems with only one partition select function 01 (Select IPL) on the control panel to display the active IPL type.</li> </ol> If the IPL storage device is not the failing item, then any storage device attached to the IPL device IOP may be the failing item.
FI00072	FI00072 indicates that the load-source media is the failing item.  If the load source is tape, exchange the tape in the alternate IPL tape unit.  If the load source is an optical storage unit, exchange the compact disk.  If the load source is DASD, exchange the DASD.  If replacing the media does not work, try replacing the drive.







Failing item code	Description/Action
FI00090	<p>FI00090 indicates that the removable media device for an alternate IPL is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.</p> <p>Determine the device that is failing by doing the following:</p> <ol style="list-style-type: none"> <li>1. Select function 01 (Select IPL) on the control panel and press Enter to verify that the active IPL type is D. <ul style="list-style-type: none"> <li><b>Note:</b> Use the system configuration list to identify the device (see Hardware Service Manager in the <i>iSeries<sup>(TM)</sup> Service Functions</i>  information).</li> </ul> </li> </ol> <p>The possible failing devices are the following type numbers: 3490, 3570, 3590, 632x, 6382, 6383, 6386, 6387, 63A0, 7208, 9348, and 9427.</p> <ol style="list-style-type: none"> <li>2. Use the service information for the specific removable media unit for an alternate IPL to analyze the device failure.</li> </ol>
FI00092	<p>FI00092 indicates that the load-source for an alternate IPL or the interface to the load-source is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to Determine if the system has logical partitions, before continuing with this procedure.</p> <p><b>Note:</b> If the load source is an optical unit, you may need to perform function 3 to IPL the system again. This will make the unit ready.</p> <p>To locate the alternate load-source for a system that does not have multiple partitions see Determine the load source disk and alternate IPL device. To locate the alternate load-source for the Primary partition on a system that has multiple partitions, or locate the alternate IPL load-source for a secondary partition see <i>&gt;iSeries<sup>(TM)</sup> Service Functions</i> .</p> <p>Use the device type to determine the part.</p>
FI00096	<p>FI00096 indicates that the IOP attached to the load-source device is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to Determine if the system has logical partitions, before continuing with this procedure.</p> <ol style="list-style-type: none"> <li>1. Verify that the IPL type is correct: <ul style="list-style-type: none"> <li>• For a failing logical partition, other than the Primary partition, on systems with multiple logical partitions, go to the "Work with partition status" screen and determine the active IPL type (source).</li> <li>• For a failing Primary partition or for systems with only one partition select function 01 (Select IPL) on the control panel to display the active IPL type. Select function 01 on the control panel and press Enter to display the present IPL mode.</li> </ul> </li> <li>2. The failing CFIO or IOP may have a removable storage I/O adapter FRU. Replace the storage IOA first using the STORIOA symbolic FRU. To locate the load source for a system that does not have multiple partitions see Determine the load source disk and alternate IPL device. To locate the load source for the Primary partition on a system that has multiple partitions see Determine the load source disk and alternate IPL device. To locate the load source for a secondary partition, see Locating the secondary partition's load source in the <i>iSeries<sup>(TM)</sup> Service Functions</i>  information.</li> </ol>





Failing item code	Description/Action
FI00098	<p>FI00098 indicates that the load-source disk device is the failing item.</p> <p><b>Note:</b> Determine if the system has logical partitions. Go to Determine if the system has logical partitions before continuing with this procedure.</p> <p>Determine the disk unit 1 type number. It is printed on a label on the front of the system frame.</p> <p>If the system does not have a label that identifies the disk unit type, you can determine the part number of the disk unit by looking at a label located on the disk unit. You must remove the disk unit to see this label.</p> <p>Exchange the disk drive and logic card for the disk unit type you have (see Type, model, and part number list).</p> <p>To locate the load source for a system that does not have multiple partitions see Determine the load source disk and alternate IPL device. To locate the load source for the Primary partition on a system that has multiple partitions see Determine the load source disk and alternate IPL device. To locate the load source for a secondary partition see &gt;iSeries<sup>(TM)</sup></p> <p>Service Functions  .</p>
FI00099	<p>FI00099 indicates that the Licensed Internal Code failed or responded in an unpredictable way.</p> <p>Ask your next level of support for assistance.</p>
FI00121	<p>FI00121 indicates that any tape or optical storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Use the device type to determine the part.</p>
FI00122	<p>FI00122 indicates that a reserved IOA port on the IOP is the failing item.</p> <p>If the IOP is type 2624, the failing item is type 6146 IOA.</p>
FI00123	<p>See the symbolic FRU DEVTERM.</p>
FI00124	<p>FI00124 indicates that the control panel is the failing item.</p> <p>For part number information, see the 9251 and 507x, 508x Expansion Tower(s) Control Panel in the parts section of the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .</p>
FI00130	<p>FI00130 indicates that the Licensed Internal Code for one of the IOPs or IOAs is the failing item.</p> <p>Determine the IOP or IOA type and location:</p> <ol style="list-style-type: none"> <li>1. Determine the address of the IOP or IOA card (see SRC address formats).</li> <li>2. Determine the location of the IOP or IOA card (see Locations and addresses for the model you are working on), and get the type from the card at that address.</li> </ol> <p>Look for PTFs associated with the reference code and the identified hardware type and have the customer apply them.</p>
FI00131	<p>FI00131 indicates that one of the IOPs or IOAs, if active, is the failing item.</p> <p>Determine the IOP or IOA type and location:</p> <ol style="list-style-type: none"> <li>1. Determine the address of the IOP or IOA card (see SRC address formats).</li> <li>2. Determine the location of the IOP or IOA card (see Locations and addresses for the model you are working on), and get the type from the card at that address.</li> </ol> <p>Use the IOP or IOA type to determine the part.</p>





Failing item code	Description/Action
FI00132	<p>FI00132 indicates that one of the IOAs is the failing item.</p> <p>Perform Bus-PIP5 to isolate the failing IOA.</p>
FI00141	<p>FI00141 indicates that the IOP for the 7208 tape drive is the failing item.</p> <p>The failing IOP is the type 2621 IOP.</p>
FI00142	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI00180	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI00182	<p>For Models 270 and 820, FI00182 indicates that the local optical link card is the failing item. For Models 830, 840, SB2, and SB3, FI00182 indicates that the SPD optical bus driver is the failing item.</p> <ul style="list-style-type: none"> <li>• If the fifth character of word 5 (xxxx <u>x</u>xxx) is 1, 5, 9, or D—2686 (266 MB/s)</li> <li>• If the fifth character of word 5 (xxxx <u>x</u>xxx) is 3, 7, B, or F—2688 (1062 MB/s)</li> </ul>
FI00185	<p>FI00185 indicates that the 12-port ASCII workstation attachment cable is the failing item.</p>
FI00186	<p>For the Model 270 and 820, FI00186 indicates that the optical cable in the top position (even bus) of the optical link card is the failing item. For the Model 830, 840, SB2, and SB3, FI00186 indicates that the optical cable in the top position (lower number bus) of the SPD optical Bus Driver is the failing item.</p>
FI00187	<p>FI00187 indicates that the optical cable configuration is the failing item.</p> <p>Perform Bus PIP1 in <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  to correct the problem.</p>
FI00189	<p>For the Model 270 and 820, FI00189 indicates that the bus extension card configuration is the failing item.</p> <p>For the Model 830, 840, SB2, and SB3, FI00189 indicates that the local SPD bus adapter configuration is the failing item.</p> <p>Perform Bus PIP1 in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  to correct the problem.</p>
FI00200	<p>FI00200 indicates that the AC module or the removable power cable is the failing item.</p> <p>The following list shows the possible failing AC modules (see Type, model, and part number list for part numbers):*</p> <ul style="list-style-type: none"> <li>• System unit — part SPNLCRD</li> <li>• System unit expansion (FC 5070, 5072), storage expansion tower (FC 5080, 5082)</li> <li>• System unit expansion (FC 5071, 5073), storage expansion tower (FC 5081, 5083)</li> </ul> <p>See Determine line cord, plug, and receptacle type in the Plan for hardware and software topic in Information Center, to determine the power cable part number for systems in your country or region. This information is also available in the &gt;Plan for hardware and software  book under the Power topic.</p>

Failing item code	Description/Action
FI00203	<p>For the Models 270 and 820, FI00203 indicates that the remote bus expansion adapter card in the bus expansion unit is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p> <p>For Models 830, 840, SB2, and SB3, FI00203 indicates that the remote SPD optical bus receiver card in the expansion tower is the failing item.</p> <p>Use the receiver card type in the expansion tower to determine the part.</p>
FI00204	<p>For Models 270 and 830, FI00204 indicates that the bus cable between the system unit and the bus expansion unit is the failing item. For Models 830, 840, SB2, and SB3, FI00204 indicates that the bus cable between the migrated tower and the expansion tower is the failing item.</p>
FI00205	<p>For Models 270 and 830, FI00205 indicates that the remote bus expansion adapter for the paired bus is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p> <p>For Models 830, 840, SB2, and SB3, FI00205 indicates that the remote SPD optical bus receiver on the paired bus is the failing item.</p> <p>Use the receiver card type in the expansion tower bus to determine the part.</p>
FI00206	<p>For Models 270 and 830, FI00206 indicates that a type 2685 remote bus expansion adapter is the failing item.</p> <p>For Models 830, 840, SB2, and SB3, FI00206 indicates that a type 2685 remote SPD optical bus receiver is the failing item.</p> <p>Perform Bus PIP1 in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI00230	<p>FI00230 indicates that the Licensed Internal Code for the failing node is the failing item and needs to be restored.</p> <p>Determine the type of node and select the Licensed Internal Code load.</p> <ul style="list-style-type: none"> <li>• <b>Primary node</b> - AJSFDJ04</li> <li>• <b>Secondary node</b> - AJSFDJ05</li> </ul>
FI00235	<p>FI00235 indicates that an SPCN cable that connects two frames or a frame to a node is the failing item. This FI is applicable only if an SPCN cable is installed.</p> <p>The following list shows the lengths and part numbers of the possible failing items:</p> <ul style="list-style-type: none"> <li>• 6.0 meters — part 21F9469</li> <li>• 15.0 meters — part 21F9358</li> <li>• 30.0 meters — part 21F9359</li> <li>• 60.0 meters — part 21F9360</li> <li>• 100.0 meters (SPCN optical cable) — part 21F9415</li> <li>• SPCN optical adapter — part 90H6287</li> <li>• SPCN port cable (frame-to-node) — part 21F9362</li> <li>• Frame-to-frame cable — part 87G6235</li> <li>• SPCN optical adapter — part 90H6287</li> </ul>
FI00236	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>






Failing item code	Description/Action
FI00237	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00238	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00239	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00240	<p>FI00240 indicates that an SPCN node is the failing item.</p> <p>The system cannot identify the type of node. Determine the failing node and exchange the failing item.</p> <p>The following list shows the possible failing items (see Type, model, and part number list for part numbers):</p> <ul style="list-style-type: none"> <li>• SPCN unit — part SPNLCRD</li> <li>• SPCN unit — part 21H6961 (if installed)</li> <li>• Secondary AC module (if installed)</li> <li>• For 9251 base I/O (if installed)</li> <li>• Power control compartment — part 21F9008</li> </ul>
FI00244	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00245	<p>FI00245 indicates that the card enclosure for an unknown unit type is the failing item.</p> <p>System units and system expansion units — see symbolic FRU BACKPLN.</p>
FI00246	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00248	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>

Failing item code	Description/Action
FI00251	<p>FI00251 indicates that a battery power unit is the failing item.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• System units, extension units, storage expansion units, and the base I/O tower (9251) use the following: <ul style="list-style-type: none"> <li>– For 9910 type uninterruptible power supply call IBM<sup>(R)</sup> Service Support. For all other uninterruptible power supply units, call the uninterruptible power supply provider.</li> <li>– Internal battery unit pack assembly (see Locations for the model you are working on for part number information and remove and replace procedures)</li> <li>– Battery power unit charger — part 21H7060</li> <li>– External battery unit (see Type, model, and part number list for part number information)</li> <li>– External battery unit cable — part 21H7695</li> </ul> </li> <li>• Expansion battery power unit 1 and 2 battery pack — part 87G8048</li> <li>• Internal battery power unit 1 and 2 charger (see Type, model, and part number list for part number information)</li> <li>• 9309 general purpose I/O frame with SPCN (FC 9171) — part 21F9380</li> </ul>
FI00253	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00255	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00256	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00300	<p>FI00300 indicates that media is the failing item.</p> <p>If the load source is:</p> <ul style="list-style-type: none"> <li>• Tape, exchange the tape in the alternate IPL tape unit.</li> <li>• An optical storage unit, exchange the compact disk.</li> <li>• DASD, exchange the DASD.</li> </ul> <p>If installing from:</p> <ul style="list-style-type: none"> <li>• Tape, exchange the tape in the alternate IPL tape unit.</li> <li>• An optical storage unit, exchange the compact disk.</li> </ul>
FI00301	<p>FI00301 indicates that the magnetic storage I/O processor (MSIOP) or the combined function I/O processor (CFIOP) is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00302	<p>FI00302 indicates that the Licensed Internal Code for the magnetic storage I/O processor (MSIOP) or the combined function I/O processor (CFIOP) is the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00310	<p>FI00310 indicates that an I/O processor card or an I/O adapter card is the failing item.</p> <p>Perform Bus PIP1 in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .</p>
FI00315	<p>FI00315 indicates that the battery power unit install time life has been exceeded.</p>

Failing item code	Description/Action
FI00316	<p>FI00316 indicates that no I/O processors were found on the bus.</p> <p>Verify the configuration information for the system. If a bus is configured to be empty, there is no problem.</p>
FI00317	<p>FI00317 indicates that the I/O processor cards at consecutive direct select addresses appear to be failing.</p> <p>The I/O processor cards or a damaged backplane could cause this problem.</p>
FI00318	<p>FI00318 indicates that an I/O adapter card attached to an I/O processor card on the failing bus is the failing item.</p>
FI00319	<p>FI00319 indicates that the Licensed Internal Code on an I/O processor is the failing item. Install a PTF to correct the problem.</p> <p>Ask your next level of support for assistance.</p>
FI00320	<p>FI00320 indicates that the display station used as the console is the failing item.</p>
FI00350	<p>For Models 830, 840, SB2, and SB3 only, FI00350 indicates that the alternate IPL device is the failing item.</p> <p>See the service information for the specific device type and model installed on the system to determine the part.</p>
FI00360	<p>FI00360 indicates that the IPL disk device is the failing item.</p>
FI00380	<p>On the bus with the system console or the failing logical partition's console the failing item is the first workstation IOP card or the workstation IOA card. The bus with the system console is bus 0001. For systems with multiple logical partitions the Primary partition's console is on bus 0001 and the consoles for other logical partitions are determined by the LPAR configuration.</p>
FI00500	<p>See FI01140 (See page 267)</p>
FI00580	<p>FI00580 indicates that any storage device may be the failing item.</p> <p>The address of the failing storage device cannot be determined.</p>
FI00581	<p>FI00581 indicates that a storage device at the address identified by the problem isolation procedures for the reference code is the failing item.</p> <p>Use the service information of the I/O device to continue analyzing the problem.</p>
FI00584	<p>FI00584 indicates that any storage device may be the failing item.</p> <p>The address of the failing storage device cannot be determined.</p>
FI00601	<p>FI00601 indicates that the display station is the failing item.</p> <p>If a link protocol converter is used to connect the console to the system, the protocol converter is the failing item.</p>
FI00602	<p>FI00602 indicates that the cable between the workstation attachment and the device is the failing item.</p>
FI00603	<p>FI00603 indicates that the 5299 multiconnector is the failing item.</p>
FI00604	<p>FI00604 indicates that a printer is the failing item.</p> <p>Use the printer device information to analyze the problem.</p>
FI00605	<p>FI00605 indicates that a magnetic stripe reader on a display station is the failing item.</p>
FI00606	<p>FI00606 indicates that the storage media is the failing item.</p>
FI00607	<p>FI00607 indicates that a selector light pen attached to a display station is the failing item.</p>
FI00608	<p>FI00608 indicates that the link protocol converter is the failing item.</p>

Failing item code	Description/Action
FI00610	<p>FI00610 indicates that the twinaxial workstation IOP or the twinaxial workstation IOA attached to a combined function I/O processor (CFIOP), communications IOP, or combined function IOP is the failing item.</p> <p>Use the workstation IOP or IOA type to determine the part.</p>
FI00611	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI00612	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI00613	<p>FI00613 indicates that the display station used as the console is the failing item.</p>
FI00614	<p>FI00614 indicates that a unit reference code of FFFF was indicated when the user entered the ANZPRB (Analyze Problem) command from a workstation.</p> <p>The failing items for this error can be identified by running the complete ANZPRB command. The failing items are also in the problem log when the WRKPRB command is entered.</p>
FI00615	<p>FI00615 indicates that the twinaxial workstation attachment cable is the failing item.</p> <p>Check the twinaxial workstation attachment cable for the part number.</p>
FI00616	<p>FI00616 indicates that the 5259 migration data link is the failing item.</p> <p>Exchange the 5259 migration data link.</p>
FI00626	<p>FI00626 indicates that the modem on the failing port is the failing item.</p> <p>Exchange the modem.</p>
FI00630	<p>FI00630 indicates that the multi-line communications IOP is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00631	<p>FI00631 indicates that a cable other than the cable from the workstation IOA to the first device is the failing item.</p>
FI00632	<p>FI00632 indicates that the cable from the workstation IOA to the first device is the failing item.</p>
FI00700	<p>FI00700 indicates that the remote data terminal equipment (DTE) or an attached device is the failing item.</p> <p>Report this problem to the operator of the remote equipment.</p>
FI00701	<p>FI00701 indicates that a local communications cable is the failing item.</p> <p>Use the cable to determine the part.</p>
FI00702	<p>FI00702 indicates that the local cable for the automatic call unit is the failing item.</p> <p>Check the automatic call unit interface cable for the part number.</p>
FI00703	<p>FI00703 indicates that the automatic call unit is the failing item.</p>
FI00704	<p>FI00704 indicates that the local data circuit-terminating equipment (DCE) is the failing item.</p>
FI00705	<p>FI00705 indicates that the remote data circuit-terminating equipment (DCE) is the failing item.</p> <p>Report this problem to the operator of the remote equipment.</p>

Failing item code	Description/Action
FI00708	FI00708 indicates that the local communications cable (X.21 interface) is the failing item. Check the communications cable for the part number.
FI00709	FI00709 indicates that the local communications cable (V.35 interface) is the failing item. Check the communications cable for the part number.
FI00710	FI00710 indicates that the local communications cable (V.24 interface with remote power on) is the failing item.  The remote power on feature is given support by using an available pin on the EIA-232/V.24 enhanced or EIA-232/V.24 non-enhanced cables. Check the communications cable for the part number.
FI00711	FI00711 indicates that the local communications cable (token-ring interface cable) is the failing item.  <b>Note:</b> An IBM <sup>(R)</sup> Cabling System Patch Cable or a comparable cable may have been supplied by the user to increase the length of this cable. Any cable attached to the token-ring interface cable may also be the failing item.
FI00712	FI00712 indicates that the token-ring access unit is the failing item.
FI00716	FI00716 indicates that the EIA-232/V.24 enhanced cable is the failing item. Check the communications cable for the part number.
FI00717	FI00717 indicates that the EIA-232/V.24 non-enhanced cable is the failing item. Check the communications cable for the part number.
FI00718	FI00718 indicates that an IOP card is the failing item. Use the IOP type to determine the part.
FI00719	FI00719 indicates that an IOA card is the failing item.
FI00720	FI00720 indicates that the Ethernet transceiver is the failing item.  Verify that the signal quality error switch in the transceiver that the Ethernet is attached to is set to active.  See the transceiver operator's guide for correct operation or correct remove and replace procedure.
FI00721	FI00721 indicates that the token-ring IOA card is the failing item. Use the IOA type to determine the part.
FI00722	FI00722 indicates that the cable attached to the local area network IOA is the failing item.
FI00723	FI00723 indicates that the communications two-port adapter cable for the communications IOA card is the failing item.  Exchange the communications two-port adapter cable.  If this does not correct the problem, use the IOA type to determine the part.
FI00725	FI00725 indicates that the Ethernet IOA card is the failing item. Use the IOA type to determine the part.
FI00726	FI00726 indicates that a communications IOA card is the failing item: Use the IOA type to determine the part.


Failing item code	Description/Action
FI00727	<p>FI00727 indicates that one of the IOAs attached to either a combined function I/O processor (CFIOP), multiline communications IOP or an Integrated xSeries<sup>(TM)</sup> Server (IXS) for iSeries<sup>(TM)</sup> server is the failing item.</p> <p>Perform Bus-PIP5 to isolate the failing IOA.</p>
FI00728	<p>FI00728 indicates that the local communications cable (RS449/V.36 interface) is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00730	<p>FI00730 indicates that the Licensed Internal Code module for an I/O card may be the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00731	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00732	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00733	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00734	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00735	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1</p> <p>Supplemental Manuals web site  .</p>
FI00741	<p>FI00741 indicates that the telephone cable to the wall outlet is the failing item.</p> <p>Check the cable for the part number.</p>
FI00742	<p>FI00742 indicates that the communications coupler is the failing item.</p> <p>Check the coupler for the part number.</p>
FI00751	<p>FI00751 indicates that the Licensed Internal Code module is the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00810	<p>FI00810 indicates that the magnetic tape is the failing item.</p> <p>Exchange the magnetic tape.</p>
FI00830	<p>FI00830 indicates that the external signal cable is the failing item.</p> <p>See EXTSCSI for cable part numbers.</p>
FI00832	<p>FI00832 indicates that the external signal cable is the failing item.</p> <p>See EXTSCSI for cable part numbers.</p>
FI00841	<p>FI00841 indicates that the terminating plug for the attached device is the failing item.</p> <ul style="list-style-type: none"> <li>• For tape devices—see FI00880</li> </ul>





Failing item code	Description/Action
FI00842	FI00842 indicates that the external signal cable for the attached device is the failing item. See EXTSCSI
FI00844	FI00844 indicates that the device controller for the attached device is the failing item. <ul style="list-style-type: none"> <li>• For tape devices—see FI00882 (See page 264)</li> </ul>
FI00845	FI00845 indicates that the external signal cable is the failing item. See EXTSCSI
FI00850	FI00850 indicates that the interface cables attached to the tape IOP are the failing items.
FI00851	FI00851 indicates that the I/O device attached to the tape IOP is the failing item. Use the service information of the I/O device to continue analyzing the problem.
FI00856	FI00856 indicates that an active tape IOP is the failing item. Use the IOP type to determine the part.
FI00870	FI00870 indicates that a storage device is the failing item. Use the device type to determine the part. If a device location is not listed in the Service Action Log entry or in Hardware Service Manager (HSM), then the failing device is either externally attached or the failing device may be part of an unsupported configuration. <b>Note:</b> The 636x tape unit is located in the FC 5032 removable storage unit.




Failing item code	Description/Action
FI00871	<p>FI00871 indicates that the attached tape device is the failing item.</p> <ul style="list-style-type: none"> <li>• 358x - External Ultrium drive. Refer to the device Maintenance Information manual to determine the part number(s) to replace.</li> <li>• 3590 Model Exx - External 1/2 cartridge tape drive; refer to the device Maintenance Information manual to determine the part number(s) to replace.</li> <li>• 4685 - VXA2 drive. <ul style="list-style-type: none"> <li>– For Models 270, 800, 810, and 820 system units, use P/N 97P3045</li> <li>– For Models 825, 830, 840, 870, 890, SB2, SB3 system units, use P/N 97P3046</li> <li>– For FC 5065, 5066, 5074, 5079 expansion towers, use P/N 97P3046</li> <li>– For externally attached drives, refer to the device service information to determine the part numbers(s) to replace.</li> </ul> </li> <li>• 6381 - Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door. <ul style="list-style-type: none"> <li>– For FC 5072, 5073, 5077 expansion towers use P/N 21H7658.</li> <li>– For all other towers use P/N 59H2742.</li> </ul> </li> <li>• 6382 - Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door. <ul style="list-style-type: none"> <li>– For Models 270, 800, 810, and 820 system unit use P/N 04N2564.</li> <li>– For Models 825, 830, 840, 870, 890, SB2, and SB3 system unit use P/N 53P2647.</li> <li>– For FC 5072, 5073, 5077 expansion towers use P/N 21H7019.</li> <li>– For FC 5065, 5074, 5079 expansion towers use P/N 53P2647.</li> <li>– For all other towers use P/N 59H3745.</li> </ul> </li> <li>• 6383 - Internal 1/4 inch cartridge drive with MLR1-S on the front cover. <ul style="list-style-type: none"> <li>– For Models 270, 800, 810, and 820 system unit use P/N 04N2565.</li> <li>– For Models 825, 830, 840, 870, 890, SB2, and SB3 system units use P/N 53P2648.</li> <li>– For FC 5072, 5073, 5077 expansion towers use P/N 97H7717.</li> <li>– For FC 5065, 5066, 5074, 5079 expansion towers use P/N 53P2648.</li> <li>– For all other towers use P/N 59H4533.</li> </ul> </li> <li>• 6384 - Internal 1/4 inch cartridge drive with SLR60 on the front cover. <ul style="list-style-type: none"> <li>– For Models 270, 800, 810, and 820 system units use P/N 53P2385</li> <li>– For Models 825, 830, 840, 870, 890, SB2, SB3 system units, use P/N 53P2386</li> <li>– For FC 5065, 5066, 5074, 5079 expansion towers use P/N 53P2386</li> </ul> </li> <li>• 6386 - Internal 1/4 inch cartridge drive with MLR3 on the front cover. <ul style="list-style-type: none"> <li>– For Models 270, 800, 810, and 820 system units use P/N 04N2566.</li> <li>– For Models 825, 830, 840, 870, 890, SB2, and SB3 system units use P/N 53P2649.</li> <li>– For FC 5072, 5073, 5077 expansion towers use P/N 97H7528.</li> <li>– For FC 5065, 5066, 5074, 5079 expansion towers use P/N 53P2649.</li> <li>– For all other towers use P/N 59H4130.</li> </ul> </li> </ul> <p>Continued...</p>


Failing item code	Description/Action
FI00871 continued	<p>FI00871 indicates that the attached tape device is the failing item.</p> <ul style="list-style-type: none"> <li>• 6387 - Internal 1/4 inch cartridge drive with SLR100 on the front cover. <ul style="list-style-type: none"> <li>– For Models 270 and 820 system units use P/N 04N2567</li> <li>– For Models 830, 840, 870, 890, SB2, and SB3 system units use P/N 53P2650</li> <li>– For FC 5065, 5066, 5074, 5079 expansion towers use P/N 53P2650</li> </ul> </li> <li>• 7207 Model 122 - External 1/4 inch cartridge drive with QIC-4GB-DC on the door, P/N 59H4434.</li> <li>• 7208 Model 342 - External 8mm tape drive; refer to the device service information to determine the part number(s) to replace.</li> <li>• 7208 Model 345 - External 8mm tape drive; refer to the device service information to determine the part number(s) to replace.</li> <li>• 7239 Model 308 - External 1/4 inch cartridge tape library; refer to the device service information to determine the part number(s) to replace.</li> <li>• 9348 - External 1/2 inch reel tape unit. Is one of the following status codes displayed anywhere on the 9348 control panel? (x = any number) <ul style="list-style-type: none"> <li>– Exxx</li> <li>– Fxxx</li> <li>– ***xx</li> <li>– *****</li> </ul> <ul style="list-style-type: none"> <li>- <b>No:</b> Refer to the 9348 Service Information and use the "Running Diagnostic Tests" procedure to run Diagnostic Test 1. If the test fails, use the 9348 Service Information to determine the failing items.</li> <li>- <b>Yes:</b> Use the "Status Codes" section of the 9348 Service Information to determine the failing items.</li> </ul> </li> <li>• Other device type: Refer to the device's service information to determine the part number or part numbers that need to be replaced.</li> </ul>
FI00872	<p>FI00872 indicates that the interface is the failing item.</p> <ul style="list-style-type: none"> <li>• Internal device: See FI01140 (See page 267).</li> <li>• External device: See EXTSCSI</li> </ul>

Failing item code	Description/Action
FI00880	<p>FI00880 indicates that a terminating plug on the device bus to this IOP is the failing item.</p> <p><b>Note:</b> If the unit is a 9427, an internal terminating plug is used (see the service information for the specific device).</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> <li>• Terminating plug for 2440 Tape Unit — part 79X3795</li> <li>• Terminating plug for 3490, 3570, 3590, and 7208 Model 342 Tape Units — part 61G8324</li> <li>• SCSI differential terminating plug for 3995 iSeries<sup>(TM)</sup> Optical Library Dataserver — part 79X3795</li> <li>• SCSI single-ended terminating plug for 3995 iSeries<sup>(TM)</sup> Optical Library Dataserver Models C4x — part 34H5608</li> <li>• Terminator for 637x, 638x, and 6390 Tape Units — Terminator is part of the DASD backplane. Use the IOA type and see the symbolic FRU DEVTERM to determine the correct part.</li> <li>• Terminating plug for 63A0 Tape Unit — See device documentation.</li> <li>• Terminating plug for 7208 Model 002 Tape Drive — part 91F0721</li> <li>• Terminating plug for 7208 Model 012 Tape Drive — part 46G2599</li> <li>• Terminating plug for 7208 Model 222 Tape Drive — part 46G2599</li> <li>• Terminating plug for 7208 Model 232 Tape Drive — part 79X3795</li> <li>• Terminating plug for 7208 Model 234 Tape Drive — part 79X3795</li> <li>• Terminating plug for 9348 Tape Unit — part 79X3795</li> </ul>
FI00882	<p>FI00882 indicates that the addressed unit is the failing item.</p> <p>Determine the address and type of the failing unit (see System Reference Code (SRC) Information in the <i>iSeries<sup>(TM)</sup> Service Functions</i>  information).</p> <p>If one of the following device types is the failing item, see the service information for the device Model installed on the system: * 2440 * 3490 * 3570 * 3590 * 3995 * 63A0 * 7208 * 9347* 9348 * 9427.</p> <p>If the tape unit being used is in the FC 5032 Removable Storage Unit, the failing item is the 636x Tape Unit.</p> <p>See "Removable Storage Unit (FC 5032)" in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.</p> <p><b>Note:</b> The FC 5032 DSE module connects tape units as follows:</p> <ul style="list-style-type: none"> <li>• Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector.</li> <li>• Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector.</li> </ul> <p>A tape unit to the left or right of the tape unit being used (in position 1 or 2 or in position 3 or 4) may be causing the failure.</p> <p>A tape unit above or below the tape unit being used is <i>not</i> a probable cause of the failure because it is attached to a different internal FC 5032 DSE I/O bus and, as described above, uses the other external signal cable.</p>
FI00883	<p>FI00883 indicates that a unit attached to the same IOP, other than the addressed unit identified by FI00882 (See page 264), is the failing item.</p>
FI00884	<p>FI00884 indicates that any unit attached to the IOP may be the failing item.</p> <p>See FI00882 (See page 264) for the list of possible units.</p>

Failing item code	Description/Action
FI01040	FI01040 indicates that you have an OptiConnect system, and the error is on an iSeries <sup>(TM)</sup> server that is connected to it.
FI01101	<p>FI01101 indicates that the addressed IOA card on the I/O processor is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Determine the address of the IOA card (see SRC address formats).</li> <li>2. Determine the location of the IOA card (see Locations and addresses).</li> <li>3. Exchange the failing device. Use the device type to determine the part.</li> </ol>
FI01103	<p>FI01103 and FI01104 indicate that an attached IOA card is the failing item.</p> <p>Perform Bus-PIP5 to isolate the failing IOA.</p>
FI01104	See FI01103 (See page 265).
FI01105	<p>FI01105 indicates that the addressed storage device is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> <li>• <b>No:</b> Continue with the next step.</li> <li>• <b>Yes:</b> Exchange the failing item. See Recovery procedures.</li> </ul> <p><b>Note:</b> If the failing item is in a migration tower, go to the recovery procedures in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .</p> <p><b>This ends the procedure.</b></p> </li> <li>2. Find the IOP address and the device address (see SRC address formats).</li> <li>3. To determine the location of the I/O processor card, see Locations and addresses and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> <li>• The IOP card location identified by the direct select address.</li> <li>• The addressed storage device location identified by the device address.</li> </ul> </li> <li>4. Exchange the failing device. Use the device type to determine the part.</li> </ol>
FI01106	<p>FI01106 indicates that a storage device other than the addressed storage device is the failing item.</p> <p>See FI01105 to find the addressed device. The failing item could be any device with the same IOP address and I/O (SCSI) bus number but with a different device unit number.</p> <p>If the reference code that called out this FI does not have a problem analysis procedure, perform SDIOP-PIP16 to isolate the possible failing device.</p>

Failing item code	Description/Action
FI01107	<p>FI01107 indicates that any storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see SRC address formats).</li> <li>2. To determine the location of the I/O processor card, see the Locations and addresses list. <ul style="list-style-type: none"> <li>The unit reference code indicates the I/O (SCSI) bus that has the problem: <ul style="list-style-type: none"> <li>• URC 3020, 3100 —I/O Bus 0</li> <li>• URC 3021, 3101 —I/O Bus 1</li> <li>• URC 3022, 3102 —I/O Bus 2</li> <li>• URC 3023, 3103 —I/O Bus 3</li> <li>• Any Other URC—Any I/O bus on the I/O card</li> </ul> </li> </ul> </li> <li>3. See Locations and addresses list and find the diagram of the system unit or the expansion unit and find: <ul style="list-style-type: none"> <li>• The IOP card location identified by the direct select address.</li> <li>• All the storage devices on the same I/O (SCSI) bus. <p><b>Note:</b> The I/O (SCSI) bus number is the first character of the device unit address.</p> </li> </ul> </li> <li>4. Exchange the failing device. Use the device type to determine the part: <p>If the reference code that called out this FI does not have a problem analysis procedure, perform SDIOP-PIP16 to isolate the possible failing device.</p> </li> </ol>
FI01108	<p>FI01108 indicates that the I/O (SCSI) bus or power cable is the failing item.</p> <p>See FI01140 (See page 267) and FI01141 (See page 267).</p>
FI01109	<p>A backplane or a connection to the backplane may be failing.</p> <p>See the symbolic FRU BACKPLN.</p>
FI01110	<p>FI01110 indicates that the diskette unit is the failing item.</p> <p>Use the diskette device type to determine the part.</p>
FI01112	<p>FI01112 indicates that the active IOP is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see SRC address formats).</li> <li>2. To determine the location of the I/O processor card, see Locations and addresses list.</li> <li>3. Use the IOP type to determine the part.</li> </ol>
FI01117	<p>FI01117 indicates that any IOA, card, cable, or device attached to the IOP may be the failing item.</p> <ol style="list-style-type: none"> <li>1. Find the IOP address (see SRC address formats).</li> <li>2. To determine the location of the I/O processor card, see Locations and addresses list.</li> <li>3. Identify the IOAs, cards, cables, and devices attached to the IOP found in the preceding steps.</li> <li>4. Exchange the IOAs, cards, cables, and devices attached to the IOP one at a time until you have corrected the problem.</li> </ol>
FI01119	<p>See symbolic FRU BACKPLN.</p>
FI01121	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>

Failing item code	Description/Action
FI01130	<p>For Models 270 and 820: FI01130 indicates that the disk drive and logic card is the failing item.</p> <p>Find the disk unit type number in the Type, model, and part number list to determine the part number.</p> <p>For Models 830, 840, SB2, and SB3: This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI01131	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI01132	<p>This failing item is in a migrated tower. See the failing item table for this failing item in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI01140	<p>FI01140 indicates that the I/O (SCSI) bus cable is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>Are there external devices attached? <ul style="list-style-type: none"> <li><b>No:</b> Continue with the next step.</li> <li><b>Yes:</b> For SCSI attached external devices, see EXTSCSI. For Fibre Channel attached external devices, see FCCABLE.</li> </ul> </li> <li>Find the IOP address (see SRC address formats).</li> <li>To determine the location of the I/O processor card, see Locations and addresses list.</li> <li>Exchange the failing item associated with the IOP address.</li> </ol> <p><b>Note:</b> Any of the SCSI cables or backplanes between the IOA and the device could be the failing item. See Power and signal cables.</p>
FI01141	<p>FI01141 indicates that a loss of power to an IOP, to an internal device, or to an external device may have occurred.</p> <ol style="list-style-type: none"> <li>Are 0000 xxxx, 1xxx xxxx, or A6xx 698x SRCs displayed on the control panel? <ul style="list-style-type: none"> <li><b>No:</b> Continue with the next step.</li> <li><b>Yes:</b> Go to System Reference Codes and use the SRC displayed on the control panel.</li> </ul> </li> <li>Did the SRC that directed you to this FI code involve an externally attached device or an IOP with an externally attached device? <ul style="list-style-type: none"> <li><b>No:</b> Continue with the next step.</li> <li><b>Yes:</b> Verify that there is no obvious problem with power to the device. If you suspect a power problem with the device, go to the service information for that external device.</li> </ul> </li> <li>The power supply cables or connections to internal disk units, tape units, diskette units, or optical storage units may be the failing item. <ul style="list-style-type: none"> <li>For cable information, see Power and signal cables.</li> <li>For part numbers, see the Type, model, and part number list.</li> </ul> </li> </ol>
FI01201	<p>FI01201, FI01202, and FI01203 indicates that the disk drive and logic card is the failing item.</p> <p>Find the disk unit type number in the Type, model, and part number list to determine the part number.</p>
FI01202	See FI01201 (See page 267).
FI01203	See FI01201 (See page 267).

Failing item code	Description/Action
FI02092	See FI00092 (See page 251).
FI02112	<p>FI02112 indicates that the addressed storage device is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> <li><b>No:</b> Continue with the next step.</li> <li><b>Yes:</b> Exchange the failing item. See Recovery procedures.</li> </ul> <p><b>Note:</b> If the failing item is in a migration tower, go to the recovery procedures in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .</p> <p><b>This ends the procedure.</b></p> </li> <li>Find the IOP address and the device address (see SRC address formats).</li> <li>To determine the location of the I/O processor card, see the Locations and addresses list and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> <li>The IOP card location identified by the direct select address.</li> <li>The addressed storage device location identified by the device address.</li> </ul> </li> <li>Exchange the failing device. Use the device type to determine the part.</li> </ol>

## Symbolic FRUs

*For use by authorized service providers.*

Use the contents pane to select the symbolic FRU you would like to use.

## ACMODUL

*For use by authorized service providers.*

An AC module or power supply may be failing. This procedure will help you to determine the part number for the failing item. If the system powers on normally, or stays powered on after an ac power failure, no replacement of parts may be needed.

Follow the instructions for the model you are working on:

- Models 270, 800, 810, 820, 825, 870/890 (FC 9094) (See page 268)
- Models 830, 840, SB2, and SB3 (See page 269)


### ACMODUL instructions for Models 270, 800, 810, 820, 825, 870/890 (FC 9094)

- For Model 825 with a reference code 00AC, make sure that the processor enclosure cover is fully closed.

**Note:** On a Model 825, the 00AC reference code can be caused by the processor enclosure cover not installed, or a faulty interlock switch assembly. See the Model 825 - Interlock switch remove and replace procedure, and the Type, model, and part number list for the part number.

- For Models 870/890 with reference code 00AC, check the following before continuing with this procedure:
  - When the room EPO cable is **not** installed (on an 870/890 system unit), make sure that the room EPO BYPASS switch on the bottom of the EPO panel is to the left (blocking cable installation).
  - When the room EPO **is** installed, check to ensure that the customer's room EPO switch is not tripped and the cable is connected and seated correctly (On an 870/890 system unit).
  - Check the VSCOMM cable, BPC-A/B P00 and M41 VPD to CB1 between the FC 9094 and 870/890 system unit, to ensure that it is connected and seated correctly.



3. Is the reference code occurring on a Model 270, 800, 810, 820, or 825 system unit, or an FC 5074, FC 5075, FC 5078, FC 0578, FC 5079, FC 5088, FC 0588, FC 5094, FC 5095, FC 9074, FC 9079, or FC 9094 I/O Expansion?
  - **Yes:** Continue with the next step.
  - **No:** See symbolic FRU ACMODUL in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for FRU isolation instructions.
4. Find the model and or feature code in the table below, then go to the Locations table for the model you are working on to find the part number and remove and replace procedure information. Note that on some models and feature codes, “Power PIP11” on page 175 must be performed before replacing parts.

**Table 1. Part replacement for unit reference code for Models 270, 800, 810, 820, 825, 870/890 (FC 9094)**

Model	Unit reference code	Failing item
Model 270	00AC	P01, P02
Models 800, 810	00AC	P01, P02
Model 820 ("Power PIP11" on page 175 must be performed before replacing parts)	00AC	P01, P02, P03
Model 825	00AC	P01, P02
Models 870/890, FC 9094 BPC-A/B P00 and M41 VPD to CB1 (FC 9094), VSCOMM cable	00AC	Cable: PWR23 (See the Power and signal cables page, and follow the Models 870 and 890 processor towers link.)
FC 5075	00AC	P01, P02
FC 5078, FC 0578, FC 5088, and FC 0588 ("Power PIP11" on page 175 must be performed before replacing parts)	00AC	P01, P02
FC 5074, FC 5079, FC 9074, and FC 9079 (single line cord)	00AC	P01, P02, P03
FC 5074, FC 5079, FC 9074, and FC 9079 (dual line cord) ("Power PIP11" on page 175 must be performed before replacing parts)	00AC	1. P01, P02 2. A01, A02
FC 5094 and FC 9094 (dual line cord) ("Power PIP11" on page 175 must be performed before replacing parts)	00AC	1. P00, P01, P02, P03 2. A01, A02
FC 5095	00AC	P01, P02

5. For Models 870/890 with reference code 00AC, if the problem still prevails, perform “MAPPWR-3: An open room EPO switch has been detected from one side” on page 368.  
**This ends the procedure.**

### ACMODUL instructions for Models 830, 840, SB2, and SB3

**Note:** The C in the SRC (1xxC xxxx) indicates the problem is on the processor tower side of the Model 840 system type.

1. Is SRC 1xxx 00AC displayed?
  - **Yes:** On the system unit, the 00AC reference code can be caused by an SPCN frame-to-frame cable problem. This usually occurs between the Model 840/SB3 processor tower and the FC 9079

base I/O tower. See the symbolic FRU "CBLALL" on page 298 for a parts list. If the problem is not resolved, return here and continue with the next step.

- **No:** Continue with the next step.
2. Is the failing AC module on a system unit?
- **Yes:** Continue with the next step.
  - **No:** Go to step 7 (See page 271).
3. Is the reference code 00AC, CB05, or CB06 on a system with one AC module?
- **No:** Continue with the next step.
  - **Yes:** Replace the AC module for the Model 840/SB3 processor tower. See Locations - Model 840 for the part number and remove and replace procedure information.
    - AC module 1 USA
    - World Trade 1 phase
    - World Trade 2 phase
    - AC line cord

If the reference code prevails - see Symbolic FRU "BKSPCN" on page 286.

**This ends the procedure.**

4. Is the reference code 00AC, 01AC, 02AC, 7410, 7411, 7412, 7413, 7414, 7415, or 7416 on a Model 840/SB3 dual line cord system?

**Notes:**

- a. For reference code 00AC, 01AC, or 02AC, "Power PIP11" on page 175 must be performed before replacing parts.
  - b. Check the error log when reference codes 7412 and 7413 are both logged at the same time. If they are replace - part "CLCKCRD" on page 320
- **No:** Continue with the next step.
  - **Yes:** Exchange the FRUs listed for the reference codes:
    - **01AC, 7410, 7412, 7414**, exchange:
      - AC module 1 USA
      - World Trade 1 phase
      - If the reference code prevails, exchange the concurrent maintenance adapter card.
    - **02AC, 7411, 7413, 7415**, exchange:
      - AC module 2 USA
      - World Trade 1 phase
      - If the reference code prevails, exchange the concurrent maintenance adapter card.
    - For **00AC**, exchange:
      - AC module 1 and 2 USA
      - World Trade 1 phase
      - If the reference code prevails, exchange the concurrent maintenance adapter card.
    - For **7416**, exchange:
      - Concurrent maintenance adapter card.
      - If the reference code prevails, exchange:
        - AC module 1 and 2 USA
        - World Trade 1 phase
        - Clock card - see symbolic FRU "CLCKCRD" on page 320

**This ends the procedure.**

5. Is the reference code CC00?
- **No:** Continue with the next step.

- **Yes:** Exchange the following:
  - AC module 1 and 2 (if installed)
  - Concurrent maintenance adapter card A02

**This ends the procedure.**
- 6. Exchange one of the following parts (see Locations for the model you are working on for part number and remove and replace procedure information):
  - For FC 9074 or FC 9079 (single line cord) AC charger.
  - For FC 9074 or FC 9079 (dual line cord) AC Module. (“Power PIP11” on page 175 **must** be performed before replacing parts.)
  - For Model 840/SB3 processor tower AC Module:
    - USA
    - World Trade 1PH
    - World Trade 2PH

If the problem is not resolved after exchanging the FRUs listed, exchange the tower card. See symbolic FRU “TWRCARD” on page 470 if it was not previously exchanged.

**This ends the procedure.**
- 7. Are you working on an FC 5033, FC 5034, FC 5035, or FC 5077 frame?
  - **No:** Continue with the next step.
  - **Yes:** Re-IPL the entire system to restore resources. If the reference code 00AC prevails after the IPL, then return here and continue with the next step.
- 8. The failing AC module is on a secondary expansion unit or base I/O unit. See Type, model, and part number list for part numbers.
  - FC 5074 or FC 5079 (single line cord)
  - FC 5074 or FC 5079 (dual line cord) -“Power PIP11” on page 175 **must** be performed before replacing parts.
  - Uninterruptible power supply base unit for FC 5033, FC 5034, or FC 5035
  - FC 5065 or FC 5066
  - AC Module FC 5071, FC 5073, FC 5077, FC 5081, or FC 5083
  - AC Module all other FC 5xxx

**This ends the procedure.**

## AIRMOVR

*For use by authorized service providers.*

An air-moving device (AMD) may be failing. Before replacing any field replaceable units (FRUs), verify that all cables are seated correctly.

Perform the following to determine the part number for the failing air-moving device. The address of the failing frame and unit is shown in the second, third, and fourth characters of the four leftmost characters of the system reference code (SRC). For example, 11-x xFFU-xxxx, where F=frame and U=unit.

1. Is the failing air moving device in a system unit?
  - **No:** Go to step 2 (See page 273).
  - **Yes:** Find the model and reference code in the following tables to determine the failing AMD. Then, see Locations and addresses for the model you are working on to determine the location of the failing item, information on the part number, and a link to the remove and replace procedure.

**Table 1. For Model 270**

Unit reference code	FRU
7610, 7611	AMD B01

Unit reference code	FRU
7620, 7621	AMD B02

**Table 2. For Model 270 internal expansion (7104), or Models 800 or 810 internal expansion (7116)**

Unit reference code	FRU
7630, 7631	AMD B03

**Table 3. For Models 800 and 810**

Unit reference code	FRU
7610, 7611	AMD B01
7620, 7621	AMD B02
7630 7631	AMD B03

**Table 4. For Model 820**

**Attention:** The replacement fan must be reconnected within 30 seconds of removal of the failing unit or system failure/shutdown may result.

Unit reference code	FRU
7610, 7611	AMD B01
7620, 7621	AMD B02
7630, 7631	AMD B03
7640, 7641	AMD B04

**Table 5. For Model 825**

**Attention:** The replacement fan must be reconnected within 30 seconds of removal of the failing unit or system failure/shutdown may result.

Unit reference code	FRU
7610, 7611	AMD B01
7620, 7621	AMD B02

**Table 6. For Models 830/SB2 (FC 9074), 840/SB3 (FC 9079), 870/890 (FC 9094)**

Unit reference code	FRU
7610, 7611	AMD B01
7620, 7621	AMD B02
7710, 7711	AMD BP1
7720, 7721	AMD BP2

**Table 7. For Models 840/SB3 except 9079**

Unit reference code	FRU
7000, 7500	AMD B01
7001, 7501	AMD B02
7002, 7502	AMD B03
7003, 7503	AMD B04

**This ends the procedure.**

- The failing air moving device is in a secondary expansion unit. Find the unit reference code in the following tables to determine the failing AMD and part number. Then, see Locations and addresses for the unit you are working on to determine the location of the failing item.

For Migrated towers, refer to the *Migrated Expansion Tower Problem Analysis, Repair and Parts*

manual on the V5R1 Supplemental Manuals web site  for locations and part number information.

**Table 8. For FC 503x**

Unit reference code	FRU
2240	Air moving device (AMD) panel
2241F	AMD 1
2242	AMD 2
2244	<ul style="list-style-type: none"> <li>• AMD 1 (if fan 4 is not installed)</li> <li>• Distribution Cable (part 44H8337)</li> </ul>
2245	AMD 5
2246	AMD 6A (SPD enclosure)
2246	AMD 6B (PCI enclosure)

**Table 9. For FC 5065, FC 5066 I/O frame**

Unit reference code	FRU
7610, 8610	AMD B01
7620, 8620	AMD B02

**Table 10. For FC 5072, 5073, 5077, 5082, 5083 frames**

Unit reference code	FRU
7000	ACMODUL (see “ACMODUL” on page 268 for part number)
7001	AMD 1
7002	AMD 2
7003	AMD 3
7004	AMD 4

**Table 11. For FC 5074, 5079, FC 5094, FC 5294, FC 5294, FC 8093-002, FC 8094-002, I/O frame**

Unit reference code	FRU
7610, 7611, 8610	AMD B01
7620, 7621, 8620	AMD B02

**Table 12. For FC 5075**

Unit reference code	FRU
7610, 7611	AMD B01
7620, 7621	AMD B02

**Table 13. For FC 5078, FC 0578, FC 5088, or FC 0588 I/O frame**

Unit reference code	FRU
7610, 7611	<ol style="list-style-type: none"> <li>1. AMD B02</li> <li>2. Cable (part 51L5652)</li> <li>3. AMD controller card BB1</li> </ol>
7620, 7621	<ol style="list-style-type: none"> <li>1. AMD B02</li> <li>2. Cable (part 51L5652)</li> <li>3. AMD controller card BB1</li> </ol>
7630, 7631	<ol style="list-style-type: none"> <li>1. AMD B01</li> <li>2. Cable (part 51L5652)</li> <li>3. AMD controller card BB1</li> </ol>
7640, 7641	<ol style="list-style-type: none"> <li>1. AMD B01</li> <li>2. Cable (part 51L5652)</li> <li>3. AMD controller card BB1</li> </ol>

**Table 14. For FC 5095**

Unit reference code	FRU
7610, 7611	AMD B01
7620, 7621	AMD B02
7630, 7631	AMD B03
7640, 7641	AMD B04

**This ends the procedure.**

### AJDGP01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

### ALTINTF

*For use by authorized service providers.*

The failing item is any card, cable or card enclosure connected to Bus 1 that might cause an interface failure between the service processor and the alternate IPL load-source device.

1. Check the load source device unit to ensure it is ready.
2. Verify that the load source media (tape or compact disk) is loaded properly and is a valid IPL media.
3. Power off the system from the control panel.
4. Perform the following:
  - a. Check cable connections:
    - For Models 270 and 820, check the cables and connections between the system unit backplane and the storage device units.
    - For Models 830, 840, SB2, and SB3, check the cables and connections between the system unit and the base I/O tower.
  - b. Reseat cables where possible.
  - c. Change the IPL mode to **Manual**, and the IPL speed to SLOW OVERRIDES using control panel function 2.
  - d. Power on the system.

Does the same SRC occur?

- **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2 and follow the service actions for the new SRC.
5. Power off the system from the control panel. Attempt to IPL from a different load sources device:
- If the failing IPL was mode D from an optical storage device unit alternate IPL media, then use the tape device unit as the load-source device and attempt to IPL mode D.
  - If the failing IPL was mode D from a tape unit alternate IPL media, then use the optical storage device unit as the load source device and attempt to IPL mode D. (Temporarily disconnect the tape device unit from the system if possible.)
- Does the same SRC occur?
- **Yes:** Continue with the next step.
  - **No:** Choose from the following options:
    - If there is a different SRC, go to “Starting point for all problems” on page 2 and follow the service actions for the new SRC.
    - If this IPL was successful, then the failing item is the original alternate IPL load-source device.
      - If the load-source is an optical storage unit, exchange the IPL media on the compact disk in the alternate IPL optical storage unit. If replacing the media does not work, try replacing the optical storage device unit.
      - If the load-source is a tape unit, exchange the IPL media on the tape in the alternate IPL tape unit. If replacing the media does not work, try replacing the tape device unit.
6. The failing item is one of the cards or devices that is attached to the interface for the alternate IPL load-source device.
7. Choose from the following options:
- If you are on a Model 270 or 820: Continue with the next step.
  - If you are on a Model 830, 840, SB2, or SB3: Go to step **13** (See page 276).
8. Is this system a Model 270?
- **Yes:** Continue with the next step.
  - **No:** Go to step **11** (See page 275).
9. See Locations — Model 270. Remove all of the IOPs and IOAs, **EXCEPT** for the first storage IOA. (Normally this would mean to remove all of the cards in locations C07, C06, C05, C04, C03, and C02 - but leave the card in location C01.)
- Attempt to perform the alternate IPL.
- Does the same SRC occur?
- **Yes:** Continue with the next step.
  - **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.  
**This ends the procedure.**
10. Remove and label all of the storage device units **EXCEPT** for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D01 - D06.)
- If the system IPLs past the original error, then isolate to the failing device unit. If the failure still occurs, replace the following FRUs one at a time until the problem is resolved. See the Remove and replace procedures.
- First storage IOA
  - System unit backplane in location MB1
- This ends the procedure.**
11. See Locations — Model 820. Remove all of the IOPs and IOAs on bus 1, **EXCEPT** for the first storage IOA. (Normally this would mean to remove all of the cards in locations C06, C04, C03, C02, and C01 - but leave the card in location C05.)
- Attempt to perform the alternate IPL.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.

**This ends the procedure.**

12. Remove and label all of the storage device units **EXCEPT** for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D01 - D12.)

If the system IPLs past the original error, then isolate to the failing device unit.

If the failure still occurs, replace the following FRUs one at a time until the problem is resolved. See the Remove and replace procedures.

- First storage IOA
- System unit backplane in location MB1

13. For Models 830, 840, SB2, or SB3: Is this system a Model 830 with SB2 system unit and FC 9074?

- **Yes:** Continue with the next step.
- **No:** Go to step **16** (See page 276).

14. See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower.

Remove the IOPs and IOAs, **EXCEPT** for the load-source IOP and the first storage IOA.

Attempt to perform the alternate IPL.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card.

Follow the service actions for the new SRC.

**This ends the procedure.**

15. Remove (and label) all of the storage device units **EXCEPT** for the alternate IPL load-source device unit that you are currently using (This includes all of the disk devices in D31-D40 and D46-D50.)

If the system IPLs past the original error, then isolate to the failing device unit.

If the failure still occurs, replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.

- a. Load source IOP in location C01 in the FC 9074 base I/O tower.
- b. First storage IOA (location C02, C03 or C04) in the FC 9074 base I/O tower.
- c. HSL I/O bridge card in location C08 in the FC 9074 base I/O tower.
- d. Network interface controller (NIC) card in location M06 in the 830 system unit.
- e. Tower card in location CB1 in the FC 9074 base I/O tower.

**This ends the procedure.**

16. This is a Model 840, SB3 system unit and FC 9079 base I/O tower.

See FRU locations and failing components for Models 840, SB3 system unit processor tower table.

Remove the IOPs and IOAs, **EXCEPT** for the load-source IOP and the first storage IOA.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card.

Follow the service actions for the new SRC

17. Remove (and label) all of the storage device units **EXCEPT** for the alternate IPL load-source device unit that you are currently using. (This includes all of the disk devices in D31-D40 and D46-D50.)

If the system IPLs past the original error, then isolate to the failing device unit.

If the failure still occurs, replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.

- a. Load source IOP in location C01 in the FC 9079 base I/O tower.



- b. First storage IOA (location C02, C03 or C04) in the FC 9079 base I/O tower.
- c. HSL I/O bridge Card in location C08 in the FC 9079 base I/O tower.
- d. Network interface controller (NIC) card in location M17 in the 840 system unit.
- e. Tower card in location CB1 in the FC 9079 base I/O tower

**This ends the procedure.**

## ALTMANL

*For use by authorized service providers.*

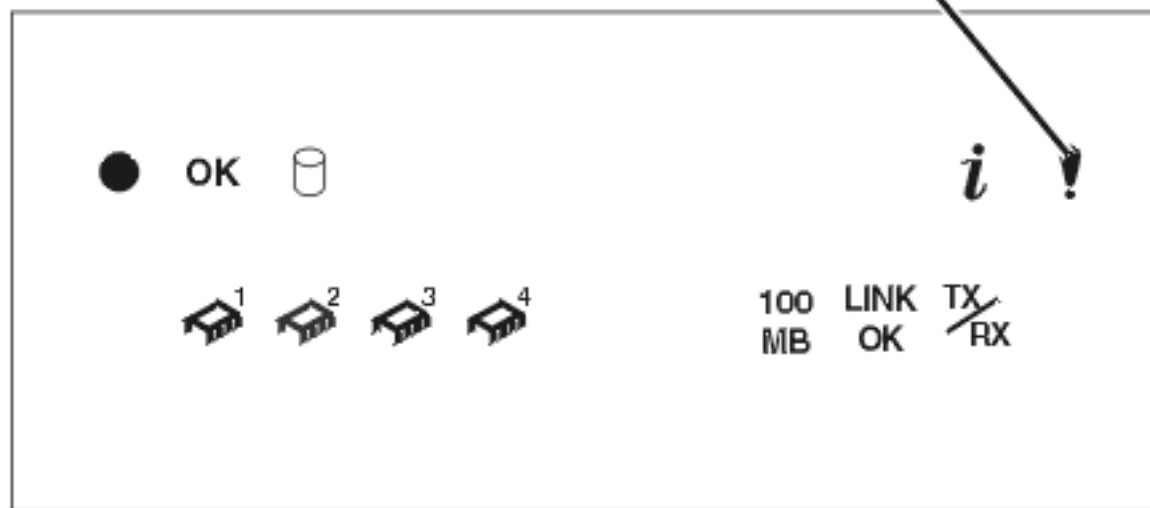
An Integrated xSeries Server for iSeries service call may be needed to fix the problem on the Integrated xSeries Server (IXS).

**Note:** An error condition is indicated by the blinking frame ID on the IXS card. When an error occurs, it can take up to ten minutes for the frame ID to start blinking, and up to one minute (after the error is reset) for the frame ID to stop blinking.

1. Choose the system reference code (SRC) you are receiving:
  - For SRC **1xxx-8910**: Check the system error light (amber exclamation mark, see figure below) on the Integrated xSeries Server (IXS) Panel.
    - If the system error light is **on**, call your Integrated xSeries Server (IXS) service provider.
    - If the system error light is **not** on, see symbolic FRU “TWRCARD” on page 470.  
**This ends the procedure.**
  - For SRC **1xxx-8920**: Call your Integrated xSeries Server (IXS) service provider.  
**Note:** For SRC 1xxx-8910 or 8920, removal of the ac line cord on the Integrated xSeries Server (IXS) Unit is required to reset the flashing frame indicating LEDs on the TWRCARD.  
**This ends the procedure.**
  - For SRC **1xxx-8940, 8941, 8942, 8943**: Check the R485 cable connections for proper seating to resolve the problem (SRC).  
**Note:** After reseating the R485 cable it may take up to one minute for the SRC to reset
2. If the problem remains unresolved after reseating and replacing the cable by performing symbolic FRU “CBLALL” on page 298, call your Integrated xSeries Server (IXS) service provider.

**Figure 1. Integrated xSeries Server (IXS) - Control Panel**

## System error light.



RZAQ4802-0

**This ends the procedure.**

### **ANYBRDG**

*For use by authorized service providers.*

Any cable, card, or card enclosure connected to the Multi-adapter bridge may be causing the problem.

The card that reported the problem may not be causing the problem. Multi-adapter bridge domains are labeled **PCI Bridge Set** inside the tower. Find the location of the card reporting the problem and its corresponding PCI Bridge Set. Any cable, card, or card enclosure connected to this PCI Bridge Set may be causing the problem.

### **ANYBUS**

*For use by authorized service providers.*

Any cable, card, or card enclosure may be causing an IOP-detected bus error. The IOP that is reporting the problem may not be causing the problem.

### **ANYFC**

*For use by authorized service providers.*

Any IOA, hub, gateway, or device attached to the same Fiber Channel interface may be failing.

### **ANYMEM**

*For use by authorized service providers.*

Follow the instructions for the model on which you are working:

- Model 270 (See page 279)
- Models 800 and 810 (See page 279)
- Model 820 (See page 280)
- Model 825 (See page 280)
- Models 830 and SB2 (See page 281)

- Models 840 and SB3 (See page 281)
- Models 870 and 890 (See page 281)

### Instructions for Model 270

- For Model 270 - Processor Feature Code 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, 2452:  
Any memory card in slots MB1-A through MB1-H may be the failing item. See Locations — Model 270 to identify the locations, type number, and remove and replace procedure for the memory cards.
- For Model 270 - Processor Feature Code 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454:  
Choose from the following options:
  - If there is no memory card in slot location M01, then any one of the memory expansion cards on the processor card in location M02 may be the failing item. See the Locations — Model 270 to identify the locations, type number, and remove and replace procedure for the memory expansion cards.
  - If there is a memory card in slot location M01, then any one of the memory expansion cards in the memory card may be the failing item. Or the memory card in slot M01 may be the failing item. See Locations — Model 270 to identify the locations, type number, and remove and replace procedure for the memory expansion cards and memory card.

### Instructions for Models 800 and 810

Choose from the following options:

- For Model 810 systems with processor features 7428, 7429, or 7430:
  - If there is no memory card in slot location M01, then any one of the memory expansion cards on the processor card in location M02 may be the failing item. See Locations - Models 800 and 810 to identify the locations, type number, and remove and replace procedure for the memory expansion cards.
  - If there is a memory card in slot location M01, then any one of the memory expansion cards in the memory card may be the failing item, or the memory card in slot M01 may be the failing item. See Locations - Models 800 and 810 to identify the locations, type number, and remove and replace procedure for the memory expansion cards and memory card.
- For other Models 800 and 810 systems, use the SRC and the table below to determine the location of the failing memory card. See Locations - Models 800 and 810 to identify the part number, and a link to the remove and replace procedure.

**Table 1. Memory locations for Models 800 and 810**

Reference code	Location of failure
B427 x010	memory in location MB1 - A
B427 x011	memory in location MB1 - B
B427 x012	memory in location MB1 - C
B427 x013	memory in location MB1 - D
B427 x014	memory in location MB1 - E
B427 x015	memory in location MB1 - F
B427 x016	memory in location MB1 - G
B427 x017	memory in location MB1 - H
B427 x00A	memory in location MB1 - A, B
B427 x00B	memory in location MB1 - C, D
B427 x00C	memory in location MB1 - E, F
B427 x00D	memory in location MB1 - G, H
B427 x009	memory in any one of the locations given above

## Instructions for Model 820

Choose from the following options:

- If there is no memory card in slot location M01 or M02, then any one of the memory expansion cards on the processor card in location M03 may be the failing item. See the Locations — Model 820 to identify the locations, type number, and remove and replace procedure for the memory expansion cards.
- If there is a memory card in slot location M01 or M02, then any one of the memory expansion cards in any memory card slot, locations M01 or M02, may be the failing item. Or a memory card in location M01 or M02, may be the failing item. See the Locations — Model 820 to identify the locations, type number, and remove and replace procedure for the memory expansion cards and memory cards.

## Instructions for Model 825

The memory cards are plugged directly onto the processor cards. The processor cards are located in locations C13, M01, and M02. Any one of the memory cards in slot locations A through H on any processor card may be the cause of the problem. See Locations — Model 825 to identify the locations, type number, and remove and replace procedure for the memory cards.

**Table 2. Memory locations for Model 825**

Reference code	Location of failure
B428 x010	memory in location C13 - C
B428 x011	memory in location C13 - A
B428 x012	memory in location C13 - D
B428 x013	memory in location C13 - B
B428 x014	memory in location C13 - G
B428 x015	memory in location C13 - E
B428 x016	memory in location C13 - H
B428 x017	memory in location C13 - F
B428 x018	memory in location M01 - C
B428 x019	memory in location M01 - A
B428 x01A	memory in location M01 - D
B428 x01B	memory in location M01 - B
B428 x01C	memory in location M01 - G
B428 x01D	memory in location M01 - E
B428 x01E	memory in location M01 - H
B428 x01F	memory in location M01 - F
B428 x020	memory in location M02 - C
B428 x021	memory in location M02 - A
B428 x022	memory in location M02 - D
B428 x023	memory in location M02 - B
B428 x024	memory in location M02 - G
B428 x025	memory in location M02 - E
B428 x026	memory in location M02 - H
B428 x027	memory in location M02 - F

Reference code	Location of failure
B428 xC09 or B1xx xxxx	memory in any one of the locations given above

### Instructions for Models 830 and SB2

Any of the memory expansion cards in any memory card slot, locations M02 or M05, may be the failing item. Or, a memory card in location M02 or M05, may be the failing item. See Locations — Model 830 and SB2 to identify the locations, type number, and remove and replace procedure for the memory expansion cards and memory cards.

### Instructions for Models 840 and SB3

A memory card in any memory card slot may be the failing item. See Locations — Model 840 and SB3 to identify the locations, type number, and remove and replace procedure for the memory cards.

### Instructions for Models 870 and 890

A memory card in one of the slot locations M01, M02, M07, M08, M17, M18, M24, or M25 may be the cause of the problem. See Locations - Models 870 and 890 to identify the locations, type number, and remove and replace procedure for the memory expansion cards.

**Table 3. Memory locations for Models 870 and 890**

Reference code	Location of failure
B448 x010	memory in location M18
B448 x011	memory in location M24
B448 x012	memory in location M07
B448 x013	memory in location M02
B448 x014	memory in location M25
B448 x015	memory in location M08
B448 x016	memory in location M01
B448 x017	memory in location M17
B448 x020	memory controller in location M18-A
B448 x021	memory controller in location M24-A
B448 x022	memory controller in location M07-A
B448 x023	memory controller in location M02-A
B448 x024	memory controller in location M25-A
B448 x025	memory controller in location M08-A
B448 x026	memory controller in location M01-A
B448 x027	memory controller in location M17-A
B448 xC09 or B1xx xxxx	memory in any one of the locations given above

### ANYMEMX

*For use by authorized service providers.*

Any one of the memory expansion cards in the specified memory card slot, may be the failing item. Or the memory card in the specified slot may be the failing item. Read the slot number (M02 or M05) in the Location column of the reference code table.

See Table 2. FRU locations and failing components for Models 830, SB2 system unit with FC 9074 base I/O tower to identify the locations, type number, and remove and replace procedure for the memory expansion cards and memory cards.

## ANYPROC

*For use by authorized service providers.*

Follow the instructions for the model on which you are working:

- Models 270, 820, 830, 840, SB2, and SB3 (See page 282)
- Models 800, 810, 825, 870, and 890 (See page 283)

### Instructions for Models 270, 820, 830, 840, SB2 and SB3

A processor card in any processor card slot may be the failing item.

1. Use the following table to determine the processor card type. If necessary, use control panel function 20 to determine the Processor Feature Code.
2. Go to Locations and addresses, select the model you are working on, and view the FRU locations and failing components table to help you to identify the locations, type number, and remove and replace procedure for the processor cards.

Model	Card number and locations	Processor feature codes	Processor type (CCIN)
Model 270	MB-1	22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, 2452  <b>Note:</b> Before exchanging any parts, verify that the connections to the backplane are secure.	n/a
Model 270	M02	22A7, 22A8, 2423 (one-way)	24A0
Model 270	M02	22AA, 22AB, 2424 (2 way)	24A2
Model 270	M02	23F4, 23F5, 2454 (2 way)	25BD
Model 820	M03	23A1, 23A2, 23A3, 23A4 (1 way)	244A
Model 820	M03	23A9, 23AA, 23AB, 23AC, 23AD, 2425 (1 way)	24A0
Models 830 and SB2	The processor card slots are M03, M04.	23C1, 23C2, 23C3, 23C4, 23C5	245C
Models 830 and SB2	The processor card slots are M03, M04.	23D1, 23D2, 23D3, 23D4, 23D5, 23D6, 23D8, 23D9, 23DA, 23DB, 23DC, 23DD, 23DE, 26A8, 26A9, 26AA, 26AB, 26AC, 26AD, 26AE	245D
Models 830 and SB2	The processor card slots are M03, M04.	2315 (SB2)	245D
Models 840 and SB3	Card 0 (Location M05)	2316, 2318, 23E8, 23E9, 23EA, 23EB, 23EC, 23ED, 23EE, 23F8, 23F9, 23FA, 23FB, 23FC, 23FD, 23FE, 23FF, 24C0, 24C1, 24C2, 24C3, 24C4, 24C5, 24C6, 24C8, 24C9, 24CA, 24CB, 24CC, 24CD, 24CE, 24D0, 24D1, 24D2, 24D3, 24D4, 24D5, 24D6, 24D7	245F
Models 840 and SB3	Card 0 (Location M05)	26B0, 26B1, 26B2, 26B3, 26B4, 26B5, 26B6, 26B8, 26B9, 26BA, 26BB, 26BC, 26BD, 26BE, 26BF, 26C0, 26C1, 26C2, 26C3, 26C4, 26C5, 26C6, 26C7, 26C8, 26C9, 26CA, 26CB, 26CC, 26CD, 26CE, 26CF, 26D0, 26D1, 26D2, 26D3, 26D4, 26D5, 26D6, 26D7, 26D8	246F

Model	Card number and locations	Processor feature codes	Processor type (CCIN)
Models 840 and SB3	Card 1,2,3 (Locations M18, M06, M16)	2316, 2318, 23E8, 23E9, 23EA, 23EB, 23EC, 23ED, 23EE, 23F8, 23F9, 23FA, 23FB, 23FC, 23FD, 23FE, 23FF, 24C0, 24C1, 24C2, 24C3, 24C4, 24C5, 24C6, 24C8, 24C9, 24CA, 24CB, 24CC, 24CD, 24CE, 24D0, 24D1, 24D2, 24D3, 24D4, 24D5, 24D6, 24D7	245E
Models 840 and SB3	Card 1,2,3 (Locations M18, M06, M16)	26B0, 26B1, 26B2, 26B3, 26B4, 26B5, 26B6, 26B8, 26B9, 26BA, 26BB, 26BC, 26BD, 26BE, 26BF, 26C0, 26C1, 26C2, 26C3, 26C4, 26C5, 26C6, 26C7, 26C8, 26C9, 26CA, 26CB, 26CC, 26CD, 26CE, 26CF, 26D0, 26D1, 26D2, 26D3, 26D4, 26D5, 26D6, 26D7, 26D8	246E

**This ends the procedure.**

### Instructions for Models 800, 810, 825, 870, and 890

A processor card may be the failing item.

1. See Locations and addresses for the model you are working on, and view the FRU locations and failing components table to identify the locations, type number, and remove and replace procedure for the processor cards.
2. If necessary, use control panel function 20 to determine the Processor Feature Code.
3. See the processor table in the symbolic FRU “CCIN” on page 303 for the processor CCIN number for the system processor feature code you are working on.
4. Refer to the following information for details:
  - **For Models 800 and 810**, choose from the following options:
    - **Without** processor features 7428, 7429, and 7430: The processor is embedded on the system unit backplane. Exchange the system unit backplane to exchange the processor.  
**This ends the procedure.**
    - **With** processor features 7428, 7429, and 7430: The processor is located in location M02. Exchange the Processor Card.  
**This ends the procedure.**
  - **For Model 825**: The processors are located in locations C13, M01, or M02.
    - An SRC of B428 x003 indicates a failure of the processor in location C13.
    - An SRC of B428 x004 indicates a failure of the processor in location M01.
    - An SRC of B428 x005 indicates a failure of the processor in location M02.
    - An SRC of B428 xC03 indicated a failure in any one of the above processors (if installed).  
**This ends the procedure.**
  - **For Model 870 and 890**: The processors are located in locations M21, M16, M11, and M14.
    - An SRC of B448 x003 or B1xx 4651 indicates a failure of the processor in location M21.
    - An SRC of B448 x005 or B1xx 4652 indicates a failure of the processor in location M16.
    - An SRC of B448 x004 or B1xx 4653 indicates a failure of the processor in location M11.
    - An SRC of B448 x006 or B1xx 4654 indicates a failure of the processor in location M14.
    - An SRC of B448 xC03 or B1xx 4650 indicates a failure in any one of the above processors (if installed).  
**This ends the procedure.**

## AS4NTDD

*For use by authorized service providers.*

The Windows NT Server Application Processor device driver may be causing the problem. Refer to the Windows server on iSeries page, which is located in the Networking topic in Information Center, or contact your next level of support for assistance.

## AUXCBL

Replace the SCSI cable that connects the auxiliary cache I/O adapter to the storage I/O adapter.

1. Find the location of the auxiliary cache I/O adapter:
  - a. Determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats.
  - b. Determine the location of the auxiliary cache I/O adapter. See Part locations and listings for the model you are working on.
2. Replace the SCSI cable that connects the auxiliary cache I/O adapter to the storage I/O adapter. See Type, model, and part number list for cable part number information. This ends the procedure.

**Note:** In order to replace the SCSI cable concurrently, you **must** use concurrent maintenance to power off the auxiliary cache I/O adapter. Replace the cable and then use concurrent maintenance to power on the auxiliary cache I/O adapter. **Do NOT replace the cable when both adapters are powered on.**

## AUXIOA


Replace the auxiliary I/O adapter. Use the location information in the Service Action Log, if it is available. If the location information is not available, determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats. Use the address to find the location (see Part locations and listings).

## BACKPLN

*For use by authorized service providers.*

A backplane or a connection to the backplane may be failing.

Before replacing any parts, the connections to the backplane should be verified. The following steps identify which backplane may be failing.

1. Were you sent here by a power SRC (1xxx xxxx)?
  - **No:** Continue with the next step.
  - **Yes:** Go to symbolic FRU "SYSBKPL" on page 464.
2. Determine the location of the device by doing the following:
  - Use the location information in the Service Action Log if it is available.
  - If no location information for the device is available, use the location information for the I/O adapter instead.
  - If no location information is available for either the device or the I/O adapter, find the address of the device or I/O adapter. See SRC address formats. Use the address to find the location. See Locations and addresses.
3. Is the device or I/O adapter located in a migrated tower?
  - **No:** Use Power and signal cables to locate the device, cable, and backplane. Any backplane connecting the device or I/O Adapter may be the cause of the problem. For backplane part numbers and remove and replace procedures, see Locations and addresses.  
**This ends the procedure.**
  - **Yes:** Go to symbolic FRU BACKPLN in the *Migrated Expansion Tower Problem Analysis, Repair and Parts manual* on the V5R1 Supplemental Manuals web site  .  
**This ends the procedure.**



## BATCHGR

For use by authorized service providers.

A battery power unit charger is the failing item.

When a location and part number are displayed on the Control Panel of a system or expansion tower, replace that FRU first.

**Note:** See Locations and addresses before exchanging the the battery charger. Migrated expansion tower remove and replace procedures are in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .

Perform the following to determine the part number for the failing unit.

1. Is the SRC 1xxx 4413 displayed?
  - **No:** Continue with the next step.
  - **Yes:** Go to symbolic FRU “BATRY.” If the problem is not fixed, then return here.
2. Exchange the battery power unit charger. Use the model and feature code in the table below

**Table 1. Charger part number**

Model or feature code	Charger part number
840, SB3	See Type, model, and part number list.
FC 5065, FC 5066, 5074, FC 5079, FC 5094, FC 9074, FC 9079, FC 9094	See Type, model, and part number list .
FC 5071, FC 5073, FC 5081, FC 5083	Replace the failing charger (see Type, model, and part number list ): <ul style="list-style-type: none"><li>• Internal battery power unit 1 or 2 charger</li><li>• External battery power unit 2 charger</li></ul>
FC 9309	21F9380

**This ends the procedure.**

## BATRY

For use by authorized service providers.


The battery may be the failing item.

Follow the instructions for the model you are working on:

- Models 270 and 820, 830, 840, SB2, and SB3 (See page 285)
- Models 800, 810, 825, 870, and 890 (See page 286)

### Instructions for Models 270, 820, 830, 840, SB2, and SB3

When there is a location and part number displayed on the Control Panel of the system or expansion tower, then you are to replace that FRU first.

**Note:** See Locations and addresses before exchanging the battery. Migrated expansion tower remove and replace procedures are in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .

Perform the following to determine the part number for the failing unit.

1. Choose from the following:

- If you are on a Model 270 or 820: Go to step 3 (See page 286).
  - If you are on a Model 830, 840, SB2, or SB3: Continue with the next step.
2. Is the failing battery part of a system unit?
- **No:** Continue with the next step.
  - **Yes:** Replace the following for the system unit that you are working on:
    - Model 840 (system processor unit) internal battery unit pack assembly (see Locations — Models 840, SB3 system unit with processor tower and FC 9079 Base I/O Tower for part number information and remove and replace procedures).
    - Model 840 (system processor unit) external battery power unit (see Type, model, and part number list for part number information).
    - FC 9074 or FC 9079 system tower battery power unit (includes all four battery power units and all four units should be replaced - see Locations and addresses for the model you are working on).
    - If the problem prevails, replace the symbolic FRU “BACKPLN” on page 284.

**This ends the procedure.**
3. The failing battery is part of a secondary expansion unit. Use one of the following batteries and parts.
- For an FC 507x or FC 508x:
    - One piece battery/charger unit installed, replace with (see Type, model, and part number list for part number information)
    - Internal battery power unit 1 and 2, battery pack (see Type, model, and part number list for part number information)

**Note:** When the FC 5058 expansion unit is installed on an FC 5071, FC 5073, FC 5081, and FC 5083, the battery power unit 2 is required.

    - External battery power unit 2, battery pack (see Type, model, and part number list for part number information)
    - External battery power unit 2, cable (see Type, model, and part number list for part number information)
    - 9309 general purpose I/O frame with SPCN (FC 9171) - part 21F9380
  - For an FC 5065, FC 5066, FC 5074, or FC 5079 expansion tower battery power unit (includes all four battery power units and all four units should be replaced), see Type, model, and part number list for part number information.
  - For an FC 5033, FC 5034, or FC 5035 expansion tower: Exchange both battery unit assemblies (includes both batteries). See Type, model, and part number list for part number information.
- This ends the procedure.**

### Instructions for Models 800, 810, 825, 870, and 890

**Note:** See Locations and addresses for the model you are working on before exchanging the battery.

The failing battery is in a secondary FC 5074, FC 5079, or FC 5094 Expansion I/O Tower. The battery includes all four battery power units.


**This ends the procedure.**

### BKSPCN

*For use by authorized service providers.*

An SPCN card may be failing. The SPCN card may be part of the AC Module in some parts of the system.

1. Choose from the following:

- If you are on a Model 270 or 820: The failing SPCN card is in a secondary expansion unit or base I/O unit. See the BKSPCN symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .


**This ends the procedure.**

- If you are on a Model 830, 840, SB2, or SB3: Is the failing SPCN card in a system unit?
  - **No:** Continue with the next step.
  - **Yes:** Replace the following:
    - Models 840/SB3 (non dual-line cord) SPCN card
    - Models 840/SB3 (dual-line cord) SPCN card

For location and part number of the SPCN card refer to Locations and addresses.

**This ends the procedure.**

2. The failing SPCN card is in a secondary expansion unit or base I/O unit. For FC 5072, 5073, 5077, 5082, 5083, and 9251 base I/O, the SPCN card is part of the ACMODUL. See Type, model, and part number list for part number information.

**Note:** Before exchanging the BKSPCN, see the Remove and replace procedures in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .

**This ends the procedure.**

## BPCPWR

*For use by authorized service providers.*

The bulk power controller (BPC) may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - Bulk power controller remove and replace procedure.

### Notes:

- Before replacing any field replaceable units (FRUs), verify that all cables are seated correctly.
- Ensure that the red switch on the front of the EPO panel is in the ON position and that if there is no external EPO cable, that the internal toggle switch to the ROOM EPO BYPASS on the bottom of the EPO panel is set to the left before proceeding.
- See Type, model, and part number list for the part number.

**Table 1. Unit reference code, BPC unit, and part number for the Model 870 and 890 System Units**

Unit reference code	BPC unit
1xx1- 8710, 8731, 8750; 1xxA- xx11, xx13, xx17, xx22, xx32, xx42, xx52, xx56, xx62, xx66, xx72, xx76, CE16	BPC-A
1xx1- 8711, 8731, 8751; 1xxB- xx11, xx13, xx17, xx22, xx32, xx42, xx52, xx56, xx62, xx66, xx72, xx76, CE16	BPC-B

**This ends the procedure.**

## BPDPWR

*For use by authorized service providers.*

The bulk power distribution (BPD) may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - Bulk power distribution remove and replace procedure.
3. See Type, model, and part number list for the part number.

**Note:** Before replacing any field replaceable units (FRUs), verify that all cables are seated correctly.

**Table 1. Unit reference code, BPD unit, and part number for Model 870 and 890 System Units**

Unit reference code	BPD unit
1xxA- xx21, xx22, xx23	BPD-1A
1xxA- xx31, xx32, xx33	BPD-2A
1xxB- xx21, xx22, xx23	BPD-1B
1xxB- xx31, xx32, xx33	BPD-2B

**This ends the procedure.**

## **BFPFWR**

*For use by authorized service providers.*

The bulk power fan (BPF) may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - Bulk power F-airmover remove and replace procedure.
3. See Type, model, and part number list for the part number.

**Note:** Before replacing any field replaceable units (FRUs), verify that all fans are seated correctly.

**Table 1. Unit reference code, BPF unit, and part number for Model 870 and 890 System Units**

Unit reference code	BPF unit
1xxA- xx17	BPF-A
1xxB- xx17	BPF-B

**This ends the procedure.**

## **BPRPWR**

*For use by authorized service providers.*

The bulk power regulator (BPR) may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - Bulk power regulator remove and replace procedure.

### **Notes:**

- Verify that all cables are seated correctly before replacing any FRUs.
- Check that the BPR is switched on, to ensure that it is not causing the problem.
- See Type, model, and part number list for the part number.

**Table 1. Unit reference code, BPR unit, and part number for Model 870 and 890 System Units**

Unit reference code	BPR unit
1xxA- xx51, xx52, xx53, xx56	BPR-1A
1xxA- xx61, xx62, xx63, xx66	BPR-2A
1xxA- xx71, xx72, xx73, xx76	BPR-3A
1xxB- xx51, xx52, xx53, xx56	BPR-1B
1xxB- xx61, xx62, xx63, xx66	BPR-2B
1xxB- xx71, xx72, xx73, xx76	BPR-3B

**This ends the procedure.**

## BSTWRPL

*For use by authorized service providers.*

BSTWRPL: Base I/O tower PCI board.

The failing component is the tower card in the FC 9074 Base I/O Tower for Models 830/SB2, an FC 9079 Base I/O Tower for Models 840/SB3, or an FC 9094 Base I/O Tower for a Model 870 or 890.

Identify the system model you are working on and exchange the tower card with the information in the table below:

System model	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, locations diagram, remove and replace procedure)
Models 830 and SB2	Tower card	CB1	Locations - Models 830/SB2 system unit with FC 9074 base I/O tower.
Models 840 and SB3	Tower card	CB1	Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower.
Models 870 and 890	Tower card	CB1	Locations - Models 870 and 890 with an FC 9094 Base I/O Tower.

**This ends the procedure.**

## BUS1

*For use by authorized service providers.*

The failing item is any card, cable or card enclosure connected to bus 1 that might cause an interface failure between the service processor and the system unit processor.

The system unit or the base I/O tower has failed and the diagnostic software was not able to isolate the failure to a single FRU.

1. Check the last IPL status code in SRC data word 3 in the second half of control panel function 12.

12

xxxxxxxxxxxxSSSS      SSSS = IPL status code  
xxxxxxxxxxxxxxxxxxxx

2. Choose from the following options:
  - If this value is **2000** through **2009** then use the "IPLINTF" on page 350 symbolic FRU instead of following this procedure.
  - If this value is **200A** through **2018**, then continue with the next step.
3. Attempt a SLOW OVERRIDE IPL to run full processor hardware diagnostics.
  - a. Power off the system from the control panel.
  - b. Change the IPL mode to manual, and the IPL speed to SLOW OVERRIDE (S) using control panel function 2.
  - c. Power on the system.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** Go to "Starting point for all problems" on page 2 and follow the service actions for the new SRC.

**This ends the procedure.**

4. Choose from the following options:

- If you are on a **Model 270** system unit, choose from the following options:
    - With processor feature 22A2, 22A4, 22A5, 2301, 2302 or 2422, continue with the next step.
    - With processor features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454: Go to step **6** (See page 290).
    - With processor feature 23E7, 23F0, 23F1, or 2452: Go to step **7** (See page 290).
  - If you are on a **Model 800 or 810**, choose from the following options:
    - With processor features 7428, 7429, or 7430: Go to step **6** (See page 290).
    - With processor features **except** 7428, 7429, or 7430: Go to step **7** (See page 290).
  - If you are on a **Model 820**: Go to step **8** (See page 290).
  - If you are on a **Model 825**: Go to step **9** (See page 291).
  - If you are on a **Model 830, 840, SB2, or SB3**: Go to step **10** (See page 291).
  - If you are on a **Model 870 or 890**: Go to step **15** (See page 292).
5. This is a Model 270 system unit with processor feature 22A2, 22A4, 22A5, 2301, 2302 or 2422. See Figure 1. Model 270 system unit, processor features 22A2, 22A4, 22A5, 2301, 2302 or 2422 in the Locations — Model 270 page. Replace the following FRUs in order, one at a time until the problem is resolved. See the Remove and replace procedures for instructions. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Power regulator in location R01
    - b. Power supply in location P01
    - c. System unit backplane in location MB1
    - d. Memory card pairs in locations A-H  
**This ends the procedure.**
  6. This is a Model 270 system unit with processor feature 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454, or a Model 810 system unit with processor features 7428, 7429, or 7430. See either Figure 2. Model 270 system unit, processor features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454 in the Locations — Model 270 page, or Locations — Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Processor card in location M02
    - b. Power supply in location P01
    - c. System unit backplane in location MB1
    - d. Memory riser card in location M01  
**This ends the procedure.**
  7. This is a Model 270 system unit **with** processor feature 23E7, 23F0, 23F1, or 2452, or a Model 800 or 810 system unit with processor features **except** 7428, 7429, 7430. See either Figure 3. Model 270 system unit, processor features 23E7, 23F0, 23F1, 2452 (Processor embedded on backplane) in the Locations - Model 270 page, or Locations - Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Power regulator in location R01
    - b. Power supply in location P01
    - c. System unit backplane in location MB1
    - d. Memory card pairs in locations A-H  
**This ends the procedure.**
  8. This is a Model 820. See Locations — Model 820 and replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Processor card in location M03
    - b. Power supply in location P01
    - c. Power supply in location P02

- d. Power supply in location P03
  - e. Memory riser card in location M01
  - f. Memory Riser card in location M02
  - g. System unit backplane in location MB1
- This ends the procedure.**
9. This is a Model 825. See Locations — Model 825. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
- a. Processor card in location M02 (if present)
  - b. Memory cards on the processor card in location M02 (if present and exchanging the processor card in M02 corrected the problem)
  - c. Processor card in location M01 (if present)
  - d. Memory cards on the processor card in location M02 (if present and exchanging the processor card in M01 corrected the problem)
  - e. Processor card in location C13
  - f. Memory cards on the processor card in location C13 (if exchanging the processor card in C13 corrected the problem)
  - g. Power supply in location P01
  - h. Power supply in location P02
  - i. System Backplane Extender in location MB1
  - j. System unit backplane in location MB1
- This ends the procedure.**
10. For Models 830, 840, SB2, and SB3: Perform the following:
- a. Power off the system from the control panel.
  - b. Check cable connections between the system unit and the base I/O tower.
  - c. Reseat cables where possible.
  - d. Power on the system.
- Does the same SRC occur?
- **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2 and follow the service actions for the new SRC.
- This ends the procedure.**
11. Perform the following:
- a. Power off the system from the control panel.
  - b. Remove the cables and connections from the secondary I/O towers so that HSL ports A0 and A1 connect only the base I/O tower to the system unit. This is a minimum configuration for IPL.
- Note:** The connections to any I/O towers other than those connected to ports A0 and A1 should not affect this procedure.
- c. Power on the system.
- Does the same SRC occur?
- **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2 and follow the service actions for the new SRC.
- If the IPL is successful, then the failing item is in a secondary I/O tower. Restore the I/O towers one at a time until the problem is isolated.
12. Is this system a Model 830, SB2 system unit and FC 9074?
- **Yes:** Continue with the next step.
  - **No:** Go to Step 14 (See page 292).

13. See Locations — Models 830 for the locations and remove and replace procedures. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. Network Interface Controller card in location M06 in the 830 system unit.
  - b. Clock card in location M06A in the 830 system unit.
  - c. Processor regulator card in location M01 in the 830 system unit.
  - d. Processor card in location M03 in the 830 system unit.
  - e. Processor card in location M04 in the 830 system unit.
  - f. System unit backplane in location MB1 in the 830 system unit.

**This ends the procedure.**
14. This is a Model 840, SB3 system unit and FC 9079 base I/O tower. See Locations — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. Network Interface Controller (NIC) card in location M17 in the 840 system unit.
  - b. Clock card in location M19 in the 840 system unit.
  - c. Processor regulator card in location M04 in the 840 system unit.
  - d. Processor regulator card in location M07 in the 840 system unit.
  - e. Processor card 0 in location M05 in the 840 system unit.
  - f. Processor card 1 in location M18 in the 840 system unit.
  - g. Processor card 2 in location M06 in the 840 system unit.
  - h. Processor card 3 in location M16 in the 840 system unit.
  - i. System unit backplane in location MB1 in the 840 system unit.

**This ends the procedure.**
15. This is a Model 870 or 890 with an FC 9094 Base I/O Tower. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. HSL I/O bridge card in position C10 in the FC 9094 base I/O tower.
  - b. Network interface controller (NIC) card in position M41 in the Model 870 or 890 processor tower.
  - c. Replace each memory card one at a time in the Model 870 or 890 processor tower.
  - d. Replace HSL cable C0 on the NIC card in position M41 in the Model 870 or 890 processor tower.

**This ends the procedure.**

## **BUSCBL1, BUSCBL2, BUSCBL3, or BUSCBLx**

*For use by authorized service providers.*

BUSCBL1, BUSCBL2, BUSCBL3, or BUSCBLx: HSL Loop cable, the HSL loop connections (external or embedded) or an HSL interposer card in an HSL loop.

The failing component is an HSL cable, the HSL connections (external, internal, or embedded), an internal HSL ribbon cable, an HSL link embedded in a FRU, or an HSL interposer card in an HSL loop.

**Warning:** If an HSL cable is pulled, it may result in the HSL connection being lost to frames that were in a loop after the cable is reconnected. To fix this, you will need to cycle power on the frame with the locked HSL connection. If this occurs, follow the Power down, power on instructions (See page 294) instructions below to power down the frames, reconnect the HSL cable, and power the frames back on.

The name of the symbolic FRU given in the Service Action Log (SAL) gives information about the type of connection at the failing port. Use information about the connection on each end of the cable to determine the cable type.

- BUSCBL1 indicates the connection is an optical connection.



- BUSCBL2 indicates the connection is a copper HSL cable (it will have yellow connectors) unless stated differently in a FRU locations table.
- BUSCBL3 indicates the connection is a copper HSL-2 connection (it will have silver connectors).
- BUSCBLx indicates the connection type could not be determined.

**Note:** When exchanging HSL optical cables use the optical cleaning kit and procedures. See symbolic FRU “OPT\_CLN” on page 407 for additional information. If an interposer card is called for, be sure the interposer type matches the cable type (optical or copper).

1. Exchange the HSL cable, see HSL cables - concurrent. The cable ports may be displayed in the location information in the Service Action Log.

**Note:** When connecting any copper cable between a system unit and an I/O tower, start with the port of an I/O Tower.

2. If the error has been corrected, then the cable was the failing item. See Verify the repair. If the error persists, continue with the next step. To see if the error is corrected:
  - Select **Start a service tool** —> **Hardware service manager** —> **Logical hardware resource** —> **High-speed link (HSL) resources**.
  - Move the cursor to the HSL loop containing the cable you just replaced and select **Display detail**.
  - Select **F8** to move through the loop until you find the link containing the cable you just replaced in the Leading Port or Trailing Port display. If the status is “operational”, then changing the cable fixed the problem.
3. Locate the frame type or types on which you are working in the table below. Exchange the HSL loop connections (external or embedded), or the HSL interposer card. See the Remove and replace procedure - Cards (concurrent or dedicated) for the model you are working on.
4. If the error has been corrected, then the FRU you replaced was the failing item. See Verify the repair. If the error persists, call your next level of support.

**This ends the procedure.**

**Table 1. HSL cable or connections**

System model, tower, expansion unit, or machine type	HSL cable or connections
Model 810 <b>with</b> processor features 7428, 7429, or 7430 See Locations — Models 800 and 810	The Network Interface Controller (NIC) is embedded in the system processor card (position M02). <ul style="list-style-type: none"> <li>• There is an HSL ribbon cable from the system unit backplane (position MB1) to the external HSL ports on the frame.</li> <li>• There is an internal HSL connection from the NIC in the Processor Card to the HSL I/O bridge embedded in the system unit backplane.</li> <li>• There is an internal HSL connection from the HSL I/O bridge component embedded in the system unit backplane to the HSL ribbon cable port on the system unit backplane.</li> </ul>

System model, tower, expansion unit, or machine type	HSL cable or connections
Model 800 or 810 <b>without</b> processor features 7428, 7429, or 7430 See Locations — Models 800 and 810	The Network Interface Controller (NIC) is embedded in the system unit backplane (position MB1). <ul style="list-style-type: none"> <li>• There is an HSL ribbon cable from the system unit backplane (position MB1) to the external HSL ports on the frame.</li> <li>• There is an internal HSL connection from the NIC to the HSL I/O bridge embedded in the system unit backplane.</li> <li>• There is an internal HSL connection from the HSL I/O bridge component embedded in the system unit backplane to the HSL ribbon cable port on the system unit backplane.</li> </ul>
Model 825 See Locations — Model 825	<ul style="list-style-type: none"> <li>• External HSL ports on the HSL interposer card in position C08 or C09.</li> <li>• The HSL interposer card in position C08 or C09 that connect to CB1.</li> <li>• External HSL ports on the NIC card in position MB1.</li> </ul>
Models 870 or 890 See Locations - Models 870 and 890 with an FC 9094 Base I/O Tower	External HSL ports on the NIC card in position M30, M39, M40, or M41.
FC 5074 Expansion I/O Tower See Locations - FC 5074 Expansion I/O Tower	External HSL ports on the HSL I/O bridge card in position C08.
FC 5075 Expansion I/O Tower See Locations - FC 5075 Expansion I/O Tower	<ul style="list-style-type: none"> <li>• External HSL ports on the tower frame.</li> <li>• Internal ribbon cable connecting the frame to the tower card in position CB1.</li> </ul>
FC 5078, FC 0578 Expansion I/O Unit See Locations - FC 5078, FC 0578 Expansion I/O Unit	External HSL ports on the HSL I/O bridge card in position C08.
FC 5079 (1.8m expansion tower) See Locations - FC 5079 Expansion I/O Tower	External HSL ports on the HSL I/O bridge card in position C08.
FC 5088 or FC 0588 Expansion I/O unit See Locations - FC 5088, FC 0588 Expansion I/O Unit	External HSL ports on the HSL I/O bridge card in position C10.
FC 5094, FC 9094 Expansion I/O Tower See Locations - FC 5094, FC 9094 Expansion I/O Tower	External HSL ports on the HSL I/O bridge card in position C10.
FC 5095, 0595 Expansion I/O Tower See Locations - FC 5095, 0595 Expansion I/O Tower	External HSL ports on the HSL I/O bridge card in position C05.
External xSeries <sup>(TM)</sup> Server See Locations - External xSeries Server	External HSL ports on the Integrated xSeries Adapter.

### Power down, power on instructions

Follow these steps if you accidentally pulled an HSL cable, and lost HSL connections to frames that were in a loop.

1. From the Hardware Service Manager screen, select **Packaging hardware resources**.
2. Select the frame that has just accidentally lost its HSL connection and select **Concurrent Maintenance**. Then, press **Enter**.
3. Select **Power off domain** to power off the tower.
4. After reconnecting the frame into the HSL loop, select **Power on domain**.

## BUSPWR

*For use by authorized service providers.*

There is a problem with the +29V Bus.

**Attention:** AC power must be removed from the system before removing or installing regulator 3.

Perform the following:

1. Is the SRC 1xxx 1200 displayed?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
2. Perform the following:
  - a. Remove regulators R01 to R10 (except R3) R11 and R20 from the system unit.
  - b. Power on the system.Is the SRC 1xxx 1200 displayed?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **12** (See page 296).
3. Perform the following:
  - a. Remove one of the AMDs from the system not previously removed during this procedure.
  - b. Power on the system.Is the SRC 1xxx 1200 displayed?
  - **Yes:** Continue with the next step.
  - **No:** The AMD you removed in this step is the failing item.  
**This ends the procedure.**
4. Have you removed all of the AMDs one at a time?
  - **No:** Perform the following:
    - a. Install the AMD that was removed in step **3** (See page 295).
    - b. Repeat step **3** (See page 295).
  - **Yes:** Install all AMDs and continue with the next step.
5. Perform the following:
  - a. Power off the system.
  - b. Remove the battery power unit charger.
  - c. Power on the system.Is the SRC 1xxx 1200 displayed?
  - **Yes:** Continue with the next step.
  - **No:** The battery power unit charger that you removed in this step is the failing item.  
**This ends the procedure.**
6. Perform the following:
  - a. Remove all except one of the bulk power supplies from the system.
  - b. Disconnect all of the disk units and removable media devices by pulling them out of the enclosure about one inch.
  - c. Power on the system.Is the SRC 1xxx 1200 displayed?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **10** (See page 296).

7. Perform the following:
  - a. Power off the system.
  - b. Remove the only bulk power supply installed.
  - c. Install one of the other bulk power supplies that was removed in step 6 (See page 295).
  - d. Power on the system.

Is the SRC 1xxx 1200 displayed?

- **Yes:** Continue with the next step.
- **No:** The bulk power supply just removed in this step is the failing item.  
**This ends the procedure.**

8. Perform the following:
  - a. Remove regulator R3.
  - b. Power on the system.

Is the SRC 1xxx 1200 displayed?

- **Yes:** Continue with the next step.
- **No:** Regulator R3 is the failing item.  
**This ends the procedure.**

9. Perform the following:
  - a. Power off the system.
  - b. Exchange the SPCN card. See symbolic FRU "BKSPCN" on page 286.
  - c. Power on the system.

Is the SRC 1xxx 1200 displayed?

- **Yes:** Replace the backplane. See symbolic FRU "BACKPLN" on page 284.  
**This ends the procedure.**
- **No:** The SPCN card exchanged in this step was the failing item.  
**This ends the procedure.**

10. Perform the following:
  - a. Power off the system.
  - b. Install one of the bulk power supplies that was removed in step 6 (See page 295).
  - c. Power on the system.

Is the SRC 1xxx 1200 displayed?

- **No:** Continue with the next step.
- **Yes:** The power supply that you installed in this step is the failing item.  
**This ends the procedure.**

11. Have you installed all of the power supplies that were removed in step 6 (See page 295)?
  - **Yes:** Install all units removed in this procedure.  
**This ends the procedure.**
  - **No:** Repeat step 10 (See page 296).

12. Perform the following:
  - a. Power off the system.
  - b. Install one of the regulators that was removed in step 2 (See page 295).
  - c. Remove all bus load (processor, memory, and IOP except Clock card).
  - d. Power on the system.

Is the SRC 1xxx 1200 displayed?

- **No:** Continue with the next step.

- **Yes:** The regulator installed in this step is the failing item.  
**This ends the procedure.**
13. Have you installed all of the regulators that were removed in step 2 (See page 295)?
- **Yes: This ends the procedure.**
  - **No:** Repeat step 12 (See page 296).

## BUSVPD

*For use by authorized service providers.*

This is a PCI bus VPD at the Multi-Adapter Bridge of the Primary PCI Bus.

1. Choose from the following options:
  - If you are working from the Service Action Log, and a card position is listed with this failing item, then that is where the error is located. Continue with the next step.
  - Otherwise, record the bus number value, BBBB, in word 7 of the SRC, see “Breaking down the SRC” on page 63 (in the Bus PIP Overview section) for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing item. Record the frame or tower type. Then, continue with the next step.
2. Use the following table to determine which symbolic FRU to go to the system or tower you are working on.


System frame or I/O Tower type containing the failing item	Action
Models 800 and 810	Go to symbolic FRU “SYSBKPL” on page 464
Model 825	Go to symbolic FRU “SYSBKPL” on page 464
Models 870 or 890 Base I/O Tower	Go to symbolic FRU “TWRPLNR” on page 473
FC 5074, FC 5078, FC 0578, FC 5079, or FC 5095 Expansion I/O Tower, FC 5088, FC 0588 Expansion I/O Unit	Go to symbolic FRU “TWRPLNR” on page 473
FC 5075 Expansion I/O Tower	Go to symbolic FRU “TWRBKPL” on page 469
External xSeries Server	Go to symbolic FRU “SIADPCD” on page 446

**This ends the procedure.**

## CACHBAT

*For use by authorized service providers.*

The cache battery pack may be failing. Use the cache battery pack location information in the Service Action Log if it is available. If the location is not available, find the address of the storage IOA. See SRC address formats. Use the address to find the location. See Locations and addresses.

If the failing item is in a migration tower, go to the CACHBAT symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .


Using the type number of the storage IOA, go to Type, model, and part number list to determine the cache battery pack part number.

To exchange the cache battery pack, see Type 2748, 2757, 2763, 2778, 2780, 2782, 5703, 5708 - Cache battery pack.

## CACHE

*For use by authorized service providers.*

The cache adapter card is only a separate failing item on migrated towers. If the cache adapter card is located in a migrated tower, see the CACHE symbolic FRU in the *Migrated Expansion Tower Problem*

*Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for FRU isolation instructions.

## CAPPWR

*For use by authorized service providers.*

The Capacitor card (CAP) may be the failing item.

1. Is the SRC 1xx1-8468?

- **No:** Continue with the next step.
- **Yes:** Choose from the following options:
  - If fewer than 3 DCAs are installed:
    - If no capacitor card is installed in CAP 1 (M33) or CAP 2 (M37) location, install a card in CAP 1 location.
    - If a capacitor card is present in either CAP 1 or CAP 2 location, reseal it. If the problem is not fixed, replace it.
  - If 3 or more DCAs are installed:
    - If no capacitor card is installed in CAP 1 location, one is required.
    - If a capacitor card is installed in either CAP 1 location, reseal it. If the problem is not fixed, replace it.

2. For SRC 1xx1-8469:

- If no capacitor card is installed in CAP 2 (M37) location, install one. It is required.
- If a capacitor card is installed in CAP 2 location, reseal it. If the problem is not fixed, replace it.
- See Type, model, and part number list for the part number.

**Note:** Before replacing any field replaceable units (FRUs), verify that the card is seated correctly.

**Table 1. CAPPWR for Models 870 and 890:**

Unit Reference Code	CAP Unit/location
1xx1- 8468	CAP-1/M33
1xx1- 8469	CAP-2/M37

**This ends the procedure.**

## CBLALL

*For use by authorized service providers.*

A power cable may be the failing item.

When there is a location and part number displayed on the Control Panel of a system or expansion tower, then you are to replace that FRU first.

Perform the following to determine the part number of the failing part.

1. Is the SRC 1xxx 2201 or 2301?

- **No:** Continue with the next step.
- **Yes:** The failing item is a power cable. Exchange the following parts one at a time.
  - Base backplane power cable:
    - PWR3A if installed - part 44H7809
    - PWR3B if installed - part 44H7825
  - Tape/Optical/Disk Unit power cable:

- PWR1B if installed - part 44H7808
  - PWR1C if installed - part 44H8337
  - Disk Unit BACKPL5B power cable: PWR8 if installed - part 44H7811
  - Disk Unit BACKPL5A to:
    - Optical D02 cable (for Models 830, 840, SB2, and SB3)
    - CD D02 cable (for Models 270 and 820)
  - PWR9 if installed - part 44H8271
  - Power supply interposer backplane
    - PWRBUS1A if installed - part 44H8400
    - PWRBUS1B if installed - part 44H8401
2. Is the SRC 1xxx 2202 or 2302?
- **No:** Continue with the next step.
  - **Yes:** The failing item is within the power cables. Exchange the following parts one at a time.
    - SPD backplane power cable: PWR23A if installed - part 44H7814
    - PCI backplane power cable: PWR23B if installed - part 44H7816
    - Tape BACKPL4B and Disk Unit BACKPL5B power cable: PWR21 if installed - part 44H7812
    - Disk Unit BACKPL4B power cable: PWR22 if installed - part 44H7815
    - Power supply interposer backplane: PWRBUS1C if installed - part 44H7910
3. Is the SRC 1xxx 2221, 2222, 2223, 2224, 2321, 2322, 2323, or 2324?
- **No:** Continue with the next step.
  - **Yes:** The failing item is the power cables, exchange the following parts one at a time.
    - Panel backplane to base backplane cable:
      - SIG5A if installed - part 44H8017
      - SIG5B if installed - part 44H8021
    - Panel backplane to power supply:
      - SIG9A if installed - part 44H8016
      - SIG6B if installed - part 44H8035
      - SIG6C if installed - part 44H8022
    - Base backplane to expansion PWRBUS1B cable
      - SIG8A - Part 44H8339 installed (with cover interlock) replace with - part 44H4599 kit
      - SIG8A - Part 87G0785 installed (without cover interlock) replace with - part 87G0785
    - PWRBUS1B - part 44H8401
    - Disk Unit BACKPL4B power cable: PWR21 if installed - part 44H7812
4. Is the SRC 1xxx 2231?
- **No:** Continue with the next step.
  - **Yes:** The failing item is the signal cables, exchange the following parts one at a time.
    - Panel to RPO/MI/UPS signal/SPCN cover cable
      - SIG9B - Part 44H8338 installed (with cover interlock) replace with - part 44H4598 kit
      - SIG9B - Part 87G0784 installed (without cover interlock) replace with - part 87G0784
    - Interlock jumper - part 44H8340
5. Is the SRC 1xxx 2232?
- **No:** Continue with the next step.
  - **Yes:** The failing item is the signal cables, exchange the following parts one at a time.
    - Panel to expansion cover cable
      - SIG8A - Part 44H8339 installed (with cover interlock) replace with - part 44H4599 kit

- SIG8A - Part 87G0785 installed (without cover interlock) replace with - part 87G0785
  - Interlock jumper - part 44H8340
6. Is the SRC 1xxx 2311?
- **No:** Continue with the next step.
  - **Yes:** The failing item is the signal cables, exchange the following parts one at a time.
    - Panel to power supply cable:
      - SIG6B if installed - part 44H8035
      - SIG6C if installed - part 44H8022
    - Power supply interposer backplane
      - PWRBUS1A - part 44H8400
      - PWRBUS1B - part 44H8401
7. Is the SRC 1xxx 2312, 2313, or 2314?
- **No:** Continue with the next step.
  - **Yes:** The failing item is the signal cables, exchange the following parts one at a time.
    - For Models 270 and 820: Panel to power supply cable
    - For Models 830, 840, SB2, and SB3: Panel to expansion cover cable
      - SIG8A if installed - Part 44H8339 installed (with cover interlock) replace with - part 44H4599 kit
      - SIG8A if installed - Part 87G0785 installed (without cover interlock) replace with - part 87G0785
    - Power supply interposer backplane: PWRBUS1B - part 44H8401
8. Is the SRC 1xxx 1100, 1101, 1102, 1103, 1104 or 1105? (For 830, 840, SB2, and SB3 only.)
- **No:** Continue with the next step.
  - **Yes:** Exchange the power subframe assembly - part 97H2348.  
**This ends the procedure.**
9. Is the SRC 1xxx 1512, 1522, or 1532?
- **No:** Continue with the next step.
  - **Yes:** Exchange one of the following one at a time.
 


For all except FC 5078/0578 and FC 5088 or FC 0588:

    - The failing item is the SPCN cable, exchange the following - part 97H7477.
    - The failing item is the power distribution card, exchange the following - part 97H7544.

For FC 5078/0578 and FC 5088 or FC 0588:

    - The failing item is the SPCN cable, exchange the following - part 21P6096 (PWRC03) and part - 41L5650 (PWRC02).
    - The failing item is the power distribution card, exchange the following - part 00P2382
10. Is the SRC 1xxx 4410, 4411, 4412, 4413, 4414 (Models 830, 840, SB2, and SB3 only), 4415, 4416, 4417?
- **No:** Continue with the next step.
  - **Yes:** Exchange one of the following at a time.
    - Charger A01 to batteries (T01 through T04) - part 97H7474
    - Charger to Power supply 1, 2 or 3 - part 36L8858
11. Is the SRC 1xxx 00AC, 2612, 302E, 7417 (Models 830, 840, SB2, and SB3 only), 9012, 9013, 90F0, 9231, 9232, 9233, 9235, 9236, 9280, 9281, 9282, C62E, C701, C702 or C703?
- **No:** Continue with the next step.
  - **Yes:** The failing item is the SPCN frame to frame cable. The following list shows the lengths and part numbers of the possible failing items:



- 6.0 meters - part 21F9469
  - 15.0 meters - part 21F9358
  - 30.0 meters - part 21F9359
  - 60.0 meters - part 21F9360
  - 100.0 meters (SPCN optical cable) - part 21F9415
  - SPCN optical adapter - part 90H6287
  - SPCN port cable (frame-to-node) - part 21F9362
  - Frame-to-frame cable - part 87G6235
  - Integrated xSeries<sup>(TM)</sup> Server SPCN-Y cable assembly - part 04N2652
12. Is the SRC 1xxx-2613?
- **No:** Continue with the next step.
  - **Yes:** Go to Determine line cord, plug, and receptacle type in the Plan for hardware and software topic in Information Center, to determine the power cable part number for systems in your country or region. This information is also available in the Plan for hardware and software  book under the Power topic.
13. Is the SRC 1xxx-8940, 8941, 8942 or 8943?
- **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
14. Reseat the RS485 cable. Does this correct the problem?
- Note:** It may take up to one minute for the frame ID to stop blinking.
- **Yes: This ends the procedure.**
  - **No:** Continue with the next step.
15. Exchange the RS485 cable assembly part - 21P4162. Does this correct the problem?
- Note:** It may take up to one minute for the frame ID to stop blinking.
- **Yes: This ends the procedure.**
  - **No:** Go to the next FRU in the list.  
**This ends the procedure.**

## CBLPWR

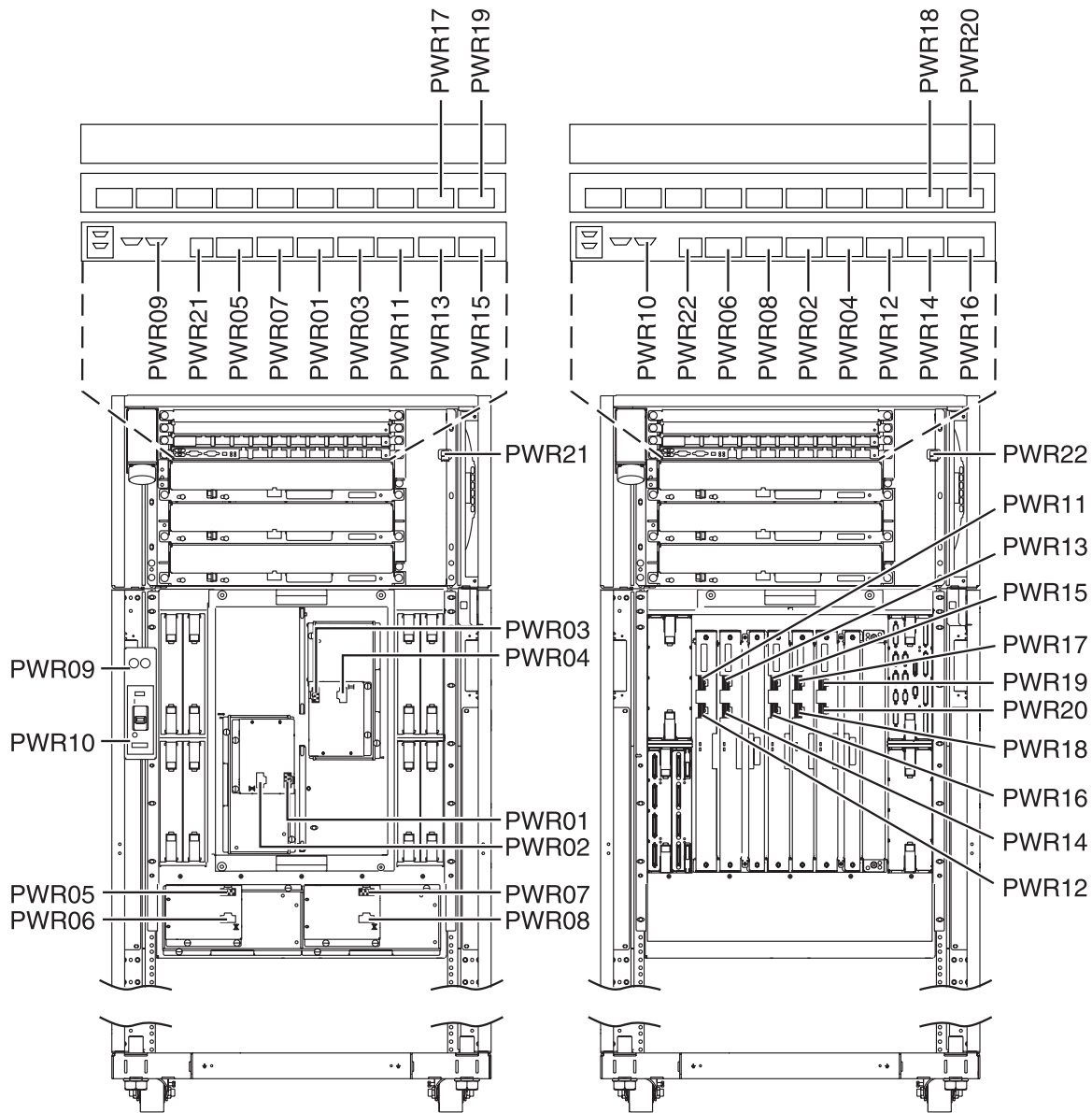
*For use by authorized service providers.*

A power or AC line cord may be the failing item.

Use the diagram below to view the power cable locations, in conjunction with the tables below that give more details. The tables include:

- Power cables (See page 302)
- AC line cords (See page 303)

### Figure 1. Part locations for power cables



RZAR6902-5

**Notes:**

- For SRC 1xxx-8711, check that the bulk power regulator (BPR) is switched **on** before replacing any parts.
- When DC converter assembly (DCA) cable SRCs of 1xxC- xx15, xx25, xx35, xx45, xx55, xx65, and motor drive assembly (MDA) cable SRCs of 1xxC- xx75, xx85, xx95, xxA5 occur:
  - Both the A-side and the B-side cables of the unit called out may be failing.
  - Replace the cables for that unit until the error is corrected. That is, if the error is corrected after replacing the first selected cable, then this ends the procedure. Otherwise, continue to the second cable.

**Table 1. Power cables — Index, units, and description**

**Important:** Always ensure that both cables for the unit that you are replacing are connected correctly before attempting concurrent maintenance.

**Note:** For part numbers, refer to Models 870 and 890 processor towers in the Power and signal cables page.

Index	Units per assembly	Description
PWR21	1	BPC-A J03 to Bulk Power Fan BPF-A, Cable attached to FAN
PWR22	1	BPC-B J03 to Bulk Power Fan BPF-B, Cable attached to FAN
PWR11	1	BPC-A J08 to DCA-1 J00, Red with white stripe
PWR12	1	BPC-B J08 to DCA-1 J01, Red
PWR13	1	BPC-A J09 to DCA-2 J00, Red with white stripe
PWR14	1	BPC-B J09 to DCA-2 J01, Red
PWR15	1	BPC-A J10 to DCA-3 J00, Red with white stripe
PWR16	1	BPC-B J10 to DCA-3 J01, Red
PWR17	1	BPD1-A J09 to DCA-4 J00, Red with white stripe
PWR18	1	BPD1-B J09 to DCA-4 J01, Red
PWR19	1	BPD1-A J10 to DCA-5 J00, Red with white stripe
PWR20	1	BPD1-B J10 to DCA-5 J01, Red
PWR05	1	BPC-A J04 to MDA-F1 J1, Red with white stripe
PWR06	1	BPC-B J04 to MDA-F1 J2, Red
PWR07	1	BPC-A J05 to MDA-F2 J1, Red with white stripe
PWR08	1	BPC-B J05 to MDA-F2 J2, Red
PWR01		BPC-A J06 to MDA-F3 J1, Red with white stripe
PWR02	1	BPC-B J06 to MDA-F3 J2, Red
PWR03	1	BPC-A J07 to MDA-F4 J1, Red with white stripe
PWR04	1	BPC-B J07 to MDA-F4 J2, Red
PWR09	1	BPC-A J02 to UEPO J00, Red with white stripe
PWR10	1	BPC-B J02 to UEPO J01, Red
PWR23	1	BPC-A/B P00 and M41 VPD to CB1 (FC 9094) VSCOMM

**Table 2. AC line cords — Description and units per assembly**

**Note:** For part numbers, refer to the

### CCIN

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Follow the instructions for the model you are working on.

- Models 270, 820, 830, 840, SB2, and SB3 (See page 303)
- Models 800, 810, 825, 870, and 890 (See page )

### Instructions for Model 270, 820, 830, 840, SB2, and SB3

There are two parts here:

- “Locations for processors and memory FRUs” on page 304
- “Processor configuration” on page 305

**Locations for processors and memory FRUs:** If you are replacing a processor or memory card on a Model 270, 820, 830, 840, SB2, or SB3 use the reference code for the FRU you are replacing, and the appropriate table below to determine the location of the FRU. The tables include:

- Locations for processors and memory FRUs for Models 270 and 820 (See page 304)
- Locations for processors and memory FRUs for Models 830 and SB2 (See page 304)
- Locations for processors and memory FRUs for Models 840 and SB3 (See page 305)

**Table 1. Locations for processors and memory FRUs for Models 270 and 820**

Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location
x001: MB1	x010: MB1-A	x011: MB1-B	x012: MB1-C	x013: MB1-D	x014: MB1-E
x015: MB1-F	x016: MB1-G	x017: MB1-H	x00A: MB1-A, B	x00B: MB1-C, D	x00C: MB1-E, F
x00D: MB1-G, H	x100: M01	x101: M01-A	x102: M01-B	x103: M01-C	x104: M01-D
x10D: M01-A, B, C, D	x10E: M01-A, B	x111: M01-E	x112: M01-F	x113: M01-G	x114: M01-H
x11D: M01-E, F, G, H	x121: M01-J	x122: M01-K	x123: M01-L	x124: M01-M	x12D: M01-J, K, L, M
x131: M01-N	x132: M01-P	x133: M01-Q	x134: M01-R	x13D: M01-N, P, Q, R	x200: M02
x201: M02-A	x202: M02-B	x203: M02-C	x204: M02-D	x20D: M02-A, B, C, D	x20E: M02-A, B, C, D
x211: M02-E	x212: M02-F	x213: M02-G	x214: M02-H	x21D: M02-E, F, G, H	x21E: M02-C, D
x221: M02-J	x222: M02-K	x223: M02-L	x224: M02-M	x22D: M02-J, K, L, M	x22E: M02-E, F, G, H
x231: M02-N	x232: M02-P	x233: M02-Q	x234: M02-R	x23D: M02-N, P, Q, R	x23E: M02-G, H
x300: M03	x301: M03-A	x302: M03-B	x30D: M03-A, B	x311: M03-C	x312: M03-D
x31D: M03-C, D	x321: M03-E	x322: M03-F	x32D: M03-E, F	x331: M03-G	x332: M03-H
x33D: M03-G, H					

**Table 2. Locations for processors and memory FRUs for Models 830 and SB2**

Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location
x001: MB1	x200: M02	x201: M02-A	x202: M02-B	x203: M02-C	x204: M02-D
x205: M02-E	x206: M02-F	x207: M02-G	x208: M02-H	x20D: M02-A thru H	x20E: A, C, E, G, H
x20F: M02-B, D, F, H	x211: M02-J	x212: M02-K	x213: M02-L	x214: M02-M	x215: M02-N
x216: M02-P	x217: M02-Q	x218: M02-R	x21D: M02-J thru R	x21E: M02-J, L, N, Q	x21F: M02-K, M, P, R
X221: M02-S	x222: M02-T	x223: M02-U	x224: M02-V	x225: M02-W	x226: M02-X
X227: M02-Y	x228: M02-Z	x22D: M02-S thru Z	x22E: M02-S, U, W, Y	x22F: M02-T, V, X, Z	x231: M02-1
x232: M02-2	x233: M02-3	x234: M02-4	x235: M02-5	x236: M02-6	x237: M02-7
x238: M02-8	x23D: M02-1 thru 8	x23E: M02-1, 3, 5, 7	x23F: M02-2, 4, 6, 8	x300: M03	x400: M04
x500: M05	x501: M05-A	x502: M05-B	x503: M05-C	x504: M05-D	x505: M05-E

Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location
x506: M05-F	x507: M05-G	x508: M05-H	x50D: M05-A thru H	x50E: M05-A, C, E, G	x50F: M05-B, D, F, H
x511: M05-J	x512: M05-K	x513: M05-L	x514: M05-M	x515: M05-N	x516: M05-P
x517: M05-Q	x518: M05-R	x51D: M05-J thru R	x51E: M05-J, L, N, Q	x51F: M05-K, M, P, R	x521: M05-S
x522: M05-T	x523: M05-U	x524: M05-V	x525: M05-W	x526: M05-X	x527: M05-Y
x528: M05-Z	x52D: M05-S thru Z	x52E: M05-S, U, W, Y	x52F: M05-T, V, X, Z	x531: M05-1	x532: M05-2
x533: M05-3	x534: M05-4	x535: M05-5	x536: M05-6	x537: M05-7	x538: M05-8
x53D: M05-1 thru 8	x53E: M05-1, 3, 5, 7	x53E: M05-2, 4, 6, 8	x600: M06	x601: M06-A	

**Table 3. Locations for processors and memory FRUs for Models 840 and SB3**

In this table, the x in the first three rows equals 4, 8, or C. The x in the last two rows equals 5, 9, or D.

Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location	Reference code and Location
x001: MB1	x00A: M01, M02, M03, M24	x00B: M20, M21, M22, M23	x00C: M08, M09, M10, M11	x00D: M12, M13, M14, M15	x100: M01
x200: M02	x300: M03	x500: M05	x600: M06	x800: M08	x900: M09
xA00: M10	xB00: M11	xC00: M12	xD00: M13	xE00: M14	xF00: M15
x000: M16	x100: M17	x200: M18	x300: M19	x400: M20	x500: M21
x600: M22	x121: M23	x122: M24			

**Processor configuration:**

- Use the tables below to identify the processor configuration for the model you are working on. Then, continue with the next step. Choose the model you are working on for the correct processor configuration table:
  - Model 270 (See page 305)
  - Model 820 (See page 306)
  - Models 830 and SB2 (See page 307)
  - Models 840 and SB3 (See page 308)

**Table 4. Processor configuration for Model 270**

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN
270	23F5	2434	1520	25BD
270	23F4	2434	NA	25BD
270	23F1	2432	1519	25BA
270	23F0	2432	NA	25BA
270	23E7	2431	1518	25B9
270	2302	2302	NA	224A
270	2301	2301	NA	224A
270	2454	2454	NA	25BD
270	2452	2452	NA	25BA

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN
270	2424	2424	NA	24A2
270	22AB	2253	1520	24A2
270	22AA	2253	NA	24A2
270	2423	2423	NA	24A0
270	22A8	2252	1519	24A0
270	22A7	2252	NA	24A0
270	2422	NA	NA	2249
270	22A5	2250	1518	2249
270	22A4	2250	NA	2249
270	22A2	2248	1517	2249

**Table 5. Processor configuration for Model 820**

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN
820	0150	0150	NA	25BC
820	0151	0151	NA	25BD
820	0152	0152	NA	25BE
820	23A1	2395	1521	244A
820	23A2	2395	1522	244A
820	23A3	2395	1523	244A
820	23A4	2395	1524	244A
820	23A9	2396	1521	24A0
820	23AA	2396	1522	24A0
820	23AB	2396	1523	23A0
820	23AC	2396	1524	24A0
820	23AD	2396	1525	23A0
820	2425	2425	NA	24A0
820	23B1	2397	1521	244D
820	23B2	2397	1522	244D
820	23B3	2397	1523	244D
820	23B4	2397	1524	244D
820	23B5	2397	1525	244D
820	23B6	2397	1526	244D
820	2426	2426	NA	244D
820	23B8	2398	1521	244E
820	23B9	2398	1522	244E
820	23BA	2398	1523	244E
820	23BB	2398	1524	244E
820	23BC	2398	1525	244E
820	23BD	2398	1526	244E

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN
820	23BE	2398	1527	244E
820	2427	2427	NA	244E
820	24BE	2438	1527	25BE
820	24BD	2438	1526	25BE
820	24BC	2438	1525	25BE
820	24BB	2438	1524	25BE
820	24BA	2438	1523	25BE
820	24B9	2438	1522	25BE
820	24B8	2438	1521	25BE
820	24B5	2437	1526	25BD
820	24B4	2437	1525	25BD
820	24B3	2437	1524	25BD
820	24B2	2437	1523	25BD
820	24B1	2437	1522	25BD
820	24B0	2437	1521	25BD
820	24AC	2436	1525	25BC
820	24AB	2436	1524	25BC
820	24AA	2436	1523	25BC
820	24A9	2436	1522	25BC
820	24A8	2436	1521	25BC
820	249E	2435	1524	25BC
820	249D	2435	1523	25BC
820	249C	2435	1522	25BC
820	249B	2435	1521	25BC
820	243F	2303	1524	224B
820	243E	2303	1523	224B
820	243D	2303	1522	224B
820	243C	2303	1521	224B
820	2458	2458	NA	25BE
820	2457	2457	NA	25BD
820	2456	2456	NA	25BC

**Table 6. Processor configuration for Models 830 and SB2**

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN M03	Proc 1 CCIN M04
SB2	2315	2315	NA	245D	245D
830	0153	0153	NA	245D	245D
830	23C1	2400	1531	245C	
830	23C2	2400	1532	245C	
830	23C3	2400	1533	245C	

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN M03	Proc 1 CCIN M04
830	23C4	2400	1534	245C	
830	23C5	2400	1535	245C	
830	23D1	2402	1531	245D	
830	23D2	2402	1532	245D	
830	23D3	2402	1533	245D	
830	23D4	2402	1534	245D	
830	23D5	2402	1535	245D	
830	23D6	2402	1536	245D	
830	23D8	2403	1531	245D	245D
830	23D9	2403	1532	245D	245D
830	23DA	2403	1533	245D	245D
830	23DB	2403	1534	245D	245D
830	23DC	2403	1535	245D	245D
830	23DD	2403	1536	245D	245D
830	23DE	2403	1537	245D	245D
830	24DE	2349	1537	245D	245D
830	24DD	2349	1536	245D	245D
830	24DC	2349	1535	245D	245D
830	24DB	2349	1534	245D	245D
830	24DA	2349	1533	245D	245D
830	24D9	2349	1532	245D	245D
830	24D8	2349	1531	245D	245D
830	0153	0153	NA	245D	245D
830	26AE	2351	1537	245D	245D
830	26AD	2351	1536	245D	245D
830	26AC	2351	1535	245D	245D
830	26AB	2351	1534	245D	245D
830	26AA	2351	1533	245D	245D
830	26A9	2351	1532	245D	245D
830	26A8	2351	1531	245D	245D

**Table 7. Processor configuration for Models 840 and SB3**

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN	Proc 1 CCIN	Proc 2 CCIN	Proc 3 CCIN
SB3	2318	2318	NA	245F	245E	245E	245E
SB3	2316	1316	NA	245F	245E		
840	0158	0158	NA	246F	246E		
840	0159	0159	NA	245F	246E	246E	246E
840	0159	0159	NA	246F	246E	246E	246E
840	26D8	2461	1548	246F	246E	246E	246E



Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN	Proc 1 CCIN	Proc 2 CCIN	Proc 3 CCIN
840	26D7	2461	1547	246F	246E	246E	246E
840	26D6	2461	1546	246F	246E	246E	246E
840	26D5	2461	1545	246F	246E	246E	246E
840	26D4	2461	1544	246F	246E	246E	246E
840	26D3	2461	1543	246F	246E	246E	246E
840	26D2	2461	1542	246F	246E	246E	246E
840	26D1	2461	1541	246F	246E	246E	246E
840	26D0	2461	1540	246F	246E	246E	246E
840	26CF	2460	1546	246F	246E		
840	26CE	2460	1545	246F	246E		
840	26CD	2460	1544	246F	246E		
840	26CC	2460	1543	246F	246E		
840	26CB	2460	1542	246F	246E		
840	26CA	2460	1541	246F	246E		
840	26C9	2460	1540	246F	246E		
840	26C8	2354	1548	246F	246E	246E	246E
840	26C7	2354	1547	246F	246E	246E	246E
840	26C6	2354	1546	246F	246E	246E	246E
840	26C5	2354	1545	246F	246E	246E	246E
840	26C4	2354	1544	246F	246E	246E	246E
840	26C3	2354	1543	246F	246E	246E	246E
840	26C2	2354	1542	246F	246E	246E	246E
840	26C1	2354	1541	246F	246E	246E	246E
840	26C0	2354	1540	246F	246E	246E	246E
840	26BF	2353	1547	246F	246E	246E	
840	26BE	2353	1546	246F	246E	246E	
840	26BD	2353	1545	246F	246E	246E	
840	26BC	2353	1544	246F	246E	246E	
840	26BB	2353	1543	246F	246E	246E	
840	26BA	2353	1542	246F	246E	246E	
840	26B9	2353	1541	246F	246E	246E	
840	26B8	2353	1540	246F	246E	246E	
840	26B6	2352	1546	246F	246E		
840	26B5	2352	1545	246F	246E		
840	26B4	2352	1544	246F	246E		
840	26B3	2352	1543	246F	246E		
840	26B2	2352	1542	246F	246E		
840	26B1	2352	1541	246F	246E		
840	26B0	2352	1540	246F	246E		

Model	Processor feature code	Processor capacity card CCIN	Interactive card CCIN	Proc 0 CCIN	Proc 1 CCIN	Proc 2 CCIN	Proc 3 CCIN
840	23E8	2418	1540	245F	245E		
840	23E9	2418	1541	245F	245E		
840	23EA	2418	1542	245F	245E		
840	23EB	2418	1543	245F	245E		
840	23EC	2418	1544	245F	245E		
840	23ED	2418	1545	245F	245E		
840	23EE	2418	1546	245F	245E		
840	23F8	2420	1540	245F	245E	245E	
840	23F9	2420	1541	245F	245E	245E	
840	23FA	2420	1542	245F	245E	245E	
840	23FB	2420	1543	245F	245E	245E	
840	23FC	2420	1544	245F	245E	245E	
840	23FD	2420	1545	245F	245E	245E	
840	23FE	2420	1546	245F	245E	245E	
840	23FF	2420	1547	245F	245E	245E	
840	24C0	2416	1540	245F	245E		
840	24C1	2416	1541	245F	245E		
840	24C2	2416	1542	245F	245E		
840	24C3	2416	1543	245F	245E		
840	24C4	2416	1544	245F	245E		
840	24C5	2416	1545	245F	245E		
840	24C6	2416	1546	245F	245E		
840	24C8	2417	1540	245F	245E	245E	
840	24C9	2417	1541	245F	245E	245E	
840	24CA	2417	1542	245F	245E	245E	
840	24CB	2417	1543	245F	245E	245E	
840	24CC	2417	1544	245F	245E	245E	
840	24CD	2417	1545	245F	245E	245E	
840	24CE	2417	1546	245F	245E	245E	
840	24D0	2419	1540	245F	245E	245E	245E
840	24D1	2419	1541	245F	245E	245E	245E
840	24D2	2419	1542	245F	245E	245E	245E
840	24D3	2419	1543	245F	245E	245E	245E
840	24D4	2419	1544	245F	245E	245E	245E
840	24D5	2419	1545	245F	245E	245E	245E
840	24D6	2419	1546	245F	245E	245E	245E
840	24D7	2419	1547	245F	245E	245E	245E

2. Did you come to this symbolic FRU from a power procedure (1xxx SRC) or a B1xx SRC?

- **No:** Continue with the next step.

- **Yes:** Go to step 8 (See page ).
3. Is the type number from the FRU information zero? Refer to the following:
    - For Models 270 and 820: see (B427) System Processor Reference Codes.
    - For Models 830, 840, SB2 and SB3: see (B437) System Processor Reference Codes.
      - **No:** Continue with the next step.
      - **Yes:** Go to step 7 (See page ).
  4. Use the type number from the FRU information to determine the part number from the Type, model, and part number list.
  5. **rom the** Type, model, and part locations from the Reference Code Table MB1? **No:** Continue with the next step. **Yes:** The failing item is a backplane. Before exchanging any parts, verify that the connections to the backplane are secure. Then, choose from the following options: For Models 270 and 820: Continue with the next step. For Models 830, 840, SB2, and SB3: Go to step 11.
  6. **>11. the FRU locations and failing components table for the system that you are working on to determine the CCIN and remove and replace procedure for the location specified. Use the following references:**
    - For model 270 see Locations: Model 270
    - For model 820 see Locations: Model 820
    - For models 830 and SB2 see the FRU locations and failing components table in Locations: Models 830, SB2 system unit with FC 9074 base I/O tower.
    - For models 840 and SB3 see the FRU locations and failing components table in Locations: Models 840, SB3 system unit processor tower.

**Note:** If the failing item is a system sub-card, for example, a DIMM on a memory riser card, the location will have a sub-card letter, for example, M02-A, where M02 is the card slot and A is the sub-card letter.

**This ends the procedure.**
  7. **cedure. "Type number" from the FRU information is zero:**
    - Use the location information from the reference Code Table to get the FRU name and the physical mapping information from the Locations and addresses list.
  8. **ns.htm" >Locations and addresses list. needed, use control panel function 20 to determine the processor feature code.**
  9. Use the FRU name and, if needed, the processor feature code, to reference the appropriate table below to determine the type number for the failing item. Then, determine the part number from the Type, model, and part number list.
  10. Go to step (See page )>5.
  11. **CCINIFMB1" > the part number from the Type, model, and part number list. system a model 840 or SB3?**
    - **Yes:** Continue with the next step.
    - **No:** For Models 830/SB2:
 

**Attention:** When replacing the system unit backplane (MB1) on a model 830/SB2, it is **required** that the processor cards be replaced also (For additional information, refer to the Model 830/SB2 - Processor feature codes and CCINs).

Then, continue with step (See page )>6.
  12. **htm" >Model 830/SB2 - Processor feature codes See the the FRU locations and failing components table in in the** Locations : Models 840, SB3 system unit processor tower for location MB1 and FRU "System unit backplane" to determine the CCIN and remove and replace procedure. **This ends the procedure.**

The following tables are included here:

    - Backplane type numbers for Models 270, 820, 830, SB2, 840, and SB3 (See page )
    - Processor type numbers for Models 270 and 820 (See page )

- Memory DIMM type numbers for Model 270, 820, 830, and SB2 (See page )
- Processor and clock card type numbers for Models 830, SB2, and 840, SB3 (See page )
- Memory card type numbers for Models 830, SB2, and Models 840, SB3 (See page )
- Network Interface Controller (NIC) card for Models 830, SB2, and 840, SB3 (See page )

**for 820, 830, SB2, 840, and SB3**

Model	Processor feature code	Backplane type	Location
270	22A2, 22A4, 22A5, 2422	2249	MB1
270	23E7	25B9	MB1
270	23F0, 23F1, 2452	25BA	MB1
270	22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454	282F	MB1
270	2301, 2302	224A	MB1
820	All	282D	MB1
830, SB2	All	281A	MB1
840, SB3	All	282B	MB1

**r 820**

Model	Processor feature code	Processor type	Location
270	22A2, 22A4, 22A5, 2422	<b>Note:</b> The processor is embedded in the system backplane (2249).	MB1
270	2301, 2302	<b>Note:</b> The processor is embedded in the system backplane (224A)	MB1
270	23E7	<b>Note:</b> The processor is embedded in the system backplane (25B9)	MB1
270	23F0, 23F1, 2452	<b>Note:</b> The processor is embedded in the system backplane (25BA)	MB1
270	22A7, 22A8, 2423	24A0	M02
270	22AA, 22AB, 2424	24A2	M02
270	23F4, 23F5, 2454	25BD	M02
820	23A1, 23A2, 23A3, 23A4	244A	M03
820	23A9, 23AA, 23AB, 23AC, 23AD, 2425	24A0	M03
820	23B1, 23B2, 23B3, 23B4, 23B5, 23B6, 2426	244D	M03
820	23B8, 23B9, 23BA, 23BB, 23BC, 23BD, 23BE, 2427	244E	M03
820	243C, 243D, 243E, 243F	224B	M03
820	0150, 2456, 249B, 249C, 249D, 249E, 24A8, 24A9, 24AA, 24AB, 24AC	25BC	M03
820	0151, 2457, 24B0, 24B1, 24B2, 24B3, 24B4, 24B5	25BD	M03

Model	Processor feature code	Processor type	Location
820	0152, 2458, 24B8, 24B9, 24BA, 24BB, 24BC, 24BD, 24BE	25BE	M03

### r 820, 830, and SB2

Model	Processor feature code	Memory DIMM type	Location
270	22A2, 22A4, 22A5, 2422	3022, 3024, 3025, 3026	A-H
270	23E7, 23F0, 23F1, 2452	3031, 3032, 3033, 3034	A-H
270	2301, 2302	3022, 3024, 3025, 3026, 3027, 3029	A-H
270	22A7, 22A8, 22AA, 22AB, 2423, 2424	3022, 3024, 3025, 3026	M01-s or M02-s
270	23F4, 23F5, 2454	3022, 3024, 3025, 3026, 3027, 3029	M01-s or M02-s
820	All	3002, 3004, 3005, 3006	M01-s, M02-s, or M03-s
820	0150, 0151, 0152, 243F, 243E, 243D, 243C, 2456, 2457, 2458, 249B, 249C, 249D, 249E, 24A8, 24A9, 24AA, 24AB, 24AC, 24B0, 24B1, 24B2, 24B3, 24B4, 24B5, 24B8, 24B9, 24BA, 24BB, 24BC, 24BD, 24BE	3007, 3009	M01-s, M02-s, or M03-s
830	All	3002, 3004, 3005, 3006, 3007	M02-s or M05-s
SB2	All	300F	M02-s or M05-s

### Models 830, SB2, and 840, SB3

Model	Processor feature code	Processor or clock card type	Location
830	23C1, 23C2, 23C3, 23C4, 23C5	<ul style="list-style-type: none"> <li>Processor card: 245C</li> <li>Clock card: 25AB</li> </ul>	<ul style="list-style-type: none"> <li>Processor card: M03 or M04</li> <li>Clock card: M06A</li> </ul>
830	23D1, 23D2, 23D3, 23D4, 23D5, 23D6, 23D8, 23D9, 23DA, 23DB, 23DC, 23DD, 23DE, 24D8, 24D9, 24DA, 24DB 24DC, 24DD, 24DE, 26A8, 26A9, 26AA, 26AB, 26AC, 26AD, 26AE	<ul style="list-style-type: none"> <li>Processor card: 245D</li> <li>Clock card: 25AD</li> </ul>	<ul style="list-style-type: none"> <li>Processor card: M03 or M04</li> <li>Clock card: M06A</li> </ul>
SB2	2315	<ul style="list-style-type: none"> <li>Processor card: 245D</li> <li>Clock card: 25AD</li> </ul>	<ul style="list-style-type: none"> <li>Processor card: M03 or M04</li> <li>Clock card: M06A</li> </ul>
SB3	All	<ul style="list-style-type: none"> <li>Processor card: <ul style="list-style-type: none"> <li>245F</li> <li>245E</li> </ul> </li> <li>Clock card: <ul style="list-style-type: none"> <li>25AA/25AF (See the Note (See page ) below)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Processor card: <ul style="list-style-type: none"> <li>Card 0 (Location M05)</li> <li>Card 1, 2, 3 (Location M18, M06, M16)</li> </ul> </li> <li>Clock card: M19</li> </ul>

Model	Processor feature code	Processor or clock card type	Location
840	23E8, 23E9, 23EA, 23EB, 23EC, 23ED, 23EE, 23F8, 23F9, 23FA, 23FB, 23FC, 23FD, 23FE, 23FF, 24C0, 24C1, 24C2, 24C3, 24C4, 24C5, 24C6, 24C8, 24C9, 24CA, 24CB, 24CC, 24CD, 24CE, 24D0, 24D1, 24D2, 24D3, 24D4, 24D5, 24D6, 24D7	<ul style="list-style-type: none"> <li>Processor card: <ul style="list-style-type: none"> <li>– 245F</li> <li>– 245E</li> </ul> </li> <li>Clock card: 25AA/25AF (See Note (See page ) below)</li> </ul>	<ul style="list-style-type: none"> <li>Processor card: <ul style="list-style-type: none"> <li>– Card 0 (Location M05)</li> <li>– Card 1,2,3 (Location M18, M06, M16)</li> </ul> </li> <li>Clock card: M19</li> </ul>
840	26B0, 26B1, 26B2, 26B3, 26B4, 26B5, 26B6, 26B8, 26B9, 26BA, 26BB, 26BC, 26BD, 26BE, 26BF, 26C0, 26C1, 26C2, 26C3, 26C4, 26C5, 26C6, 26C7, 26C8, 26D0, 26D1, 26D2, 26D3, 26D4, 26D5, 26D6, 26D7, 26D8	<ul style="list-style-type: none"> <li>Processor card: <ul style="list-style-type: none"> <li>– 246F</li> <li>– 246E</li> </ul> </li> <li>Clock card: 25AA/25AC (See the Note (See page ) below)</li> </ul>	<ul style="list-style-type: none"> <li>Processor card: <ul style="list-style-type: none"> <li>– Card 0 (Location M05)</li> <li>– Card 1,2,3 (Location M18, M06, M16)</li> </ul> </li> <li>Clock card: M19</li> </ul>

**Note: The Model 840/SB3 clock card consists of CCIN 25AA as the mother card and has either CCIN 25AF or 25AC as the daughter card.**

**SB2, and Models 840, SB3**

Model	Processor feature code	Memory card type	Location
830, SB2	All	2881	M02 or M05
840	All	3195, 3196, 3197, 3198, 3612, 3613, 3614	M01-03, M08-15, M20-24
SB3	All	319A, 31A1	M01-03, M08-15, M20-24

**for Models 830, SB2, and 840, SB3**

Model	Processor feature code	HSL controller type	Location
830, SB2	All	2732, 2754, 2758	M06
840, SB3	All	2737, 2755, 2759, 2770	M17

### Instructions for Models 800, 810, 825, 870, and 890

There is a hardware failure, or the system is not able to give configuration or hardware information. The following tables give the CCIN numbers for the FRUs associated with processor and memory errors. See Locations and addresses for the model you are working on. Use the FRU locations and failing items table to find additional information, including the component on which the failing item resides, a link to the part number information for that component, and a link to remove and replace instructions.

If the system is active, see the Service Action Log for further information and analysis on the hardware failure. If the system is not active, and the SRC documentation sent you here, use the Unit reference code in the following tables to identify the failing item. The tables include:

- Processor configuration for Models 800 and 810 (See page )
- Processor configuration for Model 825 (See page )
- Processor configuration for Models 870 and 890 (See page )
- Memory information for Models 800, 810, 825, 870, and 890 (See page )
- System backplane information for Models 800, 810, 825, 870, and 890 (See page )
- Clock card information for Models 870 and 890 (See page )
- Cache card information for the Models 870 and 890 (See page )

- Network Interface Controller (NIC) card information for Models 800, 810, 825, 870, and 890 (See page )

**Table 14. Processor configuration for Models 800 and 810**

Use the following bulleted information to determine the failing item given in the reference code. Then, use the table below to determine the CCIN number of that FRU.

- All processors are located on the system unit backplane, except for systems with processor feature codes 7428 and 7430. Those systems have processors located in M02.
- All processor capacity cards are located behind the control panel.

Model and processor feature code	Processor capacity card CCIN	Interactive card CCIN	CPU 0 VPD CCIN
800 7400	7400	NA	25B9
800 7408	7408	NA	25BA
810 7404	7404	NA	25BA
810 7406	7406	NA	25BA
810 7407	7407	NA	25BA
810 7409	7409	NA	25BA
810 7410	7410	NA	25F0
810 7412	7412	NA	25F0
810 7428	7428	NA	25EB
810 7430	7430	NA	25EB

**Table 15. Processor configuration for Model 825**

Use the following list to determine the failing item given in the SRC. Then, use the table below to determine the CCIN number of that FRU. The following information is included in this list: Reference code, FRU description, and location:

- x003 is a processor card in location C13
- x004 is a processor card in location M01
- x005 is a processor card in location M02
- x00E is a processor capacity card in location NB1A

Model and processor feature code	Processor capacity card CCIN	Interactive card CCIN	CPU 0 VPD CCIN	CPU 1 VPD CCIN	CPU 2 VPD CCIN
825 7416	7416	NA	25DC	25DC	25DC
825 7418	7418	NA	25DC	25DC	25DC
825 7439	7439	NA	25DC	25DC	25DC

**Table 16. Processor configuration for Models 870 and 890**

Use the following list to determine the failing item given in the SRC, then use the table below to determine the CCIN number of that FRU. The following information is included in this list: Reference code, FRU description, and location:

- x003 is a Processor MCM in location M21
- x004 is a Processor MCM in location M11
- x005 is a Processor MCM in location M16

- x006 is a Processor MCM in location M14
- x00E is a Processor Capacity Card in location M41A
- x00F is an Interactive Card in location M41B

Model and processor feature code	Processor capacity card CCIN (M41A)	Interactive card CCIN (M41B)	Processor CCIN (M21)	Processor CCIN (M11)	Processor CCIN (M16)	Processor CCIN (M14)
870 7419	7419	NA	25D3	25D3		
870 7421	7421	NA	25D3	25D3		
870 7431	7431	NA	25D3			
870 7433	7433	NA	25D3			
870 7440	7440	25D3	25D3			
890 32-w 2ADF	2488	1591	25D3	25D3	25D3	25D3
890 32-w 2ADC	2488	1588	25D3	25D3	25D3	25D3
890 32-w 2ADB	2488	1587	25D3	25D3	25D3	25D3
890 32-w 2AD9	2488	1585	25D3	25D3	25D3	25D3
890 32-w 2AD7	2488	1583	25D3	25D3	25D3	25D3
890 32-w 2AD5	2488	1581	25D3	25D3	25D3	25D3
890 32-w 2AD3	2488	1579	25D3	25D3	25D3	25D3
890 32-w 2AD2	2488	1578	25D3	25D3	25D3	25D3
890 32-w 2AD1	2488	1577	25D3	25D3	25D3	25D3
890 32-w 2AD0	2488	1576	25D3	25D3	25D3	25D3
890 32-w 0198	0198	NA	25D3	25D3	25D3	25D3
890 24-w 2AFC	2487	1588	25D3	25D3	25D3	
890 24-w 2AFB	2487	1587	25D3	25D3	25D3	
890 24-w 2AF9	2487	1585	25D3	25D3	25D3	
890 24-w 2AF7	2487	1583	25D3	25D3	25D3	
890 24-w 2AF5	2487	1581	25D3	25D3	25D3	
890 24-w 2AF3	2487	1579	25D3	25D3	25D3	
890 24-w 2AF2	2487	1578	25D3	25D3	25D3	
890 24-w 2AF1	2487	1577	25D3	25D3	25D3	
890 24-w 2AF0	2487	1576	25D3	25D3	25D3	
890 24-w 0197	0197	NA	25D3	25D3	25D3	
890 7422	7422	NA	25D3	25D3	25D3	
890 7424	7424	NA	25D3	25D3	25D3	
890 7425	7425	NA	25D3	25D3	25D3	25D3
890 7427	7427	NA	25D3	25D3	25D3	25D3
890 7441	7441	25D3	25D3	25D3	25D3	



**Table 17. Memory information for Models 800, 810, 825, 870, and 890**

Model	Processor feature code	Memory CCIN	Location
800 and 810	7400 through 7412	3092, 3093, 3094, 3095, 3096	A through H
810	7428 and 7430	3022, 3024, 3025, 3026, 3027, 3029	M01
825	All	3041, 3042, 3043, 3044, 3045, 3046, 3047	C13, M01, and M02 (Slots A through H)
870, 890	All	3015, 3016, 3017, 3018, 3020, 3021, 3035, 3036, 3037, and 3038, 3621, 3622, 3624, 3625	M01, M02, M07, M08, M17, M18, M24, M25

**Table 18. System backplane information for Models 800, 810, 825, 870, and 890**

Model	Unit reference code	Processor feature code	Backplane type	Location
810	x001	7428, 7430	282F	MB1
810	x001	7410, 7412	25F0	MB1
800, 810	x001	7400	25B9	MB1
800, 810	x001	7407, 7408, 7409	25BA	MB1
825	4009, 8009 or C009	All	289C (4-way) or 289D (6-way) (Backplane extender - right side)	MB2
825	400A, 800A or C00A	All	28B3 (Backplane extender - left side)	MB1
825	4002, 8002 or C002	All	25Ca	CB1
870, 890	4002, 8002 or C002	All	25C0	MB1

**Table 19. Clock card information for Models 870 and 890**

Model	Unit reference code	Processor feature code	Clock card type	Location
870, 890	x001	All	25C1	M15

**Table 20. Cache card information for the Models 870 and 890**

Unit reference code	FRU description / CCIN	Location
xD00	L3 cache card / 25F1	M27
xD01	L3 cache card / 25F1	M28
xD02	L3 cache card / 25F1	M22
xD03	L3 cache card / 25F1	M20
xD04	L3 cache card / 25F1	M29
xD05	L3 cache card / 25F1	M06
xD06	L3 cache card / 25F1	M13
xD07	L3 cache card / 25F1	M23
xD08	L3 cache card / 25F1	M05
xD09	L3 cache card / 25F1	M04

Unit reference code	FRU description / CCIN	Location
xD0A	L3 cache card / 25F1	M10
xD0B	L3 cache card / 25F1	M12
xD0C	L3 cache card / 25F1	M03
xD0D	L3 cache card / 25F1	M09
xD0E	L3 cache card / 25F1	M19
xD0F	L3 cache card / 25F1	M26
x007	L3 cache card VPD / 25F1	M41- C

**Table 21. Network Interface Controller (NIC) card information for Models 800, 810, 825, 870, and 890**

Model	Unit reference code	Processor feature code	HSL controller type	Location
800, 810	4600, 8600, C600, 5100, 9100, or D100	All	25F0, 25B9, 25BA	MB1
825	x00C	All	2785, 2786	C09
825	x00B	All	2785, 2786	C08
825	x00A	All	28B3	MB1
870, 890	x00D	All	2776, 2788	M39
870, 890	x00C	All	2776, 2788	M30
870, 890	x00B	All	2776, 2788	M40
870, 890	x00A	All	2738	M41

### **CDAWKLD**

*For use by authorized service providers.*

Too many communications lines are in use.

### **CDTRAY**

*For use by authorized service providers.*

This symbolic FRU is not supported.

### **CECPWR**

*For use by authorized service providers.*

The failing item is the power supply for the system unit.

1. Choose from the following options:
  - If you are on a Model 270 or 820: Continue with the next step.
  - If you are on a Model 830, 840, SB2, or SB3: Go to step 5 (See page 319).
2. Is this a Model 270 system unit, with processor feature 22A2, 22A4, 22A5 or 2422?
  - **Yes:** See Locations — Model 270. Replace the following FRUs in order one at a time until the problem is resolved.
    - Note:** Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Power regulator in location R01


- b. Power supply in location P01  
**This ends the procedure.**
- **No:** Continue with the next step.
- 3. Is this a Model 270 system unit, with processor feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?
  - **Yes:** See Locations — Model 270. Replace the power supply in location P01. Be sure to IPL in SLOW OVERRIDE mode after the replacement.  
**This ends the procedure.**
  - **No:** Continue with the next step.
- 4. This is a Model 820. See Locations — Model 820. Replace the following FRUs in order one at a time until the problem is resolved.  
**Note:** Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. Power supply in location P01
  - b. Power supply in location P02
  - c. Power supply in location P03  
**This ends the procedure.**
- 5. Is this system a Model 830, SB2 system unit and FC 9074?
  - **No:** Continue with the next step.
  - **Yes:** See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.  
**Note:** Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Processor regulator card in location M01 in the 830 system unit.
    - b. Power supply in location PP1 in the 830 system unit.
    - c. Power supply in location PP2 in the 830 system unit.
- 6. This is a Model 840, SB3 system unit and FC 9079 base I/O tower. See Locations — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.  
**Note:** Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. Processor regulator card in location M04 in the 840 system unit.
  - b. Processor regulator card in location M07 in the 840 system unit.
  - c. Power supply in location P01 in the 840 system unit.
  - d. Power supply in location P02 in the 840 system unit.
  - e. Power supply in location P03 in the 840 system unit.
  - f. Power supply in location P04 in the 840 system unit.
  - g. Power supply in location P05 in the 840 system unit.  
**This ends the procedure.**

## CHECK

*For use by authorized service providers.*

If the attached device is an external device, do the following before exchanging any parts:

1. Ensure that the device is powered on.
2. Is there a SCSI interface between the IOP/IOA?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - If an interposer is required, make sure that it is connected between the I/O Processor and the SCSI cable.

- Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.
  - Ensure that a terminating plug is attached to the device end of the SCSI cable.
  - Continue with the next step.
3. Is there a Fiber Channel interface between the IOP/IOA and the device?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - Verify that any hub or gateway devices are powered on.
    - Verify that the Fiber Channel cable is correctly connected to the ports.
    - If a cleaning kit is available clean the Fiber Channel cable connectors.
    - Continue with the next step.
4. Perform the Verification Procedures in the *iSeries Service Functions*  book to see if the problem was corrected.  
**This ends the procedure.**

## CLKCARD

*For use by authorized service providers.*

See symbolic FRU “CLCKCRD.”

## CLCKCRD

*For use by authorized service providers.*

The failing item is the clock card on the system unit, or the SPCN cable (JTAG) interface (for Models 830, 840, 870, 890, SB2, and SB3).

1. Choose from the following options:
  - If you are on a **Model 270, 800, or 810:** Continue with the next step.
  - If you are on a **Model 820:** Go to step 4 (See page 321).
  - If you are on a **Model 825:** Go to step 5 (See page 321).
  - If you are on a **Model 830, 840, SB2, or SB3:** Go to step 6 (See page 321).
  - If you are on a **Model 870 or 890:** Go to step 7 (See page 321).
2. Is this system a Model 270 system unit with processor feature 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, or 2452, or a Model 800 or 810 system unit with processor feature **except** 7428, 7429, or 7430?
  - **No:** Continue with the next step.
  - **Yes:** See Locations — Model 270 and use Table 1. to find the appropriate table by processor feature code, or Locations — Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - a. Power regulator in location R01
    - b. System unit backplane in location MB1

**This ends the procedure.**
3. This is a Model 270 system unit with processor feature 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, or 2454, or a Model 810 system unit **with** processor feature 7428, 7429, or 7430. See Locations — Model 270 and use Table 1. to find the appropriate table by processor feature code, or Locations — Models 800 and 810.
 

Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.

  - a. Processor card in location M02

- b. System unit backplane in location MB1  
**This ends the procedure.**
- 4. This is a Model 820. See Locations — Model 820. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. Processor card in location M03
  - b. System unit backplane in location MB1  
**This ends the procedure.**
- 5. This is a Model 825. Replace the System unit backplane in location CB1. See Locations — Model 825 for part number and remove and replace information. Be sure to IPL in SLOW OVERRIDE mode after the replacement.  
**This ends the procedure**
- 6. Is this system a Model 830, SB2 system unit and FC 9074?
  - **Yes:** See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement.
    - a. Clock card in location M06A in the 830 system unit.
    - b. JTAG cable
    - c. Processor regulator card in location M01  
**This ends the procedure.**
  - **No:** This is a Model 840, SB3 system unit and FC 9079 base I/O tower. See Locations — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement.
    - a. Clock card in location M19 in the 840 system unit
    - b. JTAG cable
    - c. Regulator card in location M04 in the 840 system unit
    - d. Regulator card in location M07 in the 840 system unit  
**This ends the procedure.**
- 7. This is a Model 870 or 890 unit with processor and FC 9094 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. See Locations — Models 870 and 890 and view the FRU locations and failing components table for locations and remove and replace procedure links. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - a. Card in location M41 in the Model 870 or 890 system unit
  - b. JTAG cable  
**This ends the procedure.**

## **CMPRES1**

*For use by authorized service providers.*

The compressed device and the compression IOA are not compatible.

## **CRYPBAT**

*For use by authorized service providers.*

The batteries for the IBM<sup>(R)</sup> 4758 cryptographic adapter card need to be replaced.

**Attention:** If you remove any of the batteries without first backing up the power with a fresh battery, the data in the card's protected memory could be lost, which would render the 4758 Adapter card useless and require replacement of the 4758 Adapter card. Because the 4758-023 Adapter card contains 4 batteries, and the Battery Replacement Kit contains only 2 batteries, DO NOT attempt to remove or replace batteries unless you have two Battery Replacement Kits (see Type, model, and part number list ). (Individual

models of the 4758 PCI Cryptographic Coprocessor family of cards contain either 2 or 4 batteries. For cards that contain 4 batteries, two battery replacement kits must be ordered.) Refer to Type 4758 - Battery Replacement Procedure for additional information.

## CTLPNCD

*For use by authorized service providers.*

The interactive card, or the processor capacity card, that plugs into the control panel assembly is the failing item.

1. Choose from the following options:
  - For SRCs starting with B4xx, continue with the next step.
  - For SRCs starting with B6xx, go to step 5 (See page 322).
2. Choose from the following options:
  - If the type number from the FRU information is zero, contact your next level of support.  
**This ends the procedure.**
  - Otherwise, if the FRU has a reference code of x004, the FRU is located in NB1-A. If the FRU has a reference code of x005, the FRU is located in NB1-B. See Locations and addresses for the model you are working on. See the following for further location information.
    - Control panel assembly - Models 270, 800, and 810
    - Control panel assembly - Models 820 and 825
    - Control panel assembly - Models 830 and SB2 with FC 9074
    - Control panel assembly, processor tower - Models 840 and SB3
3. Use the type number from the FRU information to determine the part number from the Type, model, and part number list.
4. Exchange the failing item. For remove and replace instructions, see the following.
  - Models 270, 800, and 810 - Control panel - NB1
  - Model 820 - Control panel - NB1
  - Model 825 - Control panel - NB1
  - Model 830/SB2 with FC 9074 - System unit control panel (NB1)
  - Model 840/SB3 processor tower, FC 8079 (lower half), and FC 9079 - Control panels (NB1)  
**This ends the procedure.**
5. For SRCs starting with B6xx, follow the instructions for the model you are working with.
  - If you are working on a Model 270, 800, or 810, replace the processor capacity card on the Control Panel assembly. See Locations — Model 270 or Locations — Models 800 and 810 for part number and remove and replace procedure information.
  - If you are working on a Model 820, replace the processor capacity card on the Control Panel assembly. See Locations — Model 820 for part number and remove and replace procedure information.
  - If you are working on a Model 825, replace the processor capacity card on the Control Panel assembly. See Locations — Model 825 for part number and remove and replace procedure information.
  - If you are working on a Model 830 or SB2, replace the processor capacity card on the Control Panel assembly. See Locations — Models 830/SB2 System Unit with FC 9074 Base I/O Tower for part number and remove and replace procedure information.
  - If you are working on a Model 840 or SB3, replace the processor capacity card on the Control Panel assembly. See Locations — Models 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower for part number and remove and replace procedure information.

- If you are working on a Model 870 or 890, replace the processor capacity card in location 41-A. See Locations — Model 870 and 890 with an FC 9094 Base I/O Tower for part number and remove and replace procedure information.

**This ends the procedure.**

## CTLPNL

*For use by authorized service providers.*

A control panel or display panel may be failing.

Perform the following to determine the part number for the failing item.

1. Are you working on a system unit?

- **No:** Continue with the next step.
- **Yes:** Exchange the failing system control panel card for the appropriate model.
  - **For Models 270 and 820:**
    - Model 270 Control panel tray without keystick (see Locations and addresses for part number)
    - Model 820 Control panel tray with keystick (see Locations and addresses for part number)  
See the following remove and replace procedures before exchanging the control panel:
      - Models 270, 800, and 810 - Control panel - NB1
      - Model 820 - Control panel - NB1
  - **For Models 800, 810, 825, 870, and 890:**
    - Models 800 and 810: Control panel tray assembly (see Locations - Models 800 and 810 for part number)
    - Model 825: Control panel tray assembly with keystick (see Locations - Model 825 for part number)
    - Model 870, 890, FC 9094: Control panel (see Locations - Models 870 and 890 with an FC 9094 Base I/O Tower for part number)  
See the following remove and replace procedures before exchanging the control panel:
      - Models 270, 800, and 810 - Control panel - NB1
      - Model 825 - Control panel - NB1
      - Models 870, 890 (FC 9094) - Control panel - NB1
  - **For Models 830, 840, SB2, and SB3:**
    - Model 830/SB2 control panel card (see Locations - Models 830, SB2 for part number)
    - Model 840/SB3 FC 9079 control panel card (see Locations - Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower for part number)
    - Model 840/SB3 processor tower control panel card (see Locations - Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower for part number)
    - For FC 8079-001 Base I/O Tower (see Locations - FC 8079 expansion I/O tower for part number)  
See the following remove and replace procedures before exchanging the control panel.
      - Models 830/SB2 with FC 9074 - System unit control panel (NB1)
      - Model 840/SB3 processor tower, FC 8079 (lower half), and FC 9079 - Control panels (NB1)

**This ends the procedure.**

2. Exchange the failing expansion display panel for the appropriate I/O Expansion feature code:

- For FC 5033, FC 5034, and FC 5035 I/O Tower - part 04N4317
- For FC 5065 or FC 5066 PCI tower (see Type, model, and part number list for part number)
- For FC 5071, FC 5072, FC 5073, FC 5077, FC 508x - part 17G0574
- For FC 5074 I/O Tower (see Type, model, and part number list for part number)

- For FC 5075 I/O Tower (see Locations and addresses for part number)
- For FC 5078, FC 0578, FC 5088, FC 0588 Expansion I/O Tower (see Type, model, and part number list for part number)
- For FC 5079 1.8m I/O frame (see Locations - FC 5079 expansion I/O tower for part number)
- For FC 5094 I/O Tower (see Type, model, and part number list for part number)
- For FC 5095 I/O Tower (see Locations and addresses for part number)
- For FC 8079-002 Base I/O Tower (see Locations - FC 8079 expansion I/O tower for part number)
- For FC 9171 9309 I/O frame - part 17G0573

See the following remove and replace procedures before exchanging the display panel.

- FC 5074, FC 5079 - Display panel - NB1
- FC 5075 - Display panel - NB1
- FC 5078, FC 0578, FC 5088, FC 0588 - Display panel - NB1
- FC 5094 - Display panel - NB1
- FC 5095, FC 0595 - Display panel - NB1

For migrated towers, find the remove and replace procedures in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

## CVTCARD

*For use by authorized service providers.*

CVTCARD: High-speed link I/O bridge and SPD conversion hardware.

The failing item is the HSL I/O bridge card in an FC 5033, FC 5034, FC 5035 SPD migrated tower.

Go to symbolic FRU CVTCARD in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.

## DCAPWR

*For use by authorized service providers.*

The Distributed Converter Assembly (DCA) may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - DC converter assembly (DCA) remove and replace procedure.
3. See Type, model, and part number list for the part number.

**Note:** Before replacing any FRU's verify that all cables are seated correctly.

**Table 1. DCA unit and location for the Models 870 and 890 system unit**

Unit reference code	DCA unit, location
1xxC- xx11, xx13	DCA-1/M31
1xxC- xx21, xx23	DCA-2/M32
1xxC- xx31, xx33	DCA-3/M34
1xxC- xx41, xx43	DCA-4/M35
1xxC- xx51, xx53	DCA-5/M36

**This ends the procedure.**



## DEVBPLN

For use by authorized service providers.


A device backplane may be failing.

Replace the device backplane. Use the device backplane information in the Service Action Log. See Locations and addresses for the model you are working on for location, part number, and remove and replace procedure information.

## DEVICE

For use by authorized service providers.

The addressed storage device is the failing item. Perform the following.


1. Is the device location information available in the Service Action Log?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the failing item. See Data recovery procedures and general system information.  
**Note:** If the failing item is in a migration tower, go to Chapter 6 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .  
**This ends the procedure.**
2. Find the IOP address and the device address. See SRC address formats.
3. To determine the location of the I/O processor card, see Locations and addresses and find the diagram of the system unit or the expansion unit. Then, find:
  - The IOP card location identified by the direct select address.
  - The addressed storage device location identified by the device address.
4. Exchange the failing device. Use the device type to determine the part.  
**This ends the procedure.**

## DEVTERM

For use by authorized service providers.

The device terminating plug may be failing.

Perform the following.

1. Find the IOA type:
  - a. Find the IOA location information in the Service Action Log if it is available. If the location is not available, find the address of the IOA. See SRC address formats. Use the address to find the location. See Locations and addresses list.  
If the failing item is in a migration tower, go to the DEVTERM symbolic FRU in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .
  - b. Find the IOA card in the system and read the type number of the card at that location.
2. Use the information in the following list to determine the failing terminating plug:

Storage IOA type	Action
2749	For device types 3490, 3570, 3590, 3995, and 7208, see FI00880 (See page 264) in the Failing Item (FI) code table. For all other devices, use part 85F7887
2768	For device type 7207, use part 52G9907.
5702	Use part 19P0874.
All others	The terminator is integrated into the backplane and not a separate failing item.

3. Exchange the failing item.

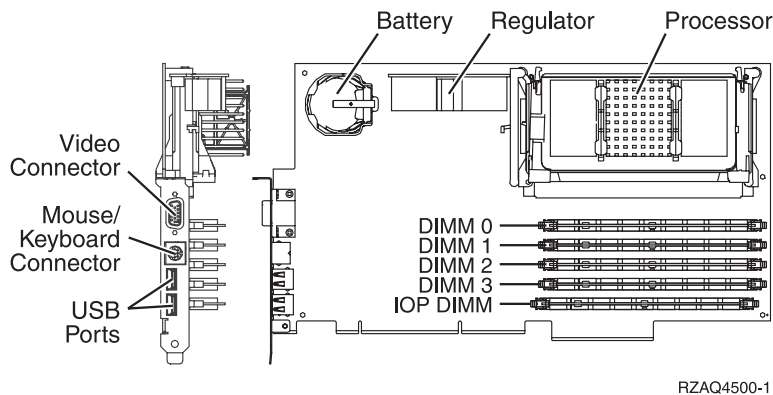
**Note:** If the terminating plug is located on a backplane, go to symbolic FRU “BACKPLN” on page 284. Follow the procedure until the terminating plug is accessible and then remove or exchange the plug.  
**This ends the procedure.**

## DIMM 0

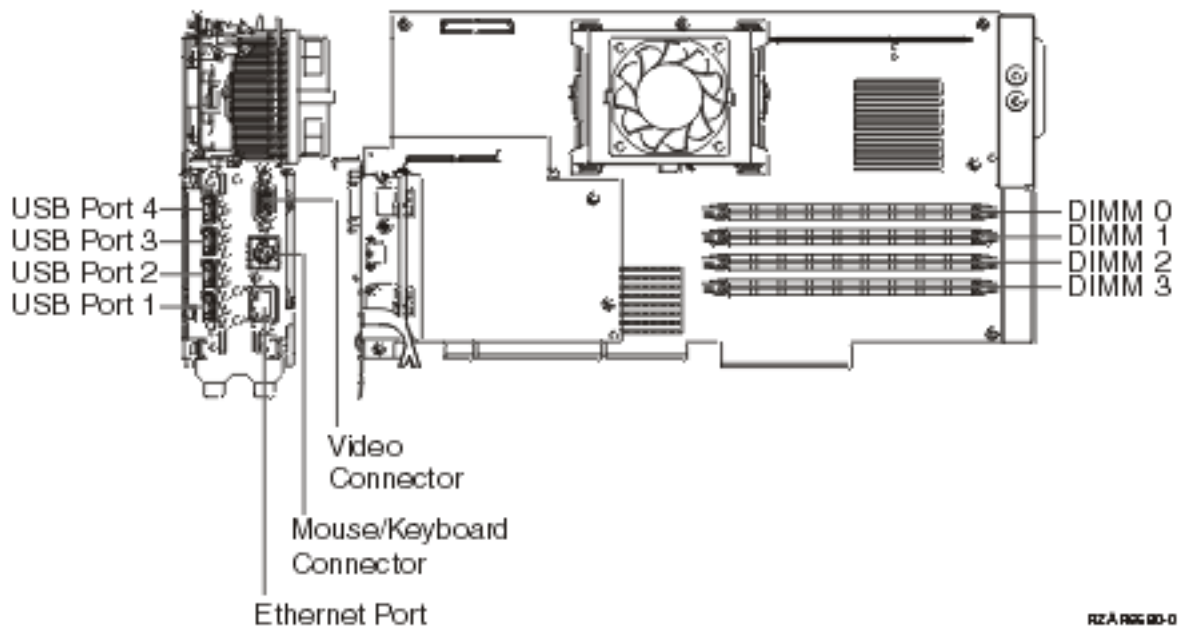
*For use by authorized service providers.*

Use this page to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) cards.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.**



**Figure 2. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.**



In both figures, the **first** DIMM from the top of the IXS card (DIMM 0) is the failing item. To determine the part number, go to symbolic FRU “MEMORY” on page 401.

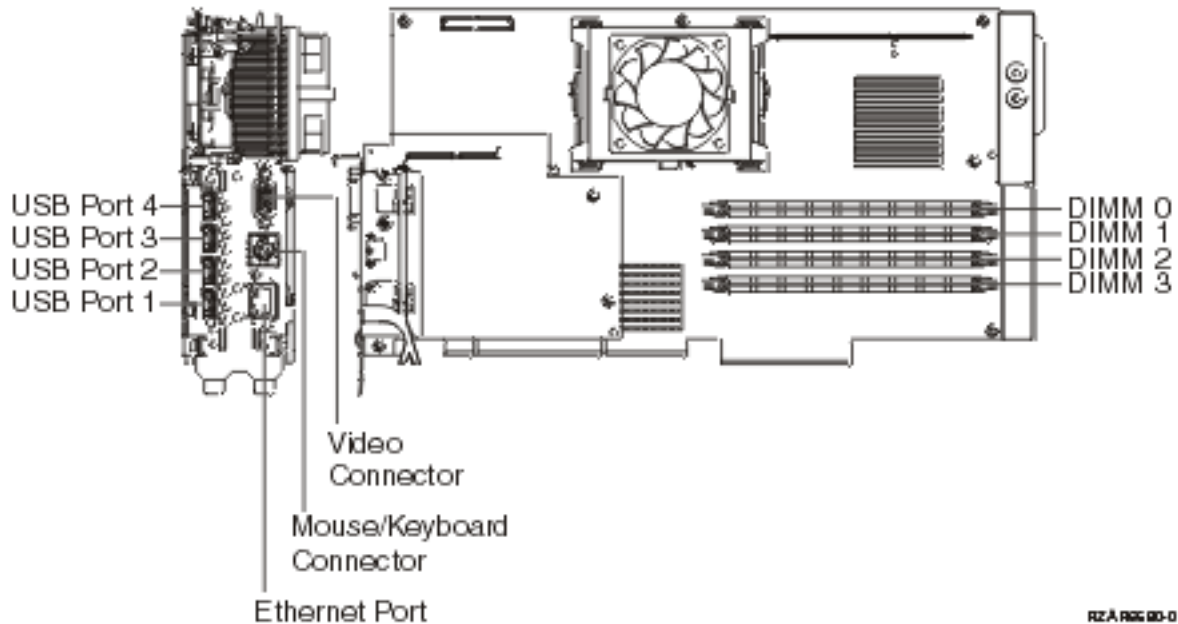
**This ends the procedure.**

## DIMM0\_1

For use by authorized service providers.

Use this page to view the Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.**



The **first** or **second** DIMM from the top (DIMM 0 or DIMM 1) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 401.

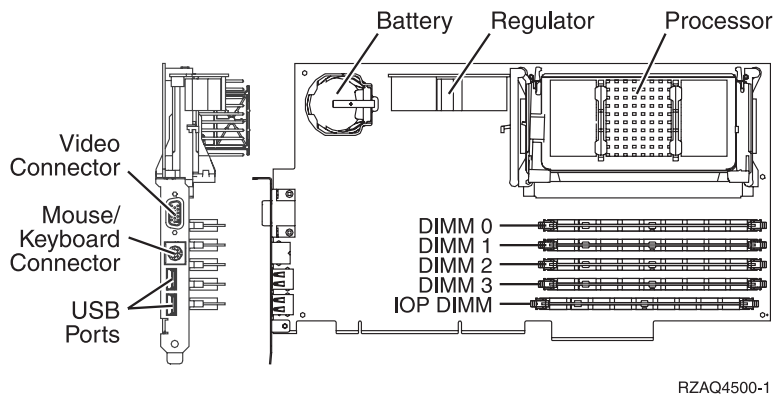
**This ends the procedure.**

## DIMM 1

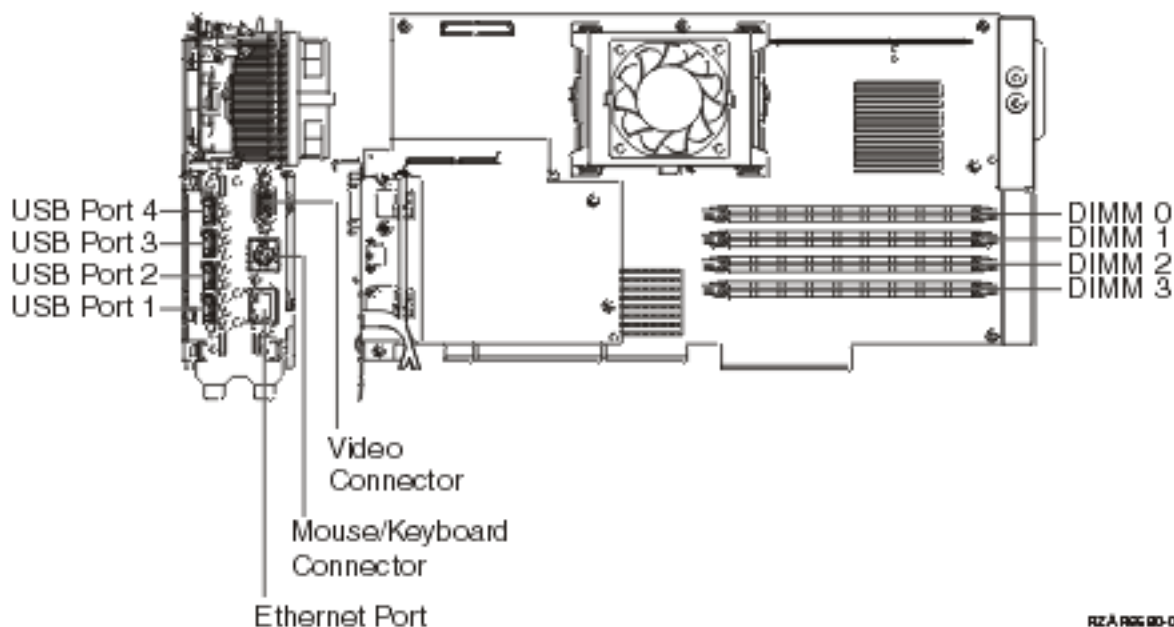
For use by authorized service providers.

Use this page to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) cards.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.**



**Figure 2. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.**



In both figures, the **second** DIMM from the top of the IXS card (DIMM 1) is the failing item. To determine the part number, go to symbolic FRU “MEMORY” on page 401.

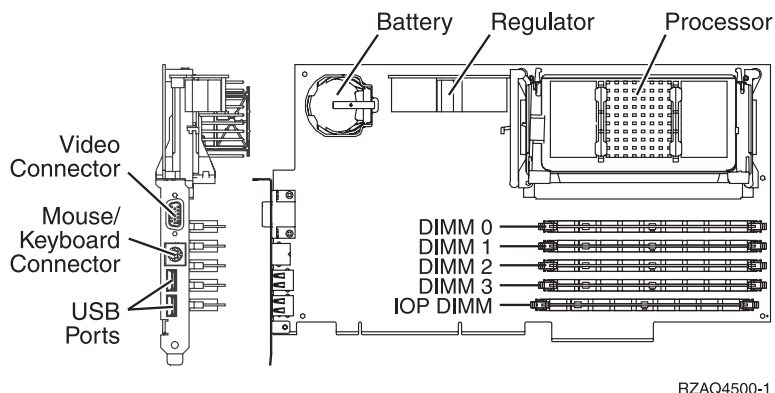
**This ends the procedure.**

## DIMM 2

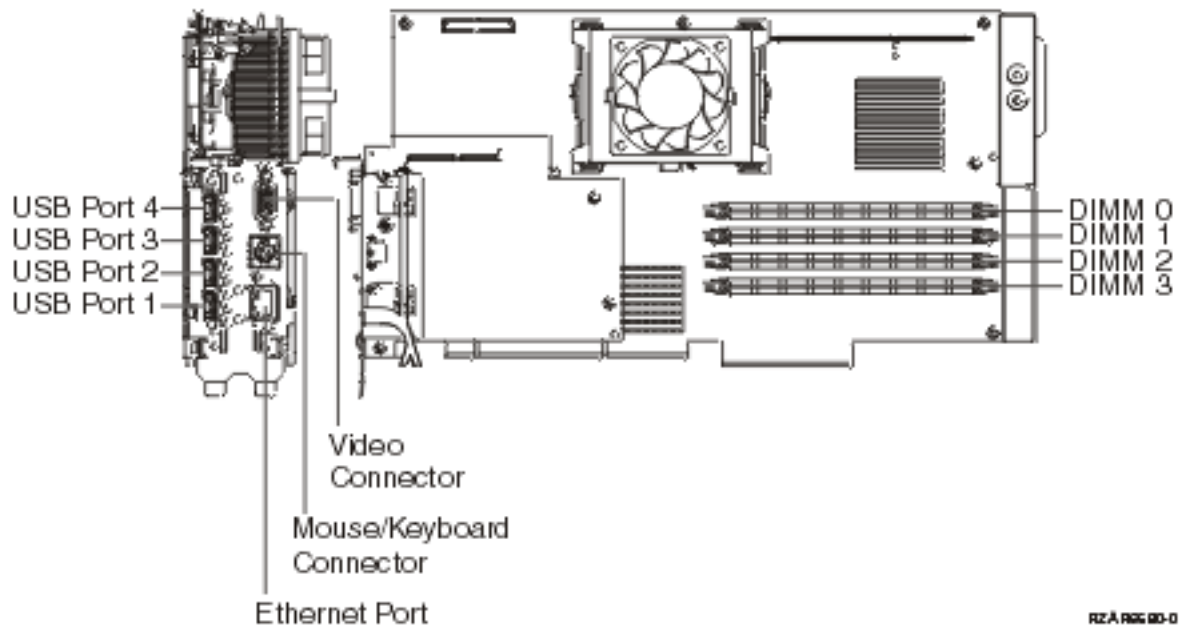
*For use by authorized service providers.*

Use this page to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) card.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.**



**Figure 2. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.**



In both figures, the **third** DIMM from the top (DIMM 2) of the IXS card is the failing item. To determine the part number, go to symbolic FRU “MEMORY” on page 401.

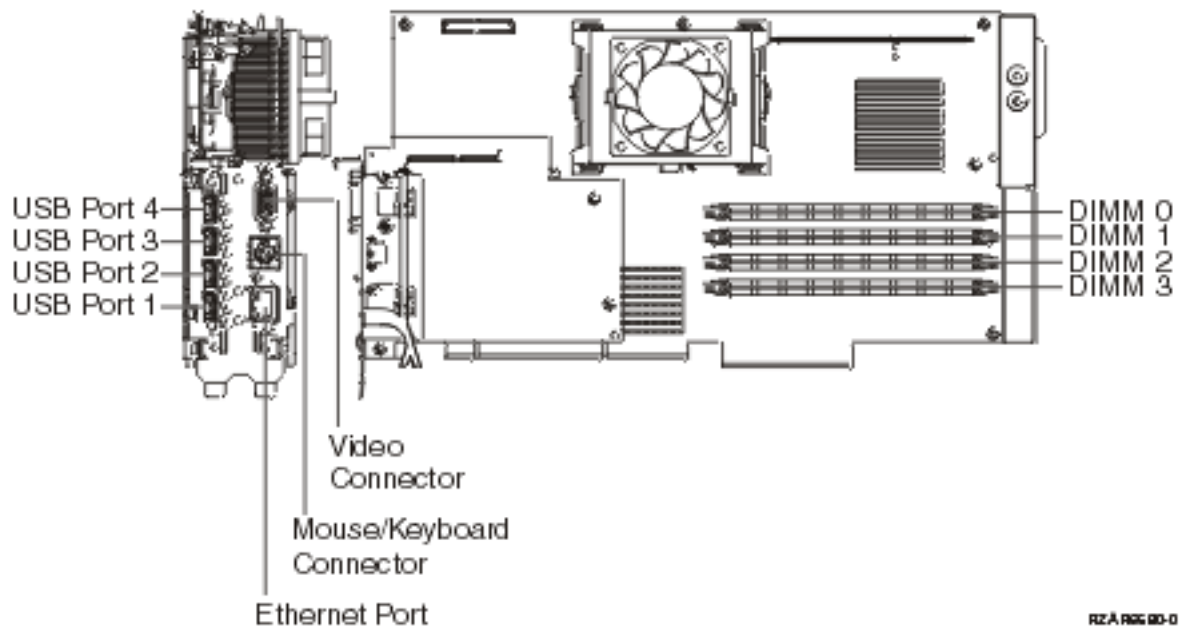
**This ends the procedure.**

### DIMM2\_3

*For use by authorized service providers.*

Use this page to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.**



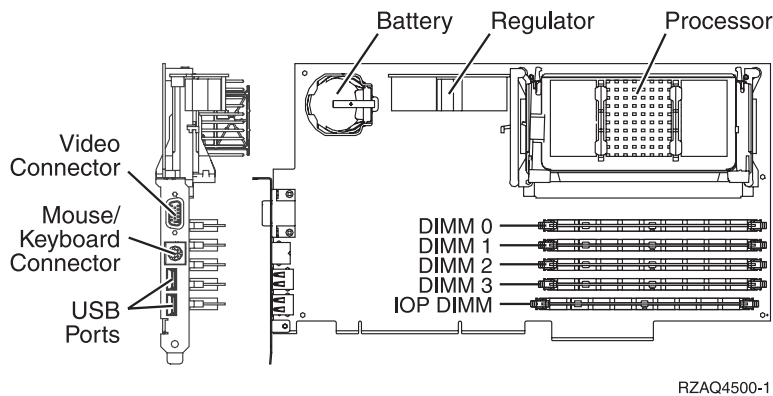
The **third** or **fourth** DIMM from the top (DIMM 0 or DIMM 1) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 401.  
**This ends the procedure.**

### DIMM 3

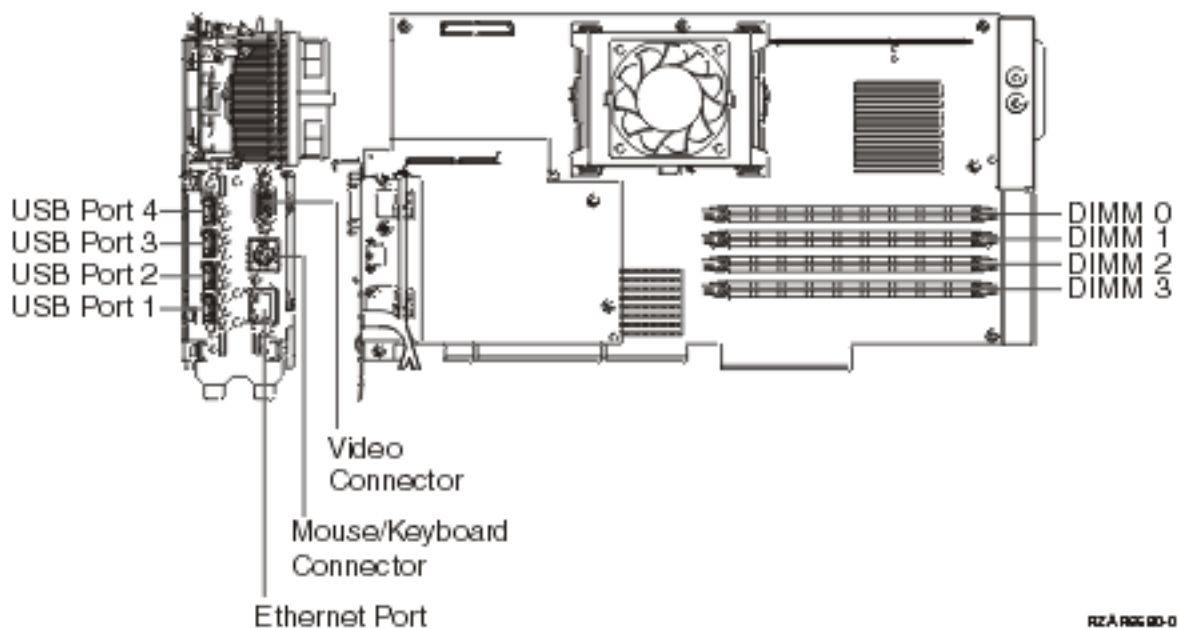
*For use by authorized service providers.*

Use this page to view the Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) cards.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card**



**Figure 2. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card**





In both figures, the **fourth** DIMM from the top (DIMM 3) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 401.  
**This ends the procedure.**

## DISKDRV

For use by authorized service providers.

The disk drive and logic card may be failing.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 6 (See page 331).
2. Is the device location information available in the Service Action Log?
  - **No:** Continue with the next step.
  - **Yes:** To exchange the failing item, see Recovery procedures.  
**Note:** If the failing item is in a migration tower, go to the recovery procedures in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .  
**This ends the procedure.**
3. Find the IOP address and the device address. See SRC address formats.
4. See Locations and addresses and find the diagram of the system unit or expansion unit and find:
  - The IOP card location that is identified by the direct select address.
  - The addressed disk location that is identified by the device address.
5. Is the SRC reported on the control panel?
  - **No:** Go to step 7 (See page 331).
  - **Yes:** See Hardware Related System Reference Code Formats in the *iSeries Service Functions*  book.  
The two right-most characters of word 2 define the SRC format. Use the correct SRC format to locate the function that contains the characters tttt lmmm, where:
    - tttt=Type number
    - l=Level
    - mmm=ModelGo to step 8 (See page 331).
6. Use the disk or device unit number that is called out in the reference code table for this SRC. Physically locate the disk or device using Locations and addresses.
7. Remove the disk unit to determine the part number. To exchange the disk drive and logic card, see Recovery procedures.  
**This ends the procedure.**
8. Using the type information, go to Type, model, and part number list to determine the part number. If you do not know the type, remove the disk unit to determine the part number.  
To exchange the disk drive and logic card, see Recovery procedures.  
**This ends the procedure.**

## DISKIMG

For use by authorized service providers.


There may be a problem with the Network Server Description (NWSD). First, vary off and then vary back on the Network Server Description (NWSD).

If this does not correct the problem, delete and recreate the Network Server Description (NWSD), or call your next level of support.

## DISKTRY

For use by authorized service providers.

The disk unit tray or disk unit holder is only a separate failing item on migrated towers. If the disk unit tray or holder is located in a migration tower, see the DISKTRY symbolic FRU in *Migrated Expansion Tower*

*Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for FRU isolation instructions.

## DMREG

For use by authorized service providers.

A power regulator card is failing.

1. Is the SRC 1xxx 1201 or 1401?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 5 (See page 332).
2. Perform the following:
  - a. Remove load cards Mxx in table below for application. The possible failing loads are:

Model	Load position
840/SB3	M01, M02, M03 - memory

- b. Power on the system.  
Does the system power on?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 23 (See page 335).
3. Perform the following:
  - a. Power off the system.
  - b. Reinstall one of the Mxx load cards that was removed in step 2 (See page 332).
  - c. Power on the system.  
Does the system power on?
    - **Yes:** Continue with the next step.
    - **No:** The last card that was reinstalled in this step is the failing item.  
**This ends the procedure.**
4. Have all the Mxx load cards been reinstalled?
  - **Yes: This ends the procedure.**
  - **No:** Repeat step 3 (See page 332).
5. Is the SRC 1xxx 1202 or 1402?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 7 (See page 332).
6. Perform steps 23 (See page 335) to 24 (See page 335), and return here after completion. Did the completion of these steps resolve SRC 1xxx 1202 or 1402?
  - **No:** Replace the "BACKPLN" on page 284.  
**This ends the procedure.**
  - **Yes: This ends the procedure.**
7. Is the SRC 1xxx 1203 or 1403?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 9 (See page 333).



8. Perform steps **23 (See page 335)** to **24 (See page 335)**, and return here after completion. Did the completion of these steps resolve SRC 1xxx 1203 or 1403?
  - **No:** Replace the “BACKPLN” on page 284.  
**This ends the procedure.**
  - **Yes: This ends the procedure.**
9. Is the SRC 1xxx 1204 or 1404?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **13 (See page 333)**.
10. Perform the following:
  - a. Remove load cards Mxx in table below for application. The possible failing loads are:

Model	Load position
840/SB3	M20, M21, M23, M24- memory

- b. Power on the system.  
Does the system power on?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **23 (See page 335)**.
11. Perform the following:
  - a. Power off the system.
  - b. Reinstall one of the Mxx load cards that was removed in step **10 (See page 333)**.
  - c. Power on the system.  
Does the system power on?
    - **Yes:** Continue with the next step.
    - **No:** The last card that was reinstalled in this step is the failing item.  
**This ends the procedure.**
12. Have all the Mxx load cards been reinstalled?
  - **Yes: This ends the procedure.**
  - **No:** Repeat step **11 (See page 333)**.
13. Is the SRC 1xxx 1205 or 1405?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **17 (See page 334)**.
14. Perform the following:
  - a. Remove load cards Mxx in table below for application. The possible failing loads are:

Model	Load position
840/SB3	M05, M18 - Processors P0, P1

- b. Power on the system.  
Does the system power on?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **23 (See page 335)**.
15. Perform the following:
  - a. Power off the system.
  - b. Reinstall one of the Mxx load cards that was removed in step **14 (See page 333)**.
  - c. Power on the system.

Does the system power on?

- **Yes:** Continue with the next step.
- **No:** The last card that was reinstalled in this step is the failing item.  
**This ends the procedure.**

16. Have all the Mxx load cards been reinstalled?

- **Yes: This ends the procedure.**
- **No:** Repeat step 15 (See page 333).

17. Is the SRC 1xxx 1206 or 1406?

- **Yes:** Continue with the next step.
- **No:** Go to step 21 (See page 334).

18. Perform the following:

a. Remove load cards Mxx in table below for application. The possible failing loads are:

Model	Load position
840/SB3	M06, M16 - Processor P2, P3

b. Power on the system.

Does the system power on?

- **Yes:** Continue with the next step.
- **No:** Go to step 23 (See page 335).

19. Perform the following:

- Power off the system.
- Reinstall one of the Mxx load cards that was removed in step 18 (See page 334).
- Power on the system.

Does the system power on?

- **Yes:** Continue with the next step.
- **No:** The last card that was reinstalled in step 18 (See page 334) is the failing item.  
**This ends the procedure.**

20. Have all the Mxx load cards been reinstalled?

- **Yes: This ends the procedure.**
- **No:** Repeat step 19 (See page 334).

21. Is the SRC 1xxx 1207 or 1407?

- **Yes:** Continue with the next step.
- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

22. Perform the following:

a. Remove load cards Mxx in table below for application. The possible failing loads are:

Model	Load position
840/SB3	M19 - clock card

b. Power on the system.

Does the system power on?

- **Yes:** Replace the clock card (M19).  
**This ends the procedure.**
- **No:** Go to the next failing item.  
**This ends the procedure.**

23. Perform the following:
- Power off the system.
  - Remove one of the regulator cards that was not previously swapped indicated in this table for the model selection for the SRC that was in steps 1 (See page 332) to step 22 (See page 334) that sent you here and install a new one. See the Type, model, and part number list for part numbers.

Number	Model	Regulator
1201/1401	840/SB	R1, R2
1202/1402	840/SB3	R4, R5, R6
1203/1403	840/SB3	R6, R7, R8
1204/1404	840/SB3	R9, R10
1205/1405	840/SB3	R11
1206/1406	840/SB3	R20
1207/1407	840/SB3	R23 (clock card)

- Power on the system.

Does the system power on?

- Yes:** Continue with the next step.
- No:** The regulator you removed in this step is the failing item.  
**This ends the procedure.**

24. Have you swapped out all the regulators?

- No:** Perform the following:
  - Power off the system.
  - Remove the new regulator where installed previously and install the original regulator.
  - Repeat step 23 (See page 335).
- Yes: This ends the procedure.**

## DPAC

*For use by authorized service providers.*

The two port adapter cable (P/N - 21F9345) is the failing item.

## DRVSWCH

*For use by authorized service providers.*

The address switches on an Optical Disk Drive in the Optical Library need to be checked and verified.

Refer to the All 3995 Publications and Documentation  Web site for more information.

## DSKDRV

*For use by authorized service providers.*

The disk drive and logic card in a migrated expansion tower may be failing.

See the DSKDRV symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for FRU isolation instructions.

## DSKTRY

*For use by authorized service providers.*

A disk unit tray or a disk unit holder in a migrated expansion tower may be failing.

See the DSKTRY symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*  book for FRU isolation instructions.

## **DSKUNIT**

*For use by authorized service providers.*

See symbolic FRU “DISKDRV” on page 331.

## **EACODE**

*For use by authorized service providers.*

An error occurred in the error analysis Licensed Internal Code.

Ask your next level of support for assistance.

## **EXTREMD**

*For use by authorized service providers.*

An external removable media storage device may be failing.

See symbolic FRU “CHECK” on page 319 for more information prior to removing or replacing any parts. Return here if symbolic FRU CHECK does not reveal any problems.

Use the device type and refer to the appropriate service documentation for that device. This documentation will help you determine the FRU part numbers and replacement procedures that you are to use during this repair action. If you are unable to locate the documentation for your specific device, then contact your next level of support for assistance.

## **EXTSCSI**

*For use by authorized service providers.*

The external signal cable may be failing.

If more than one device is attached, they may have duplicate addresses. See the device documentation for information on setting the device address.

Perform the following:

1. Find the IOA type:
  - a. Find the IOA location.
  - b. Use the location information of the IOA in the Service Action Log if it is available. If the location is not available, find the address. See SRC Address Formats. Use the address to find the location. See Locations and Addresses.
  - c. Find the IOA card in the system and read the type number of the card at that location.
2. Find the IOA type, the attached device, the cable length, and the cable part number in the following list.
3. Verify that the part number in the list is the same as the part number on the cable.
4. For external devices that are not found in the following list, use the device type and refer to the appropriate service documentation for that device. The service documentation for that device will help you determine the FRU part numbers and replacement procedures you are to use during this repair action. If you are unable to locate the documentation for your specific device, then contact your next level of support for assistance.

**Table 1. External device and part numbers**

IOP or IOA Type	Device	Lengths	Part Number
2749	3490, 3490/Exx, 3590	2.8 meters	05H4647
2749	3490, 3490/Exx, 3590	4.5 meters	05H4648
2749	3490, 3490/Exx, 3590	12.0 meters	05H4649
2749	3490, 3490/Exx, 3590	18.0 meters	05H4650
2749	3490, 3490/Exx, 3590	25.0 meters	05H4651
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	0.5 meters	49G6456 <b>Note:</b> For 358x and 9427 see the Notes (See page 338) below.
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	4.5 meters	49G6457 <b>Note:</b> For 358x and 9427 see the Notes (See page 338) below.
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	12.0 meters	49G6458 <b>Note:</b> For 358x and 9427 see the Notes (See page 338) below.
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	18.0 meters	49G6459 <b>Note:</b> For 358x and 9427 see the Notes (See page 338) below.
2749	63A0		See device documentation to determine cable part numbers
2749	7208/012, 7208/222	1.5 meters	52G0174
2749	7208/012, 7208/222	4.0 meters	59H3462
2749	7208/012, 7208/222	12.0 meters	59H3463
2749	7208/232, 7208/234, 9348	0.5 meters	06H6037
2749	7208/232, 7208/234, 9348	4.0 meters	59H3460
2749	7208/232, 7208/234, 9348	12.0 meters	59H3461
2749	3995	12.0 meters	59H3461
2768	7206/VX2, 7207/122, 7208/345, 7210/020, 7210/025, 7329/308	1.5 meters	19P4506
2768	7206/VX2, 7207/122, 7208/345, 7210/020, 7210/025, 7329/308	2.5 meters	35L1307
2782, 5702, 5703	358x, 7206/VX2, 7207/122, 7208/345, 7210/020, 7210/025	1.5 meters	19P4508, or 19P4506 with 19P0482 interposer cable <b>Note:</b> For 358x see the Notes (See page 338) below.

IOP or IOA Type	Device	Lengths	Part Number
2782, 5702, 5703	358x, 7206/VX2, 7207/122, 7208/345, 7210/020, 7210/025	2.5 meters	19P0279, or 35L1307 with 19P0482 interposer cable <b>Note:</b> For 358x see the Notes (See page 338) below.
2782, 5702, 5703	358x, 7206/VX2, 7208/345	4.5 meters	19P0050 <b>Note:</b> For 358x see the Notes (See page 338) below.
2782, 5702, 5703	358x, 7206/VX2, 7208/345	10 meters	19P0048 <b>Note:</b> For 358x see the Notes (See page 338) below.

**Notes:**

- All cables for the 9427 tape library must include an interposer - part 05H3834 on the device end of the cable.
- All cables for the 399F attachment are the responsibility of the external device service.
- For specific 358X attachment cable information, refer to the specific device and model service documentation, or contact your next level of support.

**This ends the procedure.**

**FCCABLE**

*For use by authorized service providers.*

The Fiber Channel cable may be failing.

Use the part number on the cable to determine the part number to replace.

**FCCODE**

*For use by authorized service providers.*

An error has been detected in the Fiber Channel gateway device Licensed Internal Code.

See the gateway device service guide for possible corrective actions.

**FCDEV**

*For use by authorized service providers.*

The attached Fiber Channel device or Fiber Channel gateway device is the failing item.

Is there a Fiber Channel gateway device between the Fiber Channel I/O Adapter and the device?

- No:** See the attached device maintenance information to determine the parts to replace.  
**This ends the procedure.**
- Yes:** See symbolic FRU "FCGATE."  
**This ends the procedure.**

**FCGATE**

*For use by authorized service providers.*

The Fiber Channel gateway device is the failing item.

Use the gateway device service guide to determine the parts to replace.

## **FCINTF**

*For use by authorized service providers.*

An error has been detected on the Fibre Channel interface.

The failure may be anything between and including the Fibre Channel IOA and the storage device.

To continue diagnosis, use existing Fibre Channel service procedures or contact your next level of support.

## **FCIOA**

*For use by authorized service providers.*

The Fiber Channel I/O Adapter is the failing item.

Replace the Fiber Channel I/O Adapter. Use the I/O Adapter location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O Adapter. See SRC Address Formats. Use the address to find the location. See Locations and Addresses.

## **FCPORT**

*For use by authorized service providers.*

The Fibre Channel IOA port may be the failing item.

Perform the following:

1. Is the SRC 2765/2766/2787/5704 3120 or has a 2765/2766/2787/5704 3120 SRC been logged within 5 minutes of the SRC that sent you to this symbolic FRU?
  - **Yes:** Continue with the next step.
  - **No:** The Fibre Channel IOA port has not failed. See the next FRU in the SRC table.  
**This ends the procedure.**
2. Go to the Product Activity Log. Find the most recent 2765/2766/2787/5704 3120 SRC. Has a 2765/2766/2787/5704 3140 SRC occurred after the most recent 2765/2766/2787/5704 3120 SRC?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 5 (**See page 339**).
3. The 2765/2766/2787/5704 3140 SRC indicates that the port is now active. Has a 2105 3002 SRC occurred around the time the problem was first reported?
  - **Yes:** Continue with the next step.
  - **No:** No further service actions are required.  
**This ends the procedure.**
4. A 2105 3002 has occurred, and the link has gone from not active (2765/2766/2787/5704 3120 SRC) to active (2765/2766/2787/5704 3140). Choose from the following options:
  - If the disk units that reported the 2105 3002 SRC are usable, then no further service actions are required.  
**This ends the procedure.**
  - If the disk units that reported the 2105 3002 SRC are not usable, then go back to the 2105 3002 FRU list and work with a FRU other than FCPORT.  
**This ends the procedure.**
5. Clean the Fibre Channel IOA wrap plug using the cleaning kit (see Type, model, and part number list for part number) and following the Fiber Optic Cleaning Procedures - SY27-2604-04. If the wrap plug has been lost, order and clean a new one (see Type, model, and part number list for part number).

6. Install the wrap plug on the Fibre Channel IOA. After the wrap plug has been installed, wait 20 seconds and then check for a new 2765/2766/2787/5704 3140 SRC in the Product Activity Log. The 2765/2766/2787/5704 3140 SRC indicates that the port is active. Did a new 2765/2766/2787/5704 3140 SRC occur?
  - **Yes:** Continue with the next step.
  - **No:** Replace the Fibre Channel IOA. See symbolic FRU “FCIOA” on page 339 for further instructions.  
**This ends the procedure.**
7. Ask the customer whether the Fibre Channel IOA will attach devices now or whether the Fibre Channel IOA is to be used at a later time. Is the Fibre Channel IOA intended to attach devices at this time?
  - **No:** The wrap plug must be left installed on the Fibre Channel IOA when it is not in use. No further service actions are required.  
**This ends the procedure.**
  - **Yes:** Unplug the wrap plug from the Fibre Channel IOA and wait until the 2765/2766/2787/5704 3120 SRC occurs. This may take up to 10 minutes. The failure has been isolated to the first link, which includes any of the cables, junctions, etc. between the Fibre Channel IOA port and the first Fibre Channel hub, switch, gateway or device. To continue diagnosis within this link, use existing Fibre Channel service procedures, or contact your next level of support.  
**This ends the procedure.**

## HSLCTLR

*For use by authorized service providers.*

Follow the instructions for the model you are working on:

- Models 270, 800, 810, and 820 (See page 340)
- Models 830 and SB2 (See page 340)
- Models 840 and SB3 (See page 340)
- Models 825, 870, and 890 (See page 341)

### Instructions for Models 270, 800, 810, and 820

The failing item is the system unit backplane in location MB1. For location information and links to the remove and replace procedures, see Locations - Model 270, Locations - Models 800 and 810, or Locations - Model 820.

### Instructions for Models 830 and SB2

The failing item is the Network Interface Controller (NIC). Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement.

1. Network interface controller (NIC) card in location M06.
2. Clock card in location M06A.

For location information and links to the remove and replace procedures, see Locations - Models 830/SB2 system unit with FC 9074 base I/O tower.

### Instructions for Models 840 and SB3

The failing item is the Network Interface Controller (NIC). Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement.

1. Network interface controller (NIC) card in location M17.
2. Clock card in location M19.

For location information and links to the remove and replace procedures, see Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower.



## Instructions for Models 825, 870, and 890

The failing item is the Network Interface Controller (NIC). Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement.

1. Network Interface Controller (NIC) card.
2. Clock card (only found in the Models 870 and 890)  
For location information and links to the remove and replace procedures, see Locations - Model 825 or Locations - Models 870 and 890 with an FC 9094 Base I/O Tower .

## IDPART

*For use by authorized service providers.*

A system unit part is failing.

Follow the instructions for the model you are working on:

- Models 270, 820, 830, 840, SB2, or SB3 (See page 341)
- Models 800, 810, 825, 870, or 890 (See page 346)

## Instructions for Models 270, 820, 830, 840, SB2, and SB3

1. Choose from the following options:
  - If you are on a Model 270 or 820: Continue with the next step.
  - If you are on a Model 830, 840, SB2, or SB3: Go to step 7 (See page 343).
2. Does the SRC 1xxx 840D, 840E or 840F appear on the panel?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
3. Is the SRC for an xSeries<sup>(TM)</sup> Server Tower?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the Integrated xSeries Adapter (IXA) (see Type, model, and part number list ).
4. Perform the following to display the Configuration ID:

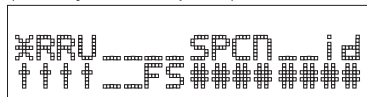
**Note:** The system or frame that will display the ID **MUST** be powered down with ac applied. If you are working on a Model 270 with an FC 7104 system unit expansion, verify that both the ac line cord for the system and the ac line cord for the expansion unit is plugged in.

- a. Select Function **07** on the system control panel and press **Enter**. An 07\*\* displays.
- b. Use the arrow keys to increment / decrement to subfunction **A8**. An 07A8 will display.
- c. Press **Enter**. An 07A8 00 will display.
- d. Use the arrow keys to increment / decrement to the frame address of the box you want to check (usually 02, 03, ... for the towers, 01 for system unit frames). An 07nn will display where nn is the frame address.
- e. Press **Enter**. An 07nn 00 will display.

**Note:** For a non-system unit frame, the display on the addressed frame should now be blinking on and off. For a system unit, press an arrow key (increment or decrement) twice to display the ID (first 07\*\* will be displayed then 07nn will be displayed, where nn is the Configuration ID).

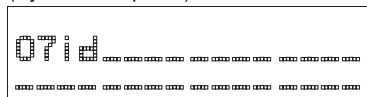
### Figure 1. Control panel diagram for function A6 and A8

(Non-System unit panel)



(RRU = Rack and Unit, id = Config ID)  
(tttt = Box Type, FS##### = Frame Serial #)

(System unit panel)



( id = Config ID)

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f. The Configuration ID displayed is defined as follows:

**Table 1. Configuration ID**

ID	Model
80	FC 5065, FC 5066
81	FC 5074, FC 5079
82	FC 9079
84	FC 5078, FC 0578
90	FC 5075
91	Model 270 <b>without</b> an expansion unit and <b>without</b> a removable processor
92	Model 270 <b>without</b> an expansion unit and <b>with</b> a removable processor
93	Model 820
95	Model 270 <b>with</b> an expansion unit and <b>without</b> a removable processor
96	Model 270 <b>with</b> an expansion unit and <b>with</b> a removable processor

Is the correct configuration ID displayed for the tower selected?

- **No:** Continue with the next step.
- **Yes:** Go to step **6** (See page 343).

5. Perform the following to set frame Configuration ID:

**Note:** The system or frame that will display the ID **MUST** be powered down with ac applied.

- Select Function **07** on the system control panel and press **Enter**. An 07\*\* will display.
- Use the arrow keys to increment / decrement to subfunction **A9**. An 07A9 will display.
- Press **Enter**. An 07A9 00 will displayed.
- Use the arrow keys to increment / decrement to the frame address of the box you want to set the Configuration ID (usually 02, 03, ... for the towers, 01 for system unit frames). An 07nn will display where nn is the frame address.
- Press **Enter**. An 07nn 00 will display.

**Note:** The display on the addressed frame should now be blinking on and off (non-system unit frame only).

f. Select the correct Configuration ID from the following table:

**Table 2. Configuration ID**

ID	Model
80	FC 5065, FC 5066
81	FC 5074, FC 5079
82	FC 9079
84	FC 5078, FC 0578

ID	Model
90	FC 5075
91	Model 270 <b>without</b> an expansion unit and <b>without</b> a removable processor
92	Model 270 <b>without</b> an expansion unit and <b>with</b> a removable processor
93	Model 820
95	Model 270 <b>with</b> an expansion unit and <b>without</b> a removable processor
96	Model 270 <b>with</b> an expansion unit and <b>with</b> a removable processor

- g. Use the arrow keys to increment / decrement to the correct Configuration ID. An 07xx will display where xx is the Configuration ID.
- h. Press **Enter**. An 07xx 00 will display. After a few seconds, the display on the addressed non-system unit frame will stop blinking and return to displaying the frame address. On a system unit, the display will show the series of bring up SRCs, and then display function 01.  
**Note:** To return the panel to normal display, scroll to **07\*\*** and press **Enter**.

Does the SRC 1xxx 840D, 840E or 840F appear on the panel?

- **Yes:** Continue with the next step.
- **No: This ends the procedure.**

6. Perform the following:

- a. Power off the system.
- b. Exchange the SPCN card in the failing frame (see symbolic FRU “TWRCARD” on page 470).  
**This ends the procedure.**

7. Is the SRC 1xxx 8430, 8431, 8440, or 8441?

- **No:** Is the SRC 1xxx 7405?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **18** (See page 345).
- **Yes:** Go to step **21** (See page 346).

8. Perform the following:

- a. Power off the system.
- b. Remove all processor and memory cards from the system.
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

- **Yes:** Continue with the next step.
- **No:** Go to step **13** (See page 344).

9. Perform the following:

- a. Power off the system.
- b. Exchange the AC module in the system unit (see symbolic FRU “ACMODUL” on page 268).
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

- **Yes:** Continue with the next step.
- **No:** The AC module you replaced in this step is the failing item.  
**This ends the procedure.**

10. Perform the following:

- a. Power off the system.
- b. Exchange the control panel in the system unit.
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

- **Yes:** Continue with the next step.
- **No:** The control panel you replaced in this step is the failing item.  
**This ends the procedure.**

11. Perform the following:

- a. Power off the system.
- b. Exchange the SPCN card in the system unit (see symbolic FRU “BKSPCN” on page 286).
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

- **Yes:** Continue with the next step.
- **No:** The SPCN card you replaced in this step is the failing item.  
**This ends the procedure.**

12. Perform the following:

- a. Power off the system.
- b. Exchange the Clock card in the system unit.
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

- **Yes:** Perform the following:
  - a. Power off the system.
  - b. Exchange the BACKPLN in the system unit.
  - c. Install all parts that were removed.  
**This ends the procedure.**
- **No:** The clock card you replaced in this step is the failing item.  
**This ends the procedure.**

13. Perform the following:

- a. Power off the system.
- b. Install one of the units removed in step 8 (See page 343).
- c. Power on the system.

Does the SRC 1xxx 7405 appear on the panel?

- **No:** Continue with the next step.
- **Yes:** The last unit you installed in this step is the failing item.  
**This ends the procedure.**

14. Have you installed all of the units removed in step 8 (See page 343)?

- **Yes:** Continue with the next step.
- **No:** Repeat step 13 (See page 344).

15. Does the SRC 1xxx 840D, 840E, 840F, or 8450 appear on the panel?

- **Yes:** Is the SRC for an xSeries Server tower?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the Integrated xSeries Adapter (IXA) (see Type, model, and part number list ).  
**This ends the procedure.**
- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**

16. Is the SRC 1xxx 8450?

- **No:** Continue with the next step.
- **Yes:** Exchange the processor regulator card M01 for a 2 or 4 way processor (FC 2400 or FC 2402) or an 8 way processor (FC 2403) (see Type, model, and part number list for part number).

If the SRC prevails continue with the next step.

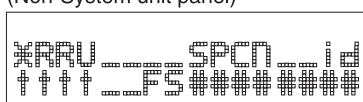
17. Perform the following to display the Configuration ID:

**Note:** The system or frame that will display the ID MUST be powered down with ac applied.

- a. Select Function **07** on the system control panel and press **Enter**. (07\*\* will display.)
- b. Use the arrow keys to increment / decrement to sub-function **A8** and press **Enter**. (07A8 00 will display)
- c. Use the arrow keys to increment / decrement to the frame address of the box you want to check (usually 02, 03, etc. for the towers, 01 for system unit frames). (07nn will display where nn is the frame address.) Press **Enter**. (07nn 00 will display.) The display on the addressed frame should now be blinking on and off (Non-system unit only).
- d. The Configuration ID should now be displayed for the non-system unit. For a system unit, press an arrow key (increment or decrement) twice to display the ID (first 07\*\* will be displayed then 07nn will be displayed, where nn is the Configuration ID). See Table 3. Configuration ID below.

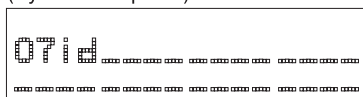
**Figure 2. Control panel diagram for function A8**

(Non-System unit panel)



(RRU = Rack and Unit, id = Config ID)  
(ttt = Box Type, FS##### = Frame Serial #)

(System unit panel)



( id = Config ID)

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**Table 3. Configuration ID**

ID	Model
80	FC 5065, FC 5066
81	FC 5074, FC 5079, FC 8079 (002), FC 8093-002
82	FC 9079 (on Model 840), FC 8079 (001)
83	FC 9074 (on Model 830)
84	FC 5078, FC 0578
90	FC 5075

Is the correct configuration ID displayed for the tower selected?

- **No:** Continue with the next step.
- **Yes:** Go to step **20** (See page 346).

18. Perform the following to set frame Configuration ID:

**Note:** The system or frame that will display the ID MUST be powered down with ac applied.

- a. Select Function **07** on the system control panel. Press **Enter**. (07\*\* will be displayed)
- b. Use the arrow keys to increment/decrement to sub-function **A9**. (07A9 will be displayed). Press **Enter**. (07A9 00 will be displayed)
- c. Use the arrow keys to increment / decrement to the frame address of the box you want to set the Configuration ID (usually 02, 03, etc. for the towers, 01 for system unit frames). (07nn will be displayed where nn is the frame address) Press **Enter**. (07nn 00 will be displayed.) The display on the addressed frame should now be blinking on and off (Non-system unit only).
- d. Select the correct Configuration ID from the following table:

**Table 4. Configuration ID**

<b>ID</b>	<b>Model</b>
80	FC 5065, FC 5066
81	FC 5074, FC 5079, FC 8079 (002), FC 8093-002
82	FC 9079 (on Model 840), FC 8079 (001)
83	FC 9074 (on Model 830)
84	FC 5078, FC 0578
90	FC 5075

Use the arrow keys to increment / decrement to correct Configuration ID. (07xx will be displayed where xx is the Configuration ID). Press **Enter**. (07xx 00 will be displayed.)

- e. After a few seconds the display on the addressed non-system unit will stop blinking and return to displaying the frame address. On a system unit, the display will not show the series of bring up SRCs on the panel. After going through function 07A9 from the panel exit back to function 01 manually, the tower ID is updated.
  - f. If this operation was done on a non-system unit, use the arrow keys to increment/decrement to display 07\*\* . Press **Enter** to display 07. You can now scroll to any function needed.
19. Power on the system.  
Does the SRC 1xxx 840D, 840E, or 840F occur on the panel?
- **Yes:** Continue with the next step.
  - **No: This ends the procedure.**
20. Perform the following:
- a. Power off the system.
  - b. Exchange the SPCN card in the system unit (see symbolic FRU “TWRCARD” on page 470).  
**This ends the procedure.**
21. Is the SRC 1xxx 8430 or 1xxx 8440?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Power off the system.
    - b. Connect the V/S COMM cable (see Power and signal cables for the part number).
    - c. Power on the system.  
Does the same SRC appear on the control panel?
      - **No:** Continue with the next step.
      - **Yes:** Go to the next FRU on the list.  
**This ends the procedure.**
22. Is the SRC 1xxx 8431 or 1xxx 8441?
- **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Power off the system.
    - b. Disconnect the V/S COMM cable (see Power and signal cables for the part number).
    - c. Power on the system.  
Does the same SRC appear on the control panel?
      - **No: This ends the procedure.**
      - **Yes:** Go to the next FRU on the list.  
**This ends the procedure.**

**Instructions for Models 800, 810, 825, 870, and 890**

1. Is the SRC 1xxx 8430, 8431, 8440, or 8441?
  - **Yes:** Go to step 7 (See page 349).
  - **No:** Continue with the next step.
2. Does the SRC 1xxx 840D, 840E or 840F appear on the panel?
  - **No:** Go to the “Starting point for all problems” on page 2
  - **Yes:** Continue with the next step.
3. Is the SRC for a xSeries Server Unit?
  - **Yes:** Exchange the Integrated xSeries Adapter (IXA) (see Type, model, and part number list ).
  - **No:** Continue with the next step.

4. Perform the following to display the Configuration ID:

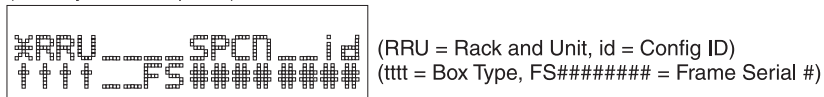
**Note:** The system or frame that will display the ID MUST be powered down with ac applied. If you are working on a Model 800 or 810 with an FC 7116 expansion unit, verify that both the ac line cord for the system and the ac line cord for the expansion unit are plugged in.

- a. Select Function **07** on the system control panel and press **Enter**. (07\*\* will be displayed)
- b. Use the arrow keys to increment / decrement to subfunction **A8**. (07A8 will be displayed). Press **Enter**. (07A8 00 will be displayed)
- c. Use the arrow keys to increment / decrement to the frame address of the box you want to check (usually 02, 03, ... for the towers, 01 for system unit frames). (07nn will be displayed where nn is the frame address.) Press **Enter**. (07nn 00 will be displayed.)

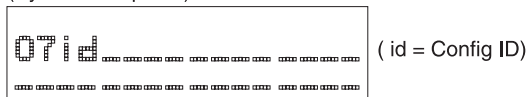
**Note:** For a non-system unit frame, the display on the addressed frame should now be blinking on and off. For a system unit, press an arrow key (increment or decrement) twice to display the ID (first 07\*\* will be displayed then 07nn will be displayed, where nn is the Configuration ID).

**Figure 3. Control Panel Diagram for Function A6 and A8**

(Non-System unit panel)



(System unit panel)



RZAQ2551-3

- d. The Configuration ID displayed is defined as follows:

**Table 5. Configuration ID**

ID	Model
81	FC 5074, FC 5079, FC 8093-002
84	FC 5078, FC 0578
89	FC 5088, FC 0588
8A	FC 5094, FC 5294
8B	FC 5095
90	FC 5075
91	Model 800 or 810 <b>without</b> an expansion unit (FC 7116), and without a removable processor
92	Model 800 or 810 <b>without</b> an expansion unit (FC 7116), and with a removable processor
95	Model 800 or 810 <b>with</b> an expansion unit (FC 7116), and without removable processor

ID	Model
96	Model 800 or 810 <b>with</b> an expansion unit (FC 7116), and with removable processor
99	FC 9094 (Models 870, 890), FC 8093-001, FC 8094-001
A1	Model 825

Is the correct configuration ID displayed for the tower selected?

- **Yes:** Go to step **6** (See page 349).
- **No:** Continue with the next step.

5. Perform the following to set the frame Configuration ID:

**Note:** The system or frame that will display the ID **MUST** be powered down with ac applied.

- Select Function **07** on the system control panel, and press **Enter**. (07\*\* will be displayed)
- Use the arrow keys to increment / decrement to subfunction A9. (07A9 will be displayed).
- Press **Enter**. (07A9 00 will be displayed)
- Use the arrow keys to increment / decrement to the frame address of the box you want to set the Configuration ID (usually 02, 03, ... for the towers, 01 for system unit frames). (07nn will be displayed where nn is the frame address)
- Press **Enter**. (07nn 00 will be displayed)

**Note:** The display on the addressed frame should now be blinking on and off (Non-system frame only).

f. Select the correct Configuration ID from the following table:

**Table 6. Configuration ID**

ID	Model
81	FC 5074, FC 5079, FC 8093-002
84	FC 5078, FC 0578
89	FC 5088, FC 0588
8A	FC 5094, FC 5294
8B	FC 5095
90	FC 5075
91	Model 800 or 810 <b>without</b> an expansion unit (FC 7116), and without a removable processor
92	Model 800 or 810 <b>without</b> an expansion unit (FC 7116), and with a removable processor
95	Model 800 or 810 <b>with</b> an expansion unit (FC 7116), and without removable processor
96	Model 800 or 810 <b>with</b> an expansion unit (FC 7116), and with removable processor
99	FC 9094 (Models 870, 890), FC 8093-001, FC 8094-001
A1	Model 825

- Use the arrow keys to increment / decrement to the correct Configuration ID. (07xx will be displayed where xx is the Configuration ID.)
  - Press **Enter**. (07xx 00 will be displayed.)
- Note:** Scroll to **07\*\*** and press **Enter** to return the panel to normal display.
- After a few seconds the display on the addressed non-system unit frame will stop blinking and return to displaying the frame address. On a system unit, the display will show the series of bring-up SRCs (Model 800, 810, and some Model 825s) and then display function 01.

Does the SRC 1xxx 840D, 840E or 840F appear on the panel?

- **No: This ends the procedure.**



- **Yes:** Continue with the next step.
6. Perform the following:
    - a. Power off the system.
    - b. Exchange the SPCN card in the failing frame (see symbolic FRU “TWRCARD” on page 470).  
**This ends the procedure.**
  7. Is the SRC 1xxx 8430?
    - **Yes:** The configuration is incorrect. Correct the configuration.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  8. Is the SRC 1xxx 8440?
    - **No:** Go to step **10** (See page 349).
    - **Yes:** Continue with the next step.
  9. Perform the following:
    - a. Power off the system.
    - b. Connect the V/S COMM cable correctly. If the V/S COMM cable is connected correctly and the SRC prevails, replace the cable. For Models 870 and 890 see Power and signal cables for the part number.
    - c. Power on the system.  
Does the same SRC appear on the control panel?
      - **Yes:** Go to the next FRU on the list.
      - **No:** Continue with the next step.
  10. Is the SRC 1xxx 8431 or 1xxx 8441?
    - **No: This ends the procedure.**
    - **Yes:** Continue with the next step.
  11. Perform the following:
    - a. Power off the system.
    - b. Disconnect the V/S COMM cable.
    - c. Power on the system.  
Does the same SRC appear on the control panel?
      - **Yes:** Go to the next FRU on the list.
      - **No: This ends the procedure.**

## INTRLCK

*For use by authorized service providers.*


An interlock failure may have occurred.

See the INTRLCK symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for further FRU isolation procedures.

## IOACNFG

*For use by authorized service providers.*


There is an IOA configuration problem.

Too many communications lines or IOAs are configured using the same IOP. See the *iSeries Service Functions*  book for information about how to move an IOA to another IOP.

## IOP

*For use by authorized service providers.*

Replace the I/O processor. Use the I/O processor location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O Processor. See SRC address formats. Use the address to find the location. See Locations and addresses.

If the failing item is in a migration tower, go to the IOP symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .

## IOPWR

*For use by authorized service providers.*

The failing item is a power supply or power subsystem hardware in an I/O tower. See Remove and replace procedures.

## IPLINTF

*For use by authorized service providers.*

The failing item is any card, cable, card enclosure, or device connected to bus 1 that might cause an interface failure between the service processor and the load-source device.

1. Perform the following:
  - a. Power off the system from the control panel.
  - b. Change the IPL mode to manual, and the IPL speed to **SLOW OVERRIDE(S)** using control panel function 2.
  - c. Power on the system.Does the same SRC occur?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2 and follow the service actions for the new SRC.  
**This ends the procedure.**

2. Power off the system from the control panel. Attempt to IPL from a different load source device.
  - If the failing IPL was mode A or B from the disk load source, then get an alternate IPL media and attempt an IPL mode D using the alternate IPL media.
  - If the failing IPL was mode D from an alternate IPL media, then use the “LSMEDIA” on page 360 symbolic FRU.Does the same SRC occur?
  - **Yes:** Continue with the next step.
  - **No:** Follow the service actions for the new SRC.
    - If the IPL is successful, then the failing item is the load-source disk device. Slip-install Licensed Internal Code and attempt another IPL.
    - If the failure still occurs replace the load-source disk device unit.
3. The failing item is one of the cards or devices attached to the interface for IPL load-source device(s). Choose from the following options:
  - If you are on a Model 270, 800, or 810: Continue with the next step.
  - If you are on a Model 820: Go to step **6** (See page 351).
  - If you are on a Model 825: Go to step **8** (See page 351).
  - If you are on a Model 830 or SB2: Go to step **11** (See page 351).
  - If you are on a Model 840 or SB3: Go to step **14** (See page 352).

- If you are on a Model 870 or 890: Go to step 13 (See page 352).
4. See Locations — Model 270 or Locations — Models 800 and 810. Remove all of the IOPs and IOAs, EXCEPT for the first storage IOA. (Normally this would mean to remove all of the cards in locations C07, C06, C05, C04, C03, and C02 - but leave the card in location C01.) Attempt to perform the alternate IPL.  
Does the same SRC occur?
    - **Yes:** Continue with the next step.
    - **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.
  5. Remove (and label) all of the storage device units EXCEPT for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D01 - D06.) If the system IPLs past the original error, then isolate to the failing device unit. If the failure still occurs, replace the following FRUs one at a time until the problem is resolved. See the Remove and replace procedures.
    - First storage IOA
    - System unit backplane in location MB1

**This ends the procedure.**
  6. See Locations - Model 820. Remove all of the IOPs and IOAs on bus 1, EXCEPT for the first storage IOA. (Normally this would mean to remove all of the cards in locations C06, C04, C03, C02, and C01 - but leave the card in location C05.) Attempt to perform the alternate IPL.  
Does the same SRC occur?
    - **Yes:** Continue with the next step.
    - **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.
  7. Remove (and label) all of the storage device units EXCEPT for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D01 - D12.) If the system IPLs past the original error, then isolate to the failing device unit. If the failure still occurs, replace the following FRUs one at a time until the problem is resolved. See the Remove and replace procedures.
    - First storage IOA
    - System unit backplane in location MB1

**This ends the procedure.**
  8. See Locations — Model 825. Remove the IOPs and IOAs, EXCEPT for the load-source IOP and the first storage IOA. (Normally this would mean to remove the card in location C06 - but leave the cards in location C07 and C05.)  
Attempt to perform the alternate IPL.
  9. Does the same SRC occur?
    - **Yes:** Continue with the next step.
    - **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.

**This ends the procedure.**
  10. Remove (and label) all of the storage device units EXCEPT for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D01 - D15.) If the system IPLs past the original error, then isolate to the failing device unit. If the failure still occurs, replace the following FRUs one at a time until the problem is resolved. See Locations - Model 825 for part number and remove and replace information.
    - First storage IOA
    - System unit backplane in location CB1

**This ends the procedure.**
  11. See Locations - Models 830, SB2 system unit with FC 9074 base I/O tower.

Remove the IOPs and IOAs, **EXCEPT** for the load-source IOP and the first storage IOA. (Normally this would mean to remove the cards in locations C02 and C04 - but leave the cards in location C01 and C03.)

Attempt to perform the alternate IPL

12. Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.

**This ends the procedure.**

13. Remove (and label) all of the storage device units **EXCEPT** for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D31-D40 and D46-D50.)

If the system IPLs past the original error, then isolate to the failing device unit.

If the failure still occurs, replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.

- a. Load source IOP in location C01 in the FC 9074 base I/O tower
- b. First storage IOA (location C02, C03 or C04) in the FC 9074 base I/O tower
- c. HSL I/O bridge card in location C08 in the FC 9074 base I/O tower
- d. Network interface controller (NIC) card in location M06 in the 830 system unit
- e. Tower card in location CB1 in the FC 9074 base I/O tower

14. See Locations - Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower.

Remove the IOPs and IOAs, **EXCEPT** for the load-source IOP and the first storage IOA. (Normally this would mean to remove the cards in locations C02 and C04 - but leave the cards in location C01 and C03.)

Attempt to perform the alternate IPL.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.

**This ends the procedure.**

15. Remove (and label) all of the storage device units **EXCEPT** for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D31-D40 and D46-D50.)

If the system IPLs past the original error, then isolate to the failing device unit.

If the failure still occurs, replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.

- a. Load source IOP in location C01 in the FC 9079 base I/O tower.
- b. First storage IOA (location C02, C03, or C04) in the FC 9079 base I/O tower.
- c. HSL I/O bridge card in location C08 in the FC 9079 base I/O tower.
- d. Network interface controller (NIC) card in location M17 in the 840 system unit.
- e. Tower card in location CB1 in the FC 9079 base I/O tower.

**This ends the procedure.**

16. See Locations — Models 870 and 890 with FC 9094 base I/O tower.

Remove the IOPs and IOAs, **EXCEPT** for the load-source IOP and the first storage IOA. (Normally, this would mean to remove the cards in locations C02 and C04 - but leave the cards in location C01 and C03.) Attempt to perform the alternate IPL.

Does the same SRC occur?

- **Yes:** Continue with the next step.

- **No:** If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Follow the service actions for the new SRC.  
**This ends the procedure.**
17. Remove (and label) all of the storage device units **EXCEPT** for the alternate IPL load-source device unit you are currently using. (This includes all of the disk devices in D31-D40 and D46-D50.)  
If the system IPLs past the original error, then isolate to the failing device unit.  
If the failure still occurs, replace the following FRUs in order one at a time until the problem is resolved. See the Remove and replace procedures.
- a. Load source IOP in location C01 in the FC 9094 base I/O tower.
  - b. First storage IOA (location C02, C03, or C04) in the FC 9094 base I/O tower.
  - c. HSL I/O bridge card in location C10 in the FC 9094 base I/O tower.
  - d. Network interface controller (NIC) card in location M41 in the Models 870 or 890 system unit.
  - e. Tower card in location CB1 in the FC 9094 base I/O tower.
- This ends the procedure.**

## I2CBUS

*For use by authorized service providers.*

A Fault was detected on the I2C bus.

1. Are you working on a Model 270, 800, 810, 820, or 825:
  - **No:** Continue with the next step.
  - **Yes:** Go to step **15** (See page 355).
2. Are you working on an FC 5075, FC 0575, FC 5095, or FC 0595 Expansion I/O Tower?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **20** (See page 356).
3. Is the SRC 3100?
  - **No:** Continue with the next step.
  - **Yes:** Replace the Tower card - CB1. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.  
**This ends the procedure.**
4. Is the SRC 3101, 3105, 3115, or 3116?
  - **No:** Go to step **7** (See page 354).
  - **Yes:** Are you working on an FC 5078, FC 0578, FC 5088, or FC 0588?
    - **Yes:** Continue with the next step.
    - **No:** Replace the following FRUs. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
      - Control panel - NB1
      - Tower card - CB1
      - Power cable (PWR60) - Power distribution board (PB1) to Device board (DB3)
      - Signal cable (SIG63) - Control panel (NB1) to Device board (DB3)**This ends the procedure.**
5. Replace the following FRUs. See either Locations — FC 5078, FC 0578 Expansion I/O Unit or Locations — FC 5088, FC 0588 Expansion I/O Unit for part numbers and locations information.
  - For SRC 3101 or 3115:
    - Control panel - NB1
    - Tower card- CB1**This ends the procedure.**

- For SRC 3105 or 3116:
    - Air moving device (AMD) control card - BB1
    - Tower card - CB1

**This ends the procedure.**
6. Is the SRC 3102?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at a time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - HSL I/O bridge - C08
    - Tower card - CB1

**This ends the procedure.**
7. Is the SRC 3103?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at a time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - For FC 5074, FC 5079, FC 5094, FC 8079, FC 9074, FC 9079, and FC 9094:
      - Device board - DB1
      - Device board - DB2
      - Device board - DB3
      - Tower card - CB1

**This ends the procedure.**
    - For FC 5078, FC 0578, and FC 5088, FC 0588:
      - Tower card - CB1

**This ends the procedure.**
8. Is the SRC 3104, 3114, 3118, or 311C?
- **No:** Continue with the next step.
  - **Yes:** Replace the Tower card - CB1. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
 

**This ends the procedure.**
9. Is the SRC 3106 or 3123?
- **No:** Continue with the next step.
  - **Yes:** Replace the Network interface controller (NIC) card - M41. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
 

**This ends the procedure.**
10. Is the SRC 3110, 3111, 3112?
- **No:** Go to step **14** (See page 355).
  - **Yes:** Are you working on an FC 5078, FC 0578, FC 5088, or FC 0588?
    - **No:** Continue with the next step.
    - **Yes:** Replace the Tower card - CB1. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
 

**This ends the procedure.**
11. Is the SRC 3110?
- **No:** Continue with the next step.

- **Yes:** Replace the following FRUs one at a time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Device board - DB1
    - Tower card - CB1

**This ends the procedure.**
12. Is the SRC 3111?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at a time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Device board - DB2
    - Tower card - CB1

**This ends the procedure.**
13. Is the SRC 3112?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at a time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Device board - DB3
    - Tower card - CB1

**This ends the procedure.**
14. Is the SRC 3113?
- **No:** Go to the “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **Yes:** Replace the HSL I/O bridge. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.  
**This ends the procedure.**
15. Is the SRC 3100, 3105, 3106, 3113, 3114, 3116, or 3118?
- **No:** Continue with the next step.
  - **Yes:** Replace the System unit backplane - MB1. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.  
**This ends the procedure.**
16. Is the SRC 3104 (on a Model 270, 800, 810, 820, or 825)?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Device board - DB1
    - Device board - DB2

**This ends the procedure.**
17. Is the SRC 3119?
- **No:** Continue with the next step.
  - **Yes:** Replace the Device board - DB1. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.  
**This ends the procedure.**

18. Is the SRC 311A or 311D?
- **No:** Continue with the next step.
  - **Yes:** Replace the Device board - DB2. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.  
**This ends the procedure.**
19. Is the SRC 311E?
- **No:** Go to the “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **Yes:** Replace the following FRUs one at time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Device board - DB1
    - SPCN card (TWRCARD)  
**This ends the procedure.**
20. Is the SRC 3100, 3104, 3105, 3116, or 3118?
- **No:** Continue with the next step.
  - **Yes :** Replace the SPCN card - SB1 (TWRCARD). Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.  
**This ends the procedure.**
21. Is the SRC 3101 or 3115?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Control panel - NB1
    - SPCN card - SB1 (TWRCARD)
    - Signal cable (SIGC01) - SPCN card (SB1) to Control panel (NB1)  
**This ends the procedure.**
22. Is the SRC 3102, 3113, or 3114?
- **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs one at time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - SPCN card - SB1 (TWRCARD)
    - Tower card - CB1
    - Signal cable (SIGC04) - SPCN card (SB1) to Tower card (CB1)  
**This ends the procedure.**
23. Is the SRC 3103 or 3112?
- **No:** Go to the “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **Yes:** Replace the following FRUs one at time. Use the FRU locations and failing components table in the Locations and addresses page for the model or feature code you are working on. The table will include location, and remove and replace instructions.
    - Device board - DB1
    - SPCN card - SB1 (TWRCARD)  
**This ends the procedure.**



## JTPORT

*For use by authorized service providers.*

There is a problem with the J-Tag connection.

If a B1xx 4660 SRC sent you here, the JTAG-A external cable may be failing. For information about the JTAG cable, see the Power and signal cables page.

If a B4xx xEB0 SRC sent you here, the following procedure will help you determine the failing item.

1. If there is an entry in the Service Action Log, replace any hardware listed. If that fails to correct the problem, call your next level of support.  
**This ends the procedure.**
2. If the system does not IPL and no SAL entry can be found, or if the SAL entry has no possible failing items listed, do the following.
  - See the B428 and B448 SRCs in the System reference code topic.
  - Use the examples there to break down the SRC and extract any values that may be given for the pairs RC02 and TP02, RC03 and TP03, RC04 and TP04, and RC05 and TP05. The TP0x values are hardware CCIN numbers.
  - Look up the associated part numbers in the Type, model, and part number list.
3. The RC0x values are reference codes. Use the RC0x values and the table below to determine the location for the associated CCIN. Replace any possible failing items one at a time.

**Table 1. RCOx values**

RC0x Value	Location for Model 825	Location for Models 870 and 890
x001	NA	M15
x002	CB1	MB1
x003	C13	M21
x004	M01	M11
x005	M02	M16
x006	NA	M14
x007	NA	M41-C
x009	MB2	NA
x00A	MB1	M41
x00B	C08-C09	M40
x00C	C08-C09	M30
x00D	NA	M39
x00E	NB1-A	M41-A
x00F	NB1-B	M41-B
x010	C13-C	M18
x011	C13-A	M24
x012	C13-D	M07
x013	C13-B	M02
x014	C13-G	M25
x015	C13-E	M08
x016	C13-H	M01
x017	C13-F	M17

RC0x Value	Location for Model 825	Location for Models 870 and 890
x020	M02-C	M18-A (control card)
x021	M02-A	M24-A (control card)
x022	M02-D	M07-A (control card)
x023	M02-A	M02-A (control card)
x024	M02-G	M25-A (control card)
x025	M02-E	M08-A (control card)
x026	M02-H	M01-A (control card)
x027	M02-F	M17-A (control card)
xD00	NA	M27
xD01	NA	M28
xD02	NA	M22
xD03	NA	M20
xD04	NA	M29
xD05	NA	M06
xD06	NA	M13
xD07	NA	M23
xD08	NA	M05
xD09	NA	M04
xD0A	NA	M10
xD0B	NA	M12
xD0C	NA	M03
xD0D	NA	M26
xD0E	NA	M19
xD0F	NA	M09

4. If replacing the possible failing items from the SRC does not correct the problem, replace the J-Tag Cable. See Power and signal cables.
5. If the problem persists, replace the Service Processor.
  - For Model 825, the Service Processor is part of the System Unit Backplane in location MB1. See Model 825 - System unit backplane (MB1)
  - For Models 870 and 890, the Service Processor is part of the Tower Card in the Base I/O Unit in location CB1. See Models 870 and 890 (FC 9094) - Tower card - CB1.


6. If the problem still persists, call your next level of support.

For locations and removal and replacement information about possible failing items, see Locations — Model 825 or Locations — Models 870 and 890 with an FC 9094 Base I/O Tower.

**This ends the procedure.**


## LBSADP1

*For use by authorized service providers.*

The failing item is a combination HSL I/O bridge card and local bus adapter card in an FC 5077 SPD migrated tower. Go to symbolic FRU LBSADP1 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.


## **LBSADP2**

*For use by authorized service providers.*

The failing item is a combination HSL I/O bridge card and local bus adapter card in an FC 5077 SPD migrated tower. Go to symbolic FRU LBSADP2 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.

## **LBSADP3**

*For use by authorized service providers.*

The failing item is a combination HSL I/O bridge card and local bus adapter card in an FC 5077 SPD migrated tower. Go to symbolic FRU LBSADP3 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.

## **LBSADP4**

*For use by authorized service providers.*

For Models 270 and 820, the failing item is the local Bus adapter card in an FC 5033, FC 5034, FC 5035 SPD migrated tower.

For Models 830, 840, SB2, and SB3, the failing item is the Local Bus adapter card in an FC 5034 or FC 5035 SPD migrated tower.

Go to symbolic FRU LBSADP4 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.

## **LBSADP5**

*For use by authorized service providers.*

For Models 270 and 820, the failing item is the local bus adapter card in an FC 5033, FC 5034, FC 5035 SPD migrated tower.

For Models 830, 840, SB2, and SB3, the failing item is the local bus adapter card in an FC 5034 or FC 5035 SPD migrated tower.

Go to symbolic FRU LBSADP5 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.

## **LBUSADP**

*For use by authorized service providers.*

For Models 270 and 820, the failing item is the HSL I/O bridge card in an FC 5077 SPD migrated tower.

For Models 830, 840, SB2 and SB3, the failing item is the HSL I/O bridge card in an FC 5033, FC 5034, FC 5035 or FC 5077 SPD migrated tower.

Go to symbolic FRU LBUSADP in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing item.

## **LOC\_SYS**

*For use by authorized service providers.*

A problem has occurred on the local (this) system with HSL OptiConnect. The Service Action Log (SAL) code will attempt to identify the HSL loop number as a portion of the part description for this symbolic FRU. Search the SAL of this system for hardware and LIC problems. Correct any problems that you find with LIC or Network Interface Controller (NIC) hardware.

## **LPARCFG**

*For use by authorized service providers.*

There is a configuration problem with a logical partition. Perform any actions listed in the "Description/Action" column in the Unit Reference Code Table for the SRC.

Have the customer check processor and memory allocations to the secondary partitions. The customer must ensure that there are enough functioning processor and memory resources in the system for all the partitions. Be aware that processor or memory resources that failed during system IPL could have caused the IPL problem in the secondary partition.

Have the customer check the bus and I/O processor allocations for the secondary partition. The customer must ensure that the partition has load source and console I/O resources.

Have the customer check the IPL mode of the Primary partition and the failing secondary partition:

- If the Primary partition is IPL'd in mode 'C' then secondary partitions can only be IPL'd in mode 'C'. If that is the problem, then re-IPL the Primary partition in either 'A' or 'B' mode. Then the secondary partition can IPL in any mode.
- If the Primary partition is IPL'd in mode 'C' then "Guest" partitions will not IPL.

For "Guest" partitions, this may be a problem accessing or loading the specified Kernel.

For further assistance the customer should contact their software service provider, or visit the IBM web page at <http://www.ibm.com/servers/eserver/series/lpar/> for additional support direction.

## **LPARSUP**

*For use by authorized service providers.*

There is either an IPL problem, MSD problem, or a software error with a secondary partition. Perform any actions listed in the "Description/Action" column in the System Reference Code Table for the SRC.

During the IPL or mainstore dump of a secondary partition, a complex problem was detected. The Primary partition's SAL has to be searched or the SRC history list in the primary partition for the secondary partition with the problem has to be analyzed in sequence. If the secondary partition is a "Guest" partition, then the SRC history list of the "Hosting" partition must be analyzed.

Contact your next level of hardware support.

## **LSMEDIA**

*For use by authorized service providers.*

The load-source media is the failing item.

- If the load-source is tape, exchange the tape in the alternate IPL tape unit. If replacing the media does not work, try replacing the tape device unit.
- If the load-source is an optical storage unit, exchange the compact disk. If replacing the media does not work, try replacing the optical storage device unit.

- If the load-source is disk, slip-install Licensed Internal Code back to the last known working level. If this does not work, exchange the disk device unit.

For location information, refer to the following:

- Locations — Model 270
- Locations — Models 800 and 810
- Locations — Model 820
- Locations — Model 825
- Locations — Model 830/SB2 System Unit with FC 9074 Base I/O Tower
- Locations — Model 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower
- Locations — Models 870 and 890 with an FC 9094 Base I/O Tower

## MABRCFG

*For use by authorized service providers.*

MABRCFG: multi-adapter bridge configuration error.


The multi-adapter bridge hardware detected a configuration problem.

1. If you are working from the Service Action Log and there is a card position that is listed with this failing item, then that is where the error is located. Continue with the next step in this procedure. Otherwise, to determine the card location where the multi-adapter bridge configuration error is, go to “Bus PIP PCIBUS-PIP1” on page 99. Return here after locating the card.
2. Use the following table to determine the corrective action.

**Table 1. Multi-adapter bridge errors and meaning or corrective action**

Problem or message (these appear in upper case in the console)	Meaning or corrective action
Multi-adapter bridge has no IOP for the I/O adapters	<ul style="list-style-type: none"> <li>• <b>Step a.</b> System code detected one or more I/O adapters under the multi-adapter bridge specified in the DSA, but no I/O processor to control them. The I/O adapters are not available to the system. The SAL entry lists the card locations controlled by the multi-adapter bridge. If you do not have the card locations listed in the SAL, find them by performing the rest of step A. Otherwise, go to <b>Step b (See page 361)</b>.  To locate the I/O adapters, search for the card locations controlled by the multi-adapter bridge. The multi-adapter bridge is in the DSA in word 7 of the SRC. See “Breaking down the SRC” on page 63 (in the Bus PIP overview) to determine the multi-adapter bridge number. See the “Card positions” on page 65 (in the Bus PIP overview) to determine all the card locations controlled by the multi-adapter bridge.</li> <li>• <b>Step b.</b> To make the I/O adapters available to the system, install an I/O processor in a card slot controlled by the multi-adapter bridge to control the I/O adapters or move the I/O adapters to a multi-adapter bridge with an I/O processor. When adding an IOP, place it in a card position that is ahead of the IOAs according to the “IOA Assignment Rules” table (located in the Locations page for the frame type on which you are working).</li> </ul>

<b>Problem or message (these appear in upper case in the console)</b>	<b>Meaning or corrective action</b>
Card type not supported in this slot	<p>System code detected a card type that is not supported in the multi-adapter bridge card location it is installed in. Move the card to a location which will support that card type. Check the installation instructions for the card to determine which card locations can support it.</p> <p>For SRC word 1 = B6006964 and word 4 = xxxx2015, if the Service Action Log does not show a card position for this error, then the card position can be determined by creating a Direct Select Address (DSA) from information in the SRC. To create the DSA, use the first 5 digits of word 7 and the 6th digit of word 5 followed by two zeros (00). Using this DSA perform "Bus PIP PCIBUS-PIP1" on page 99 to determine the position of the card that is not supported in that slot.</p>
I/O processor removed from multi-adapter bridge card slot	System code detected that an I/O processor card was located in that card location on the previous IPL. The I/O processor is no longer installed in that location.
I/O adapter unavailable due to moved I/O processor card	System code detected that the I/O processor which controlled the I/O adapter card specified in the DSA has been moved since the last IPL. The I/O adapter card is unavailable to the system.
IOA removed from multi-adapter bridge slot	System code detected that the card location specified in the DSA had an I/O adapter installed on the previous IPL. The I/O adapter is no longer installed in that card location.
I/O adapter replaced by I/O processor card	System code detected that the card location specified in the DSA had an I/O adapter installed on the previous IPL. The I/O adapter has been replaced by an I/O processor.
Multi-adapter bridge configuration change or error	System code has detected a change in the multi-adapter bridge configuration or a configuration error since the last IPL.

Problem or message (these appear in upper case in the console)	Meaning or corrective action
PCI I/O processor rejected assignment or removal of an IOA	<p>The I/O processor's (IOP) licensed internal code (LIC) has rejected the assignment of an I/O adapter (IOA) to that IOP, or the IOP's LIC has rejected the removal of an IOA which the IOP owns.</p> <p>Word 5 of the SRC is the Direct Select Address (DSA) of the IOP. Word 7 of the SRC is the DSA of the IOA.</p> <ol style="list-style-type: none"> <li>1. To find the IOP go to "Bus PIP PCIBUS-PIP1" on page 99 using the DSA in word 5 of the SRC.</li> <li>2. To find the IOA go to "Bus PIP PCIBUS-PIP1" on page 99 using the DSA in word 7 of the SRC.</li> </ol> <p>Use HSM concurrent maintenance functions to assign or remove the IOA. See Hardware Service Manager in the <i>iSeries<sup>(TM)</sup> Service Functions</i>  manual for help in using the HSM concurrent maintenance functions.</p> <p>Assignment failures can be from:</p> <ul style="list-style-type: none"> <li>• The IOP already being at its capacity to accept IOA assignments.</li> <li>• The IOA is not a type supported by the IOP.</li> </ul> <p>Corrective action:</p> <ul style="list-style-type: none"> <li>• Add another IOP for LIC to assign the IOA to if necessary.</li> <li>• Re-assign the IOA to another IOP using concurrent maintenance.</li> </ul> <p>Removal failures:</p> <ul style="list-style-type: none"> <li>• This is a LIC problem and should be reported.</li> <li>• Call your next level of support.</li> </ul>
Linux owned slot - no IOP is allowed	An I/O processor card was found in a PCI Bridge Set that is allocated to a Linux partition. The IOP will not be supported in this card position.

**This ends the procedure.**

## MA\_BRDG

*For use by authorized service providers.*

MA\_BRDG: multi-adapter bridge.

The problem is the multi-adapter bridge hardware on a system bus.

1. Is the location information for this failing component available in the Service Action Log?
  - **No:** Continue with the next step.
  - **Yes:** Use the location information in the Service Action Log, and go to step 4 (See page 364).
2. Were you sent here by an A6xx xxxx or B6xx xxxx SRC, and no location information was available in the Service Action Log?
  - **No:** Continue with the next step.
  - **Yes:** Record the bus number value, BBBB, in word 7 of the SRC. See "Breaking down the SRC" on page 63 (located in the Bus PIP Overview topic) for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing component. Record the frame or tower type, and go to step 4 (See page 364).

3. Record the bus number value, BBBB, of the IOP or IOA Direct Select Address. See SRC address formats. Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing component. Record the frame or tower type.
4. The failing component is the FRU containing the multi-adapter bridge. Identify the system model, tower, expansion unit, or machine type that is indicated by the location in the SAL, or by using the bus number, BBBB. Using the information provided in the table below, exchange the FRU that is indicated.

**Table 1. FRU containing the multi-adapter bridge**

<b>System model, tower, expansion unit or machine type</b>	<b>Name of FRU to exchange</b>	<b>FRU position</b>	<b>Link to failing component service information (CCIN, locations diagram, remove and replace procedure).</b>
Model 270 Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	System unit backplane	MB1	Use the Model 270 diagrams and tables by processor feature code and follow the Locations diagram link or the FRU positions and failing components link for the processor feature code.
Models 800 and 810	System unit backplane	MB1	See Locations — Models 800 and 810
Model 820	System unit backplane	MB1	See Locations — Model 820
Model 825	System unit backplane	CB1	See Locations — Model 825
Models 830 and SB2 base I/O tower (FC 9074)	Tower card	CB1	See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower.
Models 840 and SB3 Base I/O Tower (FC 9079)	Tower card	CB1	See Locations for FC 9079 Base I/O Tower (On Models 840, SB3 system unit).
Models 870 and 890	Tower card	CB1	See Locations — Models 870 and 890.
FC 5074 Expansion I/O Tower	Tower card	CB1	See Locations — FC 5074 I/O Tower.
FC 5075 Expansion I/O Tower	Tower card	CB1	See Locations — FC 5075 I/O tower.
FC 5078, 0578 expansion I/O unit	Tower card	CB1	See Locations — FC 5078, 0578 Expansion I/O Unit.
FC 5079 (1.8m expansion tower)	Tower card	CB1	See Locations — FC 5079 I/O tower.
FC 5088, FC 0588 PCI Expansion Unit	Tower card	CB1	See Locations — FC 5088, FC 0588 Expansion I/O Tower.
FC 5095, FC 0595 PCI Expansion Tower	Tower card	CB1	See Locations — FC 5095, FC 0595 Expansion I/O Tower.
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	See Locations — Integrated xSeries Adapter Card (IXA).

**This ends the procedure.**

## **MAPPWR**

*For use by authorized service providers.*

Use this procedure to help locate power problems in the processor subsystem, I/O subsystems, or rack. If a problem is detected, this procedure helps you isolate the problem to a failing unit. Observe the following safety notices during service procedures.

## **DANGER**

**An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (RSFTD201)**



## DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. (RSFTD004)

## DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. (RSFTD003)

## DANGER

To avoid electrical shock, use the three-wire power cable and plug with a properly grounded electrical outlet. (RSTD218)

## CAUTION:

Energy hazard, remove power before servicing.

**Table 1. Power problems**

System reference code	Action
1xxA FE06 for BPC A 1xxB FE06 for BPC B 1xxA FE16 for BPC A 1xxB FE16 for BPC B	Go to "MAPPWR-1: The UEPO switch on the bulk power controller (BPC) is in the bypass position" on page 367.
1xxA 0856 or 1xxA FE56 for BPR 1A 1xxA 0866 or 1xxA FE66 for BPR 2A 1xxA 0876 or 1xxA FE76 for BPR 3A 1xxB 0856 or 1xxB FE56 for BPR 1B 1xxB 0866 or 1xxB FE66 for BPR 1B 1xxB 0876 or 1xxB FE76 for BPR 1B	Go to "MAPPWR-2: There is a bulk power regulator (BPR) communications fault" on page 367.
1xxA FDB6 for BPC A 1xxB FDB6 for BPC B	Go to "MAPPWR-3: An open room EPO switch has been detected from one side" on page 368.
1xxA 0D06 for BPA A 1xxB 0D06 for BPA B	Go to "MAPPWR-4: There is a 350 V bulk failure" on page 369.
1xxA 1C06 1xxB 1C06 1xxC 1C06	Go to "MAPPWR-5: An air flow loss has been detected" on page 370.
1xxC E006 1xxC E106	Go to "MAPPWR-6: There is a processor (critical/warning) overtemperature fault" on page 371.
1xxA D216 for BPA A 1xxB D216 for BPA B	Go to "MAPPWR-7: There is a bulk power assembly (BPA) communication failure" on page 372.
1xx1 8700 1xx1 8701 1xxA F806, 1xxA F906, or 1xxA FA06 for BPC A 1xxB F806, 1xxB F906, or 1xxB FA06 for BPC B	Go to "MAPPWR-8: Loss of ac power or phase missing" on page 373.
1xxC 6014 1xxC 6814 1xxC B014 1xxC B814	Go to "MAPPWR-9: 2.5 V current/voltage problem in processor subsystem" on page 375.

System reference code	Action
1xxC 6114 1xxC 6914 1xxC B114 1xxC B914	Go to "MAPPWR-A: 1.8 V current/voltage problem in processor subsystem" on page 378.
1xxC 6134 1xxC 6934 1xxC B134 1xxC B934	Go to "MAPPWR-B: 1.5 V auxiliary current/voltage problem in processor subsystem" on page 382.
1xxC 6124 1xxC 6924 1xxC B124 1xxC B924	Go to "MAPPWR-C: 1.5 V CPU current/voltage problem in processor subsystem" on page 386.
1xxC 6144 1xxC 6944 1xxC B144 1xxC B944	Go to "MAPPWR-D: 3.3 V current/voltage problem in processor subsystem" on page 388.
1xxC 6514 1xxC 6D14 1xxC B514 1xxC BD14 1xxC B544 1xxC BD44	Go to "MAPPWR-E: 5.0 V current/voltage problem in processor subsystem" on page 392.
1xxA x115 1xxA x215 1xxA x315 1xxA x415 1xxA x515 1xxA x615 1xxA x715 1xxA x925 1xxA xA25 1xxB x115 1xxB x215 1xxB x315 1xxB x415 1xxB x515 1xxB x615 1xxB x715 1xxB x925 1xxB xA25	Go to "MAPPWR-F: Cable problem in power subsystem" on page 395.
1xxA E206 for BPC A 1xxB E206 for BPC B 1xxA FC06 for BPC A 1xxB FC06 for BPC B 1xxA xxB1 for BPC A 1xxB xxB1 for BPC B	Go to "MAPPWR-G: A UEPO panel fault has been detected" on page 398.

System reference code	Action
1xxC 7E06 1xxC 7F06 1xxC 0FB6 1xxC 7EB6 1xxC E1B6 1xxC 0FC6 1xxC 7EC6 1xxC E1C6 1xxC 0FD6 1xxC 7ED6 1xxC E1D6 1xxC 0FE6 1xxC 7EE6 1xxC E1E6	Go to “MAPPWR-H: An MCM fault has been detected” on page 398
1xxA xx22 1xxA xx32 1xxA xx52 1xxA xx72 1xxB xx22 1xxB xx32 1xxB xx52 1xxB xx72	Go to “MAPPWR-J: There is a bulk power enclosure (BPE) communication failure” on page 399

### MAPPWR-1: The UEPO switch on the bulk power controller (BPC) is in the bypass position

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

- Check the Unit Emergency Power Off (UEPO) switch on the bulk power controller (BPC), that is in the bulk power assembly (BPA) that is exhibiting the failure. Is the switch in the Normal position?
  - Yes:** Continue with the next step.
  - No:** Set the switch to the Normal position and continue the with the next step.
- Press the (white) **Service Complete** button. Is the error code 101A FE06 or 101B FE06 displayed?
 

**Note:** It can take up to 10 seconds for the error code to clear.

  - No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
  - Yes:** Replace the Bulk power controller (BPCPWR) on the side that is exhibiting the failure. See symbolic FRU “BPCPWR” on page 287. Then, continue with the next step.
- If not already done, press the (white) **Service Complete** button. Is the error code 101A FE06 or 101B FE06 displayed?
  - Yes:** Call your next level of support for assistance.  
**This ends the procedure.**
  - No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**

### MAPPWR-2: There is a bulk power regulator (BPR) communications fault

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Check the position of the on/off switch on the bulk power regulator (BPR) referenced by the error code. Is the switch in the ON position (to the left)?
  - **Yes:** Continue with the next step.
  - **No:** Set the switch to the ON position, press the (white) **Service Complete** button, and go to Verify the repair.  
**This ends the procedure.**
2. Exchange the following field replaceable units (FRUs) one at a time:
  - Bulk power regulator (BPR) referenced by the error code that sent you to this procedure. See symbolic FRU “BPRPWR” on page 288.
  - Bulk power controller (BPC) on the side referenced by the error code that sent you to this procedure. See symbolic FRU “BPCPWR” on page 287.
  - Bulk power enclosure (BPE) on the side referenced by the error code that sent you to this procedure. See Bulk power enclosure assembly - Models 870 and 890 for the part number and a link to the remove and replace procedure.

After each FRU is exchanged, is the error code that sent you to this procedure still reported?

- **Yes:** Exchange the next FRU on the list. If all of the FRUs have been exchanged, then call your next level of support.  
**This ends the procedure.**
- **No:** Go to Verify the repair.  
**This ends the procedure.**

### **MAPPWR-3: An open room EPO switch has been detected from one side**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Ensure the following for the Model 870 and 890 system unit:
  - If the room EPO cable is **not** installed: Make sure that the room EPO BYPASS switch on the bottom of the EPO panel is to the left (blocking cable installation).
  - If the room EPO cable **is** installed: Check to ensure that the customer’s room EPO switch is not tripped, and the cable is connected and seated correctly.
2. Check the Unit Emergency Power Off (UEPO) card assembly. Is a customer room EPO cable plugged into the UEPO panel?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 4 (**See page 368**).
3. Perform the following:
  - a. Set the UEPO switch on both bulk power controllers (BPCs) to the BYPASS position.
  - b. Unplug the customer room EPO cable.
  - c. Set the internal toggle switch on the bottom of the UEPO panel to EPO BYPASS position. See Figure 1. UEPO card assembly, reference number 6, in the Models 870 and 890 - Unit Emergency Power Off (UEPO) card assembly remove and replace procedure.
  - d. Set the UEPO switch on both BPCs back to the NORMAL position.
  - e. Press the (white) **Service complete** button.

Is error code 1011 00AC, 101A FDB6, or 101B FDB6 generated?

- **Yes:** Continue with the next step.
  - **No:** Go to step 5 (**See page 369**).
4. Exchange the following field replaceable units (FRUs) one at a time:
    - UEPO card assembly. See Final assembly - Models 870 and 890 for the part number and a link to the remove and replace procedure.

- The cable from the UEPO to the BPC on the side referenced by the error code that sent you to this procedure. See symbolic FRU “CBLPWR” on page 301.
- BPCPWR on the side referenced by the error code that sent you to this procedure. See symbolic FRU “BPCPWR” on page 287.

After each FRU is exchanged, is the error code that sent you here still reported?

- **No:** The problem has been corrected. See Verify the repair.  
**This ends the procedure.**
- **Yes:** Exchange the next FRU in the list. If all of the FRUs have been exchanged, then call your next level of support.  
**This ends the procedure.**

5. Perform the following actions one at a time:

- Replace the UEPO card assembly. See Final assembly - Models 870 and 890 for the part number and a link to the remove and replace procedure. Then, continue with step 6 (See page 369).
- Check with the customer’s site services to test the room EPO for correct operation. When the room EPO is working correctly, reconnect the cable by performing the following steps:
  - Set the UEPO switch on both bulk power controllers (BPCs) to the BYPASS position.
  - Reconnect the customer’s room EPO cable.
  - Set the UEPO switch on both BPCs back to the NORMAL position.
  - Press the (white) **Service complete** button.
  - Continue with step 6 (See page 369).

6. After each action is performed in step 4, is the error code that brought you here reported?

- **No:** The problem has been corrected. See Verify the repair.  
**This ends the procedure.**
- **Yes:** Perform the next action on the list. If all actions have been performed, then call your next level of support for assistance.  
**This ends the procedure.**

## **MAPPWR-4: There is a 350 V bulk failure**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. This problem can be caused by the bulk power distribution (BPD) plugged into the failing bulk power assembly (BPA). Check all the BPDs on the side of the BPA (A or B) referenced by the error code that sent you to this procedure.

FRUs on the operating side of the BPA (with BPC GOOD LED on) must not be disturbed during this procedure. Perform the following:

- Turn all the BPR on/off switches on this BPA to the off position (to the right).
- If there is more than one BPD left to be checked, start with the uppermost BPD. Unplug and make a note of the BPD to be checked and carefully pull it approximately 25 mm (1 inch) away from the backplane without unplugging any cables. See the symbolic FRU “BPD PWR” on page 287.
- Set all the BPR on/off switches on this BPA to the on position (to the left).

Does the BPC GOOD LED on the BPC come on and stay on?

- **Yes:** Replace the BPD that is currently unplugged. See the symbolic FRU “BPD PWR” on page 287. Then, see Verify the repair.  
**This ends the procedure.**
- **No:** Perform the following:
  - Turn all of the BPR on/off switches on this BPA to the off position (to the right).
  - Replug the BPD.

- c. Set all the BPR on/off switches on this BPA to the on position (to the left), and continue with the next step.
2. Are there any BPDs you have not checked yet?
  - **Yes:** Repeat step 1 (See page 369).
  - **No:** Continue with the next step.
3. This problem can also be caused by any bulk power regulator (BPR) plugged into the failing BPA. The system has up to two BPRs depending on the system configuration, and each BPR on the failing BPA must be checked independently. The following steps check all the BPRs on the side of the BPA (A or B) referenced by the error code that sent you to this procedure.
 

Are there any BPRs you have not checked yet?

  - **Yes:** Go to step 5 (See page 370).
  - **No:** Continue with the next step.
4. Exchange the following field replaceable units (FRUs) one at a time:
  - Bulk power controller (BPC) on the side referenced by the error code that sent you to this procedure. See symbolic FRU “BPCPWR” on page 287.
  - Bulk power enclosure (BPE) on the side referenced by the error code that sent you to this procedure. See Bulk power enclosure assembly - Models 870 and 890 for the part number and a link to the remove and replace procedure.

After each FRU is exchanged, is the error code that sent you to this procedure still reported?

  - **No:** The problem has been corrected. See Verify the repair.  
**This ends the procedure.**
  - **Yes:** Exchange the next FRU in the list. If all the FRUs have been exchanged, then call your next level of support for assistance.  
**This ends the procedure.**
5. Be sure you are working on the side of the BPA (A or B) referenced by the error code that sent you to this procedure. FRUs on the operating side of the BPA (with BPC GOOD LED on) must not be disturbed during this procedure. Perform the following:
  - a. Turn the BPR on/off switch to the off position (to the right) on one BPR.
  - b. If there is more than one BPR left to be checked, start with the uppermost unchecked BPR. Unplug and make a note of the BPR to be checked, and carefully pull it approximately 25 mm (1 inch) away from the backplane without unplugging any cables. See symbolic FRU “BPRPWR” on page 288.
 

Does the BPC GOOD LED on the BPC come on and stay on?

    - **No:** Plug in the BPR and set the BPR on/off switch to the ON position (to the left). Go to step 3 (See page 370).
    - **Yes:** Replace the BPR that is currently unplugged. Go to step 6 (See page 370).
6. Is the error code that sent you to this procedure still reported?
  - **No:** The problem has been corrected. See Verify the repair.  
**This ends the procedure.**
  - **Yes:** Call your next level of support for assistance.  
**This ends the procedure.**

## **MAPPWR-5: An air flow loss has been detected**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Check the following air inlets and outlets for blockage or obstruction:
  - Front and rear frame door openings (except for acoustical foam)
  - Bulk power assembly (BPA) cage:

- Inlet opening in left side of front BPA, BPA A
- Outlet opening in right side of rear BPA, BPB B
- Bulk power F-airmover (BPF) cover is present on front BPA and absent on rear BPA
- Processor subsystem cage:
  - Inlet opening at top front of processor subassembly
  - Outlet opening at top rear of processor subassembly

Are all of these openings clear and unobstructed?

- **Yes:** Continue with the next step.
  - **No:** Remove any obstructions and go to Verify the repair.  
**This ends the procedure.**
2. Do all book positions in the processor subsystem contain books or fillers? See Models 870 and 890 remove and replace procedures for the appropriate book procedure.
    - **Yes:** Continue with the next step.
    - **No:** Fill any open positions with books or fillers. Then, go to Verify the repair.  
**This ends the procedure.**
  3. Are the air filters clean and free of any obstructions? See the Processor subsystem assembly - Models 870 and 890 for the part number and link to the remove and replace procedure for the Motor scroll assembly (MSA) air filters.
    - **Yes:** Continue with the next step.
    - **No:** Replace the air filters and clean the airflow pathway as needed. Then, go to Verify the repair.  
**This ends the procedure.**
  4. Remove the blowers from the affected subsystems.
 

**Attention:** Do not put your hand into the enclosure. Push the spring loaded door open and hold it open with one hand. Using a suitably long instrument (a 12-inch ruler or long-handled screwdriver), push gently against the recirculation flaps at the back of the blower enclosure. Are all the recirculation flaps in both enclosures free to swing up?

    - **Yes:** Reinstall the blower. See Verify the repair.  
**This ends the procedure.**
    - **No:** The enclosure is not a replaceable FRU. Contact your next level of support.  
**This ends the procedure.**

## **MAPPWR-6: There is a processor (critical/warning) overtemperature fault**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Is the room ambient temperature in normal range (less than 35 degrees C or 95 degrees F)?
  - **No:** Notify the customer. The customer must bring the room temperature within normal range. See Verify the repair.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
2. Are the system front and rear doors free of obstructions?
  - **No:** Notify the customer. The system must be free of obstructions for proper air flow. See Verify the repair.  
**This ends the procedure.**
  - **Yes:** Exchange the following field replaceable units (FRUs), if present, one at a time. See Locations - Models 870 and 890 for the part number and a link to the remove and replace procedure:
    - The processor MCM module 0, at location M21
    - The processor MCM module 3 at location M14

- The processor MCM module 1 at location M16
- The processor MCM module 2 at location M11

After each FRU is exchanged, is the error code that sent you to this procedure still reported?

- **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
- **Yes:** Replace the next FRU on the list. If all FRUs on the list have been replaced, call your next level of support.

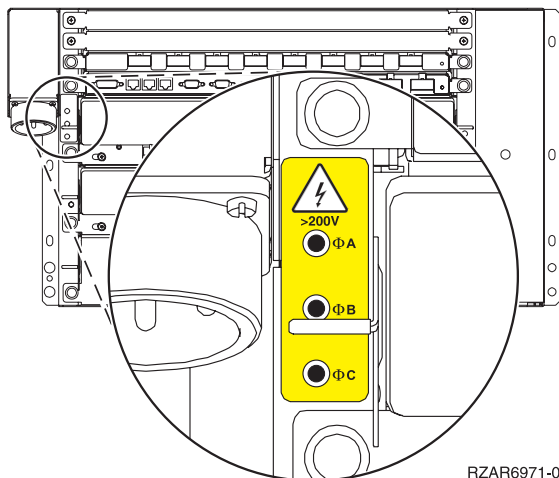
## MAPPWR-7: There is a bulk power assembly (BPA) communication failure

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Press the (green) **Start service** button. Wait 30 seconds. Press the (white) **Service complete** button. Is the error code that sent you to this procedure still reported?
  - **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
2. Check the position of the on/off switch on the BPRs. Is the switch in the ON position (to the left)?
  - **Yes:** Continue with the next step.
  - **No:** Set the switch to the ON position (to the left), and press the (white) **Service Complete** button. See Verify the repair.  
**This ends the procedure.**
3. Perform the following:
  - a. Prepare a multimeter to measure up to 600 V ac.
  - b. Use the multimeter to measure the ac voltage at the following test points on the face plate of the BPA that is **not** referenced by the error code that sent you to this procedure:

**Figure 1. Measuring the ac voltage**



- Phase A and phase B
- Phase B and phase C
- Phase C and phase A

Are all the readings greater than 180 V ac?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time:



- BPR 1 on the other side not referenced by the error code that sent you to this procedure. See symbolic FRU “BPRPWR” on page 288.
- If installed, BPR 2 on the other side not referenced by the error code that sent you to this procedure.
- BPCPWR on the other side not referenced by the error code that sent you to this procedure. See symbolic FRU “BPCPWR” on page 287.
- Bulk power enclosure (BPE) on the other side not referenced by the error code that sent you to this procedure. See Bulk power enclosure assembly - Models 870 and 890 for the part number and a link to the remove and replace procedure.

After each FRU is exchanged, is the error code that sent you to this procedure still reported?

- **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
  - **Yes:** Replace the next FRU on the list. If all FRUs on the list have been replaced, call your next level of support.
4. Inform the customer that the line voltage into the bulk power assembly (BPA) is missing or too low, and needs to be checked.  
Can the line voltage be checked now?
    - **No:** Defer this repair until the customer’s utility can check the line voltage.  
**This ends the procedure.**
    - **Yes:** Continue with the next step.
  5. Does the customer utility voltage check out okay?
    - **No:** The customer must restore utility voltage.  
**This ends the procedure.**
    - **Yes:** Exchange the line cord, and continue with the next step.
  6. Press the (white) **Service complete** button. Is the error code that sent you to this procedure still reported?
    - **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
    - **Yes:** Call your next level of support.  
**This ends the procedure.**

## **MAPPWR-8: Loss of ac power or phase missing**

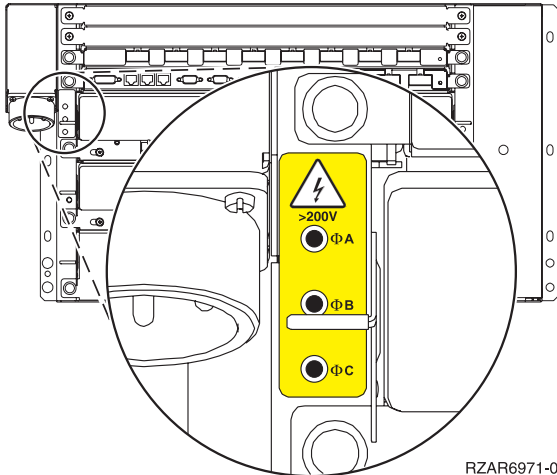
*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Check the position of the on/off switch on the BPRs. Is the switch in the ON position (to the left)?
  - **Yes:** Continue with the next step.
  - **No:** Set the switch to the ON position (to the left), and press the (white) **Service Complete** button. Then, go to Verify the repair.  
**This ends the procedure.**
2. Press the (white) **Service Complete** button. Is the error code that sent you to this procedure still reported?
  - **No:** This was a transient condition. The condition no longer exists. No service action is required.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
3. Check all LEDs on the bulk power assembly (BPA) that is not referenced by the error code that sent you to this procedure. Are they okay?
  - **No:** Defer this repair until the failure on the other BPA can be repaired.  
**This ends the procedure.**

- **Yes:** Continue with the next step.
4. Perform the following steps:
- Prepare a multimeter to measure up to 600 V ac.
  - Use the multimeter to measure the ac voltage at the following test points on the faceplate of the BPA that is referenced by the error code that sent you to this procedure:

**Figure 1. Measuring the ac voltage**



- Phase A and phase B
- Phase B and phase C
- Phase C and phase A

Are all the readings greater than 180 V ac?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time:
  - BPR 1 on the side referenced by the error code that sent you to this procedure.
  - BPR 2 on the side referenced by the error code that sent you to this procedure.
  - BPR 3 (as installed) on the side referenced by the error code that sent you to this procedure.  
**Note:** For BPR 1, 2, and 3: See symbolic FRU “BPRPWR” on page 288.
  - BPC on the side referenced by the error code that sent you to this procedure. See symbolic FRU “BPCPWR” on page 287.
  - Bulk power enclosure on the side referenced by the error code that sent you to this procedure. See Bulk power enclosure assembly - Models 870 and 890 for the part number and a link to the remove and replace procedure.

After each FRU is exchanged, is the error code that sent you to this procedure still reported?

- **No:** The problem has been corrected. See Verify the repair.  
**This ends the procedure.**
- **Yes:** Replace the next FRU on the list. If all FRUs on the list have been replaced, call your next level of support.

5. Inform the customer that the line voltage into the BPA is missing or too low, and must be checked. Can the line voltage be checked now?
- **No:** Defer this repair until the customer’s utility can check the line voltage.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
6. Does the customer utility voltage check out okay?
- **No:** The customer must restore utility voltage.  
**This ends the procedure.**

- **Yes:** Exchange the line cord, and Continue with the next step.
7. Press the (white) **Service Complete** button. Is error code that sent you to this procedure still reported?
- **No:** The problem has been corrected. See Verify the repair.  
**This ends the procedure.**
  - **Yes:** Call your next level of support.  
**This ends the procedure.**

## **MAPPWR-9: 2.5 V current/voltage problem in processor subsystem**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Record the error code and location codes that sent you to this procedure.
2. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
3. Are all amber logic-power LEDs of all installed processor subsystem DC converter assemblies (DCAs) off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See “DCAPWR” on page 324.
4. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks:
  - Memory book 0 at location M18
  - Memory book 1 at location M24
  - Memory book 2 at location M07
  - Memory book 3 at location M02
5. Power on the system. See Power on/off the system and logical partitions.
6. Did the system stop with the same error code as recorded in step 1 (**See page 375**)?
  - **Yes:** Go to step 12 (**See page 375**).
  - **No:** Continue with the next step.
7. One of the books just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
8. Reinsert one of the books that is pulled out and listed in step 4 (**See page 375**).
9. Power on the system. See Power on/off the system and logical partitions.
10. Did the system stop with the same error code as recorded in step 1 (**See page 375**)?
  - **Yes:** The book just reinserted is defective. Replace it and return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
11. Have all the books listed in step 4 (**See page 375**) been reinserted?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 8 (**See page 375**).
12. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
13. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?

- **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
14. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks:
    - Memory book 4 at location M25
    - Memory book 5 at location M08
    - Memory book 6 at location M01
    - Memory book 7 at location M17
  15. Power on the system. See Power on/off the system and logical partitions.
  16. Did the system stop with the same error code as recorded in step 1 (**See page 375**)?
    - **Yes:** Go to step 22 (**See page 376**).
    - **No:** Continue with the next step.
  17. One of the books just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  18. Reinsert one of the books that is pulled out and listed in step 14 (**See page 376**).
  19. Power on the system. See Power on/off the system and logical partitions.
  20. Did the system stop with the same error code as recorded in step 1 (**See page 375**)?
    - **Yes:** The book just reinserted is defective. Replace it and return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  21. Have all the books listed in step 14 (**See page 376**) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 18 (**See page 376**).
  22. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  23. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  24. Pull out the following cards about 25 mm (1 inch), if present. See Models 870 and 890 - Network interface controller (NIC) card or Models 870 and 890 - Capacitor books and blanks:
    - Network interface controller (NIC) card at location M30
    - Network interface controller (NIC) card at location M39
    - Network interface controller (NIC) card at location M40
    - Primary network interface controller (NIC) card at location M41
    - Capacitor book at location M33
    - Capacitor book at location M37
  25. Power on the system. See Power on/off the system and logical partitions.
  26. Did the system stop with the same error code as recorded in step 1 (**See page 375**)?
    - **Yes:** Go to step 32 (**See page 377**).
    - **No:** Continue with the next step.
  27. One of the books just removed is defective.

- a. Power off the system. See Power on/off the system and logical partitions.
- b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
28. Reinsert one of the books that is pulled out and listed in step 24 (See page 376).
29. Power on the system. See Power on/off the system and logical partitions.
30. Did the system stop with the same error code as recorded in step 1 (See page 375)?
  - **Yes:** The book just reinserted is defective. Replace it and return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
31. Have all the books listed in step 24 (See page 376) been reinserted?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 28 (See page 377).
32. Power off the system. See Power on/off the system and logical partitions). Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
33. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
34. Replace the cards or books in the following list, if present, one at a time and in the order listed. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower for a link to the part number and remove and replace procedure:
  - a. DCA 1-RH at location M31
  - b. DCA 2-RH at location M32
  - c. DCA 3-RH at location M34
  - d. DCA 4-RH at location M35
  - e. DCA 5-RH at location M36
35. Power on the system. See Power on/off the system and logical partitions.
36. Did the system stop with the same error code as recorded in step 1 (See page 375)?
  - **Yes:** Continue with the next step.
  - **No:** The book just replaced is defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
37. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
38. Remove the new book that was just installed in step 34 (See page 377) and reinstall the original book.
39. Have all the books listed in step 34 (See page 377) been replaced with new or original books?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 34 (See page 377).
40. Examine the amber logic-power LEDs of all installed processor subsystem DCAs.
41. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
42. **Attention:** Before replacing the system backplane, call your next level of support.

Replace the system backplane at location M1. See Models 870 and 890 - System unit backplane (MB1).

43. Power on the system. See Power on/off the system and logical partitions.
44. Did the system stop with the same error code as recorded in step 1 (See page 375)?
  - **Yes:** Continue with the next step.
  - **No:** The system backplane was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
45. Power off the system. See Power on/off the system and logical partitions). Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
46. Has the system backplane been replaced?
  - **Yes:** Call your next level of support.
  - **No:** Go to step 42 (See page 377).

### **MAPPWR-A: 1.8 V current/voltage problem in processor subsystem**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. For future reference, record the error code in the operator panel display.
2. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
3. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
4. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks:
  - Memory book 0 at location M18
  - Memory book 1 at location M24
  - Memory book 2 at location M07
  - Memory book 3 at location M02
5. Power on the system. See Power on/off the system and logical partitions.
6. Did the system stop with the same error code as recorded in step 1 (See page 378)?
  - **Yes:** Go to step 12 (See page 379).
  - **No:** Continue with the next step.
7. One of the books just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
8. Reinsert one of the books that is pulled out and listed in step 4 (See page 378).
9. Power on the system. See Power on/off the system and logical partitions.
10. Did the system stop with the same error code as recorded in step 1 (See page 378)?
  - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
11. Have all the books listed in step 4 (See page 378) been reinserted?

- **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 8 (See page 378).
12. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  13. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  14. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks:
    - Memory book 4 at location M25
    - Memory book 5 at location M08
    - Memory book 6 at location M01
    - Memory book 7 at location M17
  15. Power on the system. See Power on/off the system and logical partitions.
  16. Did the system stop with the same error code as recorded in step 1 (See page 378)?
    - **Yes:** Go to step 22 (See page 379).
    - **No:** Continue with the next step.
  17. One of the books just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  18. Reinsert one of the books that is pulled out and listed in step 14 (See page 379).
  19. Power on the system. See Power on/off the system and logical partitions.
  20. Did the system stop with the same error code as recorded in step 1 (See page 378)?
    - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  21. Have all the books listed in step 14 (See page 379) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 18 (See page 379).
  22. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  23. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  24. Pull out the following cards or books about 25 mm (1 inch), if present. See Models 870 and 890 - Network interface controller (NIC) card or Models 870 and 890 - Capacitor books and blanks:
    - Secondary network interface controller (NIC) card at location M30
    - Third network interface controller (NIC) card at location M39
    - Fourth network interface controller (NIC) card at location M40
    - Primary network interface controller (NIC) card at location M41

- Capacitor book at location M33
  - Capacitor book at location M37
25. Power on the system. See Power on/off the system and logical partitions.
  26. Did the system stop with the same error code as recorded in step 1 (See page 378)?
    - **Yes:** Go to step 32 (See page 380).
    - **No:** Continue with the next step.
  27. One of the books just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  28. Reinsert one of the books that is pulled out and listed in step 24 (See page 379).
  29. Power on the system. See Power on/off the system and logical partitions.
  30. Did the system stop with the same error code as recorded in step 1 (See page 378)?
    - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  31. Have all the books listed in step 24 (See page 379) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 28 (See page 380).
  32. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  33. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  34. Replace the books in the following, if present, one at a time and in the order listed:
    - a. DCA 1-RH at location M31.
    - b. DCA 2-RH at location M32
    - c. DCA 3-RH at location M34
    - d. DCA 4-RH at location M35
    - e. DCA 5-RH at location M36

**Note:** For DCA 1, 2, 3, 4, and 5: See symbolic FRU “DCAPWR” on page 324.
  35. Power on the system. See Power on/off the system and logical partitions.
  36. Did the system stop with the same error code as recorded in step 1 (See page 378)?
    - **Yes:** Continue with the next step.
    - **No:** The book just replaced was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  37. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  38. Remove the new book that was just installed in step 34 (See page 380) and reinstall the original book.
  39. Have all the books listed in step 34 (See page 380) been replaced with new or original books?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 34 (See page 380).



40. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
41. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
42. Record the location of each installed L3 module.

**Attention:** L3 modules have a limit of three plug cycles. Before removing any of the L3 modules in the following list, call your next level of support.

Remove all of the following modules, if present. See Models 870 and 890 - L3 modules:

  - L3 module at location M03
  - L3 module at location M04
  - L3 module at location M05
  - L3 module at location M06
  - L3 module at location M09
  - L3 module at location M10
  - L3 module at location M12
  - L3 module at location M13
  - L3 module at location M19
  - L3 module at location M20
  - L3 module at location M22
  - L3 module at location M23
  - L3 module at location M26
  - L3 module at location M27
  - L3 module at location M28
  - L3 module at location M29
  - Clock card at location M15 (see Models 870 and 890 - System clock card)
43. Power on the system. See Power on/off the system and logical partitions.
44. Did the system stop with the same error code as recorded in step 1 (**See page 378**)?
  - **Yes:** Go to step 50 (**See page 382**).
  - **No:** Continue with the next step.
45. One of the modules just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
46. Reinstall one of the modules that is removed and listed in step 42 (**See page 381**).
47. Power on the system. See Power on/off the system and logical partitions.
48. Did the system stop with the same error code as recorded in step 1 (**See page 378**)?
  - **Yes:** The module just replaced was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
49. Have all the modules listed in step 42 (**See page 381**) been reinstalled?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 45 (**See page 381**).

50. Examine the amber logic-power LEDs of all installed processor subsystem DCAs.
51. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
52. **Attention:** Before replacing the system backplane, call your next level of support.  
Replace the system backplane at location M1.
53. Power on the system. See Power on/off the system and logical partitions.
54. Did the system stop with the same error code as recorded in step 1 (**See page 378**)?
  - **Yes:** Continue with the next step.
  - **No:** The system backplane was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
55. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
56. Has the system backplane been replaced?
  - **Yes:** Call your next level of support.
  - **No:** Go to step 52 (**See page 382**).

## **MAPPWR-B: 1.5 V auxiliary current/voltage problem in processor subsystem**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Record the error code and the location codes that sent you to this procedure.
2. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
3. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
4. Pull out the following books about 25 mm (1 inch), if present (see Models 870 and 890 - Memory books and memory blanks):
  - Memory book 0 at location M18
  - Memory book 1 at location M24
  - Memory book 2 at location M07
  - Memory book 3 at location M02
5. Power on the system. See Power on/off the system and logical partitions.
6. Did the system stop with the same error code as recorded in step 1 (**See page 382**)?
  - **Yes:** Go to step 12 (**See page 383**).
  - **No:** Continue with the next step.
7. One of the books just removed is defective.
  - Power off the system. See Power on/off the system and logical partitions.
  - Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
8. Reinsert one of the books that is pulled out and listed in step 4 (**See page 382**).
9. Power on the system. See Power on/off the system and logical partitions.
10. Did the system stop with the same error code as recorded in step 1 (**See page 382**)?

- **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
11. Have all the books listed in step 4 (**See page 382**) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 8 (**See page 382**).
  12. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  13. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  14. Pull out the following books about 25 mm (1 inch), if present:
    - Memory book 4 at location M25
    - Memory book 5 at location M08
    - Memory book 6 at location M01
    - Memory book 7 at location M17
  15. Power on the system. See Power on/off the system and logical partitions.
  16. Did the system stop with the same error code as recorded in step 1 (**See page 382**)?
    - **Yes:** Go to step 22 (**See page 383**).
    - **No:** Continue with the next step.
  17. One of the books just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  18. Reinsert one of the books that is pulled out and listed in step 14 (**See page 383**).
  19. Power on the system. See Power on/off the system and logical partitions.
  20. Did the system stop with the same error code as recorded in step 1 (**See page 382**)?
    - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  21. Have all the books listed in step 14 (**See page 383**) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 18 (**See page 383**).
  22. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  23. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  24. Pull out the following cards or books about 25 mm (1 inch), if present:
    - Secondary network interface controller (NIC) card at location M30

- Third network interface controller (NIC) card at location M39
  - Fourth network interface controller (NIC) card at location M40
  - Primary network interface controller (NIC) card at location M41
  - Capacitor book at location M33
  - Capacitor book at location M37
25. Power on the system. See Power on/off the system and logical partitions.
  26. Did the system stop with the same error code as recorded in step 1 (See page 382)?
    - **Yes:** Go to step 32 (See page 384).
    - **No:** Continue with the next step.
  27. One of the books just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  28. Reinsert one of the books that is pulled out and listed in step 24 (See page 383).
  29. Power on the system. See Power on/off the system and logical partitions.
  30. Did the system stop with the same error code as recorded in step 1 (See page 382)?
    - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  31. Have all the books listed in step 24 (See page 383) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 28 (See page 384).
  32. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  33. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  34. Replace the books in the following list, if present, one at a time and in the order listed:
    - a. DCA 1-RH at location M31
    - b. DCA 2-RH at location M32
    - c. DCA 3-RH at location M34
    - d. DCA 4-RH at location M35
    - e. DCA 5-RH at location M36
  35. Power on the system. See Power on/off the system and logical partitions.
  36. Did the system stop with the same error code as recorded in step 1 (See page 382)?
    - **Yes:** Continue with the next step.
    - **No:** The book just replaced was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  37. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  38. Remove the new book that was just installed in step 34 (See page 384) and reinstall the original book.
  39. Have all the books listed in step 34 (See page 384) been replaced with new or original books?

- **Yes:** Continue with the next step.
  - **No:** Go to step **34 (See page 384)**.
40. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
41. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
- **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
42. Record the location of each installed L3 module.
- Attention:** L3 modules have a limit of three plug cycles. Before removing any of the L3s in the following list, call your next level of support.
- Remove all of the following modules, if present:
- L3 module at location M03
  - L3 module at location M04
  - L3 module at location M05
  - L3 module at location M06
  - L3 module at location M09
  - L3 module at location M10
  - L3 module at location M12
  - L3 module at location M13
  - L3 module at location M19
  - L3 module at location M20
  - L3 module at location M22
  - L3 module at location M23
  - L3 module at location M26
  - L3 module at location M27
  - L3 module at location M28
  - L3 module at location M29
43. Power on the system. See Power on/off the system and logical partitions.
44. Did the system stop with the same error code as recorded in step **1 (See page 382)**?
- **Yes:** Go to step **50 (See page 386)**.
  - **No:** Continue with the next step.
45. One of the modules just removed is defective.
- a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
46. Reinstall one of the L3 modules that is removed and listed in step **42 (See page 385)**.
47. Power on the system. See Power on/off the system and logical partitions.
48. Did the system stop with the same error code as recorded in step **1 (See page 382)**?
- **Yes:** The module just replaced is defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
49. Have all the modules listed in step **42 (See page 385)** been reinstalled?
- **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**

- **No:** Go to step **45 (See page 385)**.
50. Examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  51. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  52. **Attention:** Before replacing the system backplane, call your next level of support.  
Replace the system backplane at location M1.
  53. Power on the system. See Power on/off the system and logical partitions.
  54. Did the system stop with the same error code as recorded in step **1 (See page 382)**?
    - **Yes:** Continue with the next step.
    - **No:** The system backplane was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  55. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  56. Has the system backplane been replaced?
    - **Yes:** Call your next level of support.
    - **No:** Go to step **52 (See page 386)**.

### **MAPPWR-C: 1.5 V CPU current/voltage problem in processor subsystem**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Record the error code and the location codes that sent you to this procedure.
2. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
3. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
4. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Capacitor books and blanks.
  - Capacitor book at location M33
  - Capacitor book at location M37
5. Power on the system. See Power on/off the system and logical partitions.
6. Did the system stop with the same error code as recorded in step **1 (See page 386)**?
  - **Yes:** Go to step **12 (See page 387)**.
  - **No:** Continue with the next step.
7. One of the books just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
8. Reinsert one of the books that is pulled out and listed in step **4 (See page 386)**.
9. Power on the system. See Power on/off the system and logical partitions.
10. Did the system stop with the same error code as recorded in step **1 (See page 386)**?

- **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
11. Have all the books listed in step 4 (**See page 386**) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 8 (**See page 386**).
  12. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  13. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  14. Replace one of the books in the following list, if present, one at a time and in the listed order with a new book. See symbolic FRU “DCAPWR” on page 324.
    - a. DCA 1 at location M31
    - b. DCA 2 at location M32
    - c. DCA 3 at location M34
    - d. DCA 4 at location M35
    - e. DCA 5 at location M36
  15. Power on the system. See Power on/off the system and logical partitions.
  16. Did the system stop with the same error code as recorded in step 1 (**See page 386**)?
    - **Yes:** Continue with the next step.
    - **No:** The book just replaced is defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  17. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  18. Remove the new book that was just installed in step 14 (**See page 387**) and reinstall the original book.
  19. Have all the books listed in step 14 (**See page 387**) been replaced with new or original books?
    - **Yes:** Continue with the next step.
    - **No:** Go to step 14 (**See page 387**).
  20. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  21. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  22. **Attention:** Before you remove or replace an MCM module, stop, read, and understand the Testing MCMs and passthru modules for a short circuit procedure.  
**Attention:** MCM modules have a limit of three plug cycles. Before replacing any of the MCMs in the following list, call your next level of support. Record the original location on each MCM. Remove the following MCM modules, if present. See the Models 870 and 890 - MCM module (processor) and pass-through modules remove and replace procedure.
    - MCM module 0 at location M21

- MCM module 3 at location M14
  - MCM module 1 at location M16
  - MCM module 2 at location M11
23. Power on the system. See Power on/off the system and logical partitions.
  24. Did the system stop with the same error code as recorded in step 1 (See page 386)?
    - **Yes:** Go to step 30 (See page 388).
    - **No:** Continue with the next step.
  25. One of the modules just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  26. **Attention:** Before you remove or replace an MCM module, stop, read, and understand the Testing MCMs and passthru modules for a short circuit procedure.  
**Attention:** MCM modules have a limit of three plug cycles. Before replacing any of the MCMs in the following list, call your next level of support.  
 Reinstall one of the MCM modules that is removed and listed in step 22 (See page 387).
  27. Power on the system. See Power on/off the system and logical partitions.
  28. Did the system stop with the same error code as recorded in step 1 (See page 386)?
    - **Yes:** The module just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  29. Have all the modules listed in step 22 (See page 387) been reinstalled?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 25 (See page 388).
  30. Examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  31. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  32. **Attention:** Before replacing the system backplane, call your next level of support.  
 Replace the system backplane at location M1.
  33. Power on the system. See Power on/off the system and logical partitions.
  34. Did the system stop with the same error code as recorded in step 1 (See page 386)?
    - **Yes:** Continue with the next step.
    - **No:** The system backplane was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  35. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  36. Has the system backplane been replaced?
    - **Yes:** Call your next level of support.
    - **No:** Go to step 32 (See page 388).

### **MAPPWR-D: 3.3 V current/voltage problem in processor subsystem**

*For use by authorized service providers.*



**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Record the error code and the location codes that sent you to this procedure.
2. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
3. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
4. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks.
  - Memory book 0 at location M18
  - Memory book 1 at location M24
  - Memory book 2 at location M07
  - Memory book 3 at location M02
5. Power on the system. See Power on/off the system and logical partitions.
6. Did the system stop with the same error code as recorded in step 1 (**See page 389**)?
  - **Yes:** Go to step 12 (**See page 389**).
  - **No:** Continue with the next step.
7. One of the books just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
8. Reinsert one of the books that is pulled out and listed in step 4 (**See page 389**).
9. Power on the system. See Power on/off the system and logical partitions.
10. Did the system stop with the same error code as recorded in step 1 (**See page 389**)?
  - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
11. Have all the books listed in step 4 (**See page 389**) been reinserted?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 8 (**See page 389**).
12. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
13. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
14. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks.
  - Memory book 4 at location M25
  - Memory book 5 at location M08
  - Memory book 6 at location M01
  - Memory book 7 at location M17
15. Power on the system. See Power on/off the system and logical partitions.

16. Did the system stop with the same error code as recorded in step 1 (See page 389)?
  - **Yes:** Go to step 22 (See page 390).
  - **No:** Continue with the next step.
17. One of the books just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
18. Reinsert one of the books that is pulled out and listed in step 14 (See page 389).
19. Power on the system. See Power on/off the system and logical partitions.
20. Did the system stop with the same error code as recorded in step 1 (See page 389)?
  - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
21. Have all the books listed in step 14 (See page 389) been reinserted?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 18 (See page 390).
22. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
23. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
24. Pull out the following books about 25 mm (1 inch), if present. Models 870 and 890 - Network interface controller (NIC) card.
  - Secondary network interface controller (NIC) card at location M30
  - Third network interface controller (NIC) card at location M39
  - Fourth network interface controller (NIC) card at location M40
  - Primary network interface controller (NIC) card at location M41
25. Power on the system. See Power on/off the system and logical partitions.
26. Did the system stop with the same error code as recorded in step 1 (See page 389)?
  - **Yes:** Go to step 32 (See page 391).
  - **No:** Continue with the next step.
27. One of the books just removed is defective.
  - Power off the system. See Power on/off the system and logical partitions.
  - Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
28. Reinsert one book that was pulled out and listed in step 24 (See page 390).
29. Power on the system. See Power on/off the system and logical partitions.
30. Did the system stop with the same error code as recorded in step 1 (See page 389)?
  - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
31. Have all the books listed in step 24 (See page 390) been reinserted?

- **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step **28 (See page 390)**.
32. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  33. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  34. Replace the books in the following list, if present, one at a time and in the order listed with a new book. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower for part number and remove and replace information.
  35.
    - a. DCA 1-RH at location M31
    - b. DCA 2-RH at location M32
    - c. DCA 3-RH at location M34
    - d. DCA 4-RH at location M35
    - e. DCA 5-RH at location M36
  36. Power on the system. See Power on/off the system and logical partitions.
  37. Did the system stop with the same error code as recorded in step **1 (See page 389)**?
    - **Yes:** Continue with the next step.
    - **No:** The book just replaced was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  38. Turn off the power See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  39. Remove the new book that was just installed in step **34 (See page 391)** and reinstall the original book.
  40. Have all the books listed in step **34 (See page 391)** been replaced with new or original books?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **34 (See page 391)**.
  41. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  42. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  43. Remove the system clock card at location M15.
  44. Power on the system. See Power on/off the system and logical partitions.
  45. Did the system stop with the same error code as recorded in step **1 (See page 389)**?
    - **Yes:** Go to step **50 (See page 392)**.
    - **No:** Continue with the next step.
  46. The system clock card may be defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  47. Reinstall the system clock card that you removed in step **42 (See page 391)**.

48. Power on the system. See Power on/off the system and logical partitions.
49. Did the system stop with the same error code as recorded in step 1 (See page 389)?
  - **Yes:** The system clock card just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
50. Have all the modules listed in step 42 (See page 391) been reinstalled?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 45 (See page 391).
51. Examine the amber logic-power LEDs of all installed processor subsystem DCAs.
52. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
53. **Attention:** Before replacing the system backplane, call your next level of support.  
Replace the system backplane at location M1.
54. Power on the system. See Power on/off the system and logical partitions.
55. Did the system stop with the same error code as recorded in step 1 (See page 389)?
  - **Yes:** Continue with the next step.
  - **No:** The system backplane was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
56. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
57. Has the system backplane been replaced?
  - **Yes:** Call your next level of support.
  - **No:** Go to step 52 (See page 392).

## **MAPPWR-E: 5.0 V current/voltage problem in processor subsystem**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. For future reference, record the error code and the location codes that sent you to this procedure.
2. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
3. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
4. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks.
  - Memory book 0 at location M18
  - Memory book 1 at location M24
  - Memory book 2 at location M07
  - Memory book 3 at location M02

5. Power on the system. See Power on/off the system and logical partitions.
6. Did the system stop with the same error code as recorded in step 1 (See page 392)?
  - **Yes:** Go to step 12 (See page 393).
  - **No:** Continue with the next step.
7. One of the books just removed is defective.
  - Power off the system. See Power on/off the system and logical partitions.
  - Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
8. Reinsert one of the books that is pulled out and listed in step 4 (See page 392).
9. Power on the system. See Power on/off the system and logical partitions.
10. Did the system stop with the same error code as recorded in step 1 (See page 392)?
  - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
11. Have all the books listed in step 4 (See page 392) been reinserted?
  - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 8 (See page 393).
12. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
13. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
14. Pull out the following books about 25 mm (1 inch), if present. See Models 870 and 890 - Memory books and memory blanks.
  - Memory book 4 at location M25
  - Memory book 5 at location M08
  - Memory book 6 at location M01
  - Memory book 7 at location M17
15. Power on the system. See Power on/off the system and logical partitions.
16. Did the system stop with the same error code as recorded in step 1 (See page 392)?
  - **Yes:** Go to step 22 (See page 394).
  - **No:** Continue with the next step.
17. One of the books just removed is defective.
  - a. Power off the system. See Power on/off the system and logical partitions.
  - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
18. Reinsert one of the books that is pulled out and listed in step 14 (See page 393).
19. Power on the system. See Power on/off the system and logical partitions.
20. Did the system stop with the same error code as recorded in step 1 (See page 392)?
  - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Continue with the next step.
21. Have all the books listed in step 14 (See page 393) been reinserted?

- **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
  - **No:** Go to step 18 (See page 393).
22. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  23. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  24. Pull out the following cards or books about 25 mm (1 inch), if present. See Models 870 and 890 - Network interface controller (NIC) card Or Models 870 and 890 - Capacitor books and blanks.
    - Secondary network interface controller (NIC) card at location M30
    - Third network interface controller (NIC) card at location M39
    - Fourth network interface controller (NIC) card at location M40
    - Primary network interface controller (NIC) card at location M41
    - Capacitor card at location M33
    - Capacitor card at location M37
  25. Power on the system. See Power on/off the system and logical partitions.
  26. Did the system stop with the same error code as recorded in step 1 (See page 392)?
    - **Yes:** Go to step 32 (See page 394).
    - **No:** Continue with the next step.
  27. One of the books just removed is defective.
    - a. Power off the system. See Power on/off the system and logical partitions.
    - b. Make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
  28. Reinsert one of the books that is pulled out and listed in step 24 (See page 394).
  29. Power on the system. See Power on/off the system and logical partitions.
  30. Did the system stop with the same error code as recorded in step 1 (See page 392)?
    - **Yes:** The book just reinserted is defective. Replace it. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Continue with the next step.
  31. Have all the books listed in step 24 (See page 394) been reinserted?
    - **Yes:** The symptom has changed. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
    - **No:** Go to step 28 (See page 394).
  32. Power off the system. See Power on/off the system and logical partitions. Then, examine the amber logic-power LEDs of all installed processor subsystem DCAs.
  33. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
    - **Yes:** Continue with the next step.
    - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
  34. Replace the books in the following list, if present, one at a time and in the order listed. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower for part number and remove and replace information.
    - a. DCA 1-RH at location M31

- b. DCA 2-RH at location M32
- 35. Power on the system. See Power on/off the system and logical partitions.
- 36. Did the system stop with the same error code as recorded in step 1 (See page 392)?
  - **Yes:** Continue with the next step.
  - **No:** The book just replaced was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
- 37. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
- 38. Remove the new book that was just installed in step 34 (See page 394) and reinstall the original book.
- 39. Have all the books listed in step 34 (See page 394) been replaced with new or original books?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 34 (See page 394).
- 40. Examine the amber logic-power LEDs of all installed processor subsystem DCAs.
- 41. Are all amber logic-power LEDs of all installed processor subsystem DCAs off?
  - **Yes:** Continue with the next step.
  - **No:** Replace the DCA that has the amber logic power LED that did not turn off. See symbolic FRU “DCAPWR” on page 324.
- 42. **Attention:** Before replacing the system backplane, call your next level of support. Then, replace the system backplane at location MB1. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower for part number and remove and replace information.
- 43. Power on the system. See Power on/off the system and logical partitions.
- 44. Did the system stop with the same error code as recorded in step 1 (See page 392)?
  - **Yes:** Continue with the next step.
  - **No:** The system backplane was defective. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
- 45. Power off the system. See Power on/off the system and logical partitions. Then, make sure all amber logic-power LEDs of all installed processor subsystem DCAs are off.
- 46. Has the system backplane been replaced?
  - **Yes:** Call your next level of support.
  - **No:** Go to step 42 (See page 395).

## MAPPWR-F: Cable problem in power subsystem

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

**Important:** Always ensure that the opposite side cable for the unit that you are replacing is connected correctly before attempting concurrent maintenance.

1. Find the error code and in the table below that sent you to this procedure. Record the associated FRUs listed in the Action column.

**Table 1. Error codes**

Error code	Action
1xxA x115	BPC-A MDA-1 BPC-A-J04 to MDA-1-J01 cable

<b>Error code</b>	<b>Action</b>
1xxA x215	BPC-A MDA-2 BPC-A-J05 to MDA-2-J01 cable
1xxA x315	BPC-A MDA-3 BPC-A-J06 to MDA-3-J01 cable
1xxA x415	BPC-A MDA-4 BPC-A-J07 to MDA-4-J01 cable
1xxA x515	BPC-A DCA-1 BPC-A-J08 to DCA-1-J00 cable
1xxA x615	BPC-A DCA-2 BPC-A-J09 to to DCA-2-J00 cable
1xxA x715	BPC-A DCA-3 BPC-A-J09 to DCA-3-J00 cable
1xxA x925	BPD-1A DCA-4 BPD-1A-J08 to DCA-4-J00 cable
1xxA xA25	BPD-1A DCA-5 BPD-1A-J09 to DCA-5-J00 cable
1xxB x115	BPC-B MDA-1 BPC-B-J04 to MDA-1-J02 cable
1xxB x215	BPC-B MDA-2 BPC-B-J05 to MDA-2-J02 cable
1xxB x315	BPC-B MDA-3 BPC-B-J06 to MDA-3-J02 cable
1xxB x415	BPC-B MDA-4 BPC-B-J07 to MDA-4-J02 cable
1xxB x515	BPC-B DCA-1 BPC-B-J08 to DCA-1-J01 cable
1xxB x615	BPC-B DCA-2 BPC-B-J09 to DCA-2-J01 cable
1xxB x715	BPC-B DCA-3 BPC-B-J10 to DCA-3-J01 cable
1xxB x925	BPD-1B DCA-4 BPD-1B-J08 to DCA-4-J01 cable
1xxB xA25	BPD-1B DCA-5 BPD-1B-J09 to DCA-5-J01 cable



2. Press the (green) **Start Service** button on the panel with the UEPO switch.
3. From the action column for the error code recorded in step 1 (**See page 395**), find the FRUs located at both ends of the suspect power cable.
4. Examine both ends of the power cable and make sure each end is properly connected and fully seated.
5. Is the power cable properly connected and seated fully at both ends?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 11 (**See page 397**).
6. Have you replaced the first FRU in the list of FRUs recorded in step 1 (**See page 395**) in a previous service action?
  - **Yes:** Go to step 16 (**See page 397**) .
  - **No:** Continue with the next step.
7. Replace the first FRU in the list of FRUs recorded in step 1 (**See page 395**). See either symbolic FRU “BPCPWR” on page 287 or “BPD PWR” on page 287.
8. Does the error code recorded in step 1 (**See page 395**) reappear?
  - **Yes:** Continue with the next step.
  - **No:** The problem has been corrected. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
9. Remove the new FRU that was just installed in step 7 (**See page 397**), and reinstall the original FRU.
10. Go to step 16 (**See page 397**).
11. Reseat and properly connect the power cable ends with location codes recorded in step 1 (**See page 395**).
12. Set the power on switches of all BPRs on the same side with the power cable that was not connected properly to the off (right) position.
13. Wait 30 seconds and then turn the power on switches of the BPRs found in step 12 (**See page 397**) to the on (left) position.
14. Press the (white) **Service Complete** button on the panel with the UEPO switch.
15. Does the error code recorded in step 1 (**See page 395**) reappear?
  - **Yes:** Go to step 2 (**See page 397**).
  - **No:** The problem has been corrected. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
16. Replace the second FRU in the list of FRUs recorded in step 1 (**See page 395**). See either symbolic FRU “DCAPWR” on page 324 or “MDAPWR” on page 400.
17. Does the error code recorded in step 1 (**See page 395**) reappear?
  - **Yes:** Continue with the next step.
  - **No:** The problem has been corrected. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**
18. Remove the new FRU that was just installed in step 16 (See page 397) and reinstall the original FRU.
19. Press the (green) **Start Service** button on the panel (with the UEPO switch). Replace the third FRU in the list of FRUs recorded in step 1 (**See page 395**).
20. Set the power switches of all BPRs, on the side reporting the failure, to the off position (to the right).
21. Wait 30 seconds, and then turn the BPRs power switches to the On position (to the left).
22. Press the (white) **Service Complete** button on the panel with the UEPO switch. Does the error code recorded in step 1 (**See page 395**) reappear?

- **Yes:** Call your next level of support.
- **No:** The problem has been corrected. Return the system to its original configuration. See Verify the repair.  
**This ends the procedure.**

## **MAPPWR-G: A UEPO panel fault has been detected**

*For use by authorized service providers.*

1. Is the SRC 1xxA-E206 or 1xxB-E206?
  - **No:** Go to step 4 (See page 398).
  - **Yes:** Continue with next step.
2. Is the room temperature at ambient (below 90 degrees fahrenheit)?
  - **No:** Inform the customer to correct the room temperature. When the room temperature has been corrected, press the **Service Complete** button on the EPO panel, and continue with next step.
  - **Yes:** Press the **Service Complete** button on the EPO panel and continue with next step.
3. Does the SRC 1xxA-E206 or 1xxB-E206 continue to prevail after the room temperature is below 90 degrees fahrenheit and the Service Complete button on the EPO panel has been reset?
  - **Yes:** Go to step 5 (See page 398).
  - **No:** The ambient room temperature has corrected the problem.  
**This ends the procedure.**
4. Check the unit emergency power off (UEPO) panel. Is the UEPO panel switch in the OFF position?
  - **No:** Go to step 5 (See page 398).
  - **Yes:** Switch the UEPO panel switch to the ON position. Go to Verify the repair.  
**This ends the procedure.**
5. Exchange the following FRUs one at a time:
  - UEPO card assembly. See the Final assembly - Models 870 and 890.
  - Cable from the UEPO to BPC on the side referenced by the error code that sent you to this procedure. See symbolic FRU "CBLPWR" on page 301.
  - Bulk power controller (BPC) on the side referenced by the error code that sent you to this procedure. See symbolic FRU "BPCPWR" on page 287.

After each FRU is exchanged, is the error code that sent you to this procedure still reported?

  - **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
  - **Yes:** Replace the next FRU on the list. If all FRUs on the list have been replaced, call your next level of support.  
**This ends the procedure.**

## **MAPPWR-H: An MCM fault has been detected**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the "MAPPWR" on page 364 introduction before performing this procedure.

1. Is the reference code 7E06 or 7F06?
  - **No:** Go to step 2 (See page 399).
  - **Yes:** Perform the following verifications, one at a time. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower
    - a. Verify that the processor MCMs are plugged in a valid configuration.
    - b. Verify that the processor MCMs are seated properly.
    - c. Verify the processor VPD cards in the primary I/O book are of the proper number and are positioned and seated correctly.

After each verification, is the error code that sent you to this procedure still reported?

- **No:** The problem has been corrected. Go to Verify the repair.  
This ends the procedure.
- **Yes:** Perform the next verification. If all verifications have been performed, call your next level of support.  
**This ends the procedure.**

2. Find the reference code in Table 1. MCM fault reference code to MCM index below to determine the MCM that is running over temperature. Perform the following verifications, one at a time:
  - a. Verify that the MCM is installed.
  - b. Verify that there are no airflow problems with the MCM or its heatsink.
  - c. Verify that the MCM is installed correctly onto the processor backplane.

After each verification, is the error code that sent you to this procedure still reported?

- **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
- **Yes:** Perform the next verification. If all verifications have been performed, call your next level of support.  
**This ends the procedure.**

**Table 1. MCM fault reference code to MCM index**

Reference code	MCM
0FB6, 7EB6, E1B6	MCM 0 at location M21
0FC6, 7EC6, E1C6	MCM 1 at location M16
0FD6, 7ED6, E1D6	MCM 2 at locations M11
0FE6, 7EE6, E1E6	MCM 3 at location M14

## **MAPPWR-J: There is a bulk power enclosure (BPE) communication failure**

*For use by authorized service providers.*

**Note:** Read the Danger and caution notices in the “MAPPWR” on page 364 introduction before performing this procedure.

1. Press the (green) **Start service** button. Wait 30 seconds. Press the (white) **Service complete** button.  
Is the error code that sent you to this procedure still reported?
  - **No:** The problem has been corrected. Go to Verify the repair.  
**This ends the procedure.**
  - **Yes:** Continue with the next step.
2. Exchange the Bulk power enclosure (BPE) on the side referenced by the error code that sent you to this procedure. See the Bulk power enclosure assembly - Models 870 and 890 page for the part number and a link to the remove and replace procedure.  
**This ends the procedure.**

## **MASBUS**

*For use by authorized service providers.*

MASBUS: multi-adapter bridge card location.

The multi-adapter bridge detected a problem with a physical card location that it controls. The problem is either in the bus between the multi-adapter bridge and the card slot, or with the card slot. The card location may or may not have an installed card.

1. If you are working from the Service Action Log and a card position is listed with this failing component, then that is where the error is located. Continue with the next step in this procedure. Otherwise, record

the bus number value, BBBB, in word 7 of the SRC, see “Breaking down the SRC” on page 63 (located in the Bus PIP Overview topic) for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing component. Record the frame or tower type.

2. The failing component is the FRU containing the logical card slot that is controlled by the multi-adapter bridge. Identify the system model, tower, expansion unit, or machine type that is indicated by the location in the SAL, or by using the bus number, BBBB. Using the information provided in the table below, exchange the FRU that is indicated.

**Table 1. Failing component service information for symbolic FRU MASBUS**

System model, tower, expansion unit, or machine type	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, location diagram, and removal and replace procedures)
Model 270 Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	System unit backplane	MB1	Use the Model 270 diagrams and tables by processor feature code and follow the locations diagram link or the FRU positions and failing components link for the processor feature code.
Models 800 and 810	System unit backplane	MB1	See Locations — Models 800 and 810
Model 820	System unit backplane	MB1	See Locations — Model 820
Model 825	System unit backplane	MB1	See Locations — Model 825
Models 830 and SB2 base I/O tower (FC 9074)	Tower card	CB1	See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower
Models 840 and SB3 base I/O tower (FC 9079)	Tower card	CB1	See Locations for FC 9079 base I/O tower (on Models 840, SB3 system unit)
Models 870 and 890	Tower card	CB1	See Locations — Models 870 and 890
FC 5074 expansion I/O tower	Tower card	CB1	See Locations — FC 5074 I/O tower
FC 5075 expansion I/O tower	Tower card	CB1	See Locations — FC 5075 I/O tower
FC 5078/0578 expansion I/O unit	Tower card	CB1	See Locations — FC 5078, 0578 expansion I/O unit
FC 5079 (1.8m expansion tower)	Tower card	CB1	See Locations — FC 5079 Expansion I/O Tower
FC 5088, FC 0588 Expansion I/O Unit	Tower card	CB1	See Locations — FC 5088, FC 0588 Expansion I/O Unit
FC 5095, FC 0595 Expansion I/O Tower	Tower card	CB1	See Locations — FC 5095, FC 0595 Expansion I/O Tower
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	See Locations — Integrated xSeries Adapter Card (IXA)

**This ends the procedure.**

## MDAPWR

*For use by authorized service providers.*

The Motor Drive Assembly (MDA) may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - MDA (air mover) controller remove and replace procedure.
3. See Type, model, and part number list for the part number.

**Note:** Before replacing any FRU's verify that all cables are seated correctly.

**Table 1: The MDA units for Models 870 and 890 system unit**

Unit Reference Code	MDA Unit
1xxC- xx71, xx73, xx77	MDA-F1
1xxC- xx81, xx83, xx87	MDA-F2
1xxC- xx91, xx93, xx97	MDA-F3
1xxC- xxA1, xxA3, xxA7	MDA-F4

**This ends the procedure.**

## MEDIA

*For use by authorized service providers.*

The drive or media may be dirty, or the media may be defective.

1. If optical media, clean the drive (for 6330 DVD-RAM see Type, model, and part number list for the cleaning kit).
2. If tape media, clean the recording head in the tape unit.
3. Attempt the failing operation again.

Does the operation complete successfully?

- **No:** Replace the media.  
**This ends the procedure.**
- **Yes:** The problem has been corrected.  
**This ends the procedure.**

## MEMCFG

*For use by authorized service providers.*

The system has encountered an invalid memory configuration.

For memory DIMM location information, refer to Memory locations and placement rules. For system location details, refer to the following.

- For Model 270: See Locations - Model 270
- For Models 800 and 810: See Locations - Models 800 and 810
- For Model 820: See Locations - Model 820
- For Model 825: See Locations - Model 825
- For Model 890: See Locations - Models 870 and 890

For Models 270, 800, 810, and 820, the most likely cause of the problem is that there are memory DIMMs on the system processor card and also memory DIMMs on a memory riser card. When a memory riser card is used with DIMM memory, no DIMMs are allowed on the processor card.

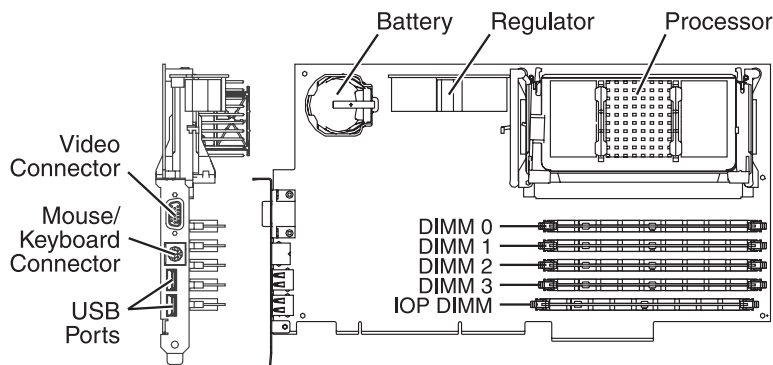
**This ends the procedure.**

## MEMORY

*For use by authorized service providers.*

Use this page to view memory and location information for the 2890 and 2892 Integrated xSeries<sup>(TM)</sup> Server (IXS) cards.

**Figure 1. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.**



RZAQ4500-1

**Memory for 2890 Integrated xSeries Server (IXS) card:** One of the Pentium<sup>(R)</sup> memory modules (DIMM 0, DIMM 1, DIMM 2, or DIMM 3) may be the failing item. See Type, model, and part number list for part numbers.

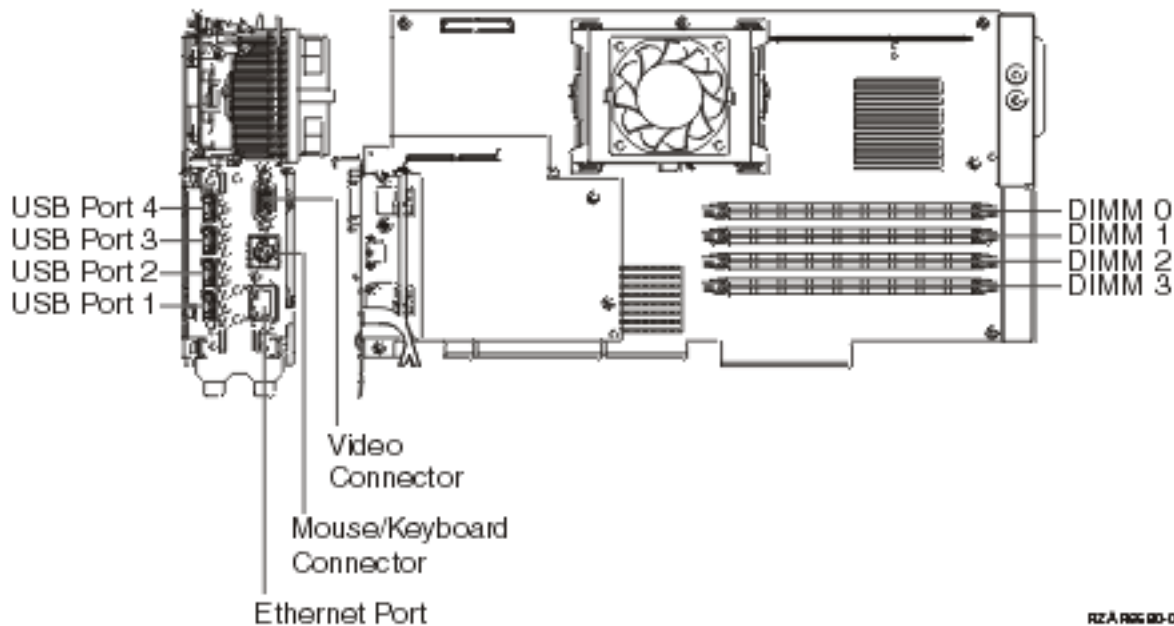
Feature	Size
2795/2895	128 MB
2796/2896	256 MB
2797/2897	1 GB

**Notes:**

1. At least 1 Pentium memory module is required in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.
2. An IXS adapter card IOP (see Type, model, and part number list for part number) is required in the IOP DIMM position. This IOP memory module is NOT interchangeable with the Pentium memory module(s) in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.

**This ends the procedure.**

**Figure 2. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.**



RZA RSG 00-0

**Memory for 2892 Integrated xSeries Server (IXS) card:** One of the Pentium memory modules (DIMM 0, DIMM 1, DIMM 2, or DIMM 3) may be the failing item. See Type, model, and part number list for part numbers.

Feature	Size
0426/0446	512 MB
0427/0447	1 GB

**Note:** At least **two** Pentium memory modules are required in positions DIMM 0 and DIMM 1, or positions DIMM 2 and DIMM 3.

**This ends the procedure.**

## MESSAGE

*For use by authorized service providers.*

If the word MESSAGE is listed in the service action log as a part number, the description field will give you information regarding proper handling of the error. The following descriptions are used in MESSAGE FRUs. Please follow the given instructions when dealing with an error and the associated FRUs.

**Note:** The following messages will be capitalized in the service action log.

- Work all B600 6906 errors before this one.
- Cycle frame power before exchanging FRUS.
- Note: Replace FRUs one at a time.
- Slot unavailable due to 64 bit card in adjacent slot.
- Linux owned slots - no IOP is allowed.
- Cluster and migrated SPD unit.
- Multiple SPD migrated units.
- Migrated unit not on loop 256.

## MOVEIOA

*For use by authorized service providers.*

An Incorrect hardware configuration was detected.

The I/O adapter used by a guest partition is on the same multi-adapter bridge domain as an I/O processor in a different partition. Guest partition data may be lost if any of the following occur:

- A primary partition Type D IPL is performed
- The I/O Adapter is moved to an OS/400<sup>(R)</sup> partition
- An error causes the logical partition (LPAR) configuration to not be used

To correct the hardware configuration, either the I/O adapter or the I/O processor must be moved to a new card location. Use the LPAR Validation Tool (LVT) to create a valid configuration. For more information

about the LPAR Validation Tool, see the Logical partitions for IBM<sup>(R)</sup> iSeries<sup>(TM)</sup> web site. 

## MSAPWR

*For use by authorized service providers.*

The Motor scrolling assembly (MSA) blower may be the failing item.

1. Use the table below to find the part number you need.
2. Refer to the Models 870 and 890 - Processor MSA (air mover) assembly remove and replace procedure.
3. See Type, model, and part number list for the part number.

**Note:** Before replacing any FRU's verify that all cables are seated correctly.

**Table 1: The MSA units for the Model 890 system unit**

Unit reference code	MSA unit
1xxC- xx77	MSA-x1
1xxC- xx87	MSA-x2
1xxC- xx97	MSA-x3
1xxC- xxA7	MSA-x4

**This ends the procedure.**

## MSTORE

*For use by authorized service providers.*

The failing item is the system processor main storage.

1. Choose from the following options:
  - If you are working on a Model 825, 870, or 890 with an SRC that starts with B1xx, see symbolic FRU "ANYMEM" on page 278 for further FRU isolation.
  - Otherwise, continue with the next step.
2. Attempt a SLOW OVERRIDE IPL to run full processor hardware diagnostics.
  - a. Power off the system from the control panel.
  - b. Change the IPL mode to manual, and the IPL speed to SLOW OVERRIDE(S) using control panel function 2.
  - c. Power on the system.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** Go to "Starting point for all problems" on page 2 and follow the service actions for the new SRC.

**This ends the procedure.**

3. Choose from the following options:
    - If you are on a Model 270, 800, 810, or 820: Continue with the next step.
    - If you are on a Model 830, 840, SB2, or SB3: Go to step 7 (**See page 405**).
  4. Is this a Model 270 system unit (with processor feature 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, or 2452), or a Model 800 or 810 system unit (with processor features **except** 7428, 7429, or 7430)?
    - **No:** Continue with the next step.
    - **Yes:** See Locations — Model 270 or Locations — Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
      - Power regulator in location R01
      - Memory card pairs in locations A-H
- This ends the procedure.**
5. Is this a Model 270 system unit (with processor feature 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, or 2454), or a Model 810 system unit (with processor features 7428, 7429, 7430)?
    - **No:** Continue with the next step.
    - **Yes:** See Locations — Model 270 or Locations — Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.



- Processor Card in location M02
  - Memory Riser Card in location M01
- This ends the procedure.**
6. This is a Model 820. See Locations — Model 820. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - Memory riser card in location M01
    - Memory riser card in location M02
    - Processor card in location M03

**This ends the procedure.**
  7. Is this system a Model 830 with SB2 system unit and FC 9074?
    - **No:** Continue with the next step.
    - **Yes:** See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement. See Remove and replace procedures.
      - a. Memory riser card in location M02 in the system unit
      - b. Memory riser card in location M05 in the system unit
  8. This is a Model 840, SB3 system unit and FC 9079 base I/O tower. See Locations — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement. See Remove and replace procedures.
    - a. Memory cards in bank A in the system unit
    - b. Memory cards in bank B in the system unit
    - c. Memory cards in bank C in the system unit
    - d. Memory cards in bank D in the system unit

**This ends the procedure.**

## MUMIOCD

*For use by authorized service providers.*

The failing item may be the tower card or the high-speed link (HSL) I/O adapter card.

Is the location from the Reference code table CB1?

- **Yes:** The failing item may be the tower card. Exchange the tower card in position CB1. To determine CCIN, part number, and remove and replace procedure, locate card position CB1 and FRU name "Tower card" from the following:
  - For Model 830, SB2 see FRU locations and failing components for Models 830, SB2 system unit with FC 9074 base I/O tower table.
  - For Model 840, SB3 see FRU locations and failing components for FC 9079 base I/O tower table.

**This ends the procedure.**
- **No:** The HSL I/O bridge card may be the failing item. Exchange the HSL I/O bridge card in location C08. To determine the CCIN, part number, and remove and replace procedure, locate card position C08 and FRU name "HSL I/O bridge card" from the following:
  - For Model 830, SB2 see FRU locations and failing components for Models 830, SB2 system unit with FC 9074 base I/O tower table.
  - For Model 840, SB3 see FRU locations and failing components for FC 9079 base I/O tower table.

**This ends the procedure.**

## **NETSERV**

*For use by authorized service providers.*

The Integrated xSeries Server (IXS) is the failing item.

Call your Integrated xSeries Server (IXS) service provider.

## **NEXTLVL**

*For use by authorized service providers.*

Contact your next level of support for assistance. Save all data for your next level of support.

## **NOFRUS**

*For use by authorized service providers.*

No failing items are identified for the reference code.

## **NOMSUSE**

*For use by authorized service providers.*

System processor has detected no usable main storage. This error does not occur without a related problem. See the additional failing items that were reported with this failure.

## **NSCABLE**

*For use by authorized service providers.*

The cable between the Integrated xSeries Adaptor (IXA) card and the RS-485 port on the Integrated xSeries Server (IXS) is the failing item.

## **NTDEVDR**

*For use by authorized service providers.*

The Windows NT Server device driver may be causing the problem. Refer to the Windows server on iSeries page, which is located in the Networking topic in the Information Center, or contact your next level of support for assistance.

## **NTLANDDD**

*For use by authorized service providers.*

The Windows NT Server Virtual LAN device driver may be causing the problem. Refer to the Windows server on iSeries page, which is located in the Networking topic in the iSeries Information Center, or contact your next level of support for assistance.

## **NTOPSYS**

*For use by authorized service providers.*

The Windows NT Server Operating System may be causing the problem. Refer to the Windows server on iSeries page, which is located in the Networking topic in the Information Center, or contact your next level of support for assistance.

## **NTUSER**

*For use by authorized service providers.*

The Windows NT Server user problem may be caused by:

- User-initiated action
- A Windows NT user application

- No keyboard or mouse attached to the Integrated xSeries Server (IXS)

Refer to the Windows server on iSeries page, which is located in the Networking topic in the Information Center, or contact your next level of support for assistance.

## **NTVSCSI**

*For use by authorized service providers.*

The Windows NT Server Virtual SCSI device driver may be causing the problem. Refer to the Windows server on iSeries page, which is located in the Networking topic in the Information Center, or contact your next level of support for assistance.

## **OPT\_CLN**


*For use by authorized service providers.*

Use the Fiber Optic Cleaning Kit (see Type, model, and part number list for part number) and the Fiber Optic Cleaning Procedures in "SY27-2604-04 Fiber Optic Cleaning Procedures" for all fiber channel connections such as those used in optical High Speed Link (HSL) connections or Fibre Channel attached devices.

## **OPTLCBL**

*For use by authorized service providers.*

The cabling for an Optical Disk Drive in the Optical Library needs to be checked. The cabling may be incorrectly installed, or it may be defective.

Refer to the All 3995 Publications and Documentation  Web site for more information.

## **OPTLDRV**

*For use by authorized service providers.*

An Optical Disk Drive in the Optical Library is failing.

Refer to the All 3995 Publications and Documentation  Web site for more information.

## **OPUSER**

*For use by authorized service providers.*

The failing item indicates that the operator of the system console or the control panel performed an incorrect action.

Refer to the iSeries Information Center for more information.

## **PCIBUS**

*For use by authorized service providers.*

The failing item is in an FC 5033, FC 5034, or FC 5035 migrated tower, or an attached FC 5065 I/O tower. Go to symbolic FRU PCIBUS in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*

manual on the V5R1 Supplemental Manuals web site  for information on servicing this symbolic FRU.

## **PGDPART**

*For use by authorized service providers.*

Follow the instructions for the model you are working on:

- Models 270 and 820 (See page 408)
- Models 800, 810, 825, 870, and 890 (See page 410)
- Models 830, 840, SB2, and SB3 (See page 413)

### Instructions for Models 270 and 820

See Locations and addresses for the model you are working on.

1. Is the SRC 1xxx 2600 or 2601?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 3 (See page 408).
2. Perform the following:
  - a. Power off the frame.
  - b. Check that the tower card is connected and seated properly. See symbolic FRU "TWRCARD" on page 470.
  - c. Check that the power supplies are connected and seated properly.
  - d. Power on the frame.

Is there an SRC 1xxx 2600 or 2601?

- **No:** Continue with the next step.
  - **Yes:** Exchange the following FRUs one at a time. See Locations and addresses for location information.
    - a. Memory cards if installed.
    - b. Processor cards if installed.

**This ends the procedure.**
3. Is the SRC 1xxx 2602?
    - **No:** Continue with the next step.
    - **Yes:** Go to step 10 (See page 410).
  4. Is the SRC 1xxx 2603?
    - **No:** Continue with the next step.
    - **Yes:** If you are working on a Model 270 with a FC 7104 system expansion unit, ensure that the FC 7014 ac power cable is plugged into both the system and the wall. Try to IPL the system, if you cannot and the SRC persists, then the configuration ID may not be accurate. When you set the system or frame ID, you must power down the system or frame with ac power applied. Verify that both the system and the FC 7104 power cords are still plugged in.

#### Check the frame configuration ID:

- a. Select function **07** on the system control panel. Press **Enter** (07\*\* will be displayed).
- b. Use the arrow keys to increment/decrement to subfunction A8. 07A8 will be displayed. Press **Enter** (07A8 00 will be displayed).
- c. Use the arrow keys to increment/decrement to the frame address of the box that you want to check (07nn will be displayed, where nn is the frame address, usually 01 for system units). Press **Enter** (07nn 00 will be displayed).
 

**Note:** The display on the addressed non-system unit should be blinking on and off. For a system unit, press an arrow key (increment or decrement) twice to display the ID (first 07\*\* will be displayed then 07nn will be displayed, where nn is the Configuration ID).
- d. The correct configuration ID is:
  - **91** for a Model 270 **without** FC 7104 system expansion unit, **without** a removable processor.
  - **92** for a Model 270 **without** FC 7104 system expansion unit, **with** a removable processor.
  - **95** for a Model 270 **with** FC 7104 system expansion unit, **without** a removable processor.

- **96** for a Model 270 **with** FC 7104 system expansion unit, **with** a removable processor.
- **93** for a Model 820.

If the configuration ID is correct, then try to re-IPL the system. If you cannot re-IPL the system and the SRC persists, then go to the following PIPs to isolate the failing item:

- “Power PIP4” on page 153 for a Model 270 system unit
- “Power PIP5” on page 158 for a Model 820 system unit
- “Power PIP9” on page 172 for a Model 270 FC 7104 system expansion unit
- “Power PIP8” on page 168 for and FC 5078, FC 0578, FC 5088, or FC 0588

If the configuration ID is incorrect, continue with Change the frame configuration ID (See page 409).

**Change the frame configuration ID:**

- a. Select function **07** on the system control panel. Press **Enter** (07\*\* will be displayed).
- b. Use the arrow keys to increment/decrement to subfunction A9. 07A9 will be displayed. Press **Enter** (07A9 00 will be displayed).
- c. Use the arrow keys to increment/decrement to the frame address of the box that you want to check (07nn will be displayed, where nn is the frame address). Press **Enter** (07nn 00 will be displayed).
 

**Note:** The display on the addressed frame blinks on and off (non-system unit frames only).
- d. Choose the correct configuration ID:
  - **91** for a Model 270 **without** FC 7104 system expansion unit, **without** a removable processor.
  - **92** for a Model 270 **without** FC 7104 system expansion unit, **with** a removable processor.
  - **95** for a Model 270 **with** an FC 7104 system expansion unit, **without** a removable processor.
  - **96** for a Model 270 **with** an FC 7104 system expansion unit, **with** a removable processor.
  - **93** for for a Model 820.
- e. Use the arrow keys to increment/decrement to the correct configuration ID (07xx will be displayed, where xx is the configuration ID). Press **Enter**, 07xx 00 will be displayed. After a few seconds, the display on the addressed non-system unit frame will stop blinking and return to displaying the frame address. On a system unit, the display will show the series of bring-up SRCs and then display function 01.

**Note:** Scroll to 07\*\* and press **Enter** to return the panel to normal display.

Try to re-IPL the system. If you cannot re-IPL the system and the SRC persists, then go to the following PIPs to isolate the failing item.

- “Power PIP4” on page 153 for a model 270 system unit.
- “Power PIP9” on page 172 for a Model 270 FC 7104 system expansion unit.
- “Power PIP5” on page 158 for a Model 820 system unit.
- “Power PIP6” on page 160 for an FC 5065, FC 5066, FC 5074, or FC 5079 expansion unit.
- “Power PIP8” on page 168 for an FC 5078, FC 0578, FC 5088, or FC 0588.

5. Is the SRC 1xxx 2604?

- **No:** Continue with the next step.
- **Yes:** Perform one of the following to isolate the failing item:
  - “Power PIP4” on page 153 for Model 270 system unit.
  - “Power PIP5” on page 158 for Model 820 system unit.
  - “Power PIP9” on page 172 for a Model 270 FC 7104 System Unit Expansion.
  - “Power PIP6” on page 160 for FC 5065, FC 5066, FC 5074, or FC 5079 expansion unit.

6. Is the SRC 1xxx 2221 or 2321?

- **No:** Continue with the next step.
  - **Yes:** The backplane card may be the failing item. See symbolic FRU “BACKPLN” on page 284 to exchange the failing item. See Locations and addresses. If the error did not go away, exchange the cable between the panel and the card, part 44H8022 or 44H8017. See Locations and addresses.  
**This ends the procedure.**
7. Is the SRC 1xxx 2222, 2223, 2322 or 2323?
    - **No:** Continue with the next step.
    - **Yes:** See symbolic FRU (“TWRCARD” on page 470) only for these SRCs.
  8. Is the SRC 1xxx 2224 or 2324?
    - **Yes:** Continue with the next step.
    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
  9. Are you working on a unit with a SPD card enclosure with the 2735 card installed correctly?
    - **No:** Exchange the following parts one at a time:
      - PCI I/O card - part 45H1235 (see Locations and addresses).
      - The cable between the SP/PCI I/O card and the PCI I/O card - part 44H8038. See Locations and addresses.
      - The SP/PCI/ I/O card - part 45H1226. See Locations and Addresses.  
**This ends the procedure.**
    - **Yes:** Exchange the following parts one at a time:
      - 2735 optical Bus IOP - part 44H7791
      - SPD backplane - part 44H7994  
**This ends the procedure.**
  10. Is the AC line cord from the FC 7104 power supply to the customer’s AC power outlet connected and seated correctly at both ends?
    - **Yes:** Continue with the next step.
    - **No:** Connect the AC line cord correctly at both ends.  
**This ends the procedure.**
  11. Perform the following:
    - a. Disconnect the FC 7104 AC line cord from the customer’s AC outlet.
    - b. Use a multimeter to measure the AC voltage at the customer’s AC outlet.

Is the AC voltage 100V to 127V or 200V to 240V?

    - **Yes:** Continue with the next step.
    - **No:** Inform the customer that the AC voltage at the power outlet is not correct. Reconnect the line cord after the voltage has been corrected.  
**This ends the procedure.**
  12. Perform the following:
    - a. Reconnect the AC line cord to the AC outlet.
    - b. Disconnect the AC line cord from the FC 7104.
    - c. Use a multimeter to measure the AC voltage at the end of the line cord.

Is the voltage 100V to 127V or 200V to 240V?

    - **Yes:** Reconnect the line cord to the FC 7104 and perform “Power PIP9” on page 172 on the FC 7104 system unit expansion.  
**This ends the procedure.**
    - **No:** Exchange the failing AC line cord.  
**This ends the procedure.**

## Instructions for Models 800, 810, 825, 870, and 890

1. Is the SRC 1xxx 2600 or 2601?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 3 (See page 411).
2. Perform the following:
  - a. Power off the frame.
  - b. Check that the tower card is connected and seated properly. See symbolic FRU “TWRCARD” on page 470.
  - c. Check that the power supplies are connected and seated properly. See symbolic FRU “PWRSPPLY” on page 431.
  - d. Power on the frame.

Is there an SRC 1xxx 2600 or 2601?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time. Refer to Locations and addresses for the model you are working on.
  - Tower card. See symbolic FRU “TWRCARD” on page 470.
  - Power supplies. See symbolic FRU “PWRSPPLY” on page 431.
  - Memory cards if installed.
  - Processor cards if installed.
  - Backplane. See symbolic FRU “BACKPLN” on page 284.

**This ends the procedure.**

3. Is the SRC 1xxx 2602?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP9” on page 172 on Models 800 and 810.
4. Is the SRC 1xxx 2603?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following to isolate the failing item.
    - a. Try to IPL the system. If you cannot IPL and the SRC persists, then the configuration ID may not be accurate. When you set the system or frame ID, the system unit or frame must be powered off and have ac power applied.
    - b. Verify that all frame power cords are still plugged in.
    - c. Check the frame configuration ID:
      - 1) Select function **07** on the system control panel. Press **Enter** (07\*\* will be displayed).
      - 2) Use the arrow keys to increment/decrement to subfunction **A8**. 07A8 will be displayed. Press **Enter** (08A8 00 will be displayed).
 

**Note:** The display on the addressed non-system unit frame should be blinking on and off. For a system unit, press an arrow key (increment or decrement) twice to display the ID (first 07\*\* will be displayed then 07nn will be displayed, where nn is the Configuration ID).
      - 3) Choose the correct configuration:
        - **89** for an FC 5088, FC 0588
        - **8A** for an FC 5094, FC 5294, or FC 8094-002
        - **8B** for an FC 5095, FC 0595
        - **91** for a Model 810 **without** FC 7116 system expansion unit, **without** a removable processor.
        - **92** for a Model 810 **without** FC 7116 system expansion unit, **with** a removable processor.
        - **95** for Models 800 and 810 **with** an FC 7116 expansion unit
        - **96** for Models 800 and 810 **with** FC 7116 system expansion unit, **with** a removable processor.

- **99** for FC 9094 (Models 870 and 890), FC 8093-001, or 8094-001 system expansion unit
  - **A1** for Model 825
- d. If the configuration ID is correct, try to re-IPL the system. If you cannot re-IPL the system and the SRC persists, perform the following problem isolation procedures (PIPs).
- “Power PIP4” on page 153 for Models 800 and 810
  - “Power PIP5” on page 158 for Model 825
  - “Power PIP9” on page 172 if the fault is in an FC 5075, FC 5085, FC 5095, or FC 0595 I/O tower, or an FC 7116 system expansion unit
  - “Power PIP6” on page 160 for an FC 5074, FC 5079, FC 5094, FC 8093, FC 8094, or FC 9094
  - “Power PIP8” on page 168 for an FC 5088, or FC 0588
- e. If the configuration ID is incorrect, use the following steps to change the configuration ID.
- 1) Select function 07 on the system control panel. Press **Enter** (07\*\* will be displayed).
  - 2) Use the arrow keys to increment/decrement to subfunction A9. 07A9 will be displayed. Press **Enter** (07A9 00 will be displayed).
  - 3) Use the arrow keys to increment/decrement to the frame address of the box that you want to change (07nn will be displayed, where nn is the frame address). Press **Enter** (07nn 00 will be displayed).
 

**Note:** The display on the addressed frame will be blinking on and off (non-system unit frames only).
  - 4) The correct configuration ID is:
    - **89** for an FC 5088, FC 0588
    - **8A** for an FC 5094, FC 5294, or FC 8094-002
    - **8B** for an FC 5095, FC 0595
    - **91** for a Model 810 **without** FC 7116 system expansion unit, **without** a removable processor.
    - **92** for a Model 810 **without** FC 7116 system expansion unit, **with** a removable processor.
    - **95** for Models 800 and 810 with an FC 7116 expansion unit
    - **96** for Models 800 and 810 **with** FC 7116 system expansion unit, **with** a removable processor.
    - **99** for FC 9094 (Models 870 and 890), FC 8093-001, or 8094-001 system expansion unit
    - **A1** for Model 825
  - 5) Use the arrow keys to increment/decrement to the correct configuration ID (07xx will be displayed where xx is the configuration ID. Press **Enter** (07xx 00 will be displayed). After a few seconds, the display on the addressed no-system unit frame will stop blinking and return to displaying the frame address. On a system unit, the display will show the series of bring-up SRCs and then display function 01.
 

**Note:** Scroll to 07\*\* and press **Enter** to return the panel to normal display.
  - 6) Try to re-IPL the system. If you cannot re-IPL the system and the SRC persists, then perform the following PIPs.
    - “Power PIP4” on page 153 for Models 800 and 810
    - “Power PIP5” on page 158 for Model 825
    - “Power PIP6” on page 160 for an FC 5074, FC 5079, FC 5094, FC 8093, FC 8094 or FC 9094
    - “Power PIP9” on page 172 if the fault is in an FC 5075, FC 5085, FC 5095, or FC 0595 I/O tower, or an FC 7116 system expansion unit
    - “Power PIP8” on page 168 for an FC 5078, FC 0578, FC 5088, or FC 0588

5. Is the SRC 1xxx 2604?



- **No:** Continue with the next step.
  - **Yes:** Perform one of the following to isolate the failing item:
    - “Power PIP4” on page 153 for Models 800 and 810
    - “Power PIP5” on page 158 for Model 825
6. Is the SRC 1xxx 2605 or 1xxx 2606?
- **No: This ends the procedure.**
  - **Yes:** Perform one of the following to isolate the failing item:
    - “Power PIP6” on page 160 for an FC 5074, FC 5079, FC 5094, FC 8093, FC 8094 or FC 9094
    - “Power PIP9” on page 172 if the fault is in an FC 5075, FC 5085, FC 5095 or FC 0595 I/O tower, or an FC 7116 system expansion unit
    - “Power PIP8” on page 168 for an FC 5078, FC 0578, FC 5088, or FC 0588

### Instructions for Models 830, 840, SB2, and SB3

When referenced, perform the Power PIPs in each step before exchanging parts.

1. Is the SRC 1xxx 2221 or 2321?
  - **No:** Continue with the next step.
  - **Yes:** The backplane card may be the failing item. See symbolic FRU “BACKPLN” on page 284 to exchange the failing item. Also see Locations and addresses for the model you are working on. If the error did not go away, exchange the cable between the panel and the card, part 44H8022 or 44H8017. See Locations and addresses.  
**This ends the procedure.**
2. Is the SRC 1xxx 2222, 2223, 2322 or 2323?
  - **No:** Continue with the next step.
  - **Yes:** See tower card (“TWRCARD” on page 470) only for these SRCs.
3. Is the SRC 1xxx 2224 or 2324?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 5 (See page 413).
4. Are you working on a unit with a SPD card enclosure with the 2735 card installed correctly?
  - **No:** Exchange the following parts one at a time:
    - PCI I/O card - part 45H1235 (see Locations and addresses).
    - The cable between the SP/PCI I/O card and the PCI I/O card - part 44H8038 (see Locations and addresses).
    - The SP/PCI/ I/O card - part 45H1226 (see Locations and addresses).**This ends the procedure.**
  - **Yes:** Exchange the following parts one at a time:
    - 2735 optical Bus IOP - part 44H7791
    - SPD backplane - part 44H7994**This ends the procedure.**
5. Perform the following:
  - a. Power off the expansion frame.
  - b. Check that the tower card is connected and seated properly. See symbolic FRU “TWRCARD” on page 470.
  - c. Check that the power supplies are connected and seated properly. See symbolic FRU “PWRSPLY” on page 431.
  - d. Power on the expansion frame.

Is there an SRC 1xxx 2600 or 2601?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time:
  - a. Memory cards if installed. See Locations and addresses.
  - b. Processor cards if installed. (see Locations and addresses).

**This ends the procedure.**

6. Is the SRC 1xxx 2602?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP7” on page 166 on the Model 830 processor enclosure (upper).
7. Is the SRC 1xxx 2603?
  - **No:** Continue with the next step.
  - **Yes:** Perform one of the following PIPs to isolate the failing item.
    - “Power PIP6” on page 160 for FC 5074, FC 5079, FC 5094, FC 5294, or FC 9079
    - “Power PIP9” on page 172 for FC 5075 or FC 5095
    - “Power PIP8” on page 168 for FC 5088 or FC 0588
8. Is the SRC 1xxx 2604?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP6” on page 160 on the failing frame, or “Power PIP7” on page 166 on the Model 830 processor enclosure (upper unit) to find failing item.
9. Is the SRC 1xxx 6400 or 6401?
  - **Yes:** Continue with the next step.
  - **No:** Go to “Starting point for all problems” on page 2.

**This ends the procedure.**

10. Perform the following:
  - a. Power off the system.
  - b. In a system unit: Exchange the SPCN card (see symbolic FRU “BKSPCN” on page 286).
  - c. In an expansion unit: Exchange the AC module (see symbolic FRU “ACMODUL” on page 268).
  - d. Power on the system.

Does the SRC 1xxx 6400 or 6401 continue to be displayed?

- **Yes:** Continue with the next step.
- **No:** The part that was replaced in this step was the failing item.

**This ends the procedure.**

11. Perform the following:
  - a. Power off the system.
  - b. Remove one of the regulators in position R1-R10, R11, R20 and clock card regulator (M19) and install a new regulator (see Locations and addresses).
  - c. Power on the system.

Is SRC 1xxx 6400 or 6401 displayed?

- **Yes:** Continue with the next step.
- **No:** The regulator that was removed in this step is the failing item.

**This ends the procedure.**

12. **the following:**
  - a. Power off the system.
  - b. Remove the new regulator that you just installed, and replace it with the original regulator.
  - c. Replace another untested regulator with a new regulator.
  - d. Power on the system.

Is SRC 1xxx 6400 or 6401 displayed?

- **Yes:** If there are some regulators that you have not yet tried replacing, then repeat step 12 (See page 414). However, if you have tried exchanging all of the regulators, continue with the next step.
- **No:** The regulator that was removed in this step is the failing item.  
**This ends the procedure.**

13. Perform the following:

- a. Power off the system.
- b. Remove the new regulator that you just installed, and replace it with the original regulator.
- c. Remove all the cards in the expansion bus.

**CAUTION:**

**To prevent overheating problems, do not remove any device completely from the enclosure unless you install an airflow card in its place.**

- d. Power on the system.

Is SRC 1xxx 6400 or 6401 displayed?

- **No:** Continue with the next step.
- **Yes:** Exchange the backplane in the expansion. See symbolic FRU “BACKPLN” on page 284.  
**This ends the procedure.**

14. Perform the following:

- a. Power off the system.
- b. Reinstall one of the cards you removed from the expansion bus in step 13 (See page 415).
- c. Power on the system.

Is the SRC 1xxx 6400 or 6401 displayed?

- **No:** Repeat step 14 (See page 415) until all the cards have been reinstalled.  
**This ends the procedure.**
- **Yes:** Power off the system. Replace the last card installed in this step.  
**This ends the procedure.**

## PIOCARD

*For use by authorized service providers.*

PIOCARD: PCI I/O card, IOP, or IOA.

The multi-adapter bridge hardware detected an error in an adapter card, IOP, or IOA. The failing component is the card installed in the card location specified by the Direct Select Address (DSA).

1. If you are using the Service Action Log (SAL) and there is a card position given for this FRU, then that is the location of the failing component. Go to step 3 (See page 416). Otherwise, perform the following:
  - Determine the location of the card using the DSA in the SRC. Record the Direct Select Address (DSA), which is word 7 of the SRC from the SAL display.
  - Locate the card specified in the DSA by going to “Bus PIP PCIBUS-PIP1” on page 99. Return here after locating the card.
  - If you are working on a system Model 270 or 820, go to step 3 (See page 416). For all other system models, continue with the next step.
2. Did “Bus PIP PCIBUS-PIP1” on page 99 identify a single card position?
  - **Yes:** This is the location of the failing item. Continue with the next step.
  - **No:** While referring to the remove and replace procedures for each card position, perform the following: (You can find links to the locations information, and from there to the remove and replace procedures, in the table at the end of this procedure.)
    - a. Remove all of the cards in the card positions that are identified in the given range of card slots.

- b. Replace each card one at a time, powering on the system or tower (as instructed in the remove and replace procedure) after you replace each one, until the problem appears again. The last card that you replaced before the problem appeared again is the failing item. Continue with the next step.

3. Use the links in the table below to locate and replace the failing item.

**Table 1. Failing item for symbolic FRU PIOCARD**

<b>System model, tower, expansion unit, or machine type</b>	<b>Name of FRU to exchange</b>	<b>Link to locations information and remove and replace procedures</b>
Model 270 (Embedded IOP DSA = 000110xx)	System unit backplane	See Locations - Model 270. You will need the processor feature code (characters 5 through 8 of function 20 on the control panel).
Model 270	PCI IOP or IOA	See Locations - Model 270. You will need the processor feature code (characters 5 through 8 of function 20 on the control panel).
Models 800 and 810	System unit backplane	See Locations - Models 800 and 810 You will need the processor feature code (characters 5 through 8 of function 20 on the control panel).
Models 800 and 810	PCI IOP or IOA	See Locations - Models 800 and 810
Model 820 (Embedded IOP DSA = 000110xx)	System unit backplane	See Locations - Model 820
Model 820	PCI IOP or IOA	See Locations - Model 820
Model 825	PCI IOP or IOA	See Locations - Model 825
Models 830 and SB2 base I/O tower (FC 9074)	PCI IOP or IOA	See Locations - Models 830/SB2 System Unit with FC 9074 Base I/O Tower
Models 840 and SB3 base I/O tower (FC 9079)	PCI IOP or IOA	See Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower
Models 870 and 890	PCI IOP or IOA	See Locations - Models 870 and 890
FC 5074 Expansion I/O Tower	PCI IOP or IOA	See Locations - FC 5074 Expansion I/O Tower
FC 5075 Expansion I/O Tower	PCI IOP or IOA	See Locations - FC 5075 Expansion I/O Tower
FC 5078, FC 0578 Expansion I/O Unit	PCI IOP or IOA	See Locations - FC 5078, 0578 Expansion I/O Unit
FC 5079 (1.8m expansion tower)	PCI IOP or IOA	See Locations - FC 5079 Expansion I/O Tower
FC 5088 or FC 0588 Expansion I/O Unit	PCI IOP or IOA	See Locations - FC 5088, FC 0588 Expansion I/O Unit
FC 5095, FC 0595 Expansion I/O Unit	PCI IOP or IOA	See Locations - FC 5095, FC 0595 Expansion I/O unit
External xSeries Server	Integrated xSeries Adapter Card	See Locations - Integrated xSeries adapter card (IXA).

**This ends the procedure.**

## **PLUS**

*For use by authorized service providers.*

The list of possible failing items that are displayed on-line is not complete. There is not enough space to display all of the failing items. See the complete list of possible failing items in the appropriate unit reference code table in System reference codes.

## PPCIMIN

*For use by authorized service providers.*

PPCIMIN: Primary PCI bus in an I/O expansion tower.

The failing component is the tower card in an FC 5075, FC 5095, or FC 0595 Expansion I/O Tower.

1. Choose from the following options:
  - If you are working from the service action log, and a card position is listed with this failing component, then that is where the error is located. Continue with the next step.
  - Otherwise, record the bus number value, BBBB, in word 7 of the system reference code (SRC). See “Breaking down the SRC” on page 63 for help in determining the bus number.
2. Search for the bus number in HSM or the system configuration listing to determine which FC 5075, FC 5095, or FC 0595 Expansion I/O Tower contains the failing component.

**Table 1. FRU to exchange for PPCIMIN**

<b>Tower</b>	<b>Name of FRU to exchange</b>	<b>FRU position</b>	<b>Link to failing component service information. (CCIN, Remove and replace procedure, and Locations information)</b>
FC 5075 Expansion I/O Tower	Tower card	CB1	See Locations - FC 5075 Expansion I/O Tower
FC 5095, FC 0595 Expansion I/O Tower	Tower card	CB1	See Locations - FC 5095, FC 0595 Expansion I/O Tower

**This ends the procedure.**

## PPCISYS

*For use by authorized service providers.*

The failing component is the primary PCI bus on the system unit backplane. Use the system model and the table below to exchange the field replaceable unit (FRU) with the failing component.

**Table 1. Failing component for symbolic FRU PPCISYS**

<b>System model, tower, expansion unit, or machine type</b>	<b>Name of FRU to exchange</b>	<b>FRU position</b>	<b>Link to failing component service information (CCIN, part number, and remove and replace procedure)</b>
Model 270 - Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	System unit backplane	System unit backplane	Use the Model 270 diagrams and tables by processor feature code and follow the “locations diagram” link for the processor feature code, and the “FRU positions and failing components” link for the processor feature code.
Models 800 and 810	System unit backplane	MB1	See Locations - Models 800 and 810
Model 820	System unit backplane	MB1	See Locations - Model 820.
Model 825	System unit backplane	CB1	See Locations - Model 825

## PPCITWR

*For use by authorized service providers.*

PPCITWR: Primary PCI bus in an I/O tower.

There are potentially two failing components. The HSL I/O bridge card and the tower card in an FC 5074, FC 5088, FC 0588, FC 5095, FC 0595, the base I/O tower for Models 870 or 890, or the FC 5078, FC 0578 Expansion I/O Unit.

1. If you are using the Service Action Log (SAL) and there is a frame ID given for this FRU, then that is the frame with the failing component or components. Continue with the next step of this procedure. Otherwise, determine the location of the frame by using the DSA in the SRC. Record the bus number value, BBBB, in word 7 of the SRC, see “Breaking down the SRC” on page 63 for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which tower contains the failing component. Record the tower type.
2. Exchange symbolic FRU “SIADPCD” on page 446, and return here.
3. If the problem still exists after powering on the tower, then exchange symbolic FRU “TWRPLNR” on page 473.

**This ends the procedure.**

## PPCITWR

*For use by authorized service providers.*

PPCITWR: Primary PCI bus in an I/O tower.

There are potentially two failing components. The HSL I/O bridge card and the tower card in an FC 5074, FC 5088, FC 0588, FC 5095, FC 0595, the base I/O tower for Models 870 or 890, or the FC 5078, FC 0578 Expansion I/O Unit.

1. If you are using the Service Action Log (SAL) and there is a frame ID given for this FRU, then that is the frame with the failing component or components. Continue with the next step of this procedure. Otherwise, determine the location of the frame by using the DSA in the SRC. Record the bus number value, BBBB, in word 7 of the SRC, see “Breaking down the SRC” on page 63 for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which tower contains the failing component. Record the tower type.
2. Exchange symbolic FRU “SIADPCD” on page 446, and return here.
3. If the problem still exists after powering on the tower, then exchange symbolic FRU “TWRPLNR” on page 473.

**This ends the procedure.**

## PRI\_PCI

*For use by authorized service providers.*

PRI\_PCI: Primary PCI bus.

This is a PCI bus generated under an HSL I/O bridge.

1. Choose from the following options:
  - If you are working from the Service Action Log and a card position is listed with this failing item, then that is where the error is located. Continue with the next step in this procedure.
  - Otherwise, record the bus number value, BBBB, in word 7 of the SRC (see “Breaking down the SRC” on page 63 for help in determining the bus number). Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing item. Record the frame or tower type.
2. Use the following table to determine which symbolic FRU or FRUs to go to for PRI\_PCI.

**Table 1. Symbolic FRU to perform for PRI\_PCI**

<b>System frame or I/O tower type containing the failing item:</b>	<b>Action:</b>
Model 270	Go to symbolic FRU "SYSBKPL" on page 464. <b>Note:</b> Do <b>not</b> replace both at the same time.
Models 800 and 810	Go to symbolic FRU "SYSBKPL" on page 464.
Model 820	Go to symbolic FRU "SYSBKPL" on page 464. <b>Note:</b> Do <b>not</b> replace both at the same time.
Model 825	Go to symbolic FRU "SYSBKPL" on page 464.
Models 870 and 890 Base I/O Tower	There are two potential failing items. Perform symbolic FRU "SIADPCD" on page 446. If the problem still exists after powering on the frame or tower, then perform symbolic FRU "TWRPLNR" on page 473. <b>Note:</b> Do <b>not</b> replace both at the same time.
FC 5074 Expansion I/O Tower	There are two potential failing items. Perform symbolic FRU "SIADPCD" on page 446. If the problem still exists after powering on the frame or tower then perform symbolic FRU "TWRPLNR" on page 473.
FC 5075 Expansion I/O Tower	Go to symbolic FRU "TWRBKPL" on page 469.
FC 5078 or FC 0578 Expansion I/O Tower	There are two potential failing items. Perform symbolic FRU "SIADPCD" on page 446. If the problem still exists after powering on the frame or tower, then Perform symbolic FRU "TWRPLNR" on page 473.
FC 5079 Expansion I/O Tower	There are two potential failing items. Perform symbolic FRU "SIADPCD" on page 446. If the problem still exists after powering on the frame or tower, then perform symbolic FRU "TWRPLNR" on page 473.
FC 5088 or FC 0588 Expansion Unit	There are two potential failing items. Perform symbolic FRU "SIADPCD" on page 446. If the problem still exists after powering on the frame or tower, then perform symbolic FRU "TWRPLNR" on page 473.
FC 5095 or FC 0595 Base I/O Tower	There are two potential failing items. Perform symbolic FRU "SIADPCD" on page 446. If the problem still exists after powering on the frame or tower, then perform symbolic FRU "TWRPLNR" on page 473.
External xSeries Server	Go to symbolic FRU "SIADPCD" on page 446.

**This ends the procedure.**

## **PRIMIOA**

Replace the storage I/O adapter to which the auxiliary cache I/O adapter is connected.

1. Find the location of the auxiliary cache I/O adapter:
  - a. Determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats.
  - b. Determine the location of the auxiliary cache I/O adapter. See Part locations and listings for the model you are working on.
2. Trace the SCSI cable from the auxiliary cache I/O adapter to the storage I/O adapter. This is the storage I/O adapter that you should replace.
3. Replace the storage I/O adapter that you just identified. See Part locations and listings for links to part number and removal information. This ends the procedure.

## **PROC**

*For use by authorized service providers.*

The failing item is a system processor card. See symbolic FRU "ANYPROC" on page 282.

## **PROCMM**

*For use by authorized service providers.*

There is a mismatch between the processor card and the capacity card. This is most often caused by not replacing the processor card and the capacity card as a set. They are designed to be ordered and replaced together. If just one was recently replaced due to a hardware failure or processor upgrade, replace the other associated card. Use the information given below to find the correlation between an error and possible solution.

See Locations - Models 870 and 890 with an FC 9094 Base I/O Tower

- For errors of the form **B4xx xC10**, the processor in location **M21** is not the type expected by the capacity card.
- For errors of the form **B4xx xC11**, the processor in location **M11** is not the type expected by the capacity card.
- For errors of the form **B4xx xC12**, the processor in location **M16** is not the type expected by the capacity card.
- For errors of the form **B4xx xC13**, the processor in location **M14** is not the type expected by the capacity card.

**This ends the procedure.**

## PROC0

*For use by authorized service providers.*

There is a problem with the Service Processor Code or the Licensed System Code. Updating the code with new and improved code should correct the problem

1. Choose from the following options:

- If the SRC is of the form B4xx xEA1, then find and load the code replacement AJDG301 from RETAIN.
- If the SRC is of the form B4xx xEA0, xEA2, xEA5, xEAF, xEE1, or xEE2, then find and load the code replacement AJDGP01 from RETAIN.

2. If the problem persists, call your next level of support.

**This ends the procedure.**

## PROC0

*For use by authorized service providers.*

The failing item is a system processor card. See symbolic FRU "ANYPROC" on page 282.

## PROC1

*For use by authorized service providers.*

The failing item is a system processor card. See symbolic FRU "ANYPROC" on page 282.

## PROC2

*For use by authorized service providers.*

The failing item is a system processor card. See symbolic FRU "ANYPROC" on page 282.

## PROC3

*For use by authorized service providers.*

The failing item is a system processor card. See symbolic FRU "ANYPROC" on page 282.

## PTFSRCH

Licensed Internal Code is the failing item. Look for fixes (PTFs) associated with the reference code and have the customer apply them.



## PWROC

*For use by authorized service providers.*

A power supply is reporting a load fault.

Follow the instructions for the model you are working on:

- Models 270 and 820 (See page 421)
- Models 800, 810, 825, 870/890 (FC 9094) (See page 423)
- Models 830, 840, SB2, and SB3 (See page 424)

### Instructions for Models 270 and 820


1. Is the SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B06, or 1B07 on a Model 270 or 820 system unit?
  - **No:** Continue with the next step.
  - **Yes:** For a Model 270, perform “Power PIP4” on page 153 to isolate the failing item. For a Model 820, perform “Power PIP5” on page 158 to isolate the failing item. The failing item may be one of the following parts (see Type, model, and part number list for part numbers):
    - Any part on the system power bus
    - Power supply P01:
      - Model 270
      - Model 820
    - Power supply P02, Model 820
    - Power supply P03, Model 820**This ends the procedure.**
2. Is the SRC 1xxx 1B05?
  - **No:** Continue with the next step.
  - **Yes:** Replace the following part:
    - On a Model 270 with FC 22A7, 22A8, or 2423: processor regulator (see Type, model, and part number list for part number)
    - On a Model 270 with FC 22A2, 22A4, 22A5, or 2422: regulator card R01 (see Locations - Model 270 for part number)
    - On a Model 820: processor card, see symbolic FRU “CCIN” on page 303.
3. Is the SRC 1xxx 1B11, 1B12, 1B13 1B14, 1B16 or 1B17 on a Model 270 (FC 7104), or SRC 1xxx 1B01, 1B02, 1B03 1B04, 1B06, 1B07 on an FC 5075, FC 5095, or FC 0595 I/O tower?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP9” on page 172 to isolate the failing item. The failing item may be one of the following parts (see Type, model, and part number list for part number):
    - a. Any part on the expansion power bus.
    - b. Power supply:
      - FC 7104 power supply P02
      - FC 5075 power supply P01 or P02
      - FC 5095, FC 0595 power supply P01 or P02
4. Is the SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B05, 1B06 or 1B07 on an FC 5074, FC 5079, FC 5078, FC 0578, FC 5088, or FC 0588 expansion?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following depending on the model:
    - For FC 5074, FC 5079: Perform “Power PIP6” on page 160 to isolate the failing item. The failing item may be one of the following parts:
      - Any part on the system power bus

- Power supply P01, P02, or P03 (see Type, model, and part number list for part number)
- For FC 5078, FC 0578, FC 5088, or FC 0588: Perform “Power PIP8” on page 168 to isolate the failing item. The failing item may be one of the following parts:
  - Any part on the expansion bus
  - Power supply P01, or power supply P02 (see Locations — FC 5078, FC 0578 Expansion I/O Unit or Locations — FC 5088, FC 0588 Expansion I/O Unit )

**This ends the procedure.**

5. Is the SRC 1xxx 1810, 1820, 1830, or 1840 on an FC 5065 or FC 5066 expansion?

- **No:** Continue with the next step.
- **Yes:** Perform Power PIP6 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*


manual on the V5R1 Supplemental Manuals web site  to isolate the failing item. The failing item may be one of the following parts:

- a. Any part on the system power bus.
- b. Power supply P01, P02, or P03 (see Type, model, and part number list for part number)

**This ends the procedure.**

6. Is the SRC 1xxx 2201 or 2301?

- **No:** Continue with the next step.
- **Yes:** Perform Power PIP1 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*


manual on the V5R1 Supplemental Manuals web site  to isolate the failing item. The failing item may be one of the following parts:

- Any part on the system power bus
- Power supply P01 (FC 5033 or FC 5034) - part 21H9364
- Power Supplies P01 and P02 (FC 5035) - part 4H7779

**This ends the procedure.**

7. Is the SRC 1xxx 2202 or 2302?

- **No:** Continue with the next step.
- **Yes:** Perform Power PIP2 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*

manual on the V5R1 Supplemental Manuals web site  to isolate the failing item. The failing item may be one of the following parts:

- Any part on the system power bus
- Power supply P03, or P04 - part 44H7777

**This ends the procedure.**

8. Is the SRC 4414?

- **No: This ends the procedure.**
- **Yes:** Perform “Power PIP6” on page 160 to isolate failing item, then return here and continue.

Is the SRC 4414 still present?

- **No:** Continue with the next step.
- **Yes:** Replace the battery power unit charger (see Type, model, and part number list for part number).

**This ends the procedure.**

9. Power on the system. Does the expansion tower that was failing, power on?

- **Yes:** Continue with the next step.
- **No:** Go to “Starting point for all problems” on page 2.

**This ends the procedure.**

10. Remove the ac line cord from the outlet. Does a battery power unit, charger fault occur?


- **Yes:** Replace the battery power unit charger (see Type, model, and part number list for part number).  
**This ends the procedure.**
- **No:** **This ends the procedure.**

#### Instructions for Models 800, 810, 825, 870/890 (FC 9094)

1. Is the SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B06, or 1B07 on a Model 800 or 810 system unit?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP4” on page 153 to isolate the failing item. The failing item may be one of the following parts:
    - Any part on the system power bus
    - Models 800 and 810 - regulator card R01 (see Locations - Models 800 and 810 for part number)  
**This ends the procedure.**
2. Is the SRC 1xxx 1B05?
  - **No:** Continue with the next step.
  - **Yes:** For Models 800 and 810 replace regulator card R01 (see Locations - Models 800 and 810 for part number)  
**This ends the procedure.**
3. Is the SRC 1xxx 1B0A, 1B0B, 1B0C 1B0D, 1B0E, or 1B0F on a Model 825?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP5” on page 158 to isolate the failing item. The failing item may be one of the following parts:
    - Any part on the system power bus.
    - Power supply P01 or P02 (see Locations - Model 825 )  
**This ends the procedure.**
4. Is the SRC 1B11, 1B12, 1B13, 1B14, 1B16, 1B17 on a Model 800 or 810 with FC 7116 system unit expansion, or SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B05, 1B06 or 1B07 on an FC 5075 or FC 5095 I/O Tower?
  - **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP9” on page 172 to isolate the failing item. The failing item may be one of the following parts (see Type, model, and part number list for part number):
    - Any part on the expansion power bus.
    - A power supply:
      - FC 7116: Power supply P02
      - FC 5075: Power supply P01 or P02
      - FC 5095 or FC 0595: Power supply P01 or P02
5. Is the SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B05, 1B06 or 1B07 on an FC 5074, FC 5078, FC 0578, FC 5079, FC 5088, FC 0588, FC 5094, FC 5294, FC 8093, FC 8094, or FC 9094 expansion?
  - **No:** Continue with the next step.
  - **Yes:** Choose from the following options:
    - For **FC 5074, FC 5079, FC 5094, FC 5294, FC 8093, FC 8094, or FC 9094**, perform “Power PIP6” on page 160 to isolate the failing item. The failing item may be one of the following parts (see Locations and addresses ).
      - Any part on the system power bus.
      - Power supply P00 (dual line cord)
      - Power supply P01 (single line cord)
      - Power supply P01 (dual line cord)
      - Power supply P02 (single line cord)


- Power supply P02 (dual line cord)
  - Power supply P03 (single line cord)
  - Power supply P03 (dual line cord)
- For **FC 5078, FC 0578, FC 5088, or FC 0588**, perform “Power PIP8” on page 168 to isolate the failing item. The failing item may be one of the following parts (see Type, model, and part number list for part number).
- Any part on the expansion bus.
  - Power supply P01
  - Power supply P02
- This ends the procedure.**
6. Is the SRC 4414?
- **No: This ends the procedure.**
  - **Yes:** Perform “Power PIP6” on page 160 to isolate failing item. Then, return here and continue with the next step.
7. Is the SRC 4414 still present?
- **Yes:** Replace the battery power unit charger (see Type, model, and part number list for part number).  
**This ends the procedure.**
  - **No:** Continue with the next step.
8. Power on the system. Does the expansion tower that was failing, power on?
- **No:** Go to “Starting point for all problems” on page 2.
  - **Yes:** Continue with the next step.
9. Remove the ac line cord from the outlet. Does a battery power unit, charger fault occur?
- **Yes:** Replace the battery power unit charger (see Type, model, and part number list for part number).  
**This ends the procedure.**
  - **No: This ends the procedure.**


### Instructions for Models 830, 840, SB2, and SB3

1. Is the SRC 1xxx 1810, 1820, 1830, or 1840?
- **No:** Continue with the next step.
  - **Yes:** Perform “Power PIP6” in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to isolate the failing item. The failing item may be one of the following parts (see Locations and addresses ):
    - Any part on the system bus
    - Power supply P01, P02, or P03
2. Is the SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B05, 1B06 or 1B07 or 1B09?
- **No:** Continue with the next step.
  - **Yes:** Use the following, except for FC 5078, FC 0578, FC 5088, FC 0588, FC 5095, or FC 0595. Perform “Power PIP6” on page 160 to isolate the failing item. The failing item may be one of the following parts (see Locations and addresses ):
    - Any part on the system bus.
    - Power supply P01, P02, or P03 (single line cord)
    - Power supply P01, P02, or P03 (dual line cord)

Use the following for FC 5078, FC 0578, FC 5088, FC 0588, and perform “Power PIP8” on page 168 to isolate the failing item. The failing item may be one of the following parts:

    - Any part on the expansion bus.

- Power supply P01, or P02 (see Locations — FC 5078, FC 0578 Expansion I/O Unit or Locations — FC 5088, FC 0588 Expansion I/O Unit )
- Use the following for FC 5095, and FC 0595, and perform “Power PIP9” on page 172 to isolate the failing item. The failing item may be one of the following parts:
- Any part on the power bus.
  - Power supply P01 or P02 (see Type, model, and part number list for part number)
3. Is the SRC 1xxx 1C01, 1C03, 1C05, 1C06, 1C07 or 1C08?
    - **No:** Continue with the next step.
    - **Yes:** Perform “Power PIP7” on page 166 to isolate the failing item. The failing item may be one of the following parts:
      - Any part on the system bus
      - Power supply PP1, or PP2 (see Type, model, and part number list for part number)
  4. Is the SRC 1xxx 2201 or 2301?
    - **No:** Continue with the next step.
    - **Yes:** Perform Power PIP1 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to isolate the failing item. The failing item may be one of the following parts:
      - Any part on the expansion bus
      - Power supply P01 (FC 5033, or FC 5034) - part 21H9364
      - Power supply P01, P02 (FC 5035) - part 44H7779

**This ends the procedure.**
  5. Is the SRC 1xxx 2202 or 2302?
    - **No:** Continue with the next step.
    - **Yes:** Perform Power PIP2 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to isolate the failing item. The failing item may be one of the following parts:
      - Any part on the expansion bus
      - Power supply P03, P04 - part 44H7777

**This ends the procedure.**
  6. Is the SRC 4414?
    - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
    - **Yes:** The failing item may be one of the following parts:
      - Power supply P01, P02, or P03 (single line cord) (see Locations and addresses )
      - Power supply P01, P02, or P03 (dual line cord) (see Locations and addresses )
      - Power supply PP1, PP2 (see Type, model, and part number list for part number)
      - AC input / battery charger A01 (see Type, model, and part number list for part number)

**This ends the procedure.**

## PWRREG

*For use by authorized service providers.*



A power regulator card may be failing.


Perform the following to determine the part number for the failing power regulator. Perform any SPCN-PIPs before exchanging parts.

Follow the instructions for the model you are working on:

- Models 270 and 820 (See page 426)
- Models 800 and 810 (See page 427)
- Models 830, 840, SB2, and SB3 (See page 428)

### PWRREG instructions for Models 270 and 820

1. Is the SRC 1xxx 1611, 1612, 1613, 1621, 1622 or 1623?
  - **No:** Continue with the next step.
  - **Yes:** Power regulator 1 or 2 is the failing item. Use Table 6. Processor type numbers for Models 270 and 820 (See page ) in symbolic FRU CCIN to determine the processor type to be replaced.
2. Is the SRC 1xxx 2611?
  - **No:** Continue with the next step.
  - **Yes:** Choose from the following (processor feature codes can be found in control panel function 20 and broken down into CCIN as necessary using symbolic FRU "CCIN" on page 303):
    - For Processor feature code 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422 and 2452: Replace Regulator R01 (see Locations - Model 270).
    - For removable Processor feature code 23A1, 23A2, 23A3, 23A4, 2456, 24AA, 24A9, 24AC, 24AB, 24A8, 249E, 249D, 249C, 249B, 0150: Replace regulator in processor M03 daughter card (see Locations - Model 820).
    - For removable Processor feature code 23A9, 23AA, 23AC, 2425, 23B1, 23B2, 23B3, 23B4, 23B5, 23B6, 2426, 0151, 24B5, 24B4, 24B3, 24B2, 24B1, 24B0, 2457, 23B8, 23B9, 23BA, 23BB, 23BC, 23BD, 23BE, 2427, 0152, 2458, 24BE, 24BD, 24BC, 24BB, 24BA, 24B9, 24B8, 243F, 243E, 243D, 243C, 23AB, 23AD: Replace processor M03 (see Locations - Model 820).
    - For all other feature codes, use Table 6. Processor type numbers for Models 270 and 820 (See page ) in symbolic FRU "CCIN" on page 303 to determine the processor type to be replaced.
3. Is the SRC 1xxx CE1A?
  - **No:** Continue with the next step.
  - **Yes:** Power regulator R03 on FC 5077 expansion I/O tower is the failing item (see Type, model, and part number list for part number).  
**This ends the procedure.**
4. Is the SRC 1xxx 6018, 6118, 6518, 6818, 6918, 601A, or CE18?
  - **No:** Continue with the next step.
  - **Yes:** Power regulator 1, 2, or 3 is the failing item. Perform "SPCN-PIP1" in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the failing item. The following list shows the possible failing items (see Type, model, and part number list for part numbers):
    - Expansion I/O tower (FC 5077)
    - System unit expansion (FC 507x)
    - Storage expansion tower (FC 508x)**This ends the procedure.**
5. Is the SRC 1xxx 6218, 6318, 631A, 6618, 6718, 671A, or 6A18?
  - **No:** Continue with the next step.
  - **Yes:** Power regulator 1 is the failing item. Perform "SPCN-PIP1" in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the failing item. The following list shows the possible failing items (see Type, model, and part number list for part numbers):
    - Expansion I/O tower (FC 5077)
    - System unit expansion (FC 507x)

- Storage expansion tower (FC 508x)  
**This ends the procedure.**
6. Is the SRC 1xxx 6x38 or 6x3A?
- **No:** Continue with the next step.
  - **Yes:** Power regulator 2 is the failing item. Perform "SPCN-PIP1" in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the failing item. The following list shows the possible failing items:
    - Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
    - System unit expansion (FC 507x) (see Type, model, and part number list for part number)
    - Storage expansion tower (FC 508x) - see next FRU in the SRC list**This ends the procedure.**
7. Is the SRC 1xxx 6x58?
- **No:** Continue with the next step.
  - **Yes:** Power regulator 3 is the failing item. The following list shows the possible failing items:
    - Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
    - System unit expansion (FC 507x) - see next FRU in the SRC list
    - Storage expansion tower (FC 508x) - see next FRU in the SRC list**This ends the procedure.**
8. Is the SRC 1xxx 7201, 7202, 7203, or 7401?
- **No:** Continue with the next step.
  - **Yes:** One of the power regulators is the failing item. The following list shows the possible failing items:
    - Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
    - System unit expansion (FC 507x) (see Type, model, and part number list for part number)
    - Storage expansion tower (FC 508x) (see Type, model, and part number list for part number)
    - Battery charger (see symbolic FRU "BATCGR" on page 285)**This ends the procedure.**
9. Is the SRC 1xxx B101 or B102?
- **No:** Continue with the next step.
  - **Yes:** If the system can be powered on with this SRC, perform symbolic FRU "BATCGR" on page 285, and then continue. One of the power regulators is the failing item. The following list shows the possible failing items:
    - Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
    - System unit expansion (FC 507x) (see Type, model, and part number list for part number)
    - Storage expansion tower (FC 508x) (see Type, model, and part number list for part number)
    - Battery charger (see symbolic FRU "BATCGR" on page 285)**This ends the procedure.**
10. Is the SRC 1xxx B201 or B202?
- **No:** Go to the "Starting point for all problems" on page 2.  
**This ends the procedure.**
  - **Yes:** If the system can be powered on with this SRC, perform symbolic FRU "BATCGR" on page 285, and then continue. The battery unit is reporting an over-current. The following list shows the possible failing items:
    - Battery charger - part 21H7060 (see symbolic FRU "BATCGR" on page 285)**This ends the procedure.**

## PWRREG instructions for Models 800 and 810

Is the SRC 1xxx 2611?

- **No:** Go to the “Starting point for all problems” on page 2.  
**This ends the procedure.**
- **Yes:** Choose from the following:
  - 
  - For Processor feature code 7400, 23E7, 7408, 7404, 7406, 7407, 7409, 7410, 7412: Replace Regulator R01 (see Locations - Models 800 and 810).
  - For removable Processor feature code 7430, 7428: Replace processor (see Locations - Models 800 and 810).
  - For all other feature codes, use Processor type numbers for Models 800 and 810 in symbolic FRU “CCIN” on page 303 to determine the processor type to be replaced.  
**This ends the procedure.**

### PWRREG instructions for Models 830, 840, SB2, and SB3

The C in the SRC (1xxC xxxx) indicates the problem is on the system processor frame.

**Attention:** To avoid thermal damage to other cards when exchanging regulators, you must put the EMC shield for the CEC regulator in place before powering on the system.

**Attention:** AC power must be removed from the system before removing or installing regulator 3.




1. Is the SRC 1xxC xxxx?
  - **No:** Go to step 5 (See page 429).
  - **Yes:** Find the system unit reference code (URC) in the following table, and exchange the part that is listed for the system unit. If the URC is not listed in this table, then continue with the next step. See the Type, model, and part number list for part numbers.

**Table 1. System unit reference codes for Models 830, 840, SB2, and SB3**

Unit reference code	Location
1108, 1308	R01
1109, 1309	R02
110B, 130B	R04
110C, 130C	R05
110D, 130D	R06
110E, 1308E	R07
110F, 130F	R08
1110, 1310	R09
1111, 1311	R10
1112, 1312	R11
111B, 131B	R20
111C, 131C	M04
111D, 131D	M07
111E, 131E	M19

2. Is the SRC 1113 - 111A or 1313 - 131A?
  - **No:** Continue with the next step.
  - **Yes:** Go to symbolic FRU “BKSPCN” on page 286 and symbolic FRU “BACKPLN” on page 284.
3. Is the SRC 1xxC CE1A?



- **No:** Continue with the next step.
  - **Yes:** Power regulator R03 on FC 5077 expansion I/O tower is the failing item (see Type, model, and part number list for part number).
4. Is the SRC 1xxC 601A, 671A, or 673A?
- **No:** Continue with the next step.
  - **Yes:** Memory control regulator R03 is the failing item. All models system unit - see Type, model, and part number list for part number.  
**This ends the procedure.**
5. Is the SRC 1xxx 1611, 1612, 1613, 1621, 1622 or 1623?
- **No:** Continue with the next step.
  - **Yes:** The Power regulator is the failing item. The failing item is in Card Position M01 for a 2 or 4 way processor (FC 2400 or FC 2402) or an 8 way processor (FC 2403) (see Type, model, and part number list for part number).  
**This ends the procedure.**
6. Is the SRC 1xxx 1631, 1632, or 1633?
- **No:** Continue with the next step.
  - **Yes:** Power regulator 3 is the failing item. The failing item is in card position M06 - part CCIN 2732, 2754, or 2758.  
**This ends the procedure.**
7. Is the SRC 1xxx 6018, 6118, 6518, 6818, 6918, 601A or CE18?
- **No:** Continue with the next step.
  - **Yes:** Power regulator 1, 2, or 3 is the failing item. Perform "SPCN-PIP1" in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the failing item.
- The following list shows the possible failing items (see Type, model, and part number list for part numbers):
- Expansion I/O tower (FC 5077)
  - System unit expansion (FC 507x)
  - Storage expansion tower (FC 508x)
- This ends the procedure.**
8. Is the SRC 1xxx 6x18 or 6x1A?
- **No:** Continue with the next step.
  - **Yes:** Power regulator 1 is the failing item. Perform "SPCN-PIP1" in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the failing item.
- The following list shows the possible failing items (see Type, model, and part number list for part numbers):
- Expansion I/O tower (FC 5077)
  - System unit expansion (FC 507x)
  - Storage expansion tower (FC 508x)
- This ends the procedure.**
9. Is the SRC 1xxx 6x38 or 6x3A?
- **No:** Continue with the next step.
  - **Yes:** Power regulator 2 is the failing item. Perform "SPCN-PIP1" in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the failing item.
- The following list shows the possible failing items:

- Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
- System unit expansion (FC 507x) (see Type, model, and part number list for part number)
- Storage expansion tower (FC 508x) - see the next FRU in the SRC list.

**This ends the procedure.**

10. Is the SRC 1xxx 6x58?

- **No:** Continue with the next step.
- **Yes:** Power regulator 3 is the failing item.

The following list shows the possible failing items:

- Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
- System unit expansion (FC 507x) - no regulator installed, see the next FRU in the SRC list.
- Storage expansion tower (FC 508x) - no regulator installed, see the next FRU in the SRC list.

**This ends the procedure.**

11. Is the SRC 1xxx 7201, 7202, 7203, or 7401?

- **No:** Continue with the next step.
- **Yes:** One of the power regulators is the failing item. The following list shows the possible failing items:

- Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
- System unit expansion (FC 507x) (see Type, model, and part number list for part number)
- Storage expansion tower (FC 508x) (see Type, model, and part number list for part number)
- Battery charger (see symbolic FRU “BATCHGR” on page 285).

**This ends the procedure.**

12. Is the SRC 1xxx B101 or B102?

- **No:** Continue with the next step.
- **Yes:** If the system can be powered on with this SRC, perform symbolic FRU “BATCHGR” on page 285, and then continue.

One of the power regulators is the failing item. The following list shows the possible failing items.

- System unit - programmable regulator R01, R02, R04-R11, R20 (see Type, model, and part number list for part number)
- System unit - memory control regulator R03 (see Type, model, and part number list for part number)
- Expansion I/O tower (FC 5077) (see Type, model, and part number list for part number)
- System unit expansion (FC 507x) (see Type, model, and part number list for part number)
- Storage expansion tower (FC 508x) (see Type, model, and part number list for part number)
- Battery charger (see symbolic FRU “BATCHGR” on page 285).

**This ends the procedure.**

13. Is the SRC 1xxx B201 or B202?

- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
- **Yes:** If the system can be powered on with this SRC, perform symbolic FRU “BATCHGR” on page 285, and then continue.

The battery unit is reporting an over-current. The following list shows the possible failing items.

- System unit - programmable regulator R01, R02, R04-R11, R20 (see Type, model, and part number list for part number)
- System unit - memory control regulator R03 (see Type, model, and part number list for part number)
- Battery charger - part 21H7060 (see symbolic FRU “BATCHGR” on page 285)

**This ends the procedure.**

## PWRSPLY

For use by authorized service providers.

A power supply may be the failing item.

Follow the instructions for the model you are working on:

- Models 270 or 820 (See page 431)
- Models 800, 810, 825, 870/890 (FC 9094) (See page 435)
- Models 830, 840, SB2, or SB3 (See page 438)

### Instructions for Model 270 or 820

**Attention:** Before installation, you must remove the protective cover on connector J4 on the power supply (see Type, model, and part number list for part number).

1. Is the SRC 1xxx-15xx?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the unit reference code in the following tables to determine the failing power supply.
    - b. On a system with the dual line cord feature, and an SRC 1xxx-1510, 1520, or 1530, perform “Power PIP11” on page 175 before replacing parts.
    - c. Refer to Locations and addresses to determine the location and part number of the failing item.
    - d. Replace the failing power supply.
    - e. Perform the following if the new power supply does not fix the problem:
      - 1) Reinstall the original power supply.
      - 2) Try the new power supply in each of the other positions listed in the table.
      - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.
      - 4) On a Model 820 with SRCs 1xxx-1510, 1520, and 1530, exchange the power distribution backplane if a problem prevails after replacing the power supply.

**Table 1. Model 270 system unit**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01

**Table 2. Model 270 FC 7104 Internal Expansion Unit**

Unit reference code	Power supply
1520, 1521, 1522, 1523, 1524, 1526	P02

**Table 3. Model 820 system unit frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533, 1534, 1536	P03

**Table 4. FC 5075 Expansion I/O Frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02

**Table 5. FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P02
1520, 1521, 1522, 1523, 1524, 1526	P01

**Table 6. FC 5065, FC 5066, FC 5074, FC 5079, FC 9074, FC 9079 (single line cord), Expansion I/O Frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533, 1534, 1536	P03

**Table 7. FC 5094, FC 9094 (dual line cord), Expansion I/O Frame**

**Note:** For reference codes 1500, 1510, 1520, and 1530, perform “Power PIP11” on page 175 before replacing parts.

Unit reference code	Power supply
1500, 1501, 1502, 1503, 1504, 1506	P00
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533, 1534, 1536	P03

**Note:** Do not install power supplies P00 and P01 ac jumper cables on the same AC input module.

**This ends the procedure.**

2. Is the SRC 1xxx-1Bxx?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
  - a. Find the unit reference code in the following table to determine the failing power supply.
  - b. Refer to Locations and addresses to determine the location and part number of the failing item.
  - c. Replace the failing power supply.
  - d. Perform the following if the new power supply does not fix the problem:
    - 1) Reinstall the original power supply.
    - 2) Try the new power supply in each of the other positions listed in the table.
    - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

**Table 9. For FC 7104 (internal expansion)**

Unit reference code	Power supply
1B13, 1B14, 1B16, 1B17	P02

**This ends the procedure.**

3. Is the SRC 1xxx-2600, 2601, 2602, 2603, or 2604?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the system or feature code in the following table to determine the failing power supply.
    - b. Refer to Locations and addresses to determine the location and part number of the failing item.
    - c. Replace the failing power supply.
    - d. Perform the following if the new power supply does not fix the problem:
      - 1) Reinstall the original power supply.
      - 2) Try the new power supply in each of the other positions listed in the table.
      - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.


**Table 10. For SRCs in a Model 270 or Model 820 system unit or FC 5065, FC 5066, FC 5074, FC 5079 secondary I/O frame**

System or feature code	Power supply
Model 270	P01
Model 820	P01, P02, P03
FC 5075	P01, P02
FC 5065, FC 5066, FC 5074, FC 5079	P01, P02, P03 (single line cord)
FC 5074, FC 5079	P01, P02 (dual line cord)

**This ends the procedure.**

4. Is the SRC 1xxx CD00?
  - **No:** Continue with the next step.
  - **Yes:** The expansion unit is not detecting any power supplies installed. If a power supply is installed, replace the following, one at a time (see Type, model, and part number list for part numbers):
    - In the expansion unit frame FC 5077, 5073, and 5083: AC module.
    - In any other expansion unit frame with AC module: AC module.

**This ends the procedure.**

5. Is the SRC 1xxx 7xxx?
  - **No:** Continue with the next step.
  - **Yes:** The failing power supply is located in a secondary tower. The address of the failing tower and unit is shown in the third and fourth character of the four leftmost characters of the SRC.
    - a. Find the unit reference code in the following list to determine the failing power supply. See Type, model, and part number list for part numbers.
    - b. Then see System Unit Locations and Addresses in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  to determine the location of the failing item.

**Table 11. Determine the failing power supply and part number**

Unit reference code	Power supply
7x01	AC module (except 5073, 5077, 5083)
7x01	AC module 5073, 5077, 5083
7x02	Feature 2 (all except 5073, 5077, 5083)
7x02	5073, 5077, 5083
7x03	Feature 1 (all except 5073, 5077, 5083)

Unit reference code	Power supply
7x03	5073, 5077, 5083

**This ends the procedure.**

6. Is the SRC 1xxx 2131, 2240, or 2311?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 1 on a base expansion unit:
    - FC 5033 - part 21H9364
    - FC 5034 (without expansion unit) and FC 5035 (without expansion unit) - part 21H9364
    - FC 5034 (with expansion unit) and FC 5035 (with expansion unit) - part 44H7779

**Note:** FC 5035 may contain up to four power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See Expansion Unit Locations and Addresses in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

7. Is the SRC 1xxx 2132, 2142, 2152, 2212, 2312, or 2332?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 2 on a internal expansion unit: FC 5035 - part 44H7779.

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See Expansion Unit Locations and Addresses in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  .

**This ends the procedure.**

8. Is the SRC 1xxx 2133, 2143, 2153, 2313, or 2333?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 3 on a internal expansion unit: FC 5034, 5035 - part 44H7777

**Note:** FC 5035 may contain up to four power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See Expansion Unit Locations and Addresses in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the

V5R1 Supplemental Manuals web site  .

**This ends the procedure.**

9. Is the SRC 1xxx 2134, 2144, 2154, 2314, or 2334?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 4 on the expansion unit of an FC 5035 system - part 44H7777.

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See Expansion Unit Locations and Addresses in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1

Supplemental Manuals web site  .

**This ends the procedure.**

10. Is the SRC 1xxx 2141, 2151, or 2211?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 1 on a base expansion unit:

- FC 5033 - part 21H9364
- FC 5034 (as installed) - part 21H9364 **or** part 44H7779
- FC 5035 - part 44H7779

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See Expansion Unit Locations and Addresses in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

11. Is the SRC 1xxx 2330 or 2331?

- **No:** Continue with the next step.
- **Yes:** The failing item is power supply 1 on a base expansion unit:
  - FC 5033 - part 21H9364
  - FC 5034 (as installed) - part 21H9364 **or** 44H7779
  - FC 5035 - part 44H7779

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See Expansion Unit Locations and Addresses in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

12. Is the SRC 1xxx 2213?

- **No:** Continue with the next step.
- **Yes:** See the next failing item.

**This ends the procedure.**

13. Is the SRC 1xxx 2210?

- **No:** Continue with the next step.
- **Yes:** The failing item is power supply 1 on the base expansion unit, or power supply 2 on the internal expansion unit of an FC 5035 expansion.
  - FC 5033 - part 21H9364
  - FC 5034 (as installed) - part 21H9364 **or** 44H7779
  - FC 5035 (power supply 2) - part 44H7779

**This ends the procedure.**

14. Is the SRC 1xxx 2610?

- **No:** Go to “Starting point for all problems” on page 2.
- **Yes:** Check the memory cards (2) and processor card for correct installation and that it is seated properly. If the SRC prevails, replace the following one at a time (see Locations and addresses ):
  - Power supply
  - Memory cards
  - Processor card

**This ends the procedure.**

**Instructions for Models 800, 810, 825, 870/890 (FC 9094)**

Expansion units are included in the tables below.

1. Is the SRC 1xxx-15xx?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
  - a. If you are working on a Model 825 that is powered off, the 1510 and 1520 reference codes can be caused by the cover on the processor enclosure not being installed (see Locations - Model 825 ), or a faulty interlock switch assembly (see the Model 825 - Interlock switch remove and replace procedure, and the Type, model, and part number list for the part number).
  - b. Find the unit reference code in the following tables to determine the failing power supply.
  - c. If the SRC is 1xxx-1500, 1510, 1520, or 1530 and the failing unit has the dual line cord feature, perform “Power PIP11” on page 175 before replacing parts.
  - d. Refer to Locations and addresses to determine the location and part number of the failing item.
  - e. Replace the failing power supply.
  - f. Perform the following if the new power supply does not fix the problem:
    - 1) Reinstall the original power supply.
    - 2) Try the new power supply in each of the other positions listed in the table.
    - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.
    - 4) For SRCs 1xxx-1500, 1510, 1520, or 1530, exchange the power distribution backplane if a problem prevails after replacing the power supply.

**Table 12. Models 800 and 810**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01

**Table 13. Models 800 and 810 FC 7116 Internal Expansion unit**

Unit reference code	Power supply
1520, 1521, 1522, 1523, 1524, 1526	P02

**Table 14. Model 825**

Note: For reference codes 1510 and 1520, perform “Power PIP11” on page 175 before replacing parts.

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02

**Table 15. FC 5075 Expansion I/O Frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02

**Table 16. FC 5095, FC 0595 Expansion I/O Frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02



**Table 17. FC 5078, FC 0578, FC 5088, or FC 0588 Expansion I/O Frame**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P02
1520, 1521, 1522, 1523, 1524, 1526	P01

**Table 18. FC 5074, FC 5079, FC 5094, FC 5294, FC 8093, FC 8094, or FC 9094, (single line cord) Expansion I/O Unit**

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533, 1534, 1536	P03

**Table 19. FC 5094, FC 5294, FC 8094, or FC 9094 (dual line cord), Expansion I/O Unit**

**Note:** For reference codes 1500, 1510, 1520, and 1530, perform “Power PIP11” on page 175 before replacing parts.

Unit reference code	Power supply
1500, 1501, 1502, 1503	P00
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533, 1534, 1536	P03

**Note:** Do not install power supplies P00 and P01 ac jumper cables on the same AC input module.

**Table 20. FC 5074, FC 5079, FC 9074, FC 9079 (dual line cord) Expansion I/O Unit**

**Note:** For reference codes 1510 and 1520, perform “Power PIP11” on page 175 before replacing parts.

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02

**This ends the procedure.**

2. Is the SRC 1xxx-1Bxx

- **No:** Continue with the next step.
- **Yes:** Perform the following:
  - a. Find the unit reference code in the following tables to determine the failing power supply.
  - b. Refer to Locations and addresses to determine the location and part number of the failing item.
  - c. Replace the failing power supply.
  - d. Perform the following if the new power supply does not fix the problem:
    - 1) Reinstall the original power supply.
    - 2) Try the new power supply in each of the other positions listed in the table.
    - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

**Table 21. FC 7116 (internal expansion)**

Unit reference code	Power supply
1B13, 1B14, 1B16, 1B17	P02

3. Is the SRC 1xxx-2600, 2601, 2602, 2603, 2604, 2605, or 2606?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the system or feature code in the following table to determine the failing power supply.
    - b. Refer to Locations and addresses to determine the location and part number of the failing item.
    - c. Replace the failing power supply.
    - d. Perform the following if the new power supply does not fix the problem:
      - 1) Reinstall the original power supply.
      - 2) Try the new power supply in each of the other positions listed in the table.
      - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

**Table 22. For SRCs in a Model 800, 810 or 825 system unit, or an FC 5074, FC 5079, or FC 5094 secondary I/O frame**

System or feature code	Power supply
Models 800 and 810	P01
Model 825	P01, P02
FC 5075	P01, P02
FC 5095	P01, P02
FC 5074, FC 5079, or FC 8093	P01, P02, P03 (single line cord)
FC 5074, FC 5079, or FC 8093	P01, P02 (dual line cord)
FC 5094, FC 5294, or FC 8094	P01, P02, P03 (single line cord)
FC 5094, FC 5294, or FC 8094	P00, P01, P02, P03 (dual line cord)

**This ends the procedure.**

4. Is the SRC 1xxx 2610?
  - **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **Yes:** Check the memory cards (two) and processor card for correct installation, and that it is seated properly. If the SRC prevails, replace the following, one at a time.
    - Power supply
    - Memory cards
    - Processor card**This ends the procedure.**

#### **Instructions for Models 830, 840, SB2, or SB3**

1. If the LED in a power supply is not on or is blinking, it may be the failing item. The LED not on may be the only indication of a failure. Exchange the power supply to correct this problem.  
**Note:** The C in the SRC (1xxC xxxx) indicates the problem is on the processor tower side of the Model 840 system type.
2. Is the SRC 1xxx-11xx?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the unit reference code in the following tables to determine the failing power supply.
    - b. Refer to Locations - Models 840 and SB3 for the location and part number of the failing item.
    - c. Replace the failing power supply.

- d. Perform the following if the new power supply does not fix the problem:
  - 1) Reinstall the original power supply.
  - 2) Try the new power supply in each of the other positions listed in the table.
  - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

**Table 23. For 1xxx-11xx SRCs**

Unit reference code	Power supply
1100	P01
1101	P02
1102	P03
1103	P04
1104	P05
1105	P06

**This ends the procedure.**

3. Is the SRC 1xxx-13xx?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the unit reference code in the following tables to determine the failing power supply.
    - b. Refer to Locations - Models 840 and SB3 for the location and part number of the failing item.
    - c. Replace the failing power supply.
    - d. Perform the following if the new power supply does not fix the problem:
      - 1) Reinstall the original power supply.
      - 2) Try the new power supply in each of the other positions listed in the table.
      - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

**Table 24. For SRC 1xxx-13xx**

Unit reference code	Power supply
1300	P01
1301	P02
1302	P03
1303	P04
1304	P05
1305	P06

**This ends the procedure.**

4. Is the SRC 1xxx-15xx or 19xx?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the unit reference code in the following tables to determine the failing power supply.
    - b. On a system unit with the dual line cord feature and a 1xxx-1510, 1520, 1530, 1910 or 1920 SRC, perform "Power PIP11" on page 175 before replacing parts.
    - c. Refer to Locations and addresses to determine the location and part number of the failing item.
    - d. Replace the failing power supply.

- e. Perform the following if the new power supply does not fix the problem:
- 1) Reinstall the original power supply.
  - 2) Try the new power supply in each of the other positions listed in the table.
  - 3) If the problem still is **not** fixed, reinstall the original power supply.
  - 4) If the reference code is 1911 or 1921, replace the memory riser card in positions M02 and M05. If the memory riser card does not fix the problem, or if the reference code is not 1911 or 1921, go to the next FRU in the list.

**Table 25. For SRC 1xxx-15xx or 19xx in a system unit or secondary I/O frame with single ac line cord, except FC 5078, FC 0578, FC 5088, or FC 0588**

Unit reference code	Power supply	Part number
1510, 1511, 1512, 1513, 1514, 1516	P01	See Type, model, and part number list
1520, 1521, 1522, 1523, 1524, 1526	P02	See Type, model, and part number list
1530, 1531, 1532, 1533, 1534, 1536	P03	See Type, model, and part number list
1910, 1911, 1912, 1913	PP1	See Type, model, and part number list (type 515B)
1920, 1921, 1922, 1923	PP2	See Type, model, and part number list (type 515B)

**Table 26. For SRC 1xxx-15xx or 19xx in a system unit or secondary I/O frame with dual ac line cord, except FC 5078, FC 0578, FC 5088, or FC 0588**

**Note:** For reference codes 1510, 1520, 1910, and 1920, perform “Power PIP11” on page 175 before replacing parts.

Unit reference code	Actual power supply FRU to replace	Part number
1510, 1511, 1512, 1513, 1514, 1516	P01	See Type, model, and part number list
1520, 1521, 1522, 1523, 1524, 1526	P02	See Type, model, and part number list
1910, 1911, 1912, 1913	PP1	See Type, model, and part number list (type 515B)
1920, 1921, 1922, 1923	PP2	See Type, model, and part number list (type 515B)

**Table 27. For FC 5078, FC 0578, FC 5088, or FC 0588**

Unit reference code	Actual power supply FRU to replace
1510, 1511, 1512, 1513, 1514, 1516	P02
1520, 1521, 1522, 1523, 1524, 1526	P01

**This ends the procedure.**

5. Is the SRC 1xxx-2600 or 2610?
  - **No:** Continue with the next step.
  - **Yes:** Perform the following:
    - a. Find the unit reference code in the following tables to determine the failing power supply.
    - b. Refer to Locations and addresses to determine the location and part number of the failing item.

- c. Replace the failing power supply.
- d. Perform the following if the new power supply does not fix the problem:
  - 1) Reinstall the original power supply.
  - 2) Try the new power supply in each of the other positions listed in the table.
  - 3) If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

**Table 28. For SRC 1xxx-2600 or 2610 in an FC 9074, FC 9079 system unit or FC 5065, FC 5066, FC 5074, or FC 5079 secondary I/O frame, (single line cord)**

Unit reference code	Power supply
2600, 2610	P01, P02, P03

**Table 29. For SRC 1xxx-2600 or 2610 in an FC 9074, FC 9079 system unit or FC 5074, or FC 5079 secondary I/O frame, (dual line cord)**

Unit reference code	Power supply
2600, 2610	P01, P02

**Table 30. For SRC 1xxx-2600 in an FC 5078, FC 0578, FC 5088, or FC 0588 secondary I/O frame**

Unit reference code	Power supply
2600	P01, P02

**This ends the procedure.**

6. Is the SRC 1xxx CD00?
  - **No:** Continue with the next step.
  - **Yes:** The system unit is not detecting any power supplies installed. If a power supply is installed replace the following one at a time (see Type, model, and part number list for part numbers):
    - Expansion unit frame FC 5077, 5073, and 5083
    - All others with AC module

**This ends the procedure.**
7. Is the SRC 1xxx 7xxx?
  - **No:** Continue with the next step.
  - **Yes:** The failing power supply is located in a secondary tower. The address of the failing tower and unit is shown in the third and fourth character of the 4 leftmost characters of the SRC. Find the unit reference code in the following list to determine the failing power supply and the part number. Then, see the Locations and addresses topic to determine the location of the failing item.

**Table 31. Determine the failing power supply and part number**

Unit reference code	Power supply	Part number
7x01	AC module (except FC 5073, FC 5077, and FC 5083)	See Type, model, and part number list for part numbers.
7x01	AC module FC 5073, FC 5077, and FC 5083	See Type, model, and part number list for part numbers.
7x02	Feature 2 (all except FC 5073, FC 5077, and FC 5083)	87G6290
7x02	5073, 5077, 5083	87G6110
7x03	Feature 1 (all except 5073, 5077, 5083)	87G6290

Unit reference code	Power supply	Part number
7x03	5073, 5077, 5083	87G6110

**This ends the procedure.**

8. Is the SRC 1xxx 2131, 2240, or 2311?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 1 on a base expansion unit:
    - FC 5033 - part 21H9364
    - FC 5034 (as installed) - part 21H9364 **or** 44H7779
    - FC 5035 - part 44H7779

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See the Locations and Addresses section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

9. Is the SRC 1xxx 2132, 2142, 2152, 2212, 2312, or 2332?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 2 on a FC 5035 internal expansion unit (see Type, model, and part number list for part numbers).

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See the Locations and Addresses section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental

Manuals web site .

**This ends the procedure.**

10. Is the SRC 1xxx 2133, 2143, 2153, 2313, or 2333?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 3 on a internal expansion unit: FC 5034, 5035 - part 44H7777.

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See the Locations and Addresses section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental

Manuals web site .

**This ends the procedure.**

11. Is the SRC 1xxx 2134, 2144, 2154, 2314, or 2334?
- **No:** Continue with the next step.
  - **Yes:** The failing item is power supply 4 on a internal expansion unit: FC 5035 - part 44H7777.
    - FC 5033 - part 21H9364
    - FC 5034 (as installed) - part 21H9364 **or** part 44H7779
    - FC 5035 - part 44H7779

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See the Locations and Addresses section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

12. Is the SRC 1xxx 2330 or 2331?

- **No:** Continue with the next step.
- **Yes:** The failing item is power supply 1 on a base expansion unit:
  - FC 5033 - part 21H9364
  - FC 5034 (as installed) - part 21H9364 **or** 44H7779
  - FC 5035 - part 44H7779

**Note:** FC 5035 may contain up to 4 power supplies. The reference code that sent you here refers to the power supply on the base expansion unit. See the Locations and Addresses section in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

13. Is the SRC 1xxx 2213?

- **No:** Continue with the next step.
- **Yes:** See the next failing item.

**This ends the procedure.**

14. Is the SRC 1xxx 2210?

- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
- **Yes:** The failing item is power supply 1 on the base expansion unit, or power supply 2 on the internal expansion unit of an FC 5035 expansion:
  - FC 5033 - part 21H9364
  - FC 5034 (as installed) - part 21H9364 **or** 44H7779
  - FC 5035 (power supply 2) - part 44H7779

**Note:** See the Locations and Addresses section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site



**This ends the procedure.**

## QSYSOPR

*For use by authorized service providers.*

For more information, look in the System Operator message queue for a message with the same date and time. Perform any actions defined in the message.

## REDH

*For use by authorized service providers.*

The processor has received a memory error, however, analysis has determined this is most likely due to a previous processor error than a memory failure.

Perform the following:


1. Look in the Service Action Log for a processor error (B4xx) occurring prior to this B4xx xEBF error and replace any FRUs associated with that error.

2. Perform a slow IPL. Then, check the Service Action Log and work any errors found during the extended IPL diagnostics.
3. If, after servicing any other processor reported errors, the B4xx xEBF error persists, contact your next level of support.

**This ends the procedure.**

## REFER

*For use by authorized service providers.*

Consult the All 3995 Publications and Documentation  Web site to assist in analyzing the unit reference code (URC).

## REM\_NIC

*For use by authorized service providers.*

One end of the failed link is a system unit other than the one reporting this error. In a cluster, all system units should send a warning to the other system units in the cluster when they are about to perform a controlled power down. This error could occur when a system unit leaves the cluster without issuing any warning to other system units. If the system unit is not reporting due to a failed cable or HSL hardware, replacing the FRUs in this error log entry will correct the problem.

However, the system unit may have been powered down immediately, or powered down because of an error. If this is the case, work any errors in the other system unit, or power the other system unit back on. When the other system unit reports in, the loop will be complete and this error can be closed.

## REM\_SYS

*For use by authorized service providers.*

A problem has occurred in a remote system that is in an HSL OptiConnect loop. The Service Action Log (SAL) code will attempt to identify the HSL loop number of the local system and the serial number of the remote system as a portion of the part description for this symbolic FRU. If the SAL could not identify the serial number of the remote system then check all the systems which are connected to the local HSL loop identified in the SAL. Search the SAL of the remote system(s) for hardware and LIC problems. Correct any problems you find with LIC or Network Interface Controller (NIC) hardware.

## RIOPORT

*For use by authorized service providers.*

Follow the instructions for the model you are working on:

- Models 270, 820, 830, 840, SB2, or SB3 (See page 444)
- Models 800, 810, 825, 870, or 890 (See page 444)

### Instructions for Models 270, 820, 830, 840, SB2, and SB3

The system processor has detected an error on the HSL port.

1. Use the information in the Description/Action column of the following System reference code tables: B427 (for Models 270 and 820), and B437 (for Models 830 and SB2), and B467 (for Models 840 and SB3), and the information from Locations and addresses to determine the physical mapping of the information from the Location column.
2. Check the cabling and connections from the failing item location. Then, follow the procedure in symbolic FRU "SIRGCBL" on page 453.

**This ends the procedure.**

### Instructions for Models 800, 810, 825, 870, and 890



The system processor has detected an error on the HSL port. The error was found during an IPL, and is preventing the system from finishing the IPL. The error is on the load source or flash source HSL Bus.

1. Use the information in the Location of failure column in Table 1. below, and the information from Locations and Addresses to determine the physical mapping of the information from the Location column.
2. Check the cabling and connections from the failing port. Follow the procedure in Symbolic FRU "BUSCBL1, BUSCBL2, BUSCBL3, or BUSCBLx" on page 292.
3. If checking cables and connections does not correct the problem, replace the HSL connection in the given location.
4. Choose from the following options:
  - **For Models 800 and 810:** See Locations - Models 800 and 810. All errors are on the A0-A1 HSL port. If checking the cables does not correct the problem, the field replaceable unit (FRU) to replace is the System unit backplane, CCIN 25F0, 25B9, 25BA, or 282F.
  - **For Model 825:** See Locations - Model 825.
    - For SRCs of the form B428 xB0x, the failing item is the HSL Card in position C09.
    - For SRCs of the form B428 xB1x, the failing item is the HSL Card in position C08.
    - For SRCs of the form B428 xB2x, the failing item is the HSL Card in position MB1.
  - **For Models 870 and 890:** See Table 1. below, and Locations - Models 870 and 890.

**Table 1. Failure locations for Models 870 and 890**

System reference code	Location of failure
B448 xB00	M41 port A0
B448 xB01	M41 port A1
B448 xB02	M41 port B0
B448 xB03	M41 port B1
B448 xB10	M40 port A0
B448 xB11	M40 port A1
B448 xB12	M40 port B0
B448 xB13	M40 port B1
B448 xB14	M40 port C0
B448 xB15	M40 port C1
B448 xB16	M40 port D0
B448 xB17	M40 port D1
B448 xB20	M30 port A0
B448 xB21	M30 port A1
B448 xB22	M30 port B0
B448 xB23	M30 port B1
B448 xB24	M30 port C0
B448 xB25	M30 port C1
B448 xB26	M30 port D0
B448 xB27	M30 port D1
B448 xB30	M39 port A0
B448 xB31	M39 port A1
B448 xB32	M39 port B0
B448 xB33	M39 port B1

System reference code	Location of failure
B448 xB34	M39 port C0
B448 xB35	M39 port C1
B448 xB36	M39 port D0
B448 xB37	M39 port D1
B448 xBF0	M41 ports A0-A1
B448 xBF1	M41 ports B0-B1
B448 xBF2	M40 ports A0-A1
B448 xBF3	M40 ports B0-B1
B448 xBF4	M30 ports C0-C1
B448 xBF5	M30 ports D0-D1
B448 xBF6	M39 ports A0-A1
B448 xBF7	M39 ports B0-B1
B448 xBF8	M40 ports C0-C1
B448 xBF9	M40 ports D0-D1
B448 xBFA	M30 ports A0-A1
B448 xBFB	M30 ports B0-B1
B448 xBFC	M39 ports C0-C1
B448 xBFD	M39 ports D0-D1

**This ends the procedure.**

## RMDEV

*For use by authorized service providers.*

A removable media power regulator or device in a migrated expansion tower may be failing.

See the RMDEV symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for FRU isolation instructions.

## SIADPCD

*For use by authorized service providers.*

SIADPCD: High Speed Link I/O bridge card.

If you are working on a Model 170, 250, 5xx, 6xx, or SBx, see the following for field replaceable unit (FRU) isolation and repair.

- FI00065 (See page 250)
- AJDG30 software load

The failing component is the HSL I/O bridge card in a system unit primary I/O unit (for Models 830, 840, 870, 890, SB2, and SB3), an FC 5074, FC 5078, FC 0578, FC 5079 (1.8m expansion tower) I/O expansion tower, or the Integrated xSeries Adapter Card in an xSeries server.

1. If you are working from the Service Action Log and you know the frame ID where this failing component is located, then continue with the next step in this procedure. Otherwise, record the bus number value (BBBB) in word 7 of the SRC (see “Breaking down the SRC” on page 63 for help in determining the bus number). Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing component.

- Determine the tower type where the failing component is located and exchange the FRU indicated using the links to the service information for that FRU.

**Table 1. Name of FRU to exchange for symbolic FRU SIADPCD**

System model, tower, expansion unit, or machine type	Name of FRU to exchange	Link to failing component service information (CCIN, Locations diagram, remove and replace procedure)
Models 830 and SB2 Base I/O Tower (FC 9074)	HSL I/O bridge card	See Locations - Models 830/SB2 system unit with FC 9074 base I/O tower
Models 840 and SB3 Base I/O Tower (FC 9079)	HSL I/O bridge card	See Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower
Models 870 and 890	HSL I/O bridge card	See Locations - Models 870 and 890 with an FC 9094 Base I/O Tower
FC 5074 Expansion I/O Tower	HSL I/O bridge card	See Locations - FC 5074 I/O Tower
FC 5078, FC 0578 Expansion I/O Unit	HSL I/O bridge card	See Locations - FC 5078, FC 0578 Expansion I/O Unit
FC 5079 (1.8m Expansion I/O Tower)	HSL I/O bridge card	See Locations - FC 5079 I/O Tower
FC 5088, FC 0588 Expansion I/O Unit	HSL I/O bridge card	See Locations - FC 5088, FC 0588 Expansion I/O Unit
FC 5095, FC 0595 Expansion I/O Tower	HSL I/O bridge card	See Locations - FC 5095, FC 0595 Expansion I/O Tower
External xSeries Server	Integrated xSeries Adapter Card	See Locations - Integrated xSeries adapter card (IXA)

**This ends the procedure.**

## SI\_CARD

*For use by authorized service providers.*

SI\_CARD: high-speed link controller card.

The failing component is the network interface controller (NIC) card in the system unit.

Use the system model and the table below to determine the service information for the failing component.

System model	Name of FRU to exchange	Link to failing component service information (CCIN, locations diagram, remove and replace procedure)
Models 870 and 890	Network Interface Controller	Locations - Models 870 and 890 with an FC 9094 Base I/O Tower
Models 830 and SB2	Network Interface Controller	Locations - Models 830/SB2 system unit with FC 9074 base I/O tower
Models 840 and SB3	Network Interface Controller	Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower

**This ends the procedure.**

## SICNTRL

For use by authorized service providers.

SICNTRL: Network Interface Controller (NIC).

The failing component is the Network Interface Controller (NIC).

Follow the instructions for the model you are working on:

- Models 270, 820, 830, 840, SB2, and SB3 (See page 448)
- Models 800 and 810 (See page 448)
- Models 825, 870, and 890 (See page 449)

### Instructions for Models 270, 820, 830, 840, SB2, and SB3

Use the system model and the table below to determine the FRU containing the NIC. Exchange the FRU indicated in the table below using the service information link.

**Table 1. FRU containing the NIC for Models 270, 820, 830, 840, SB2, and SB3**

System model, tower, expansion unit, or machine type	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, location diagram, remove and replace procedure).
Model 270	See Locations - Model 270. You will need the processor feature code (characters 5 through 8 of function 20 on the control panel).		
Model 820	Processor card	M03	See Locations - Model 820.
Models 830 and SB2	Network Interface Controller	M06	See Locations - Models 830/SB2 system unit with FC 9074 base I/O tower.
Models 840 and SB3	Network Interface Controller	M17	See Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower.

**This ends the procedure.**

### Instructions for Models 800 and 810

Use the the table below to determine the FRU containing the NIC. Exchange the FRU indicated in the table below using the service information link.

**Table 2. FRU containing the NIC for Models 800 and 810**

System model, tower, expansion unit, or machine type	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, location diagram, remove and replace procedure).
Model 810 with processor FC 7428, 7429, or 7430	System processor card	M02	See Locations - Models 800 and 810
Models 800 and 810 without processor features 7428, 7429, or 7430	System unit backplane	MB1	See Locations - Models 800 and 810

## Instructions for Models 825, 870, and 890

Choose from the following options:

- If you have a resource name in the SAL for this error, then go to Table 3. (See page 450) below to find the FRU containing the NIC.
- If there is no location in the SAL, look in the first half of word 7 of the SRC for the hexadecimal loop number. If the loop number is greater than 0100, then it is a valid loop number and can be correlated to a position using the “Converting from HSL loop number to port labels on the system unit or processor tower” on page 72 information in the Bus overview.
- If there is not a valid loop number in the SRC, then perform Determine the NIC’s FRU for Models 825, 870, and 890 (See page 449) procedure below to determine the loop number from the reporting resource.

### Determine the NIC’s FRU for Models 825, 870, and 890:

1. If you have a resource name in the SAL for this error, then go to Procedure one (See page 449). If not, then continue with the next step.
2. If characters 1 through 4 in word 7 of the SRC are greater than or equal to 0100, then go to Procedure two (See page 449). If not, continue with the next step.
3. If characters 1 through 4 in word 7 of the SRC are less than 0100, then go to Procedure three (See page 449).

#### Procedure one:

1. Start Hardware Service Manager under SST or DST.
2. Select **Logical Hardware Resources** —> **High-speed link resources** —> **Include non-reporting resources**.
3. Each HSL resource will be displayed. HSL loop resources will have a corresponding loop number. Search for the resource name you have by selecting **Resources associated with loop** for each loop resource, one at a time.
4. When you have located the resource name you are searching for move the cursor to the local HSL NIC resource it is associated with and select **Associated packaging resources**.
5. Select **Display Detail** and record the frame ID and card position of the NIC resource. Go to Table 3. (See page 450) below, and use the NIC’s card position to determine the link to follow to the FRU positions, names and components table.  
**This ends the procedure.**

#### Procedure two:

If characters 1 through 4 in word 7 of the SRC are greater than or equal to 0100, then they form the HSL loop number. Perform the following:

1. Determine the NIC’s card position using the “Converting from HSL loop number to port labels on the system unit or processor tower” on page 72 information in the Bus PIP overview page.
2. Go to Table 3 (See page 450) below, and use the NIC’s card position to determine the link to follow to the FRU positions, names, and components table.  
**This ends the procedure.**

#### Procedure three:

If characters 1 through 4 in word 7 of the SRC are less than 0100, then they form the system bus number. You have two options:

- If you have a system configuration listing, use it to determine which HSL loop number the system bus is connected to. Then, determine the NIC’s card position using the “Converting from HSL loop number to port labels on the system unit or processor tower” on page 72 information in the Bus PIP overview.

Once you have the NIC's card position, go to Table 3. (See page 450) below and use the link to the FRU positions, names, and components table associated with the card position.

**This ends the procedure.**

- If you do not have a system configuration listing, then perform the following:
  1. Start Hardware Service Manager under SST or DST and select **Logical Hardware Resources** —> **High-speed link resources**.
  2. Select the **Include non-reporting resources** function.
  3. Each HSL resource will be displayed. HSL loop resources will have a corresponding loop number. Search for the system bus number under each loop by selecting **Resources associated with loop** for each HSL loop, one at a time.
  4. For each HSL I/O bridge under the loop select **Resources associated with this resource**.
  5. To locate the system bus number for each system bus resource, select **Display detail** for each system bus resource.
  6. When you have located the system bus number you are searching for use the cancel function to return to the Work with high-speed link (HSL) resources display. Move the cursor to the local HSL NIC resource that the system bus is associated with and select **Associated packaging resources**.
  7. Select **Display Detail** and record the frame ID and card position of the NIC resource. Go to Table 3. (See page 450) below and use the NIC's card position to determine the link to follow to the FRU positions, names and components table.

**This ends the procedure.**

**Table 3. FRU containing the NIC for Models 825, 870, and 890**

System model, tower, expansion unit, or machine type	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, location diagram, and remove and replace procedure).
Model 825	System unit backplane or system unit backplane extender	CB1 or MB1	See Locations - Model 825
Models 870 and 890	NIC card assembly	M30, or M39, or M40, or M41	See Locations - Models 870 and 890



## SIIOADP

*For use by authorized service providers.*

SIIOADP: High-speed link (HSL) I/O bridge.



This is the HSL I/O bridge in a system unit, a primary I/O unit, an expansion I/O unit or an SPD migrated tower.

1. Was the frame ID **and** the card position listed in the SAL information?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **8** (See page 451).  
**This ends the procedure.**
2. Was a frame ID listed in the SAL entry or do you know the frame ID?
  - **No:** Continue with the next step.
  - **Yes:** The failing component is the HSL I/O bridge in that frame. Record the frame type and go to step **8** (See page 451).
3. Is there an HSL loop number listed for this FRU in the SAL entry?
  - **No:** Continue with the next step.
  - **Yes:** Go to step **7** (See page 451).

4. Record the Direct Select Address (DSA) which is word 7 of the SRC from the SAL display.
5. Are the first four digits of the DSA in word 7 greater than or equal to 0100?
  - **No:** Continue with the next step.
  - **Yes:** Convert the bus number in the DSA (BBBB) to decimal. For help in converting the DSA, see “DSA breakdown” on page 63 (in the Bus PIP overview topic). Perform “Bus PIP HSL-04” on page 85, then return here and continue with step 8 (See page 451).
6. Perform the following:
  - a. Record the bus number value, BBBB, in word 7 of the SRC. See “Breaking down the SRC” on page 63 (in the Bus PIP overview topic) for help in determining the bus number.
  - b. Search for the bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing component. Record the frame or tower type.
  - c. Choose from the following options:
    - If the bus number is **not** in the range **4** through **23** (0004 through 0017 hexadecimal) go to step **8** (See page 451).
    - If the bus number **is** in the range **4** through **23** (0004 through 0017 hexadecimal), the failing component is the HSL I/O bridge card in an SPD migrated tower.
      - For SPD migrated tower FC 5077 go to symbolic FRU LBUSADP in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing component.
      - For SPD migrated tower FC 5033, FC 5034, FC 5035 go to symbolic FRU CVTCARD in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for information on servicing this failing component.
7. Have you already determined the frame ID and frame type of this failing component using another procedure or symbolic FRU?
  - **No:** Perform “Bus PIP HSL-04” on page 85, then return here and continue with the next step.
  - **Yes:** The problem is in one of the HSL I/O bridges within that loop. Use the frame ID and type that you have already determined to exchange the failing component. Continue with the next step.
8. Use the system model, tower, expansion unit, or machine type, and the table below to determine the service information for the failing component.

**Table 1. Failing component service information table for symbolic FRU SIIOADP**

System model, tower, expansion unit, or machine type	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, PN, remove and replace procedure)
Model 270 - Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	System unit backplane	MB1	Use the Model 270 diagrams and tables by processor feature code and follow the Locations diagram link for the processor feature code.
Models 800 and 810	System unit backplane	MB1	See Locations — Models 800 and 810
Model 820	System unit backplane	MB1	See Locations — Model 820
Model 825	System unit backplane	CB1	See Locations — Model 825
Models 830 and SB2 Base I/O Tower (FC 9074)	HSL I/O bridge card	C08	See Locations — Models 830, SB2 System Unit with FC 9074 Base I/O Tower

System model, tower, expansion unit, or machine type	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, PN, remove and replace procedure)
Models 840 and SB3 Base I/O Tower (FC 9079)	HSL I/O bridge Card	C08	See Figure 2. Locations for FC 9079 Base I/O Tower (on Models 840, SB3 System Unit) in Locations — Model 840
Models 870 and 890 Primary I/O Unit, FC 9094	HSL I/O bridge card	C10	See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower
FC 5074 Expansion I/O Tower	HSL I/O bridge card	C08	See Locations — FC 5074 Expansion I/O Tower
FC 5075 Expansion I/O Tower	Tower card	CB1	See Locations — FC 5075 Expansion I/O Tower
FC 5078 and FC 0578 Expansion I/O Unit	HSL I/O bridge card	C08	See Locations — FC 5078, FC 0578 Expansion I/O Unit
FC 5079 (1.8m Expansion I/O Tower)	HSL I/O bridge card	C08	See Locations — FC 5079 I/O Expansion I/O Tower
FC 5088, FC 0588 Expansion I/O Unit	HSL I/O bridge card	C10	See Locations — FC 5088, FC 0588 Expansion I/O Unit
FC 5094, FC 5294, FC 8094 Expansion I/O Unit	HSL I/O bridge card	C10	See the following: <ul style="list-style-type: none"> <li>• Locations — FC 5094 Expansion I/O Tower</li> <li>• Locations — FC 5294 Expansion I/O Tower</li> <li>• Locations — FC 8094 Expansion I/O Tower</li> </ul>
FC 5095, FC 0595 Expansion I/O Tower	HSL I/O bridge card	C05	See Locations — FC 5095, 0595 Expansion I/O Tower
External xSeries <sup>(TM)</sup> Server	Integrated xSeries <sup>(TM)</sup> Adapter Card	Follow the HSL cables	See Locations — Integrated xSeries <sup>(TM)</sup> Adapter Card (IXA)
FC 5077 SPD migrated tower	Go to symbolic FRU LBUSADP in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .		
FC 5033, FC 5034, or FC 5035 SPD migrated tower	Go to symbolic FRU CVTCARD in the <i>Migrated Expansion Tower Problem Analysis, Repair and Parts</i> manual on the V5R1 Supplemental Manuals web site  .		

**This ends the procedure.**

## SI\_PHB

*For use by authorized service providers.*

SI\_PHB: high-speed link PCI host bridge.

The HSL I/O bridge hardware in a system unit, primary I/O unit, or I/O expansion unit is failing.

Follow this procedure to identify the failing component to exchange.

1. Choose from the following options:

- If you are working from the Service Action Log and a card position is listed with this FRU, then that is the card position where the error is. Continue with the next step.



- Otherwise, record the bus number value, BBBB, in word 7 of the SRC, see “Breaking down the SRC” on page 63 (in the Bus PIP overview) for help in determining the bus number. Search for the decimal bus number in HSM or the System Configuration Listing to determine which frame or I/O tower contains the failing item. From the Hardware Service Manager screen select **Logical Hardware Resources** → **System Bus resources**. Move the cursor to a system bus object and select **Display Detail**. Do this for each bus until you find the bus on which you are working. Record the frame or tower type.
2. Use the system model, tower, expansion unit, or machine type and the table below to determine the service information for the failing component.

System model, tower, expansion unit, or machine type	Name of FRU to exchange	Link to failing component service information (CCIN, locations diagram, remove and replace procedure).
Model 270	System unit backplane	Go to Locations - Model 270 and follow the Locations diagram link for the processor feature code (characters 5 through 8 of function 20 on the control panel).
Models 800 and 810	System unit backplane	See Locations - Models 800 and 810
Model 820	System unit backplane	See Locations - Model 820.
Model 825	System unit backplane	See Locations - Model 825
Models 830 and SB2 with FC 9074 base I/O tower	HSL I/O bridge card	See Locations - Models 830/SB2 system unit with FC 9074 base I/O tower.
Models 840 and SB3 base I/O tower (FC 9079)	HSL I/O bridge card	See Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower.
Models 870 and 890	HSL I/O bridge card	See Locations - Models 870 and 890.
FC 5074 expansion I/O tower	HSL I/O bridge card	See Locations - FC 5074 expansion I/O tower.
FC 5075 expansion I/O tower	Tower card	See Locations - FC 5075 expansion I/O tower.
FC 5078, FC 0578 expansion I/O tower	HSL I/O bridge card	See Locations - FC 5078, 0578 expansion I/O unit.
FC 5079 (1.8m expansion I/O tower)	HSL I/O bridge card	See Locations - FC 5079 expansion I/O tower.
FC 5088, FC 0588 expansion I/O unit	HSL I/O bridge card	See Locations - FC 5088, FC 0588 expansion I/O unit.
FC 5094, FC 5294 expansion I/O unit	HSL I/O bridge card	See Locations - FC 5094 expansion I/O unit or Locations - FC 5294 expansion I/O unit.
FC 5095, FC 0595 expansion I/O tower	HSL I/O bridge card	See Locations - FC 5095, FC 0595 expansion I/O unit.
External xSeries <sup>(TM)</sup> Server	Integrated xSeries <sup>(TM)</sup> Adapter Card	See Locations - Integrated xSeries <sup>(TM)</sup> Adapter Card (IXA).

**This ends the procedure.**

## SIRGCBL

*For use by authorized service providers.*

SIRGCBL: high-speed link (HSL) loop cable.

This failing component is an HSL loop cable, the HSL loop connections (external, internal, or embedded), an internal HSL ribbon cable, an HSL link embedded in a FRU, or an HSL interposer card in an HSL loop.

**Warning:** If an HSL cable is pulled accidentally, it may result in the HSL connection being lost to frames that were in a loop. If this occurs, follow the Power down, power on instructions (See page 455) below to power down the frames, reconnect the HSL cable, and power the frames back on.

**Note:** When exchanging HSL optical cables use the optical cleaning kit and procedures. If you are replacing a cable between a system unit and an expansion unit, connect the expansion unit end of the cable first. See symbolic FRU “OPT\_CLN” on page 407 for additional information on the optical cleaning kit and procedures.

Were you sent to this symbolic FRU as a result of a B4xx SRC?

- **No:** The loop number may be given in the FRU description and location information of the SAL in decimal format. The loop number is in the left four digits of word 7 of the SRC in hexadecimal format. In the table below is a list of system models, towers, expansion units and machine types with their corresponding HSL connections in each of them.
- **Yes:** Perform the following:
  1. Use the location given in the SRC table to determine the failing HSL port.
  2. On the HSL link with the problem, exchange the HSL cables first.
  3. If the problem remains, exchange the interposer cards or ribbon cables.
  4. Finally, if the problem persists, exchange the FRUs containing the embedded HSL links.

In the table below is a list of system models, towers, expansion units, and machine types with their corresponding HSL connections in each of them.

System Model, Tower, Expansion Unit or Machine Type	HSL Cable or Connections
<p>Model 270</p> <ol style="list-style-type: none"> <li>1. Record the processor feature code (characters 5 through 8 of function 20 on the control panel).</li> <li>2. Use Table 1. Model 270 Diagrams and Tables by Processor Feature Code in the Locations — Model 270 topic, to determine the name and location of the FRU containing the Network Interface Controller (NIC).</li> </ol>	<p>For all Model 270 systems</p> <p>There is an HSL ribbon cable from the system unit backplane (position MB1) to the external HSL ports on the frame.</p> <p>For systems where the Network Interface Controller (NIC) is embedded in the system unit backplane (position MB1)</p> <ul style="list-style-type: none"> <li>• There is an internal HSL connection from the NIC to the HSL I/O bridge embedded in the system unit backplane.</li> <li>• There is an internal HSL connection from the HSL I/O bridge component embedded in the system unit backplane to the HSL ribbon cable port on the system unit backplane.</li> </ul> <p>For systems where the Network Interface Controller (NIC) is embedded in the processor card (position M02)</p> <ul style="list-style-type: none"> <li>• There is an internal HSL connection from the NIC embedded in the processor card to the HSL I/O bridge embedded in the system unit backplane (position MB1).</li> <li>• There is an internal HSL connection from the HSL I/O bridge component embedded in the system unit backplane to the HSL ribbon cable port on the system unit backplane.</li> </ul>
<p>Model 820</p>	<ul style="list-style-type: none"> <li>• There is an HSL ribbon cable from the system unit backplane (position MB1) to the external HSL ports on the frame.</li> <li>• There is an internal HSL connection from the NIC embedded in the processor card (position M03) to the HSL I/O bridge embedded in the system unit backplane (position MB1).</li> <li>• There is an internal HSL connection from the HSL I/O bridge component embedded in the system unit backplane to the HSL ribbon cable port on the system unit backplane.</li> </ul>

System Model, Tower, Expansion Unit or Machine Type	HSL Cable or Connections
Models 830 and SB2 system unit	<p><b>Note:</b> The HSL cable ports A0 and A1 (for loop number 256) are not on the Network Interface Controller NIC card in position M06.</p> <ul style="list-style-type: none"> <li>• The "A0" port is labeled "1" and is located on the HSL I/O bridge card in position C08 of the FC 9074 base I/O tower.</li> <li>• Port "A1" is located on the system unit frame under the NIC card in position M06. The "A1" port is oriented horizontally below a cross member of the frame.</li> <li>• An internal ribbon cable connecting the Network Interface Controller (NIC) card in position M06 to the HSL I/O bridge in position C08 of the FC 9074 base I/O tower. (The first link on HSL loop 256).</li> <li>• HSL ports are on the Network Interface Controller (NIC) Card in position M06.</li> </ul>
Models 830 and SB2 base I/O tower (FC 9074)	<ul style="list-style-type: none"> <li>• An internal ribbon cable connecting the HSL I/O bridge in position C08 to the system unit's Network Interface Controller (NIC) card in position M06. (The first link on HSL loop 256).</li> <li>• External HSL port on the HSL I/O bridge card in position C08.</li> </ul>
Models 840 and SB3 system unit/processor tower	HSL ports are on the Network Interface Controller (NIC) Card in position M17.
Models 840/SB3 System Unit with FC 9079 Base I/O Tower	External HSL ports on the HSL I/O bridge card in position C08.
FC 5074 Expansion I/O Tower	External HSL ports on the HSL I/O bridge card in position C08.
FC 5075 Expansion I/O Tower	<ul style="list-style-type: none"> <li>• External HSL ports on the tower frame.</li> <li>• Internal ribbon cable connecting the frame to the tower card in position CB1</li> </ul>
FC 5078/0578 Expansion I/O Tower	External HSL ports on the HSL I/O bridge card in position C08.
FC 5079 (1.8m expansion tower)	External HSL ports on the HSL I/O bridge card in position C08.
External xSeries Server	External HSL ports on the Integrated xSeries Adapter
FC 5033, FC 5034, FC 5035 SPD migrated towers	<ul style="list-style-type: none"> <li>• External HSL ports on the frame.</li> <li>• An HSL interposer card inside the frame behind the external HSL ports.</li> <li>• An internal ribbon cable connecting the Tower Card in position C00 to the HSL interposer card inside the frame behind the external HSL ports.</li> </ul>
FC 5077 SPD migrated towers	<ul style="list-style-type: none"> <li>• External HSL ports on the frame.</li> <li>• An HSL interposer card in position S08.</li> </ul>

**This ends the procedure.**

### **Power down, power on instructions**

Follow these steps if you accidentally pulled an HSL cable, and lost HSL connections to frames that were in a loop.

1. From the Hardware Service Manager screen, select **Packaging hardware resources**.
2. Select the frame that has just accidentally lost its HSL connection and select **Concurrent Maintenance**. Then, press **Enter**.
3. Select **Power off domain** to power off the tower.
4. After reconnecting the frame into the HSL loop, select **Power on domain**.

## SIRGCFG


For use by authorized service providers.

An invalid configuration was detected on an HSL loop during IPL.

The four rightmost characters of word 4 in the SRC contains a Program Return Code (PRC) which describes the problem detected. The leftmost four digits of word 7 in the SRC contains the loop number in hexadecimal format. Convert the loop number to decimal format before comparing it to loop numbers shown in HSM.

To determine the problem, find the PRC in the table below.

**Note:** The FRU description in the SAL may already contain a message that identifies the problem.

PRC (in word 4 of the SRC)	Problem identified	Corrective action
xxxx 0008	System serial number not set	Set the serial number on the system unit.  See the iSeries <sup>(TM)</sup> Service Functions  . If the problem persists contact your next level of support.
xxxx 3200	Clustered system(s) on loop with SPD migrated tower	<b>For Models 800, 810, 825, 870, and 890 only:</b> Migration towers are not supported on these models. Remove them.  <b>For Models 270, 820, 830, 840, SB2, and SB3:</b> Remove clustered systems from the loop with the migration tower.
xxxx 3201	Clustered systems on multiple HSL loops	Ensure all clustered systems are on the same HSL loop.
xxxx 3202	Multiple SPD migrated towers detected	<b>For Models 800, 810, 825, 870, and 890 only:</b> Migration towers are not supported on these models. Remove them.  <b>For Models 270, 820, 830, 840, SB2, and SB3:</b> Only one migration tower is supported on a system. Remove the additional migration towers.
xxxx 3207	SPD migrated tower not on first HSL loop	<b>For Models 800, 810, 825, 870, and 890 only:</b> Migration towers are not supported on these models. Remove them.  <b>For Models 270, 820, 830, 840, SB2, and SB3:</b> Move the migration tower to the first HSL loop. The first HSL loop is number 256 and attaches to ports A0 and A1 on the network interface controller (NIC) card of the system unit. The first HSL loop connects to the system frame at HSL ports A0 and A1.
xxxx 3212	NIC level does not support opticonnect	<b>For Models 800, 810, 825, 870, and 890 only:</b> Migration towers are not supported on these models. Remove them.  <b>For Models 270, 820, 830, 840, SB2, and SB3:</b> See Corrective action for xxxx 3212 (See page 457) below.

**Corrective action for xxxx 3212:** The Network Interface Controller (NIC) hardware component does not support HSL OptiConnect. The FRU containing the NIC component must be upgraded to a level that supports HSL OptiConnect. The Service Action Log will call out the correct FRU to replace. If you do not have the service action log available then follow this procedure to determine which FRU to replace:

1. Determine the model of the system. If the system is a Model 270, then you must also determine the processor feature code in characters 5 through 8 of function 20 on the control panel.
2. Use the FRU locations and failing components table links for the model of the system you are working on.
  - For Model 270 record the processor feature code (characters 5 through 8 of function 20 on the control panel). See the Model 270 diagrams and tables by processor feature codes in the Locations — Model 270 page, and follow the FRU positions and failing components link for the processor feature code.
  - For Model 820, see the FRU locations and failing components table in the Locations — Model 820 page.
  - For Model 830, see the FRU locations and failing components table in the Locations — Models 830/SB2 System Unit with FC 9074 Base I/O Tower page.
  - For Model 840, see the FRU locations and failing components table in the Locations — Models 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower page.
3. In the FRU locations and failing components table, locate the Network Interface Controller (NIC) component in the column labeled Possible failing components. Use the service information in that row of the table to determine the FRU position, FRU name, CCIN, and remove and replace procedure for the FRU containing the NIC.

**This ends the procedure.**

## **SIRSTAT**

*For use by authorized service providers.*

A status indication for a high speed link (HSL) loop is identified in the system reference code (SRC). The status may require a service action. The rightmost four characters of word 4 in the SRC form the program return code (PRC), which indicates the HSL status. The leftmost four characters of word 7 in the SRC indicate the HSL loop number in hexadecimal format.

### **Table 1. Indicated status for PRC in Word 4**

PRC in Word 4	Indicated status
3205	<p>During IPL LIC determined that the loop was not complete.</p> <p>This is expected if there are no I/O towers on the loop. This is also expected if one of the I/O towers on the loop is an FC 5077 migrated tower which does not have all three bus adapter cards installed.</p> <p>This error can also occur when a tower, shared tower, or another system on the loop did not complete powering on by the time LIC on this system checked the loop for errors. As a result of that you may see this error in the Service Action Log (SAL). When you find the same SRC logged against the same resource with a "3206" or "3208" PRC in word 4, from the same IPL, it means that the problem no longer exists and the SAL entry can be closed.</p> <p>This error may also appear in the SAL if any I/O towers were removed from the loop, but the HSL I/O Bridge resources of those towers were not deleted from HSM. The service procedure(s) identified with the SRC that sent you to this symbolic FRU will help you determine if the loop is functioning correctly or if service is required.</p> <p>This error may also be caused by a problem in a frame or unit connected to the HSL loop. Follow the service procedures for this SRC. When necessary, you may be directed to work on other SRCs before returning to this procedure.</p> <p>For models introduced after version 5, release 1, this error can be caused by unsupported SPD migration towers being placed in the loop. Remove the unsupported towers to correct the problem.</p>
3206	During normal operation an HSL loop recovered its redundant path. The loop is now complete.
3208	During normal operation an HSL I/O bridge recovered a failed link on the loop.
3209	See Indicated status for PRC in Word 4, 3209 (See page 458) below.
3210	<p>An HSL link switched to a slower speed. The link is designed to run at a faster speed. If there is a FRU list in the SAL, use it to complete the repair section. If there is no FRU list in the SAL, use <b>only</b> the following sections of the procedure below:</p> <p>Determine the HSL port label (See page 459)</p> <p>Replace the link's failing end point FRUs (See page 461) (replace <b>only</b> the "From Frame ID" End Point FRU)</p>

**Indicated status for PRC in Word 4, 3209:**

Recoverable CRC errors have occurred on the loop. **This error requires a service action.** An HSL cable or connection must be exchanged. Exchange only the HSL cable that appears in the FRU list of this SRC (BUSCBLX) in this document. If you are working from the SAL, then only the FRU(s) required for this error will be displayed.

Choose from the following scenarios:

- If there is a SAL entry with a cable FRU (BUSCBLX in the part number field) listed with a loop number, frame ID, and port label identified with the cable FRU, then:
  - If the cable is optical, it is possible the optical connections need cleaning. You can choose to clean the cable connections at each end without exchanging the cable. Use the Symbolic FRU "OPT\_CLN" on page 407 for information on cleaning the connections. If you choose to exchange the HSL cable you have identified, see HSL cables - concurrent.
  - If the cable is copper, examine the screws which hold the connector at the end of the cable identified in the SRC or the first cable location listed in the SAL entry. It is possible to get CRC errors when the screws are not tight. You can choose to tighten the cable connector screws without exchanging the cable **only** if they are loose. Otherwise, exchange the cable. See HSL cables - concurrent.

If this does not correct the problem, replace the FRUs in the SAL one at a time. See the Locations page for the frame on which you are working.

**This ends the procedure.**

- If the SAL entry does not list any cable FRUs (BUSCBLX is not in the part number field), then exchange the failing items listed in the SAL entry by following the normal service procedures for those FRUs. See the Locations page for the frame on which you are working.  
**This ends the procedure.**
- If the SAL entry has cable FRU(s) (BUSCBLX in the part number field) listed, but the loop number, frame ID, and port label are not **all** listed with the cable FRU, go to the Determine the HSL port label (See page 459) procedure below.

**Determine the HSL port label:**

Retrieve the following information:

- **Loop number.** The loop number is displayed in hexadecimal format as the four leftmost digits of word 7 in the SRC. Convert the loop number to decimal format (as it is shown in HSM) using the “DSA breakdown” on page 63 table (found in the Bus PIP overview). Record both the hexadecimal and decimal formats of the loop number. If the loop is an internal loop on a Model 270, 800, or Model 810, then, record “Internal”.
- **Frame ID.** The frame ID is displayed in hexadecimal format as the four leftmost digits of word 5 of the SRC. You must convert the frame ID to decimal format to match what is displayed on the Display Panel of that frame. Record both the hexadecimal and decimal formats of the frame ID.  
**Note:** A frame ID of 0000 is valid at this point in the procedure.
- **Port number indicator.** The port number indicator is the four rightmost digits of word 5 of the SRC. Record the port number indicator.

Use the frame ID and port number indicator in the table below to find the HSL Port Label. If you are referenced to the “Converting From HSL Loop Number to NIC’s FRU and Port Labels on the System Unit, Primary I/O Unit or Processor Unit” table, the failing item is in a system unit. You will need the HSL loop number to determine the failing item.

**Table 2. Determining which HSL port label to use**

Frame ID	Port number indicator	Use HSL port label:
0000	0000	<ul style="list-style-type: none"> <li>• Models 270, 800, 810, 820, 830, and SB2:               <ul style="list-style-type: none"> <li>– On loop 256: The port identified is an internal connection from the Network Interface Controller (NIC) to the embedded HSL I/O Bridge in the system unit. Exchange the NIC using symbolic FRU “SICNTRL” on page 448. If that does not correct the problem, exchange the HSL I/O Bridge in the system unit using symbolic FRU “SIIOADP” on page 450. <b>This ends the procedure.</b></li> <li>– Other than loop 256 use: “x0”</li> </ul> </li> <li>• Model 825: The port is internal. Replace the system unit backplane. See Locations - Model 825 for location and service information. <b>This ends the procedure.</b></li> <li>• Models 840 and SB3 use: “x0”</li> <li>• Models 870 and 890 use: “x0” and determine the correct NIC FRU. See “Converting from HSL loop number to port labels on the system unit or processor tower” on page 72.</li> </ul>

Frame ID	Port number indicator	Use HSL port label:
0000	0001	Use: "x1". See "Converting from HSL loop number to port labels on the system unit or processor tower" on page 72. <b>UNLESS</b>  If you are working on a Model 270, 800, or Model 810, the port identified is an internal connection from the Network Interface Controller (NIC) to the external "A1" HSL port on the system unit. Exchange the NIC using symbolic FRU "SICNTRL" on page 448. If that does not correct the problem, see the section below called Determine if the cable is the cause of the problem (See page 460). That will guide you through the cable replacement. If that does not fix the problem, use Table 3. End point FRUs (See page 461) to replace the End Point FRUs at the other end of the cable. Perform "Bus PIP HSL-08" on page 88 to determine the frame ID and HSL port label of the other end of the cable (if you do not already know). <b>This ends the procedure.</b>
0000	0002	Use: "x0". See "Converting from HSL loop number to port labels on the system unit or processor tower" on page 72.
0000	0003	Use: "x1". See "Converting from HSL loop number to port labels on the system unit or processor tower" on page 72.
0001 - Models 270, 800, 810, 820, 825, 830, and SB2	0000	The port identified is an internal connection from the Network Interface Controller (NIC) to the embedded HSL I/O Bridge in the system unit. Exchange the HSL I/O Bridge in the system unit using symbolic FRU "SIIOADP" on page 450. If that does not correct the problem, exchange the NIC using symbolic FRU "SICNTRL" on page 448. <b>This ends the procedure.</b>
0001 - Models 270, 800, 810, 820, 825, 830, and SB2	0001	Use: "x0". For the Model 825 (see "Converting from HSL loop number to port labels on the system unit or processor tower" on page 72.).  <b>OR</b>  Internal to NIC on some Models 270, 800, 810 processor features.
0001 - Model 840, SB3, and Models 870 and 890	0000	Use: "0"
0001 - Model 840, SB3, and Models 870 and 890	0001	Use: "1"
Other than 0000 or 0001	0000	Use: "0"
Other than 0000 or 0001	0001	Use: "1"

### Determine if the cable is the cause of the problem:

If there is a cable attached to the failing port:

- If the cable is optical, it is possible the optical connections need cleaning. You can choose to clean the cable connections at each end without exchanging the cable. Use the Symbolic FRU "OPT\_CLN" on page 407 for information on cleaning the connections. If you choose to exchange the HSL cable you have identified, see HSL cables - concurrent.
- If the cable is copper, examine the screws that hold the connector at the end of the cable identified in the SRC or the first cable location listed in the SAL entry. It is possible to get CRC errors when the screws are not tight. You can choose to tighten the cable connector screws without exchanging the cable **only** if they are loose. Otherwise, exchange the cable. See HSL cables - concurrent.



If this does not correct the problem, replace the cable. Perform “Bus PIP HSL-08” on page 88 to determine the frame ID and HSL port label of the other end of the cable you will be exchanging (if you do not already know). If the problem is corrected, then **This ends the procedure**. If replacing the cable does not correct the problem, continue with replacing the failing end FRUs.

### Replace the link’s failing end point FRUs:

Use the following table to determine the End Point FRUs on the “From Frame ID” port. Replace the FRUs one at a time.

**Table 3. End point FRUs**

Frame type	End point FRUs
Models 270, 800, and 810	<ul style="list-style-type: none"> <li>For frame ID 0001 and the port number indicator in word 5 is 0001: The port identified is a connection from the embedded HSL I/O Bridge in the system unit to the external HSL Port “A0”. Exchange the HSL I/O Bridge in the system unit using symbolic FRU “SIIOADP” on page 450.</li> </ul>
Model 820	<ul style="list-style-type: none"> <li>For frame ID 0000, with port number indicator (in word 5) 0000: The port identified is an internal connection on the Network Interface Controller (NIC). Exchange the NIC using symbolic FRU “SICNTRL” on page 448.</li> <li>For frame ID 0001, with port number indicator (in word 5) 0000: The port identified is an internal connection on the embedded HSL I/O bridge. Exchange the HSL I/O bridge using symbolic FRU “SIIOADP” on page 450.</li> </ul>
Model 825	<p>The HSL I/O bridge card, in position C09 for failed ports A0 or A1, C08 for failed ports B0 or B1 - not applicable for failed ports C0 and C1.</p> <p>The System unit backplane, in position CB1 for failed ports A0, A1, B0, or B1 - not applicable for failed ports C0 and C1.</p> <p>The System unit backplane extender, in position MB1 for failed ports C0 and C1 - not applicable for failed ports A0, A1, B0, and B1.</p>
Models 830/SB2	<ul style="list-style-type: none"> <li>For loop number 256 decimal (01000 hexadecimal), on frame ID 0000, with the port number indicator in word 5 is 0000: The port identified is the internal HSL port on the NIC card that is connected to the FC 9074 Base I/O Tower with an internal ribbon cable. Exchange the internal ribbon cable using the service information associated with FRU name HSL Ribbon Cable (see FRU Locations and Failing Components for Models 830/SB2 System Unit with FC 9074 Base I/O Tower Table). <b>Note:</b> Before exchanging the cable, if you discover that the ribbon cable is not securely connected to the NIC, then you have the option of reseating the ribbon cable without exchanging it.</li> <li>For loop number 256 decimal (01000 hexadecimal), on frame ID 0001, with the port number indicator in word 5 is 0000: The port identified is the internal HSL port on the FC 9074 Base I/O Tower’s HSL I/O bridge card that is connected to the NIC with an internal ribbon cable. Exchange the internal ribbon cable using the service information associated with FRU name HSL Ribbon Cable (see FRU Locations and Failing Components for Models 830/SB2 System Unit with FC 9074 Base I/O Tower Table). <b>Note:</b> Before exchanging the cable, if you discover that the ribbon cable is not securely connected to the NIC then you have the option of reseating the ribbon cable without exchanging it.</li> </ul>
Models 840/SB3 - Frame 0000	The Network Interface Card (NIC)
Models 870 and 890 - Frame 0000	The Network Interface Card (NIC). The location will be given in the “Converting from HSL loop number to port labels on the system unit or processor tower” on page 72 table.

Frame type	End point FRUs
Base I/O units - Frame 0001 and any I/O tower	The HSL I/O bridge card

If replacing the End Point FRUs for the "From Frame ID" port did not clear up the error, use the table above to replace the End Point FRUs at the other end of the cable. Perform "Bus PIP HSL-08" on page 88 to determine the frame ID and HSL port label of the other end of the cable (if you do not already know). **This ends the procedure.**

## SLOTERR

*For use by authorized service providers.*

SLOTERR: card slot control hardware detected an error.

The multi-adapter bridge detected a problem with a card location that it controls. The problem is in the controls for the card slot. The card location may or may not have an installed card. If there is a card installed in that location, it may be the source of the problem.

**Note:** If there is a Linux partition in the system, any IOPs plugged into slots owned by a Linux partition will not power on. This error will be logged. Correct the situation by removing the IOP cards.

1. Is there a single card position listed in the SAL for this failing item?
  - **No:** Continue with the next step.
  - **Yes:** Go to step 5 (See page 462).
2. Is there a range of card positions (PCI Bridge Set) listed in the SAL for this failing item?
  - **No:** Continue with the next step.
  - **Yes:** LIC could not identify the slot with the error. Perform "Bus PIP MAB-03" on page 95 to determine the card position with the failure.  
**This ends the procedure.**
3. Record the Direct Select Address (DSA) which is word 7 of the SRC from the SAL display.
4. Examine the multi-adapter bridge function number in the DSA. See "DSA breakdown" on page 63 in the Bus PIP Overview page.
 

Is the multi-adapter bridge function number less than or equal to 7?

  - **Yes:** Go to "Bus PIP PCIBUS-PIP1" on page 99. Return here after locating the card.
  - **No:** LIC could not identify the slot with the error. Perform "Bus PIP MAB-03" on page 95 to determine the card position with the failure.  
**This ends the procedure.**
5. Does the SRC that sent you here appear more than once, **OR** does any other SRC with this symbolic FRU appear from the same IPL **AND** against the same resource?
  - **Yes:** The failure is at the multi-adapter bridge. Do not use this symbolic FRU. Go to the next failing item in the list.  
**This ends the procedure.**
  - **No:** Locate the message in the following table to determine the problem and the corrective action.

Problem or message	Meaning or corrective action
Slot unavailable due to 64 bit card in adjacent slot	<p>The card location specified in the DSA is unavailable for the card installed there. Do not use that card location.</p> <p>The card location with a multi-adapter bridge function number 1 (one) less than the multi-adapter bridge function number in the DSA has a 64 bit card installed. The 64 bit card is using the 32 bit PCI bus of the card location specified in the DSA.</p> <p>To determine the multi-adapter bridge function numbers and the card locations they specify, see the “DSA breakdown” on page 63 in the Bus PIP overview page.</p>
LED control failure, do not use slot	System code has detected a problem with the controls for the Light Emitting Diode at the card location specified by the DSA. Do not use that card location.
Power control failure, do not use slot	System code has detected a problem with the power controls at the card location specified by the DSA. Do not use that card location.
Multi-adapter bridge card slot error, do not use card slot	System code has detected a problem with the controls at the card location specified by the DSA. Do not use that card location.

**This ends the procedure.**

## **SNSDATA**

*For use by authorized service providers.*

This is a portion of the SCSI sense data associated with the unit reference code (URC); it is not a failing item in and of itself. This data is referenced by certain failure isolation procedures within the All 3995

Publications and Documentation  web site.

## **SPCNCRD**

*For use by authorized service providers.*

An SPCN card may be failing. Go to symbolic FRU “TWRCARD” on page 470, and replace the SPCN card in the system unit.

## **SPNLCRD**

*For use by authorized service providers.*

The control panel electronics card may be the failing item. See the SPNLCRD Symbolic FRU in the


*Migrated Expansion Tower Problem Analysis, Repair and Parts*  .

## **STORIOA**

*For use by authorized service providers.*

Replace the storage I/O adapter. Use the I/O adapter location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O adapter. See SRC address formats. Use the address to find the location. See Locations and addresses.

If the failing item is in a migration tower, go to the STORIOA symbolic FRU in the *Migrated Expansion*

*Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .

## SVCDOCS

*For use by authorized service providers.*

See the *Description/Action* column in the System reference code list for the system reference code you have.

## SVCPROC

*For use by authorized service providers.*

The service processor is failing.

Perform the following:

1. Select function **20** on the system unit control panel. Characters 2 through 4 are the system model, and characters 5 through 8 are the processor feature code.
2. Use Table 1. below to determine the service information.

**Table 1. Service information for the failing component**

<b>System model</b>	<b>Name of FRU to exchange</b>	<b>FRU position</b>	<b>Link to locations diagram and failing component service information (CCIN, Part number, and remove and replace procedure)</b>
Model 270	System unit backplane	MB1	See Locations — Model 270  Use the Model 270 diagrams and tables by processor feature code and follow the "locations diagram" link, or the "FRU positions and Failing Components" link for the processor feature code.
Models 800 and 810	System unit backplane	MB1	See Locations - Models 800 and 810
Model 820	System unit backplane	MB1	See Locations - Model 820
Model 825	System unit backplane	CB1	See Locations - Models 825.
Models 830 and SB2 base I/O tower (FC 9074)	Tower card	CB1	See Locations - Models 830, SB2 system unit with FC 9074 Base I/O Tower.
Models 840 and SB3 base I/O tower (FC 9079)	Tower card	CB1	See Locations - Models 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower.
Models 870 and 890	Tower card	CB1	See Locations - Models 870 and 890 with an FC 9094 Base I/O Tower

## SYSBKPL

*For use by authorized service providers.*

The failing component is the system unit backplane.

Follow the instructions for the model you are working on:

- Models 270 and 820 (See page 465)
- Models 800, 810, 825, 830, 840, 870, 890, SB2, and SB3 (See page 466)

### Instructions for Models 270 and 820

1. Choose one of the following:
  - If you are working on a Model 820, use Table 1. below to determine the service information.  
**This ends the procedure.**
  - If you are working on a Model 270, continue with the next step.
2. Is function 20 available on the system unit control panel?
  - **No:** Continue with the next step.
  - **Yes:** Select function 20 on the system unit control panel. Record the processor feature code (characters 5 through 8). Use Table 1. below to determine the service information.  
**This ends the procedure.**
3. The system unit backplane is in position MB1. To determine which system unit backplane is installed, remove the cover on the left side. See Models 270, 800, 810 - Covers. Then, continue with the next step.
4. Examine the card positions on the system unit backplane.
  - If there are card positions labeled M01 and M02, then you are working on a Model 270 with a Network Interface Controller (NIC) embedded in the processor card.
  - If there are no card positions labeled M01 and M02, then you are working on a Model 270 with a Network Interface Controller (NIC) embedded in the system unit backplane.

**Table 1. Service information for Models 270 and 820**

System model	Name of FRU to exchange	FRU position	Link to failing component service information (CCIN, locations diagram, remove and replace procedure)
Model 270	System unit backplane	MB1	Go to Locations - Model 270 and follow links for either the processor feature code or what FRU the NIC is embedded in. (The processor feature code is characters 5 through 8 of function 20 on the control panel.)
Model 820	System unit backplane	MB1	See Locations - Model 820.
FC 5065, FC 5066	Expansion unit backplane	CB1	See Locations - FC 5074 Expansion I/O Tower. <b>Note:</b> Position CB1 is the same on the FC 5074, FC 5065, and FC 5066.
FC 5074, FC 5079	Expansion unit backplane	CB1	See Locations - FC 5074 Expansion I/O Tower or Locations - FC 5079 Expansion I/O Tower.
FC 5075	Expansion unit backplane	CB1	See Locations - FC 5075 Expansion I/O Tower.

<b>System model</b>	<b>Name of FRU to exchange</b>	<b>FRU position</b>	<b>Link to failing component service information (CCIN, locations diagram, remove and replace procedure)</b>
FC 5078, FC 0578	Expansion unit backplane	CB1	See Locations - FC 5078, FC 0578 Expansion I/O Tower.

### Instructions for Models 800, 810, 825, 830, 840, 870, 890, SB2, and SB3

Use Table 2. below to find the FRU to exchange, the locations, and the link to the service information.

**Table 2. Service information for Models 800, 810, 825, 830, 840, 870, 890, SB2, and SB3**

<b>System model</b>	<b>Name of FRU to exchange</b>	<b>FRU position</b>	<b>Link to failing component service information (CCIN, locations diagram, remove and replace procedure)</b>
Models 800 and 810	System unit backplane	MB1	See Locations - Models 800 and 810
Model 825	System unit backplane	CB1	See Locations - Model 825
Models 830 and SB2	System unit backplane	MB1	See Locations - Models 830/SB2 system unit with FC 9074 base I/O tower.
Models 840 and SB3	System unit backplane, processor tower backplane	MB1	See Locations - Models 840/SB3 system unit with processor tower and FC 9079 base I/O tower.
Models 870 and 890	System unit backplane, processor tower backplane	MB1	See Locations - Models 870 and 890 with an FC 9094 Base I/O Tower
FC 5074, FC 5079	Expansion unit backplane	CB1	See Locations - FC 5074 Expansion I/O Tower or Locations - FC 5079 Expansion I/O Tower.
FC 5075	Expansion unit backplane	CB1	See Locations - FC 5075 Expansion I/O Tower.
FC 5078, FC 0578	Expansion unit backplane	CB1	See Locations - FC 5078, FC 0578 Expansion I/O Tower.
FC 5088, 0588	Expansion unit backplane	CB1	See Locations - FC 5088, FC 0588 Expansion I/O Tower.
FC 5094	Expansion unit backplane	CB1	See Locations - FC 5094 Expansion I/O Tower.
FC 5095, FC 0595	Expansion unit backplane	CB1	See Locations - FC 5095, FC 0595 Expansion I/O Tower.

## **SYSBKEX**

*For use by authorized service providers.*

The failing item is the system backplane extender in location MB1 of the Model 825. For more information, see:

- Locations — Model 825 for diagrams and detailed location information.
- Model 825 - System unit backplane (MB1) for remove and replace instructions.

## SYSUNIT

*For use by authorized service providers.*

The failing item is the system processor hardware subsystem. The system processor (system unit) has failed and the diagnostic software was not able to isolate the failure to a FRU.

1. Attempt a SLOW OVERRIDE IPL to run full processor hardware diagnostics.
  - a. Power off the system from the control panel.
  - b. Change the IPL mode to manual, and the IPL speed to SLOW OVERRIDE(S) using control panel function 2.
  - c. Power on the system.

Does the same SRC occur?

- **Yes:** Continue with the next step.
- **No:** Go to “Starting point for all problems” on page 2 and follow the service actions for the new SRC.

**This ends the procedure.**

2. Choose from the following options:
  - If you are on a Model 270, 800, or 810: Continue with the next step.
  - If you are on a Model 820: Go to step 5 (See page 467).
  - If you are on a Model 825: Go to step 6 (See page 468).
  - If you are on a Model 830 or SB2: Go to step 7 (See page 468).
  - If you are on a Model 840 or SB3: Go to step 8 (See page 468).
  - If you are on a Model 870 or 890: Go to step 9 (See page 469).
3. Is this a Model 270 system unit (with processor feature 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, or 2452), or Models 800 and 810 system unit (with processor features **except** 7428, 7429, 7430)?
  - **No:** Continue with the next step.
  - **Yes:** See Locations — Model 270 or Locations — Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
    - Power regulator in location R01
    - Power supply in location P01
    - Memory card pairs in locations A-H
    - System unit backplane in location MB1**This ends the procedure.**
4. This is a Model 270 system unit with processor feature 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, or 2454, or a Model 810 system unit (with processor features 7428, 7429, 7430). See Locations — Model 270 or Locations — Models 800 and 810. Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.
  - Processor card in location M02
  - Power supply in location P01
  - Memory riser card in location M01
  - System unit backplane in location MB1**This ends the procedure.**
5. See Locations — Model 820.

Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.

- a. Processor card in location M03
- b. Power supply in location P01
- c. Power supply in location P02
- d. Power supply in location P03
- e. Memory riser card in location M01
- f. Memory riser card in location M02
- g. System unit backplane in location MB1

**This ends the procedure.**

6. See Locations — Model 825.

Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement.

- a. Processor card in location M01
- b. Processor card in location M02
- c. Power supply in location P01
- d. Power supply in location P02
- e. System backplane extender MB1
- f. System backplane extender MB2
- g. System unit backplane in location CB1

**This ends the procedure.**

7. See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower.

Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement. See Remove and replace procedures.

- a. Clock card in location M06A
- b. Network interface controller (NIC) card in location M06
- c. Processor regulator card in location M01
- d. Processor card in location M03
- e. Processor card in location M04
- f. Power supply in location PP1
- g. Power supply in location PP2
- h. System unit backplane in location MB1
- i. Memory riser card in location M02
- j. Memory riser card in location M05

**This ends the procedure.**

8. See Locations — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower.

Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement. See Remove and replace procedures.

- a. Clock card in location M19
- b. Regulator card in location M04
- c. Regulator card in location M07
- d. Network interface controller (NIC) card in location M17
- e. Processor card 3 in location M16
- f. Processor card 1 in location M18
- g. Processor card 2 in location M06
- h. Processor card 0 in location M05



- i. System unit backplane in location MB1
- j. Memory cards in bank A
- k. Memory cards in bank B
- l. Memory cards in bank C
- m. Memory cards in bank D

**This ends the procedure.**

9. See Locations — Models 870 and 890 with an FC 9094 Base I/O tower.

Replace the following FRUs in the processor tower one at a time until the problem is resolved. Be sure to IPL in SLOW OVERRIDE mode after each replacement. See Remove and replace procedures.

- a. Clock card in location M15
- b. Bulk power regulators in locations BPR-1A, BPR-2A, BPR-3A, BPR-1B, BPR-2B, BPR-3B
- c. Network interface controller (NIC) card in location M41
- d. System processors in positions M21, M16, M11, and M14
- e. System unit backplane in location MB1
- f. Memory cards in locations M01, M02, M07, M08, M17, M18, M24, M25

**This ends the procedure.**

## **TAPCLN**

*For use by authorized service providers.*

Clean the tape unit.

## **TAPCNFG**

*For use by authorized service providers.*

Tape and DASD devices are attached to an I/O Processor that can not support both tape and DASD at the same time.

## **TOD**

*For use by authorized service providers.*

The time of day battery may be failing.

Exchange the time of day battery. For location and part number information, see the following:

- Locations — Model 270
- Locations — Models 800 and 810
- Locations — Model 820
- Locations — Model 825
- Models 830 and SB2 with FC 9074 - Final assembly, rear
- Final assembly - FC 9079 Base I/O Tower (Models 840 and SB3)
- Locations - Models 870 and 890

Use the table in the locations section to find the remove and replace procedure.

**This ends the procedure.**

## **TWRBKPL**

*For use by authorized service providers.*

TWRBKPL: I/O tower PCI card backplane.

The failing item is the tower card in an FC 5075 or FC 5095 Expansion I/O Tower.

1. Choose from the following options:
  - If you are working from the Service Action Log and a card position is listed with this failing item, then that is where the error is located. Continue with the next step in this procedure.
  - Otherwise, record the bus number value, BBBB, in word 7 of the SRC (see “Breaking down the SRC” on page 63 for help in determining the bus number). Search for the bus number in HSM or the System Configuration Listing to determine which tower contains the failing item.
2. The failing component is built into the backplane of the FC 5075 expansion I/O tower. Use the table below to determine the service information for the failing component.

Expansion I/O tower	Name of FRU to exchange	Link to failing component service information (CCIN, PN, remove and replace procedure)
FC 5075	Tower card	See the Locations - 5075 topic
FC 5095	Tower card	See the Locations - FC 5095 topic

**This ends the procedure.**

## TWRCARD

*For use by authorized service providers.*


An SPCN card may be failing. The SPCN card may be on the backplane, on a card, or part of the AC module in some of the system expansions. See the Remove and replace procedures for the model you are working on before exchanging the SPCN.

Perform the following to determine the part number:

1. Verify that all cables are seated correctly.
2. Choose from the following options:
  - If you are on a Model 270 or 820: Continue with the next step.
  - If you are on a Model 830, 840, SB2, or SB3: Go to step 5 (See page 471).
  - If you are on a Model 800, 810, 825, 870, or 890: Go to step 7 (See page 472).
3. Is the failing SPCN card in the system unit?
  - **No:** Continue with the next step.
  - **Yes:** The TWRCARD is the system unit backplane (MB1). Replace:
    - Model 270 without removable processor as installed:
      - (MB1) - (CCIN 224A)
      - (MB1) [no cache] - (CCIN 25B9)
      - (MB1) [2M] - (CCIN 25BA)
    - Model 270 with removable processor (MB1) - (CCIN 282F)
    - Model 820 (MB1) - (CCIN 282D)

**Note:** See symbolic FRU “CCIN” on page 303 for the correct part. For location information, see Locations and addresses for the model you are working on.

**This ends the procedure.**
4. The failing SPCN card is in a secondary expansion unit or base I/O unit.
 

**Note:** For migrated towers (FC 5033, FC 5034, FC 5035, FC 5065, FC 5066, FC 5072, FC 5082, FC 5073, FC 5083, and FC 5077), see chapter 4 in *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for remove and replace procedures before exchanging the part.

  - For **FC 5033, FC 5034, and FC 5035**, the SPCN card is part of SPNLCARD, and is the card located behind the control panel. See Type, model, and part number list for the part number.


- For **FC 5065 and FC 5066** expansion tower, the SPCN card is part of the PCI/SPCN backplane assembly (see Type, model, and part number list for the part number).
  - For **FC 5072 and FC 5082**, the SPCN card is part of the ACMODUL (see Type, model, and part number list for part numbers).
  - For **FC 5073, FC 5077, FC 5083** Base I/O Tower, the SPCN card is part of the ACMODUL (see Type, model, and part number list for part numbers).
  - For **FC 5074 and FC 5079** expansion tower, the SPCN card is part of the PCI, SPCN backplane assembly (see Type, model, and part number list for the part number).
  - For the **FC 5075** expansion tower, replace the SPCN card. See the FRU locations and failing components table in Locations — FC 5075 for locations information, part numbers, and directions to the remove and replace procedures before exchanging the part.
  - For **FC 5078, FC 0578**, choose from the following options (see Locations - FC 5078, 0578 Expansion I/O unit for locations and part number information):
    - (**With** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, or 7641) replace one part at a time:
      - Air moving device (AMD) control card
      - Tower card
    - (**Except** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace the Tower card.
  - For **xSeries<sup>(TM)</sup> Server Tower**, replace the Integrated xSeries<sup>(TM)</sup> Adapter card. See Locations — Integrated xSeries<sup>(TM)</sup> Adapter Card (IXA) for locations information, part number, and directions to the remove and replace procedures before exchanging the part.
 

**Note:** For SRC 1xxx-8910 or 8920, ac removal is required to reset the flashing (frame indicating) LEDs that are located on the TWRCARD.
  - For **FC 9309** expansion tower, replace the PCC. Refer to the SY44-4934-00 FC 504x Problem Analysis and Repair and Parts information.
 

**This ends the procedure.**
5. Is the failing SPCN card in a system unit?
- **No:** Continue with the next step.
  - **Yes:** Replace the following for the system unit that you are working on:
    - System Base I/O Tower FC 9074, FC 9079, or FC 8079-001.
    - Models 840 processor side (non-dual-line cord) SPCN card
    - Models 840/SB3 processor side (dual line cord) SPCN card

For location and part number information of the SPCN card refer to Locations and addresses for the model you are working on.

**This ends the procedure.**
6. The failing SPCN card is in a secondary expansion unit or base I/O unit.
- For **FC 5072 and FC 5082**, the SPCN card is part of the ACMODUL (see Type, model, and part number list for part numbers).
  - For **FC 5073, FC 5077, FC 5083, and FC 9251** Base I/O, the SPCN card is part of the ACMODUL (see Type, model, and part number list for part numbers).
  - For **FC 5065, FC 5066, FC 5074, FC 5079, or FC 8079** expansion tower the SPCN card is part of the PCI, SPCN card assembly. See Type, model, and part number list for part numbers.
  - For **FC 5078, FC 0578**, choose from the following options (see Locations - FC 5078, 0578 Expansion I/O unit for locations and part number information):
    - (**With** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace one part at a time:
      - Air moving device (AMD) control card
      - Tower card

- (**Except** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace the Tower card.
  - For **xSeries<sup>™</sup> Server Tower**, replace the Integrated xSeries<sup>™</sup> Adapter card. See Locations — Integrated xSeries<sup>™</sup> Adapter Card (IXA) for locations information, part number, and directions to the remove and replace procedures before exchanging the part.
    - Note:** For SRC 1xxx-8910 or 8920, ac removal is required to reset the flashing (frame indicating) LEDs that are located on the TWRCARD.
  - For the **FC 9309** expansion tower - PCC, see the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts book. See chapter 4 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  for remove and replace procedures before exchanging the part.
    - This ends the procedure.**
7. Is the failing SPCN card in the system unit?
- **No:** Continue with the next step.
  - **Yes:** The tower card is the system unit backplane (MB1 or CB1). Replace:
    - **Model 800 and 810** as installed:
      - (MB1) - CCIN 25B9
      - (MB1) - CCIN 25BA
      - (MB1) - CCIN 25F0
      - (MB1) - CCIN 282F
    - **Model 825:** (CB1) - CCIN 25CA
    - **Models 870 and 890 - FC 9094, FC 8093-001, FC 8094-001:** (MB1) - CCIN 28B6
  - Note:** See symbolic FRU “CCIN” on page 303 for the correct part. For location information, see Locations and addresses.
    - This ends the procedure.**
8. The failing SPCN card is in a secondary expansion unit or base I/O unit.
- For **FC 5074, FC 5079** expansion tower, the SPCN card is part of the PCI/SPCN backplane assembly. See the FRU locations and failing components table in Locations — FC 5074 for locations information, part numbers, and directions to the remove and replace procedures before exchanging the part.
  - For **FC 5094, FC 5294-001, FC 5294-002, FC 5294-002, FC 8093-002, FC 8094-002** expansion tower, the SPCN card is part of the PCI/SPCN backplane assembly - part CCIN 28B7. See the FRU locations and failing components table in the Locations — FC 5094 Expansion I/O Tower page for location information and directions to the remove and replace procedures before exchanging the part.
  - For the **FC 5075** expansion tower, replace the SPCN card. See the FRU locations and failing components table in Locations — FC 5075 for locations information, part numbers, and directions to the remove and replace procedures before exchanging the part.
  - For the **FC 5095, FC 0595** expansion tower, replace the SPCN card - part CCIN 28BE. See the FRU locations and failing components table in Locations — FC 5095 for location information and directions to the remove and replace procedures before exchanging the part.
  - For **FC 5078, FC 0578** (with reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace one part at a time (see Locations - FC 5078, 0578 Expansion I/O unit for locations and part number information):
    - Air moving device (AMD) control card
    - Tower card
  - For **FC 5078, FC 0578**, (**Except** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace the Tower card (see Locations - FC 5078, 0578 Expansion I/O unit for locations and part number information).

- For **FC 5088 or FC 0588**, choose from the following options:
  - **(With** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace one part at a time:
    - Air moving device (AMD) control card (see Locations - FC 5078, 0578 Expansion I/O unit for locations and part number information)
    - part CCIN 28B8 (TWRCARD)
  - **(Except** reference code 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641) replace - part CCIN 28B8 (TWRCARD).
- For **xSeries™ Server Tower**, replace the Integrated xSeries™ Adapter card. See Locations — Integrated xSeries™ Adapter Card (IXA) for locations information, part number, and directions to the remove and replace procedures before exchanging the part.

**Note:** For SRC 1xxx-8910 or 8920, ac removal is required to reset the flashing (frame indicating) LEDs that are located on the TWRCARD.

**This ends the procedure.**

## TWRPLNR

TWRPLNR: I/O tower PCI board.

The failing component is in the Tower Card of an FC 5074, FC 5079 (1.8m) Expansion I/O Tower, or an FC 5078/0578 Expansion I/O Unit, or (on a Model 830, 840, SB2, SB3, or 890) a FC 9074, FC 9079, or FC 9094 Base I/O Expansion Tower.

1. Choose from the following options:
  - If you are working from the Service Action Log and a card position is listed with this failing component, then that is where the error is located, continue with the next step in this procedure.
  - Otherwise, record the bus number value, BBBB, in word 7 of the SRC, see “Breaking down the SRC” on page 63 for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which tower contains the failing component. Record the tower type.
2. Use the feature code of the tower or expansion unit and the table below to determine the service information for the failing component.

**Table 1. Failing Component Service Information table for symbolic FRU TWRPLNR**

System model, Tower, Expansion unit, or Machine type	Name of FRU to exchange	Link to Failing Component Service Information. (CCIN, PN, Remove and replace procedure)
FC 5074 Expansion I/O Tower	Tower card	Locations — FC 5074 Expansion I/O Tower
FC 5078/0578 Expansion I/O Unit	Tower card	Locations — FC 5078, 0578 Expansion I/O Unit
FC 5079 (1.8m Expansion Unit)	Tower card	Locations — FC 5079 Expansion I/O Tower
FC 5088 or FC 0588 Expansion I/O Unit	Tower card	Locations — FC 5088, FC 0588 Expansion I/O Unit
FC 5094 Expansion I/O Tower	Tower card	Locations — FC 5094, FC 0594 Expansion I/O Tower
Model 890 System Unit with FC 9094 Base I/O Tower.	Tower card	Locations — Model 890 with an FC 9094 Base I/O Tower
Models 830 and/SB3 System Unit with FC 9074 Base I/O Tower	Tower card	Locations — Models 830, SB2 System Unit with FC 9074 Base I/O Tower
Models 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower	Tower card	Locations Models 840/SB3 System Unit with Processor Tower and FC 9079 Base I/O Tower

**This ends the procedure.**

### UC235

*For use by authorized service providers.*

The problem may be that the card (a resource) was removed from the card enclosure without updating the system configuration records.

**Note:** If the system has OptiConnect/400, verify that the remote system was powered on at the time of the failure.

To update the system configuration records: Select: **Hardware System Manager**—> **Logical Hardware Resources**—> **System Bus Resources**—> **Non-reporting Resources**—> **Remove**.

**This ends the procedure.**

### UC236

*For use by authorized service providers.*

The problem may be that the card (a resource) is not correctly plugged into the card enclosure.

Use the location information associated with this failing component in the Service Action Log entry and verify that the card is installed properly.

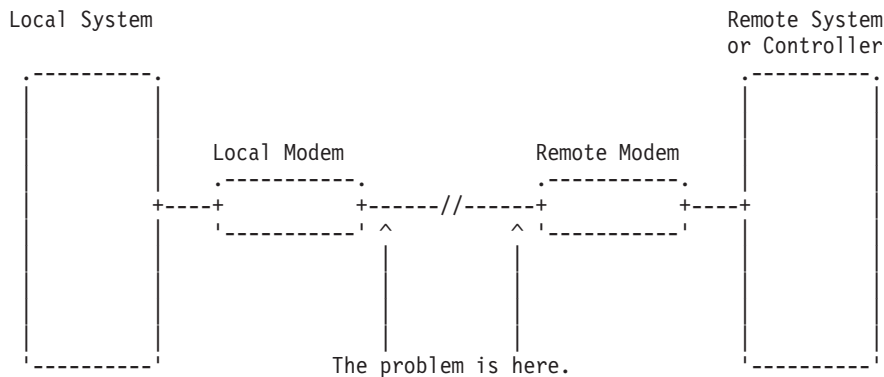
### UG3AS

*For use by authorized service providers.*

An error has been detected in iSeries Licensed Internal Code. Contact your next level of support for possible corrective actions.

### UJ0E7

*For use by authorized service providers.*



The problem has been isolated to the telephone line equipment that links the local and the remote equipment.

### UJ6P3

*For use by authorized service providers.*

An error occurred in the IBM Facsimile Support/400 Licensed Program. Please contact your next level of support for possible corrective actions.

Find additional information on Facsimile Support for OS/400 in the Application System Facsimile Support for OS/400 User's Guide.

## **UJA34**

*For use by authorized service providers.*

The line configuration parameter that was identified as a possible problem can be changed by using the WRKLIND command. Determine if the suspected configuration parameter is wrong and change if necessary. Information about commands related to communications can be found in the following manuals:

- CL Programming, SC41-5721-03
- Communications Configuration, SC41-5401-00

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

## **UJE34**

*For use by authorized service providers.*

The error message may have been logged from a temporary error that is not caused by equipment failure. This type of error message sometimes contains information about system performance.

See the original system message for cause and recovery information about the error.

## **UJE35**

*For use by authorized service providers.*

The configuration parameter that was identified as a possible problem can be verified by displaying the local area network line description with the DSPLIND command.

The line description was created by the CRTLINTRN, the CRTLINETH or the CRTLINDDI command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the Programming, CL topic in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

## **UJE40**

*For use by authorized service providers.*

The problem may be at the remote site or on the network media.

Perform the following:

1. Ask the remote site operator to verify the following:
  - The remote equipment is powered on and ready.
  - The configuration values are correct.
  - The local area network cables are securely connected and are not damaged.
2. If the problem continues, run all available diagnostic tests on the remote equipment and perform the repair action specified.

**This ends the procedure.**

## **ULNZ3**

*For use by authorized service providers.*

The problem may be a communications line problem.

When a workstation is attached to the system through modems, it may fail or lose communication with the system for various lengths of time. This is due to a communications line problem.

Refer to the modem service information to determine how to test the modems and verify that the communications line between the modems is working correctly.

## **ULNZ4**

*For use by authorized service providers.*

Independent workstation and SDLC support.

The system considers an independent workstation to be an attached remote system when it is attached using PC Support asynchronous communications on an ASCII workstation controller.

Perform the following:

- See the *ASCII Work Station Reference*, SA41-3130-00 information for instructions on how to verify that the remote system (independent workstation) that is attached to the failing port is a supported device.
- See the device hardware maintenance and service information for instructions on how to verify that the device is working correctly.

## **UNP20**

*For use by authorized service providers.*

The internal code of the I/O card that detected the error may be defective.

Perform the following:

1. Replace the suspected card.
2. If the failure occurs again, contact your next level of support and report the problem.

**This ends the procedure.**

## **UPLF1**

*For use by authorized service providers.*

The system may not have been able to complete the APPN session initiation due to the number of jobs that were active when the timeout occurred.

The timeout condition could have been caused by a system performance problem. System performance could be impacted by the capacity of the system. System performance can also be impacted by processing requests from other systems in the network.

For capacity planning and system performance information, refer to *LPS: Performance Tools for AS/400*, GC41-5055-00.

## **UPSUNIT**


*For use by authorized service providers.*

The uninterruptible power supply (UPS) may be the failing component.

The air moving device (AMD) in the UPS will be stopped when the UPS is not running on batteries or is charging the batteries on an FC 5033, FC 5034, or FC 5035.



Perform the following:

1. Is the SRC or problem on an FC 5033, FC 5034, or FC 5035 frame?
  - **No:** Continue with the next step.
  - **Yes:** Go to the UPSUNIT symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* manual on the V5R1 Supplemental Manuals web site  .
2. Do you have an SRC 1xxx 4500, 4501, 4502, 4507, or 4513?
  - **No:** Continue with the next step.
  - **Yes:** An incorrect status response was detected during normal operation. Perform the following:
    - a. Unplug and replug the UPS signal cable connector.
    - b. Choose from the following:
      - If the fault clears, contact the UPS provider to fix the UPS.
      - If the fault does **not** clear, the problem is in the system unit and you need to refer to symbolic FRU “TWRCARD” on page 470.  
**This ends the procedure.**
3. Do you have an SRC 1xxx 4510?
  - **Yes:** The UPS did not respond to a test request. Call the UPS provider for service.  
**This ends the procedure.**
  - **No:** Were you sent to this procedure by an SRC 1xxx 4503, 4504, or 4505?
    - **No:** Choose from the following options:
      - If you are on a Model 870 or 890: Continue with the next step.
      - If you are on a Model 270, 800, 810, 820, 825, 830, SB2, or SB3: **This ends the procedure.**
    - **Yes:** Call the UPS provider for service. Even though the UPS has been repaired, when the system is powered on, the old fault was displayed and reported. Refer to Important UPS Information for further battery test instructions.  
**This ends the procedure.**
4. Do you have an SRC 101A-xxxx or 101B-xxxx D616, D716, D816, D916, DA16, DB16, DC16, DD16, DF16 on a Model 870 or 890?
  - **No:** **This ends the procedure.**
  - **Yes:** Perform the following:
    - a. Verify the cabling between the UPS and the BPCs.
    - b. Refer to the manufacturer’s documentation for the UPS.
    - c. Call service support.

## USER

*For use by authorized service providers.*

System operator error or user error. See the system operator information.

## UX201

*For use by authorized service providers.*

The printer definition table may be causing the problem. See the original system message for cause and recovery information about the error.

## UX202

*For use by authorized service providers.*

A problem was detected while downloading a device Licensed Internal Code change to the device. See the original system message for cause and recovery information about the error.

## UY1Z1

*For use by authorized service providers.*

Cable problems:

See the *IBM Technical Information Manual* for information on how to correct cabling problems. Problems that are associated with noise can cause a workstation to fail or lose communication with the system for various lengths of time. A motor or any device that is a source of electrical radiation can cause noise or electrical interference. The following are common causes for noise problems:

- Cables that are located near a source of electrical interference.
- Cables that are loose, damaged, or not correctly connected

## UY1Z2

*For use by authorized service providers.*

This error occurs if you attempted to activate more workstations than the amount allowed.

Perform one of the following to correct the problem:

- Turn off the power for the workstation that caused the error, or connect the workstation to a different controller.
- Turn off the power for a different workstation that is connected to the same workstation controller.

See the local workstation diagrams for the physical location of workstations.

**This ends the procedure.**

## UY1Z3

*For use by authorized service providers.*

This error is caused by a workstation that is connected to the port.

1. Perform the following:
  - a. Turn off the power for one workstation on the port
  - b. Check if the other workstations operate correctly.
  - c. Repeat this for each workstation on the port.
  - d. The workstation that causes the problem is the one that is turned off when the others are working correctly.
  - e. If you did not find the problem, continue with the next step.
2. Perform the following:
  - a. Turn off the power for all workstations on the port.
  - b. Then, turn on one workstation to check if it works when all other workstations are turned off.
  - c. Repeat this for each workstation on the port. The workstation that causes the problem is the one that works when all other workstations are turned off.

**This ends the procedure.**

## UY1Z4

*For use by authorized service providers.*

An error occurred with the pass-through command between the workstation controller and the workstation.

A failure in the Licensed Internal Code in the workstation or the Licensed Internal Code in the workstation controller causes this type of error.

## UY1Z5

*For use by authorized service providers.*

The communication between the workstation controller and a workstation was interrupted during an active session.

Possible causes include:

- The power for the workstation was turned off, then on.
- A temporary loss of power to the workstation occurred.

## VPDCONC

*For use by authorized service providers.*

The failing component is the VPD concentrator hardware.

1. Choose from the following options:
  - If you are on a Model 270, 800, 810, or 820: Replace the system unit backplane at location MB1. See Locations and addresses for the model you are working on to find part information and links to the remove and replace procedures.  
**This ends the procedure.**
  - If you are on a Model 825, 830, 840, 870, 890, SB2, or SB3: Continue with the next step.
2. Is this system a Model 825?
  - **No:** Continue with the next step.
  - **Yes:** Replace the system unit backplane at location CB1. See Model 825 - System unit backplane - CB1.
3. Is this system a Model 830 with SB2 system unit and FC 9074?
  - **No:** Continue with the next step.
  - **Yes:** Replace the following FRUs in order one at a time until the problem is resolved. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement. See Locations — Models 830, SB2 system unit with FC 9074 base I/O tower for part number and remove and replace information.
    - a. Clock card in location M06A in the 830 system unit.
    - b. Network interface controller (NIC) card in location M06 in the 830 system unit.  
**This ends the procedure.**
4. Is this a Model 840, SB3 system unit and FC 9079 base I/O tower?
  - **No:** Continue with the next step.
  - **Yes:** Replace the clock card in location M19 in the 840 system unit. Be sure to IPL in **SLOW OVERRIDE** mode after each replacement. See Locations — Models 840, SB3 system unit with processor tower and FC 9079 base I/O tower for part number and remove and replace information.  
**This ends the procedure.**
5. This is a Model 870 or 890 system unit with FC 9094 base I/O tower. Replace the Network interface controller (NIC) card in position M41 in the 870 or 890 processor tower. See Locations — Models 870 and 890 with an FC 9094 Base I/O Tower.  
**This ends the procedure.**

## VPDPART

*For use by authorized service providers.*

A VPDPART may be failing.

**Attention:** AC power must be removed from the system before removing or installing regulator 3.

Perform the following to determine the part for the failing VPDPART. The address of the failing frame and unit is shown in the second, third, and fourth characters of the 4 leftmost characters of the SRC. 11-x xFFU-xxxx (F=frame and U=unit).

Follow the instructions for the model you are working on:

- Models 270 and 820 (See page 480)
- Models 800, 810 and 825 (See page 482)
- Models 830, 840, SB2, and SB3 (See page 485)
- Models 870 and 890 (See page 488)

### Instructions for Model 270 and 820

1. Is the SRC 1xx 8401?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the control panel. See symbolic FRU “CTLPNL” on page 323 for the correct part.  
**This ends the procedure.**
2. Is the SRC 1xxx 8402?
  - **No:** Continue with the next step.
  - **Yes:** Prior to exchanging any parts, verify that the processors are installed. If you are in test mode and have removed all of the processors, disregard this SRC. Otherwise, correct the processors. If the processors are installed correctly, then exchange the control panel. See symbolic FRU “CTLPNL” on page 323 for the correct part.  
**This ends the procedure.**
3. Is the SRC 1xxx 8403?
  - **No:** Continue with the next step.
  - **Yes:** Check that processor 1 is connected and seated properly if pluggable and then exchange processor 1. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
4. Is the SRC 1xxx 8404?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the following parts one at a time:
    - Model 270 - FC 2248, FC 2250, FC 2252, FC 2422, FC 2423, FC 2431, FC 2432 and FC 2452 - System backplane. See symbolic FRU “TWRCARD” on page 470 for the correct part.
    - Models 270 - FC 2252, FC 2422, FC 2423, FC 2431, FC 2432 and FC 2452, and Model 820 - Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
5. Is the SRC 1xxx 8405?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information. If there is not a Processor 3, see the next FRU.  
**This ends the procedure.**
6. Is the SRC 1xxx 8406?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information. If there is not a Processor 4, see the next FRU.  
**This ends the procedure.**
7. Is the SRC 1xxx 8409?
  - **No:** Continue with the next step.
  - **Yes:** No processors are installed. If you are in test mode and have removed all the processors, disregard this SRC. Otherwise, correct the processors. If the processors are installed correctly, exchange all processors. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**

8. Is the SRC 1xxx 840A?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the System backplane. See symbolic FRU “TWRCARD” on page 470 for the correct part.  
**This ends the procedure.**
9. Is the SRC 1xxx 840B?
  - **No:** Go to step **14 (See page 481)**.
  - **Yes:** Are the processor and memory cards removable from the system?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **11 (See page 481)**.
10. Perform the following:
  - a. Power off the system.
  - b. Remove all processor and memory cards from the system.
  - c. Power on the system.Does the SRC 1xxx 840B appear on the panel?
  - **Yes:** Continue with the next step.
  - **No:** Go to step **12 (See page 481)**.
11. Perform the following:
  - a. Power off the system.
  - b. Exchange the control panel in the system unit.
  - c. Power on the system.Does the SRC 1xxx 840B appear on the panel?
  - **Yes:** Perform the following:
    - a. Power off the system.
    - b. Exchange the Tower Card in the system unit. See symbolic FRU “TWRCARD” on page 470.
    - c. Install all parts that were removed.  
**This ends the procedure.**
  - **No:** The control panel you replaced in this step is the failing component.  
**This ends the procedure.**
12. Perform the following:
  - a. Power off the system.
  - b. Install one of the units removed in step **10 (See page 481)**.
  - c. Power on the system.Does the SRC 1xxx 840B appear on the panel?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the last unit you installed in this step it is the failing component.  
**This ends the procedure.**
13. Have you installed all of the units removed in step **10 (See page 481)**?
  - **No:** Repeat step **12 (See page 481)**.
  - **Yes:** **This ends the procedure.**
14. Is the SRC 1xxx 840C?
  - **No:** Continue with the next step.
  - **Yes:** The memory module has been misplugged. Reinstall the correct memory module and check that it is seated correctly. If a problem still exists exchange the Memory Module. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**

15. Is the SRC 1xxx 8413?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
16. Is the SRC 1xxx 8414?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
17. Is the SRC 1xxx 8415?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
18. Is the SRC 1xxx 8416?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
19. Is the SRC 1xxx 8423?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
20. Is the SRC 1xxx 8424?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
21. Is the SRC 1xxx 8425?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
22. Is the SRC 1xxx 8426?
  - **No:** Go to “Starting point for all problems” on page 2  
**This ends the procedure.**
  - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**

#### **Instructions for Models 800, 810, and 825**

1. Is the SRC 1xx 8401?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the control panel. See symbolic FRU “CTLPNL” on page 323 for the correct part.  
**This ends the procedure.**
2. Is the SRC 1xxx 8402?
  - **No:** Continue with the next step.

- **Yes:** Prior to exchanging any parts, verify that the processors are installed. If you are in test mode and have removed all of the processors, disregard this SRC. Otherwise, correct the processors. If the processors are installed correctly, then exchange the control panel. See symbolic FRU “CTLPNL” on page 323 for the correct part.  
**This ends the procedure.**
3. Is the SRC 1xxx 8403?
    - **No:** Continue with the next step.
    - **Yes:** Check that processor 1 is connected and seated properly if pluggable and then exchange the following:
      - For Models 800 and 810 as installed: Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part and Locations and addresses for location information.
      - For Model 825: Processor 1. See see symbolic FRU “CCIN” on page 303 for the correct part and Locations and addresses for location information.**This ends the procedure.**
  4. Is the SRC 1xxx 8404?
    - **No:** Continue with the next step.
    - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information. If there is not a Processor 2, see the next FRU.  
**This ends the procedure.**
  5. Is the SRC 1xxx 8405?
    - **No:** Continue with the next step.
    - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information. If there is not a Processor 3, see the next FRU.  
**This ends the procedure.**
  6. Is the SRC 1xxx 8406?
    - **No:** Continue with the next step.
    - **Yes:** There is not a Processor 4, see the next FRU.  
**This ends the procedure.**
  7. Is the SRC 1xxx 8409?
    - **No:** Continue with the next step.
    - **Yes:** No processors are installed. If you are in test mode and have removed all the processors, disregard this SRC. Otherwise, correct the processors. If the processors are installed correctly, exchange all processors. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
  8. Is the SRC 1xxx 840A?
    - **No:** Continue with the next step.
    - **Yes:** Exchange the System backplane. See symbolic FRU “TWRCARD” on page 470 for the correct part.  
**This ends the procedure.**
  9. Is the SRC 1xxx 840B?
    - **No:** Go to step 14 (See page 484).
    - **Yes:** Are the processor and memory cards removable from the system?
      - **Yes:** Continue with the next step.
      - **No:** Go to step 11 (See page 484).
  10. Perform the following:
    - a. Power off the system.
    - b. Remove all processor and memory cards from the system.
    - c. Power on the system.

Does the SRC 1xxx 840B appear on the panel?

- **Yes:** Continue with the next step.
- **No:** Go to step **12 (See page 484)**.

11. Perform the following:

- a. Power off the system.
- b. Exchange the control panel in the system unit.
- c. Power on the system.

Does the SRC 1xxx 840B appear on the panel?

- **No:** The control panel you replaced in this step is the failing component.  
**This ends the procedure.**
- **Yes:** Perform the following:
  - a. Power off the system.
  - b. Exchange the Tower Card in the system unit. See symbolic FRU “TWRCARD” on page 470.
  - c. Install all parts that were removed.  
**This ends the procedure.**

12. Perform the following:

- a. Power off the system.
- b. Install one of the units removed in step **10 (See page 483)**.
- c. Power on the system.

Does the SRC 1xxx 840B appear on the panel?

- **No:** Continue with the next step.
- **Yes:** Exchange the last unit you installed in this step it is the failing component.  
**This ends the procedure.**

13. Have you installed all of the units removed in step **10 (See page 483)**?

- **No:** Repeat step **12 (See page 484)**.
- **Yes: This ends the procedure.**

14. Is the SRC 1xxx 840C?

- **No:** Continue with the next step.
- **Yes:** The memory module has been misplugged. Reinstall the correct memory module and check that it is seated correctly. If a problem still exists exchange the Memory Module. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**

15. Is the SRC 1xxx 8413?

- **No:** Continue with the next step.
- **Yes:** Exchange Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**

16. Is the SRC 1xxx 8414?

- **No:** Continue with the next step.
- **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**

17. Is the SRC 1xxx 8415?

- **No:** Continue with the next step.
- **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**



18. Is the SRC 1xxx 8416?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
19. Is the SRC 1xxx 8423?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
20. Is the SRC 1xxx 8424?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
21. Is the SRC 1xxx 8425?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part, and Locations and addresses for location information.  
**This ends the procedure.**
22. Is the SRC 1xxx 8426?
  - **No:** Go to “Starting point for all problems” on page 2  
**This ends the procedure.**
  - **Yes:** There is no Processor 4, see the next FRU.  
**This ends the procedure.**

#### Instructions for Models 830, 840, SB2, and SB3

1. Is the SRC 1xxx 8401?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the control panel. See symbolic FRU “CTLPNL” on page 323 for the correct part.  
**This ends the procedure.**
2. Is the SRC 1xxx 8402?
  - **No:** Continue with the next step.
  - **Yes:** Prior to exchanging any parts, verify that the processors are installed. If you are in test mode and have removed all of the processors, disregard this SRC. Otherwise, correct the processors. If the processors are installed correctly, then exchange the following parts:
    - Control panel (see symbolic FRU “CTLPNL” on page 323 for the correct part).
    - For Models 840, and SB3:
      - Clock card (see symbolic FRU “CLCKCRD” on page 320 for the correct part).
      - Cable connecting the system unit and the FC 9079 (see Power and signal cables for the part number).
    - For Models 830, and SB2:
      - Clock card (see symbolic FRU “CLCKCRD” on page 320 for the correct part).  
**This ends the procedure.**
3. Is the SRC 1xxx 8403?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the following parts:
    - Tower card (See symbolic FRU “TWRCARD” on page 470 for the correct part.)

- Processor 1 (See symbolic FRU “CCIN” on page 303 for the correct part.)  
**This ends the procedure.**
4. Is the SRC 1xxx 8404?
    - **No:** Continue with the next step.
    - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
  5. Is the SRC 1xxx 8405?
    - **No:** Continue with the next step.
    - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
  6. Is the SRC 1xxx 8406?
    - **No:** Continue with the next step.
    - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
  7. Is the SRC 1xxx 8409?
    - **No:** Continue with the next step.
    - **Yes:** No processors are installed. If you are in test mode and have removed all the processors, disregard this SRC. Otherwise, correctly install the processors.  
If the processors are installed correctly, exchange all Processors. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
  8. Is the SRC 1xxx 840A?
    - **No:** Continue with the next step.
    - **Yes:** Exchange the following part:
      - For Models 840, and SB3:
        - AC module (see symbolic FRU “ACMODUL” on page 268 for the correct part).
        - Tower card (see symbolic FRU “TWRCARD” on page 470 for the correct part).
      - For Models 830, and SB2:
        - Clock card (see symbolic FRU “CLCKCRD” on page 320 for the correct part).
        - Tower card (see symbolic FRU “TWRCARD” on page 470 for the correct part).**This ends the procedure.**
  9. Is the SRC 1xxx 840B?
    - **Yes:** Continue with the next step.
    - **No:** Go to step **17 (See page 487)**.
  10. Perform the following:
    - a. Power off the system.
    - b. Remove all processor and memory cards from the system.
    - c. Power on the system.

Does the SRC 1xxx 840B appear on the panel?

    - **Yes:** Continue with the next step.
    - **No:** Go to step **15 (See page 487)**.
  11. Perform the following:
    - a. Power off the system.
    - b. Exchange the Clock card in the system unit.
    - c. Power on the system.

Does the SRC 1xxx 840B appear on the panel?

- **Yes:** Continue with the next step.
  - **No:** The Clock card you replaced in this step is the failing component.  
**This ends the procedure.**
12. Perform the following:
- a. Power off the system.
  - b. Exchange the control panel in the system unit.
  - c. Power on the system.
- Does the SRC 1xxx 840B appear on the panel?
- **Yes:** Continue with the next step.
  - **No:** The control panel you replaced in this step is the failing component.  
**This ends the procedure.**
13. Perform the following:
- a. Power off the system.
  - b. Exchange the SPCN card in the system unit. See symbolic FRU “TWRCARD” on page 470.
  - c. Power on the system.
- Does the SRC 1xxx 840B appear on the panel?
- **Yes:** Continue with the next step.
  - **No:** The SPCN card you replaced in this step is the failing component.  
**This ends the procedure.**
14. Perform the following:
- a. Power off the system.
  - b. Exchange the backplane in the system unit.
  - c. Install all parts that were removed.  
**This ends the procedure.**
15. Perform the following:
- a. Power off the system.
  - b. Install one of the units removed in step 10 (See page 486).
  - c. Power on the system.
- Does the SRC 1xxx 840B appear on the panel?
- **No:** Continue with the next step.
  - **Yes:** The last unit you installed in this step is the failing component.  
**This ends the procedure.**
16. Have you installed all of the units removed in step 10 (See page 486)?
- **Yes: This ends the procedure.**
  - **No:** Repeat step 15 (See page 487).
17. Is the SRC 1xxx 840C?
- **No:** Continue with the next step.
  - **Yes:** The memory module has been misplugged, reinstall the correct memory module and check to see that it is seated correctly. If a problem still exists, exchange the Memory module. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
18. Is the SRC 1xxx 8413?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
19. Is the SRC 1xxx 8414?

- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
20. Is the SRC 1xxx 8415?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
21. Is the SRC 1xxx 8416?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
22. Is the SRC 1xxx 8423?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
23. Is the SRC 1xxx 8424?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
24. Is the SRC 1xxx 8425?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
25. Is the SRC 1xxx 8426?
- **No:** Go to “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **Yes:** Exchange Processor 4. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**

### Instructions for Models 870 and 890

1. Is the SRC 1xxx 8401?
- **No:** Continue with the next step.
  - **Yes:** Exchange the control panel. See symbolic FRU “CTLPNL” on page 323 for the correct part.  
**This ends the procedure.**
2. Is the SRC 1xxx 8402?
- **No:** Continue with the next step.
  - **Yes:** Prior to exchanging any parts, verify that the processor VPD cards are installed. If you are in test mode and have removed the processors VPD cards, disregard this SRC. Otherwise, correct the processor VPD cards. If the processor VPD cards are installed correctly, then exchange the following parts:
    - M41 Network Interface card (see Symbolic FRU “CCIN” on page 303 for the correct part).
    - Cable connecting the system unit and the FC 9094  
**This ends the procedure.**
3. Is the SRC 1xxx 8403?
- **No:** Continue with the next step.
  - **Yes:** Exchange the following parts:
    - Tower card (See symbolic FRU “TWRCARD” on page 470 for the correct part.)

- Processor 1 VPD card/processor (see symbolic FRU “CCIN” on page 303 for the correct part).

**This ends the procedure.**

4. Is the SRC 1xxx 8404?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2 VPD card/processor. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
5. Is the SRC 1xxx 8405?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3 VPD card/processor. See symbolic FRU “CCIN” on page 303 for the correct part. If there is not a Processor 3 VPD card/processor, see the next FRU.  
**This ends the procedure.**
6. Is the SRC 1xxx 8406?
  - **No:** Continue with the next step.
  - **Yes:** Exchange Processor 4 VPD card/processor. See symbolic FRU “CCIN” on page 303 for the correct part. If there is not a Processor 4 VPD card/processor, see the next FRU.  
**This ends the procedure.**
7. Is the SRC 1xxx 8409?
  - **No:** Continue with the next step.
  - **Yes:** No processor VPD cards are installed. If you are in test mode and have removed all the processor VPD cards, disregard this SRC. Otherwise, correctly install the processor VPD cards. If the processors are installed correctly, contact your next level of support.  
**This ends the procedure.**
8. Is the SRC 1xxx 840A?
  - **No:** Continue with the next step.
  - **Yes:** Exchange the Network interface controller (NIC) card, CCIN 2738. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
9. Is the SRC 1xxx 840B?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 17 (**See page 490**).
10. Perform the following:
  - a. Power off the system.
  - b. Remove all processor VPD cards (do not remove the processors), clock module (M15), memory, and NIC cards from the system.
  - c. Power on the system.Does the SRC 1xxx 840B appear on the panel?
  - **Yes:** Continue with the next step.
  - **No:** Go to step 15 (**See page 490**).
11. Perform the following:
  - a. Power off the system.
  - b. Exchange the Network interface controller card M41, CCIN 2738. See symbolic FRU “CCIN” on page 303 for the correct part.
  - c. Power on the system.Does the SRC 1xxx 840B appear on the panel?
  - **Yes:** Continue with the next step.

- **No:** The Network interface card M41 you replaced in this step is the failing component.  
**This ends the procedure.**
12. Perform the following:
- a. Power off the system.
  - b. Exchange the control panel in the system unit.
  - c. Power on the system.
- Does the SRC 1xxx 840B appear on the panel?
- **Yes:** Continue with the next step.
  - **No:** The control panel you replaced in this step is the failing component.  
**This ends the procedure.**
13. Perform the following:
- a. Power off the system.
  - b. Exchange the SPCN card in the system unit. See symbolic FRU “TWRCARD” on page 470.
  - c. Power on the system.
- Does the SRC 1xxx 840B appear on the panel?
- **Yes:** Continue with the next step.
  - **No:** The SPCN card you replaced in this step is the failing component.  
**This ends the procedure.**
14. Perform the following:
- a. Power off the system.
  - b. Exchange the CEC backplane in the system unit.
  - c. Install all parts that were removed.  
**This ends the procedure.**
15. Perform the following:
- a. Power off the system.
  - b. Install one of the units removed in step **10** (See page 489).
  - c. Power on the system.
- Does the SRC 1xxx 840B appear on the panel?
- **No:** Continue with the next step.
  - **Yes:** The last unit you installed in this step is the failing component.  
**This ends the procedure.**
16. Have you installed all of the units removed in step **10** (See page 489).?
- **Yes: This ends the procedure.**
  - **No:** Repeat step **15** (See page 490).
17. Is the SRC 1xxx 840C?
- **No:** Continue with the next step.
  - **Yes:** The memory module has been mis-plugged, reinstall the correct memory module and check to see that it is seated correctly. If a problem still exists, exchange the Memory module. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
18. Is the SRC 1xxx 8413?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
19. Is the SRC 1xxx 8414?

- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
20. Is the SRC 1xxx 8415?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
21. Is the SRC 1xxx 8416?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 4 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
22. Is the SRC 1xxx 8423?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 1 with the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
23. Is the SRC 1xxx 8424?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 2 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
24. Is the SRC 1xxx 8425?
- **No:** Continue with the next step.
  - **Yes:** Exchange Processor 3 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**
25. Is the SRC 1xxx 8426?
- **No:** Go to the “Starting point for all problems” on page 2.  
**This ends the procedure.**
  - **Yes:** Exchange Processor 4 and the matching VPD card. See symbolic FRU “CCIN” on page 303 for the correct part.  
**This ends the procedure.**





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## Notices

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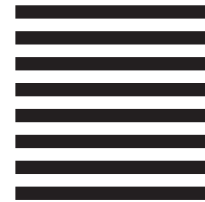
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