IBM

@server

iSeries

iSeries Model 270 and 820 Problem Analysis, Repair and Parts

Version 5

SY44-5967-01

IBM

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> **Note**
>
> Before using this information and the product it supports, be sure to read the information in
> "Safety and Environmental Notices" on page iii and "Notices" on page 893.

Safety and Environmental Notices

Danger Notices

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

Use the following danger notices throughout this book:

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

> **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 when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. (RSFTD202)**

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 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)

DANGER

> Use caution when installing or modifying telephone lines. Disconnect the lines at the network interface before working with telephone wires that are not insulated. Never install telephone jacks that are not waterproof in wet locations. Do not install or modify telephone lines or use a telephone (other than a cordless type) during an electrical storm. Do not use a telephone to report a gas leak in the area of the leak. (RSFTD213)

Caution Notices

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition.

CAUTION:
Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

CAUTION:
The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

CAUTION:
The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

CAUTION:
The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

CAUTION:
This assembly has a circuit card that contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the assembly as instructed by local regulations. (RSFTC235)

CAUTION:
The optical link card contains a laser. To avoid the release of toxic substances into the environment, do not burn. Discard the optical link as instructed by local regulations. (RSFTC236)

Attention Notices

An attention notice indicates the possibility of damage to a program, device, system, or data.

Laser Safety Information

CAUTION:
This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)

Product Recycling and Disposal

Components of the system, such as structural parts and circuit cards, can be recycled where recycling facilities exist. IBM does not currently collect and recycle used IBM products from customers in the United States other than those products that are involved in trade-in programs. Companies are available to disassemble, reutilize, recycle, or dispose of electronic products. Contact an IBM account representative for more information.

The system unit contains batteries and circuit boards with lead solder. Before you dispose of this unit, these batteries and circuit boards must be removed and discarded according to local regulations or recycled where facilities exist. This book contains specific information on each battery type where applicable.

Battery Return Program

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM batteries and battery packs. For information on proper disposal of the batteries in this unit, please contact IBM at 1-800-426-4333. Please have the IBM part number that is listed on the battery available when you make your call. For information on battery disposal outside the United States, contact your local waste disposal facility.

Environmental Design

The environmental efforts that have gone into the design of the system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class I ozone-depleting chemicals in the manufacturing process, reductions in manufacturing wastes, and increased product energy efficiency. For more information, contact an IBM account representative.

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Part 2. FRU Replacement 591

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Part 1. Problem Analysis

Chapter 1. Starting Problem Analysis

Starting Problem Analysis

System Service Library Structure

Problem Analysis, Repair, and Parts

The purpose of this book is to provide complete instructions for the task of locating and repairing system problems. It uses directed procedures in a specific logical order to accomplish this task. This book is **not** meant to teach theory of operations. Therefore, there is no index to information that could cause further problems with the system if it was not used correctly. References within the directed procedures point to other sources of information, such as the *iSeries Service Functions*, for more information about common tasks.

The Problem Analysis, Repair, and Parts book is broken into two main parts:

- Part one deals with problem isolation and determining which field replaceable unit (FRU) needs to be replaced, if any.

- Part two deals with locating the FRU, including any addressing information needed, and replacing it.

Towards that end, the Problem Analysis, Repair, and Parts book has the following chapters:

Appendixes

Data Recovery and
General System Information

Locations and Addresses,
Parts Assemblies, FRU Part Numbers

Remove and Install Procedures

Problem Isolation Procedures
and FRU Information

Unit Reference Codes

Starting Problem Analysis

Problem Analysis
Repair and Parts

A-

6-

5-

4-

3-

2-

1-

RZAIT504-1
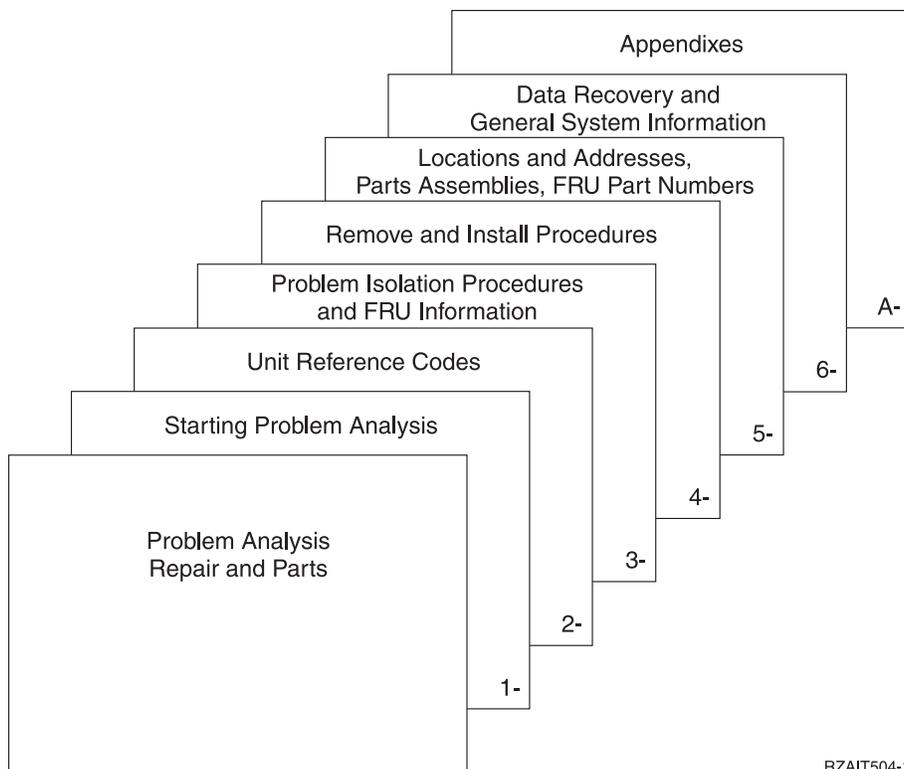
- **Chapter 1** is the starting point for all service actions. It provides an introduction and procedures for problems that occur without an SRC, such as a system that will not power on.
- **Chapter 2** contains information about system reference codes (SRCs) and the unit reference code (URC) information that is contained within the SRCs.
- **Chapter 3** contains:
  - Problem isolation procedures for specific types of problems
  - Failing item information
  - Symbolic FRU information
- **Chapter 4** contains FRU removal and installation procedures.
- **Chapter 5** contains locations information, the parts assemblies, and FRU part numbers.
- **Chapter 6** contains data recovery procedures and general system information.
- **The appendixes** contain information such as Problem Summary Forms and System Safety Inspection information.

Starting Point for All Problems

Before you start problem analysis, review the "System Service Library Structure" on page 3 and how the system and its devices connect together (see "System Architecture and Configuration" in the *iSeries Service Functions* information). Also review the SRC definition and formats and how they appear (see "System Reference Code (SRC) Record" in the *iSeries Service Functions* information). Also understand how the control panel works (see "Control Panel Functions" in the *iSeries Service Functions* information). Also, review any supplemental RPQ pages in this guide.

Note:

- For instructions on displaying SRCs, see the "System Reference Code (SRC)" section in the *iSeries Service Functions* information.
- Use the *Help Key* text that is available through these procedures for additional information.
- If the Verification of System Password Failed display appears during IPL, see "System Password" in the *iSeries Service Functions* information for instructions.

1. Make sure that the system operator has collected all the necessary information for the reported problem. If not, you will need to work with the system operator and collect the information by referring to the topic "Troubleshooting Your System" in the http://www.ibm.com/eserver/iseries/infocenter or "Getting Started With iSeries" on the Information Center CD.

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

   > **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)**

3. **You must** determine if the system has multiple logical partitions or only one Primary partition. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

4. All systems have a minimum of one logical partition and its name is "Primary". In step 3 you determined if this system has multiple logical partitions. Does this system have multiple logical partitions?

Yes	You must look for configuration changes and missing resources in the logical partition (primary or secondary) that reported the problem. Continue with the next step in this procedure to look for configuration changes in the logical partition with the problem.
No	You must look for configuration changes and missing resources in the Primary partition. Continue with the next step in this procedure to look for configuration changes in the Primary partition.

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

   No   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 all is correct before continuing with this procedure.

   Check the system configuration:

   Use the display hardware configuration service function to check for any missing or failed hardware.

   To display missing or failed hardware perform the following:

   a. On the command line, enter

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*.

d. On the Start a Service Tool display, select the *Hardware service manager*.

e. On the Hardware Service Manager display, select *Logical hardware resources*

f. On the Logical Hardware Resources display, select *System bus resources*.

g. Select the function keys for *failed* or *non-reporting* resources.

Continue with the next step in this procedure.

6. Use the *Symptom* column of Table 1 and find the best description of the reason for this service action. Then follow the instructions in the *What You Should Do* column.

Table 1. Start Table

Symptom	What You Should Do
Intermittent Problems	
You suspect an intermittent problem.	Go to "Analyzing Intermittent Problems" on page 14.
DST/SST functions are available on the Primary system console (console of the Primary partition) and the symptom is:	
• There is a system reference code or message. • The customer reports reduced system function. • There is a system performance problem. • There are Failing, Missing, or Inoperable system resources.	Go to "Using the Service Action Log" on page 9. **Note:** 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 *iSeries Service Functions* for details.
There is an SRC displayed in function 5 on the control panel.	Go to "Analyzing Power Problems" on page 37.
The system is not operational and the symptom is:	
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 426.
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 "Analyzing Power Problems" on page 37.
There is an SRC in function 11 and the system attention light is on.	Go to "Chapter 2. Unit Reference Codes" on page 59.

Table 1. Start Table (continued)

Symptom	What You Should Do
There is an IPL problem (the system attention light is off) and there is no SRC in function 5.	Go to "Analyzing IPL Problems" on page 22.
There is a "Device Not Found" message during an install from an alternate installation device	Go to "TU-PIP6" on page 447.
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 31.
On a system that has multiple logical partitions, there is a problem with a secondary partition and the symptom is:	
There is a B2xx xxxx SRC on the *Work with Partition Status* screen of the Primary console.	Go to "Chapter 2. Unit Reference Codes" on page 59.
One or more of the following was reported: • The console of a secondary partition was lost or is **not** functioning. • There is an SRC on the panel of an I/O expansion tower owned by a secondary partition. • You suspect a power problem with resources owned by a secondary partition. • 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. • 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.	• Search the Primary partition's Service Action Log. Go to "Using the Service Action Log" on page 9. • 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 *iSeries Service Functions*. Use that SRC and go to "Chapter 2. Unit Reference Codes" on page 59. Perform service from the secondary partition unless instructed to move to another partition.
The partition's console is functioning **and** 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 *iSeries Service Functions*.	Use the partition's SRC. From the partition's console search for that SRC in the partition's Service Action Log. Go to "Using the Service Action Log" on page 9.
One or more of the following was reported: • There is an IPL problem with the secondary partition and there is **no** SRC displayed in the *Work with Partition Status* screen. • The partition's operations have stopped or the partition is in a loop and there is **no** SRC displayed in the *Work with Partition Status* screen.	• Go to "Logical Partition Hangs or Loops (No SRC)" on page 34.

Start

Symptom	What You Should Do
One or more of the following was reported: • There is a system reference code or message on the partition's console. • The customer reports reduced function in the partition. • There is a partition performance problem. • There are Failing, Missing, or Inoperable resources.	From the partition's console search the partition's Service Action Log. Go to "Using the Service Action Log" on page 9. **Note:** 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 *iSeries Service Functions* for details.
There is a "Device Not Found" message during an install from an alternate installation device.	Go to "TU-PIP6" on page 447.
Problems with Guest partitions: Reported from the operating system (other than OS/400) 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 "Glossary" on page 889.	
Is the problem appearing from a guest operating system? To understand what a guest partition is, see the definitions for "guest partition" in the "Glossary" on page 889. To determine if the system has guest partitions see "Determining if the System Has Guest Partitions" on page 853.	If there are Service Action Log (SAL) entries in the Primary partition or the hosting partition, work these problems first. To determine the hosting partition for a guest partition see "Determining if the System Has Guest Partitions" on page 853.
Is the problem appearing in the hosting partition of a guest partition? To determine if a partition is a guest partition, see "Determining if the System Has Guest Partitions" on page 853 or ask the customer if the problem is appearing in the hosting partition for a guest partition.	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.
There is a Time of Day Problem and this symptom is:	
System clock loses or gains more than 1 sec/day when the system is connected to utility power.	Replace the Service Processor (see the symbolic FRU "SVCPROC" on page 574).
System clock loses or gains more than 1 sec/day when the system is disconnected from utility power.	Replace the Time of Day Battery on the Service Processor (see "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683 for Service Processor location information. The associated table will direct you to the removal and installation procedure).
There is an obvious physical symptom	
A light or display on the system unit control panel or on a FC 507x System Unit Expansion, a FC 508x Storage Expansion Unit, or a FC 506x PCI Expansion Unit control panel is **not** working correctly.	Perform "SPCN PIP20" on page 432.
A light or display on the control panel of the FC 504x System Unit Expansion is not working correctly.	Perform SPCN-PIP4 in SPCN PIPs in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.

Table 1. Start Table (continued)

Symptom	What You Should Do
One or more of the following was reported: • Noise • Smoke • Odor	Go to "Appendix D. System Safety Inspection" on page 867.
A part is broken or damaged.	Go to "Parts Assemblies" on page 740 to get the part number. Then go to "Chapter 4. Removal and Installation Procedures" on page 593 to exchange the part.
There is a problem with the Operations Console or the remote control panel	
The System **Remote** Control Panel is **not** working properly.	Perform "Operations Console-PIP2" on page 365.
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 363.
You cannot find the symptom in this table	
You cannot find the symptom in this table. **Note:** 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.	Go to "Using the Service Action Log".

Using the Service Action Log

1. Search for an entry in the Service Action Log that matches the time, SRC, or resource of the reported problem.

   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 "Accessing Dedicated Service Tools" 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*.

   d. On the Start a Service Tool display, select the *Hardware Service Manager* (see the *iSeries Service Functions*).

   e. Select the *Work with service action log* option on the Hardware Service Manager display.

   f. 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.

   g. Search for an entry that matches one or more conditions of the problem:

      1) SRC

      2) Resource

3) Time

4) FRU list (choose the *Display the failing item information* option to display the SAL entry). Use the *Additional Details* function to switch between part descriptions and part locations information.

Notes:

a. 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.

b. 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.

Did you find an entry in the Service Action Log?

No   Yes

↓   Go to step 4 of this procedure.

2. Is the OS/400 operating system available?

Yes   No

↓   Go to "Handling Problems for Non-critical Resources" on page 13.

This ends the procedure.

3. Go to "Using the Problem Log" on page 12.

This ends the procedure.

4. Was the entry isolated (does the letter "Y" appear in the Isolated column)?

Yes   No

↓   Go to "Chapter 2. Unit Reference Codes" on page 59. Using the SRC that is indicated in the log, 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.

5. 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.

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 FRU(s) 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. After exchanging items, verify that the item(s) that were exchanged repaired the problem.

Notes:

a. For Failing Items (FIs) and symbolic FRUs, go to "Chapter 3. Problem Isolation Procedures (PIPs), Failing Items, and Symbolic FRU Isolation" on page 259.

b. Location information is displayed by choosing the function key for Additional details.

If location information is available, go to "Locations and Addresses" on page 671 to determine the removal and installation procedure to use.

c. If the failing item is Licensed Internal Code, contact your next level of support for the correct PTF to apply.

d. After exchanging an item, go to "Verifying the Repair" on page 830.

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.

Using the Product Activity Log

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

      STRSST

      (the Start System Service Tools) command.

      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. On the System Service Tools display, select the *Start a Service Tool* option (see the *iSeries Service Functions*).
   d. Select the *Product Activity Log* option on the Start a Service Tool display.
   e. Select the *Analyze log* option on the Product Activity Log display.
   f. 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.
   g. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
   h. 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 problem the customer reported.

   Did you find an SRC that matches the time and type of problem the customer reported?

> Yes   No
>
> ↓   Contact your next level of support.
>
> **This ends the procedure**.

3. Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC information to correct the problem.

   This ends the procedure.

Using the Problem Log

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. Enter WRKPRB (the Work with Problems command) on the command line.

   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   No
   >
   > ↓   Go to "Handling Problems for Non-critical Resources" on page 13.
   >
   > **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?

   > Yes   No
   >
   > ↓   Go to step 5 of this procedure.

3. 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 "Chapter 2. Unit Reference Codes" on page 59.
   b. If the message on the display directs you to use SST (System Service Tools), go to "COMM-PIP1" on page 307.

   Was the problem corrected by the analysis procedure?

   > No   Yes
   >
   > ↓   **This ends the procedure**.

4. Go to step 6 of this procedure.

5. Analyze Problem (option 1) is not available on the *Work with Problem* display. 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 entering option 5 to display details.

   c. Select F5 to display possible causes.

   > **Note:** If F5 is not available, use the customer reported symptom string for customer perceived information about this problem. Then, go to "Using the Product Activity Log" on page 11.

   d. Use the list of possible causes as the FRU list and go to step 8 of this procedure.

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

   No   **Yes**

   ↓   Go to the entry point indicated by problem analysis.

   This ends the procedure.

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

   Yes   **No**

   ↓   Go to "Handling Problems for Non-critical Resources".

   This ends the procedure.

8. 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 (FIs) and symbolic FRUs, go to "Chapter 3. Problem Isolation Procedures (PIPs), Failing Items, and Symbolic FRU Isolation" on page 259 .

   b. When exchanging FRUs, go to "Chapter 4. Removal and Installation Procedures" on page 593. If you are exchanging a disk unit, go to "Recovery Procedures" on page 803.

   c. After exchanging an item, go to "Verifying the Repair" on page 830.

9. Has the problem been resolved?

   No   **Yes**

   ↓   **This ends the procedure**.

10. Contact your next level of support.

   This ends the procedure.

Handling Problems for Non-critical Resources

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   **Yes**

   ↓   Go to "Chapter 2. Unit Reference Codes" on page 59.

   This ends the procedure.

2. Does the problem involve a workstation resource?

   No   **Yes**

↓   Check the following:

- The workstation is operational.
- The cabling/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   **Yes**

    ↓   Go to "Using the Product Activity Log" on page 11 to resolve the problem.

           This ends the procedure.

4. Does the problem involve a communications resource?

    No   **Yes**

    ↓

- Are there any system operator messages that indicate a communications-related problem has occurred?

    No   **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.

5. Contact your next level of support.

This ends the procedure.

Analyzing Intermittent Problems

The information in this section helps you correct intermittent problems on the iSeries system.

Safety

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 16 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 Intermittent Problem Section

You are here because of intermittent problems.

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

1. Read all of the information in "Correcting 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 16. Then return to this step of this procedure and answer the following question.

   Did you correct the intermittent problem?

   No   Yes

   ↓   This ends the procedure.
3. Go to "How to Analyze the Intermittent Problem" on page 20.

   This ends the procedure.

Correcting Intermittent Problems

What Is an Intermittent Problem?

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:

- An system reference code (SRC) occurs 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 Vary Configuration command (`VRYCFG *CTL RESET(*YES)`).

Hints for Correcting Intermittent Problems

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 occurred).

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 AS/400 system
  - 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

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).

General Intermittent Problem Checklist

The following steps have been successful in correcting intermittent problems on the AS/400 system. 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 AS/400 system (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/iseries/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 4.

   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 causes of electrical noise that match 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?

   Find the source of the electrical noise and prevent the noise from getting into the system.

6. Ensure that site temperature and humidity are compatible with system specifications. See web site http://www.as400.ibm.com/tstudio/planning/plngstrt.htm for site physical planning information.

   Acceptable operating conditions are:
   - Temperature: 10° C to 37.8° C (50° F to 100° F)

Intermittent Problems

- Humidity: 8% to 80% relative humidity

The best operating conditions are:
- Temperature: 23° C (73° F)
- Humidity: 40% to 60% relative humidity

7. Check the 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 DASD failures.
    - Smell for unusual odors in the air. Some gases can corrode electrical connections.

8. Ask the customer if any large vibration (caused by thunder, an earthquake, an explosion, or road construction) occurred in the area at the time of the failure.

    Note: A failure that is caused by vibration is more probable if the AS/400 system is on a raised floor.

9. 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. Hold the ground strap and attempt to turn it counter-clockwise around the screw.

       Does the screw loosen?

       No   Yes

       ↓   Tighten the screw more, then repeat this step.

    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.

10. 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.

11. 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.

12. 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.

13. Review the service entries to determine what service actions were performed on the system (see the "Appendix A. Problem Summary Form" on page 861).

14. Review the entries in the problem log (WRKPRB) and look for problems that were reported to the user.

15. Review the entries in the Product Activity Log and 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.

16. Review the entries in the history log (Display Log (DSPLOG)) and look for a change that matches the start of the intermittent problems.

17. Check your records and the service log to ensure that the latest engineering changes are installed on the system and on all system I/O devices.

18. 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.

19. 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   **Yes**

    ↓   Review the installation instructions to ensure that each step was performed correctly. Then continue with the next step of this procedure.

20. Is the problem associated with a storage device?

    No   **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.

21. Ensure that all the items in "Appendix B. Preventive Maintenance (PM)" on page 863 are being performed regularly.

    Performing the following helps prevent intermittent thermal checks:
    - Ensuring that the AMDs on all disk units, tape units, and power supplies are working
    - Exchanging all air filters as recommended

22. 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

1. Is a reference code associated with the intermittent problem?

   No   **Yes**

   ↓   Go to "Chapter 2. Unit Reference Codes" on page 59 and find the reference code. If the actions in the unit reference code tables do not correct the intermittent problem, return here and continue with the next step of this procedure.

2. Is a symptom associated with the intermittent problem?

   No   **Yes**

   ↓   Go to "Intermittent Symptom Table". If the Intermittent Symptom Table does not correct the intermittent problem, return here and continue with the next step of this procedure.

3. Go to "Failing Area INT-PIP Table" on page 21. If the Failing Area INT-PIP Table does not correct the intermittent problem, return here and continue with the next step of this procedure.

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 Symptom Table

1. In the *Symptom* column, find the failure symptom.
2. In the *Description* column, read the description of the failure.
3. In the *INT-PIPs* column, perform the INT-PIPs shown for that symptom beginning at "Intermittent Problem Isolation Procedures" on page 313.

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.

If the symptom for the intermittent problem you have is not listed, go to "Failing Area INT-PIP Table" on page 21.

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. **Notes:** 1. If the system has no workstation I/O processor cards, omit INT-PIP5. 2. If the system has an uninterruptable power supply (UPS), perform "INT-PIP9 Utility Power and Battery Power Units" on page 318.	"INT-PIP5 External Noise on Twinaxial Cables" on page 315, "INT-PIP9 Utility Power and Battery Power Units" on page 318
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. **Note:** Ensure that the latest service processor PTF for your release is installed.	"INT-PIP18 PTFs Not Installed" on page 321

Symptom	Description	INT-PIPs
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 321

If the symptom for the intermittent problem you have is not listed, go to "Failing Area INT-PIP Table".

Failing Area INT-PIP Table

Use this table only if you do not have an SRC or cannot find your symptom in the "Intermittent Symptom Table" on page 20.

Note: Before performing any INT-PIPs in Table 2, first perform all of the steps in "General Intermittent Problem Checklist" on page 16 for all failing areas.

1. Under *Failing Area*, find the area of failure.
2. Look down the column for the area of failure until you find an X. Look across to the *INT-PIP* column and perform the INT-PIP indicated.
3. If the INT-PIP does not correct the intermittent problem, continue down the column for 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 2. Failing Area INT-PIPs

Failing Area						INT-PIP
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 16
X	X			X		"INT-PIP5 External Noise on Twinaxial Cables" on page 315
	X	X	X	X	X	"INT-PIP7 Electromagnetic Interference (EMI)" on page 315
X						"INT-PIP9 Utility Power and Battery Power Units" on page 318
X						"INT-PIP14 Station Protectors" on page 320
		X				"INT-PIP16 Licensed Internal Code" on page 321
X	X	X	X	X	X	"INT-PIP18 PTFs Not Installed" on page 321
	X	X	X	X	X	"INT-PIP20 Performance Problems" on page 321

Analyzing IPL Problems

Start Analyzing IPL Problems Here

Table 3. Start Table

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)"
You cannot perform an IPL at a specified time (no SRC).	Go to "Cannot Perform IPL at a Specified Time (No SRC)" on page 23
You cannot start an IPL from a remote location (no SRC).	Go to "Cannot Perform IPL from a Remote Location (No SRC)" on page 27
The IPL did not complete.	Go to "System Hangs or Loops (No SRC)" on page 31
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 36

Cannot Perform IPL from the Control Panel (No SRC)

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 *iSeries Service Functions*).
    b. Power on the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    Does the IPL complete successfully?

    No   Yes

    ↓   This ends the procedure.

3. Have all the units in the system become powered on that you expected to become powered on?

    Yes   No

    ↓   Go to "Analyzing Power Problems" on page 37 and find the symptom that matches the problem.

    This ends the procedure.

4. Is an SRC displayed on the control panel?

    Yes   No

    ↓

    Exchange the following FRUs one at a time (see "Chapter 4. Removal and Installation Procedures" on page 593):
    a. SPCN card unit (TWRCARD)
    b. Power Supply (PWRSPLY)

    This ends the procedure.

5. Go to "Chapter 2. Unit Reference Codes" on page 59 and use the displayed SRC to correct the problem.

This ends the procedure.

Cannot Perform IPL at a Specified Time (No SRC)

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 "Powering On and Powering Off the System and Logical Partitions" on page 832).

   Does the IPL complete successfully?

   Yes   No

   ↓   Go to "Starting Point for All Problems" on page 4.

   This ends the procedure.

3. Have all the units in the system become powered on that you expected to become powered on?

   Yes   No

   ↓   Go to "Starting Point for All Problems" on page 4 and find the symptom that matches the problem.

   This ends the procedure.

4. Verify the system date and time by doing the following:
   a. Enter DSPSYSVAL QIPLDATTIM (the Display System Value command) on the command line.

      Observe the system value parameters.

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

```
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
```

Figure 1. Display for QIPLDATTIM

   b. Enter DSPSYSVAL QDATE (the Display System Value command) on the command line.

      Check the system values for the date.

IPL Problems

```
Display System Value
System:  S0000000
System value . . . . . . . . . :  QDATE

Description  . . . . . . . . . :  System date

Date        . . . . . . . . . :  MM/DD/YY
```

Figure 2. Display for QDATE

    c. Enter DSPSYSVAL QTIME (the Display System Value command) on the command line.

    Check the system values for the time.

```
Display System Value
System:  S0000000
System value . . . . . . . . . :  QTIME

Description  . . . . . . . . . :  Time of day

Time        . . . . . . . . . :  HH:MM:SS
```

Figure 3. Display for QTIME

Does the operating system have the correct present date and time?

No   **Yes**

↓   Go to step 6 of this procedure.

5. Change the system values to the correct date and time by doing the following:

    a. To set the correct date, do the following:

      1) Enter CHGSYSVAL QDATE VALUE('mmddyy') (the Change System Value command) on the command line.

      2) Set the date by entering

        • mm=month

        • dd=day

        • yy=year

      3) Press the Enter key.

    b. To set the correct time, do the following:

      1) Enter CHGSYSVAL QTIME VALUE('hhmmss') (the Change System Value command) on the command line.

      2) Set the time by entering

        • hh=24 hour time clock

        • mm=minutes

        • ss=seconds

      3) Press the Enter key.

6. 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 CHGSYSVAL SYSVAL(QIPLDATTIM) VALUE('mmddyy hhmmss') (the Change System Value command) 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 PWRDWNSYS *IMMED (the Power Down System Immediate command) on the command line.

c. Wait 5 minutes.

Does the IPL start at the time you specified?

No   Yes

↓   **This ends the procedure.**

7. Power on the system in normal mode, (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

Does the IPL complete successfully?

Yes   No

↓   Go to "Starting Point for All Problems" on page 4.

            This ends the procedure.

8. 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

    STRSST

    (the Start System Service Tools) command.

    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*.

d. On the Service Tools display, select the *Hardware Service Manager* (see the *iSeries Service Functions*).

e. Select the *Work with service action log* option on the Hardware Service Manager display.

f. 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.

g. Find an entry that matches one or more conditions of the problem:

    1) SRC
    2) Resource
    3) Time
    4) FRU list (choose the *Display the failing item information* option 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   Yes

↓   Go to step 11 of this procedure.

9. **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 "Chapter 4. Removal and Installation Procedures" on page 593).

After exchanging each part, go to step 6 of this procedure to verify that the system can perform an IPL at a specified time.

Attention: Before exchanging any part, power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

- SYSBKPL
- System control panel
- System control panel cable

Then continue with the next step of this procedure.

Notes:

a. Attempt to perform an IPL after exchanging each part.

b. If you exchange the control panel or the SYSBKPL, you must set the correct date and time (perform step 5 of this procedure).

10. If the IPL does not complete successfully after you exchange all of the parts listed in step 9 of this procedure, ask your next level of support for assistance.

    This ends the procedure.

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

    Yes   No

    ↓   Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC indicated in the log.

              This ends the procedure.

12. 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 (FIs) and symbolic FRUs, go to "Chapter 3. Problem Isolation Procedures (PIPs), Failing Items, and Symbolic FRU Isolation" on page 259.

b. When exchanging FRUs, go to "Chapter 4. Removal and Installation Procedures" on page 593. If you are exchanging a disk unit, go to "Recovery Procedures" on page 803.

c. After exchanging an item, go to "Verifying the Repair" on page 830.

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)

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   No

   ↓   Go to step 4 of this procedure.

2. Enter DSPSYSVAL QRMTIPL (the Display System Value command) on the command line.

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

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

Figure 4. Example of Remote Power-on Configuration Display for QRMTIPL

   Yes   No

   ↓   Perform the following:

   a. Change the value to 1 by entering CHGSYSVAL QRMTIPL (the Change System Value command) on the command line.

   b. Power off the system by entering PWRDWNSYS *IMMED (the Power Down System Immediate command) 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 8 of this procedure.

3. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

4. 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 modem is powered on.
- The modem cable is connected or plugged in.
- The modem switches are set or jumper wires are installed for the type of communications network being used.

5. Is Normal mode on the control panel selected (see *iSeries Service Functions*)?

   No   Yes

   ↓   Go to step 7 of this procedure.

6. Select Normal mode on the control panel.

7. Verify that the cable connecting the modem to the communications adapter card is fastened correctly.

8. Perform the following:

   a. Dial the telephone number for the system.

   b. Wait at least 40 seconds 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 40 seconds?

   Yes   No

   ↓   Go to step 10 of this procedure.

9. Does the IPL complete successfully?

   No   Yes

   ↓   **This ends the procedure.**

10. 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.

11. Start an IPL by powering on the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    Does the IPL complete successfully?

    Yes   No

    ↓   Go to "Starting Point for All Problems" on page 4.

    This ends the procedure.

12. Did you verify that the operating system has the correct value of 1 for the remote power-on function in step 2 of this procedure?

    No   Yes

    ↓   Go to step 14 of this procedure.

13. Enter DSPSYSVAL QRMTIPL (the Display System Value command) on the command line.

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

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

Figure 5. Example of Remote Power-on Configuration Display for QRMTIPL

Yes   No

↓   Perform the following:

a. Change the value to 1 by entering CHGSYSVAL QRMTIPL (the Change System Value command) on the command line.

b. Power off the system by entering PWRDWNSYS *IMMED (the Power Down System Immediate command) 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 8 of this procedure.

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

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

Note: For more information on VFYCMN (the Verify Communications command), 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 the *Cable test* option 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   Yes

↓   Perform the following:

a. Exchange the failing item indicated (see "Chapter 4. Removal and Installation Procedures" on page 593).

b. Verify that an IPL from a remote location completes successfully by going to step 8 of this procedure.

15. 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

STRSST

(the Start System Service Tools) command.

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*.

d. On the Service Tools display, select the *Hardware Service Manager* (see the *iSeries Service Functions*).

e. Select the *Work with service action log* option on the Hardware Service Manager display.

f. 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.

g. Find an entry that matches one or more conditions of the problem:

   1) SRC

   2) Resource

   3) Time

   4) FRU list (choose the *Display the failing item information* option 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   Yes

↓   Go to step 18 of this procedure.

16. Find an entry in the Product Activity Log that matches the time, SRC, and/or resource that compares to the reported problem (see "Using the Product Activity Log" on page 11).

Did you find an entry in the Product Activity Log?

No   Yes

↓   Go to step 19 of this procedure.

17. **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 "Chapter 4. Removal and Installation Procedures" on page 593):

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

- Communications cable
- Communications adapter card
- Modem
- The SYSBKPL (see symbolic FRU "SYSBKPL" on page 575).

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), step 4 on page 23

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.

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

   Yes   No

   ↓   Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC indicated in the log.

   This ends the procedure.

19. 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. For Failing Items (FIs) and symbolic FRUs, go to "Chapter 3. Problem Isolation Procedures (PIPs), Failing Items, and Symbolic FRU Isolation" on page 259 .

   b. When exchanging FRUs, go to "Chapter 4. Removal and Installation Procedures" on page 593. If you are exchanging a disk unit, go to "Recovery Procedures" on page 803.

   c. After exchanging an item, go to "Verifying the Repair" on page 830

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

A system hang or loop is the result of either:

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

This procedure assumes that the system completed an IPL and that at least one user had successfully signed on before the condition occurred.

The purpose of this procedure is to:

IPL Problems

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 **any** workstation?

   No   **Yes**

   ↓   Work with the system operator to complete the appropriate problem handling procedures. See:

   - The Information Center at http://www.ibm.com/eserver/iseries/infocenter

   This ends the procedure.

2. Perform the following to collect and record the failure data (see the *iSeries Service Functions*).

   Note: If any of the data collection steps fail, go to step 3 of this procedure.

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

   j. Include the information recorded above in the APAR data

3. Perform the following to initiate a Main Store Dump (see the *iSeries Service Functions*).

   a. Select Function 22 on the control panel and press the Enter key.
   b. Select Function 22 on the control panel and press the Enter key again.

   c. 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   **Yes**

↓   The Main Store Dump cannot complete successfully. The Load Source IOP is in a hang condition.

        Go to step 6 of this procedure.

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

Yes   **No**

↓   Go to step 7 of this procedure.

5. Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See:
   - The Information Center at http://www.ibm.com/eserver/iseries/infocenter
   a. Record the SRC information available in the Main Store Dump Summary.
   b. Copy the main storage dump to media (see *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. Go to step 7 of this procedure.

6. Perform an Load Source IOP dump (see *iSeries Service Functions*, "Performing an IOP Storage Dump to Disk"). Select Function 70 on the control panel and press the Enter key.

7. Perform the following:
   a. Power off the system.
   b. Power on the system in Manual mode.

   Does the system IPL complete to DST?

   No   **Yes**

   ↓   Go to "Using the Service Action Log" on page 9.

           This ends the procedure.

8. Does the system stop with a reference code displayed on the control panel?

   No   **Yes**

   ↓   Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC information to correct the problem.

           This ends the procedure.

9. Did a "Missing Disk Units" display appear?

   No   **Yes**

   ↓   Go to "Using the Service Action Log" on page 9.

           This ends the procedure.

10. Did the "Main Store Dump Manager" display appear?

    No   **Yes**

    ↓   Record the SRC information available in the Main Store Dump Summary (see *iSeries Service Functions*).

> Then, go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC information to correct the problem.
>
> **This ends the procedure**.

11. Contact your next level of support.

   This ends the procedure.

Logical Partition Hangs or Loops (No SRC)

This procedure is for the case where the hanging or looping partition does not display an SRC in the Primary partition's *Work with Partition Status* screen.

You are here because:

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

A logical partition hang or loop is the result of either:

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

This procedure assumes that the logical partition completed an IPL and that at least one user had successfully signed on before the condition occurred.

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 logical partition operational from **any** workstation?

   No   Yes

   ↓   Work with the system operator to complete the appropriate problem handling procedures. See:

   - The Information Center at http://www.ibm.com/eserver/iseries/infocenter

   This ends the procedure.

2. Perform steps 2a through 2i on page 35 on the system's physical panel and **NOT** on the *Partition Status* screen 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 4 of this procedure.

   a. Select Manual mode (see *iSeries Service Functions*).
   b. Select Function 25 on the control panel and press the Enter key.
   c. Select Function 26 on the control panel and press the Enter key.
   d. Select Function 50 on the control panel and press the Enter key to stop the system. After a short time, SRC D141900F displays and indicates the system is stopped.
   e. Select Function 51 on the control panel and press the Enter key. The display shows 51**.

f. Select 5100 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction to be executed next on processor 0).

g. Select 5101 on the control panel and press the Enter key. Record the value displayed on the control panel (second part of the address for the instruction to be executed next on processor 0).

h. Select 5102 on the control panel and press the Enter key. Record the value displayed on the control panel (first part of the address for the instruction being executed on processor 0).

i. Select 5103 on the control panel and press the Enter key. 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 the Enter key.

3. Go to the Primary partition's main menu.

   a. Select *Work with Partitions*.

   b. Select *Display Partition Information*.

   c. Select *Display Partition Processing Configuration*.

   d. 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.

   e. Record this information with the APAR data that you recorded in step 2 on page 34 of this procedure.

4. Perform the following to initiate a Main Store Dump (see the *iSeries Service Functions*).

   a. Go to the Primary partition's SST/DST screen.

   b. Select *Work with Partitions*.

   c. Select *Work with Partition Status*.

   d. Select *More Options*.

   e. Select *Force Main Store Dump*.

   f. 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   Yes

   ↓   The Main Store Dump cannot complete successfully. The Load Source IOP is in a hang condition.

           Go to step 7 of this procedure.

5. Does the Main Store Dump complete successfully (A1xx 300x displayed on the Monitor Partition Status screen)?

   Yes   No

   ↓   Go to step 8 of this procedure.

6. Work with the customer and your next level of support to collect the Main Store Dump and APAR information. See:
   - The Information Center at http://www.ibm.com/eserver/iseries/infocenter
   a. Record the SRC information available in the Main Store Dump Summary.
   b. Copy the main storage dump to media (see *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. Go to step 8 of this procedure.

7. Perform an Load Source IOP dump (see *iSeries Service Functions*, "Performing an IOP Storage Dump to Disk"). Select Function 70 on the control panel and press the Enter key.

8. 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   Yes

   ↓   Go to "Using the Service Action Log" on page 9.

            This ends the procedure.

9. Does the logical partition stop with a reference code displayed on the *Partition Status* screen?

   No   Yes

   ↓   Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC information to correct the problem.

            This ends the procedure.

10. Did a "Missing Disk Units" display appear?

    No   Yes

    ↓   Go to "Using the Service Action Log" on page 9.

             This ends the procedure.

11. Did the "Main Store Dump Manager" display appear?

    No   Yes

    ↓   Record the SRC information available in the Main Store Dump Summary (see *iSeries Service Functions*).

             Then, go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC information to correct the problem.

             This ends the procedure.

12. Contact your next level of support.
    This ends the procedure.

Cannot Automatically Perform an IPL after a Power Failure

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 Service Functions*)?

Yes   No

↓   Select Normal or Auto mode on the control panel.

This ends the procedure.

2. Use DSPSYSVAL (the Display System Value command) to verify that the system value under QPWRRSTIPL on the Display System Value display is equal to 1.

Is QPWRRSTIPL equal to 1?

Yes   No

↓   Use CHGSYSVAL (the Change System Value command) to set QPWRRSTIPL equal to 1.

This ends the procedure.

3. Exchange the following parts one at a time (see "Chapter 4. Removal and Installation Procedures" on page 593):

Attention: Before exchanging any part, power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

a. SPCN panel card

b. SYSBKPL (see symbolic FRU "SYSBKPL" on page 575).

c. Power supply

Note: If you exchange the control panel or the SYSBKPL, you must set the system date (**QDATE**) and time (**QTIME**).

This ends the procedure.

Analyzing Power Problems

Start Analyzing Power Problems Here

Table 4. Start Table

Symptom	What You Should Do
Power Problems	
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" on page 64 of this manual and find the reference code. Integrated xSeries Server frames will **only** have the frame number flashing on the failing unit's SPCN card assembly, which is visible after removing the cover.
System unit does not become powered on.	Go to "Cannot Power On System Unit (No SRC)" on page 38.
The system does not become powered off.	Go to "System or Frame Cannot Become Powered Off" on page 55.

Power Problems

Table 4. Start Table (continued)

Symptom	What You Should Do
The system does not remain powered on during a loss of incoming AC voltage and has a UPS installed.	Go to *AS/400 CPM/UPS Safety Manual* and one of: • *AS/400 CPM/UPS User's Guide (English, French, German, Spanish, Italian)* • *AS/400 CPM/UPS User's Guide (Japanese, Korean, Chinese, Simplified Chinese)* • *AS/400 CPM/UPS User's Guide (Portuguese, Turkish, Danish, Dutch, Norwegian)*
The secondary frame or unit does not power on.	Go to "Cannot Power On Secondary Frame or Unit (No SRC)" on page 41.

Cannot Power On System Unit (No SRC)

To correct the power-on problem, perform this procedure until you correct the problem and you can power on the system.

DANGER

> **To prevent the system from powering on automatically during 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 UPS power on button.

1. Attempt to power on the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

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

   Note: The Power Ready light blinks at the slower 1 blink per second rate while powered off, and at the faster 3 blinks per second rate during a normal power on sequence. It should not blink at the faster rate for more than one minute.

   No   Yes

   ↓   Go to step 14 on page 40 of this procedure.

2. Is the background light for the Data display on the control panel on or are there any characters displayed on the control panel? (A scrolling dot may be visible as a character.)

   Note: The background light is a dim (yellow) light located in the Data area of the control panel on some models.

   No   Yes

   ↓   Go to step 12 on page 40 of this procedure.

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   No

   ↓   Connect the mainline AC power cables correctly at both ends and go to step 1 of this procedure.

4. **DANGER**

Dangerous voltage being measured. (RSFTD005)

   Note: Verify that the UPS is powered on before proceeding (if it is installed).

   Perform the following:

   a. Disconnect the AC power cable or AC power jumper cable from the system's AC power connector at the power supply.

   b. 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   Yes

   ↓   Go to step 11 on page 40 of this procedure.

5. Are you working on a Power Distribution Unit with tripped breakers?

   No   Yes

   ↓   Reset the tripped power distribution breaker, and go the power problem procedure for the unit that is connected to the tripped breaker.

6. Does the system have an external uninterruptible power supply installed?

   Yes   No

   ↓   Go to step 9 on page 40 of this procedure.

7. 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   Yes

   ↓   Exchange the AC power jumper cable – part 90H9135.

         This ends the procedure.

8. Perform the following:

   DANGER

Dangerous voltage being measured. (RSFTD005)

   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   Yes

   ↓   The uninterruptible power supply needs service: – For 9910 type UPS

Power Problems

Call IBM Service Support – For all other UPS call the UPS provider. Go to step 19 on page 41 to verify system.

9. **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   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.

10. Exchange the mainline AC power cable then go to step 1 on page 38 of this procedure.

11. Perform the following:

    a. Power off the system.

    b. Disconnect the power cable.

12. 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 doesn't 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 ("CTLPNL" on page 505) and cables

    b. SPCN card ("TWRCARD" on page 578)

    c. Power supply ("PWRSPLY" on page 552)

    This ends the procedure.

13. 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   Yes

    ↓   Go to step 16 on page 41 of this 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?

    No   **Yes**

    ↓   Go to step 17 of this procedure.

15. Exchange the system unit control panel card. (See "Chapter 4. Removal and Installation Procedures" on page 593).

    This ends the procedure.

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

    No   **Yes**

    ↓   Go to "Starting Point for All Problems" on page 4.

           This ends the procedure.

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

    No   **Yes**

    ↓   **This ends the procedure.**

18. Go to "Starting Point for All Problems" on page 4.

    This ends the procedure.

19. Perform the following to bypass the UPS unit:

    a. Power Down your system and the UPS unit.

    b. Remove the 9-pin D-shell signal cable (p/n 17G1768) used between the UPS and the system.

    c. Remove the power jumper cords used between the UPS and the attached devices (Model 080 and 140 use p/n 90H9135)

    d. Remove the country specific power cord used from the UPS to the wall outlet.

    e. Use the correct power cord:

       • Use the original country 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?

    No   **Yes**

    ↓   Go to step 13 on page 40 of this procedure.

20. Go to step 4 on page 39 of this procedure.

Cannot Power On Secondary Frame or Unit (No SRC)

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

1. Does the frame that cannot become powered on contain a 3490 or a 3590 Tape Unit?

    No   **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 (FC9309)?

Power Problems

> **Note:** Stage 2 frames (FC9309) have a Rack Attention light on the frame control panel.

	Rack Power Ready
	Rack Attention
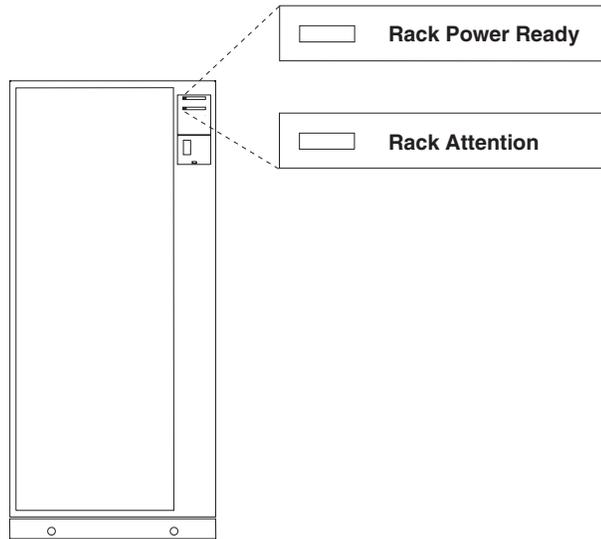
RV2A176-2

Yes   No

↓   Go to step 33 on page 48 of this procedure.

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   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. See the removal and installation procedures in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.

         This ends the procedure.

4. Is the Attention light on or blinking?

   No   Yes

   ↓   Go to step 18 on page 44 of this procedure.

5. Does a frame-mounted unit display a power reference code of 1xxx xx2E?

   No   Yes

   ↓   Exchange the PCC in the failing frame. See the removal and installation procedures in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.

         This ends the procedure.

6. Is the Unit Emergency Power Off (UEPO) switch on the secondary frame set to the On position?

   No   Yes

↓   Go to step 8 of this procedure.

7. Perform the following:

    a. Check with the customer to determine why the UEPO switch is set to the Off position.

    b. Set the UEPO switch to the On position.

    c. Go to step 30 on page 47 of this procedure.

8. 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   **Yes**

    ↓   Go to step 13 of this procedure.

9. Perform the following:

    a. Power off the system (see Powering Off and Powering On the System or Expansion Tower).

    b. Set circuit breaker CB1 on the PCC to the O (off) position.

10. Connect the mainline AC power cable correctly at both ends.

11. Set circuit breaker CB1 to the | (on) position.

12. Power on the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832). Does the failing frame become powered on?

    No   **Yes**

    ↓   Go to step 23 on page 44 of this procedure.

13. Perform the following:

    DANGER

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

    a. 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   **No**

    ↓   Inform the customer that the AC voltage at the power outlet is not correct.

            This ends the procedure.

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

    No   **Yes**

    ↓   Exchange the following FRUs, one at a time. See the removal and installation procedures in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.

            • PCC

            • Frame control panel

            • Frame control panel cable

            This ends the procedure.

15. Set circuit breaker CB1 on the PCC to the | (on) position.

Power Problems

16. Power on the system. Does CB1 remain in the | (on) position?

    Yes   **No**

    ↓   Exchange the power control compartment. See the removal and installation procedures in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.

              This ends the procedure.

17. Does the failing frame become powered on?

    No   **Yes**

    ↓

              This ends the procedure.

18. Is the Attention light blinking?

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

    Yes   **No**

    ↓   Go to step 21 of this procedure.

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

    Yes   **No**

    ↓

              This ends the procedure.

20. Go to step 23 of this procedure.

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

    Yes   **No**

    ↓

              This ends the procedure.

22. Exchange the following FRUs, one at a time. See the removal and installation procedures in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.
    - PCC
    - AC module
    - Frame control panel
    - SPCN frame-to-frame cable

    This ends the procedure.

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

```
                    (A) SPCN
              Optical Cables ─┐            ┌─ SPCN
   ┌────────┐                 │            │  Optical
   │System  │                 │            │  Adapter
   │Unit    │                 ▼            ▼
   │J15     │             ┌──────┐    ┌──────┐
   └───┬────┘             │      ├────┤      │
       │                  └──────┘    └──────┘
   ┌───┴────┐  ┌────────┐  ┌────────┐  ┌────────┐
   │  J15   │  │  J16   │  │  J15   │  │        │
   │Frame J16├──┤J15 Frame├──┤Frame J16├──┤J15 Frame│
   │  1     │  │  2     │  │  3     │  │  4     │
   └────────┘  └────────┘  └──┬─────┘  └────────┘
                              ▲
                              └──── (B) Failing Frame
```
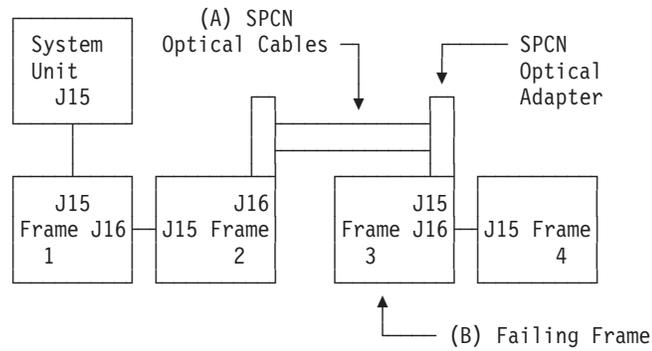
Yes   No

↓   Go to step 27 on page 46 of this procedure.

24. Remove the SPCN optical adapter **A** from the preceding frame in the string
    that cannot become powered on. See the removal and installation procedures
    in SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information
    or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*,
    depending on the secondary frame you are working on.

```
                          ┌─── (A) SPCN Optical Adapter
   ┌────────┐             │
   │System  │             ▼
   │Unit    │         ┌──────┐    ┌──────┐
   │J15     │         │      ├────┤      │
   └───┬────┘         └──────┘    └──────┘
       │
   ┌───┴────┐  ┌────────┐  ┌────────┐  ┌────────┐
   │  J15   │  │  J16   │  │  J15   │  │        │
   │Frame J16├──┤J15 Frame├──┤Frame J16├──┤J15 Frame│
   │  1     │  │  2     │  │  3     │  │  4     │
   └────────┘  └────────┘  └──┬─────┘  └────────┘
                              ▲
                              └─── Failing Frame
```
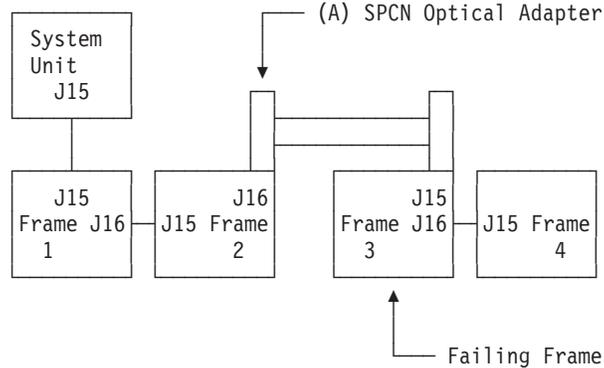
25. Perform the following:

    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 on the PCC, AC
       module, or SPCN card in the frame from which you removed the SPCN
       optical adapter in step 24 of this procedure.

       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.

    c. Note the voltage reading on pin 2.

    d. Move the positive lead of the multimeter to pin 3 of J16 on the PCC.

    e. Note the voltage reading on pin 3.
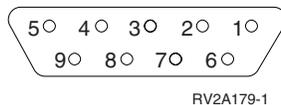
```
   ╭─────────────────────────╮
   │ 5○  4○  3○  2○  1○      │
    ╲  9○  8○  7○  6○      ╱
     ╲────────────────────╱
          RV2A179-1
```

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

Yes   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. See the removal and installation procedures in
           the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts

information, or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame that you are working on.

This ends the procedure.

26. Exchange the following FRUs, one at a time. See the removal and installation procedures in SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information, or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame that 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.

```
        (A) SPCN
        Optical                          (C) SPCN
        Adapter  ─────┐              ── Optical Cables
                      │
                      │                   ┌── (B) SPCN
                      │                   │   Optical
                      │                   │   Adapter
     ┌─────────┐      │                   │
     │ System  │      ▼       ┌──┐      ▼
     │ Unit    │   ┌────┐     │  │   ┌────┐
     │ J15     │   │    │─────┤  ├───│    │
     └────┬────┘   └────┘     └──┘   └────┘
          │
     ┌────┴────┐  ┌────────┐  ┌────────┐  ┌─────────┐
     │   J15   │  │   J16  │  │   J15  │  │J15 Frame│
     │Frame J16├──┤J15 Frame│ │Frame J16├─┤    4    │
     │    1    │  │    2   │  │    3   │  │         │
     └─────────┘  └────────┘  └────────┘  └─────────┘
                                   ▲
                                   │
                              └─Failing Frame
```
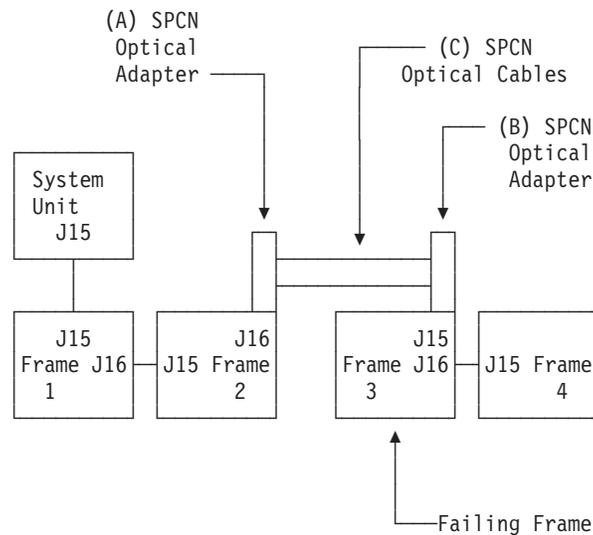
This ends the procedure.

27. 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.

```
    ┌──────────────────────────┐
    │ 1●  2●  3●  4●  5●        │
    │   6●  7●  8●  9●         ╱
    └────────────────────────╱
           RV2A180-1
```

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

No   Yes

⬇ Exchange the following FRU's one at a time. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, 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.

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

     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.
  g. Note the voltage reading on pin 3.
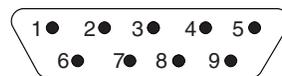
RV2A180-1

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

   No   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. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.

   This ends the procedure.

29. Exchange the power control compartment, AC module, or SPCN card (BKSPCN or TWRCARD) from which you disconnected the SPCN cable in step 28 of this procedure. See the removal and installation procedures in SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information, or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame that you are working on.
   This ends the procedure.

30. Power on the system. Do all of the frames on the system become powered on?

   Yes   No

   ⬇ Go to "Starting Point for All Problems" on page 4 to analyze problems for frames that do not become powered on.

   This ends the procedure.

Power Problems

31. Continue the IPL (see "Initial Program Load (IPL) Information" in *iSeries Service Functions*).

    Does the IPL complete successfully?

    Yes   No

    ↓   Go to "Starting Point for All Problems" on page 4.

             This ends the procedure.

32. You have corrected the problem. Select the mode on the control panel that the customer wants.

    This ends the procedure.

33. Is the frame that will not power on part of a shared I/O Tower loop?

    Yes   No

    ↓   Go to step 35 of this procedure.

34. 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   Yes

    ↓   Go to step 36 of this procedure.

35. Power on the system unit.

    Does the failing frame power on?

    No   Yes

    ↓   **This ends the procedure.**

36. 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.

37. Is the failing unit an xSeries Server Tower?

    Yes   No

    ↓   Go to step 41 of this procedure.

38. Is the green power LED on the xSeries Server Tower control panel blinking?

    Yes   No

    ↓   Go to step 42 on page 49 of this procedure.

39. Remove the top cover from the xSeries Server Tower. Is the two digit display on the Integrated xSeries Adapter card (CCIN 2689) blinking slowly?

    No   Yes

    ↓   Go to step 67 on page 54 of this procedure.

40. Replace the following:
    - "TWRCARD" on page 578 TWRCARD
    - "ALTMANL" on page 487 ALTMANL

    This ends the procedure.

41. 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.

      No   **Yes**

      ↓   Go to step 60 on page 52 of this procedure.

42. Use a multimeter to measure the AC voltage at the customer's AC power outlet.

    DANGER

Dangerous voltage being measured. (RSFTD005)

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

    Yes   **No**

    ↓   Inform the customer that the AC voltage at the power outlet is not correct.

             This ends the procedure.

    Note: Some systems have more than one mainline AC power cable. For these systems, check both power cables when answering the following questions.

43. Is the mainline AC power cable from the failing unit to the customer's AC power outlet connected and seated correctly at both ends?

    Yes   **No**

    ↓   Connect the mainline AC power cable correctly at both ends.

             This ends the procedure.

44. 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.

    c. AC modules (part 87G6300 and 21H7697) must have 200 V to power on.

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

    No   **Yes**

    ↓   Go to step 47 of this procedure.

45. Are you working on a Power Distribution Unit with tripped breakers? See "Locations — Power Distribution Unit (PDU)" on page 702.

    No   **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.

46. Exchange the mainline AC power cable or Power Distribution Unit (as installed).

    This ends the procedure.

47. Is the failing unit a xSeries Server Tower?

    No   **Yes**

Power Problems

    ↓   See "ALTMANL" on page 487 ALTMANL.

            This ends the procedure.

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

    Yes   **No**

    ↓   Go to step 51 of this procedure.

49. Is the AC module leadscrew seated correctly (clockwise)? (See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.)

    Yes   **No**

    ↓   Seat the AC module leadscrew correctly (clockwise) and reconnect the mainline AC power cable to the AC module.

            This ends the procedure.

50. Exchange the AC module. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.

    This ends the procedure.

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

    Yes   **No**

    ↓   Go to step 56 on page 51 of this procedure.

52. 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   **No**

    ↓   Connect the AC power jumper cables correctly at both ends.

            This ends the procedure.

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

    No   **Yes**

    ↓   Go to step 57 on page 51 of this procedure.

54. Perform the following:

    DANGER

Dangerous voltage being measured. (RSFTD005)

    a. 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 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   **No**

   ↓   Exchange the following (as installed):

- Battery charger unit (see "BATCHGR" on page 491 BATCHGR)
- AC module (see "ACMODUL" on page 482 ACMODUL)
- Power Distribution Unit

      This ends the procedure.

55. Perform the following:

DANGER

Dangerous voltage being measured. (RSFTD005)

a. Connect the AC power jumper cables to the battery charger unit, AC module, 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?

   Yes   **No**

   ↓   Exchange the power jumper cable.

      This ends the procedure.

56. Exchange the following parts one at a time.

- SPCN card unit ("TWRCARD" on page 578).
- Control Panel ("CTLPNL" on page 505).
- 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 "Chapter 5. Locations, Addresses, and Part Listings" on page 667.

   This ends the procedure.

57. 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   **Yes**

   ↓   Go to step 60 on page 52 of this procedure.

58. 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   **No**

   ↓   Exchange the following parts one at a time.

- Uninterruptible power supply battery unit – part 44H77845 (minimum voltage 12.5V each)
- Uninterruptible power supply base unit – part 44H7784
- Uninterruptible power supply unit signal cable SIG7 – part 44H8027
- Uninterruptible power supply transformer unit – part 44H7786

59. 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 ("TWRCARD" on page 578)
      - Power supply ("PWRSPLY" on page 552)
      - 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 failing item. If the system does not power on, repeat steps 59a through 59e of this procedure 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.

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

   Yes   No

   ↓   Replace the SPCN card ("TWRCARD" on page 578)

            This ends the procedure.

61. Is the SRC 1xxx xx2E?

   Yes   No

   ↓   Go to "Starting Point for All Problems" on page 4.

62. Do SPCN optical cables **A** connect the failing frame **B** to the preceding frame in the string?
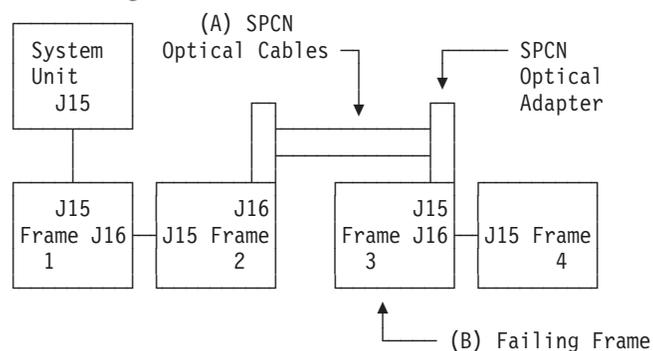
   Yes   No

   ↓   Go to step 66 on page 54 of this procedure.

63. Remove the SPCN optical adapter **A** from the preceding frame in the string that cannot become powered on. See "Removal and Installation Procedures" in the Repair and Parts information for the system.
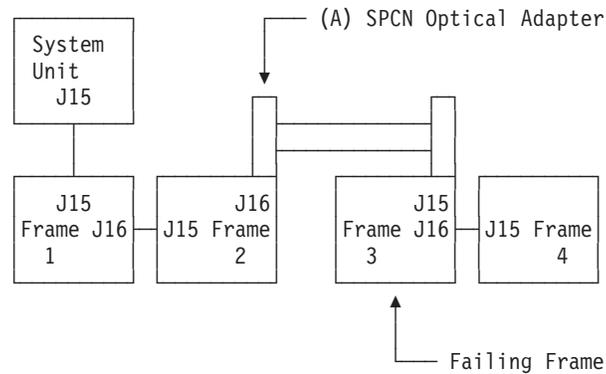
```
                               ┌── (A) SPCN Optical Adapter
  ┌────────┐                   │
  │ System │                   ▼
  │  Unit  │              ┌──┐    ┌──┐
  │  J15   │              │  │────│  │
  └────────┘              └──┘    └──┘
       │
  ┌────────┬──────────┐   ┌──────────┬────────┐
  │  J15   │      J16 │   │      J15 │  J15   │
  │Frame J16│J15 Frame│   │Frame J16 │  Frame │
  │   1    │    2     │   │    3     │    4   │
  └────────┴──────────┘   └──────────┴────────┘
                                ▲
                                │
                           └── Failing Frame
```

64. 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 on the AC module or SPCN card in the frame from which you removed the SPCN optical adapter in step 63 on page 52 of this procedure.

   > **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.

   c. Note the voltage reading on pin 2.

   d. Move the positive lead of the multimeter to pin 3 of J16 on the AC module or SPCN card.

   e. Note the voltage reading on pin 3.

```
 ╱ 5○  4○  3○  2○  1○ ╲
│                      │
 ╲  9○  8○  7○  6○    ╱
  ╲_____╱
        RV2A179-1
```
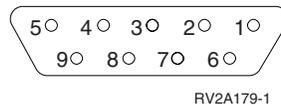
Is the voltage on both pin 2 and pin 3 from 1.5 V DC to 5.5 V DC?

   Yes   No

   ↓   Exchange the AC module or SPCN card (BKSPCN for the system or TWRCARD in the frame from which you removed the SPCN optical adapter. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.

   This ends the procedure.

65. Exchange the following FRUs, one at a time. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.

   • AC module or SPCN card (TWRCARD) in the failing frame (first frame with a failure indication)

   • 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.

Power Problems
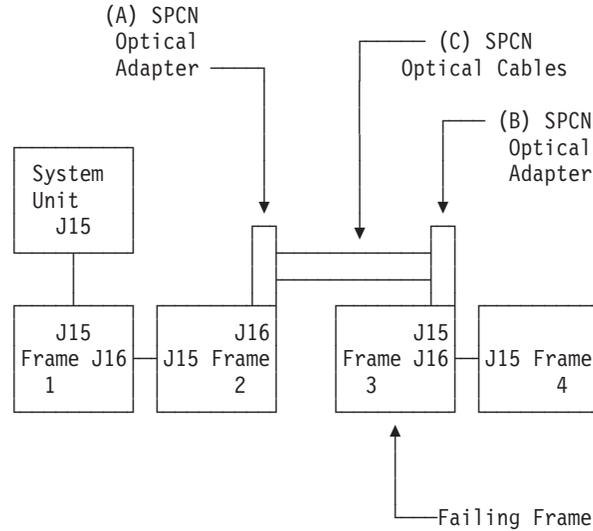
       This ends the procedure.

66. 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   **No**

    ↓   Correct the connection by connecting the SPCN frame-to-frame cable coming from the system unit to J15 of the secondary frame.

        This ends the procedure.

67. 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.

RV2A180-1

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

    No   **Yes**

    ↓   Exchange the following FRUs, one at a time. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.

         • AC module or SPCN card (TWRCARD) in the failing frame or unit.

- AC module or SPCN card (BKSPCN or TWRCARD) in the preceding frame in the frame string.
- SPCN frame-to-frame cable.

This ends the procedure.

68. Perform the following:
    a. Follow the SPCN frame-to-frame cable back to the preceding frame in the string.
    b. Disconnect the SPCN cable from J16 on the AC module or SPCN card.
    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 on the AC module or SPCN card.

       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 on the AC module or SPCN card.
    g. Note the voltage reading on pin 3.

    ```
    5○  4○  3○  2○  1○
      9○  8○  7○  6○
    ```
    RV2A179-1

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

    No   Yes

    ↓   Exchange the following FRUs, one at a time. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame you are working on.
             - SPCN frame-to-frame cable
             - AC module or SPCN card (TWRCARD) in the failing frame or unit
             - AC module or SPCN card (TWRCARD) in the preceding frame of the frame string

             This ends the procedure.

69. Exchange the AC module or SPCN card ("TWRCARD" on page 578) from which you disconnected the SPCN cable in step 68 of this procedure. See the removal and installation procedures in this book or in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*, depending on the secondary frame or unit you are working on.
    This ends the procedure.

System or Frame Cannot Become Powered Off

This procedure analyzes 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?

Power Problems

Note: Stage 2 frames (FC9309) have a Rack Attention light on the frame control panel.

RV2A176-2
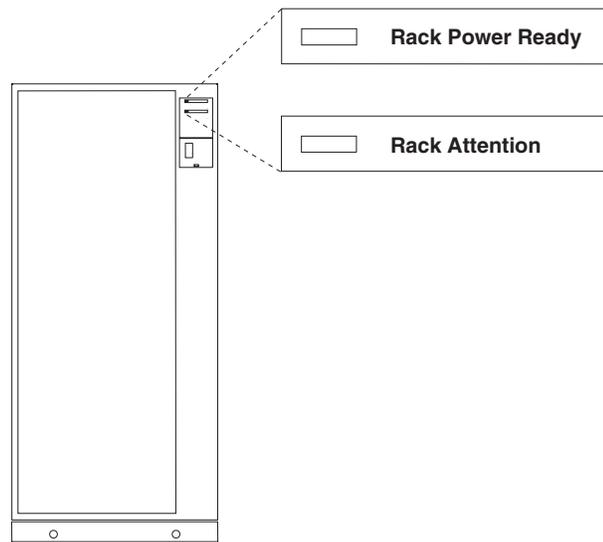
Yes	No
↓	Go to step 3 of this procedure.

2. Go to "System or Rack Cannot Become Powered Off" in the FC 504x Problem Analysis and Repair and Parts information.

    This ends the procedure.

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

No	Yes
↓	Go to step 6 of this procedure.

4. 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?

    No   Yes

    ↓

    This ends the procedure.

5. Go to step 7 of this procedure.

6. Power Off the System (see "Powering On and Powering Off the System and Logical Partitions" on page 832), then return here and answer the following question. Does the system unit or frame power off, and is the Power On light off?

    No   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.

7. Is the frame that will not power off part of a shared I/O Tower loop?

    Yes   No

    ↓   Go to 9 on page 57.

8. Make sure that the frame that will not power off has been switched to the system unit that is connected by the SPCN frame-to-frame cable.

   Does the frame power off?

   NO   Yes

   ↓   This ends the procedure.

9. Be sure 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.

10. 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 SYSTEM UNIT EXPANSION** attached, disconnect both the system AC line cord and the expansion unit AC line cord. On systems with dual line cord, disconnect both AC line cords.

11. Exchange the following FRUs in the system unit or frame, one at a time (see "Chapter 4. Removal and Installation Procedures" on page 593.):

    If the system unit is failing:
    - System control panel (CTLPNL)
    - System SPCN card (TWRCARD)
    - Power supply (PWRSPLY)
    - Control panel cable

    If a secondary frame is failing:
    - Expansion SPCN card (TWRCARD)
    - The SPCN card (TWRCARD) in the frame preceding the frame that will not power off
    - Power supply (PWRSPLY)
    - Battery charger unit (BATCHGR)

    This ends the procedure.

Power Problems

Chapter 2. Unit Reference Codes

How to Use This Section

This procedure uses an SRC (System Reference Code) on the problem summary form to:

- Find a list of possible failing items.
- 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.

1. Were you directed here from another procedure, including Starting Point for All Problems?

   Yes   No

   ↓   Go to "Starting Point for All Problems" on page 4.

2. For SRCs appearing on the control panel, the first 4 characters represent the SRC type and the second 4 characters represent the URC. For SRCs appearing in the Product Activity Log or on other software displays, use characters 1 through 4 of word 1 for the SRC type and characters 5 through 8 of word 1 for the URC. See Figure 6 on page 60 for the Control Panel layout.

   a. Determine which SRC table to use.

      The SRC table name is the same as the SRC type. The tables in this section are arranged in hexadecimal sequence.

      The reference code tables only support 8-character SRC formats. If the SRC provided is in a 4-character format, contact your next level of support for assistance.

   b. Determine the URC (Unit Reference Code).

      The URCs are listed within the SRC tables. The URCs are arranged in hexadecimal sequence, with numeric characters listed before alphabetic characters. For example, URCs 0001 through 0009 are listed before URCs 000A through 000F.

Reference Code Tables
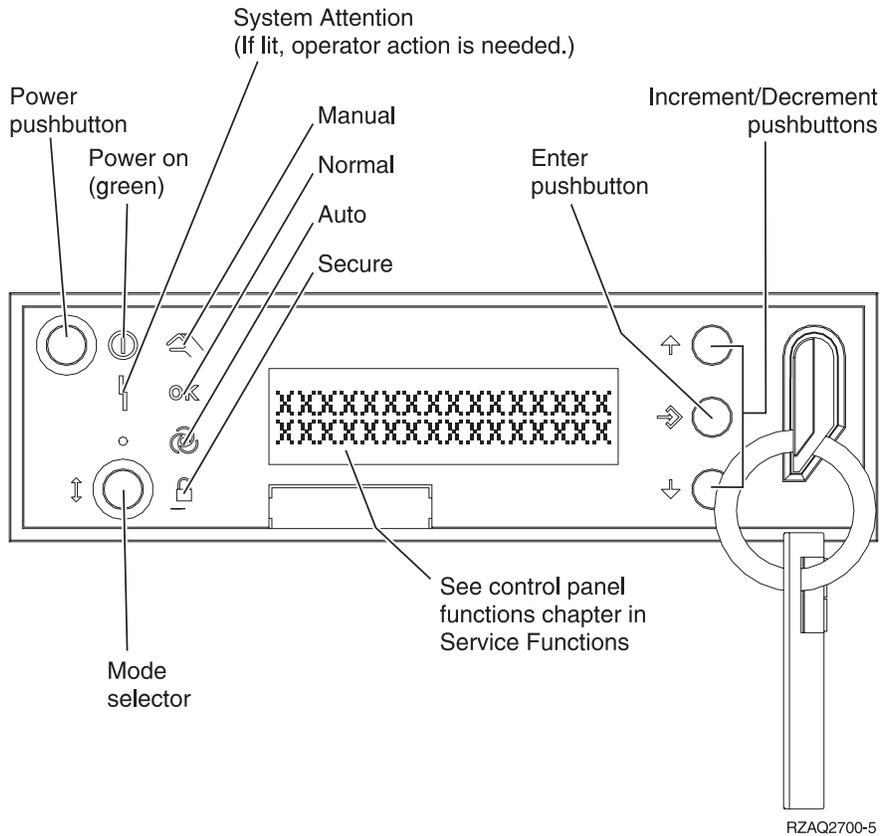
Figure 6. Model 820 Control Panel layout with keystick

For additional information about using the Control Panel, see "SRC Address Formats" on page 846

3. You will be directed to find the appropriate SRC table for your SRC.

To correct the problem, perform the action indicated for the URC in the *Description/Action* column of the table. If this does not correct the problem, exchange the failing items or parts listed in *Failing Item* column in the order that they are listed.

If no action is indicated in the SRC table, exchange the failing items or parts listed in the table.

Notes:

a. When exchanging the failing items, use the "Chapter 4. Removal and Installation Procedures" on page 593.

b. When instructed to perform problem isolation procedures, go to "Problem Isolation Procedures" on page 261.

c. Any additional information you need to complete the procedure may be found in "Chapter 5. Locations, Addresses, and Part Listings" on page 667.

The failing item listed first should be exchanged first. If exchanging the first failing item does not correct the problem, reinstall the original item and exchange the next failing item listed. Continue to exchange and reinstall the failing items, one at a time, until the problem is corrected. If exchanging the failing items does not correct the problem, ask your next level of support for assistance.

Now find the SRC table in this Chapter.

Follow the instructions in the SRC table. The list contains all SRC tables for critical resources available at the time this edition was published. If you cannot find the SRC table, return here and continue with step 4.

This ends the procedure.

4. You are at this step because you did not find the reference code table for your SRC in the "Chapter 2. Unit Reference Codes" on page 59. Refer to "SRC Exception Table" to find the SRC.

   Note:

   - If the 4 leftmost characters of the SRC are listed in SRC Exception Table, follow the instructions listed.
   - If the 4 leftmost characters of the SRC are **not** listed in "SRC Exception Table", additional information may be available by doing the following:
     - Look for the SRC information on-line.
     - Find any supplemental information for the system and look for the SRC table in that information. In some cases the supplemental information may have been inserted into the pages of the SRC tables.

   If you do not find any information for the SRC, ask your next level of support for assistance.

SRC Exception Table

Table 5. SRC exception table

First 4 characters of SRC	What You Should Do
2629, 2718, 2726, 2728, 2729, 2740, 2741	These Storage IOA types are only allowed on migrated towers. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* and follow the instructions in the SRC table.
2763, 2778	Go to "(2748, 2763, 2778) Reference Codes" on page 114 and follow the instructions in the SRC table.
2766	Go to "(2765, 2766) Reference Codes" on page 125 and follow the instructions in the SRC table.
2767, 2768	Go to "(2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F) Reference Codes" on page 118 and follow the instructions in the SRC table.
2809, 2810, 2824, 282C	These Storage IOA types are only allowed on migrated towers. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* and follow the instructions in the SRC table.
2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F	Go to "(2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F) Reference Codes" on page 118 and follow the instructions in the SRC table.
283D, 283F	Go to "(283C, 283D, 283F) Device Backplane Reference Codes" on page 127 and follow the instructions in the SRC table.
6382, 6383, 6386, 6387, 7207	Go to "(63A0) Tape Unit Reference Codes" on page 147 and follow the instructions in the SRC table.
660x, 671x, 673x	Go to "(432x, 660x, 671x, 673x) Disk Unit Reference Codes" on page 151 and follow the instructions in the SRC table.
B1xx	Service Processor terminating SRC Go to "(A1xx, B1xx) Service Processor Reference Codes" on page 173 and follow the instructions in the SRC table.

Reference Code Tables

Table 5. SRC exception table (continued)

First 4 characters of SRC	What You Should Do
B9xx	Go to "(A9xx, B9xx) Reference Codes" on page 177.
C9xx	For information about these SRCs, see "Status SRCs" in the *iSeries Service Functions*.
C1xx	Service Processor IPL status This is a normal reference code during the IPL of the system. You may suspect that the IPL is not advancing correctly when the 6 rightmost characters do not change for 2 minutes. The IPL may take longer with more I/O units and main storage. Perform the following procedure if you suspect a problem: 1. See "IPL Status SRCs" in the *iSeries Service Functions*. 2. If there is still a problem, ask your next level of support for assistance.
C6xx, D6xx	For information about these SRCs, see "Status SRCs" in the *iSeries Service Functions*.
D1xx 3xxx	Service Processor Main Storage Dump Status This is a normal reference code showing the status of the system when performing a main storage dump. You may suspect that the system is not operating correctly when the rightmost characters do not change for 2 minutes. **Note:** It takes approximately 1 minute to dump each 20MB of main storage. For more information on main storage dumps, see *Working with Storage Dumps* in the *iSeries Service Functions* information.
D1xx xxxx	Service Processor General Status SRCs If you suspect a problem, ask your next level of support for assistance.
EE60, F000	Go to "(0000) Control Panel Reference Codes" and follow the instructions in the SRC table.

(0000) Control Panel Reference Codes

The control panel detected a failure.

1. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1110 to 111F	Failure of CEC power supply not identified by SPCN. This referenc code can be caused by something holding the system Power On Reset (POR) line active.	TWRCARD ANYBUS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2222	Service processor failure caused machine check interrupt. Before exchanging the TWRCARD, remove the adapter cards from the TWRCARD and perform an IPL. If the IPL completes successfully, one of the adapter cards you removed is defective.	TWRCARD ANYBUS
3333	SPCN to CSP interface error. An attempt to communicate between the SPCN and the CSP processor failed.	TWRCARD
3334	CSP to VPD Collector interface error. An attempt to communicate between the CSP and the VPD Collector failed.	TWRCARD
4444	Power on request failure A power-on request was not completed successfully. A control panel-detected power-on failure occurred.	TWRCARD BACKPLN
5553	Incorrect key used or the key is not completely inserted The key inserted is not the correct key or is not completely inserted.	CTLPNL TWRCARD
AABB	Remote power-on failure An attempt was made to power on the system by a remote power-on operation with the keylock mode on the control panel set to Secure or Manual. To correct the problem, select Normal or Auto mode on the control panel and perform the remote power-on operation again, if necessary.	USER TWRCARD CTLPNL
AACC	Service processor power-on failure An attempt was made to power on the system from the service processor with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode on the control panel and perform the service processor power-on operation again, if necessary. **Note:** This reference code may occur if the service processor card was exchanged and Manual mode was selected. Select Normal mode on the control panel.	USER CTLPNL TWRCARD
AADD	Manual power-on failure An attempt was made to power on the system manually with Secure or Auto mode selected on the control panel. To correct the problem, select Manual or Normal mode on the control panel and manually power on the system again.	USER CTLPNL
AAEE	SPCN - control panel interface error. An attempt was made to power on the system from the SPCN with Secure or Manual mode selected on the control panel. To correct the problem, select Normal or Auto mode and attempt the remote power-on operation again. If this does not correct the problem, exchange the failing items.	USER CTLPNL TWRCARD
BBBB	Battery not working correctly A problem was detected with the battery supplying power to the time-of-day clock. The battery is either weak or is not connected securely. **Note:** This is not a critical failure. However, if there is a power failure, the time of day will be lost.	TOD TWRCARD

Control Panel Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
CLKCARD	Clock card	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control Panel	Problem Analysis; Symbolic FRU Isolation
TOD	Control Panel Battery	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(1xxx) System Power Control Network (SPCN) Reference Codes

The system power control network (SPCN) detected a failure.

Note: The second and third characters of the SRC indicate the frame number of the failing unit.

1. Look at the 4 rightmost characters of the Data display for word 1 or word 5. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Note: Integrated xSeries Server frames will **only** have the frame number flashing on the failing unit's PCI (SPCN) card assembly, which is visible after removing the cover.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A0	SPCN BATs in process No action required. This reference code is logged for information only. If this reference code is present for more than 1 minute, exchange the failing items.	TWRCARD
00A1	Regulator 1 has been turned off by system No action required. This reference code is logged for information only.	
00A2	Regulator 2 has been turned off by system No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
00A3	Regulator 3 has been turned off by system No action required. This reference code is logged for information only.	
00A4	Regulator 4 has been turned off by system No action required. This reference code is logged for information only.	
00A5	Regulator 5 has been turned off by system No action required. This reference code is logged for information only.	
00A6	Regulator 6 has been turned off by system No action required. This reference code is logged for information only.	
00A7	The system is running on the Battery Power Unit. No action required. This reference code is logged for information only.	
00A8	The Battery Power Unit is not fully charged. No action required. This reference code is logged for information only.	
00A9	Battery Power Unit test is in process. No action required. This reference code is logged for information only.	
00AA	Download in process No action required. This reference code is logged for information only.	
00AB	Rack UEPO switch is OFF. Informational reference code. The UEPO switch must be returned to the On position to power on the rack.	TWRCARD CTLPNL 6462417
00AC	Detected AC loss If system powers on normally or stays powered on after AC power failure, no replacement of parts may be needed.	ACMODUL
00BA	The system is running on the Battery Power Unit. No action required. This reference code is displayed for information only.	
00BC	Battery Power Unit test is in process. No action required. This reference code is displayed for information only.	
00CA	CPM power down is complete. No action required. This reference code is displayed for information only.	
00EF	Remote EPO switch is OFF	
0100	Install Disk Unit 1 Concurrent maintenance informational reference code.	
0101	Install Disk Unit 2 Concurrent maintenance informational reference code.	
0102	Install Disk Unit 3 Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0103	Install Disk Unit 4 Concurrent maintenance informational reference code.	
0104	Install Disk Unit 5 Concurrent maintenance informational reference code.	
0105	Install Disk Unit 6 Concurrent maintenance informational reference code.	
0106	Install Disk Unit 7 Concurrent maintenance informational reference code.	
0107	Install Disk Unit 8 Concurrent maintenance informational reference code.	
0108	Install Disk Unit K1 Concurrent maintenance informational reference code.	
0109	Install Disk Unit K2 Concurrent maintenance informational reference code.	
010A	Install Disk Unit K3 Concurrent maintenance informational reference code.	
010B	Install Disk Unit K4 Concurrent maintenance informational reference code.	
010C	Install Disk Unit K5 Concurrent maintenance informational reference code.	
010D	Install Disk Unit K6 Concurrent maintenance informational reference code.	
010E	Install Disk Unit K7 Concurrent maintenance informational reference code.	
010F	Install Disk Unit K8 Concurrent maintenance informational reference code.	
0110	Install Disk Unit K9 Concurrent maintenance informational reference code.	
0111	Install Disk Unit K10 Concurrent maintenance informational reference code.	
0112	Install Disk Unit K11 Concurrent maintenance informational reference code.	
0113	Install Disk Unit K12 Concurrent maintenance informational reference code.	
0114	Install Disk Unit K13 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0115	Install Disk Unit K14 Concurrent maintenance informational reference code.	
0116	Install device 1 Concurrent maintenance informational reference code.	
0117	Install device 2 Concurrent maintenance informational reference code.	
0118	Install Disk Unit 9 Concurrent maintenance informational reference code.	
0119	Install Disk Unit 10 Concurrent maintenance informational reference code.	
011A	Install Disk Unit 11 Concurrent maintenance informational reference code.	
011B	Install Disk Unit 12 Concurrent maintenance informational reference code.	
011C	Install device 3 Concurrent maintenance informational reference code.	
011D	Install Disk Unit K15 Concurrent maintenance informational reference code.	
011E	Install Disk Unit K16 Concurrent maintenance informational reference code.	
011F	Install Device 4 Concurrent maintenance informational reference code.	
0120	Install Disk Unit K17 Concurrent maintenance informational reference code.	
0121	Install Disk Unit K18 Concurrent maintenance informational reference code.	
0122	Install Disk Unit K19 Concurrent maintenance informational reference code.	
0123	Install Disk Unit K20 Concurrent maintenance informational reference code.	
0124	Install Disk Unit K21 Concurrent maintenance informational reference code.	
0125	Install Disk Unit K22 Concurrent maintenance informational reference code.	
0126	Install Disk Unit K23 Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0127	Install Disk Unit K24 Concurrent maintenance informational reference code.	
0128	Install Disk Unit K25 Concurrent maintenance informational reference code.	
0129	Install Disk Unit K26 Concurrent maintenance informational reference code.	
012A	Install Disk Unit K27 Concurrent maintenance informational reference code.	
012B	Install Disk Unit K28 Concurrent maintenance informational reference code.	
012C	Install Disk Unit K29 Concurrent maintenance informational reference code.	
012D	Install Disk Unit K30 Concurrent maintenance informational reference code.	
012E	Install Disk Unit K31 Concurrent maintenance informational reference code.	
012F	Install Disk Unit K32 Concurrent maintenance informational reference code.	
0200	Remove Disk Unit 1 Concurrent maintenance informational reference code.	
0201	Remove Disk Unit 2 Concurrent maintenance informational reference code.	
0202	Remove Disk Unit 3 Concurrent maintenance informational reference code.	
0203	Remove Disk Unit 4 Concurrent maintenance informational reference code.	
0204	Remove Disk Unit 5 Concurrent maintenance informational reference code.	
0205	Remove Disk Unit 6 Concurrent maintenance informational reference code.	
0206	Remove Disk Unit 7 Concurrent maintenance informational reference code.	
0207	Remove Disk Unit 8 Concurrent maintenance informational reference code.	
0208	Remove Disk Unit K1 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0209	Remove Disk Unit K2 Concurrent maintenance informational reference code.	
020A	Remove Disk Unit K3 Concurrent maintenance informational reference code.	
020B	Remove Disk Unit K4 Concurrent maintenance informational reference code.	
020C	Remove Disk Unit K5 Concurrent maintenance informational reference code.	
020D	Remove Disk Unit K6 Concurrent maintenance informational reference code.	
020E	Remove Disk Unit K7 Concurrent maintenance informational reference code.	
020F	Remove Disk Unit K8 Concurrent maintenance informational reference code.	
0210	Remove Disk Unit K9 Concurrent maintenance informational reference code.	
0211	Remove Disk Unit K10 Concurrent maintenance informational reference code.	
0212	Remove Disk Unit K11 Concurrent maintenance informational reference code.	
0213	Remove Disk unit K12 Concurrent maintenance informational reference code.	
0214	Remove Disk Unit K13 Concurrent maintenance informational reference code.	
0215	Remove Disk Unit K14 Concurrent maintenance informational reference code.	
0216	Remove device 1 Concurrent maintenance informational reference code.	
0217	Remove device 2 Concurrent maintenance informational reference code.	
0218	Remove Disk Unit 9 Concurrent maintenance informational reference code.	
0219	Remove Disk Unit 10 Concurrent maintenance informational reference code.	
021A	Remove Disk Unit 11 Concurrent maintenance informational reference code.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
021B	Remove Disk Unit 12 Concurrent maintenance informational reference code.	
021C	Remove device 3 Concurrent maintenance informational reference code.	
021D	Remove Disk Unit K15 Concurrent maintenance informational reference code.	
021E	Remove Disk Unit K16 Concurrent maintenance informational reference code.	
021F	Remove device 4 Concurrent maintenance informational reference code.	
0220	Remove Disk Unit K17 Concurrent maintenance informational reference code.	
0221	Remove Disk Unit K18 Concurrent maintenance informational reference code.	
0222	Remove Disk Unit K19 Concurrent maintenance informational reference code.	
0223	Remove Disk Unit K20 Concurrent maintenance informational reference code.	
0224	Remove Disk Unit K21 Concurrent maintenance informational reference code.	
0225	Remove Disk Unit K22 Concurrent maintenance informational reference code.	
0226	Remove Disk Unit K23 Concurrent maintenance informational reference code.	
0227	Remove Disk Unit K24 Concurrent maintenance informational reference code.	
0228	Remove Disk Unit K25 Concurrent maintenance informational reference code.	
0229	Remove Disk Unit K26 Concurrent maintenance informational reference code.	
022A	Remove Disk Unit K27 Concurrent maintenance informational reference code.	
022B	Remove Disk Unit K28 Concurrent maintenance informational reference code.	
022C	Remove Disk Unit K29 Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
022D	Remove Disk Unit K30 Concurrent maintenance informational reference code.	
022E	Remove Disk Unit K31 Concurrent maintenance informational reference code.	
022F	Remove Disk Unit K32 Concurrent maintenance informational reference code.	
0300	Disk Unit 1 regulator has been turned on Installation of disk unit 1 is complete, and the regulator is turned on.	
0301	Disk Unit 2 regulator has been turned on Installation of disk unit 2 is complete, and the regulator is turned on.	
0302	Disk Unit 3 regulator has been turned on Installation of disk unit 3 is complete, and the regulator is turned on.	
0303	Disk Unit 4 regulator has been turned on Installation of disk unit 4 is complete, and the regulator is turned on.	
0304	Disk Unit 5 regulator has been turned on Installation of disk unit 5 is complete, and the regulator is turned on.	
0305	Disk Unit 6 regulator has been turned on Installation of disk unit 6 is complete, and the regulator is turned on.	
0306	Disk Unit 7 regulator has been turned on Installation of disk unit 7 is complete, and the regulator is turned on.	
0307	Disk Unit 8 regulator has been turned on Installation of disk unit 8 is complete, and the regulator is turned on.	
0308	Disk Unit K1 regulator has been turned on Installation of disk unit K1 is complete, and the regulator is turned on.	
0309	Disk Unit K2 regulator has been turned on Installation of disk unit K2 is complete, and the regulator is turned on.	
030A	Disk Unit K3 regulator has been turned on Installation of disk unit K3 is complete, and the regulator is turned on.	
030B	Disk Unit K4 regulator has been turned on Installation of disk unit K4 is complete, and the regulator is turned on.	
030C	Disk Unit K5 regulator has been turned on Installation of disk unit K5 is complete, and the regulator is turned on.	
030D	Disk Unit K6 regulator has been turned on Installation of disk unit K6 is complete, and the regulator is turned on.	
030E	Disk Unit K7 regulator has been turned on Installation of disk unit K7 is complete, and the regulator is turned on.	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
030F	Disk Unit K8 regulator has been turned on Installation of disk unit K8 is complete, and the regulator is turned on.	
0310	Disk Unit K9 regulator has been turned on Installation of disk unit K9 is complete, and the regulator is turned on.	
0311	Disk Unit K10 regulator has been turned on Installation of disk unit K10 is complete, and the regulator is turned on.	
0312	Disk Unit K11 regulator has been turned on Installation of disk unit K11 is complete, and the regulator is turned on.	
0313	Disk Unit K12 regulator has been turned on Installation of disk unit K12 is complete, and the regulator is turned on.	
0314	Disk Unit K13 regulator has been turned on Installation of disk unit K13 is complete, and the regulator is turned on.	
0315	Disk Unit K14 regulator has been turned on Installation of disk unit K14 is complete, and the regulator is turned on.	
0316	Device 1 regulator has been turned on Installation of device 1 is complete, and the regulator is turned on.	
0317	Device 2 regulator has been turned on Installation of device 2 is complete, and the regulator is turned on.	
0318	Disk Unit 9 regulator has been turned on Installation of disk unit 9 is complete, and the regulator is turned on.	
0319	Disk Unit 10 regulator has been turned on Installation of disk unit 10 is complete, and the regulator is turned on.	
031A	Disk Unit 11 regulator has been turned on Installation of disk unit 11 is complete, and the regulator is turned on.	
031B	Disk Unit 12 regulator has been turned on Installation of disk unit 12 is complete, and the regulator is turned on.	
031C	Device 3 regulator has been turned on Installation of device 3 is complete, and the regulator is turned on.	
031D	Disk Unit K15 regulator has been turned on Installation of disk unit K15 is complete, and the regulator is turned on.	
031E	Disk Unit K16 regulator has been turned on Installation of disk unit K16 is complete, and the regulator is turned on.	
031F	Device 4 regulator has been turned on Installation of device 4 is complete, and the regulator is turned on.	
0320	Disk Unit K17 regulator has been turned on Installation of disk unit K17 is complete, and the regulator is turned on.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0321	Disk Unit K18 regulator has been turned on Installation of disk unit K18 is complete, and the regulator is turned on.	
0322	Disk Unit K19 regulator has been turned on Installation of disk unit K19 is complete, and the regulator is turned on.	
0323	Disk Unit K20 regulator has been turned on Installation of disk unit K20 is complete, and the regulator is turned on.	
0324	Disk Unit K21 regulator has been turned on Installation of disk unit K21 is complete, and the regulator is turned on.	
0325	Disk Unit K22 regulator has been turned on Installation of disk unit K22 is complete, and the regulator is turned on.	
0326	Disk Unit K23 regulator has been turned on Installation of disk unit K23 is complete, and the regulator is turned on.	
0327	Disk Unit K24 regulator has been turned on Installation of disk unit K24 is complete, and the regulator is turned on.	
0328	Disk Unit K25 regulator has been turned on Installation of disk unit K25 is complete, and the regulator is turned on.	
0329	Disk Unit K26 regulator has been turned on Installation of disk unit K26 is complete, and the regulator is turned on.	
032A	Disk Unit K27 regulator has been turned on Installation of disk unit K27 is complete, and the regulator is turned on.	
032B	Disk Unit K28 regulator has been turned on Installation of disk unit K28 is complete, and the regulator is turned on.	
032C	Disk Unit K29 regulator has been turned on Installation of disk unit K29 is complete, and the regulator is turned on.	
032D	Disk Unit K30 regulator has been turned on Installation of disk unit K30 is complete, and the regulator is turned on.	
032E	Disk Unit K31 regulator has been turned on Installation of disk unit K31 is complete, and the regulator is turned on.	
032F	Disk Unit K32 regulator has been turned on Installation of disk unit K32 is complete, and the regulator is turned on.	
0400	Removal of Disk Unit 1 is complete	
0401	Removal of Disk Unit 2 is complete	
0402	Removal of Disk Unit 3 is complete	
0403	Removal of Disk Unit 4 is complete	
0404	Removal of Disk Unit 5 is complete	
0405	Removal of Disk Unit 6 is complete	
0406	Removal of Disk Unit 7 is complete	

1xxx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0407	Removal of Disk Unit 8 is complete	
0408	Removal of Disk Unit K1 is complete	
0409	Removal of Disk Unit K2 is complete	
040A	Removal of Disk Unit K3 is complete	
040B	Removal of Disk Unit K4 is complete	
040C	Removal of Disk Unit K5 is complete	
040D	Removal of Disk Unit K6 is complete	
040E	Removal of Disk Unit K7 is complete	
040F	Removal of Disk Unit K8 is complete	
0410	Removal of Disk Unit K9 is complete	
0411	Removal of Disk Unit K10 is complete	
0412	Removal of Disk Unit K11 is complete	
0413	Removal of Disk Unit K12 is complete	
0414	Removal of Disk Unit K13 is complete	
0415	Removal of Disk Unit K14 is complete	
0416	Removal of device 1 is complete	
0417	Removal of device 2 is complete	
0418	Removal of Disk Unit 9 is complete	
0419	Removal of Disk Unit 10 is complete	
041A	Removal of Disk Unit 11 is complete	
041B	Removal of Disk Unit 12 is complete	
041C	Removal of device 3 is complete	
041D	Removal of Disk Unit K15 is complete	
041E	Removal of Disk Unit K16 is complete	
041F	Removal of device 4 is complete	
0500	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit 1, and the bus was released. You must reinitialize the operation to continue.	
0501	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit 2, and the bus was released. You must reinitialize the operation to continue.	
0502	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit 3, and the bus was released. You must reinitialize the operation to continue.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0503	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 4, and the bus was released. You must reinitialize the operation to continue.	
0504	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 5, and the bus was released. You must reinitialize the operation to continue.	
0505	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 6, and the bus was released. You must reinitialize the operation to continue.	
0506	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 7, and the bus was released. You must reinitialize the operation to continue.	
0507	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 8, and the bus was released. You must reinitialize the operation to continue.	
0508	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K1, and the bus was released. You must reinitialize the operation to continue.	
0509	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K2, and the bus was released. You must reinitialize the operation to continue.	
050A	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K3, and the bus was released. You must reinitialize the operation to continue.	
050B	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K4, and the bus was released. You must reinitialize the operation to continue.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
050C	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K5, and the bus was released. You must reinitialize the operation to continue.	
050D	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K6, and the bus was released. You must reinitialize the operation to continue.	
050E	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K7, and the bus was released. You must reinitialize the operation to continue.	
050F	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K8, and the bus was released. You must reinitialize the operation to continue.	
0510	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K9, and the bus was released. You must reinitialize the operation to continue.	
0511	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K10, and the bus was released. You must reinitialize the operation to continue.	
0512	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K11, and the bus was released. You must reinitialize the operation to continue.	
0513	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K12, and the bus was released. You must reinitialize the operation to continue.	
0514	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K13, and the bus was released. You must reinitialize the operation to continue.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0515	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K14, and the bus was released. You must reinitialize the operation to continue.	
0516	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of device 1, and the bus was released. You must reinitialize the operation to continue.	
0517	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of device 2, and the bus was released. You must reinitialize the operation to continue.	
0518	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 9, and the bus was released. You must reinitialize the operation to continue.	
0519	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 10, and the bus was released. You must reinitialize the operation to continue.	
051A	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 11, and the bus was released. You must reinitialize the operation to continue.	
051B	Timeout, no action detected. Reinitialize the operation. No action was detected for the installation or removal of disk unit 12, and the bus was released. You must reinitialize the operation to continue.	
051C	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of device 3, and the bus was released. You must reinitialize the operation to continue.	
051D	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K15, and the bus was released. You must reinitialize the operation to continue.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
051E	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of disk unit K16, and the bus was released. You must reinitialize the operation to continue.	
051F	Timeout, no action detected. Reinitialize the operation No action was detected for the installation or removal of device 4, and the bus was released. You must reinitialize the operation to continue.	
0700	Timeout, no action detected. Reinitialize the operation Disk unit 1 was powered off but not removed. Concurrent maintenance informational reference code.	
0701	Timeout, no action detected. Reinitialize the operation Disk unit 2 was powered off but not removed. Concurrent maintenance informational reference code.	
0702	Timeout, no action detected. Reinitialize the operation Disk unit 3 was powered off but not removed. Concurrent maintenance informational reference code. You must reinitialize the operation to continue.	
0703	Timeout, no action detected. Reinitialize the operation. Disk unit 4 was powered off but not removed. Concurrent maintenance informational reference code.	
0704	Timeout, no action detected. Reinitialize the operation. Disk unit 5 was powered off but not removed. Concurrent maintenance informational reference code.	
0705	Timeout, no action detected. Reinitialize the operation. Disk unit 6 was powered off but not removed. Concurrent maintenance informational reference code.	
0706	Timeout, no action detected. Reinitialize the operation. Disk unit 7 was powered off but not removed. Concurrent maintenance informational reference code.	
0707	Timeout, no action detected. Reinitialize the operation. Disk unit 8 was powered off but not removed. Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0708	Timeout, no action detected. Reinitialize the operation Disk unit K1 was powered off but not removed. Concurrent maintenance informational reference code.	
0709	Timeout, no action detected. Reinitialize the operation Disk unit K2 was powered off but not removed. Concurrent maintenance informational reference code.	
070A	Timeout, no action detected. Reinitialize the operation Disk unit K3 was powered off but not removed. Concurrent maintenance informational reference code.	
070B	Timeout, no action detected. Reinitialize the operation Disk unit K4 was powered off but not removed. Concurrent maintenance informational reference code.	
070C	Timeout, no action detected. Reinitialize the operation Disk unit K5 was powered off but not removed. Concurrent maintenance informational reference code.	
070D	Timeout, no action detected. Reinitialize the operation Disk unit K6 was powered off but not removed. Concurrent maintenance informational reference code.	
070E	Timeout, no action detected. Reinitialize the operation Disk unit K7 was powered off but not removed. Concurrent maintenance informational reference code.	
070F	Timeout, no action detected. Reinitialize the operation Disk unit K8 was powered off but not removed. Concurrent maintenance informational reference code.	
0710	Timeout, no action detected. Reinitialize the operation Disk unit K9 was powered off but not removed. Concurrent maintenance informational reference code.	
0711	Timeout, no action detected. Reinitialize the operation Disk unit K10 was powered off but not removed. Concurrent maintenance informational reference code.	
0712	Timeout, no action detected. Reinitialize the operation Disk unit K11 was powered off but not removed. Concurrent maintenance informational reference code.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0713	Timeout, no action detected. Reinitialize the operation Disk unit K12 was powered off but not removed. Concurrent maintenance informational reference code.	
0714	Timeout, no action detected. Reinitialize the operation Disk unit K13 was powered off but not removed. Concurrent maintenance informational reference code.	
0715	Timeout, no action detected. Reinitialize the operation Disk unit K14 was powered off but not removed. Concurrent maintenance informational reference code.	
0716	Timeout, no action detected. Reinitialize the operation Device 1 was powered off but not removed. Concurrent maintenance informational reference code.	
0717	Timeout, no action detected. Reinitialize the operation Device 2 was powered off but not removed. Concurrent maintenance informational reference code.	
0718	Timeout, no action detected. Reinitialize the operation. Disk unit 9 was powered off but not removed. Concurrent maintenance informational reference code.	
0719	Timeout, no action detected. Reinitialize the operation. Disk unit 10 was powered off but not removed. Concurrent maintenance informational reference code.	
071A	Timeout, no action detected. Reinitialize the operation. Disk unit 11 was powered off but not removed. Concurrent maintenance informational reference code.	
071B	Timeout, no action detected. Reinitialize the operation. Disk unit 12 was powered off but not removed. Concurrent maintenance informational reference code.	
071C	Timeout, no action detected. Reinitialize the operation Device 3 was powered off but not removed. Concurrent maintenance informational reference code.	
071D	Timeout, no action detected. Reinitialize the operation Disk unit K15 was powered off but not removed. Concurrent maintenance informational reference code.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
071E	Timeout, no action detected. Reinitialize the operation Disk unit K16 was powered off but not removed. Concurrent maintenance informational reference code.	
071F	Timeout, no action detected. Reinitialize the operation Device 4 was powered off but not removed. Concurrent maintenance informational reference code.	
0800	Blower B01 powered off for concurrent maintenance	
0801	Blower B02 powered off for concurrent maintenance	
0802	Blower B03 powered off for concurrent maintenance	
0803	Blower B04 powered off for concurrent maintenance	
0900	Power Supply P01 powered off for concurrent maintenance	
0901	Power Supply P02 powered off for concurrent maintenance	
0902	Power Supply P03 powered off for concurrent maintenance	
0903	Power Supply P04 powered off for concurrent maintenance	
0904	Power Supply P05 powered off for concurrent maintenance	
0905	Power Supply P06 powered off for concurrent maintenance	
0F0F	AC Module Failure The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F12	Undefined box ID, EEPROM test failed The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F13	Undefined box ID, Code type mismatch The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F1F	Undefined box ID, LCD test failed The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2C	Unknown box ID The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2D	Unknown box ID, Code level mismatch. The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN 21F9429
0F2E	SPCN Network Fault The box ID is not defined. A network communications failure occurred.	TWRCARD BACKPLN 21F9429

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
102B	PCC Overcurrent The power control compartment is causing an over current condition in the FC 5032 Removable Storage Unit power system. The ac module and the SPCN port cable should be exchanged together.	TWRCARD 21F5680 21F5793 21F9362
1510	Detected AC loss Before replacing any parts, verify that the AC input voltage is correct.	PWRSPLY TWRCARD
1511	Power supply failure	PWRSPLY TWRCARD
1512	Power supply failure	PWRSPLY TWRCARD CBLALL
1513 to 1514	Power supply failure	PWRSPLY TWRCARD
1516	No Power Supplies Present The required power supplies are not installed.	PWRSPLY TWRCARD
1520	Detected AC loss Before replacing any parts, verify that the AC input voltage is correct.	PWRSPLY TWRCARD
1521	Power supply failure	PWRSPLY TWRCARD
1522	Power supply failure	PWRSPLY TWRCARD CBLALL
1523 to 1524	Power supply failure	PWRSPLY TWRCARD
1526	No Power Supplies Present The required power supplies are not installed.	PWRSPLY TWRCARD
1530	Power Supply P03 fault/AC loss Before replacing any parts, verify that the AC input voltage is correct.	PWRSPLY TWRCARD
1531	Power Supply P03 fault	PWRSPLY TWRCARD
1532	Power Supply P03 Communication fault	PWRSPLY TWRCARD CBLALL
1533	Power Supply P03 fault	PWRSPLY TWRCARD
1534	Power Supply P03 Fault	PWRSPLY TWRCARD
1611	Regulator Fault on Card Position M01	PWRREG TWRCARD
1612	Regulator Communication Fault on Card Position M01	PWRREG TWRCARD
1613, 1621	Regulator Fault on Card Position M01	PWRREG TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1622	Regulator Communication Fault on Card Position M01	PWRREG TWRCARD
1623	Regulator Fault on Card Position M01	PWRREG TWRCARD
1810	Load fault on the +12V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1820	Load fault on the +5V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1830	Load fault on the +3.3V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1840	Load fault on the -12V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B01	Load fault on the +12V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B02	Load fault on the +5V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B03	Load fault on the +3.3V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B04	Load fault on the -12V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B05	Load fault on the +1.8V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B06 to 1B07	Load fault on the +2.5V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B11	Load fault on the +12V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B12	Load fault on the +5V bus An isolation procedure is required for identifying which load is at fault.	PWROC TWRCARD
1B13	Load fault on the +3.3V bus	PWROC TWRCARD
1B14	Load fault on the -12V bus	PWROC TWRCARD
1B16 to 1B17	Load fault on the +2.5V bus	PWROC TWRCARD
2131	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY SPNLCRD
2132	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY SPNLCRD

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2133	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY SPNLCRD
2134	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY SPNLCRD
2141	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY SPNLCRD
2142	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY SPNLCRD
2143	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY SPNLCRD
2144	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY SPNLCRD
2151	Power Supply P01 Fault A fault has been detected for Power Supply P01.	PWRSPLY SPNLCRD
2152	Power Supply P02 Fault A fault has been detected for Power Supply P02.	PWRSPLY SPNLCRD
2153	Power Supply P03 Fault A fault has been detected for Power Supply P03.	PWRSPLY SPNLCRD
2154	Power Supply P04 Fault A fault has been detected for Power Supply P04.	PWRSPLY SPNLCRD
2201	Power Supply P01 or P02 Overcurrent Fault A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCRD CBLALL
2202	Power Supply P03 or P04 Overcurrent Fault A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCRD CBLALL
2210	One of the CPM regulators has reported a fault	PWRSPLY SPNLCRD
2211	CPM Regulator 1 Fault	PWRSPLY SPNLCRD
2212	CPM Regulator 2 Fault	PWRSPLY SPNLCRD
2213	CPM Regulator 3 Fault	PWRSPLY SPNLCRD
2221	Power Good Fault A MFIOP power good fault occurred.	SPNLCRD PGDPART CBLALL
2222	Power Good Type M Fault A Memory power good fault occurred.	SPNLCRD PGDPART CBLALL

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2223	Power Good Type P Fault A Processor power good fault occurred.	SPNLCRD PGDPART CBLALL
2224	Power Good Type I Fault A Internal expansion power good fault occurred.	SPNLCRD PGDPART CBLALL
2231	System Unit Interlock Failure	INTRLCK SPNLCRD CBLALL
2232	Secondary Frame Interlock Failure	INTRLCK SPNLCRD CBLALL
2240	Air Moving Device Panel Fault	AIRMOVR PWRSPLY
2241	Air Moving Device 1 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2242	Air Moving Device 2 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2244	Air Moving Device 4 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2245	Air Moving Device 5 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2246	Air Moving Device 6 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR SPNLCRD
2260	Timeout on Panel for Request of VPD	CTLPNL
2301	Power Supply P01 or P02 Overcurrent error A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCRD CBLALL
2302	Power Supply P03 or P04 Overcurrent error A POW-PIP is required for identifying which load is at fault.	PWROC SPNLCRD CBLALL
2311	Power Supply P01 error A fault detection failure occurred for Power Supply P01.	PWRSPLY SPNLCRD CBLALL
2312	Power Supply P02 error A fault detection failure occurred for Power Supply P02.	PWRSPLY SPNLCRD CBLALL

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2313	Power Supply P03 error A fault detection failure occurred for Power Supply P03.	PWRSPLY SPNLCRD CBLALL
2314	Power Supply P04 error A fault detection failure occurred for Power Supply P04.	PWRSPLY SPNLCRD CBLALL
2321	Power Good Fault A MFIOP power good error was detected.	SPNLCRD CBLALL PGDPART
2322	Power Good Type M error A Memory power good error was detected.	SPNLCRD CBLALL PGDPART
2323	Power Good Type P error A Processor power good error was detected.	SPNLCRD CBLALL PGDPART
2324	Power Good Type I error A Internal expansion power good error was detected.	SPNLCRD CBLALL PGDPART
2330	Power Supply P01 not installed	PWRSPLY SPNLCRD
2331	Power Supply P01 ID is Invalid	PWRSPLY SPNLCRD
2332	Power Supply P02 ID is Invalid	PWRSPLY SPNLCRD
2333	Power Supply P03 ID is Invalid	PWRSPLY SPNLCRD
2334	Power Supply P04 ID is Invalid	PWRSPLY SPNLCRD
2400 to 2402	UPS Enable/Disable Failure	UPSUNIT SPNLCRD
2403	UPS CPM Failure	UPSUNIT SPNLCRD
2404	UPS Battery Failure	BATRY UPSUNIT
2405	UPS Unit Failure	UPSUNIT SPNLCRD
2406 to 2407	UPS Enable/Disable Failure	UPSUNIT SPNLCRD
2410 to 2411	UPS Test Failure	UPSUNIT SPNLCRD
2413	UPS Interface Failure	UPSUNIT SPNLCRD
2600	Power Good Fault	PGDPART TWRCARD PWRSPLY
2601 to 2604	Power Good Fault	PGDPART TWRCARD
2610	Processor/Memory Card not installed	PWRSPLY TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2611	Processor Regulator fault	PWRREG TWRCARD
2612	Optical Converter 5V Fault The SPCN detected a fault on the SPCN card optical converter 5V.	CBLALL TWRCARD
2613	Configuration Requires 200V Input Configuration now requires 200V AC power.	CBLALL
300E	EPO Circuit Fault The ac module installed in the 9406 Expansion Unit (FC 504x) detected a fault in the UEPO signal. The signal was active and the incoming ac voltage was still present.	TWRCARD 21F9362 21F5680
302B	PCC Overcurrent The power control compartment is causing an over current condition in the 9406 Expansion Unit power system. Exchange the ac module and the SPCN port cable at the same time.	TWRCARD 21F5680 21F9631 21F9362
3100	I2C Bus Controller Communication fault	I2CBUS TWRCARD
3101	I2C Bus 1 Communication fault	I2CBUS TWRCARD
3102	I2C Bus 2 Communication fault	I2CBUS TWRCARD
3103	I2C Bus 3 Communication fault	I2CBUS TWRCARD
3104	I2C Bus 4 Communication fault	I2CBUS TWRCARD
3105	I2C Bus 5 Communication fault	I2CBUS TWRCARD
3106	I2C Bus 6 Communication fault	I2CBUS TWRCARD
3110	I2C Bus DASD Backplane 1 Communication fault	I2CBUS TWRCARD
3111	I2C Bus DASD Backplane 2 Communication fault	I2CBUS TWRCARD
3112	I2C Bus DASD Backplane 3 Communication fault	I2CBUS TWRCARD
3113	I2C Bus Adapter Communication fault	I2CBUS TWRCARD
3114	I2C Bus PCI Backplane Communication fault	I2CBUS TWRCARD
3115	I2C Bus Panel Communication fault	I2CBUS TWRCARD
3116	I2C Bus Fan Local Controller Communication fault	I2CBUS TWRCARD
3117	I2C Bus Fan Remote Controller Communication fault	I2CBUS TWRCARD
3118	I2C Bus SPCN VPD Communication fault	I2CBUS TWRCARD

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
311C	I2C Bus Panel Communication fault	I2CBUS TWRCARD
311D	I2C Bus DASD Backplane 2 Communication fault	I2CBUS TWRCARD
311E	I2C Bus DASD Backplane 3 Communication fault	I2CBUS TWRCARD
4410	Internal Battery Power Unit Fault Internal Battery Power Unit in the system has failed.	BATRY BATCHGR TWRCARD CBLALL
4411	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR TWRCARD CBLALL
4412	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR BATRY TWRCARD CBLALL
4413	Internal Battery Power Unit Charger Fault Internal Battery Power Unit Charger in the system has failed.	BATCHGR TWRCARD CBLALL
4414	Battery Charger Load fault	PWROC BATRY TWRCARD CBLALL
4415	Battery Power Unit missing	BATRY TWRCARD CBLALL
4416	Internal Battery Power Unit Charger Fault	BATCHGR TWRCARD CBLALL
4417	Battery Charger Unit missing	BATCHGR TWRCARD CBLALL
4500 to 4502	UPS Enable/Disable Failure	UPSUNIT TWRCARD
4503	UPS CPM Failure	UPSUNIT TWRCARD
4504	UPS Battery Failure	BATRY UPSUNIT
4505	UPS Unit Failure	UPSUNIT TWRCARD
4507	UPS Enable/Disable Failure	UPSUNIT TWRCARD
4510	UPS Test Failure	UPSUNIT TWRCARD
4513	UPS Interface Failure	UPSUNIT TWRCARD
6018	One of the regulators has reported a fault A regulator fault was detected.	PWRREG BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
601A	One of the CPM regulators has reported a fault A CPM regulator fault was detected.	PWRREG BKSPCN FI00022
6118	Regulator over current fault One of the regulators detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6218	Regulator over current fault Regulator 1 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6238	Regulator over current fault Regulator 2 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG BKSPCN
6258	Regulator over current fault Regulator 3 detected an over current condition. This may be caused by the regulator or one of cards powered by the regulator.	PWRREG ACMODUL
6318	Regulator Fault Regulator 1 has reported a fault.	PWRREG BKSPCN
631A	Regulator Fault Regulator 1 has reported a fault.	PWRREG ACMODUL FI00022
6338	Regulator Fault Regulator 2 reported a fault.	PWRREG BKSPCN
633A	Regulator Fault Regulator 2 reported a fault.	PWRREG ACMODUL FI00022
6358	Regulator Fault A regulator 3 reported a fault.	PWRREG ACMODUL
6400 to 6401	Power Good Fault	PGDPART FI00065 BKSPCN
6518	One of the regulators has reported a fault An over current sensor failure occurred for a regulator. The ac module or one of the regulators can cause this fault.	PWRREG BKSPCN
6618	Regulator over current fault Regulator 1 reported a false over current condition. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
6638	Regulator over current fault Regulator 2 reported a false over current condition. Fault tolerance may allow continued system operation.	PWRREG BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6658	Regulator over current fault Regulator 3 reported a false over current condition. Fault tolerance may allow continued system operation.	PWRREG ACMODUL
6718	Regulator fault Regulator 1 reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
671A	Regulator fault	PWRREG BKSPCN FI00022
6738	Regulator fault Regulator 2 reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN
673A	Regulator fault Regulator 18 reported a fault. Fault tolerance may allow continued system operation.	PWRREG BKSPCN FI00022
6758	Regulator fault Regulator 3 reported a fault. Fault tolerance may allow continued system operation.	PWRREG ACMODUL
6818	One of the regulators has reported a fault A fault detection failure occurred for a regulator. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN
6918	One of the regulators has reported a fault An over current fault detection failure occurred for a regulator. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN
6A18	Regulator Fault A regulator fault detection failure occurred for regulator 1. The ac module or the regulator can cause this fault.	PWRREG BKSPCN BACKPLN
6A38	Regulator Fault A regulator fault detection failure occurred for regulator 2. The regulator or the ac module/SPCN card can cause this fault.	PWRREG BKSPCN BACKPLN
6A58	Regulator Fault A regulator fault detection failure occurred for regulator 3. The regulator or the ac module/SPCN card can cause this fault.	PWRREG ACMODUL BACKPLN
6B00	Disk Unit 1 regulator fault The regulator that powers disk unit 1 reported a fault.	DISKTRY DISKDRV BKSPCN
6B01	Disk Unit 2 regulator fault The regulator that powers disk unit 2 reported a fault.	DISKTRY DISKDRV BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B02	Disk Unit 3 regulator fault The regulator that powers disk unit 3 reported a fault.	DISKTRY DISKDRV BKSPCN
6B03	Disk Unit 4 regulator fault The regulator that powers disk unit 4 reported a fault.	DISKTRY DISKDRV BKSPCN
6B04	Disk Unit 5 regulator fault The regulator that powers disk unit 5 reported a fault.	DISKTRY DISKDRV BKSPCN
6B05	Disk Unit 6 regulator fault The regulator that powers disk unit 6 reported a fault.	DISKTRY DISKDRV BKSPCN
6B06	Disk Unit 7 regulator fault The regulator that powers disk unit 7 reported a fault.	DISKTRY DISKDRV BKSPCN
6B07	Disk Unit 8 regulator fault The regulator that powers disk unit 8 reported a fault.	DISKTRY DISKDRV BKSPCN
6B08	Disk Unit K1 regulator fault The regulator that powers disk unit K1, located in slot K1 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B09	Disk Unit K2 regulator fault The regulator that powers disk unit K2, located in slot K2 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0A	Disk Unit K3 regulator fault The regulator that powers disk unit K3, located in slot K3 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0B	Disk Unit K4 regulator fault The regulator that powers disk unit K4, located in slot K4 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0C	Disk Unit K5 regulator fault The regulator that powers disk unit K5, located in slot 5 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0D	Disk Unit K6 regulator fault The regulator that powers disk unit K6, located in slot K6 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0E	Disk Unit K7 regulator fault The regulator that powers disk unit K7, located in slot K7 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B0F	Disk Unit K8 regulator fault The regulator that powers disk unit K8, located in slot K8 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B10	Disk Unit K9 regulator fault The regulator that powers disk unit K9, located in slot K9 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B11	Disk Unit K10 regulator fault The regulator that powers disk unit K10, located in slot K10 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B12	Disk Unit K11 regulator fault The regulator that powers disk unit K11, located in slot K11 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B13	Disk Unit K12 regulator fault The regulator that powers disk unit K12, located in slot K12 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B14	Disk Unit K13 regulator fault The regulator that powers disk unit K13, located in slot K13 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B15	Disk Unit K14 regulator fault The regulator that powers disk unit K14, located in slot K14 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B16	Device 1 regulator fault The regulator for device 1 or D01 reported a fault.	RMDEV BKSPCN
6B17	Device 2 regulator fault The regulator for device 2 or D02 reported a fault.	RMDEV BKSPCN
6B18	Disk Unit 9 regulator fault The regulator that powers disk unit 9 reported a fault.	DISKTRY DISKDRV BKSPCN
6B19	Disk Unit 10 regulator fault The regulator that powers disk unit 10 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1A	Disk Unit 11 regulator fault The regulator that powers disk unit 11 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1B	Disk Unit 12 regulator fault The regulator that powers disk unit 12 reported a fault.	DISKTRY DISKDRV BKSPCN
6B1C	Device 3 regulator fault The regulator for device 3 reported a fault.	RMDEV BKSPCN
6B1D	Disk Unit K15 regulator fault The regulator that powers disk unit K15, located in slot K15 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B1E	Disk Unit K16 regulator fault The regulator that powers disk unit K16, located in slot K16 of the disk expansion unit, reported a fault.	DISKTRY DISKDRV BKSPCN
6B1F	Device 4 regulator fault The regulator for device 4 reported a fault.	RMDEV BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6B20	Disk Unit K17 regulator fault The regulator that powers disk unit K17 reported a fault.	DISKTRY DISKDRV BKSPCN
6B21	Disk Unit K18 regulator fault The regulator that powers disk unit K18 reported a fault.	DISKTRY DISKDRV BKSPCN
6B22	Disk Unit K19 regulator fault The regulator that powers disk unit K19 reported a fault.	DISKTRY DISKDRV BKSPCN
6B23	Disk Unit K20 regulator fault The regulator that powers disk unit K20 reported a fault.	DISKTRY DISKDRV BKSPCN
6B24	Disk Unit K21 regulator fault The regulator that powers disk unit K21 reported a fault.	DISKTRY DISKDRV BKSPCN
6B25	Disk Unit K22 regulator fault The regulator that powers disk unit K22 reported a fault.	DISKTRY DISKDRV BKSPCN
6B26	Disk Unit K23 regulator fault The regulator that powers disk unit K23 reported a fault.	DISKTRY DISKDRV BKSPCN
6B27	Disk Unit K24 regulator fault The regulator that powers disk unit K24 reported a fault.	DISKTRY DISKDRV BKSPCN
6B28	Disk Unit K25 regulator fault The regulator that powers disk unit K25 reported a fault.	DISKTRY DISKDRV BKSPCN
6B29	Disk Unit K26 regulator fault The regulator that powers disk unit K26 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2A	Disk Unit K27 regulator fault The regulator that powers disk unit K27 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2B	Disk Unit K28 regulator fault The regulator that powers disk unit K28 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2C	Disk Unit K29 regulator fault The regulator that powers disk unit K29 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2D	Disk Unit K30 regulator fault The regulator that powers disk unit K30 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2E	Disk Unit K31 regulator fault The regulator that powers disk unit K31 reported a fault.	DISKTRY DISKDRV BKSPCN
6B2F	Disk Unit K32 regulator fault The regulator that powers disk unit K32 reported a fault.	DISKTRY DISKDRV BKSPCN
6C00	Disk Unit 1 regulator fault A fault detection failure occurred for the regulator that powers disk unit 1 or F01. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C01	Disk Unit 2 regulator fault A fault detection failure occurred for the regulator that powers disk unit 2 or F02. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C02	Disk Unit 3 regulator fault A fault detection failure occurred for the regulator that powers disk unit 3 or F03. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C03	Disk Unit 4 regulator fault A fault detection failure occurred for the regulator that powers disk unit 4 or F04. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C04	Disk Unit 5 regulator fault A fault detection failure occurred for the regulator that powers disk unit 5 or F05. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C05	Disk Unit 6 regulator fault A fault detection failure occurred for the regulator that powers disk unit 6 or F06. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C06	Disk Unit 7 regulator fault A fault detection failure occurred for the regulator that powers disk unit 7 or F07. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C07	Disk Unit 8 regulator fault A fault detection failure occurred for the regulator that powers disk unit 8 or F08. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C08	Disk Unit K1 regulator fault A fault detection failure occurred for the regulator that powers disk unit K1, located in slot 1 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C09	Disk Unit K2 regulator fault A fault detection failure occurred for the regulator that powers disk unit K2, located in slot 2 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0A	Disk Unit K3 regulator fault A fault detection failure occurred for the regulator that powers disk unit K3, located in slot 3 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0B	Disk Unit K4 regulator fault A fault detection failure occurred for the regulator that powers disk unit K4, located in slot 4 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0C	Disk Unit K5 regulator fault A fault detection failure occurred for the regulator that powers disk unit K5, located in slot 5 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C0D	Disk Unit K6 regulator fault A fault detection failure occurred for the regulator that powers disk unit K6, located in slot 6 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0E	Disk Unit K7 regulator fault A fault detection failure occurred for the regulator that powers disk unit K7, located in slot 7 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C0F	Disk Unit K8 regulator fault A fault detection failure occurred for the regulator that powers disk unit K8, located in slot 8 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C10	Disk Unit K9 regulator fault A fault detection failure occurred for the regulator that powers disk unit K9, located in slot 9 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C11	Disk Unit K10 regulator fault A fault detection failure occurred for the regulator that powers disk unit K10, located in slot 10 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C12	Disk Unit K11 regulator fault A fault detection failure occurred for the regulator that powers disk unit K11, located in slot 11 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C13	Disk Unit K12 regulator fault A fault detection failure occurred for the regulator that powers disk unit K12, located in slot 12 of the disk expansion unit. The regulator or the ac module/SPCN card can cause this fault.	DISKTRY BKSPCN
6C14	Disk Unit K13 regulator fault A fault detection failure occurred for the regulator that powers disk unit K13, located in slot 13 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C15	Disk Unit K14 regulator fault A fault detection failure occurred for the regulator that powers disk unit K14, located in slot 14 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C16	Device 1 regulator fault A fault detection failure occurred for the regulator that powers device 1 or D01. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C17	Device 2 regulator fault A fault detection failure occurred for the regulator that powers device 2 or D02. The regulator or the ac module can cause this fault.	RMDEV BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C18	Disk Unit 9 regulator fault A fault detection failure occurred for the regulator that powers disk unit 9. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C19	Disk Unit 10 regulator fault A fault detection failure occurred for the regulator that powers disk unit 10. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1A	Disk Unit 11 regulator fault A fault detection failure occurred for the regulator that powers disk unit 11. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1B	Disk Unit 12 regulator fault A fault detection failure occurred for the regulator that powers disk unit 12. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1C	Device 3 regulator fault A fault detection failure occurred for the regulator that powers device 3. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C1D	Disk Unit K15 regulator fault A fault detection failure occurred for the regulator that powers disk unit K15, located in slot 15 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1E	Disk Unit K16 regulator fault A fault detection failure occurred for the regulator that powers disk unit K16, located in slot 16 of the disk expansion unit. The regulator or the ac module can cause this fault.	DISKTRY BKSPCN
6C1F	Device 4 regulator fault A fault detection failure occurred for the regulator that powers device 4. The regulator or the ac module can cause this fault.	RMDEV BKSPCN
6C20	Disk Unit K17 regulator fault A fault detection failure occurred for the regulator that powers disk unit K17.	DISKTRY BKSPCN
6C21	Disk Unit K18 regulator fault A fault detection failure occurred for the regulator that powers disk unit K18.	DISKTRY BKSPCN
6C22	Disk Unit K19 regulator fault A fault detection failure occurred for the regulator that powers disk unit K19.	DISKTRY BKSPCN
6C23	Disk Unit K20 regulator fault A fault detection failure occurred for the regulator that powers disk unit K20.	DISKTRY BKSPCN
6C24	Disk Unit K21 regulator fault A fault detection failure occurred for the regulator that powers disk unit K21.	DISKTRY BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6C25	Disk Unit K22 regulator fault A fault detection failure occurred for the regulator that powers disk unit K22.	DISKTRY BKSPCN
6C26	Disk Unit K23 regulator fault A fault detection failure occurred for the regulator that powers disk unit K23.	DISKTRY BKSPCN
6C27	Disk Unit K24 regulator fault A fault detection failure occurred for the regulator that powers disk unit K24.	DISKTRY BKSPCN
6C28	Disk Unit K25 regulator fault A fault detection failure occurred for the regulator that powers disk unit K25.	DISKTRY BKSPCN
6C29	Disk Unit K26 regulator fault A fault detection failure occurred for the regulator that powers disk unit K26.	DISKTRY BKSPCN
6C2A	Disk Unit K27 regulator fault A fault detection failure occurred for the regulator that powers disk unit K27.	DISKTRY BKSPCN
6C2B	Disk Unit K28 regulator fault A fault detection failure occurred for the regulator that powers disk unit K28.	DISKTRY BKSPCN
6C2C	Disk Unit K29 regulator fault A fault detection failure occurred for the regulator that powers disk unit K29.	DISKTRY BKSPCN
6C2D	Disk Unit K30 regulator fault A fault detection failure occurred for the regulator that powers disk unit K30.	DISKTRY BKSPCN
6C2E	Disk Unit K31 regulator fault A fault detection failure occurred for the regulator that powers disk unit K31.	DISKTRY BKSPCN
6C2F	Disk Unit K32 regulator fault A fault detection failure occurred for the regulator that powers disk unit K32.	DISKTRY BKSPCN
7000 to 7004	Air Moving Device Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR BKSPCN
7101	Power supply failure The ac power supply module reported a fault. One of the other power supplies may also cause this error.	PWRSPLY

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7102	Power supply failure Feature power supply 2 reported a fault. An ac module or one of the other feature power supplies may also cause this error.	PWRSPLY ACMODUL
7103	Power supply failure Feature power supply 1 reported a fault. The ac module or one of the other feature power supplies may also cause this error.	PWRSPLY ACMODUL
7201	Power Supply over current fault The ac module reported an over current condition. This is usually caused by one of the regulators. Perform "SPCN PIP10" on page 431.	PWRREG PWRSPLY ACMODUL
7202	Power Supply over current fault Feature power supply 2 reported an over current condition. This is usually caused by one of the regulators. Perform "SPCN PIP10" on page 431.	PWRREG PWRSPLY ACMODUL
7203	Power Supply over current fault Feature power supply 1 reported an over current condition. This is usually caused by one of the regulators. Perform "SPCN PIP10" on page 431.	PWRREG PWRSPLY ACMODUL
7300	AC Module Over current The ac module or one of the feature power supplies reported an over current condition. Perform "SPCN PIP10" on page 431.	ACMODUL PWRSPLY
7400	Control Supply fault A control supply fault was reported in the ac module.	ACMODUL BKSPCN
7401	Control Supply over current A control supply over current condition was detected in the ac module.	ACMODUL PWRREG BKSPCN
7402	Control Supply 5V regulator fault The SPCN detected a fault in the +5 V dc regulator of the control supply in the ac module.	ACMODUL BKSPCN
7403	Control Supply 12V regulator fault The SPCN detected a fault in the +12 V dc regulator of the control supply in the ac module.	ACMODUL
7404	Control Supply 12V regulator over current An over current condition was detected in the +12 V dc regulator of the control supply in the ac module. Perform "SPCN PIP10" on page 431.	ACMODUL PWRSPLY FI00251
7407	Optical Converter 5V Fault The SPCN detected a fault on the SPCN card optical converter 5V.	90H6287 SPNLCRD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7500 to 7503	Air Moving Device missing error A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving Device if missing, replace if already installed.	AIRMOVR BKSPCN
7610	Air Moving Device Fault The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
7611	Air Moving Device missing error A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving Device if missing, replace if already installed.	AIRMOVR TWRCARD
7620	Air Moving Device Fault The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
7621	Air Moving Device missing error A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving device if missing, replace if already installed.	AIRMOVR TWRCARD
7630	Air Moving Device Fault The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
7631	Air Moving Device missing error A problem was dectected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving Device if missing, replace if already installed.	AIRMOVR TWRCARD
7640	Air Moving Device Fault The Air Moving Device is operating at the wrong speed.	AIRMOVR TWRCARD
7641	Air Moving Device missing error A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving Device if missing, replace if already installed.	AIRMOVR TWRCARD
7710	Air Moving Device BP1 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR TWRCARD
7711	Air Moving Device BP1 Not Present A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving device if missing, replace if already installed.	AIRMOVR TWRCARD
7720	Air Moving Device BP2 Fault A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed or operating at the wrong speed.	AIRMOVR TWRCARD

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7721	Air Moving Device BP2 Not Present A problem was detected with an Air Moving Device which can be caused by an Air Moving Device not being installed. Install Air Moving device if missing, replace if already installed.	AIRMOVR TWRCARD
8001	A Battery Power Unit 1 Failed A response was received from battery power unit 1 charger that was not valid.	46G3890 ACMODUL BACKPLN
8002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	46G3890 ACMODUL BACKPLN
8101	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	46G3890
8102	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	46G3890
8110	Battery Power Unit 1 and 2 Failed Replace both batteries.	BATRY
8201	A Battery Power Unit 1 Failed Battery power unit 1 charging fault was detected.	46G3890
8202	Battery Power Unit 2 Failed Battery power unit 2 charging fault was detected.	46G3890
8301	A Battery Power Unit 1 Failed Battery power unit 1 load test fault occurred.	46G3890
8302	Battery Power Unit 2 Failed Battery power unit 2 load test fault occurred.	46G3890
8400	No VPD Found due to Invalid Bypass	TWRCARD
8401	Timeout on Panel for Request of VPD	VPDPART TWRCARD
8402	Unable to Collect VPD	VPDPART BKSPCN
8403	VPD Critical Mismatch	VPDPART BKSPCN
8404 to 8406	Processor Unit VPD Mismatch	VPDPART BKSPCN
840A	VPD 5V Power Off Failure	VPDPART TWRCARD
840B	VPD 5V Power On Failure	VPDPART TWRCARD
840C	Memory Module Misplug	VPDPART TWRCARD
840D	SPCN Configuration mismatch	IDPART TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
840E	SPCN Default Configuration loaded	IDPART TWRCARD
840F	SPCN Configuration mismatch	IDPART TWRCARD
8413 to 8416	Invalid Processor VPD	VPDPART TWRCARD
8423 to 8426	No Processor VPD	VPDPART TWRCARD
8610	Air Moving Device B01 Not Present	AIRMOVR TWRCARD
8620	Air Moving Device B02 Not Present	AIRMOVR TWRCARD
8810	Battery Power Unit missing	BATRY
8811	Battery Charger Unit missing	BATCHGR
8910	External Netfinity Server 3.3V fault	ALTMANL TWRCARD
8920	External Netfinity Server Power Good fault	TWRCARD ALTMANL
8930	Integrated Netfinity Adapter fault	TWRCARD
8940 to 8943	External Netfinity Server R485 Communication fault	TWRCARD CBLALL ALTMANL
9012	Address not valid. LIC command had a frame address that was not valid. Exchange the SPCN frame-to-frame cables to the failing frame.	TWRCARD CBLALL
9013	Invalid Node Address. The address in the SPCN command does not match the secondary nodes assigned address. Exchange the failing items for the SPCN node reporting the error.	TWRCARD CBLALL
9014	A command has an invalid address mode. A command from the system unit specified a unit address of D or E or had a frame address of 00. Exchange the failing items in the system unit.	AJDG301 TWRCARD
9016, 9021	A command to an SPCN node was rejected. No action required. This reference code is logged for information only.	
9022	Addressed Unit not in frame. The addressed unit does not exist in the addressed frame. No action required. This reference code is logged for information only.	
9023	Addressed Unit exists, but the frame is powered off. The addressed unit is in a frame that is powered off. No action required. This reference code is logged for information only.	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9024	SPCN Licensed Internal Code not valid. The Licensed Internal Code in one of the secondary nodes is not valid. The code will be reloaded. No action required. This reference code is logged for error analysis only.	
9025	SPCN Licensed Internal Code is not valid. The Licensed Internal Code in one of the frames is not valid. The code will be reloaded. No action required. This reference code is logged for error analysis only.	
9026	Battery Power Unit is reporting a low charge. The battery power unit is not charged enough to run a test. No action required. This reference code is logged for information only.	
9027	Battery Power Unit is defective. No action required. This reference code is logged for information only.	
9028	SPCN Licensed Internal Code is not valid. The Licensed Internal Code in the primary node is not valid. The code will be reloaded. No action required. This reference code is logged for error analysis only.	
9029	SPCN VPD Damaged The VPD record in the EEPROM has bad data. Exchange the failing items for the node reporting the failure.	TWRCARD
902C	Battery Power Unit test was aborted. The battery power unit test was aborted. No action required. This reference code is logged for information only.	
902D	Addressed frame is not in SPCN configuration table. The addressed frame is not in the SPCN configuration table. No action required. This reference code is logged for information only.	
9031	Frame-to-Frame Communications Failure The SPCN detected a BCC error on a transmission from another frame. The transmission is attempted again. No action required. This reference code is logged for error analysis only.	
9032	SPCN Communications Failure, unit to rack. The frame detected a BCC error on a transmission from a secondary node to the frame. The transmission is attempted again. No action required. This reference code is logged for error analysis only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9033	SPCN Communications Failure, rack to unit. A secondary node detected a BCC error on a transmission from the frame. The transmission is attempted again. No action required. This reference code is logged for error analysis only.	
9034	Unsupported Packet Size The receiving node detected a packet exceeding 70 bytes. The frame can also return this code if a secondary node returns more than 10 bytes to a PAS command. No action required. This reference code is logged for error analysis only.	
9035	Secondary SPCN node timeout. A secondary SPCN node did not respond to a command. The command was attempted again and failed. No action required. This reference code is logged for error analysis only.	
9036	Frame Timeout One or more frames did not respond to a command. The command is attempted again. No action required. This reference code is logged for error analysis only.	
903B	Invalid Packet Length for data sent. The number of bytes sent or received does not match the number of bytes specified in the command. No action required. This reference code is logged for error analysis only.	
9041	Invalid Load Type The down load was successful, but the wrong type of Licensed Internal Code was loaded. The operation was attempted again but was not successful. Exchange the failing items for the node reporting the fault.	AJDG301 TWRCARD
9042	EEPROM Failure The EEPROM in an SPCN node cannot be written successfully. Exchange the SPCN node reported in the failure.	TWRCARD
9043	Download Failure The Licensed Internal Code download to an SPCN node was completed but was not successful. Exchange the failing SPCN node.	TWRCARD
9046	QDS Packet Sequence Error The Packet Sequence number is wrong. The download was stopped.	TWRCARD
9047	QDS Block Sequence Error The Block Sequence number is wrong. The download was stopped.	TWRCARD
9048	The SPCN ROS and EEPROM LIC is not compatable. The LIC levels in the nodes ROS and EEPROM are not compatible. Exchange the failing items for the failing node.	TWRCARD AJDG301

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9080	Undefined Status Code An SPCN node returned an unknown status code. Exchange the failing SPCN node.	TWRCARD BACKPLN
90F0	A frame was dropped from the SPCN configuration. A frame was dropped from the SPCN configuration. This is usually caused by a loss of ac power or a problem with the frame-to-frame cable.	TWRCARD CBLALL
90F1	A frame was added to the SPCN configuration. No action required. This reference code is logged for information only.	
9100	Battery capacity test completed. No action required. This reference code is logged for information only.	
9101	VLIC-SPCN Timeout A Licensed Internal Code timeout occurred. The SPCN failed to respond to a Licensed Internal Code command.	TWRCARD CTLPNL SVCPROC
9102	Assign Permanent Address command failure A node failed to perform an Assign Permanent Address command.	TWRCARD
9103	Download Initialize Timeout An SPCN node failed to enter the download state after an Initialize for Download command. Exchange the failing SPCN node.	TWRCARD
9104	Download Completion Timeout An SPCN node failed to leave the download state. Exchange the failing SPCN node.	TWRCARD
9105	Load Damaged Timeout An SPCN node failed to enter the operational state. Exchange the failing SPCN node.	TWRCARD
9106	An SPCN LID was not found. No action required. This reference code is logged for information only.	
9107	An SPCN microcode download is required. No action required. This reference code is logged for error analysis only.	
9108	A status change occured in one of the SPCN nodes. No action required. This reference code is logged for information only.	
9109	Licensed Internal Code part number is not correct. The AROS part number field was not updated to the correct level after the system attempted to load new Licensed Internal Code.	TWRCARD
9110	Battery Power Unit capacity test failed. The battery power unit was not able to pass the capacity test.	BATRY

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9111	SPCN is too large for VLIC. There are more nodes in the network than VLIC can service.	AJDG301
9112	Primary SPCN node is reporting load damaged. The Licensed Internal Code for the primary SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9113	Secondary SPCN node is reporting load damaged. The Licensed Internal Code for the secondary SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9114	Frame SPCN node is reporting load damaged. The Licensed Internal Code for a SPCN node is damaged. The reload failed because the code could not be found.	TWRCARD
9115	SPCN Command rejected by the Service Processor. The service processor rejected an SPCN command from the Licensed Internal Code. No action required. This reference code is logged for information only.	
9116	SPCN - Control Panel interface failure. The SPCN to control panel interface is not working.	
9117	SPCN - Control Panel interface is now working. The SPCN to control panel interface is now working. No action required. This reference code is logged for information only.	
9212	Frame Address field not valid. A Licensed Internal Code command had a frame address that is not valid. Exchange the failing items for the failing node.	TWRCARD
9213	Invalid Address status, secondary node. The address in the SPCN command does not match the assigned address of the secondary node. Exchange the failing items for the failing node.	TWRCARD
9214	Invalid Address Mode status Invalid Address Mode occurred during Frame Command processing.	TWRCARD AJDG301
9215	Invalid Frame Command status Invalid Frame Command occurred during Frame Command processing.	TWRCARD AJDG301
921B	System Unit SPCN Port Fault status. System Unit Port Fault occurred during Command processing.	TWRCARD AJDG301
922B	Address Unassigned status A secondary node has no address assigned during Command processing.	TWRCARD AJDG301
9231	Frame-to-Frame Communications Failure A frame-to-frame communications failure occurred during STF processing.	TWRCARD CBLALL

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9232	Intrarack Communications Failure An SPCN secondary node to frame communications failure occurred during Command processing.	TWRCARD CBLALL
9233	Intrarack Communications Failure An SPCN frame to secondary node communications failure occurred during Command processing.	TWRCARD CBLALL
9234	Unsupported Packet Size status Unsupported Packet Size occurred during STF and Secondary Node Command processing.	TWRCARD CTLPNL SVCPROC
9235	SPCN Secondary Node Timeout status An SPCN Secondary Node Timeout occurred during Command processing. If the failing secondary node is in a 9337, go to the "Analyzing Problems" section in the 9337 *Disk Array Service Information* manual.	TWRCARD AJDG301 CBLALL
9236	Frame Timeout status An SPCN Frame Node Timeout occurred during Network post processing.	TWRCARD CBLALL
9238	Secondary Node Fault An SPCN Secondary Node Fault occurred during Command processing.	TWRCARD AJDG301
9239	Frame Node Fault An internal error in the SPCN frame node prevents the running of a Frame command.	TWRCARD AJDG301
923A	ASA Failure The frame address returned by a secondary node does not match the address of the frame.	TWRCARD AJDG301
923B	Invalid Packet Length for data sent. An Invalid Packet Length occurred for data exchanged.	AJDG301 TWRCARD
9280	Response Stack Overflow Too many responses were received during System Frame command processing.	CBLALL AJDG301 TWRCARD
9281	Response Overrun Response Overrun occurred during System Frame processing.	CBLALL AJDG301 TWRCARD
9282	No Free Entries No free entries were found during System Frame processing.	CBLALL AJDG301 TWRCARD
9283	ARA Failure An Assign Frame Address Failure occurred during ARA Preprocessing.	TWRCARD AJDG301
9284	Undefined status Undefined Status occurred during Frame or STF processing.	TWRCARD AJDG301
9285	BCC Fault A BCC Error was detected during Network post processing.	TWRCARD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9286	Length Check Error. Length Check occurred during SPCN post processing.	TWRCARD AJDG301
9287	Undefined status Undefined Status occurred during Command processing.	TWRCARD AJDG301
9288	Configuration Error A configuration error was detected during System Frame processing.	TWRCARD AJDG301
9289	Invalid Packet Length for data sent. Invalid Packet Length occurred for data exchanged.	AJDG301 TWRCARD
A100	Battery Power Unit capacity test failure The battery power unit capacity test time exceeds the installed battery capacity. The battery power may not be enough to provide a controlled stop during a loss of incoming ac voltage. This reference code is logged for information only.	
A201	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	BATRY BATCHGR
A202	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	BATRY BATCHGR
A300	Battery Power Unit missing The existing number of battery power units installed may not be adequate for the current configuration. If the battery power units are installed, insure that they are properly connected before replacing any FRUs.	BATCHGR BATRY
A301	A Battery Power Unit 1 Failed The installed SPCN Licensed Internal Code does not give support to the type of battery power unit installed. Install the latest SPCN code.	AJDG301 BATCHGR
A302	Battery Power Unit 2 Failed The installed SPCN Licensed Internal Code does not give support to the type of battery power unit installed. Install the latest SPCN code.	AJDG301 BATCHGR
AC01 to AC02	Internal Battery Power Unit Charger Fault	BATCHGR BKSPCN
B101	A Battery Power Unit 1 Failed Battery power unit reported an over current condition on the +29 V dc bus.	PWRREG BATCHGR BACKPLN
B102	Battery Power Unit 2 Failed Battery power unit 2 reported an over current condition on the +29 V dc bus.	PWRREG BATCHGR BACKPLN
B201	A Battery Power Unit 1 Failed Battery power unit 1 reported an over current condition on the +31 V dc bus.	PWRREG BATCHGR BACKPLN
B202	Battery Power Unit 2 Failed Battery power unit 2 reported an over current condition on the +31 V dc bus.	PWRREG BATCHGR BACKPLN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C510	A Battery Power Unit 1 Failed SPCN-to-battery power unit 1 or 3 communications fault occurred.	BATCHGR ACMODUL BACKPLN
C511	Battery Power Unit 2 Failed SPCN-to-battery power unit 2 communications fault occurred.	BATCHGR ACMODUL BACKPLN
C512	AC Module Failure SPCN serial port communications fault occurred.	ACMODUL
C600	AC Module Failure The AC module control supply failed to turn off.	ACMODUL
C601	AC Module Failure AC module bus voltage control test fault occurred.	ACMODUL
C602	AC Module Failure AC module fault detection failure occurred.	ACMODUL
C609	Clock Card Failure The clock card in slot 17 is missing or defective.	CLKCARD BKSPCN
C62E	SPCN Network Fault An SPCN frame-to-frame communication failure was detected. "Cannot Power On Secondary Frame or Unit (No SRC)" on page 41 or "System or Frame Cannot Become Powered Off" on page 55.	TWRCARD CBLALL
C701 to C703	SPCN Frame-to-Frame Communication fault	TWRCARD CBLALL
CB00	Unknown box ID The SPCN node cannot determine the machine type of the box in which it is installed.	TWRCARD BACKPLN
CB05 to CB06	AC Module Failure The SPCN ROS and EPROMs test failed.	ACMODUL
CB1D	AC Module Failure The LCD test failure was detected on an Extension/Expansion Unit.	ACMODUL 17G0573
CC00	AC Module Failure An unknown fault was detected. The machine failed to power up.	ACMODUL FI00065 BKSPCN
CD00	No Power Supplies Present SPCN cannot detect any power supplies installed.	BKSPCN PWRSPLY
CE18	Regulator Not Present No regulators can be found. If the regulators are installed, exchange the failing items.	PWRREG ACMODUL
CE1A	Regulator Not Present If regulator 3 in slot R03 is installed, exchange the failing items.	PWRREG BKSPCN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
D001	A Battery Power Unit 1 Failed A response was received from battery power unit 1 charger that was not valid.	86G8020 ACMODUL BACKPLN
D002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	86G8020 ACMODUL BACKPLN
D101	A Battery Power Unit 1 Failed Battery power unit 1 capacity test failed.	86G8040 86G8020
D102	Battery Power Unit 2 Failed Battery power unit 2 capacity test failed.	86G8040 86G8020
D110	Battery Power Unit 1 and 2 Failed Replace both batteries.	BATRY
D201	A Battery Power Unit 1 Failed Battery power unit 1 charging fault was detected.	86G8020 86G8040
D202	Battery Power Unit 2 Failed Battery power unit 2 charging fault was detected.	86G8020 86G8040
D301	A Battery Power Unit 1 Failed Battery power unit 1 load test fault occurred.	86G8020 86G8040
D302	Battery Power Unit 2 Failed Battery power unit 2 load test fault occurred.	86G8020 86G8040
E002	Battery Power Unit 2 Failed A response was received from battery power unit 2 charger that was not valid.	86G7750 ACMODUL BACKPLN
E102	Battery Power Unit 2 Failed External battery power unit 2 capacity test failed.	86G7714 86G7750
E202	Battery Power Unit 2 Failed External battery power unit 2 charging fault was detected.	86G7750 86G7714
E302	Battery Power Unit 2 Failed External battery power unit 2 load test fault occurred.	86G7750 86G7714
F401	Internal Battery Power Unit Charger Fault	BATCHGR BKSPCN
F501	Internal Battery Power Unit Fault	BATRY BATCHGR
F601	Internal Battery Power Unit or Charger Fault	BATCHGR BATRY
F701	Internal Battery Power Unit Charger Fault	BATCHGR BATRY
F802	External Battery Power Unit Charger Fault	BATCHGR BKSPCN

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
F902	External Battery Power Unit Fault	BATRY BATCHGR
FA02	External Battery Power Unit or Charger Fault	BATCHGR BATRY
FB02	External Battery Power Unit Charger Fault	BATCHGR BATRY

System Power Control Network Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
17G0573	Expansion Unit Control Panel	Repair and Parts
21F5680	AC Module, SPCN Secondary node.	Repair and Parts
21F5793	Fan assembly.	Repair and Parts
21F9362	SPCN Port Cable	Repair and Parts
21F9429	Cable Carrier, 504x feature.	Repair and Parts
21F9631	Fan assembly.	Repair and Parts
46G3890	Internal Battery Power Unit	Repair and Parts
6462417	Rack Control Panel cable.	Repair and Parts
86G7714	External Battery Power Unit	Repair and Parts
86G7750	Battery Power Unit Charger	Repair and Parts
86G8020	Battery Power Unit Charger	Repair and Parts
86G8040	Battery Power Unit	Repair and Parts
90H6287	Optical Converter	Repair and Parts
ACMODUL	AC Module	Problem Analysis; Symbolic FRU Isolation
AIRMOVR	Fan and Blower assemblies	Problem Analysis; Symbolic FRU Isolation
AJDG301	Vertical Licensed Internal Code.	Service Functions; APAR or LICTR
ALTMANL	Alternate Manual Required	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Back Plane Unit	Problem Analysis; Symbolic FRU Isolation
BATCHGR	Battery Power Unit Charger	Problem Analysis; Symbolic FRU Isolation
BATRY	Battery Power Unit	Problem Analysis; Symbolic FRU Isolation
BKSPCN	SPCN card	Problem Analysis; Symbolic FRU Isolation
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control Panel	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk Unit Power regulator	Problem Analysis; Symbolic FRU Isolation
DISKTRY	Disk unit tray	Problem Analysis; Symbolic FRU Isolation
I2CBUS		Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
IDPART	Vital Product Data Parts	Problem Analysis; Symbolic FRU Isolation
INTRLCK	Interlock part	Problem Analysis; Symbolic FRU Isolation
PGDPART	Power Good Parts	Problem Analysis; Symbolic FRU Isolation
PWROC	Power Supply overcurrent	Problem Analysis; Symbolic FRU Isolation
PWRREG	Regulator.	Problem Analysis; Symbolic FRU Isolation
PWRSPLY	Power Supply	Problem Analysis; Symbolic FRU Isolation
RMDEV	Disk Unit or Removable Media Device	Problem Analysis; Symbolic FRU Isolation
SPNLCRD	SPCN panel card	Problem Analysis; Symbolic FRU Isolation
SVCPROC	Service Processor Card	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
UPSUNIT	UPS unit part	Problem Analysis; Symbolic FRU Isolation
VPDPART	VPD Communication Part	Problem Analysis; Symbolic FRU Isolation

(2105) Disk Unit Reference Codes

1. If the error is reported on the control panel, the unit reference code is characters 5 through 8 of the top 16 character line of function 11. If the error is reported on the console, the unit reference code is the 4 rightmost characters of word 1.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3002	Addressed device is not responding	FCPORT FCDEV FCIOA FCINTF OPT_CLN
3010	Disk device returned wrong response to IOP	FCDEV FCIOA OPT_CLN
3020	Storage subsystem configuration error If an MES is being installed, verify the configuration.	FCDEV FCIOA OPT_CLN
3029	A device replacement has occurred No action required. This reference code is logged for information only.	
3100	Fibre Channel interface error occurred	FCINTF FCDEV FCIOA OPT_CLN

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3109	IOP timed out a disk command	FCDEV FCINTF FCIOA OPT_CLN
34FF	Format in progress The device indicated that a format is in progress. When the format is complete, the device should be useable. No action is required. This reference code is logged for information only.	
FFF3	Disk media format bad	FCDEV
FFF4	Disk device problem	FCDEV
FFF5	Disk sector read error	FCDEV
FFF6	Disk device detected recoverable error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	FCDEV
FFFA	Disk device wrong response was recovered by the IOP A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	FCDEV FCIOA OPT_CLN
FFFE	Temporary Fibre Channel interface error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	FCINTF FCDEV FCIOA OPT_CLN

Disk Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
FCDEV	Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
FCINTF	Fibre Channel interface	Problem Analysis; Symbolic FRU Isolation
FCIOA	Fibre Channel IOA	Problem Analysis; Symbolic FRU Isolation
FCPORT	Port not operational	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
OPT_CLN	Fiber optic cleaning kit	Problem Analysis; Symbolic FRU Isolation

(2629, 2718, 2726, 2728, 2729, 2741, 2809, 2810, 2824, 282C, 6532, 6533, 6534, 671A) Reference Codes

These Storage IOAs are only allowed on migrated towers. See *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

(2746) Twinaxial Workstation Adapter Reference Codes

1. Look at characters 5 through 8 of the top 16 character line of function 11 (4 rightmost characters of word 1). These 4 characters are the unit reference code.
2. Look at the last 8 characters of the top 16 character line of function 12 (word 3). These 8 characters are the direct select address of the card (BBBBCcbb). The unit address portion of the card address is characters 1 through 8 of the bottom 16 character line of function 11 (Word 4). Card locations can be found using the 16 character address. See "SRC Address Formats" on page 846.
3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
B904	I/O adapter Licensed Internal Code failed.	AJDGP01 FI00719
B934	Incompatible hardware detected.	FI00719 FI00718
B940	I/O adapter hardware error detected	FI00719 FI00718 AJDGP01
B941 to B942	One half of I/O adapter failed.	FI00719 FI00718 AJDGP01

Workstation Adapter Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR

(2748, 2763, 2778) Reference Codes

If the error is reported on the control panel, the unit reference code is characters 5 through 8 of the top 16 character line of function 11. If the error is reported on the console, the unit reference code is the 4 rightmost characters of word 1.

Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3006	System bus error	IOP ANYBUS STORIOA
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 398. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 398. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3022	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 398. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "SDIOP-PIP13" on page 391.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 391.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 391.	STORIOA FI01107 FI01140 BACKPLN
3400	I/O processor card detected device error	FI02112 STORIOA FI01106 DEVTERM FI01140

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3401	Device backplane problem	DEVBPLN
3501	I/O processor Licensed Internal Code error	AJDGP01 IOP
3600 to 3601	System log entry only, no service action required	
8008	A permanent cache battery pack failure occurred	CACHBAT STORIOA
8009	Impending cache battery pack failure	CACHBAT
8012	Attached read cache devices exceed capacity supported by IOA Reduce the number of read caches on the IOA.	SVCDOCS
8100	I/O processor Licensed Internal Code error	AJDGP01 IOP
8130	IOA detected recoverable device bus error An error occurred on SCSI bus 0. No action is required. This reference code is logged for information only.	
8131	IOA detected recoverable device bus error An error occurred on SCSI bus 1. No action is required. This reference code is logged for information only.	
8132	IOA detected recoverable device bus error An error occurred on SCSI bus 2. No action is required. This reference code is logged for information only.	
8140	IOA detected recoverable device bus error No action is required. This reference code is logged for information only.	
8141	IOA detected recoverable device error No action is required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	STORIOA
8146	Disk device detected recoverable error	FI01105
8150	A permanent I/O processor failure occurred	STORIOA IOP FI01107 ANYBUS
8151	I/O processor Licensed Internal Code error	AJDGP01 STORIOA
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 STORIOA
8200	I/O processor Licensed Internal Code error	AJDGP01 IOP
9000 to 9001	I/O processor card detected device error	FI01105 STORIOA
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 BACKPLN FI01106

2748, 2763, 2778

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 413.	SVCDOCS
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP31" on page 422.	SVCDOCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP32" on page 424.	SVCDOCS
9014	Mode jumper overridden due to cache data in conflicting mode See "Mode jumper has been overridden" on page 845.	SVCDOCS
9015	Mode jumper missing See "Mode jumper is missing" on page 846.	SVCDOCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 405.	SVCDOCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 409.	SVCDOCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 408.	SVCDOCS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 409.	SVCDOCS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOCS
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOCS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 408.	SVCDOCS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended Protection will be automatically restarted. Call your next level of support to report the problem.	AJDGP01
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP30" on page 421.	SVCDOCS
9051	IOP cache data exists for a missing or failed device. If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code. Otherwise, perform "SDIOP-PIP27" on page 417.	SVCDOCS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9052	Cache data exists for device that has been modified. Contact your next level of support.	SVCDOCS
9053	IOP resources not available due to previous problems. Take action on other IOP reference codes which have surfaced. If you cannot get to SST or DST, and cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDOCS
9054	IOP resources not available due to previous problems. Power off the system and remove all new or replacement disk units. IPL the system to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDOCS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDOCS
9091	Incorrect hardware configuration change has been detected. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDOCS
9092	Disk unit requires initialization before use. Perform "SDIOP-PIP26" on page 415.	SVCDOCS
9093	Read cache device not in correct format Contact your next level of support.	SVCDOCS
B934	Incompatible hardware detected.	STORIOA
FF3D	I/O processor card	STORIOA IOP
FF6D	I/O processor detected a recoverable system bus error	IOP ANYBUS

Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.

2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.

3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHBAT	Cache battery pack	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
PCIBUS	Any PCI card on the PCI bus	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F) Reference Codes

1. If the error is reported on the control panel, the unit reference code is characters 5 through 8 of the top 16 character line of function 11. If the error is reported on the console, the unit reference code is the 4 rightmost characters of word 1.

2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0A17	A permanent I/O processor failure occurred	IOP MA_BRDG AJDGP01 AJDG301
0A22	I/O processor detected a storage transfer error	AJDGP01 AJDG301 IOP MA_BRDG
102E	Out of alternate sectors for disk storage	FI01105

2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1307	I/O processor resource not available	AJDGP01 AJDG301
1310	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
2200	I/O processor Licensed Internal Code error	AJDGP01
2201	Removable media error during IPL	USER FI01105
2202	Removable media error during IPL	FI00022 FI01105
3000	A permanent I/O processor failure occurred	FI01101 IOP MA_BRDG
3001	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	IOP AJDGP01
3002	Addressed device failed to respond to selection Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 FI01141 FI01106
3006	System bus error	IOP ANYBUS FI01101
3020	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 0. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 398. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3021	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 1. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 398. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3022	I/O processor detected a SCSI bus configuration error Error occurred on SCSI bus 2. To correct or isolate a possible user error or configuration error, perform "SDIOP-PIP17" on page 398. Use the failing item (FI) codes to find failing devices.	USER FI01107 STORIOA
3080	I/O processor Licensed Internal Code error	AJDGP01
3081	System log entry only, no service action required	
3084	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJDGP01 IOP FI01104 MA_BRDG
3087	I/O processor resource not available The Licensed Internal Code could not allocate resources on the I/O processor card.	AJDGP01 AJDG301 IOACNFG FI01104

2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	I/O processor card detected interface error Error occurred on SCSI bus 0. Perform "SDIOP-PIP13" on page 391.	STORIOA FI01107 FI01140 BACKPLN
3101	I/O processor card detected interface error Error occurred on SCSI bus 1. Perform "SDIOP-PIP13" on page 391.	STORIOA FI01107 FI01140 BACKPLN
3102	I/O processor card detected interface error Error occurred on SCSI bus 2. Perform "SDIOP-PIP13" on page 391.	STORIOA FI01107 FI01140 BACKPLN
3109	I/O processor timed out a device command Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 BACKPLN FI01106
3110	I/O processor card detected interface error Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 BACKPLN FI01106
3136	The removable media device is assigned elsewhere	USER FI01105
3200	A tape/CD or disk device reported a failure	FI01105 STORIOA IOP MEDIA
3203	Disk media format bad	FI01105
3205, 3215	Disk sector read error Disk unit data may need to be reloaded, but the disk unit does not need to be replaced.	FI01105
3250	Disk unit requires initialization before use. Perform a D-IPL and work on errors found in the log.	USER
3300	Storage unit detected a media problem Perform "SDIOP-PIP1" on page 388.	MEDIA FI00121 FI01141
3400	I/O processor card detected device error NOTE: If external devices are attached check EXTSCSI and DEVTERM first.	FI02112 STORIOA FI01106 DEVTERM FI01140
3401	Device backplane problem	DEVBPLN
3501	I/O processor Licensed Internal Code error	AJDGP01 IOP
3600 to 3601	System log entry only, no service action required	
6070	A permanent I/O processor failure occurred	IOP
6071	I/O processor Licensed Internal Code error	AJDGP01

2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6072	I/O processor Licensed Internal Code error	AJDGP01 IOP
6073	IPL device not ready	MEDIA FI01105 USER
6075	I/O processor resource not available	AJDGP01
6076	I/O processor card detected media error	MEDIA AJDGP01 FI01105
6081 to 6083	I/O processor Licensed Internal Code error	AJDGP01 IOP
6085	I/O processor Licensed Internal Code error	AJDGP01 IOP MA_BRDG
6200	A permanent IOA hardware error occurred	FCIOA OPT_CLN
6201	IOA LID is not valid	AJDGP01
6602	An I/O processor Licensed Internal Code error occurred.	AJDGP01
8000	A permanent IOP or cache adaptor card failure occurred. **Note:** DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	STORIOA CACHE
8002	A permanent cache adaptor card failure occurred. **Note:** DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8004	Voltage drop detected on I/O processor 5 volt power supply.	FI01141 STORIOA
8005	A recoverable IOP or cache adaptor card error occurred. **Note:** DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	STORIOA CACHE
8007	A recoverable cache adaptor card error occurred. **Note:** DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8010 to 8011	A permanent cache adaptor card failure occurred. The cache adaptor card may be missing, broken or incompatible. **Note:** DO NOT replace both FRUs at the same time. Exchange the FRUs one at a time in the order shown.	CACHE STORIOA
8100	I/O processor Licensed Internal Code error	AJDGP01 IOP
8130	IOA detected recoverable device bus error An error occurred on SCSI bus 0. No action is required. This reference code is logged for information only.	
8131	IOA detected recoverable device bus error An error occurred on SCSI bus 1. No action is required. This reference code is logged for information only.	

2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
8132	IOA detected recoverable device bus error An error occurred on SCSI bus 2. No action is required. This reference code is logged for information only.	
8140	IOA detected recoverable device bus error No action is required. This reference code is logged for information only.	
8141	IOA detected recoverable device error No action is required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	STORIOA
8146	Disk device detected recoverable error	FI01105
8150	A permanent I/O processor failure occurred	STORIOA IOP FI01107 ANYBUS
8151	I/O processor Licensed Internal Code error	AJDGP01 STORIOA
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 STORIOA
8200	I/O processor Licensed Internal Code error	AJDGP01 IOP
8300	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	STORIOA IOP AJDGP01
8301	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	FI01101 AJDGP01 IOP
8400	I/O processor Licensed Internal Code error	AJDGP01
9000 to 9001	I/O processor card detected device error	FI01105 STORIOA
9002	I/O processor card detected device error Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 BACKPLN FI01106
9008	I/O card does not support functions expected by devices Perform "SDIOP-PIP25" on page 413.	SVCDOCS
9010	Cache data associated with attached devices cannot be found Perform "SDIOP-PIP19" on page 403.	SVCDOCS
9011	Cache data belongs to devices other than those attached Perform "SDIOP-PIP19" on page 403.	SVCDOCS
9012	IOP requires a cache adaptor card but cannot find it. The cache adapter card is missing or broken. Perform "SDIOP-PIP29" on page 420.	CACHE

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9013	The IOP and attached cache adaptor card are not compatible. Perform "SDIOP-PIP19" on page 403.	SVCDOCS
9020 to 9021	Array not functional due to present hardware configuration. Perform "SDIOP-PIP20" on page 405.	SVCDOCS
9022 to 9024	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 409.	SVCDOCS
9025	Disk unit is not supported at its physical location. Perform "SDIOP-PIP21" on page 408.	SVCDOCS
9026 to 9027	Array not functional due to present hardware configuration. Perform "SDIOP-PIP22" on page 409.	SVCDOCS
9028	Incorrect hardware configuration change has been detected. Reduce the number of arrays on IOP. Either move all devices in an array to another IOP that supports arrays, or stop an array on this IOP.	SVCDOCS
9029	Incorrect hardware configuration change has been detected. Contact your next level of support.	SVCDOCS
9030	Array no longer protected due to missing or failed disk unit Perform "SDIOP-PIP21" on page 408.	SVCDOCS
9031, 9040	Array protection temporarily suspended No action required. Protection will be automatically restarted.	
9041	Array protection temporarily suspended Protection will be automatically restarted. Call your next level of support to report the problem.	AJDGP01
9050	Required cache data cannot be located for a disk unit. Perform "SDIOP-PIP23" on page 409.	SVCDOCS
9051	IOP cache data exists for a missing or failed device. If all configured units are missing, a 9054 reference code may appear in the product activity log. If so, perform the action indicated for the 9054 reference code. Otherwise, perform "SDIOP-PIP27" on page 417.	SVCDOCS
9052	Cache data exists for device that has been modified. Perform "SDIOP-PIP28" on page 419.	SVCDOCS
9053	IOP resources not available due to previous problems. Take action on other IOP reference codes which have surfaced. If you cannot get to SST or DST, and cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDOCS

2749, 2767, 2768, 2842, 2843, 284B, 284C, 284D, 284E, 286C, 286D, 286F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9054	IOP resources not available due to previous problems. Power off the system and remove all new or replacement disk units. IPL the system to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Look for Product Activity Log entries for other IOP reference codes and take action on them.	SVCDOCS
9081	I/O processor card detected device error	FI01105 STORIOA
9082	I/O processor card detected device error Perform "SDIOP-PIP16" on page 394.	FI01105 STORIOA FI01140 BACKPLN FI01106
9090	Disk unit has been modified after the last known status. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDOCS
9091	Incorrect hardware configuration change has been detected. Re-IPL the system. If any reference codes are surfaced, go to "Chapter 2. Unit Reference Codes" on page 59 and use the new reference code as the entry point to the problem. If you cannot resolve the problem, contact your next level of support.	SVCDOCS
9092	Disk unit requires initialization before use. Perform "SDIOP-PIP26" on page 415.	SVCDOCS
B3B7	A permanent I/O processor failure occurred	IOP
B3B8	Multi-adapter bridge error detected.	MA_BRDG IOP
B3E1	I/O processor detected a fault condition.	IOP MA_BRDG
B410 to B411	A permanent I/O processor failure occurred	STORIOA
B412	Tape/CD or disk bus interface error occurred Perform "SDIOP-PIP16" on page 394.	FI01107 FI01140 STORIOA DEVTERM
B935	Unknown hardware detected	FI01101 AJDGP01 IOP MA_BRDG
BE00	I/O processor detected a fault condition.	AJDGP01 IOP FI01104 MA_BRDG
FF3D	I/O processor card	STORIOA IOP
FF6D	I/O processor detected a recoverable system bus error	IOP ANYBUS

Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O card Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card Enclosure or Planar Board	Problem Analysis; Symbolic FRU Isolation
CACHBAT	Cache battery pack	Problem Analysis; Symbolic FRU Isolation
CACHE	Cache adaptor card	Problem Analysis; Symbolic FRU Isolation
CMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control panel, or the interface to the Control panel	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
FCIOA	Fibre Channel IOA	Problem Analysis; Symbolic FRU Isolation
IOACNFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
MA_BRDG	Multi-adapter bridge	Problem Analysis; Symbolic FRU Isolation
MEDIA	Defective media	Problem Analysis; Symbolic FRU Isolation
OPT_CLN	Fiber optic cleaning kit	Problem Analysis; Symbolic FRU Isolation
PCIBUS	Any PCI card on the PCI bus	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
USER	Operator/User Error	Problem Analysis; Symbolic FRU Isolation

(2765, 2766) Reference Codes

If the error is reported on the control panel, the unit reference code is characters 5 through 8 of the top 16 character line of function 11. If the error is reported on the console, the unit reference code is the 4 rightmost characters of word 1.

Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	I/O processor card detected interface error	FCINTF ANYFC FCIOA OPT_CLN
3120	I/O processor detected a port failure	FCPORT FCIOA FCDEV OPT_CLN
3140	I/O Processor detected that a port is now operational This reference code and the 3120 reference code that occurred before it require no service action, since the port is now operational.	
3400	I/O processor card detected device error	FCDEV FCINTF ANYFC FCIOA OPT_CLN
34FF	Format in progress The device indicated that a format is in progress. When the format is complete, the device should be useable. No action is required. This reference code is logged for information only.	
8130, 8140	Recovered Fibre Channel interface error No action required. This reference code is logged for information only.	
8141	IOA detected recoverable device error No action required. This reference code is logged for information only.	
8145	A recoverable I/O processor error occurred.	FCIOA OPT_CLN
8146	Disk device detected recoverable error	FCDEV
8150	A permanent I/O processor failure occurred	FCIOA IOP ANYFC OPT_CLN
8151	I/O processor Licensed Internal Code error	AJDGP01 FCIOA IOP OPT_CLN
8155 to 8156	A permanent I/O processor failure occurred	AJDGP01 FCIOA OPT_CLN
9091 to 9092	Incorrect hardware configuration change has been detected. Reset the I/O processor and then IPL the I/O processor. For information on how to reset and IPL the I/O processor, see "Debug the Resource" in the "Hardware Service Manager" section of the *iSeries Service Functions*. If an I/O processor reset and I/O processor IPL does not resolve the problem, contact your next level of support.	SVCDOCS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF3D	Recovered IOA error	FCIOA IOP OPT_CLN

Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYFC	Any Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
FCDEV	Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
FCINTF	Fibre Channel interface	Problem Analysis; Symbolic FRU Isolation
FCIOA	Fibre Channel IOA	Problem Analysis; Symbolic FRU Isolation
FCPORT	Port not operational	Problem Analysis; Symbolic FRU Isolation
IOP	I/O processor card	Problem Analysis; Symbolic FRU Isolation
OPT_CLN	Fiber optic cleaning kit	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

(283C, 283D, 283F) Device Backplane Reference Codes

1. If the error is reported on the control panel, the unit reference code is characters 5 through 8 of the top 16 character line of function 11. If the error is reported on the console, the unit reference code is the 4 rightmost characters of word 1.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3002	Addressed device backplane failed to respond to selection	DEVBPLN STORIOA FI01140 FI01106

283C, 283D, 283F

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3109	I/O adapter timed out a device backplane command	DEVBPLN STORIOA FI01140 FI01106
8401	Removable media power fault	DEVBPLN
FFF4	Device backplane problem	DEVBPLN STORIOA FI01140 FI01106

Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
CMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
DEVBPLN	Device backplane	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

(3490) Tape Unit Reference Codes

A tape or a 3490 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Is the operating system available and can you enter commands from the command line?

   Yes　**No**

   ↓　　Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *iSeries Service Functions*)?

   No　**Yes**

   ↓　　Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3490 is powered on.

4. Verify that the channel Enable/Disable switches are set to the Enable position.

5. Verify that the 3490 Online/Offline switches are set to the Online position.

6. Load the first tape.

7. Start a type D IPL from the system unit control panel.

    Does the IPL complete successfully?

    No   Yes

    ↓   The problem has been corrected.

             This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 9.

9. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.

10. If the 3490 indicator panel shows a check (CHK) code or an error code, see the "Start" section of the 3490 service information.

11. See "SRC Address Formats" on page 846 to determine the IOP, IOA, and device address.

12. Find the unit reference code in the following table.

13. See the "Start" section of the 3490 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0xxx, 1xxx, 2000	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to analyze the problem.	
2001	Tape path dirty or write data check error Clean the tape path using the cleaning procedures in the *3490 Magnetic Tape Subsystem Operator's Guide*, GA32-0124. Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2003	Tape path dirty or write identification record error Clean the tape path using the cleaning procedures in the *3490 Magnetic Tape Subsystem Operator's Guide*, GA32-0124. Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2008	Tape path dirty or read data check error Clean the tape path using the cleaning procedures in the *3490 Magnetic Tape Subsystem Operator's Guide*, GA32-0124. Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2009	Tape path dirty or read identification record error Clean the tape path using the cleaning procedures in the *3490 Magnetic Tape Subsystem Operator's Guide*, GA32-0124. Use the 3490 Tape Unit service information to continue analyzing the problem.	MHK0001 DHK0002
2010	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
2014	Recoverable tape unit failure; logged only No action required. This reference code is logged for information only.	
2015	Tape unit failure Clean the tape path using the cleaning procedures in the *3490 Magnetic Tape Subsystem Operator's Guide*, GA32-0124. Use the 3490 Tape Unit service information to continue analyzing the problem.	DHK0002 FI00856 FI00845
2017	Write Protect violation reported by tape unit; logged only No action required. This reference code is logged for information only.	
202x, 205x, 206x, 21xx, 22xx	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
23xx	Tape Library failure Use the 3494 Tape Library Dataserver Maintenance Information to analyze the problem.	
26xx, 27xx, 3xxx, 4xxx, 5xxx, 6xxx, 7xxx, 8xxx	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are not present: • Tape and DASD devices attached to the same type 6501 I/O processor • A device type or model that is not given support	UHKCNFG FI00851 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: 1. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9201	Tape unit command timeout Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00856 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	FI00851 FI00856 FI00130
9300	Tape unit failure	DHK0002
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation. See the 3490 Tape Unit service information to determine the failing item.	DHK0002
9302	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9310	Licensed Internal Code for the tape unit is not correct	FI00851 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9320	Tape device Licensed Internal Code failure Do the following: 1. Take a dump of the tape device Licensed Internal Code (see the 3490 Tape Drive service information). 2. Power off the tape unit. Then power on the tape unit to resume operation.	FI00851
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.	MHKTMED UHKCLN FI00851
9351	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9355	The data format is incorrect; the tape cannot be read The tape device does not give support to the data format on the tape cartridge. Re-initialize the tape cartridge or use a different tape cartridge.	MHKTMED UHKCLN FI00851
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
96xx	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHKFIXD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape unit again. • Perform "TU-PIP4" on page 441 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	
Axxx, Bxxx, Cxxx, Dxxx, Exxx, F00x	Tape unit failure Use online problem analysis and the 3490 Tape Unit service information to continue analyzing the problem.	

FFD5	Device error reported; tape I/O processor
	
	Verify the following:
	1. That power is switched on in the 3490 Tape Unit Rack:
	  • Set the 3490 Rack Unit Emergency Power Off switch to the On position.
	  • Ensure that the 3490 Rack Enable/Off switch is set to the Enable position.
	  • Press the 3490 Rack Power On button.
	2. Verify the following on 3490 Tape Unit:
	  • The Channel Enable/Disable switches are set to the Enable position.
	  • The Normal/Test switch is set to the Normal position.
	  • The CU Online/Offline switch is set to the Online position.
	  • The Drive Address Online/Offline switches are set to the Online position.
	  • The Drive DC Power switches are set to the On position.
	
	If you are attempting to perform an IPL from the device that had the error, verify that the drive control unit address switch has an address of hexadecimal 7 and the drive unit address switch has an address of 0.
	
	Use the 3490 Tape Unit service information to continue analyzing the problem.
		UHK0003 DHK0002

FFF6	Volume statistics; logged only No action required. This reference code is logged for information only.	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
05H3834	Interposer	Magnetic tape subsystem service information
61G8324	Terminating plug	Magnetic tape subsystem service information
DHK0002	I/O device	Use the sense bytes and 3490 MI to find the failing items
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
MHK0001	Tape	Magnetic tape subsystem operator's information
MHKTMED	Defective removable media	Magnetic tape subsystem operator's information
UHK0003	I/O device not communicating	Magnetic tape subsystem operator's information
UHKCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHKCNFG	Tape configuration detected by I/O processor; not valid	Installation

(3494) Tape Library Reference Codes

A tape or a tape library failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Is the operating system available and can you enter commands from the command line?

   Yes   No

   ↓   Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *iSeries Service Functions*)?

   No   Yes

   ↓   Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2301	Library device failure Library attachment facility equipment check. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2303	Library device failure Device control unit and library manager Licensed Internal Code are incompatible. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	DHALIBC DHADEVC
2306 to 2307	Library device failure Library vision failure. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2308	Library device failure Library manager equipment check. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY MANAGER HARDWARE PROBLEM"	3494
2309	Library device failure Library equipment check. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494
2310 to 2311	Library device requires operator intervention Put the library into pause mode and perform the intervention indicated on the library manager console.	
2319	Tape unit failure Use the tape unit service information to analyze the failure.	FI00851
2321	Library enclosure environmental alert was detected. Use the 3494 Tape Library Dataserver Maintenance Information and follow the procedures for analyzing a "LIBRARY PROBLEM - NO ERROR MESSAGE."	3494

Tape Library Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
3494	Library device	IBM 3494 Maintenance Information, SA37-0270
DHADEVC	3490 Control Unit Licensed Internal Code	Refer to I/O device service information
DHALIBC	3494 Library Manager Licensed Internal Code	IBM 3494 Maintenance Information, SA37-0270

(3570) Tape Unit Reference Codes

A tape or a 3570 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Is the operating system available and can you enter commands from the command line?

   Yes   No

   ↓   Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *iSeries Service Functions*)?

   No   Yes

   ↓   Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3570 is powered on.
4. Ensure that the 3570 SCSI address is set to 0.
5. Load the first tape.
6. Start a type D IPL from the system unit control panel.
7. Does the IPL complete successfully?

   No   Yes

   ↓   The problem has been corrected.

   This ends the procedure.

8. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 10.
9. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.
10. If the amber light on the 3570 indicator panel is on continuously, see the "Start" section of the 3570 service information.
11. See "SRC Address Formats" on page 846 to determine the IOP, IOA, and device address.
12. Find the unit reference code in the following table.

13. See the "Start" section of the 3570 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are not present: • Tape and DASD devices attached to an I/O processor that does not support tape and DASD devices at the same time. • A device type or model that is not given support.	UHZCNFG DHZDEV FI00130
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: 1. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable.	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9101	Fibre Channel interface error detected If the attached device is an external device, do the following before exchanging any parts: 1. Ensure that the Fibre Channel cable is correctly connected to the ports. 2. Clean the Fibre Channel connectors. 3. If there is a hub attached, verify that the hub is operational. 4. If there is a gateway device attached, refer to the gateway device service documentation for additional problem analysis procedures. 5. refer to the tape device service documentation for additonal problem analysis procedures.	FCIOA FCDEV FCCABLE
9102	Gateway device detected a SCSI interface error Use the gateway device service documentation to analyze the problem.	DHZDEV FCGATE EXTSCSI 61G8324
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	DHZDEV FI00131 05H3834 EXTSCSI 61G8324

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9201	Tape unit command timeout Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9202	Tape unit failed after Licensed Internal Code was loaded Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	DHZDEV FI00131 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	DHZDEV FI00131 FI00130
9211	Gateway device detected a bus protocol error Use the gateway device service documentation to analyze the problem.	FCGATE FCIOA DHZDEV ANYFC FCCABLE EXTSCSI 61G8324
9300	Tape unit failure	DHZDEV
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation. Refer to the 3570 Tape Unit service information to determine the failing item.	DHZDEV
9302	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9303	Gateway device failure Use the gateway device service documenation to analyze the problem.	FCGATE
9310	Licensed Internal Code for the tape unit is not correct	DHZDEV FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9320	Tape device Licensed Internal Code failure Perform the following: 1. Take a dump of the tape unit Licensed Internal Code (see the 3570 Tape Unit service information). 2. Power off the tape unit. Then power on the tape unit to resume operation. 3. Ask your next level of support for assistance.	FI00130 DHZDEV
9321	Gateway device Licensed Internal Code error Use the gateway device service documenation to analyze the problem.	FCCODE
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.	MHZTMED UHZCLN DHZDEV
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MHZTMED UHZCLN DHZDEV
9355	The data format is incorrect; the tape cannot be read The tape unit does not give support to the data format on the tape cartridge. Use a different tape cartridge.	UHZUSER MHZTMED UHZCLN DHZDEV
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHZFIXD
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 441 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	UHZUSER
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
05H3834	Interposer	IBM 3570 Tape Drive Service Guide
61G8324	Terminating plug	IBM 3570 Tape Drive Service Guide
ANYFC	Any Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
DHZDEV	Tape unit failure	IBM 3570 Tape Drive Service Guide
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
FCCABLE	Fibre Channel cable	Problem Analysis; Symbolic FRU Isolation
FCCODE	Gateway device Licensed Internal Code	Problem Analysis; Symbolic FRU Isolation
FCDEV	Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
FCGATE	Gateway device	IBM SAN Data Gateway Service Guide
FCIOA	Fibre Channel IOA	Problem Analysis; Symbolic FRU Isolation
MHZTMED	Defective removable media	Magnetic tape subsystem service information
UHZCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHZCNFG	Tape configuration detected by I/O processor; not valid	Installation
UHZUSER	Operator action required	System operation information

(3590) Tape Unit Reference Codes

A tape or a 3590 Tape Unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Is the operating system available and can you enter commands from the command line?

   Yes   No

   ↓   Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *iSeries Service Functions*)?

   No   Yes

   ↓   Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Verify that the 3590 is powered on.
4. Ensure that the 3590 SCSI address is set to 0.
5. Verify that the 3590 Online/Offline switches are set to the Online position.
6. Load the first tape.

7. Start a type D IPL from the system unit control panel.

8. Does the IPL complete successfully?

   No   **Yes**

   ↓   The problem has been corrected.

   This ends the procedure.

9. Obtain another copy of the tape. Repeat steps 6 and 7 using the new tape. If this does not correct the problem, continue with step 10.

10. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.

11. If the 3590 indicator panel shows a FRU identifier (FID) code, see the "Start" section of the 3590 service information.

12. See "SRC Address Formats" on page 846 to determine the IOP, IOA, and device address.

13. Find the unit reference code in the following table.

14. See the "Start" section of the 3590 service information.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are *not* present: • Tape and DASD devices attached to an I/O processor that does not support tape and DASD devices at the same time. • A device type or model that is not given support	UHQCNFG FI00851 FI00130
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: 1. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00131 05H3834 EXTSCSI 61G8324

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9101	Fibre Channel interface error detected If the attached device is an external device, do the following before exchanging any parts: 1. Ensure that the Fibre Channel cable is correctly connected to the ports. 2. Clean the Fibre Channel connectors. 3. If there is a hub attached, verify that the hub is operational. 4. If there is a gateway device attached, refer to the gateway device service documentation for additional problem analysis procedures. 5. refer to the tape device service documentation for additonal problem analysis procedures.	FCIOA FCDEV FCCABLE
9102	Gateway device detected a SCSI interface error Use the gateway device service documentation to analyze the problem.	FI00851 FCGATE EXTSCSI 61G8324
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9201	Tape unit command timeout Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9202	Tape unit failed after Licensed Internal Code was loaded Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that an interposer is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable between the interposer and the device is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00851 FI00131 05H3834 EXTSCSI 61G8324
9210	Illegal or unsupported tape unit response	FI00851 FI00131 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9211	Gateway device detected a bus protocol error Use the gateway device service documentation to analyze the problem.	FCGATE FCIOA FI00851 ANYFC FCCABLE EXTSCSI 61G8324
9300	Tape unit failure	FI00851
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the present operation. See the 3590 Tape Unit service information to determine the failing item.	FI00851
9302	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9303	Gateway device failure Use the gateway device service documenation to analyze the problem.	FCGATE
9310	Licensed Internal Code for the tape unit is not correct	FI00851 FI00130
9320	Tape device Licensed Internal Code failure Do the following: 1. Take a dump of the tape device Licensed Internal Code (see the 3590 Tape Unit service information). 2. Power off the tape unit. Then power on the tape unit to resume operation.	FI00130 FI00851
9321	Gateway device Licensed Internal Code error Use the gateway device service documenation to analyze the problem.	FCCODE
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred, and the tape unit determined that the tape cartridge is defective. Exchange the tape cartridge.	MHQTMED UHQCLN FI00851
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the installed tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MHQTMED UHQCLN FI00851
9355	The data format is incorrect; the tape cannot be read The tape device does not give support to the data format on the tape cartridge. Format the tape cartridge again or use a different tape cartridge. See the *3590 Tape Drive Operator's Guide* for instructions on formatting a tape cartridge.	MHQTMED UHQCLN FI00851
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UHQFIXD
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape unit again. • Perform "TU-PIP4" on page 441 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
05H3834	Interposer	IBM 3590 Tape Drive Service Guide
61G8324	Terminating plug	IBM 3590 Tape Drive Service Guide
ANYFC	Any Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
EXTSCSI	External signal cable	Problem Analysis; Symbolic FRU Isolation
FCCABLE	Fibre Channel cable	Problem Analysis; Symbolic FRU Isolation
FCCODE	Gateway device Licensed Internal Code	Problem Analysis; Symbolic FRU Isolation
FCDEV	Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
FCGATE	Gateway device	IBM SAN Data Gateway Service Guide
FCIOA	Fibre Channel IOA	Problem Analysis; Symbolic FRU Isolation
MHQTMED	Defective removable media	Magnetic tape subsystem service information
UHQCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UHQCNFG	Tape configuration detected by I/O processor; not valid	Installation

(632x, 6330) Optical Storage Unit Reference Codes

An optical storage unit failure occurred.

Notes:

1. If the system is available, use online diagnostic tests when possible.
2. Search the problem log (WRKPRB) for a recent optical storage entry that may assist in analyzing the problem. The WRKPRB entry will provide a unit reference code that can be found in the following table.
3. Use the Hardware Service Manager (HSM) verify function (via DST or SST) and verify that the unit is operating correctly.

1. If the system is available, attempt the failing operation again with an optical media that is known to be good.

   Does the operation complete successfully?

   No   Yes

   ↓   The original optical media may be defective, or the problem may be intermittent.

   Attempt the failing operation again with the original optical media to verify.

   This ends the procedure.

2. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.
3. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C002	SCSI selection or reselection timeout occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C010	Undefined sense key returned by device	FI00870
C020	Device internal configuration error	FI00870
C100	SCSI bus command error occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
C110	SCSI command timeout occurred	FI00870 FI01106 FI01112 MMVMEDA FI01140 FI01141 DEVTERM CDTRAY
C210	Unexpected device condition recovered The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
C300	Media or device error occurred Perform the following: 1. Clean the disk. 2. Attempt the failing operation again. 3. If this does not correct the problem, exchange the failing items.	MMVMEDA FI00870
C333	Incompatible media was detected Perform the following: 1. Verify that the disk has a format that is given support. 2. If the format is given support, clean the disk and attempt the failing operation again. 3. If the operation fails again with the same reference code, ask your media source for a replacement disk.	MMVMEDA FI00870
C400	Interface error detected by device	FI00870 FI01106 FI01112 FI01140 FI01141 DEVTERM CDTRAY
C402	I/O processor internal program error occurred Ask your next level of support for assistance.	FI00130
CFF2	Recovered from device not ready - Start Unit issued The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
CFF4	Internal device error occurred	FI00870
CFF6	Device recovered from error after retries The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
CFF7	Recovered device error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
CFFE	Recovered SCSI bus error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
FF3D	Recovered I/O processor error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	
FF6D	Recovered System bus error The device successfully recovered from a temporary error. No action is required. This reference code is logged for information only.	

Optical Storage Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
CDTRAY	Flex cable	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
MMVMEDA	Optical media	System operation information

(63A0) Tape Unit Reference Codes

A tape unit failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Is the operating system available and can you enter commands from the command line?

   Yes   **No**

   ↓   Go to step 3 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *iSeries Service Functions*)?

   No   **Yes**

   ↓   Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit.
4. Attempt the failing operation again.

   Does the operation complete successfully?

No	**Yes**
↓	The original data cartridge is defective. The problem has been corrected.

This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.

6. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following condition is not present: • Tape and DASD devices attached to an I/O Processor that does not support Tape and Dasd devices at the same time.	UH7CNFG FI00871 FI00130
9100	Interface error detected by I/O processor or by tape unit If the attached device is an external device, do the following before exchanging any parts: 1. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 2. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00871 FI01112 FI00872 DEVTERM
9101	Fibre Channel interface error detected If the attached device is an external device, do the following before exchanging any parts: 1. Ensure that the Fibre Channel cable is correctly connected to the ports. 2. Clean the Fibre Channel connectors. 3. If there is a hub attached, verify that the hub is operational. 4. If there is a gateway device attached, refer to the gateway device service documentation for additional problem analysis procedures. 5. refer to the tape device service documentation for additonal problem analysis procedures.	FCIOA FCDEV FCCABLE
9102	Gateway device detected a SCSI interface error Use the gateway device service documentation to analyze the problem.	FI00871 FCGATE FI00872 DEVTERM

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9200	I/O processor addressed the tape unit; no response If the attached device is an external device, do the following before exchanging any parts: 1. Ensure that the device is powered on. 2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00871 FI01112 FI00872 DEVTERM
9201	Tape unit command timeout If the attached device is an external device, do the following before exchanging any parts: 1. Ensure that the device is powered on. 2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00871 FI01112 FI00872 DEVTERM MH7TMED
9202	Tape unit failed after Licensed Internal Code was loaded If the attached device is an external device, do the following before exchanging any parts: 1. Ensure that the device is powered on. 2. If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable. 3. Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 4. Ensure that a terminating plug is attached to the device end of the SCSI cable.	FI00871 FI01112 FI00872 DEVTERM
9210	Illegal or unsupported tape unit response	FI00871 FI01112 FI00130
9211	Gateway device detected a bus protocol error Use the gateway device service documentation to analyze the problem.	FCGATE FCIOA FI00871 ANYFC FCCABLE FI00872 DEVTERM
9300	Tape unit failure	FI00871
9301	Tape device failure, redundancy lost The tape unit detected a hardware failure that does not prevent the tape unit from completing the current operation.	FI00871

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9302	Tape device failure or media error The tape unit detected a failure that may be caused by a hardware failure or a media error. Refer to the tape unit service information for possible information on diagositic tests that can be run to isolate between hardware and media failures.	MH7TMED FI00871
9303	Gateway device failure Use the gateway device service documenation to analyze the problem.	FCGATE
9310	Licensed Internal Code for the tape unit is not correct	FI00130 FI00871
9320	Tape device Licensed Internal Code failure	FI00130 FI00871
9321	Gateway device Licensed Internal Code error Use the gateway device service documenation to analyze the problem.	FCCODE
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occurred. Clean the tape unit and retry the operation. If cleaning the tape unit does not correct the problem, exchange the tape media.	MH7TMED UH7CLN FI00871
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MH7TMED UH7CLN FI00871
9355	The data format is incorrect; the tape cannot be read The tape unit has detected that the data format on the tape media is not supported. Clean the tape unit and retry the operation. If the operation continues to fail, use a different tape cartridge.	UH7USER MH7TMED UH7CLN FI00871
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information Only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UH7FIXD

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape unit was not completed. The tape unit will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 441 to reset the IOP and the tape unit. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	UH7USER
FFF6	Tape volume statistics logged (no action required)	

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
ANYFC	Any Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
FCCABLE	Fibre Channel cable	Problem Analysis; Symbolic FRU Isolation
FCCODE	Gateway device Licensed Internal Code	Problem Analysis; Symbolic FRU Isolation
FCDEV	Fibre Channel device	Problem Analysis; Symbolic FRU Isolation
FCGATE	Gateway device	IBM SAN Data Gateway Service Guide
FCIOA	Fibre Channel IOA	Problem Analysis; Symbolic FRU Isolation
MH7TMED	Defective removable media	Magnetic tape subsystem service information
UH7CLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UH7CNFG	Tape configuration detected by I/O processor; not valid	Installation
UH7USER	Operator action required	System operation information

(432x, 660x, 671x, 673x) Disk Unit Reference Codes

1. If the error is reported on the control panel, the unit reference code is characters 5 through 8 of the top 16 character line of function 11. If the error is reported on the console, the unit reference code is the 4 rightmost characters of word 1.
2. Find the unit reference code in the following table.

   If the failing item is a disk unit, go to Start Disk Service Here in "Recovery Procedures" on page 803.

432x, 660x, 671x, 673x

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.
4. The 673x is a read cache. Perform all actions required for 673x as a disk drive and logic card except where separate 673x cache instructions are provided.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
102E	Out of alternate sectors for disk storage	DISKDRV
3002	Addressed device failed to respond to selection	DISKDRV DISKTRY FI01112 BACKPLN FI01106 FI01140 FI01141 DEVTERM
3010	Disk device returned wrong response to IOP	DISKDRV DISKTRY BACKPLN FI01112 FI01141 FI01140 DEVTERM
3020	Storage subsystem configuration error If an MES is being installed, verify the configuration.	DISKDRV DISKTRY FI01106 FI01112 BACKPLN FI01141 FI01140 DEVTERM
3029	A device replacement has occurred No action required. This reference code is logged for information only.	
3100	Tape/CD or disk bus interface error occurred Perform "DU-PIP3" on page 310.	FI01112 DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3109	IOP timed out a disk command	DISKDRV FI01112 FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3110	Disk bus interface error occurred Perform "DU-PIP3" on page 310.	FI01112 DISKDRV FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM
3130	Device Licensed Internal Code The device is not supported with the level of code currently on the system. Contact your next level of support.	SVCDOCS
7000	Disk sector read error No action required. This reference code is logged for information only.	DISKDRV
7001	Temporary disk data error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	DISKDRV
7003	Device format error If the disk has not been formatted by the system, initialize and format the disk. See "Work with disk unit recovery" in the *iSeries Service Functions*.	
7004	System log entry only, no service action required	
7050	Data compression failure Contact your next level of support.	SVCDOCS
7051	Compressed device and compression IOA are not compatible The customer should perform the "Recovering From 6xxx7051 SRC" procedure in the *Backup and Recovery*, SC41-5304-05.	CMPRES1
7052	Data compression warning The customer should perform the "Recovering From 6xxx7052 SRC" procedure in the *Backup and Recovery*, SC41-5304-05.	SVCDOCS
FFF2	Disk motor problem	DISKDRV
FFF3	Disk media format bad	DISKDRV
FFF4	Disk device problem	DISKDRV FI01112
FFF5	Disk sector read error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	DISKDRV
FFF6	Disk device detected recoverable error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	DISKDRV

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF7	Temporary disk data error No action required. This reference code is logged for information only.	DISKDRV
FFF8 to FFF9	Temporary disk data error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	DISKDRV
FFFA	Temporary disk bus error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	DISKDRV FI01112 BACKPLN FI01141 FI01140 DEVTERM
FFFE	Temporary disk bus error A disk unit service action is recommended only if the Service Action Log contains an entry for this reference code. For more information about the Service Action Log, see "Hardware Service Manager" in the *iSeries Service Functions*.	DISKDRV FI01112 FI01106 DISKTRY FI01141 FI01140 BACKPLN DEVTERM

Disk Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
CMPRES1	Compressed device and compression IOA are not compatible	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Device terminator	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation

(6A59) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at characters 5 through 8 of the top 16 character line of function 11 (4 rightmost characters of word 1). These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0AD2 to 0AD3	Communications adapter card test failed	FI00718
0B25	Communications adapter card test failed	FI00719 FI00718 FI00727
0BA0, 0BAB, 0BB0, 0BD0 to 0BD1	Communications adapter card test failed	FI00719 FI00718
0BEE	I/O card Licensed Internal Code ended abnormally	FI00719 FI00718
0C10	Communications adapter card test failed	FI00719 FI00718 FI00727
0C20	Communications adapter card test failed	FI00719 FI00718
0C30	Adapter card failed modem interface test	FI00719 FI00718
0C40, 0C43	Synchronous-data-link-control send-receive test failed	FI00719 FI00718
0C50, 0C53	Binary synchronous control send-receive test failed	FI00719 FI00718
0C60, 0C63	Asynchronous send-receive test failed	FI00719 FI00718
0C70, 0C80	Communications adapter card test failed	FI00719 FI00718
0C90	Communications adapter card X.21 test failed	FI00719 FI00718
0CA1, 0CC0	Communications adapter card test failed	FI00719 FI00718
5007	Diagnostic wrap test completed; no errors detected	
5008	Diagnostic wrap test completed; error was detected	FI00719 DPAC FI00718
FFFF	User suspected communications problem.	UNAUPPR

Workstation Adapter Console Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.

2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.

3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

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Failing Item	Description	Document Description
DPAC	Communications two-port adapter cable	Problem Analysis; Symbolic FRU Isolation
UNAUPPR	User suspected communications problem.	

(7208) Tape Drive Reference Codes

An 8-mm tape drive failure occurred.

Note: For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Is the operating system available and can you enter commands from the command line?

   Yes   No

   ↓   Go to step 5 of this procedure.

2. Is OS/400 available on the system (see "Determining the Dominant Operating System" in the *iSeries Service Functions*)?

   No   Yes

   ↓   Use the online problem analysis procedures to isolate the problem. Use the WRKPRB (Work with Problem) command to determine if a recent problem was entered in the problem log, or use the VFYTAP (Verify Tape) command to run verification tests.

3. Clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit:

   • In Canada, the United States, and all other countries use part 16G8467.

4. Attempt the failing operation again.

   Does the operation complete successfully?

   No   Yes

   ↓   The original data cartridge is defective. The problem has been corrected.

          This ends the procedure.

5. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.

6. Is the failing tape unit located in a type 9427 Tape Library device?

   Yes   No

   ↓   Go to step 8.

7. Go to "(9427) Tape Unit Reference Codes" on page 167.

8. Does the label on the front of the 7208 Tape Drive show 7208-002?

   No   Yes

   ↓   See "(7208) Model 002 Tape Drive Reference Codes" on page 157 and find the unit reference code.

9. The label shows 7208-012. See "(7208) Model 012 Tape Drive Reference Codes" on page 160 and find the unit reference code.

(7208) Model 002 Tape Drive Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	Tape unit failure 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. Also see the procedure for reference code FFFF.	MLVTMED 91F0914
0002	Tape unit formatter failure 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. Also see the procedure for reference code FFFF.	91F0914 MLVTMED
0003	Tape unit servo failure 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. Also see the procedure for reference code FFFF.	91F0914 MLVTMED
0004	Tape unit motion failure 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. Also see the procedure for reference code FFFF.	MLVTMED 91F0914

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3002	I/O processor addressed the tape unit; no response The tape unit did not respond to a command sent by the IOP. 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the *7208 Model 2 8 mm Tape Drive Service Guide*, SA23-2640, to analyze the problem. 2. Switch off power to the tape unit. 3. Reseat the signal cable to the tape unit. 4. Reseat the signal cable to the IOP. 5. Switch on power to the tape unit.	91F0914 81F9128 FI00830 FI00141 91F0721 53F3861 42F7300
3005	Blank tape or BOT encountered The tape unit has found blank tape or BOT. When using a new data cartridge, the tape must first be initialized. This error can also occur when reading a tape if the tape was removed from the tape unit before writing was complete. Also see the procedure for reference code FFFF.	MLVTMED 91F0914 AJEDA00
3010	Illegal or unsupported tape unit response 1. Look at the In-use lights. If the green light is off and the yellow light is on, the tape unit is indicating an error condition. 2. Switch off power to the tape unit. 3. Switch on power to the tape unit. 4. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 5. Use a new data cartridge if saving data. Also see the procedure for reference code FFFF.	91F0914 AJEDA00
3100	IOP to tape unit interface error 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the *7208 Model 2 8 mm Tape Drive Service Guide*, SA23-2640, to analyze the problem. 2. Switch off power to the tape unit. 3. Reseat the signal cable to the tape unit. 4. Reseat the signal cable to the IOP. 5. Switch on power to the tape unit.	91F0914 FI00141 FI00830 91F0721 42F7300 53F3861 81F9128 AJEDA00
3110	Tape unit command timeout The tape unit did not complete a command sent by the IOP in the time allowed. 1. Ensure that the tape unit is powered on. If the tape unit does not become powered on, refer to the "Maintenance Analysis Procedures" in the *7208 Model 2 8 mm Tape Drive Service Guide*, SA23-2640, to analyze the problem. 2. Switch off power to the tape unit. 3. Reseat the signal cable to the tape unit. 4. Reseat the signal cable to the IOP. 5. Switch on power to the tape unit.	91F0914 FI00141 FI00830 91F0721 42F7300 53F3861 81F9128 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FF4D	IOP to tape unit interface error; logged only No action required. This reference code is logged for information only.	
FF5D	Tape unit response error; logged only No action required. This reference code is logged for information only.	
FFF6	Volume statistics; logged only No action required. This reference code is logged for information only.	
FFFE	Read data error: tape path dirty This error may be caused by a dirty recording head, poor or damaged tapes, worn or damaged data cartridges, or using a format that is not correct. 1. Switch off power to the tape unit. 2. Switch on power to the tape unit. 3. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 4. Visually inspect the data cartridge. If it is damaged, discard it. 5. Check the lifetime statistics on the system for this tape volume ID (see the *System Operation* information). If the cartridge has a history of tape errors, discard it. If the data on the tape was not written by an AS/400 system, the format may not be correct. Do not use the cleaning cartridge more than 12 times. Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).	MLVTMED 91F0914
FFFF	Write data error: tape path dirty This error may be caused by a dirty recording head, poor or damaged tapes, worn or damaged data cartridges, or using a format that is not correct. 1. Switch off power to the tape unit. 2. Switch on power to the tape unit. 3. Clean the recording head in the tape unit. Use the IBM Cleaning Cartridge Kit (part 21F8593). 4. Visually inspect the data cartridge. If it is damaged, discard it. 5. Check the lifetime statistics on the system for this tape volume ID (see the *System Operation* information). If the cartridge has a history of tape errors, discard it. If the data on the tape was not written by an AS/400 system, the format may not be correct. Do not use the cleaning cartridge more than 12 times. Each data cartridge must have a unique volume ID label. The user must assign a volume ID when the tape is initialized (INZTAP).	MLVTMED 91F0914

Model 002 Tape Drive Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
42F7300	Fan	7208 8mm Tape Drive service information
53F3861	Internal signal cable	7208 8mm Tape Drive service information
81F9128	Power supply	7208 8mm Tape Drive service information
91F0721	Terminating plug	7208 8mm Tape Drive service information
91F0914	Tape drive	7208 8mm Tape Drive service information
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
MLVTMED	Defective removable media	7208 8mm Tape Drive service information

(7208) Model 012 Tape Drive Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 436.	46G2227 ML2TMED

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
030B	Tape unit detected a read error on the tape medium Read (or write) errors may be caused by: • Poor or damaged tape • Dirty read/write heads • Damaged data cartridges • Using a data cartridge previously recorded in a format or density that is not correct • Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges) If the data on the tape was not written by an AS/400 system, the format or the density may not be correct. Get or make a new copy of the data cartridge. If you are performing a write or a save operation, initialize the tape. See the note below. If you are performing a read or a restore operation, the tape may be worn or the device that wrote the tape may be the cause of the problem. Perform "TU-PIP2" on page 436. When the system is available, perform the following: • Verify the operation of the tape drive. Use the VFYTAP system command. **Note:** When a tape is initialized, a new label is recorded at the beginning of the tape, and any data recorded previously is erased and overwritten. To initialize used tapes, use the INZTAP system command with "Check for active files" option of *NO. Use of the INZTAP "Clear" (security erase) option is not recommended. The 7208 Tape Drive performs a write operation to erase all of the tape; writing (erasing) a full-size tape takes up to 3.5 hours.	ML2TMED 46G2227 46G3934 42F7300
0311, 0316	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227 46G3934 42F7300
031C	The data format is incorrect; the tape cannot be read The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system. Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system (see the *System Operation* information).	ML2TMED 46G2227
0336	The data format is incorrect; the tape cannot be read The tape format is not known or not compatible. The data cartridge may not have been recorded on an AS/400 system. Get another copy of the data cartridge recorded in a format and density given support by the AS/400 system (see the *System Operation* information).	ML2TMED 46G2227 46G3934 42F7300
0337 to 0338, 033D	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227 46G3934 42F7300

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0395 to 0397, 039D to 039F	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03AE, 03B0	Tape unit detected a read or write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03B3 to 03B4	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
03B5	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227
0417 to 0419, 0458, 045A, 0467 to 0468, 046D, 0498 to 049A, 049C, 04A1 to 04A8, 04AB to 04AD, 04FA, 04FC to 04FD	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 436.	46G2227 ML2TMED 46G3934 42F7300
3002	I/O processor addressed the tape unit; no response The tape drive did not respond to commands from the IOP. Perform the following: 1. Ensure that the system interface cable is connected. 2. Ensure that power is on. If the above items are correct, perform the following: 1. "TU-PIP1" on page 434. 2. "TU-PIP3" on page 439.	46G2227 46G3934 FI00830 FI00141 46G2599 17G1500 42F7300
3004	Tape unit failed after Licensed Internal Code was loaded The tape drive does not respond to IOP commands after new Licensed Internal Code was transferred to the tape drive. Perform "TU-PIP4" on page 441.	46G2227
3005	Blank tape or BOT encountered The tape drive has found a blank tape or BOT. When using a new data cartridge, the tape must first be initialized. This error can also occur when reading a tape if that tape was removed from the tape drive before writing was complete. Also see the Action for reference code 030B.	ML2TMED 46G2227 AJEDA00
3010	Illegal or unsupported tape unit response The tape drive returned a response to the IOP that is illegal or is not given support. Perform the following: 1. "TU-PIP1" on page 434. 2. TU-PIP3 in "Tape Unit Problem Isolation Procedures" on page 433	46G2227 AJEDA00

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3100	Interface error detected by I/O processor or by tape unit The IOP or the device detected a permanent error on the interface to the system. Perform the following: 1. "TU-PIP1" on page 434. 2. "TU-PIP3" on page 439.	46G2227 FI00141 FI00830 46G2599 42F7300 17G1500 46G3934 AJEDA00
3110	Tape unit command timeout The tape drive did not complete a command sent by the IOP in the time allowed. Perform the following: 1. "TU-PIP1" on page 434. 2. TU-PIP2 in "Tape Unit Problem Isolation Procedures" on page 433	46G2227 FI00141 FI00830 46G2599 42F7300 17G1500 46G3934 AJEDA00
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are not present: • Tape and DASD devices attached to an I/O Processor that does not support attachment of both tape and DASD devices at the same time. • A device type or model that is not given support.	UL2CNFG 46G2227 FI00130
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device.	46G2227 FI00131 46G3934 FI00830 46G2599 17G1500
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device.	46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300
9201	Tape unit command timeout Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device.	46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300

7208

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9202	Tape unit failed after Licensed Internal Code was loaded Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device.	46G2227 46G3934 FI00830 FI00131 46G2599 17G1500 42F7300
9210	Illegal or unsupported tape unit response	46G2227 FI00130 FI00131
9300	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 436.	46G2227 ML2TMED 46G3934 42F7300
9301	Tape device failure, redundancy lost The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation. Refer to the Tape unit service information to determine the failing item.	46G2227 ML2TMED 46G3934 42F7300
9302	Tape device failure or media error The tape unit detected a failure that may be caused by a hardware failure or a media error. Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.	ML2TMED 46G2227 46G3934 42F7300
9310	Licensed Internal Code for the tape unit is not correct	46G2227 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 46G2227
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occured. Clean the tape unit and retry the operation. If cleaning the tape unit does not correct the problem, exchange the tape media.	ML2TMED 46G2227 46G3934 42F7300
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	ML2TMED UL2CLN 46G2227
9355	The data format is incorrect; the tape cannot be read The tape unit has detected that the data format on the tape media is not supported. Clean the tape unit and retry the operation. If the operation continues to fail, use a different tape cartridge.	UL2USR1 ML2TMED UL2CLN 46G2227

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more information, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information only)	
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	UL2FIXD
9900, FF09	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed. The tape drive will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 441 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	UL2WAIT
FF4D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only. When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshhold has been exceeded.	46G2227 FI00141 FI00830 46G2599 46G3934 17G1500 42F7300 AJEDA00
FF5D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only. When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshhold has been exceeded.	46G2227 46G3934 FI00830 FI00141 46G2599 17G1500 42F7300
FFF6	Tape volume statistics logged (no action required) No action required. This reference code is logged for information only.	
FFF8	Asynchronous device attached; synchronous device expected The attached device is operational and working in the asynchronous mode of data transfer. The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.	46G2227

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFFE	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227 46G3934 42F7300
FFFF	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	ML2TMED 46G2227

Model 012 Tape Drive Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
17G1500	Internal signal cable	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
42F7300	Fan	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G2227	Tape drive	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G2599	Terminating plug	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
46G3934	Power supply	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
AJEDA00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	IOP card bus error	Problem Analysis; Symbolic FRU Isolation
ML2TMED	Defective removable media	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
UL2CLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
UL2CNFG	Tape configuration detected by I/O processor; not valid	Magnetic tape subsystem operator's information
UL2USR1	Operator action required	Magnetic tape subsystem operator's information
UL2WAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

(9348) Tape Unit Reference Codes

A tape or a 9348 Tape Unit failure occurred.

Note: If the system is available, use the online diagnostic tests when possible. Use WRKPRB (the Work with Problem command) to determine if a recent problem has been entered in the problem log, or use VFYTAP (the Verify Tape command). Other helpful commands are WRKHDWRSC *STG (Work with Hardware Resources) and WRKCFGSTS *DEV *TAP (Work with Configuration Status). For tape device and IOP reset procedures, see "TU-PIP4" on page 441.

1. Verify that the 9348 Tape Unit is powered on.
2. Verify that the interface cable connections are correct for each 9348 Tape Unit.
3. Clean the tape path as described in the *9348 Tape Unit Service Information*
4. Load the first tape.
5. Start a type D IPL from the system unit control panel.

   Does the IPL complete successfully?

   No   Yes

   ↓   The problem has been corrected.

            This ends the procedure.
6. Obtain another copy of the tape. Repeat steps 4 and 5 using the new tape. If this does not correct the problem, continue with step 7.
7. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.
8. If the tape unit indicator panel shows an error condition, see the *9348 Tape Unit Service Information* and find the unit reference code.

(9427) Tape Unit Reference Codes

The tape library detected a failure.

1. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0001	Tape unit failure Refer to the 9427 8mm Tape Cartridge Library Service Guide.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
03xx	Tape unit detected a read error on the tape medium Read (or write) errors may be caused by: • Poor or damaged tape • Dirty read/write heads • Damaged data cartridges • Using a data cartridge previously recorded in a format or density that is not correct • Using the wrong data cartridge (for example, one in a different format or density from another set of data cartridges) Do the following: 1. Clean the tape unit and retry the operation. 2. If cleaning the tape unit does not correct the problem, exchange the tape media. Refer to the 9427 8mm Tape Cartridge Library Service Guide for additional information.	
04xx	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Refer to the 9427 8mm Tape Cartridge Library Service Guide.	
3xxx	Device or interface error. Refer to the 9427 8mm Tape Cartridge Library Service Guide.	
4016 to 4017	Licensed Internal Code for the tape unit is not correct	AJEDA00
9020	I/O processor detected a SCSI bus configuration error Before exchanging any parts, verify that the following conditions are not present: • Tape and DASD devices attached to an I/O Processor that does not support attachment of both tape and DASD devices at the same time. • A device type or model that is not given support.	ULYCNFG 86G9251 FI00130 86G9254
9100	Interface error detected by I/O processor or by tape unit Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are no bent or damaged pins on the SCSI cable. 3. Ensure that a terminating plug is attached to the device.	86G9251 FI00131 86G9254 EXTSCSI 86G9255 86G9274 17G1934 FI00130

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9200	I/O processor addressed the tape unit; no response Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device.	86G9251 86G9274 86G9254 FI00131 EXTSCSI 17G1934 87G1531 86G9255
9201	Tape unit command timeout Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device.	86G9251 FI00131 86G9254 EXTSCSI 17G1934 86G9255 86G9274 FI00130
9202	Tape unit failed after Licensed Internal Code was loaded Before exchanging any parts, do the following: 1. Ensure that the device is powered on. 2. Ensure that the SCSI cable between the device and the I/O Processor or I/O Adaptor is seated correctly, and that there are not bent or damaged pins on the SCSI cable. 3. Ensure that the terminating plug is attached to the device.	86G9251 86G9274 86G9254
9210	Illegal or unsupported tape unit response	86G9251 FI00130 FI00131
9300	Tape unit failure The tape drive reported a hardware error to the IOP; the amber light on the tape drive may be blinking. Perform "TU-PIP2" on page 436.	86G9251 LIBDEV MLYTMED 86G9274 86G9255
9301	Tape device failure, redundancy lost The tape device detected a hardware failure that does not prevent the tape unit from completed the current operation. Refer to the Tape unit service information to determine the failing item.	86G9251 LIBDEV MLYTMED 86G9274 86G9255

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9302	Tape device failure or media error The tape unit detected a failure that may be caused by a hardware failure or a media error. Refer to the tape unit service information for possible information on diagnostic tests that can be run to isolate between hardware and media failures.	MLYTMED 86G9251
9310	Licensed Internal Code for the tape unit is not correct	86G9251 FI00130
9320	Tape device Licensed Internal Code failure	FI00130 86G9251
9350	Tape unit detected a read or write error on tape medium A permanent read or write error occured. Clean the tape unit and retry the operation. If cleaning the tape unit does not correct the problem, exchange the tape media.	MLYTMED 86G9251
9351	Tape with excessive error rate was mounted in tape device. The tape unit detected that the mounted tape cartridge has a history of excessive read and write errors. It is recommended that you exchange the tape cartridge.	MLYTMED ULYCLN 86G9251
9355	The data format is incorrect; the tape cannot be read The tape unit has detected that the data format on the tape media is not supported. Clean the tape unit and retry the operation. If the operation continues to fail, use a different tape cartridge.	ULYUSR1 MLYTMED ULYCLN 86G9251
9500	I/O processor Licensed Internal Code error If the system is operational, take a dump of the I/O processor data. For more infomration, see the *iSeries Service Functions* information or ask your next level of support for assistance.	FI00130
9600	Equipment Check Failure on Library Device. See library device service information to resolve the error.	LIBDEV
9800 to 9803	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only.	
9810	Problem analysis has determined a part should be replaced. This reference code is used for ending Online Problem Analysis with a list of failing items. (Information only)	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
9899	Problem analysis completed, the problem has been corrected. This reference code is used for ending Online Problem Analysis when no problem was found or the problem was corrected.	ULYFIXD
9900	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed. The tape drive will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • Perform "TU-PIP4" on page 441 to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	ULYWAIT
FF09	Licensed Internal Code for tape unit was not upgraded The I/O processor loading of Licensed Internal Code (LIC) to the programmable tape drive was not completed. The tape drive will continue to operate with the previous LIC. You may do either of the following: • Wait for next IPL when the system will attempt to load the LIC for the tape drive again. • See the system service documentation to reset the IOP and the tape drive. When the IOP is reset, if the device has the wrong level of LIC, the IOP will attempt to load the new LIC.	ULYWAIT
FF4D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only. When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshhold has been exceeded.	86G9251 FI00141 EXTSCSI 17G1934 86G9274 86G9255 AJSLC01
FF5D	I/O processor successfully recovered from temporary error No action required. This reference code is logged for information only. When the system is available, display the operator messages, find message CPI946B, and press F14 to run online problem analysis to see if the error threshhold has been exceeded.	86G9251 86G9274 EXTSCSI FI00141 17G1934 86G9255
FFF6	Tape volume statistics logged (no action required) No action required. This reference code is logged for information only.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
FFF8	Asynchronous device attached; synchronous device expected The attached device is operational and working in the asynchronous mode of data tranfer. The IBM tape unit uses the synchronous mode of data transfer; if the attached device is an IBM tape unit, exchange the tape unit.	86G9251
FFFE	Tape unit detected a read error on the tape medium Perform the Action for reference code 030B.	MLYTMED 86G9251 86G9274
FFFF	Tape unit detected a write error on tape medium Perform the Action for reference code 030B.	MLYTMED 86G9251

Tape Unit Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
17G1934	Terminating plug	Magnetic tape subsystem service information
86G9251	Tape drive	7208 Model 012 5.0GB External 8mm Tape Drive Service Guide
86G9251	Tape drive	Magnetic tape subsystem service information
86G9254	Controller logic card	Magnetic tape subsystem service information
86G9255	Internal signal cable	Magnetic tape subsystem service information
86G9274	Power supply	Magnetic tape subsystem service information
87G1531	Operator Panel/LCD Assembly	Magnetic tape subsystem service information
AJSLC01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
EXTSCSI	Cable assembly	Problem Analysis; Symbolic FRU isolation
LIBDEV	Media Library Device	Magnetic tape subsystem service information
MLYTMED	Defective removable media	System operation information
ULYCLN	Tape unit needs cleaning	Magnetic tape subsystem operator's information
ULYCNFG	Tape configuration detected by I/O processor; not valid	Magnetic tape subsystem operator's information

Failing Item	Description	Document Description
ULYUSR1	Operator action required	Magnetic tape subsystem operator's information
ULYWAIT	Wait to next IPL or perform TU-PIP4	Problem Analysis

(A1xx, B1xx) Service Processor Reference Codes

If the SRC is A1xx 3xxx, see *Working with Storage Dumps* in the *iSeries Service Functions* information.

If the SRC is A1xx 8xxx, go to "Powering Off the System" on page 833.

1. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
1000, 1002, 1005	Service processor card failure	SVCPROC	
1007 to 1008	Service processor real time clock problem	SVCPROC	
100E to 100F, 1300	Service processor card failure	SVCPROC	
1360	Service processor reset was issued LIC has detected a problem with the Service processor and has reset it but has not initiated reload of the Service processor. Some system service operations have been suspended and the system should be scheduled for power down as soon as possible. Perform a system IPL. If no PTFs are available to fix this problem, send the Service processor dump in to IBM.	AJDGP01 AJDG301 SVCPROC	
1370, 1380	Service processor card failure	SVCPROC	
1381	Service processor card failure	AJDGP01 SVCPROC	
1384	Service processor card failure	SVCPROC	
1387	Service processor card failure The Licensed Internal Code could not allocate resources on the Service processor.	SVCPROC	
1400 to 1401, 1670, 1672, 1675, 1681 to 1683, 4600	Service processor card failure	SVCPROC	
4601	System Card(s) or BackPlane	SYSUNIT	
4602	Any device attached to Bus 1	BUS1	

A1xx, B1xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4604	Any device attached to Bus 1 or the Load Source IOP	IPLINTF	
4605	Problem with load source device media	LSMEDIA	
4606	Problem detected with control panel	CTLPNL	
4607	Alternate load source device (tape/optical)	ALTINTF	
4609	Service Processor Problem Isolation Procedure Perform INT-PIP24 and call your next level of support.	AJDGP01	
460A	Service processor real time clock problem The system time and date has been lost. The correct time and date must be entered on the system.	SVCPROC	
460B	Battery not working correctly	TOD	
460C	Power supply	IOPWR	
4611	System processor card failure	SVCPROC SYSUNIT	
4622	Problem detected with control panel	CTLPNL SVCPROC	
4633	SPCN to CSP interface error.	SPCNCRD SVCPROC	
4644	CSP to VPD Collector interface error. Perform SP-PIP41.	VPDCONC SVCPROC	
4645 to 4646	CSP to VPD Collector interface error.	VPDCONC SVCPROC SYSUNIT	
4647	CSP to VPD Collector interface error.	SVCPROC CTLPNL	
4648	CSP to VPD Collector interface error.	VPDCONC SVCPROC SYSUNIT	
4649	Power supply	CECPWR	
4650	System processor card failure	PROC	
4651	System processor card failure	PROC0	
4652	System processor card failure	PROC1	
4653	System processor card failure	PROC2	
4654	System processor card failure	PROC3	
4660 to 4662	Main storage failure	MSTORE	
4680	System processor card failure	HSLCTLR	
4690	Service processor LIC problem If this SRC is displayed at the control panel, then record all of the SRC data words. Perform a main storage dump using control panel function 22, and report the problem to the next level of support. If this SRC is displayed at the system console dump manager screen then save the main storage dump and report the problem to service.	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4691 to 4697	Service processor Licensed Internal Code Perform INT-PIP24.	AJDGP01	
4698	Operator/User Error	OPUSR	
4699	Service processor Licensed Internal Code Perform INT-PIP24.	AJDGP01	
469A	Service processor Licensed Internal Code Perform INT-PIP24.	AJDGP01 AJDG301	
469B	Service processor LIC problem Record all the SRC data words, attempt a main storage dump, and replace the FRUs listed if necessary.	AJDG301 BUS1	
469C	Service processor Licensed Internal Code Perform INT-PIP24, then replace the FRUs listed if necessary.	AJDGP01 BUS1	
469D	Service processor Licensed Internal Code If this SRC is displayed at the system console dump manager screen then save the main storage dump and report the LIC failure to service. If this SRC is displayed at the control panel then perform INT-PIP24.	AJDGP01	
469E	Service processor Licensed Internal Code Perform INT-PIP24.	AJDGP01 SYSUNIT SVCPROC	
469F	Service processor Licensed Internal Code Perform INT-PIP24.	AJDGP01 SVCPROC SYSUNIT	
4998	Operator/User Error	UCSUSER	
6010	Any device attached to Bus 1	BUS1	

8FF0	Information only, no service action required
	
	Service processor error log entry.
	
	If the secondary refcode is 806A, a successful download of control panel code has occured.
	
	If the secondary refcode is 8EEE, one of the following conditions may have occured.
	
	    Operation was successful but current keylock position was not in Auto or normal.
	
	    The Time-of-Day (TOD) chip had to be reset due to an invalid power-up state. TOD requests will not work successfully until a write TOD is done (CHGSYSVAL QDATE).
	
	    Timed-Power-On request has been acknowledged. Power on sequences must be set for valid months, days, hours, minutes, and seconds, for future times, and for times when the system will be powered off.		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
8FF1	System down, condition reported		

Service Processor Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	Service processor Licensed Internal Code	Service Functions; APAR or LICTR
ALTINTF	System bus	Problem Analysis; Symbolic FRU Isolation
AUSTIN0	Problem detected with MFIOP	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Back Plane Unit	Problem Analysis; Symbolic FRU Isolation
BUS1	System bus	Problem Analysis; Symbolic FRU Isolation
CECPWR	Power supply	Problem Analysis; Symbolic FRU Isolation
CLCKCRD	Clock card	Problem Analysis; Symbolic FRU Isolation
CLKCARD	Clock card	Problem Analysis; Symbolic FRU Isolation
CTLPNL	Control panel, or the interface to the Control panel	Problem Analysis; Symbolic FRU Isolation
HSLCTLR	System processor card	Problem Analysis; Symbolic FRU Isolation
IOPWR	Power supply	Problem Analysis; Symbolic FRU Isolation
IPLINTF	System bus	Problem Analysis; Symbolic FRU Isolation
LSMEDIA	Tape, DASD or Optical Media	Problem Analysis; Symbolic FRU Isolation
MSTORE	Main storage cards	Problem Analysis; Symbolic FRU Isolation
OPUSR	Operator/User Error	System Operations: Operator's Guide SC41-8082
PROC	System processor card	Problem Analysis; Symbolic FRU Isolation
PROC0	System processor card	Problem Analysis; Symbolic FRU Isolation
PROC1	System processor card	Problem Analysis; Symbolic FRU Isolation
PROC2	System processor card	Problem Analysis; Symbolic FRU Isolation
PROC3	System processor card	Problem Analysis; Symbolic FRU Isolation
SPCNCRD	SPCN card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Storage I/O adapter	Problem Analysis; Symbolic FRU Isolation
SVCPROC	Service Processor Card	Problem Analysis; Symbolic FRU Isolation
SYSUNIT	System unit	Problem Analysis; Symbolic FRU Isolation
TOD	Control Panel Battery	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
UCSPIP	Service Processor Problem Isolation Procedure	
UCSUSER	Option not valid at this time	Service Functions; Working with Storage Dumps

Failing Item	Description	Document Description
VPDCONC	The system vital product data has failed	Problem Analysis; Symbolic FRU Isolation

(A6xx) LIC Reference Codes

Use the "(B6xx) LIC Reference Codes" on page 220.

(A9xx, B9xx) Reference Codes

This section informs service representatives that all A9xx and B9xxx SRCs and their associated unit reference codes give information about the user (customer) program.

1. The service representative should have the user see "Problem Handling Tables and Procedures" in the Information Center at http://www.ibm.com/eserver/iseries/infocenter for the descriptions and actions indicated by these reference codes. For additional help, the user should contact their next level of support.

   Note: A brief description of some of the C9xx codes can be found in the *iSeries Service Functions* information (see "IPL Status SRC Sequence" under "Initial Program Load Information").

   A complete description and definition of these codes are found in the *iSeries OS/400 Diagnostic Aids* information under Unit Reference Codes. This information is used by the support representatives.

2. If a Licensed Internal Code error is suspected and the recovery action recommends an IPL, take a main storage dump to save the error conditions (see "Working with Storage Dumps" in the *iSeries Service Functions* information) **before** the customer does an IPL. Support may need the information saved in this dump.

3. Have the customer continue with the recommended recovery action.

(B003) Asynchronous Communications Reference Codes

The Asynchronous Communications detected a failure.

1. Look at characters 5 through 8 of the top 16 character line of function 11 (4 rightmost characters of word 1). These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2321	Procedure error in Licensed Internal Code	CNGTEMP
2322	Data-set-ready error on modem interface	CNGTEMP

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
2340	Data-set-ready changed to not active; for information only	FI00704 CNGTHRS FI00701 FI00719
3200	Clear-to-send state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3201	Data-set-ready state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3202	Clear-to-send state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3203	Carrier-detect state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
3204	Call not completed; error limit per 256 reached	CNGTEL GNGLINK FI00705 FI00703
3205	Call completed with error; error limit per 256 reached	CNGTHRS
3206	Data-line-occupied error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702
3207	Abandon-call-retry error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702 CNGTEL
3208	Present-next-digit error; error limit per 256 reached	FI00703 CNGTHRS FI00702 FI00719
3209	Distant-station-connected error; error limit per 256 reached	FI00703 CNGTHRS GNGLINK FI00702 CNGTEL
320B	Data-set-ready state changed; error limit per 256 reached	FI00704 CNGTHRS FI00701 FI00719
320C	Incorrect number dialed; error limit per 256 reached	CNGTEL CNGTHRS
4200	Break character received; error limit per 256 reached	GNGLINK CNGTHRS

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4202	Received storage overrun; error limit per 256 reached	FI00730 CNGTHRS
4203	Incorrect stop bit; error limit per 256 reached	GNGLINK CNGLBPS CNGTHRS
4204	Receive-time-out error; error limit per 256 reached	CNGTHRS GNGLINK
4205	Number of characters discarded; error limit per 256 reached	GNGLINK CNGLBPS CNGLOAD CNGTHRS
4206	Procedure error in Licensed Internal Code	FI00730 AJDG301
4209	Wrong data received; error limit per 256 reached	GNGLINK CNGTHRS
4220	Port already in use	AJDG301 FI00719 CNGSLPT
4240	Port not installed	AJDG301 FI00719 CNGSLPT
4340	Automatic call unit port is not installed	AJDG301 CNGASPT FI00719 FI00702
4376	Automatic call unit already in use	AJDG301 GNGRESC CNGASPT
4502	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4503	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGDTRT
4504	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGASPT CNGSLPT
4505 to 4506	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGASPT FI00730 CNGSLPT
4507	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGSTOP
4508	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4509	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGTMOD FI00730
450A	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGCTYP

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
450B to 450C	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
450D	Wrong configuration value sent by Licensed Internal Code	CNGPRTY CNGBCHR FI00730 AJDG301
450E	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730 CNGMCFL
4549	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
4590	Wrong number specified in controller description	CNGTEL FI00703 FI00701 CNGCLBR FI00719
4592	No number specified in controller description	AJDG301 CNGTEL
4594	Wrong number specified in controller description	CNGTEL FI00730 AJDG301 CNGCLBR
5410	Switched line already in use	FI00704 CNGCMOD FI00701 FI00719
5472	Data-line-occupied error at time of starting	FI00703 GNGRESC FI00719 FI00702
5474	Automatic call unit line connection error	FI00702 FI00703 FI00719 GNGLINK
5476	Present-next-digit error	FI00702 FI00703 FI00719
5501	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5502	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGTMOD FI00730
5503	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGCMOD FI00730
5510	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGECHO FI00730
5511 to 5512	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5513	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGEORT FI00730
5514	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5515	Wrong configuration value sent by Licensed Internal Code	AJDG301 CNGFLOC FI00730
5549	Wrong configuration value sent by Licensed Internal Code	AJDG301 FI00730
5590	Wrong length for number dialed	AJDG301
5630	Automatic call unit distant-station-connected time out	FI00700 GNGLINK CNGRMTA FI00701 FI00719
5632	Automatic call unit had data-set-ready time out	FI00700 CNGTEL FI00703 CNGDRTY CNGRMTA FI00701 FI00719 GNGLINK
5684	Time-out on call-clear-request	FI00704 FI00701 AJDG301 FI00719
5886	Automatic call unit line connection error	FI00704 FI00719 FI00701
5A18	Clear-to-send signal failed to drop on modem interface	FI00704 FI00701 FI00719
5A1C	Clear-to-send signal dropped on modem interface	GNGLINK CNGCTSV FI00704 FI00701 FI00719
5A20	Clear-to-send not active on modem interface	GNGLINK CNGCTSV FI00704 FI00701 FI00719
5A24	Carrier-detect dropped on modem interface	FI00701 FI00704 GNGLINK FI00719
5A54	Time-out; data-set-ready did not drop	FI00704 CNGDSRT FI00701 FI00719

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5A58	Time-out; data-set-ready not received	FI00701 FI00704 FI00719 AJDG301
5C68	Procedure error in Licensed Internal Code	AJDG301 FI00730
5E00	Wrong or no external communications cable installed	FI00701 CNGASPT CNGSLPT FI00719
5E01	Call received during dialing procedure	GNGRESC FI00704 FI00701 FI00719
6210	Resource or storage not available	CNGMAXI FI00730
6212, 6214	Communications controller error	FI00730 FI00718
6288	Port not operational	FI00719 AJDG301 CNGSLPT
6320	Abandon-call-retry	FI00700 CNGTEL FI00703 FI00719 FI00702
6322	Abandon-call-retry; not all numbers dialed	CNGTEL FI00703 FI00702 FI00719 FI00730
6870	Automatic call unit power turned off	FI00703 FI00702 FI00719
6890	Data-set-ready dropped on modem interface No action is required if Operations Console is attached.	GNGLINK FI00701 FI00704 FI00719
6C05	I/O card Licensed Internal Code error	FI00730 AJDG301
6C0A	Hardware detected failure	FI00719 FI00718
7200	Communications Configuration	CNGSLPT
7210	Resource or storage not available	CNGMAXI FI00730
7212	Procedure error in Licensed Internal Code	AJDG301 FI00730
7C00	Asynchronous server program ended abnormally	FI00730
7C02	Wrong command sent by Licensed Internal Code	FI00730

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7C03	Resource or storage not available	CNGLOAD FI00730 CNGDTRT CNGECHO CNGEORT CNGPRTY
7C04	Wrong internal routing information	FI00730
7C05, 7C09	Error in I/O card Licensed Internal Code	FI00730
8011	IOP activation failed. Modem Country ID parameter in Network Attributes is not set. Use the CHGNETA command to set MDMCNTRYID value to your country ID.	CNGCONF
8013	IOP activation failed. Modem Country ID parameter in Network Attributes is not valid for this adapter. Use the CHGNETA command to change the MDMCNTRYID value to your country ID.	CNGCONF
8020	System log entry only, no service action required	
FFFF	User suspected communications problem.	UNGUPPR

Asynchronous Communications Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
CNGASPT	ACRSRCNAME value in CRTLINASC command	Communications Configuration
CNGBCHR	BITSCHAR value in CRTLINASC command	Communications Configuration
CNGCLBR	CALLNBR value in CRTLINASC command	Communications Configuration
CNGCMOD	CNN value in CRTLINASC command	Communications Configuration
CNGCTSV	CTSTMR value in CRTLINASC command	Communications Configuration
CNGCTYP	AUTOANS, AUTODIAL, DIALCMD, SWTCNN, CNN in CRTLINASC	Communications Configuration
CNGDRTY	DIALRTY value in CRTCTLASC command	Communications Configuration
CNGDSRT	DSRDRPTMR value in the CRTLINASC command	Communications Configuration
CNGDTRT	LINESPEED value in CRTLINASC command	Communications Configuration
CNGECHO	ECHO value in CRTLINASC command	Communications Configuration
CNGEORT	EORTBL value in CRTLINASC command	Communications Configuration
CNGFLOC	FLOWCNTL value in CRTLINASC command	Communications Configuration
CNGLBPS	LINESPEED, BITSCHAR, PARITY, STOPBITS values in CRTLINASC	Communications Configuration

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Failing Item	Description	Document Description
CNGLOAD	System processor workload heavy	Communications Configuration
CNGMAXI	MAXBUFFER value in CRTLINASC command	Communications Configuration
CNGMCFL	DUPLEX, CNN, MODEMRATE values in CRTLINASC command	Communications Configuration
CNGPRTY	PARITY value in CRTLINASC command	Communications Configuration
CNGRMTA	RMTANSTMR value in CRTLINASC command	Communications Configuration
CNGSLPT	RSRCNAME value in CRTLINASC command	Communications Configuration
CNGSTOP	STOPBITS value in CRTLINASC command	Communications Configuration
CNGTEL	CNNNBR value in CRTCTLASC command	Communications Configuration
CNGTEMP	No failure found	Communications Configuration
CNGTHRS	THRESHOLD value in CRTLINASC command	Communications Configuration
CNGTMOD	DUPLEX, ECHO, FLOWCNTL value in CRTLINASC command	Communications Configuration
GNGLINK	External devices or network	
GNGRESC	Line or automatic call unit already in use	
UNGUPPR	User suspected communications problem.	

(B006) Common Licensed Internal Code Reference Codes

The common Licensed Internal Code detected a failure.

1. Look at the 4 rightmost characters of the Data display for word 1. These 4 characters are the unit reference code.

2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.

2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.

3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1201	I/O processor resource not available A deactivation failed to get a resource controlled by Licensed Internal Code.	AJEQU00 AJDG301
1202	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	AJEQU00 AJDG301 FI00131
1203	I/O processor resource not available A resource needed to perform a requested function is not available in the Licensed Internal Code.	AJEQU00 AJDG301
1204	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code has recovered from a condition that was not expected.	AJEQU00 AJDG301 FI00131

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1205 to 1206	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJEQU00 FI00131 FI00132
1207	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	AJEQU00 AJDG301
1208	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	AJEQU00 AJDG301 FI00131
1209	I/O processor was not ready for interrupt that occurred	AJEQU00 FI00131
1210	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
1211	System bus error	FI00131 ANYBUS AJEQU00 AJDG301
1212	A permanent I/O processor failure occurred	FI00131 AJEQU00
1213	System bus error	AJDG301 AJEQU00 FI00131
1214 to 1215	I/O processor card or Licensed Internal Code error	FI00131 AJEQU00
1301	I/O processor resource not available An activation or deactivation failed to get a resource controlled by Licensed Internal Code.	CDAWKLD AJDGP01 AJDG301
1302	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	AJDGP01 AJDG301 FI00131 FI00132
1303	I/O processor resource not available A resource needed to perform a requested function is not available in the Licensed Internal Code.	IOACNFG AJDGP01 AJDG301
1304	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code has recovered from an unexpected condition.	AJDGP01 AJDG301 FI00131 FI00132
1305 to 1306	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	AJDGP01 FI00131 FI00132 BACKPLN
1307	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	AJDGP01 AJDG301 IOACNFG FI00132

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1308	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	AJDGP01 AJDG301 FI00131
1309	I/O processor was not ready for interrupt that occurred	AJDGP01 FI00131 FI00132 FI01117
1310	I/O processor resource not available The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	
1311	System bus error	FI00131 ANYBUS AJDGP01 AJDG301
1312	A permanent I/O processor failure occurred	FI00131 AJDGP01
1313	System bus error	AJDG301 AJDGP01 FI00131
1316	I/O processor card or Licensed Internal Code error	AJDGP01 FI00132 FI00131
1317	I/O processor card error Display the Service Action Log entry for this SRC. If the Failing Item indicates IOP, then replace the IOP. If the Failing Item indicates SVCDOCS, then do NOT replace the IOP. This is a recoverable error. Perform the following: 1. If the I/O Processor is not operable and disk units are attached, use Hardware Service Manager to re-IPL the IOP. Other resources attached to the IOP may then need to be Varied On. 2. If disk units are not attached, perform the VRYCFG RESET(*YES) command to reset the IOP and Vary On attached resources.	SVCDOCS
1318	I/O processor card error	FI00131
1403	Service processor Licensed Internal Code error A resource needed to perform a requested function is not available in the Licensed Internal Code.	AJDGP01 SVCPROC
1404	Service processor Licensed Internal Code error The Licensed Internal Code has recovered from an unexpected condition.	AJDGP01 SVCPROC
1405	Service processor Licensed Internal Code error A recoverable microcode condition occurred on the Service processor.	AJDGP01 SVCPROC
1406	Service processor Licensed Internal Code failed A microprocessor exception occurred on the Service processor.	AJDGP01 SVCPROC AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1407	Service processor Licensed Internal Code failed The Licensed Internal Code could not allocate resources on the Service processor.	AJDGP01 SVCPROC AJDG301
1408	Service processor Licensed Internal Code failed	AJDGP01 AJDG301 SVCPROC
1409	Service processor Licensed Internal Code failed The Service processor was not ready for an interrupt that occurred.	AJDGP01 SVCPROC
1A01	I/O processor resource not available A deactivation failed to get a resource controlled by Licensed Internal Code.	CDAWKLD FI00130 AJDG301
1A02	Not valid condition in I/O Processor Licensed Internal Code An error in an activation or deactivation occurred.	FI00130 FI00131 FI00132
1A03	I/O processor resource not available A resource that is needed to perform a requested function is not available in the Licensed Internal Code.	FI00130 AJDG301 CDAWKLD
1A04	Recovered from condition in Licensed Internal Code. The Licensed Internal Code has recovered from a condition that was not expected.	FI00130 AJDG301 FI00131 FI00132
1A05 to 1A06	I/O processor card or Licensed Internal Code error A microprocessor exception occurred on the I/O processor.	FI00130 FI00131 FI00132
1A07	I/O processor resource not available The Licensed Internal Code could not allocate memory resources on the I/O processor card.	CDAWKLD FI00132 FI00130 AJDG301
1A08	Not valid condition in I/O Processor Licensed Internal Code The Licensed Internal Code found a condition that should not have occurred.	FI00130 FI00131 FI00132
1A09	Threshold overflow The I/O processor card has detected a threshold of recoverable error conditions. The errors are either wrong interruptions or memory error corrections. If in communications, the line is still running. **Note:** If a large number of these errors occur during a short time, they may be caused by an electrically noisy environment, a defective communications I/O processor card or modem, or a communications I/O processor code problem.	FI00131 FI00132 FI01117 FI00130
1A10	Error reported to system The I/O processor error log is being filled faster than the errors are being reported to the system. Check other errors reported to the system and correct them.	

Common Licensed Internal Code Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
AJEQU00	I/O processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYBUS	System bus	Problem Analysis; Symbolic FRU Isolation
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
CDAWKLD	Too many communications lines in use	
IOACNFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
SVCPROC	Service Processor Card	Problem Analysis; Symbolic FRU Isolation

(B070) Reference Codes

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0000	Device no response time-out; temporary error	FI00601 FI00602 FI00610

0001	WS IOP detected error when transmitting data
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	        1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	        2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU7777
		GAU8888
		FI00610
		FI00615

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item

0003	WS IOP detected parity error from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures in "Intermittent Problem Isolation Procedures" on page 313:
	        1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	        2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU7777
		FI00610

0004	Device detected parity error from WS IOP
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	        1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	        2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU7777
		FI00610

0005	WS IOP detected error when transmitting data
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	        1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	        2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU8888
		FI00610
		FI00615

0006	WS IOP detected wrong data from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	        1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	        2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00601
		FI00602
		GAU8888
		FI00610

0007	WS IOP detected wrong address from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	        1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	        2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00601
		GAU8888
		GAU7777
		FI00610

0008	WS IOP detected device power turned off, and then on Perform "TWSC-PIP1" on page 453.	GAUEEEE FI00601

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0009	WS IOP detected wrong device response to start command Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0020	Device detected wrong command or device ID from WS IOP Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0021	Device detected not valid value from WS IOP Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0022	Device detected storage or data overrun Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0023	Device detected null or attribute exception error Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0024	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0025	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0026	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 453.	GAU9999 FI00610
0049	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0082	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 453.	FI00601
0090	WS IOP detected no status change from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0091	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0100	Device no response time-out; temporary error	FI00601 FI00602 FI00610

0101	WS IOP detected error when transmitting data
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	   1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	   2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU7777
		GAU8888
		FI00610
		FI00615

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item

0103	WS IOP detected parity error from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	            1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	            2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU7777
		FI00610

0104	Device detected parity error from WS IOP
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	            1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	            2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU7777
		FI00610

0105	WS IOP detected error when transmitting data
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	            1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	            2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00601
		GAU8888
		FI00610
		FI00615

0106	WS IOP detected wrong data from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	            1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	            2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00601
		FI00602
		GAU8888
		FI00610

0107	WS IOP detected wrong address from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	            1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	            2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00601
		GAU8888
		GAU7777
		FI00610

0108	WS IOP detected device power turned off, and then on Perform "TWSC-PIP1" on page 453.	GAUEEEE FI00601

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0109	WS IOP detected wrong device response to start command Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0111	WS IOP detected wrong keyboard scan code from display Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0120	Device detected wrong command or device ID from WS IOP Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0121	Device detected not valid value from WS IOP Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0122	Device detected storage or data overrun Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0123	Device detected null or attribute exception error Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0124	Device detected wrong start command from WS IOP Perform "TWSC-PIP1" on page 453.	FI00601 AJLYD01 FI00610
0125	WS IOP detected wrong exception response from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0126	WS IOP detected not valid pass-through command Perform "TWSC-PIP1" on page 453.	GAU9999 FI00610
0149	WS IOP detected wrong request or response from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0170	WS IOP detected error downloading printer definition table	AJDG301 FI00601
0171	WS IOP detected error downloading printer definition table	FI00601 AJLYD01
0172	WS IOP detected error downloading printer definition table	CAUPDT AJDG301 FI00601
0173	WS IOP detected error downloading printer definition table	CAUPDT FI00601
0174	WS IOP detected error unloading printer definition table	FI00601 AJLYD01
0175	WS IOP detected device configuration error	FI00601 AJLYD01
0176 to 0177	WS IOP detected error downloading LIC to device	GAUDMCC FI00601
0181	Wrong magnetic stripe reader response Perform "TWSC-PIP1" on page 453.	FI00605 MAUFFFF FI00601 FI00610
0182	WS IOP detected wrong device type from device Perform "TWSC-PIP1" on page 453.	FI00601

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0183	WS IOP detected wrong display size value Perform "TWSC-PIP1" on page 453.	FI00601
0184	WS IOP detected wrong keyboard identification Verify that the correct keyboard is attached correctly to the workstation. If the correct keyboard is attached correctly to the workstation, perform "TWSC-PIP1" on page 453.	FI00601
0189	Wrong magnetic stripe reader or light pen status Perform "TWSC-PIP1" on page 453.	FI00601 FI00605 FI00607 FI00610

0190	WS IOP detected no status change from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	          1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	          2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00601
		FI00610
		GAU7777

0191	WS IOP detected busy time-out from device Perform "TWSC-PIP1" on page 453.	FI00601 FI00610
0200	Device no response time-out; temporary error	FI00604 FI00602 FI00610

0201	WS IOP detected error when transmitting data
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	          1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	          2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00604
		GAU7777
		GAU8888
		FI00610
		FI00615

0203	WS IOP detected parity error from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	          1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	          2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00604
		GAU7777
		FI00610

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item

0204	Device detected parity error from WS IOP
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	      1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	      2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00604
		GAU7777
		FI00610

0205	WS IOP detected error when transmitting data
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	      1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	      2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00602
		FI00604
		GAU7777
		FI00610
		FI00615

0206	WS IOP detected wrong data from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	      1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	      2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00604
		FI00602
		GAU8888
		FI00610

0207	WS IOP detected wrong address from device
	
	Is the problem intermittent?
	
	No **Yes**
	
	↓ Perform the following procedures:
	      1. "INT-PIP5 External Noise on Twinaxial Cables" on page 315
	      2. "INT-PIP14 Station Protectors" on page 320
	
	Perform "TWSC-PIP1" on page 453.
		FI00604
		GAU8888
		GAU7777
		FI00610

0208	WS IOP detected device power turned off, and then on	GAUEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 FI00610
0210	Printer detected equipment error	FI00604
0211	Printer detected equipment error	FI00604 AJLYD01 FI00610
0212	Printer detected equipment error	FI00604
0220	Device detected wrong command or device ID from WS IOP	FI00604 AJLYD01 FI00610

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0221	Device detected not valid value from WS IOP	FI00604 AJLYD01 FI00610
0222	Device detected storage or data overrun	FI00604 AJLYD01 FI00610
0223	WS IOP detected start command to printer was lost	FI00604 FI00602 FI00610
0224	Device detected wrong start command from WS IOP	FI00604 AJLYD01 FI00610
0225	WS IOP detected wrong exception response from device	FI00604 FI00610
0230 to 0239, 0240 to 0248	Printer detected equipment error	FI00604
0249	WS IOP detected wrong request or response from device	FI00604 FI00610
0290	WS IOP detected no status change from device	FI00604 FI00610
0291	WS IOP detected busy time-out from device	FI00604 FI00610
A000	Too many devices active on the workstation IOP This error occurs if you attempted to activate more workstations than allowed. Switch off power to (or remove) one or more of the display stations (except for the console) that are attached to this workstation I/O processor. Perform an initial program load (IPL) from the control panel to correct the problem. Refer to the local workstation diagrams for the location of workstations if necessary.	GAUBBBB
B000	WS IOP fails to report part, model and serial number Perform "TWSC-PIP1" on page 453.	FI00610
C000	WS IOP error not known	AJLYD01 FI00610
D000	Work Station IOA start-up test error	FI00610
D010	WS IOP storage failure corrected Perform "TWSC-PIP1" on page 453.	FI00610
D011	WS IOP card storage failure	FI00610
D021	WS IOP detected errors on all cables	FI00602 FI00601 FI00610 FI00615
D022	WS IOP parity errors detected on all cables	FI00602 FI00601 FI00610 FI00615

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
D023	WS IOP detected errors on some, but not all cables Perform "TWSC-PIP1" on page 453.	FI00602 FI00601 FI00610
E000	WS IOP or IOA error during working operation	AJLYD01 FI00610
F000	WS IOP or IOA operating system program error	AJLYD01

Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDG301	Licensed program	Service Functions; APAR or LICTR
AJDGP01	Licensed Internal Code	Service Functions; APAR or LICTR
AJLYD01	Work Station IOP or IOA system Licensed Internal Code	Service Functions; APAR or LICTR
CAUPDT	Printer definition table	Communications Configuration
GAU7777	Electrical interference	
GAU8888	Other work station on port is failing	
GAU9999	Error occurred with pass-through command	
GAUBBBB	Too many work stations are active on the workstation IOP	
GAUDMCC	Device Licensed Internal Code change	
GAUEEEE	Active device turned off	
MAUFFFF	Magnetic stripe	Refer to I/O device service information
UAUFF00	User believes there is a problem	

(B075) Workstation Adapter Console Reference Codes

The workstation adapter console detected a failure.

1. Look at characters 5 through 8 of the top 16 character line of function 11 (4 rightmost characters of word 1). These 4 characters are the unit reference code.
2. Find the unit reference code in the following table.

Notes:

1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0101	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 465.	FI00601 GXC7777 FI00631 FI00730
0103	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 465.	FI00601 GXC7777 FI00631 FI00730
0104	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 465.	FI00601 GXC7777 FI00631 FI00730
0105	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 465.	FI00601 GXC7777 FI00631 FI00730
0106	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 465.	FI00601 FI00631 GXC7777 FI00730
0107	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 465.	FI00601 GXC7777 FI00730
0108	WS IOP detected device power turned off, and then on Perform "WSAC-PIP1" on page 465.	GXCEEEE FI00601
0109	WS IOP detected wrong device response to start command Perform "WSAC-PIP1" on page 465.	FI00601 FI00615
0111	WS IOP detected wrong keyboard scan code from display Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0120	Device detected wrong command or device ID from WS IOP Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0121	Device detected not valid value from WS IOP Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0122	Device detected storage or data overrun Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0123	Device detected null or attribute exception error Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0124	Device detected wrong start command from WS IOP Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0125	WS IOP detected wrong exception response from device Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0126	WS IOP detected not valid pass-through command Perform "WSAC-PIP1" on page 465.	GXC9999 FI00730

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
0149	WS IOP detected wrong request or response from device Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0190	WS IOP detected no status change from device Perform "WSAC-PIP1" on page 465.	FI00601 GXC7777 FI00730
0191	WS IOP detected busy time-out from device Perform "WSAC-PIP1" on page 465.	FI00601 FI00730
0201	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 465.	FI00604 GXC7777 FI00631 FI00730
0203	WS IOP detected parity error from device Perform "WSAC-PIP1" on page 465.	FI00604 GXC7777 FI00631 FI00730
0204	Device detected parity error from WS IOP Perform "WSAC-PIP1" on page 465.	FI00604 GXC7777 FI00631 FI00730
0205	WS IOP detected error when transmitting data Perform "WSAC-PIP1" on page 465.	FI00604 GXC7777 FI00631 FI00730
0206	WS IOP detected wrong data from device Perform "WSAC-PIP1" on page 465.	FI00604 FI00631 FI00730
0207	WS IOP detected wrong address from device Perform "WSAC-PIP1" on page 465.	FI00604 GXC7777 FI00730
0208	WS IOP detected device power turned off, and then on	GXCEEEE FI00604
0209	WS IOP detected wrong device response to start command	FI00604 FI00730
0211	Printer detected equipment error	FI00604 FI00730
0221	Device detected not valid value from WS IOP	FI00604 FI00730
0224	Device detected wrong start command from WS IOP	FI00604 FI00730
0225	WS IOP detected wrong exception response from device	FI00604 FI00730
0290	WS IOP detected no status change from device	FI00604 FI00730
0291	WS IOP detected busy time-out from device	FI00604 FI00730
5000	Wrong command sent by Licensed Internal Code	AJDG301
5001	Procedure error in Licensed Internal Code	AJDG301

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5002	Procedure error in Licensed Internal Code Procedure error in machine instructions	CXCTEMP AJDG301
5006	Procedure error in Licensed Internal Code	AJDG301
5007	Procedure error in Licensed Internal Code	AJDG301 CXCMSTA
5009	Incorrect command value sent by Licensed Internal Code	AJDG301
500A	Procedure error in Licensed Internal Code	AJDG301
500D	Incorrect command value sent by Licensed Internal Code	AJDG301 CXCMAXI
5022	Procedure error in Licensed Internal Code	AJDG301
5206	Communications controller storage not available	CXCBUSY
56EA	Clear-to-send signal dropped on modem interface	GXCLINK FI00704 CXCCTSV FI00719 FI00701
56ED	Data-set-ready turn-on time-out on modem interface	FI00701 FI00704 FI00719 AJLAG01
56F1	Data-set-ready dropped on modem interface	FI00704 FI00701 GXCLINK FI00719
5710	Nonproductive receive time-out while receiving from remote	CXCNPRT FI00700 FI00705 FI00704 GXCLINK FI00701 FI00719
5712	No data received from remote equipment; time-out	AJLAG01 CXCENCD CXCINAT GXCLINK FI00704 FI00705 FI00700 CXCSTAD FI00701 CXCDTAR FI00719 CXCMRTY

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5715	Remote equipment did not respond causing an idle-time-out	GXCLINK CXCRPTO FI00701 FI00704 CXCMRTY FI00705 CXCENCD FI00700 CXCDTAR FI00719
5718	Retry limit reached for sending frames to remote equipment	GXCLINK FI00705 FI00704 FI00700 CXCMRTY FI00719 FI00701
5719	Retry limit reached for sending frames to remote equipment	FI00700
5720	Retry limit reached for sending poll frame to remote	FI00700 CXCMODU
5721	Could not send frame to remote equipment; local problem	FI00704 CXCDTAR FI00701 FI00719 FI00730
5722	Wrong command value sent by OS/400 licensed program	AJLAG01 CXCSTAD
A000	Too many devices active on the workstation IOP	GXCBBBB
B000	WS IOP fails to report part, model and serial number Perform "WSAC-PIP1" on page 465.	FI00615
C000, D000	WS IOP error not known	AJLAG01
D001	Wrong or no external communications cable installed	FI00631 AJLAG01
F003	WS IOA buffer utilization threshold exceeded temporarily	AJLAG01
FFFF	User believes there is a problem Reference code FFFF is assigned by the ANZPRB (Analyze Problems) for user-detected errors. Run ANZPRB again if the problem still exists or look in the problem log (WRKPRB) for possible failing FRUs.	UXCFF00

Workstation Adapter Console Failing Items

Notes:

1. To determine the failing items, go to "Failing Items" on page 466.
2. To determine the associated part numbers, go to "Type, Model, and Part Number list" on page 797.
3. To determine the parts associated with symbolic FRUs, such as "ANYBUS", or "DEVTERM", go to "Symbolic FRUs" on page 482.

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJLAG01	I/O adapter Licensed Internal Code	Service Functions; APAR or LICTR
CXCBUSY	Too many communications lines in use	Communications Configuration
CXCCONF	Configuration or OS/400 licensed program	Communications Configuration
CXCCPTO	CNNPOLLTMR value in CRTLINSDLC command	Communications Configuration
CXCCTSV	CTSTMR value in CRTLINSDLC command	Communications Configuration
CXCDTAR	LINESPEED value in CRTLINSDLC command	Communications Configuration
CXCENCD	NRZI value in CRTLINSDLC command	Communications Configuration
CXCINAT	INACTTMR value in CRTLINSDLC command	Communications Configuration
CXCMAXI	MAXFRAME value in CRTLINSDLC command	Communications Configuration
CXCMODU	MODULUS value in CRTLINSDLC command	Communications Configuration
CXCMRTY	FRAMERTY value in CRTLINSDLC command	Communications Configuration
CXCMSTA	MAXCTL value in CRTLINSDLC command	Communications Configuration
CXCNPRT	NPRDRCVTMR value in CRTLINSDLC command	Communications Configuration
CXCRPTO	IDLTMR value in CRTLINSDLC command	Communications Configuration
CXCSNDT	SHMNODE value in CRTLINSDLC command	Communications Configuration
CXCSTAD	STNADR value in CRTCTL_____command	Communications Configuration
CXCTEMP	No failure found	Communications Configuration
GXC7777	Electrical interference	
GXC8888	Other work station on port is failing	
GXC9999	Error occurred with pass-through command	
GXCBBBB	Too many work stations are active on the workstation IOP	
GXCEEEE	Active device turned off	
GXCLINK	Communications network equipment	
UXCFF00	User believes there is a problem	

(B2xx) Logical Partition Reference Codes

The code that logically partitions the system detected an error in the logical partition. These reference codes are posted in the *Partition Status* screens under the SST/DST *"Work with system partitions"* option.

1. Characters 3 and 4 of word 1 are the partition ID of the logical partition with the problem.
2. Find the unit reference code in the following table.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1210	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Look in the Primary partition's Service Action Log for a B6005090 during the secondary partition IPL. Use that SRC and go to "Chapter 2. Unit Reference Codes" on page 59. If you do not find a B6005090 in the Service Action Log of the Primary partition then look for any SRC which was logged during the IPL of the Primary partition. Search the Service Action Log first and if you do not find an SRC there then search the Product Activity Log. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.	FI00580
1220	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Initiate a Primary partition main storage dump then contact your next level of support.	FI00099
1230	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. See the *iSeries Service Functions* information. This is a partitioning configuration problem. The partition is lacking the necessary resources to IPL. Refer the customer to their software support.	FI00099 LPARCFG
1250	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. The primary partition's IPL mode does not allow the secondary partition to IPL in the mode the secondary partition attempted to IPL in. If the primary partition is IPL'd in 'C' mode then secondary partitions can only IPL in 'C' mode. Other modes are not allowed. IPL the primary partition in either 'A' mode or 'B'. Then retry the IPL of the secondary partition.	LPARCFG
1260	A problem occurred during the IPL of a secondary partition The secondary partition identified in the xx field of the B2xx SRC could not IPL at the Timed Power On setting because the IPL mode of the secondary partition was not set to Automatic or Normal. Go into the "Work With System Partitions" option of SST/DST and reset the IPL mode to Normal/Automatic, then re-IPL the secondary.	LPARSUP
1270	A problem occurred during the IPL of a secondary partition The guest partition identified in the xx field of the B2xx SRC could not IPL because the Primary partition was not in a full paging environment. IPL the Primary partition past the Storage Management full paging IPL step. Re-IPL the guest partition.	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
1310	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. No alternate (D-mode) IPL IOP was selected. The IPL will attempt to continue, but there may not be enough information to find the correct D-mode load source. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Have the customer configure an alternate IPL IOP for the secondary partition. Then retry the secondary partition IPL.	LPARCFG
1320	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. No default load source IOP was selected for an A/B-mode IPL. The IPL will attempt to continue, but there may not be enough information to find the correct load source. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Have the customer configure a load source IOP for the secondary partition. Then retry the secondary partition IPL.	LPARCFG
3110	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Contact your next level of support.	LPARSUP
3113	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Look in the Service Action Log of the Primary partition for B600xxxx SRCs that were logged when the secondary partition was IPLing. Correct the B600xxxx problem, then retry the secondary partition IPL. If there are no B600xxxx SRCs in the Service Action Log of the Primary partition from the secondary partition's IPL then contact your next level of support.	LPARSUP
3114	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Look in the Service Action Log of the Primary partition for B600xxxx SRCs with the same bus/board/card numbers identified in the B2xx xxxx SRC words. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59. The B2xx xxxx SRC Format is Word 1: B2xx3114, Word 3: Bus, Word 4: Board, Word 5: Card.	FI00096
3120	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Retry count exceeded. Contact your next level of support.	LPARSUP

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
3123	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Due to the multi-adapter bridge configuration the IOA with the load source device for the secondary partition does not belong to the IOP it was assigned to when the secondary partition was configured. Contact your next level of support.	LPARSUP
3125	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information on logical partitions. See the *iSeries Service Functions* information. Primary partition main store utilization problem. The Primary partition code could not obtain a segment of main storage within the Primary partition's main store to use for managing the creation of a secondary partition.	LPARCFG
3128	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. An unexpected failure return code was returned when attempting to query the IOA slots that are assigned to an IOP.	FI00099
3130	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. If word 3 is zero, then this SRC is informational and can be ignored. Otherwise there is a problem in the Primary partition. A non-zero bus number has no associated bus object. Contact your next level of support.	LPARSUP
3135	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. An unknown bus type was detected.	FI00099
3140	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The load-source IOP is not owned by the secondary partition. This is a configuration problem in the secondary partition. Have the customer re-configure the partition to have the intended load-source IOP. If there is not a configuration problem then contact your next level of support.	LPARSUP
3200	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Look for an SRC in the Service Action Log of the Primary partition logged at the time the secondary partition was IPLing. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.	FI00098 FI00096

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
4310	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Initiate a Primary partition main storage dump and contact your next level of support.	FI00099
4311	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Initiate a primary partition main storage dump and contact your next level of support.	FI00099
4312	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Received an unexpected Direct Select Address. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Initiate a Primary partition main storage dump and contact your next level of support.	FI00099
4315	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Storage in the Primary partition could not be allocated for the LID manager. The IPL of the secondary partition is failed. Increase the allocated storage to the Primary partition.	LPARCFG
4320	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Configuration error. Expected a disk unit and got some other kind of adapter or device. See the *iSeries Service Functions* information.	LPARSUP
4321	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Configuration error. Expected a tape or optical unit and received some other kind of adapter or device. See the *iSeries Service Functions* information.	LPARSUP
5106	Problem detected during main storage dump The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Not enough space in the Primary partition's ASP to contain the dump. Contact your next level of support.	LPARSUP
5114	Problem detected during main storage dump The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There is not enough space on the secondary partition's load-source to contain the dump.	FI00099

B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
5115	Problem detected during main storage dump The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There was an error reading the secondary partition's main storage dump from the secondary partition's load-source into the Primary partition's main storage.	LPARSUP
5117	Problem detected during main storage dump The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. A main storage dump has occurred but cannot be written to the load source device because a valid dump already exists. Contact your next level of support.	LPARSUP
5121, 5135, 5145	Problem detected during main storage dump The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There was an error writing the secondary partition's main storage dump to the secondary partition's load-source.	LPARSUP
5148	Problem detected during main storage dump The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. An error occurred while doing a main storage dump that would have caused another main storage dump. Contact your next level of support.	LPARSUP
6012	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The secondary partition's LID failed to completely load into the the partition's mainstore area. Contact your next level of support.	LPARSUP
6015	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. The load-source media is corrupted or invalid. A SLIP install of the secondary partition is required to recover.	MEDIA FI00099
6025	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. This is a problem with the load-source media being corrupt or invalid. A SLIP install of the secondary partition is required to recover.	MEDIA FI00099
6027	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. A failure occurred when allocating memory for an internal object used for LID load operations.	LPARCFG

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
6110	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Error on load-source device. See the information about logical partitions. See the *iSeries Service Functions* information. Record the SRC. The Direct Select Address of the device IOP in the SRC. Word 3: Bus, Word 4: Board, Word 5: Card.	FI00098
6900	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The guest partition's allocated memory is not large enough for the kernel specified to load. Increase the size of the secondary partition's memory allocation. Word 3 of the SRC is the allocated size of the secondary partition and word 4 of the SRC is the required size of the kernel.	LPARCFG
6905	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There is no valid kernel to load for the specified IPL Mode of the guest partition. Either the kernel is not valid or there is not a kernel in the selected IPL Mode. Verify that the kernel specified to load is valid and the IPL mode specified is where the kernel is located. If the problem persists then record all words of the SRC and contact your next level of support.	LPARCFG
6910	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. A storage management problem occurred loading the guest partition. Record all the words of the SRC and contact your next level of support.	LPARCFG
6920	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. A problem occurred while loading the guest partition. Record all the words of the SRC and contact your next level of support.	LPARSUP
6930	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. A problem occurred while loading the guest partition. Record all of the words in the SRC and contact your next level of support.	LPARCFG
7111	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Load-source device driver does not point to an IOP hardware driver. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Initiate a Primary partition main storage dump, and contact your next level of support.	FI00099

B2xx

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
7115	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The IOP identified in word 5 is not reporting to the secondary partition. Removing an IOP hardware driver (not the load source for the current IPL) from the Primary partition failed. The IPL will continue, but the secondary partition will not be able to establish connections to this IOP. Word 3: Bus, Word 4: Board, Word 5: Card.	FI00099 LPARSUP
7117	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The IOP identified in word 5 is not reporting to the secondary partition. Removing the IOP hardware driver that is associated with the current load-source has failed. The IPL will fail. Read and understand the information about logical partitions. See the *iSeries Service Functions* information. Record the SRC. The location of the IOP is in SRC words 3, 4 and 5. Word 3: Bus, Word 4: Board, Word 5: Card.	FI00099 LPARSUP
7200	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. An error condition was encountered when communicating with the load source IOP for the partition identified in the xx field of the B2xx SRC.	LPARSUP
8081	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. An internal LIC timeout has occurred. The partition may continue to IPL but it may experience problems while running.	LPARSUP
8105	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There was a failure loading the VPD areas of the secondary partition. The load-source media has been corrupted. A SLIP install of the partition is required.	MEDIA FI00099
8107	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There was a problem getting a segment of main storage in the Primary partition's main store.	FI00099
8115	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. There was a low level partition to partition communication failure. A secondary partition re-IPL is necessary to recover. If this SRC appears again when the partition is re-IPLed contact your next level of support.	LPARSUP

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item
F000	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. An operation has timed out. Look in the Service Action Log of the Primary partition for a failure during the last IPL of the secondary partition. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59. If you do not find a failure in the Service Action Log from the last IPL of the partition then record all words of this SRC and call your next level of support. See the *iSeries Service Functions* information.	LPARSUP
F001	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. A bus time out occurred on a command to the load source IOP.	FI00098 FI00096
F002	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Timeout waiting for the load source hardware driver. Initiate a main store dump of secondary partition.	LPARSUP
F003	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. Partition processors did not start LIC within the timeout window.	FI00099
F004 to F005	A problem occurred during power off of secondary partition. The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. From the "Work with partition status screen" the primary partition issued a power down message to the secondary partition but the message response from the secondary timed out. Initiate a main store dump of the secondary partition.	FI00099
F006	A problem occurred during the IPL of a secondary partition The partition ID is characters 3 and 4 of the B2xx reference code in word 1 of the SRC. The LID load operation for the secondary partition's IPL timed out.	FI00098 FI00096

(B2xx) Logical Partition Failing Items

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Failing Item	Description	Document Description
LPARCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
LPARSUP	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation
MEDIA	Attached storage device	Problem Analysis; Symbolic FRU Isolation

(B427) System Processor Reference Codes

The system processor detected a failure.

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Collect data from Functions 11, 12, and 13 of the system panel, or words 1 through 9 from the Main Store Dump (MSD) screen. This SRC, beginning with "**B4**", may contain up to five FRUs. Eight characters of this data represent a single FRU. The FRU characters have two parts: a unit reference code, and a type number. The location of this data is shown below:

```
PANEL FUNC 11:   B4xx____    RC01TP01
                 RC02RC03    RC04RC05

PANEL FUNC 12:   DATA0012    DATA0013
                 TP02TP03    TP04TP05

 PANEL FUNC 13:  DATA0016    DATA0017
                 DATA0018    DATA0019
```

The FRU information for FRU 1 would be RC01 and TP01, for FRU 2 would be RC02 and TP02, etc.

Characters	Description / Meaning	Length
RC01	FRU 1 - Ref Code	4 Characters
TP01	FRU 1 - Type	4 Characters
RC02	FRU 2 - Ref Code	4 Characters
TP02	FRU 2 - Type	4 Characters
RC03, TP03, RC04, TP04, RC05, TP05 same as above.		
DATA012, DATA013, DATA016, DATA017, DATA018, DATA019	Miscellaneous Data - Not applicable, but may be needed for your next level of support.	8 Characters

The example below shows relevant data for three FRUs:
RC01=4300, TP01=244A, RC02=8200, TP02=2884, RC03=8100, TP03=2884,
the remaining values are zeroes.

```
PANEL FUNC 11:   B427____    4300244A
                 82008100    00000000

PANEL FUNC 12:   xxxxxxxx    xxxxxxxx
                 28842884    00000000

PANEL FUNC 13:   xxxxxxxx    xxxxxxxx
                 xxxxxxxx    xxxxxxxx
```

Characters	Description / Meaning	Length
4300	FRU 1 - Ref Code = 4300	4 Characters
244A	FRU 1 - Type = 244A	4 Characters
8200	FRU 2 - Ref Code = 8200	4 Characters
2884	FRU 2 - Type = 2884	4 Characters
8100	FRU 3 - Ref Code = 8100	4 Characters
2884	FRU 3 - Type = 2884	4 Characters

Below is the information as shown in a MSD SCREEN:

```
1 - B4xx____RC01TP01RC02RC03RC04RC05
2 - DATA0012
3 - DATA0013
4 - TP02TP03
5 - TP04TP05
```

```
          .
          .
          .
     9 -  DATA0019
```

The FRU information for FRU 1 would be **FI1A** and **FI1B** or for FRU 2 it would be **FI2A** and **FI2B**, and so forth.

The first part of the FRU information is the unit reference code. Find the reference codes in the table below to determine the Priority and Location of the failing items. See "Locations and Addresses" on page 671 for the physical mapping of the information in the Location column.

Note: The priorities are:

- **Mandatory:** You should replace all mandatory failing items before the next IPL.
- **High:**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.
- **Low:** This part has a low probability of resolving the problem. Replace low priority failing items after replacement of mandatory and high priority items.

The second part of the FRU information is the type number. This will be used in combination with the Failing Item information to determine the Part Number from the "Type, Model, and Part Number list" on page 797.

- If the failing item is given as a FI code, go to "Failing Items" on page 466. Determine the part number that is associated with the failing FI code.
- If the failing item is given as a Symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4001	System Card(s) or BackPlane	CCIN	MB1
4003	System Card(s) or BackPlane	ANYPROC	
4004	System Sub-Card(s)	CTLPNCD	N02-A
4005	System Sub-Card(s)	CTLPNCD	N02-B
4009	System Card(s) or BackPlane	ANYMEM	
400A	System Sub-Card(s)	CCIN	MB1-A, B
400B	System Sub-Card(s)	CCIN	MB1-C, D
400C	System Sub-Card(s)	CCIN	MB1-E, F
400D	System Sub-Card(s)	CCIN	MB1-G, H
4010	System Sub-Card(s)	CCIN	MB1-A
4011	System Sub-Card(s)	CCIN	MB1-B
4012	System Sub-Card(s)	CCIN	MB1-C
4013	System Sub-Card(s)	CCIN	MB1-D
4014	System Sub-Card(s)	CCIN	MB1-E
4015	System Sub-Card(s)	CCIN	MB1-F
4016	System Sub-Card(s)	CCIN	MB1-G
4017	System Sub-Card(s)	CCIN	MB1-H

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
40A0	Service processor Licensed Internal Code	AJDGP01	
40A1	Licensed Internal Code error	AJDG301	
40A2	Service processor Licensed Internal Code	AJDGP01	
40A4	Call your next level of support for assistance	NEXTLVL	
40A6	Main storage failure	NOMSUSE	
40A9	System memory card configuration problem detected	MEMCFG	
40E1	Service processor Licensed Internal Code	AJDGP01	
4100	System Card(s) or BackPlane	CCIN	M01
4101	System Sub-Card(s)	CCIN	M01-A
4102	System Sub-Card(s)	CCIN	M01-B
4103	System Sub-Card(s)	CCIN	M01-C
4104	System Sub-Card(s)	CCIN	M01-D
410D	System Sub-Card(s)	CCIN	M01-A, B, C, D
410E	System Sub-Card(s)	CCIN	M01-A, B
4111	System Sub-Card(s)	CCIN	M01-E
4112	System Sub-Card(s)	CCIN	M01-F
4113	System Sub-Card(s)	CCIN	M01-G
4114	System Sub-Card(s)	CCIN	M01-H
411D	System Sub-Card(s)	CCIN	M01-E, F, G, H
4121	System Sub-Card(s)	CCIN	M01-J
4122	System Sub-Card(s)	CCIN	M01-K
4123	System Sub-Card(s)	CCIN	M01-L
4124	System Sub-Card(s)	CCIN	M01-M
412D	System Sub-Card(s)	CCIN	M01-J, K, L, M
4131	System Sub-Card(s)	CCIN	M01-N
4132	System Sub-Card(s)	CCIN	M01-P
4133	System Sub-Card(s)	CCIN	M01-Q
4134	System Sub-Card(s)	CCIN	M01-R
413D	System Sub-Card(s)	CCIN	M01-N, P, Q, R
4200	System Card(s) or BackPlane	CCIN	M02
4201	System Sub-Card(s)	CCIN	M02-A
4202	System Sub-Card(s)	CCIN	M02-B
4203	System Sub-Card(s)	CCIN	M02-C
4204	System Sub-Card(s)	CCIN	M02-D
420D	System Sub-Card(s)	CCIN	M02-A, B, C, D
420E	System Sub-Card(s)	CCIN	M02-A, B
4211	System Sub-Card(s)	CCIN	M02-E
4212	System Sub-Card(s)	CCIN	M02-F
4213	System Sub-Card(s)	CCIN	M02-G
4214	System Sub-Card(s)	CCIN	M02-H

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
421D	System Sub-Card(s)	CCIN	M02-E, F, G, H
421E	System Sub-Card(s)	CCIN	M02-C, D
4221	System Sub-Card(s)	CCIN	M02-J
4222	System Sub-Card(s)	CCIN	M02-K
4223	System Sub-Card(s)	CCIN	M02-L
4224	System Sub-Card(s)	CCIN	M02-M
422D	System Sub-Card(s)	CCIN	M02-J, K, L, M
422E	System Sub-Card(s)	CCIN	M02-E, F
4231	System Sub-Card(s)	CCIN	M02-N
4232	System Sub-Card(s)	CCIN	M02-P
4233	System Sub-Card(s)	CCIN	M02-Q
4234	System Sub-Card(s)	CCIN	M02-R
423D	System Sub-Card(s)	CCIN	M02-N, P, Q, R
423E	System Sub-Card(s)	CCIN	M02-G, H
4300	System Card(s) or BackPlane	CCIN	M03
4301	System Sub-Card(s)	CCIN	M03-A
4302	System Sub-Card(s)	CCIN	M03-B
430D	System Sub-Card(s)	CCIN	M03-A, B
4311	System Sub-Card(s)	CCIN	M03-C
4312	System Sub-Card(s)	CCIN	M03-D
431D	System Sub-Card(s)	CCIN	M03-C, D
4321	System Sub-Card(s)	CCIN	M03-E
4322	System Sub-Card(s)	CCIN	M03-F
432D	System Sub-Card(s)	CCIN	M03-E, F
4331	System Sub-Card(s)	CCIN	M03-G
4332	System Sub-Card(s)	CCIN	M03-H
433D	System Sub-Card(s)	CCIN	M03-G, H
7102	System bus error	RIOPORT	A1
7140	System bus error	RIOPORT	A0, A1
7282	System bus error	RIOPORT	A0
7283	System bus error	RIOPORT	A0, A1
7401	System Card(s) or BackPlane	FI00017	C00
7402	Bus expansion card	FI00017	E00
7404	Optical link on Bus Expansion Adapter card failed	FI00017	E01A
7405	Optical link on Bus Expansion Adapter card failed	FI00017	E01B
7406	Optical link on Bus Expansion Adapter card failed	FI00017	E01C
7408	Bus expansion card	FI00017	S07
7409	Optical link on Bus Expansion Adapter card failed	FI00017	S07A
740A	Optical link on Bus Expansion Adapter card failed	FI00017	S07B
740B	Optical link on Bus Expansion Adapter card failed	FI00017	S07C

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
740C	Optical link on Bus Expansion Adapter card failed	FI00017	E01-A, B, C
740D	Optical link on Bus Expansion Adapter card failed	FI00017	S07-A, B, C
8001	System Card(s) or BackPlane	CCIN	MB1
8003	System Card(s) or BackPlane	ANYPROC	
8004	System Sub-Card(s)	CTLPNCD	N02-A
8005	System Sub-Card(s)	CTLPNCD	N02-B
8009	System Card(s) or BackPlane	ANYMEM	
800A	System Sub-Card(s)	CCIN	MB1-A, B
800B	System Sub-Card(s)	CCIN	MB1-C, D
800C	System Sub-Card(s)	CCIN	MB1-E, F
800D	System Sub-Card(s)	CCIN	MB1-G, H
8010	System Sub-Card(s)	CCIN	MB1-A
8011	System Sub-Card(s)	CCIN	MB1-B
8012	System Sub-Card(s)	CCIN	MB1-C
8013	System Sub-Card(s)	CCIN	MB1-D
8014	System Sub-Card(s)	CCIN	MB1-E
8015	System Sub-Card(s)	CCIN	MB1-F
8016	System Sub-Card(s)	CCIN	MB1-G
8017	System Sub-Card(s)	CCIN	MB1-H
80A0	Service processor Licensed Internal Code	AJDGP01	
80A1	Licensed Internal Code error	AJDG301	
80A2	Service processor Licensed Internal Code	AJDGP01	
80A4	Call your next level of support for assistance	NEXTLVL	
80A6	Main storage failure	NOMSUSE	
80A9	System memory card configuration problem detected	MEMCFG	
80E1	Service processor Licensed Internal Code	AJDGP01	
8100	System Card(s) or BackPlane	CCIN	M01
8101	System Sub-Card(s)	CCIN	M01-A
8102	System Sub-Card(s)	CCIN	M01-B
8103	System Sub-Card(s)	CCIN	M01-C
8104	System Sub-Card(s)	CCIN	M01-D
810D	System Sub-Card(s)	CCIN	M01-A, B, C, D
810E	System Sub-Card(s)	CCIN	M01-A, B
8111	System Sub-Card(s)	CCIN	M01-E
8112	System Sub-Card(s)	CCIN	M01-F
8113	System Sub-Card(s)	CCIN	M01-G
8114	System Sub-Card(s)	CCIN	M01-H
811D	System Sub-Card(s)	CCIN	M01-E, F, G, H
8121	System Sub-Card(s)	CCIN	M01-J
8122	System Sub-Card(s)	CCIN	M01-K

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
8123	System Sub-Card(s)	CCIN	M01-L
8124	System Sub-Card(s)	CCIN	M01-M
812D	System Sub-Card(s)	CCIN	M01-J, K, L, M
8131	System Sub-Card(s)	CCIN	M01-N
8132	System Sub-Card(s)	CCIN	M01-P
8133	System Sub-Card(s)	CCIN	M01-Q
8134	System Sub-Card(s)	CCIN	M01-R
813D	System Sub-Card(s)	CCIN	M01-N, P, Q, R
8200	System Card(s) or BackPlane	CCIN	M02
8201	System Sub-Card(s)	CCIN	M02-A
8202	System Sub-Card(s)	CCIN	M02-B
8203	System Sub-Card(s)	CCIN	M02-C
8204	System Sub-Card(s)	CCIN	M02-D
820D	System Sub-Card(s)	CCIN	M02-A, B, C, D
820E	System Sub-Card(s)	CCIN	M02-A, B
8211	System Sub-Card(s)	CCIN	M02-E
8212	System Sub-Card(s)	CCIN	M02-F
8213	System Sub-Card(s)	CCIN	M02-G
8214	System Sub-Card(s)	CCIN	M02-H
821D	System Sub-Card(s)	CCIN	M02-E, F, G, H
821E	System Sub-Card(s)	CCIN	M02-C, D
8221	System Sub-Card(s)	CCIN	M02-J
8222	System Sub-Card(s)	CCIN	M02-K
8223	System Sub-Card(s)	CCIN	M02-L
8224	System Sub-Card(s)	CCIN	M02-M
822D	System Sub-Card(s)	CCIN	M02-J, K, L, M
822E	System Sub-Card(s)	CCIN	M02-E, F
8231	System Sub-Card(s)	CCIN	M02-N
8232	System Sub-Card(s)	CCIN	M02-P
8233	System Sub-Card(s)	CCIN	M02-Q
8234	System Sub-Card(s)	CCIN	M02-R
823D	System Sub-Card(s)	CCIN	M02-N, P, Q, R
823E	System Sub-Card(s)	CCIN	M02-G, H
8300	System Card(s) or BackPlane	CCIN	M03
8301	System Sub-Card(s)	CCIN	M03-A
8302	System Sub-Card(s)	CCIN	M03-B
830D	System Sub-Card(s)	CCIN	M03-A, B
8311	System Sub-Card(s)	CCIN	M03-C
8312	System Sub-Card(s)	CCIN	M03-D
831D	System Sub-Card(s)	CCIN	M03-C, D

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
8321	System Sub-Card(s)	CCIN	M03-E
8322	System Sub-Card(s)	CCIN	M03-F
832D	System Sub-Card(s)	CCIN	M03-E, F
8331	System Sub-Card(s)	CCIN	M03-G
8332	System Sub-Card(s)	CCIN	M03-H
833D	System Sub-Card(s)	CCIN	M03-G, H
B102	System bus error	RIOPORT	A1
B140	System bus error	RIOPORT	A0, A1
B282	System bus error	RIOPORT	A0
B283	System bus error	RIOPORT	A0, A1
B401	System Card(s) or BackPlane	FI00017	C00
B402	Bus expansion card	FI00017	E00
B404	Optical link on Bus Expansion Adapter card failed	FI00017	E01A
B405	Optical link on Bus Expansion Adapter card failed	FI00017	E01B
B406	Optical link on Bus Expansion Adapter card failed	FI00017	E01C
B408	Bus expansion card	FI00017	S07
B409	Optical link on Bus Expansion Adapter card failed	FI00017	S07A
B40A	Optical link on Bus Expansion Adapter card failed	FI00017	S07B
B40B	Optical link on Bus Expansion Adapter card failed	FI00017	S07C
B40C	Optical link on Bus Expansion Adapter card failed	FI00017	E01-A, B, C
B40D	Optical link on Bus Expansion Adapter card failed	FI00017	S07-A, B, C
C001	System Card(s) or BackPlane	CCIN	MB1
C003	System Card(s) or BackPlane	ANYPROC	
C004	System Sub-Card(s)	CTLPNCD	N02-A
C005	System Sub-Card(s)	CTLPNCD	N02-B
C009	System Card(s) or BackPlane	ANYMEM	
C00A	System Sub-Card(s)	CCIN	MB1-A, B
C00B	System Sub-Card(s)	CCIN	MB1-C, D
C00C	System Sub-Card(s)	CCIN	MB1-E, F
C00D	System Sub-Card(s)	CCIN	MB1-G, H
C010	System Sub-Card(s)	CCIN	MB1-A
C011	System Sub-Card(s)	CCIN	MB1-B
C012	System Sub-Card(s)	CCIN	MB1-C
C013	System Sub-Card(s)	CCIN	MB1-D
C014	System Sub-Card(s)	CCIN	MB1-E
C015	System Sub-Card(s)	CCIN	MB1-F
C016	System Sub-Card(s)	CCIN	MB1-G
C017	System Sub-Card(s)	CCIN	MB1-H
C0A0	Service processor Licensed Internal Code	AJDGP01	
C0A1	Licensed Internal Code error	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
C0A2	Service processor Licensed Internal Code	AJDGP01	
C0A4	Call your next level of support for assistance	NEXTLVL	
C0A6	Main storage failure	NOMSUSE	
C0A9	System memory card configuration problem detected	MEMCFG	
C0E1	Service processor Licensed Internal Code	AJDGP01	
C100	System Card(s) or BackPlane	CCIN	M01
C101	System Sub-Card(s)	CCIN	M01-A
C102	System Sub-Card(s)	CCIN	M01-B
C103	System Sub-Card(s)	CCIN	M01-C
C104	System Sub-Card(s)	CCIN	M01-D
C10D	System Sub-Card(s)	CCIN	M01-A, B, C, D
C10E	System Sub-Card(s)	CCIN	M01-A, B
C111	System Sub-Card(s)	CCIN	M01-E
C112	System Sub-Card(s)	CCIN	M01-F
C113	System Sub-Card(s)	CCIN	M01-G
C114	System Sub-Card(s)	CCIN	M01-H
C11D	System Sub-Card(s)	CCIN	M01-E, F, G, H
C121	System Sub-Card(s)	CCIN	M01-J
C122	System Sub-Card(s)	CCIN	M01-K
C123	System Sub-Card(s)	CCIN	M01-L
C124	System Sub-Card(s)	CCIN	M01-M
C12D	System Sub-Card(s)	CCIN	M01-J, K, L, M
C131	System Sub-Card(s)	CCIN	M01-N
C132	System Sub-Card(s)	CCIN	M01-P
C133	System Sub-Card(s)	CCIN	M01-Q
C134	System Sub-Card(s)	CCIN	M01-R
C13D	System Sub-Card(s)	CCIN	M01-N, P, Q, R
C200	System Card(s) or BackPlane	CCIN	M02
C201	System Sub-Card(s)	CCIN	M02-A
C202	System Sub-Card(s)	CCIN	M02-B
C203	System Sub-Card(s)	CCIN	M02-C
C204	System Sub-Card(s)	CCIN	M02-D
C20D	System Sub-Card(s)	CCIN	M02-A, B, C, D
C20E	System Sub-Card(s)	CCIN	M02-A, B
C211	System Sub-Card(s)	CCIN	M02-E
C212	System Sub-Card(s)	CCIN	M02-F
C213	System Sub-Card(s)	CCIN	M02-G
C214	System Sub-Card(s)	CCIN	M02-H
C21D	System Sub-Card(s)	CCIN	M02-E, F, G, H
C21E	System Sub-Card(s)	CCIN	M02-C, D

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
C221	System Sub-Card(s)	CCIN	M02-J
C222	System Sub-Card(s)	CCIN	M02-K
C223	System Sub-Card(s)	CCIN	M02-L
C224	System Sub-Card(s)	CCIN	M02-M
C22D	System Sub-Card(s)	CCIN	M02-J, K, L, M
C22E	System Sub-Card(s)	CCIN	M02-E, F
C231	System Sub-Card(s)	CCIN	M02-N
C232	System Sub-Card(s)	CCIN	M02-P
C233	System Sub-Card(s)	CCIN	M02-Q
C234	System Sub-Card(s)	CCIN	M02-R
C23D	System Sub-Card(s)	CCIN	M02-N, P, Q, R
C23E	System Sub-Card(s)	CCIN	M02-G, H
C300	System Card(s) or BackPlane	CCIN	M03
C301	System Sub-Card(s)	CCIN	M03-A
C302	System Sub-Card(s)	CCIN	M03-B
C30D	System Sub-Card(s)	CCIN	M03-A, B
C311	System Sub-Card(s)	CCIN	M03-C
C312	System Sub-Card(s)	CCIN	M03-D
C31D	System Sub-Card(s)	CCIN	M03-C, D
C321	System Sub-Card(s)	CCIN	M03-E
C322	System Sub-Card(s)	CCIN	M03-F
C32D	System Sub-Card(s)	CCIN	M03-E, F
C331	System Sub-Card(s)	CCIN	M03-G
C332	System Sub-Card(s)	CCIN	M03-H
C33D	System Sub-Card(s)	CCIN	M03-G, H
F102	System bus error	RIOPORT	A1
F140	System bus error	RIOPORT	A0, A1
F282	System bus error	RIOPORT	A0
F283	System bus error	RIOPORT	A0, A1
F401	System Card(s) or BackPlane	FI00017	C00
F402	Bus expansion card	FI00017	E00
F404	Optical link on Bus Expansion Adapter card failed	FI00017	E01A
F405	Optical link on Bus Expansion Adapter card failed	FI00017	E01B
F406	Optical link on Bus Expansion Adapter card failed	FI00017	E01C
F408	Bus expansion card	FI00017	S07
F409	Optical link on Bus Expansion Adapter card failed	FI00017	S07A
F40A	Optical link on Bus Expansion Adapter card failed	FI00017	S07B
F40B	Optical link on Bus Expansion Adapter card failed	FI00017	S07C
F40C	Optical link on Bus Expansion Adapter card failed	FI00017	E01-A, B, C
F40D	Optical link on Bus Expansion Adapter card failed	FI00017	S07-A, B, C

System Processor Failing Items

Failing Item	Description	Document Description
AJDG301	Licensed Internal Code error	Service Functions; APAR or LICTR
AJDGP01	Service processor Licensed Internal Code	Service Functions; APAR or LICTR
ANYMEM	System Card(s) or BackPlane	Problem Analysis; Symbolic FRU Isolation
ANYPROC	System Card(s) or BackPlane	Problem Analysis; Symbolic FRU Isolation
CCIN	System Sub-Card(s)	Problem Analysis; Symbolic FRU Isolation
CCIN	System Card(s) or BackPlane	Problem Analysis; Symbolic FRU Isolation
CTLPNCD	System Sub-Card(s)	Problem Analysis; Symbolic FRU Isolation
MEMCFG	System memory card configuration problem detected	Problem Analysis; Symbolic FRU Isolation
NEXTLVL	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation
NOMSUSE	Main storage failure	Problem Analysis; Symbolic FRU Isolation
RIOPORT	System bus error	Problem Analysis; Symbolic FRU Isolation

(B4FF) System Processor Reference Codes

A major system problem has occurred.

The reference code is the first eight characters of the display data for panel function 11.

1. Is the reference code B4FF0003?

   No   **Yes**

   ↓   The System cannot find any processors. Any processor may be the failing item. Refer to Symbolic FRU "ANYPROC" on page 489, for the procedure to determine processor location and part information.

   If this does not fix the problem, contact your next level of support.

   This ends the procedure.

2. Is the reference code B4FF00B0 or B4FF00B1?

   Yes   **No**

   ↓   Contact your next level of support.

   This ends the procedure.

3. If the reference code is B4FF00B1, then the System Unit Backplane may be the failing item. If the reference code is B4FF00B0, then the System Unit Backplane may be the failing item, or the failure may be caused by the Licensed Internal code. For either reference code, perform the following:

   a. Before exchanging any parts, verify that all connections to the System Unit Backplane are secure.

   b. Exchange the System Unit Backplane in position MB1.
      - For Model 270: to determine the location, CCIN, part number and removal and installation procedure for the "System Unit Backplane", locate card position MB1 in the FRU Locations and Failing Components table for the processor feature code of the model 270 you are working on.

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Use "Locations — Model 270" on page 671 and the processor feature code to determine which model 270 locations diagram and FRU Locations and Failing Components table to use.

- For Model 820: to determine the location of the System Unit Backplane see Figure 30 on page 683. To determine the CCIN, part number and removal and installation procedure for the System Unit Backplane, locate card position MB1 and FRU name "System Unit Backplane in "Locations — Model 820" on page 683.

4. If this does not fix the problem, contact your next level of support.

This ends the procedure.

(B6xx) LIC Reference Codes

Use this table for both A6xx and B6xx reference codes.

Perform the following:
1. Find the SRC in the *SRC* column of the following table.
2. Perform the actions in the *What You Should Do* column.

SRC	What You Should Do
11 A6xx xxxx	Licensed Internal Code intervention is needed. 1. Look at characters 5 through 8 of the top 16 character line of function 11 (4 rightmost characters of word 1). These 4 characters are the unit reference code. 2. See the table below and find the unit reference code.

11 B6xx xxxx	The Licensed Internal Code detected a failure.
	
	 1. Look at characters 5 through 8 of the top 16 character line of function 11 (4 rightmost characters of word 1). These 4 characters are the unit reference code.
	
	 2. See the table below and find the unit reference code.
	
	 3. When working with the Product Activity Log, system LIC entries often occur as a secondary effect of other hardware related entries. The following list is a suggested method of isolating these kinds of problems.
	
	    a. Examine the date and time of the informational reference codes.
	
	    b. Determine if any other reference codes were logged at or before the same date and time.
	
	    c. Start the service approach based on these other logged errors.

Notes:
1. If the failing item is a failing item (FI) code, go to "Failing Items" on page 466 to determine which part number associated with the FI code is failing.
2. If the failing item is a type number, go to "Type, Model, and Part Number list" on page 797 to determine the part number.
3. If the failing item is a symbolic FRU, go to "Symbolic FRUs" on page 482 to determine the part number.

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0000	Operating system status code This reference code is for information only. It is shown in the Product activity log as a side effect of a condition that was detected by LIC. Normally, no action should be taken as a result of information reference codes. However, to isolate the root cause, use these suggestions: 1. Examine the date and time of the informational reference code. 2. Determine if any other reference codes have been logged at or before the same date and time. 3. Begin the service approach based on these other logged errors.		
0102	A machine check occurred during IPL Words 2 to 9 of this SRC contain additional diagnostic information. Record SRC words 1 through 9 before attempting to IPL again and report the problem to your Software Service Provider.		
0103	Main storage dump must be copied for service. Perform "LIC-PIP1" on page 324.		
0104	Terminate Immediate reference code is bad Perform "LIC-PIP8" on page 331.	AJDG301	
0105	More than one request to terminate the system was issued Perform "LIC-PIP8" on page 331.	AJDG301	
0106	Terminate Immediate data is not valid Perform "LIC-PIP8" on page 331.	AJDG301	
0202	Unrecoverable read error Restore the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the *iSeries Service Functions* information.		
0244, 0255, 0266	Contact was lost with the device indicated Do not power off the system. Perform "LIC-PIP13" on page 350.	FI00580 FI00500 FI00302 FI00301 AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0277	A compression disk unit cannot complete an operation. **Note:** Do not power off the system when performing this procedure. Look at the 4 leftmost characters of the Data display for word 7. These four characters indicate the type of problem that exists and the recovery action to perform. If these characters are 8402 or 2002, the compression disk unit is temporarily full of data. The command to the compression disk is being held. When the storage subsystem controller has created sufficient space on the compression disk unit to contain the data, the command which is being held will be released and the system will resume normal processing. If the system does not resume normal processing within 20 minutes, contact your next level of support. If these characters are 8400 or 2000, the compression disk unit is full of data. The command to the compression disk is being held. Ask the customer to perform the recovery actions in the "Disk Unit Full Considerations" section of the Backup and Recovery Guide, SC41-5304.		
0302	Recursion in exception handler Perform "LIC-PIP8" on page 331.	AJDG301	
0304	Component specific exception handler return code not valid Perform "LIC-PIP8" on page 331.	AJDG301	
0305	Exception while storage management lock is held Perform "LIC-PIP8" on page 331.	AJDG301	
0308	LIC exception code detected a problem Component Specific Exception Handler recursion is detected in an OS/400 process. Perform "LIC-PIP8" on page 331.	AJDG301	
0317	Traceback for code not found Perform "LIC-PIP8" on page 331.	AJDG301	
0323 to 0329	LIC exception code detected a problem Perform "LIC-PIP8" on page 331.	AJDG301	
0333	A branch to a bad address was attempted Perform "LIC-PIP8" on page 331.	AJDG301	
0334	Exception Handler could not be removed Perform "LIC-PIP8" on page 331.	AJDG301	
0335	Code resumed to not valid address following exception Perform "LIC-PIP8" on page 331.	AJDG301	
0401	A machine check occurred during IPL Perform "LIC-PIP8" on page 331.	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0402	A machine check occurred during authority initialization Perform "LIC-PIP8" on page 331.	AJDG301	
0403	Unhandled exception during IPL or install Perform "LIC-PIP8" on page 331.	AJDG301	
0405	Unhandled exception in authority recovery Perform "LIC-PIP8" on page 331.	AJDG301	
0406	Unhandled exception in data base recovery Perform "LIC-PIP8" on page 331.	AJDG301	
0407	Unhandled exception in data base initialization Perform "LIC-PIP8" on page 331.	AJDG301	
0408	Unhandled exception in journal recovery Perform "LIC-PIP8" on page 331.	AJDG301	
0409	Unhandled exception in journal synchronization Perform "LIC-PIP8" on page 331.	AJDG301	
0410	Unhandled exception in journal clean up Perform "LIC-PIP8" on page 331.	AJDG301	
0411	Unhandled exception in commit recovery Perform "LIC-PIP8" on page 331.	AJDG301	
0412	Unhandled exception in commit initialization Perform "LIC-PIP8" on page 331.	AJDG301	
0413	Rebuild of recovery object index failed Perform "LIC-PIP8" on page 331.	AJDG301	
0414	Install of operating system failed on read from media Perform "LIC-PIP8" on page 331.	FI00300	
0415	Create user profile failed Perform "LIC-PIP8" on page 331.	AJDG301	
0417	Initiating the initial process failed Perform "LIC-PIP8" on page 331.	AJDG301	
0418 to 0419, 0420	The information loaded from the install media is not valid Perform "LIC-PIP8" on page 331.	AJDG301	
0421	Bad return code creating a queue or message Perform "LIC-PIP8" on page 331.	AJDG301	
0422	The Load/Dump command failed Perform "LIC-PIP8" on page 331.	AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0439	Opening the IPCF connection failed Perform "LIC-PIP8" on page 331.	AJDG301	
0440	Termination code is not valid Perform "LIC-PIP8" on page 331.	AJDG301	
0441	Power off system command failed Perform "LIC-PIP8" on page 331.	AJDG301	
0443	Programmed IPL command failure Perform "LIC-PIP8" on page 331.	AJDG301	
0446	Error during machine termination Perform "LIC-PIP8" on page 331.	AJDG301	
0447	Failure to reach MI boundary Perform "LIC-PIP8" on page 331.	AJDG301	
0449	Exception in MI boundary manager Perform "LIC-PIP8" on page 331.	AJDG301	
0506	Attempt to destroy a task with critical flag on Perform "LIC-PIP8" on page 331.	AJDG301	
0607	Maximum stack size exceeded in process or task Perform "LIC-PIP8" on page 331.	AJDG301	
0620	Event management index is not usable Perform "LIC-PIP8" on page 331.	AJDG301	
0650	Resource management segment could not be created or extended A main store dump was initiated. Words 2 to 9 of this SRC contain additional diagnostic information. Record SRC words 1 through 9. Perform a system IPL and collect the Product activity log and mainstore dump and provide them along with the recorded SRC information to IBM Service Support. The problem may also be that there is not enough auxiliary storage.	AJDG301	
0801	Invalid LID directory detected During system IPL, the LIDMgr detected an I/O failure or media failure while trying to read the LID directory. Perform "LIC-PIP8" on page 331.	FI00070 FI00300 AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
0802	LID directory unusable During system IPL, the LIDMgr detected that the LID directory and associated load source is not usable. Reinstall the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the *iSeries Service Functions* information. For more information, contact IBM Service Support.	AJDG301	
0901	The LinkLoader has found its bad flag ON This reference code is usually the result of a system termination while the LinkLoader is performing its work. Reinstall the Licensed Internal Code using "Licensed Internal Code Install and Restore" in the *iSeries Service Functions* information.		
0902	Unable to perform programmed IPL The LinkLoader was not successful in performing a programmed IPL. Perform a system IPL. If the problem persists, examine the main storage dump and determine the reason for the failure of the programmed IPL.		
1001	Enqueuing a task to the TDQ which is already enqueued on TDQ Perform "LIC-PIP8" on page 331.	AJDG301	
1103	MISR not readable; must be readable for Normal Mode install MISR is not readable. Perform a manual install to reinitialize the system.		
1104	Failure reading media or not install media Determine that correct install media is loaded. If correct install media is installed, media could be corrupt. Obtain another copy of the install media and reattempt the install. If the install still fails, contact your service representative.		
1201	Critical database segment could not be created Perform "LIC-PIP8" on page 331.	AJDG301	
1204	Error in constraint enforcement Perform "LIC-PIP8" on page 331.	AJDG301	
1210	Object not found in the in-use table Perform "LIC-PIP8" on page 331.	AJDG301	
1215	Error in critical code sequence Perform "LIC-PIP8" on page 331.	AJDG301	
1219	A back leveled driver has been detected Perform "LIC-PIP8" on page 331.	AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
1604	Not able to create APPN task An error occurred during task creation which requires a power off of the system. Perform "LIC-PIP8" on page 331.	AJDG301	

1724	An attempt to create a segment failed
	
	The create could fail for two reasons:
	• A code problem
	  Perform "LIC-PIP8" on page 331.
	• No free auxiliary storage on the system
	  Add additional DASD if the create failed because no auxiliary storage was available.
		AJDG301	

1730	An IPL is needed to restore system performance Licensed Internal Code has detected a condition that is impacting system performance. System operation can continue, but system performance may be noticeably reduced until the next IPL. Look at the Product Activity Log entry, and find the value at offset x'000180'. If the value equals x'00000122', the error was caused by too much processor memory being installed. For more information, contact IBM Service Support.	GG3PL01	
3000	Logical partition service function Main Storage Dump. Copy the current main storage dump to media. For more information on how to copy a Main Storage Dump, refer to the *iSeries* Service Functions Information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").	AJDG301	
4402	Missing DASD units. Copy the current main storage dump to media. Then exit the Main Storage Dump Manager. For more information on how to perform a Main Storage Dump, refer to *iSeries* Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").		
4403	Storage Management failed to reach full paging. Copy the current main storage dump to media. For more information on how to perform a Main Storage Dump, refer to *iSeries* Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4404	Auto copy failed or not attempted. Copy the current main storage dump. If copying to system ASP, existing copies may need to be deleted or renamed. Then exit the Main Storage Dump Manager. For more information on how to perform a Main Storage Dump, refer to *iSeries* Service Functions information (see "Copying a Main Storage Dump" under "Working with Storage Dumps").		
4405	System ASP threshold exceeded after auto copy done. Delete other system ASP copies or exit the Main Storage Dump Manager and then from DST copy the Auto Copy to media and then delete the Auto Copy in system ASP.		
4700	Processor On Demand error detected. Processor on Demand Data Block key is not valid. Replace the Processor Capacity card.	CTLPNCD	N02-B
4701	Processor On Demand error detected. Processor On Demand Data Block contains data that does not match the expected data. Contact your service provider.	AJDG301	
4703	Processor On Demand error detected. Processor On Demand Serialization has failed during IPL. Contact your service provider.	AJDG301	
4710	Processor On Demand error detected. SPCN communication failure during Processor On Demand. Look in the Product Activity Log for other SPCN errors and perform the actions indicated for those errors.	SPNLCRD	
4712	Processor On Demand error detected. Correct any Processor Capacity card or SPCN failures.	CTLPNCD	N02-B
4713	Incorrect Processor Capacity Card installed. The Processor Capacity Card is the failing item since it has been swapped in from a different system. Put the Procesor Capacity Card back in the system it came from, and re-install this system's original Processor Capacity Card.	CTLPNCD	N02-B
4714	Processor Capacity card replaced on unactivated POD system. Processor Capacity Card replaced on unactivated Processor On Demand System. Contact your service provider.		
4715	Processor On Demand error detected. Correct any Processor Capacity card or SPCN failures.	CTLPNCD	N02-B

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
4730	Processor On Demand error detected. Processor On Demand standby processors are in use. Contact your service provider.	AJDG301	
4731	Processor On Demand error detected. The Processor On Demand Trial Activation period is not valid. Contact your next level of support.	AJDG301	
4733	Processor On Demand error detected. Contact your service provider.	AJDG301	
4740	Processor On Demand error detected. The Processor On Demand Activation code just entered is not valid. Contact your next level of support.	AJDG301	
4741	Processor On Demand error detected. A nonvalid Processor On Demand Activation code has been entered more than 5 consecutive times. Contact your service provider.	AJDG301	
4745	Processor Capacity card replaced on activated POD system. Contact IBM Support to order a replacement Processor On Demand activation code.		
4747	1 hour left in POD 14 day Trial Activation Period. If a new activation code was purchased, it should be entered now. Otherwise, the system will revert back to its previous activation state at the end of the Trial Activation Period.		
5001	DST received no response from a work station controller The workstation I/O processor for the system or partition console did not respond. If the system uses an *iSeries* Operations Console, perform "Operations Console-PIP1" on page 363. Otherwise, perform "BUS PIP CNSL01" on page 269.	FI00380 AJDG301	
5002	DST problem attempting to use the system console A code problem occurred during an attempt to use the system console. Perform "LIC-PIP3" on page 326.	AJDG301 FI00380	
5003	Service program failed The ASCII system console failed to respond.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5004	DST console failed to respond The system console failed to respond. If the system uses an *iSeries* Operations Console, perform "Operations Console-PIP1" on page 363. Otherwise, perform "TWSC-PIP1" on page 453.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5005	Service program failed The workstation adapter system console failed to respond. Perform "WSAC-PIP1" on page 465.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5007	Service program failed The workstation adapter console failed to respond. If the system uses an *iSeries* Operations Console, perform "Operations Console-PIP1" on page 363. Otherwise, perform "WSAC-PIP1" on page 465.	FI00320 FI00602 UG3USR1 AJDG301 FI00380	
5008	DST console failed to respond Perform Operations Console-PIP3.	FI00719	
5010	IPL service function ended abnormally Perform "LIC-PIP4" on page 327.	AJDG301	
5082	DST lost contact with the console A service program lost contact with the system console. Do you have a twinaxial terminal for the console? **No** **Yes** ↓ Perform "TWSC-PIP1" on page 453. Perform "WSAC-PIP1" on page 465.	AJDG301 UG3USR1	
5083	IPL service function ended abnormally A service program lost contact with the system console. Perform "TWSC-PIP1" on page 453.	AJDG301 UG3USR1	
5090	System startup failed in unattended IPL mode Perform the following: • If reference code A6005090 is displayed on the control panel for more than 10 minutes, perform "LIC PIP11" on page 332. • For reference code B6005090, perform "LIC PIP11" on page 332.	FI00580 FI00500 FI00301 FI00021 FI00065 AJDG301	
5092	System is in DASD migration mode "Install Licensed Internal Code" and "Upgrade Load Source" was specified but the key is not in the manual position. Change the key position to manual and perform a system IPL.		

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5094	IASP detected a failure during the vary on operation Perform "LIC-PIP12" on page 345.	SVCDOCS	
50FF	DST unrecoverable program error Perform "LIC-PIP3" on page 326.	AJDG301 FI00380	
5120	System LIC detected a program exception System LIC detected a programming problem. If performance or other system degradation is occurring, the system may be operating with reduced resources. Check the Product activity log for related entries. If this reference code is logged with a *Class* of Informational, then no action is required. Otherwise, perform "LIC-PIP1" on page 324 in "Licensed Internal Code PIPs" on page 323.	AJDG301 FI00130	
5121	System LIC program exception occurred System LIC detected a programming problem for which a main storage dump may have been initiated. A problem log entry may be generated for this ref code. Perform "LIC-PIP1" on page 324.	AJDG301	
5122	System LIC program exception occurred System LIC detected an IOP programming problem for which an IOP dump may have been initiated. Perform "LIC-PIP1" on page 324.	FI00130 AJDG301 FI00131	
5123	System LIC program exception occurred System LIC detected an interface problem with the IOP or an IOP programming problem for which an IOP and main storage dump may have been initiated. Perform "LIC-PIP1" on page 324.	FI00130 AJDG301 FI00131	
5126	Addressed device failed to respond to selection	DISKDRV STORIOA DISKTRY FI01106 FI01140 FI01141 DEVTERM BACKPLN	
5127	IOP timed out a disk command	DISKDRV STORIOA FI01106 DISKTRY FI01140 FI01141 DEVTERM BACKPLN	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5128	I/O processor failure	FI01112 FI01107	
512D	An IOP dump was initiated Copy the IOP dump entry and any related entries from the Product Activity Log to suitable media, and give to an IBM service representative.		
512E	System LIC program exception occurred The system was in a D IPL mode when the problem was detected. A main storage dump was not taken. Perform "LIC-PIP1" on page 324.	AJDG301 FI00130	
5206	System LIC detected a missing IOP LIC code load System LIC detected a missing IOP LIC code load during IPL of the IOP. This indicates that either the IOP code load is not installed on the system load source device or that system LIC was unable to successfully read that load from the load source device. Perform "LIC-PIP1" on page 324.	UG3USR1	
5209	System LIC detected an IOP timeout during IOP IPL Verify that all IOP cable connections are secure, and check tape and other non-disk devices and media to verify that they are in a ready state. Perform "LIC-PIP1" on page 324.	UG3USR1 FI00130 AJDG301	
5219	System LIC program exception occurred An IOP signalled to system LIC that it had entered a critical internal state. LIC automatically attempted to restart the IOP. This reference code is logged for information only. No action is required.	FI00310 FI00318 FI00065 FI00130 AJDG301	
5275	The system issued a reset/reload to the IOP. System Licensed Internal Code detected that an IOP Reset/Reload has occurred, and that the IOP sucessfully recovered. Users who were signed on to a Workstation device under the IOP will need to sign back on. Any LAN/WAN communications lines under the IOP will need to be restarted. Tape/Optical devices under the IOP may need to be varied back on. To determine the cause of the IOP Reset/Reload, check the Product Activity Log for additional entries logged with the same System Log ID, and perform any actions indicated for those errors.		

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5276	IOP Reset was issued LIC has detected a problem with the Service Processor IOP and has reset it but has not initiated reload of the Service Processor. If the load source is mirrored, some system operations may be able to continue normally. However, some system service operations have been suspended and the system should be scheduled for power down as soon as possible. Perform a system IPL. If the IPL is successful, then perform "LIC-PIP1" on page 324 to determine the cause of the problem. If the system IPL is not successful, perform the action described in the new SRC.	AJGLD01 AJDG301 FI00021	
5310	System LIC program exception occurred System LIC detected a logical partition configuration data consistency error. Copy the Product Activity Log data for this error and any related entries and contact your next level of hardware service support.	LPARSUP	
5311	System LIC program exception occurred LPAR configuration data does not match current system configuration. The system will not IPL past DST until the problem is corrected. Following is a list of problems which may have caused this SRC to be reported: • Non-configured disk unit which was previously a load source on a partitioned system. • Load source configuration data does not match partition for which it is being used. • Load source configuration data does not match system serial number for which it is being used. • Load source configuration data is newer than primary partition configuration data. Perform "LPAR-PIP01" on page 358.	LPARSUP	
5312	System LIC program exception occurred LPAR configuration data informational error. The LPAR configuration data was found to be or inconsistent on a secondary partition's load source. The data was automatically updated to the current system level.		
5313	System LIC program exception occurred LPAR configuration data informational error. The LPAR configuration data was found to be inconsistent on a primary partition and could only be corrected with an older copy of the data.	LPARCFG	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
5340	Secondary partition not running at optimum. Check the Primary partition's Product Activity Log for system processor entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the *iSeries Service Functions*.		
5341	Secondary partition not running at optimum. Check the primary partition Product Activity Log for system memory entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the *iSeries Service Functions*.		
5342	Secondary partition not running at optimum. Check the Primary partition's Product Activity Log for system processor entries from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning, see the Logical Partitioning Information in the *iSeries Service Functions*.		
5343	Secondary partition not running at optimum. Check the Primary partition's Product Activity Log for system memory errors from approximately the same time. Perform the actions indicated for those entries. For more information on Logical Partitioning see the Logical Partitioning Information in the *iSeries Service Functions*.		
5344	Secondary partition not running at optimum. The interactive performance specified in the configuration data for this partition could not be met. Contact your next level of support.	LPARSUP	
5350	Secondary partition software release not supported. The logical partition software version is outside the supported release delta. Check the Release Delta from the Primary partition "Display Partition Release Level" screen. Check the LPAR documentation for the release level of the Primary partition and determine what the supported Release Delta is.		
5380	System LIC program exception occurred Record the Procduct Activity Log (PAL) hex data for this SRC or print the PAL entry. Contact your next level of support.	LPARSUP	
5390	System LIC program exception occurred Record the Product Actvity Log (PAL) hex data for this SRC or print the PAL entry. Contact your next level of support.	LPARSUP	
5555	SLIC I/O DASD subsystem error recovery in progress.		

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6900	System bus error The copper bus, bus 4 in the SPD migrated tower, is inoperative due to a stuck line or a parity error. Any SPD system bus-related hardware on bus 4 may have failed including the HSL I/O bridge or HSL cable connecting SPD bus 4 to the HSL loop. Perform "BUS-PIP1" on page 267.	FI00065 AJDG301	
6901	Bus Expansion Adapter card failed The copper bus, the first SPD bus in the system unit or migrated tower, has failed due to an internal chip error on the local bus adapter. Perform "BUS-PIP1" on page 267. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	LBUSADP AJDG301	
6902	Bus Expansion Adapter card failed An optical bus has failed due to an internal chip error on one of the remote bus adapters. Perform "BUS-PIP1" on page 267.	FI00203 AJDG301	
6905	Optical bus failed An optical bus is inoperative due to a stuck line or an invalid bus command. Any bus-related hardware may have failed. Perform "BUS-PIP1" on page 267. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	FI00065 LBUSADP AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6906	High Speed Link (HSL) I/O bridge failure LIC could not access part of the HSL I/O bridge VPD. The bridge and HSL loop may be prevented from becoming operational. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SIIOADP OPT_CLN	
6907	High Speed Link (HSL) I/O bridge failure LIC detected invalid data in the HSL I/O bridge VPD. The bridge and HSL loop may not have become operational. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SIIOADP OPT_CLN	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6908	High Speed Link (HSL) I/O bridge failure LIC data in the I/O bus vpd could not be accessed. The I/O Bus identified in the SRC may not have become operational. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SIIOADP OPT_CLN	
6909	High Speed Link (HSL) I/O bridge failure LIC detected invalid data in the I/O bus VPD. The bus and resources associated with it may not be operational. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SIIOADP OPT_CLN	
6910	I/O processor failure An I/O processor timed out, returned bad status, or is not following the system bus protocol. Perform "LIC-PIP7" on page 327.	FI00310 FI00318 FI00065 FI00130 AJDG301	
6938	Not valid system configuration detected This system model does not allow a configuration of more than three (non-OptiConnect) I/O Processors. Power down the system and remove the extra (non-OptiConnect) I/O Processor(s) so that there are three or less. Restart the system.		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6944	Missing or failed I/O processor cards A system bus appears to be empty. If the bus is not empty, two I/O processors in consecutive slots may be missing or broken. If there are broken I/O processors, then another more serious SRC has occurred. Otherwise find the bus number for this failure from the Product activity log and use the system configuration list to verify the configuration of the I/O processors on that bus.	FI00317 FI00316 AJDG301	
6960	Multi-adapter bridge card slot error, do not use card slot Slot unavailable due to 64 bit card in adjacent slot. One of the messages documented with the symbolic FRU will describe the problem. See the SLOTERR symbolic FRU for a list of messages and corrective actions.	SLOTERR	
6961	Multi-adapter bridge card slot error, do not use card slot LED control failure, do not use slot. The card location is not available for use. The Failing Item with the card slot error is in the Failing Item list for this reference code. See the SLOTERR symbolic FRU for the list of messages and a further description of the problem detected by Licensed Internal Code. For this reference code the failing item list presented in the ″Service Action Log″ can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the ″Service Action Log″ is available then use the failing item list presented there for servicing this reference code. If the ″Service Action Log″ is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	SLOTERR MASBUS	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6962 to 6963	Multi-adapter bridge card slot error, do not use card slot Power control failure, do not use slot. The card location is not available for use. The Failing Item with the card slot error is in the Failing Item list for this reference code. See the SLOTERR symbolic FRU for the list of messages and a further description of the problem detected by Licensed Internal Code. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	SLOTERR MASBUS	
6964	Multi-adapter bridge configuration change or error Multi-adapter bridge has no IOP for the I/O adapters. LIC detected I/O adapters under the multi-adapter bridge but did not detect an I/O processor. The I/O adapters are not available. See the MABRCFG symbolic FRU for the list of messages, a further description of the problem detected by Licensed Internal Code and the corrective action.	MABRCFG	
6965	Multi-adapter bridge configuration change or error Card type not supported in this slot. An I/O processor or I/O adapter card type is installed in the location indicated in word 7 of the SRC. The card type is not supported in that slot under the Multi-adapter bridge. The card is unavailable. See the MABRCFG symbolic FRU for the list of messages, a further description of the problem detected by Licensed Internal Code and the corrective action.	MABRCFG	
6966	Multi-adapter bridge configuration change or error I/O processor removed from multi-adapter bridge card slot. On the previous IPL an I/O processor was in the card location specified in word 7 of the SRC. The I/O processor was not detected on this IPL. See the MABRCFG symbolic FRU for the list of messages, a further description of the problem detected by Licensed Internal Code and the corrective action.	MABRCFG	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6967	Multi-adapter bridge configuration change or error I/O adapter unavailable due to moved I/O processor card. The I/O adapter specified in word 7 of the SRC is not available. On the previous IPL there was an I/O processor card the adapter was assigend to. The I/O processor was not detected on this IPL. See the MABRCFG symbolic FRU for the list of messages, a further description of the problem detected by Licensed Internal Code and the corrective action.	MABRCFG	
6968	Multi-adapter bridge configuration change or error IOA removed from multi-adapter bridge slot. On the previous IPL an I/O adapter was in the card slot specified in word 7 of the SRC. That I/O adapter was not detected on this IPL. See the MABRCFG symbolic FRU for the list of messages, a further description of the problem detected by Licensed Internal Code and the corrective action.	MABRCFG	
6969	Multi-adapter bridge configuration change or error I/O adapter replaced by I/O processor card. On the previous IPL there was an I/O adapter in the location specified in word 7 of the SRC. This IPL LIC detected that the IOA was replaced by an IOP in that location. See the MABRCFG symbolic FRU for the list of messages, a further description of the problem detected by Licensed Internal Code and the corrective action.	MABRCFG	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6970	High Speed Link (HSL) resource failure A system PCI bus failure was detected. Word 7 of the SRC contains the bus number. This error is most likely in the hardware that makes up the PCI bus, the PCI bus side of the HSL I/O bridge or the multi-adapter bridge. In some cases it may be caused by a failing IOP in the multi-adapter bridge's domain. When an IOP is causing the problem, the failing IOP cannot be identified. Exchange the failing items in the order they are listed in the SAL or this document until you get to the PIOCARD failing item. If the problem still exists after exchanging the failing items up to, but not including, PIOCARD then perform "BUS PIP MAB-03" on page 297 to determine the failing I/O processor card. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SI_PHB PRI_PCI MA_BRDG PIOCARD OPT_CLN	
6971	High Speed Link (HSL) resource failure Failure in a multi-adapter bridge or on the bus to the card location it controls. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed. Perform "BUS PIP MAB-02" on page 296	MA_BRDG MASBUS PIOCARD	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6972	High Speed Link (HSL) resource failure Multi-adapter Bridge (MaB) failure detected. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	MA_BRDG	
6973	High Speed Link (HSL) resource failure Mulit-adapter Bridge has detected a problem in the card installed in the location specified in word 7 of the SRC.	PIOCARD	
6974	Multi-adapter bridge configuration change or error PCI I/O processor rejected the assignment of or the removal of an I/O adapter. The direct select address in word 7 of the SRC specifies the location of the IOA. The direct select address of the IOP is in word 5 of the SRC. Use the Table 7 on page 263 and the "Card Position Tables" on page 264 to determine the card locations for the IOA and the IOP. Use slot concurrent maintenance under HSM to assign or remove the IOA.	MABRCFG	
6975	The system issued a reset/reload to the service processor. Service processor error.	AJDGP01	
6976	Service processor failure. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	SVCPROC	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6980	Network Interface Controller (NIC) resource failure The FRU list displayed in the Service Action Log (SAL) may vary from the failing item list given in this document. Use the FRU list in the SAL if the SAL is available to you. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SICNTRL OPT_CLN	
6981	High Speed Link (HSL) I/O bridge failure The FRU list displayed in the Service Action Log (SAL) may vary from the failing item list given in this document. Use the FRU list in the SAL if the SAL is available to you. If you find either a B600 6982 or B600 6984 SRC logged at approximately the same time as this SRC then they were caused by the same failure. If you find a 6982 SRC logged at approximately the same time then close this problem and service the 6982 SRC. The failing item listed for this SRC is one of the failing items listed for B600 6982. If the SAL entry for this SRC has a location listed then record the location for use in servicing the 6982 SRC. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SIIOADP OPT_CLN	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6982	High Speed Link (HSL) connection failure Connection failure between HSL links. A B600 6984 SRC may also appear in the SAL. Both SRCs are reporting the same failure. 1. Search for a B600 6981 SRC in the SAL logged at approximately the same time. If you find one then go to step 2. Otherwise perform the following: • Perform "BUS PIP HSL-06" on page 287 to determine if this loop connects to any other systems and return here. (SIRGCBL FRU in the SAL will indicate the loop number this failure is on.) If this loop is connected to other systems then continue with the steps that follow, otherwise go to step 2. • Check for HSL failures in the SALs of the other system(s). HSL failures are SAL entries with HSL I/O Bridge and Network Interface Controller (NIC) resources. Ignore B600 6982 and B600 6984 SRCs. If there are any HSL failures on the other system(s), (not including B600 6982 and B600 6984), then continue with the steps that follow, otherwise go to step 2. • Repair the problem(s) on the other system(s) and then return to this step. After making repairs on other system(s) check the Product Activity Log (PAL) of this system for a B600 6985 and this loop's resource name logged after the repairs you made on the other system(s). If there is a 6985 logged after the repairs on the other system(s) then continue with the steps that follow, otherwise go to step 2. • For the B600 6985 SRC you found use FRU SIRSTAT to determine if it is indicating that the loop is complete. If the loop is complete then this problem has been resolved. Use "BUS PIP HSL-01" on page 270 to verify that the loop is now working properly. Otherwise, go to setp 2. 2. The FRU list displayed in the SAL may be different from the failing item list given here. Use the FRU list in the SAL when it is available. If there is more than one FRU in the SAL for this SRC then perform "BUS PIP HSL-01" on page 270. NOTE: A fiber optic cleaning kit may be required for optical HSL connections.	SIIOADP SICNTRL SIRGCBL OPT_CLN	
6983	An invalid High Speed Link (HSL) configuration was detected. An HSL loop has an invalid configuration. Word 4 of the SRC contains the program return code (PRC) which identifies the problem with the loop's configuration. Use the PRC and the FRU listed to determine the problem. If you are using the Service Action Log (SAL) the FRU description may already indicate the configuration problem.	SIRGCFG	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6984	High Speed Link (HSL) loop status message. An HSL I/O loop has switched to its alternate path. This is an informational SRC only. Word 7 of the SRC contains the loop number in the leftmost 4 digits. The loop number is in hexadecimal format. You must convert the hexadecimal loop number into decimal format to recognize the loop number in HSM. This SRC can be caused by a tower on the HSL loop powering off. This SRC may also appear in the SAL with a B600 6982 or B600 6981 logged at approximately the same time. In that case the other SRC is reporting a failure and this SRC is reporting that the alternate HSL path is now being used. Service the other SRC if present, otherwise ignore this SRC.		

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location

6985	High Speed Link (HSL) loop status message.
	
	If this SRC is not in Service Action Log (SAL) then it is informational. Use FRU SIRSTAT to determine what this SRC means. Otherwise, continue with the following steps:
	
	This error can appear in the SAL when a tower or another system in the loop did not complete powering on before LIC checked this loop for errors. Search the PAL for all B600 6985 SRCs logged for this loop and use FRU SIRSTAT to determine if this error requires service.
	
	1. If you find a B600 6981 in the SAL then close that problem and go to step 2. Otherwise perform the following:
	
	  • Perform "BUS PIP HSL-06" on page 287 to determine if any other systems are connected to this loop and return here. (SIRGCBL FRU in the SAL indicates the loop number.) If there are other system(s) then continue with the steps that follow, otherwise go to step 2.
	
	  • Check for HSL failures on the other system(s) before replacing parts. HSL failures are SAL entries with HSL I/O Brige and Network Interface Controller (NIC) resources. Ignore B600 6982 and B600 6984 entries. If there are HSL failures on other system(s) then continue with the steps that follow, otherwise go to step 2.
	
	  • Repair the problems on the other systems and return to this step. After making repairs on the other system(s) check the PAL of this system for a B600 6985 logged after the repairs you made on the other system(s). If you find one then continue with the steps that follow, otherwise go to step 2.
	
	  • For the B600 6985 log you found, use FRU SIRSTAT to determine if the loop is now complete. If the loop is complete then this problem has been resolved. Use "BUS PIP HSL-01" on page 270 to verify that the loop is now working properly. Otherwise, go to step 2.
	
	2. Use the SAL's FRU list when it is available.
	
	If this SRC appears in the SAL with more than one failing item displayed then perform problem isolation procedure "BUS PIP HSL-01" on page 270.
	
	NOTE: A fiber optic cleaning kit may be required for optical HSL connections.
		SIRSTAT
		-OR-
		SIIOADP
		SICNTRL
		SIRGCBL
		OPT_CLN	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
6986	System bus error During IPL, system LIC detected an HSL I/O bridge that was already initialized. The bridge should have been in a flushed and unintialized state after powering on. There is a problem with SPCN components that prevented the tower from powering off after a previous power off was issued. The tower will not be configured for this IPL. This reference code is equivalent to 1xxx 90F0. When referring to the "CBLALL" symbolic FRU in the Failing Item list, perform the "CBLALL" procedure using reference code "90F0". Word 5 of the SRC identifies the frame. Determine the frame by breaking down word 5: Word 5 -> xxxx xxNN where: NN is the frame number in hexadecimal format.	TWRCARD CBLALL	
6990	Service processor failure. The FRU list displayed in the Service Action Log (SAL) may vary from the failing item list given in this document. Use the FRU list in the SAL if the SAL is available to you.	SVCPROC	
6991 to 6992	Service processor failure.	AJDGP01	
6993	Service processor failure. A failure occurred with the service processor hardware or the service processor LIC. The FRU list displayed in the Service Action Log (SAL) may vary from the failing item list given in this document. Use the FRU list in the SAL if the SAL is available to you.	SVCPROC AJDGP01	
6994	Service processor failure. The FRU list displayed in the Service Action Log (SAL) may vary from the failing item list given in this document. Use the FRU list in the SAL if the SAL is available to you.	SVCPROC	
699C	Wrap plug is installed on Bus Expansion Adapter card This reference code is for information only. It indicates the presence of a wrap plug on the local optical link card.		
69A8	Informational bus reference code This reference code is for information only and might include the following: • Optical speed encode • Broken optical links now operational • Other information		
69B8	Bus hardware configuration problem The optical bus cabling is not connected correctly. Perform "BUS-PIP1" on page 267.	FI00187 AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69C1	A failure occurred on another system Perform "BUS-PIP1" on page 267.	FI01040 FI00206 FI00182 AJDG301	
69C2	Information only, no service action required. HSL OptiConnect normal connection to another system or partition. This reference code is informational only. HSL Opticonnect has established connection normally. The local system or partition is participating in HSL Opticonnect with other systems or partitions on the same HSL loop.		
69C3	Information only, no service action required. Opticonnect normal remote disconnection from OptiConnect participation. This reference code is informational only. HSL Opticonnect disconnected normally from a remote node. The local system or partition has stopped participating in HSL Opticonnect with the remote system or partition on the same HSL loop. Possible reasons include: • A remote system or partition went off line due to a normal power off or disable of HSL Opticonnect		
69C5	I/O processor failure The OptiConnect/400 card which connects this system to another system has failed. The failing card is located in an I/O processor card slot. Perform "BUS-PIP1" on page 267.	FI00206 FI01040 AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69C6	Abnormal or unexpected HSL OptiConnect disconnection from a remote system or partition. The local system or partition disconnected from a remote system or partition due to an unexpected event or failure. The problem is most likely with the remote system or partition. Intervention at the remote system is most likely required. Examine both the local and remote HSL Opticonnected systems or partitions for problems on this HSL loop. Possible reasons include: A fatal error in software or hardware in the remote system or partition or a power failure in the remote system. If there was not a complete HSL loop before this error occurred then a failure or power down in an HSL component between the local system or partition and the remote system or partition could have caused this error. Check for a problem with: an HSL cable, HSL I/O bridge or a power problem in an expansion I/O tower or unit on this loop. Examine the Service Action Log (SAL) on the local system or partition for HSL failures on the same HSL loop at approximately the same time this error occurred. Examine the remote system or partition for problems. If the remote system or partition is powered on and IPL'd then examine the Service Action Log (SAL) on the remote system or partition for problems on the same HSL loop at approximately the same time this error occurred. Correct any problems you find with the remote and local systems or partitions that happened at approximately the same time and involve HSL Opticonnect or HSL loop components or Network Interface Controllers. When the remote system is IPL'd it will automatically reconnect with this system or partition. If there are no problems with the remote system or partition and there are no problems with the local system or partition then collect all the Product Activity Log information for this failure on both systems. Be sure to record all words in the SRC. Contact your next level of support.	REM_SYS	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69C7	Abnormal or unexpected HSL OptiConnect disconnection from a remote system or partition. The local system or partition disconnected from a remote system or partition due to an unexpected event or failure. LIC will attempt to recover from the error. Intervention at the local or remote system or partition may be required. Possible causes are: time out, hang or hardware failure. The problem may be with: the local system or partition or the remote system or partition. If there was not a complete HSL loop before this error then a failure or power down in an HSL component between the local system or partition and the remote system or partition could have caused this error. Check for SRCs with FRUs like: HSL cables, HSL I/O bridge or a power problem in an expansion I/O tower or unit on this loop. Examine the SAL on the local system or partition for failures on the same loop, or with the Network Interface Controller at approximately the same time. Examine the remote system or partition for problems. Correct any HSL or NIC problems you find with the remote and local systems or partitions. If there are no problems with the remote system or partition and there are no problems with the local system or partition then collect all the PAL information for this failure on both systems. Be sure to record all words in the SRC. Contact your next level of support.	REM_SYS LOC_SYS	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69C8	Abnormal or unexpected HSL OptiConnect disconnection from a remote system or partition. The local system or partition disconnected from a remote system or partition due to an unexpected event or failure. All of the HSL OptiConnect connections on this loop will be in a failed state. LIC will attempt to recover from the error. Intervention at the local or remote system or partition may be required. Possible causes are: • time out of a critical message • LIC code / table problem • Network deadlock detected The problem may be with: • The local system or partition • The remote system or partition Examine the Service Action Log (SAL) on the local system or partition for HSL failures on the same HSL loop, or with the Network Interface Controller at approximately the same time this error occurred. Examine the remote system or partition for problems. Examine the Service Action Log (SAL) on the remote system or partition for problems on the same HSL loop or with the Network Interface Controller at approximately the same time this error occurred. Correct any problems you find with the remote and local systems or partitions that happened at approximately the same time and involve HSL Opticonnect or HSL loop components or Network Interface Controllers. If there are no problems with the remote system or partition and there are no problems with the local system or partition then collect all the Product Activity Log information for this failure on all systems or partitions. Be sure to record all words in the SRCs. Contact your next level of support.	REM_SYS LOC_SYS AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69C9	Abnormal or unexpected HSL OptiConnect disconnection from a remote system or partition. The local system or partition disconnected from a remote system or partition due to an failure in a LIC virtualized bus unit. LIC will attempt to recover from the error. Possible causes are: • LIC problem where the local bus unit is off line. • LIC problem where the remote bus unit is off line. Examine the Service Action Log (SAL) on the local system or partition for HSL Opticonnect failures that occurred at approximately the same time this error occurred. Examine the remote system or partition for problems. Examine the Service Action Log (SAL) on the remote system or partition for HSL Opticonnect problems that occurred at approximately the same time this error occurred. Collect all the Product Activity Log information for this failure on all systems and partitions on this HSL loop. Be sure to record all words in the SRCs. Contact your next level of support with the information you have collected.	AJDG301 REM_SYS LOC_SYS	
69CF	Abnormal or unexpected HSL OptiConnect disconnection from a remote system or partition. LIC internal error. All systems participating in HSL OptiConnect will be disconnected. The system must be re-IPL'd to recover. Before re-IPL'ing the system initiate a main store dump. After getting the dump, examine the Service Action Log (SAL) on the local system or partition for HSL Opticonnect failures that occurred at approximately the same time this error occurred. Examine the remote systems or partitions for problems. Examine the Service Action Log (SAL) on the remote systems or partitions for HSL Opticonnect problems that occurred at approximately the same time this error occurred. Collect all the Product Activity Log information for this failure on all systems and partitions on this HSL loop. Be sure to record all words in the SRCs. Contact your next level of support with the information you have collected.	AJDG301	
69D0	Bus Expansion Adapter card failed An internal error was detected on a local optical link card. Perform "BUS-PIP1" on page 267.	FI00182 FI00055 AJDG301	

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
69D8	Bus Expansion Adapter failed A primary optical link had a failure. Contact with the bus may still be possible through this link or through a redundant link. Perform "BUS-PIP1" on page 267. For this reference code the failing item list presented in the "Service Action Log" can be different from the failing item list documented here. That is due to the differences in system models and features installed. If the "Service Action Log" is available then use the failing item list presented there for servicing this reference code. If the "Service Action Log" is not available then use the failing item list documented here. By following the procedures in the symbolic FRUs listed here you will isolate to the correct FRU list based on system model and features installed.	FI00182 FI00203 FI00055 LBUSADP AJDG301	
69E0	Bus Expansion Adapter card failed An internal error was detected on a remote bus adapter card. Perform "BUS-PIP1" on page 267.	FI00203 AJDG301	
69E8	Bus Expansion Adapter failed Redundancy has been lost due to a secondary optical link failure. Contact with the bus may still be possible through the primary optical link. Perform "BUS-PIP1" on page 267.	FI00203 FI00205 FI00057 AJDG301	
69F0	Bus Expansion Adapter failed Contact has been lost to the bus. Perform "BUS-PIP1" on page 267.	FI00180 FI00182 FI00203 FI00056 FI00205 LBUSADP AJDG301	
69F8	Bus Expansion Adapter failed An optical link initialization failure occurred. The number and configuration of the system buses can not be determined. Perform "BUS-PIP1" on page 267.	FI00180 FI00203 FI00182 FI00186 FI00057 AJDG301	
7001	ISDN call in rejected	GG3COMM	
7002	Lines not selected	GG3COMM	
7003	Network interfaces not selected	GG3COMM	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7004	TCP/IP informational error This reference code is logged when the TCP/IP Attribute "Log Protocol Errors" is set, and the TCP/IP System LIC "silently discards" an inbound datagram. "Silently discard" is defined to mean discard the received datagram without reporting an error to the originating host device. Examples of such datagrams are those with checksums or destination addresses which are not valid. This reference code is for information only. Normally no action should be taken as a result of this reference code. It is generated in order to assist with remote device or TCP/IP network problem determination.		
7055	Statistics were logged, no service action required This reference code is logged for information only.		
7100	APPN session initiation attempt has timed out This reference code is used to indicate that LIC timed out on a request to initiate a session. The user must run problem analysis for this reference code. If this indicates a software problem, the user should dial IBM Software Support for assistance. The Problem Determination Procedure (PDP) will indicate whether the original timeout condition still exists and what the corrective actions should be.	AJDG301 GG3PL03 GG3PL01 GG3PL02	
7101	APPN session initiation attempt has failed This reference code is used to indicate that LIC attempted to satisfy a session initiation request, but some failure condition was detected by LIC. The failure condition could be a configuration or operational problem in the network. The user must run problem analysis for this reference code. If this indicates a software problem, the user should dial IBM Software Support for assistance. The Problem Determination Procedure (PDP) will indicate whether the original timeout condition still exists and what the corrective actions should be.	GG3PL04 GG3PL05 GG3PL06 AJDG301	
7102	APPN CP-CP session ended.		
7201	A utility failure occurred. This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a utility failure.		
7202	Utility power restored. This reference code is for information only. The Uninterruptible Power System (UPS) is reporting that utility power has been restored.		
7203	A battery low condition was detected. This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a battery low condition.		

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Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7204	Uninterruptible Power System reported a bypass active This reference code is for information only. The Uninterruptible Power System (UPS) is reporting a bypass is active.		
7205	Battery low condition was reset. This reference code is for information only. The Uninterruptible Power System (UPS) is no longer reporting a battery low condition.		
7206	UPS reported bypass no longer active This reference code is for information only. The Uninterruptible Power System (UPS) is no longer reporting a bypass active condition.		
7207	Battery Power Unit needs service The replacement period for BPU 1, installed in the System Unit, has been exceeded.	FI00315	
7208	Battery Power Unit needs service The replacement period for BPU 2, installed in the System Unit, has been exceeded.	FI00315	
7209	Battery Power Unit needs service The replacement period for BPU 1, installed in the Expansion Unit, has been exceeded.	FI00315	
720A	Battery Power Unit replacement dates do not match The replacement dates for one of the Battery Power Units do not match. Run "Display Hardware Configuration" and verify that the dates match the labels on the batteries.		
7701	SCSI jumper card was not detected.	21H7625 BACKPLN	
7702	Incorrect SCSI jumper card detected	21H7625	
7703	System LIC detected a program exception Storage Management detected a DASD datacheck condition and the defective sector was reallocated. Perform a system IPL to restart the system.		
7704	General failure detected by HRI component.	AJDG301	

Reference Code	Description/Action Perform all actions before exchanging Failing Items	Failing Item	Location
7777	Hardware configuration change detected A hardware resource is missing. The resource reported in to the system on a previous IPL, but has not reported in on the current IPL. This could occur for several different reasons. 1. It could be a normal situation where the resource is currently powered off. In this case, when the resource is powered back on, it will no longer be missing. 2. The hardware resource could also be missing if it has been removed from the system, for example, a tape drive that was replaced with a different tape drive. The service representative should use the Hardware service manager to remove the entry for this resource. 3. The resource may not have reported in on this IPL because it is failing. Perform problem analysis to determine why the resource is failing.		
CFFC	Optical library device condition not expected The optical disk drive addressing within the optical library is incorrect. This error is likely to be the result of faulty cabling or switch setting following service to an optical library. Contact your hardware service provider.	OPTLCBL DRVSWCH	
CFFD	Optical drive failure	OPTLDRV	
CFFF	Media determined to be bad in Optical library		
F103	Main storage dump must be copied for service. Perform "LIC-PIP1" on page 324.		
FDC0	LIC program reported informational error This reference code is logged for information only. No action required.		
FDC5	LIC program failed and data was captured This reference code indicates first failure data capture (FFDC) data was collected for a problem reported by licensed internal code. The user should dial IBM Software Support for assistance.	GG3FFDC	

Licensed Internal Code (LIC) Failing Items

Failing Item	Description	Document Description
21H7625	Incorrect, defective or missing SCSI jumper card	Repair and Parts; removal and installation procedures
AJDG301	Licensed Internal Code	Service Functions; APAR or LICTR
AJDGP01	Service processor Licensed Internal Code	Repair and Parts; removal and installation procedures
AJGLD01	I/O card Licensed Internal Code	Service Functions; APAR or LICTR
BACKPLN	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
BSTWRPL	I/O tower card	Problem Analysis; Symbolic FRU Isolation

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Failing Item	Description	Document Description
CBLALL	Cable Unit Part	Problem Analysis; Symbolic FRU Isolation
CTLPNCD	System Unit Control Panel Card Assembly	Problem Analysis; Symbolic FRU Isolation
CVTCARD	System Interconnect SPD migration card	Problem Analysis; Symbolic FRU Isolation
DEVTERM	Terminating plug	Problem Analysis; Symbolic FRU Isolation
DISKDRV	Disk drive and logic card	Problem Analysis; Symbolic FRU Isolation
DISKTRY	Disk unit tray	Problem Analysis; Symbolic FRU Isolation
DRVSWCH	Drive address switch	Problem Analysis; Symbolic FRU Isolation
GG3COMM	Communications failure	
GG3FFDC	LIC program failed and data was captured	
GG3PL01	System performance problem	
GG3PL02	Network performance problem	
GG3PL03	Switched link activation failure message not answered	
GG3PL04	Transmission groups in the network must be activated	
GG3PL05	Class-of-service specified does not provide a route	
GG3PL06	COS acceptable TGs and nodes do not exist for the route	
LBUSADP	System bus adapter failed	Problem Analysis; Symbolic FRU Isolation
LOC_SYS	Local HSL OptiConnect system	Local HSL OptiConnect system
LPARCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
LPARSUP	Call your next level of support for assistance	Problem Analysis; Symbolic FRU Isolation
MABRCFG	Multi-adapter bridge configuration change or error	Problem Analysis; Symbolic FRU Isolation
MASBUS	Multi-adapter bridge card slot or card bus	Problem Analysis; Symbolic FRU Isolation
MA_BRDG	Multi-adapter bridge	Problem Analysis; Symbolic FRU Isolation
OPTDRIV	Optical Disk Drive	Problem Analysis; Symbolic FRU Isolation
OPTLCBL	Optical Library drive cabling	Problem Analysis; Symbolic FRU Isolation
OPTLDRV	Optical Library optical drive	Problem Analysis; Symbolic FRU Isolation
OPT_CLN	Fiber optic cleaning kit	Fiber optic cleaning kit
PIOCARD	PCI I/O processor or adapter card	Problem Analysis; Symbolic FRU Isolation
PPCIMIN	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PPCISYS	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PPCITWR	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
PRI_PCI	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
REM_SYS	Remote HSL OptiConnect system	Remote HSL OptiConnect system
SIADPCD	System Interconnect I/O adapter	Problem Analysis; Symbolic FRU Isolation
SICNTRL	System Interconnect controller	Problem Analysis; Symbolic FRU Isolation
SIIOADP	System Interconnect I/O adapter	Problem Analysis; Symbolic FRU Isolation
SIRGCBL	System Interconnect cable, connection or interposer card	Problem Analysis; Symbolic FRU Isolation

Failing Item	Description	Document Description
SIRGCFG	Configuration error	Problem Analysis; Symbolic FRU Isolation
SIRSTAT	System Interconnect cable, connection or interposer card	Problem Analysis; Symbolic FRU Isolation
SI_CARD	System Interconnect controller	Problem Analysis; Symbolic FRU Isolation
SI_PHB	System PCI bus hardware	Problem Analysis; Symbolic FRU Isolation
SLOTERR	Multi-adapter bridge card slot error, do not use card slot	Problem Analysis; Symbolic FRU Isolation
SPNLCRD	SPCN panel card	Problem Analysis; Symbolic FRU Isolation
STORIOA	Active I/O processor	Problem Analysis; Symbolic FRU Isolation
SVCDOCS	Customer engineer directed to system problem analysis	Problem Analysis; Symbolic FRU Isolation
SVCPROC	Service Processor Card	Problem Analysis; Symbolic FRU Isolation
SYSBKPL	System unit backplane	Problem Analysis; Symbolic FRU Isolation
TWRBKPL	I/O tower card	Problem Analysis; Symbolic FRU Isolation
TWRCARD	Card enclosure or backplane	Problem Analysis; Symbolic FRU Isolation
TWRPLNR	I/O tower card	Problem Analysis; Symbolic FRU Isolation
UG3USR1	Operator response required	

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Chapter 3. Problem Isolation Procedures (PIPs), Failing Items, and Symbolic FRU Isolation

Problem Isolation Procedures

Bus, High-Speed Link (HSL) Problem Isolation Procedures

Overview

Note: Symbolic FRUs, FIs, and BUS 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.

Note: Migrated SPD busses from earlier AS/400 systems 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 262). Empty card positions (between I/O processors) are not allowed on the system SPD bus. Card gaps may cause system reference codes (SRC) 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).

Bus, High-Speed Link (HSL) PIPs

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)

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 Position Tables" on page 264.

Table 6. SRC Break Down Table

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" on page 850 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

Table 6. SRC Break Down Table (continued)

SRC Word	Control Panel Function	Panel Function Characters	Format	Description
7	13	9-16	BBBB Ccbb	Bus, Card, board Direct Select Address (DSA). See "Determining a Part Position and Item From the Direct Select Address". 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)

Determining a Part Position and Item From the Direct Select Address:

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 7.
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 Position Tables" on page 264. Search for the bus number, the multi-adapter bridge number and the multi-adapter bridge function number in the Card Position Table that matches the system unit or the I/O tower type where the bus is located.

Table 7. DSA Break Down Table

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
		2	0 through 7
		7	0
0002 through 0003	PCI	1	0 through 7
		2	0 through 7
0004 through 0017	SPD	Logical Card Number (See the Bus Overview section in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.	
0018 through 00FF	PCI	1	0 through 7
		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

Bus, High-Speed Link (HSL) PIPs

Table 7. DSA Break Down Table (continued)

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**
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

Card Position Tables

Table 8. System Unit Card Position Table

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)	0001	1	0	Embedded IOP	MB1
			1	PCI IOP or IOA Card	C07 (32 bit)
			2	PCI IOP or IOA Card	C01 (32 bit)
			3	PCI IOP or IOA Card	C06 (32 bit)
			4	PCI IOP or IOA Card	C05 (32 bit)
			5	PCI IOP or IOA Card	C04 (32 bit)
			6	PCI IOP or IOA Card	C03 (32 bit)
			7	PCI IOP or IOA Card	C02 (32 bit)
			F	Multi-adapter Bridge	MB1
		7	0	Service Processor	MB1
820 (All)	0001	1	0	Embedded IOP	MB1
			1	PCI IOP or IOA Card	C06 (32 bit)
			2	PCI IOP or IOA Card	C05 (32 bit)
			3	PCI IOP or IOA Card	C04 (32 bit)
			4	PCI IOP or IOA Card	C03 (64 bit)
			6	PCI IOP or IOA Card	C02 (32 bit)
			7	PCI IOP or IOA Card	C01 (32 bit)

Table 8. System Unit Card Position Table (continued)

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
			F	Multi-adapter Bridge	MB1
		7	0	Service Processor	MB1
820 (All)	other than 0001	1	0	PCI IOP or IOA Card	C12 (32 bit)
			1	PCI IOP or IOA Card	C11 (32 bit)
			2	PCI IOP or IOA Card	C10 (64 bit)
			4	PCI IOP or IOA Card	C09 (32 bit)
			5	PCI IOP or IOA Card	C08 (32 bit)
			6	PCI IOP or IOA Card	C07 (64 bit)
			F	Multi-adapter Bridge	MB1

Note: Service FC 5079 towers as two independent FC 5074 towers.

Table 9. Model 830/SB2 – FC 9074 Base I/O Tower, Model 840/SB3 – FC 9079 Base I/O Tower, FC 5074, 5079 I/O Expansion Towers, and FC 5078/0578 PCI Expansion Unit Card Position Table

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
0001 (FC 9074 and FC 9079 towers only)	7	0	Service Processor (FC 9074, FC 9079 Only)	CB1
First bus under the HSL I/O bridge, (1 multi-adapter bridge)	1	0	PCI IOP or IOA Card	C01 (64 bit)
		2	PCI IOP or IOA Card	C02 (64 bit)
		4	PCI IOP or IOA Card	C03 (64 bit)
		6	PCI IOP or IOA Card	C04 (64 bit)
		F	Multi-adapter Bridge	CB1
Second bus under the HSL I/O bridge, (2 multi-adapter bridge's)	1	0	PCI IOP or IOA Card	C05 (64 bit/INS)
		2	PCI IOP or IOA Card	C06 (32 bit)
		3	PCI IOP or IOA Card	C07 (32 bit)
		4	PCI IOP or IOA Card	C09 (64 bit)
		6	PCI IOP or IOA Card	C10 (64 bit)
		F	Multi-adapter Bridge	CB1
Second bus under the HSL I/O bridge, (2 multi-adapter bridge's)	2	0	PCI IOP or IOA Card	C11 (64 bit/INS)
		2	PCI IOP or IOA Card	C12 (32 bit)
		3	PCI IOP or IOA Card	C13 (32 bit)
		4	PCI IOP or IOA Card	C14 (64 bit)
		6	PCI IOP or IOA Card	C15 (64 bit)

Bus, High-Speed Link (HSL) PIPs

Table 9. Model 830/SB2 – FC 9074 Base I/O Tower, Model 840/SB3 – FC 9079 Base I/O Tower, FC 5074, 5079 I/O Expansion Towers, and FC 5078/0578 PCI Expansion Unit Card Position Table (continued)

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
		F	Multi-adapter Bridge	CB1

Table 10. FC 5075 I/O Expansion Towers Card Position Table

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
First Bus under the HSL I/O bridge	1	0	Embedded IOP	CB1
		1	PCI IOP or IOA Card	C01 (32 bit)
		2	PCI IOP or IOA Card	C02 (64 bit)
		4	PCI IOP or IOA Card	C03 (64 bit)
		6	PCI IOP or IOA Card	C04 (64 bit)
		F	Multi-adapter Bridge	CB1
Second bus under the HSL I/O bridge	1	0	PCI IOP or IOA Card	C05 (64 bit)
		2	PCI IOP or IOA Card	C06 (64 bit)
		4	PCI IOP or IOA Card	C07 (64 bit)
		6	PCI IOP or IOA Card	C08 (64 bit)
		F	Multi-adapter Bridge	CB1

Table 11. External xSeries Server, iSeries Adapter — Machine Type 1519 Card Position Table

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.
		F	Multi-adapter Bridge	Follow the HSL cables.

Converting From HSL Loop Number to Port Labels on the System Unit or Processor Tower

Table 12. Loop Number to NIC Port Location Labels for Models 270 and 820

Decimal Loop Number	Hexadecimal Loop Number	System Model	HSL Port Labels on System Unit or Processor Tower
256	0100	• Model 270 - Record the processor feature code (characters 5 through 8 of function 20 on the control panel). Use the processor feature code and "Locations — Model 270" on page 671 to determine if loop 256 is embedded internally or has external HSL ports.	• No HSL ports when loop 256 is an internal loop embedded in the System Unit Backplane. • "A0" and "A1" when loop 256 has external HSL ports.
		820	"A0" and "A1"

Table 12. Loop Number to NIC Port Location Labels for Models 270 and 820 (continued)

Decimal Loop Number	Hexadecimal Loop Number	System Model	HSL Port Labels on System Unit or Processor Tower
257	0101	270	"A0" and "A1"

BUS-PIP1
You will perform BUS-PIP1 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP2
You will perform BUS-PIP2 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP3
You will perform BUS-PIP3 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP5
This procedure will attempt to identify a failing I/O adapter card controlled by the IOP processor which you are performing isolation on.

1. Do you have a frame ID from the Service Action Log (SAL)?

   Yes   No

   ↓   Go to step 4 of this procedure.

2. Is the frame that you are working on a FC 5033, 5034, 5035, 5076 or 5077?

   No   Yes

   ↓   Go to step 6 on page 268 of this procedure.

3. 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 290. 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. Do you have a Direct Select Address (DSA)?

   Yes   No

   ↓   Obtain the bus number by performing **one** of the following steps:

   a. Record the Direct Select Address (DSA) which is word 7 from the SAL display. The bus number is the 4-leftmost characters.

   b. Search the Product Activity Log (PAL) for the SRC that sent you here and perform the following steps in the PAL for that SRC:

   1) Select the *"Display"* option for the SRC.

   2) Select the *"Additional information"* function. The DSA is word 7 of the SRC and the bus number is the 4-leftmost characters.

   c. Get the SRC from either the control panel or the main store dump screen. The DSA is word 7 of the SRC and the bus number is the 4-leftmost characters.

Record the bus number, then continue with the next step of this procedure.

5. 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 262 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　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 290. 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.

6. The I/O processor is in an SPD Migrated Tower. You will perform BUS-PIP5 for SPD Migrated Towers. Go to "BUS-PIPs for Migrated Towers" on page 269 to determine how to locate BUS-PIP5 for SPD Migrated Towers.

This ends the procedure.

BUS-PIP6
You will perform BUS-PIP6 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP7
You will perform BUS-PIP7 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP8
You will perform BUS-PIP8 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP9
You will perform BUS-PIP9 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP10
You will perform BUS-PIP10 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIP11
You will perform BUS-PIP11 on an SPD Migrated Tower. Go to "BUS-PIPs for Migrated Towers" on page 269.

This ends the procedure.

BUS-PIPs for Migrated Towers

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* 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*. 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.

This ends the procedure.

BUS PIP CNSL01

This procedure will direct you to exchange the I/O processor for the system or partition console.

1. Does the system have multiple partitions?

   Yes   No

   ↓   Go to step 11 on page 270 of this procedure.

2. Is the problem on a secondary partition?

   Yes   No

   ↓   Go to step 11 on page 270 of this procedure.

3. Can the customer power off the partition at this time?

   Yes   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 off the partition. Work with the customer to get the partition ready to be powered off. Return to step 4 of this procedure when the partition can be powered off.

4. Power down the partition from the Primary partition's *"Work with partition status"* display.

5. Determine the logical address and the frame ID of the console IOP using the following steps:
   - Select option *"Work with System Partitions"* in SST/DST.
   - Select option *"Display partition information"*.
   - Select option *"Display allocated I/O resources"*.
   - Page down until you find the console IOP for the partition that you are working with.
   - Select function *"Display logical address"*.
   - Record the bus, card and board logical address for the console's IOP.
   - Go to HSM in the Primary partition.
   - Select option *"Logical hardware resources"*.
   - Select option *"System bus resources"*.

- Select option *"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.
- For the system bus that you found, select option *"Associated packaging resource(s)"*.
- Record the frame ID in the "Frame ID" column.

6. 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.

7. Is the bus number that you recorded for the IOP between 4 and 23 (in decimal) ?

   Yes   No

   ↓   Go to step 9 of this procedure.

8. Perform "BUS PIP CNSL01" in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

   This ends the procedure.

9. Determine the card location of the IOP by going to the bus overview section of this document and locate the card position table for the frame type/feature you recorded using the bus and card logical address you recorded. Follow the page reference given at the end of this step. Record the card location for the IOP. Follow this page reference for the Bus "Overview" on page 261 section of this book.

10. Exchange the IOP in that card position by performing the following:
    a. Refer to the "Locations, Addresses and Part Listings" section of this document. The page reference is given in step 10e.
    b. Within the "Locations, Addresses and Part Listings" section go to the section for the frame type/feature that you recorded.
    c. Go to the "FRU Locations and Failing Items table" for the frame type/feature that you recorded.
    d. Locate the card position in the "FRU Locations and Failing Items table" and use the "Removal and Installation Procedure" identified for that card location.
    e. Follow this reference for the "Locations and Addresses" on page 671.

       Power on the secondary partition.

       This ends the procedure.

11. The problem is in the Primary partition of a system with one or more partitions.

12. The console IOP is embedded in the system unit backplane. Exchange the system unit backplane using symbolic FRU "SYSBKPL" on page 575.

13. Power on the system.

    This ends the procedure.

BUS PIP HSL-01
BUS PIP HSL-01, high-speed link - Failure Isolation.

This procedure isolates a failure in an HSL loop. In this procedure you are directed to examine the loop using HSM.

1. 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!**

Attention: This procedure MUST be performed from the Primary partition!

3. Get the loop number from the SRC if you do not already have it. The loop number is in word 7 of the SRC in hexadecimal format.

   If you are working from the Service Action Log (SAL) it may be displayed in the FRU description area in decimal.

   If you are working with the SRC in the PAL then the loop number is the leftmost 4 characters of the DSA in word 7 (BBBB). Use Table 7 on page 263 to convert the hexadecimal loop number to decimal before continuing with this procedure.

   Check to see if all I/O towers and system units attached to the loop are powered on.

4. Are all towers and systems on the loop powered on?

   No　**Yes**

   ↓　　Go to step 9 of this procedure.

5. Are all the powered off towers and systems able to be powered on at this time?

   No　**Yes**

   ↓　　Go to step 7 of this procedure.

6. Correct all problems on I/O towers and system units that are preventing them from powering on.

   If that is not possible at this time, then the customer may choose to re-configure the HSL loop without the I/O towers and system units that cannot be powered on. Re-configuring the loop by removing those towers and systems from the loop will allow the loop to be complete.

   The customer may also choose to keep those I/O towers and systems in the loop however, the loop will not be complete until all links in the loop are functioning.

   After you have corrected any problems with I/O towers and system units, **or** after you have re-configured the loop, return to this procedure at step 4. You may also start at the beginning of the procedure.

   This ends the procedure.

7. Power on the I/O towers or system units on the loop that were powered off. Wait for the frame number to appear in the OP Panel of the I/O towers that you powered on.

   Wait until the DST or system sign on screen appears on the console of the system units that you powered on.

8. Did the I/O towers and system units power on successfully?

   Yes　**No**

   ↓　　Go to step 6 of this procedure.

9. Perform "BUS PIP HSL-02" on page 280 to examine the loop using the *"Display HSL Information"* screens looking for failed ports. Then, return here and continue with the next step of this procedure.

10. Did you find a failed link?

    Yes　**No**

    ↓　　Close the problem. The loop is now functioning properly.

    　　This ends the procedure.

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11. Use the information that you recorded in "Appendix G. HSL Link Status Diagnosis Form" on page 877 to answer the following question:

    Is the frame ID # recorded in column 'A' for the *first* failing resource the same frame ID number recorded in column 'A' for the *second* failing resource?

    No   Yes

    ↓   Go to step 37 on page 275 of this procedure.

12. Is the first failing resource a system unit or base I/O tower (FC 9074 or FC 9079)?

    No   Yes

    ↓   Go to step 46 on page 276 of this procedure.

13. Is the second failing resource a system unit or base I/O tower (FC 9074 or FC 9079)?

    No   Yes

    ↓   Go to step 59 on page 277 of this procedure.

14. Refer to the information that you recorded in "Appendix G. HSL Link Status Diagnosis Form" on page 877.

    Locate and move to the frame identified in column 'A' for the *first* failing resource. Label the cables in order to restore them later.

15. Disconnect the HSL cables.

16. Are the connections optical links?

    No   Yes

    ↓   Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 18 of this procedure.

17. Wait at least 30 seconds.

18. Connect each of the cables to the **other** port (the one to which the other cable was originally attached). The following will now be true:
    - The cable originally connected to port 0 will now be connected to port 1.
    - The cable originally connected to port 1 will now be connected to port 0.

    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.

19. Refresh the port status for the first failing resource by:
    a. Wait 1 minute.
    b. Select the *Cancel* function.
    c. Select the *Refresh* function.
    d. Select the *Display detail* option for the *first* failing resource.

20. Complete the information for column 'B' in the HSL Link Status Diagnosis Chart by doing the following:

    Note: If you need help finding the *"Display HSL Information"* screen, refer to "BUS PIP HSL-02" on page 280.

    a. In the *"Display HSL Information"* screens, follow the leading or trailing port function until you have reached the frame and port pair that you recorded

as the *first* failing resource in column '**A**'. In column '**B**' record the port status for the same two HSL ports on the *first* failing resource.

b. In the *"Display HSL Information"* screens, follow the leading or trailing port function to the frame and port pair that you recorded as the *second* failing resource in column '**A**'. In column '**B**' record the port status for the same two HSL ports on the *second* failing resource.

21. Determine what to record for all the rows of column '**C**' by performing the following:

    • For the port status in column '**C**', compare the port status that you recorded in column '**A**' to the port status you that recorded in column '**B**'. If the port's status is *"Failed"* in both column '**A**' and column '**B**,' then mark in the same row of column '**C**' the letter "**X**" otherwise, leave this row in column '**C**' blank.

22. Refer to the information that you recorded in the "Appendix G. HSL Link Status Diagnosis Form" on page 877.

    Locate and move to the frame identified in column '**A**' for the *second* failing resource. Label the cables in order to restore them later.

23. Disconnect the HSL cables.

24. Are the connections optical links?

    No   Yes

    ↓   Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 26 of this procedure.

25. Wait at least 30 seconds.

26. Connect each of the cables to the **other** port (the one to which the other cable was originally attached). The following will now be true:

    • The cable originally connected to port 0 will now be connected to port 1.

    • The cable originally connected to port 1 will now be connected to port 0.

    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.

27. Refresh the port status by:

    a. Wait 1 minute.

    b. Select the *Cancel* function.

    c. Select the *Refresh* function.

    d. Select the *Display detail* option for the *first* failing resource.

28. Complete the information for column '**D**' in the "Appendix G. HSL Link Status Diagnosis Form" on page 877 by doing the following:

    a. In the *"Display HSL Information"* screens, follow the leading or tailing port function until you have reached the frame and port pair that you recorded as the *first* failing resource in columns '**A and B**'. In column '**D**' record the port status for the same two HSL ports on the *first* failing resource.

    b. In the *"Display HSL Information"* screens, follow the leading or tailing port function to the frame and port pair that you recorded as the *second* failing resource in column '**A and B**'. In column '**D**' record the port status for the same two HSL ports on the *second* failing resource.

29. Determine what to record in column '**E**' by performing the following:

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- For the port status in each row of column 'E', compare the port status that you recorded in column 'B' to the port status that you recorded in column 'D'. If the port's status is *"Failed"* in both column 'B' and column 'D,' then mark in the same row of column 'E' the letter "X" otherwise, leave this row in column 'E' blank.

30. Compare column 'C' with column 'E'. Is there a row with an 'X' in both column 'C' and column 'E'?

    Yes   No

    ↓   Go to step 33 of this procedure.

31. Exchange the HSL I/O Bridge in the frame associated with the row where both column 'C' and column 'E' have an 'X'. Use the following procedure:

    a. If the frame is a FC 5033, FC 5034 or FC 5035 SPD Migrated Tower, then exchange the HSL I/O Bridge using the symbolic FRU "CVTCARD" in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

    b. If the frame is a FC 5077 SPD Migrated Tower, then record the card type, card position, and frame ID of the associated packaging in HSM for this HSL I/O Bridge Resource. Determine which HSL I/O Bridge card in the FC 5077 to exchange by using the card position that you recorded.

       1) If the type number is 2696, then exchange the HSL I/O Bridge card by using symbolic FRU "LBSADP1" in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

       2) Otherwise, exchange the HSL I/O Bridge card by using one of these symbolic FRUs in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

          - Use LBSADP2 for card position S07.
          - Use LBSADP3 for card position S10.

    c. If the frame is an I/O tower, then exchange the HSL I/O bridge card by using symbolic FRU "SIIOADP" on page 560.

32. Go to step 39 on page 275 of this procedure.

33. Exchange the HSL cable currently connected to the port identified in column 'E' in the row with an 'X'. Use symbolic FRU "SIRGCBL" on page 563. Exchange **only** the frame to frame (external) cable at this time. Label the new cable the same as the one you are replacing.

    Examine the loop using the *"Display HSL Information"* screens looking for a failed *"leading link"* and stop when you find one. Stop if you have gone all the way around the loop and come back to the network interface controller (NIC). Refer to "BUS PIP HSL-02" on page 280 for help when examining the loop.

34. Is there a failed link on the loop at the port identified in column 'E' in the row with an 'X'?

    Yes   No

    ↓   Go to step 40 on page 275 of this procedure.

35. Determine if there are any interposer cards or ribbon cables connected to the HSL cable that you just exchanged by performing the following:

    - Record the frame types which are connected by the HSL cable. Use symbolic FRU "SIRGCBL" on page 563 and the frame types you recorded to determine if there are any HSL interposer cards or cables.

    - If you determined there are HSL interposer cards or ribbon cables, then exchange them before continuing to the next step.

36. Go to step 39 on page 275 of this procedure.

37. Is the frame type an FC 5077 SPD Migrated Tower?

    No   Yes

    ↓   Go to step 42 of this procedure.

38. Exchange the HSL I/O Bridge in the frame by performing the following:

    a. If the frame is a FC 5033, FC 5034 or FC 5035 SPD Migrated Tower, then exchange the HSL I/O Bridge using the symbolic FRU "CVTCARD" in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

    b. If the frame is an I/O tower, then exchange the HSL I/O Bridge card by using symbolic FRU "SIIOADP" on page 560.

    c. If the frame is a system unit or base I/O tower, then exchange these FRUs in the following order:

       • HSL I/O Bridge (see "SIIOADP" on page 560.)
       • Network interface controller (see "SICNTRL" on page 559.)

39. Examine the loop using the *"Display HSL Information"* screens looking for a failed *"leading link"* and stop when you find one. Stop if you have gone all the way around the loop and come back to the network interface controller (NIC). Refer to "BUS PIP HSL-02" on page 280 for help in examining the loop.

40. Did you find a failed link anywhere in the loop?

    Yes   No

    ↓   The loop is now functioning. Restore all HSL cables to their original connections. Close the problem.

             This ends the procedure.

41. Either you did not repair the original problem or you have discovered a new problem on the loop.

    • Restore all HSL cables to their original connections.
    • Continue isolation of the problem under the direction of your next level of support.
    • Your next level of support may direct you to continue with this Problem Isolation Procedure by going to step 1 on page 280 of this procedure.

    This ends the procedure.

42. The failing item is one of three HSL I/O Bridges in the FC 5077 SPD Migrated tower.

    Use the associated packaging resources for the failing port identified in the first failing resource row of "Appendix G. HSL Link Status Diagnosis Form" on page 877. Determine the card type and card position of the HSL I/O Bridge with the failing port(s).

43. Is the card type 2696?

    Yes   No

    ↓   Exchange the HSL I/O Bridge card using one of these symbolic FRUs in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

             • Use LBSADP2 for card position S07.
             • Use LBSADP3 for card position S10.

             Then continue with step 45 of this procedure.

44. Exchange the HSL I/O Bridge card using symbolic FRU "LBSADP1" in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

45. Go to step 39 of this procedure.

46. Is the *second* failing resource an I/O expansion tower?

    Yes   No

    ↓   Go to step 74 on page 279 of this procedure.

47. Locate and move to the frame identified in column 'A' for the *second* failing resource. Label the cables inorder to restore them later.

48. Disconnect the HSL cables.

49. Are the connections optical links?

    No   Yes

    ↓   Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 51 of this procedure.

50. Wait at least 30 seconds.

51. Connect each of the cables to the **other** port (the one to which the other cable was originally attached). The following will now be true:
    • The cable originally connected to port 0 will now be connected to port 1.
    • The cable originally connected to port 1 will now be connected to port 0.

    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.

52. Refresh the port status by:
    a. Wait 1 minute.
    b. Select the *Cancel* function.
    c. Select the *Refresh* function.
    d. Move to the *"Display HSL Information"* screen for the *first* failing resource.

53. For the *first* failing resource, did the failing port number change?

    No   Yes

    ↓   Exchange the HSL I/O Bridge in the frame of the first failing resource (see "SIIOADP" on page 560). Then go to step 79 on page 279 of this procedure.

54. Is the HSL cable an optical HSL cable?

    Yes   No

    ↓   Go to step 56 of this procedure.

55. Examine the state of the LEDs associated with the optical ports where the HSL cable connections are by performing the following: Determine which LEDs to examine using the table below.

Table 13. LED Locations

Frame type	LED locations
FC 5074, 5078/0578	LEDs are located on the HSL I/O Bridge card directly below the optical ports for the HSL cable. There is one (1) LED associated with each port and they are labeled as x-1L, x-2L, y-1L, y-2L, where x and y are the port numbers.

Table 13. LED Locations (continued)

Frame type	LED locations
Models 830/SB2	LEDs are located in pairs directly below the optical ports for the HSL cable. There is one (1) LED associated with each port and they are labeled as *B0-1L, B0-2L, B1-1L, B1-2L*. See the diagram of the Network Interface (NIC) Card Port Locations in the *iSeries Model 830, 840, SB2, and SB3 Problem Analysis, Repair and Parts* information.
Models 840/SB3	LEDs are located in pairs either above or below the optical ports. The two (2) LEDs closest to (above or below) the optical port pair for the cable belong to that port pair. There is one (1) LED associated with each port and they are labeled as *x*-1L, *x*-2L, *y*-1L, *y*-2L, where *x* equal D0 or E0 and *y* equals D1 or E1. See the diagram of the Network Interface (NIC) Card Port Locations in the *iSeries Model 830, 840, SB2, and SB3 Problem Analysis, Repair and Parts* information.

Examine both LEDs at the ports for each end of the optical cable. Are all four (4) LEDs lighted?

No   Yes

↓   Go to step 58 of this procedure.

56. Exchange the HSL cable (see "SIRGCBL" on page 563).

57. Is the leading port status of the HSL link from the *first* failing resource *"failed"*?

Yes   No

↓   The link is now functioning. Go to step 79 on page 279 of this procedure.

58. Exchange these FRUs in the following order:

   • HSL I/O Bridge (see "SIIOADP" on page 560).

   Then go to step 79 on page 279 of this procedure.

59. Is the first failing resource an I/O expansion tower?

Yes   No

↓   Go to step 74 on page 279 of this procedure.

60. Locate and move to the frame identified in column 'A' for the *first* failing resource. Label the cables so you can restore them later.

61. Disconnect the HSL cables.

62. Are the connections optical links?

No   Yes

↓   Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 64 on page 278 of this procedure.

63. Wait at least 30 seconds.

64. Connect each of the cables to the **other** port (the one to which the other cable was originally attached). The following will now be true:
    - The cable originally connected to port 0 will now be connected to port 1.
    - The cable originally connected to port 1 will now be connected to port 0.

    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.

65. Refresh the port status by:
    a. Wait 1 minute.
    b. Select the *Cancel* function until you return to *"Logical Hardware Resources Associated with HSL Loops"*.
    c. Select the *Refresh* function.
    d. Select the *Display detail* option for the *first* failing resource.

66. For the *first* failing resource, did the failing port number change?

    Yes   **No**

    ↓   Exchange the HSL I/O Bridge in the frame of the first failing resource (see "SIIOADP" on page 560). Then go to step 79 on page 279 of this procedure.

67. Is the HSL cable an optical HSL cable?

    Yes   **No**

    ↓   Go to step 69 of this procedure.

68. Examine the state of the LEDs associated with the optical ports where the HSL cable connections are by performing the following: Determine which LEDs to examine using the 13 table.

    Examine both LEDs at the ports for each end of the optical cable. Are all four (4) LEDs lighted?

    No   **Yes**

    ↓   Go to step 71 of this procedure.

69. Exchange the HSL Cable (see "SIRGCBL" on page 563).

70. Is the leading port status of the HSL link from the *first* failing resource *"failed"*?

    Yes   **No**

    ↓   The link is now functioning. Go to step 79 on page 279 of this procedure.

71. Exchange the Network interface controller (NIC) on the system unit (see "SICNTRL" on page 559). Then go to step 79 on page 279 of this procedure.

72. Is the HSL cable an optical HSL cable?

    Yes   **No**

    ↓   Go to step 74 of this procedure.

73. Examine the state of the LEDs associated with the optical ports where the HSL cable connections are by performing the following: Determine which LEDs to examine using the 13 table.

    Examine both LEDs at the ports for each end of the optical cable. Are all four (4) LEDs lighted?

    No   Yes

    ↓   Go to step 76 of this procedure.

74. Exchange the HSL cable between the *first* failing resource and the *second* failing resource using symbolic FRU "SIRGCBL" on page 563. Exchange only the frame to frame cable. Do not exchange any internal HSL cables at this time.

75. Is the leading port status of the HSL link from the *first* failing resource *"failed"*?

    Yes   No

    ↓   The link is now functioning. Go to step 79 of this procedure.

76. Determine which FRU on the *second* failing resource to exchange using the following table.

If the HSL trailing port on the second failing resource is:	Exchange this FRU on the frame with the second failing resource:
Port A0	HSL I/O Bridge using symbolic FRU "SIIOADP" in the Problem Analysis, Parts and Repair document that supports that system unit and model. In this document see "SIIOADP" on page 560.
Ports B0, C0, D0, E0, F0, G0, H0	Network Interface Controller (NIC) using symbolic FRU "SICNTRL" in the Problem Analysis, Parts and Repair document that supports that system unit and model. In this document see "SICNTRL" on page 559.
Ports A1, B1, C1, D1, E1, F1, G1, H1	Network Interface Controller (NIC) using symbolic FRU "SICNTRL" in the Problem Analysis, Parts and Repair document that supports that system unit and model. In this document see "SICNTRL" on page 559.

77. Is the leading port status of the HSL link from the *first* failing resource *"failed"*?

    Yes   No

    ↓   The link is now functioning. Go to step 79 of this procedure.

78. Exchange the HSL I/O Bridge on the frame with the first failing resource using symbolic FRU "SIIOADP" on page 560.

79. Use HSM to examine the loop and search for a failed link by starting at the Network Interface Controller (NIC) and following the leading ports. Refer to BUS PIP HSL-02 to locate the displays that do this.

    Did you find a failed link?

    Yes   No

    ↓   The loop is now functioning. **This ends the procedure.**

80. Is the failing link between the *first* failed resource and the *second* failed resource that you were working on?

    Yes   No

    ↓   Perform this procedure again. Go to step 1 on page 270 of this procedure.

81. Exchange any internal HSL connections between the *first* failing resource and the *second* failing resource using symbolic FRU "SIRGCBL" on page 563.

82. Is the link still failing?

Yes   No

↓   Verify that the loop is now complete by performing this procedure again. Go to step 1 on page 270 of this procedure.

83. Call your next level of support.

This ends the procedure.

BUS PIP HSL-02

BUS PIP HSL-02, Use HSM to examine the HSL Loop to find *failing* resources.

This procedure will direct you to use HSM screens to determine the status of HSL ports in the loop.

1. Make a copy of "Appendix G. HSL Link Status Diagnosis Form" on page 877. 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"*.
4. Select *"Hardware service manager"*.
5. Select *"Logical hardware resources"*.
6. Select *"High-speed link (HSL) resources"*.
7. Move the cursor to the HSL loop that you are here to examine. Select the *"Display detail"* option.
8. Select the function *"Include non-reporting resources"*.
9. The display that appears is showing 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.
10. Is the status of the *"Leading port to next resource"* *"operational"* ?

    Yes   No

    ↓   You have found the first *"failed"* link. You will be directed to find the other *"failed"* link. Go to step 14 of this procedure.

11. Select function *"Follow Leading Port"*.
12. Is the resource name the same name that you recorded for the NIC in step 9 of this procedure?

    No   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.

13. 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 10 of this procedure.
14. 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 "Appendix G. HSL Link Status Diagnosis Form" on page 877, 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 the *"cancel"* function to return to the *"Work with High-speed link (HSL) resources"* display.

    e. Select the *"Resources associated with loop"* option for the loop with the failure.

   f. Select the *"Associated packaging resources"* option for the HSL I/O Bridge with the resource name that you recorded.

   g. Record the frame ID, card position, and port. Record this information for the *first* failing link in "Appendix G. HSL Link Status Diagnosis Form" on page 877.

   h. Select the *"Display detail"* option and record the card position for the *first* failing resource.

15. Find the information for the other *(second)* failing resource using the following steps:

   a. Record this information as the *second* failing resource on the link.

   b. Select the *"cancel"* function to return to the *"Packaging resource associated with a logical resource"* display.

   c. Select the *"cancel"* function again, to return to the *"Logical hardware associated with HSL loops"* screen.

   d. Select the *"Display detail"* option for the HSL I/O Bridge with the name of the *first* failing resource.

   e. Follow the failed port by:

      • If the leading port is failed, select the *"Follow leading port"* function.

      • If the trailing port is failed, select the *"Follow trailing port"* function.

   f. You have located the *second* failing resource on the link.

   g. Record the resource name, card type-model, and part number.

   h. In "Appendix G. HSL Link Status Diagnosis Form" on page 877, record the link status of each port in column **A** for the *second* failing link. Circle 'Internal' if the port is designated as internal.

   i. Select the *"cancel"* function to return to the *"Logical hardware associated with HSL loops"* display.

   j. Select the *"Associated packaging resources"* option for the HSL I/O Bridge or Network Interface Controller (NIC) with the resource name that you recorded for the *second failed* resource.

   k. Record the frame ID, card position, and port. Record this information for the *second* failing link in "Appendix G. HSL Link Status Diagnosis Form" on page 877.

   l. Select the *"Display detail"* option and record the card position for the *second* failing resource.

16. Have you repeated steps 2 through 15 for a second time during this procedure?

    No   **Yes**

    ↓   Return to the procedure that sent you here.

           This ends the procedure.

17. Does the *first* failing link and the *second* failing link have the same frame ID?

    No   **Yes**

    ↓   Return to the procedure which sent you here.

18. The following steps guide you through disconnecting and reconnecting the HSL cable connection between the first and second failing resources to determine if the cable connectors are properly seated and cleaned

19. Disconnect the cable at the frame ID, card position, and port that you recorded for the *first* failing resource.

20. Is the connection an optical link?

> **No   Yes**
>
> ↓   Clean the HSL cable connector and port using the tools and
>   procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to
>   step 22 of this procedure.

21. Wait at least 30 seconds.

22. 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.

23. Disconnect the cable at the frame ID, card position, and port that you
    recorded for the *second* failing resource.

24. Is the connection an optical link?

    > **No   Yes**
    >
    > ↓   Clean the HSL cable connector and port using the tools and
    >   procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to
    >   step 26 of this procedure.

25. Wait at least 30 seconds.

26. 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.

27. Wait 1 minute to allow the changes to be detected by LIC.

28. Determine if the link has become *"operational"* by repeating steps 2 through 15
    of this procedure 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 through 15 of this procedure.

This ends the procedure.

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

This procedure will direct you to use HSM screens to determine the status of HSL
links in the loop.

1. Sign on to SST or DST.

2. Select the *Start a service tool* option.

3. Select the *Hardware sevice manager* option.

4. Select the *Logical hardware resources* option.

5. Select the *System interconnect* option.

6. Move the cursor to the HSL loop that you are here to examine. Select the
   Display detail option.

7. Select the function *Include non-reporting resources*.

8. The display that appears is showing the port status of the HSL controller for
   the loop that you selected. Record the resource name, type-model, and serial
   number, if it has not been previously recorded.

9. Is the status of the *"Leading port to next resource""operational*?

   Yes   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 14 of
             this procedure.

10. Select function *"Follow leading port"*.

11. Record the HSL resource name, type-model, part number, and port.

12. Is the resource name the same name that you recorded for the HSL controller
    in step 8 of this procedure?

   No   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.

13. 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 9 of this procedure.

14. 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, part number, and port.

    c. Select the *"cancel"* function to return to the *"Work with system interconnect
       resources"* display.

    d. Select the *Resources associated with ring* option for the loop with the failure.

    e. Select the *Associated packaging resources* option for the HSL I/O adapter
       with the resource name that you recorded.

    f. Record the frame ID, card position, and port. Record this information for
       the *"first"* failing link in "Appendix G. HSL Link Status Diagnosis Form" on
       page 877.

    g. Select the *Display detail* option and record the card position for the *"first"*
       failing resource.

15. Find the information for the other *(second)* failing resource using the following
    steps:

    a. Record this information as the *"second"* failing resource on the link.

    b. Select the *Cancel* function to return to the *"Packaging resource associated with
       a logical resource"* display.

    c. Select the *Cancel* function again, to return to the *"Logical hardware associated
       with HSL ring"* display.

    d. Select the *Display detail* option for the HSL I/O adapter with the name of
       the *"first"* failing resource.

    e. Select the *Follow leading port"* function.

    f. You have located the *"second"* failing resource on the link.

    g. Record the resource name, card type-model, part number, port.

    h. Select the *Cancel* function to return to the *"Logical hardware associated HSL
       rings"* display.

    i. Select the *Associated packaging resources* option for the HSL I/O adapter with
       the resource name that you recorded for the *"second"* failed resource.

    j. Record the frame ID, card position, and port. Record this information for
       the *"second"* failing link in "Appendix G. HSL Link Status Diagnosis Form"
       on page 877.

        k. Select the *Display detail* option and record the card position for the *"second"* failing resource.

16. Have you repeated steps 1 through 15 for a **second** time during this procedure?

      No   **Yes**

      ↓   Return to the procedure that sent you here.

            This ends the procedure.

17. Does the *"first"* failing resource and the *"second"* failing resource have the same frame ID?

      No   **Yes**

      ↓   Return to the procedure that sent you here.

            This ends the procedure.

18. The following steps guide you through disconnecting and reconnecting the HSL cable connection between the *first* and *second* failing resources to determine if the cable connectors are properly seated:

      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, them wait 30 seconds and reconnect it. See the 30 second attention notice in step 18a of this procedure.

      c. Refresh the port status by:

         1) Wait 1 minute.

         2) Select the *Cancel* function.

         3) Select the *Refresh* function.

         Determine if the link has become *"operational"* by repeating steps 1 through 15 of this procedure for a **second** time.

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

         Note: Return to the procedure that sent you here, when you are directed to do so in steps 1 through 15 of this procedure.

         This ends the procedure.

BUS PIP HSL-04

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"*.
3. Select *"Hardware service manager"*.
4. Select *"Logical hardware resources"*.

5. Select *"High-speed link (HSL) resources"*.

6. Move the cursor to the HSL loop that you are here to examine. Select the *"Display detail"* option.

7. Select the function *"Include non-reporting resources"*.

8. The display that appears is showing 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.

9. Is the status of the *"Leading port to next resource" "operational"* ?

   Yes   No

   ↓   You have found the first *"failing"* link. You will be directed to find the *"failing HSL I/O Bridge"*. Go to step 14 of this procedure.

10. Select function *"Follow Leading Port"*.

11. Record the HSL resource name, type-model, part number, and port.

12. Is the resource name the same name that you recorded for the NIC in step 8 of this procedure?

   No   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.

13. 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 9 of this procedure.

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

   a. Record the resource name, card type-model, part number, and port.

   b. Select the *"cancel"* function to return to the *"Work with high-speed link (HSL) resources"* display.

   c. Select the *"Resources associated with loop"* option for the loop with the failure.

   d. Select the *"Associated packaging resources"* option for the HSL I/O Bridge with the resource name that you recorded.

   e. Record the frame ID.

   f. Select the *"Display detail"* option and record the card position.

15. Have you repeated steps 1 through 14 for a second time during this procedure?

   No   Yes

   ↓   Return to the procedure that sent you here.

            This ends the procedure.

16. The following steps guide you through disconnecting and reconnecting the HSL cable connections on this HSL I/O Bridge to determine if the cable connectors are properly seated and clean.

17. Disconnect the cable labelled port 0 at the frame ID of the *HSL I/O bridge*.

18. Is the connection an optical link?

   No   Yes

   ↓   Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 20 on page 286 of this procedure.

19. Wait at least 30 seconds.

20. 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.

21. Disconnect the cable labelled port 1 at the frame ID of the *HSL I/O Bridge*.

22. Is the connection an optical link?

    No   Yes

    ↓   Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 24 of this procedure.

23. Wait at least 30 seconds.

24. 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.

25. Refresh the port status by:

    a. Wait 1 minute.

    b. Select the *Cancel* function.

    c. Select the *Refresh* function.

    d. Select the *Display detail* option for the failing resource.

26. Determine if the link has become *"operational"* by repeating steps 1 on page 284 through 14 on page 285 of this procedure for a **second** time.

    Note: Return to the procedure that sent you here, when you are directed to do so in steps 1 through 14 of this procedure.

    This ends the procedure.

BUS PIP HSL-05

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

1. Make a copy of "Appendix F. HSL Loop Configuration and Status Form" on page 873. 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"*.

4. Select *"Hardware service manager"*.

5. Select *"Logical hardware resources"*.

6. Select *"High-speed link (HSL) resources"*.

7. Move the cursor to the HSL loop that you are here to examine. Select the *"Display detail"* option.

8. Select the function *"Include non-reporting resources"*.

9. The display that appears is showing the port status of the Network Interface Controller (NIC) for the loop that you selected. Starting in the first row of the table, record the resource type, name, and the system/tower – type, model, or feature code (FC).

10. In the second column, record the frame ID and HSL port number of the leading port.

11. In the third column, record the status of the leading port (*failed* or *operational*).

12. Select function *"Follow Leading Port"*.

13. Record the HSL port number and the frame ID of the trailing link.

14. Record the resource type, name, and the system/tower – type, model, or feature code (FC).

15. Is the resource name the same name that you recorded for the NIC in step 9 of this procedure?

> **No   Yes**
>
> ↓   You have followed the HSL links around the loop and back to the NIC on the system. Return to the procedure that sent you here.
>
>   **This ends the procedure.**

16. The display that appears is showing the status of the HSL ports for the next HSL resource on the loop.

17. Go to the next row in the table and record the resource type, name, and the system/tower – type, model, or feature code (FC). Go to step 10 of this procedure.

This ends the procedure.

BUS PIP HSL-06

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"*.

3. Select *"Hardware service manager"*.

4. Select *"Logical hardware resources"*.

5. Select *"High-speed link (HSL) resources"*.

6. Move the cursor to the HSL loop that you are here to examine. Select the *"Display detail"* option.

7. Search for *Remote HSL NIC*(s) on the loop.

   Is there any *Remote HSL NIC*(s) on the loop?

> **No   Yes**
>
> ↓   You have determined that there **are** other systems connected to this loop.
>
>   **This ends the procedure.**

8. You have determined that there are **not** any other systems connected to this loop.

This ends the procedure.

Bus PIP HSL-07

Starting with a frame ID, for a frame connected to an HSL loop, this procedure will 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"*.

3. Select *"Hardware Service Manager"*.

4. Select *"Logical Hardware Resources"*.

5. Select *"High Speed Link (HSL) Resources"*.

6. Move the cursor to the HSL loop that you are here to examine. Select the *"Resources associated with loop"* option.

7. Select the function *"Include non-reporting resources"*.

8. The display that appears is showing the loop resource and all the "HSL I/O Bridge" and all the "Remote HSL NIC" resources connected to the loop.

9. 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 the *"Associated packaging resource(s)"* option.

    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	Yes
↓	Record the resource name and the Type-Model of the HSL I/O Bridge with the frame ID for possible use later. Select the *"Display Detail"* option 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). Select the *"Cancel"* function to the return to the *"Packaging Resources Associated with a Logical Resource"* display. Then continue with step 10 of this procedure

10. Select the *"Cancel"* function to return to the *"Logical Hardware Associated With HSL Loops"* display.

11. Repeat step 9 for each HSL I/O Bridge under the loop. When you have completed performing step 9 for each HSL I/O Bridge, then continue with the next step in this procedure.

12. Did you record find more than one HSL I/O Bridge with the same frame ID?

No	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.

13. 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.

Bus PIP HSL-08

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"*.

3. Select *"Hardware Service Manager"*.

4. Select *"Logical Hardware Resources"*.

5. Select *"High Speed Link (HSL) Resources"*.

6. Move the cursor to the HSL loop that you are here to examine. Select the *"Resources associated with loop"* option.

7. Select the *"Include non-reporting resources"* function.

8. The display that appears is showing the loop resource and all the ″HSL I/O Bridge″ and all the ″Remote HSL NIC″ resources connected to the loop.

9. 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 the option *″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?

   No   Yes

   ↓   Go to step 12 of this procedure.

10. Select the *″Cancel″* function to return to the *″Logical Hardware Associated With HSL Loops″* display.

11. Repeat step 12 for each HSL I/O Bridge resource under the loop until you are directed to do otherwise.

    This ends the procedure.

12. Perform the following:

    a. Select the *″Associated logical resource(s)″* option.

    b. Move the cursor to the HSL I/O Bridge resource and select the option *″Display detail″*.

    c. Examine the *Leading port* and *Trailing port* information. Search the display for the HSL port location label that you previously recorded prior to starting this procedure. If the HSL port location label that you came to this procedure with is part of the information for the *Leading port*, then select the function *″Follow leading port″*. Otherwise, if the HSL port location label that you came to this procedure with is part of the information for the *Trailing port*, then select the function *″Follow trailing port″*.

    d. Perform the step below that matches the function you selected in the previous step:

       • If you selected the function *″Follow Leading Port″* in the previous step, 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 the function *″Follow Trailing Port″* in the previous step, 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 the *″Cancel″* function to return to the *″Logical Resources Associated with a Packaging Resource″* display.

    h. Select the *″Cancel″* function to return to the *″Packaging Resources Associated with a Logical Resource″* display.

    i. Select the *″Cancel″* function to return to the *″Logical Hardware Associated With HSL Loops″* display.

     j. Move the cursor to the resource with the resource name you recorded in step 12f.

    k. Select the *"Associated packaging resource(s)"* option.

    l. Record the frame ID on the worksheet that you are using for the *"To Frame ID"*.

    m. Return to the procedure that sent you here.

This ends the procedure.

BUS PIP IOP-01, IOP Reset

This procedure will direct you 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 screen 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 the *"Start a service tool"* option.

4. Select the *"Hardware service manager"* option.

5. Select the *"Logical hardware resources"* option.

6. Select the *"System bus resources"* option.

7. 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 262.

8. Verify that the IOP are correct by matching the resource name(s) on the screen with the resource name(s) in the *"Service Action Log"* (SAL) for the problem you are working on.

9. Move the cursor to the IOP that you want to reset and select the *"I/O Debug"* option for that IOP.

10. Select the *"Reset IOP"* option.

11. Select the *"IPL IOP"* option.

    This ends the procedure.

BUS PIP IOP-02, Isolate to Failing I/O Adapter Resource

This procedure will 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. Does the system IPL to DST?

    Yes   No

    ↓   Perform "BUS PIP IOP-03" on page 292.

    This ends the procedure.

2. From the SAL screen for the SRC, record the count.

3. Go to the SST/DST screen 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.

4. On the *Start Service Tools Sign On* display, type in a User ID with QSRV authority and Password.

5. Select the *"Start a service tool"* option.

6. Select the *"Hardware service manager"* option.

7. Select the *"Logical hardware resources"* option.

8. Select the *"System bus resources"* option.

9. Is there a resource name logged in the SAL entry?

   No   **Yes**

   ↓   Go to step 18 of this procedure.

10. Do you have a location for the I/O processor?

    No   **Yes**

    ↓   Go to step 15 of this procedure.

11. Record word 7 (the Direct Select Address (DSA)) of the SRC from the SAL display.

12. Return to the HSM *"System bus resources"* display.

13. Locate the I/O processor by performing the following:

    a. Select the *"Display detail"* option.

    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.

14. Select *"cancel"* and then go to step 19 of this procedure.

15. Locate the I/O processor in HSM by performing the following for each IOP:

    a. Select the *"Associated packaging resource(s)"* option.

    b. Select the *"Display detail"* option.

    c. Repeat this step until you find the IOP with the same location.

16. Select *"cancel"*.

17. Select *"cancel"* again and go to step 19 of this procedure.

18. 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 screen with the resource name(s) in the *"Service Action Log"* (SAL) for the problem that you are working on.

19. Select the *"Resources associated with IOP"* option for the IOP that you are working on (if the I/O adapters are not already displayed).

20. Move the cursor to the first IOA that is assigned to the IOP.

21. Select the *"Associated packaging resource(s)"* option for the IOA where the cursor is located.

22. Select option *"Concurrent maintenance"* for the IOA.

23. Select function *"Power off domain"*.

Did the domain power off successfully?

Yes   No

↓   This procedure will not be able to identify a *failing* I/O adapter. Return to the procedure that sent you here.

24. Perform "BUS PIP IOP-01, IOP Reset" on page 290, then return here and continue with step 25 of this procedure.

25. Did the IOP reset and IPL successfully?

Yes   No

↓   This procedure will not be able to identify a *failing* I/O adapter. Return to the procedure that sent you here.

26. 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* screen for the partition that reported the problem. In the SAL the count will increase if the SRC occurred again.

27. Did the same SRC occur after the IOP was reset and IPL'd?

Yes   No

↓   Go to step 31 in this procedure.

28. Power on the IOA by pressing the *Power on domain* function key. Reassign the IOA to the IOP. Return to the *HSL resources* screen, showing the IOP and associated resources.

29. Is there another IOA associated with the IOP?

No   Yes

↓   Move the cursor to the next IOA assigned to the IOP. Go to step 21 on page 291 of this procedure.

30. Go to step 34 of this procedure.

31. The failing IOA is located. Exchange the I/O adapter that you just powered off. For help in locating the IOA, select the *Display detail* option and record the location.

32. Power on the IOA that you just exchanged.

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

Yes   No

↓   The failing item is the IOA that you just exchanged. Go to "BUS PIP VERIFY - RA" on page 304.

This ends the procedure.

33. The IOA is not the failing item. Remove the IOA and reinstall the original IOA.

34. No failing IOAs were identified. Return to the procedure that sent you here.

This ends the procedure.

BUS PIP IOP-03

Introduction: This procedure isolates a failing PCI I/O adapter card from an SRC.

1. **The removal and installation of all FRUs in this procedure must be performed using** ″**Dedicated Maintenance**″**.**

2. 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 262 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 Position Tables" on page 264 to locate the card position table for the frame type that you recorded.

    e. Using the card position table, record the "PCI Bridge Set" card positions, and multi-adapter bridge function numbers in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879.

    f. Examine the "PCI Bridge Set" in the frame and record the information in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879 for all of the positions with IOP and IOA cards installed in them.

    g. 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 "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879 write the word "DSA" next to the IOP that is identified in the DSA.

    h. In the "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879, 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.

3. 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   **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 step 5 of this procedure.

4. 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. Perform that from the "*Work with system partitions*" option 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 removal and exchange procedures for those positions will guide you through the HSM concurrent maintenance functions. This procedure will guide you to the correct removal and exchange procedure for each card position that you are instructed to work with.

5. Power off the system or partition.

6. Remove all of the IOAs that you marked with an "X" in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879. Be sure to record the card position of each IOA so that you can reinstall it in the same position

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later. To determine the removal and installation 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" on page 671.

Power on the system or partition.

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

Yes   No

↓   Power off the system or partition. Go to step 14.

7. Power off the system or partition. 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 removal and installation 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" on page 671.

Power on the system or partition.

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

No   Yes

↓   Go to step 24 on page 295.

8. Power off the system or partition.

9. Install all of the IOAs that you removed in step 6 on page 293 of this procedure. Be sure to install them in their original positions.

10. Power on the system or partition.

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

Yes   No

↓   Perform "BUS PIP VERIFY - RA" on page 304.

This ends the procedure.

11. Power off the system or partition.

12. Remove all of the IOAs that you marked with an "X" in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879. Be sure to record the card position of each IOA so that you can reinstall it in the same position later.

13. Remove the IOP that you exchanged and install the original IOP in it's original position.

14. Reinstall, in its original position, one of the IOA adapters that you removed.

15. Power on the system or partition.

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

Yes   No

↓   Power off the system or partition. Repeat step 14 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.

16. The I/O adapter card that you just installed is the failing FRU.

17. Power off the system or partition.

18. Exchange the I/O adapter card that you last installed. Be sure to install the new I/O adapter card in the same position.

19. Power on the system or partition.

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

    No   Yes

    ↓   Call your next level of support.

           This ends the procedure.

20. Power off the system or partition.

21. 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?

    No   Yes

    ↓   Call your next level of support.

           This ends the procedure.

22. Does a different SRC occur?

    Yes   No

    ↓   Perform "BUS PIP VERIFY - RA" on page 304.

           This ends the procedure.

23. Follow the service procedures for the new SRC. Start with "Starting Point for All Problems" on page 4.

    This ends the procedure.

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

25. 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 Position Tables" on page 264 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.

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

    No   Yes

    ↓   Call you next level of support.

           This ends the procedure.

27. Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure.

28. Exchange the card multi-adapter bridge's FRU at the card position that you determined for it. To determine the removal and installation 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" on page 671.

29. Install the original IOP in it's original position.

30. 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 6 on page 293 of this procedure.

31. Power on the system or partition.

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

    No   **Yes**

    ↓   Call your next level of support.

           This ends the procedure.

32. Install all of the IOAs that you removed in step 6 on page 293 of this procedure. Be sure to install them in their original positions.

33. Power on the system or partition.

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

    No   **Yes**

    ↓   Call your next level of support.

           This ends the procedure.

BUS PIP MAB-02

This procedure is intended to determine if the multi-adapter bridge may be 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   **Yes**

    ↓   Go to step 6 of this procedure.

2. Find the SRC in the SAL and record the Direct Select Address (DSA) in word 7. See "Breaking Down The SRC" on page 262 to find the DSA in the SRC.

3. 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 262 to find the DSA in the SRC.

4. Go to "BUS PIP PCIBUS-PIP1" on page 301 to determine the location of the PCI I/O Card in the failing item list. Return here and continue with step 5 of this procedure.

5. Using the card position table for the frame or I/O tower type that you recorded in BUS PIP PCIBUS-PIP1. 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 4 of this procedure. See "Card Position Tables" on page 264. 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 4 of this procedure. 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.

6. Look in the *"Service Action Log"* (SAL), see "Using the Service Action Log" on page 9. Look for other failures in the same frame that are located in any of the card positions that you recorded in step 5 or that are listed in the SAL with the PIOCARD FRU.

7. Are there any other failures within the same frame that correspond with any of the card positions that you recorded in step 5 or that are listed in the SAL with the PIOCARD FRU?

   No   **Yes**

   ↓   The multi-adapter bridge is failing. Remove symbolic FRU PIOCARD from the list of failing items, it is not the failing FRU.

8. Use the failing item list that you were using when you started this procedure.

BUS PIP MAB-03

BUS PIP MAB-03: Isolate to Failing multi-adapter bridge Resource

This procedure will 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   **No**

   ↓   Perform "BUS PIP MAB-04" on page 299.

           This ends the procedure.

2. Go to the SST/DST screen 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 the *"Start a service tool"* option.

5. Select the *"Hardware service manager"* option.

6. Select the *"Logical hardware resources"* option.

7. Select the *"System bus resources"* option.

8. 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" on page 850. Verify that the multi-adapter bridge is the correct one by matching the resource name on the screen with the resource name in the *"Service Action Log"* (SAL) for the problem that you are working on.

9. Select the *"Include non-reporting resources"* function.

10. Move the cursor to the first IOP under the multi-adapter bridge.

11. Select the *"Associated packaging resource(s)"* option for each IOP that is under the multi-adapter bridge that you are working on.

12. Select the *"Display detail"* option.

13. Record the location of the I/O processor (IOP).

14. Select *"cancel"*.

15. Select *"cancel"* again.

16. Select the *"Resources associated with IOP"* option.

17. For each I/O adapter under the IOP, perform the following:

    a. Select the *"Associated packaging resource(s)"* option.

    b. Select the *"Display detail"* option.

    c. Record its location.

18. Power off the frame or tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

19. Remove one of the IOPs and all of its IOAs.

20. Power on the frame or tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

21. 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"* screen for the partition that reported the problem.

22. Did the same SRC appear after the frame or tower was powered on?

    Yes   No

    ↓   Go to step 27 of this procedure.

23. Power on the frame or tower.

24. Return to the *"System bus resources"* screen showing the multi-adapter bridge and the associated resources.

25. Is there another IOP under the multi-adapter bridge?

    No   Yes

    ↓   Go to step 18 of this procedure.

26. Go to step 30 of this procedure.

27. Failing IOP 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 "BUS PIP IOP-02, Isolate to Failing I/O Adapter Resource" on page 290. 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.

28. Exchange the I/O Processor that you identified in step 27 of this procedure.

    Power on the frame or tower.

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

    No   Yes

    ↓   The failing item is the FRU containing the multi-adapter bridge which controls this IOP. Go to step 31 of this procedure.

29. 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 304.

30. No failing IOPs. The failing item is the FRU containing the multi-adapter bridge which controls this IOP.

31. Power off the system unit or I/O tower that you are working in.

    Exchange the FRU containing the multi-adapter bridge using the symbolic FRU "MA_BRDG" on page 529.

    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   Yes

    ↓   Contact your next level of support.

            This ends the procedure.

32. 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 304.

This ends the procedure.

BUS PIP MAB-04

Introduction: This procedure isolates a failing PCI I/O processor card from an SRC when the system or logical partition will not IPL.

1. **The removal and installation of all FRUs in this procedure must be performed using** ″**Dedicated Maintenance**″.

2. 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 262 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 Position Tables" on page 264 to locate the card position table for the frame type that you recorded.

   e. Using the card position table, record the ″PCI Bridge Set″ card positions, and multi-adapter bridge function numbers in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879.

   f. Examine the ″PCI Bridge Set″ in the frame and record the information in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879 for all of the positions with IOP and IOA cards installed in them.

   g. In the "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879 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.

3. 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   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 step 5 on page 300 of this procedure.

4. 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. Perform that from the ″*Work with system partitions*″ option 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 removal and exchange procedures for those positions will guide you through the HSM

concurrent maintenance functions. This procedure will guide you to the correct removal and exchange procedure for each card position that you are instructed to work with.

5. Power off the system or partition.

6. Remove all the IOPs you marked with an ″X″ and all the IOAs in "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879. 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 removal and installation 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" on page 671.

   Power on the system or partition.

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

   Yes   **No**

   ↓   Power off the system or partition. Go to step 7 of this procedure.

7. Starting at the empty card position with the lowest multi-adapter bridge function number from "Appendix H. Installed Features in a PCI Bridge Set Form" on page 879.

   Reinstall, in their original positions, one of the IOPs and all the IOAs between it and the next IOP.

8. Power on the system or partition.

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

   Yes   **No**

   ↓   Power off the system or partition. Repeat step 7 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.

9. The I/O processor card that you just installed is the failing FRU.

10. Power off the system or partition.

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

12. Power on the system or partition.

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

   No   **Yes**

   ↓   Remove the IOP that you just installed and replace the original IOP in it's original position. Perform "BUS PIP IOP-03" on page 292.

         This ends the procedure.

13. Power off the system or partition.

14. 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?

   No   **Yes**

   ↓   Call your next level of support.

> **This ends the procedure.**

15. Does a different SRC occur?

    Yes   No

    ↓   Perform "BUS PIP VERIFY - RA" on page 304.

             This ends the procedure.

16. Follow the service procedures for the new SRC. Start with "Starting Point for All Problems" on page 4.

    This ends the procedure.

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

18. 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 Position Tables" on page 264 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.

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

    No   Yes

    ↓   Call you next level of support.

             This ends the procedure.

20. Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure.

21. Exchange the card multi-adapter bridge's FRU at the card position that you determined for it. To determine the removal and installation 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" on page 671.

22. Install all IOPs and IOAs in their original positions.

23. Power on the system or partition.

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

    No   Yes

    ↓   Call your next level of support.

             This ends the procedure.

24. Perform "BUS PIP VERIFY - RA" on page 304.

    This ends the procedure.

BUS PIP PCIBUS-PIP1

PCIBUS-PIP1: PCI Adapter Card Position Procedure.

If you were sent to this procedure with a specific Direct Select Address (DSA) then use that DSA in this procedure. Otherwise use the DSA in word 7 of the B6xx SRC, see "Breaking Down The SRC" on page 262 for help in locating the DSA.

1. Record the bus number value, BBBB, in the DSA. See the Table 7 on page 263 for help in locating the BBBB value in the DSA. You **must convert** the BBBB value **to decimal**. Search for the decimal bus number in HSM or the System

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Configuration Listing to determine which frame or I/O tower contains the failing item. Record the frame or tower type.

2. Record the Cc value in the DSA. See Table 7 on page 263 for help in locating the Cc value in the DSA.

3. Is the Cc value greater than 00 ?

   Yes   **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 of this procedure.

4. Is the right-most character of the Cc value 'F'?

   No   **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 of this procedure.

5. Is SST/DST available?

   No   **Yes**

   ↓   Go to step 14 of this procedure.

6. Use the "Card Position Tables" on page 264 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, FI or symbolic FRU that sent you here.

8. Perform the following:

   a. Sign on to SST or to DST if you have not already done so.
   b. Select *"Start a service tool"*.
   c. Select *"Hardware service manager"*.
   d. Select *"Logical Hardware Resources"*.
   e. Select *"System bus resources"*.
   f. 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 the option *"Display detail"* 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.
   g. From the *"Logical Hardware Resources on System Bus"* display, select the function *"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   **No**

   ↓   Go to step 12 of this procedure.

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

   No   **Yes**

   ↓   Go to step 11 of this procedure.

10. From the *"Logical Hardware Resources on System Bus"* display, examine the status of all the resources under the bus, looking for a *"failed"* resource. You

will have to select the option *"Resources associated with IOP"* for each IOP under the bus, to examine the status of the IOAs. You are looking for *"failed"* resources under the bus. To determine the card position of a *failed* resource, select option *"Associated packaging resource(s),"* then select the option *"Display detail"* and record the frame ID, card position and part number. Return to the procedure that sent you here.

This ends the procedure.

11. Search for the multi-adapter bridge number that is identified in the DSA by moving the cursor to each "Mulit-adapter Bridge" resource and selecting the *"Display detail"* option. 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.

12. 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. You will have to select the option *"Resources associated with IOP"* for each IOP under the multi-adapter bridge, to examine the status of the IOAs. You are looking for *"failed"* resources under the multi-adapter bridge and the IOPs. To determine the card position of a failed resource, select the option *"Associated packaging resource(s)"*. Then select the option *"Display detail"* and record the frame ID, card position and part number.

Did you find any failed resources?

No   Yes

↓   One of the failing resources that you located is the problem. Return to the procedure that sent you here.

This ends the procedure.

13. Use the System Configuration Listing and the "Card Position Tables" on page 264 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 Position Tables" on page 264 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 Position Tables" on page 264 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.

14. 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"*.

    d. Select *"Hardware Service Manager"*.

    e. Select "Logical Hardware Resources".

    f. Select *"System Bus Resources"*.

    g. 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

the option *"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.

h. From the *"Logical Hardware Resources on System Bus"* display, select the function *"Include non-reporting resources"*.

15. 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 14 on page 303 of this procedure. Perform the following to display the *"System card"* value for each of the IOP and IOA resources:

* To examine the IOP resources, select the option *"Associated packaging resource(s),"* then select the option *"Display detail"*. The *"System card"* value of the IOP will be shown on the display. 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, 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, move the cursor to an IOP resource and select the option *"Resources associated with IOP"*. Select the option *"Associated packaging resource(s),"* then select the option *"Display detail"*. The *"System card"* value of the IOA will be shown on the display. 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, 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?

Yes   No

↓   Go to step 15 of this procedure.

16. Did you locate a resource with a *"System card"* value that matches the decimal Cc value from step 14 of this procedure?

Yes   No

↓   You will not be able to locate the card using DST. Go to step 6 of this procedure to locate the card.

17. Record the frame ID, card position and part number of the resource. Return to the procedure that sent you here.

This ends the procedure.

BUS PIP VERIFY - RA

This procedure will verify a repair for the high-speed link, for a system PCI Bus, or for a multi-adapter bridge.

Note: Within this procedure the terms "system" and "logical partition" are interchangeable when used individually.

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 the *iSeries Service Functions* information.

Perform the following procedure to ensure that the system functions correctly after you perform an HSL, PCI or multi-adapter bridge isolation procedure. Use this procedure to verify an HSL, PCI or multi-adapter bridge repair.

1. If you were previously told to power off a system or logical partition or an expansion tower during this service action, then you need to make sure to power it off again at this time.

2. 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.

3. Power on any expansion tower, logical partition or system unit that was powered off during the service action.

   - 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?

   or

   - If an expansion tower was powered off during the service action, does the expansion tower power on complete successfully?

   or

   - If any IOP or IOA card locations were powered off using concurrent maintenance during the service action, do the slot(s) power on successfully?

   or

   - If you exchanged a FRU that should appear as a resource(s) to the system, such as an IOA, or I/O Bridge, does the new FRU's resource(s) appear in HSM as operational?

   Yes   No

   ↓   Verify that you have followed the power off, removal, installation 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.

4. Does the system/logical partition have mirrored protection?

   Note: If you do not know the type of protection on your system/logical partition, select **Yes**.

   Yes   No

   ↓   Go to step 6 of this procedure.

5. From the Dedicated Service Tools (DST) display, select the *Work with disk units* option and resume mirrored protection for all units that have a suspended status. (See "Work with Disk Unit Recovery" in the *iSeries Service Functions* information).

6. From the Start a Service Tool display, select the *Hardware service manager* option 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   Yes

   ↓   Go to step 12 of this procedure.

Bus, High-Speed Link (HSL) PIPs

7. 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).

8. Perform the following:

   a. Return to the Dedicated Service Tools (DST) display.

   b. Display the Product Activity Log.

   c. Select the *All logs* option and search for an entry with the same bus, board, and card address information as the non-operational I/O processor.

      Note: 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   Yes

   ↓   Ask your next level of support for assistance.

            This ends the procedure.

9. Did you find a B600 6944 SRC that occurred during the last IPL?

   Yes   No

   ↓   A different SRC is associated with the non-operational I/O processor.

             Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

             This ends the procedure.

10. Is there a B600 xxxx SRC that occurred during the last IPL other than the B600 6944 and informational SRCs?

    Yes   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 "BUS PIP VERIFY - RA" on page 304 to verify the bus repair.

              This ends the procedure.

11. Use the other B600 xxxx SRC to determine the problem.

    Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

    This ends the procedure.

12. Use the hardware service manager function to print the system configuration list.

    Are there any configuration mismatches?

    No   Yes

    ↓   Ask your next level of support for assistance.

             This ends the procedure.

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

    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 14 on page 307 in this procedure.

    Perform the following to return the system to the customer:

   a. Power off the system/logical partition.

   b. 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* screen under DST. (See the *iSeries Service Functions* information.)

   c. Power on the system/logical partition.

14. 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* information.)

   This ends the procedure.

Communications PIPs

Overview

This section contains the procedures necessary to isolate a communications failure.

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

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Communications PIPs

1. 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.

2. Perform the following:

   a. Vary off the resources.

   b. Go to the Start a Service Tool display.

   c. Select the *Hardware service manager* option.

   d. Select the *Logical hardware resources* option.

   e. Select the *System bus resources* option.

   f. Select the *Resources associated with IOP* option for the attached IOPs in the list until you display the suspected failing hardware.

   g. Select the *Verify* option on the hardware you want to test.

   > **Note:** The *Verify* option may be valid on the IOP, IOA, or port resource. When the *Verify* option 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.

3. 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   Yes

   ↓   The IOA/IOP is good. Do NOT replace the IOA/IOP. Go to step 5 of this procedure.

4. 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 "Chapter 4. Removal and Installation Procedures" on page 593).

   This ends the procedure.

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   No

   ↓   Go to step 9 on page 309 of this procedure.

6. Is the RJ-45 connector on the external cable correctly wired according to the EIA/TIA-568A standard? i.e.

```
-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   No

↓   Replace 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   Yes

↓   Go to step 10 of this procedure.

8. 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.

9. Is the cable wrap test option available as a *Verify* test option for the hardware you are testing?

Yes   No

↓   Go to step 11 of this procedure.

Verify the external cable by running the cable wrap test.

Note: A wrap plug is required to perform the cable wrap test. This wrap plug is available from IBM or your Hardware Service Provider.

Note: Wrap plug part numbers can be found in "Cables and Miscellaneous" on page 791.

Does the cable wrap test complete successfully?

Yes   No

↓   The problem is in the cable. Exchange the cable.

This ends the procedure.

10. 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 4 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.

11. 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 4 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 Problem Isolation Procedures

Overview

This section contains the procedures necessary 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) before removing, exchanging, or installing a field-replaceable unit (FRU).

DU-PIP3

Introduction: This procedure determines the system reference code (SRC) to be used to isolate the problem and to determine the failing device.

Note: When exchanging a disk unit, go to "Recovery Procedures" on page 803.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. 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   Yes

   ↓   Go to step 6 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

   Yes   No

   ↓   Go to step 4 of this procedure.

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   Yes

↓   Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC PIP11" on page 332 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 of this procedure 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. Does the Display Failing System Bus display appear on the console?

   No   **Yes**

   ↓   Use the reference code that is displayed under *Reference Code* to correct the problem.

   This ends the procedure.

5. Look at all the Product Activity Logs by using the *Product activity log* option 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   **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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

   This ends the procedure.

6. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

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

   Yes   **No**

   ↓   Go to "Starting Point for All Problems" on page 4 to correct the problem.

   This ends the procedure.

7. Perform the following:

   a. Power off the system or expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. See "Failing Items" on page 466 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   **Yes**

        ↓   Go to step 12 of this procedure.

9. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console 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   No

   ↓   Go to step 11 of this procedure.

10. Select option 5, then press F11, then press the Enter key to display details.

    Does an SRC appear in the Reference Code column?

    No   Yes

    ↓   Go to step 12 of this procedure.

11. Look at all the Product Activity Logs by using the *Product activity log* option under DST.

    Is an SRC logged as a result of this IPL?

    Yes   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 "Recovery Procedures" on page 803).

            This ends the procedure.

12. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

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

    No   Yes

    ↓   The last device you disconnected is not the failing item.

            a. Leave the device disconnected and go to step 7 of this procedure 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 16 of this procedure.

13. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console 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   No

    ↓   Go to step 13 of this procedure.

14. Select option 5 then press F11, then press the Enter key to display details.

    Are all the reference codes 0000?

      No   **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 "Disk Unit" in "Chapter 4. Removal and Installation Procedures" on page 593.

        This ends the procedure.

15. Use the reference code to correct the problem.

    This ends the procedure.

16. Was disk unit 1 (the load-source disk unit) a failing item that FI code FI01106 identified?

      Yes   **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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

        This ends the procedure.

17. 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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

    This ends the procedure.

Intermittent Problem Isolation Procedures

Introduction

These intermittent problem isolation procedures instruct you to perform procedures to help you correct an intermittent problem.

Use these procedures only if problem analysis steps or tables sent you here.

Perform only 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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)** |
> | --- |

INT-PIP3 External Noise on AC Voltage Lines

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   No

   ↓   Go to step 3 of this procedure.

2. Determine if lightning protection devices are installed on the incoming AC voltage lines where they enter the building.

   Note: There must be a dedicated ground wire from the lightning protection devices to earth ground.

   Are lightning protection devices installed?

   Yes   No

   ↓   Lightning may have caused the intermittent problem. Recommend that the customer install lightning protection devices to prevent this problem from occurring again.

            This ends the procedure.

3. *An installation planning representative should perform this step.*

   a. Get a recording AC voltage monitor. Connect it 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   No

   ↓   **This ends the procedure.**

4. 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   No

   ↓   Perform the next INT-PIP listed in the *INT-PIP* column.

            This ends the procedure.

5. 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 400 system.

   This ends the procedure.

INT-PIP5 External Noise on Twinaxial Cables

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 are: 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 breaks in a twinaxial cable run.
   - Station protectors must be installed (in pairs) where a cable enters or leaves a building.
   - There can be only 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 400 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)
This procedure contains actions 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.

4. *It is recommended that an installation planning representative perform the following steps.*

   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).

5. Use a radio frequency (RF) field intensity meter to determine if there is an unusual amount of RF noise near the iSeries 400 system. You can also use it to help determine the source of the noise.

   This ends the procedure.

INT-PIP8 Grounding

This procedure contains actions 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)**

An installation planning representative must perform all of the steps in this procedure.

Notes:

1. Power off the iSeries 400 system and the power network branch circuits before performing this procedure.

2. The customer may have to get an electrician to perform some of the steps in 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.

1. Check **ALL** system receptacles to ensure that each one is wired correctly. This includes receptacles for the AS/400 system and all equipment that attaches to the iSeries 400 system-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.

2. 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.

3. 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 iSeries 400 system must be connected together. This applies to the first electrically isolating unit that is found in the path of electrical wiring from the iSeries 400 system 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.

4. 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 3 of this procedure.
5. 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.
6. 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.

7. 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 iSeries 400 system. 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).

8. 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

This procedure contains actions 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)**

An installation planning representative must perform all of the steps in this procedure.

Notes:

1. Power off the iSeries 400 system and the power network branch circuits before performing this procedure.
2. The customer may have to get an electrician to perform some of the steps in 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.

 1. Check **ALL** system receptacles to ensure that each is wired correctly. This includes receptacles for the iSeries 400 system and all equipment that attaches to the iSeries 400 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.
 2. When three-phase voltage is used to provide power to the iSeries 400 system, correct balancing of the load on each phase is important. Each unit in the iSeries 400 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
 3. 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, step 4 on page 317.

4. The iSeries 400 system and its attached equipment should be the only units that are connected to the power distribution network that the system gets its power.

5. The equipment that is attached to the iSeries 400 system, such as workstations and printers, must be attached to the power distribution network for the system when possible.

6. Each unit in the iSeries 400 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.

7. Check all circuit breakers in the network that supply AC power to the iSeries 400 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.

8. 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 400 system. The reason for this is that this equipment generates AC noise pulses. These pulses can get into the AC voltage for the iSeries 400 system and cause intermittent problems.

9. Measure the AC voltage to each unit to ensure that it is in the normal range.

   Is the voltage outside the normal range?

   No   Yes

   ↓   Contact the customer to have the voltage source returned to within the normal voltage range.

10. *The remainder of this procedure is only for an iSeries 400 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 400 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.

  Note: 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 400 system as determined by the power profile.
- Peak load current is the steady state peak current of the iSeries 400 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 2 of this procedure 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.

11. 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

Station protectors must be installed on all twinaxial cables that leave the building in which the iSeries 400 system 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 400 system.

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?

   No   Yes

   ↓   Perform the next INT-PIP listed in the *INT-PIP* column.

          This ends the procedure.

3. You may need to install station protectors on the twinaxial cables to the failing workstations. See chapter 9, section F in the *iSeries 400 Technical Information Manual* , SY44-0008, for additional information on station protectors.

   This ends the procedure.

INT-PIP16 Licensed Internal Code

Sometimes a dump of main storage is needed to analyze the problem. The data on the dump is analyzed at the iSeries 400 system 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* information).

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

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

This procedure analyzes system performance problems.

1. 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?

   No   Yes

   ↓   Correct the hardware errors.

          This ends the procedure.

2. The performance problems are not related to hardware.

3. Perform the following:

   a. Ask the customer if they have asked software level one support for any software PTFs that relate to this problem.

   b. Recommend that the customer install a cumulative PTF package if they have not done so in the past three months.

c. Inform the customer that performance could possibly be improved by having a system engineer analyze the conditions.

d. 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

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. This procedure tells you how to collect the data.

There are 3 different ways the system may have displayed the SRC. Please follow the instructions for the correct display method, defined as follows:

1. 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.

2. 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 426 instead of using this procedure.

3. 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. Follow the remainder of this procedure.

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 "Appendix A. Problem Summary Form" on page 861).

2. To start a storage dump of the service processor, do the following:
   a. Select control panel function 25 and press the Enter key.
   b. Select control panel function 26 and press the Enter key to enable functions 54 through 70.
   c. Select function 70 (CFIOP Storage Dump) on the control panel and press the Enter key.
   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 "Powering On and Powering Off the System and Logical Partitions" on page 832).
   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   No

   ↓   The problem is not intermittent.

If you were sent here from Chapter 2. Unit 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 574).

This ends the procedure.

4. The problem is intermittent.

   Save the IOP dump to tape (see "Copying the Service Processor Storage Dump to Removable Media" in the *iSeries Service Functions* information).

5. Complete the IPL.

6. Go to the General Intermittent Problem Checklist in "Analyzing Intermittent Problems" on page 14 to find available PTFs for this problem. Follow the steps to find and apply a program temporary fix (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?

   No   Yes

   ↓   This ends the procedure.

7. 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 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 "APAR or LICTR" in the *iSeries Service Functions* information)

   This ends the procedure.

Licensed Internal Code PIPs

Overview
This section contains the procedures necessary to isolate Licensed Internal Code 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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)**

Licensed Internal Code PIPs

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:

- "Powering On and Powering Off the System and Logical Partitions" on page 832
- See "Selecting IPL Type, Mode, and Speed" in *iSeries Service Functions*.

LIC-PIP1

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

LIC detected an IOP programming problem. Data must be gathered 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.**

1. Is the system operational (did the SRC come from the Service Action Log, Product Activity Log, problem log, or system operator message)?

    Yes   No

    ↓   Go to step 9 of this procedure.

2. Is this a x6xx5121 SRC?

    No   Yes

    ↓   Go to step 4 of this procedure.

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 "Copying the IOP Storage Dump to Removable Media" in the *iSeries 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 "Hardware Service Manager, Printing the System Configuration List" in the *iSeries Service Functions* information).

7. Provide the dumps to IBM 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 "Using the Service Action Log" on page 9). Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.

- If there are no new SRCs in the Service Action Log, go to "BUS-PIP1" on page 267.

   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   No

   ↓   Go to step 15 of this procedure.

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 "Error Recovery for Dumps, Reporting the Error" in the *iSeries 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 Service Functions* information).

12. Copy the main storage dump to tape (see "Copying a Main Storage Dump" in the *iSeries 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, 4, 5, and 6 of this procedure.

14. Provide the dumps to IBM Service Support.

   This ends the procedure.

15. Has the system stopped with an SRC at the control panel?

   Yes   No

   ↓   Go to step 1 of this procedure.

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 "Error Recovery for Dumps, Reporting the Error" in the *iSeries Service Functions* information).

17. IPL to DST and start the Main storage dump manager service function.

18. Copy the main storage dump to tape (see "Copying a Main Storage Dump" in the *iSeries Service Functions* information).

19. Obtain the data in steps 3, 4, 5, and 6 of this procedure.

20. Re-IPL the system.

21. Has the system stopped with an SRC at the control panel?

   Yes   No

   ↓   Provide the dumps to IBM Service Support.

          This ends the procedure.

22. Use the new SRC and go to "Chapter 2. Unit Reference Codes" on page 59.

   This ends the procedure.

LIC-PIP3

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Dedicated service tools (DST) found a permanent program error, or a hardware failure occurred.

Read the "Overview" on page 323 before continuing with this procedure.

1. Does URC 50FF occur?

   No   Yes

   ↓   Go to step 3 of this procedure.

2. Perform a main storage dump, then perform an IPL by doing the following:
   a. Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *iSeries Service Functions* information).
   b. Select manual mode and perform an IPL to DST (see "Dedicated Service Tools (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 267. Otherwise, go to step 6 of this procedure.

3. Perform a main storage dump, then perform an IPL by doing the following:
   a. Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *iSeries Service Functions* information).
   b. Select manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does a display appear?

   No   Yes

   ↓   Go to step 6 of this procedure.

4. If the problem is in the Primary partition, exchange the first workstation I/O processor card on bus 1 (see "Chapter 4. Removal and Installation Procedures" on page 593). 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*.

5. Select manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Is the IPL or Install the System display shown?

   Yes   No

   ↓   Ask your next level of support for assistance and report the problem.

           This ends the procedure.

6. Copy the main storage dump to removable media (see "Copying a Main Storage Dump" in the *iSeries Service Functions* information).

7. Report a Licensed Internal Code problem to your next level of support.

   This ends the procedure.

LIC-PIP4

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

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 "Overview" on page 323 before continuing with this procedure.

1. Select function 21 (Make DST Available) on the control panel and press the Enter key to start DST again.

   Does the DST Sign On display appear?

   Yes   No

   ↓   Go to step 3 of this procedure.

2. Perform the following (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information):

   a. Select the *Start a Service Tool* option.

   b. Select the *Licensed Internal Code log* option.

   c. Perform a dump of the Licensed Internal Code log to tape (see "Work with Licensed Internal Code Log" in the *iSeries Service Functions* information).

   d. Return here and continue with the next step of this procedure.

3. Perform a main storage dump (see "Perform a Main Storage Dump to Disk" in the *iSeries Service Functions* information).

4. Copy the main storage dump to removable media (see "Copying a Main Storage Dump" 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

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

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.

Licensed Internal Code PIPs

Read the "Overview" on page 323 before continuing with this procedure.

1. Did a previous procedure have you power off the system then perform an IPL in Manual mode, **and** is the system in Manual mode now?

   No   Yes

   ↓   Go to step 3 of this procedure.

2. Perform the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Select Manual mode on the control panel (see "Selecting IPL Type, Mode, and Speed" in *iSeries Service Functions*.).

   c. Power on the system.

3. Does the SRC that sent you to this procedure appear on the control panel?

   No   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 14 of this procedure.

4. Does the console display indicate a problem with missing disks?

   Yes   No

   ↓   Go to step 7 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 "Accessing Dedicated Service Tools" in the *iSeries Service Functions* information).

   c. Select the Start a service tool option.

   d. Select the Hardware service manager option.

   e. Check for the SRC in the service action log (see "Using the Service Action Log" on page 9.

   f. Did you find the same SRC that sent you to this procedure?

      No   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 12 of this procedure.

6. Perform the following:

   a. Return to the DST main menu.

   b. Perform an IPL and return to the Display Missing Disk Units display.

   c. Go to "LIC PIP11" on page 332.

   This ends the procedure.

7. Does the SRC that sent you to this procedure appear on the console or on the alternative console?

    No   **Yes**

    ↓   Go to step 9 of this procedure.

8. Does the IPL complete successfully to the IPL or Install the System display?

    Yes   **No**

    ↓   A different SRC occurred. Go to "Chapter 2. Unit Reference Codes" on page 59 and use the new SRC to correct the problem.

              This ends the procedure.

9. 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   **Yes**

    ↓   Go to step 13.

10. Did you find a different SRC than the one that sent you to this procedure?

    Yes   **No**

    ↓   The problem appears to be intermittent. Ask your next level of support for assistance.

              This ends the procedure.

11. Use the new SRC to correct the problem. See "Chapter 2. Unit Reference Codes" on page 59.

    This ends the procedure.

12. 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   **Yes**

    ↓   Go to step 15 of this procedure.

13. 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

Licensed Internal Code PIPs

14. Use the BBBBCcbb information and refer to "Locations and Addresses" on page 671 to determine the failing IOP and its location.

15. Go to "BUS-PIP5" on page 267 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 of this procedure.

16. Is the I/O processor card you identified in step 12 or step 14 of this procedure the CFIOP?

    No   Yes

    ↓   Exchange the failing CFIOP card (see "Chapter 4. Removal and Installation Procedures" on page 593).

            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 19 of this procedure.

17. 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   Yes

    ↓   Perform the following:
            a. Power off the system.
            b. Install the IOP card you just removed.
            c. Go to "BUS-PIP1" on page 267

            This ends the procedure.

18. Perform the following:
    a. Power off the system.
    b. Exchange the failing IOP card.

19. 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   Yes

    ↓   Go to step 22 of this procedure.

20. Does a different SRC appear on the control panel, on the console, or on the alternative console?

    No   Yes

    ↓   Go to "Chapter 2. Unit Reference Codes" on page 59 and use the new SRC to correct the problem.

            This ends the procedure.

21. The IPL or Install the System display is on the console.

Check for the SRC in the service action log (see "Using the Service Action Log" on page 9).

Did you find the same SRC that sent you to this procedure?

Yes   No

↓   Go to "BUS PIP VERIFY - RA" on page 304.

This ends the procedure.

22. 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 267.

    This ends the procedure.

23. 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.
    - Print the product activity log.
    - Copy the IOP storage dump to removable media.

    This ends the procedure.

LIC-PIP8

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Licensed Internal Code detected an operating system program problem.

Read the "Overview" on page 323 before continuing with this procedure.

1. Select manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does the same SRC occur?

   No   Yes

   ↓   Go to step 6 of this procedure.

2. Does the same URC appear on the console?

   No   Yes

   ↓   Go to step 5 of this procedure.

3. Does a different SRC occur, or does a different URC appear on the console?

   No   Yes

   ↓   Use the new SRC or reference code to correct the problem (see

"Chapter 2. Unit Reference Codes" on page 59). If the procedure for the new SRC sends you back to this procedure, go to step 5.

This ends the procedure.

4. Select the *Perform an IPL* option on the IPL or Install the System display to complete the IPL.

Is the problem intermittent?

Yes   No

↓   **This ends the procedure.**

5. Copy the main storage dump to removable media (see "Copying a Main Storage Dump" in the *iSeries Service Functions* information).

6. Report a Licensed Internal Code problem to your next level of support.

This ends the procedure.

LIC PIP11

Introduction: This procedure isolates a system STARTUP failure in the initial program load (IPL) mode.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 323 before continuing with this procedure.

How to Find the Cause Code:

1. Were you given a cause code by another procedure?

No   Yes

↓   Use the cause code given by the other procedure.

         Go to step 3 of this procedure.

2.   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).

   Refer to the 4 leftmost characters of word 3, which are the **cause code**.

3. If the **cause code** is:

0001: Disk configuration is missing.

1. Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

Does the Disk Configuration Error Report display appear?

Yes   No

↓   The IPL completed successfully.

         This ends the procedure.

2. Is Missing Disk Configuration information displayed?

> **Yes   No**
>
> ↓   Go to step 1 for cause code 0002.

3. Select option 5 on the *Missing Disk Configuration* display.

   Select the *Display Detailed Report* option and follow the instructions to:

   a. Select the *Work with disk units* option.

   b. Select the *Work with disk unit recovery* option.

   c. Select the *Recover Configuration* option and follow the instructions on the display.

   Note: 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 "Hardware SRC Formats" in the *iSeries 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 or the Disk Configuration Warning Report display) have a reference code of 0000?

   > **No   Yes**
   >
   > ↓   Go to step 22 of this procedure.

2. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?

   > **No   Yes**
   >
   > ↓   Ignore SRC A600 5090.
   >
   >   Continue with the disk unit exchange recovery procedure (see "Disk Service Support" in "Recovery Procedures" on page 803).
   >
   >   **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   Yes**
   >
   > ↓   Go to step 5 of this procedure.

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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 11 of this procedure:

      - 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   **No**

   ↓   Go to step 11 of this procedure.

6. Are customer jobs running on the system now?

   Yes   **No**

   ↓   **Attention**: Ensure that the customer is not running any jobs before continuing with this procedure.

        Go to step 11 of this procedure.

7. Perform the following:

   a. Select System Service Tools (SST).

   b. Select the *Work with disk units* option.

   c. Select the *Display disk configuration* option.

   d. Select the *Display disk configuration status* option.

   Are any disk units missing from the configuration?

   Note: Missing disk units are indicated by an asterisk (*).

        Yes   **No**

        ↓   **This ends the procedure**.

8. Do all of the disk units that are missing from the configuration have a status of "Suspended"?

   Yes   **No**

   ↓   **Attention**: Ensure that the customer is not running any jobs before continuing with this procedure.

        Go to step 11 of this procedure.

9. Use the Service Action Log to determine if there are any entries for the missing disk units (see "Using the Service Action Log" on page 9).

   Are there any entries in the Service Action Log for the missing disk units that were logged since the last IPL?

   Yes   **No**

   ↓   Go to step 23 of this procedure.

10. Use the information in the Service Action Log and go to the SRC information for the specific disk unit in "Chapter 2. Unit Reference Codes" on page 59.

    Perform the action indicated for the unit reference code.

This ends the procedure.

11. Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

    Does the Disk Configuration Error Report or the Disk Configuration Warning Report display appear?

    Yes   No

    ↓   The IPL completed successfully.

             This ends the procedure.

12. 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   No

    ↓   Go to step 18 of this procedure.

13. 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   No

    ↓   Go to step 15 of this procedure.

14. Is the status DPY/Active?

    Yes   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 "Using the Service Action Log" on page 9).

             This ends the procedure.

15. Press F11, then press the Enter key to display the details.

    Do all of the disk units listed on the display have a reference code of 0000?

    Yes   No

    ↓   Use the disk unit reference code shown on the display and go to the SRC information for the specific disk unit in "Chapter 2. Unit Reference Codes" on page 59. Perform the action indicated for the unit reference code.

             This ends the procedure.

16. Do all of the IOPs or devices listed on the display have a reference code of 0000?

    No   Yes

    ↓   Go to step 22 of this procedure.

17. Use the IOP reference code shown on the display and go to "Chapter 2. Unit Reference Codes" on page 59. Perform the action indicated for the reference code.

    This ends the procedure.

18. Does the following message appear in the list?
    - Unknown load-source status

    Yes   No

    ↓   Go to step 20 of this procedure.

19. Select option 5 then press F11, then press the Enter key to display the details.
    Does the *Assign Missing Load Source Disk* display appear?

    No   **Yes**

    ↓   Press the Enter key to assign the missing load-source disk unit.

              This ends the procedure.

20. Does the following message appear in the list?
    • Load source failure

    Yes   **No**

    ↓   The IPL completed successfully.

               This ends the procedure.

21. Select option 5, then press F11, then press the Enter key to display the details.

22. 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.

23. Is the failing disk unit a 9337?

    No   **Yes**

    ↓   Go to step 28 of this procedure.

24. Is there more than one failing disk device attached to the IOA or MSIOP?

    Yes   **No**

    ↓   Go to step 26 of this procedure.

25. Are all the disk devices that are attached to the IOA or MSIOP failing?

    Note: If the disk units are using mirrored protection, you may need to use
    Display Disk Status to answer the question.

    No   **Yes**

    ↓   Go to step 27 of this procedure.

26. Go to the service information for the specific disk unit listed below and
    perform the action indicated. Then return here and answer the following
    question.
    • 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" on
      page 111 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" on page 151 and exchange the FRUs shown one at a
      time.

    Did the disk unit service information correct the problem?

    No   **Yes**

    ↓   **This ends the procedure.**

27. Exchange the IOA or MSIOP (see "Chapter 4. Removal and Installation
    Procedures" on page 593).

    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 466 to help determine parts and locations.

This ends the procedure.

28. Use Hardware Service Manager to display logical resources connected to the MSIOP (see Hardware Service Manager in the *iSeries Service Functions*).

29. Are all the disk devices that are attached to the MSIOP failing?

   Yes   No

   ↓   Go to step 32 of this procedure.

30. Is there more than one controller attached to the MSIOP?

   Yes   No

   ↓   Go to step 26 of this procedure.

31. Go to step 27 of this procedure.

32. Are all disk units attached to one controller missing?

   Yes   No

   ↓   Go to step 26 of this procedure.

33. Use the device documentation to correct the problem. Exchange the disk unit controller.

   This ends the procedure.

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 Service Functions* information).

2. Select the *Work with disk units* option 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 "Dedicated Service Tools (DST)" in the *iSeries 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.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

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 "Chapter 2. Unit Reference Codes" on page 59).

This ends the procedure.

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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.

Are the disk units part of a 9337 subsystem?

No   Yes

↓   If the protection was stopped without using the *Stop device parity protection* option of DST, use the 9337 device documentation and follow the manual process to enable device parity protection.

Select DST using Function 21 (see "Control Panel Functions" in the *iSeries Service Functions* information).

Correct the problem by doing the following:
1. Select the *Work with disk units* option.
2. Select the *Work with disk unit recovery* option.
3. Select the *Correct device parity protection* option.
4. 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 "Hardware SRC Formats" in the *iSeries 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 Chapter 2. Unit 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" on page 803).

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 Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *iSeries Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.

4. Select the *Analyze log* option on the Product Activity Log display.
5. 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.

6. Use the defaults on the Select Analysis Report Options display by pressing the
   Enter key.
7. Search the entries on the Log Analysis Report display for system reference
   codes associated with the missing disk units.
8. Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC
   information to correct the problem.

This ends the procedure.

000B: Some system IOPs require cache storage be reclaimed.

Select DST using Function 21 (see "Control Panel Functions" in the *iSeries Service
Functions* information).

Reclaim the cache adapter card storage (see "Reclaim IOP Cache Storage" on
page 856).

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 "Hardware SRC Formats" in the *iSeries 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 Chapter 2. Unit 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 400 Handbook*, GA19-5486-20 .

This ends the procedure.

000E: Start compression failure.

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:
1. Select the *Work with disk units* option.
2. Select the *Work with disk unit recovery* option.
3. Select the *Recover from start compression failure* option.

4. 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.

Select Manual mode on the control panel (see *iSeries Service Functions*). Perform an IPL to reinstall the operating system.

Note: 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.

Select Manual mode on the control panel (see *iSeries Service Functions*). 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 "Chapter 4. Removal and Installation Procedures" on page 593). For the location of the card, see "Locations and Addresses" on page 671.

This ends the procedure.

0015: The mirrored load-source disk unit is missing from the disk configuration.

Go to step 1 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 for cause code 0002.

0017: One or more disk units have a lower level of mirrored protection than originally configured.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

The detailed display 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 Service Functions* information).
3. Select the *Work with disk units* option.
4. Select the *Work with disk unit configuration* option.
5. Select the *Remove unit from configuration* option.
6. Select the disk unit you recorded earlier in this procedure.
7. 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)
8. When the remove function is complete, select the *Add unit to configuration* option.
9. Select the disk unit you recorded earlier in this procedure.
10. Confirm the add. The disk unit is formatted during functional operation.

This ends the procedure.

001A: The loadsource disk unit data is down-level.

The loadsource disk unit is mirror protected. The system is using the loadsource disk unit that does not have the current level of data.

1. Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does the Disk Configuration Error Report display appear?

   Yes   No

   ↓   The system is now using the correct loadsource.

         This ends the procedure.

2. Does a *Load source failure* message appear in the list?

   Yes   No

   ↓   The system is now using the correct loadsource.

         This ends the procedure.

3. Select option 5, then press F11, then press the Enter key to display details.

   The loadsource type, model, and serial number information that the system needs is displayed on the console.

   Is the loadsource disk unit (displayed on the console) attached to an MSIOP that cannot be used for a loadsource?

   Yes   No

   ↓   The loadsource disk unit is missing. Go to step 1 for cause code 0002.

4. Is the system configured for remote loadsource protection?

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<pre>
       No   Yes
       ↓   Go to "Recover Remote Load Source" on page 827.
</pre>

5. Move the loadsource disk unit to the loadsource MSIOP.

   This ends the procedure.

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 Service Functions* information) to determine the cause of the problem.

This ends the procedure.

001D:

1. Is the Disk Configuration Warning Report displayed?

<pre>
       Yes   No
       ↓   Ask your next level of support for assistance.

                 This ends the procedure.
</pre>

2. Select option 5 on the *Bad Load Source Configuration* message line. 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 "Disk Service Support" on page 803.

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.

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 "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).
2. Is the Disk Configuration Warning Report displayed?

<pre>
       Yes   No
       ↓   The system is now using the correct load source.

                 This ends the procedure.
</pre>

3. 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 the Enter key.

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 "Restoring Licensed Internal Code" in the *iSeries 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 "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

This ends the procedure.

0021: The system password verification failed.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). You will be prompted for the correct system password.

Enter the correct system password. If the correct system password is not available:
- Select the *Bypass the system password* option from the prompt.
- Have the customer contact the marketing representative immediately to order a new system password from IBM.

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.

Perform the following:
1. Select DST using Function 21 (see "Control Panel Functions" in the *iSeries Service Functions* information).
2. On the Service Tools display, select the *Start a Service Tool* option (see the *iSeries Service Functions*).
3. Select the *Product activity log* option on the Start a Service Tool display.
4. Select the *Analyze log* option on the Product Activity Log display.
5. 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.

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6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.

7. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.

8. Go to "Chapter 2. Unit Reference Codes" on page 59 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.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

You will be prompted for the correct system type or system unique ID.

This ends the procedure.

0025: Hardware Resource Information Persistence disabled.

Select Manual mode and perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

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 "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

2. On the Service Tools display, select the *Start a Service Tool* option (see the *iSeries Service Functions*).

3. Select the *Product activity log* option on the Start a Service Tool display.

4. Select the *Analyze log* option on the Product Activity Log display.

5. 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.

6. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.

7. Search the entries on the Log Analysis Report display for system reference codes (B6xx 53xx) that are associated with the error.

8. Go to "Chapter 2. Unit Reference Codes" on page 59 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 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 doing another system IPL.

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

This procedure isolates an IASP (Independent Auxiliary Storage Pool) vary on failure. Message CPDB8E0 occurred if the user attempted to vary on the IASP.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 323 before continuing with this procedure.

How to Find the Cause Code:

1. Were you given a cause code by another procedure?

   No   **Yes**

   ↓   Use the cause code given by the other procedure.

            Go to step 3 of this procedure.

2. 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 "Accessing Dedicated Service Tools" 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*.

   d. On the *Start a Service Tool* display, select the *Hardware Service Manager* option (see the *iSeries Service Functions*).

   e. Select the *Work with service action log* option on the *Hardware Service Manager* display.

   f. 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.

   g. 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.

    h. Select the function key for Additional details.

    i. The 4 leftmost characters of word 3 is the cause code to be used in this procedure.

3. If the **cause code** is:

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   **Yes**

    ↓   Ignore SRC A600 5094.

        Continue with the disk unit exchange recovery procedure (see "Disk Service Support" in "Recovery Procedures" on page 803).

        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?

    No   **Yes**

    ↓   Go to step 4 of this procedure.

3. 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 before continuing with step 4. of this procedure:

- All cable connections are made correctly and are tight.
- Make sure the configuration within the device is correct.
- All storage devices are powered on and ready.

4. Perform the following:

    a. Select *System Service Tools (SST)*.

    b. Select the *Work with disk units* option.

    c. Select the *Display disk configuration* option.

    d. Select the *Display disk configuration status* option.

Are any disk units missing from the IASP configuration?

Note: Missing disk units are indicated by an asterisk (*).

    Yes   **No**

    ↓   **This ends the procedure.**

5. 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"Using the Service Action Log" on page 9).

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 **Yes**

↓ Use the information in the Service Action Log to solve the problem. See "Using the Service Action Log" on page 9.

This ends the procedure.

6. Did you enter this procedure because there was a B6xx 5094 cause code of 0030?

No **Yes**

↓ Work with the customer to recover the unknown configuration source disk unit.

Use a workstation with Operations Navigator installed to select the disk pool with the problem, and then select the *recover unknown configuration source* option for this disk pool.

This ends the procedure.

7. Use Hardware Service Manager to display logical resources connected to the IOP (see Hardware Service Manager in the *iSeries Service Functions* information).

8. Is every device attached to the IOP failing?

Yes **No**

↓ Go to step 11 of this procedure.

9. Is there more than one storage IOA attached to the IOP?

Yes **No**

↓ Go to step 13 of this procedure.

10. Exchange the IOP. Use the IOP direct select address from step 2 on page 346 to find the location. See "Locations and Addresses" on page 671.

This ends the procedure.

11. Are all of the disk units that are attached to one IOA missing?

No **Yes**

↓ Exchange the IOA. Use the IOP direct select address and the first character of the unit address from step 2 on page 346 to find the location. See "Locations and Addresses" on page 671.

This ends the procedure.

12. 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" on page 111 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" on page 151 and exchange the FRUs shown one at a time.

Did the disk unit service information correct the problem?

No **Yes**

↓

This ends the procedure.

13. Exchange the IOA. Use the IOP direct select address and the first character of the unit address from step 2 on page 346 to find the location. See "Locations and Addresses" on page 671.

    If exchanging the IOA does not correct the problem, exchange the IOP. Use the IOP direct select address from step 2 on page 346 to find the location. See "Locations and Addresses" on page 671.

    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.

    Failing item list:

    a. FI01140

    b. BACKPLN

    c. FI00580

    d. 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:

1. Select the *Work with disk units* option.

2. Select the *Work with disk unit recovery* option.

3. Select the *Correct device parity protection mismatch* option.

4. Follow the on-line 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 "Hardware SRC Formats" in the *iSeries Service Functions* information).

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 "Chapter 2. Unit Reference Codes" on page 59).

    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" on page 803).

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 "Using the Service Action Log" on page 9.

This ends the procedure.

000B: Some system IOPs require cache storage be reclaimed.

Start SST. Reclaim the cache adapter card storage by performing the following:
1. Select the *Work with disk units* option.
2. Select the *Work with disk unit recovery* option.
3. Select the *Reclaim IOP Cache Storage* option.
4. Follow the on-line instructions to reclaim 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.

000D: The system disk capacity has been exceeded.

For more information about disk capacity, see the *iSeries 400 Handbook*.

This ends the procedure.

000E: Start compression failure.

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:
1. Select the *Work with disk units* option.
2. Select the *Work with disk unit recovery* option.
3. Select the *Recover from start compression failure* option.
4. 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.

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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. Use a workstation with Operations Navigator installed to select the disk pool with the problem, and then select the recover configuration option for this disk pool.

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 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

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Note: Do not power off the system when performing this procedure.

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 can be found and corrected.

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 the disk unit that stopped communicating and continues normal operation. See "Disk Service Support" on page 803 for more information on systems with mirrored protection.

Read the "Overview" on page 323 before continuing with this procedure.

1. Was a Problem Summary Form completed for this problem?

   No   **Yes**

   ↓   Use the Problem Summary Form information and go to step 3 of this procedure.

2. 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.

3. 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 these symptoms?

   Yes   **No**

   ↓   Go to step 6 of this procedure.

4. 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   **No**

   ↓   **This ends the procedure.**

5. 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.

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   **No**

   ↓   Go to step 11 of this procedure.

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.

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> - 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   **Yes**

   ↓   Go to step 24 of this procedure.

9. Is the disk unit reference code 0000?

   Yes   **No**

   ↓   Using the information from step 7, find the table for the indicated disk unit type in "Chapter 2. Unit Reference Codes" on page 59. Perform problem analysis for the disk unit reference code.

           This ends the procedure.

10. 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 "Chapter 2. Unit Reference Codes" on page 59. 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.

11. Are characters 7-8 of the top 16 character line of function 12 (2 rightmost characters of word 2) equal to 27?

    Yes   **No**

    ↓   Go to step 16 of this procedure.

12. 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.

13. Is the disk unit a 9337?

> **No   Yes**
>
> ↓   Go to step 24 of this procedure.

14. Is the disk unit reference code 0000?

> **Yes   No**
>
> ↓   Using the information from step 12, find the table for the indicated disk unit type in "Chapter 2. Unit Reference Codes" on page 59. Perform problem analysis for the disk unit reference code.
>
> **This ends the procedure.**

15. Find the table for the indicated disk unit type in "Chapter 2. Unit Reference Codes" on page 59.

    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.

16. Are the 2 rightmost characters of word 2 on the Problem Summary Form equal to 62?

> **Yes   No**
>
> ↓   Use the information in characters 9-16 of the bottom 16 character line of function 13 (word 9) and go to "Chapter 2. Unit Reference Codes" on page 59. Use this information instead of the information in word 1 for the reference code.
>
> **This ends the procedure.**

17. Are characters 9 - 16 of the top 16 character line of function 12 (word 3) equal to 00010004?

> **Yes   No**
>
> ↓   Go to step 21 of this procedure.

18. Are characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) equal to 0000?

> **No   Yes**
>
> ↓   Go to step 22 of this procedure.

19. 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   Yes**
>
> ↓   Go to step 24 of this procedure.

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20. 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 "Chapter 2. Unit Reference Codes" on page 59, 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.

21. Are characters 9-16 of the top 16 character line of function 12 (word 3) equal to 0002000D?

    Yes   No

    ↓   Use the information in characters 9-16 of the bottom 16 character line of function 13 (word 9) and go to "Chapter 2. Unit Reference Codes" on page 59. 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.

    - 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.

22. 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   Yes

    ↓   Go to step 24 of this procedure.

23. 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 "Chapter 2. Unit Reference Codes" on page 59 and use 3002 as the unit reference code. Exchange the FRUs for URC 3002 one at a time.

    This ends the procedure.

24. The disk unit that stopped communicating with the system is a 9337 Disk Unit.

25. Locate the IOP using the IOP address (see "Locations and Addresses" on page 671).

    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" on page 671).

Does the 9337 Disk Unit Data display contain the value 9337 xxxx?

Note: xxxx can be any hexadecimal value from 0000 to FFFF.

No   Yes

↓   Use the service information for the specific disk unit to analyze the status of the failing unit.

This ends the procedure.

26. 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   No

    ↓   Go to step 29 of this procedure.

27. Does the system continue normal operation in 3 to 4 minutes?

    No   Yes

    ↓   Go to step 33 of this procedure.

28. Go to step 30 of this procedure.

29. 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   No

    ↓   Use the service information for the specific disk unit to analyze the status of the failing unit.

    This ends the procedure.

30. 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.

       Correct any loose connections and ensure that the terminating plug is installed tightly.

    b. 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.

    c. 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).

    d. For each unit that had its address switch changed, set the unit Power switch off, then on again.

31. Does the system continue normal operation in 3 to 4 minutes?

    No   Yes

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    ↓   Go to step 33 of this procedure.

32. 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   No

        ↓   Go to step 34 of this procedure.

33. 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.

34. 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 2 of this procedure?

    Yes   No

        ↓   A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

                This ends the procedure.

35. Are words 3 - 9 on the Problem Summary Form the same as on the Problem Summary Form filled out in step 2 of this procedure?

    Yes   No

        ↓   A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

                This ends the procedure.

36. 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 34 of this procedure equal to 0000?

    Yes   No

        ↓   Return to "Chapter 2. Unit Reference Codes" on page 59. Analyze the problem using the data in 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.

37. 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   Yes

        ↓   **This ends the procedure.**

38. A manual reset of the IOP may clear the attention SRC. Perform the steps in the following table:

Primary Partition Steps	Secondary Partition Steps
a. Select Manual mode on the control panel.	a. From the SST/DST screen select *Work With Partitions*.
b. Select Function **25** and press Enter.	b. Select *Work With Partition Status*.
c. Select Function **26** and press Enter.	c. Select Function **23** *More Options*.
d. Select Function **67** and press Enter to reset the IOP.	d. Select option **59** for the logical partition that you are working in.
e. Select Function **25** and press Enter to disable the service functions on the control panel.	e. Select the IOP for debug.
	f. Select *Reset I/O Processor*.
f.	g. Return to the *Partition Status* screen.

Does an SRC occur?

Yes   No

↓   **This ends the procedure.**

39. 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 the Enter key 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 "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

    Does a different SRC occur, or does a display appear on the console showing reference codes.

    No   Yes

    ↓   Use the new SRC or the URC displayed on the console and go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

               This ends the procedure.

40. Does the same SRC occur?

    No   Yes

    ↓   Use the SRC information from the original failure and return to "Chapter 2. Unit Reference Codes" on page 59. 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.

41. 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 "Copying a Main Storage Dump" in the *iSeries Service Functions* information).
    c. Provide your next level of support with this information.

    This ends the procedure.

Logical Partition (LPAR) Problem Isolation Procedures

LPAR-PIP01

This procedure identifies some 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   No

   ↓   Go to step 8 on page 359 of this procedure.

2. Is the reporting partition the Primary partition?

   Yes   No

   ↓   Go to step 6 of this procedure.

3. Was the load source disk unit migrated from another partition within the same system?

   Yes   No

   ↓   The load source disk unit has not changed. Contact your next level of support.

   This ends the procedure.

4. Is this load source device intended to be the load source for the Primary partition?

   Yes   No

   ↓   Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.

   This ends the procedure.

5. Use the *"Accept load source disk unit"* option to accept the new load source into the current partition.

   a. Go to SST/DST in the current partition and select option *"Work with system partitions"*.

   b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.

   c. From the *"Recover configuration data"* screen select option *"Accept load source disk unit"*.

   This ends the procedure.

6. 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 seconday partition, replaced intentionally with a load source from another system or another partition from the same system?

   Yes   No

   ↓   Contact your next level of support.

   This ends the procedure.

7. Use the *"Accept load source disk unit"* option to accept the new load source into the current partition.

   a. Go to SST/DST in the current partition and select option *"Work with system partitions"*.

   b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.

   c. From the *"Recover configuration data"* screen select option *"Accept load source disk unit"*.

   This ends the procedure.

8. Are there **multiple** B600 5311 SRCs logged in the same partition?

   Yes   **No**

   ↓   None of the conditions in this procedure have been met, call your next level of support.

   This ends the procedure.

9. 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   **No**

   ↓   Go to step 16 on page 360 of this procedure.

10. Is the partition that is reporting the error the **Primary** partition?

    Yes   **No**

    ↓   Go to step 14 on page 360 of this procedure.

11. Was the load source disk unit migrated from another partition within the same system?

    Yes   **No**

    ↓   The load source disk unit has not changed. Contact your next level of support.

    This ends the procedure.

12. Is this load source device intended to be the load source for the Primary partition?

    Yes   **No**

    ↓   Power off the system. Return the original load source disk to the Primary partition and perform a system IPL.

    This ends the procedure.

13. Use the *"Accept load source disk unit"* option to accept the new load source into the current partition.

    a. Go to SST/DST in the current partition and select option *"Work with system partitions"*.

    b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.

    c. From the *"Recover configuration data"* screen select option *"Accept load source disk unit"*.

    This ends the procedure.

14. 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 seconday partition, replaced intentionally with a load source from another system or another partition from the same system?

Yes   **No**

↓   Contact your next level of support.

    This ends the procedure.

15. Use the *"Accept load source disk unit"* option to accept the new load source into the current partition.

    a. Go to SST/DST in the current partition and select option *"Work with system partitions"*.

    b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.

    c. From the *"Recover configuration data"* screen select option *"Accept load source disk unit"*.

    This ends the procedure.

16. 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   **No**

↓   None of the conditions in this procedure have been met, call your next level of support.

    This ends the procedure.

17. Were any disk unit resources associated with the B600 5311 SRCs added to the partition, since the last IPL of this partition?

No   **Yes**

↓   Use the *"Clear non-configured disk unit configuration data"* option to clear old configuration data from each new disk unit device.

        a. Go to SST/DST in the partition and select option *"Work with system partitions"*.

        b. From *"Work with system partitions"* screen select *"Recover configuration data"*.

        c. From the *"Recover configuration data"* screen select option *"Clear non-configured disk unit configuration data"*.

    d. Select each unit in the list which is new to the system. Press enter.

    e. Continue the system IPL.

    This ends the procedure.

18. 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   **Yes**

    ↓   Go to step 21 of this procedure.

19. A scratch install was not performed.

    Was the *"Clear configuration data"* option recently used to discontinue LPAR use?

    Yes   **No**

    ↓   The *"Clear configuration data"* option was not used. Contact your next level of support.

        This ends the procedure.

20. Use the *"Clear non-configured disk unit configuration data"* option to clear old configuration data, from the old partition load source disk device(s).

    a. Go to SST/DST in the partition, select option *"Work with system partitions"*.

    b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.

    c. From the *"Recover configuration data"* screen select the option *"Clear non-configured disk unit configuration data"*.

    d. Select each former load source in the list. Press enter.

    e. Continue the system IPL.

    This ends the procedure.

21. Was the load source device previously mirrored before the scratch install?

    Yes   **No**

    ↓   Go to step 23 of this procedure.

22. Use the *"Clear non-configured disk unit configuration data"* option. 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 that is reporting the SRC and select the *"Work with system partitions"* option .

    b. From the *"Work with system partitions"* screen select the *"Recover configuration data"* option.

    c. From the *"Recover configuration data"* screen select the *"Clear non-configured disk unit configuration data"* option.

    d. Select the former load source mirror in the list. Press enter.

23. Is the Primary partition reporting the B600 5311 error(s)?

    Yes   **No**

    ↓   **This ends the procedure.**

24. Does the customer want multiple partitions on the system?

    Yes   **No**

↓   **This ends the procedure.**

25. 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 the *"Work with system partitions"* option .

   b. From the *"Work with system partitions"* screen select option *"Recover configuration data"*.

   c. From the *"Recover configuration data"* screen select the *"Recover primary partition configuration data"* option.

   d. Verify the information that is presented on the screen. 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.

      Note: The system will perform an automatic IPL during this step.

   This ends the procedure.

Operations Console Problem Isolation Procedures

Overview
This section contains the procedures necessary to isolate a failure with iSeries 400 Operations Console.

These PIPs only work with cable-connected configurations only. They are not valid for network or dial connected configurations.

The following symptoms can be caused by iSeries 400 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 400 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.
- iSeries 400 Operations Console status is "Connecting remote control panel".

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 "Powering On and Powering Off the System and Logical Partitions" on page 832) before removing, exchanging, or installing a field-replaceable unit (FRU).

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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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-PIP1

This procedure will help isolate an Operations Console failure.

The following symptoms can be caused by iSeries 400 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 400 Operations Console window remains "Connecting console".

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Ensure that the 2745 IOA is installed into the correct position:
   - For the Model 270 – C07
   - For the Model 820 – C06

   Note: If a 2771 is located anywhere within the CEC (or on the IOP of a secondary partition designated for console support), it will be found and used for Operations Console.

2. 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.

Operations Console PIPs

3. 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.

4. The following procedure will use the Windows application Hyperterminal to determine is there is connectivity between the system unit console (PC) and the iSeries 400:

   a. Use one of the following paths to look for Hyperterminal:
      - Start | Programs | Accessories | Hyperterminal
      - Start | Programs | Communications | Hyperterminal

   b. Is the Hyperterminal present?

      Yes   No

      ↓   Install the Hyperterminal (you will need the install media for the operating system used on the PC):

               1) Place the install media, if CD, 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) Click Start.

               3) Select Settings.

               4) Click Control Panel.

               5) Double-click Add/Remove Programs.

               6) Click the Windows Setup tab or the Windows NT Setup tab, based on the operating system.

               7) Select Communications.

               8) Click Details.

               9) Place a check mark in the box preceeding Hyperterminal by clicking on the box.

               10) Click OK.

               11) Click Apply.

               12) Follow the instructions in any prompts that may show up. If you are presented a window in which you might replace a newer file with an older one, click Yes to keep the newer file.

               13) Follow one of the paths to Hyperterminal and start it.
                   - Start | Programs | Accessories | Hyperterminal
                   - Start | Programs | Communications | Hyperterminal

   c. Start the executable.

   d. Enter a name, then, click OK.

   e. Click on the drop down arrow at the end of the line for Connect using:

   f. 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.

   g. In the Bits per second field, select 9600. Then, click OK.

      Note: 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.

h. 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.

i. Perform a Disconnect using the toolbar button. It's the one with the handset raised above the telephone.

j. Click File | Properties.

k. Click the Settings tab.

l. Click the ASCII Setup button.

m. Select the following options so they have a check mark in the preceeding box:

- Send line ends with line feeds
- Echo typed characters locally
- Append line feeds to incoming line ends
- Wrap lines that exceed terminal width

n. Click OK.

o. Click OK.

p. 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.

q. 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.

r. 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.

s. Using UPPERCASE, type NEGOTIATE in the Hyperterminal window. Then, press the Enter key.

t. Wait at least 30 seconds. If no data is returned, do step 4s again.

u. If there is full connectivity between the PC and the iSeries 400 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

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.

Operations Console-PIP2

This problem isolation procedure will isolate a failure with the remote control panel. This PIP is only works with cable-connected configurations only. It is not valid for network or dial connected configurations.

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.

Operations Console PIPs

- Remote control panel accepts mode selections, however the system does not respond.
- The remote control panel does not function.
- iSeries 400 Operations Console status is "Connecting remote control panel".

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Ensure the remote control panel cable is connected to the Debug port on the rear of the iSeries 400. 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.

The following procedure must be performed when Operations Console has an active connection.

1. Is the status in the iSeries 400 Operations Console window "Connecting console" or did you get a message indicating the connection to the LCS failed?

   No   **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 363 for assistance in determining if the PC and iSeries 400 have connectivity.

   This ends the procedure.

2. Is the status in the iSeries 400 Operations Console window any of the following: "Connected", "Pending authorization", "Connecting remote control panel", or "Remote control panel connection to xxxxxx failed. Do you want to try again?"

   No   **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.**

3. Did the remote control panel window open? Be certain to look behind any open windows or in the task bar for it.

   Yes   **No**

   ↓   Verify that iSeries 400 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.

4. Did the remote control panel window display any Function/Data, or either the Power or a Mode indicator green?

   Yes   **No**

   ↓   Replace the remote control panel cable.

This ends the procedure.

5. 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.

Operations Console-PIP3

This problem isolation procedure will isolate an Operations Console bringup failure when the SRC on the panel is A6xx5008 or B6xx5008 **only**.

This PIP works with cable-connected and Lan configurations **only**. It is not valid for dial connected configurations.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Perform the following:

1. Is the SRC on the panel A6xx5008 or B6xx5008?

   Yes   No

   ↓   **This ends the procedure.**

2. Are you connecting Operations Console using the ASYNC adapter?

   Yes   No

   ↓   You are connecting using a LAN adapter. Go to step 9 of this procedure.

3. Are words 17, 18, and 19 all equal to 00000000?

   No   Yes

   ↓   Report the problem to your next level of support.

   This ends the procedure.

4. Is word 17 equal to 00000001?

   No   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.

5. Is word 17 equal to 00000002?

   No   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.

6. Is word 17 equal to 00000003?

   No   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.

7. Is word 17 equal to 00000004?

   No   **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.

8. Report the problem to you next level of support.

   This ends the procedure.

9. Are words 13, 14 and 15 all equal to 00000000?

   No   **Yes**

   ↓   Report the problem to you next level of support.

   This ends the procedure.

10. Is word 13 equal to 00000002?

   No   **Yes**

   ↓   The LAN hardware failed to activate. Replace the LAN IOA being used.

   This ends the procedure.

11. Is word 13 equal to 00000003?

   Yes   **No**

   ↓   Go to step 14 of this procedure.

12. 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   **No**

   ↓   The LAN adapter hardware is not operational. Replace the hardware and try again.

   This ends the procedure.

13. The network cable is not attached to the LAN adapter, the cable is defective, or the network is not operational.

   This ends the procedure.

14. Is word 13 equal to 00000004?

   No   **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.

15. Is word 13 equal to 00000005?

No   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.

16. Report the problem to your next level support.

    This ends the procedure.

Power PIPs

Overview
This section contains the procedures necessary to isolate a failure in the system
power.

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 "Powering
On and Powering Off the System and Logical Partitions" on page 832) 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 PIP3
This section contains the procedures necessary to isolate a failure in the system
power.

Attention: Disconnecting or removing the cryptographic I/O processor causes the
loss of the master encryption key.

The following safety notices apply throughout this section.

Read "Overview" before servicing the system.

This procedure tests the battery power unit for correct operation.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Ensure that the battery power unit is installed and that there was no system power loss for the last 8 hours by checking the message log for CPF1816.

   Note: 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).

   Note: The *time date* parameter that you use should be for the last 8-hour period.
   c. Fill in the time and date.
      For the United States, the format is:
      hhmmss mmddyy

   Note: The output may be printed (*PRINT) or displayed. The default (*) is to display.

2. Ensure that all user programs are ended.

3. 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 the Enter key.
   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.

4. Select the *Start a Service Tool* option.

5. Select the *System Power Control Network* option.

6. Press the Enter key to continue.

7. Select the *Test Battery Interface* option by entering 7 under the *OPT* column on the line for the correct unit (**not** the line for the frame).

8. Press the Enter key to confirm your selection.

   Does the battery test complete with no problems found?

   Yes   No

   ↓   Exchange the following, one at a time (see "Chapter 4. Removal and Installation Procedures" on page 593 or the "Removal and Installation Procedures" in the):
           a. Battery power unit (see the Symbolic FRU BATRY).
           b. Battery charger unit or UPSUNIT, as installed.
           c. The SPCN card (TWRCARD).
           d. Backplane.

           This ends the procedure.

9. 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.

   This ends the procedure.

Power PIP4

A power supply overcurrent/load fault is occurring.

Read "Overview" on page 369 for important safety information.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Verify that your power supply is functioning properly.

   a. Disconnect the AC power cable to the unit you are working on. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system 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 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.

2. Perform the following:

   a. Disconnect the AC power cable to the unit you are working on. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system 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 "Chapter 4. Removal and Installation Procedures" on page 593).

   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   No

   ↓   Go to step 8 on page 372.

3. Perform the following:

   a. Remove one of the AMDs from the system 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   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?

Power PIPs

      No   **Yes**

      ↓   Install all the AMDs and continue with step 6 of this procedure.

5. Perform the following:

   a. Power off the system.

   b. Install the AMD that was removed in step 3 on page 371 in the original location.

   c. Go to step 3 on page 371.

6. Perform the following:

   a. Power off the system.

   b. Remove the power supply and replace it with the new one.

   c. Power on the system.

   Does a power reference code occur?

      Yes   **No**

      ↓   The power supply that was removed in step 6 was the failing item.

             This ends the procedure.

7. Perform the following:

   a. Remove the new power supply that was installed in step 6 and reinstall the original power supply.

   b. Replace the BACKPLN.

   This ends the procedure.

8. Perform the following:

   a. Reinstall all of the cards you removed in step 1 on page 371 of this procedure.

   b. Power on the system.

   Does a power reference code occur?

      Yes   **No**

      ↓   Go to step 12.

9. Perform the following:

   a. Power off the system.

   b. Disconnect one of the cards you connected in step 8 of this procedure.

   c. Power on the system.

   Does a power reference code occur?

      Yes   **No**

      ↓   Exchange the last card you disconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

10. Have you disconnected all the cards?

      No   **Yes**

      ↓   Install all parts removed in this procedure and go to "Starting Point for All Problems" on page 4.

             This ends the procedure.

11. Repeat step 9 of this procedure.

12. Perform the following:

a. Power off the system.

b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 1 on page 371 of this procedure.

c. Power on the system.

Does a power reference code occur?

Yes   No

↓   The system is working. The problem seems to be intermittent.

         This ends the procedure.

13. Perform the following:

    a. Power off the system.

    b. Disconnect one of the I/O devices (tape, diskette, or disk units) you connected in step 12 on page 372 of this procedure.

    c. Power on the system.

    Does a power reference code occur?

    No   Yes

    ↓   Exchange the last I/O device you disconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

14. Have you disconnected all the I/O devices?

    No   Yes

    ↓   Install all parts removed in this procedure and go to "Starting Point for All Problems" on page 4.

            This ends the procedure.

15. Repeat step 13 of this procedure.

Power PIP5

A power supply overcurrent/load fault is occurring.

Read "Overview" on page 369 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. 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 "Chapter 4. Removal and Installation Procedures" on page 593).

   b. Remove and label all cards installed except 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   No

   ↓   Go to step 12 on page 375.

2. Perform the following:

   a. Power off the system.

    b. Remove one of the AMDs from the system that was not previously removed during this procedure. (Disregard a AMD SRC if it occurs during this step.)

    c. Power on the system.

Does a power reference code occur?

Yes   No

↓   The AMD you removed in this step is the failing item.

        This ends the procedure.

3. Have you removed all of the AMDs one at a time?

No   Yes

↓   Install all the AMDs and continue with step 5 of this procedure.

4. Perform the following:

    a. Power off the system.

    b. Install the AMD that was removed in step 2 on page 373 in the original location.

    c. Go to step 2 on page 373.

5. Perform the following:

    a. Power off the system.

    b. Remove 1 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   No

↓   The memory card that was removed in this step was the failing item.

6. Have all of the memory cards been swapped out with a new unit?

No   Yes

↓   Go to step 8 of this procedure.

7. Perform the following:

    a. Remove the new memory card that was installed in step 5 and replace the original memory card.

    b. Go to step 5 of this procedure.

8. 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   No

↓   The processor card was the failing item.

        This ends the procedure.

9. 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   **No**

↓   The power supply that was removed in step 9 on page 374 was the failing item.

10. Have all of the power supplies been swapped out with a new unit?

    No   **Yes**

    ↓   Replace BACKPLN.

11. Perform the following:

   a. Remove the new power supply that was installed in step 9 on page 374 and replace the original power supply.

   b. Go to step 9 on page 374 of this procedure.

12. Perform the following:

   a. Power off the system.

   b. Reinstall all of the cards you removed in step 1 on page 373 of this procedure.

   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   **No**

↓   Go to step 16.

13. Perform the following:

   a. Power off the system.

   b. Disconnect one of the cards you connected in step 12 of this procedure.

   c. Power on the system.

Does a power reference code occur?

Yes   **No**

↓   Exchange the last card you disconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

14. Have you disconnected all the cards?

    No   **Yes**

    ↓   Install all the parts you removed in this procedure and go to "Starting Point for All Problems" on page 4.

        This ends the procedure.

15. Repeat step 13 of this procedure.

16. Perform the following:

   a. Power off the system.

   b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 1 on page 373 of this procedure.

   c. Power on the system.

Does a power reference code occur?

> **Yes**   **No**
>
> ↓
>
> **This ends the procedure.**

17. Perform the following:
    a. Power off the system.
    b. Disconnect one of the I/O devices (tape, diskette, or disk units) you connected in step 16 on page 375 of this procedure.
    c. Power on the system.

    Does a power reference code occur?

    > **No**   **Yes**
    >
    > ↓   Exchange the last I/O device you disconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

18. Have you disconnected all the I/O devices?

    > **No**   **Yes**
    >
    > ↓
    >
    > **This ends the procedure.**

19. Repeat step 17 of this procedure.

Power PIP6

A power supply overcurrent or load fault has occurred.

Read "Overview" on page 369 for important safety information.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Perform the following:
   a. Power off the system or frame you are working on. (Frames with FC 5078/0578 attached – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)
   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 "Chapter 4. Removal and Installation Procedures" on page 593).
   c. Remove and label all cards installed in the PCI card area.
   d. Power on the system or frame that you are working on. (Frames with FC 5078/0578 attached – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

   Does a power reference code occur?

   > **Yes**   **No**
   >
   > ↓   Go to step 10 on page 378 of this procedure.

2. Perform the following:

    a. Power off the system or frame you are working on. (Frames with FC 5078/0578 attached – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    b. Remove power supplies P02 and P03 if they are installed.

    c. Power on the system or frame that you are working on. (Frames with FC 5078/0578 attached – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

Does a power reference code occur?

No   **Yes**

↓   Go to step 5 of this procedure.

3. Perform the following:

    a. Power off the system or frame you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    b. Reconnect power supply P02 removed in step 2 on page 376 of this procedure.

    c. Power on the system or frame that you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

Does a power reference code occur?

No   **Yes**

↓   Exchange the power supply P02 that you reconnected in this step.

       This ends the procedure.

4. Exchange power supply P03.

   This ends the procedure.

5. Perform the following:

    a. Power off the system or frame that you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    b. Remove power supply P01.

    c. Reconnect power supply P02 or P03, if they are installed.

    d. Power on the system or frame that you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

Does a power reference code occur?

Yes   **No**

↓   Exchange the power supply P01.

       This ends the procedure.

6. Perform the following:

    a. Power off the system.

   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 or frame that you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

   Does a power reference code occur?

   Yes   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   Yes

   ↓   Install all the AMDs and continue with step 9 of this procedure.

8. Perform the following:

   a. Power off the frame that you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

   b. Install the AMD that was removed in step 6 on page 377 in the original location.

   c. Go to step 6 on page 377 of this procedure.

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 system or frame you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

   Does a power reference code occur?

   Yes   No

   ↓   Replace the DASD backplane that the power cable was removed form in this step. See symbolic FRU "DEVBPLN" on page 506

10. Is a second lower DASD backplane installed?

    No   Yes

    ↓   Go to 9 of this procedure.

11. Replace the following one at a time:

    a. DASD backplane upper (CCIN 283C). See symbolic FRU "DEVBPLN" on page 506.

    b. System backplane. See sybolic FRU "SYSBKPL" on page 575.

    This ends the procedure.

12. Perform the following:

    a. Power off the frame you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

b. Reinstall all of the cards that you removed in 1 on page 376 of this procedure.

c. Reconnect the AC power cable to the unit that you are working on.

d. Power on the system or frame you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

13. Does a power reference code occur?

    Yes   No

    ↓   Go to step 16 of this procedure.

14. Perform the following:

    a. Power off the frame you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    b. Disconnect one of the cards that you connected in 12 on page 378 of this procedure.

    c. Power on the system or frame you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    Does a power reference code occur?

    Yes   No

    ↓   Exchange the last card that you disconnected in this step. See "Chapter 4. Removal and Installation Procedures" on page 593.

15. Have you disconnected all the cards?

    Yes   No

    ↓   Repeat step 14 of this procedure.

16. Perform the following:

    a. Power off the system or frame you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 1 on page 376 of this procedure.

    c. Power on the system or frame that you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

    Does a power reference code occur?

    Yes   No

    ↓

        This ends the procedure.

17. Perform the following:

    a. Power off the system or frame you are working on. (Frames with FC 5078/0578 – trace and remove the **lower** frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

b. Disconnect all of the I/O devices (tape, diskette, or disk units) you connected in step 16 on page 379 of this procedure.

c. Reconnect one of the I/O devices (tape, diskette, or disk units) you disconnected in step 17b.

d. Power on the system or frame that you are working on. (Frames with FC 5078/0578 – reconnect the lower frame power supply AC jumper cables at the AC input/battery charger, or at the AC modules on dual line cord frames.)

Does a power reference code occur?

No   **Yes**

↓   Exchange the last I/O device you reconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

18. Have you reconnected all the I/O devices?

Yes   **No**

↓   Repeat steps 17a on page 379, 17c, and 17d of this procedure.

19. **This ends the procedure.**

Power PIP8

A power supply overcurrent or load fault has occurred in a FC 5078/0578 (for location information, see "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695). Read the "Overview" on page 369, before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Perform the following:

a. Power off the system and disconnect the AC power cable to the unit that you are working on.

b. Remove and label all cards installed in the PCI backplane area.

c. Reconnect the AC power cable to the unit that you are working on.

d. Power on the system.

Does a power reference code occur?

Yes   **No**

↓   Go to step 7 on page 382 of this procedure.

2. Perform the following:

a. Power off the system.

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   **No**

↓   The Power supply P01 that you removed in this step is the failing item.

3. Perform the following:

    a. Power off the system.

    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 system.

    Does a power reference code occur?

    Yes   No

    ↓   The Power supply P02 that you removed in this step is the failing item.

             This ends the procedure.

4. Perform the following:

    a. Power off the system.

    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 system.

    Does a power reference code occur?

    Yes   No

    ↓   The B02 assembly that you removed in this step is the failing item.

             This ends the procedure.

5. Perform the following:

    a. Power off the system.

    b. Remove power supply P02 and remove the new B02 assembly. Replace it with the original B02 assembly. Install power supply P02.

    c. Remove power supply P01. Remove the B01 assembly. Replace it with a new B01 assembly. Install power supply P01.

    d. Power on the system.

    Does a power reference code occur?

    Yes   No

    ↓   The B01 assembly that you removed in this step is the failing item.

             This ends the procedure.

6. Perform the following:

    a. Power off the system.

    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 – CTPNL

        • PCI backplane assembly location CB1 symbolic FRU – TWRCARD.

> **This ends the procedure.**

7. Perform the following:

   a. Power off the system.

   b. Reinstall 1 of the cards that you removed in step 1 on page 380 of this procedure.

   c. Power on the system.

   Does a power reference code occur?

   No   **Yes**

   ↓   Exchange the last card that you reinstalled in this step.

8. Have you reinstalled all of the cards?

   Yes   **No**

   ↓   Repeat step 7 of this procedure, reinstalling the next card.

9. Replace the PCI backplane assembly in location CB1, symbolic FRU -TWRCARD.

   This ends the procedure.

Power PIP9

A power supply overcurrent/load fault is occurring.

Read "Overview" on page 369 for important safety information.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852 before continuing with this procedure. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Is the SRC 1xxx 1B11, 1B12, 1B13, 1B14, 1B16, 1B17, 2602, or 2604?

   No   **Yes**

   ↓   Go to step 19 on page 384 of this procedure.

2. Perform the following:

   a. Power off the system.

   b. 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 "Chapter 4. Removal and Installation Procedures" on page 593).

   c. Remove and label all cards installed in the PCI card area.

   d. Power on the system.

   Does a power reference code occur?

   Yes   **No**

   ↓   Go to step 11 on page 383 of this procedure.

3. Perform the following:

   a. Power off the system.

   b. Remove one of the AMDs from the system that was not previously removed during this procedure. (Disregard a AMD SRC if it occurs during this step.)

   c. Power on the system.

   Does a power reference code occur?

    Yes   **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   **Yes**

    ↓   Install all the AMDs and continue with step 6 of this procedure.

5. Perform the following:

   a. Power off the system.

   b. Install the AMD that was removed in step 3 on page 382 in the original location.

   c. Go to step 3 on page 382 of this procedure.

6. Perform the following:

   a. Power off the system.

   b. Remove the power supply cables from the DASD backplane.

   c. Power on the system.

   Does a power reference code occur?

    No   **Yes**

    ↓   Go to step 8 of this procedure.

7. The DASD backplane that was disconnected in step 6 is the failing item.

   This ends the procedure.

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   **No**

    ↓   The power supply that was removed in step 8 was the failing item.

           This ends the procedure.

9. Have you removed all of the power supplies one at a time?

    Yes   **No**

    ↓   Remove the new power supply that was installed in step 8 and reinstall the original power supply, then go to step 8 of this procedure.

10. Perform the following:

   a. Remove the new power supply that was installed in step 8 and reinstall the original power supply.

   b. Replace the BACKPLN. See "BACKPLN" on page 490.

   This ends the procedure.

11. Perform the following:

   a. Power off the system.

   b. Reinstall all of the cards you removed in step 2 on page 382 of this procedure.

    c. Power on the system.

    Does a power reference code occur?

    Yes   **No**

    ↓   Go to step 15 of this procedure.

12. Perform the following:

    a. Power off the system.

    b. Disconnect one of the cards you connected in step 11 on page 383 of this procedure.

    c. Power on the system.

    Does a power reference code occur?

    Yes   **No**

    ↓   Exchange the last card you disconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

13. Have you disconnected all the cards?

    No   **Yes**

    ↓   Reinstall all the parts and go to "Analyzing Power Problems" on page 37.

14. Repeat step 12 of this procedure.

15. Perform the following:

    a. Power off the system.

    b. Reconnect all of the I/O devices (tape, diskette, or disk units) you disconnected in step 2 on page 382 of this procedure.

    c. Power on the system.

    Does a power reference code occur?

    Yes   **No**

    ↓

            This ends the procedure.

16. Perform the following:

    a. Power off the system.

    b. Disconnect one of the I/O devices you connected in step 15 of this procedure.

    c. Power on the system.

    Does a power reference code occur?

    Yes   **No**

    ↓   Exchange the last I/O device you disconnected in this step. (See "Chapter 4. Removal and Installation Procedures" on page 593).

17. Have you disconnected all the I/O devices?

    No   **Yes**

    ↓   Reinstall all the parts and go to "Analyzing Power Problems on page 37".

18. Repeat step 16 of this procedure.

    This ends the procedure.

19. Perform the following:

   a. Power off the system.

   b. Disconnect one of the disk units in the Model 270 System Unit Expansion.

   c. Power on the system.

Does a power reference code occur?

No   **Yes**

↓   Exchange the last disk unit you disconnected in this step (see "Chapter 4. Removal and Installation Procedures" on page 593).

20. Have you disconnected all the disk units?

    No   **Yes**

    ↓   Replace the following FRUs, see "Locations — Model 270" on page 671:
       • Device Boards DB2 and DB2
       • Power Supply P02

    This ends the procedure.

21. Repeat step 19 on page 384 of this procedure.

Power PIP11

To correct the power-on problem, perform this procedure until you correct the problem and you can power on the system.

Note: The following steps are for the system unit, unless other instructions are given.

DANGER

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

Note: If a UPS is installed, verify that the UPS is powered on before proceeding.

1. Are the mainline AC power cables from the AC modules to the customer's AC power outlet connected and seated correctly at both ends?

    Yes   **No**

    ↓   Connect the mainline AC power cables correctly at both ends.

    This ends the procedure.

2. Is the SRC 1xxx-00AC, 1510, 1520 or 1530?

    Yes   **No**

    ↓   Go to "Starting Point for All Problems" on page 4.

3. Is the system powered on?

    No   **Yes**

    ↓   Go to step 8 on page 386

4. Perform the following:

    a. Disconnect the mainline AC power cables from both AC line cord frame connectors.

    b. Use a multimeter to measure the AC voltage at both AC line cord (frame connectors end).

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

No **Yes**

↓ Perform the following:

a. Verify the system fails to power on.

b. Exchange the failing power supply:

Reference Code	Position	Part Number
1510	P01	21P6417
1520	P02	21P6417
1530	P03	21P6417

This ends the procedure.

6. Perform the following:

a. Disconnect the mainline AC power cables 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 **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.

This ends the procedure.

7. Exchange the failing mainline AC power cables.

This ends the procedure.

8. Is the SRC 1xxx-1510, 1520?

Yes **No**

↓ Go to step 10.

9. Perform the following

a. See "Locations — Model 820" on page 683 to determine the location of AC line cord 1.

b. Trace the AC input line cord that connects to AC line cord frame connector 1.

Attention: Do not disconnect the other system line cord when powered on.

c. Go to step 11.

10. Perform the following:

a. See "Locations — Model 820" on page 683 to determine the location of AC line cord 2.

b. Trace the AC input line cord that connects to AC line cord frame connector 2.

Attention: Do not disconnect the other system line cord when powered on.

11. Perform the following:

   a. Disconnect the mainline AC power cable from the AC line cord frame connector for the SRC you are working on.

   b. Use a multimeter to measure the AC voltage at the AC line cord frame connector end of the mainline AC power cable.

12. Is the AC voltage from 200 V AC to 240 V AC?

   No   **Yes**

   ↓   Exchange the failing power supply:

Reference Code	Position	Part Number
1510	P01	21P6417
1520	P02	21P6417
1530	P03	21P6417

       This ends the procedure.

13. 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.

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

   Yes   **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.

       This ends the procedure.

14. Exchange the failing mainline AC power cable.

This ends the procedure.

Storage Device I/O Processor (SDIOP) Problem Isolation Procedures

Overview
This section contains the procedures necessary 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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)**

Warning: 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:

- "Powering On and Powering Off the System and Logical Partitions" on page 832
- "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-PIP1

Introduction: This procedure performs 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.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Was the IPL performed from disk (Type A or Type B)?

   No   **Yes**

   ↓   Go to step 6 of this procedure.

2. 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. If the IPL media is cartridge type optical media (e.g. DVD), do not attempt to clean the media.

If the IPL media is non-cartridge type media (e.g. 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 the IPL media is tape, clean the recording head in the tape unit. Use the correct IBM Cleaning Cartridge Kit.

3. Perform a Type D IPL in Manual mode.

   Does a system reference code (SRC) appear on the control panel?

   Yes   No

   ↓   Go to step 9 of this procedure.

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

   Yes   No

   ↓   A different SRC occurred. Use the new SRC to correct the problem (see "Starting Point for All Problems" on page 4).

           This ends the procedure.

5. 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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

   This ends the procedure.

6. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does an SRC appear on the control panel?

   No   Yes

   ↓   Go to step 11 of this procedure.

7. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

   No   Yes

   ↓   Select option 5, then press F11, then press the Enter key to display the details.

          If all of the reference codes are 0000, go to "LIC PIP11" on page 332 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

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

8. Look at the product activity log (see "Product Activity Log" in the *iSeries Service Functions* information).

   Is an SRC logged as a result of this IPL?

   Yes   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 "Chapter 2. Unit Reference Codes" on page 59 and "Chapter 4. Removal and Installation Procedures" on page 593). If the failing item list contains

FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

This ends the procedure.

9. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

No **Yes**

↓ Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC PIP11" on page 332 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

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

10. Look at the product activity log (see "Product Activity Log" in the *iSeries Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes **No**

↓ The problem is corrected.

This ends the procedure.

11. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

Are the SRC and unit reference code (URC) the same ones that sent you to this procedure?

Yes **No**

↓ Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

This ends the procedure.

12. Perform the following:

   a. Power off the system or expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   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 "Chapter 2. Unit Reference Codes" on page 59 and "Chapter 4. Removal and Installation Procedures" on page 593). Perform steps 13 through 18 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.

13. Power on the system or the expansion tower.

Does an SRC appear on the control panel?

No **Yes**

↓ Go to step 16 of this procedure.

14. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

No   Yes

↓   Select option 5, then press F11, then press the Enter key to display the details.

   If all of the reference codes are 0000, go to "LIC PIP11" on page 332 and use cause code 0002. If any of the reference codes are not 0000, go to step 11 of this procedure and use the reference code that is not 0000.

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

15. Look at the product activity log (see "Product Activity Log" in the *iSeries Service Functions* information).

   Is an SRC logged as a result of this IPL?

   Yes   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 "Chapter 4. Removal and Installation Procedures" on page 593 before exchanging a disk unit.

      This ends the procedure.

16. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

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

   No   Yes

   ↓   The last FRU you exchanged is not the failing FRU. Go to step 12 of this procedure to continue FRU isolation.

17. 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   No

   ↓   Use the new SRC or reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

      This ends the procedure.

18. 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 "Chapter 4. Removal and Installation Procedures" on page 593 before exchanging a disk unit.

   This ends the procedure.

SDIOP-PIP13

Introduction: This procedure isolates problems on the interface between the I/O card and the storage devices when the I/O card is the most probable failing item.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

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Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Note: The unit reference code (part of the SRC that sent you to this procedure) indicates the SCSI bus that has the problem:

URC	SCSI Bus
3100	0
3101	1
3102	2

1. Were you performing an IPL from removable media (IPL type D) when the error occurred?

   No   Yes

   ↓   Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.

2. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does an SRC appear on the control panel?

   No   Yes

   ↓   Go to step 7 of this procedure.

3. Does one of the following displays appear on the console?
   - Disk Configuration Error Report
   - Disk Configuration Warning Report
   - Display Unknown Mirrored Load-Source Status
   - Display Load-Source Failure

   Yes   No

   ↓   Go to step 6 of this procedure.

4. On some of the displays that are listed in step 3 of this procedure, you must press F11 to display reference codes.

   Are all of the reference codes 0000?

   No   Yes

   ↓   Go to "LIC PIP11" on page 332 and use cause code 0002.

   This ends the procedure.

5. Go to step 7 of this procedure and use the reference code that is not 0000.

6. Look at the product activity log (see "Product Activity Log" in the *iSeries Service Functions* information).

   Is an SRC logged as a result of this IPL?

   Yes   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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

   This ends the procedure.

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

   Yes　**No**

   ↓　　Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861). Then go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

   　　This ends the procedure.

8. Perform the following:
   a. Power off the system or the expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
   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 "Chapter 4. Removal and Installation Procedures" on page 593). 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　**Yes**

   ↓　　Go to step 16 of this procedure.

9. Does one of the following displays appear on the console?
   • Disk Configuration Error Report
   • Disk Configuration Warning Report
   • Display Unknown Mirrored Load-Source Status
   • Display Load-Source Failure

   Yes　**No**

   ↓　　Go to step 15 of this procedure.

10. Does the Display Unknown Mirrored Load-Source Status display appear on the console?

    Yes　**No**

    ↓　　Go to step 13 of this procedure.

11. Is the reference code the same one that sent you to this procedure?

    No　**Yes**

    ↓　　Go to step 17 of this procedure.

12. 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 "Powering On and Powering Off the System and Logical Partitions" on page 832).
    b. Remove the I/O card you installed in step 8 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 7 to continue isolating the problem.

This ends the procedure.

13. On some of the displays that are listed in step 9 of this procedure, you must press F11 to display reference codes.

Are all of the reference codes 0000?

No   Yes

↓   Go to "LIC PIP11" on page 332 and use cause code 0002.

This ends the procedure.

14. Go to step 16 of this procedure and use the reference code that is not 0000.

15. Look at the product activity log (see "Product Activity Log" in the *iSeries Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes   No

↓   The I/O card, which you removed in step 8 of this procedure, is the failing item.

This ends the procedure.

16. Is the SRC or reference code the same one that sent you to this procedure?

Yes   No

↓   Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861). Then go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

This ends the procedure.

17. 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 "Powering On and Powering Off the System and Logical Partitions" on page 832).

b. Remove the I/O card you installed in step 8 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 7 on page 395 to continue isolating the problem.

This ends the procedure.

SDIOP-PIP16

Introduction: This procedure isolates failing devices that are identified by FI codes FI01105, FI01106, and FI01107. In this procedure, you will remove devices that are identified by the FI code. 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.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem. See *iSeries Service Functions* for more information on logical partitions.

1. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

    Does an SRC appear on the control panel?

    No   Yes

    ↓   Go to step 6 of this procedure.

2. Does one of the following displays appear on the console?
    - Disk Configuration Error Report
    - Disk Configuration Warning Report
    - Display Unknown Mirrored Load-Source Status
    - Display Load-Source Failure

    Note: On the Disk Configuration Error Report display, 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   No

    ↓   Go to step 5 of this procedure.

3. On some of the displays that are listed in step 2 of this procedure, you must press F11 to display reference codes.

    Are all of the reference codes 0000?

    No   Yes

    ↓   Go to "LIC PIP11" on page 332 and use cause code 0002.

    This ends the procedure.

4. Go to step 6 of this procedure and use the reference code that is not 0000.

5. Look at the Product Activity Log (see "Product Activity Log" in the *iSeries Service Functions* information).

    Is a reference code logged as a result of this IPL?

    Yes   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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

    This ends the procedure.

6. Is the SRC or reference code the same one that sent you to this procedure?

    Yes   No

    ↓   Record the SRC or reference code on the Problem Summary Form. Then go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

    This ends the procedure.

7. Isolate the failing device by doing the following:

    a. Power off the system or the expansion tower if it is powered on (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    b. Go to "Failing Items" on page 466 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 9 of this procedure.

8. Continue to isolate the possible failing items by doing the following:

    a. Power off the system or the expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    b. Disconnect the next device that is identified by FI codes FI01105, FI01106, or FI01107 in the FRU list. (See the note in step 7 of this procedure). 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.

9. Power on the system or the expansion tower.

   Does an SRC appear on the control panel?

   No   **Yes**

   ↓   Go to step 14 of this procedure.

10. Does one of the following displays appear on the console?

   • Disk Configuration Error Report

   • Disk Configuration Warning Report

   • Display Unknown Mirrored Load-Source Status

   • Display Load-Source Failure

   Note: On the Disk Configuration Error Report display, 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   **Yes**

      ↓   Go to step 14 of this procedure.

11. Look at the Product Activity Log (see "Product Activity Log" in the *iSeries Service Functions* information).

   Is a reference code logged as a result of this IPL?

   No   **Yes**

   ↓   Go to step 14 of this procedure.

12. 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   **Yes**

   ↓   Exchange the failing FRU.

> **Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to "Start Disk Service Here" on page 804 before exchanging a disk unit.

> **This ends the procedure.**

13. Exchange the failing item and reconnect the devices you disconnected previously (see "Chapter 4. Removal and Installation Procedures" on page 593).

    This ends the procedure.

14. Is the SRC or reference code the same one that sent you to this procedure?

    Yes   No

    ↓   Record the SRC or reference code on the Problem Summary Form. Then go to step 17 of this procedure.

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   No

    ↓   Leave the device disconnected and go to step 8 of this procedure to continue isolating the possible failing items.

16. 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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

    This ends the procedure.

17. Is the SRC B1xx 4504, and have you disconnected the load-source disk unit?

    Note: The load-source disk unit is disconnected by disconnecting disk unit 1.

    No   Yes

    ↓   Go to step 19 of this procedure.

18. Does one of the following displays appear on the console, and are all reference codes 0000?
    - Disk Configuration Error Report
    - Disk Configuration Warning Report
    - Display Unknown Mirrored Load-Source Status
    - Display Load-Source Failure

    Note: On the Disk Configuration Error Report display, 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   No

    ↓   A new SRC or reference code occurred. Go to "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

    This ends the procedure.

19. The last device you disconnected may be the failing item. Exchange the last device you disconnected (see "Chapter 4. Removal and Installation Procedures" on page 593).

> **Note:** Before exchanging a disk drive, you should attempt to save customer data. Go to "Start Disk Service Here" on page 804 before exchanging a disk unit.

> Was the problem corrected by exchanging the last device you disconnected?

> **No   Yes**

> ↓   **This ends the procedure.**

20. Reconnect the devices you disconnected previously in this procedure.

21. 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 "Chapter 2. Unit Reference Codes" on page 59). Do not exchange the FRU that you exchanged in this procedure. If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

    This ends the procedure.

SDIOP-PIP17

Introduction: This procedure isolates problems that are associated with SCSI bus configuration errors and device task initialization failures.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Were you performing an IPL from removable media (IPL type D) when the error occurred?

   No   Yes

   ↓   Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.

2. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does an SRC appear on the control panel?

   No   Yes

   ↓   Go to step 6 of this procedure.

3. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

   Yes   No

   ↓   Go to step 5 of this procedure.

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   Yes

   ↓   Select option 5, then press F11, then press the Enter key to display the details.

If all of the reference codes are 0000, go to "LIC PIP11" on page 332 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 of this procedure 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. Look at the product activity log (see "Product Activity Log" in the *iSeries Service Functions* information).

Is an SRC logged as a result of this IPL?

Yes   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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

This ends the procedure.

6. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

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

Yes   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 4).

This ends the procedure.

7. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report display or 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. (See "System Reference Code (SRC) Record" in the *iSeries Service Functions* information).

Is the device unit reference code 3020, 3021, or 3022?

Yes   No

↓   Go to step 9 of this procedure.

8. A unit reference code of 3020, 3021, or 3022 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:

a. 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" on page 671).

b. The unit reference code indicates the SCSI bus that has the problem:

URC SCSI Bus

3020 0

3021 1

3022 2

To find the bus and device locations, see "Locations and Addresses" on page 671.

c. 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 394.

This ends the procedure.

9. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).

Find the device unit address from the SRC (see "SRC Address Formats" on page 846). 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 No

↓   Go to step 12 of this procedure.

10. Perform the following:

a. Exchange the device.

b. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

Does this correct the problem?

No Yes

↓   **This ends the procedure.**

11. Ask your next level of support for assistance.

This ends the procedure.

12. Perform the following:

a. Remove the device.

b. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

Does this correct the problem?

No Yes

↓   **This ends the procedure.**

13. Ask your next level of support for assistance.

This ends the procedure.

SDIOP-PIP18

Introduction: This procedure isolates problems that are associated with SCSI bus configuration errors and device task initialization failures.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does an SRC appear on the control panel?

   No   **Yes**

   ↓   Go to step 5 of this procedure.

2. Does the Disk Configuration Error Report display or the Disk Configuration Warning Report display appear on the console?

   Yes   **No**

   ↓   Go to step 4 of this procedure.

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   **Yes**

   ↓   Select option 5, then press F11, then press the Enter key to display the details.

   If all of the reference codes are 0000, go to "LIC PIP11" on page 332 and use cause code 0002. If any of the reference codes are not 0000, go to step 5 of this procedure 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 "Product Activity Log" in the *iSeries Service Functions* information).

   Is an SRC logged as a result of this IPL?

   Yes   **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 "Chapter 2. Unit Reference Codes" on page 59). If the failing item list contains FI codes, see "Failing Items" on page 466 to help determine part numbers and location in the system.

   This ends the procedure.

5. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

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

   Yes   **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 4).

          This ends the procedure.

6. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report display or 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. (See "Stage 1 System Reference Code (SRC) Definition" in the *iSeries Service Functions* information).

   Is the device unit reference code 3020?

   Yes   No

   ↓   Go to step 8 of this procedure.

7. 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 394.

   This ends the procedure.

8. 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   No

   ↓   Go to step 11 of this procedure.

9. Perform the following:
   a. Exchange the device.
   b. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does this correct the problem?

   No   Yes

   ↓   **This ends the procedure.**

10. Ask your next level of support for assistance.

   This ends the procedure.

11. Perform the following:
    a. Remove the device.
    b. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does this correct the problem?

No   Yes

↓   **This ends the procedure.**

12. Ask your next level of support for assistance.

   This ends the procedure.

SDIOP-PIP19

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates the problem when the I/O card reports (during the IPL) that the cache adapter card is not the one it had at the last power off.

You were sent to this procedure from URC 9010, 9011, or 9013.

1. Go to SST or DST to determine if any other SRCs have occurred at about the same time as this error. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

   Have any other I/O card or device SRCs occurred at about the same time as this error?

   No   Yes

   ↓   Use the other I/O card or device SRCs to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59)

           This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

   Yes   No

   ↓   Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

           This ends the procedure.

3. Find the location of the I/O card with the cache adapter card problem by performing 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). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

   - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

     If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:

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– 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. See "Locations and Addresses" on page 671 for location information. 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.

Have you determined the location of the I/O card that is reporting the problem?

Yes   No

↓   Ask your next level of support for assistance.

        This ends the procedure.

4. **Attention**: If the URC is 9010, the I/O card needs to retrieve data from the correct cache adapter card. If the correct cache adapter card is not installed, customer data will be lost.

   Attention: If the URC is 9011 or 9013, the cache adapter card has data in its storage that may belong to another I/O card. Customer data from the other I/O card may be lost.

   Do you want to continue with the cache adapter card that is installed now and accept the data loss?

   No   Yes

   ↓   Go to step 8 of this procedure.

5. The correct cache adapter card must be installed in the I/O card. Find the cache adapter card that was removed from the I/O card.

   Did you find the correct cache adapter card?

   Yes   No

   ↓   Go to step 7 of this procedure.

6. Perform the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Install the correct cache adapter card that you found (see "Chapter 4. Removal and Installation Procedures" on page 593).

   c. Select the IPL type and mode that are used by the customer (see *iSeries Service Functions*)

   d. Power on the system.

   e. Go to step 9 of this procedure.

7. You may remove the cache adapter card and continue without a card temporarily. This will cause degraded performance until a card is installed.

   Attention: When you install a new cache adapter card or continue without one, customer data is lost.

   To continue without a cache adapter card, perform the following:

   a. Power off the system.

   b. Remove the cache adapter card.

8. Perform an IPL to DST (see "Dedicated Service Tools (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.

Attention: Continuing with this option will cause the loss of customer data.

Reclaim the cache adapter card storage (see "Reclaim IOP Cache Storage" on page 856).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

9. Does the IPL complete successfully?

   No   **Yes**

   ↓   **This ends the procedure.**

10. Go to "Starting Point for All Problems" on page 4 to correct the problem.

    This ends the procedure.

SDIOP-PIP20

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates 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. Go to SST or DST to determine if any other SRCs have occurred at about the same time as this error. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.

   Have any other I/O card or device SRCs occurred at about the same time as this error?

   No   **Yes**

   ↓   Use the other I/O card or device SRCs to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59)

             This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

   Yes   **No**

   ↓   Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

              This ends the procedure.

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

   • If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

- If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

  If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC.

4. Use the Product Activity Log entry that you found in step 3 of this procedure. Find and record all the array members that have both a present address of 0 and an expected address that is not 0. For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *iSeries Service Functions*.

   These devices are missing from the disk array.

   Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

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, continue with step 6 of this procedure.

   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 8 of this procedure.

   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 10 of this procedure.

6. Perform the following:

   a. Install the missing devices in the correct locations in the system (see "Chapter 4. Removal and Installation Procedures" on page 593).

   b. Power on the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   Does the IPL complete successfully?

   No   Yes

   ↓   This ends the procedure.

7. Go to "Starting Point for All Problems" on page 4 to correct the problem.

   This ends the procedure.

8. 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 "Dedicated Service Tools (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 the *Work with disk units* option.

      Did you get to DST with a Type D IPL?

      Yes   **No**

      ↓

          1) Select the *Work with disk configuration* option.

          2) Select the *Work with device parity protection* option.

          Then continue with the next step of this procedure.

   c. Select the *Stop device parity protection* option.

   d. Follow the on-line instructions to stop device parity protection.

   e. Perform an IPL from disk.

   Does the IPL complete successfully?

   No   **Yes**

   ↓   **This ends the procedure.**

9. Go to "Starting Point for All Problems" on page 4 to correct the problem.

   This ends the procedure.

10. 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 "Dedicated Service Tools (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 the *Work with disk units* option.

      Did you get to DST with a Type D IPL?

      Yes   **No**

      ↓

          1) Select the *Work with disk unit recovery* option.

          2) Select the *Disk unit problem recovery procedures* option.

          3) Select the disk units on the display you identified in step 4 of this procedure.

          Then continue with the next step of this procedure.

   c. Select the *Initialize and format disk unit* option.

   d. Follow the online instructions to format and initialize the disk units.

   e. Perform an IPL from disk.

   Does the IPL complete successfully?

   No   **Yes**

   ↓   **This ends the procedure.**

11. Go to "Starting Point for All Problems" on page 4 to correct the problem.

   This ends the procedure.

SDIOP-PIP21

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure determines 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 URC 9025 or 9030.

1. Find the address of the I/O card that is reporting the problem, by performing 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). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
   - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

2. Perform the following:
   a. Return to the SST or DST main menu.
   b. Select the *Work with disk units* option.
   c. Select the *Display disk configuration* option.
   d. Select the *Display disk configuration status* option.
   e. On the Display disk configuration status display, look for the devices attached to the I/O card that is identified in step 1 of this procedure.
   f. 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 the *Display Disk Unit Details* option. Then select the *Display Detailed Address* option and record the device address.
   g. See "Locations and Addresses" on page 671 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   No

   ↓   Ask your next level of support for assistance.

            This ends the procedure.

3. Exchange the disk unit that is causing the problem (see "Start Disk Service Here" on page 804).

This ends the procedure.

SDIOP-PIP22

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
   - If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.
   - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC.

     If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC.

     For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *iSeries Service Functions*.

   Record all the information in the Product Activity Log entry for this SRC.
2. 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

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects the problem when the system cannot find the required cache data for the attached disk units.

Note: For some storage I/O adapters, the cache card is integrated and not removable.

You were sent to this procedure from URC 9050.

1. Have any other I/O card or device SRCs occurred at about the same time as this error?

	No	Yes
↓		Use the other I/O card or device SRCs to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59)

This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

   Yes   No

   ↓   Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

   This ends the procedure.

3. Were both an I/O card **and** the cache adapter card exchanged during the last repair action or reconfiguration?

   Yes   No

   ↓   Go to step 7 of this procedure.

4. Can you find the original cache adapter card that was exchanged during the last repair action or reconfiguration?

   Yes   No

   ↓   Go to step 8 of this procedure.

5. Perform the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Remove the cache adapter card from the I/O card and install the original cache adapter card (see "Chapter 4. Removal and Installation Procedures" on page 593).

   c. Select the IPL type and mode that are used by the customer (see *iSeries Service Functions*).

   d. Start an IPL by powering on the system.

   Does the IPL complete successfully?

   Yes   No

   ↓   This is a new problem. Go to "Starting Point for All Problems" on page 4.

   This ends the procedure.

6. The repair action corrected the problem.

   This ends the procedure.

7. Have disk units been moved from another I/O card to this I/O card?

   Yes   No

   ↓   Ask your next level of support for assistance.

   This ends the procedure.

8. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

   • If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

- If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

  If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. 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.

  For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *iSeries Service Functions*.

  Record the addresses that are not 0000 0000 for all devices listed.

  Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

9. See "Locations and Addresses" on page 671 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 disk units with the problem?

   Yes   No

   ↓   Ask your next level of support for assistance.

          This ends the procedure.

10. There are three possible ways to correct the problem:

    - Physically remove the disk units you identified in step 8 of this procedure and return them to their original location.

      If you want to continue with this repair option, continue with step 11 of this procedure.

    - Initialize and format the disk units you identified in step 8 of this procedure.

      Attention: Customer data will be lost.

      If you want to continue with this repair option, go to step 12 of this procedure.

    - Perform an IPL to DST and perform the Reclaim Cache Storage procedure.

      Attention: Customer data will be lost.

      If you want to continue with this repair option, go to step 13 of this procedure.

11. You have chosen to remove the problem disk units.

Perform the following:

a. Physically remove the problem disk units and return them to their original location.

Note: The Product Activity Log I/O processor and cache adapter card information fields identify the type, serial number of the original I/O card, and cache adapter card to which the disk units should be returned.

b. Select the IPL type and mode that are used by the customer.

c. Power on the system.

d. Go to step 14 of this procedure.

12. You have chosen to initialize and format the disk units you identified in step 8 of this procedure.

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 "Dedicated Service Tools (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 the *Work with disk units* option.

Did you get to DST with a Type D IPL?

Yes   No

↓

  1) Select the *Work with disk unit recovery* option.
  2) Select the *Disk unit problem recovery procedures* option.
  3) Select the disk units on the display that you identified in step 8 of this procedure.

  Then continue with the next step of this procedure.

c. Select the *Initialize and format disk unit* option.

d. Follow the online instructions to format and initialize the disk units.

e. Perform an IPL from disk.

f. Go to step 14 of this procedure.

13. You have chosen to perform an IPL to DST and perform the Reclaim Cache Storage procedure.

Perform an IPL to DST (see "Dedicated Service Tools (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.

Reclaim the cache adapter card storage (see "Reclaim IOP Cache Storage" on page 856).

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

14. Does the IPL complete successfully?

No   Yes

↓   **This ends the procedure.**

15. Go to "Starting Point for All Problems" on page 4 to correct the problem.

This ends the procedure.

SDIOP-PIP25

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates 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. Have any other I/O card or device SRCs occurred at about the same time as this error?

   No   **Yes**

   ↓   Use the other I/O card or device SRCs to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

   This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

   Yes   **No**

   ↓   Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

   This ends the procedure.

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:

   - If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

   - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

     If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. 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.

4. For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *iSeries Service Functions*.

   Record the addresses that are not 0000 0000 for all devices listed.

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> **Note:** There may be multiple displays of data. Ensure that you check all
> displays that are associated with the error.

See "Locations and Addresses" on page 671 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   No

↓   Ask your next level of support for assistance.

       This ends the procedure.

5. Have one or more devices been moved to this I/O card from another I/O card?

   Yes   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" on page 844.

   Yes   No

   ↓   Either change the I/O card mode or remove the devices from the I/O
          card (see "Start Disk Service Here" on page 804).

          Note: You can remove disk units with out installing other disk units
          and the system will continue to operate.

          This ends the procedure.

7. Do you want to continue using these devices with this I/O card?

   Yes   No

   ↓   Remove the devices from the I/O card (see "Start Disk Service Here"
          on page 804).

          Note: You can remove disk units without installing another disk unit,
          and the system will continue to operate.

          This ends the procedure.

8. 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 the *Work with disk units* option.

      Did you get to DST with a Type D IPL?

Yes   No

↓   Select the *Work with disk unit recovery* option.

        Then continue with the next step of this procedure.

c. Select the *Initialize and format disk unit* option 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.

d. The disk unit is now ready to be added to the system configuration.

This ends the procedure.

SDIOP-PIP26

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects 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. Have any other I/O card or device SRCs occurred at about the same time as this error?

    No   Yes

    ↓   Use the other I/O card or device SRCs to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

           This ends the procedure.

2. Has the I/O card, or have the devices been repaired or reconfigured recently?

    Yes   No

    ↓   Note any other errors that occurred at about the same time for the same I/O card. Then ask your next level of support for assistance.

            This ends the procedure.

3. Display the Product Activity Log entry that is associated with this SRC by performing one of the following:
    *   If you can enter a command at the console, select system service tools (SST) (see "System Service Tools (SST)" in the *iSeries Service Functions* information). Select the *Product Activity Log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.
    *   If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

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If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. 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.

4. For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, see "More Information from Hexadecimal Reports" in the *iSeries Service Functions*.

Record the addresses that are not 0000 0000 for all devices listed.

Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

See "Locations and Addresses" on page 671 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   No

↓   Ask your next level of support for assistance.

This ends the procedure.

5. Have one or more devices been moved to this I/O card from another I/O card?

Yes   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   No

↓   Remove the devices from the I/O card (see "Start Disk Service Here" on page 804).

Note: You can remove disk units without installing another disk unit, and the system will continue 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 the *Work with disk units* option.

Did you get to DST with a Type D IPL?

Yes   No

↓   Select the *Work with disk unit recovery* option.

         Then continue with the next step of this procedure.

c. Select the *Initialize and format disk unit* option 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.

d. The disk unit is now ready to be added to the system configuration.

This ends the procedure.

SDIOP-PIP27

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

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!

Perform the following:

1. Display the Product Activity Log entry for URC 9051 by performing 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). Select the Product Activity Log option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. This is the I/O card address.

- If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the Product Activity Log option and display the Product Activity Log for this SRC. 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.

  For a type A or B IPL, view the "Additional Information" to see the formatted log information. For a type D IPL, 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.

  Note: There may be multiple displays of data. Ensure that you check all displays that are associated with the error.

  See "Locations and Addresses" on page 671 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.

2. If the devices from step 1 of this procedure have never been installed on this system, go to step 3 of this procedure. If the devices are not in the current system disk configuration, go to step 5 of this procedure. Otherwise, the devices are part of the system disk configuration; go to step 7 of this procedure.

3. If this I/O card and cache card were moved from a different system, go to step 4 of this procedure. Otherwise, the cache card was shipped to the customer without first being cleared. Make a note of both the serial number and the customer number, and the device types and their serial numbers. These were found in step 1 of this procedure. Then inform your next level of support. Then, go to step 6 of this procedure to clear the cache card and correct the URC 9051 problem.

4. You should 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.

5. 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, or they were removed after an abnormal power off, or they have failed. Go to step 6 of this procedure to clear the cache card and correct the URC 9051 problem.

6. 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 "Dedicated Service Tools (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" on page 856).

7. If this I/O card and cache card were moved from a different location on this system, go to step 4 of this procedure. If the devices from step 1 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 3 of this procedure. (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, go to step 8 of this procedure.

8. 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. This 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

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

You were sent to this procedure with a unit reference code of 9052.

Either cache data exists for a device that has been modified, or the cache card failed during system operation and became operational at the next system IPL.

1. Has a device currently under this storage I/O adapter been moved from a different I/O card?

   No   Yes

   ↓   **Attention**: Customer data may be lost.

            Ask your next level of support for assistance.

            This ends the procedure.

2. The cache card failed during system operation and became available at the next IPL. Perform the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Remove the cache card.

   c. Power on and IPL the system to DST.

   If the problem is corrected, exchange the failing cache card (see "Chapter 4. Removal and Installation Procedures" on page 593).

   Note: Disk units attached to the I/O card will continue to operate in degraded mode until the cache card is exchanged.

This ends the procedure.

SDIOP-PIP29

Introduction: The cache card is missing or failed.

You were sent to this procedure from URC 9012.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. Find the location of the I/O card with the cache adapter card problem by performing 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). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.
   - If you cannot enter a command at the console, perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). Select the *Product activity log* option and display the Product Activity Log entry for this SRC. Press the F9 key for address information in the Product Activity Log entry for this SRC. Get the Physical location of the I/O card.

   If you cannot perform a type A or B IPL, perform a type D IPL from removable media. Select the *Product Activity Log* option and display the Product Activity Log for this SRC. 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. See "Locations and Addresses" on page 671 for location information. 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.

   Have you determined the location of the I/O card that is reporting the problem?

   Yes   No

   ↓   Ask your next level of support for assistance.

            This ends the procedure.

2. The correct cache adapter card must be installed in the I/O card. Find the cache adapter card that was removed from the I/O card.

   Attention: The I/O card needs to retrieve data from the correct cache adapter card. If the correct cache adapter card is not installed, customer data will be lost.

   Did you find the correct cache adapter card?

   Yes   No

   ↓   Go to step 4 of this procedure.

3. Perform the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Install the correct cache adapter card you found in step 2 on page 420 (see "Chapter 4. Removal and Installation Procedures" on page 593).

   c. Select the IPL type and mode that are used by the customer (see *iSeries Service Functions*).

   d. Power on the system.

   e. Go to step 5 of this procedure.

4. Perform an IPL to DST (see "Dedicated Service Tools (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.

   Attention: Continuing with this option will cause the loss of customer data.

   Reclaim the cache adapter card storage (see "Reclaim IOP Cache Storage" on page 856).

   Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

5. Does the IPL complete successfully?

   No   Yes

   ↓   **This ends the procedure.**

6. Go to "Starting Point for All Problems" on page 4 to correct the problem.

   This ends the procedure.

SDIOP-PIP30

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure corrects 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. Did you just exchange the storage input/output (I/O) adapter as a result of a failure?

   Yes   No

   ↓   Go to "SDIOP-PIP23" on page 409.

        This ends the procedure.

2. You have just exchanged a storage I/O adapter. The storage I/O adapter you have just exchanged contains data which is required by the devices that were attached to that adapter. If the storage I/O adapter that you just exchanged is failing intermittently, reinstalling it and performing a manual IPL to DST may allow the data to be successfully written to the devices.

Attention: If the system is **NOT** powered down normally with the original card in an **OPERATIONAL** state, customer data may be lost.

Perform the following:

a. Replace the new cache directory card with the original cache directory card from the failed storage I/O adapter (see "Type 2748, 2763, 2778 – Cache Directory Card" on page 659).

b. A 9010 URC will occur. Ignore this and continue with the next steps.

3. Reclaim the cache storage (see "Reclaim IOP Cache Storage" on page 856).

   Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

4. Have any new SRCs occurred in the Service Action Log, or is the resource not operational?

   No   Yes

   ↓   Go to "Starting Point for All Problems" on page 4 to correct the problem.

             This ends the procedure.

5. Before completing this service action, perform the following:

a. Replace the cache directory card from the failed storage I/O adapter with the cache directory card that came with the replacement storage I/O adapter that you exchanged in step 2a. (See "Type 2748, 2763, 2778 – Cache Directory Card" on page 659.)

6. Have any new SRCs occurred in the Service Action Log, or is the resource not operational?

   Yes   No

   ↓   **This ends the procedure.**

7. Go to "Starting Point for All Problems" on page 4 to correct the problem.

   This ends the procedure.

SDIOP-PIP31

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Introduction: Cache data associated with the attached devices cannot be found.

You were sent to this procedure from URC 9010.

1. Did you just exchange the storage I/O adapter as a result of a failure?

   Yes   No

   ↓   Go to step 6 on page 423 of this procedure.

2. Reclaim the cache storage (see "Reclaim IOP Cache Storage" on page 856).

   Note: 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?

Yes   No

↓   Go to "Starting Point for All Problems" on page 4 to correct the
           problem.

           This ends the procedure.

4. Before completing this service action, perform the following:
    a. Power off the system (see "Powering On and Powering Off the System and
       Logical Partitions" on page 832).
    b. Replace the cache directory card from the failed storage I/O adapter with
       the cache directory card that came with the replacement storage I/O
       adapter (see "Type 2748, 2763, 2778 – Cache Directory Card" on page 659).
    c. Select the IPL type and mode that are used by the customer (see *iSeries
       Service Functions*).
    d. Power on the system.

5. Does the IPL complete successfully?

    No   Yes

    ↓   **This ends the procedure.**

6. Have the I/O cards been moved or reconfigured recently?

    Yes   No

    ↓   Go to step 9 of this procedure.

7. Perform the following:
    a. Power off the system (see "Powering On and Powering Off the System and
       Logical Partitions" on page 832).
    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.

8. Does the IPL complete successfully?

    No   Yes

    ↓   **This ends the procedure.**

9. Has the system been powered off for several days?

    Yes   No

    ↓   Ask your next level of support for assistance.

               This ends the procedure.

10. 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" on page 856).

    Note: The system operator may want to restore data from the most recent
             saved tape after you complete the repair.

11. Does the IPL complete successfully?

    No   Yes

    ↓   **This ends the procedure.**

12. Ask your next level of support for assistance.
    This ends the procedure.

SDIOP-PIP32

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

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. Did you just exchange the storage I/O adapter as a result of a failure?

   Yes   No

   ↓   Go to step 5 of this procedure.

2. You have just exchanged a storage I/O adapter.
   Reclaim the cache storage (see "Reclaim IOP Cache Storage" on page 856).

3. Does the IPL complete successfully?

   No   Yes

   ↓   **This ends the procedure.**

4. Go to "Starting Point for All Problems" on page 4 to correct the problem.
   This ends the procedure.

5. Have the I/O cards been moved or reconfigured recently?

   Yes   No

   ↓   Ask your next level of support for assistance.

              This ends the procedure.

6. Perform the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   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.

7. Does the IPL complete successfully?

   No   Yes

   ↓   **This ends the procedure.**

8. Ask your next level of support for assistance.
   This ends the procedure.

Storage Device I/O Card FRU Locations

Use Table 14 on page 425 to find FRU locations. If only a type number is listed, go to the "Type, Model, and Part Number list" on page 797 to determine the part number. If the failing item is an FI code, see "Failing Items" on page 466.

> **Note:** See "Locations and Addresses" on page 671 to help find FRUs that are not in this table.

Table 14. 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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.
Terminating plug	See "DEVTERM" on page 507 for more information. Also see "Locations and Addresses" on page 671.

Service Processor Problem Isolation Procedures

Overview

This section contains the procedures necessary 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

> **Note:** These procedures should be performed by selecting Manual mode on 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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)**

Service Processor PIPs

> ### 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 procedure in "Chapter 4. Removal and Installation Procedures" on page 593 may damage the card, the card enclosure, or both.

Read and understand the following service procedures before using this section:
- "Powering On and Powering Off the System and Logical Partitions" on page 832
- "Model 270 – System Unit Backplane – MB1" on page 642 or "Model 820 – System Unit Backplane – MB1 and Power Distribution Board – PB1 (PB1 and MB1 are included in theTWRCARD)" on page 654
- "Hardware Service Manager" in the *iSeries Service Functions* information

SP-PIP42

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 322 instead of this procedure.

1. Record all of the SRC data words and describe the operation that was being attempted.
2. Attempt a recovery by selecting the white button on the control panel to IPL.

   Note: (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   No

   ↓

         a. Attempt the white button IPL a second time.

         b. If the failure still occurs, reload the service processor code. Contact your next level of support to get instructions to reload the service processor code.

         c. If you were unable to resolve the problem by reloading the service processor code, then follow the service actions for the SRC you recorded in the previous step.

3. The system has now IPLed past the original error, but to prevent the error from occuring 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.

4. Did the IPL to DST complete successfully?

   Yes   No

↓ Follow the service actions for the new SRC. Go to "Starting Point for All Problems" on page 4.

5. The service processor problem has been resolved. If this failure occurs again, the system may require a slip install of Licensed Internal Code.

SP-PIP43

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. Record all of the SRC data words and describe the operation that was being attempted.
2. 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   No

   ↓ Follow the service actions for the new SRC. Go to "Starting Point for All Problems" on page 4.
3. Locate the Extended Reference Code in SRC data word 13. This is the first half of the second data word in control panel function 12:

   12
   xxxxxxxxEEEExxxx
   xxxxxxxxxxxxxxxx

   Use the following list to get a detailed description of the error condition and a recommended service action:

Value for EEEE and Description:	Recommended Service Action:
2103: No valid load source device was found.	The service processor encountered no other errors while attempting to open the load source. This may indicate that no IOAs were found. Reseat or replace the first storage IOA.
2107: No load source device was found.	Replace the first storage IOA, or the load source device unit or isolate a problem on that device interface.

Service Processor PIPs

Value for EEEE and Description:	Recommended Service Action:
2108: IPL command time out.	If the SRC data word 16 in control panel function 13 is 00001024, then: 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 SRC data word 17, in control panel function 13. Replace the load source IOP. If the SRC data word 16 in control panel function 13 is 00300002, then: The load source device failed to respond to the first storage IOA in the given time. The device unit address is in SRC data word 18, in control panel function 13. Replace the load source device unit or isolate a problem on that device interface.

Value for EEEE and Description:	Recommended Service Action:
2109: Load source interface error.	If the SRC data word 16 in control panel function 13 is 00001020, then:
	The load source IOP encountered an error and built an error log entry, but the service processor was unable to retrieve the error data successfully. The DSA of the load source IOP is in SRC data word 17, in control panel function 13. Replace the load source IOP.
	If the SRC data word 16 in control panel function 13 is 0000107C, then:
	The load source IOP failed to respond to a Unit Reset command. The DSA of the load source IOP is in SRC data word 17, in control panel function 13. Replace the load source IOP.
	If the SRC data word 16 in control panel function 13 is 00240000, then:
	The load source device failed to complete a command successfully. The device unit address is in SRC data word 18, in control panel function 13. Replace the load source device unit or isolate a problem on that device interface.
	If the SRC data word 16 in control panel function 13 is 00410000, then:
	The first storage IOA or the load source device failed to complete a command successfully. The device unit address is in SRC data word 18, in control panel function 13. Replace the first storage IOA, or the load source device unit or isolate a problem on that device interface.
	If the SRC data word 16 in control panel function 13 is BFD10000, then:
	The power control logic detected a power fault associated with an IOP/IOA slot. Check for correct power to the load source IOP and the first storage IOA.

Service Processor PIPs

Value for EEEE and Description:	Recommended Service Action:
210E: Load source internal error.	If the SRC data word 16 in control panel function 13 is 00001070, then: The service processor encountered an error while communicating with the load source IOP. The DSA of the load source IOP is in SRC data word 17, in control panel function 13. Replace the load source IOP or the service processor hardware (SVCPROC). If the SRC data word 16 in control panel function 13 is 00400000, then: The load source IOP encountered an error while communicating with the load source device. The device unit address is in SRC data word 18, in control panel function 13. Replace the first storage IOA, or the load source device unit or isolate a problem on that device interface. If the SRC data word 16 in control panel function 13 is BFD00009, then: The service processor encountered an error on a PCI adaptor. The DSA of the load source IOP is in SRC data word 17, in control panel function 13. Replace the load source IOP or the first storage IOA.
2111: Load source device became non-operational.	The load source IOA encountered an error while communicating with the load source device. The device unit address is in SRC data word 18, in control panel function 13. Replace the load source device unit or isolate a problem on that device interface.
2121: Less data was transferred than was requested, during an IPL command.	The load source IOP reported that the data available for transfer was less than requested. Replace the service processor hardware (SVCPROC) or the load source IOP.
2124: Load source IOP failed.	The load source IOP reported a fatal error, but did not provide any other information. Replace the load source IOP.
212A: Load source device not responding.	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.
212D: Bad error log data format	The load source IOP encountered and 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.
214x: Load source IOP time out	The load source IOP did not respond in time to a command from the service processor. Replace the load source IOP.

Value for EEEE and Description:	Recommended Service Action:
35AE: Load source device not found during main storage dump.	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 SRC data word 17, in control panel function 13. The device unit address is in SRC data word 18, in control panel function 13. Verify the IOP DSA and device unit address are correct for the location of the load-source on this system.

4. If the problem is not resolved use the Symbolic FRU "IPLINTF" on page 519.

SPCN PIPs

Overview
This section contains the procedures necessary to isolate a failure in the system power control network (SPCN).

Note: 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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 PIP10
A power reference code requiring problem isolation has been detected. Go to SPCN-PIP10 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

SPCN PIP20

This procedure verifies that the lights and display on the System Unit and all attached Expansion Units are operating correctly. Read the "Overview" on page 431 before continuing with this procedure.

Note: Determine if the system has logical partitions. Go to Determining if the System Has Logical Partitions, before continuing with this procedure. If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

1. Select function 04 (Lamp Test) on the control panel and press the Enter key.
2. Look at the display panels on the System Unit and all attached Expansion Units:

   Note: The SPCN lamp test is active on the expansion units for only 25 seconds after you press the Enter key.
   Are all of the following lights on for the System Unit and all attached Expansion Units?
   - Power-on light.
   - Attention light.
   - A five-by-seven dot pattern for the 8 or 32-character display as installed.

   No   Yes

   ↓   These control panel lights are working correctly.

            Go to step 4 of this procedure.
3. Exchange the following FRUs in the failing unit one at a time (see "Chapter 4. Removal and Installation Procedures" on page 593):
   - Control panel.(CTLPNL)
   - Tower card.(TWRCARD)
   - Control panel cable.

   This ends the procedure.
4. Are there any abnormal characters or character patterns that are not SRCs or normal display mode displayed?

   Yes   No

   ↓

            This ends the procedure.
5. Exchange the following FRUs in the failing unit one at a time (see "Chapter 4. Removal and Installation Procedures" on page 593):
   a. Control panel.(CTLPNL)
   b. Tower card.(TWRCARD)
   c. Control panel cable.

   This ends the procedure.

SPCN PIP21

This procedure verifies that the Remote Control Panel is operating correctly.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure only from the Primary partition's console and the system control panel.

Procedure:

1. Select function 04 (Lamp Test) on the control panel by clicking on the⬆ until 04 appears, then click on Enter.
2. Look at 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   Yes

   ⬇   The control panel lights are working correctly.

            This ends the procedure.

3. Exchange the following FRU in the failing unit
   - Remote Control Panel cable – 04N5592
   - Operations Console Configuration cable — 97H7557

   This ends the procedure.

Tape Unit Problem Isolation Procedures

Overview

This section 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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:
- "Powering On and Powering Off the System and Logical Partitions" on page 832
- "Initial Program Load (IPL) Information" in the *iSeries Service Functions* information

TU-PIP1

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure isolates tape unit power problems.

Read the "Overview" on page 433 before continuing with this procedure.

1. Is the tape unit in an external enclosure, and does the tape unit enclosure have a Power switch?

   Yes   No

   ↓   Go to "TU-PIP3" on page 439.

           This ends the procedure.

2. Is the tape unit powered on?

   Yes   No

   ↓   Go to step 10 of this procedure.

3. Press the Unload switch on the front of the tape unit.

   Is a data cartridge or a tape reel present?

   Yes   No

   ↓   Go to step 5 of this procedure.

4. Attempt to remove the data cartridge or tape reel from the tape unit.

   Can you remove the data cartridge or tape reel?

   Yes   No

   ↓   The tape unit is the failing part.

           Go to "TU-PIP3" on page 439.

Note: If the tape unit is an 8mm tape drive, perform the following:

   a. Go to "Tape Cartridge – Manual Removal" on page 663.

   b. Go to "TU-PIP3" on page 439.

   This ends the procedure.

5. Is the tape unit installed in an FC 5032 Removable Storage Unit?

   No   **Yes**

   ↓ Go to Tape Unit PIP 5 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

   This ends the procedure.

6. Are you working on an 8mm tape drive?

   Yes   **No**

   ↓ Go to step 8 of this procedure.

7. Is the system powered on?

   Yes   **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 of this procedure.

8. Is the tape unit Power light on?

   Yes   **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 10 of this procedure.

9. Set the tape unit Power switch to the Power Off position (see Table 15).

   Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Table 15. Power Off and Power On Positions of Tape Unit Power Switches

		Toggle
Operation	**Power Switch Type**	**Push In/Out**
Power Off	Down	Out
Power On	Up	In

10. Set the tape unit Power switch to the Power On position (see Table 15).

   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   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 439.

      This ends the procedure.

11. 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   Yes

    ↓   Go to "TU-PIP3" on page 439.

          This ends the procedure.

12. Go to the service information for the specific tape device to correct the problem. Then go to "TU-PIP3" on page 439.

    This ends the procedure.

TU-PIP2

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

This procedure performs the 8mm tape drive read self-test and hardware self-test. The write test is performed in "TU-PIP3" on page 439.

Read the "Overview" on page 433 before continuing with this procedure.

1. Press the Unload switch on the front of the 8mm tape drive.

    Is a data cartridge present?

    Yes   No

    ↓   Go to step 3 of this procedure.

2. Attempt to remove the data cartridge.

    Can you remove the data cartridge?

    Yes   No

    ↓   The tape drive is the failing part.

          Go to "Tape Cartridge – Manual Removal" on page 663. After removing the data cartridge, exchange the tape drive (see Removable Media in "Chapter 4. Removal and Installation Procedures" on page 593).

          This ends the procedure.

3. Clean the tape drive by using the cleaning cartridge (part 16G8467).

   Note: 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   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 439.

   This ends the procedure.

4. Is the Disturbance light blinking?

   No   Yes

   ↓

   - 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 439.

   This ends the procedure.

5. The 8mm tape drive read self-test and hardware self-test can take up to 5 minutes to run.

   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   Yes

   ↓   Go to step 9 of this procedure.

6. Does the tape drive eject the diagnostic cartridge?

   Yes   No

   ↓   The tape drive is the failing part.

Go to "Tape Cartridge – Manual Removal" on page 663. After removing the diagnostic cartridge, exchange the tape drive (see Removable Media in "Chapter 4. Removal and Installation Procedures" on page 593).

This ends the procedure.

7. Is the Disturbance light blinking approximately four times per second?

   No   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 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 439.

   This ends the procedure.

8. 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" on page 439.

   This ends the procedure.

9. 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   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" on page 439.

This ends the procedure.

10. The read self-test and hardware self-test ended successfully.

    Was the user's original tape identified as the probable cause of failure?

    Yes   No

    ↓   Go to "TU-PIP3".

             This ends the procedure.

11. 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.

TU-PIP3

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

When you are directed to this procedure, you may need to exchange a failing part. You determined the failing part from one of the following:
• Other problem isolation procedures
• The *Failing Item* column of the tape unit reference code table
• Tape unit service guide

Note: Sometimes, 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.

Read the "Overview" on page 433 before continuing with this procedure.

1. Do you need to exchange a possible failing device?

   No   Yes

   ↓   Perform the following:

            For an internal tape unit, go to Removable Media in "Chapter 4. Removal and Installation Procedures" on page 593.

            For an external tape unit, go to the removal and installation procedures in the device service information.

Tape Unit PIPs

2. Do you need to exchange the tape unit I/O processor?

   No   **Yes**

   ↓   Exchange the tape unit I/O processor (see "Chapter 4. Removal and Installation Procedures" on page 593). When you have completed the removal and installation procedure, continue with the next step of this procedure.

3. Are you working with a tape unit in the system unit or in an expansion unit?

   Yes   **No**

   ↓   Go to step 5 of this procedure.

4. Is the system available, and can you enter commands on the command line?

   No   **Yes**

   ↓   Go to step 12 of this procedure.

5. Display the selected IPL type (see *iSeries Service Functions*).
   Is the displayed IPL type D?

   No   **Yes**

   ↓   Go to step 8 of this procedure.

6. Do you want to perform an alternate IPL (type D)?

   No   **Yes**

   ↓   Go to step 8 of this procedure.

7. Perform an IPL from disk by doing the following:

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
   b. Select IPL type A in manual mode.
   c. Power on the system.
   d. Go to step 10 of this procedure.

8. 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).

9. 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.

10. 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   **Yes**

    ↓   Go to step 13 of this procedure.

11. Does the IPL complete successfully?

    Yes   **No**

    ↓   Go to "Starting Point for All Problems" on page 4 to continue analyzing the problem.

       This ends the procedure.

12. 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   **Yes**

↓   **This ends the procedure.**

13. Record the SRC on the Problem Summary Form (see "Appendix A. Problem Summary Form" on page 861).

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

Yes   **No**

↓   A different SRC occurred. Use the new SRC to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

       This ends the procedure.

14. 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.

TU-PIP4

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Use this procedure to reset an IOP and its attached tape units.

Note: If disk units are attached to an IOP, you must power off the system, then power it on to reset the IOP.

1. Is the tape unit powered on?

   No   **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.

2. Verify the following:

Tape Unit PIPs

- 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.

3. Did you press the Unload switch in step 1 of this procedure?

   Yes   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.

4. Can you enter commands on the command line?

   Yes   No

   ↓   Go to step 12 of this procedure.

5. Has the tape unit operated correctly since it was installed?

   Note: If you do not know, continue with the next step of this procedure.

   Yes   No

   ↓   Go to step 12 of this procedure.

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 step 7 of this procedure. You may continue without a name.

   Does the I/O processor give support to only one tape unit?

   Note: If you do not know, continue with the next step of this procedure.

   No   Yes

   ↓   Perform the following:

   a. Enter

      WRKCFGSTS *DEV *TAP ASTLVL(*INTERMED)

      (the Work with Configuration Status command) on the command line.

   b. You must complete all parts of this step before you press the Enter key.

      Note: If the device is not varied off, select the *Vary off* option before continuing.

   c. Select the *Vary on* option for the failing tape unit.

   d. Enter

      RESET(*YES)

      (the Reset command) on the command line.

   e. Press the Enter key.

This ends the procedure.

7. Steps 7 and 8 of this procedure determine 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 12 of this procedure.

   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 of this procedure?

   No   Yes

   ↓   Perform the following:

   a. Select the *Work with resources* option 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. Go to step 9 of this procedure.

8. Perform the following:

   a. Select the *Work with resources* option 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. 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.

9. Does the I/O processor give support to any disk unit resources?

   No   Yes

   ↓   The *Reset* option is not available. Go to step 12 of this procedure.

10. Does the I/O processor give support to only one tape unit?

    No   Yes

    ↓   Perform the following:

    a. Select the *Work with configuration description* option and press the Enter key.

    b. Select the *Work with status* option and press the Enter key.

    c. You must complete the remaining parts of this step before you press the Enter key.

       Note: If the device is not varied off, select the *Vary off* option before continuing.

    d. Select the *Vary on* option for the failing tape unit.

    e. Enter

```
RESET(*YES)
```

   (the Reset command) on the command line.

   f. Press the Enter key.

   This ends the procedure.

11. Perform the following:

   a. Enter

   ```
   WRKCFGSTS *DEV *TAP ASTLVL(*INTERMED)
   ```

   (the Work with Configuration Status command) on the command line.

   b. Select the *Vary off* option for the failing tape unit and associated devices (the devices you identified in step 7 or 8 of this procedure). Press the Enter key.

   c. You must complete the remaining parts of this step before you press the Enter key.

   d. Select the *Vary on* option for the failing tape unit.

   e. Enter

   ```
   RESET(*YES)
   ```

   (the Reset command) on the command line.

   f. Press the Enter key.

   g. Select the *Vary on* option for the associated devices (tape units) you identified in step 7 or 8 of this procedure. It is not necessary to use the *Reset* option again.

   Does a system message indicate that the vary on operation failed?

   Yes   No

   ↓   This ends the procedure.

12. The *Reset* option 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.

13. Is the tape device you are working on an 8mm tape drive?

   Yes   No

   ↓

14. 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   No

↓   Go to "TU-PIP2" on page 436 to correct the problem.

     This ends the procedure.

15. Is a data cartridge or a tape reel installed in the tape device?

No   Yes

↓   Remove the data cartridge or tape reel. Then continue with the next step of this procedure.

16. Can you enter commands on the command line?

Yes   No

↓   Perform the following:
     a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
     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.

17. 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   No

↓   Perform the following:
     a. Press the Enter key 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 23 of this procedure,
     c. Continue with the next step of this procedure.

18. 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 the *Start a Service Tool* option.
    d. Select the *Hardware Service Manager* option.
    e. Select the *Logical Hardware Resources* option.
    f. Select the *System Bus Resources* option.

The Logical Hardware Resources on System Bus display shows all of the IOPs.

g. Find the IOP you want to reset.

> Note: 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　**Yes**

↓　Disk units are attached to the IOP.

Perform the following:

a. Press F3 until the Exit System Service Tools display appears.

b. Press the Enter key.

c. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

d. Power on the system.

The system performs an IPL and resets all devices.

This ends the procedure.

19. Perform the following:

a. Select the *I/O debug* option.

b. Select the *IPL the I/O processor* option.

c. When the IOP reset is complete, continue with the next step of this procedure.

20. Perform the following:

a. Press F12 to return to the Logical Hardware Resources on System Bus display.

b. Select the *Resources associated with IOP* option for the IOP you reset.

Did the IOP detect the tape unit?

Yes　**No**

↓　The IOP did not detect the tape unit.

Ensure that the tape unit is powered on and that the signal cables are connected correctly. If you find and correct a power problem or a signal cable problem, return to step 18 of this procedure.

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 18 of this procedure.

If not, ask your next level of support for assistance.

This ends the procedure.

21. Press F3 until the Exit System Service Tools display appears. Then press the Enter key.

22. Was automatic configuration Off before you performed step 17 of this procedure?

> | Yes | No |
> | :--- | :--- |
>
> ↓   **This ends the procedure.**

23. 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

Introduction: This procedure isolates 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.

Note: Determine if the system has logical partitions. Go to "Determining if the
System Has Logical Partitions" on page 852, before continuing with this
procedure.

Note: If the system has logical partitions, perform this procedure from the logical
partition that reported the problem.

Read the "Overview" on page 433 before continuing with this procedure.

1. Is the device that you are using for alternate installation defined as the
   alternate installation device?

   > | Yes | No |
   > | :--- | :--- |
   >
   > ↓   Correct the alternate installation device information and retry the
   >   alternate installation.
   >
   >   **This ends the procedure.**

2. Is the alternate installation device ready?

   > | Yes | No |
   > | :--- | :--- |
   >
   > ↓   Make the alternate installation device ready and retry the alternate
   >   installation.
   >
   >   **This ends the procedure.**

3. Is there installation media in the alternate installation device?

   > | Yes | No |
   > | :--- | :--- |
   >
   > ↓   Load the correct media and retry the alternate installation.
   >
   >   **This ends the procedure.**

4. Is the alternate installation device an external device?

   > | Yes | No |
   > | :--- | :--- |

    ↓   Go to step 11 of this procedure.

5. Is the alternate installation device powered on?

    Yes   **No**

    ↓   Go to step 8 of this procedure.

6. 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   **No**

    ↓   Correct the problem and retry the alternate installation.

                This ends the procedure.

7. Go to step 11 of this procedure.

8. 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   **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.

9. 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   **Yes**

    ↓   Retry the alternate installation.

                This ends the procedure.

10. Go to the service information for the specific alternate installation device to correct the problem. Then retry the alternate installation.

    This ends the procedure.

11. Was a device error recorded in the Product Activity Log?

    No   **Yes**

    ↓   See "Chapter 2. Unit Reference Codes" on page 59 to correct the problem.

                This ends the procedure.

12. Contact your next level of support.

This ends the procedure.

Tape Unit Self-Test Procedure

Introduction: The following procedure is designed to allow you to quickly perform a complete set of diagnostic tests on a 4487 or 4587 (SLR100) 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" on page 663 of this Problem Analysis Guide.

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 is waiting for a cartridge to be inserted.

Running the self-test:

3. 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 to reenter diagnostic mode.

4. For fastest results, we recommend using an IBM SLR100 Test Tape (P/N 35L0967) which was originally provided with your iSeries 400 system.

   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 step 9 below.

   Self-testing will only be performed using a write-compatible cartridge type, and with a cartridge that is not damaged -- see step 9 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 to reenter diagnostic mode.

5. **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.

6. The Ready (left) LED will continue to flash while the following 4 steps are performed:

   - 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 ½ 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 ½ 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:

7. **Test Passed:Cartridge is unloaded from the tape unit and all LEDs are off**, when self-testing has completed successfully and no problems were detected. 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).

8. **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 and repeat this self-test using a different scratch cartridge.

Incorrect cartridge:

9. 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 and run the self-test using another cartridge, or one which is not write-protected.

This ends the procedure.

Tape Device Ready Conditions

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

All the conditions that are listed for the device must be correct for the device to be ready.

Note: If the device is not ready, use the *Action* column or other instructions and go to the service information for the specific tape device.

Table 16. Tape Device Ready Conditions

Storage Device	Ready Description	Action
2440	• Power switch is set to the On position. • Power light is on. • Tape is loaded. • Status display shows A 0. • On-line light is on.	See the *IBM 2440 Magnetic Tape Subsystem Operator's Manual* G571-0149, for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the "MAPs" section of the *IBM 2440 Magnetic Tape Subsystem Service Guide* , G571-0166.
3422/3430	• Power switch is set to the On position. • Power light is on. • Enable/Disable switch is set to the Enable position. • Tape is loaded. • Ready light is on.	See the *3422 Magnetic Tape Subsystem Operator's Guide* , SA32-0090, or *3430 Magnetic Tape Subsystem Operator's Guide* , SA32-0079, for instructions on making the tape unit ready.
3480/3490	• Power switch is set to the On position. • Power light is on. • DC Power light is on. • Control unit On-line switch is set to the On-line position. • Control unit Normal/Test switch is set to the Normal position. • Control unit channel Enable/Disable switch is set to the Enable position. • Tape unit On-line/Off-line switch is set to the On-line position. • Tape is loaded. • Tape unit displays Ready U or Ready F.	See the *3480 Magnetic Tape Subsystem Operator's Guide* , SA32-0066, or *3490 Magnetic Tape Subsystem Operator's Guide* , SA32-0124, for instructions on making the tape unit ready.
7208	• Power switch is on (pressed). • Power light is on. • Data cartridge is inserted. • Ready light is on. • System external signal cable is connected to the type 2621 I/O processor and to the 7208 Tape Drive. **Note:** 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.	See the *7208 8 mm Tape Drive Operator's Manual* 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 436.

Tape Unit PIPs

Table 16. Tape Device Ready Conditions (continued)

Storage Device	Ready Description	Action
9348	• Power switch is set to the On position. • Power light is on. • Tape is loaded. • Status display shows 00 A002. • On-line light is on.	See the *9348 Customer Information* 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 *9348 Tape Unit Service Information* , SY31-0697.

This ends the procedure.

Twinaxial Workstation I/O Processor Problem Isolation Procedures

This section contains the procedures to isolate a failure which has been detected by the twinaxial workstation I/O processor.

Note: 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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:
- "Powering On and Powering Off the System and Logical Partitions" on page 832
- "Determining a Primary or Alternative Console" in the *iSeries Service Functions* information

TWSC-PIP1

Introduction: The workstation IOP detected an error. 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.

> **Note:** If you are using a Remote Operations Console, use "Operations Console-PIP2" on page 365 before using this procedure.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

1. 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 **Yes**

   ↓ Go to "WSAC-PIP1" on page 465.

   This ends the procedure.

2. Is the device you are attempting to repair a personal computer (PC)?

   No **Yes**

   ↓ PC emulation programs operate and report system-to-PC communications problems differently. See the PC emulation information for details on error identification.

   Go to step 3 of this procedure.

Twinaxial Workstation PIPs

3. 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 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).

   Note: 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.
   - The cursor in the upper right corner indicates a communication problem between the workstation IOP and the device.
     – Continue to the next step of this procedure to analyze the problem.

4. Is the system powered off?

   Yes   No

   ↓   Go to step 7 of this procedure.

5. Perform the following:

   a. Power on the system in Manual mode (see "Selecting IPL Type, Mode, and Speed" in *iSeries Service Functions*).

   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   Yes

   ↓   If you disconnected any devices after the console in step 3 of this procedure, 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 8 of this procedure.

    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.

6. Does the same reference code that sent you to this procedure appear on the control panel?

    Yes   No

    ↓   Go to "Starting Point for All Problems" on page 4 for this new problem.

    This ends the procedure.

7. 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 *iSeries Service Functions*).

    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   Yes

    ↓   If you disconnected any devices after the console in step 3 of this procedure, 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 8 of this procedure.

        e. If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.

    Continue to perform the initial program load (IPL).

    This ends the procedure.

8. 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   No

    ↓   Go to step 11 of this procedure.

9. Perform the following:

Twinaxial Workstation PIPs

    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   **Yes**

↓   Continue to perform the IPL.

    This ends the procedure.

10. Does the same reference code appear on the control panel?

    Yes   **No**

    ↓   Go to "Starting Point for All Problems" on page 4 for this new problem.

        This ends the procedure.

11. 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   **Yes**

    ↓   Go to step 15 of this procedure.

12. Does the system have an alternative console on a second workstation IOP?

    Yes   **No**

    ↓   Go to step 14 of this procedure.

13. 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 "MA_BRDG" on page 529.)

    This ends the procedure.

14. 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:

- 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.

- If you have another working display, you can exchange the console 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. Workstation IOA
    c. The multi-adapter bridge (see "MA_BRDG" on page 529.)
    d. Twinaxial attachment (cable)

    This ends the procedure.

15. 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?

    No   Yes

    ↓   Go to step 18 of this procedure.

16. Check or exchange the cables from the system to the failing display.

    Did this correct the problem?

    Yes   No

    ↓   Go to step 12 of this procedure.

17. You corrected the problem.

    This ends the procedure.

18. **DANGER**

    > **To prevent a possible electrical shock, do not use the port tester during electrical storms. (RSFTD006)**

    To use the port tester to isolate the problem, perform the following:
    - 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.

19. Find the input cable to the failing console or port.

    Is the failing console or the failing port attached to a protocol converter?

    No   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. Go to step 21 of this procedure.

20. Perform the following:
    a. Disconnect the input cable from the failing console.

    b. Connect the port tester to the input cable.

21. 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.

Press and hold the test switch on the port tester for 15 seconds and observe the lights.

If the port tester has three lights, do the following:

- If only the top (green) light is on, go to step 31 of this procedure.
- If both the top (green) and center (yellow) lights are on, go to step 23 of this procedure.

    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 24 of this procedure.
- If all lights are off, go to step 25 of this procedure.
- If all lights are on, go to step 22 of this procedure.

If the port tester has two lights, do the following:

- If only the top (green) light is on, go to step 31 of this procedure.
- If only the bottom (yellow) light is on, go to step 24 of this procedure.
- If both lights are off, go to step 25 of this procedure.
- If both lights are on, continue with the next step of this procedure.

22. 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 21 of this procedure.

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 18 of this procedure.

23. 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.

24. The cable network is bad. The wires in the cable between the console and the twinaxial workstation attachment are reversed. Go to step 30 of this procedure.

25. 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.

26. Press and hold the test switch on the port tester for 15 seconds and observe the lights.

If the port tester has three lights, do the following:

- If both the top (green) and center (yellow) lights are on, continue with step 27 of this procedure.

> **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 27 of this procedure.
- If all lights are off, continue with step 27 of this procedure.
- If only the top (green) light is on, go to step 29 of this procedure.
- If all lights are on, go to step 28 of this procedure.

If the port tester has two lights, do the following:

- If only the top (green) light is on, go to step 29 of this procedure.
- If only the bottom (yellow) light is on, continue with step 27 of this procedure.
- If both lights are off, continue with step 27 of this procedure.
- If both lights are on, go to step 28 of this procedure.

27. 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 "MA_BRDG" on page 529.)

    b. Power on the system to perform an IPL.

    This ends the procedure.

28. 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 26 of this procedure.

    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 25 of this procedure.

29. The cable to the workstation is the failing item.

    Continue with the next step of this procedure.

30. Cable maintenance is a customer responsibility.

    See the information that is listed below for more information on correcting cable problems.

    - If the IBM cable system is being used to attach the workstation, see the following information:

        – *IBM Cabling System Planning and Installation Guide*, GA27-3361
        – *Using the IBM Cabling System with Communication Products*, GA27-3620
        – *IBM Cabling System Problem Determination Guide for Twinaxial Applications* , GA21-9491

    - If the telephone twisted-pair cable is being used to attach the console, see:

        – *IBM 5299 Model 3 Terminal Multiconnector and IBM Twinaxial to Twisted-pair Adapter Planning, Installation, and Problem Analysis Guide*, GA27-3749

    - If a twinaxial cable is being used to attach the console, see:

        – *IBM 5250 Information Display System Planning and Site Preparation Guide* , GA21-9337
        – *Twinaxial Cabling Troubleshooting Guide* , SY31-0703

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- If a link protocol converter is being used to attach the console, see the link protocol converter service information for problem analysis.
- The cable must be repaired or exchanged.

Then power on the system to perform an IPL.

This ends the procedure.

31. 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.
    - 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.
    - Exchange the following parts:
      a. Console
      b. Twinaxial workstation IOA
      c. The multi-adapter bridge (see "MA_BRDG" on page 529.)
      d. Cables
    - 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.
    - 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 326.
    - The problem may be caused by devices that are attached after the console on port 0.

    This ends the procedure.

Workstation Adapter PIPs

Overview
This section contains the procedures necessary to isolate a failure that is detected by the workstation adapter. These procedures are 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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:
- "Powering On and Powering Off the System and Logical Partitions" on page 832
- "Determining a Primary or Alternative Console" in the *iSeries Service Functions* information

WS-PIP1

Introduction:

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 460 before continuing with this procedure.

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. Are you using a workstation adapter console (type 6A58 or 6A59)?

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> **No   Yes**
>
> ↓   Go to "WSAC-PIP1" on page 465.
>
> **This ends the procedure.**

2. 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). 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   Yes**
   >
   > ↓   The problem is corrected.
   >
   > **This ends the procedure.**

3. Isolate the problem to one AS/400 system 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 AS/400 system, one console, two connector boxes, and one cable.

   c. Ensure that the cables that are connected to the console, the keyboard, and the AS/400 system are connected correctly and are not damaged.

4. Perform the following:

   a. Ensure that the AS/400 system 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.

   See the workstation information for more information.

5. 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). 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   Yes**
   >
   > ↓   The problem is in a cable, connector box, or device you disconnected in step 3 of this procedure.
   >
   > **This ends the procedure.**

6. Does the reference code A600 5005 appear on the control panel?

   > **Yes   No**

   ↓   Go to "Starting Point for All Problems" on page 4 to correct the problem.

       This ends the procedure.

7. Do you have another workstation, cable, and two connector boxes you can exchange with the workstation connected to the AS/400 system?

   Yes   **No**

   ↓   Go to step 10 of this procedure.

8. Repeat steps 3 through 7 of this procedure, using a different workstation, cable, and connector boxes.

   Do you still have a problem?

   Yes   **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.

10. 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.

Workstation Adapter Console Problem Isolation Procedures

Overview

This section contains the procedures necessary to isolate a failure that is detected by the workstation adapter console. Use these procedures 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 "Powering On and Powering Off the System and Logical Partitions" on page 832) 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:

- "Powering On and Powering Off the System and Logical Partitions" on page 832
- "Determining a Primary or Alternative Console" in the *iSeries Service Functions* information
- "Card Removal and Installation" in "Chapter 4. Removal and Installation Procedures" on page 593.
- "Locations and Addresses" on page 671

WSAC-PIP1

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Note: If the system has logical partitions, perform this procedure from the logical partition that reported the problem.

Read the "Overview" on page 464 before continuing with this procedure.

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. 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   Yes

   ↓   Correct the problem. Then perform an IPL of the system.

          This ends the procedure.

2. 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.

Workstation Adapter Console PIPs

Does a display appear on either the console or any alternative console?

No   **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.

3. Do you have SRC A600 5001, A600 5004, A600 5007, or B075 xxxx (where xxxx is any value)?

No   **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.

4. Does SRC 6A59 5007 occur?

No   **Yes**

↓   One of the following is causing the problem:
      • Workstation emulation program
      • Workstation
      • Workstation console cable

This ends the procedure.

5. Did SRC A600 5001, A600 5004, or 6A59 5008 occur?

No   **Yes**

↓   The Type 2745 workstation adapter is the failing item.

This ends the procedure.

6. This is a new problem. Use the new reference code to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59) or ask your next level of support for assistance.

This ends the procedure.

Failing Items

This table is used to find field replaceable unit (FRU) part numbers identified by a failing item code. If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00015	FI00015 indicates that a Local Bus Adapter card in a migrated tower is the failing item. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00017	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00020	FI00020 is not supported on these models. Continue with the next FRU in the list.

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
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 490.
FI00047	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00050	See FI00060
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 bus may be the failing item. This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00062	See FI00060.
FI00065	See FI00060.
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: 1. 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). 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.Select function 01 (Select IPL) on the control panel to display the active IPL type. 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 Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00090	FI00090 indicates that the removable media device for an alternate IPL is the failing item. **Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure. Determine the device that is failing by doing the following: 1. Select function 01 (Select IPL) on the control panel and press Enter to verify that the active IPL type is D. **Note:** Use the system configuration list to identify the device (see "Hardware Service Manager" in the *iSeries Service Functions* information). The possible failing devices are the following type numbers: 3490, 3570, 3590, 632x, 6382, 6383, 6386, 6387, 63A0, 7208, 9348, and 9427. 2. Use the service information for the specific removable media unit for an alternate IPL to analyze the device failure.
FI00092	FI00092 indicates that the load-source for an alternate IPL or the interface to the load-source is the failing item. **Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure. **Note:** 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. To locate the alternate load-source for a system that does not have multiple partitions see "Determining the Load Source Disk and Alternate IPL Device" on page 854. 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 *iSeries Service Functions*. Use the device type to determine the part.

FI00096	FI00096 indicates that the IOP attached to the load-source device is the failing item.
	Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.
	1. Verify that the IPL type is correct:
	  • 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).
	  • 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 the Enter key to display the present IPL mode.
	2. The failing CFIOP 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 "Determining the Load Source Disk and Alternate IPL Device" on page 854. To locate the load source for the Primary partition on a system that has multiple partitions see "Determining the Load Source Disk and Alternate IPL Device" on page 854. To locate the load-source for a secondary partition see *iSeries Service Functions*.

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00098	FI00098 indicates that the load-source disk device is the failing item. **Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure. Determine the disk unit 1 type number. It is printed on a label on the front of the system frame. 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. Exchange the disk drive and logic card for the disk unit type you have (see "Chapter 5. Locations, Addresses, and Part Listings" on page 667). To locate the load source for a system that does not have multiple partitions see "Determining the Load Source Disk and Alternate IPL Device" on page 854. To locate the load source for the Primary partition on a system that has multiple partitions see "Determining the Load Source Disk and Alternate IPL Device" on page 854. To locate the load-source for a secondary partition see *iSeries Service Functions*.
FI00099	FI00099 indicates that the Licensed Internal Code failed or responded in an unpredictable way. Ask your next level of support for assistance.
FI00121	FI00121 indicates that any tape or optical storage device attached to the I/O (SCSI) bus of this IOP may be the failing item. Use the device type to determine the part.
FI00122	FI00122 indicates that a reserved IOA port on the IOP is the failing item. If the IOP is type 2624, the failing item is type 6146 IOA.
FI00123	See the symbolic FRU "DEVTERM" on page 507.
FI00124	FI00124 indicates that the control panel is the failing item. For part number information, see the 9251 and 507x, 508x Expansion Tower Control Panels in the parts section of *Migrated Expansion Tower Problem Analysis, Repair and Parts*.
FI00130	FI00130 indicates that the Licensed Internal Code for one of the IOPs or IOAs is the failing item. Determine the IOP or IOA type and location (see "SRC Address Formats" on page 846). Get the type from the card at that address. Look for PTFs associated with the reference code and the identified hardware type and have the customer apply them.
FI00131	FI00131 indicates that one of the IOPs or IOAs, if active, is the failing item. Determine the IOP or IOA type and location (see "SRC Address Formats" on page 846). Get the type from the card at that address. Use the IOP or IOA type to determine the part.
FI00132	FI00132 indicates that one of the IOAs is the failing item. Perform "BUS-PIP5" on page 267 to isolate the failing IOA.
FI00141	FI00141 indicates that the IOP for the 7208 Tape Drive is the failing item. The failing IOP is the type 2621 IOP.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00142	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00180	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00182	FI00182 indicates that the local optical link card is the failing item. • If the fifth character of word 5 (xxxx x̲xxx) is 1, 5, 9, or D—2686 (266Mb/s) • If the fifth character of word 5 (xxxx x̲xxx) is 3, 7, B, or F—2688 (1062Mb/s)
FI00185	FI00185 indicates that the 12-port ASCII workstation attachment cable is the failing item.
FI00186	FI00186 indicates that the optical cable in the top position (even bus) of the optical link card is the failing item.
FI00187	FI00187 indicates that the optical cable configuration is the failing item. Perform Bus PIP1 in *Migrated Expansion Tower Problem Analysis, Repair and Parts* to correct the problem.
FI00189	FI00189 indicates that the bus extension card configuration is the failing item. Perform Bus PIP1 in *Migrated Expansion Tower Problem Analysis, Repair and Parts* to correct the problem.
FI00200	FI00200 indicates that the AC module or the removable power cable is the failing item. The following list shows the possible failing AC modules: • System Unit — part SPNLCRD • System Unit Expansion (FC 5070, 5072), Storage Expansion Tower (FC 5080, 5082)—part 87G6300 • System Unit Expansion (FC 5071, 5073), Storage Expansion Tower (FC 5081, 5083)—part 21H7697 See "Power Cord Part Numbers and Receptacle Descriptions" on page 802 to determine the power cable part number for systems in your country.
FI00203	FI00203 indicates that the remote bus expansion adapter card in the bus expansion unit is the failing item. Use the adapter card type in the bus expansion unit to determine the part.
FI00204	FI00204 indicates that the bus cable between the system unit and the bus expansion unit is the failing item.
FI00205	FI00205 indicates that the remote bus expansion adapter for the paired bus is the failing item. Use the adapter card type in the bus expansion unit to determine the part.
FI00206	FI00206 indicates that a type 2685 remote bus expansion adapter is the failing item. Perform Bus PIP1 in *Migrated Expansion Tower Problem Analysis, Repair and Parts*.
FI00230	FI00230 indicates that the Licensed Internal Code for the failing node is the failing item and needs to be restored. Determine the type of node and select the Licensed Internal Code load. **Primary node** 　　AJSFDJ04 **Secondary node** 　　AJSFDJ05

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00235	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. 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 • SPCN optical adapter —part 90H6287
FI00236	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00237	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00238	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00239	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00240	FI00240 indicates that an SPCN node is the failing item. The system cannot identify the type of node. Determine the failing node and exchange the failing item. The following list shows the possible failing items: • SPCN unit — part "SPNLCRD" on page 573 • SPCN unit—part 21H6961 (if installed) • Secondary AC module—part 87G6300 (if installed) • For 9251 Base I/O —part 21H7697 (if installed) • Power control compartment—part 21F9008
FI00244	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00245	FI00245 indicates that the card enclosure for an unknown unit type is the failing item. System Units and System Expansion Units — see Symbolic FRU "BACKPLN" on page 490.
FI00246	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00248	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.

FI00251	FI00251 indicates that a battery power unit is the failing item.
	
	The following list shows the possible failing items:
	• System Units, Extension Units, Storage Expansion Units and the Base I/O tower (9251) use the following:
	  – For 9910 type UPS call IBM Service Support. For all other UPS units call the UPS provider.
	  – Internal Battery Unit Pack assembly—part 21H7080
	  – Battery Power Unit Charger—part 21H7060
	  – External Battery Unit—part 90H6294
	  – External Battery Unit cable—part 21H7695
	• Expansion Battery Power Unit 1 and 2 battery pack—part 87G8048
	• Expansion Battery Power Unit 1 and 2 charger—part 86G8020
	• 9309 general purpose I/O frame with SPCN (FC 9171)—part 21F9380

FI00253	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00255	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00256	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00300	FI00300 indicates that media is the failing item. If the load source is: • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disk. • DASD, exchange the DASD. If installing from: • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disk.
FI00301	FI00301 indicates that the magnetic storage I/O processor (MSIOP) or the combined function I/O processor (CFIOP) is the failing item. Use the IOP type to determine the part.
FI00302	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. Ask your next level of support for assistance.
FI00310	FI00310 indicates that an I/O processor card or an I/O adapter card is the failing item. Perform Bus PIP1 in *Migrated Expansion Tower Problem Analysis, Repair and Parts*.
FI00315	FI00315 indicates that the battery power unit install time life has been exceeded.
FI00316	FI00316 indicates that no I/O processors were found on the bus. Verify the configuration information for the system. If a bus is configured to be empty, there is no problem.
FI00317	FI00317 indicates that the I/O processor cards at consecutive direct select addresses appear to be failing. The I/O processor cards or a damaged backplane could cause this problem.

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00318	FI00318 indicates that an I/O adapter card attached to an I/O processor card on the failing bus is the failing item.
FI00319	FI00319 indicates that the Licensed Internal Code on an I/O processor is the failing item. Install a PTF to correct the problem. Ask your next level of support for assistance.
FI00320	FI00320 indicates that the display station used as the console is the failing item.
FI00360	FI00360 indicates that the IPL disk device is the failing item.
FI00380	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.
FI00500	See "FI01140" on page 481
FI00580	FI00580 indicates that any storage device may be the failing item. The address of the failing storage device cannot be determined.
FI00581	FI00581 indicates that a storage device at the address identified by the problem isolation procedures for the reference code is the failing item. Use the service information of the I/O device to continue analyzing the problem.
FI00584	FI00584 indicates that any storage device may be the failing item. The address of the failing storage device cannot be determined.
FI00601	FI00601 indicates that the display station is the failing item. If a link protocol converter is used to connect the console to the system, the protocol converter is the failing item.
FI00602	FI00602 indicates that the cable between the workstation attachment and the device is the failing item.
FI00603	FI00603 indicates that the 5299 Multiconnector is the failing item.
FI00604	FI00604 indicates that a printer is the failing item. Use the printer device information to analyze the problem.
FI00605	FI00605 indicates that a magnetic stripe reader on a display station is the failing item.
FI00606	FI00606 indicates that the storage media is the failing item.
FI00607	FI00607 indicates that a selector light pen attached to a display station is the failing item.
FI00608	FI00608 indicates that the link protocol converter is the failing item.
FI00610	FI00610 indicates that the twinaxial workstation IOP or the twinaxial workstation IOA attached to a combined function I/O processor (CFIOP) or communications IOP is the failing item. Use the workstation IOP or IOA type to determine the part.
FI00611	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00612	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00613	FI00613 indicates that the display station used as the console is the failing item.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00614	FI00614 indicates that a unit reference code of FFFF was indicated when the user entered the ANZPRB (Analyze Problem) command from a workstation. 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.
FI00615	FI00615 indicates that the twinaxial workstation attachment cable is the failing item. Check the twinaxial workstation attachment cable for the part number.
FI00616	FI00616 indicates that the 5259 Migration Data Link is the failing item. Exchange the 5259 Migration Data Link.
FI00626	FI00626 indicates that the modem on the failing port is the failing item. Exchange the modem.
FI00630	FI00630 indicates that the multiline communications IOP is the failing item. Use the IOP type to determine the part.
FI00631	FI00631 indicates that a cable other than the cable from the workstation IOA to the first device is the failing item.
FI00632	FI00632 indicates that the cable from the workstation IOA to the first device is the failing item.
FI00700	FI00700 indicates that the remote data terminal equipment (DTE) or an attached device is the failing item. Report this problem to the operator of the remote equipment.
FI00701	FI00701 indicates that a local communications cable is the failing item. Use the cable to determine the part.
FI00702	FI00702 indicates that the local cable for the automatic call unit is the failing item. Check the automatic call unit interface cable for the part number.
FI00703	FI00703 indicates that the automatic call unit is the failing item.
FI00704	FI00704 indicates that the local data circuit-terminating equipment (DCE) is the failing item.
FI00705	FI00705 indicates that the remote data circuit-terminating equipment (DCE) is the failing item. Report this problem to the operator of the remote equipment.
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.

Failing Item Code	**Description/Action** If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00711	FI00711 indicates that the local communications cable (token-ring interface cable) is the failing item. **Note:** An "IBM 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 removal and installation 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 communication IOA card is the failing item: Use the IOA type to determine the part.
FI00727	FI00727 indicates that one of the IOAs attached to either a combined function I/O processor (CFIOP), multiline communications IOP or an Integrated xSeries Server (IXS) for iSeries 400 is the failing item. Perform "BUS-PIP5" on page 267 to isolate the failing IOA.
FI00728	FI00728 indicates that the local communications cable (RS449/V.36 interface) is the failing item. Check the communications cable for the part number.
FI00730	FI00730 indicates that the Licensed Internal Code module for an I/O card may be the failing item. Ask your next level of support for assistance.

Failing Items

Failing Item Code	**Description/Action** If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00731	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00732	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00733	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00734	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00735	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI00741	FI00741 indicates that the telephone cable to the wall outlet is the failing item. Check the cable for the part number.
FI00742	FI00742 indicates that the communications coupler is the failing item. Check the coupler for the part number.
FI00751	FI00751 indicates that the Licensed Internal Code module is the failing item. Ask your next level of support for assistance.
FI00810	FI00810 indicates that the magnetic tape is the failing item. Exchange the magnetic tape.
FI00830	FI00830 indicates that the external signal cable is the failing item. See "EXTSCSI" on page 513 for cable part numbers.
FI00832	FI00832 indicates that the external signal cable is the failing item. See "EXTSCSI" on page 513 for cable part numbers.
FI00841	FI00841 indicates that the terminating plug for the attached device is the failing item. • For tape devices—see FI00880
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. • For tape devices—see FI00882
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. **Note:** The 636x Tape Unit is located in the FC 5032 Removable Storage Unit.

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.

FI00871	FI00871 indicates that the attached tape device is the failing item.
	
	• 358x – External Ultrium drive; Refer to the device Maintenance Information manual to determine the part number(s) to replace.
	
	• 3590 Model Exx – External 1/2 cartridge tape drive; refer to the device Maintenance Information manual to determine the part number or part numbers to replace.
	
	• 6381 – Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door.
	  – For FC 5072, 5073, 5077 expansion towers use P/N 21H7658.
	  – For all other towers use P/N 59H2742.
	
	• 6382 – Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door.
	  – For system Model 270 and 820 system unit use P/N 04N2564.
	  – For system Model 830, 840, SB2, and SB3 system unit use P/N 97H7331.
	  – For FC 5072, 5073, 5077 expansion towers use P/N 21H7019.
	  – For FC 5065, 5074, 5079 expansion towers use P/N 97H7331.
	  – For all other towers use P/N 59H3745.
	
	• 6383 - Internal 1/4 Inch cartridge drive with MLR1-S on the front cover.
	  – For system Model 270 and 820 system unit use P/N 04N2565.
	  – For system Model 830, 840, SB2, and SB3 system unit use P/N 24L1064.
	  – For FC 5072, 5073, 5077 expansion towers use P/N 97H7717.
	  – For FC 5065, 5074, 5079 expansion towers use P/N 24L1064.
	  – For all other towers use P/N 59H4533.
	
	• 6386 – Internal 1/4 inch cartridge drive with MLR3 on the front cover.
	  – For system Model 270 and 820 system unit use P/N 04N2566.
	  – For FC 5072, 5073, 5077 expansion towers use P/N 97H7528.
	  – For FC 5065, 5074, 5079 expansion towers use P/N 24L1065.
	  – For all other towers use P/N 59H4130.
	
	• 6387 – Internal 1/4 inch cartridge drive with SLR100 on the front cover.
	  – For system Model 270 and 820 system unit use P/N 04N2567
	  – For FC 5065, 5074, 5079 expansion towers use P/N 04N2351
	
	• 7207 Model 122 – External 1/4 inch cartridge drive with QIC-4GB-DC on the door, PN 59H4434.
	
	• 7208 Model 342 – External 8mm tape drive; refer to the device service information to determine the part number or part numbers to replace.
	
	• 7208 Model 345 – External 8mm tape drive; refer to the device service information to determine the Part Number(s) to replace.
	
	• 7239 Model 308 – External 1/4 inch cartridge tape library; refer to the device service information to determine the Part Number(s) to replace.
	
	Continued...

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00871 cont'd	• 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) – Exxx – Fxxx – ***xx – ****** **No**　　**Yes** ↓　　Use the "Status Codes" section of the 9348 Service Information to determine the failing items. 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. • Other device type Refer to the device Service Information to determine the part number or part numbers that need to be replaced.
FI00872	FI00872 indicates that the interface is the failing item. • Internal Device See "FI01140" on page 481. • External device See "EXTSCSI" on page 513.
FI00880	FI00880 indicates that a terminating plug on the device bus to this IOP is the failing item. **Note:** If the unit is a 9427, an internal terminating plug is used (see the service information for the specific device). The following list shows the possible failing items: • Terminating plug for 2440 Tape Unit—part 79X3795 • Terminating plug for 3490, 3570, 3590, and 7208 Model 342 Tape Units—part 61G8324 • SCSI differential terminating plug for 3995 iSeries 400 Optical Library Dataserver—part 79X3795 • SCSI single-ended terminating plug for 3995 iSeries 400 Optical Library Dataserver Models C4x--part 34H5608 • 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" on page 507 to determine the correct part. • Terminating plug for 63A0 Tape Unit—See device documentation. • Terminating plug for 7208 Model 002 Tape Drive—part 91F0721 • Terminating plug for 7208 Model 012 Tape Drive—part 46G2599 • Terminating plug for 7208 Model 222 Tape Drive—part 46G2599 • Terminating plug for 7208 Model 232 Tape Drive—part 79X3795 • Terminating plug for 7208 Model 234 Tape Drive—part 79X3795 • Terminating plug for 9348 Tape Unit—part 79X3795

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI00882	FI00882 indicates that the addressed unit is the failing item. Determine the address and type of the failing unit (see "System Reference Code (SRC) Record" in the *iSeries Service Functions* information). If one of the following device types is the failing item, see the service information for the device Modelinstalled on the system: • 2440 • 3490 • 3570 • 3590 • 3995 • 63A0 • 7208 • 9347• 9348 • 9427. If the tape unit being used is in the FC 5032 Removable Storage Unit, the failing item is the 636x Tape Unit. See "Removable Storage Unit (FC 5032)" in the SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information information. **Note:** The FC 5032 DSE module connects tape units as follows: • Tape units in the top 5032 locations (positions 1 and 2) use the top external cable connector. • Tape units in the bottom 5032 locations (positions 3 and 4) use the bottom external cable connector. 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. A tape unit above or below the tape unit being used is *not* 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.
FI00883	FI00883 indicates that a unit attached to the same IOP, other than the addressed unit identified by FI00882, is the failing item.
FI00884	FI00884 indicates that any unit attached to the IOP may be the failing item. See FI00882 for the list of possible units.
FI01040	FI01040 indicates that you have an OptiConnect/400 system, and the error is on an iSeries 400 system that is connected to it.
FI01101	FI01101 indicates that the addressed IOA card on the I/O processor is the failing item. Perform the following: 1. Determine the address of the IOA card (see "SRC Address Formats" on page 846). 2. Determine the location of the IOA card (see "Locations and Addresses" on page 671). 3. Exchange the failing device. Use the device type to determine the part.
FI01103	FI01103 and FI01104 indicate that an attached IOA card is the failing item. Perform "BUS-PIP5" on page 267 to isolate the failing IOA.
FI01104	See FI01103.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.

FI01105	FI01105 indicates that the addressed storage device is the failing item.
	
	Perform the following:
	
	1. Is the device location information available in the Service Action Log?
	
	    No **Yes**
	
	    ↓ Exchange the failing item. See "Recovery Procedures" on page 803.
	            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*.
	
	            This ends the procedure.
	
	2. Find the IOP address and the device address (see "SRC Address Formats" on page 846).
	
	3. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671 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.

FI01106	FI01106 indicates that a storage device other than the addressed storage device is the failing item. 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. If the reference code that called out this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 394 to isolate the possible failing device.

FI01107	FI01107 indicates that any storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.
	
	Perform the following:
	
	1. Find the IOP address (see "SRC Address Formats" on page 846).
	
	2. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671.
	The unit reference code indicates the I/O (SCSI) bus that has the problem:
	  • URC 3020, 3100 —I/O Bus 0
	  • URC 3021, 3101 —I/O Bus 1
	  • URC 3022, 3102 —I/O Bus 2
	  • Any Other URC—Any I/O bus on the I/O card
	
	3. See "Locations and Addresses" on page 671 and find the diagram of the system unit or the expansion unit and find:
	  • The IOP card location identified by the direct select address.
	  • All the storage devices on the same I/O (SCSI) bus.
	    Note: The I/O (SCSI) bus number is the first character of the device unit address.
	
	4. Exchange the failing device. Use the device type to determine the part:
	
	If the reference code that called out this FI does not have a problem analysis procedure, perform "SDIOP-PIP16" on page 394 to isolate the possible failing device.

FI01108	FI01108 indicates that the I/O (SCSI) bus or power cable is the failing item. See FI01140 and FI01141.
FI01109	A backplane or a connection to the backplane may be failing. See the symbolic FRU "BACKPLN" on page 490.

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.
FI01110	FI01110 indicates that the diskette unit is the failing item. Use the diskette device type to determine the part.
FI01112	FI01112 indicates that the active IOP is the failing item. Perform the following: 1. Find the IOP address (see "SRC Address Formats" on page 846). 2. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671. 3. Use the IOP type to determine the part.
FI01117	FI01117 indicates that any IOA, card, cable, or device attached to the IOP may be the failing item. 1. Find the IOP address (see "SRC Address Formats" on page 846). 2. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671. 3. Identify the IOAs, cards, cables, and devices attached to the IOP found in the preceding steps. 4. Exchange the IOAs, cards, cables, and devices attached to the IOP one at a time until you have corrected the problem.
FI01119	See the symbolic FRU "BACKPLN" on page 490.
FI01121	FI01130 indicates that the disk drive and logic card is the failing item. Find the disk unit type number in the "Type, Model, and Part Number list" on page 797 to determine the part number.
FI01130	FI01130 indicates that the disk drive and logic card is the failing item. Find the disk unit type number in the "Type, Model, and Part Number list" on page 797 to determine the part number.
FI01131	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.
FI01132	This failing item is in a migrated tower. See the *Migrated Expansion Tower Problem Analysis, Repair and Parts* failing item table for this failing item.

FI01140	FI01140 indicates that the I/O (SCSI) bus cable is the failing item.
	
	 Perform the following:
	 1. Are there external devices attached?
	
	     No **Yes**
	
	     ↓ For SCSI attached external devices, see "EXTSCSI" on page 513.
	
	              For Fibre Channel attached external devices, see "FCCABLE" on page 514.
	 2. Find the IOP address (see "SRC Address Formats" on page 846).
	 3. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671.
	 4. Exchange the failing item associated with the IOP address.
	 Note:
	
	 Any of the SCSI cables or backplanes between the IOA and the device could be the failing item. See "Power and Signal Cables" on page 724.

Failing Items

Failing Item Code	Description/Action If only a type number is listed, go to "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the part number.

FI01141	FI01141 indicates that a loss of power to an IOP, to an internal device, or to an external device may have occurred.
	
	1. Are 0000 xxxx, 1xxx xxxx, or A6xx 698x SRCs displayed on the control panel?
	
	    No **Yes**
	
	    ↓ Go to "Chapter 2. Unit Reference Codes" on page 59 and use the SRC displayed on the control panel.
	
	2. Did the SRC that directed you to this FI code involve an externally attached device or an IOP with an externally attached device?
	
	    No **Yes**
	
	    ↓ 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.
	
	3. The power supply cables or connections to internal disk units, tape units, diskette units, or optical storage units may be the failing item.
	    • For cable information, see "Power and Signal Cables" on page 724.
	    • For part numbers, see "Parts Assemblies" on page 740.

FI01201	FI01130 indicates that the disk drive and logic card is the failing item. Find the disk unit type number in the "Type, Model, and Part Number list" on page 797 to determine the part number.
FI01202	See FI01201.
FI01203	See FI01201.
FI02092	See FI00092.

FI02112	FI02112 indicates that the addressed storage device is the failing item.
	
	Perform the following:
	
	1. Is the device location information available in the Service Action Log?
	
	    No **Yes**
	
	    ↓ Exchange the failing item. See "Recovery Procedures" on page 803.
	        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*.
	
	        This ends the procedure.
	2. Find the IOP address and the device address (see "SRC Address Formats" on page 846).
	3. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671 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.

Symbolic FRUs

ACMODUL

Note: If the system powers on normally, or stays powered on after AC power failure, no replacement of parts may be needed.

1. Is the SRC occurring on a system unit or FC 5074, 5075, 5078, or 5079 I/O expansion?

   Yes   No

   ↓   See the ACMODUL sybmolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* for FRU isolation instructions.

Model 820

Note: For Model 820, POW-PIP11 must be performed before replacing parts.
:

Unit Reference Code	Power Supply	Part Number
OOAC	P01, P02, P03	21P6417

Model 270 FC 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2253, 2424, 2434 or 2454::

Unit Reference Code	Power Supply	Part Number
OOAC	P01, P02, P03	24L1400

Model 270 FC 2248, 2250, 2252, 22A2, 22A4, 22A5, 2301, 2302, 23F0, 23F1, 23E7, 2422, 2423, 2429, 2430, 2432 or 2452::

Unit Reference Code	Power Supply	Part Number
OOAC	P01	04N5491

For FC 5075::

Unit Reference Code	Power Supply	Part Number
OOAC	P01, P02	21P6417

For FC 5078/0578::

Note: POW-PIP11 must be performed before replacing parts.

Unit Reference Code	Power Supply	Part Number
OOAC	P01, P02	21P4970

For FC 5065/5066 or FC 5074/5079::

Note: For FC 5074/5079, perform POW-PIP11 before replacing parts.

Unit Reference Code	Power Supply	Part Number
OOAC	P01, P02, P03	90H6629

AIRMOVR

An air-moving device may be failing. Before replacing any FRUs, verify that all cables are seated correctly.

Symbolic FRUs

Perform the following to determine the part number for the failing air-moving device.

Note: The address of the failing frame and unit are shown in the second, third, and fourth characters of the 4 leftmost characters of the SRC. For example, 11-x xFFU-xxxx (F=frame and U=unit).

1. Is the failing air moving device in a system unit?

  No **Yes**

  ↓ Find the reference code in the following list to determine the failing AMD. Then see "Locations and Addresses" on page 671 to determine the location of the failing item.

    For system unit Model 820:

    Note: The replacement fan MUST BE RECONNECTED WITHIN 30 SECONDS OF REMOVAL OF FAILED UNIT or system failure / shutdown may result.

Unit Reference Code	FRU	Part Number
7610, 7611	AMD B01	24L1730
7620, 7621	AMD B02	24L1730
7630, 7631	AMD B03	24L1730
7640, 7641	AMD B04	24L1730

    For system unit Model 270:

Unit Reference Code	FRU	Part Number
7610, 7611	AMD B01	24L1740
7620, 7621	AMD B02	24L1740

    For system unit Model 270, internal expansion (7104):

Unit Reference Code	FRU	Part Number
7630, 7631	AMD B03	04N5698

    This ends the procedure.

2. The failing air moving device is in a secondary expansion unit. Find the unit reference code in the following lists to determine the failing AMD or AMD and part number.

3. Then, see "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the location of the failing item.

  For 5074/5079 I/O frame:

Unit Reference Code	FRU	Part Number
7610, 7611, 8610	AMD B01	04N3345
7620, 7621, 8620	AMD B02	04N3345

For FC 5075:

Unit Reference Code	FRU	Part Number
7610, 7611	B01	24L1730
7620, 7621	B02	24L1730

For 5078 I/O frame:

Unit Reference Code	FRU	Part Number
7610, 7611	AMD B02	41L5448
7620, 7621	AMD B02	41L5448
7630, 7631	AMD B01	41L5448
7640, 7641	AMD B01	41L5448

4. Then, see *Migrated Expansion Tower Problem Analysis, Repair and Parts* for locations information.

For 5072, 5073, 5077, 5082, 5083 frames:

Unit Reference Code	FRU	Part Number
7000	ACMODUL	ACMODUL
7001	AMD 1	46G3510
7002	AMD 2	46G3510
7003	AMD 3	46G3587
7004	AMD 4	46G3587

For FC 5065/5066 frame:

Unit Reference Code	FRU	Part Number
7610, 8610	AMD B01	04N3345
7620, 8620	AMD B02	04N3345

For FC5033, FC5034, FC 5035:

Unit Reference Code	FRU	Part Number
2240	Air Moving Device Panel (AMDP)	44H7756
2241	AMD 1	44H8336
2242	AMD 2	44H7889
2244	• AMD 1 • Distribution Cable (if AMD 4 is not installed)	• 44H8336 • 44H8337
2245	AMD 5	44H7904
2246	AMD 6A (SPD enclosure)	44H8259
2246	AMD 6B (PCI enclosure)	44H8336

This ends the procedure.

ALTINTF

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. Check the load source device unit to ensure it is ready. Verify that the load source media (tape or compact disk) is loaded properly and is a valid IPL media.

1. Power off the system from the control panel. Check the cables and connections between the System Unit Backplane and the storage device units. Reseat cables where possible. Change the IPL mode to manual, and the IPL speed to SLOW OVERRIDE (S) using control panel function 2. Power on the system.

   Does the same SRC occur?

   Yes   No

   ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Power off the system from the control panel. Attempt to IPL from a different load source 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. (Temporarily disconnect the optical storage device unit from the system if possible.)
   - If the failing IPL was mode D from an tape device 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   No

   ↓   If there is a different SRC, go to "Starting Point for All Problems" on page 4 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.

3. The failing item is one of the cards or devices attached to the interface for alternate IPL load-source device.

   If the system has recently had new PTFs loaded and applied, or the failure first occurred during an alternate mode D IPL, or a previous IPL ended in an unexpected power off, then attempt to reload service processor code.

   Contact your next level of support for instructions on reloading the service processor code.

   Is this system a Model 270?

Yes   No

↓   Go to step 6 of this procedure.

4. See "Locations — Model 270" on page 671. 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   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 "Chapter 4. Removal and Installation Procedures" on page 593.

   • First storage IOA
   • System Unit Backplane in location MB1

6. See "Locations — Model 820" on page 683. 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   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 "Chapter 4. Removal and Installation Procedures" on page 593.

   • First storage IOA
   • System Unit Backplane in location MB1

   This ends the procedure.

ALTMANL

An xSeries Server (formerly Netfinity Server) Service call may be needed to fix the problem on the Integrated xSeries Server (IXS).

1. For SRC 1xxx-8910:
   • Check the System error light (amber exclamation mark, see figure below) on the Integrated xSeries Server (IXS) Panel to see if it is on. If the System error light is **on**, call your Integrated xSeries Server (IXS) service provider.

- When the Integrated xSeries Server (IXS) error light is **Not** on, see FRU
TWRCARD.

This ends the procedure.

2. 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.

3. For SRC 1xxx-8940, 8941, 8942, 8943:

- Check the R485 cable connections for proper seating to resolve the problem
(SRC).

  When the problem remains unresolved after reseating and replacing the cable
  in CBLALL, call your Integrated xSeries Server (IXS) service provider.
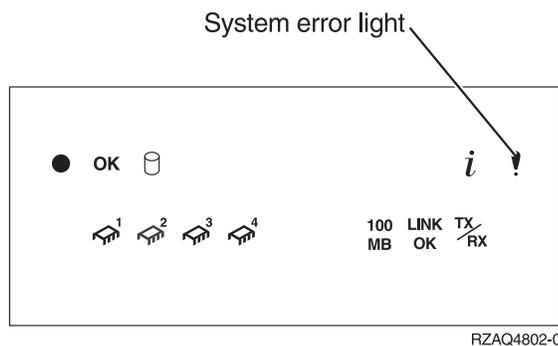
Figure 7. Integrated xSeries Server (IXS) – Control Panel

This ends the procedure.

ANYBUS

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.

This ends the procedure.

ANYFC

Any IOA, hub, gateway, or device attached to the same Fiber Channel interface
may be failing.

This ends the procedure.

ANYMEM

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 the "Locations — Model 270" on page 671 to identify the locations, type
number, and removal and installation procedure for the memory cards.

For Model 270 - Processor Feature Code 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454:

- 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" on page 671 to identify the locations, type number, and removal and installation 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 the "Locations — Model 270" on page 671 to identify the locations, type number, and removal and installation procedure for the memory expansion cards and memory card.

For Model 820:

- 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" on page 683 to identify the locations, type number, and removal and installation 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" on page 683 to identify the locations, type number, and removal and installation procedure for the memory expansion cards and memory cards.

This ends the procedure.

ANYPROC

For Model 270 - Processor Feature Code 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, 2452:

- The processor located on the backplane MB-1 may be the failing item.
- Before exchanging any parts, verify that the connections to the backplane are secure.
- See the "Locations — Model 270" on page 671 to identify the location, type number, and removal and installation procedure for the backplane MB-1.

For Model 270 - Processor Feature Code 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454:

- The processor card, located at slot M02 may be the failing item.
- To determine the processor card type number use the following information: (If needed , use control panel function 20 to determine the Processor Feature Code.)
  - Processor Feature Code 22A7, 22A8, 2423 (1 way):
    - Processor type (CCIN): 24A0
  - Processor Feature Code 22AA, 22AB, 2424 (2 way):
    - Processor type (CCIN): 24A2
  - Processor Feature Code 23F4, 23F5, 2454 (2 way):
    - Processor type (CCIN): 25BD
- See the "Locations — Model 270" on page 671 to identify the type number, and removal and installation procedure for the processor card.

For Model 820:

- The processor card, located at slot M03 may be the failing item.
- To determine the processor card type number use the following information: (If needed , use control panel function 20 to determine the Processor Feature Code.)
  - Processor Feature Code 23A1, 23A2, 23A3, 23A4 (1 way):
    - Processor type (CCIN): 244A
  - Processor Feature Code 23A9, 23AA, 23AB, 23AC, 23AD, 2425 (1 way):
    - Processor type (CCIN): 24A0
  - Processor Feature Code 0150, 2456, 249B, 249C, 249D, 249E, 24A8, 24A9, 24AA, 24AB, 24AC (1 way):
    - Processor type (CCIN): 25BC
  - Processor Feature Code 23B1, 23B2, 23B3, 23B4, 23B5, 23B6, 2426 (2 way):
    - Processor type (CCIN): 244D
  - Processor Feature Code 243C, 243D, 243E, 243F
    - Processor type (CCIN): 224B
  - Processor Feature Code 0151, 2457, 24B0, 24B1, 24B2, 24B3, 24B4, 24B5 (2 way):
    - Processor type (CCIN): 25BD
  - Processor Feature Code 23B8, 23B9, 23BA, 23BB, 23BC, 23BD, 23BE, 2427 (4way):
    - Processor type (CCIN): 244E
  - Processor Feature Code 0152, 2458, 24B8, 24B9, 24BA, 24BB, 24BC, 24BD, 24BE:
    - Processor type (CCIN): 25BE
- See the "Locations — Model 820" on page 683 to identify the type number, and removal and installation procedure for the processor card.

This ends the procedure.

AS4NTDD

The Windows NT Server Application Processor device driver may be causing the problem. Refer to the Integration for Windows Server -- Setup information which is located in the Information Center at http://www.ibm.com/eserver/iseries/infocenter, or contact your next level of support for assistance.

This ends the procedure.

BACKPLN

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.

The failing item is the System Unit Backplane.

1. Were you sent here by a power SRC (1xxx xxxx)?

   No   **Yes**

   ↓   Go to "SYSBKPL" on page 575.

2. Determine the location of the device. 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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

3. Is the device or I/O adapter located in a migrated tower?

   No   Yes

   ↓   Go to the BACKPLN symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

4. Use "Power and Signal Cables" on page 724 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 removal and installation procedures, see "Locations and Addresses" on page 671.

   This ends the procedure.

BATCHGR

A battery power unit charger is the failing item.

Perform the following to determine the part number for the failing unit:

Note: When a location and part number are displayed on the Control Panel of a system or expansion tower, then you are to replace that FRU first.

Note: The Removal and Installation Procedures for Battery Charger are in "Chapter 4. Removal and Installation Procedures" on page 593 for the Model 270, 820 and FC 5075 expansion units. They are in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* for migrated expansion Towers.

1. Is the SRC 1xxx4413 displayed?

   No   Yes

   ↓   Go to "BATRY". If problem is not fixed, return here.

2. The failing battery power unit charger is in an expansion unit. Is the failing battery power unit charger in an FC 5065/5066 or 5074/5079 expansion tower?

   Yes   No

   ↓   Find the failing battery power unit charger and part number:
   - FC 507x and 508x: Internal Battery Power Unit 1 or 2 charger – part 86G8020
   - FC 507x and 508x: External Battery Power Unit 2 charger – part 86G7750

   This ends the procedure.

3. Replace the battery power unit charger – part 97H7316.

   This ends the procedure.

BATRY

The battery may be the failing item.

Note: When a location and part number are displayed on the Control Panel of the system or expansion tower, then you are to replace that FRU first.

Symbolic FRUs

> **Note:** Migrated expansion tower removal and installation procedures and locations information are in *Migrated Expansion Tower Problem Analysis, Repair and Parts*

The failing battery is in a secondary expansion unit. Use one of the following batteries and parts:

For an FC 507x, 508x:
- Internal battery power unit 1 and 2, battery pack – part 86G8040
- External battery power unit 2, battery pack – part 86G7714
- External battery power unit 2, cable – part 86G7712
- 9309 general purpose I/O frame with SPCN (FC 9171) – part 21F9380

For an FC 5077 Base I/O Tower: Battery power unit – part 86G8040

FC 5065/5066 or 5074/5079 expansion tower battery power unit: Expansion tower battery power unit – part 97H7318 (PN 97H7318 includes all four battery power units.)

For an FC 5033, 5034, or 5035 expansion tower: Exchange both battery unit assemblies, part 44H7785

This ends the procedure.

BKSPCN

An SPCN card may be failing. The SPCN card may be part of the AC Module in some parts of the system.

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*.

BUS1

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.

Check the last IPL status code in SRC data word 13 in the second half of control panel function 12.
```
12
xxxxxxxxxxxSSSS      SSSS = IPL status code
xxxxxxxxxxxxxxx
```

If this value is 2000 through 2009 then use the "IPLINTF" on page 519 symbolic FRU instead of following this procedure. If this value is 200A through 2018 then follow this procedure.

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   **No**

↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this system a Model 270 System Unit with Processor Feature 22A2, 22A4, 22A5, or 2422 ?

Yes   **No**

↓   Go to Step 5 of this procedure.

3. See "Locations and Addresses", Figure 25 on page 671. 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 IPL.

Does the same SRC occur?

Yes   **No**

↓   If the system IPLs past the original error, then isolate to the failing IOP or IOA card. Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

4. Replace the following FRUs in order one at a time until the problem is resolved. See "Removal and Replacement Procedures".

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.
   - Power regulator in location R01
   - Power Supply in location P01
   - System Unit Backplane in location MB1
   - Memory card pairs in locations A-H

5. Is this system a Model 270 System Unit with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, or 2424 ?

Yes   **No**

↓   Go to Step 8 on page 494 of this procedure.

6. See "Locations and Addresses, Figure 26 on page 675. 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 IPL.

Does the same SRC occur?

Yes   **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. See "Locations — Model 270" on page 671. 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.
   - Processor Card in location M02
   - Power Supply in location P01

  - System Unit Backplane in location MB1
  - Memory Riser Card in location M01

8. See "Locations — Model 820" on page 683. 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 IPL.

   Does the same SRC occur?

   Yes   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.

9. See "Locations — Model 820" on page 683. 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.
   - Processor Card in location M03
   - Power Supply in location P01
   - Power Supply in location P02
   - Power Supply in location P03
   - Memory Riser Card in location M01
   - Memory Riser Card in location M02
   - System Unit Backplane in location MB1

   This ends the procedure.

CACHBAT

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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

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*.

Using the type number of the storage IOA, go to "Type, Model, and Part Number list" on page 797 to determine the cache battery pack part number.

To exchange the cache battery pack, see "Type 2748, 2763, 2778 – Cache Battery Pack" on page 657.

This ends the procedure.

CACHE

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 *Migrated Expansion Tower Problem Analysis, Repair and Parts* for FRU isolation instructions.

This ends the procedure.

CBLALL

A power cable may be the failing item.

Note: When a location and part number are 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 for the failing power supply:

1. Is the SRC 1xxx 2201 or 2301?

   No   **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 CD D02 cable

     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   **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   **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

Symbolic FRUs

- 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   **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   **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   **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   **Yes**

↓   The failing item is the signal cables, exchange the following parts one at a time:

- Panel to power supply 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 1512, 1522, or 1532?

    No   **Yes**

    ↓   Exchange one of the following one at a time:

    For all except 5078:
    - 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:
    - 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

9. Is the SRC 1xxx 4410,4411, 4412, 4413, 4415, 4416, 4417?

    No   **Yes**

    ↓   Exchange on 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

10. Is the SRC 1xxx 00AC, 2612, 302E, 9012, 9013, 90F0, 9231, 9232, 9233, 9235, 9236, 9280, 9281, 9282, C62E, C701, C702 or C703?

    No   **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
    - xSeries Server (formerly Netfinity) SPCN-Y cable asm – part 04N2652

11. Is the SRC 1xxx-2613?

    No   **Yes**

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     ↓   Go to "Power Cord Part Numbers and Receptacle Descriptions" on page 802.

12. Is the SRC 1xxx-8940, 8941, 8942 or 8943?

    Yes   No

     ↓   Go to "Starting Point for All Problems" on page 4.

13. Reseat the RS485 cable.

    Does the same SRC appear?

    Yes   No

     ↓   Go to "Starting Point for All Problems" on page 4.

14. Exchange the RS485 cable asm part – 21P4162.

    Does the same SRC appear?

    Yes   No

     ↓   Go to "Starting Point for All Problems" on page 4.

15. Go to the next FRU in the list.

    This ends the procedure.

CCIN

Use the following table to identify the processor configuration for the system you are working on. Then, continue with step one below.

Table 17. 820 Processor Configuration Table

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

Table 17. 820 Processor Configuration Table (continued)

Model	Processor Feature Code	Processor Capacity Card CCIN	Interactive Card CCIN	Proc 0 CCIN
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
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

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Table 18. 270 Processor Configuration Table

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	2454	na	25BA
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

1. Did you come to this Symbolic FRU from a Power procedure (1xxx SRC) or a B1xx SRC?

   No   **Yes**

   ↓   Go to Step 7 on page 501 of this procedure.

2. Is the type number from the FRU information zero (see "(B427) System Processor Reference Codes" on page 209)?

   No   **Yes**

   ↓   Go to Step 6 on page 501 of this procedure.

3. Use the type number from the FRU information, to determine the Part Number from the "Type, Model, and Part Number list" on page 797. Then, continue with step 4 of this procedure.

4. Is the location from the Reference Code Table MB1?

   No   **Yes**

   ↓   The failing item is a backplane. Before exchanging any parts, verify that the connections to the backplane are secure. Then, continue with the step 5 of this procedure.

5. See "Locations and Addresses" on page 671 for the physical mapping of the information from the Location column, and the removal and installation procedure. Exchange the failing item for the location specified.

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.

6. The ″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" on page 671.

7. If needed, use control panel function 20 to determine the Processor Feature Code.

8. 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" on page 797.

9. Go to step 4 on page 500 of this procedure.

Table 19. Backplane Type Numbers

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

Table 20. Processor Type Numbers

Model	Processor Feature Code	Processor Type	Location
270	22A2, 22A4, 22A5, 2422	*Note Processor is embedded in the System Backplane (2249).	MB1
270	2301, 2302	*Note Processor is embedded in the System Backplane (224A)	MB1
270	23E7	*Note Processor is embedded in the System Backplane (25B9)	MB1
270	23F0, 23F1, 2452	*Note Processor is embedded in the System Backplane (25BA)	MB1
270	22A7, 22A8, 2423	24A0	M02
270	22AA, 22AB, 2424	24A2	M02

Symbolic FRUs

Table 20. Processor Type Numbers (continued)

Model	Processor Feature Code	Processor Type	Location
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
820	0152, 2458, 24B8, 24B9, 24BA, 24BB, 24BC, 24BD, 24BE	25BE	M03

Table 21. Memory DIMM Type Numbers

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

CDAWKLD

Too many communications lines are in use.

This ends the procedure.

CDTRAY

This symbolic FRU is not supported.

This ends the procedure.

CECPWR

The failing item is the power supply for the System Unit.

1. Is this a Model 270 System Unit, with processor feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓   Go to Step 3 of this procedure.

2. See "Locations — Model 270" on page 671. 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.
   - Power Regulator in location R01
   - Power supply in location P01

3. Is this a Model 270 System Unit, with processor feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓   Go to Step 5 of this procedure.

4. See "Locations — Model 270" on page 671. Replace the Power supply in location P01.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

5. This is a Model 820. See "Locations — Model 820" on page 683. 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.
   - Power supply in location P01
   - Power supply in location P02
   - Power supply in location P03

CHECK

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   Yes

   ↓

   - 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.
- Go to step 3 of this procedure.

3. Is there a Fiber Channel interface between the IOP/IOA and the device?

   No   **Yes**

   ↓

   - 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.
   - Go to step 4 of this procedure.

4. Perform the "Verification Procedures" in the *iSeries Service Functions* information to see if the problem was corrected.

   This ends the procedure.

CLKCARD

This is not a failing item on 270 or 820 systems. See the next FRU in SRC table.

This ends the procedure.

CLCKCRD

The failing item is the clock card for the System Unit.

1. Is this system a Model 270 System Unit with Processor Feature 22A2, 22A4, 22A5, or 2422?

   Yes   **No**

   ↓   Go to Step 3 of this procedure.

2. See Table 45 on page 672. 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.
   - Power Regulator in location R01
   - System Unit Backplane in location MB1

3. Is this system a Model 270 System Unit with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, or 2424?

   Yes   **No**

   ↓   Go to Step 5 of this procedure.

4. See Table 46 on page 675. 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.
   - Processor Card in location M02
   - System Unit Backplane in location MB1

5. This is a Model 820. See "Locations — Model 820" on page 683. 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.
- Processor Card in location M03
- System Unit Backplane in location MB1

CMPRES1

The compressed device and the compression IOA are not compatible.

This ends the procedure.

CRYPBAT

The batteries for the IBM 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 (PN 09J8199). (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" on page 660 for additional information.

This ends the procedure.

CTLPNCD

The interactive card, or the Processor Capacity card, that plugs into the control panel assembly is the failing item. If the type number from the FRU information is zero, contact your next level of support. Otherwise, get the location from the Reference Code Table (N02-A or N02-B). See "Assembly 1: Cover Assembly – Model 270" on page 742 or "Assembly 6: Cover Assembly – Model 820" on page 756 for further location information. Use the type number from the FRU information to determine the part number from the "Type, Model, and Part Number list" on page 797. Exchange the failing item. For removal and installation information, refer to either "Model 270 – Control Panel – NB1" on page 634, or "Model 820 – Control Panel – NB1" on page 646, depending on the Model that you are working on.

This ends the procedure.

CTLPNL

A control 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   Yes

   ↓   Exchange the following parts one at a time:

   Note: See "Model 270 – Control Panel – NB1" on page 634 or "Model 820 – Control Panel – NB1" on page 646 before exchanging the control panel.
   - Model 820 Control panel tray with keystick – part 24L1750

        • Model 270 Control panel tray w/o keystick – part 24L1591

        This ends the procedure.

2. Exchange the failing expansion control panel.

    Note: Find the removal and replacement procedures in *Migrated Expansion Tower Problem Analysis, Repair and Parts* for migrated towers.

   • FC 5074, 5079, see "FC 5074, FC 5079 – Control Panel – NB1" on page 606.
   • For FC 5075, see "FC 5075 – Control Panel – NB1" on page 621.
   • For FC 5065 or FC 5066 1.8m I/O frame – part 24L0946
   • For FC 5074 I/O tower – part 24L0962
   • For 5079 1.8m I/O frame – part 24L0962
   • For FC 503x I/O tower – part 04N4317
   • For FC 5075 I/O tower – part 24L1592
   • For FC 5072, 5073, 5077, 508x – part 17G0574
   • For FC 9171, 9309 I/O frame – part 17G0573
   • For FC 5078/0578, PCI Expansion Unit – part 24L0962

   This ends the procedure.

CVTCARD

CVTCARD: high-speed link I/O adapter and SPD conversion card.

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* for information on servicing this failing item.

This ends the procedure.

DEVBPLN

A device backplane may be failing.

Replace the device backplane. Use the device backplane information in the Service Action Log. See "Locations and Addresses" on page 671 for location, part number, and removal and installation procedure information.

DEVICE

The addressed storage device is the failing item. Perform the following:

1. Is the device location information available in the Service Action Log?

   No   Yes

   ↓   Exchange the failing item. See "Chapter 6. Data Recovery Procedures and General System Information" on page 803.

       Note: If the failing item is in a migration tower, go to Chapter 6 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

       This ends the procedure.

2. Find the IOP address and the device address (see "SRC Address Formats" on page 846).
3. To determine the location of the I/O processor card, see "Locations and Addresses" on page 671 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.

DEVTERM

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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

      If the failing item is in a migration tower, go to the DEVTERM symbolic FRU in *Migrated Expansion Tower Problem Analysis, Repair and Parts*.
   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, and 3590, use part 61G8324. For device type 3995, see FI00880 in the Failing Item (FI) Code Table. For all other devices, use part 85F7887.
2768	For device type 7207, use part 52G9907.
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 "BACKPLN" on page 490. Follow the procedure until the terminating plug is accessible and then remove or exchange the plug.

This ends the procedure.
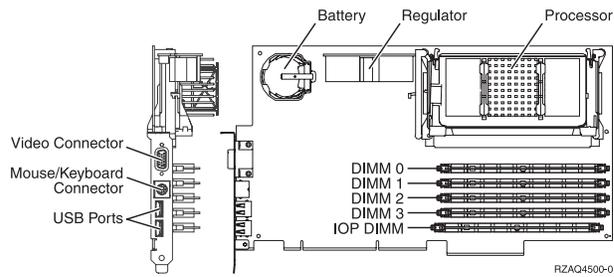
DIMM 0

Figure 8. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.

The *first* DIMM from the top of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 533.

This ends the procedure.

DIMM 1

Battery   Regulator   Processor

Video Connector
Mouse/Keyboard
Connector
USB Ports

DIMM 0
DIMM 1
DIMM 2
DIMM 3
IOP DIMM

RZAQ4500-0
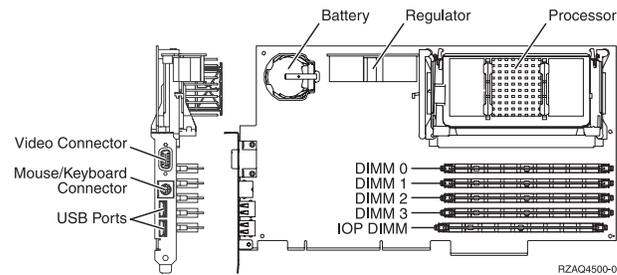
Figure 9. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.

The *second* DIMM from the top of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 533.

This ends the procedure.
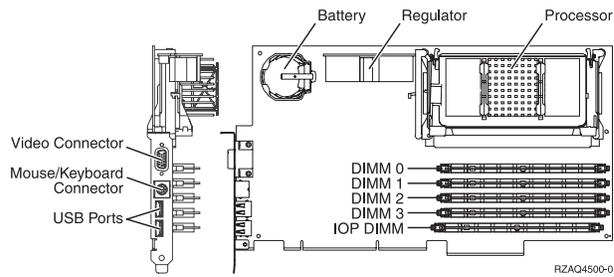
DIMM 2

Figure 10. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.

The *third* DIMM from the top of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 533.

This ends the procedure.

DIMM 3
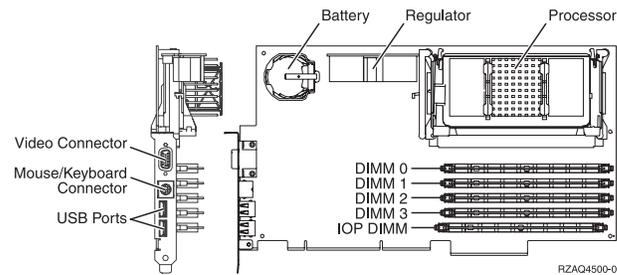
Figure 11. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.

The *fourth* DIMM from the top of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 533.

This ends the procedure.

DISKDRV

The disk drive and logic card may be failing.

Perform the following:

1. Were you sent here from a power SRC (1xxx xxxx)?

   No   Yes

   ↓   Go to step 7 of this procedure.

2. Is the device location information available in the Service Action Log?

   No   Yes

   ↓   To exchange the failing item, see "Recovery Procedures" on page 803.

            Note: If the failing item is in a migration tower, go to the recovery procedures in *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

            This ends the procedure.

3. Find the IOP address and the device address (see "SRC Address Formats" on page 846).

4. See "Locations and Addresses" on page 671 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   Yes

   ↓   See "Hardware SRC Formats" in the *iSeries Service Functions* information.

            The 2 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=Model

            Go to step 9 of this procedure.

6. Go to step 8 of this procedure.

7. 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" on page 671.

8. Remove the disk unit to determine the part number.

   To exchange the disk drive and logic card, see "Recovery Procedures" on page 803.

   This ends the procedure.

9. Using the type information, go to "Type, Model, and Part Number list" on page 797 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" on page 803.

   This ends the procedure.

DISKIMG

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

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* for FRU isolation instructions.

DPAC

The two port adapter cable (PN - 21F9345) is the failing item.

This ends the procedure.

DRVSWCH

The address switches on an Optical Disk Drive in the Optical Library need to be checked and verified. Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

DSKUNIT

See "DISKDRV" on page 511.

EACODE

An error occurred in the error analysis Licensed Internal Code.

Ask your next level of support for assistance.

This ends the procedure.

EXTREMD

An external removable media storage device may be failing.

See "CHECK" on page 503 for more information prior to removing or replacing any parts. Return here if "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

If more than one device is attached, they may have duplicate addresses. See the device documentation for information on setting the device address.

The external signal cable may be failing.

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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.
    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.

    Note: Verify that the part number in the list is the same as the part number on the cable.
3. 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

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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.

IOP or IOA Type	Device	Lengths	Part Number
2749	3490, 3490/Exx, 3590	2.8 meters	05H4647
		4.5 meters	05H4648
		12.0 meters	05H4649
		18.0 meters	05H4650
		25.0 meters	05H4651
	3490/Fxx, 3570, 358x, 9427, 7208/342	0.5 meters	49G6456
		4.5 meters	49G6457
		12.0 meters	49G6458
		18.0 meters	49G6459
	63A0		See device documentation to determine cable Part Number(s)
	7208/012, 7208/222	1.5 meters	52G0174
		4.0 meters	59H3462
		12.0 meters	59H3463
	7208/232, 7208/234, 9348	0.5 meters	06H6037
		4.0 meters	59H3460
		12.0 meters	59H3461
	3995	12.0 meters	59H3461
2768	7207/122, 7208/345, 7210/020, 7329/308	2.4 meters	67G1260

Note: All cables for the 9427 tape library must include an interposer, part 05H3834, on the device end of the cable.

This ends the procedure.

FCCABLE

The Fiber Channel cable may be failing.

Use the part number on the cable to determine the part number to replace.

FCCODE

An error has been detected in the Fiber Channel gateway device Licensed Internal Code.

See the gateway device service guide for possible corrective actions.

This ends the procedure.

FCDEV

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   YES

↓   See "FCGATE".

         This ends the procedure.

See the attached device maintenance information to determine the parts to replace.

This ends the procedure.

FCGATE

The Fiber Channel gateway device is the failing item.

Use the gateway device service guide to determine the parts to replace.

This ends the procedure.

FCINTF

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.

This ends the procedure.

FCIOA

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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

This ends the procedure.

FCPORT

The Fibre Channel IOA port may be the failing item.

Perform the following:

1. Is the SRC 2765/2766 3120 or has a 2765/2766 3120 SRC been logged within 5 minutes of the SRC that sent you to this symbolic FRU?

   Yes   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 3120 SRC. Has a 2765/2766 3140 SRC occurred after the most recent 2765/2766 3120 SRC?

Yes   No

↓   Go to step 5 of this procedure.

3. The 2765/2766 3140 SRC indicates that the port is now active. Has a 2105 3002 SRC occurred around the time the problem was first reported?

   Yes   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 3120 SRC) to active (2765/2766 3140). If the disk units that reported the 2105 3002 SRC are usable then no further service actions are required and **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.

5. Clean the Fibre Channel IOA wrap plug using the cleaning kit – P/N 46G6844 and following the Fiber Optic Cleaning Procedures – SY27-2604-04. If the wrap plug has been lost, order and clean P/N 05N6768.

   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 3140 SRC in the Product Activity Log. The 2765/2766 3140 SRC indicates that the port is active. Did a new 2765/2766 3140 SRC occur?

   Yes   No

   ↓   Replace the Fibre Channel IOA. See "FCIOA" on page 515 for further instructions.

            This ends this procedure.

6. 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?

   Yes   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.

7. Unplug the wrap plug from the Fibre Channel IOA and wait until the 2765/2766 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 this procedure.

HSLCTLR

The failing item is the System Unit Backplane in location MB1. See "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683.

IDPART

A system unit part is failing.

Perform the following:

1. Does the SRC 1xxx 840D, 840E or 840F appear on the panel?

Yes   No

↓   Go to "Starting Point for All Problems" on page 4.

2. Is the SRC for an xSeries Server Tower?

No   Yes

↓   Exchange the Integrated xSeries Adapter (IXA) – part 23L4307.

3. Perform the following to set the ID:

Note: The System or Frame that the ID is being set on **MUST** be powered down with AC applied. If you are working on a Model 270 with a 7104 expansion tower, 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. 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: The display on the address frame should now be blinking on and off (Non-system frame only).

(Non-System Panel)
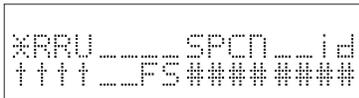
```
XRRU_____SPCN__id
tttt___FS########
```
(RRU = Rack and Unit, id = Config ID)
(tttt = Box Type, FS######## = Frame Serial #)

(System Panel)
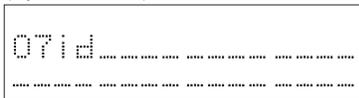
```
07id_____
_____
```
(id = Config ID)

RZAQ2551-2

Figure 12. Control PANEL DIAGRAM FOR FUNCTION A6 and A8:

d. The Configuration ID displayed is defined as follows:

80	FC 5065/5066
81	FC 5074/5079
82	FC 9079
84	FC 5078/0578
90	FC 5075
91	Model 270 **without** an expansion unit and **without** a removable processor
92	Model 270 **without** an expansion unit and **with** a removable processor
93	Model 820
95	Model 270 **with** an expansion unit and **without** a removable processor

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96	Model 270 **with** an expansion unit and **with** a removable processor

Is the correct configuration ID displayed for the tower selected?

No   Yes

↓   Go to 5 on page 519 of this procedure.

4. Perform the following to set frame Configuration ID:

Note: The System or Frame that the ID is being set on 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 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 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 address frame should now be blinking on and off (Non-system frame only).

d. Select the correct Configuration ID from the following table:

80	FC 5065/5066
81	FC 5074/5079
82	FC 9079
84	FC 5078/0578
90	FC 5075
91	Model 270 **without** an expansion unit and **without** a removable processor
92	Model 270 **without** an expansion unit and **with** a removable processor
93	Model 820
95	Model 270 **with** an expansion unit and **without** a removable processor
96	Model 270 **with** an expansion unit and **with** a removable processor

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 hit enter to return the panel to normal display. (Use the arrows to increment/decrement to the 07** . 07** enter)

e. 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.

Does the SRC 1xxx 840D, 840E or 840F appear on the panel?

Yes   No

↓

This ends the procedure.

5. Perform the following:
   a. Power off the system.
   b. Exchange the SPCN card in the failing frame (TWRCARD).
      This ends the procedure.

INTRLCK

An interlock failure may have occurred.

See the INTRLCK symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* for further FRU isolation procedures.

IOACNFG

IOA configuration problem.

Too many communications lines or IOAs are configured using the same IOP. See *iSeries Model 270, 8xx, SB2, and SB3 System Installation and Upgrade* book for configuration information. See *iSeries Service Functions* book for information about how to move an IOA to another IOP.

This ends the procedure.

IOP

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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

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*.

This ends the procedure.

IOPWR

The failing item is a power supply or power subsystem hardware in an I/O tower. See "Chapter 4. Removal and Installation Procedures" on page 593.

IPLINTF

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. Power off the system from the control panel. Check the cables and connections between the System Unit and the storage device units. Reseat cables where possible. Change the IPL mode to manual, and the IPL speed to SLOW OVERRIDE (S) using control panel function 2.

   Power on the system.

   Does the same SRC occur?

   Yes   No

    ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

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 "ALTINTF" on page 486 symbolic FRU.

   Does the same SRC occur?

   Yes   **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.

   If the system has recently had new PTFs loaded and applied, or the failure first occurred during an alternate mode D IPL, or a previous IPL ended in an unexpected power off, then attempt to reload service processor code. Contact your next level of support for instructions on reloading the service processor code.

   Is this system a Model 270?

   Yes   **No**

   ↓   Go to Step 6 of this procedure.

4. See "Locations — Model 270" on page 671. 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   **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 "Chapter 4. Removal and Installation Procedures" on page 593.

   - First storage IOA
   - System Unit Backplane in location MB1

6. See "Locations — Model 820" on page 683. 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   **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 "Chapter 4. Removal and Installation Procedures" on page 593.

   - First storage IOA
   - System Unit Backplane in location MB1

   This Ends The Procedure.

I2CBUS

A Fault was detected on the I2C bus.

1. Are you working on a 5075 tower?

   No   Yes

   ⬇   Go to step 9 on page 522 of this procedure.

2. Are you working on a FC 5074, 5078 or 5079 tower?

   No   Yes

   ⬇   Go to step 14 on page 523 of this procedure.

3. Is the SRC 3100, 3105, 3106, 3113, 3114, 3116, or 3118?

   No   Yes

   ⬇   Replace the following using the appropriate Locations and Failing Items Table for the Model/Feature Code you are working on (see either "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683):

      - MB1 - System Unit Backplane

   This ends the procedure.

4. Is the SRC 3104?

   No   Yes

   ⬇   Replace the following using the appropriate Locations and Failing Items Table for the Model/Feature Code you are working on (see either "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683):

      - DB1 - Device Board
      - DB2 - Device Board

   This ends the procedure.

5. Is the SRC 3119?

   No   Yes

   ⬇   Replace the following using the appropriate Locations and Failing Items Table for the Model/Feature Code you are working on (see either "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683):

      - DB1 - Device Board

Symbolic FRUs

This ends the procedure.

6. Is the SRC 311A, or 311D?

    No   Yes

    ↓   Replace the following using the appropriate Locations and Failing Items Table for the Model/Feature Code you are working on (see either "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683):

             • DB2 - Device Board

             This ends the procedure.

7. Is the SRC 311E?

    No   Yes

    ↓   Replace the following using the appropriate Locations and Failing Items Table for the Model/Feature Code you are working on (see either "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683):

             • DB3 - Device Board

             This ends the procedure.

8. Go "Starting Point for All Problems" on page 4.

9. Is the SRC 3100, 3104, 3105, 3116, or 3118?

    No   Yes

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5075 I/O Tower" on page 692:

             • SB1 - SPCN Card PN 23L8145

             This ends the procedure.

10. Is the SRC 3101, 3115 or 311C?

    No   Yes

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5075 I/O Tower" on page 692:

             • NB1- Control Panel
             • SB1 - SPCN Card PN 23L8145
             • SIGC01 - SPCN Card (SB1) to Control Panel (NB1)

             This ends the procedure.

11. Is the SRC 3102, 3113, 3114?

    No   Yes

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5075 I/O Tower" on page 692:

             • SB1 - SPCN Card PN 23L8145
             • CB1 - Tower Card
             • SIGC04 - SPCN Card (SB1) to Tower Card (CB1)

             This ends the procedure.

12. Is the SRC 3103, or 3112?

   No   Yes

   ↓   Replace the following one at a time. Use the locations tables in
                     "Locations — FC 5075 I/O Tower" on page 692:

                     - DB1 - Device Board
                     - SB1 - SPCN Card PN 23L8145

                     This ends the procedure.

13. Go to "Starting Point for All Problems" on page 4.

14. Is the SRC 3100?

   No   Yes

   ↓   Replace the following one at a time. Use the locations tables in
                     "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079
                     I/O Tower" on page 699, or "Locations — FC 5078, 0578 PCI
                     Expansion Unit" on page 695:

                     - CB1 - Tower Card

                     This ends the procedure.

15. Is the SRC 3101, 3105, 3115, or 3116?

   Yes   No

   ↓   Go to step 18 of this procedure.

16. Are you working on a FC 5078 or FC 0578?

   Yes   No

   ↓   Replace the following using the appropriate Locations and Failing
                     Items Table for the Model/Feature Code you are working on (see
                     either "Locations — FC 5074 I/O Tower" on page 688, or "Locations
                     — FC 5079 I/O Tower" on page 699):

                     For FC 9074, 9079, 5074, 5079:

                     - NB1 – Control Panel
                     - CB1 – Tower Card
                     - PWR60 – Power Distribution Board (PB1) to Device Board (DB3)
                     - SIG63 – Control Panel (NB1) to Device Board (DB3)

                     This ends the procedure.

17. Replace the following (see "Locations — FC 5078, 0578 PCI Expansion Unit"
    on page 695):

    For SRC 3101 or 3115:

    - NB1 – Control Panel
    - CB1 – Tower Card

    This ends the procedure.

    For SRC 3105 or 3116:

    - BB1 – part 11K1107 (Fan Contoller Asm.)
    - CB1 - Tower Card

    This ends the procedure.

18. Is the SRC 3102?

   No   Yes

Symbolic FRUs

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699, or "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695

- C08 - HSL I/O bridge
- CB1 - Tower Card

This ends the procedure.

19. Is the SRC 3103?

    No   **Yes**

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699, or "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695:

For FC 5074/5079 and FC 9074/ 9079:
- DB1 - Device Board
- DB2 - Device Board
- DB3 - Device Board
- CB1 - Tower Card

For FC 5078/0578:
- CB1 - Tower Card

This ends the procedure.

20. Is the SRC 3104, 3114, 3118 or 311C?

    No   **Yes**

    ↓   Replace the following. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699, or "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695:

- CB1 - Tower Card

This ends the procedure.

21. Is the SRC 3110, 3111, or 3112?

    No   **Yes**

    ↓   Go to step 26 on page 525 of this procedure.

22. Are you working on a FC 5078/0578?

    No   **Yes**

    ↓   Replace the following using "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695:

- CB1 – TWRCARD

This ends the procedure.

23. Is the SRC 3110?

    No   **Yes**

↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699:
  - DB1 - Device Board
  - CB1 - Tower Card

  This ends the procedure.

24. Is the SRC 3111?

    No   Yes

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699:
      - DB2 - Device Board
      - CB1 - Tower Card

      This ends the procedure.

25. Is the SRC 3112?

    No   Yes

    ↓   Replace the following one at a time. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699:
      - DB3 - Device Board
      - CB1 - Tower Card

      This ends the procedure.

26. Is the SRC 3113?

    No   Yes

    ↓   Replace the following. Use the locations tables in "Locations — FC 5074 I/O Tower" on page 688, "Locations — FC 5079 I/O Tower" on page 699, or "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695:
      - C08 - HSL I/O bridge

27. Go "Starting Point for All Problems" on page 4.

This ends the procedure.

LBSADP1

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* for information on servicing this failing item.

LBSADP2

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* for information on servicing this failing item.

LBSADP3

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* for information on servicing this failing item.

LBSADP4

The failing item is the Local Bus adapter card in an FC 5033, FC 5034, FC 5035 SPD migrated tower. Go to symbolic FRU LBSADP4 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* for information on servicing this failing item.

LBSADP5

The failing item is the Local Bus adapter card in an FC 5033, FC 5034, FC 5035 SPD migrated tower. Go to symbolic FRU LBSADP5 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* for information on servicing this failing item.

LBUSADP

The failing item is the HSL I/O bridge Card in an FC 5077 SPD Migrated Tower.

Go to symbolic FRU LBUSADP in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* for information on servicing this failing item.

This ends the procedure.

LOC_SYS

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.

This ends the procedure.

LPARCFG

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.as400.ibm.com/lpar` for additional support direction.

This ends the procedure.

LPARSUP

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 Unit 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.

This ends the procedure.

LSMEDIA

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. See "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683.
* 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. See "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683.
* 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. See "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683.

MABRCFG

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 a card position is listed with this failing item, then that is the card position 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 301. Return here after locating the card.

Symbolic FRUs

2. Use the following table to determine the corrective action:

Problem or Message	Meaning or Corrective Action
Multi-adapter bridge has no IOP for the I/O adapters	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. To locate the I/O adapters search for the card locations controlled by the multi-adapter bridge number in the DSA (see the "Card Position Tables" on page 264 in the Bus PIP Overview section of this document to determine all the card locations controlled by the multi-adapter bridge). To make the I/O adapters available to the system install an I/O processor under 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.
Card type not supported in this slot	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.
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	Meaning or Corrective Action
PCI I/O processor rejected assignment or removal of an IOA	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. 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. a. To find the IOP go to "BUS PIP PCIBUS-PIP1" on page 301 using the DSA in word 5 of the SRC. b. To find the IOA go to "BUS PIP PCIBUS-PIP1" on page 301 using the DSA in word 7 of the SRC. Use HSM concurrent maintenance functions to assign or remove the IOA. See the *iSeries Service Functions* manual for help in using the HSM concurrent maintenance functions. Assignment failures can be from: • The IOP already being at its capacity to accept IOA assignments. • The IOA is not a type supported by the IOP. Corrective action: • Add another IOP for LIC to assign the IOA to if necessary. • Re-assign the IOA to another IOP using concurrent maintenance. Removal failures: • This is a LIC problem and should be reported. • Call you next level of support.

This ends the procedure.

MA_BRDG

MA_BRDG: multi-adapter bridge.

This is the multi-adapter bridge hardware on a system bus.

1. Is the location information for this failing item available in the Service Action Log?

   No   Yes

   ↓   Use the location information in the Service Action Log and go on to step 4 on page 530 of this procedure.

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   Yes

Symbolic FRUs

    ⬇   Record the bus number value, BBBB, in word 7 of the SRC. See
"Breaking Down The SRC" on page 262 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 and go on to step 4 of
this procedure.

3. Record the bus number value, BBBB, of the IOP or IOA Direct Select Address.
See "SRC Address Formats" on page 846. 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.

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 22.

System Model, Tower, Expansion Unit or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation 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 Table 44 on page 671 and follow the "locations diagram" link for the processor feature code.	Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683.	Table 49 on page 684.
FC 5074 Expansion I/O tower	Tower Card	CB1	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
FC 5075 Expansion I/O tower	Tower Card	CB1	"Locations — FC 5075 I/O Tower" on page 692.	Table 51 on page 693.
FC 5078/0578 PCI expansion unit	Tower Card	CB1	"Locations — FC 5078, 0578 PCI Expansion Unit" on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	Tower Card	CB1	"Locations — FC 5079 I/O Tower" on page 699.	Table 50 on page 689.
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	Go to "Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server" on page 700.	Go to Table 53 on page 701.

This ends the procedure.

MASBUS

MASBUS: multi-adapter bridge card location.

The multi-adapter bridge detected a problem with a physical card location 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 item, then that is the card position 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 262 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. 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 23.

System Model, Tower, Expansion Unit or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation 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 Table 44 on page 671 and follow the "locations diagram" link for the processor feature code.	Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683.	Table 49 on page 684.
FC 5074 Expansion I/O tower	Tower Card	CB1	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
FC 5075 Expansion I/O tower	Tower Card	CB1	"Locations — FC 5075 I/O Tower" on page 692.	Table 51 on page 693.
FC 5078/0578 PCI expansion unit	Tower Card	CB1	"Locations — FC 5078, 0578 PCI Expansion Unit" on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	Tower Card	CB1	"Locations — FC 5079 I/O Tower" on page 699.	Table 50 on page 689.

Table 23. (continued)

System Model, Tower, Expansion Unit or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	Go to "Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server" on page 700.	Go to Table 53 on page 701.

This ends the procedure.

MEDIA

Dirty drive and or media. The media may also be defective.

1. If optical media, perform the following:
   a. Clean the drive (for 6330 DVD-RAM, use optical cleaning kit P/N19P0489).
   b. Clean the media and retry the operation (for 6330 DVD-RAM, use optical cleaning kit P/N19P0489).
2. If tape media, perform the following:
   a. Clean the recording head in the tape unit.
3. Attempt the failing operation again.

   Does the operation complete successfully?

   No   Yes

   ↓   The problem has been corrected.

          This ends the procedure.

4. Replace the media.

This ends the procedure.

MEMCFG

The system has encountered an invalid memory configuration. 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.

For memory DIMM location information, refer to "Memory Locations and Placement Rules" on page 720. For system location, see "Locations and Addresses" on page 671.

This ends the procedure.

MEMORY
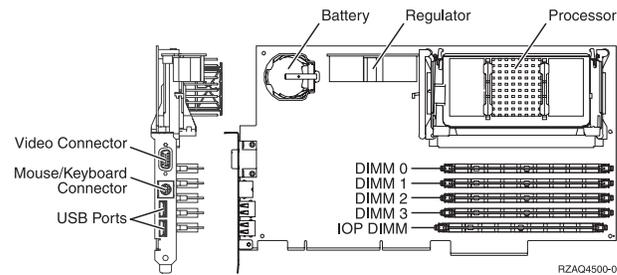
Figure 13. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.

One of the Pentium memory modules (DIMM 0, DIMM 1, DIMM 2, or DIMM 3) may be the failing item.

Feature	Size	Part Number
2795/2895	128 MB	29L0955
2796/2896	256 MB	29L0956
2797/2897	1 GB	29L0957

Notes:

1. At least 1 Pentium memory module is required in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.

2. PN 08J0653 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.

MSTORE

The failing item is the system processor main storage.

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   No

Symbolic FRUs

> ↓ Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓ Go to Step 4 of this procedure.

3. See "Locations — Model 270" on page 671. 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.
   - Power regulator in location R01
   - Memory card pairs in locations A-H

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓ Go to Step 6 of this procedure.

5. See "Locations — Model 270" on page 671. 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.
   - Processor Card in location M02
   - Memory Riser Card in location M01

6. This is a Model 820. See "Locations — Model 820" on page 683. 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.
   - Memory Riser Card in location M01
   - Memory Riser Card in location M02
   - Processor Card in location M03

NETSERV

The xSeries Server (IXS) is the failing item.

Call your xSeries Server (IXS) service provider.

NEXTLVL

Contact your next level of support for assistance. Save all data for your next level of support.

This ends the procedure.

NOFRUS

No failing items are identified for the reference code.

This ends the procedure.

NOMSUSE

System processor has detected no usable main storage. See the additional failing items that were reported with this failure.

This ends the procedure.

NSCABLE

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

The Windows NT Server device driver may be causing the problem. Refer to the Integration for Windows Server -- Setup information which is located in the Information Center at http://www.ibm.com/eserver/iseries/infocenter, or contact your next level of support for assistance.

This ends the procedure.

NTLANDD

The Windows NT Server Virtual LAN device driver may be causing the problem. Refer to the Integration for Windows Server -- Setup information which is located in the Information Center at http://www.ibm.com/eserver/iseries/infocenter, or contact your next level of support for assistance.

This ends the procedure.

NTOPSYS

The Windows NT Server Operating System may be causing the problem. Refer to the Integration for Windows Server -- Setup information which is located in the Information Center at http://www.ibm.com/eserver/iseries/infocenter, or contact your next level of support for assistance.

This ends the procedure.

NTUSER

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 Integration for Windows Server -- Setup information which is located in the Information Center at http://www.ibm.com/eserver/iseries/infocenter, or contact your next level of support for assistance.

This ends the procedure.

NTVSCSI

The Windows NT Server Virtual SCSI device driver may be causing the problem. Refer to the Integration for Windows Server -- Setup information which is located in the Information Center at http://www.ibm.com/eserver/iseries/infocenter, or contact your next level of support for assistance.

This ends the procedure.

OPT_CLN

Fiber Optic Cleaning Kit PN 46G6844. Use this kit 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

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 *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

OPTLDRV

An Optical Disk Drive in the Optical Library is failing.

Refer to the *3995 Optical Library Dataserver Maintenance Information Manual* for more information.

OPUSER

The failing item indicates that the operator of the system console or the control panel performed an incorrect action.

Reference the system operator guide.

PCIBUS

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 for information on servicing this symbolic FRU.

This ends the procedure.

PIOCARD

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 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. Continue with the next step of this procedure. Otherwise, determine the location of the card by using the DSA in the SRC. Record the Direct Select Address (DSA) which is word 7 of the SRC from the SAL display. To locate the card specified in the DSA go to "BUS PIP PCIBUS-PIP1" on page 301. Return here after locating the card and continue with this procedure.
2. Refer to FRU Locations and Failing components table for the frame or tower type where the card is located.
3. Use the system model, tower, expansion unit or machine type that you determined in step 1 of this procedure and the table below to exchange the FRU with the failing component.

System Model, Tower, Expansion Unit, or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
Model 270 Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	PCI IOP or IOA	C01 - C07	Use the Table 44 on page 671 and follow the ″locations diagram″ link for the processor feature code.	Use the Table 44 on page 671 and follow the ″FRU positions and Failing Components″ link for the processor feature code.
Model 270 Embedded IOP DSA = 000110xx Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	System Unit Backplane	MB1	Use the Table 44 on page 671 and follow the ″locations diagram″ link for the processor feature code.	Use the Table 44 on page 671 and follow the ″FRU positions and Failing Components″ link for the processor feature code.
Model 820	PCI IOP or IOA	C01 - C12	Figure 30 on page 683.	Table 49 on page 684.
Model 820 Embedded IOP DSA = 000110xx	System Unit Backplane	MB1	Figure 30 on page 683.	Table 49 on page 684.
FC 5074	PCI IOP or IOA	C01 - C07 C09 - C15	″Locations — FC 5074 I/O Tower″ on page 688.	Table 50 on page 689.
FC 5075	PCI IOP or IOA	C01 - C08	″Locations — FC 5075 I/O Tower″ on page 692.	Table 51 on page 693.
FC 5078/0578	PCI IOP or IOA	C01 - C07 C09 - C15	″Locations — FC 5078, 0578 PCI Expansion Unit″ on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	PCI IOP or IOA	C01 - C07 C09 - C15	″Locations — FC 5079 I/O Tower″ on page 699.	Table 50 on page 689.
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	Go to ″Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server″ on page 700.	Go to Table 53 on page 701.

This ends the procedure.

PGDPART

Note: See "Chapter 5. Locations, Addresses, and Part Listings" on page 667 for location information.

1. Is the SRC 1xxx 2600 or 2601?

   Yes   No

   ↓   Go to step 3 of this procedure.

2. Perform the following:

   a. Power off the frame.

   b. Check that the tower card ("TWRCARD" on page 578) is connected and seated properly.

   c. Check that the power supplies are connected and seated properly.

   d. Power on the frame.

   Is there a SRC 1xxx 2600 or 2601?

   No   Yes

   ↓   Exchange the following FRUs one at a time (for location information, see "Chapter 5. Locations, Addresses, and Part Listings" on page 667).

         a. Memory cards if installed. (see "Locations and Addresses" on page 671).

         b. Processor cards if installed. (see "Locations and Addresses" on page 671).

         This ends the procedure.

3. Is the SRC 1xxx 2602?

   No   Yes

   ↓   Perform "Power PIP9" on page 382 on the Model 270 FC 7104 System Unit Expansion.

4. Is the SRC 1xxx 2603?

   No   Yes

   ↓   If you are working on a server 270 with a sidecar, insure that the sidecar 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 sidecar 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). 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).

d. The correct configuration ID is 95 for a server 270 with an expansion unit and without a removable processor.

e. The correct configuration ID is 96 for a server 270 with an expansion unit and with a removable processor.

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 "Power PIP4" on page 371 for a model 270 system unit, or "Power PIP5" on page 373 for a Model 820 system unit, or "Power PIP9" on page 382 for a Model 270 FC 5075 System Expansion Unit, to isolate the failing item. If the configuration ID is incorrect, use the following to change the configuration ID.

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 will be blinking on and off (non-system unit frames only).

d. The correct configuration ID is 95 for a server 270 with an expansion unit and without a removable processor.

e. The correct configuration ID is 96 for a server 270 with an expansion unit and with a removable processor.

f. 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.

g. 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.

Try to re-IPL the system. If you cannot re-IPL the system and the SRC persists, then go to "Power PIP4" on page 371 for a model 270 system unit, or "Power PIP5" on page 373 for a Model 820 system unit, or "Power PIP9" on page 382 for a Model 270 FC 5075 System Expansion Unit, to isolate the failing item. For FC 5065/5066 or FC 5074/5079 expansion unit, perform "Power PIP6" on page 376, to isolate the failing item.

5. Is the SRC 1xxx 2604?

No   Yes

↓   Perform "Power PIP4" on page 371 for Model 270 system unit, or "Power PIP5" on page 373 for Model 820 system unit, or "Power PIP9" on page 382 for a Model 270 FC 7104 System Unit Expansion, to

isolate the failing item. For FC 5065/5066 or FC 5074/5079 expansion unit, perform "Power PIP6" on page 376, to isolate the failing item.

6. Is the SRC 1xxx 2221 or 2321?

   No   **Yes**

   ↓   The backplane card may be the failing item. See "BACKPLN" on page 490 to exchange the failing item (see "Locations and Addresses" on page 671). If the error did not go away, exchange the cable between the panel and the card, part 44H8022 or 44H8017 (see "Locations and Addresses" on page 671).

   This ends the procedure.

7. Is the SRC 1xxx 2222, 2223, 2322 or 2323?

   No   **Yes**

   ↓   See tower card ("TWRCARD" on page 578) only for these SRCs.

8. Is the SRC 1xxx 2224 or 2324?

   Yes   **No**

   ↓   Go to step 11 of this procedure.

9. Are you working on a unit with a SPD card enclosure with the 2735 card installed correctly?

   No   **Yes**

   ↓   Exchange the following parts one at a time:
   - 2735 optical Bus IOP – part 44H7791
   - SPD backplane – part 44H7994

   This ends the procedure.

10. Exchange the following parts one at a time:
    - PCI I/O card – part 45H1235 (see "Locations and Addresses" on page 671).
    - The cable between the SP/PCI I/O card and the PCI I/O card – part 44H8038 (see "Locations and Addresses" on page 671).
    - The SP/PCI/ I/O card – part 45H1226 (see "Locations and Addresses" on page 671).

    This ends the procedure.

11. Is the SRC 1xxx 6400 or 6401?

    Yes   **No**

    ↓   Go to "Starting Point for All Problems" on page 4.

12. Perform the following:
    a. Power off the system.
    b. In an expansion unit: Exchange the AC module ("ACMODUL" on page 482).
    c. Power on the system.

    Does the SRC 1xxx 6400 or 6401 continue to be displayed?

    Yes   **No**

    ↓   The SPCN card that was replaced in this step was the failing item.

    This ends the procedure.

13. Perform the following:
    a. Power off the system.
    b. Remove one of the regulators in position (expansion 1, 2) and install a new regulator (see "Locations and Addresses" on page 671).
    c. Power on the system.

    Is SRC 1xxx 6400 or 6401 displayed?

    Yes   No

    ↓   The regulator that was removed in this step is the failing item.

         This ends the procedure.

14. Perform the following:
    a. Power off the system.
    b. Remove the new regulator that was installed in step 13 and replace it with the original regulator.
    c. Remove the other untested regulator and install a new regulator.
    d. Power on the system.

    Is SRC 1xxx 6400 or 6401 displayed?

    Yes   No

    ↓   The regulator that was removed in this step is the failing item.

         This ends the procedure.

15. Perform the following:
    a. Power off the system.
    b. Remove the new regulator that was installed in step 14 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 it's place.

    d. Power on the system.

    Is SRC 1xxx 6400 or 6401 displayed?

    No   Yes

    ↓   Exchange the "BACKPLN" on page 490 in the expansion.

         This ends the procedure.

16. Perform the following:
    a. Install one of the cards you removed in step 15 of this procedure.
    b. Power on the system.

    Is the SRC 1xxx 6400 or 6401 displayed?

    No   Yes

    ↓   Power off the system and replace the last card installed in this step.

         This ends the procedure.

17. Repeat step 16 until all the cards have been reinstalled.

PLUS

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 "Chapter 2. Unit Reference Codes" on page 59.

This ends the procedure.

PPCIMIN

PPCIMIN: Primary PCI bus in an I/O expansion tower.

The failing component is the Tower Card in an FC 5075 expansion tower.

1. If you are working from the Service Action Log and a card position is listed with this failing component, then that is the card position where the error isolated. 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 262 for help in determining the bus number. Search for the bus number in HSM or the System Configuration Listing to determine which FC 5075 I/O tower contains the failing component.

2.

Tower	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
FC 5075	Tower Card	CB1	"Locations — FC 5075 I/O Tower" on page 692	Table 51 on page 693

This ends the procedure.

PPCISYS

The failing component is the primary PCI bus on the system unit backplane. Use the system Modeland the table below to exchange the FRU with the failing component.

Table 24.

System Model, Tower, Expansion Unit, or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
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 Table 44 on page 671 and follow the ″locations diagram″ link for the processor feature code.	Use the Table 44 on page 671 and follow the ″FRU positions and Failing Components″ link for the processor feature code.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683	Table 49 on page 684.

This ends the procedure.

PPCITWR

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 a FC 5074 expansion tower or a FC 5078/0578 PCI expansion 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 262 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 559 and return here.
3. If the problem still exists after powering on the tower, then exchange symbolic FRU "TWRPLNR" on page 579.

This ends the procedure.

PRI_PCI

PRI_PCI: Primary PCI bus.

This is a PCI bus generated under an HSL I/O bridge.

1. If you are working from the Service Action Log and a card position is listed with this failing item, then that is the card position 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 262 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.

Symbolic FRUs

2. Use the following table to determine which symbolic FRU or FRUs to go to for PRI_PCI:

System frame or I/O tower type containing the failing item:	Action:
Expansion I/O tower FC 5074, FC 5078/0578, or FC 5079	There are two potential failing items. Exchange symbolic FRU "SIADPCD" on page 559. If the problem still exists after powering on the frame or tower then exchange symbolic FRU "TWRPLNR" on page 579.
Expansion I/O tower FC 5075	Go to symbolic FRU "TWRBKPL" on page 578.
System unit Model 270 - All	Go to symbolic FRU "SYSBKPL" on page 575.
System unit Model 820 - All	
External xSeries Server	Go to symbolic FRU "SIADPCD" on page 559.

This ends the procedure.

PROC

The failing item is a system processor card.

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   No

   ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓   Go to Step 4 of this procedure.

3. See "Locations — Model 270" on page 671. Replace the System Unit Backplane in location MB1.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓   Go to Step 6 on page 545 of this procedure.

5. See "Locations — Model 270" on page 671. Replace the Processor Card in location M02.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

6. This is a Model 820. See "Locations — Model 820" on page 683. Replace the Processor Card in location M03.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

PROC0

The failing item is a system processor card.

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   No

   ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓   Go to Step 4 of this procedure.

3. See "Locations — Model 270" on page 671. Replace the System Unit Backplane in location MB1.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓   Go to Step 6 of this procedure.

5. See "Locations — Model 270" on page 671. Replace the Processor Card in location M02.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

6. This is a Model 820. See "Locations — Model 820" on page 683. Replace the Processor Card in location M03.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

PROC1

The failing item is a system processor card.

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   No

Symbolic FRUs

    ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓   Go to Step 4 of this procedure.

3. See "Locations — Model 270" on page 671. Replace the System Unit Backplane in location MB1.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓   Go to Step 6 of this procedure.

5. See "Locations — Model 270" on page 671. Replace the Processor Card in location M02.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

6. This is a Model 820. See "Locations — Model 820" on page 683. Replace the Processor Card in location M03.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

PROC2

The failing item is a system processor card.

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   No

   ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓   Go to Step 4 of this procedure.

3. See "Locations — Model 270" on page 671. Replace the System Unit Backplane in location MB1.

   Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓   Go to Step 6 on page 547 of this procedure.

5. See "Locations — Model 270" on page 671. Replace the Processor Card in location M02.

    Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

6. This is a Model 820. See "Locations — Model 820" on page 683. Replace the Processor Card in location M03.

    Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

PROC3

The failing item is a system processor card.

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   **No**

    ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

    Yes   **No**

    ↓   Go to Step 4 of this procedure.

3. See "Locations — Model 270" on page 671. Replace the System Unit Backplane in location MB1.

    Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

    Yes   **No**

    ↓   Go to Step 6 of this procedure.

5. See "Locations — Model 270" on page 671. Replace the Processor Card in location M02.

    Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

6. This is a Model 820. See "Locations — Model 820" on page 683. Replace the Processor Card in location M03.

    Note: Be sure to IPL in SLOW OVERRIDE mode after each replacement.

PWROC

A power supply load may be the failing item.

1. Is the SRC 1xxx 1B01, 1B02, 1B03 1B04, 1B06, or 1B07 on a Model 270 or 820 system unit?

    No   **Yes**

    ↓   For a Model 270, perform "Power PIP4" on page 371 to isolate the

failing item. For a Model 820, perform "Power PIP5" on page 373 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
    – Model 270 FC 22A7, 22A8, 22AA, 22AB, 23F4 23F5, 2248, 2250, 2252, 2253, 2422, 2423, 2424, 2434 or 2454 – part 24L1402
    – Model 270 FC 22A2, 22A4, 22A5, 2301, 2302, 23F0, 23F1, 23E7, 2422, 2429, 2430, 2431, 2432 or 2452 – part 04N5491
    – Model 820 – part 21P6417
- Power Supply P02 Model 820 – part 21P6417
- Power Supply P03 Model 820 – part 21P6417

   This ends the procedure.

2. Is the SRC 1xxx 1B05?

   No   Yes

   ↓   Replace the following part:
   - On a Model 270 with FC 22A7, 22A8, or 2423: regulator card – PN 04N4758
   - On a Model 270 with FC 22A2, 22A4, 22A5, or 2422: regulator card – PN 24L1687
   - On a Model 820: processor card, see "CCIN" on page 498.

3. Is the SRC 1xxx 1B11, 1B12, 1B13 1B14, 1B16 or 1B17 on a Model 270 sidecar (FC 7104), or SRC 1xxx 1B01, 1B02, 1B03 1B04, 1B06, 1B07 on a FC 5075 I/O Tower?

   No   Yes

   ↓   Perform "Power PIP9" on page 382 to isolate the failing item.

   Note: The failing item may be one of the following parts:
   a. Any part on the expansion power bus.
   b. Power Supply:
      - FC 7104 power supply P02 – part 04N5491
      - FC 5075 power supply P01 or P02 – part 21P6417

   the Power Supply P02 – part 04N5491.

4. Is the SRC 1xxx 1B01, 1B02, 1B03, 1B04, 1B05, 1B06 or 1B07 on a FC 5074/5079 or FC 5078/0578 expansion?

   No   Yes

   ↓   Use the following for FC 5074/5079:

   Perform "Power PIP6" on page 376 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 – part 90H6629
   c. Power Supply P02 – part 90H6629
   d. Power Supply P03 – part 90H6629

   Use the following for FC 5078/0578:

Perform "Power PIP8" on page 380 to isolate the failing item.

The failing item may be one of the following parts:

a. Any part on the expansion bus.

b. Power Supply P01 – part 21P4970

c. Power Supply P02 – part 21P4970

This ends the procedure.

5. Is the SRC 1xxx 1810, 1820, 1830, or 1840 on a FC 5065/5066 expansion?

   No   **Yes**

   ↓   Perform POW-PIP6 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* 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 – part 90H6629

   c. Power Supply P02 – part 90H6629

   d. Power Supply P03 – part 90H6629

   This ends the procedure.

6. Is the SRC 1xxx 2201 or 2301?

   No   **Yes**

   ↓   Perform Power PIP1 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* 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 - part 21H9364

   c. Power Supply P01 - part 44H7779

   d. Power Supply P02 - part 44H7779

   This ends the procedure.

7. Is the SRC 1xxx 2202 or 2302?

   No   **Yes**

   ↓   Perform Power PIP2 in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* 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 P03 – part 44H7777

   c. Power Supply P04 – part 44H7777

   This ends the procedure.

8. Is the SRC 4414?

   Yes   **No**

   ↓   **This ends the procedure.**

9. Perform "Power PIP6" on page 376 to isolate failing item, then return here and continue.

   Is the SRC 4414 still present?

No   Yes

↓ Replace the battery power unit charger – part 97H7316.

  This ends the procedure.

10. Power on the system. Does the expansion tower that was failing power on?

  Yes **No**

  ↓ Go to "Starting Point for All Problems" on page 4.

    This ends the procedure.

11. Remove the AC line cord from the outlet. Does a battery power unit, charger fault occur?

  Yes **No**

  ↓ **This ends the procedure.**

12. Replace the battery power unit charger – part 97H7316.

  This ends the procedure.

PWRREG

Perform any SPCN-PIPs before exchanging any parts.

A power regulator card may be failing.

Perform the following to determine the part number for the failing power regulator:

1. Is the SRC 1xxx 1611, 1612, 1613, 1621, 1622 or 1623?

  No **Yes**

  ↓

    Power regulator 1 or 2 is the failing item. Use the Table 20 on page 501 in symbolic FRU CCIN to determine the processor type to be replaced.

2. Is the SRC 1xxx 2611?

  No **Yes**

  ↓

    For Feature Code 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422 and 2452:

    • Replace Regulator R01 – part 04N6319.

    For all other feature codes, use the Table 20 on page 501 in symbolic FRU CCIN to determine the processor type to be replaced.

3. Is the SRC 1xxx CE1A?

  No **Yes**

  ↓ Power regulator R03 is the failing item. The failing item is in expansion I/O tower (FC 5077) – part 21H4829

    This ends the procedure.

4. Is the SRC 1xxx 6018, 6118, 6518, 6818, 6918, 601A, or CE18?

  No **Yes**

  ↓ Power regulator 1, 2, or 3 is the failing item. Perform "SPCN-PIP1" in

Migrated Expansion Tower Problem Analysis, Repair and Parts to determine the failing item. The following list shows the possible failing items:

- System Unit Expansion (FC 507x) – part 87G6049
- Storage Expansion Tower (FC 508x) – part 17G1209
- Expansion I/O tower (FC 5077) – part 21H4829

This ends the procedure.

5. Is the SRC 1xxx 6218, 6318, 631A, 6618, 6718, 671A, or 6A18?

    No   **Yes**

    ↓   Power regulator 1 is the failing item. Perform ″SPCN-PIP1″ in *Migrated Expansion Tower Problem Analysis, Repair and Parts* to determine the failing item. The following list shows the possible failing items:

        - System Unit Expansion (FC 507x) – part 87G6049
        - Storage Expansion Tower (FC 508x) – part 17G1209
        - Expansion I/O tower (FC 5077) – part 21H4829

    This ends the procedure.

6. Is the SRC 1xxx 6x38 or 6x3A?

    No   **Yes**

    ↓   Power regulator 2 is the failing item. Perform ″SPCN-PIP1″ in *Migrated Expansion Tower Problem Analysis, Repair and Parts* to determine the failing item. The following list shows the possible failing items:

        - System Unit Expansion (FC 507x) – part 87G6049
        - Storage Expansion Tower (FC 508x) – see next FRU in the SRC list
        - Expansion I/O tower (FC 5077) – part 21H4829

    This ends the procedure.

7. Is the SRC 1xxx 6x58?

    No   **Yes**

    ↓   Power regulator 3 is the failing item. The following list shows the possible failing items:

        - System Unit Expansion (FC 507x) – see next FRU in the SRC list
        - Storage Expansion Tower (FC 508x) – see next FRU in the SRC list
        - Expansion I/O tower (FC 5077) – part 21H4829

    This ends the procedure.

8. Is the SRC 1xxx 7201, 7202, 7203, or 7401?

    No   **Yes**

    ↓   One of the power regulators is the failing item. The following list shows the possible failing items:

        - System Unit Expansion (FC 507x) – part 87G6049
        - Storage Expansion Tower (FC 508x) – part 17G1209
        - Base I/O tower (FC 5077) – part 21H4829
        - Symbolic FRU BATCHGR

This ends the procedure.

9. Is the SRC 1xxx B101 or B102?

   No   **Yes**

   ↓   If the system can be powered on with this SRC, perform symbolic FRU BATCHGR, and then continue. One of the power regulators is the failing item. The following list shows the possible failing items:
   - System Unit – part 23L3603 *or* 21H7763
   - System Unit Expansion (FC 507x) – part 87G6049
   - Storage Expansion Tower (FC 508x) – part 17G1209
   - Base I/O tower (FC 5077) – part 21H4829
   - Symbolic FRU BATCHGR

   This ends the procedure.

10. Is the SRC 1xxx B201 or B202?

    No   **Yes**

    ↓   If the system can be powered on with this SRC, perform symbolic FRU BATCHGR, and then continue. The battery unit is reporting an over-current. The following list shows the possible failing items:
    - Regulator – part 23L3603 *or* 21H7763
    - Battery charger – part 21H7060
    - Symbolic FRU BATCHGR

    This ends the procedure.

11. Go to "Starting Point for All Problems" on page 4.

    This ends the procedure.

PWRSPLY

A power supply may be the failing item.

Note: Find the unit reference code in the following list to determine the failing power supply and the part number. Then see "Chapter 5. Locations, Addresses, and Part Listings" on page 667 to determine the location of the failing item.

Attention: Power supply PN 21P6417 **must have** the protective cover on connector J4 removed before installation.

Perform the following to determine the part number for the failing power supply:

1. Is the SRC 1xxx-15xx?

   No   **Yes**

   ↓   For 1xxx-15xx SRCs in a system unit frame, use these tables:

   Note: For 1xxx-1510, 1520 or 1530 SRCs, POW-PIP11 must be performed before replacing parts.

   Table 25. Model 820

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513, 1514, 1516	P01	21P6417

Table 25. Model 820 (continued)

Unit Reference Code	Power Supply	Part Number
1520, 1521, 1522, 1523, 1524, 1526	P02	21P6417
1530, 1531, 1532, 1533, 1534, 1536	P03	21P6417

Notes:

a. If the new power supply doesn't fix the problem, reinstall the original power supply.

b. Try the new power supply in each of the other positions listed in the table.

c. If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

Note: For SRCs 1xxx-1510, 1520, and 1530, exchange the power distribution backplane if a problem prevails after replacing the power supply – part 21P6416.

Table 26. Model 270 FC 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, or 2454:

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513, 1514, 1516	P01	24L1402

Table 27. Model 270 FC 22A2, 22A4, 22A5, 2301, 2302, 23F0, 23F1, 23E7, 2422, 2429, 2430, 2431, 2432 or 2452:

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513, 1514, 1516	P01	04N5491

For 1xxx-15xx SRCs in a expansion I/O frame, use these tables:

Table 28. FC 5075

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513, 1514, 1516	P01	21P6417
1520, 1521, 1522, 1523, 1524, 1526	P02	21P6417

Notes:

a. If the new power supply doesn't fix the problem, reinstall the original power supply.

b. Try the new power supply in each of the other positions listed in the table.

c. If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

Symbolic FRUs

Table 29. FC 5078/0578

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513, 1514, 1516	P01	21P4970
1520, 1521, 1522, 1523, 1524, 1526	P02	21P4970

Notes:

a. If the new power supply doesn't fix the problem, reinstall the original power supply.

b. Try the new power supply in each of the other positions listed in the table.

c. If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

Table 30. Single Line Cord – FC 5065/5066 or FC 5074/5079

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513	P01	90H6629
1520, 1521, 1522, 1523	P02	90H6629
1530, 1531, 1532, 1533	P03	90H6629

Table 31. Dual Line Cord – FC 5065/5066 or FC 5074/5079

Unit Reference Code	Power Supply	Part Number
1510, 1511, 1512, 1513	P01	21P5383
1520, 1521, 1522, 1523	P02	21P5383

Notes:

a. If the new power supply doesn't fix the problem, reinstall the original power supply.

b. Try the new power supply in each of the other positions listed in the table.

c. If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

2. Is the SRC 1xxx-1Bxx?

   No   **Yes**

   ↓   For FC 7104 (270 Internal Expansion)

   Table 32. For FC 7104 (Internal Expansion):

Unit Reference Code	Power Supply	Part Number
1B13, 1B14, 1B16, 1B17	P02	04N5491

3. Is the SRC 1xxx-2600, 2601, 2602, 2603, or 2604?

   No   **Yes**

↓

Table 33. For 1xxx-2600 or 2601 SRCs in a Model 270 or Model 820 system unit or FC 5065/5066, 5074/5079, 5075 secondary I/O frame, use this table:

System or Feature Code	Power Supply	Part Number
Model 270	P01	Use step 1 on page 552, Mod 270 by FC
Model 820	P01, P02, P03	21P6417
FC 5075	P01, P02	21P6417
FC 5065, FC 5066, FC 5074, FC 5079	P01, P02, P03 – Single Line Cord	90H6629
FC 5065, FC 5066, FC 5074, FC 5079	P01, P02 – Dual Line Cord	21P5383

Notes:

a. If the new power supply doesn't fix the problem, reinstall the original power supply.

b. Try the new power supply in each of the other positions listed in the table.

c. If the problem still is **not** fixed, reinstall the original power supply and go to the next FRU in the list.

4. Is the SRC 1xxx CD00?

   No   **Yes**

   ↓   The expansion unit is not detecting any power supplies installed. If a power supply is installed replace the following one at a time:

   In the expansion unit frame FC 5077, 5073, and 5083:
   - AC Module – part 21H7697

   In any other expansion unit frame with AC Module:
   - AC Module – part 87G6300

   This ends the procedure.

5. Is the SRC 1xxx 7xxx?

   No   **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 ″System Unit Locations and Addresses″ in *Migrated Expansion Tower Problem Analysis, Repair and Parts* to determine the location of the failing item.

Unit Reference Code	Power Supply	Part Number
7x01	AC Module (except 5073, 5077, 5083)	87G6300
	AC Module 5073, 5077, 5083	21H7697

Symbolic FRUs

Unit Reference Code	Power Supply	Part Number
7x02	Feature 2 (all except 5073, 5077, 5083)	87G6290
	5073, 5077, 5083	87G6110
7x03	Feature 1 (all except 5073, 5077, 5083)	87G6290
	5073, 5077, 5083	87G6110

This ends the procedure.

6. Is the SRC 1xxx 2131, 2240, or 2311?

    No   **Yes**

    ↓   The failing item is power supply 1 on a base expansion unit:
- FC 5033 – part 21H9364
- FC 5034, 5035 – part 44H7779

        Note: Model 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* book.

        This ends the procedure.

7. Is the SRC 1xxx 2132, 2142, 2152, 2212, 2312, or 2332?

    No   **Yes**

    ↓   The failing item is power supply 2 on a internal expansion unit: FC 5035 – part 44H7779.

        Note: Model 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* book.

        This ends the procedure.

8. Is the SRC 1xxx 2133, 2143, 2153, 2313, or 2333?

    No   **Yes**

    ↓   The failing item is power supply 3 on a internal expansion unit:
- Model FC 5034, 5035 – part 44H7777

        Note: Model 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* book.

        This ends the procedure.

9. Is the SRC 1xxx 2134, 2144, 2154, 2314, or 2334?

    No   **Yes**

↓ The failing item is power supply 4 on the expansion unit of a Model FC 5035 system – part 44H7777.

Note: Model 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* book.

This ends the procedure.

10. Is the SRC 1xxx 2141, 2151, or 2211?

   No   **Yes**

   ↓ The failing item is power supply 1 on a base expansion unit:
   * Model FC 5033 – part 21H9364.
   * Model FC 5034, 5035 – part 44H7779.

   Note: Model 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* book.

   This ends the procedure.

11. Is the SRC 1xxx 2330 or 2331?

   No   **Yes**

   ↓ The failing item is power supply 1 on a base expansion unit:
   * Model FC 5033 – part 21H9364.
   * Model FC 5034, 5035 – part 44H7779.

   Note: Model 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* book.

   This ends the procedure.

12. Is the SRC 1xxx 2213?

   No   **Yes**

   ↓ See next failing item.

   This ends the procedure.

13. Is the SRC 1xxx 2210?

   No   **Yes**

   ↓ The failing item is Power Supply 1 on the base expansion unit, or Power Supply 2 on the internal expansion unit of a Model FC 5035 expansion.
   * Model FC 5033 – part 21H9364.
   * Model FC 5034, 5035 – part 44H7779.

   This ends the procedure.

14. Is the SRC 1xxx 2610?

    No   Yes

    ↓   Check the memory cards(2) and processor card for correct installation
            and that it is seated properly. If SRC prevails, replace the following 1
            at a time:
            - Power supply – part 21P6417.
            - Memory cards.
            - Processor card.

            This ends the procedure.

15. Go to "Starting Point for All Problems" on page 4.

    This ends the procedure.

QSYSOPR

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.

This ends the procedure.

REFER

Consult the appropriate *3995 Optical Library Dataserver Maintenance Information
Manual* to assist in analyzing the URC.

This ends the procedure.

REM_SYS

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.

This ends the procedure.

RIOPORT

The system processor has detected an error on the HSL port.

Use the information in the Location column of the Reference Code table and the
information from "Locations and Addresses" on page 671 to determine the physical
mapping of the information from the Location column.

Check the cabling and connections from the failing item location. Follow the
procedure in Symbolic FRU "SIRGCBL" on page 563.

RMDEV

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* for FRU isolation instructions.

SIADPCD

SIADPCD: High Speed Link I/O bridge card.

The failing component is the HSL I/O bridge card in a FC 5074, FC 5078/0578, or FC 5079 (1.8m expansion tower) I/O expansion tower, or the Integrated xSeries Adapter Card in an xSeries server.

1. If you a 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 262for 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.

2. Determine the tower type in which the failing component is located and exchange the FRU indicated using the links to the service information for that FRU.

Table 34.

Tower or Expansion Unit Type	Name of FRU to Exchange	FRU Position	Link to Locations Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
FC 5074	HSL I/O Bridge Card	C08	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
FC 5078/0578	HSL I/O Bridge Card	C08	"Locations — FC 5078, 0578 PCI Expansion Unit" on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	HSL I/O Bridge Card	C08	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	Go to "Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server" on page 700.	Go to Table 53 on page 701.

This ends the procedure:

SICNTRL

SICNTRL: Network Interface Controller (NIC).

The failing component is the Network Interface Controller (NIC). Use the System Modeland the table below to determine the FRU containing the NIC. Exchange the FRU indicated in the table below using the information provided in the table.

Table 35.

System Model, Tower, Expansion Unit, or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
Model 270 Record the processor feature code (characters 5 through 8 of function 20 on the control panel)	**Use the Table 44 on page 671 to determine the name and location of the FRU containing the NIC.**		**Use the Table 44 on page 671 and follow the "locations diagram" link for the processor feature code.**	**Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.**
Model 820	Processor Card	M03	Figure 30 on page 683	Table 49 on page 684.

This ends the procedure.

SIIOADP

SIIOADP: High Speed Link (HSL) I/O bridge.

This is the HSL I/O bridge hardware in either a system unit, an expansion I/O tower or an SPD migrated tower. Follow the procedure to determine the failing component.

1. Was the frame ID **and** the card position listed in the SAL information?

   No   Yes

   ↓   Go to step 9 on page 561 of this procedure.

   This ends the procedure.

2. Was a frame ID listed in the SAL entry or do you know the frame ID?

   No   Yes

   ↓   The failing component is the HSL I/O bridge in that frame. Record the frame type and go to step 9 on page 561 of this procedure.

3. Is there an HSL loop number listed for this FRU in the SAL entry?

   No   Yes

   ↓   Go to step 7 on page 561 of this procedure.

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   Yes

   ↓   Convert the bus number in the DSA (BBBB) to decimal. For help in converting the DSA, see Table 7 on page 263. Perform "BUS PIP HSL-04" on page 284, then return here and continue with step 9 on page 561 of this procedure.

6. Record the bus number value, BBBB, in word 7 of the SRC. See "Breaking Down The SRC" on page 262 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.

If the bus number is in the range 4 through 23 (0004 through 0017 hexadecimal), then continue with this step. Otherwise, go to step 9 of this procedure.

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 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 for information on servicing this failing component.

This ends the procedure.

7. Have you already determined the frame ID and frame type of this failing component, using another procedure or symbolic FRU?

    No   **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. Go to step 9 of this procedure.

8. Perform "BUS PIP HSL-04" on page 284, then return here and continue with step 9 of this procedure.

9. Use the system model, frame, tower or expansion unit type and the table below to determine the service information for the failing component.

Table 36.

System Model, Tower, Expansion Unit or Machine Type	Name of FRU to Exchange	FRU Position	Link to Locations Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation 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 Table 44 on page 671 and follow the "locations diagram" link for the processor feature code.	Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683.	"Locations — Model 820" on page 683.
FC 5074	HSL I/O Bridge Card	C08	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
FC 5075	Tower Card	CB1	"Locations — FC 5075 I/O Tower" on page 692.	Table 51 on page 693.

Table 36. (continued)

System Model, Tower, Expansion Unit or Machine Type	Name of FRU to Exchange	FRU Position	Link to Locations Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
FC 5078/0578	HSL I/O Bridge Card	C08	"Locations — FC 5078, 0578 PCI Expansion Unit" on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	HSL I/O Bridge Card	C08	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	Go to "Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server" on page 700.	Go to Table 53 on page 701.
FC 5077 SPD Migrated Tower	Go to symbolic FRU LBUSADP in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* book.			
FC 5033, FC 5034, or FC 5035 SPD Migrated Tower	Go to symbolic FRU CVTCARD in the *Migrated Expansion Tower Problem Analysis, Repair and Parts* book.			

This ends the procedure.

SI_PHB

SI_PHB: high-speed link PCI host bridge.

The HSL I/O bridge hardware in a system unit or I/O expansion tower is failing. Follow the procedure to identify the failing component to exchange.

1. 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 in this procedure. Otherwise, record the bus number value, BBBB, in word 7 of the SRC, see "Breaking Down The SRC" on page 262 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 system model, tower or expansion unit or machine type and the table below to determine the service information for the failing component.

Table 37.

System Model, Tower, Expansion Unit, or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation 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 Table 44 on page 671 and follow the "locations diagram" link for the processor feature code.	Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683.	Table 49 on page 684.
FC 5074	HSL I/O Bridge Card	C08	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
FC 5075	Tower Card	CB1	"Locations — FC 5075 I/O Tower" on page 692.	Table 51 on page 693.
FC 5078/0578	HSL I/O Bridge Card	C08	"Locations — FC 5078, 0578 PCI Expansion Unit" on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	HSL I/O Bridge Card	C08	"Locations — FC 5079 I/O Tower" on page 699.	Table 50 on page 689.
External xSeries Server	Integrated xSeries Adapter Card	Follow the HSL cables.	Go to "Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server" on page 700.	Go to Table 53 on page 701.

This ends the procedure.

SIRGCBL

SIRGCBL: high-speed link (HSL) loop cable.

This failing component is an HSL loop cable, the HSL loop connections (external or embedded) or an HSL interposer card in an HSL loop.

1. Were you sent to this symbolic FRU as the result of a B4xx SRC?

   No   Yes

   ↓   Use the location given in the SRC table to determine the failing HSL port. In the table below is a list of system models, towers, expansion units and machine types with the HSL connections in each.

Symbolic FRUs

2. The loop number may be given in the location field 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 are system models, towers, expansion units and machine types with their corresponding HSL connections in each of them.

Table 38.

System Model, Tower, Expansion Unit or Machine Type	HSL Cable or Connections
Model 270 a. Record the processor feature code (characters 5 through 8 of function 20 on the control panel). b. Use the Table 44 on page 671 to determine the name and location of the FRU containing the Network Interface Controller (NIC).	For all Model 270 systems • There is an HSL ribbon cable from the system unit backplane (position MB1) to the external HSL ports on the frame. For systems where the Network Interface Controller (NIC) is embedded in the system unit backplane (position MB1) • There is an internal HSL connection from the NIC to the HSL I/O bridge embedded in the system unit backplane. • 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. For systems where the Network Interface Controller (NIC) is embedded in the processor card (position M02) • 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). • 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.
Model 820	• There is an HSL ribbon cable from the system unit backplane (position MB1) to the external HSL ports on the frame. • 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). • 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.
FC 5074	• External HSL ports on the HSL I/O bridge card in position C08.
FC 5075	• External HSL ports on the tower frame. • Internal ribbon cable connecting the frame to the tower card in position CB1.

Table 38. (continued)

System Model, Tower, Expansion Unit or Machine Type	HSL Cable or Connections
FC 5078/0578	• 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	• External HSL ports on the frame. • An HSL interposer card inside the frame behind the external HSL ports. • An internal ribbon cable connecting the Tower Card in position C00 to the HSL interposer card inside the frame behind the external HSL ports.
FC 5077 SPD migrated towers	• External HSL ports on the frame. • An HSL interposer card in position S08.

This ends the procedure.

SIRGCFG

An invalid configuration was detected on an HSL loop during IPL.

The 4 rightmost characters of word 4 contains a Program Return Code (PRC) which describes the problem detected. The leftmost 4 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. If the problem persists contact your next level of support.
xxxx 3200	CLUSTERED SYSTEM(S) ON LOOP WITH SPD MIGRATED TOWER	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	Only one migration tower is supported on a system. Remove the additional migration towers.

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PRC in Word 4 of the SRC	Problem Identified	Corrective Action
xxxx 3207	SPD MIGRATED TOWER NOT ON FIRST HSL LOOP	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	See "Corrective Action for xxxx 3212" 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 for the model of the system you are working on. Links to the "FRU locations and Failing Components" tables are listed below in step 4.
   - For Model 270 use the processor feature and the link in step 4 to the "Model 270 Diagrams and Tables by Processor Feature Code" table to determine the correct "FRU Locations and Failing Components" table to link to.
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 Removal and Installation procedure for the FRU containing the NIC.
4. Links to "FRU Locations and Failing Components" tables:
   - For Model 270, use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.
   - For model 820, see Table 49 on page 684.

SIRSTAT

An informational status indication for an HSL loop is identified in the SRC.

The rightmost 4 characters of word 4 in the SRC is the program return code (PRC) which indicates the HSL status. The leftmost 4 characters of word 7 in the SRC indicate the HSL loop number in hexadecimal format.

PRC in Word 4	Indicated status
3205	During IPL LIC determined that the loop was not complete. 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 a FC 5077 migrated tower which does not have all three bus adapter cards installed. 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 with a ″3206″ PRC in word 4, from the same IPL, it means that the problem no longer exists and the SAL entry can be closed. This error may also appear in the SAL if all 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.
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**″ below.
3210	An HSL link switched to a slower speed. The link is designed to run at a faster speed. Exchange the HSL I/O bridge.

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 (SIRGCBL) in this document. If you are working from the SAL, then only the FRU(s) required for this error will be displayed.

1. If you are working with a Service Action Log (SAL) entry then perform the following, otherwise go to step 2 of this procedure.
   - If the SAL entry has cable FRU(s) (**SIRGCBL** in the part number field) listed with a loop number, frame ID and port label identified with the cable FRU, then go to step 8 of this procedure.
   - If the SAL entry has cable FRU(s) (**SIRGCBL** in the part number field), but the loop number, frame ID, and port label are not **all** listed with the cable FRU, then go to step 2 of this procedure.
   - If the SAL entry does not list any cable FRUs (SIRGCBL 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.

   This ends the procedure.

2. Perform the following steps to determine the loop number, frame ID and the port label where the CRC errors have been detected. As you follow the steps, record the information on the "Appendix I. HSL Cable Location Form" on page 881.

3. Examine word 7 of the SRC. The loop number is the leftmost four digits of word 7 in the SRC. The loop number is displayed in hexadecimal format. Convert the bus number to decimal format, (as it is shown in HSM) using the Table 7 on page 263. Record both the hexadecimal loop number and the

decimal loop number in the "Appendix I. HSL Cable Location Form" on page 881. If the loop is an internal loop on a model 270 then record *"Internal"* on the worksheet.

4. Examine word 5 of the SRC. The frame ID is the leftmost four digits of word 5 in the SRC. The frame ID is displayed in hexadecimal format. You must convert the frame ID to decimal format to match what is displayed on the Op Panel of that frame. Record the both the hexadecimal and decimal frame IDs in the "Appendix I. HSL Cable Location Form" on page 881 as the *"From Frame ID"*.

   Note: A frame ID of 0000 is valid at this point in the procedure.

5. Is the frame ID 0000 **-OR-** (is the frame ID 0001 and is the system a model 270)?

   Yes   No

   ↓   Go to step 7 of this procedure.

6. Frame ID zero 0000 indicates the Network Interface Controller. Use the Loop number and the "Converting From HSL Loop Number to Port Labels on the System Unit or Processor Tower" on page 266 to determine which HSL port labels you will be working with on the NIC. Record the loop's HSL port labels on the NIC for use in a following step or steps in this procedure. Record the loop's HSL port labels on the NIC for use in a following step or steps in this procedure.

7. Determine which HSL port label the cable is connected to on the frame. The port number indicator is in the rightmost four characters of word 5 in the SRC. The port number indicator in word 5 identifies either the *"x0" or "x1"* HSL port label on the frame. Use the port number indicator and the following table to determine if you are working with the *"x0"* port or the *"x1"* port label. Record the port location label you will be working with on the "Appendix I. HSL Cable Location Form" on page 881 as the *"From HSL Port Label"*.

Table 39. Determining which HSL Port Label to Use

Frame ID	Port Number Indicator in Rightmost Four Characters of Word 5	Use HSL Port Label:

0000	0000	• Models 840 / SB3 use: *"x0"*
		• Models 270, 820, 830 / SB2
		  – On loop 256 -> Neither port, the connection is internal to the internal HSL I/O Bridge
		  – Other than loop 256 use: *"x0"*

	0001	Use: *"**x1**"* **Unless** The "Converting From HSL Loop Number to Port Labels on the System Unit or Processor Tower" on page 266 indicated that the loop is the Internal loop on some model 270 processor features
	0002	Use: *"x0"*

Table 39. Determining which HSL Port Label to Use (continued)

Frame ID	Port Number Indicator in Rightmost Four Characters of Word 5	Use HSL Port Label:
	0003	Use: "x1"
0001 - Models 270, 820, 830 / SB2	0000	Internal Connection to NIC
	0001	Use: "x0" **OR** Internal to NIC on some model 270 processor features
0001 - Model 840 / SB3	0000	Use: "0"
	0001	Use: "1"
Other than 0000 or 0001	0000	Use: "0"
	0001	Use: "1"

8. Are all of the following true?
   a. The system model is 820.
   b. The frame ID is 0000.
   c. The port number indicator in word 5 is 0000.

   No   Yes

   ↓   The port identified is an internal connection on the Network Interface Controller (NIC). Exchange the NIC using "SICNTRL" on page 559.

   This ends the procedure.

9. Are all of the following true?
   a. The system model is 820.
   b. The frame ID is 0001.
   c. The port number indicator in word 5 is 0000.

   No   Yes

   ↓   The port identified is an internal connection on the embedded HSL I/O Bridge. Exchange the HSL I/O Bridge using "SIIOADP" on page 560.

   This ends the procedure.

10. Are all of the following true?
    a. The system model is 270.
    b. The frame ID is 0000.
    c. The port number indicator in word 5 is 0000.

    No   Yes

    ↓   The port identified is an internal connection on the Network Interface Controller (NIC). Exchange the NIC using "SICNTRL" on page 559.

    This ends the procedure.

11. Are all of the following true?
    a. The system model is 270.
    b. The frame ID is 0001.
    c. The port number indicator in word 5 is 0000.

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> **No   Yes**
>
> ↓   The port identified is an internal connection on the embedded HSL I/O Bridge. Exchange the HSL I/O Bridge using "SIIOADP" on page 560.
>
> **This ends the procedure.**

12. Are all of the following true?

   a. The system model is 270.

   b. The frame ID is 0000.

   c. The port number indicator in word 5 is 0001.

   d. Loop 256 is embedded internally on model 270 systems with this processor feature number (determined in "Converting From HSL Loop Number to Port Labels on the System Unit or Processor Tower" on page 266).

   > **No   Yes**
   >
   > ↓   The port identified is an internal connection on the Network Interface Controller (NIC). Exchange the NIC using "SICNTRL" on page 559.
   >
   > **This ends the procedure.**

13. Are all of the following true?

   a. The system model is 270.

   b. The frame ID is 0001.

   c. The port number indicator in word 5 is 0001.

   d. Loop 256 is embedded internally on model 270 systems with this processor feature number (determined in "Converting From HSL Loop Number to Port Labels on the System Unit or Processor Tower" on page 266).

   > **No   Yes**
   >
   > ↓   The port identified is an internal connection on the embedded HSL I/O Bridge. Exchange the HSL I/O Bridge using "SIIOADP" on page 560.
   >
   > **This ends the procedure.**

14. Is the frame ID 0000?

   > **No   Yes**
   >
   > ↓   Frame ID 0000 is indicating the system unit on models 270, 820, 830 / SB2 or the processor tower on models 840 / SB3.
   >
   > - For models 270, 820 and 830 / SB2 use 0001 as the frame ID for the remainder of this procedure. Change the "From Frame ID" in the "Appendix I. HSL Cable Location Form" on page 881 to 0001.
   >
   > - For models 840 / SB3 use 0002 as the frame ID for the remainder of this procedure. Change the "From Frame ID" in the "Appendix I. HSL Cable Location Form" on page 881 to 0002.

15. Is the frame ID 0001?

   > **No   Yes**
   >
   > ↓   Go to step 20 of this procedure.

16. You will be exchanging an external HSL cable. Determine if there are any other systems connected to the loop and return here. "BUS PIP HSL-06" on page 287 will help you determine if there any other systems connected to the loop.

17. Are there any other systems connected to the loop?

Yes   No

↓   Go to step 20 of this procedure.

18. There may be more than one frame on the loop with the frame ID that you are working with. Determine if there is more than one frame on the loop that has the frame ID you are working with. Perform "Bus PIP HSL-07" on page 287. Then return here and continue with the next step of this procedure.

19. Is there another frame on the loop with the same frame ID that you are working with?

    No   Yes

    ↓   There is not enough information in the SRC to determine which of the frames with the same ID is having the CRC errors. Perform the following steps, beginning with step 20 for all the frames on the loop that have the frame ID you are working with.

20. The cable you are exchanging is having CRC errors at the end identified by the frame ID and HSL port label that you determined in this procedure or from the SAL entry. Perform "Bus PIP HSL-08" on page 288 to determine the frame ID and HSL port label of the other end of the cable that you will be exchanging and return here. You will be completing the "Appendix I. HSL Cable Location Form" on page 881.

21. Is the HSL cable optical?

    Yes   No

    ↓   Examine the screws holding the connector at the end of the cable that was 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. When exchanging the cable, use the information provided in the FRU Positions and Failing Components table for the frame type to which the cable is connected. Go to step 23 of this procedure.

22. It is possible the optical connections need cleaning. You can choose to clean the cable connections at each end without exchanging the cable. Use "OPT_CLN" on page 536 for information on cleaning the connections. If you choose to exchange the HSL cable that you have identified, use the information provided in the FRU Positions and Failing Components table for the frame type to which the cable is connected.

23. To exchange an HSL cable follow the references below to the frame type that the cable is connected to at the "From Frame ID" end:

    • For Model 270 record the processor feature code (characters 5 through 8 of function 20 on the control panel). Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for the processor feature code.

    • For Model 820, see Table 49 on page 684.

    • For FC 5074, see Table 50 on page 689.

    • For FC 5075, see Table 51 on page 693.

    • For FC 5078, see Table 52 on page 696.

    • For the xSeries, see Table 53 on page 701.

This ends the procedure.

SLOTERR

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.

1. Is there a single card position listed in the SAL for this failing item?

   No   **Yes**

   ↓   Go to step 6 of this procedure.

2. Is there a range of card positions (PCI Bridge Set) listed in the SAL for this failing item?

   No   **Yes**

   ↓   LIC could not identify the slot with the error. Perform "BUS PIP MAB-03" on page 297 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 muti-adapter bridge function number in the DSA (see Table 7 on page 263).

   Is the multi-adapter bridge function number less than or equal to 7 ?

   Yes   **No**

   ↓   LIC could not identify the slot with the error. Perform "BUS PIP MAB-03" on page 297 to determine the card position with the failure.

           This ends the procedure.

5. Go to "BUS PIP PCIBUS-PIP1" on page 301. Return here after locating the card.

6. 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?

   No   **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.

7. 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	The card location specified in the DSA is unavailable for the card installed there. Do not use that card location. 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. To determine the multi-adapter bridge function numbers and the card locations they specify, see Table 7 on page 263 in the "Overview" on page 261 of this document.
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

This is a portion of the SCSI sense data associated with the URC; it is not a failing item in and of itself. This data is referenced by certain failure isolation procedures within the *3995 Optical Library Dataserver Maintenance Information Manuals*.

This ends the procedure.

SPCNCRD

The failing item is the System Unit Backplane in location MB1. See "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683.

SPNLCRD

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

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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

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*.

This ends the procedure.

SVCDOCS

See the *Description/Action* column in the "Chapter 2. Unit Reference Codes" on page 59 for the Unit Reference Code you have.

This ends the procedure.

SVCPROC

The service processor is failing. The failing component is in the System Unit Backplane.

If the system is failing during IPL and you recently loaded and applied PTFs, or the failure first occurred during a mode D IPL, or the previous IPL ended in an unexpected power off, then attempt to reload service processor code.

Contact your next level of support for instructions on reloading the service processor code.

If you were unable to resolve the problem by reloading service processor code, then replace the System Unit Backplane by doing the following:

1. Are you working on a Model 270?

   Yes **No**

   ↓   You are working on a Model 820 and the failing component is embedded in the system unit backplane. Use table Table 40 on page 575 to determine the service information.

   This ends the procedure.

2. Is function 20 available on the system unit control panel ?

   No **Yes**

   ↓   Select function 20 on the system unit control panel. Characters 5 through 8 are the processor feature code. Record the processor feature code. Use table Table 40 on page 575 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 "Model 270 – Covers" on page 634.

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 40.

System model	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
Model 270 Record the processor feature code (characters 5 through 8 of function 20 on the control panel) or examine the card positions on the backplane to determine where the NIC is embedded.	System Unit Backplane	MB1	Use the Table 44 on page 671 and follow the "locations diagram" link for either: • The processor feature code. • What FRU the NIC is embedded in.	Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for either: • The processor feature code. • What FRU the NIC is embedded in.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683.	Table 49 on page 684.

This ends the procedure.

SYSBKPL

SYSBKPL: System Unit Backplane.

The failing component is the System Unit Backplane. To exchange the system unit backplane, do the following:

1. Are you working on a Model 270?

   Yes   No

   ↓   You are working on a Model 820. Use tableTable 41 on page 576 to determine the service information.

   This ends the procedure.

2. Is function 20 available on the system unit control panel?

   No   Yes

   ↓   Select function 20 on the system unit control panel. Characters 5 through 8 are the processor feature code. Record the processor feature code. Use table Table 41 on page 576 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 "Model 270 – Covers" on page 634.

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.

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- 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 41.

System model	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
Model 270 Record the processor feature code (characters 5 through 8 of function 20 on the control panel) or examine the card positions on the backplane to determine where the NIC is embedded.	System Unit Backplane	MB1	Use the Table 44 on page 671 and follow the "locations diagram" link for either: - The processor feature code. - What FRU the NIC is embedded in.	Use the Table 44 on page 671 and follow the "FRU positions and Failing Components" link for either: - The processor feature code. - What FRU the NIC is embedded in.
Model 820	System Unit Backplane	MB1	Figure 30 on page 683.	Table 49 on page 684.

This ends the procedure.

SYSUNIT

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. Attempt a SLOW OVERRIDE IPL to run full processor hardware diagnostics.

1. Power off the system from the control panel. Change the IPL mode to manual, and the IPL speed to SLOW OVERRIDE (S) using control panel function 2.

   Power on the system.

   Does the same SRC occur?

   Yes   No

   ↓   Go to "Starting Point for All Problems" on page 4 and follow the service actions for the new SRC.

2. Is this a Model 270 System Unit, with Processor Feature 22A2, 22A4, 22A5 or 2422?

   Yes   No

   ↓   Go to Step 4 on page 577 of this procedure.

3. See "Locations — Model 270" on page 671. 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.

- Power regulator in location R01
- Power Supply in location M01
- Memory card pairs in locations A-H
- System Unit Backplane in location MB1

4. Is this a Model 270 System Unit, with Processor Feature 22A7, 22A8, 22AA, 22AB, 2423, 2424?

   Yes   No

   ↓   Go to Step 6 of this procedure.

5. See "Locations — Model 270" on page 671. 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.
   - Processor Card in location M02
   - Power Supply in location P01
   - Memory Riser Card in location M01
   - System Unit Backplane in location MB1

6. This is a Model 820. See "Locations — Model 820" on page 683. 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.
   - Processor Card in location M03
   - Power Supply in location P01
   - Power Supply in location P02
   - Power Supply in location P03
   - Memory Riser Card in location M01
   - Memory Riser Card in location M02
   - System Unit Backplane in location MB1

TAPCLN

Clean the tape unit.

This ends the procedure.

TAPCNFG

Tape and DASD devices are attached to an I/O Processor that can not support both Tape and DASD at the same time.

This ends the procedure.

TOD

The Time Of Day battery may be failing.

Exchange the time of day battery – part 16G8095. For location see "Locations — Model 270" on page 671 or "Locations — Model 820" on page 683. Use the table in the locations section to find the remove and replace procedure.

This ends the procedure.

TWRBKPL

TWRBKPL: I/O tower PCI card backplane.

The failing item is the Tower Card in a FC 5075 I/O expansion tower.

1. If you are working from the Service Action Log and a card position is listed with this failing item, then that is the card position where the error is, 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 262 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.

Table 42.

Expansion I/O Tower	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
FC 5075	Tower Card	CB1	"Locations — FC 5075 I/O Tower" on page 692	Table 51 on page 693

This ends the procedure.

TWRCARD

An SPCN card may be failing. The SPCN card may be part of the System Unit Backplane in a system unit or it may be part of the AC module in some parts of the system expansion. Before replacing any FRUs, verify that all cables are seated correctly.

Note: See "Chapter 4. Removal and Installation Procedures" on page 593 before exchanging the SPCN.

Perform the following to determine the part number:

1. Check cabling.
2. Is the failing SPCN card in the system unit?

   No   Yes

   ↓   The TWRCARD is the System Unit backplane (MB1). Replace:
   - Model 270 w/o 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 498 for the correct part. For location information, see "Chapter 5. Locations, Addresses, and Part Listings" on page 667.

This ends the procedure.

3. The failing SPCN card is in a secondary expansion unit or base I/O unit.

- For FC 5072 and 5082, the SPCN card is part of the ACMODULE – part 87G6300.

  See chapter 4 in *Migrated Expansion Tower Problem Analysis, Repair and Parts* for Removal and Installation Procedures before exchanging the part.

- For FC 5073, 5083, and 5077 Base I/O, the SPCN card is part of the ACMODUL – part 21H7697.

  See chapter 4 in *Migrated Expansion Tower Problem Analysis, Repair and Parts* for Removal and Installation Procedures before exchanging the part.

- For FC 5065, 5066 expansion tower, the SPCN card is part of the PCI/SPCN backplane assembly – part 24L0921.

  See chapter 4 in *Migrated Expansion Tower Problem Analysis, Repair and Parts* for Removal and Installation Procedures before exchanging the part.

- For FC 5074, 5079 expansion tower the SPCN card is part of the PCI/SPCN backplane assembly – part 97H7307.

  See Table 50 on page 689 for Locations Information and directions to the Removal and Installation Procedures before exchanging the part.

- For FC 5075 expansion tower, replace the SPCN card – part 23L8145.

  See Table 51 on page 693 for Locations Information and directions to the Removal and Installation Procedures before exchanging the part.

- For FC 5078/0578 SRC 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641, replace one part at a time:
  - part 11K1107 (AMD Control Card)
  - part 04N6797 (TWRCARD)

- For FC 5078/0578 except SRC 7610, 7611, 7620, 7621, 7630, 7631, 7640, 7641, replace – part 04N6797 (TWRCARD).

- For xSeries Server Tower, replace Integrated xSeries Adaptor card (CCIN 2689) – part 21P5840.

  See "Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server" on page 700 for Locations Information and directions to the Removal and Installation 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.

TWRPLNR

TWRPLNR: I/O tower PCI board.

The failing component is in the Tower Card of a FC 5074, FC 5079 (1.8m expansion tower) expansion I/O tower, or a FC 5078/0578 PCI expansion unit.

1. If you are working from the Service Action Log and a card position is listed with this failing item, then that is the card position where the error is, 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 262 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 43.

System Model, Tower, Expansion Unit, or Machine Type	Name of FRU to Exchange	FRU Position	Link to Location Diagram	Link to Failing Component Service Information. (CCIN, PN, Removal and Installation Procedure)
FC 5074	Tower Card	CB1	"Locations — FC 5074 I/O Tower" on page 688.	Table 50 on page 689.
FC 5078/0578	Tower Card	CB1	"Locations — FC 5078, 0578 PCI Expansion Unit" on page 695.	Table 52 on page 696.
FC 5079 (1.8m expansion tower)	Tower Card	CB1	"Locations — FC 5079 I/O Tower" on page 699.	Table 50 on page 689.

This ends the procedure.

UC235

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.

If a resource was removed from the system without updating the system configuration records, then use Hardware System Manager, Logical Hardware Resources, System Bus Resources, Non-reporting Resources, and use the *Remove* option to remove the resource from the system configuration records.

This ends the procedure.

UC236

The problem may be that the card (a resource) is not correctly plugged into the card enclosure.

Use the location information associated with this filing item in the Service Action Log entry and verify that the card is installed properly.

This ends the procedure.

UG3AS

An error has been detected in iSeries 400 Licensed Internal Code.

Contact your next level of support for possible corrective actions.

This ends the procedure.

UJ0E7
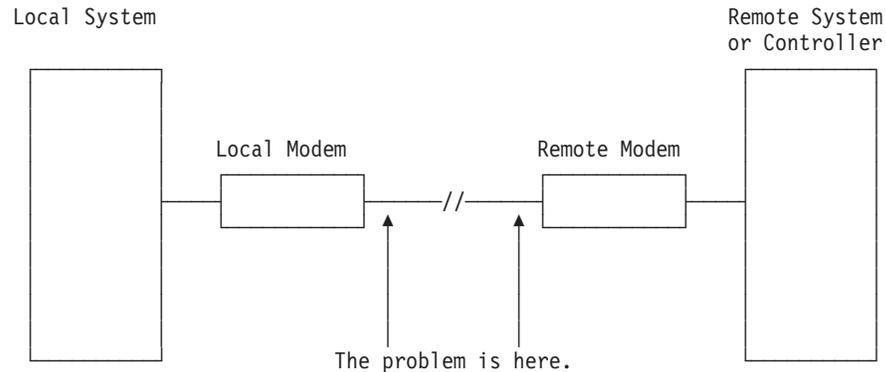
The problem has been isolated to the telephone line equipment that links the local and the remote equipment.

This ends the procedure.

UJ6P3

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/400 in the Application System/400 Facsimile Support/400 User's Guide.

This ends the procedure.

UJA34

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:
- Programming: Control Language Reference, SC41-0030
- Communications Configuration Reference, GC41-0001

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.

This ends the procedure.

UJE34

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.

Perform the following:

- See the original system message for cause and recovery information about the error.

This ends the procedure.

UJE35

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 Programming: Control Language and the Communications Configurations reference topics in the iSeries 400 Information Center, which is available at http://www.ibm.com/eserver/iseries/infocenter

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.

This ends the procedure.

UJE40

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

Communications line problems:

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.

This ends the procedure.

ULNZ4

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* 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.

This ends the procedure.

UNP20

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

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*.

This ends the procedure.

UPSUNIT

The UPS may be the failing item.

Note: The AMD in the UPS will be stopped when the UPS is not running on batteries or is charging the batteries on FC 5033, 5034, or 5035.

Perform the following:
1. Is the SRC or problem on FC 5033, 5034, or 5035 frame?

Chapter 3. Problem Isolation Procedures (PIPs), Failing Items, and Symbolic FRU Isolation **583**

Symbolic FRUs

> **No Yes**
>
> ↓ Go to the UPSUNIT symbolic FRU in the *Migrated Expansion Tower Problem Analysis, Repair and Parts*.

2. Do you have a SRC 1xxx 4500, 4501, 4502, 4507, or 4513?

> **No Yes**
>
> ↓ An incorrect status response was detected during normal operation. Before calling the UPS provider, unplug and replug the UPS signal cable connector. If the fault clears, contact 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 TWRCARD.

3. Do you have a SRC 1xxx 4510?

> **No Yes**
>
> ↓
>
> The UPS did not respond to a test request. Call the UPS provider for service.

4. Were you sent to the UPSUNIT procedure by SRC 1xxx 4503, 4504, or 4505?

> **No 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.

USER

System operator error or user error. See the system operator information.

This ends the procedure.

UX201

The printer definition table may be causing the problem.

Perform the following:
- See the original system message for cause and recovery information about the error.

This ends the procedure.

UX202

A problem was detected while downloading a device Licensed Internal Code change to the device.

Perform the following:
- See the original system message for cause and recovery information about the error.

This ends the procedure.

UY1Z1

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

This ends the procedure.

UY1Z2

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

This error is caused by a workstation that is connected to the port.

Perform the following:

1. Turn off the power for one workstation on the port, then check if the other workstations operate correctly. Repeat this step for each workstation on the port. The workstation that causes the problem is the one that is turned off when the others are working correctly.

   If you did not find the problem, continue to 2.

2. Turn off the power for all workstations on the port. Then turn on one workstation to check if it works when all other workstations are turned off. Repeat this step 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

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.

This ends the procedure.

UY1Z5

The communication between the workstation controller and a workstation was interrupted during an active session.

Possible causes:

- The power for the workstation was turned off, then on.
- A temporary loss of power to the workstation occurred.

This ends the procedure.

VPDCONC

The failing item is the VPD concentrator hardware. Replace the System Unit Backplane at location MB1. See "Chapter 4. Removal and Installation Procedures" on page 593.

VPDPART

A VPDPART may be failing.

Perform the following to determine the part for the failing VPDPART:

Note: 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).

1. Is the SRC 1xxx 8401?

    No   **Yes**

    ↓   Exchange the control panel (See symbolic FRU "TWRCARD" on page 578 for the correct part.)

2. Is the SRC 1xxx 8402?

    No   **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 "TWRCARD" on page 578 for the correct part.)

3. Is the SRC 1xxx 8403?

    No   **Yes**

    ↓   Check that processor 1 is connected and seated properly if pluggable and then exchange processor 1 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

4. Is the SRC 1xxx 8404?

    No   **Yes**

    ↓   Exchange the following parts one at a time:

- Model 270 – FC 2249, FC 2250, and FC 2252 – System backplane (See symbolic FRU "TWRCARD" on page 578 for the correct part.)
- Models 270 – FC 2253 and Model 820 – Processor 2 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

5. Is the SRC 1xxx 8405?

   No **Yes**

   ↓ Exchange Processor 3 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

   If there is not a Processor 3, see next FRU.

6. Is the SRC 1xxx 8406?

   No **Yes**

   ↓ Exchange Processor 4 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

   If there is not a Processor 4, see next FRU.

7. Is the SRC 1xxx 8409?

   No **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 498 for the correct part. For location see "Locations and Addresses" on page 671.)

8. Is the SRC 1xxx 840A?

   No **Yes**

   ↓ Exchange the System backplane (See symbolic FRU "TWRCARD" on page 578 for the correct part.)

9. Is the SRC 1xxx 840B?

   Yes **No**

   ↓ Go to 17 on page 588 of this procedure.

10. Are the processor and memory cards removable from the system?

    Yes **No**

    ↓ Go to step 12 of this procedure.

11. 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 **No**

    ↓ Go to step 14 on page 588 of this procedure.

12. Perform the following:
    a. Power off the system.
    b. Exchange the control panel in the system unit.
    c. Power on the system.

Symbolic FRUs

Does the SRC 1xxx 840B appear on the panel?

Yes   No

↓   The control panel you replaced in this step is the failing item.

   This ends the procedure.

13. Perform the following:
    a. Power off the system.
    b. Exchange the Tower Card ("TWRCARD" on page 578) in the system unit.
    c. Install all parts that were removed.
       This ends the procedure.

14. Perform the following:
    a. Power off the system.
    b. Install one of the units removed in step 11 on page 587 of this procedure.
    c. Power on the system.

    Does the SRC 1xxx 840B appear on the panel?

    No   Yes

    ↓   Exchange the last unit you installed in this step it is the failing item.

       This ends the procedure.

15. Have you installed all of the units removed in step 1 on page 586 of this procedure?

    No   Yes

    ↓

       This ends the procedure.

16. Repeat step 14 of this procedure.

17. Is the SRC 1xxx 840C?

    No   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 498 for the correct part. For location see "Locations and Addresses" on page 671.)

18. Is the SRC 1xxx 8413?

    No   Yes

    ↓   Exchange Processor 1 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

19. Is the SRC 1xxx 8414?

    No   Yes

    ↓   Exchange Processor 2 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

20. Is the SRC 1xxx 8415?

    No   Yes

    ↓   Exchange Processor 3 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

21. Is the SRC 1xxx 8416?

 No **Yes**

↓ Exchange Processor 4 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

22. Is the SRC 1xxx 8423?

 No **Yes**

↓ Exchange Processor 1 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

23. Is the SRC 1xxx 8424?

 No **Yes**

↓ Exchange Processor 2 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

24. Is the SRC 1xxx 8425?

 No **Yes**

↓ Exchange Processor 3 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

25. Is the SRC 1xxx 8426?

 No **Yes**

↓ Exchange Processor 4 (See symbolic FRU "CCIN" on page 498 for the correct part. For location see "Locations and Addresses" on page 671.)

26. Go to "Starting Point for All Problems" on page 4

This ends the procedure.

Symbolic FRUs

Part 2. FRU Replacement

Chapter 4. Removal and Installation Procedures

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

This is the starting point for all remove procedures. Perform the following steps.

Attention: It is not always necessary to power off the system to exchange a field replaceable unit (FRU). You will be directed through a concurrent exchange, if possible, for disk or removable media storage units.

1. Find the location of the part you are replacing in "Locations and Addresses" on page 671.
2. If you are removing a IOA, IOP, IXS card, disk unit or removable media unit, you may be able to use the concurrent procedures and keep the system up and running.
3. Find the FRU you are removing in this section and follow the procedures.
4. When you have completed the remove procedure, install the FRU by reversing the remove procedure unless otherwise noted.
5. After exchanging an item, see "Verifying the Repair" on page 830.

FC 5074, FC 5079, FC 9079 (With Single Line Cord) – AC Charger – A01

1. Power off the expansion tower. (See "Powering On and Powering Off the System and Logical Partitions" on page 832.)
2. Disconnect the incoming AC power cord from the expansion tower.
3. Open the rear cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)
4. Disconnect all the power cords from the battery charger.
5. Remove the screws that are holding the charger to the frame.
6. Remove the battery charging unit.
7. Install the battery charger by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5074, FC 5079, FC 9079 (With Dual Line Cord) – AC Charger – A01

1. Do Not Power Down the tower if it is powered on. (This can be done concurrently.)
2. Open the rear cover. See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.
3. See the Table 50 on page 689.
4. Trace the AC input line cord that connects to AC module that needs replacing and disconnect that AC line cord.

   Attention: Do **not** disconnect the other system AC line cord when powered on.
5. Disconnect the power supply jumper cords from the AC module that you are working on.

   Attention: Do **not** disconnect the other system AC module power supply jumper cords.
6. Remove the top and bottom screws that hold the AC module to the frame.
7. Remove the AC module unit.
8. Install the AC module by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5074/5079, FC 9074, FC 9079 – AMD – B01 and B02

1. Do **Not** Power Down the tower **if** it is powered on. (concurrent)

2. Open the rear cover, see "FC 5074, FC 5079, FC 9079 – Covers" on page 599 or the cover removal and replacement procedure for the model that you are working on.

3. Remove the EMC access plate located directly above the PCI card enclosure. Press the surfaces of the two latches together and tilt the top of the cover away from the frame to remove it.

4. Remove the screw from the AMD door assembly for the AMD that you are replacing.

5. Remove the AMD assembly by sliding it out of the enclosure, while holding the AMD access plate open.

6. Install the AMD by reversing the removal procedure.

   Note: The new AMD will automatically power on when it is installed.

7. After exchanging an item, go to "Verifying the Repair" on page 830.

   This ends the procedure.

FC 5074, FC 5079, FC 9079 – Batteries – T01, T02, T03, and T04

Attention: Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the backplane.

1. When the expansion unit is powered on indicated by the green panel light, do NOT power off the system. Go to step 2 of this procedure.

2. Open the rear cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

3. **Attention:** Removing the battery power unit while the system is running on battery power will cause the system to fail and may damage the battery power unit and the PCI card enclosure.

   If the console will accept commands, the system is not running on battery power. Continue with the next step of this procedure.

4. To remove the battery power unit perform the following:

   CAUTION:
   Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)

   a. Remove the screws from the EMC access plate that is covering the batteries.

   b. Remove the EMC access plate from the battery enclosure.

   c. Remove the top and bottom screws from the battery unit.

   d. Pull on the ring using two hands to remove the battery power unit.

      CAUTION:
      The battery is a lead-acid battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

      In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC225)

      Remove the battery unit from the frame.

   e. Install the battery power unit by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5074, FC 5079 – Cards – Concurrent

In some cases you do not need to power down the system in order to change PCI cards. Use the following rules to determine if you should use dedicated or concurrent removal and installation procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

For FC 5074 or FC 5079 cards – except IXS cards:

- Card positions C01 through C07 and C09 through C15 permit card level concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP for the system or primary partition, it must have mirrored protection in order to use concurrent maintenance.
- If the resource is the load source IOA or the load source IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- If the resource is the console IOA or the console IOP for the system or primary partition you will loose the console once you power down the domain. Follow the instructions on the screen when you use HSM to power down the IOP or IOA. They will tell you how to use function 68 and function 69 on the control panel.
- If the resource is the console IOA or the console IOP for a secondary partition you will loose the console once you power down the domain. Follow the procedure from the primary partition, then from the "Work with partition status" screen do a function 69 for the partition.

For FC 5074 or FC 5079 IXS cards:

- The IXS card in positions C05 or C11 permit tower level concurrent maintenance. Do **NOT** power down the individual card slot. You can power down the FC 5074 tower or the top or bottom half of a FC 5079 tower. Go to "FC 5074, FC 5079 – Cards – Dedicated" on page 598.

Concurrent Removal Procedure:

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Select *System Service Tools (SST)*. If you cannot get to SST, select DST.
   Attention: **Do not perform a system IPL to get to DST.**
2. Select *Start a Service Tool*.
3. Select *Hardware Service Manager*.
4. Select *Packaging hardware resources*.
5. Select *Hardware contained within package* for the Frame ID that contains the IOA or IOP that you are removing.
6. Find the card position for the IOA or IOP that you are removing and select the *Concurrent maintenance* option.

7. A listing of the power domain is shown. Select the *Power off domain* function key. Everything within the IOA's or IOP's power domain will be powered off .

8. To see the status of the power domain, select the *Display power states* function key.

9. Find the IOA or IOP that you are removing and select the *Toggle LED blink off/on* option.

10. Remove the cover to access the card that you are removing from the system. See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.

11. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

12. Look at the power LED (▲) for the card that you are removing to ensure that it is powered off. The power LED (▲) is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.

13. Disconnect and label any cables from the card that you wish to remove.

14. Turn the blue latch counter clockwise and lift upward on the black latch to release the card.

15. Gently pull the card off the backplane.

    This ends the procedure.

Concurrent Installation Procedure:

All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Install the card in to the system by reversing the card removal procedure above.

2. Select the *Power on domain* function key for the IOA or IOP that you are installing.

   Note: To the right of the description field you will see one or both of the following symbols displayed:

   *
   >

   The * indicates the location to which the system will assign the resource. Where as the > indicates the location to which the resource was last assigned.

3. Press enter, the "*Work with Controlling Resource*" screen will appear.

4. Determine the location where you want to assign the resource and select the *Assign to* option for that location.

5. Wait for the "*Hardware Resource Concurrent Maintenance*" display to appear with the message indicating power on complete.

6. After exchanging an item, go to "Verifying the Repair" on page 830.

   Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the

new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

This ends the procedure.

FC 5074, FC 5079 – Cards – Dedicated

In some cases you do not need to power down the system in order to change PCI cards. Use the following rules to determine if you should use dedicated or concurrent removal and installation procedures.

For FC 5074 or FC 5079 cards – except IXS cards:
- Card positions C01 through C07 and C09 through C15 permit concurrent maintenance using HSM. You can power down the individual card slot. See "FC 5074, FC 5079 – Cards – Concurrent" on page 596.

For FC 5074 or FC 5079 IXS cards:
- The IXS card in positions C05 or C11 permit tower level concurrent maintenance. Do **NOT** power down the individual card slot. You can power down the FC 5074 tower or the top or bottom half of a 5079 tower.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Power off the tower using "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836.
2. Remove the AC power cord on the frame that you are working on.
3. Remove the cover to access the card that you are removing from the system. See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.
4. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
5. Disconnect and label any cables from the card that you wish to remove.
6. If you are removing an IXS card, then go to "Type 2890 — Integrated xSeries Server (IXS)" on page 659.
7. Turn the blue latch counter clockwise and lift upward on the black latch to release the card.
8. Gently pull the card off the backplane.

    Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the

new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits ″1000″ to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

This ends the procedure.

FC 5074, FC 5079, FC 9079 – Covers

Note: The front and rear covers will swing open to a little more than 90 degrees. This makes it possible to replace all FRUs, without having to remove the covers.

To open the or remove the front cover, refer to Figure 14 on page 600 and perform the following steps:

1. Unlock the cover (front only)
2. Grasp the right side of the cover and pull it towards you to open it.
3. After opening the cover, press down on the lever ″**B**″ that is located inside along the top, left side of the cover.
4. Tilt the top of the cover away from the tower and lift the cover off.
5. **To open or remove the rear cover, refer to Figure 15 on page 600 and perform the following steps:**
   a. Grasp the right side of the cover and pull it towards you to open it.
   b. After opening the cover, press down on the lever ″**B**″ that is located inside along the top, left side of the cover.
   c. Tilt the top of the cover away from the tower and lift the cover off.
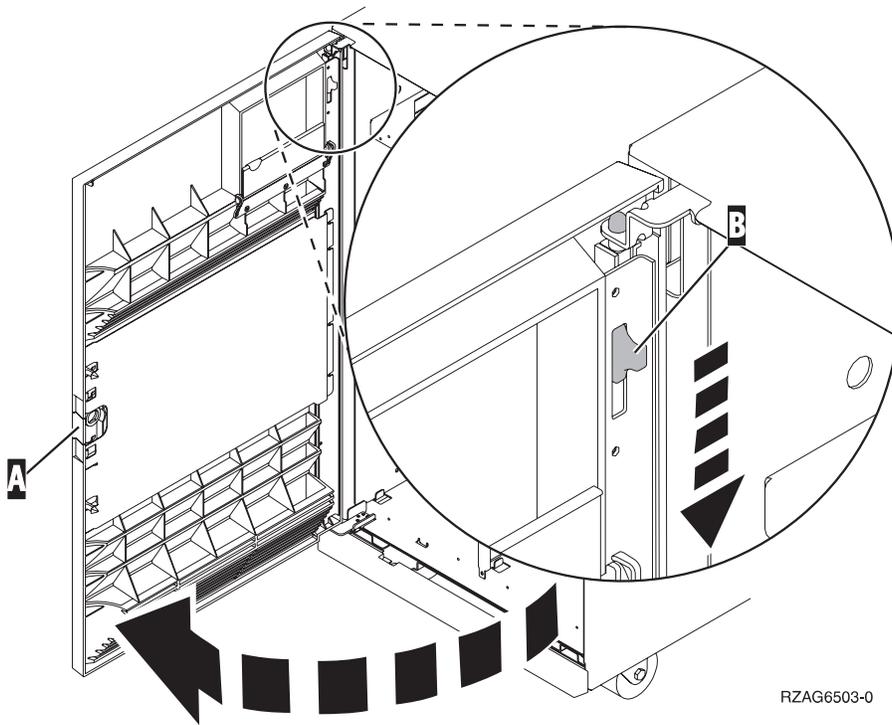
Figure 14. Front Cover - Removal

This ends the procedure.
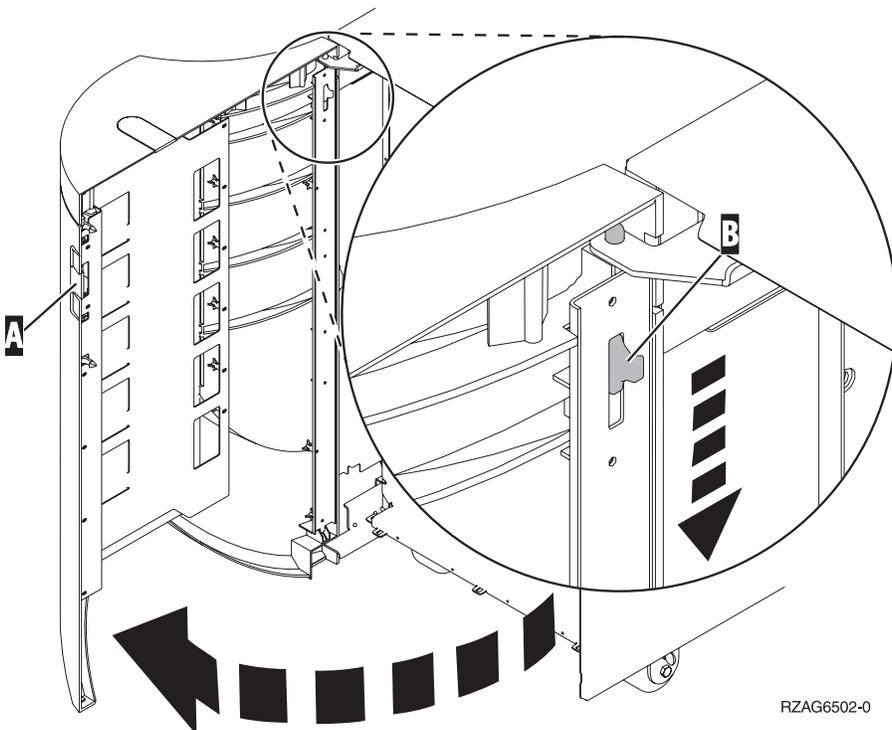
Figure 15. Rear Cover - Removal

FC 5074, FC 5079, FC 9079 – Device Board – DB1 and DB2

1. Power off the expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

2. Disconnect the power cord from the expansion tower.

3. Open the front cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

4. From the front of the expansion tower **remove** the following:

   a. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane that you are replacing. For location information, see Table 50 on page 689. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

   b. Record the locations of the disk units and then remove them from the disk unit enclosures that you just uncovered.

      Attention: The disk units are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

   c. Remove the screws that hold the disk unit cage assembly in to the frame.

   d. Remove the two retaining screws that are located inside of the disk unit cage assembly (the top right and bottom left corners).

   e. Remove the disk unit cage assemblies.

   f. Remove the screws that hold the DASD shelf to the frame.

   g. Remove the DASD shelf from the frame.

5. Remove the retaining screw that is holding the DASD board assembly to the frame.

6. Pull the DASD board assembly out until it slides off the guide pins, then rotate the DASD board assembly 90° to remove the cables that are located on the backside of it.

RZAG6509-0
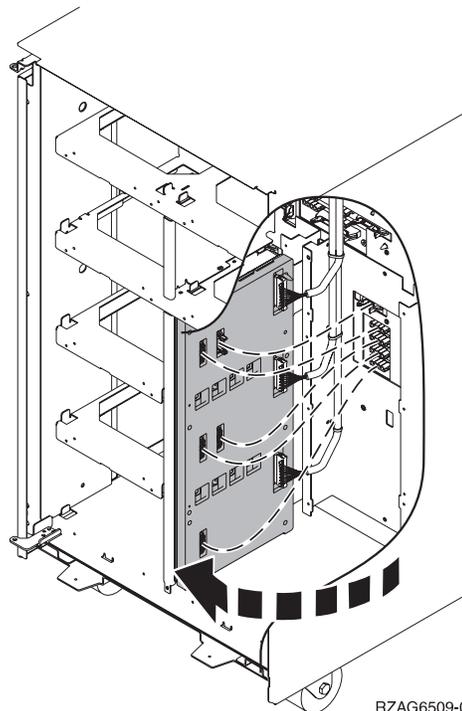
7. Remove the cables from the rear of the DASD board assembly and note their locations.

   Note: Both ends of the ribbon cables are marked "**LH**" or "**RH**" indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card (The cables will crisscross in the center of the tower).

8. Remove the DASD board assembly.

9. Install the DASD board assembly by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

   This ends the procedure.

FC 5074, FC 5079, FC 9079 – Device Board – DB3

1. Power off the expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

2. Disconnect the power cord from the expansion tower.

3. Open the rear cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

4. From the rear of the expansion tower **remove** the following:

   a. Remove the EMC access plate that is located directly above the tower card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

   b. Remove the cables from the disk unit controller cards (IOAs) that are located inside the PCI card enclosure and note their locations.

      Note: Both ends of the ribbon cables are marked "**LH**" or "**RH**" indicating that one end of the cable is plugged in to either the left-hand (DB1) or right-hand (DB2) DASD board assembly. The other end of the cable is plugged in to either the left-most (LH) or right-most (RH) DASD controller card (The cables will crisscross in the center of the tower).

   c. Remove the screws that hold the tower card enclosure in the frame.

   d. Pull the tower card enclosure partially out of the frame while lifting the cables clear of the enclosure.

   e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.

   f. Remove the tower card enclosure from the frame.

   g. Remove the screws from the EMC access plate that is located inside the frame and directly above the power distribution board.

   h. Remove the EMC access plate.

   i. Reach through the opening and remove the cables from the backside of the base DASD board assembly (DB3).

5. Open the front cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

6. From the front of the expansion tower **remove** the following:

   a. Note the removable media locations and then remove them by pulling out on the handles which are located on each side of the unit.

b. Remove the control panel by pulling on the blue handles that are located on each side of the unit and sliding it partially out of the tower. Then, unplug the cable from the rear of the control panel. (See "FC 5074, FC 5079 – Control Panel – NB1" on page 606.)

c. Unplug the control panel cable from the base DASD board assembly (DB3).

d. Remove the two retaining screws that are located inside of the removable media enclosure (the top right and lower left corners).

e. Remove the removable media enclosure.

f. Remove the EMC access plates from the disk unit enclosures that are located in front of the backplane (DB3). For location information, see Table 50 on page 689. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

g. Record the disk unit locations and then remove them from the disk unit enclosures that you just uncovered.

   Attention: The disk units are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

h. Remove the screws that hold the disk unit enclosures to the frame.

i. Remove the retaining screws that are located inside the disk unit enclosure.

j. Remove the disk unit enclosures.

k. Remove the screws that hold the center support bracket and shelf for the disk unit and removable media enclosure to the frame.

l. Remove the support bracket and shelf.

m. Remove the base DASD board assembly (DB3).

7. Install the base DASD board assembly by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5074, FC 5079 – Disk Unit – Concurrent

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

   Yes   No

   ↓   Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see "FC 5074, FC 5079, FC 9079 – Covers" on page 599).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing.

4. **To remove a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.

      Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

d. Select *Device Concurrent Maintenance* and enter the required information in the information fields.

e. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower.

   Attention: If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

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> **Note:** The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

5. Are you finished with the repair?

   No   Yes

   ↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

   This ends the procedure.

6. **To install a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.

      Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

e. Slide the unit half-way into the tower. **Ensure that the device does not contact the backplane at this time.**

f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

Attention: If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

Note: The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

FC 5074, FC 5079 – Disk Unit – Dedicated

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

    Yes   No

    ↓   Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see "FC 5074, FC 5079, FC 9079 – Covers" on page 599).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see "Locations — FC 5074 I/O Tower" on page 688.

4. **To remove a disk unit using dedicated maintenance perform the following:**

    a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    b. Disconnect the power cord.

    c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.

    d. Remove the unit from the tower.

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5. Are you finished with the repair?

   No   Yes

   ↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

   This ends the procedure.

6. **To Install a disk unit using dedicated maintenance perform the following:**

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Disconnect the power cord.

   c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.

   d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

   e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

   This ends the procedure.

FC 5074, FC 5079 – Control Panel – NB1

Attention: The control panel is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Power off the expansion tower. (See "Powering On and Powering Off the System and Logical Partitions" on page 832.)

2. Disconnect the AC power cord from the expansion tower.

3. Open the front cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

4. Pull on the two side fasteners to release the control panel assembly.

5. Slide the panel partially out of the frame.

6. Disconnect the cables that are attached to backside of the control panel.

7. Remove the control panel from the frame.

8. Reverse the above procedure to install the new panel.

9. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5074, FC 5079, FC 9079 – Power Distribution Board – PB1

1. You **must** remove both disk unit backplanes DB1 and DB2. Perform "FC 5074, FC 5079, FC 9079 – Device Board – DB1 and DB2" on page 601 for each backplane.

   After you have removed **both** disk unit backplanes DB1 and DB2 return here and continue with step 3 of this procedure.

2. Open the rear cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

3. From the rear of the expansion tower remove the following:

   a. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

   b. The cables from the disk unit controller cards that are located inside the PCI card enclosure.

      Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

   c. The screws that hold the PCI card enclosure in the frame.

   d. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.

   e. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.

   f. The battery charger. (See "FC 5074, FC 5079, FC 9079 (With Single Line Cord) – AC Charger – A01" on page 594.)

   g. The power supplies. (See "FC 9074, FC 9079, FC 5074/5079 – Power Supply – P01, P02, and P03" on page 608.)

   h. The blank filler plate(s).

4. From the front of the tower, reach through the frame and remove the cables from the backside of the power distribution backplane and note their locations.

5. From the rear of the tower, remove the mounting screws that hold the power distribution backplane to the frame.

6. Pull the power distribution backplane slightly towards you and lift it up to remove it from the frame.
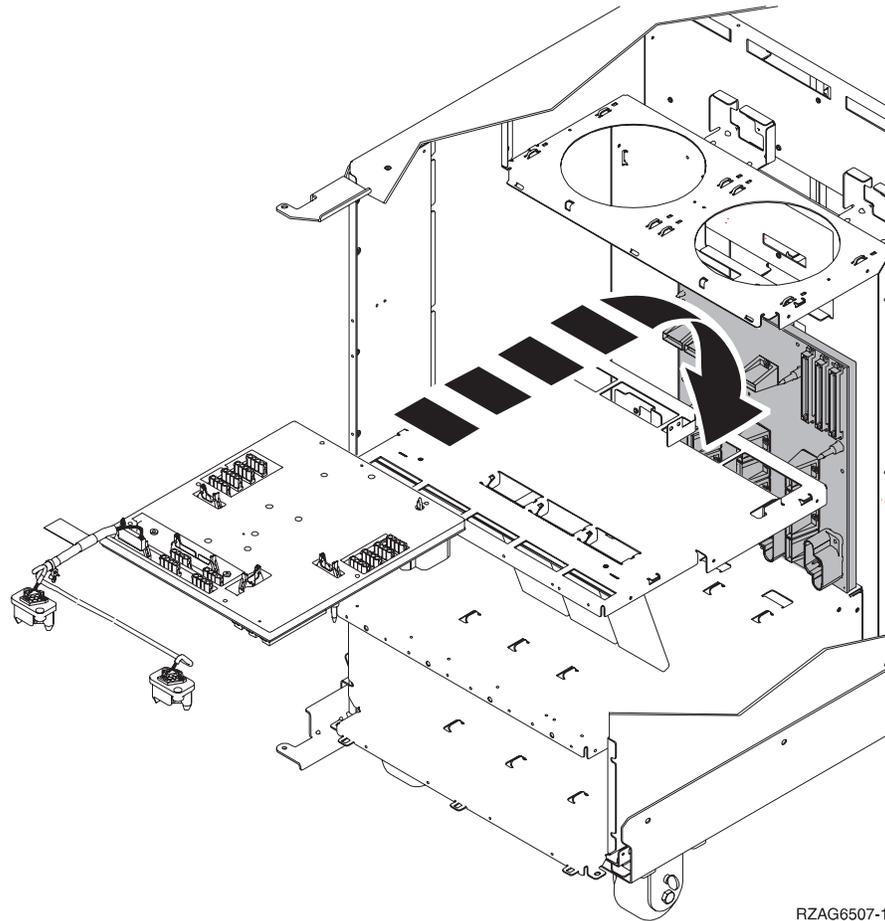
RZAG6507-1

7. Install the power distribution backplane by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 9074, FC 9079, FC 5074/5079 – Power Supply – P01, P02, and P03

1. Is the system powered on?

   Yes   No

   ↓   Go to step 3.
2. Do NOT power off the system.
3. Open the rear cover.
4. Disconnect the power jumper cord from the unit that you are replacing.
5. Remove the bottom screw (if installed).
6. Rotate the handle from right to left to release the power supply from the frame.

DANGER

Up to 240 V ac is present at the power module connectors when the main power cord is connected to a power source. (RSFTD010)

Remove the power supply from the frame.
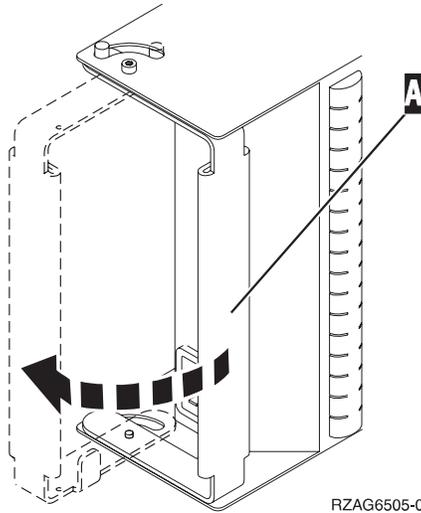
RZAG6505-0

7. Install the power supply by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

   Note: Do not slam the power supply in when installing it into the system. Insert it until the power supply engages the frame, then rotate the handle from left to right.

   This ends the procedure.

FC 5074, FC 5079, FC 9079 – Removable Media – D41 and D42

Laser Safety Information

CAUTION:
This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

1. Remove media (if any) from the device. If the eject button on a tape device is failing, go to "Tape Cartridge – Manual Removal" on page 663, then continue with the next step of this procedure. If the eject button on an optical media device (CD-ROM or DVD) is failing and will not open, go to "Optical Media – Manual Removal" on page 666, and then continue with the next step of this procedure.

2. Are you removing a unit by using device concurrent maintenance?

   Yes   No

   ↓

a. Power off the tower or expansion tower. (see "Powering On and Powering Off the System and Logical Partitions" on page 832)

b. Disconnect the power cord from the tower or expansion tower.

c. Open the front cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)

d. Pull on the handles which are located on each side of the unit and remove the unit.

e. Install the new device by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

f. If you need to remove a tape from the old tape unit, see "Tape Cartridge – Manual Removal" on page 663.

g. If you need to remove a CD-ROM or DVD media, go to "Optical Media – Manual Removal" on page 666, and then continue with the next step of this procedure.

This ends the procedure.

3. Before exchanging a removable media unit, you must ensure that the unit is not in use and is varied off.

4. Use the figure to determine the location of the internal removable media unit. Record this location for later use.
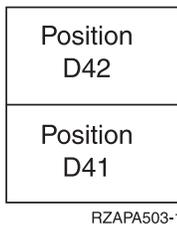
Figure 16. Internal removable media locations

5. Perform the following:

a. Select System Service Tools (SST). If you cannot get to SST, select DST.

Do not perform a system IPL to get to DST.

b. Select the *Start a Service Tool* option.

c. Select the *Hardware Service Manager* option.

d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

e. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.

f. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to pull out firmly on the handles and pull the unit partially out of the tower.

Attention: If you remove the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

Note: The light at the top right of the device will go off and remain off as soon as the device is no longer making contact with the backplane.

g. Remove the unit from the tower.

• If you need to remove a tape from the old tape unit, see "Tape Cartridge – Manual Removal" on page 663.

- If you need to remove a CD-ROM or DVD media, go to "Optical Media – Manual Removal" on page 666, and then continue with the next step of this procedure.

   This ends the removal procedure. Continue with the next step of this procedure to install the new unit.

6. Perform the following to **install** a new unit:
   a. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**
   b. Read the remaining steps of this procedure and ensure that you understand the procedure before continuing.
   c. Slide the unit partially into the tower. **Ensure that the device does not contact the backplane at this time.**
   d. Press the Enter key on the console. After the delay time, the light at the top right of the device will begin flashing. You now have 9 seconds to push in firmly on the handles and push the unit completely into the frame.

      Attention: If you install the device when the light is **not** flashing, data may be lost, the unit may be damaged, or the backplane may be damaged.

      Note: The light at the top right of the device will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

      Did the light on the device go on and remain on?

      No   Yes

      ↓   After exchanging an item, go to "Verifying the Repair" on page 830. **This ends the install procedure.**

   e. Attempt the device concurrent maintenance procedure again without physically moving the unit.

      Did the light above the device go on and remain on?

      No   Yes

      ↓   After exchanging an item, go to "Verifying the Repair" on page 830.**This ends the install procedure.**

   f. There is a power problem. Either:
      - The new unit is defective.
      - The backplane was damaged during the device concurrent maintenance procedure.
      - There is a new problem with the power subsystem.

      This ends the procedure.

FC 5074/5079, FC 9079 – Tower Card – CB1

1. Power off the expansion tower. (See "Powering On and Powering Off the System and Logical Partitions" on page 832.)
2. Open the rear cover. (See "FC 5074, FC 5079, FC 9079 – Covers" on page 599.)
3. Disconnect the plugs to each power supply.
4. From the rear of the expansion tower remove the following:
   a. The external cables from the rear of the PCI card enclosure and note their locations.

b. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

c. The cables from the top of the PCI cards and note their locations.

   Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

d. The screws that hold the PCI card enclosure to the frame.

e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.

f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.

5. Remove the PCI cards from the enclosure and note their locations. (See "FC 5074, FC 5079 – Cards – Dedicated" on page 598.)

6. Install the new PCI card enclosure by reversing the above procedure.

7. Are you working on a FC 9079?

   Yes   No

   ↓   Go to step 9 on page 613 of this procedure.

8. Perform the following:

   a. Open the front cover (see "FC 5074, FC 5079, FC 9079 – Covers" on page 599).

   b. Pull on the two side fasteners to release the control panel.

   c. Slide the panel partially out of the frame.

   d. Insert the keystick into the panel.

   e. Apply AC power. The panel should display SRC 0000 5553.

      Note: The tower may power up automatically.

   f. Locate the push button located on the back of the control panel, directly behind the keystick position.
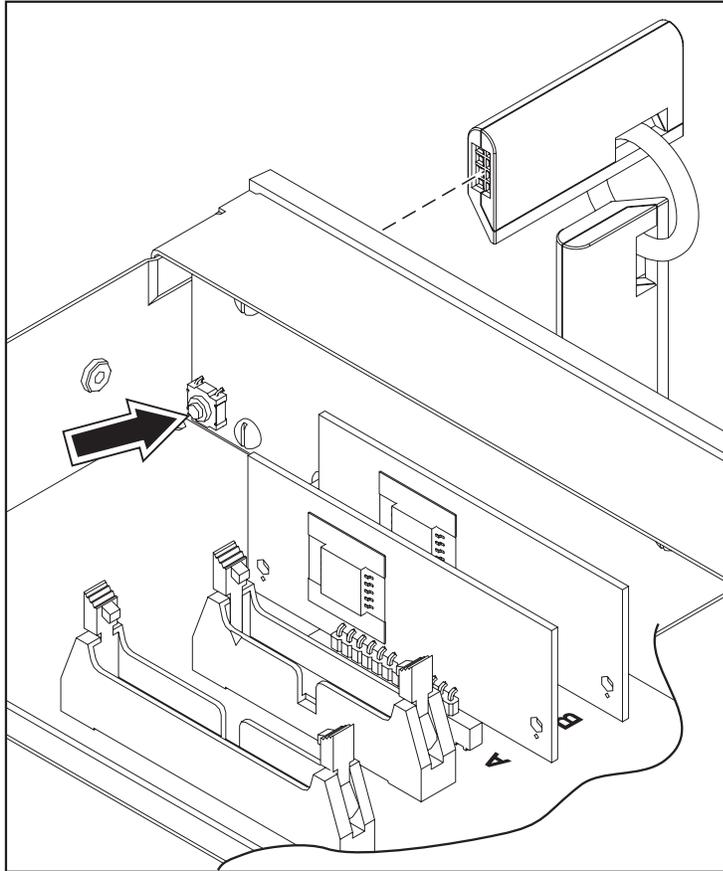
RZAQ4506-0

Figure 17. System Unit Control Panel with Keystick (NB1)

    g. Depress the push button for 3-4 seconds. The control panel will display the bring up SRCs and then function 01.

9. Set the configuration ID in the Tower Card:

    a. If the AC power is not applied, then apply it now.

       Note: The tower may power up automatically.

    b. Power down the expansion tower without removing the power cord. See "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836.

    c. Select function 07 on the system panel. Press Enter. (07** will be displayed)

    d. Use the arrow keys to increment/decrement to sub-function A9 (07A9 will be displayed). Press Enter (07A9 00 will be displayed).

    e. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually 02, 03, and so forth for expansion towers) (07nn will be displayed). Press Enter (07nn 00 will be displayed).

       Note: The display on the addressed frame should now be blinking on and off.

    f. Use the arrow keys to increment/decrement to a configuration ID.

       • The configuration ID is '81' for FC 5074 and FC 5079.

       • The configuration ID is '82' for FC 9079.

    (078x will be displayed). Press Enter (078x 00 will be displayed).

Chapter 4. Removal and Installation Procedures   **613**

g. After a few seconds, the display on the addressed FC 5074/5079 frame will stop blinking and return to displaying the frame address. On a FC 9079, the display will show "07xx 00," indicating success. Use the arrow keys to increment/decrement until ** is shown. Presss enter to return the panel to 07.

h. Power the expansion unit back on. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

10. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5075 – AMD – B01, B02

If the tower has only one AMD installed you must power down the tower to exchange that AMD.

1. Are there two AMDs installed in the tower?

   Yes **No**

   ↓

   a. Power down the expansion tower, see "Powering On and Powering Off the System and Logical Partitions" on page 832.

   b. Remove the power cord from the rear of the tower.

2. Remove the front cover (see "FC 5075 – Covers" on page 617).

3. Pull the black knob on the front of the AMD casing.

4. Pull open and remove the AMD. The power connection will undock automatically.

5. Install the AMD by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5075 – Cards – Concurrent

In some cases you do not need to power down the system in order to change PCI cards. Use the following rules to determine if you should use dedicated or concurrent removal and installation procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

- Card positions C01 through C08 permit concurrent maintenance using HSM. You can power down the individual card slot or the FC 5075 Tower.
- All other card positions permit concurrent maintenance using HSM. You can **NOT** power down the individual card slot. You can power down the FC 5075 Tower.
- If the resource is the load source IOA or the load source IOP for the system or primary partition, it must have mirrored protection in order to use concurrent maintenance.
- If the resource is the load source IOA or the load source IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- If the resource is the console IOA or the console IOP for the system or primary partition you will loose the console once you power down the domain. Follow

the instructions on the screen when you use HSM to power down the IOP or IOA. They will tell you how to use function 68 and function 69 on the control panel.

- If the resource is the console IOA or the console IOP for a secondary partition you will loose the console once you power down the domain. Follow the procedure from the primary partition, then from the "Work with partition status" screen do a function 69 for the partition.
- See "FC 5075 – Cards – Dedicated" on page 616 if you choose to perform dedicated card removal.

Concurrent Removal Procedure:

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

From the *Hardware Service Manager* screen perform the following:
1. Select the *Packaging hardware resources* option.
2. Select the *Hardware contained in packaging* option.
3. Find the card position for the IOA or IOP that you are removing and select the *Concurrent maintenance* option.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select the *Power off domain* option. Everything within the IOA's or IOP's power domain will be powered off .
5. To see the status of the power domain, select the *Display power status* option.
6. Find the IOA or IOP that you are removing and select the *Toggle LED blink off/on* option.
7. Remove the cover to access the card that you are removing from the system. See "FC 5075 – Covers" on page 617.
8. Look at the power LED (▲) for the card that you are removing to ensure that it is powered off. The power LED (▲) is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
9. Remove the right side cover, see "FC 5075 – Covers" on page 617.
10. Remove and label any cables connected to the card.
11. Turn the latches securing the card.
12. Gently pull the card off the system backplane.
   This ends the procedure.

Concurrent Installation Procedure:

All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Install the card in to the system by reversing the card removal procedure above.
2. Select the *Power on domain* option for the IOA or IOP that you are installing.

   Note: To the right of the description field you will see one or both of the following symbols displayed:

   *
   >

   The * indicates the location to which the system will assign the resource. Where as the > indicates the location to which the resource was last assigned.
3. Press enter, the "*Work with Controlling Resources*" screen will appear.
4. Determine the location where you want to assign the resource and select the *assign to* option for that location.
5. Wait for the "*Hardware Resource Concurrent Maintenance*" display to appear with the message indicating power on complete.
6. After exchanging the failing item, then go to "Verifying the Repair" on page 830.

   Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

   This ends the procedure.

   This ends the procedure.

FC 5075 – Cards – Dedicated

- Card positions C01 through C08 permit concurrent maintenance using HSM. You can power down the individual card slot or the FC 5075 Tower. See "FC 5075 – Cards – Concurrent" on page 614.
- All other card positions permit concurrent maintenance using HSM. You can **NOT** power down the individual card slot. You can power down the FC 5075 Tower. See "FC 5075 – Cards – Concurrent" on page 614.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Power off the expansion tower. See "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836.
2. Remove the AC power cord on the frame you are working on.
3. See the instructions below for the model of system or tower that you are working on:
4. Remove the right side cover, see "FC 5075 – Covers".
5. Remove and label any cables connected to the card.
6. Turn the latches securing the card.
7. Gently pull the card off the system backplane.

> **Note:** If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

This ends the procedure.

FC 5075 – Covers

To remove the front cover, pull the top of the cover away from the frame.

To remove the right side cover, unscrew the two thumbscrews at the rear of the tower and slide the cover to the rear of the tower.

To remove the rear cover, lift the cover to detach.

This ends the procedure.

FC 5075 – Device Board – DB1

1. Power off the expansion unit. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the expansion unit.
3. Remove the front and right side covers, see "FC 5075 – Covers".
4. Remove the EMC shield in front of the disk units by pulling out on the side two latches.
5. Remove the disk units from the disk unit cage. label the position of each disk unit.
6. Remove the screws holding the disk unit cage to the frame. The screws are located on the front and inside rear of the disk unit cage.
7. Unplug and remove the cables plugged into the back of the device board.
8. Pull the disk unit cage out of the frame.
9. Remove the device board from the back of the disk unit cage.
10. Install the device board by reversing the removal procedure.

This ends the procedure.

FC 5075 – SPCN Card – SB1

1. Power off the expansion unit. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the expansion unit.
3. Remove the front and right side covers, see "FC 5075 – Covers" on page 617.
4. Disconnect the control panel cable and the cable that connects the backplane to the backplane CB1.
5. Disconnect the SPCN and power cables.
6. Remove the screws connecting the backplane to the frame.
7. Remove the backplane by pulling it out of the frame.
8. Replace the SPCN card by reversing the previous steps, then continue with step 9 to set the configuration ID.
9. Set the configuration ID in the Tower Card:

   a. Power down the expansion tower without removing the power cord. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

   b. Select function 07 on the system panel. Press Enter. (07** will be displayed).

   c. Use the arrow keys to increment/decrement to sub-function A9 (07A9 will be displayed). Press Enter (07A9 00 will be displayed).

   d. Use the arrow keys to increment/decrement to the frame address – usually '02, 03, etc.' for a FC 5075 (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.

   e. Use the arrow keys to increment/decrement to a configuration ID to '90' (0790 will be displayed). Press Enter (0790 00 will be displayed).

   f. After a few seconds, the display on the addressed FC 5075 frame will stop blinking and return to displaying the frame address.

   g. Use the arrow keys to increment/decrement to the display 07** and press enter (07 will be displayed). Use the arrow keys to increment/decrement to display 01 and press enter.

   h. Power the expansion unit back on. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

This ends the procedure.

FC 5075 – Disk Unit – Concurrent

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

Yes No

↓ Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see "FC 5075 – Covers" on page 617).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see "Locations — FC 5075 I/O Tower" on page 692.

4. **To remove a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.

   Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields.

   e. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower.

   Attention: If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

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   Note: The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

   Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

5. Are you finished with the repair?

   No   **Yes**

   ↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

           This ends the procedure.

6. **To install a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.

       Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

   e. Slide the unit half-way into the tower. **Ensure that the device does not contact the backplane at this time.**

   f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

       Attention: If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

       Note: The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

   g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

       This ends the procedure.

FC 5075 – Disk Unit – Dedicated

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

   Yes   **No**

   ↓   Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see "FC 5075 – Covers" on page 617).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see "Locations — FC 5075 I/O Tower" on page 692.

4. **To remove a disk unit using dedicated maintenance perform the following:**

   a. Power off the expansion tower (see "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836).

b. Disconnect the power cord.

c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.

d. Remove the unit from the tower.

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5. Are you finished with the repair?

No   Yes

↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

         This ends the procedure.

6. **To Install a disk unit using dedicated maintenance perform the following:**

a. Power off the expansion tower (see "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836).

b. Disconnect the power cord.

c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.

d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

   This ends the procedure.

FC 5075 – Control Panel – NB1

1. Open the front cover.

2. Power off the expansion tower. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
3. Remove the front cover. See "FC 5075 – Covers" on page 617.
4. Remove the AC power cord on the frame you are working on.
5. Pull the locks on each side of the control panel.
6. Slide the control panel out approximately half way and remove the cables from the rear of the panel.
7. Remove the control panel.
8. Install the control panel by reversing the procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5075 – Power Distribution Board – PB1

1. Power off the expansion tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Remove the rear and side covers (see "FC 5075 – Covers" on page 617).
3. Remove the power supplies (see "FC 5075 – Power Supply – P01 and P02").
4. Disconnect the power cable that goes to the backplane SB1.
5. Remove the screws securing the power cage to the base of the frame.
6. Remove the screws securing the power cage to the power distribution backplane.
7. Remove the SPCN cable from the channel in the power cage.
8. Remove the power cage by lifting it out of the frame.
9. Remove the screws securing the power distribution backplane to the frame.
10. Remove the power distribution backplane by lifting it out of the frame.
11. Install the power distribution backplane by reversing the procedure.

This ends the procedure.

FC 5075 – Power Supply – P01 and P02

If the tower has only one power supply installed you must power down the tower to exchange that power supply.

1. Are there two power supplies installed in the tower?

   Yes   No

   ↓

         a. Power down the expansion tower, see "Powering On and Powering Off the System and Logical Partitions" on page 832.

         b. Remove the power cord from the rear of the tower.

2. Remove the right side cover, see "FC 5075 – Covers" on page 617.
3. Pull the docking handle down on the power supply you are exchanging. If two power supplies are being used, do not remove both at the same time.
4. Pull the power supply from the frame.
5. Install the power supply by reversing the procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5075 – Tower Card – CB1

1. Power off the expansion tower. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Remove the AC power cord from the frame that you are working on.
3. Remove the side cover (see "FC 5075 – Covers" on page 617).
4. Remove the PCI cards (see "FC 5075 – Cards – Dedicated" on page 616).
5. Remove the cardboard baffles. The vertical baffle is secured with one screw.
6. Remove the card support bracket.
7. Disconnect the RIO cable from the backplane.
8. Remove the cable connecting the top and bottom backplanes.
9. Remove the screws holding the backplane to the frame. Notice the aligning pins near the top of the board and the power connections near the bottom of the board when reinstalling the board.
10. Install by reversing the removal process.
11. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5078/0578 – AMDs – B01 and B02

1. **Do not power off the system.**
2. Remove the front cover, see "FC 5078/0578 – Covers" on page 626.
3. Remove the upper EMC access plate.
4. Remove the power supply that has the defective AMD attached. Do so by pulling down on the docking handle and sliding the power supply with the two AMDs attached out of the frame.
5. Remove the AMD from the power supply by pulling out on the nylatch knob and sliding the AMD to the left towards the nylach.
6. Install the AMD by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

   Note: Do not slam the new power supply when installing it into the system. Insert the power supply until it engages the frame, then lift the docking handle to lock the power supply into place.

This ends the procedure.

FC 5078/0578 – AMD Controller Card – BB1

1. Remove the top cover (see "FC 5078/0578 – Covers" on page 626).
2. Power down the FC 5078/0578 frame. Pull the power plugs that run from the FC 5078/0578 to the AC Box of the frame below (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
3. Remove the center top plates.
4. From the top of the tower, remove and lable the cables that connect to the AMD Control Card.
5. Remove the screws securing the AMD Control Card to the frame.
6. Pull the AMD Control Card out through the top of the frame.

7. Install the AMD Control Card by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5078/0578 – Cards – Concurrent

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

You do not need to power down the system in order to change PCI cards. If you do choose to power down the FC 5078/0578 frame, see "FC 5078/0578 – Cards – Dedicated" on page 625. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

Use the following procedure:

From the *Hardware Service Manager* screen perform the following:
1. Select the *Packaging hardware resources* option.
2. Select the *Hardware contained in packaging* option for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select the *Concurrent maintenance* option.

   Attention: If multiple resources are shown with the same card position, one or more of these resources will show a status of MISSING ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select the *Power off domain* option. Everything within the IOA's or IOP's power domain will be powered off .
5. To see the status of the power domain, select the *Display power status* option.
6. Find the IOA or IOP that you are removing and select the *Toggle LED blink off/on* option.
7. Remove the cover to access the card that you are removing from the system. See "FC 5078/0578 – Covers" on page 626.
8. Look at the power LED (▲) for the card that you are removing to ensure that it is powered off. The power LED (▲) is located above or in front of the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.
9. Remove the rear cover (see "FC 5074, FC 5079, FC 9079 – Covers" on page 599).
10. Remove the EMC access plate that is located directly above the card enclosure. Press the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.

11. Disconnect and label any cables from the card that you wish to remove.
12. Turn the blue latch counter clockwise and lift upward on the black latch to release the card.

    Note: If you are removing a FC 2890, then you must use dedicated maintenance.
13. Remove the card by gently pulling it out.
14. Install the card in to the system by reversing the card removal procedure for the model system or tower that you are working on.
15. Select the *Power on domain* option for the IOA or IOP that you are installing.

    Note: To the right of the description field you will see one or both of the following symbols displayed:
    *
    >

    The * indicates the location to which the system will assign the resource. Where as the > indicates the location to which the resource was last assigned.
16. Press enter, the "*Work with Controlling Resources*" screen will appear.
17. Determine the location where you want to assign the resource and select the *assign to* option for that location.
18. Wait for the "*Hardware Resource Concurrent Maintenance*" display to appear with the message indicating power on complete.
19. After exchanging the failing item, then go to "Verifying the Repair" on page 830.

    Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

    This ends the procedure.

FC 5078/0578 – Cards – Dedicated

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

You do not need to power down the system in order to change PCI cards in a FC 5078/0578. Use the procedure in "FC 5078/0578 – Cards – Concurrent" on page 624 to perform concurrent removal and installation.

Perform the following:

1. Power off the PCI Expansion Unit (see "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836).
2. Disconnect the two AC power cords from the AC Box.
3. Remove the rear cover (see "FC 5074, FC 5079, FC 9079 – Covers" on page 599).
4. Remove the EMC access plate over the card enclosure by loosening the thumb screws and pulling it towards you.
5. Remove the retaining screws from the card enclosure.
6. Disconnect and label the cables that are attached to the back of the card enclosure.
7. Slide the card enclosure partially out of the frame.
8. Disconnect and label any cables from the card that you wish to remove.
9. Turn the blue latch counter clockwise and lift upward on the black latch to release the card.

   Note: If you are removing a FC 2890, then there are two latches that you will have to turn and release.

10. Remove the card by gently pulling it out.
11. Install the new card by reversing the procedure.
12. After exchanging the failing item, then go to "Verifying the Repair" on page 830 .

    Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

    This ends the procedure.

FC 5078/0578 – Covers

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove the front cover, perform the following steps:
1. Grasp the edges of the front cover and pull it towards you.
   This ends the procedure.
2. **To open or remove the rear cover when the FC 5078 is mounted either on top of a FC 5074 or in a 0551 rack, perform the following steps:**

a. Grasp the right side of the cover and pull it towards you to open it.

b. After opening the cover, press down on the lever that is located inside along the top, left side of the cover.

c. Tilt the top of the cover away from the tower and lift the cover off.

To remove the rear cover when the FC 5078 is mounted on top of a FC 5074, see "FC 5074, FC 5079, FC 9079 – Covers" on page 599.

FC 5078/0578 – Expansion Unit Control Panel – NB1

Attention: The control panel is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Power down the FC 5078/0578 frame. Pull the power plugs that run from the FC 5078/0578 to the AC Box of the frame below (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

2. Open the front cover (see "FC 5078/0578 – Covers" on page 626).

3. Pull on the two side fasteners to release the control panel assembly.

4. Slide the panel partially out of the frame.

5. Disconnect the cables that are attached to backside of the control panel.

6. Remove the control panel from the frame.

7. After exchanging an item, go to "Verifying the Repair" on page 830.

   This ends the procedure.

FC 5078/0578 – Power Distribution Backplane – PB1

1. Remove the top, front and rear cover (see "FC 5078/0578 – Covers" on page 626).

2. Power down the FC 5078/0578 frame. Pull the power plugs that run from the FC 5078/0578 to the AC Box of the frame below (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

3. Remove the center top plate.

4. Remove the two power supplies (see "FC 5078/0578 – Power Supplies – P01 and P02" on page 628).

5. From the top of the tower, remove and lable the cables that connect to the power distribution board.

6. Remove the screws securing the power distribution board to the frame.

7. Pull the power distribution board out through the top of the frame.

8. Install the power distribution backplane by reversing the removal procedure. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

FC 5078/0578 – Power Supplies – P01 and P02

1. **Do not Power off the system.**

   Note: Remove and replace only one power supply at a time.
2. Open the front cover, see "FC 5078/0578 – Covers" on page 626.
3. Pull down on the docking handle in the front of the power supply to release the power supply from the frame.
4. Remove the power supply.
5. Install the new power supply by reversing the removal procedure.

   Note: Do not slam the new power supply when installing it into the system. Insert the power supply until it engages the frame, then lift the docking handle to lock the power supply into place.
   After exchanging an item, go to "Verifying the Repair" on page 830.

   This ends the procedure.

FC 5078/0578 – Tower Card – CB1

1. Power off the expansion tower. (See "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Remove the AC power cord from the expansion tower.
3. Open the rear cover. (See "FC 5078/0578 – Covers" on page 626).
4. From the rear of the expansion tower remove the following:
   a. The external cables from the rear of the PCI card enclosure and note their locations.
   b. The Air flow baffle that is located directly above the PCI card enclosure. Loosen the 3 fasteners and slide the it out the backside.
   c. The cables from the front of the PCI card assembly and note their locations.
      Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).
   d. The screws that hold the PCI card enclosure to the frame.
   e. Pull the PCI card enclosure out of the frame while lifting the cables clear of the enclosure.
   f. Remove the PCI cards from the enclosure and note their locations. (See "FC 5078/0578 – Cards – Dedicated" on page 625.)
   g. Remove the CCIN 2691 card from the enclosure and note its location.
   h. Install the new PCI card enclosure by reversing the above procedure, then procede to next step.
   i. Set the configuration ID in the Tower Card:
      1) If the AC power is not applied, then apply it now.

         Note: The tower may power up automatically.
      2) Power down the expansion tower without removing the power cord. See "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836. Select function 07 on the system panel. Press Enter. (07** will be displayed.)
      3) Use the arrow keys to increment/decrement to sub-function A9 (07A9 will be displayed). Press Enter (07A9 00 will be displayed).

4) Use the arrow keys to increment/decrement to the frame address, nn (nn is usually 02, 03, etc. for expansion towers) (07nn will be displayed). Press Enter (07nn 00 will be displayed).

   Note: The display on the addressed frame should now be blinking on and off.

5) Use the arrow keys to increment/decrement to a configuration ID. The configuration ID is '84' for FC 5078/0578.

   (078x will be displayed). Press Enter (078x 00 will be displayed).

6) After a few seconds, the display on the addressed FC 5078/0578 frame will stop blinking and return to displaying the frame address. After going through function 07A9 from the panel exit back to function 01 manually, the tower ID is updated.

7) Power the expansion unit back on. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

8) After exchanging an item, go to "Verifying the Repair" on page 830.

   This ends the procedure.

HSL Cables – Concurrent

This procedure will direct you through a concurrent maintenance procedure for replacing the HSL cables. You do **not** need to power the system or expansion tower off.

1. The following steps guide you through exchanging an HSL cable. You will need to perform the following steps for both ends of the cable that you are replacing.

2. Disconnect the cable at the frame ID, card position, and port that you are working on.

3. Is the connection an optical link?

   No   Yes

   ↓   Clean the HSL cable connectors on the new cables and the HSL cable port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 536. Go to step 5 of this procedure.

4. Wait at least 30 seconds.

5. Connect the new 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.

   This ends the procedure.

Model 270 – AMD – B01 and B02

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

2. Disconnect the power cord. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.

3. Remove the front cover, see "Model 270 – Covers" on page 634.

4. Remove the AMDs by pulling out on the two top side fasteners and pivoting them toward you.

5. Unplug the cable.

6. Reverse this procedure to install the AMDs.

   Note: When installing the AMDs, be sure the cardboard is placed between the two fans.

This ends the procedure.

Model 270 – AMD – B03

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

2. Remove the rear cover, see "Model 270 – Covers" on page 634.

3. Remove the AMD by pulling out on the top side fastener and pivoting it towards you.

4. Unplug the cable.

5. Reverse this procedure to install the AMD.

This ends the procedure.

Model 270 – Cards – Concurrent

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

In some cases you do not need to power down the system in order to change PCI cards. Use the following rules to determine if you should use dedicated or concurrent removal and installation procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

For all Model 270 cards:

- The processor feature code must be 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, or 2454. Models with processor feature code 22A2, 22A4, 22A5, 2301, 2302, 23E7, 23F0, 23F1, 2422, 2452 **do not** support concurrent maintenance. See "Model 270 – Cards – Dedicated" on page 633.
- Card positions C01 through C07 permit concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP for the system or primary partition, it must have mirrored protection in order to use concurrent maintenance.
- If the resource is the load source IOA or the load source IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- If the resource is the console IOA or the console IOP for the system or primary partition you will loose the console once you power down the domain. Follow the instructions on the screen when you use HSM to power down the IOP or IOA. They will tell you how to use function 68 and function 69 on the control panel.
- If the resource is the console IOA or the console IOP for a secondary partition you will loose the console once you power down the domain. Follow the procedure from the primary partition, then from the "Work with partition status" screen do a function 69 for the partition.
- All other card positions require dedicated maintenance. See "Model 270 – Cards – Dedicated" on page 633.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

Concurrent Removal Procedure

From the *Hardware Service Manager* screen perform the following:
1. Select the *Packaging hardware resources* option.
2. Select the *Hardware contained in packaging* option for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select the *Concurrent maintenance* option.

   Attention: If multiple resources are shown with the same card position, one or more of these resources will show a status of MISSING ("?" after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.
4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select the *Power off domain* option. Everything within the IOA's or IOP's power domain will be powered off .
5. To see the status of the power domain, select the *Display power status* option.
6. Find the IOA or IOP that you are removing and select the *Toggle LED blink off/on* option.

7. Look at the power LED (▴) for the card that you are removing to ensure that it is powered off. The power LED (▴) is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.

8. Remove the left side cover, see "Model 270 – Covers" on page 634.

9. Remove and label any cables connected to the card.

10. Turn the latches securing the card.

11. Gently pull the card off the system backplane.

   This ends the procedure.

Concurrent Installation Procedure:

All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Install the card in to the system by reversing the card removal procedure above.

2. Select the *Power on domain* option for the IOA or IOP that you are installing.

3. Press enter, the "*Work with Controlling Resources*" screen will appear.

   Note: To the right of the description field you will see one or both of the following symbols displayed:
   *
   >

   The * indicates the location to which the system will assign the resource. Where as the > indicates the location to which the resource was last assigned.

4. Determine the location where you want to assign the resource and select the *assign to* option for that location.

   Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

This ends the procedure.

Model 270 – Cards – Dedicated

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

In some cases you do not need to power down the system in order to change PCI cards. Use the rules in "Model 270 – Cards – Concurrent" on page 630 to determine if you should use dedicated or concurrent removal and installation procedures.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Remove the AC power cord on the frame you are working on. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover, see "Model 270 – Covers" on page 634.
4. Are you removing a memory DIMM?

   No   Yes

   ↓   Press down on the latches that are located on each side of the memory DIMM to release it from the backplane.

           This ends the procedure.
5. Remove and label any cables connected to the card.
6. Turn the latches securing the card or unscrew the bracket securing the card.
7. Gently pull the card off the system backplane.

   Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

   This ends the procedure.

Model 270 – Control Panel – NB1

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

Attention: The control panel is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Disconnect the AC power cord from the system unit. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Open the front cover (see "Model 270 – Covers").
4. Pull on the two side fasteners to release the control panel assembly.
5. Slide the panel partially out of the frame.
6. Remove the Processor Capacity cards on the control panel card.
7. Are you here to exchange the Processor Capacity and Interactive cards?

   No   Yes

   ↓

   a. Pull the Processor Capacity or Interactive cards off the control panel card and put the new ones in their place. Note the position and orientation of each card. See "Assembly 3: Control Panel – Model 270" on page 750
   b. Reinstall the control panel card by reversing the procedure to this point.
   c. Go to "Verifying the Repair" on page 830.
   This ends the procedure.

8. Disconnect the cables that are attached to backside of the control panel.
9. Remove the control panel from the frame
10. Remove the control panel cover and remove the VPD and Interactive cards. Note the position and orientation of each card.
11. Install the VPD and Interactive cards into the new panel and replace the cover.
12. Reverse the above procedure to install the panel.
13. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 270 – Covers

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove the left cover:
1. Remove the screws that fasten the cover to the back of the system frame.
2. Push the cover toward the back of the system to remove it.

To remove the front cover:

Pull the top of the cover away from the frame.

To remove the back cover:

Lift the cover up to remove it.

This ends the procedure.

Model 270 – Device Board – DB1, DB2, and DB3

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Disconnect the power cord. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the front and appropriate side covers, see "Model 270 – Covers" on page 634.
4. Remove all the disk units from the cage assembly, see "Model 270 – Disk Unit – Dedicated" on page 638.
5. Remove the power and signal cable from the rear of the disk unit cage assembly.
6. Remove the screws holding the front of the disk unit cage assembly to the front of the system unit frame.
7. Remove the screws from the back inside of the cage assembly.
8. Pull the cage forward about one inch.
9. Remove the remaining cables from the rear of the cage assembly.
10. Remove the disk unit cage assembly by pulling it forward and out of the system unit frame.

This ends the procedure.

Model 270 – Disk Unit – Concurrent

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

   Yes   No

   ↓   Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the covers for access (see "Model 270 – Covers" on page 634).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see "Locations and Addresses" on page 671.

4. Are you removing or installing a disk unit using concurrent maintenance?

   Note: Concurrent repair is available on a Model 270 if a storage expansion unit is installed. If a storage expansion unit is not installed, concurrent maintenance may or may not be available. Try the concurrent maintenance procedure to determine if concurrent maintenance is supported. If the concurrent maintenance procedure fails, use the dedicated maintenance procedure.

   Yes   No

   ↓   Perform "Model 270 – Disk Unit – Dedicated" on page 638.

5. **To remove a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.
      Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields.

   e. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out.

Attention: If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

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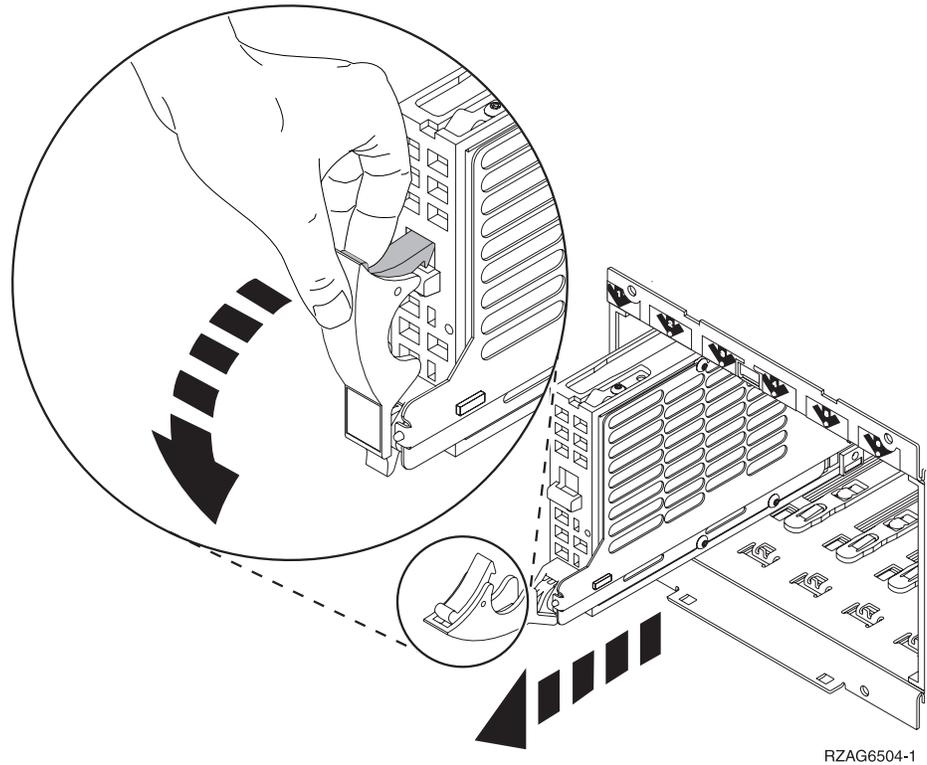
> **Note:** The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out.

6. Are you finished with the repair?

   No   Yes

   ↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

   This ends the procedure.

7. **To install a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.

      Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

   e. Slide the unit half-way in. **Ensure that the device does not contact the backplane at this time.**

   f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the disk unit. Put the disk unit part way into the desired slot and rotate the

handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

Attention: If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

> **Note:** The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

Model 270 – Disk Unit – Dedicated

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

   Yes   No

   ↓   Go to "Recovery Procedures" on page 803.

2. **To remove a disk unit using dedicated maintenance perform the following:**

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Disconnect the power cord. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.

   c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.

   d. Remove the unit.
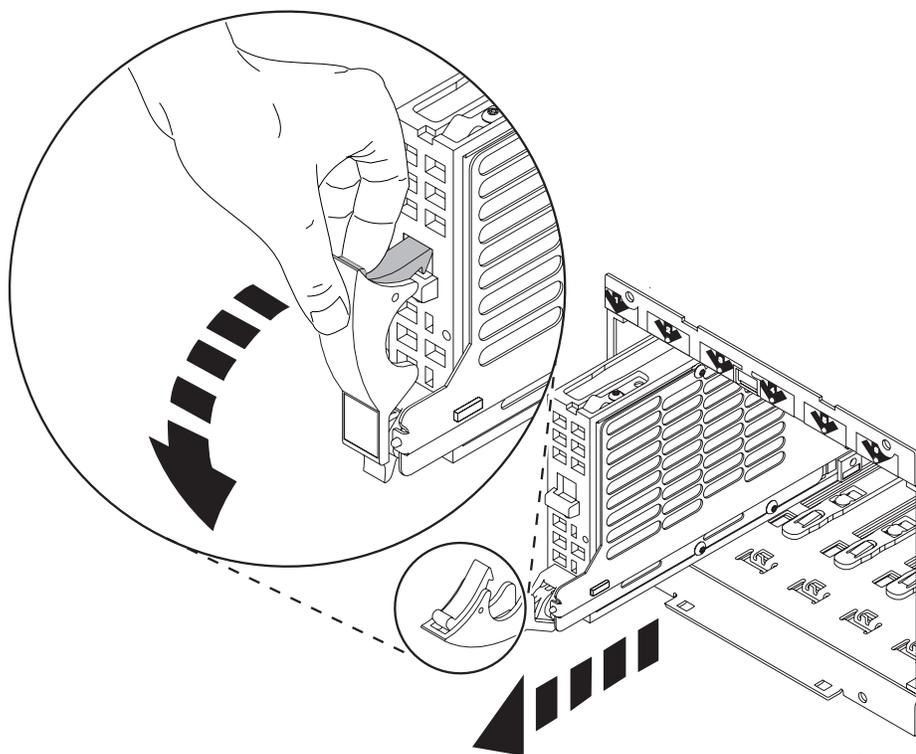
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3. Are you finished with the repair?

   No   Yes

   ↓   Replace the covers that were removed during this procedure and return
           to the procedure that sent you here.

           This ends the procedure.

4. **To Install a disk unit using dedicated maintenance perform the following:**
   a. Power off the system (see "Powering On and Powering Off the System and
      Logical Partitions" on page 832).
   b. Disconnect the power cord. On a **MODEL 270 with a 7104 SYSTEM UNIT
      EXPANSION** attached, disconnect both the system line cord and the
      expansion unit line cord.
   c. Put the disk unit part way into the desired slot and rotate the handle of the
      disk unit towards you.
   d. Push the disk unit completely into the slot and rotate the handle towards
      the disk unit to latch it into the slot.
   e. Replace the covers that were removed during this procedure and return to
      the procedure that sent you here.

      This ends the procedure.

Model 270 – Memory – A through H

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower
      Model 270 system units are placed on rails in the frame. If you are working
      on the upper or lower Model 270 in a 0551 frame, follow these instructions
      and access the internal parts by opening the front cover and sliding the
      system unit out on it's rails.

1. Power off the system, see "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover, see "Model 270 – Covers" on page 634.
4. Remove the DIMM from the system backplane.

This ends the procedure.

Model 270 – Power Regulator – R01

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover, see "Model 270 – Covers" on page 634.
4. Press on little locking tabs until power regulator is ejected.
5. Gently pull the power regulator the rest of the way off the system backplane.
6. Install the new part by reversing the procedure. Go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 270 – Power Supply – P01

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system, see "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side and rear covers, see "Model 270 – Covers" on page 634.
4. Remove all cables that run from the power planar to the system backplane.
5. Remove the screws holding the power supply to the rear of the system frame.
6. Remove the power supply by sliding it slightly forward so it will clear the back flange, then out of the system.
7. Install the new part by reversing the procedure. Go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 270 – Power Supply – P02

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system, see "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the right side and rear covers, see "Model 270 – Covers" on page 634.
4. Remove the cables attached to the top board of the power supply box.
5. Remove the screws holding the power supply to the rear of the system frame.
6. Remove the power supply by lifting the top ring. The power supply box will lift out the side of the frame.
7. Install the new part by reversing the procedure. Go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 270 – Removable Media – D07 and D08

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

Laser Safety Information

CAUTION:
This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the front and left side covers, see "Model 270 – Covers" on page 634.
4. Remove the cable(s) that attach to the rear of the unit.
5. Pull the side fasteners to release the media tray from the system frame.
6. Remove the media unit and tray form the frame by sliding it forward.
7. Reverse these steps to install the new device.
8. If you need to remove a tape from the old tape unit, see "Tape Cartridge – Manual Removal" on page 663.
9. If you need to remove a CD-ROM or DVD media, go to "Optical Media – Manual Removal" on page 666, and then continue with the next step of this procedure.

This ends the procedure.

Model 270 – System Unit Backplane – MB1

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit. On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
3. Remove the left side cover, see "Model 270 – Covers" on page 634.
4. Remove the PCI cards. See "Model 270 – Cards – Dedicated" on page 633. Note the locations to aid in replacing them correctly.
5. Remove the lower and center cardboard. The center piece of cardboard is attached to the long PCI support with one retaining screw. The cardboard that separates the AMDs does not need to be removed.
6. Remove all cables.
7. Remove the screws holding the backplane to the frame.
8. Remove the backplane assembly.
9. Install the new part by reversing the procedure.
10. Connect the power cord to the box and connect to AC.
11. Set the 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 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 just replaced the Backplane (usually 01 for the system unit. 07nn will be displayed, where nn is the frame address). Press Enter. (07nn 00 will be displayed).
    d. Select the correct configuration ID from the following:

       For:
       - Model 270 with CCIN 2249, 224A, 25B9, 25BA and without FC 7104 - 91 (w/o removable processor)
       - Model 270 with processor CCIN 24A0, 24A2 ,25BD and without FC 7104 - 92 (w/removable processor)
       - Model 270 with CCIN 2249, 224A, 25B9, 25BA and with FC 7104 - 95 (w/o removable processor)
       - Model 270 with processor CCIN 24A0, 24A2, 24A4, 25BD and with FC 7104 - 96 (w/removable processor)

       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).
    e. The control panel will display the series of bring up SRCs and then display function 01.

This ends the procedure.

Model 270 – Time of Day Battery (TOD)

Note: The Model 270 may be housed in a FC 0551 frame. The upper and lower Model 270 system units are placed on rails in the frame. If you are working on the upper or lower Model 270 in a 0551 frame, follow these instructions and access the internal parts by opening the front cover and sliding the system unit out on it's rails.

CAUTION:
This product contains a lithium battery. To avoid possible explosion, do no burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)

1. Power off the system and unplug AC power cable (see "Powering On and Powering Off the System and Logical Partitions" on page 832). On a **MODEL 270 with a 7104 SYSTEM UNIT EXPANSION** attached, disconnect both the system line cord and the expansion unit line cord.
2. Remove the left side cover, see "Model 270 – Covers" on page 634.
3. Remove the card directly above and below the TOD battery, see "Model 270 – Cards – Dedicated" on page 633.
4. Remove the TOD battery by sliding it toward the back of the system.
5. Reverse this procedure to install the new battery.
6. After installation is complete, IPL the system in Manual Mode.
7. Have the customer set the time and date.

This ends the procedure.

Model 820 – AMD – B01 Through B04

Model 820 - AMD -B01, B02, B03, B04 (Concurrent)

Note: The configuration of 3 power supplies and 4 AMDs **MUST BE INSTALLED** to use this procedure. (Use non-concurrent procedure with less than 4 AMDs.)

Note: The replacement fan MUST BE RECONNECTED WITHIN 30 SECONDS OF REMOVAL OF FAILED UNIT or system failure / shutdown may result.

1. Remove the front cover, see "Model 820 – Covers" on page 647.
2. Remove the AMD by pulling out on the latch and pivoting it towards you.
3. Reverse this procedure to install the AMD.
4. **This ends the procedure.**

Model 820 - AMD -B01, B03 (NON-Concurrent)

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Remove the front cover, see "Model 820 – Covers" on page 647.
3. Remove the AMD by pulling out on the latch and pivoting it towards you.
4. Reverse this procedure to install the AMD.
5. **This ends the procedure.**

Model 820 – Cards – Concurrent

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

In some cases you do not need to power down the system in order to change PCI cards. Use the following rules to determine if you should use dedicated or concurrent removal and installation procedures. If you use concurrent maintenance on a partitioned system, follow the procedures from the partition that owns the resource. If the resource is not owned, follow the procedure from the primary partition.

For all Model 820 cards:
- Card positions C01 through C12 permit concurrent maintenance using HSM. You can power down the individual card slot.
- If the resource is the load source IOA or the load source IOP for the system or primary partition, it must have mirrored protection in order to use concurrent maintenance.
- If the resource is the load source IOA or the load source IOP for a secondary partition, then power down the secondary partition and follow the procedure from the primary partition.
- If the resource is the console IOA or the console IOP for the system or primary partition you will loose the console once you power down the domain. Follow the instructions on the screen when you use HSM to power down the IOP or IOA. They will tell you how to use function 68 and function 69 on the control panel.
- If the resource is the console IOA or the console IOP for a secondary partition you will loose the console once you power down the domain. Follow the procedure from the primary partition, then from the ″Work with partition status″ screen do a function 69 for the partition.
- All other card positions require dedicated maintenance. See "Model 820 – Cards – Dedicated" on page 646.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

Concurrent Removal Procedure

From the *Hardware Service Manager* screen perform the following:
1. Select the *Packaging hardware resources* option.
2. Select the *Hardware contained in packaging* option for the frame ID that you are working on.
3. Find the card position for the IOA or IOP that you are removing and select the *Concurrent maintenance* option.

   Attention: If multiple resources are shown with the same card position, one or more of these resources will show a status of MISSING (″?″ after the description). Only one resource will be listed as not missing. Select this resource for the concurrent maintenance operation.

4. A listing of the power domain is shown. Find the IOA or IOP that you are removing and select the *Power off domain* option. Everything within the IOA's or IOP's power domain will be powered off.

5. To see the status of the power domain, select the *Display power status* option.

6. Find the IOA or IOP that you are removing and select the *Toggle LED blink off/on* option.

7. Look at the power LED (▴) for the card that you are removing to ensure that it is powered off. The power LED (▴) is located to the left and directly above the card slot. If the LED is blinking multiple times per second (rapidly) or it is off, then the card is powered off.

8. Remove the left side cover, see "Model 820 – Covers" on page 647.

9. Remove and label any cables connected to the card.

10. Turn the latches securing the card.

11. Gently pull the card off the system backplane.

    This ends the procedure.

Concurrent Installation Procedure

All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Install the card in to the system by reversing the card removal procedure above.

2. Select the *Power on domain* option for the IOA or IOP that you are installing.

3. Press enter, the "*Work with Controlling Resources*" screen will appear.

   Note: To the right of the description field you will see one or both of the following symbols displayed:

   *
   >

   The * indicates the location to which the system will assign the resource. Where as the > indicates the location to which the resource was last assigned.

4. Determine the location where you want to assign the resource and select the *assign to* option for that location.

   Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits ″1000″ to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

This ends the procedure.

Model 820 – Cards – Dedicated

In some cases you do not need to power down the system in order to change PCI cards. Use the rules in "Model 820 – Cards – Concurrent" on page 644 to determine if you should use dedicated or concurrent removal and installation procedures.

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

CAUTION:
The circuit card contains lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (RSFTC234)

1. Power off the system.
2. Remove the AC power cord on the frame you are working on.
3. Remove the left side cover, see "Model 820 – Covers" on page 647.
4. Remove and label any cables connected to the card.
5. Turn the latches securing the card.
6. Gently pull the card off the system backplane.

   Note: If you have exchanged a 2766 Fibre Channel IOA, the IBM 2105 disk unit subsystem must be updated to use the World-Wide Port-Name of the new 2766 IOA. This name can be found in the Port worldwide name field on the iSeries 400 by displaying detail on the 2766 IOA Logical Hardware Resource information in Hardware Service Manager in SST/DST. The 16-digit World-Wide Port-Name can also be determined by including the digits "1000" to the beginning of the 12-digit IEEE Address found on the tailstock label of the Fibre Channel IOA. Use the *ESS Web Interface User's Guide* (SC26–7346) to update the World-Wide Port-Name in the host configuration on the IBM 2105 ESS. The *ESS Web Interface User's Guide* can also be found at the following URL: http://www.storage.ibm.com/hardsoft/products/ess/refinfo

   This ends the procedure.

Model 820 – Control Panel – NB1

Attention: The control panel is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).
2. Disconnect the AC power cord from the system unit.
3. Open the front cover (see "Model 820 – Covers" on page 647).
4. Pull on the two side fasteners to release the control panel assembly.
5. Slide the panel partially out of the frame.
6. Are you here to exchange the Processor Capacity or Interactive cards?

   No   Yes

   ↓

a. Pull the Processor Capacity or Interactive cards off the control panel card and put the new ones in place. Note the position and orientation of each card. See "Assembly 8: Control Panel – Model 820" on page 762.

b. Reinstall the control panel card by reversing the procedure to this point.

c. Go to "Verifying the Repair" on page 830.

This ends the procedure.

7. Disconnect the cables that are attached to backside of the control panel.

8. Remove the control panel from the frame

9. Remove the control panel cover and remove the Processor Capacity and Interactive cards. Note the position and orientation of each card. See "Assembly 8: Control Panel – Model 820" on page 762.

10. Install the Processor Capacity and Interactive cards into the new panel and replace the cover.

11. Reverse the above procedure to install the panel.

    Note: When a control panel with keystick is replaced, discard the new keys that come with panel and reuse the original keys.

12. Do you have the original system unit keys?

    Yes   No

    ↓   Perform the following:

    a. Open the front cover (see "Model 820 – Covers").

    b. Pull on the two side fasteners to release the control panel.

    c. Slide the panel partially out of the frame.

    d. Apply AC power.

    e. Insert Keystick into panel. The panel should display SRC 0000 5553.

    f. Locate the push button located on the back of the control panel, directly behind, the keystick position.

    g. Depress the push button for 3-4 seconds.

13. After exchanging an item, go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 820 – Covers

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

To remove the left, right, or top cover:

1. Remove the screws that fasten the cover to the back of the system frame.

2. Push the cover toward the back of the system to remove it.

To remove the front cover:

Pull the top of the cover away from the frame.

To remove the back cover:

Lift the cover up to remove it.

This ends the procedure.

Model 820 – Device Board – DB1 and DB2

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit.
3. Remove the front and right side covers, see "Model 820 – Covers" on page 647.
4. Remove the EMC shield in front of the disk units by pulling out on the side two latches.
5. Remove the disk units from the disk unit cage. label the position of each disk unit.
6. Remove the screws holding the disk unit cage to the frame. The screws are located on the front and inside rear of the disk unit cage.
7. Unplug and remove the cables plugged into the back of the device board.
8. Pull the disk unit cage out of the frame.
9. Remove the device board from the back of the disk unit cage.

This ends the procedure.

Model 820 – Disk Unit – Concurrent

Attention: If removing the cover while powered on, errors may occur due to Electromagnetic Interference.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

   Yes   No

   ↓   Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see "Model 820 – Covers" on page 647).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see "Locations and Addresses" on page 671.

4. **To remove a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.
      Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields.

   e. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing. You now have 9 seconds to pinch the

two surfaces of the latching mechanism together and rotate the handle of the disk unit towards you. Pull the disk unit partially out of the tower.

Attention: If you remove the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

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> **Note:** The light above the device location will go off and remain off as soon as the device is no longer making contact with the backplane.

Wait another 5 seconds to allow time for the disk to stop spinning. Then pull the disk unit the remaining way out of the tower.

5. Are you finished with the repair?

   No   Yes

   ↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

           This ends the procedure.

6. **To install a disk unit using concurrent maintenance perform the following:**

   a. Select System Service Tools (SST). If you cannot get to SST, select DST.
      Do not perform a system IPL to get to DST.

   b. Select the *Start a Service Tool* option.

   c. Select the *Hardware Service Manager* option.

   d. Select *Device Concurrent Maintenance* and enter the required information in the information fields. **Do not press the Enter key at this time.**

   e. Slide the unit half-way into the tower. **Ensure that the device does not contact the backplane at this time.**

   f. Press the Enter key on the console. After the delay time, the light above the device location will begin flashing . You now have 9 seconds to insert the

disk unit. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you. Then push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

Attention: If you install the device when the light is **not** flashing, data may be lost, the disk unit may be damaged, or the backplane may be damaged.

> **Note:** The light above the device location will go off and remain off for a few seconds when the device contacts the backplane. Then it should go on and remain on.

g. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

This ends the procedure.

Model 820 – Disk Unit – Dedicated

> **Note:** Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: The disk unit is sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Were you directed here from "Recovery Procedures" on page 803?

   Yes   No

   ↓   Go to "Recovery Procedures" on page 803.

2. After you have determined the location of the disk unit to replace, remove the front covers for access (see "Model 820 – Covers" on page 647).

3. Remove the EMC access plate that is over the location of the disk unit that you are removing. For location information, see "Locations and Addresses" on page 671.

4. **To remove a disk unit using dedicated maintenance perform the following:**

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Disconnect the power cord.

   c. To remove the disk unit, pinch the two surfaces of the latching mechanism together and pull the handle towards you to release the disk unit from the slot.

   d. Remove the unit from the tower.

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5. Are you finished with the repair?

   No   **Yes**

   ↓   Replace the covers that were removed during this procedure and return to the procedure that sent you here.

          This ends the procedure.

6. **To Install a disk unit using dedicated maintenance perform the following:**

   a. Power off the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   b. Disconnect the power cord.

   c. Put the disk unit part way into the desired slot and rotate the handle of the disk unit towards you.

   d. Push the disk unit completely into the slot and rotate the handle towards the disk unit to latch it into the slot.

   e. Replace the covers that were removed during this procedure and return to the procedure that sent you here.

      This ends the procedure.

Model 820 – Memory

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

2. Unplug the power cord from the back of the system unit.

3. Remove the left side cover, see "Model 820 – Covers" on page 647.

4. Remove the EMC shield by pulling out the two side latches.

5. Remove the memory riser card by unlatching the two side latches.

6. Remove the memory DIMMs from the processor or memory riser card by pressing down on the latches which are on each end of the DIMM.

7. If you are replacing the memory riser card, then you must move the memory DIMMs to the new card.

8. Install the new memory DIMMs by firmly pressing the DIMM on to the riser card until it is fully seated.

This ends the procedure.

Model 820 – Power Supply – P01, P02, and P03

Note: Power supply PN 24L1400 MUST HAVE THE PROTECTIVE COVER ON CONNECTOR J4 REMOVED BEFORE INSTALLATION. Install the protective cover on the part that you are returning.

1. Remove the right side cover, see "Model 820 – Covers" on page 647.

2. Are there three power supplies installed in the system?

   Yes   **No**

   ↓   Power down the system before continuing with this procedure. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

3. Pull the handle all the way down and towards you.

4. Remove the power supply by sliding it out of the system.

Note: To replace, slide power supply all the way in then lift handle to lock into place.

This ends the procedure.

Model 820 – Processor – M03

Note: The processor regulator is part of the processor card assembly (M03).

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

2. Unplug the power cord from the back of the system unit.

3. Remove the left side cover, see "Model 820 – Covers" on page 647.

4. Remove the EMC shield by pulling out on the side two latches.

5. Unlatch the processor card and pull it towards you to remove it from the system.

6. If the processor card has memory DIMMs on it you must move the memory DIMMs to the new card.

7. Remove the memory DIMMs from the processor card by pressing down on the latches which are on opposite ends of the DIMM.

8. Install the memory DIMMs to the new processor card by firmly pressing the DIMM on to the processor card until it is fully seated.

9. Install the new part by reversing the procedure. Go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 820 – Processor Regulator – M03

Note: The processor regulator is part of the processor card assembly (M03).

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Unplug the power cord from the back of the system unit.
3. Remove the left side cover, see "Model 820 – Covers" on page 647.
4. Remove the EMC shield by pulling out on the side two latches.
5. Unlatch the processor card and pull it towards you to remove it from the system.
6. Remove the processor regulator.
7. Reverse the procedure to install the processor regulator.
8. Install the new part by reversing the procedure. Go to "Verifying the Repair" on page 830.

This ends the procedure.

Model 820 – Removable Media – D13 and D14

Laser Safety Information

CAUTION:
This product may contain a CD-ROM which is a class 1 laser product. (RSFTC240)

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.
2. Pull the power plug in the rear of the system.
3. Remove the front cover, see "Model 820 – Covers" on page 647.
4. Partially remove the unit by pulling out on the two latches. The latches are located on each side of the unit.

    Note: If both devices are installed, then you may have to remove both units to gain access to the cables.
5. Remove the cable(s) that attach to the rear of the unit.
6. Remove the unit form the frame.
7. Install the new part by reversing the procedure. Go to "Verifying the Repair" on page 830.
8. If you need to remove a tape from the old tape unit, see "Tape Cartridge – Manual Removal" on page 663.
9. If you need to remove a CD-ROM or DVD media, go to "Optical Media – Manual Removal" on page 666, and then continue with the next step of this procedure.

This ends the procedure.

Model 820 – System Unit Backplane – MB1 and Power Distribution Board – PB1 (PB1 and MB1 are included in theTWRCARD)

1. Power off the system. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

2. Unplug the power cord from the back of the system unit.

3. Remove the right side cover, see "Model 820 – Covers" on page 647.

4. Remove and label the PCI cards, processor and memory riser cards. See "Model 820 – Cards – Dedicated" on page 646.

5. Remove all the plastic card dividers.

6. Remove the screws securing the processor and memory cage to the frame.

7. Remove the power supplies. Unplug the AC cable and cables that connect to the disk unit cages, power, and control panel function cables.

8. Remove the screws securing the upper card cage to the lower processor cage.

9. Remove the lower processor cage by pulling it out of the frame.

10. Remove the cable running from the system backplane to the rear of the frame.

11. Remove the screws holding the SPCN connector plate to the rear of the frame. Pull out the plate.

12. Remove the screws that mount the boards and stiffener to the frame.

13. Remove the system unit backplane, the power distribution board, and stiffener board. This is all one FRU.

    Note: There is an insulator attached to the board. If the new assembly does not have an insulator, use the insulator from the assembly you just removed.

14. Reverse the procedure to replace the board.

    Note: Be sure to close the cable catches on the power supply side of the power distribution backplane.

15. Perform the following:

    a. Open the front cover (see "Model 820 – Covers" on page 647).

    b. Pull on the two side fasteners to release the control panel.

    c. Slide the panel partially out of the frame.

    d. Insert the Keystick into the panel.

    e. Plug the power cord back into the system frame. Do not power on the system yet. The panel should display SRC 0000 5553.
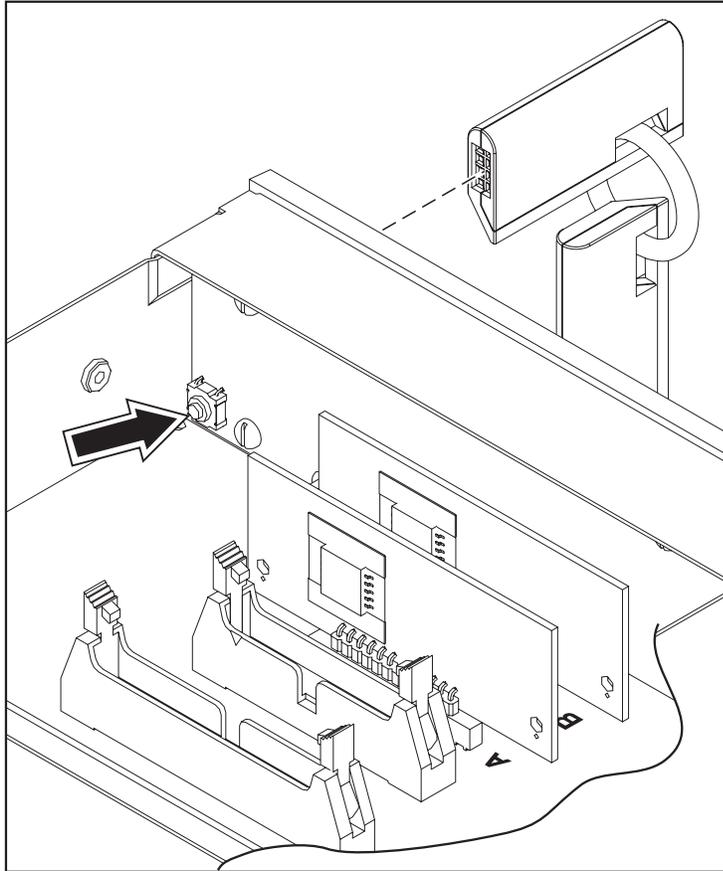
RZAQ4506-0

Figure 18. System Unit Control Panel with Keystick (NB1)

      f. Locate the push button located on the back of the control panel, directly behind the keystick position.

      g. Depress the push button for 3-4 seconds.

16. Select function 7 on the system control panel. Press Enter. (07** will be displayed)

17. Use the arrow keys to increment/decrement to sub-function A9 (07A9 will be displayed). Press Enter (07A9 00 will be displayed).

18. Use the arrow keys to increment/decrement to the frame address, nn (nn is usually '01' for system units) (07nn will be displayed). Press Enter (07nn 00 will be displayed).

19. Use the arrow keys to increment/decrement to a configuration ID to '93. (0793 will be displayed). Press Enter (0793 00 will be displayed).

20. After a few seconds, the display will go blank and then the bring up SRCs will be displayed. When the panel returns to function 01, bring up is complete.

21. Power the system unit back on. See "Powering On and Powering Off the System and Logical Partitions" on page 832.

22. Set the system time and date.

This ends the procedure.

Model 820 – Time of Day Battery (TOD)

CAUTION:
This product contains a lithium battery. To avoid possible explosion, do no burn, exchange, or charge the battery. Discard the battery as instructed by local regulations for lithium batteries. (RSFTC232)

1. Power off the system and unplug AC power cable (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

2. Remove the left side cover, see "Model 820 – Covers" on page 647.

3. Remove the cover (EMC shield) by pulling out on the two latches. The latches are located on each side of the cover.

4. Remove the processor card, see "Model 820 – Processor – M03" on page 652.

5. Remove the memory card.

6. Replace the TOD battery by sliding the battery to the left and removing it from the system.

7. Reverse this procedure to install the new battery.

8. After installation is complete, IPL the system in Manual Mode.

9. Have the customer set the time and date.

This ends the procedure.

Cards – Special Instructions for FC 2689, 2748, 2763, 2778, 2890, 4758

Type 2689 – Integrated xSeries Adapter (IXA)

Attention: Refer to the xSeries server service documentation **prior** to removing any covers or cards from the xSeries server.

The Integrated xSeries Adapter (IXA) is an external card located in an xSeries server. The card is connected to the system with both a signal cable and SPCN cable. Using SPCN to power off the tower will power off the entire server (but does not remove power supplied by the xSeries server power source).

For additional detail on the following procedure refer to Figure 19 on page 657. See the documentation that came with the xSeries server for detailed instructions.

Perform the following to exchange the failing component:

1. Check the Service Action Log (SAL) for the frame number with the failing component.

2. Using the xSeries server documentation, remove the top cover.

3. Check the LED Display in the top, left side of the Integrated xSeries Adapter (IXA) card. Is the number on the LED the frame number with the failing item?

   Yes   No

   ↓   Put the top cover back on the server unit and take the cover off another xSeries server. Continue to check the number on the LED Display until one matches the frame number you are looking for.

4. From the system unit, power down the frame with the failing item. See "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836.

Attention: You must power down the xSeries server and disconnect the AC power cord from its power source to avoid damaging the card. See the service documentation that came with the xSeries server that you are working on.

5. Disconnect the cables that are attached to the rear of the Integrated xSeries Adapter (IXA) card in the xSeries server.

6. Open the latches on the card slot and lift the card out of the xSeries server.

7. Replace the card by reversing the above procedure. After exchanging an item, go to "Verifying the Repair" on page 830.
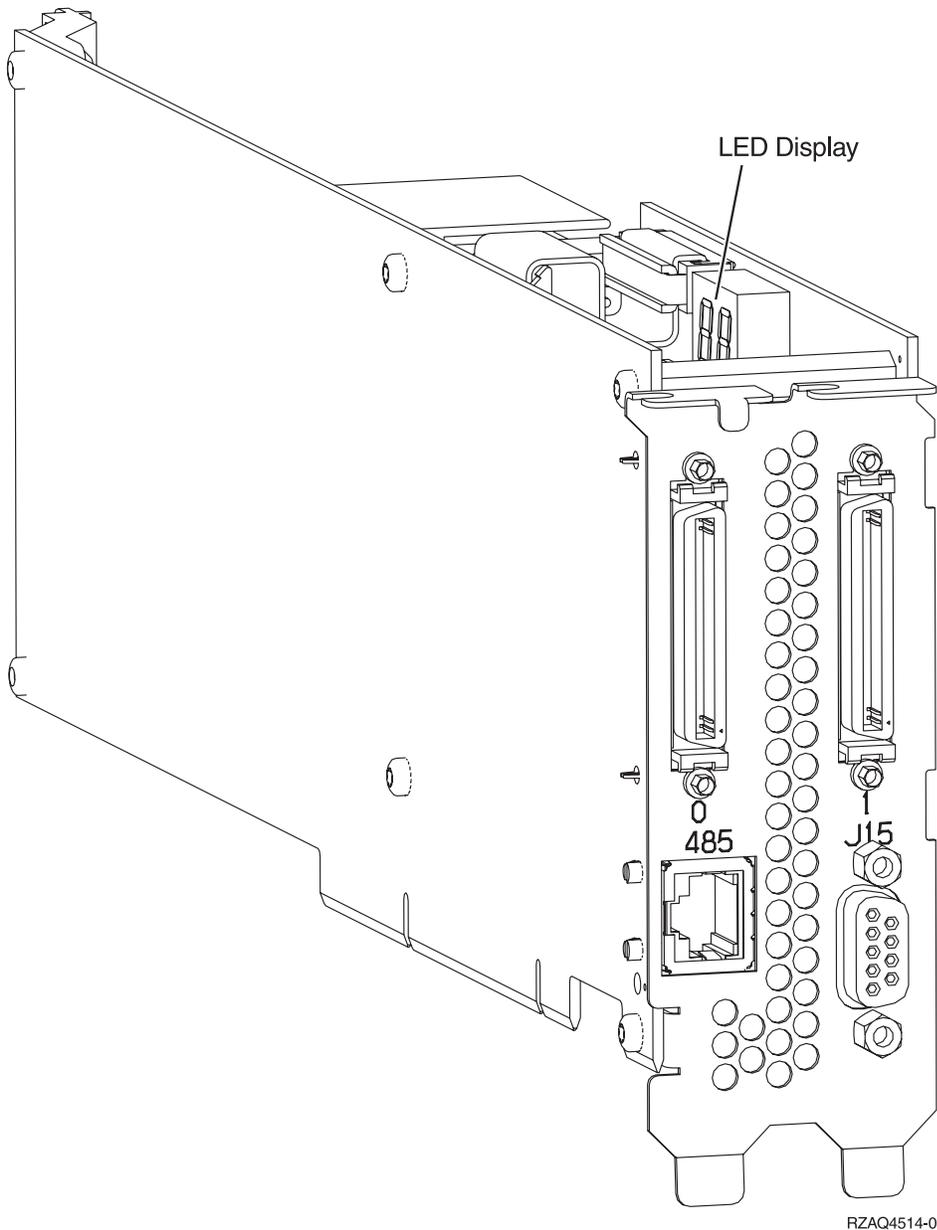

Figure 19. Integrated xSeries Adapter (IXA) Card

Type 2748, 2763, 2778 – Cache Battery Pack

The following safety notice pertains to the 2748 Cache Battery Pack.

CAUTION:
The battery is a nickel-cadmium battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC226)

The following safety notice pertains to the 2763 and 2778 Cache Battery Packs.

CAUTION:
The battery is a nickel metal hydride battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations.

In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (RSFTC244)

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Remove the card using the concurrent card removal and replacement procedure for the model or FC that you are working on (see "Chapter 4. Removal and Installation Procedures" on page 593).

   Note: If the concurrent card removal procedure fails, then power the system down normally prior to replacing the cache battery pack. (See "Powering On and Powering Off the System and Logical Partitions" on page 832.)
2. Locate the casing **A** that holds the battery pack. See Figure 20 on page 659.
3. Squeeze the casing **A** to remove battery unit from the card.
4. Remove the plug that connects the battery unit and the card.

   Note: The plug fits in the board only one way so it can not be inserted incorrectly during the replacement phase.
5. Remove the battery unit from the battery casing.

   Note: Save the battery casing. The replacement battery pack will not come equipped with a casing.
6. Install the new cache battery pack by reversing the procedure.
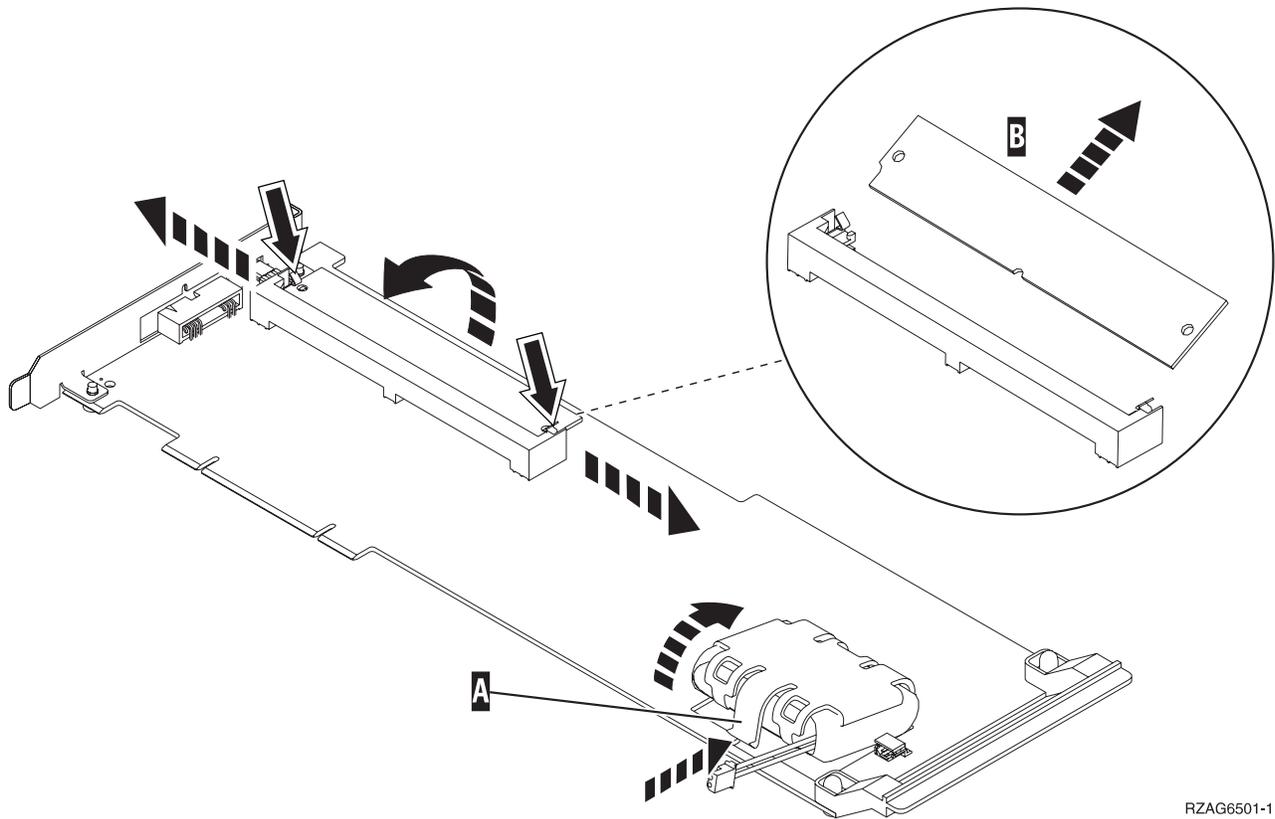
Figure 20. Cache Battery Pack and Cache Directory Card for Type 2748, 2763, 2778

This ends the procedure.

Type 2748, 2763, 2778 – Cache Directory Card

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Remove the card using the concurrent card removal and replacement procedure for the model or FC that you are working on (see "Chapter 4. Removal and Installation Procedures" on page 593).

2. Locate the cache directory card **B**; a small rectangular card mounted on the I/O card. See Figure 20.

3. Spread the tabs on each side of the cache directory card and raise the back of the cache directory card **B** up away from the I/O card. The cache directory card will pivot up about 20°

4. Pull cache directory card out.

Note: To install the replacement cache directory card, the cache directory card should be wiggled into place at a 20°angle before pushing it down and locking the tabs. Be sure that the holes on each side of the cache directory card are filled by the pegs on the cache card to ensure proper seating.

This ends the procedure.

Type 2890 — Integrated xSeries Server (IXS)

Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).

1. Remove the 2890 (IXS) card from the system using dedicated maintenance for the system model or FC that you are working on (see "Chapter 4. Removal and Installation Procedures" on page 593).
2. If you are removing an IXS card from a FC 5074/5079, then from the rear of the expansion tower remove the following:
   a. The external cables from the rear of the PCI card enclosure and note their locations.
   b. The EMC access plate that is located directly above the PCI card enclosure. Press the surfaces of the two latching mechanisms together and tilt the top of the cover away from the frame to remove it.
   c. The cables from the top of the IXS card and note their locations.

      Attention: All cards are sensitive to electrostatic discharge (see "Appendix C. Working with Electrostatic Discharge-Sensitive Parts" on page 865).
   d. The screws that hold the PCI card enclosure to the frame.
   e. Pull the PCI card enclosure partially out of the frame while lifting the cables clear of the enclosure.
   f. Press the release mechanism that is located along the top right side of the enclosure and carefully slide the enclosure towards you. Make sure that the cables are clear of the enclosure.
3. Remove the 2890 Integrated xSeries Server (IXS) card from the system.
4. If the failing item was the Integrated xSeries Server (IXS) card, remove all the Pentium memory module/DIMMS and install them on the new Integrated xSeries Server (IXS) card and install the card by reversing the removal procedure.

   If the failing item was a Pentium memory module/DIMM, install a new Pentium memory module/DIMM on the Integrated xSeries Server (IXS) card and install the card by reversing the removal procedure.

   Notes:
   a. To remove a Pentium memory modules/DIMM, open the clips and remove the module. For location information see "2890 Integrated xSeries Server (IXS)" on page 723.
   b. At least 1 Pentium memory module is required in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.
   c. PN 08J0653 is required in the IOP DIMM position. This IXS 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.

Type 4758 — Battery Replacement Procedure

This procedure demonstrates the proper method for replacing the Type 4758-023 PCI Cryptographic Coprocessor card's batteries.

Note: Two Battery Replacement Kits (PN 09J8199) are required to replace the batteries in the 4758-023 card, since the card contains 4 batteries, and each Battery Replacement Kit contains 2 new batteries. (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.)

CAUTION:
The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

1. Remove the 4758 PCI Cryptographic Coprocessor card from the system (see "Model 270 – Cards – Concurrent" on page 630, "Model 820 – Cards – Concurrent" on page 644, "FC 5074, FC 5079 – Cards – Concurrent" on page 596, or "FC 5075 – Cards – Concurrent" on page 614).

2. Find the location of the 4 lithium batteries. They are located in adjacent holders, with the Battery 2 holder above the J3 connector. Refer to the illustration below.
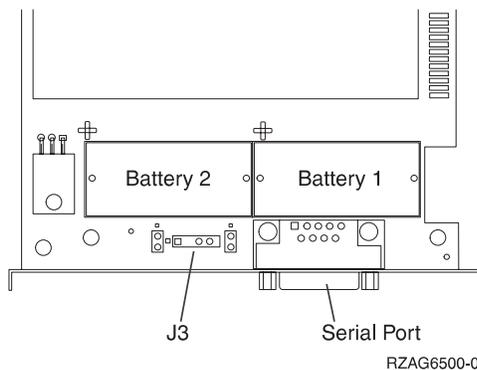

Figure 21. Battery Locations on the 4758 PCI Cryptographic Coprocessor

> **Note:** The 4758-023 card contains 4 batteries, even though only 2 batteries are shown in the figure above. Battery 3 is next to Battery 1, and Battery 4 is next to Battery 2.

3. **Attention:** Any loss of battery power erases data stored in the card's protected memory and renders the card useless.

4. Open both of the battery replacement kits.

5. Insert one of the new batteries into the battery tray provided with the kit.

   > **Note:** The battery '+' must be oriented in the battery tray with the same polarity matching the '+' on the tray.

6. Connect the battery tray's cable to the J3 connector on the 4758 card.

   > **Note:** This maintains battery power to the card while the new batteries are installed one at a time. Refer to step 3 of this procedure.

7. Remove the 2 battery warning labels which cover both sets of batteries.. Discard the labels.

8. Replace the battery in the Battery 1, 2 and 3 positions with a new battery.

   > **Note:** The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.

9. Replace the battery in the Battery 4 position with the battery in the battery tray.

   > **Note:** The battery '+' must be oriented in the holder with the same polarity matching the '+' on the holder.

10. Remove the battery tray from the J3 connector and discard it.

11. Place one of the new Battery Warning label (PN 04K9421) over the 2 new batteries in Battery positions 1 & 2 which were just installed. Place the other new Battery Warning label over the 2 new batteries in Battery positions 3 & 4 which were just installed.

12. Reinstall the card.

This ends the procedure.

Type 4758 — Disablement Procedure

Attention: For security reasons, when replacing the cryptographic coprocessor, use the following procedure.

This procedure demonstrates the proper method for disabling the Type 4758 PCI Cryptographic Coprocessor card. The disablement procedure assures that the contents of the Coprocessor's protected memory are set to zeroes. The cryptographic master key and other data stored in the protected memory will be lost.

CAUTION:
The battery is a lithium battery. To avoid possible explosion, do not burn or charge the battery. Exchange only with the IBM-approved part. Discard the battery as instructed by local regulations. (RSFTC227)

1. Remove the 4758 PCI Cryptographic Coprocessor card from the system (see "Model 270 – Cards – Concurrent" on page 630, "Model 820 – Cards – Concurrent" on page 644, "FC 5074, FC 5079 – Cards – Concurrent" on page 596, or "FC 5075 – Cards – Concurrent" on page 614).

2. Find the location of the four lithium batteries. They are located in adjacent holders, with the Battery 2 above the J3 connector. Refer to the illustration below.
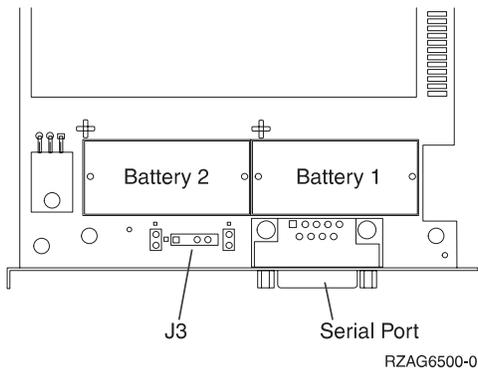

Figure 22. Battery Locations on the 4758 PCI Cryptographic Coprocessor

> **Note:** The 4758-023 card contains 4 batteries, even though only 2 batteries are shown in the figure above. Battery 3 is next to Battery 1, and Battery 4 is next to Battery 2.

> **Note:** The loss of battery power erases data stored in the card's protected memory and renders the card useless.

3. Remove the battery in the "Battery1" holder (lower right side).

4. Remove the battery in the "Battery2" holder (lower left side).

5. Remove the battery in the "Battery3" holder (upper right side).

6. Remove the battery in the "Battery4" holder (upper left side). When this has been accomplished, the PCI Cryptographic Coprocessor card has been disabled.
7. You can now install the new card.

This ends the procedure.

Tape Cartridge – Manual Removal

6383, 6385, 6386, 6387 Tape Cartridge

Attention: This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have tried the other options for removing the tape cartridge.

The following procedure describes how to remove a tape cartridge manually from a 6383, 6585, or 6586 tape unit. You may need this procedure if a power failure or tape unit failure prevent the tape cartridge from ejecting.

The procedure for removing a tape cartridge varies for the following two conditions:
- Standby position - with the bridge moved away from the cartridge.
- Locked position - with the bridge engaged to the cartridge.

To determine which position the tape unit is in, open the tape unit door and check the location of the bridge.

Locked Position
1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the metal axle **B** inside the tape unit. Look towards the lower right corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the axle inward.
5. Push the bridge **C** to the right.

   The tape unit is now in standby position. Continue with "Standby Position".

Standby Position
1. Power off the tape unit.
2. Open the tape unit door.
3. Locate the hook shaped metal rod **A** inside the tape unit in the upper left corner.
4. Insert a pointed object (like a pen or screwdriver) into the tape unit and push the metal rod downward.
5. Pull the metal rod forward until the cartridge ejects.

   The cartridge **D** is pushed out the tape unit door and can be removed.
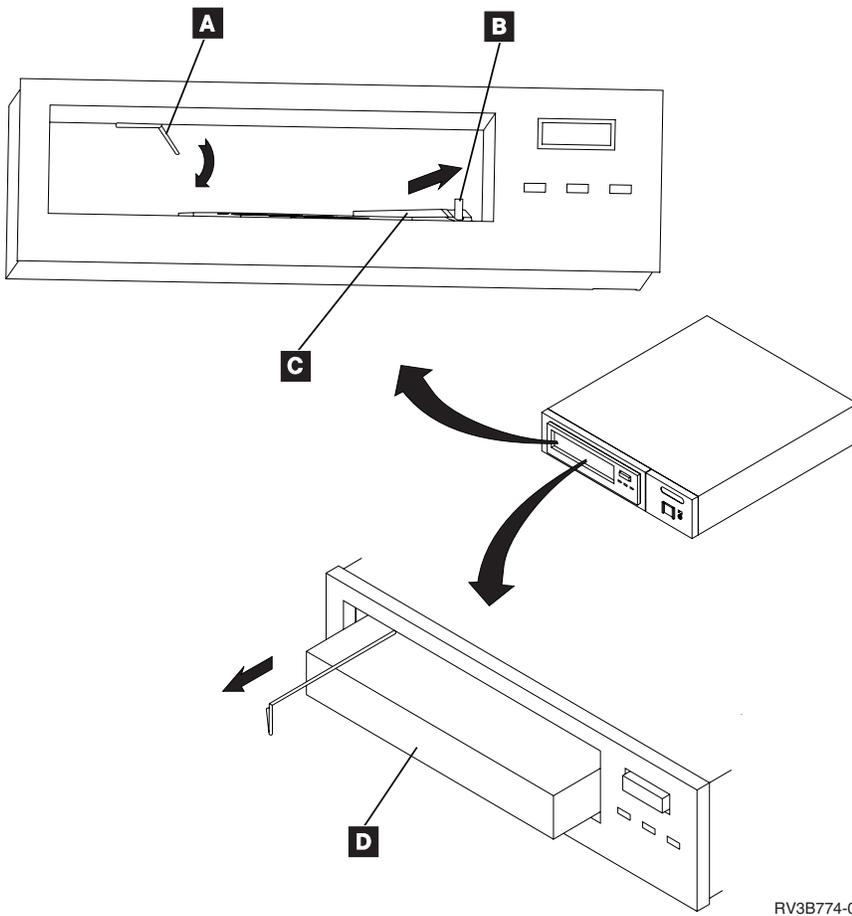
RV3B774-0

1/4 inch Tape Cartridge (Type 6335)

Attention: This procedure is very delicate and may damage or destroy the tape cartridge. Use this procedure only when you have attempted the other options for removing the tape cartridge.

The following procedure describes how to remove a tape cartridge manually from an internal 1/4 inch tape unit. This procedure may be required if a defective tape cartridge or tape unit has caused the cartridge ejection function to fail. The procedure may also be needed if the data on the tape cartridge is either critical or sensitive and the customer can not afford its loss.

1. Power off the tape unit.
2. Carefully lift and turn the manual tape cartridge unload lid **A** .

Manual Tape Cartridge Unload Lid

RV3B766-0

A

RV3B767-0
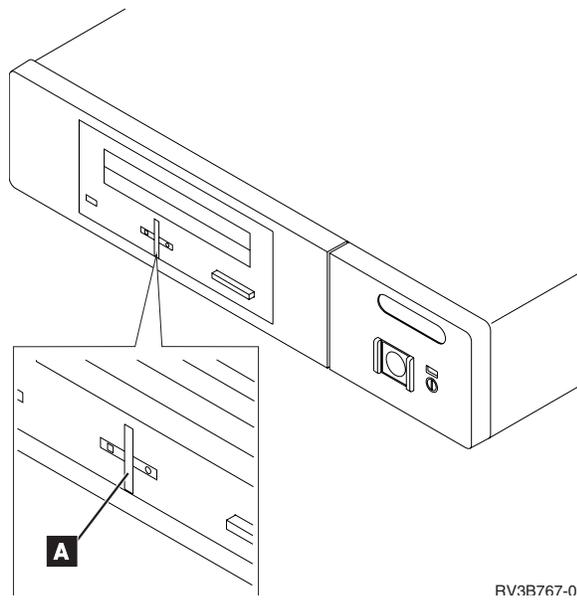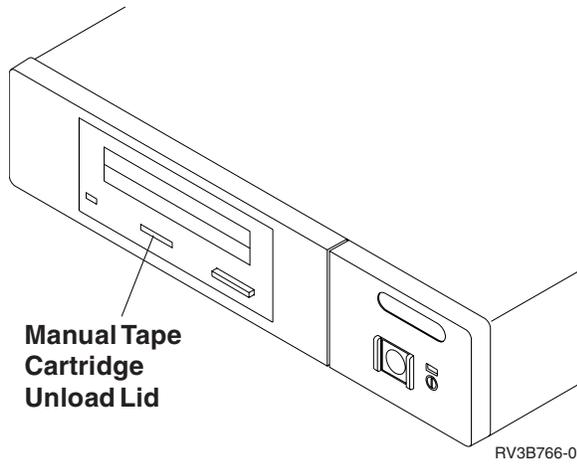
3. Insert a solid metal rod (like a bristol wrench) into the manual tape cartridge unload hole and push in until it stops and the arm appears.

RV3B768-0
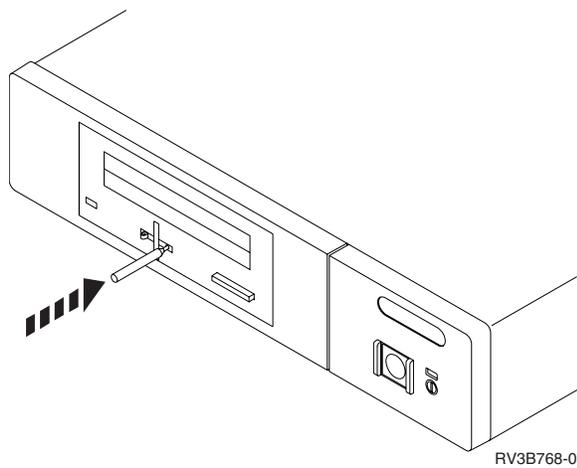
4. Pull the arm out until it stops. Insert the solid metal rod into the hole of the arm and pull out until the tape cartridge comes out.

RV3B769-0
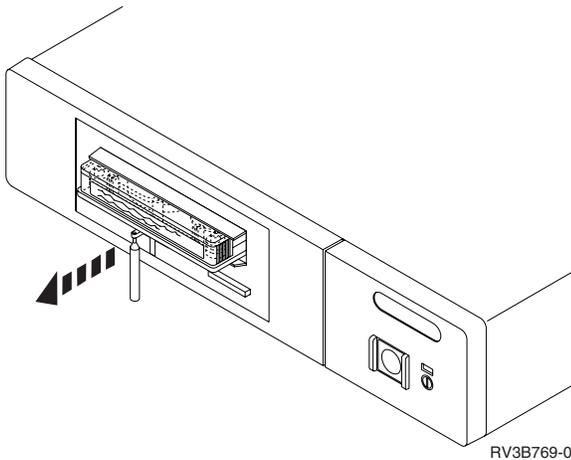
5. Remove the tape cartridge.
6. Push the arm back in until it stops, turn the manual tape cartridge lid back to the starting position and push it back in place.

Optical Media – Manual Removal

CD-ROM and DVD

Note: If the device power is lost due to a power failure or other reason while the disc tray is closed in the device and it is necessary to open the disc tray, the eject pin (see specifications below) can be inserted into the emergency eject hole on the front bezel, causing the disc tray to open, allowing you to remove the media.

Emergency Disc Ejection Function

1. For DVD, you **must** remove the device prior to manually ejecting the media.

   Attention: Damage to the DVD device(s) can result if the manual ejection function is used while the device is powered on.

2. Insert the eject pin that is approximately 1.5mm in diameter and at least (60mm-DVD, 35mm-CD) in length into the manual eject hole and push firmly. The front edge of the tray will push open approximately 1/4 of an inch. Several pushes may be necessary to open the disc tray far enough to remove the media.

   Note: If an eject pin is not easily obtainable, then you might try using a long paper clip.

3. Grasp the tray and slowly pull it out far enough to remove the media.

This ends the procedure.

Chapter 5. Locations, Addresses, and Part Listings

Start Here for Locations Information

This procedure describes how to find the correct diagram to use in this section.

1. Is the Frame ID 1, or is the direct select address 0001xxxx, or is the SRC B4xx or B1xx?

   Yes   No

   ↓   Go to step 3 on page 668 of this procedure.

2. The hardware is located in the system unit. Find the model number. When in manual mode, the system displays the model number in function 20 in pxxx cccc format, where xxx is the model number.

   If you have location information (card or device position), go to "Locations and Addresses" on page 671 and find the location diagram for the system model number. Each diagram has a table that indicates how to get part number information and which Removal and Installation/Recovery procedure to perform.

If you only have address information (Direct Select Address and Unit Address), find the address diagram for the system model number. Use the diagram to find the location. Then go back to "Locations and Addresses" on page 671 and find the location diagram for the system model number. Each diagram has a table that indicates how to get part number information and which Removal and Installation/Recovery procedure to perform.

This ends the procedure.

3. Do you know the Frame ID?

   No   Yes

   ↓   Go to step 5 of this procedure.

4. Use the following steps in "Hardware Service Manager" in SST/DST to locate which tower the failing item is in, using the bus number given in the direct select address.

   a. Go to SST. If SST is not available, go to DST.

   b. Select "Start a service tool".

   c. Select "Hardware service manager".

   d. Select "Logical hardware resources".

   e. Select "System bus resources".

   f. Change the "System bus or buses to work with" field to the decimal equivalent of the Hex bus address (this is the first four characters of the Direct Select Address). Press enter.

   g. Select the *Associated packaging resources* (option 8) for any IOP that is displayed.

   h. The Frame ID is indicated in the "Frame ID" column.

```
 Logical Hardware Resources on System Bus

 System bus(es) to work with . . . . . .   6     *ALL, 1-  7
 Subset by . . . . . . . . . . . . . . .   *ALL  *ALL, *STG, *WS, *CMN

 Type options, press Enter.
 2=Change detail    4=Remove    5=Display detail    6=I/O Debug
 8=Associated packaging resource(s)   9=Resources associated with IOP

 Resource
 Opt  Description                  Type-Model  Status       Name
 _    System Bus                   -           Operational  BUS02
 8    Storage IOP                  6512-001    Operational  SI04
 _    Storage IOP                  6512-001    Operational  SI05




 F3=Exit     F5=Refresh     F6=Print     F9=Failed resources
 F10=Non-reporting resources  F11=Display serial/part numbers  F12=Cancel
```

Figure 23. Example Display Only

5. Is the Frame ID 1?

   No   Yes

   ↓   Go to step 2 on page 667 of this procedure.

6. The Frame ID is the hexadecimal representation of the decimal number displayed on the panel of the unit or rack.

> **Note:** If the tower unit is an xSeries Server (formerly known as Netfinity Server), the Frame ID will be displayed on the 2689 adapter card located inside the tower unit (to find the card follow the SPCN or HSL cables that connect to the card). You will need to remove the cover on the xSeries Server to view the Frame ID.

> **Attention:** Refer to the xSeries Server service documentation **prior** to removing any covers or cards from the xSeries Server.

Find the unit or rack that displays this number. Then, find the unit or rack diagram that matches this hardware.
- For Migrated Tower diagrams, see *Migrated Expansion Tower Problem Analysis, Repair and Parts*, Repair and Parts.
- For rack diagrams, see SY44-4934-00, FC 504x Problem Analysis and Repair and Parts information.
- All other tower diagrams:
  - If you have location information (card or device position), go to "Locations and Addresses" on page 671 and find the location diagram that matches this hardware. Each diagram has a table that indicates how to get part number information and which Removal and Installation/Recovery procedure to perform.
  - If you only have address information (Direct Select Address and Unit Address), find the address diagram that matches this hardware. Use the diagram to find the location. Then, go back to "Locations and Addresses" on page 671 and find the location diagram that matches this hardware. Each diagram has a table that indicates how to get part number information and which Removal and Installation/Recovery procedure to perform.

This ends the procedure.

```
Packaging Resources Associated with a Logical Resource

Logical resource          Type-Model   Resource Name
Storage IOP               6512-001     SI04

Type options, press Enter.

2=Change detail    4=Remove         5=Display detail
8=Associated logical resource(s)   9=Hardware contained within package


Opt Description                      Type-Model   Frame ID   Resource Name
 _    Storage IOP                     6512-001         4        C18






F3=Exit      F5=Refresh      F6=Print
F10=Non-reporting hardware   F11=Unresolved locations    F12=Cancel
```

Figure 24. Example Display Only

Locations and Addresses

Locations — Model 270

Table 44. Model 270 Diagrams and Tables by Processor Feature Code

Processor Feature code	Locations Diagram	FRU Positions and Failing Components	Network Interface Controller (NIC) is in this FRU	Processor is in this FRU	HSL Loop Number and Port Information
22A2, 22A4, 22A5, 2301, 2302, 2422	Locations - Figure 25	Table 45 on page 672	Embedded in the System Unit Backplane in position MB1	Embedded in the System Unit Backplane in position MB1	Loop # 256 has external HSL ports labeled "A0" and "A1"
22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454	Locations - Figure 26 on page 675	Table 46 on page 675	Embedded in the Processor card in position M02	Embedded in the Processor card in position M02	Loop # 256 has external HSL ports labeled "A0" and "A1"
23E7, 23F0, 23F1, 2452	Locations - "Memory Locations and Placement Rules" on page 720	Table 47 on page 678	Embedded in the System Unit Backplane in position MB1	Embedded in the System Unit Backplane in position MB1	Loop # 256 is an internal loop embedded in the System Unit Backplane. The loop goes from the NIC, to the embedded HSL I/O Bridge, and back to the NIC with no external HSL ports. Loop # 257 has external HSL ports labeled "A0" and "A1"

270 System Unit, Processor Features 22A2, 22A4, 22A5, 2301, 2302, 2422 (Processor embedded on backplane)
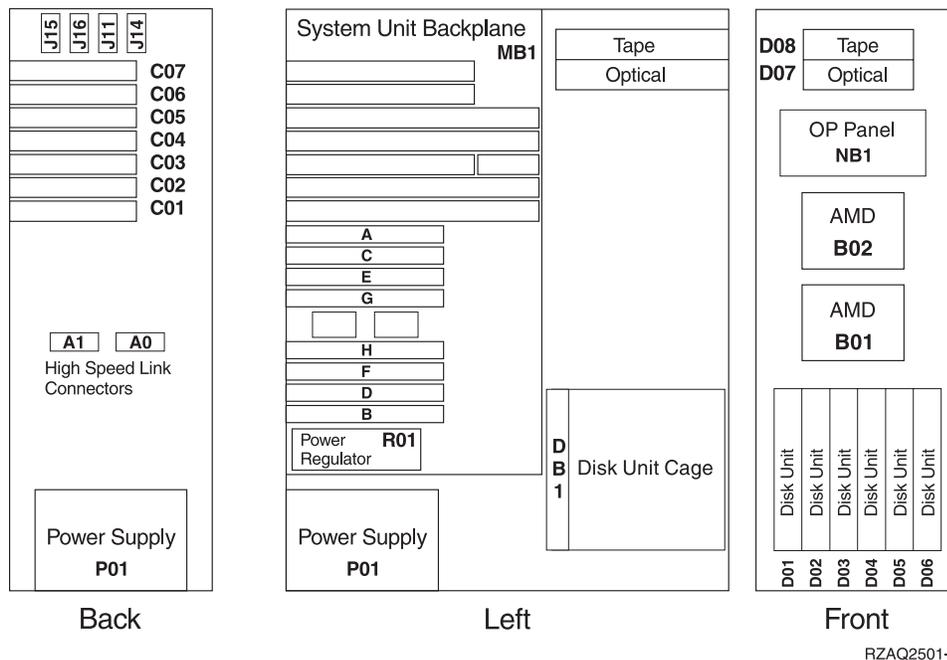

Figure 25. 270 System Unit, Processor Features 22A2, 22A4, 22A5, 2301, 2302, 2422 (Processor embedded on backplane)

Notes:

1. The model 270 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.

2. There is an embedded CFIOP in the System Unit Backplane in position MB1.

3. Memory DIMMS are placed in pairs only. Use the order A-B, C-D, E-F, then G-H.

4. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

Table 45. FRU Locations and Failing Components for Model 270 (Processor Features 22A2, 22A4, 22A5, 2301, 2302, 2422)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C01	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C02	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C03 (Short if IXS in C04)	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C04	PCI Card	1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 2. CCIN is 2842 or 2843 3. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C05	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.

Table 45. FRU Locations and Failing Components for Model 270 (Processor Features 22A2, 22A4, 22A5, 2301, 2302, 2422) (continued)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C06	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C07	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
MB1	System Unit Backplane	• Card Enclosure or Backplane • Clock Card • SPCN Card • HSL I/O bridge • Processor Regulator • Memory Riser Card • System Unit Backplane • HSL Ring Connection • HSL Controller • Processor • Service Processor • IOP • Multi-adapter Bridge (All)	2249 **Note:** Embedded IOP (type 284D) is exchanged with the System Unit Backplane. **OR**224A **Note:** Embedded IOP (type 286F) is exchanged with the System Unit Backplane.	Go to "Model 270 – System Unit Backplane – MB1" on page 642.
D01 to D06	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
D07	Optical Device	Optical Device	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Removable Media – D07 and D08" on page 641.

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
D08	Tape Unit	Tape Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Removable Media – D07 and D08" on page 641.
P01	Power Supply	Power Supply	04N5491	Go to "Model 270 – Power Supply – P01" on page 640
B01, B02	AMD	AMD		Go to "Model 270 – AMD – B01 and B02" on page 629.
NB1	Control Panel	Control Panel	247E	Go to "Model 270 – Control Panel – NB1" on page 634.
R01	Power Regulator	Power Regulator	04N6319	Go to "Model 270 – Power Regulator – R01" on page 640
DB1	Device Board	Device Board		Go to "Model 270 – Device Board – DB1, DB2, and DB3" on page 635
A	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639.
B	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
C	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
D	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
E	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
F	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
G	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
H	Memory Card	Memory Card	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Memory – A through H" on page 639
Time of Day	TOD	TOD	16G8095	Go to "Model 270 – Time of Day Battery (TOD)" on page 643
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

270 System Unit, Processor Features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454

Figure 26. 270 System Unit, Processor Features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454

Notes:

1. The model 270 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.

2. There is an embedded CFIOP in the System Unit Backplane in position MB1.

3. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

Table 46. FRU Locations and Failing Components for Model 270 (Processor Features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C01	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C02	PCI Card	1. IOP 2. IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.

Table 46. FRU Locations and Failing Components for Model 270 (Processor Features 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454) (continued)

| Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C03 (Short if IXS in C04)	PCI Card	1. IOP 2. IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C04	PCI Card	1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 2. CCIN is 2842 or 2843 3. See "Type, Model, and Part Number list" on page 797 .	Go to "Model 270 – Cards – Dedicated" on page 633.
C05	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797	Go to "Model 270 – Cards – Dedicated" on page 633.
C06	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C07	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
MB1	System Unit Backplane	1. Service Processor 2. IOP 3. Card Enclosure or Backplane 4. Clock Card 5. SPCN Card 6. HSL I/O bridge 7. System Unit Backplane 8. HSL Ring Connection 9. Multi-adapter Bridge (All)	282F **Note:** Embedded IOP (type 284E) is exchanged with the System Unit Backplane, 282F.	Go to "Model 270 – System Unit Backplane – MB1" on page 642
D01 to D06	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
D07	Optical Device	Optical Device	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Removable Media – D07 and D08" on page 641.
D08	Tape Unit	Tape Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Removable Media – D07 and D08" on page 641.
P01	Power Supply	Power Supply	24L1402	Go to "Model 270 – Power Supply – P01" on page 640
B01, B02	AMD	AMD		Go to "Model 270 – AMD – B01 and B02" on page 629
NB1	Control Panel	Control Panel	247E	Go to "Model 270 – Control Panel – NB1" on page 634
DB1	Device Board	Device Board		Go to "Model 270 – Device Board – DB1, DB2, and DB3" on page 635
M01	Memory Riser Card	Memory Riser Card	2884	Go to "Model 270 – Cards – Dedicated" on page 633

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
M01 Daughter Cards	Memory DIMM	*See Figure 40 on page 721*	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Cards – Dedicated" on page 633
M02	Processor Card	1. Processsor 2. Network Interface Controller (NIC)	24A0 (1 way) 24A2 (2 way) 25BD (2way)	Go to "Model 270 – Cards – Dedicated" on page 633
M02 Daughter Card	Processor Regulator Card	Processor Regulator		Go to "Model 270 – Cards – Dedicated" on page 633
M02 Daughter Card	Memory DIMM	*See Figure 41 on page 721*	3022, 3024, 3025, 3026, 3027, 3029	Go to "Model 270 – Cards – Dedicated" on page 633
Time of Day	TOD	TOD	16G8095	Go to "Model 270 – Time of Day Battery (TOD)" on page 643
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

270 System Unit, Processor Features 23E7, 23F0, 23F1, 2452 (Processor embedded on backplane)

Figure 27. 270 System Unit, Processor Features 23E7, 23F0, 23F1, 2452 (Processor embedded on backplane)

Notes:

1. The model 270 system unit contains one system PCI bus with one multi-adapter bridge. The bus number is 0001.

2. There is an embedded CFIOP in the System Unit Backplane in position MB1.

3. Memory DIMMS are placed in pairs only. Use the order A-B, C-D, E-F, then G-H.

4. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
MB1, C01 - C07	MB1, C07, C01, C06, C05, C04, C03, C02

Table 47. FRU Locations and Failing Components for Model 270 (Processor Features 23E7, 23F0, 23F1, 2452)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C01	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C02	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C03	PCI Card	1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 2. CCIN is 2842 or 2843 3. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C04	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C05	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C06	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.
C07	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Cards – Dedicated" on page 633.

| Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
MB1	System Unit Backplane	• Card Enclosure or Backplane • Clock Card • SPCN Card • HSL I/O bridge • Processor Regulator • Memory Riser Card • System Unit Backplane • HSL Ring Connection • HSL Controller • Processor • Service Processor • IOP • Multi-adapter Bridge (All)	25B9 **Note:** Embedded IOP (type 286C) is exchanged with the System Unit Backplane. **OR**25BA **Note:** Embedded IOP (type 286D) is exchanged with the System Unit Backplane.	Go to "Model 270 – System Unit Backplane – MB1" on page 642.
D01 to D06	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
D07	Optical Device	Optical Device	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Removable Media – D07 and D08" on page 641.
D08	Tape Unit	Tape Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Model 270 – Removable Media – D07 and D08" on page 641.
P01	Power Supply	Power Supply	04N5491	Go to "Model 270 – Power Supply – P01" on page 640
B01, B02	AMD	AMD		Go to "Model 270 – AMD – B01 and B02" on page 629.
NB1	Control Panel	Control Panel	247E	Go to "Model 270 – Control Panel – NB1" on page 634.

Table 47. FRU Locations and Failing Components for Model 270 (Processor Features 23E7, 23F0, 23F1, 2452) (continued)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
R01	Power Regulator	Power Regulator	04N6319	Go to "Model 270 – Power Regulator – R01" on page 640
DB1	Device Board	Device Board		Go to "Model 270 – Device Board – DB1, DB2, and DB3" on page 635
A through H	Memory Card	Memory Card	3031, 3032, 3033, 3034	Go to "Model 270 – Memory – A through H" on page 639.
Time of Day	TOD	TOD	16G8095	Go to "Model 270 – Time of Day Battery (TOD)" on page 643
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

Model 270 FC 7104 System Unit Expansion
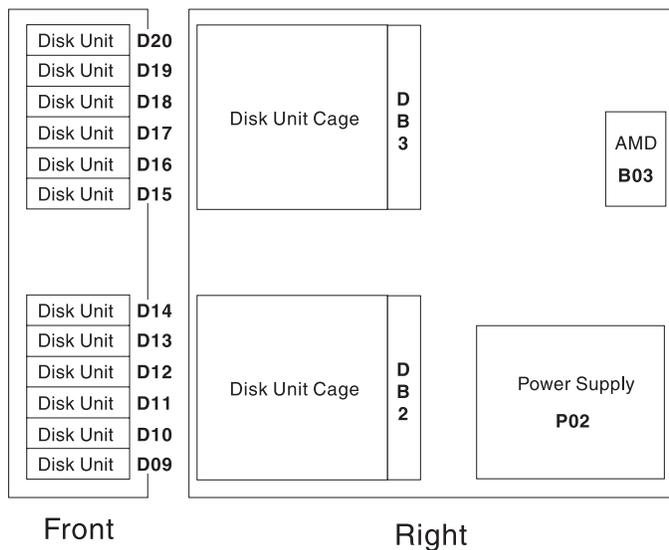
Figure 28. Model 270 FC 7104 System Unit Expansion

Table 48. FRU Locations and Failing Components for the Model 270 System Unit Expansion

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
D09 to D20	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.

Table 48. FRU Locations and Failing Components for the Model 270 System Unit Expansion (continued)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
DB2 and DB3	Device Board	Disk Unit Backplane		Go to "Model 270 – Device Board – DB1, DB2, and DB3" on page 635.
P02	Power Supply	Power Supply	04N5491	Go to "Model 270 – Power Supply – P02" on page 641.
B03	AMD	AMD		Go to "Model 270 – AMD – B03" on page 630.

Locations — FC 8079 I/O Tower
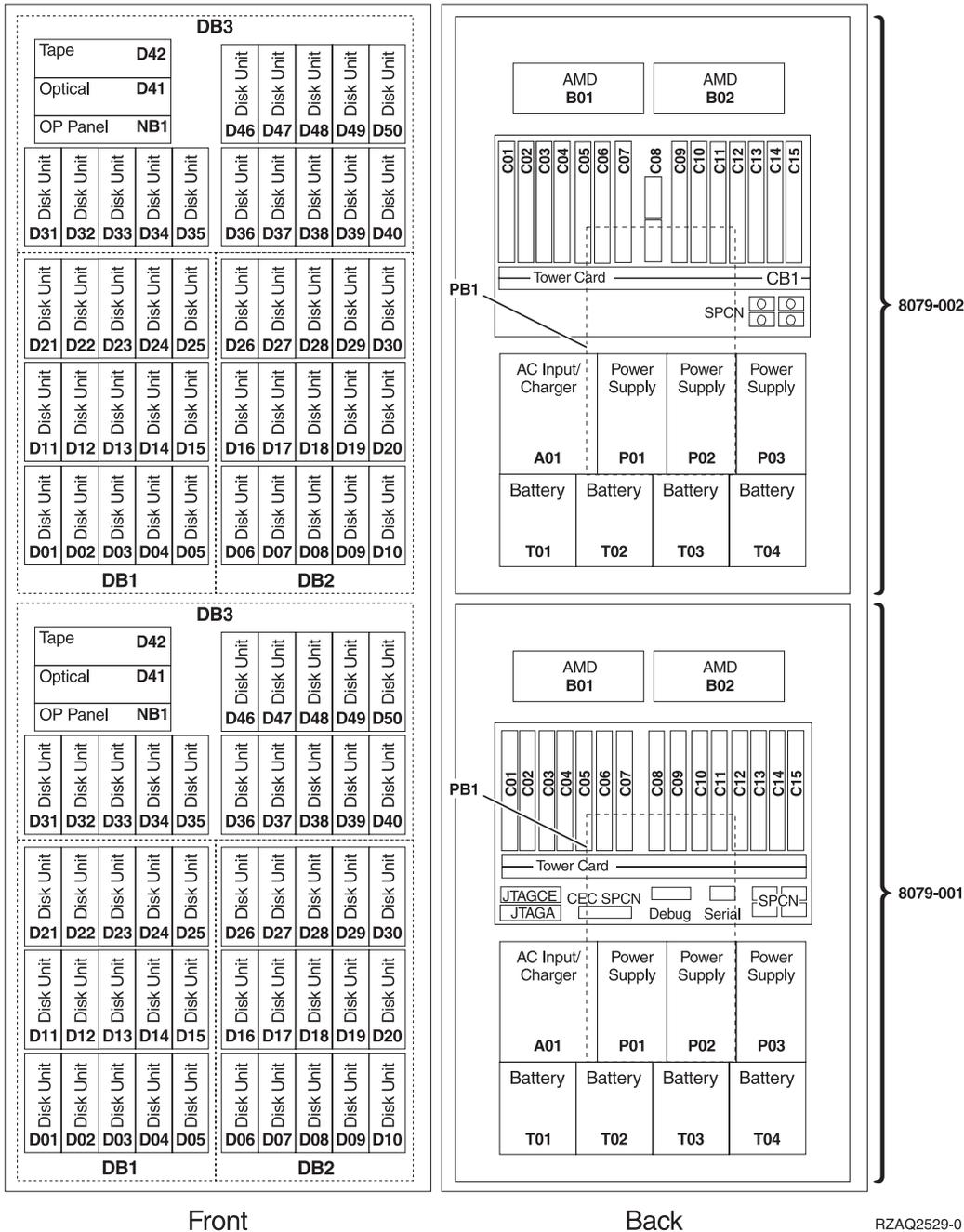
Figure 29. FC 8079 I/O Tower

Note: Service the FC 8079–001 in the bottom of the rack as a FC 9079, see FC 9079 locations in the *iSeries Model 830, 840, SB2, and SB3 Problem Analysis, Repair and Parts* information.

Note: Service the FC 8079–002 in the top of the rack as a FC 5074, see "Locations — FC 5074 I/O Tower" on page 688.

Locations — Model 820
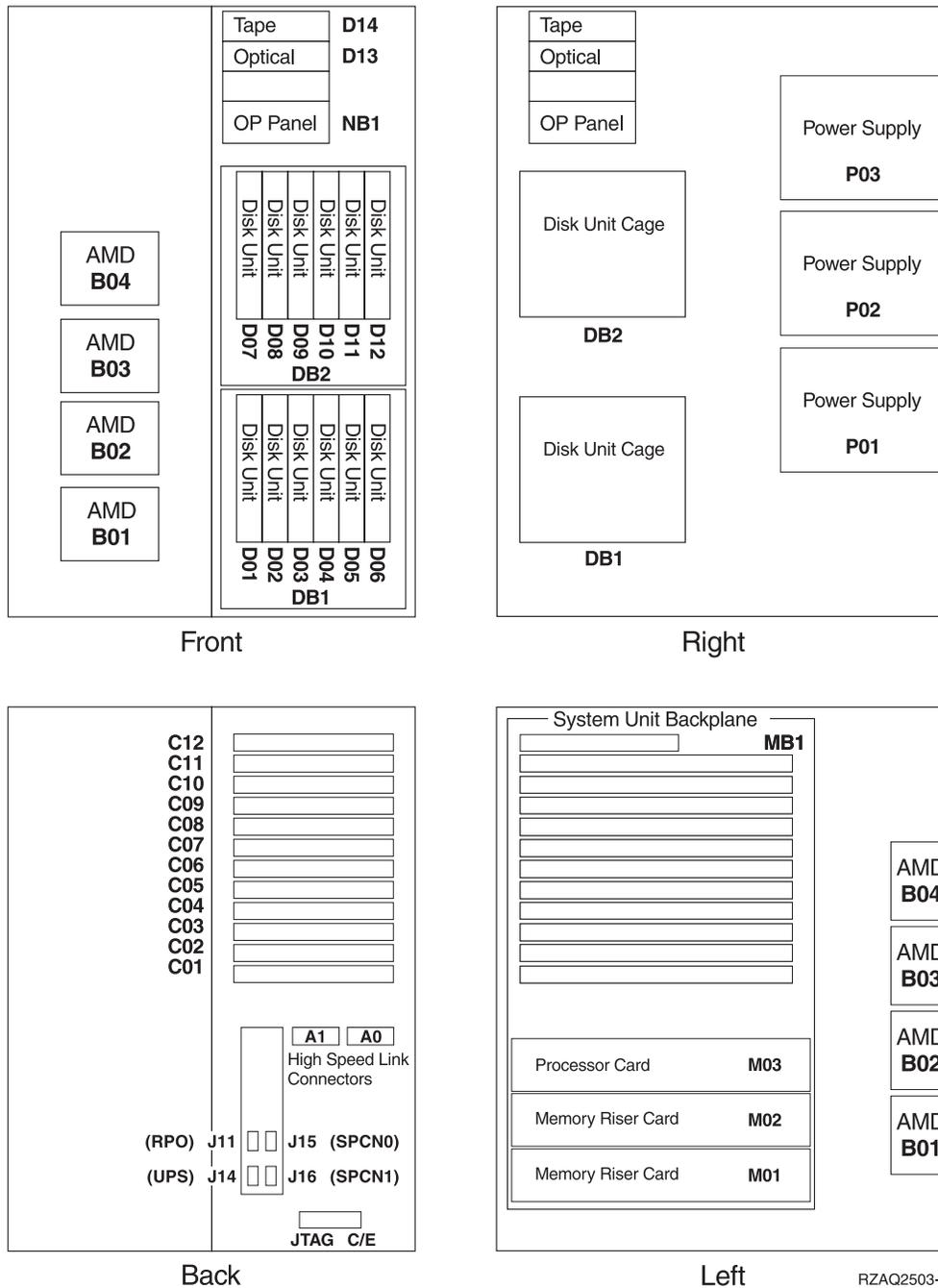
Figure 30. Model 820

Notes:

1. The Model 820 system unit contains two system PCI busses. Each PCI bus has one multi-adapter bridge.
2. In the Model 820 card position table the first of the two busses in the system unit is bus 0001 and the second bus in the system unit is designated as ″yyyy″.
3. The bus connected to card positions C01 - C06 is bus number 0001. The other bus in the system unit is not required to have a contiguous bus number.

4. There is an embedded CFIOP in the System Unit Backplane in position MB1. This CFIOP is in the C01 - C06 multi-adapter bridge domain.

5. C12 is required to be a CFIOP.

6. Multi-adapter Bridge domains are labeled "PCI Bridge Set" inside the tower.

7. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
MB1, C01 - C06	MB1, C06, C05, C04, C03, C02, C01
C07 - C12	C12, C11, C10, C09, C08, C07

Table 49. FRU Locations and Failing Components for Model 820

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C01	PCI Card	1. IOP 2. IOA	See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C02	PCI Card	1. IOP 2. IOA	See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C03	PCI Card (if no IXS in C04)	1. IOP 2. IOA	See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C04	PCI Card	1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 2. CCIN is 2842 or 2843 3. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C05	PCI Card	IOA	See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C06	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C07	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C08	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C09	PCI Card (if no IXS in C10)	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.

Table 49. FRU Locations and Failing Components for Model 820 (continued)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
C10	PCI Card	1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. CCIN is 2890 2. CCIN is 2842 or 2843 3. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C11	PCI Card	1. IOP 2. IOA	1. CCIN is 2842 or 2843 2. See Type, Model and Part Number List	Go to "Model 820 – Cards – Concurrent" on page 644.
C12	PCI Card	IOP	CCIN is 2842 or 2843	Go to "Model 820 – Cards – Concurrent" on page 644.
MB1	System Unit Backplane	1. Service Processor 2. IOP 3. Card Enclosure or Backplane 4. Clock Card 5. SPCN Card 6. SI I/O Adapter 7. System Unit Backplane 8. SI Ring Connection 9. Multi-adapter Bridge (All)	282D **Note:** Embedded IOP (type 284C) is exchanged with the 282D System Unit Backplane part.	Go to "Model 820 – System Unit Backplane – MB1 and Power Distribution Board – PB1 (PB1 and MB1 are included in theTWRCARD)" on page 654
D01 to D12	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
D13	Optical Device	Optical Device	See "Type, Model, and Part Number list" on page 797.	Go to "Model 820 – Removable Media – D13 and D14" on page 653.
D14	Tape Unit	Tape Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Model 820 – Removable Media – D13 and D14" on page 653.
DB1	Device Board	Device Board		Go to "Model 820 – Device Board – DB1 and DB2" on page 648.
DB2	Device Board	Device Board		Go to "Model 820 – Device Board – DB1 and DB2" on page 648.
P01	Power Supply	Power Supply	21P6417	Go to "Model 820 – Power Supply – P01, P02, and P03" on page 652.
P02	Power Supply	Power Supply	21P6417	Go to "Model 820 – Power Supply – P01, P02, and P03" on page 652.
P03	Power Supply	Power Supply	21P6417	Go to "Model 820 – Power Supply – P01, P02, and P03" on page 652.
PB1	Power Distribution Board	Power Distribution Board	See MB1	Go to "Model 820 – System Unit Backplane – MB1 and Power Distribution Board – PB1 (PB1 and MB1 are included in theTWRCARD)" on page 654.
B01 to B04	AMD	AMD		Go to "Model 820 – AMD – B01 Through B04" on page 643.
NB1	Control Panel	Control Panel	247F	Go to "Model 820 – Control Panel – NB1" on page 646.

Table 49. FRU Locations and Failing Components for Model 820 (continued)

| Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation/Recovery Procedure
M01	Memory Riser Card	Memory Riser Card	2884	Go to "Model 820 – Memory" on page 651.
M01 Daughter Cards	Memory DIMM	*See Figure 40 on page 721*	3002, 3004, 3005, 3006, 3007, 3009	Go to "Model 820 – Memory" on page 651.
M02	Memory Riser Card	Memory Riser Card	2884	Go to "Model 820 – Memory" on page 651.
M02 Daughter Cards	Memory DIMM	*See Figure 40 on page 721*	3002, 3004, 3005, 3006, 3007, 3009	Go to "Model 820 – Memory" on page 651.
M03	Processor Card	Processor • Network Interface Controller	224B (1 way) 244A (1 way) 24A0 (1 way) 25BC (1 way) 244D (2 way) 25BD (2 way) 244E (4 way) 25BE (4 way)	Go to "Model 820 – Processor – M03" on page 652.
M03 Daughter Cards	Memory DIMM	*See Figure 41 on page 721*	3002, 3004, 3005, 3006, 3007, 3009	Go to "Model 820 – Memory" on page 651.
M03 Daughter Card (2 way systems)	Processor Regulator	Processor Regulator		Go to "Model 820 – Processor Regulator – M03" on page 653.
M03 Daughter Card (4 way systems)	Processor Regulator	Processor Regulator		Go to "Model 820 – Memory" on page 651.
Time of Day	TOD	TOD	16G8095	Go to "Model 820 – Time of Day Battery (TOD)" on page 656.
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.
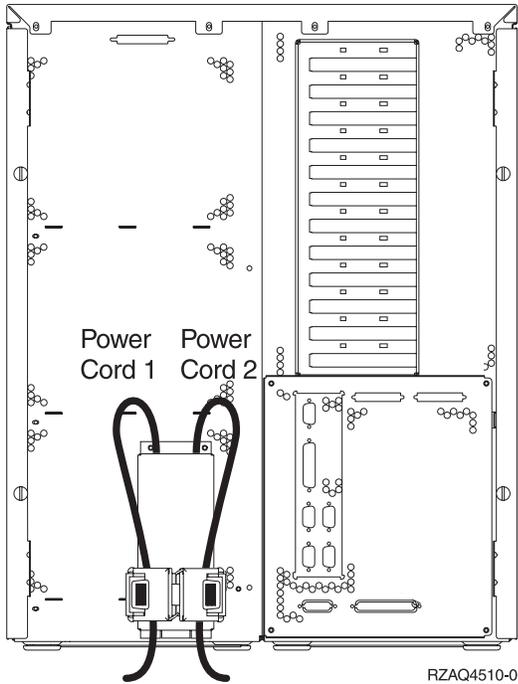
Figure 31. Dual Line Cord Drawing for Model 820 System

Figure 32. Rack mounted expansion unit feature codes

Locations — FC 5074 I/O Tower

DB3

Tape	**D42**
Optical	**D41**
OP Panel	**NB1**

Disk Unit **D46** | Disk Unit **D47** | Disk Unit **D48** | Disk Unit **D49** | Disk Unit **D50**

Disk Unit **D31** | Disk Unit **D32** | Disk Unit **D33** | Disk Unit **D34** | Disk Unit **D35** | Disk Unit **D36** | Disk Unit **D37** | Disk Unit **D38** | Disk Unit **D39** | Disk Unit **D40**

Disk Unit **D21** | Disk Unit **D22** | Disk Unit **D23** | Disk Unit **D24** | Disk Unit **D25** | Disk Unit **D26** | Disk Unit **D27** | Disk Unit **D28** | Disk Unit **D29** | Disk Unit **D30**

Disk Unit **D11** | Disk Unit **D12** | Disk Unit **D13** | Disk Unit **D14** | Disk Unit **D15** | Disk Unit **D16** | Disk Unit **D17** | Disk Unit **D18** | Disk Unit **D19** | Disk Unit **D20**

Disk Unit **D01** | Disk Unit **D02** | Disk Unit **D03** | Disk Unit **D04** | Disk Unit **D05** | Disk Unit **D06** | Disk Unit **D07** | Disk Unit **D08** | Disk Unit **D09** | Disk Unit **D10**

DB1   **DB2**

Front

AMD **B01**   AMD **B02**

C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12 C13 C14 C15

Tower Card   CB1

SPCN

PB1

AC Input/Charger	Power Supply	Power Supply	Power Supply
A01	**P01**	**P02**	**P03**
Battery **T01**	Battery **T02**	Battery **T03**	Battery **T04**

Back   RZAQ2507-4

Figure 33. Locations for FC 5074 I/O Tower

Notes:

1. The FC 5074 I/O Tower contains two system PCI busses.

2. In the FC 5074 I/O Tower FRU Locations and Failing Components table below, the first of the two busses in the tower is designated as "xxxx" and the second bus in the tower is designated as "yyyy".

3. In FC 5074 I/O Tower the two bus numbers assigned to the busses are not required to be in any order.

4. Card position C01 is required to be an I/O processor.

5. Card postitions C05 and C11 are required to be either I/O processors or Integrated xSeries Servers (IXS).

6. J11 is an RPO connection, J14 is a Uninterruptable Power Supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.

7. Multi-adapter Bridge domains are labeled **PCI Bridge Set** inside the tower.

8. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C10 (Not including C08)	C05, C06, C07, C09, C10
C11 - C15	C11, C12, C13, C14, C15

Table 50. FRU Locations and Failing Components Table for FC 5074 I/O Towers

| Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
C01	PCI Card	IOP	2842 or 2843	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C02	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C03	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C04	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C05	PCI card	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 or 2843 2. 2890 **Note:** When the IXS card is installed in this position concurrent maintenance at the card position is not recomended.	If IXS, then go to"FC 5074, FC 5079 – Cards – Dedicated" on page 598. Otherwise, go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C06	PCI Card (if no IXS in C05)	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C07	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C08	HSL I/O bridge Card	• High-Speed Link I/O Adapter • PCI Host Bridge Adapter	2691	Go to "FC 5074, FC 5079 – Cards – Dedicated" on page 598.

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
C09	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C10	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C11	PCI Card	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 or 2843 2. 2890 **Note:** When the IXS card is installed in this position concurrent maintenance at the card position is not recomended.	If IXS, then go to "FC 5074, FC 5079 – Cards – Dedicated" on page 598. Otherwise, go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C12	PCI Card (if no IXS in C11)	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C13	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C14	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
C15	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079 – Cards – Concurrent" on page 596.
CB1	Tower Card	1. SPCN 2. Card Enclosure or Backplane 3. Multi-adapter Bridge (All)	28AB-97H7307	Go to "FC 5074/5079, FC 9079 – Tower Card – CB1" on page 611.
B01 - B02	AMD	AMD	04N3345	Go to "FC 5074/5079, FC 9074, FC 9079 – AMD – B01 and B02" on page 594.

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
PB1	Power Board	Power Board	24L0891	Go to "FC 5074, FC 5079, FC 9079 – Power Distribution Board – PB1" on page 607.
A01	AC Input / Charger	AC Module/Charger	• 97H7316 – Single Line Cord	Go to "FC 5074, FC 5079, FC 9079 (With Single Line Cord) – AC Charger – A01" on page 594.
	AC Module	AC Module	21P6347 – Dual Line Cord	Go to "FC 5074, FC 5079, FC 9079 (With Dual Line Cord) – AC Charger – A01" on page 594.
A02	AC Module	AC Module	21P6347 – Dual Line Cord	Go to "FC 5074, FC 5079, FC 9079 (With Dual Line Cord) – AC Charger – A01" on page 594.
P01 – P03	Power Supply	Power Supply	90H6629 – Single Line Cord	Go to "FC 9074, FC 9079, FC 5074/5079 – Power Supply – P01, P02, and P03" on page 608.
P01 – P02	Power Supply	Power Supply	21P5383 – Dual Line Cord	Go to "FC 9074, FC 9079, FC 5074/5079 – Power Supply – P01, P02, and P03" on page 608.
T01 - T04	Battery	Battery	97H7318	Go to"FC 5074, FC 5079, FC 9079 – Batteries – T01, T02, T03, and T04" on page 595.
DB1	Device Board	Device Board	283D	Go to "FC 5074, FC 5079, FC 9079 – Device Board – DB1 and DB2" on page 601.
DB2	Device Board	Device Board	283D	Go to "FC 5074, FC 5079, FC 9079 – Device Board – DB1 and DB2" on page 601.
DB3	Device Board	Device Board	283C	Go to "FC 5074, FC 5079, FC 9079 – Device Board – DB3" on page 602.
NB1	Op Panel	Op Panel	27L0962	Go to "FC 5074, FC 5079 – Control Panel – NB1" on page 606.
D01 - D40	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
D41	Optical	Optical	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079, FC 9079 – Removable Media – D41 and D42" on page 609.
D42	Tape	Tape	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5074, FC 5079, FC 9079 – Removable Media – D41 and D42" on page 609.
D46 - D50	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

Locations — FC 5075 I/O Tower
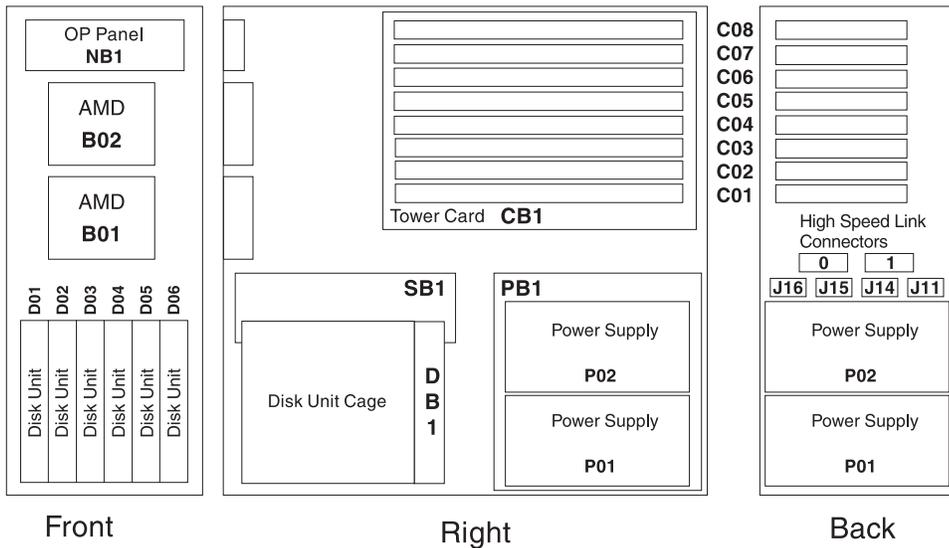
Figure 34. FC 5075 I/O Tower

Notes:

1. The FC 5075 I/O Tower contains two system PCI busses.
2. In the FC 5075 I/O Tower FRU locations and Failing Components table the first of the two busses in the tower is designated as ″xxxx″ and the second bus in the tower is designated as ″yyyy″.
3. In FC 5075 towers the two bus numbers assigned to the busses are not required to be in any order.
4. There is an embedded CFIOP in the Tower Card in position CB1. This IOP is in the C01 - C04 multi-adapter bridge domain.
5. Card position C05 is required to be an I/O processor when any cards installed in the C05 - C08 multi-adapter bridge domain.
6. J11 is an RPO connection, J14 is a Uninterruptable Power Supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.
7. Multi-adapter Bridge domains are labeled **PCI Bridge Set** inside the tower.
8. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
CB1, C01 - C04	CB1, C01, C02, C03, C04
C05 - C08	C05, C06, C07, C08

Table 51. FRU Locations and Failing Components Table for FC 5075 I/O Towers

| Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
C01	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.
C02	PCI Card	The failing component is either an: 1. Integrated xSeries Server (IXS) 2. IOP 3. IOA	1. 2890 2. 2842 or 2843 3. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.
C03	PCI Card (if no IXS in C02)	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.
C04	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.
C05	PCI Card	The failing component is either an: 1. Integrated xSeries Server (IXS) 2. IOP	1. 2890 2. 2842 or 2843	Go to "FC 5075 – Cards – Concurrent" on page 614.
C06	PCI Card (if no IXS in C05)	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.
C07	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.
C08	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5075 – Cards – Concurrent" on page 614.

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
CB1	Tower Card	• IOP (embedded) • Card Enclosure or Backplane • Tower Card • SPCN • HSL I/O bridge • Multi - adapter Bridge (All)	283B-04N4723 **Note:** Embedded IOP (type 284B) is exchanged with the 283B tower card part.	Go to "FC 5075 – Tower Card – CB1" on page 623.
D01 to D06	Disk Unit	Disk Unit	See "Type, Model, and Part Number list" on page 797.	Go to "Recovery Procedures" on page 803.
P01 - P02	Power Supply	Power Supply	21P6417	Go to "FC 5075 – Power Supply – P01 and P02" on page 622.
B01 - B02	AMD	AMD	24L1730	Go to "FC 5075 – AMD – B01, B02" on page 614.
NB1	Op Panel	Op Panel	247E-24L1592	Go to "FC 5075 – Control Panel – NB1" on page 621.
PB1	Power Board	Power Board	04N2824	Go to "FC 5075 – Power Distribution Board – PB1" on page 622.
DB1	Device Board	Device Board	283F	Go to "FC 5075 – Device Board – DB1" on page 617.
SB1	SPCN Card	SPCN Card	23L8145	Go to "FC 5075 – SPCN Card – SB1" on page 618.
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

Locations — FC 5078, 0578 PCI Expansion Unit

FC 5078 PCI Expansion Unit
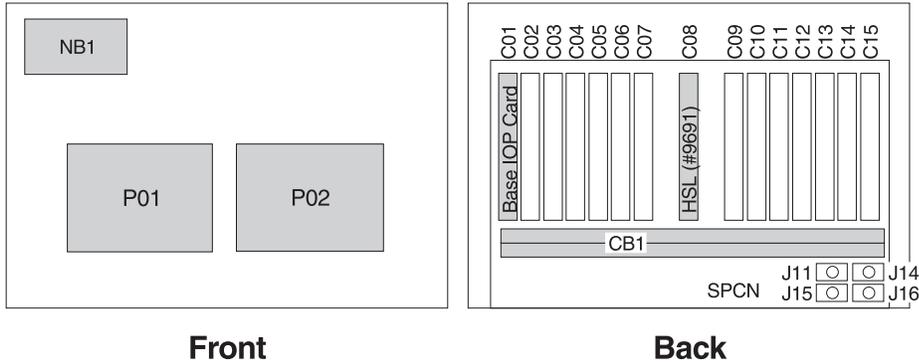
Figure 35. FC 5078, 0578 PCI Expansion Unit
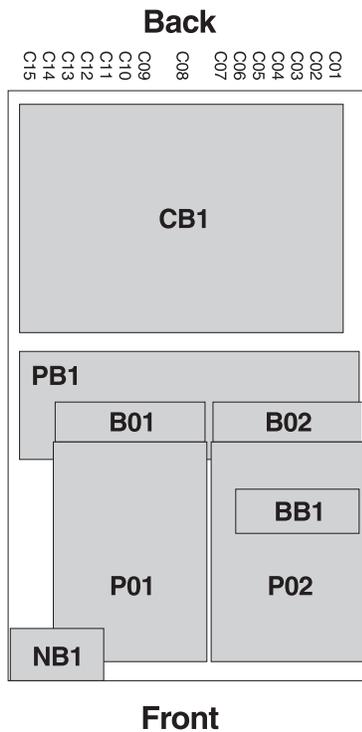
Figure 36. FC 5078, 0578 PCI Expansion Unit

Notes:

1. The FC 5078, 0578 PCI Expansion Unit can be installed on the top of a tower or within a rack. The FC 5078, 0578 is assigned a unique frame ID by the operating system.
2. The following table provides information necessary to identify the IOP to which IOAs are assigned. The left column indicates the domain in which IOA assignment is allowed. The right column is used to determine the IOP to which

an IOA is assigned. The first position in the list must be an IOP. The remaining positions may be IOPs or IOAs. IOAs are assigned to the first IOP located to their left in the list. Although IOAs can be manually reassigned using SST/DST, the IOA assignments return to the default order after each IPL.

Multi-adapter bridge domain / PCI Bridge Set	IOA assignment rules
C01 - C04	C01, C02, C03, C04
C05 - C10 (Not including C08)	C05, C06, C07, C09, C10
C11 - C15	C11, C12, C13, C14, C15

Table 52. FRU Locations and Failing Components Table for FC 5078, 0578 PCI Expansion Unit

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
C01	PCI Card	IOP	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C02	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C03	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C04	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C05	PCI Card	The failing component is either an: 1. Integrated xSeries Server (IXS) 2. IOP	1. 2890 2. 2842 or 2843	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C06	PCI Card (if no IXS in C05)	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C07	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
C08	HSL I/O Bridge Card	• High-Speed Link I/O Adapter • PCI Host Bridge Adapter	2691	Go to "FC 5078/0578 – Cards – Dedicated" on page 625.
C09	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C10	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C11	PCI Card (if no IXS in C11)	The failing component is either an: 1. IOP 2. Integrated xSeries Server (IXS)	1. 2842 or 2843 2. 2890 **Note:** When the IXS card is installed in this position concurrent maintenance at the card position is not recomended.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C12	PCI Card (if no IXS in C11)	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C13	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C14	PCI Card	The failing component is either an: 1. IOP 2. IOA	1. 2842 or 2843 2. See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
C15	PCI Card	IOA	See "Type, Model, and Part Number list" on page 797.	Go to "FC 5078/0578 – Cards – Concurrent" on page 624.
P01 - P02	Power Supply	Power Supply	21P4970	Go to "FC 5078/0578 – Power Supplies – P01 and P02" on page 628.
B01 (AMD attached to the power supply in location P01)	AMD	AMD	41L5448	Go to "FC 5078/0578 – AMDs – B01 and B02" on page 623.

Table 52. FRU Locations and Failing Components Table for FC 5078, 0578 PCI Expansion Unit (continued)

Position	FRU Name	Possible Failing Component	Type, CCIN, or Part Number (use the "Type, Model, and Part Number list" on page 797 to determine the part number when Type or CCIN are given.)	Removal and Installation Procedure
B02 (AMD attached to the power supply in location P02)	AMD	AMD	41L5448	Go to "FC 5078/0578 – AMDs – B01 and B02" on page 623.
PB1	Power Distribution Board	Power Distribution Board	00P2382	Go to "FC 5078/0578 – Power Distribution Backplane – PB1" on page 627.
NB1	Control Panel	Control Panel	247B-24L0962	Go to "FC 5078/0578 – Expansion Unit Control Panel – NB1" on page 627.
CB1	Tower Card	1. SPCN 2. Card Enclosure or Backplane 3. Multi-adapter Bridge (All)	28AB-04N6797	Go to "FC 5078/0578 – Tower Card – CB1" on page 628.
BB1	AMD Control Card	AMD Controller	11K1107	Go to "FC 5078/0578 – AMD Controller Card – BB1" on page 623.
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

Locations — FC 5079 I/O Tower
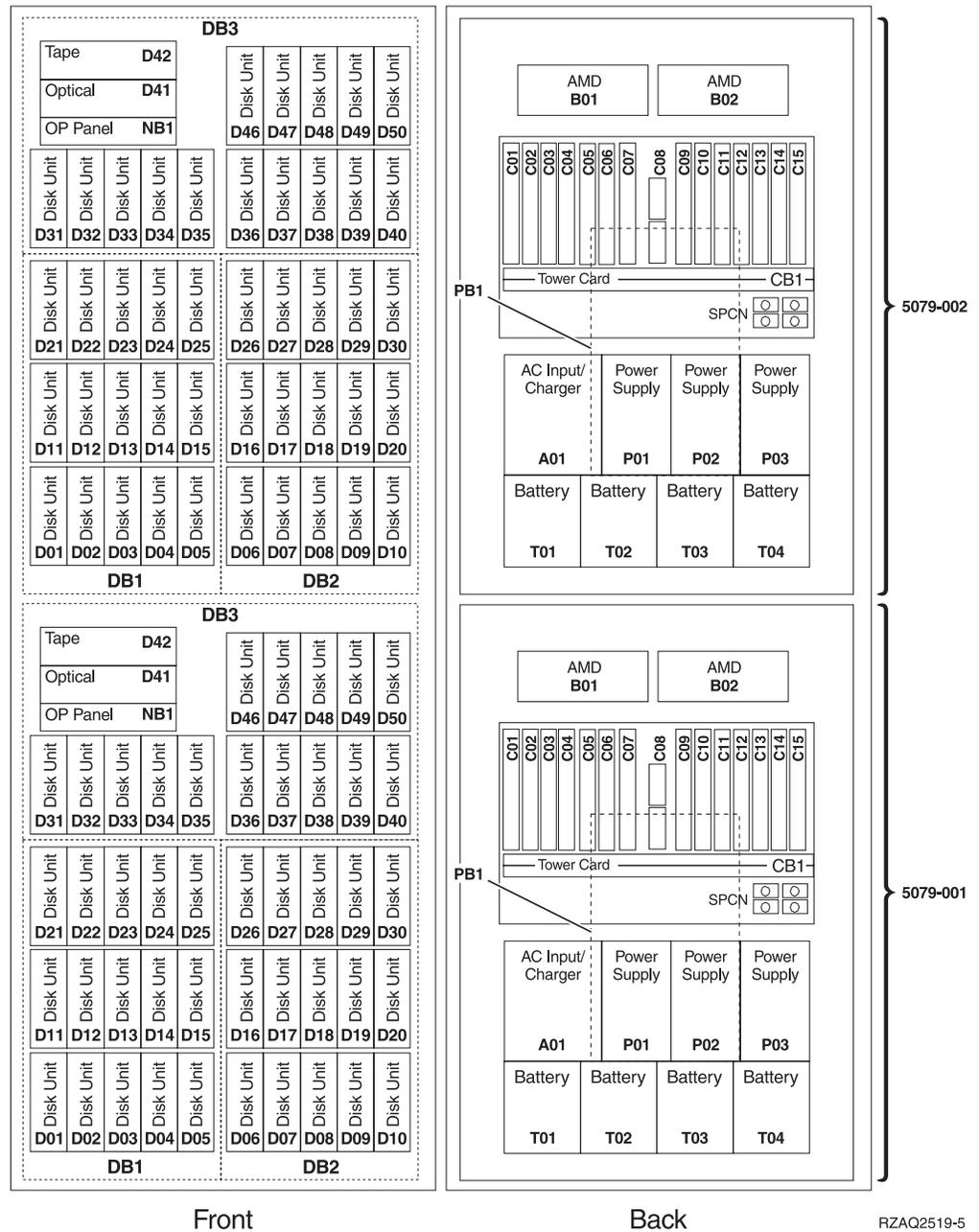
Figure 37. Locations for FC 5079 I/O Tower

J11 is an RPO connection, J14 is a Uninterruptable Power Supply connector, J15 is an SPCN 1 connector, and J16 is an SPCN 2 connector.

Note: Service the FC 5079 as two independent FC 5074 towers in the same 1.8 meter rack. See "Locations — FC 5074 I/O Tower" on page 688.

Locations — Integrated xSeries Adapter Card (IXA), Formerly the Adapter for Netfinity Server
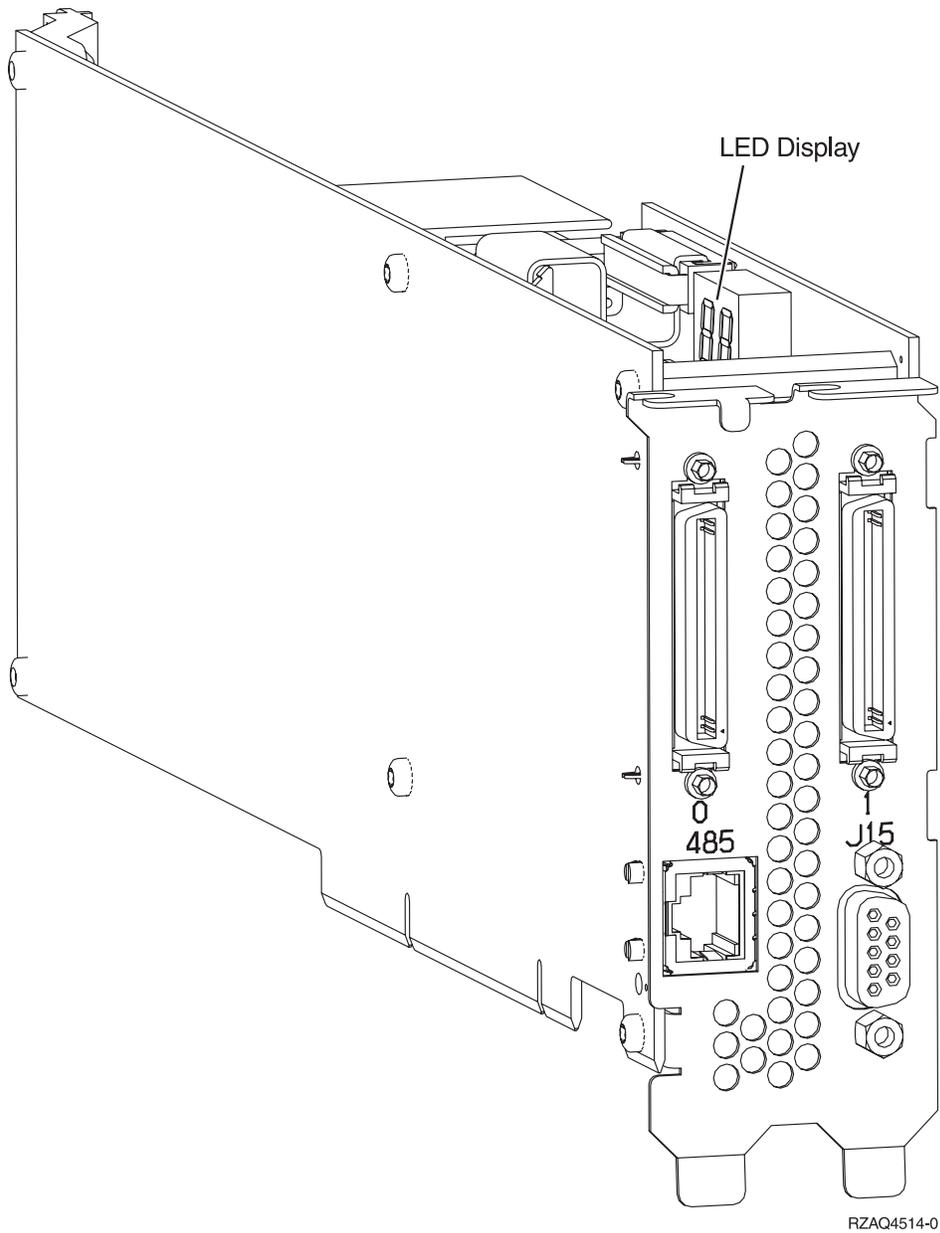
Figure 38. Locations for xSeries Adapter Card

*Table 53. FRU locations and Failing Components for Integrated xSeries Adapter Card (IXA)
— Machine Type 1519*

| Position	FRU Name	Possible Failing Component	Type, CCIN, or PN	Remove/Install Procedure
Position depends on xSeries Server machine type and model. To locate, follow the HSL cable connections or the SPCN cable connections to the Integrated xSeries Adapter card.	Integrated xSeries Adapter	The failing component is either: • HSL I/O Bridge • Multi - adapter Bridge • SPCN • Embed - ded IOP • Card Backplane	CCIN = 2689 listed under machine type 1519. **Note:** machine type 1519 is not an iSeries machine type or an xSeries machine type. Machine type 1519 was created to list feature 2689 separately from iSeries and xSeries machine types.	Go to "Type 2689 – Integrated xSeries Adapter (IXA)" on page 656. **Note:** Verify the frame ID by examining the frame ID displayed on the card's LED which is visible when the panel covering the card is removed. **Note:** In an OS/400 Opticonnect environment it is possible to have multiple xSeries Servers with the same frame ID displayed but the power controlling system is different than the system you are servicing. Verify the SPCN cable is connected to the system you are servicing.
HSL cables on the HSL ports	HSL cable	HSL connection	See "Type, Model, and Part Number list" on page 797.	Go to "HSL Cables – Concurrent" on page 629.

Locations — Power Distribution Unit (PDU)

Rear View

Power
Distribution
Unit

R6
CB6
R5
CB5 — Reset Button
R4 — Outlet for Drawers
CB4
R3
CB3
R2
CB2
R1
CB1
L1

Power Cord
(Plug configuration may vary)
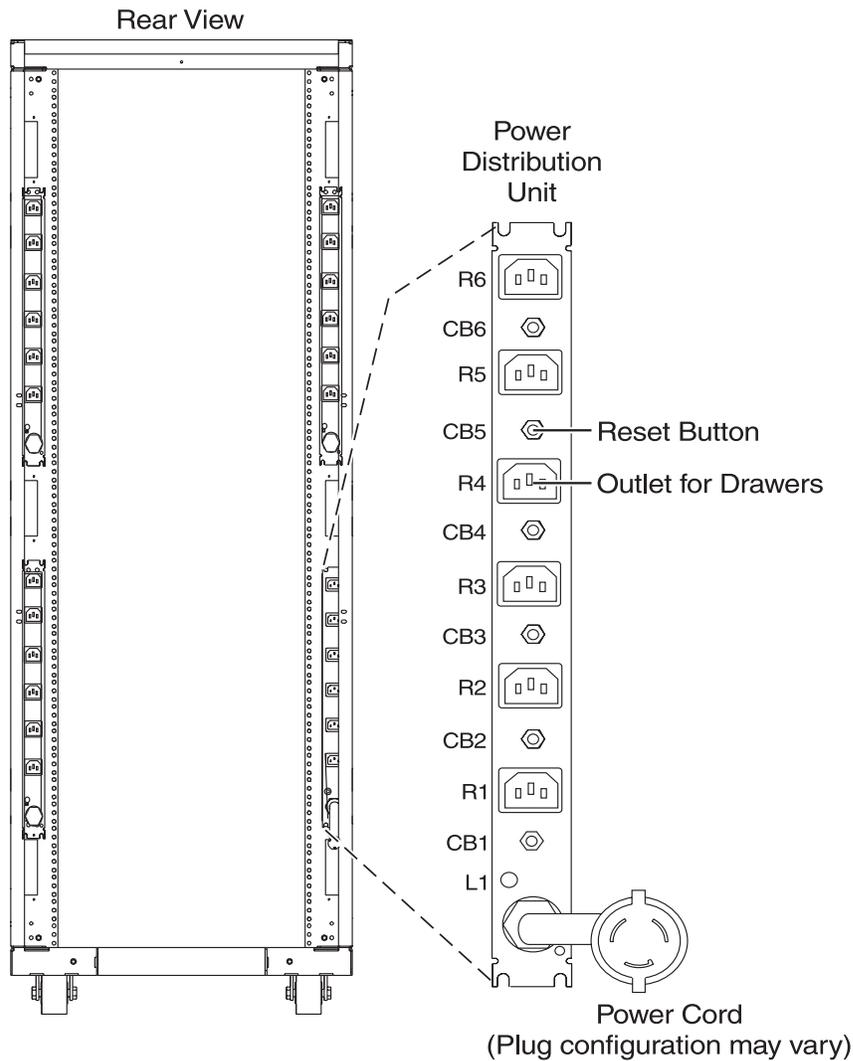
RZAQ4509-1

Figure 39. Locations for the Power Distribution Unit (PDU)

Addresses — Model 270

Use the address to find the location. Then go to "Locations — Model 270" on page 671 to find additional information.

Table 54. IOP, IOA, and device address information for Model 270

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
MB1	Embedded IOP	0001-10-00	FFFFFFFF
	Service Processor	0001-70-00	FFFFFFFF
C07	Comm/Wkst IOA	0001-10-00	E1FFFFFF

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C01	Storage IOA	0001-10-00	2FFFFFFF
C06	IOP	0001-13-00	FFFFFFFF
	Storage IOA	0001-10-00	3FFFFFFF
	Comm/Wkst IOA	0001-10-00	E3FFFFFF
C05	IOP	0001-14-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C06, MB1.	4FFFFFFF
	Comm/Wkst IOA		E4FFFFFF
C04 (IXS capable position)	IOP	0001-15-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C05, C06, MB1.	5FFFFFFF
	Comm/Wkst IOA		E5FFFFFF
C03	IOP	0001-16-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C04, C05, C06, MB1.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E506FFFF
C02	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, C05, C06, MB1.	7FFFFFFF
	Comm/Wkst IOA		E7FFFFFF
	IXS attached IOA		E507FFFF
D01	Disk Unit	0001-10-00	200100FF
D02	Disk Unit	0001-10-00	200200FF
D03	Disk Unit	0001-10-00	200300FF
D04	Disk Unit	0001-10-00	200400FF
D05	Disk Unit	0001-10-00	200E00FF
D06	Disk Unit	0001-10-00	200F00FF
D07	Optical	0001-10-00	200600FF
D08	Tape	0001-10-00	200700FF

Table 55. IOP, IOA, and device address information for Model 270 System Unit Expansion

Position	Possible Failing Component	DSA (BBBBCcbb)	Unit Address
D09, D15	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0100FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D09 or D15.)
D10, D16	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0200FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D10 or D16.)

Position	Possible Failing Component	DSA (BBBBCcbb)	Unit Address
D11, D17	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D11 or D17.)
D12, D18	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D12 or D18.)

Position	Possible Failing Component	DSA (BBBBCcbb)	Unit Address
D13, D19	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0E00FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D13 or D19.)
D14, D20	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0F00FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address and y is I/O bus 0, 1 or 2. Storage IOA I/O buses begin with 0 and are numbered from the tailstock toward the middle of the card. Find the storage IOA with the same DSA and xFFFFFFF address, then trace the I/O bus cable to determine if the position is D14 or D20.)

Addresses — Model 820

Use the address to find the location. Then go to to find additional information.

Table 56. IOP, IOA, and device address information for Model 820

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
MB1	Embedded IOP	0001-10-00	FFFFFFFF
	Service Processor	0001-70-00	FFFFFFFF

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBCcbb) **Note:** IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C06	Comm/Wkst IOA	0001-10-00	E1FFFFFF
C05	Storage IOA	0001-10-00	2FFFFFFF
C04 (IXS capable position)	IOP	0001-13-00	FFFFFFFF
	Storage IOA	0001-10-00	3FFFFFFF
	Comm/Wkst IOA	0001-10-00	E3FFFFFF
C03 (empty if IXS in C04)	IOP	0001-14-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C04, MB1.	4FFFFFFF
	Comm/Wkst IOA		E4FFFFFF
C02	IOP	0001-16-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C04, MB1.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E306FFFF
C01	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C02, C03, C04, MB1.	7FFFFFFF
	Comm/Wkst IOA		E7FFFFFF
	IXS attached IOA		E307FFFF
C12	IOP	yyyy-10-00	FFFFFFFF
C11	Storage IOA	yyyy-10-00	1FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E1FFFFFF
C10 (IXS capable position)	IOP	yyyy-12-00	FFFFFFFF
	Storage IOA	yyyy-10-00	2FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E2FFFFFF
C09 (empty if IXS in C10)	IOP	yyyy-14-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C10, C12.	4FFFFFFF
	Comm/Wkst IOA		E4FFFFFF
C08	IOP	yyyy-15-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C10, C12.	5FFFFFFF
	Comm/Wkst IOA		E5FFFFFF
	IXS attached IOA		E205FFFF
C07	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C08, C09, C10, C12.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E206FFFF
D01	Disk Unit	0001-10-00	200100FF
D02	Disk Unit	0001-10-00	200200FF
D03	Disk Unit	0001-10-00	200300FF
D04	Disk Unit	0001-10-00	200400FF

Table 56. IOP, IOA, and device address information for Model 820 (continued)

Position (listed in IOA assignment order)	Possible Failing Component	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D05	Disk Unit	0001-10-00	200E00FF
D06	Disk Unit	0001-10-00	200F00FF
D07	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0100FF (where xy is not 20)
D08	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0200FF (where xy is not 20)
D09	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0300FF (where xy is not 20)
D10	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0400FF (where xy is not 20)
D11	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0E00FF (where xy is not 20)
D12	Disk Unit	The disk unit has the same DSA as the IOP controlling the Storage IOA.	xy0F00FF (where xy is not 20)
D13	Optical	0001-10-00	200600FF
D14	Tape	0001-10-00	200700FF

Addresses — FC 5074 I/O Tower

Use the address to find the location. Then go to "Locations — FC 5074 I/O Tower" on page 688 to find additional information.

Table 57. IOP, IOA, and device address information for FC 5074 I/O Tower

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C01	IOP	xxxx-10-00	FFFFFFFF
C02	Storage IOA	xxxx-10-00	2FFFFFFF
	Comm/Wkst IOA	xxxx-10-00	E2FFFFFF
C03	IOP	xxxx-14-00	FFFFFFFF
	Storage IOA	xxxx-10-00	4FFFFFFF
	Comm/Wkst IOA	xxxx-10-00	E4FFFFFF

Table 57. IOP, IOA, and device address information for FC 5074 I/O Tower (continued)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E2FFFFFF
C07	IOP	yyyy-13-00	FFFFFFFF
	Storage IOA	yyyy-10-00	3FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E3FFFFFF
	IXS attached IOA	yyyy-10-00	E003FFFF
C09	IOP	yyyy-14-00	FFFFFFFF
	Storage IOA	yyyy-10-00	4FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E4FFFFFF
	IXS attached IOA	yyyy-10-00	E004FFFF
C10	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E006FFFF
C11 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	yyyy-20-00	2FFFFFFF
	Comm/Wkst IOA	yyyy-20-00	E2FFFFFF
C13	IOP	yyyy-23-00	FFFFFFFF
	Storage IOA	yyyy-20-00	3FFFFFFF
	Comm/Wkst IOA	yyyy-20-00	E3FFFFFF
	IXS attached IOA	yyyy-20-00	E003FFFF
C14	IOP	yyyy-24-00	FFFFFFFF
	Storage IOA	yyyy-20-00	4FFFFFFF
	Comm/Wkst IOA	yyyy-20-00	E4FFFFFF
	IXS attached IOA	yyyy-20-00	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E006FFFF

Position	Possible Failing Item	DSA (BBBBCcbb) **Note:** IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D01	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D02	Disk Unit		x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D03	Disk Unit		x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D04	Disk Unit		x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D05	Disk Unit		x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Table 57. IOP, IOA, and device address information for FC 5074 I/O Tower (continued)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D06	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled ″R-2″.	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D07	Disk Unit		x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D08	Disk Unit		x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D09	Disk Unit		x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D10	Disk Unit		x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Table 57. IOP, IOA, and device address information for FC 5074 I/O Tower (continued)

Position	Possible Failing Item	DSA (BBBBCcbb) **Note:** IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D11	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x10300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D12	Disk Unit		x10400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D13	Disk Unit		x10500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D14	Disk Unit		x10600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D15	Disk Unit		x10700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D16	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x10300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D17	Disk Unit		x10400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D18	Disk Unit		x10500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D19	Disk Unit		x10600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D20	Disk Unit		x10700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Position	Possible Failing Item	DSA (BBBBCcbb) **Note:** IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D21	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "L-1".	x20300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D22	Disk Unit		x20400FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)
D23	Disk Unit		x20500FF (where x is the same as the first character of the xFFFFFFFF IOA Unit Address)
D24	Disk Unit		x20600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D25	Disk Unit		x20700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Table 57. IOP, IOA, and device address information for FC 5074 I/O Tower (continued)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D26	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal cable labelled "R-2".	x20300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D27	Disk Unit		x20400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D28	Disk Unit		x20500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D29	Disk Unit		x20600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D30	Disk Unit		x20700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D31	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00100FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D32	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00200FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D33	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D34	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D35	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D36	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D37	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D38	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D39	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D40	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x10700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D41	Optical	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D42	Tape	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x00700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D46	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20300FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
D47	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20400FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D48	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20500FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D49	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20600FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)
D50	Disk Unit	The disk unit has the same DSA as the IOA attached to the internal flat ribbon cable.	x20700FF (where x is the same as the first character of the xFFFFFFF IOA Unit Address)

Addresses — FC 5075 I/O Tower

Use the address to find the location. Then go to "Locations — FC 5075 I/O Tower" on page 692 to find additional information.

Table 58. IOP, IOA, and device address information for FC 5075

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
CB1	Embedded IOP	xxxx-10-00	FFFFFFFF
C01	Storage IOA	xxxx-10-00	1FFFFFFF
	Comm/Wkst IOA	xxxx-10-00	E1FFFFFF
C02 (IXS capable position)	IOP	xxxx-12-00	FFFFFFFF
	Storage IOA	xxxx-10-00	2FFFFFFF
	Comm/Wkst IOA	xxxx-10-00	E2FFFFFF
C03 (empty if IXS in C02)	IOP	xxxx-14-00	FFFFFFFF
	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C02, CB1.	4FFFFFFF
	Comm/Wkst IOA		E4FFFFFF

Table 58. IOP, IOA, and device address information for FC 5075 (continued)

Position	Possible Failing Item	DSA (BBBBCcbb) **Note:** IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C02, CB1.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E206FFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E2FFFFFF
C07	IOP	yyyy-14-00	FFFFFFFF
	Storage IOA	yyyy-10-00	4FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E4FFFFFF
	IXS attached IOA	yyyy-10-00	E004FFFF
C08	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C07, C05.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E006FFFF
D01	Disk Unit	xxxx-10-00	1z0100FF (where z is 0, 1 or 2)
D02	Disk Unit	xxxx-10-00	1z0200FF (where z is 0, 1 or 2)
D03	Disk Unit	xxxx-10-00	1z0300FF (where z is 0, 1 or 2)
D04	Disk Unit	xxxx-10-00	1z0400FF (where z is 0, 1 or 2)
D05	Disk Unit	xxxx-10-00	1z0E00FF (where z is 0, 1 or 2)
D06	Disk Unit	xxxx-10-00	1z0F00FF (where z is 0, 1 or 2)

Addresses — FC 5078/0578 PCI Expansion Unit

Use the address to find the location. Then go to "Locations — FC 5078, 0578 PCI Expansion Unit" on page 695 to find additional information.

Table 59. IOP, IOA, and device address information for FC 5078/0578 PCI Expansion Unit

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C01	IOP	xxxx-10-00	FFFFFFFF
C02	Storage IOA	xxxx-10-00	2FFFFFFF
	Comm/Wkst IOA	xxxx-10-00	E2FFFFFF
C03	IOP	xxxx-14-00	FFFFFFFF
	Storage IOA	xxxx-10-00	4FFFFFFF
	Comm/Wkst IOA	xxxx-10-00	E4FFFFFF
C04	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C03, C01.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
C05 (IXS capable position)	IOP	yyyy-10-00	FFFFFFFF
C06 (empty if IXS in C05)	Storage IOA	yyyy-10-00	2FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E2FFFFFF
C07	IOP	yyyy-13-00	FFFFFFFF
	Storage IOA	yyyy-10-00	3FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E3FFFFFF
	IXS attached IOA	yyyy-10-00	E003FFFF
C09	IOP	yyyy-14-00	FFFFFFFF
	Storage IOA	yyyy-10-00	4FFFFFFF
	Comm/Wkst IOA	yyyy-10-00	E4FFFFFF
	IXS attached IOA	yyyy-10-00	E004FFFF
C10	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C09, C07, C05.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E006FFFF
C11 (IXS capable position)	IOP	yyyy-20-00	FFFFFFFF
C12 (empty if IXS in C11)	Storage IOA	yyyy-20-00	2FFFFFFF
	Comm/Wkst IOA	yyyy-20-00	E2FFFFFF
C13	IOP	yyyy-23-00	FFFFFFFF
	Storage IOA	yyyy-20-00	3FFFFFFF
	Comm/Wkst IOA	yyyy-20-00	E3FFFFFF
	IXS attached IOA	yyyy-20-00	E003FFFF

Table 59. IOP, IOA, and device address information for FC 5078/0578 PCI Expansion Unit (continued)

Position	Possible Failing Item	DSA (BBBBCcbb) Note: IOA and device DSA's will not follow the rules below if the IOA is manually reassigned after IPL.	Unit Address
C14	IOP	yyyy-24-00	FFFFFFFF
	Storage IOA	yyyy-20-00	4FFFFFFF
	Comm/Wkst IOA	yyyy-20-00	E4FFFFFF
	IXS attached IOA	yyyy-20-00	E004FFFF
C15	Storage IOA	The IOA has the same DSA as the first IOP found in the following list: C14, C13, C11.	6FFFFFFF
	Comm/Wkst IOA		E6FFFFFF
	IXS attached IOA		E006FFFF

Addresses — FC 5079 I/O Tower

Note: Service the FC 5079 as two independent FC 5074 towers in the same 1.8 meter rack. See "Addresses — FC 5074 I/O Tower" on page 708.

Addresses — for External xSeries Server, iSeries Adapter — Machine Type 1519

Table 60. IOP and IOA address information for External xSeries Server, iSeries Adapter — Machine Type 1519

Position	Possible Failing Component	DSA	Unit Address
SE1	2689 Integrated xSeries Adapter (IOP)	xxxx-10-00	FFFFFFFF
SE1	2689 Integrated xSeries Adapter (IOA)	xxxx-10-00	E0FFFFFF

Memory Locations and Placement Rules

2884 Memory Card:

Notes:

1. Memory DIMMs are placed in sets of 2.
2. Memory pairs are placed in the following order:
   - A-B
   - C-D
   - E-F
   - G-H

2884 Memory Card:
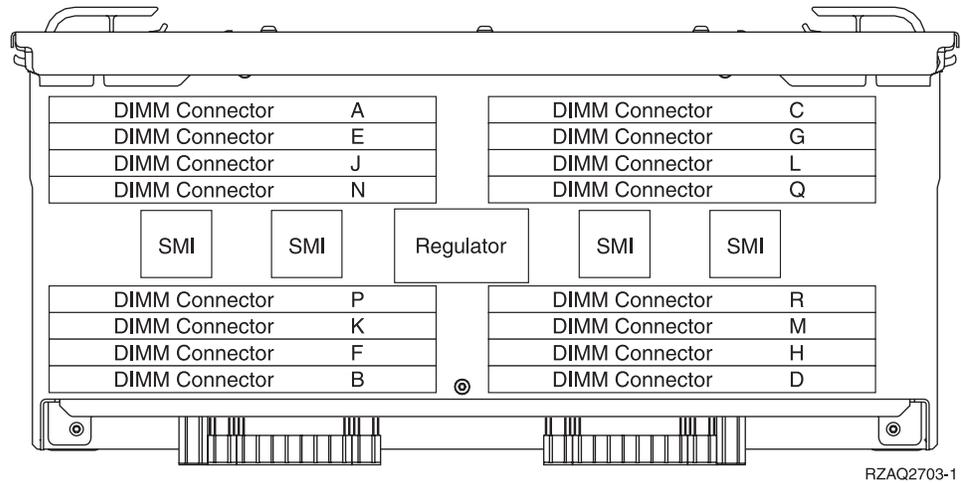
Figure 40. 2884 Memory Card

Notes:

1. If only two memory DIMMs are placed, they must be in positions A and B.
2. Memory DIMMs are placed in sets of 4 only.
3. Additional quads are placed in the following order:
   - A-B-C-D.
   - E-F-G-H
   - J-K-L-M
   - N-P-Q-R

CCIN 24A0, CCIN 244A Processor Card with DIMM memory:
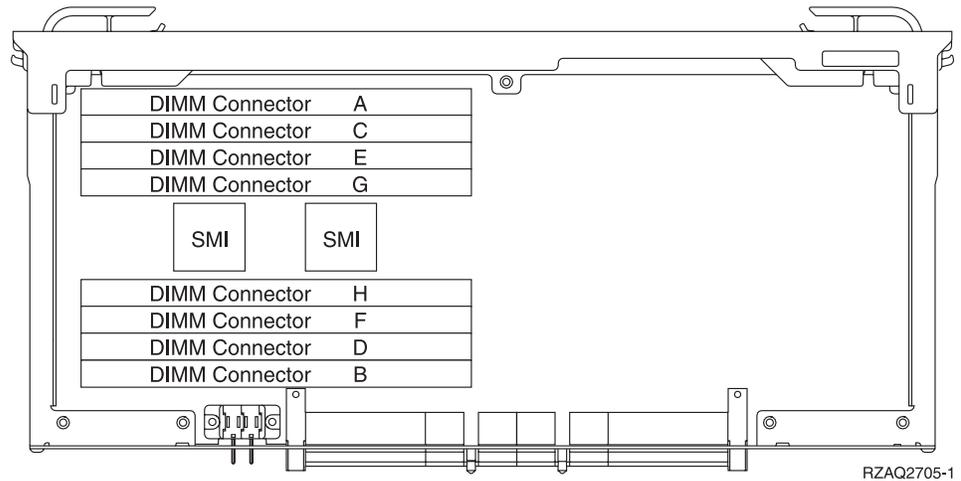
Figure 41. Processor Card with DIMM memory

Notes:

1. When memory card 2884 is used with DIMM memory, no DIMMs are allowed on the processor card.
2. Memory DIMMs are placed in sets of 2 only.
3. The base set is A-B.
4. Additional pairs are placed in the following order:

- C-D
- E-F
- G-H

Removable Media Address Jumper Positions

Only locations D07 on Model 270 and location D13 on Model 820 require address jumpers.

6321 CD-ROM Optical Unit:

Table 61. 6321 CD-ROM Optical Unit jumpers for location D07 (model 270) and D13 (Model 820)

|O|	O	O	|O|	O	O	O
|O|	O	O	|O|	O	O	O
1	2	4	P			

Note: The 6321 optical unit uses jumper part number 1675209.

6330 DVD-RAM Optical Unit:

Table 62. 6330 DVD-RAM Optical Unit jumpers for location D07 (model 270) and D13 (Model 820)

O	|O|	O	O	O	O	O
O	|O|	O	O		O	O
	1	2	4			

Note: The 6330 optical unit uses jumper part number 1675209.

6383, 6386, 6387 Tape Unit:

Table 63. 6383, 6386, 6387 tape unit address jumpers for location D07 (model 270) and D13 (Model 820)

O	...	O	|O|	O	O	O	O	O	O
O	...	O	|O|	O	O	O	O	O	O
		0	1	2	3				

Note: The 6383, 6386, and 6387 tape units use jumper part number 61X7052.

6382 tape unit address jumpers for location D07 (model 270) and D13 (Model 820)

Table 64. 6383, 6386, 6387 tape unit address jumpers for location D07 (model 270) and D13 (Model 820)

O	...	O	O	O	O	O	O	|O|	O
O	...	O	O	O	O	O	O	|O|	O
				2	1	0			

Note: The 6382 tape unit uses jumper part number 1675209.

I/O Adapters

2890 Integrated xSeries Server (IXS)
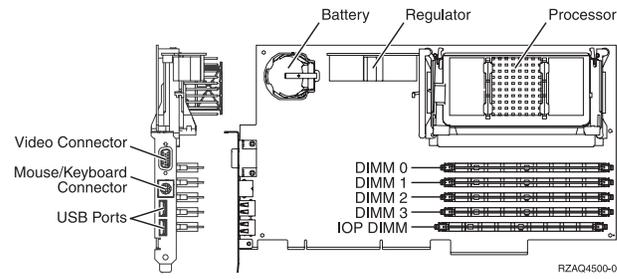
Figure 42. 2890 Integrated xSeries Server (IXS)

Power and Signal Cables

Model 270
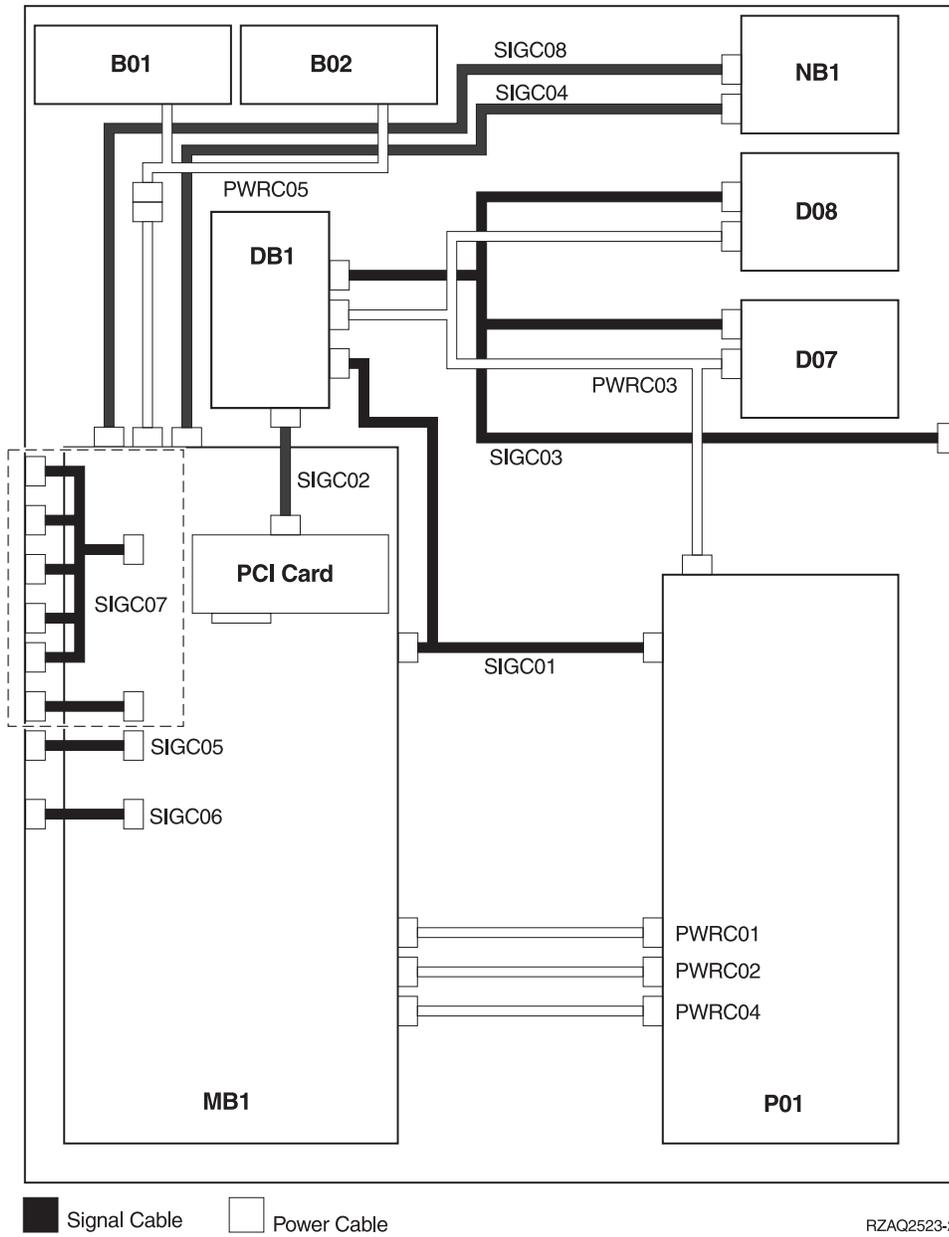
Figure 43. Model 270 (without System Unit Expansion) Power and Signal Cables

Table 65. Model 270 (without System Unit Expansion) Power and Signal Cables

Name	Description	Part Number
Signal Cables		
SIGC01	Power Supply (P01) to System Unit Backplane (MB1) and Device Board 1 (DB1)	23L2907
SIGC02	System Unit Backplane (MB1) to Device Board 1 (DB1)	04N2273

Table 65. Model 270 (without System Unit Expansion) Power and Signal Cables (continued)

Name	Description	Part Number
SIGC03	Power Supply (P01) to Optical (D07), Tape (D08), and Device Board 1 (DB1)	04N4266
SIGC04	System Unit Backplane (MB1) to Control Panel (NB1)	26L1886
SIGC05	System Unit Backplane (MB1) to rear bracket	24L1882
SIGC06	System Unit Backplane (MB1) to rear HSL connection	23L2889
SIGC07	System Unit Backplane (MB1) to rear bracket	04N4271
SIGC08	System Unit Backplane (MB1) to Control Panel (NB1)	26L1752
Power Cables		
PWRC01	Power Supply (P01) to System Unit Backplane (MB1)	24L1888
PWRC02	Power Supply (P01) to System Unit Backplane (MB1)	24L1890
PWRC03	Power Supply (P01) to Optical (D07), Tape (D08), and Device Board 1 (DB1)	04N4268
PWRC04	Power Supply (P01) to System Unit Backplane (MB1)	24L1889
PWRC05	System Unit Backplane (MB1) to AMDs (B01 and B02)	24L1884

RZAQ2524-2
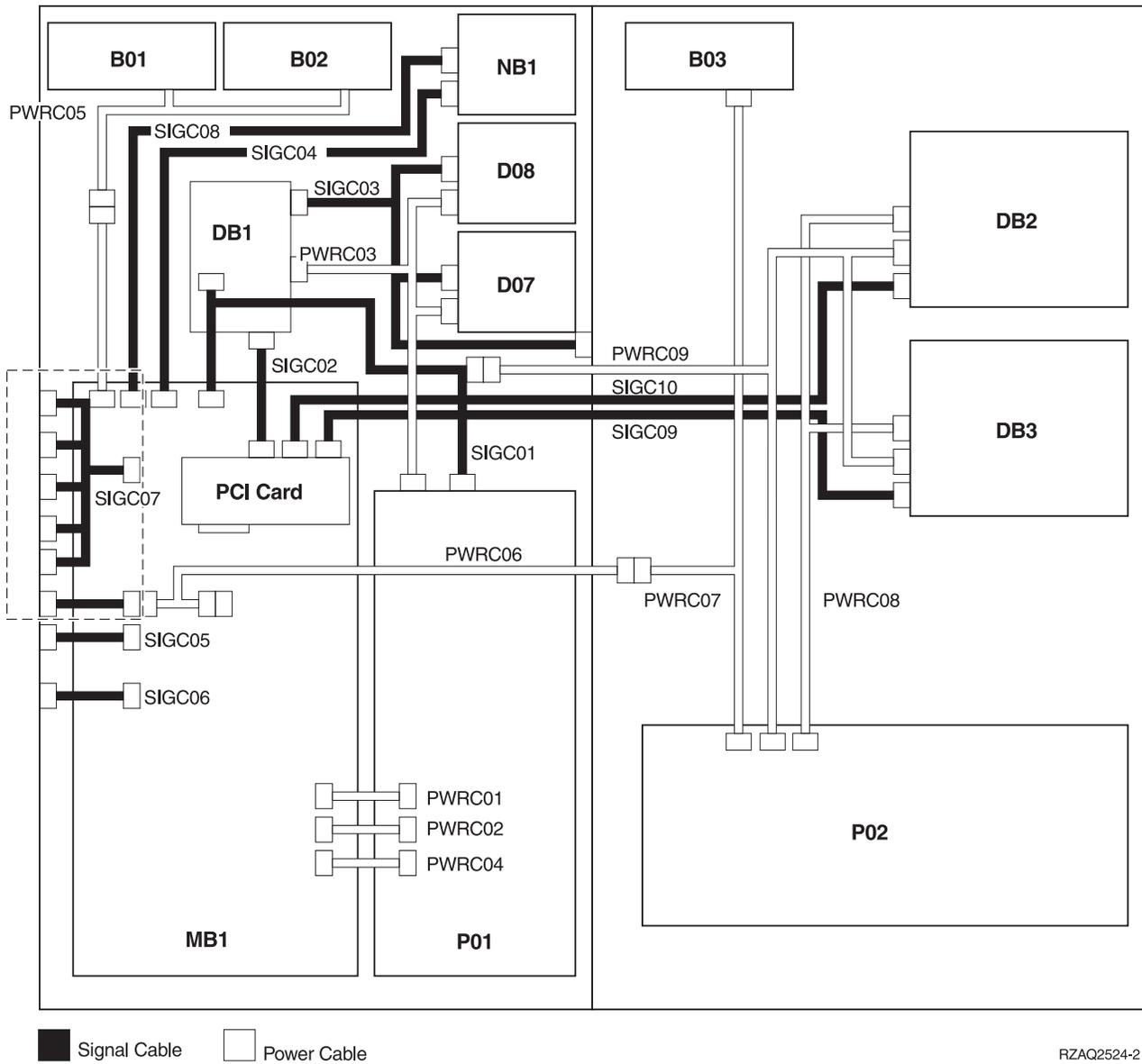
*Figure 44. Model 270 (with System Unit Expansion) Power and Signal Cables*

Table 66. Model 270 (with System Unit Expansion) Power and Signal Cables

Name	Description	Part Number
Signal Cables		
SIGC01	Power Supply (P01) to System Unit Backplane (MB1) and to Device Board 1 (DB1)	23L2907
SIGC02	System Unit Backplane (MB1) to Device Board 1 (DB1)	04N2273
SIGC03	System Unit Interface to Optical (D07), Tape (D08), and Device Board 1 (DB1)	04N4266
SIGC04	System Unit Backplane (MB1) to Control Panel (NB1)	26L1886
SIGC05	System Unit Backplane (MB1) to rear bracket	24L1882

Table 66. Model 270 (with System Unit Expansion) Power and Signal Cables (continued)

| Name	Description	Part Number
SIGC06	System Unit Backplane (MB1) to rear HSL connection	23L2889
SIGC07	System Unit Backplane (MB1) to rear bracket	04N4271
SIGC08	System Unit Backplane (MB1) to Control Panel (NB1)	26L1752
SIGC09	System Unit Backplane (MB1) to Device Board 3 (DB3)	04N2273
SIGC10	System Unit Backplane (MB1) to Device Board 2 (DB2)	04N2273
Power Cables		
PWRC01	Power Supply (P01) to System Unit Backplane (MB1)	24L1888
PWRC02	Power Supply (P01) to System Unit Backplane (MB1)	24L1890
PWRC03	Power Supply (P01) to Optical (D07), Tape (D08), and Device Board 1 (DB1)	04N4268
PWRC04	Power Supply (P01) to System Unit Backplane (MB1)	24L1889
PWRC05	System Unit Backplane (MB1) to AMDs (B01 and B02)	24L1884
PWRC06	Expansion Unit interface to System Unit Backplane (MB1) and Debug Port	04N5595
PWRC07	Power Supply (P02) to Expansion Unit interface and AMD (B03)	04N5720
PWRC08	Power Supply (P02) to Device Boards (DB2 and DB3)	04N5594
PWRC09	Expansion Unit interface to Device Boards (DB2 and DB3) and to Power Supply (P02)	04N5735

Model 820
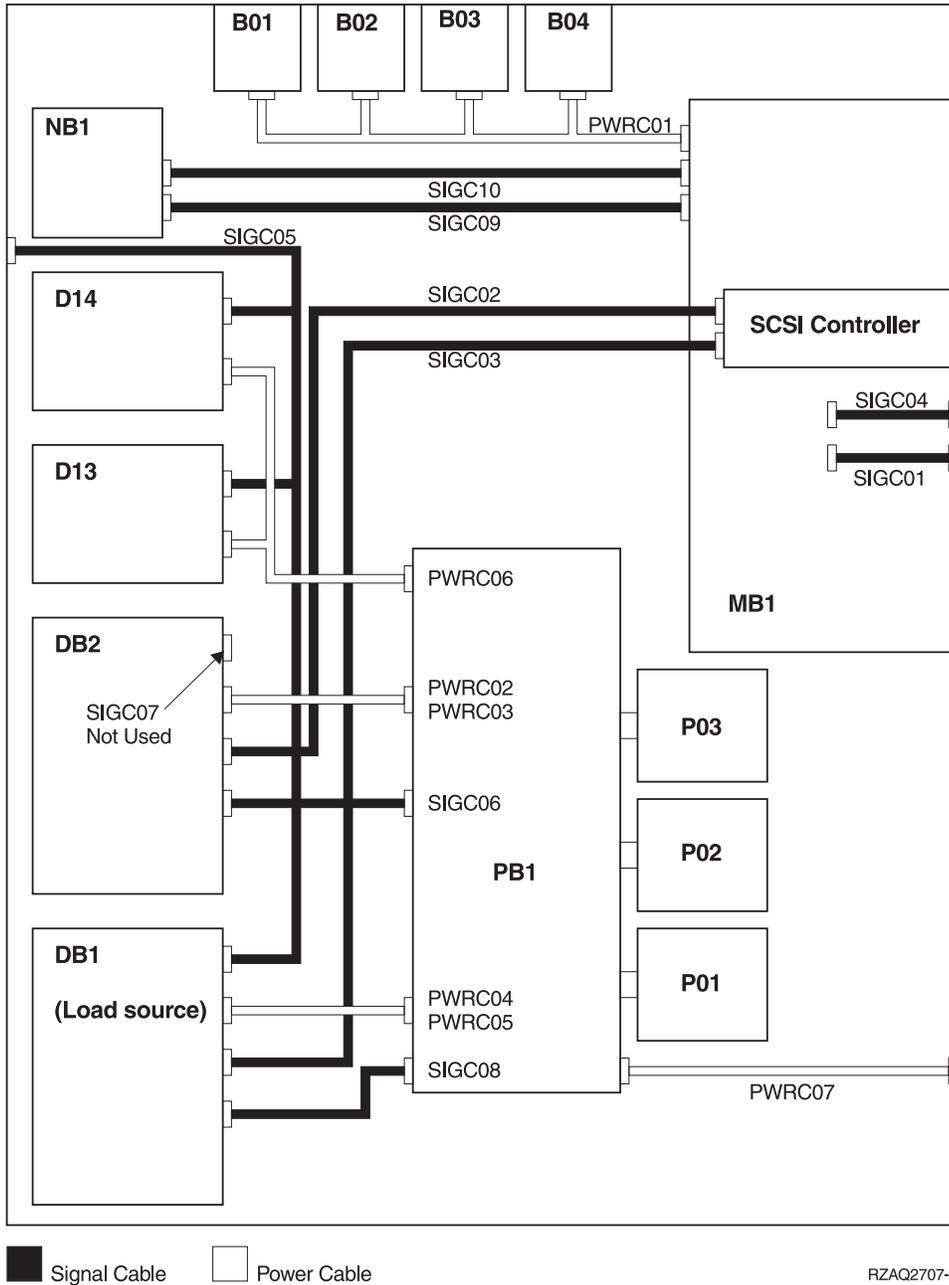
Figure 45. Model 820 – Single Line Cord Power and Signal Cables (Non-Dual Line Cord Enabled)

Table 67. Model 820 – Single Line Cord Power and Signal Cables (Non-Dual Line Cord Enabled)

Name	Description	Part Number
Signal Cables		
SIGC01	System Unit Backplane (MB1) to rear HSL connections	23L2889
SIGC02	System Unit Backplane (MB1) to Device Board 2 (DB2)	04N2920 or 04N2273

Table 67. Model 820 – Single Line Cord Power and Signal Cables (Non-Dual Line Cord Enabled) (continued)

| Name	Description	Part Number
SIGC03	System Unit Backplane (MB1) to Device Board 1 (DB1)	04N2920 or 04N2273
SIGC04	JTAG	04N2921
SIGC05	Code load connector to Optical (D13), Tape (D14), and Device Board 1 (DB1)	04N4266
SIGC06	Power distribution board (PB1) to Device Board 2 (DB2)	24L1761
SIGC07	Not used	NA
SIGC08	Power distribution board (PB1) to Device Board 1 (DB1)	24L1761
SIGC09	System Unit Backplane (MB1) to Control Panel (NB1)	24L1752
SIGC10	System Unit Backplane (MB1) to Control Panel (NB1)	24L1886
Power Cables		
PWRC01	System Unit Backplane (MB1) to AMDs (B01 through B04)	04N2543
PWRC02	Power distribution board (PB1) to Device Board 2 (DB2)	04N2920
PWRC03	Power distribution board (PB1) to Device Board 2 (DB2)	04N2920
PWRC04	Power distribution board (PB1) to Device Board 1 (DB1)	04N2920
PWRC05	Power distribution board (PB1) to Device Board 1 (DB1)	04N2920
PWRC06	Power distribution board (PB1) to Optical (D13) and Tape (D14)	04N4267 or 24L1762
PWRC07	Power distribution board (PB1) to Line cord connector	04N5192 or 23L8082
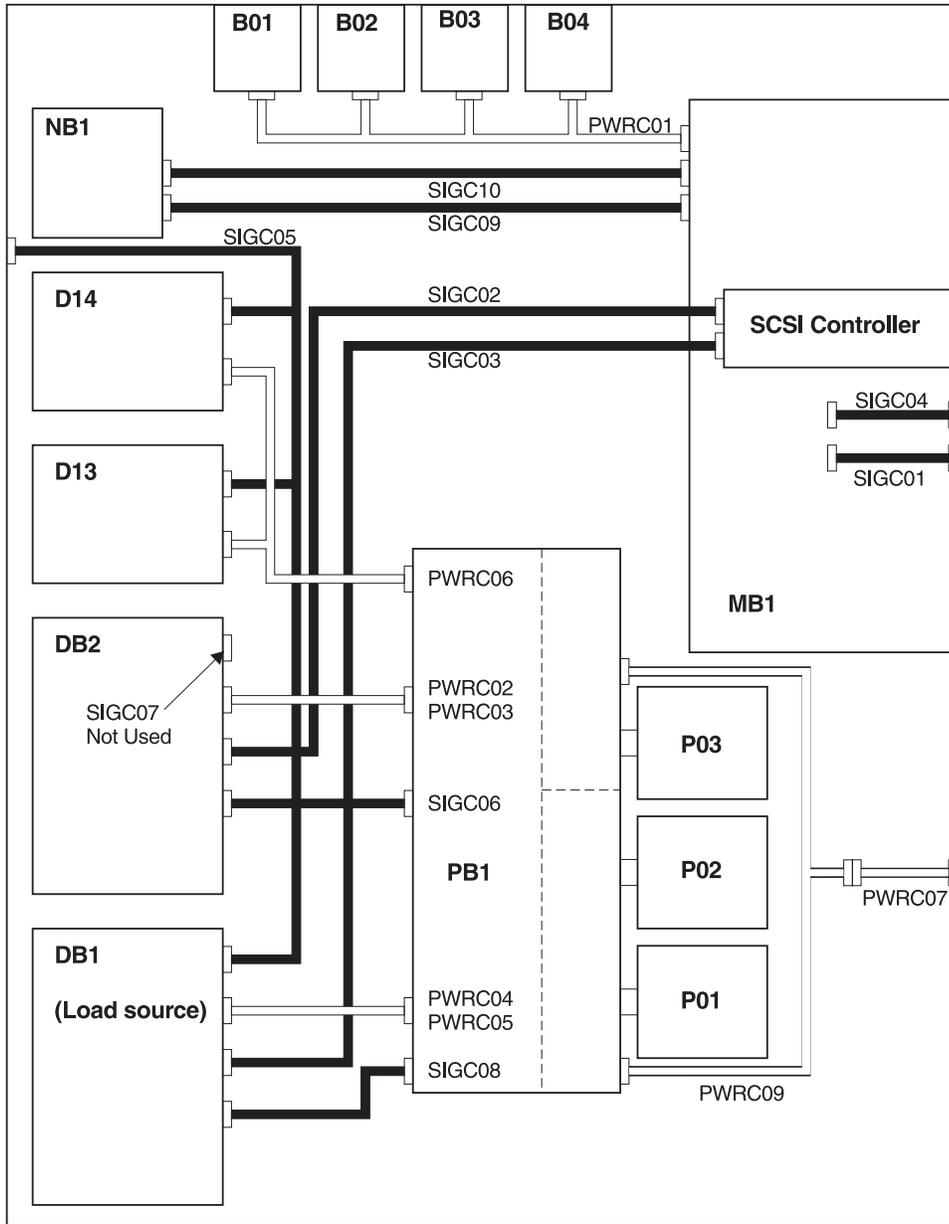
Figure 46. Model 820 – Single Line Cord Power and Signal Cables (Dual Line Cord Enabled)

Table 68. Model 820 – Single Line Cord Power and Signal Cables (Dual Line Cord Enabled)

Name	Description	Part Number
	Signal Cables	
SIGC01	System Unit Backplane (MB1) to rear HSL connections	23L2889
SIGC02	System Unit Backplane (MB1) to Device Board 2 (DB2)	04N2920 or 04N2273
SIGC03	System Unit Backplane (MB1) to Device Board 1 (DB1)	04N2920 or 04N2273
SIGC04	JTAG	04N2921

Table 68. Model 820 – Single Line Cord Power and Signal Cables (Dual Line Cord Enabled) (continued)

Name	Description	Part Number
SIGC05	Code load connector to Optical (D13), Tape (D14), and Device Board 1 (DB1)	04N4266
SIGC06	Power distribution board (PB1) to Device Board 2 (DB2)	24L1761
SIGC07	Not used	NA
SIGC08	Power distribution board (PB1) to Device Board 1 (DB1)	24L1761
SIGC09	System Unit Backplane (MB1) to Control Panel (NB1)	24L1752
SIGC10	System Unit Backplane (MB1) to Control Panel (NB1)	24L1886
Power Cables		
PWRC01	System Unit Backplane (MB1) to AMDs (B01 through B04)	04N2543
PWRC02	Power distribution board (PB1) to Device Board 2 (DB2)	04N2920
PWRC03	Power distribution board (PB1) to Device Board 2 (DB2)	04N2920
PWRC04	Power distribution board (PB1) to Device Board 1 (DB1)	04N2920
PWRC05	Power distribution board (PB1) to Device Board 1 (DB1)	04N2920
PWRC06	Power distribution board (PB1) to Optical (D13) and Tape (D14)	04N4267 or 24L1762
PWRC07	Line Cord Connector to Power Cable	21P6346
PWRC09	Power Cable to Power Distribution Board (PB1)	21P6322

B01   B02   B03   B04

NB1

PWRC01

SIGC10
SIGC09

SIGC05

D14

SIGC02

SCSI Controller

SIGC03

SIGC04

SIGC01

D13

PWRC06

MB1

DB2

SIGC07
Not Used

PWRC02
PWRC03

P03

SIGC06

PWRC08

PB1

P02

PWRC07

DB1

(Load source)

PWRC04
PWRC05

P01
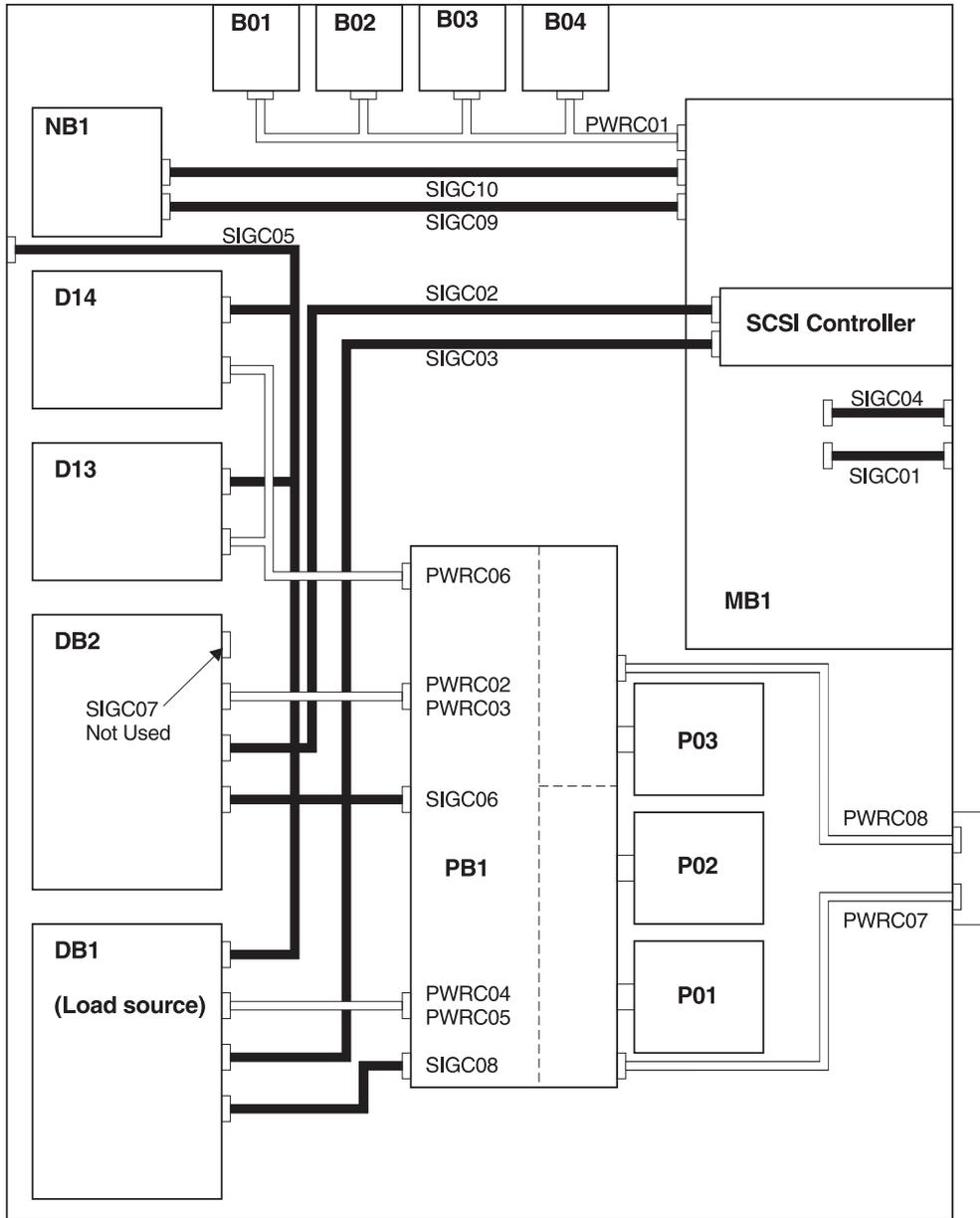
SIGC08

■ Signal Cable   □ Power Cable

RZAQ2714-0

Figure 47. Model 820 – Dual Line Cord Power and Signal Cables

Table 69. Model 820 – Dual Line Cord Power and Signal Cables

Name	Description	Part Number
Signal Cables		
SIGC01	System Unit Backplane (MB1) to rear HSL connections	23L2889
SIGC02	System Unit Backplane (MB1) to Device Board 2 (DB2)	04N2920 or 04N2273
SIGC03	System Unit Backplane (MB1) to Device Board 1 (DB1)	04N2920 or 04N2273
SIGC04	JTAG	04N2921

Table 69. Model 820 – Dual Line Cord Power and Signal Cables (continued)

Name	Description	Part Number
SIGC05	Code load connector to Optical (D13), Tape (D14), and Device Board 1 (DB1)	04N4266
SIGC06	Power distribution board (PB1) to Device Board 2 (DB2)	24L1761
SIGC07	Not used	NA
SIGC08	Power distribution board (PB1) to Device Board 1 (DB1)	24L1761
SIGC09	System Unit Backplane (MB1) to Control Panel (NB1)	24L1752
SIGC10	System Unit Backplane (MB1) to Control Panel (NB1)	24L1886
Power Cables		
PWRC01	System Unit Backplane (MB1) to AMDs (B01 through B04)	04N2543
PWRC02	Power distribution board (PB1) to Device Board 2 (DB2)	04N2920
PWRC03	Power distribution board (PB1) to Device Board 2 (DB2)	04N2920
PWRC04	Power distribution board (PB1) to Device Board 1 (DB1)	04N2920
PWRC05	Power distribution board (PB1) to Device Board 1 (DB1)	04N2920
PWRC06	Power distribution board (PB1) to Optical (D13) and Tape (D14)	04N4267 or 24L1762
PWRC07	Power Cable to Power Distribution Board (PB1)	21P6346
PWRC08	Power Cable to Power Distribution Board (PB1)	21P5192

FC 5074 and FC 5079 I/O Tower

Note: The FC 5079 I/O Tower is serviced as two FC 5074 Towers in the same frame. Cable names and part numbers are repeated in the upper and lower section of the FC 5079 frame.
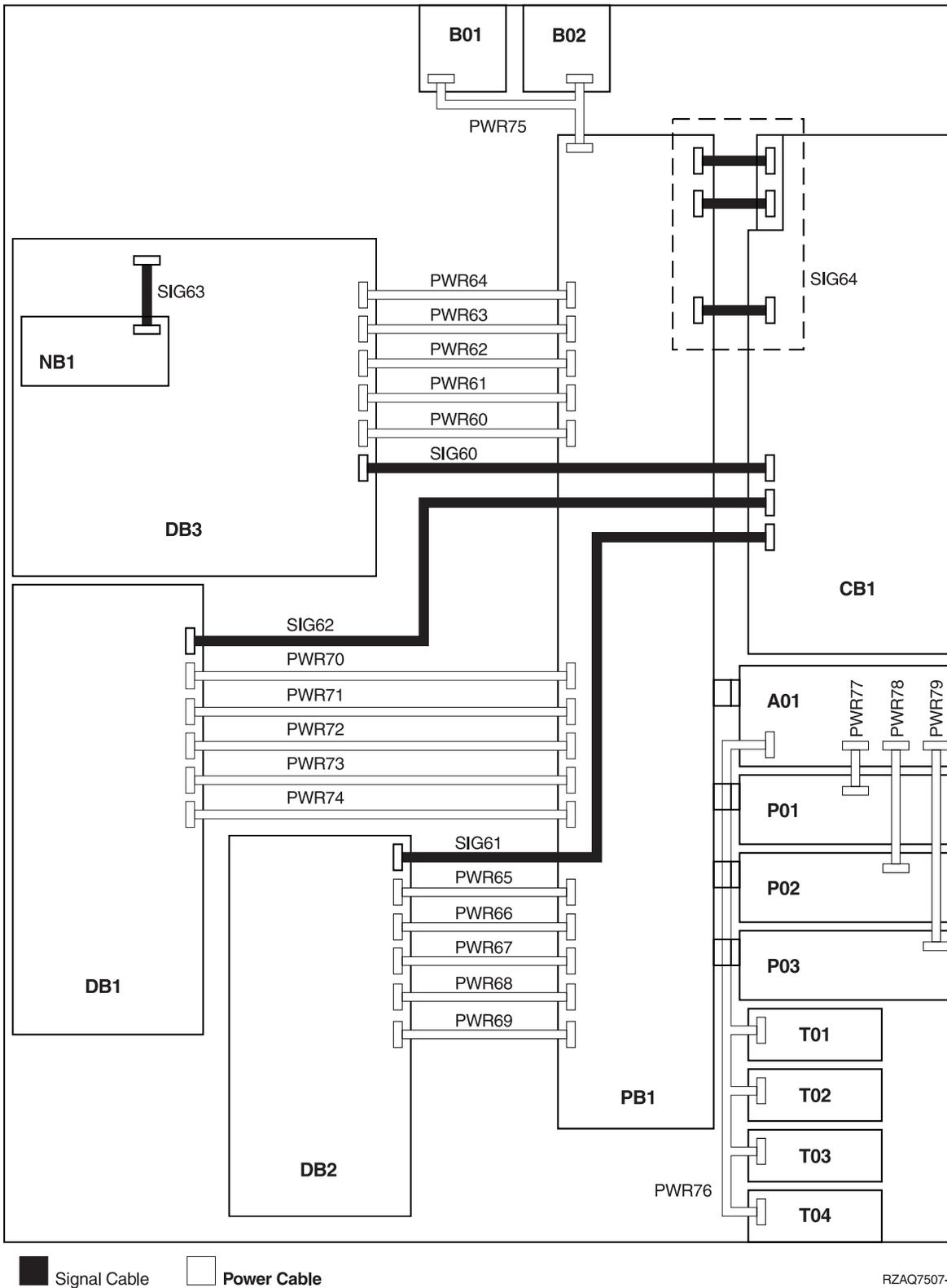
Figure 48. FC 5074 I/O Tower – Single Line Cord Power and Signal Cables

Signal Cable **Power Cable**

RZAQ7507-1

Table 70. FC 5074 I/O Tower – Single Line Cord Signal Cables

Name	Description	Part Number
SIG60	IOA in Tower Card (CB1) to Device Board 3 (DB3)	97H7481
SIG61	IOA in Tower Card (CB1) to Device Board 2 (DB2)	44L0070
SIG62	IOA in Tower Card (CB1) to Device Board 1 (DB1)	97H7484
SIG63	Control Panel (NB1) to Device Board 3 (DB3)	24L1752
SIG64	Tower Card (CB1) to Power Distribution Board (PB1 - includes P/N 97H7476, 97H7477, 97H7607) (Part of Tower Card FRU assembly)	24L0843

Table 71. FC 5074 I/O Tower – Single Line Cord Power Cables

| Name	Description	Part Number
PWR60	Power Distribution Board (PB1) to Device Board 3 (DB3)	24L1886
PWR61 to PWR64	Power Distribution Board (PB1) to Device Board 3 (DB3)	97H7483
PWR65	Power Distribution Board (PB1) to Device Board 2 (DB2)	97H7544
PWR66 to PWR69	Power Distribution Board (PB1) to Device Board 2 (DB2)	97H7543
PWR70	Power Distribution Board (PB1) to Device Board 1 (DB1)	97H7544
PWR71 to PWR74	Power Distribution Board (PB1) to Device Board 1 (DB1)	97H7543
PWR75	Power Distribution Board (PB1) to AMDs (B01 and B02)	97H7475
PWR76	Charger (A01) to Batteries (T01 through T04)	97H7474
PWR77	Charger (A01) to Power Supply 1 (P01)	04N2181
PWR78	Charger to Power Supply 2 (P02)	04N2181
PWR79	Charger to Power Supply 3 (P03)	04N2181
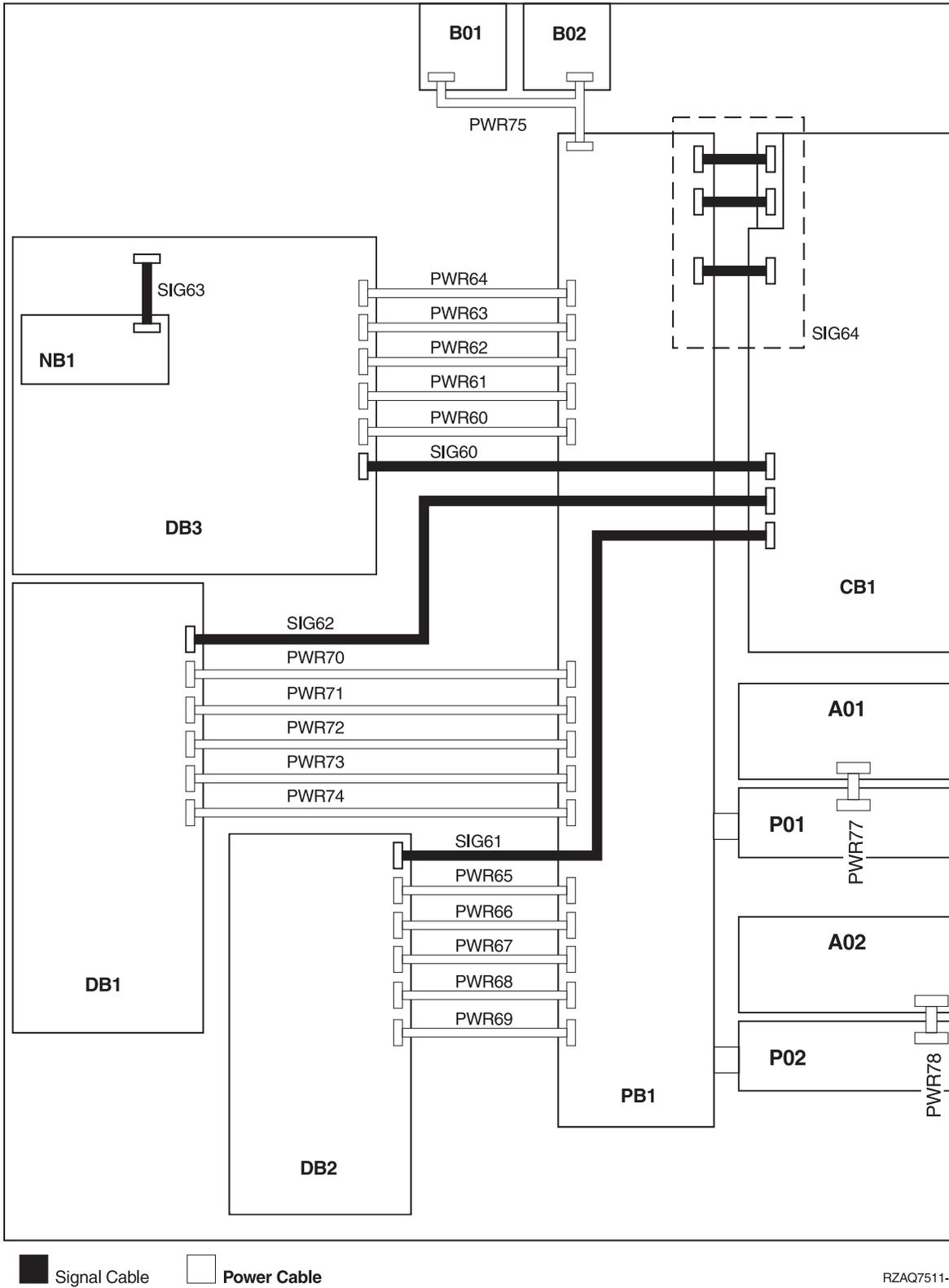
Figure 49. FC 5074 I/O Tower – Dual Line Cord Power and Signal Cables

RZAQ7511-0

Table 72. FC 5074 I/O Tower – Dual Line Cord Signal Cables

Name	Description	Part Number
SIG60	IOA in Tower Card (CB1) to Device Board 3 (DB3)	97H7481
SIG61	IOA in Tower Card (CB1) to Device Board 2 (DB2)	44L0070
SIG62	IOA in Tower Card (CB1) to Device Board 1 (DB1)	97H7484
SIG63	Control Panel (NB1) to Device Board 3 (DB3)	24L1752
SIG64	Tower Card (CB1) to Power Distribution Board (PB1 - includes P/N 97H7476, 97H7477, 97H7607) (Part of Tower Card FRU assembly)	24L0843

Table 73. FC 5074 I/O Tower – Dual Line Cord Power Cables

Name	Description	Part Number
PWR60	Power Distribution Board (PB1) to Device Board 3 (DB3)	24L1886
PWR61 to PWR64	Power Distribution Board (PB1) to Device Board 3 (DB3)	97H7483
PWR65	Power Distribution Board (PB1) to Device Board 2 (DB2)	97H7544
PWR66 to PWR69	Power Distribution Board (PB1) to Device Board 2 (DB2)	97H7543
PWR70	Power Distribution Board (PB1) to Device Board 1 (DB1)	97H7544
PWR71 to PWR74	Power Distribution Board (PB1) to Device Board 1 (DB1)	97H7543
PWR75	Power Distribution Board (PB1) to AMDs (B01 and B02)	97H7475
PWR77	Charger (A01) to Power Supply 1 (P01)	04N2181
PWR78	Charger to Power Supply 2 (P02)	04N2181

FC 5075 I/O Tower

B01

B02

NB1

PWRC03

SIGC01

SB1

DB1

SIGC03

SIGC06

PWRC02

SIGC04

CB1

PB1

SIGC05

PWRC01

SIGC02

■ Signal Cable   □ Power Cable
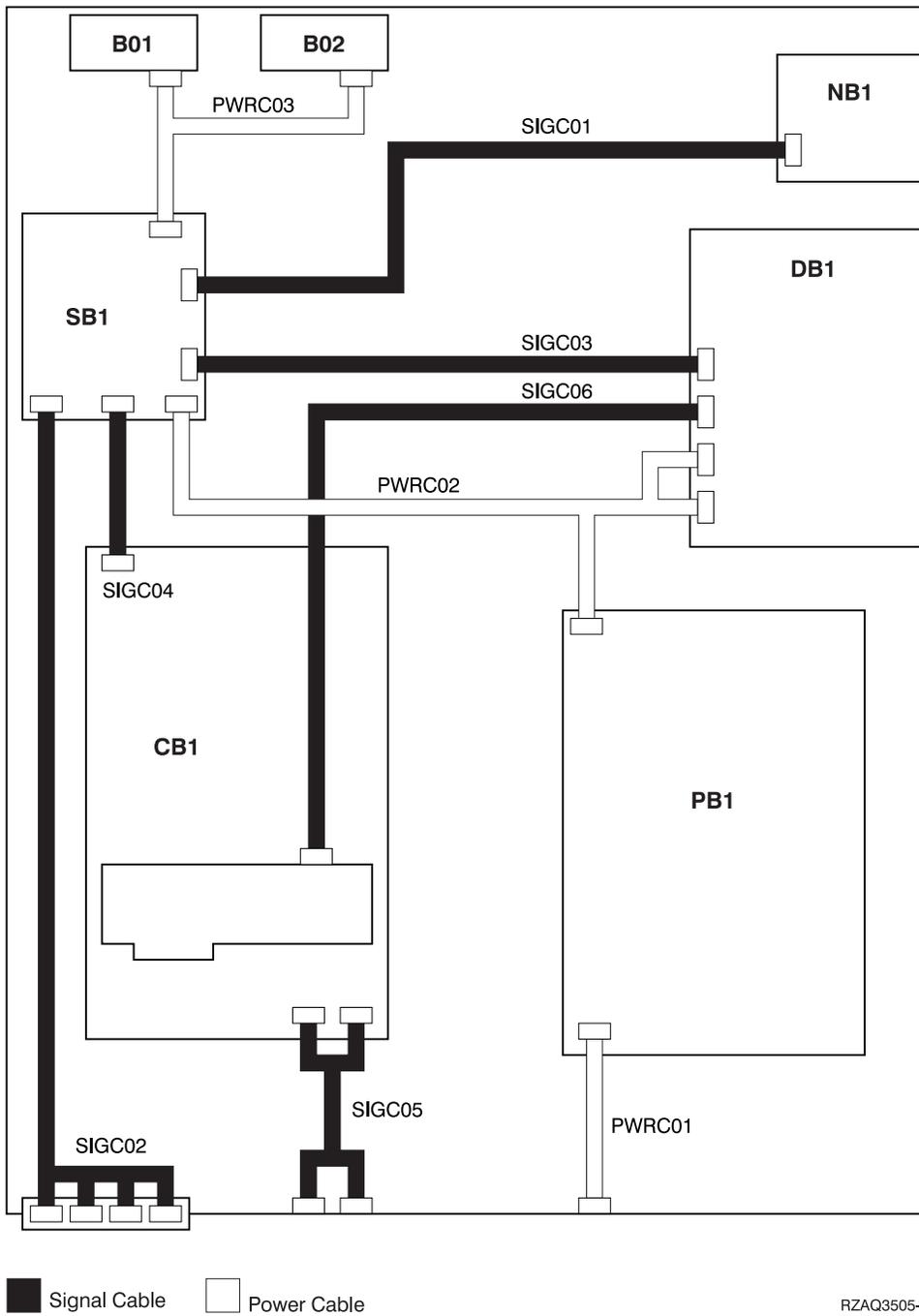
RZAQ3505-1

Figure 50. FC 5075 I/O Tower Power and Signal Cables

Table 74. FC 5075 I/O Tower Signal Cables

Name	Description	Part Number
SIGC01	SPCN Card (SB1) to Control Panel (NB1)	04N6113
SIGC02	SPCN Card (SB1) to rear SPCN connectors	23L2910
SIGC03	SPCN Card (SB1) to Device Board (DB1)	23L2911
SIGC04	Tower Card (CB1) to SPCN Card (SB1)	23L2913
SIGC05	Tower Card (CB1) to rear HSL connectors	23L2888
SIGC06	Tower Card (CB1) to Device Board (DB1)	23L2889

Table 75. FC 5075 I/O Tower Power Cables

| Name	Description	Part Number
PWRC01	Line cord to Power Distribution Backplane (PB1)	04N5192
PWRC02	Power Distribution Backplane (PB1) to SPCN Card (SB1) and Device Board (DB1)	23L2909
PWRC03	SPCN Card (SB1) to AMDs (B01 and B02)	23L2908

FC 5078, 0578 I/O Tower
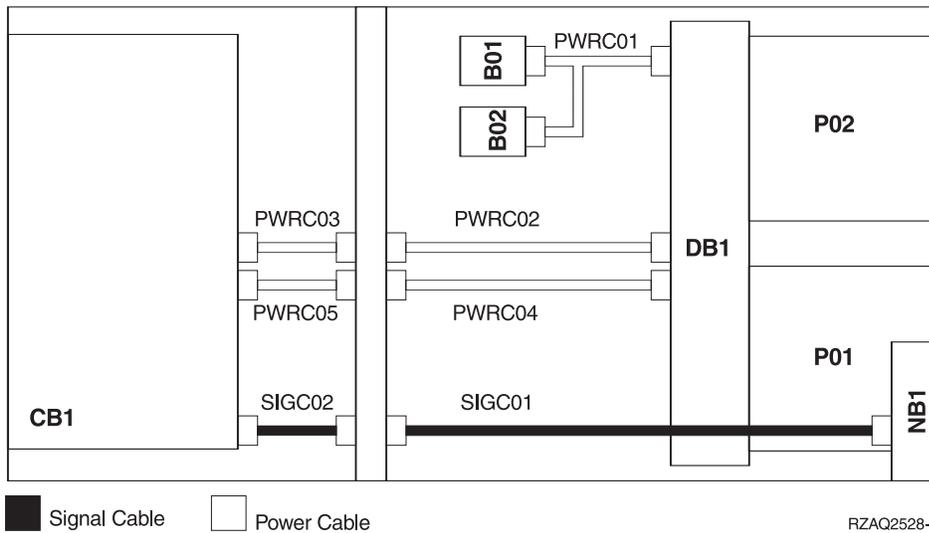
Figure 51. FC 5078, 0578 I/O Tower Power and Signal Cables

Table 76. FC 5078, 0578 I/O Tower Signal Cables

Name	Description	Part Number
SIGC01	Control Panel (NB1) to Control Panel connector	41L5649
SIGC02	Control Panel (NB1) to Tower Card (CB1)	41L5517

Table 77. FC 5078, 0578 I/O Tower Power Cables

Name	Description	Part Number
PWRC01	Power Distribution Backplane (PB1) to AMDs (B01 and B02)	41L5652
PWRC02	Power Distribution Backplane (PB1) to SPCN connector	41L5650
PWRC03	SPCN connector to Tower Card (CB1)	21P6096
PWRC04	Power Distribution Backplane (PB1) to Power connector	21P6094
PWRC05	Power connector to Tower Card (CB1)	21P6095

Parts Assemblies

How To Use This Parts Listing

- SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are broken down on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.

- AR: (As Required) in the *Units* column indicates that the quantity is not the same for all machines.

- NP: (Non-Procurable) in the *Units* column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.

- NR: (Not Recommended) in the *Units* column indicates that the part is procurable but not recommended for field replacement and that the next higher assembly should be ordered.

- R: (Restricted) in the *Units* column indicates that the part has a restricted availability.

- INDENTURE: The indenture is marked by a series of dots preceding the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indenture
     Relationship of Parts

(No dot)
　　　MAIN ASSEMBLY

(One dot)
　　　• Detail parts of a main assembly

(One dot)
　　　• Sub assembly of the main assembly

(Two dot)
　　　• • Detail part of a one-dot sub assembly

(Two dot)
　　　• • Sub assembly of a one-dot sub assembly

(Three dot)
　　　• • • Detail part of a two-dot sub assembly

Asm-Index	Part Number	Units	Description
3-	2512667 2513714	1 1	Cover Asm, Rear, Red Cover Asm, Rear, White For next higher asm, see assembly 1-2
-1	5373637	1	• Seal, Top
-2	5356429	2	• Clip, Retaining
-3	1847630	1	• Finger Stock Asm
-4	1847602	NR	• • Channel, Finger Stock
-5	5373639	AR	• Seal, Bottom
-6	5356429	2	• Clip, Retaining
-7		NP	• Cover, Rear, Without Paint
-8	0416629	R	• Screw, Panel

Assembly 1: Cover Assembly – Model 270

RZAQ2600-0
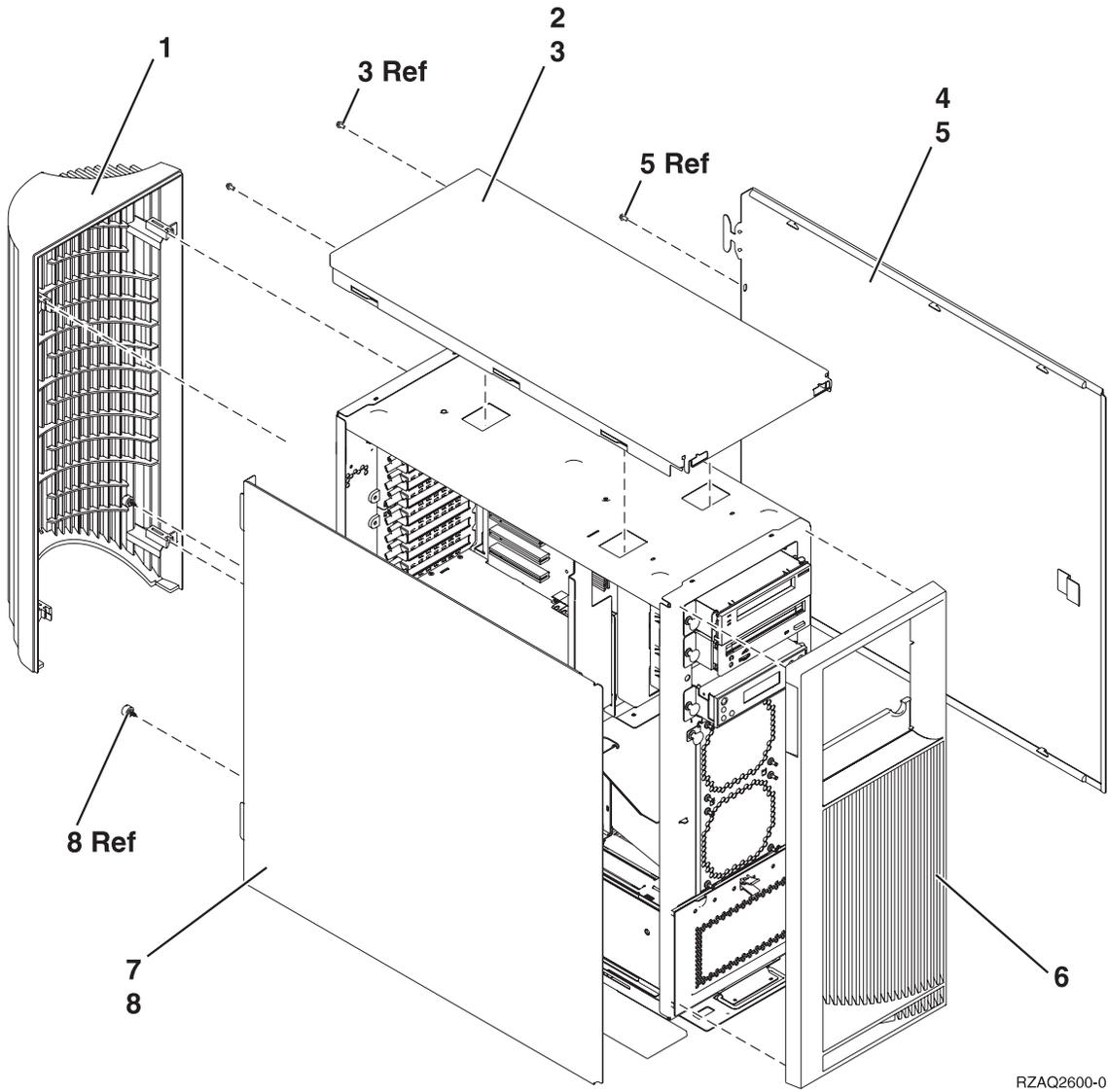
Asm–Index	Part Number	Units	Description
1–1	24L1652	1	Cover, Rear
–2	24L1630	1	Cover, Top
–3	75G2878	2	Screw, M3.5 x 8mm
–4	24L1632	1	Cover, Side
–5	75G2878	2	Screw, M3.5 x 8mm
–6	21P5145	1	Cover, Front (Single Wide iSeries)
–6	21P4614	1	Cover, Front (Single Wide Domino iSeries)
–7	24L1632	1	Cover, Side
–8	24L1946	2	Thumbscrew

Assembly 2: Final Assembly – Model 270
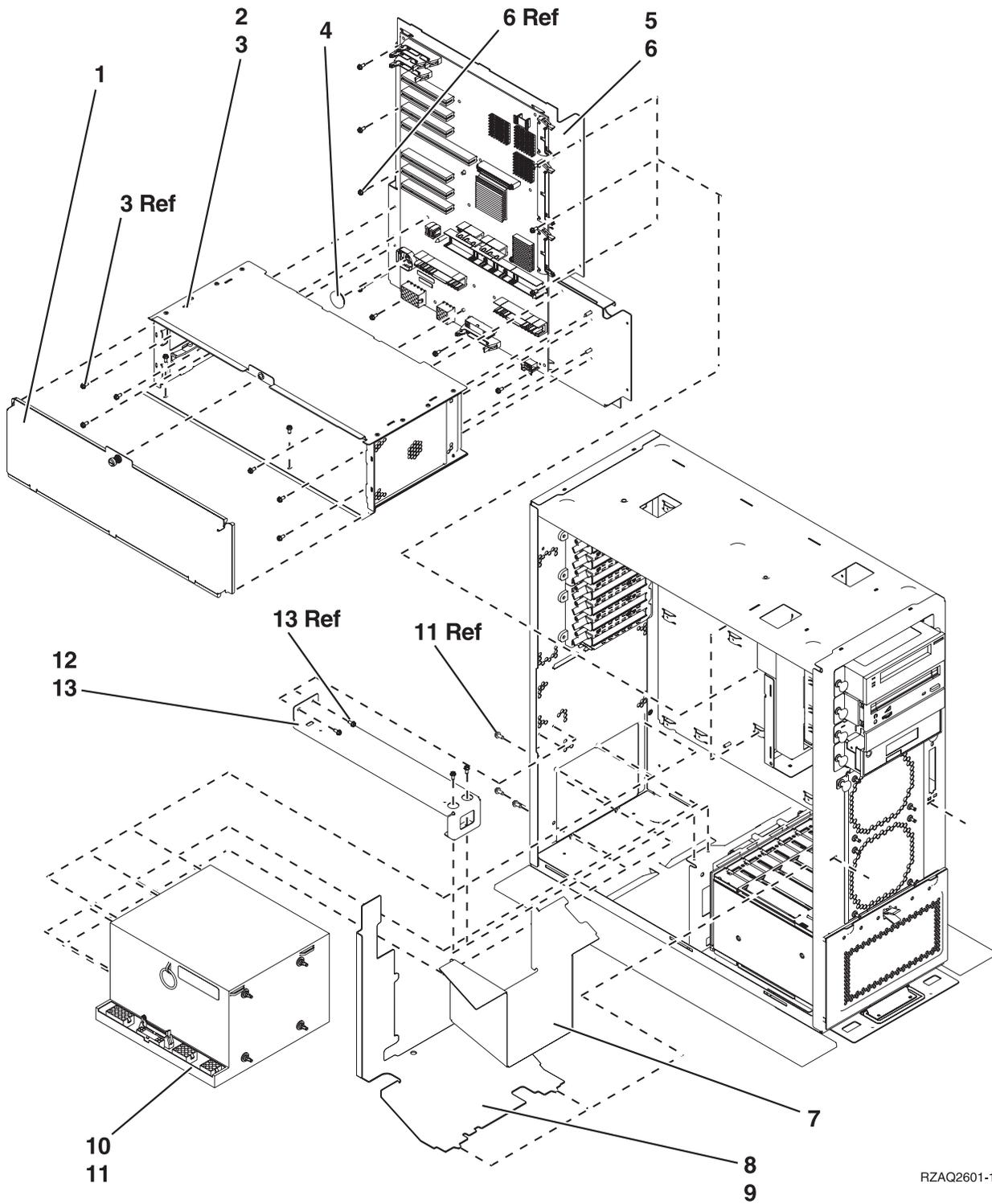
RZAQ2601-1

Asm–Index	Part Number	Units	Description
2–1	24L1609	1	Cover, Processor / Memory / CEC
–2	24L1551	1	Processor / Memory / CEC Asm.
–3	75G2878	8	Screw, M3.5 x 8mm
–4	16G8095	1	Time of Day Battery
–5	NONUM	1	Backplane Asm.
–6	75G2878	19	Screw, M3.5 x 8mm
–7	NONUM	1	Baffel
–8	24L1747	1	Plenum air flow
–9	75G2878	1	Screw, M3.5 x 8mm
–10	NONUM	1	Power Supply
–11	75G2878	7	Screw, M3.5 x 8mm
–12	NONUM	1	Bracket, CEC Support
–13	75G2878	4	Screw, M3.5 x 8mm

Assembly 2: (continued)
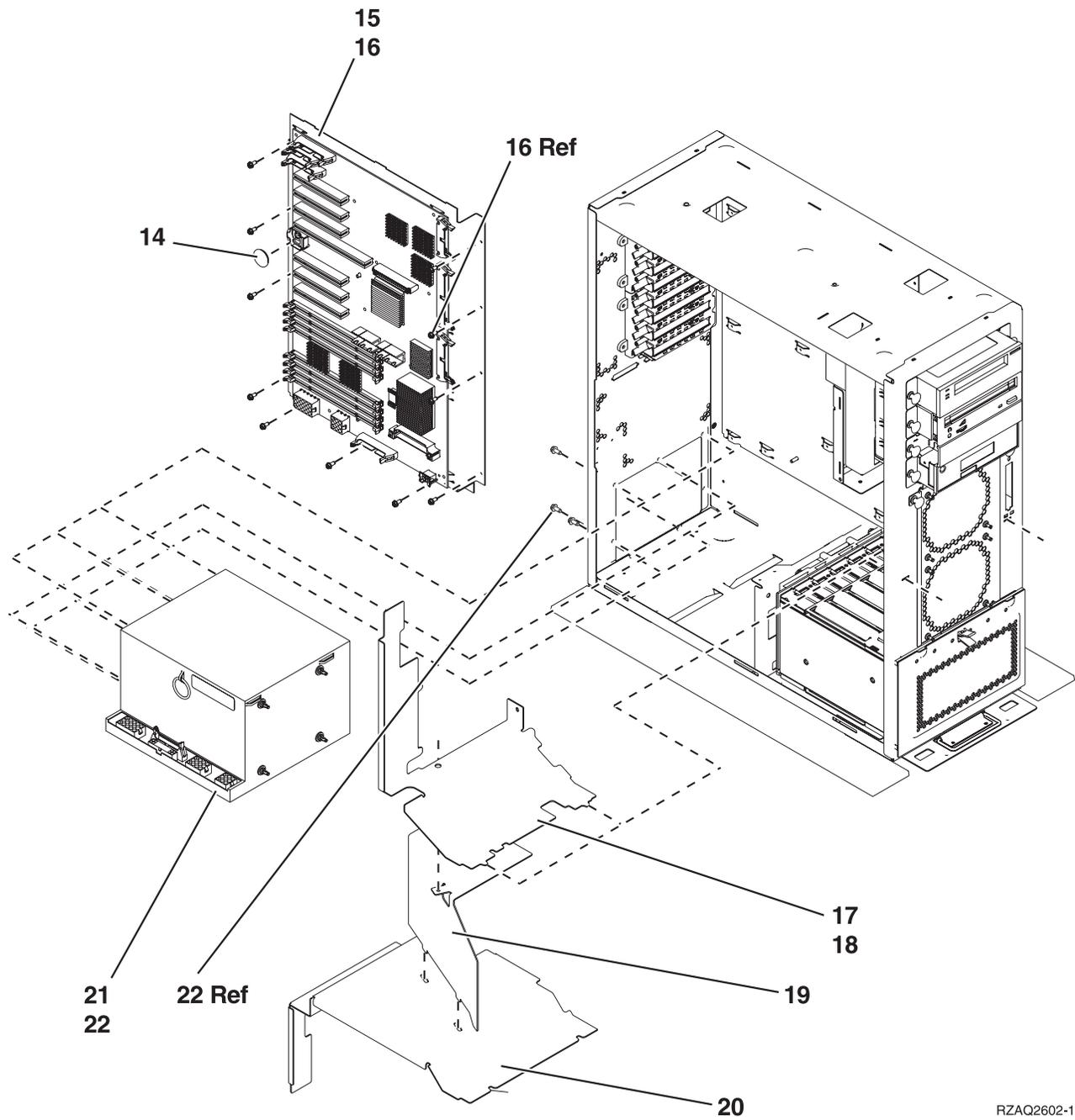
RZAQ2602-1

Asm–Index	Part Number	Units	Description
2–14	16G8095	1	Time of Day Battery
–15	NONUM	1	Backplane Asm.
–16	75G2878	19	Screw, M3.5 x 8mm
–17	24L1747	1	Plenum air flow
–18	75G2878	1	Screw, M3.5 x 8mm
–19	NONUM	1	Plenum air flow
–20	NONUM	1	Plenum air flow
–21	NONUM	1	Power Supply
–22	75G2878	7	Screw, M3.5 x 8mm

Assembly 2: (continued)

RZAQ2603-3
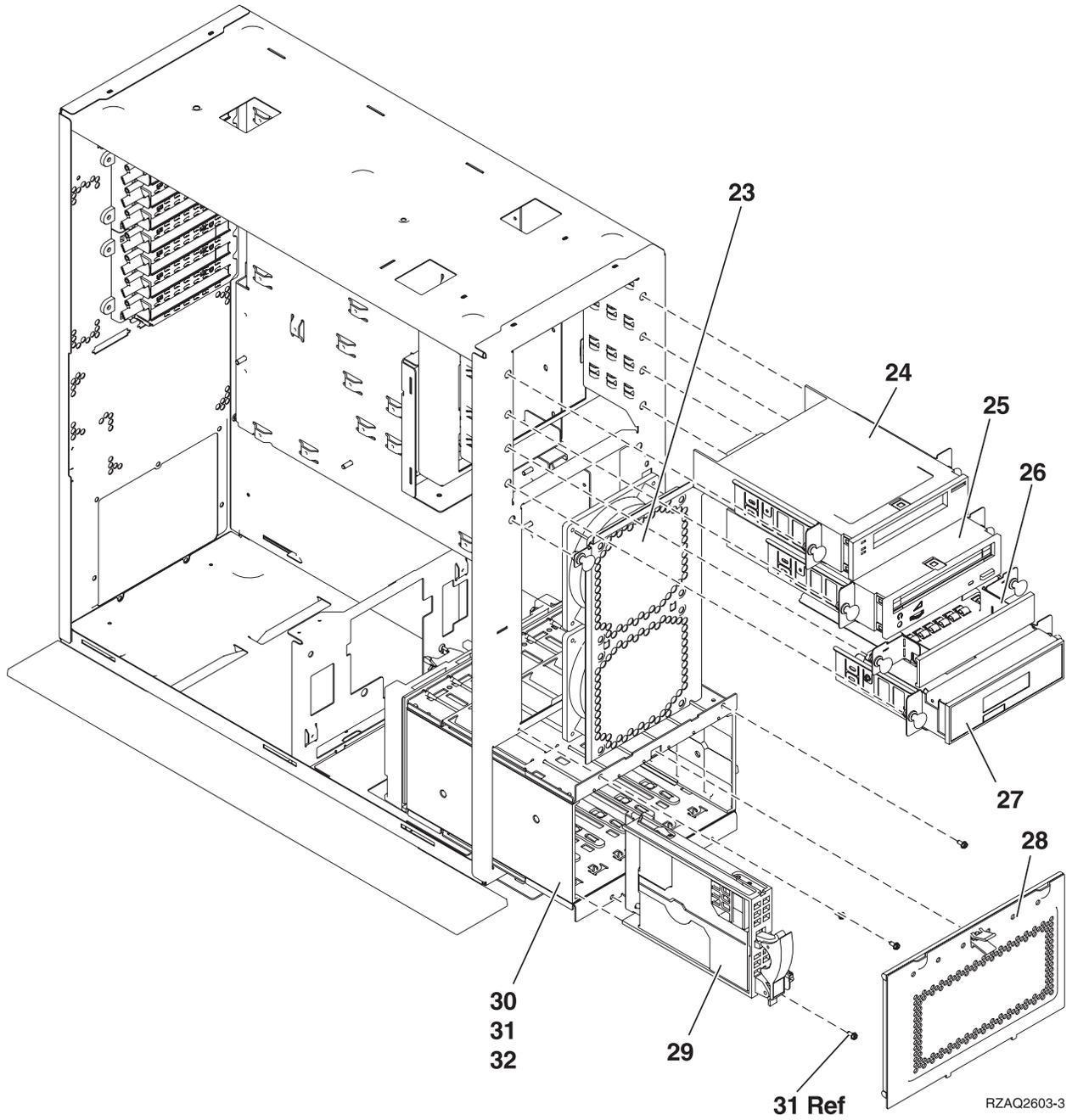
Asm–Index	Part Number	Units	Description
2–23	21L1740	1	AMD Asm. Dual 120mm
–24	NONUM	1	Tape / Tray Asm.
			See "Type, Model, and Part Number list" on page 797.
–25	NONUM	1	CD / Tray Asm.
			See "Type, Model, and Part Number list" on page 797.
–26	97H9137	1	Filler Asm.
–27	24L1591	1	Control Panel Asm.
			See "Assembly 3: Control Panel – Model 270" on page 750.
–28	24L1827	1	Shield, Disk Unit (EMC)
–29	NONUM	AR	Disk Unit Asm.
			See "Type, Model, and Part Number list" on page 797.
–30	NONUM	1	Cage Asm., Disk Unit
			See "Type, Model, and Part Number list" on page 797.
–31	75G2878	4	Screw, M3.5 x 8mm
–32	04N3392	2	Screw, M3.5 x 35mm

Assembly 3: Control Panel – Model 270
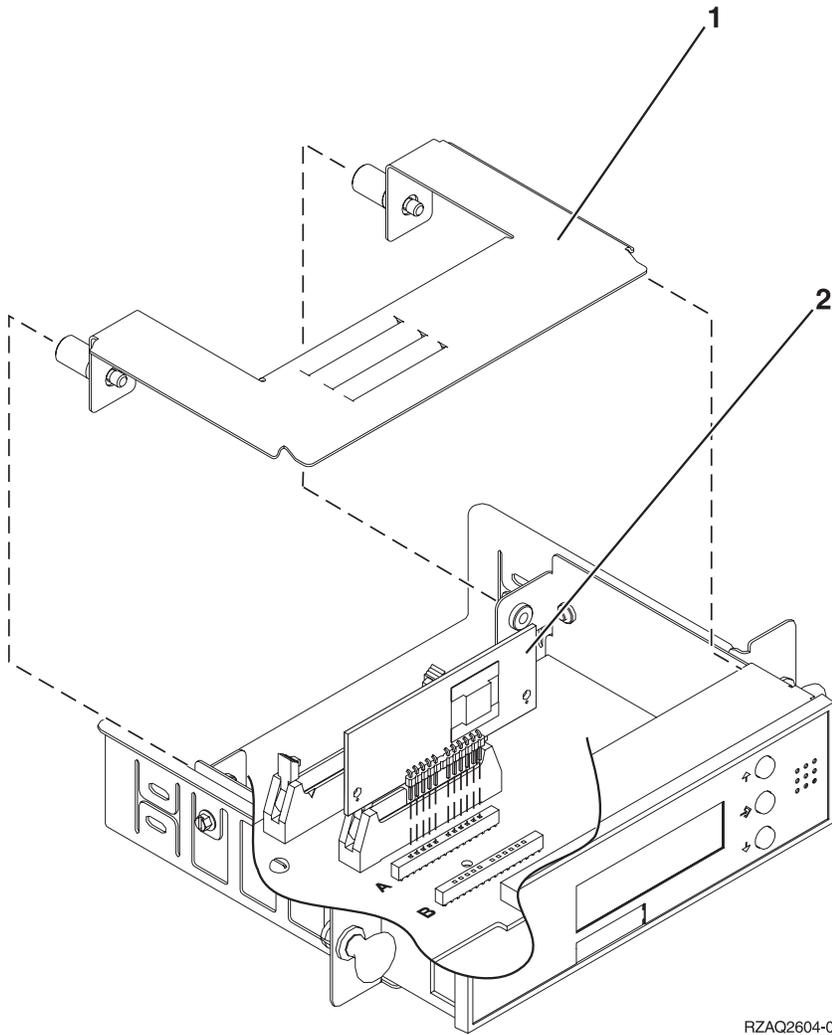
RZAQ2604-0

Asm– Index	Part Number	Units	Description
3–1	NONUM	1	EMC Plate
–2	NONUM	1	Processor Capacity Card
			See "Type, Model, and Part Number list" on page 797.

Assembly 4: Cover Assembly – Model 270 System Unit Expansion

2 Ref

1
2

8 Ref

7
8

3

6

5 Ref

4
5
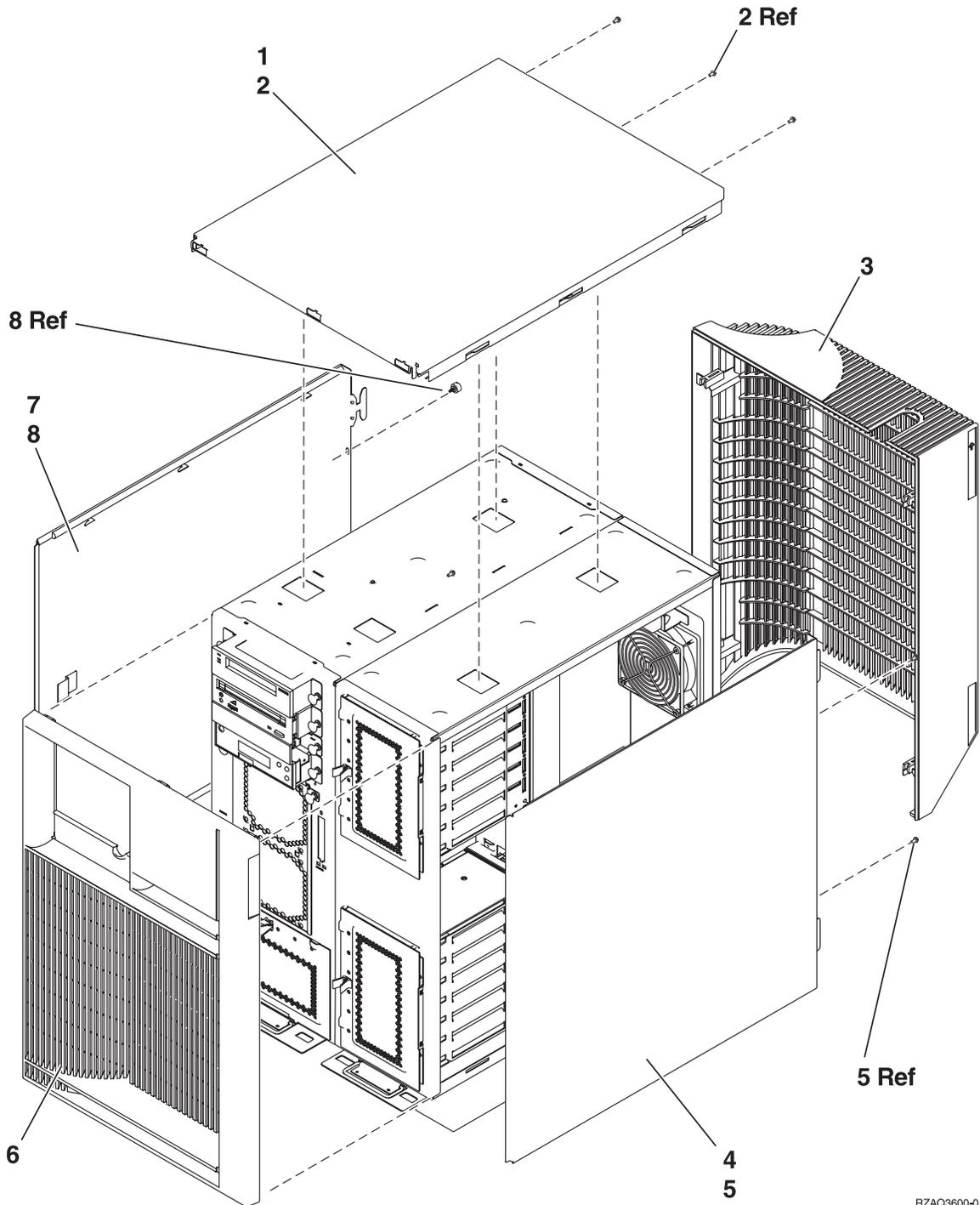
RZAQ3600-0

Asm–Index	Part Number	Units	Description
4–1	04N5701	1	Cover, Top
–2	75G2878	2	Screw, M3.5 x 8mm
–3	04N5712	1	Cover, Rear
–4	24L1632	1	Cover, Side
–5	75G2878	2	Screw, M3.5 x 8mm
–6	21P5146	1	Cover, Front (Double Wide iSeries)
–6	21P4626	1	Cover, Front (Double Wide Domino iSeries)
–7	24L1632	1	Cover, Side
–8	24L1946	2	Thumbscrew
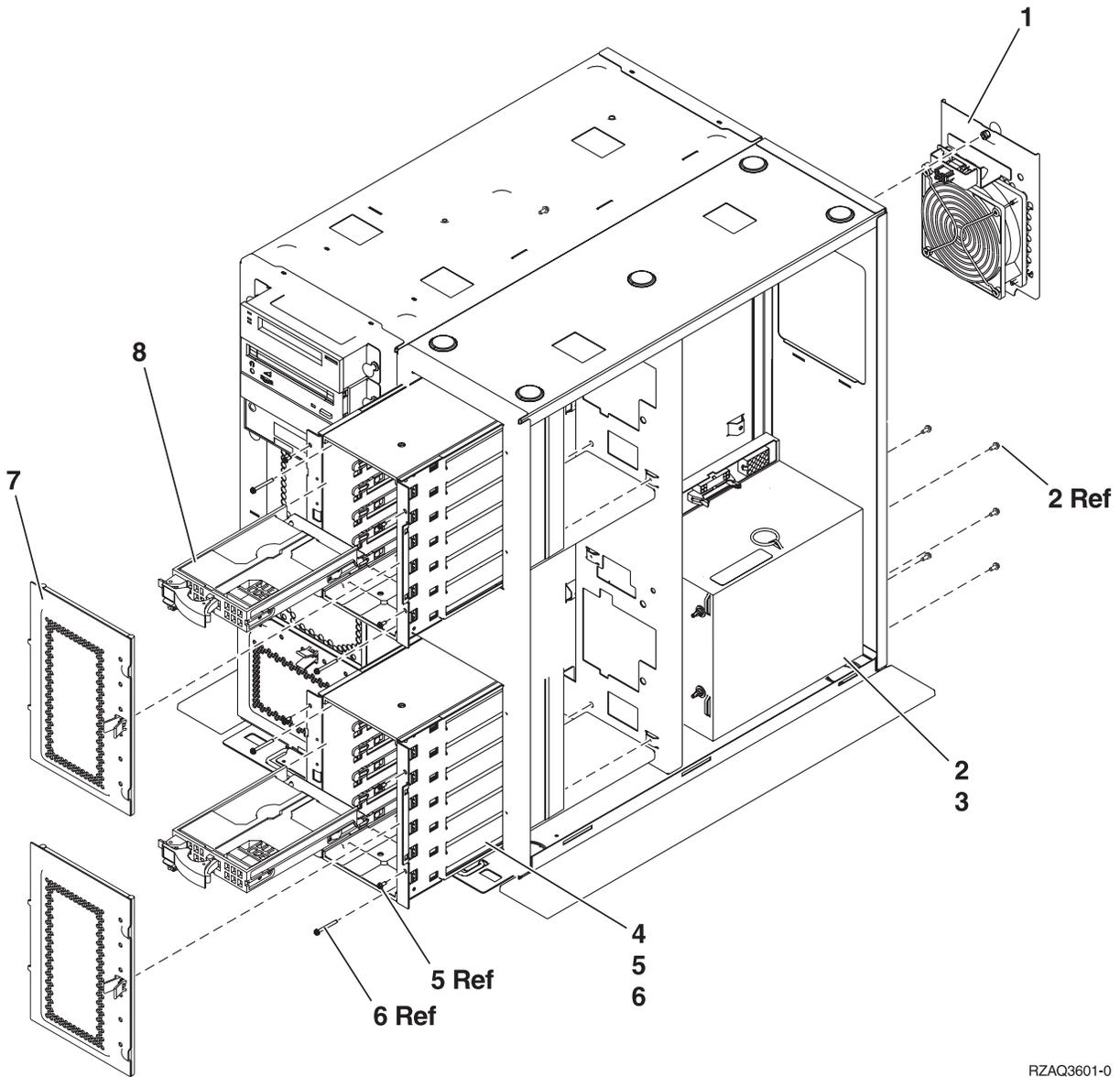
RZAQ3601-0

Asm–Index	Part Number	Units	Description
5–1	04N5698	1	AMD Asm.
–2	24L1402	1	Power Supply
–3	75G2878	7	Screw, M3.5 x 8mm
–4	NONUM	2	Cage Asm., Disk Unit
–5	75G2878	4	Screw, M3.5 x 8mm
–6	04N3392	2	Screw, M3.5 x 35mm
–7	24L1827	1	Shield, Disk Unit (EMC)
–8	NONUM	AR	Disk Unit Asm.
			See "Type, Model, and Part Number list" on page 797.

Assembly 6: Cover Assembly – Model 820

RZAQ2800-0
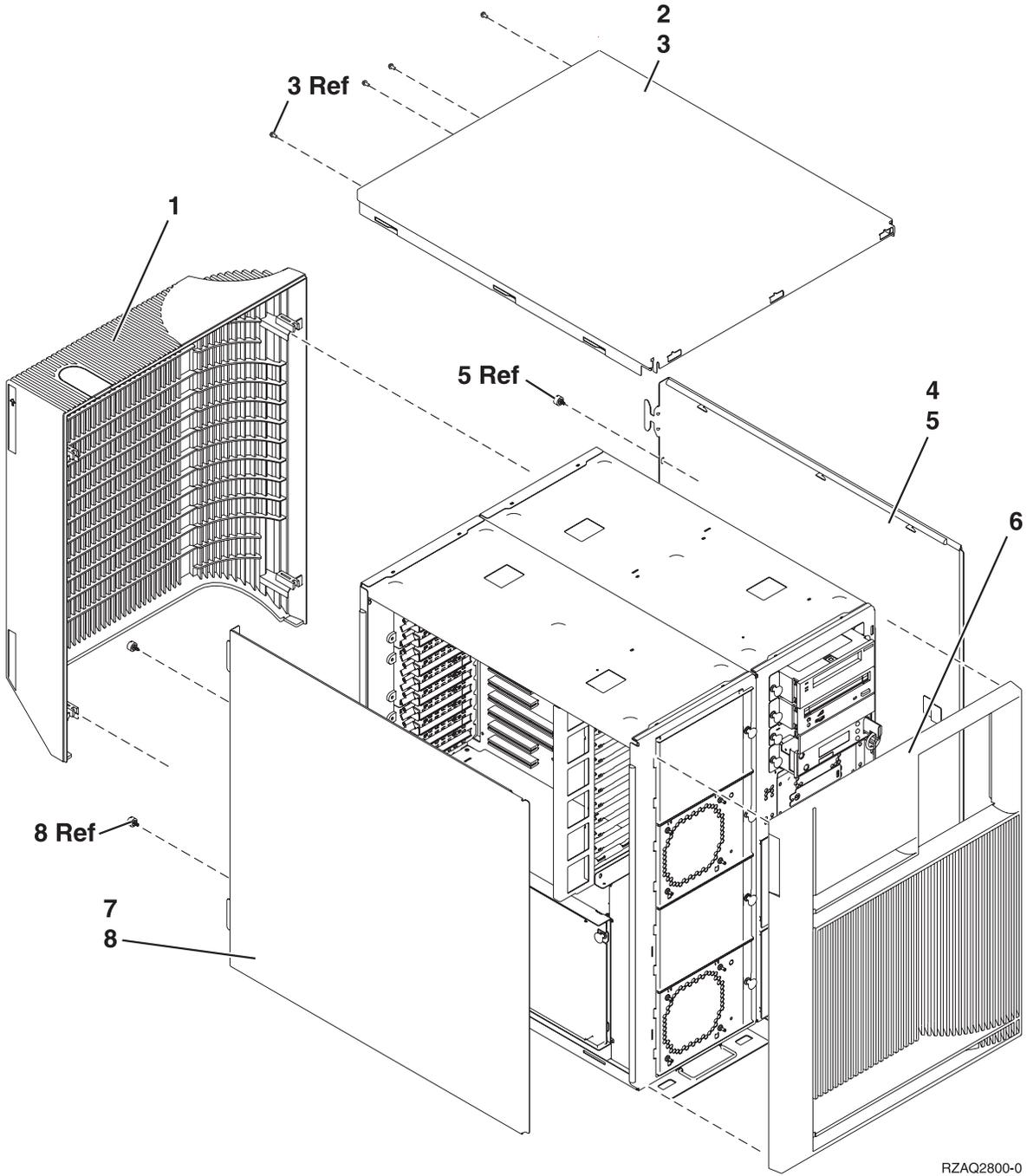
Asm– Index	Part Number	Units	Description
6–1	24L1664	1	Cover Asm., Rear
–2	24L1631	1	Cover, Top
–3	75G2878	4	Screw, M3.5 x 8mm
–4	24L1632	2	Cover, Side
–5	24L1946	4	Thumbscrew
–6	21P5144	1	Cover Asm., Front (iSeries)
–6	21P4612	1	Cover Asm., Front (Domino iSeries)

Assembly 7: Final Assembly – Model 820
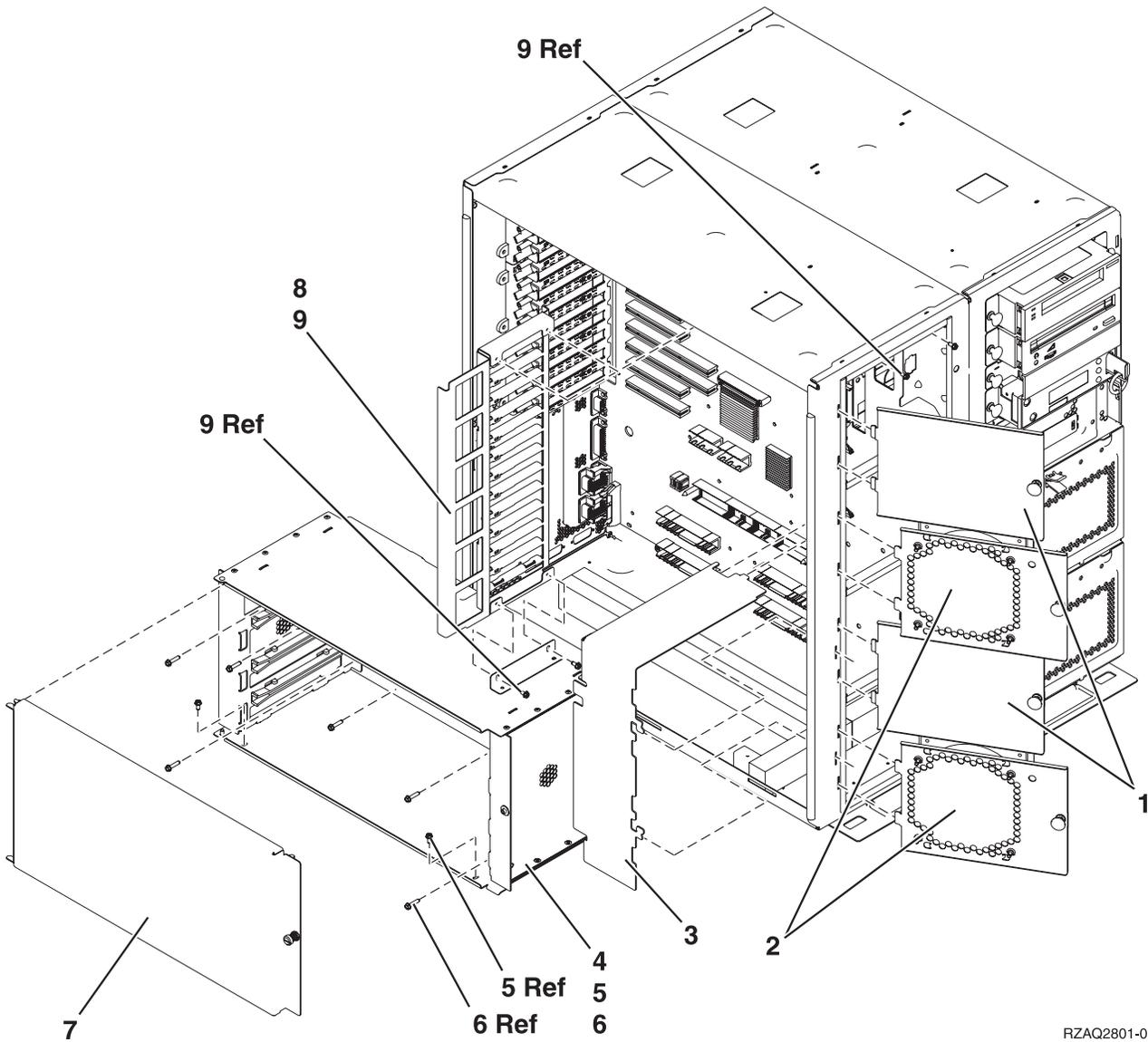
RZAQ2801-0

Asm–Index	Part Number	Units	Description
7–1	NONUM	AR	Filler plate, AMD
–2	24L1730	AR	AMD Asm.
–3	24L1737	1	Plenum air flow
–4	24L1546	1	CEC Asm., Processor / Memory
–5	75G2878	2	Screw, M3.5 x 8mm
–6	1622678	6	Screw
–7	24L1605	1	Cover, Processor / Memory CEC
–8	24L1649	1	Bracket, PCI Guide
–9	75G2878	2	Screw, M3.5 x 8mm

Assembly 7: (continued)

RZAQ2802-1

Asm–Index	Part Number	Units	Description
7–10	NONUM	1	Tape / Tray Asm.
–11	NONUM	1	Optical / Tray Asm.
–12	NONUM	1	Filler / Tray Asm.
–13	NONUM	1	Control Panel / Tray Asm.
			See "Assembly 8: Control Panel – Model 820" on page 762.
–14	24L1827	AR	EMC Shield Asm., Disk Unit Cage
–15	NONUM	AR	Disk Unit Asm.
			See "Type, Model, and Part Number list" on page 797.
–16	04N2472	AR	Disk Unit Cage Asm.
–17	75G2878	4	Screw, M3.5 x 8mm
–18	04N3392	2	Screw
–19	NONUM	AR	Filler, Disk Unit
–20	75G2878	4	Screw, M3.5 x 8mm
–21	24L1831	1	Insulator
–22	NONUM	1	Active Backplane Asm.
–23	24L1829	8	Screw
–24	16G8095	1	Time of Day Battery
–25	21P6417	AR	Power Supply Asm.
–	21P6427	1	External Power Connector for Dual Line Cord
–	21P6691	1	Dual Line Cord Warning Label
–25	24L1723	AR	Filler, Power Supply

Assembly 8: Control Panel – Model 820
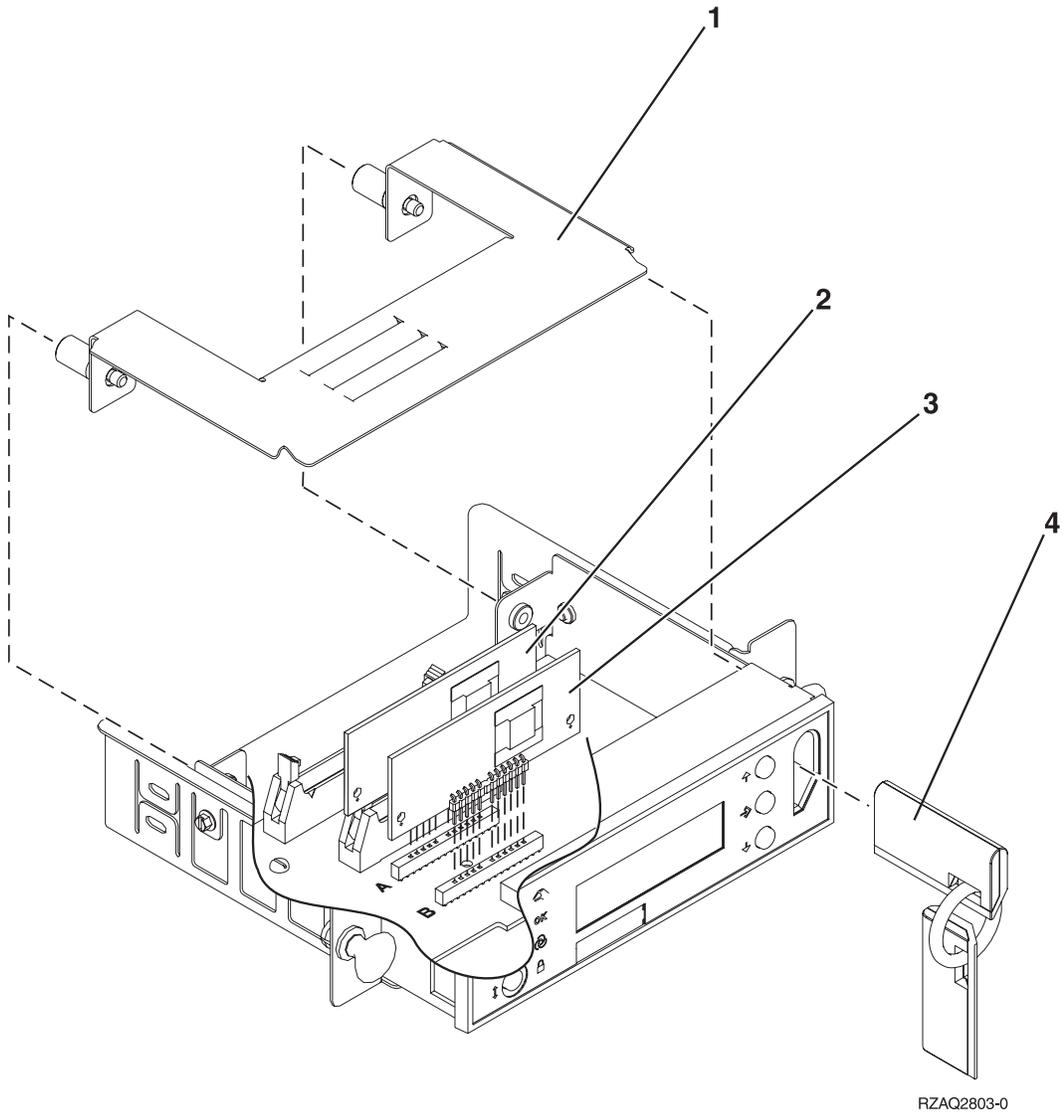
RZAQ2803-0

Asm– Index	Part Number	Units	Description
8–1	NONUM	1	EMC Plate
–2	NONUM	1	Processor Capacity Card
			See "Type, Model, and Part Number list" on page 797.
–3	NONUM	1	Interactive Card
			See "Type, Model, and Part Number list" on page 797.
–4	NONUM	1	Key Asm.

Assembly 9: Cover Assembly — FC 5074
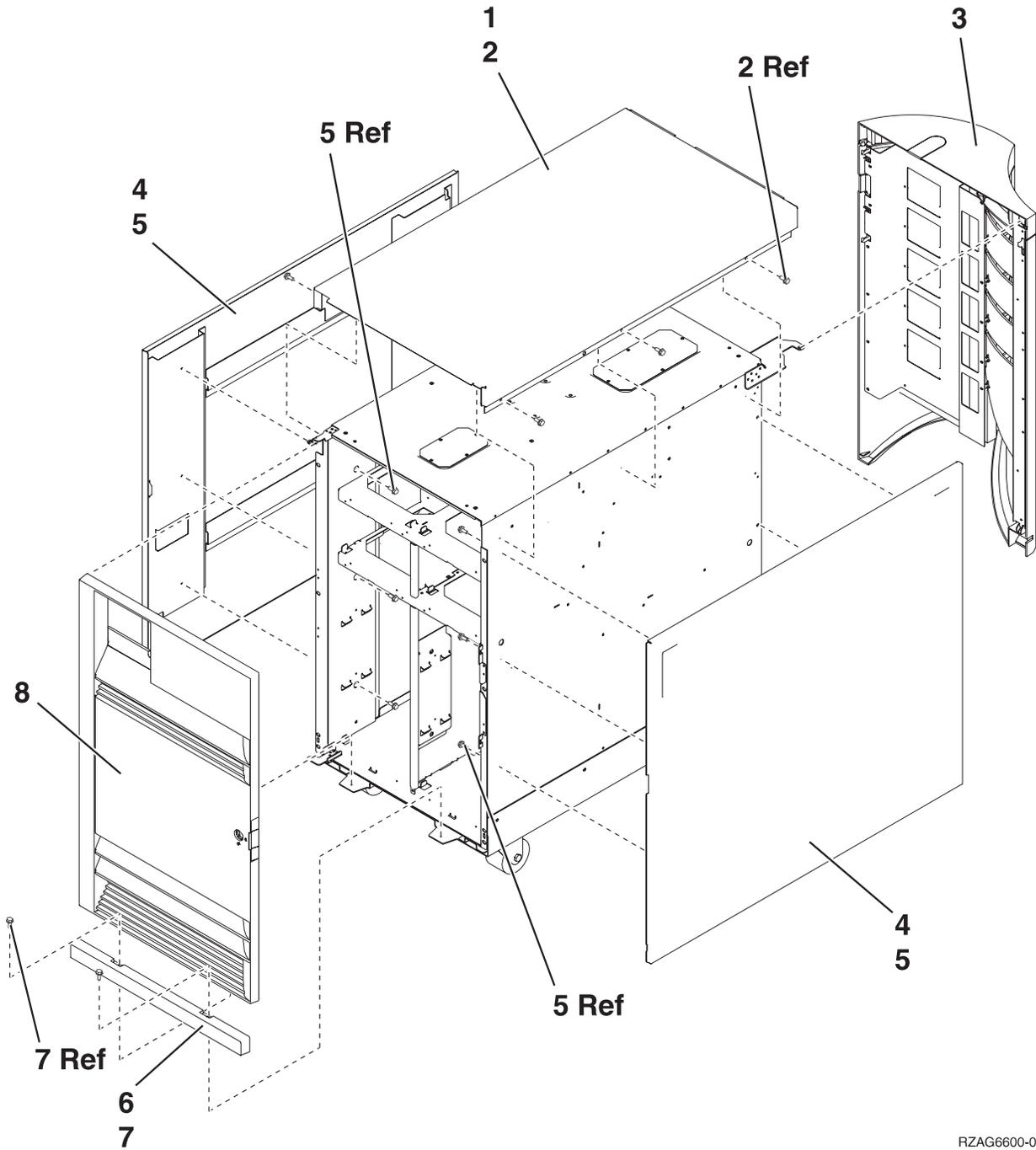
RZAG6600-0

Asm–Index	Part Number	Units	Description
9–1	24L0825	1	Top cover
–2	1621811	4	Screw, M4 (10mm)
–3	24L1079	1	Rear cover
–4	24L0824	1	Side cover
–5	1621811	12	Screw, M4 (10mm)
–6	24L1078	1	Front filler cover
–7	1621811	2	Screw, M4 (10mm)
–8	24L1069	1	Front cover

Assembly 10: Final Assembly — FC 5074
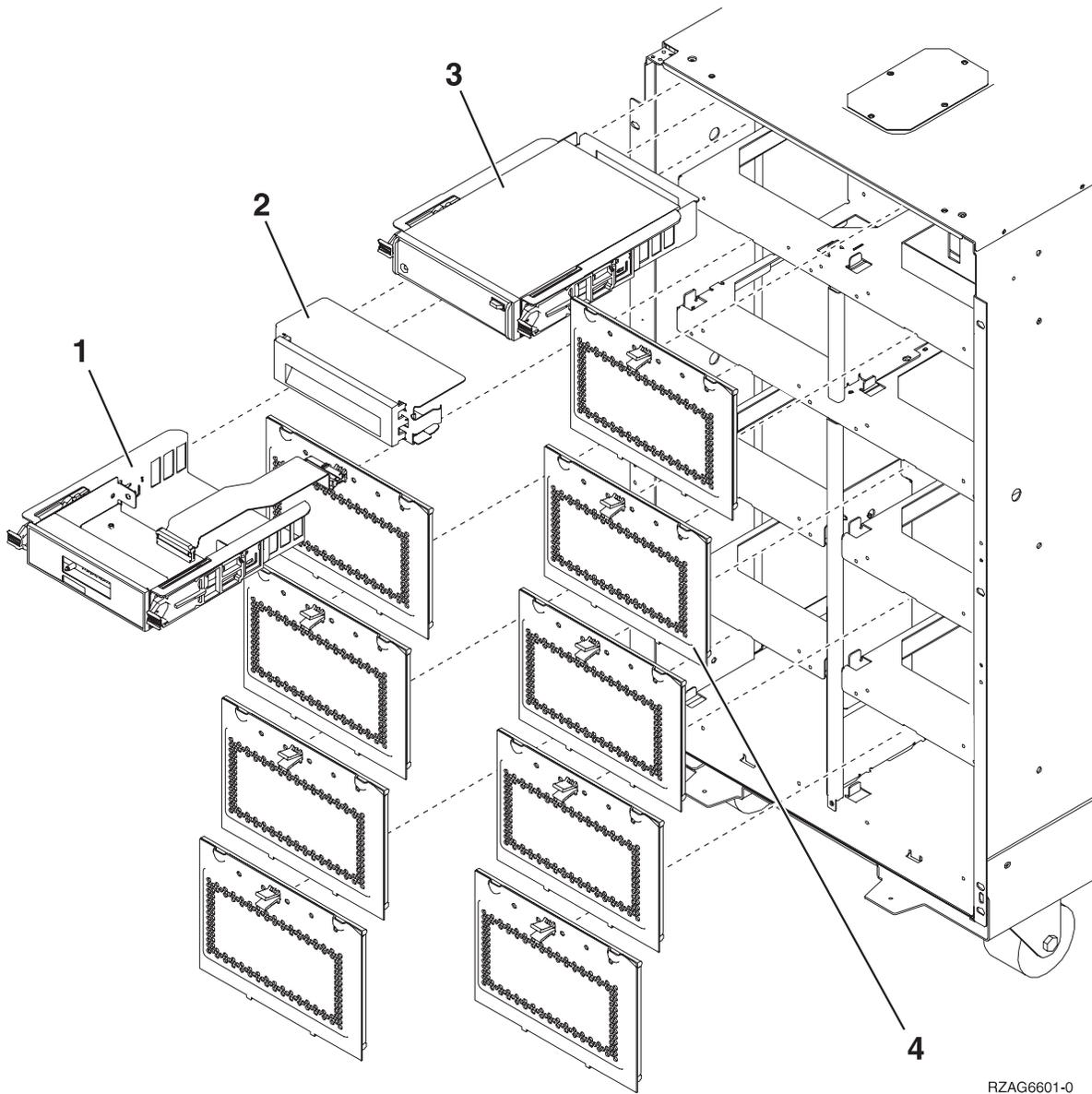
RZAG6601-0

Asm–Index	Part Number	Units	Description
10–1	24L0962	1	Op Panel
–2	44H8406	AR	Filler (Removable media)
–2		AR	Optical Storage Unit
			See "Type, Model, and Part Number list" on page 797.
–3		AR	Removable media
			See "Type, Model, and Part Number list" on page 797.
–4	24L0821	AR	Disk Unit EMC access plate

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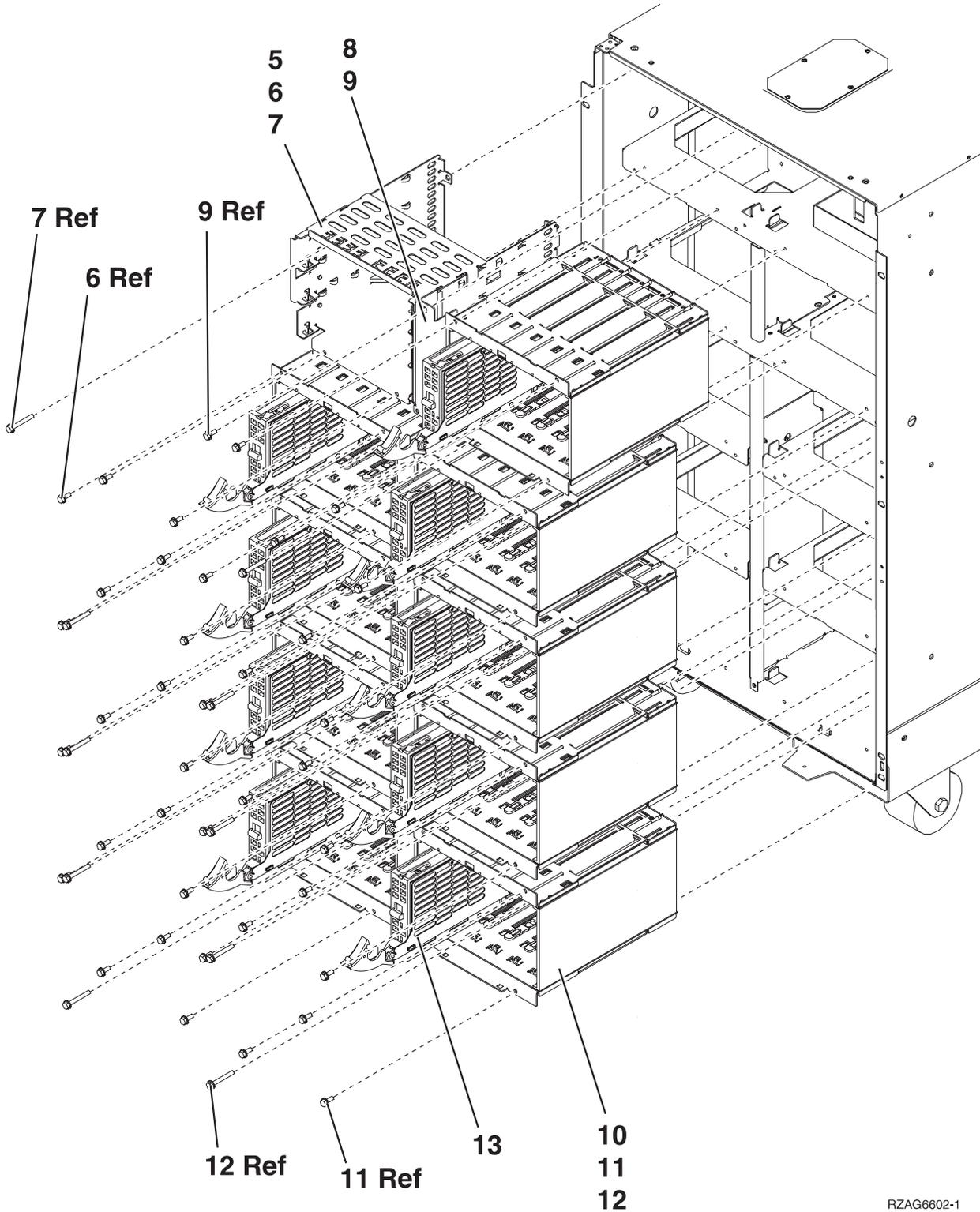
RZAG6602-1

Asm– Index	Part Number	Units	Description
10–5	NONUM	1	Removable media cage assembly
–6	1621811	2	Screw, M4 (10mm)
–7	1621817	2	Screw
–8	24L1067	1	Center Support Bracket
–9	1621811	2	Screw, M4 (10mm)
–10	NONUM	AR	5 disk unit cage assembly
–11	1621811	12	Screw, M4 (10mm)
–12	1621817	6	Screw
–13		AR	Disk unit assembly
			See "Type, Model, and Part Number list" on page 797.

Assembly 10: (continued)

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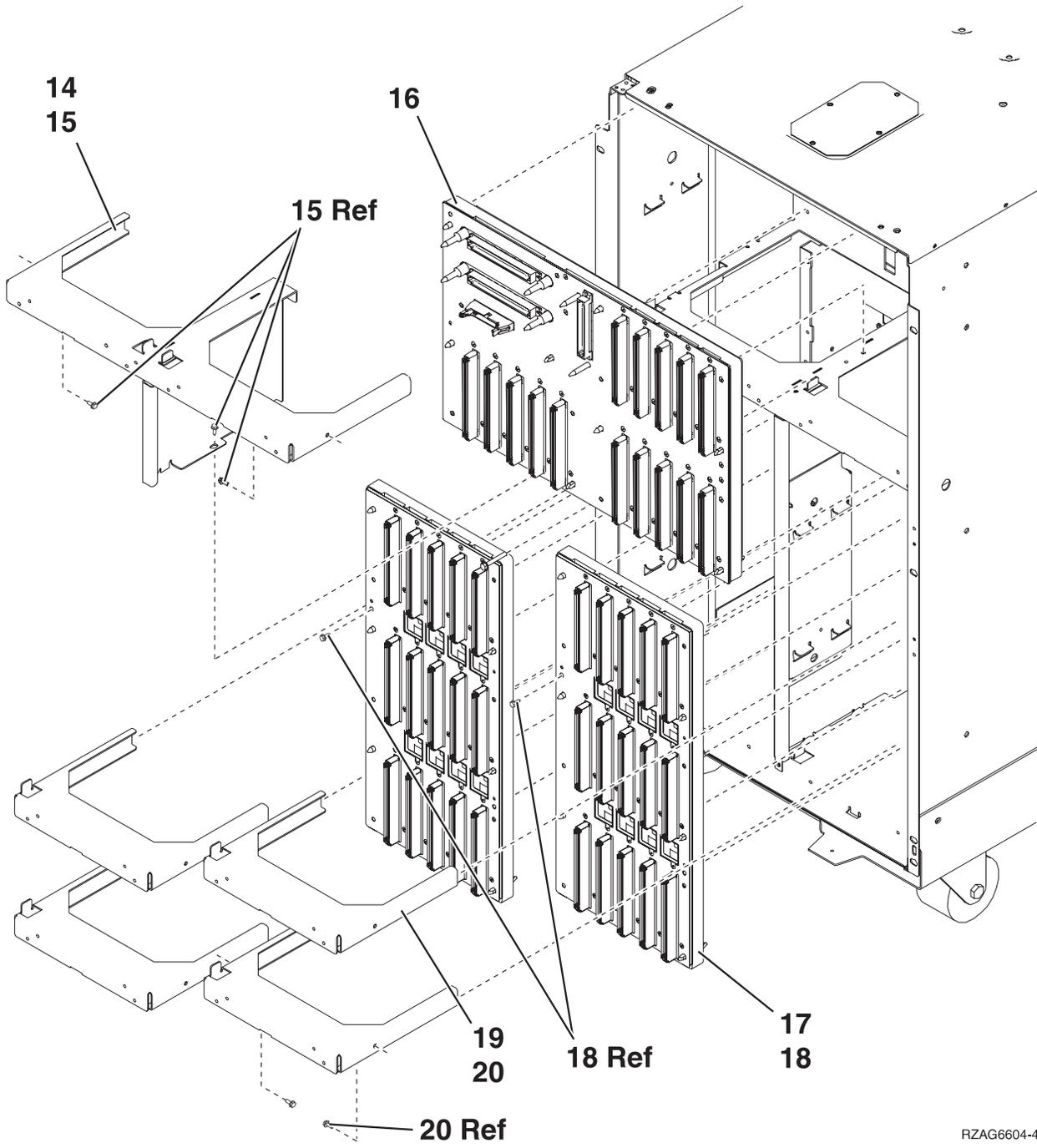
RZAG6604-4

Asm–Index	Part Number	Units	Description
10–14	NONUM	1	Shelf, Base Disk Unit
–15	1621811	3	Screw, M4 (10mm)
–16	24L0892	1	Base Disk Unit Bd/Stiff. Asm. (DB3)
–17	24L1029	AR	Disk Unit Bd/Stiff. Asm. (DB1 & DB2)
–18	1621838	1	Screw
–19	NONUM	AR	Shelf, Disk Unit
–20	1621811	2	Screw, M4 (10mm)

Assembly 10: (continued)

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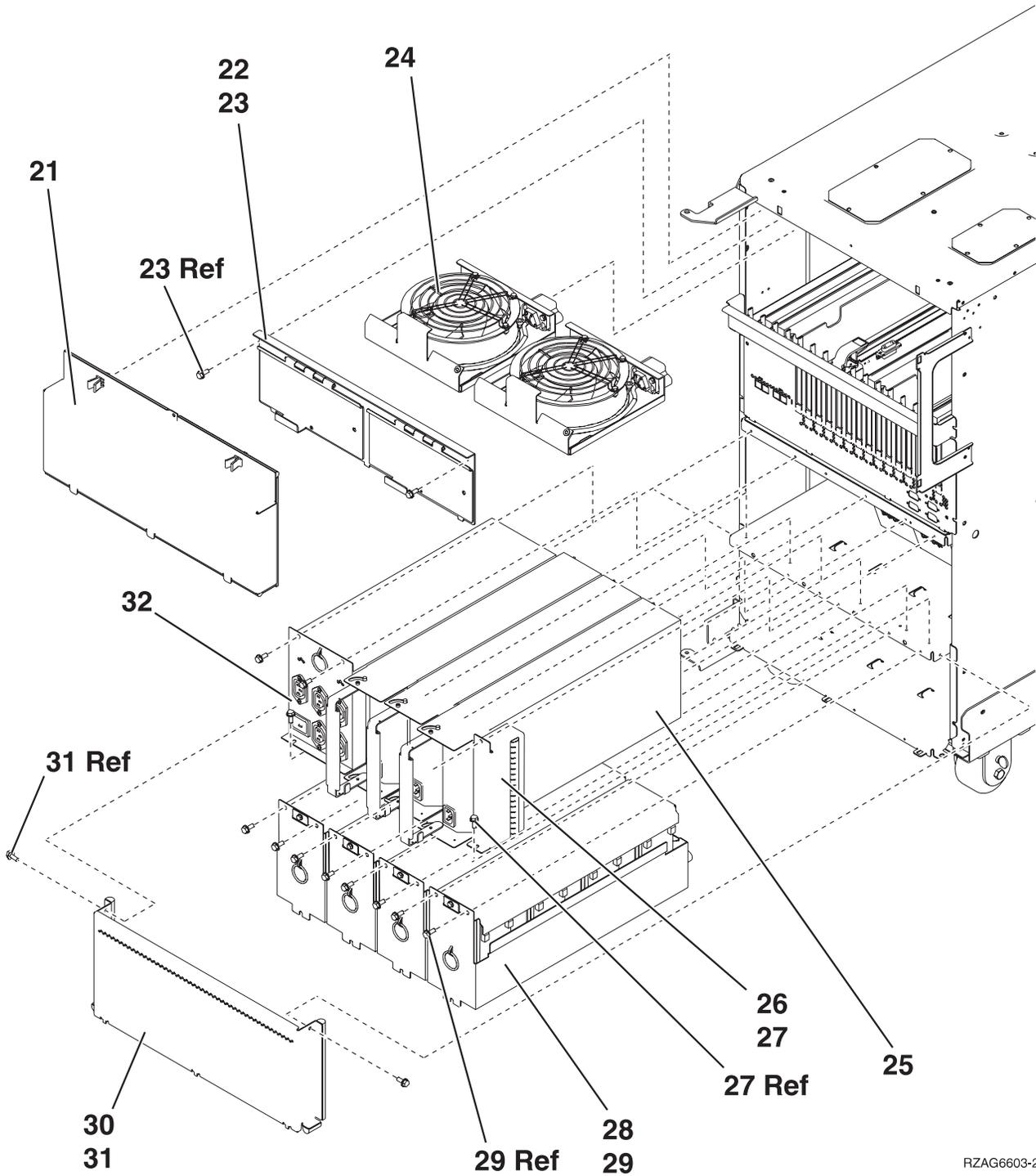
RZAG6603-2

Asm– Index	Part Number	Units	Description
10–21	24L0823	1	EMC access plate
–22	NONUM	1	AMD door assembly
–23	1621811	2	Screw, M4 (10mm)
–24	44L0023	2	AMD
–25	90H6629	3	Power supply — 765 watts
–26	24L0940	AR	Filler for power supply
–27	1621811	2	Screw, M4 (10mm)
–28	97H7320	4	Battery pack
–29	1621811	12	Screw, M4 (10mm)
–30	NONUM	1	EMC access plate
–31	1621811	2	Screw, M4 (10mm)
–32	97H7316	1	Battery Charger

Assembly 10: (continued)
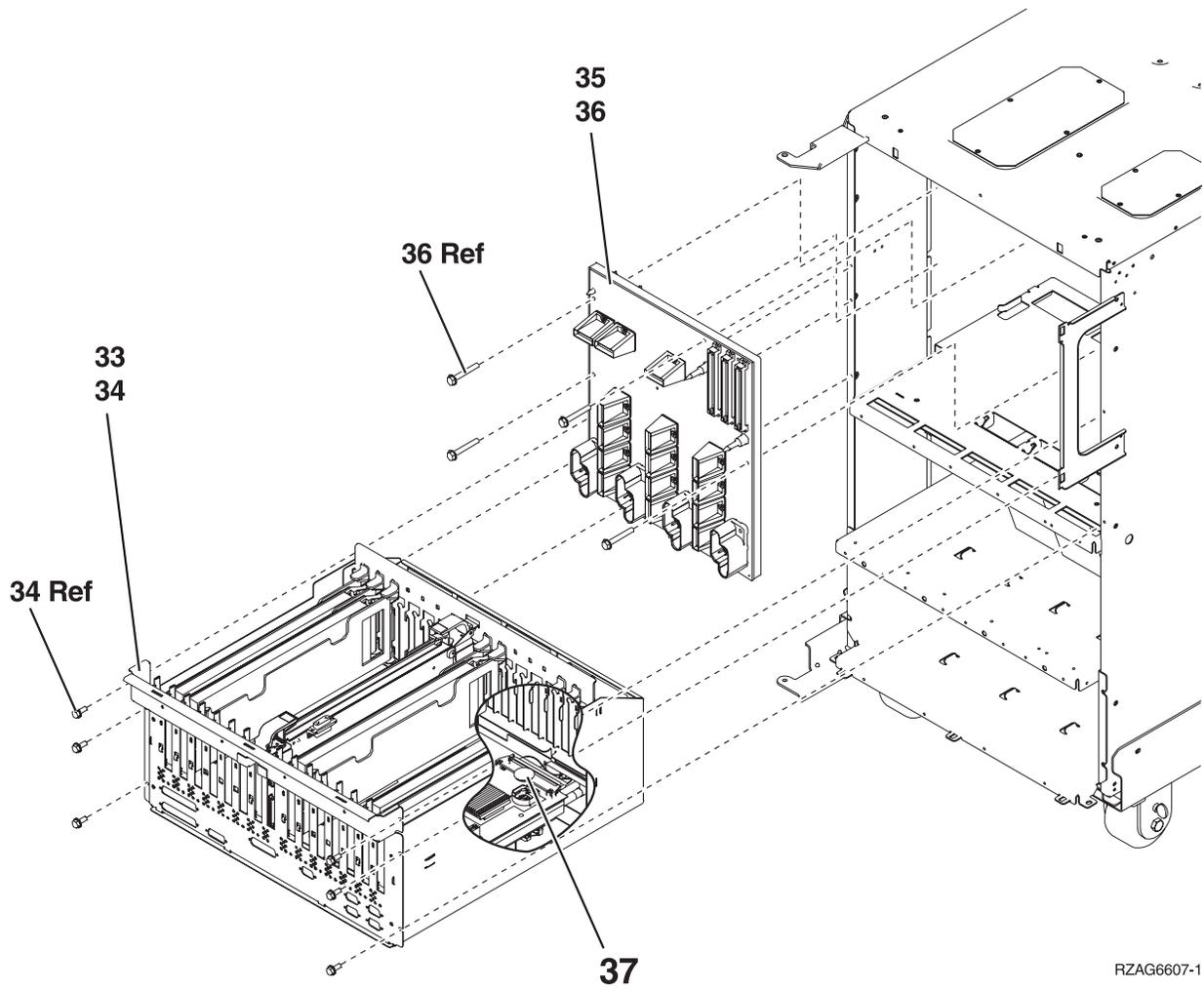
RZAG6607-1

Asm–Index	Part Number	Units	Description
10–33	97H7307	1	PCI Card Cage/Asm.
–34	1621811	6	Screw, M4 (10mm)
–35	24L0891	1	Power Board/Stiff. Asm. (PB1)
–36	1621816	6	Screw
–37	16G8095	1	TOD Battery

Assembly 11: Cover Assembly – FC 5075

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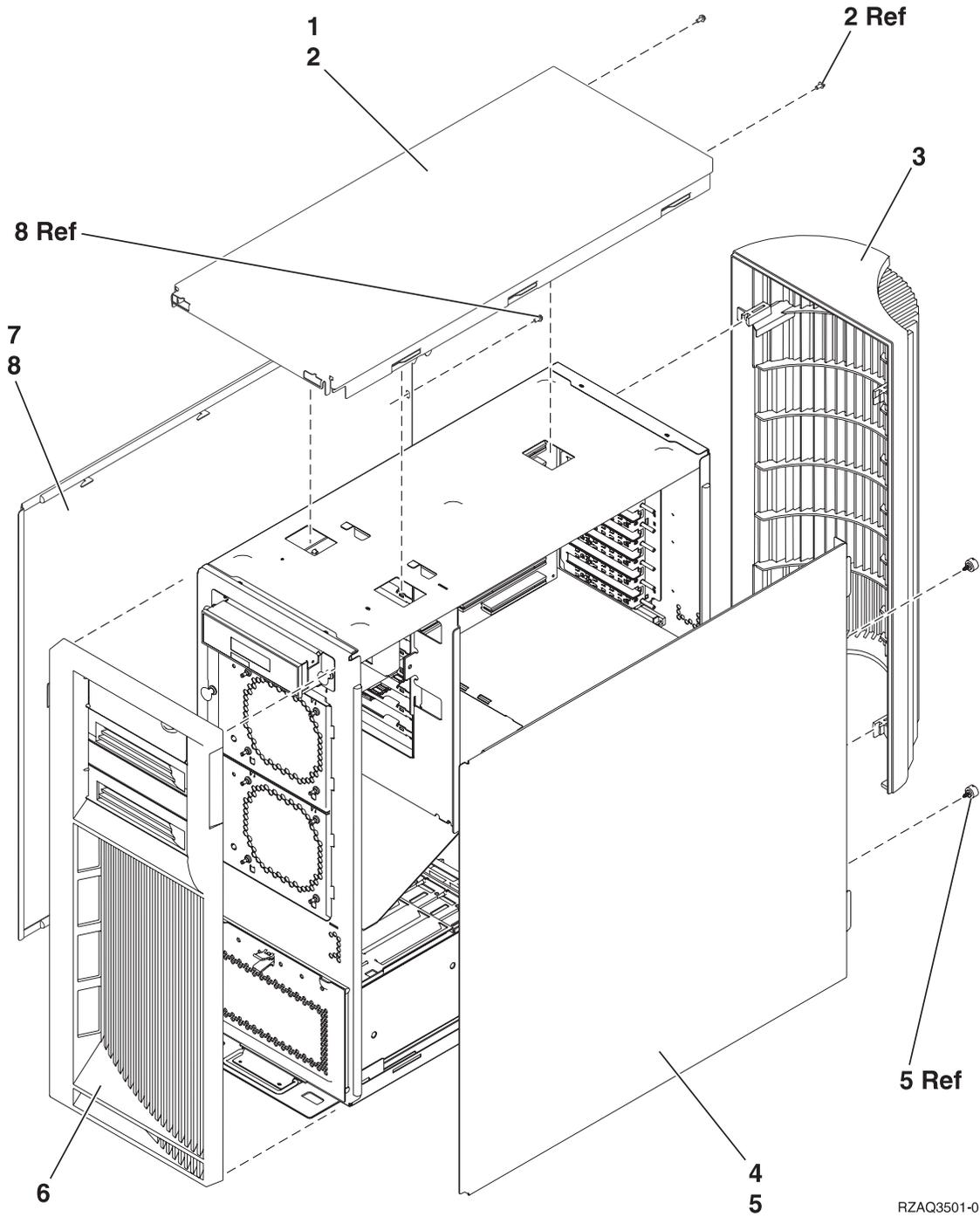
Asm–Index	Part Number	Units	Description
11–1	24L1630	1	Cover, Top
–2	75G2878	2	Screw, M3.5 x 8mm
–3	24L1652	1	Cover, Rear
–4	24L1632	1	Cover, Side
–5	24L1946	2	Thumbscrew
–6	24L1654	1	Cover, Front
–7	24L1632	1	Cover, Side
–8	75G2878	2	Screw, M3.5 x 8mm

Assembly 12: Final Assembly – FC 5075
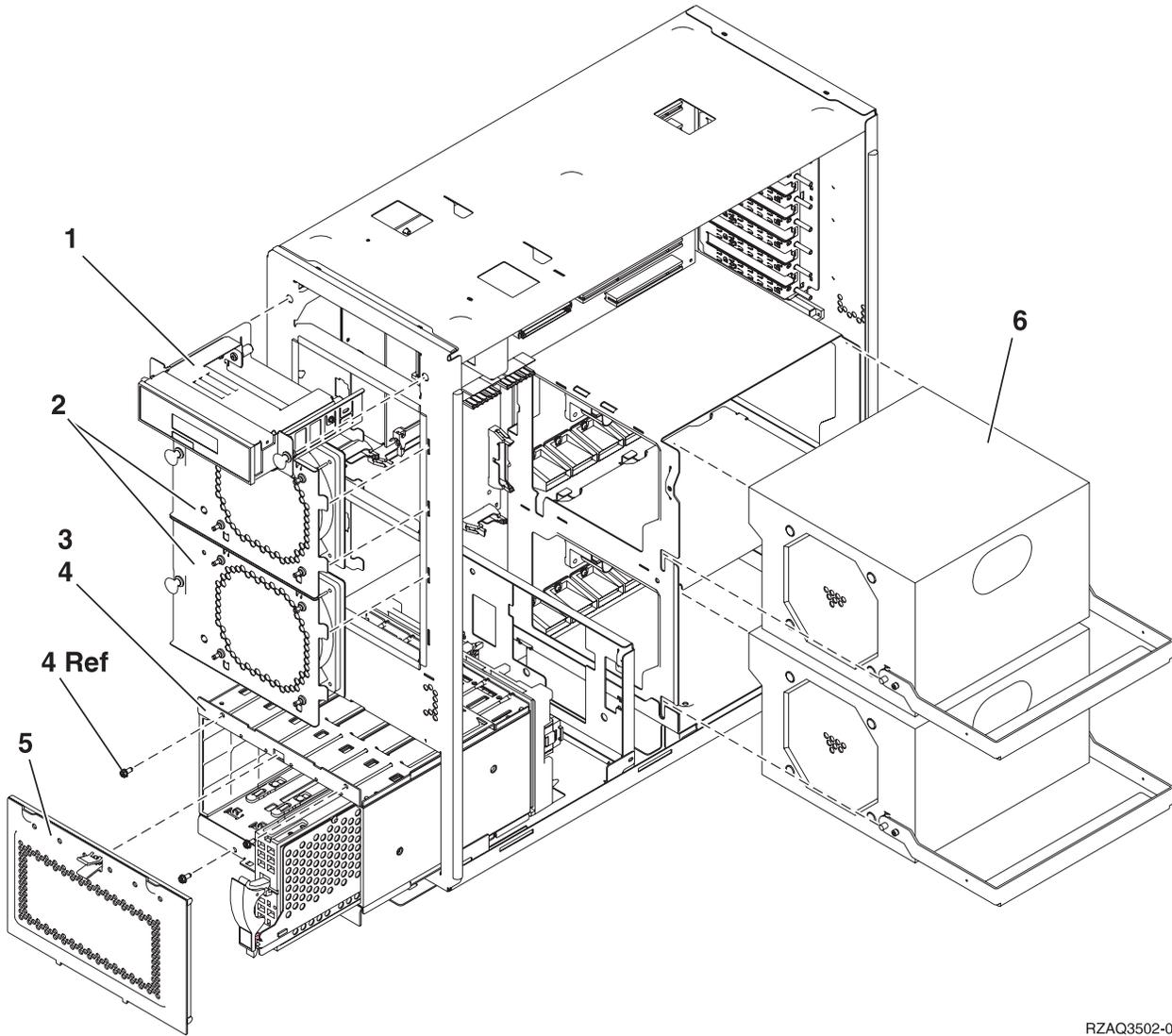
RZAQ3502-0

Asm– Index	Part Number	Units	Description
12–1	24L1592	1	Op Panel
–2	24L1730	2	AMD Asm.
–3	NONUM	1	Cage Asm., Disk Unit
–4	75G2878	4	Screw, M3.5 x 8mm
–4A	04N3392	2	Screw, M3.5 x 35mm
–5	24L1827	1	EMC Shield, Disk Unit
–5A	NONUM	AR	Disk Unit Asm.
			See "Type, Model, and Part Number list" on page 797.
–6	21P6417	AR	Power Supply
			See "Type, Model, and Part Number list" on page 797.

Assembly 12: (continued)

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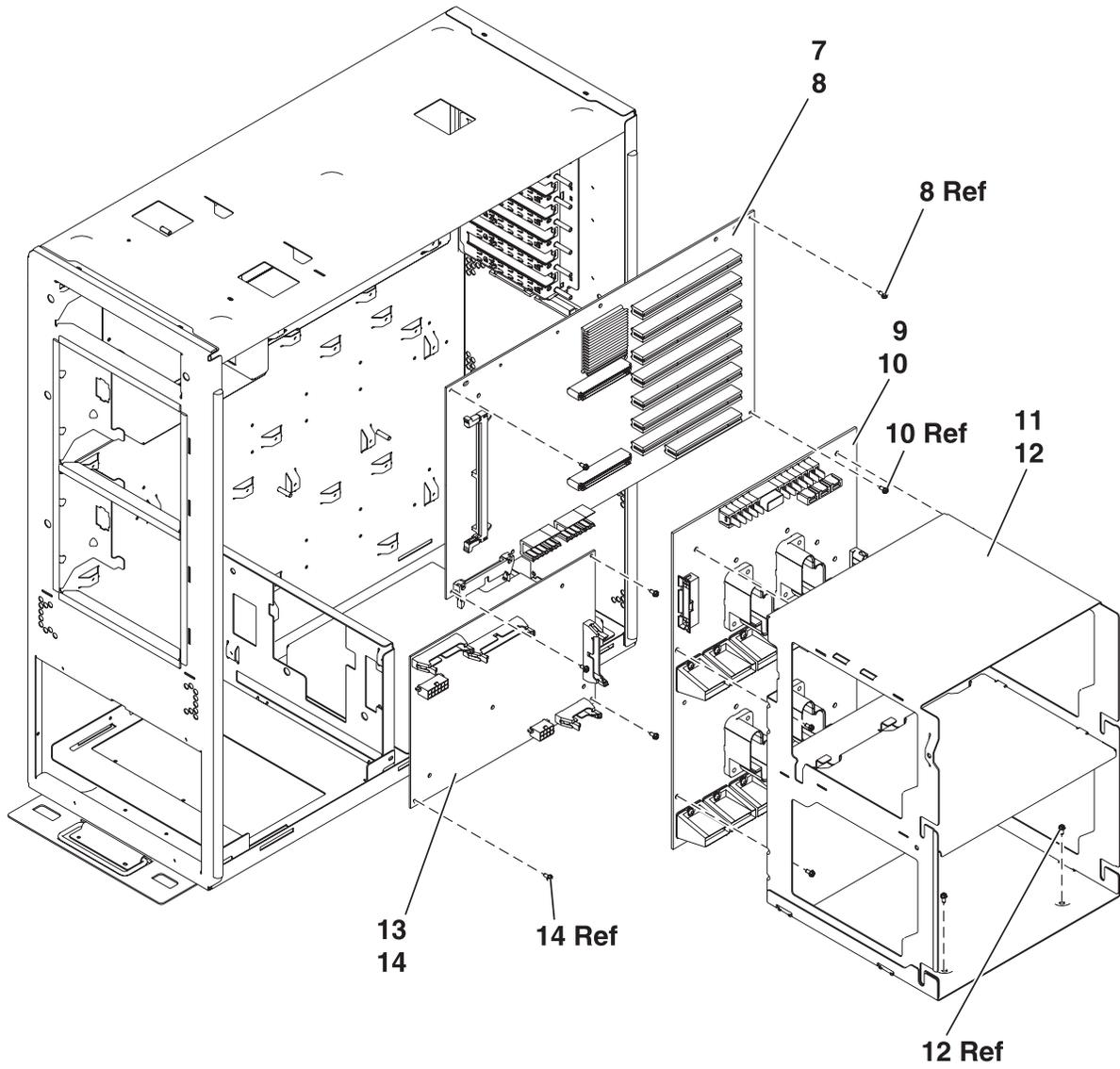
RZAQ3503-1

Asm–Index	Part Number	Units	Description
12–7	NONUM	1	Backplane Asm.
–8	75G2878	8	Screw, M3.5 x 8mm
–9	04N6111	1	Power Distribution Backplane (PB1)
–10	75G2878	5	Screw, M3.5 x 8mm
–11	NONUM	1	Power Supply Shelf
–12	75G2878	11	Screw, M3.5 x 8mm
–13	NONUM	1	Backplane Asm.
–14	75G2878	5	Screw, M3.5 x 8mm

Assembly 13: Cover Assembly — FC 5078
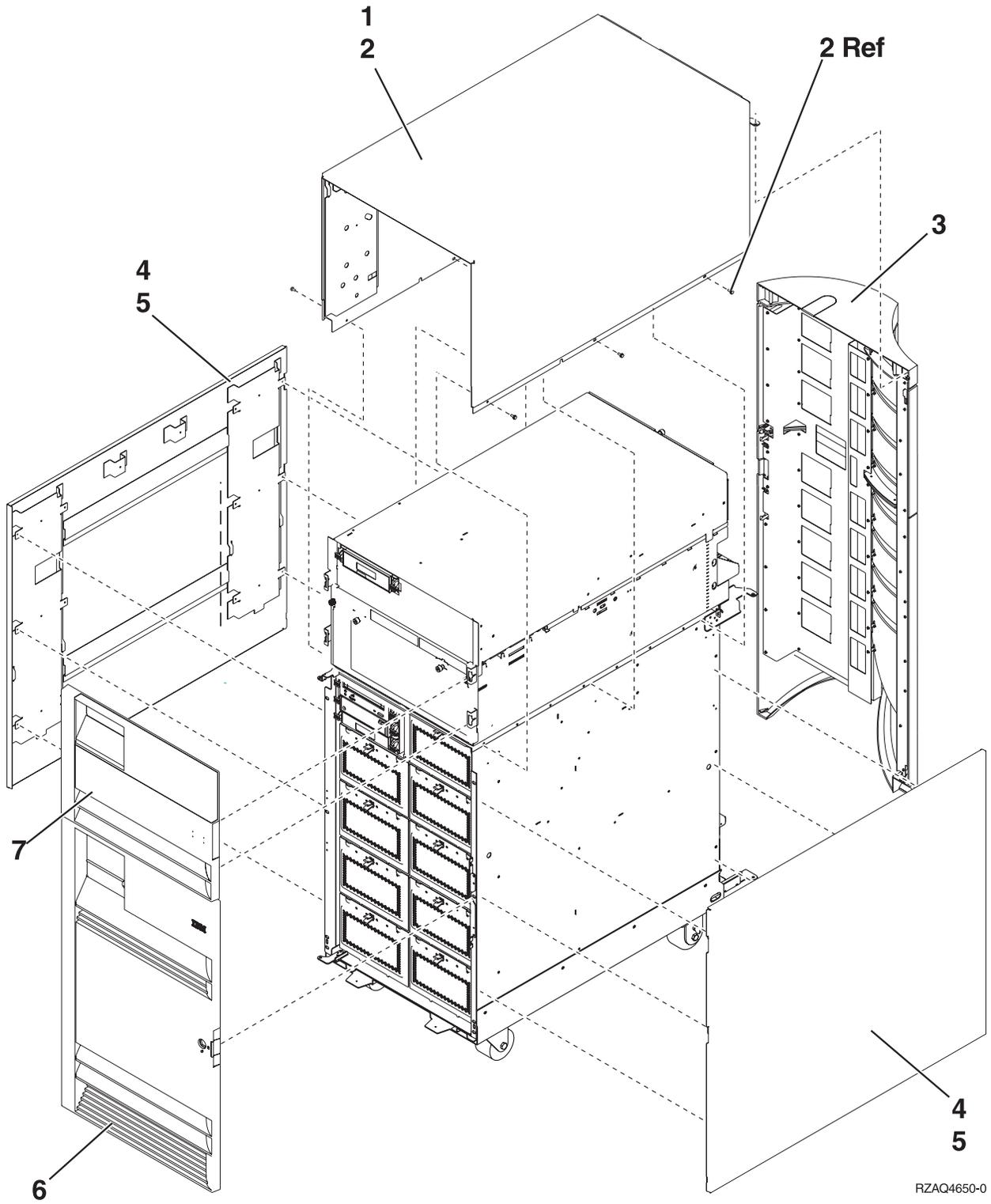
RZAQ4650-0

Asm–Index	Part Number	Units	Description
13–1	21P4986	1	Top Cover
–2	1621811	6	Screw, M4 (10mm)
–3	44L0247	1	Rear Cover
–4	24L0824	2	Side Cover
–5	1621811	16	Screw, M4 (10mm)
–6	24L1069	1	Front Cover, Lower
–7	44L0252	1	Front Cover, Upper
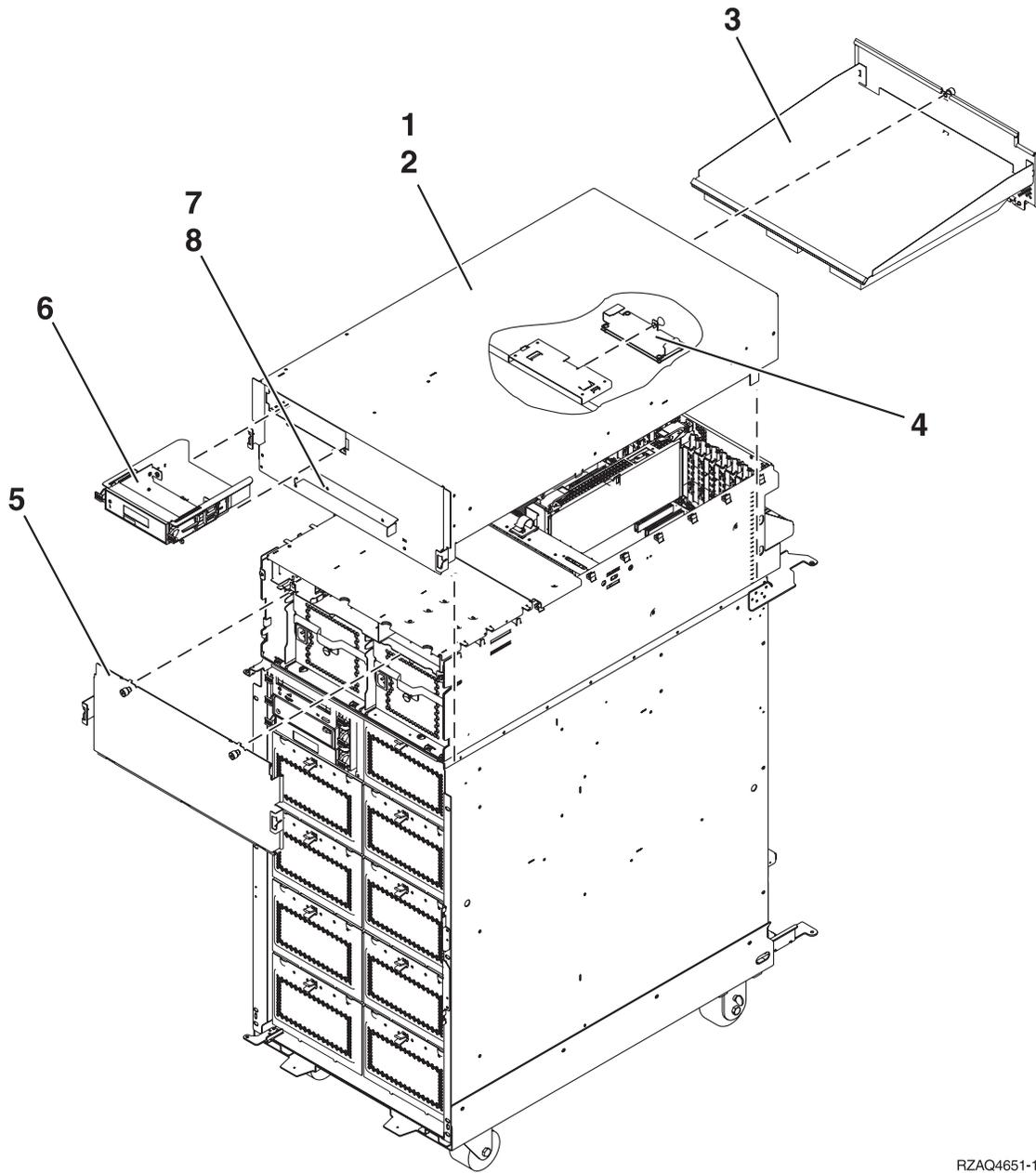
RZAQ4651-1

Asm–Index	Part Number	Units	Description
14–1	04N4523	1	Top Wrap Asm.
–2	00G1268	4	Screws, M4X
–3	04N4499	1	Rear EMC Shield
–4	11K1107	1	Air Moving Device (Fans) Control Card (BB1)
–5	04N4500	1	Front EMC Shield
–6	24L0962	1	Op Panel Asm. (NB1)
–7	21P6303	1	Front Cover Bracket (For FC 5078)
–7	21P6687	1	Front Cover Bracket (For FC 0578 in a rack)
–8	00G1268	2	Screws, M4X
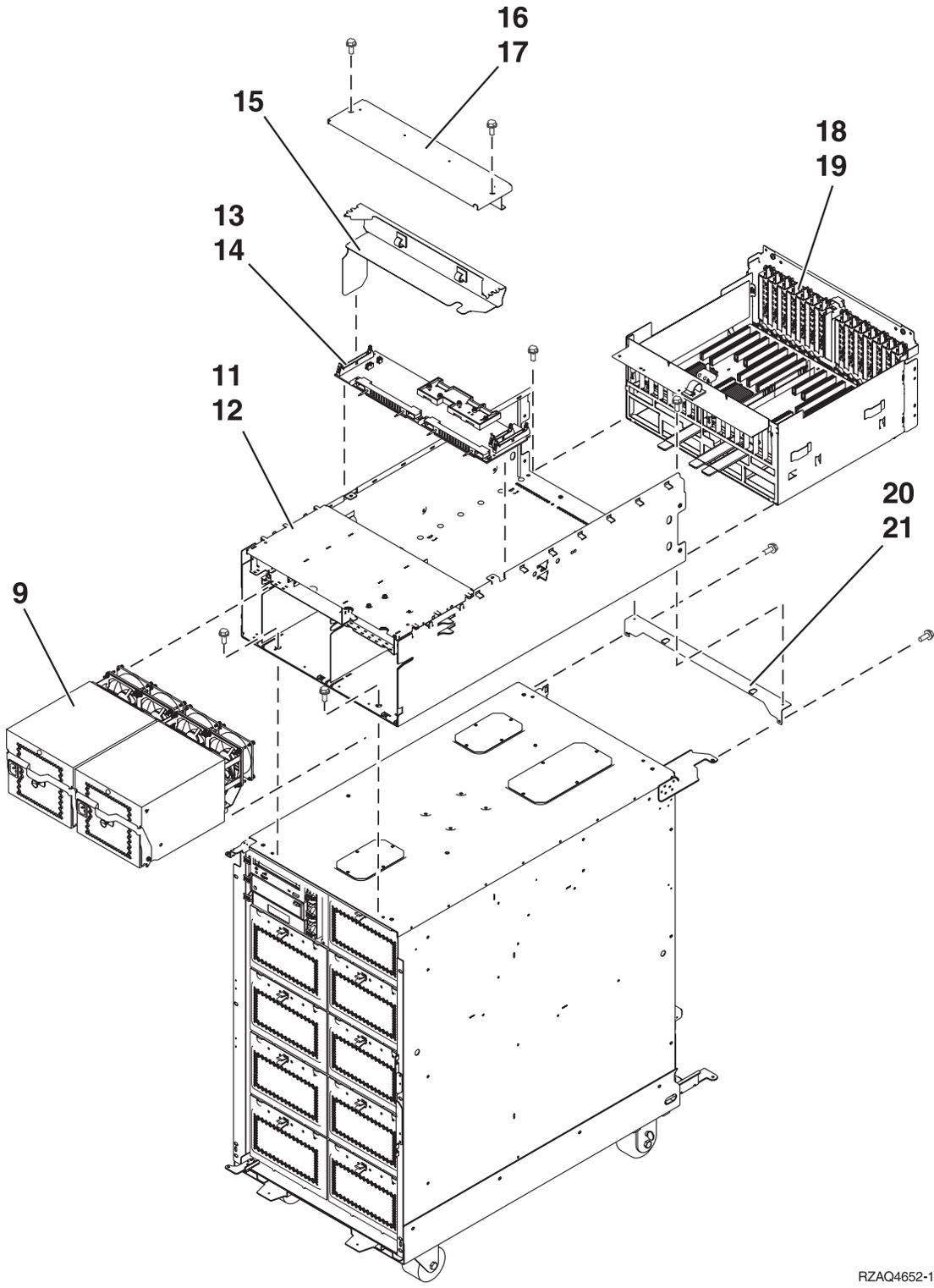
RZAQ4652-1

Asm–Index	Part Number	Units	Description
14–9	21P4970	2	AC Power Supply (P01 & P02)
–10	41L5448	2	Air Moving Device (Fans) (B01 & B02)
–11	21P4894	1	Chassis
–12	1621811	6	Screw, M4 (10mm)
–13	00P2382	1	Power Distribution (PB1)
–14	00G1268	6	Screws, M4X
–15	44K0243	1	Cable Tray
–16	41L5206	1	Cover
–17	00G1268	2	Screw, M4X
–18	04N6797	AR	PCI Node Board Asm. (CB1)
–19	00G1268	6	Screw, M4X
–20	04N4498	1	Mounting Bracket
–21	1621811	2	Screw, M4 (10mm)
–	04N3038	AR	Power Supply to PDU Line Cord
–	21P6094	AR	Misc. Power Cable
–	41L5650	AR	SPCN Cable
–	41L5649	AR	Control Panel Cable
–	41L5652	AR	Fan Control Cable

Assembly 15: Cover and Hardware Assembly For — FC 5079, FC 8079, FC 0550, FC 0551, 0578

RZAG6803-0

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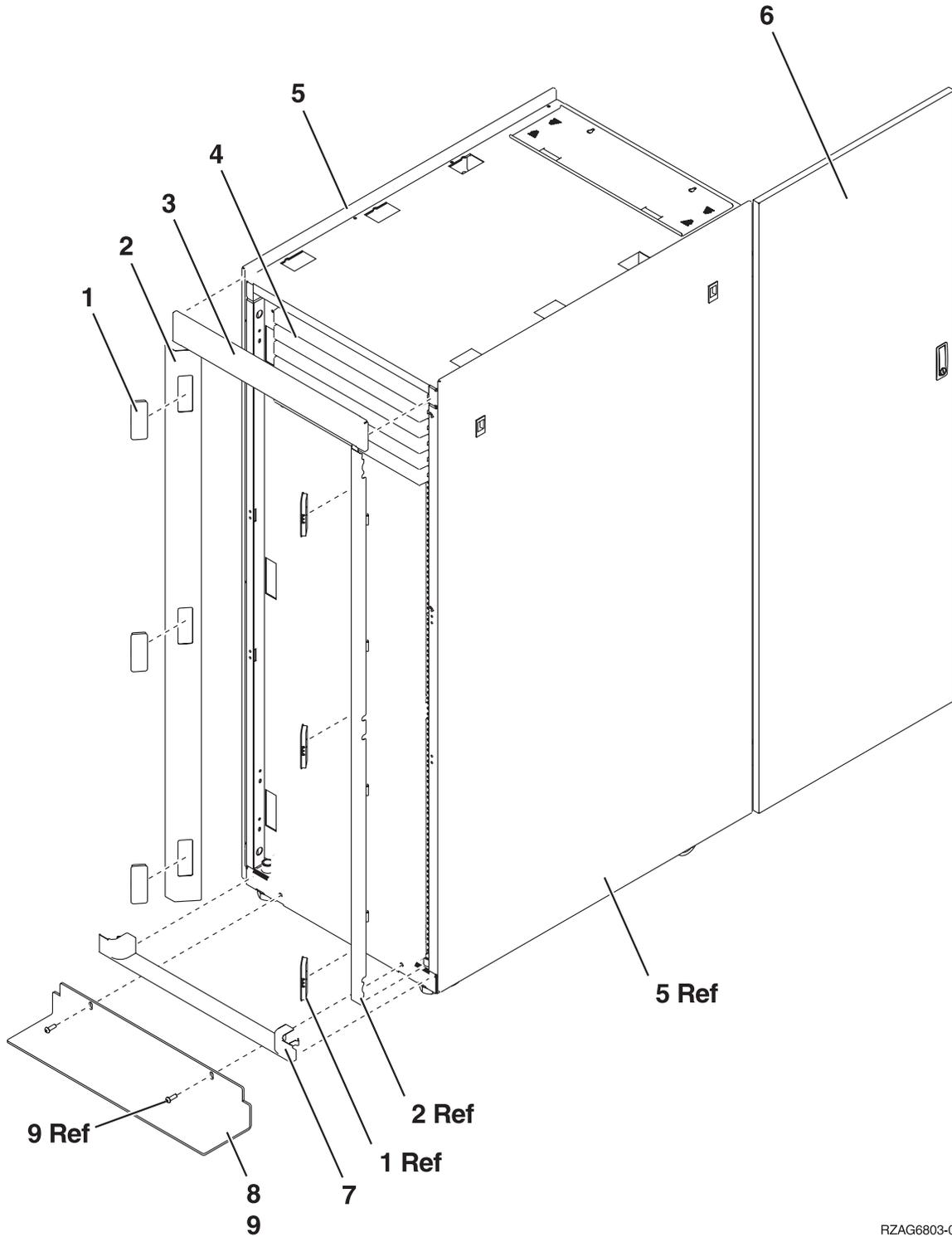
Asm–Index	Part Number	Units	Description
15–1	05N6809	6	Cover, Trim Kit
–2	12K0034	2	Side Bezel, Trim Kit
–3	12K0032	1	Top Bezel, Trim Kit
–4	97H9754	AR	1 high black EIA filler
–4	97H9755	AR	3 high black EIA filler
–4	97H9756	AR	5 high black EIA filler
–5	31L7519	2	Cover, Side
–6	31L7523	1	Cover, Rear
–7	12K0024	1	Bottom Bezel, Trim Kit
–8	24L1069	1	Tip plate
–9	24L0558	1	Screw M8x25

Note: For FC 0578 see FC 5078 for parts information.

Assembly 16: Power Distribution Unit (PDU) Assembly For — FC 5079, FC 8079, FC 0550, FC 0551, 0578

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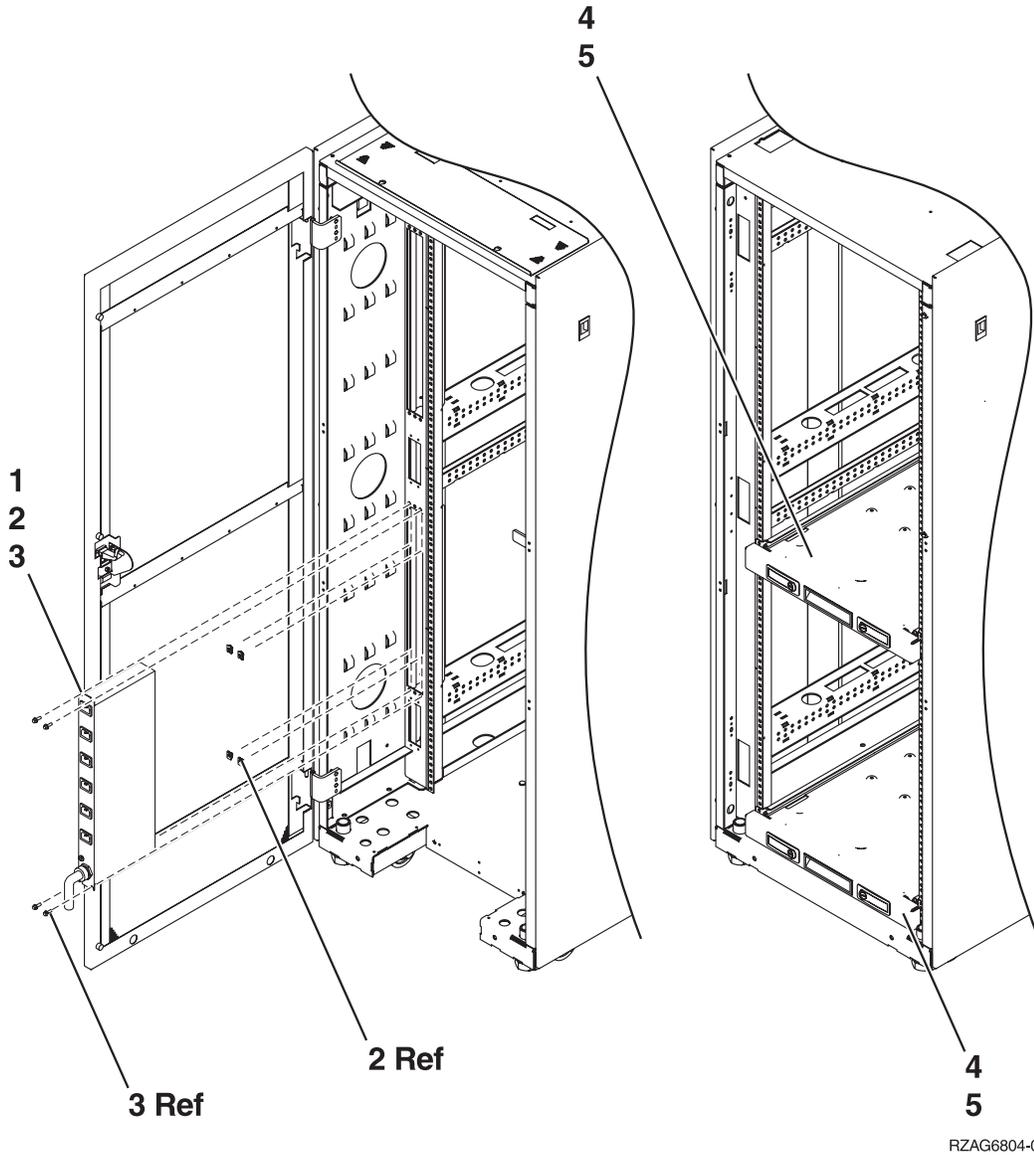
Asm–Index	Part Number	Units	Description
16–1	00P2200	1	Power Distribution Unit (PDU) Single Phase US
–1	00P2201	1	PDU Two Phase
–1	00P2202	1	PDU Three Phase
–1	00P2203	1	PDU Single Phase WT
–2	1624779	4	Nut Clip
–3	74F1823	4	Screw
–4	21P4225	2	Shelf/Tray Assembly for Model 270 System (only used on FC 0551 rack)
–5	1624779	16	Screw

Cables and Miscellaneous

External Cables

Assembly 17: External Cables

Asm– Index	Part Number	Units	Description
17–	21H4902		Internal Modem Cable (FC1010) - Austria
–	21H4903		Internal Modem Cable (FC1011) - Belgium
–	21H4904		Internal Modem Cable (FC1012) - Africa
–	21H4905		Internal Modem Cable (FC1013) - Israel
–	75G3802		Internal Modem Cable (FC1014) - Italy
–	75G3803		Internal Modem Cable (FC1015) - France
–	75G3804		Internal Modem Cable (FC1016) - Germany
–	75G3805		Internal Modem Cable (FC1017) - UK
–	75G3806		Internal Modem Cable (FC1018) - Iceland/Sweden
–	75G3807		Internal Modem Cable (FC1019) - Australia
–	75G3808		Internal Modem Cable (FC1020) - HK/NZ
–	75G3809		Internal Modem Cable (FC1021) - Fin/Nor
–	75G3810		Internal Modem Cable (FC1022) - Netherlands
–	75G3811		Internal Modem Cable (FC1023) - Switzerland
–	75G3812		Internal Modem Cable (FC1024) - Denmark
–	87G6236		Internal Modem Cable (FC1025) - US/Canada
–	6339098		Cable, Token Ring (FC2745) 8ft
–	75G2865		Cable, Ethernet (FC4723) RJ-45
–	21F5093		Cable, 8 Port Twinax (FC4746)
–	97H7699		Cable, ISDN RJ-45
–	97H7385		Cable, ATM Filtered (FC4815)
–	44H8676		Cable, VIDEO EXT (FC0325)
–	44H8677		Cable, MOUSE/KYBD EXT (FC0325)
–	07G3794		Keyboard/mouse splitter cable (CCIN 2890)
–	44L0007		V/S COMM - 6m Cable (031A)
–	44H7480		V.24 - 20' Cable (0348)
–	44H7482		V.24 - 20' Cable - Germany (0348)
–	44H7484		V.24 - 20' Cable - Japan (0348)
–	44H7481		V.24 - 50' Cable (0349)
–	44H7483		V.24 - 50' Cable - Germany (0349)
–	44H7485		V.24 - 50' Cable - Japan (0349)
–	44H7486		V.24 - 20' Cable (0350)
–	44H7489		V.24 - 20' Cable - Germany (0350)
–	44H7492		V.24 - 20' Cable - Japan (0350)
–	44H7487		V.24 - 50' Cable (0351)
–	44H7490		V.24 - 50' Cable - Germany (0351)
–	44H7491		V.24 - 50' Cable - Japan (0351)
–	44H7488		V.24 - 80' Cable (0352)
–	44H7491		V.24 - 80' Cable - Germany (0352)
–	44H7494		V.24 - 80' Cable - Japan (0352)
–	44H7495		V.35 - 20' Cable (0353)
–	44H7496		V.35 - 50' Cable (0354)
–	44H7497		V.35 - 80' Cable (0355)
–	44H7498		V.36 - 20' Cable (0356)
–	44H7499		V.36 - 50' Cable (0357)
–	44H7500		V.36 - 80' Cable (0358)
–	44H7501		X.21 - 20' Cable (0359)
–	44H7502		X.21 - 50' Cable (0360)
–	97H7386		RS232 - 80' Cable (0365)
–	97H7387		RS232 - 80' Cable - Germany (0365)
–	97H7388		RS232 - 80' Cable - Japan (0365)
–	44L0005		HSL Cable (3m) (1460)
–	97H7490		HSL Cable (6m) (1461)

Assembly 17: (continued)

Asm–Index	Part Number	Units	Description
–	04N7014		HSL Cable (15m) (1462)
–	21P5014		HSL Optical cable (6m) (1470)
–	21P5015		HSL Optical cable (30m) (1471)
–	21P5016		HSL Optical cable (100m) (1472)
–	21P6326		HSL Optical cable (250m) (1473)
–	87G6235		SPCN Cable (2m) (1463)
–	21F9469		SPCN Cable (6m) (1464)
–	21F9358		SPCN Cable (15m) (1465)
–	21F9359		SPCN Cable (30m) (1466)
–	21F9360		SPCN Cable (60m) (1467)
–	21P6325		Optical SPCN Cable (250m) (1468)
–	21F9415		Optical SPCN Cable (100m) (0369)
–	97H7486		J-TAG A Cable (033A)
–	97H7487		J-TAG C Cable (033B)
–	97H7604		J-TAG E Cable(033C)

Internal Cables

Miscellaneous

Assembly 18: Miscellaneous

Asm–Index	Part Number	Units	Description
18–	59H4366		QIC Cleaning Cartridge
–	59H3661		Test Tape QIC 4GB
–	87G1626		Test Tape QIC 16GB
–	59H4127		Test Tape QIC 25GB
–	35L0967		Test Tape QIC 50GB
–	46G6844		Cleaning Kit, Optical Cables
–	81F8902		CD-ROM Test Disk (FC4425/4525)
–	19P0484		DVD Test Disk (FC4430/4530)
–	19P0489		DVD Cleaning Kit
–	76H5078		Mouse (FC1700)
–	6165899	1	II Card Wrap (TR LAN) FC 2744
–	21H3548	1	LL Card Wrap (ATM) FC 2812, 2819
–	21H3547	1	MM Card Wrap (ATM) FC 2816, 2818
–	42H0540	1	NN Cable Wrap (ATM) FC 2811, 2815
–	45H2364	1	OO Card Wrap (WS PCI)
–	44H7479	1	QQ Card Wrap (WAN PCI)
–	21H4811	1	SS RJ45 Card Wrap FC 2838
–	97H7749	1	UU Card Wrap (ISDN) FC 2750
–	97H7745	1	VV Card Wrap (ISDN) FC 2751
–	97H7754	1	WW Card Wrap FC 2761
–	44L0082	1	XX Card Wrap (FC 2744)
–	16G5609	1	YY Card Wrap (FC 2743)
–	04N5682	AR	ZZ card wrap (FC 2890)
–	21P4745	AR	GL card wrap (Ethernet) - (FC 2760)
–	17G2642	1	ASYNC Cable Wrap
–	21H3761	1	V.24AD Cable Wrap
–	21H3762	1	RS232AD Cable Wrap
–	21H3763	1	V35AD Cable Wrap
–	21H3790	1	RS449AD Cable Wrap
–	21H3791	1	X21AD Cable Wrap
–	59X4262	1	Twinax port tester (93X2040)
–	46G0298	AR	Adapter, 25 pin to 9 pin EIA232
–	15F8409	AR	Battery, Integrated xSeries Server (IXS) (2890) adapter card
–	08J0653	AR	DIMM, Integrated xSeries Server (IXS) (2890) adapter card IOP

Type, Model, and Part Number list

Type	Description	Model	Part Number
0150	Processor Capacity Card	820	21P6947
0151	Processor Capacity Card	820	21P6949
0152	Processor Capacity Card	820	21P6951
1517	Interactive Card	270	04N2625
1518	Interactive Card	270	04N4648
1519	Interactive Card	270	04N4649
1520	Interactive Card	270	04N4650
1521	Interactive Card	820	04N2624
1522	Interactive Card	820	04N2623
1523	Interactive Card	820	04N2622
1524	Interactive Card	820	04N2621
1525	Interactive Card	820	04N2620

Type	Description	Model	Part Number
1526	Interactive Card	820	04N2619
1527	Interactive Card	820	04N2618
2248	Processor Capacity Card	270	04N4647
2249	System Unit Backplane	270 (Processor Feature Codes 22A2, 22A4, 22A5, 2422)	04N6319
224A	System Unit Backplane with embedded processor	270 (Processor Feature Codes 2301, 2302)	21P5692
224B	System Processor	820	21P5686
2250	Processor Capacity Card	270	04N2598
2252	Processor Capacity Card	270	04N2597
2253	Processor Capacity Card	270	04N2596
2301	Processor Capacity Card	270	21P5759
2302	Processor Capacity Card	270	21P5761
2303	Processor Capacity Card	270, 820	21P5763
2350	Processor Capacity Card	270, 820	21P4398
2395	Processor Capacity Card	820	04N2595
2396	Processor Capacity Card	820	04N2594
2397	Processor Capacity Card	820	04N2593
2398	Processor Capacity Card	820	04N2592
2423	Processor Capacity Card	270	04N3759
2424	Processor Capacity Card	270	04N3761
2425	Processor Capacity Card	820	04N3763
2426	Processor Capacity Card	820	04N3765
2427	Processor Capacity Card	820	03P0004
2431	Processor Capacity Card	270, 820	21P4444
2432	Processor Capacity Card	270, 820	04N5166
2434	Processor Capacity Card	270, 820	04N5168
2435	Processor Capacity Card	270, 820	21P4446
2436	Processor Capacity Card	270, 820	04N5169
2437	Processor Capacity Card	270, 820	04N5170
2438	Processor Capacity Card	270, 820	04N5171
243C	Processor / Interactive Set	820	N/A
243D	Processor / Interactive Set	820	N/A
243F	Processor / Interactive Set	820	N/A
244A	System Processor Card (1-way)	820	24L2694
244D	System Processor Card (2-way)	820	23L7738
244E	Processor (4-way)	820	04N6738
2452	Processor Capacity Cards	270	04N5172
2454	Processor Capacity Cards	270	04N5174
2456	Processor Capacity Cards	820	04N5175
2457	Processor Capacity Cards	820	04N5176
2458	Processor Capacity Cards	820	04N5177
24A0	Processor (1-way)	270	04N4758
24A2	Processor (2-way)	270	04N6751

Type	Description	Model	Part Number
25B9	System Unit Backplane with embedded processor	270 (Processor Feature Code 23E7)	04N3903
25BA	System Unit Backplane with embedded processorr	270 (Processor Feature Codes 23F0, 23F1, 2452)	04N5555
25BC	System Processor	820	04N5345
25BD	System Processor	270, 820	23L7785
25BE	System Processor	820	23L7794
263D	Memory riser filler card	820	23L8127
2689	• Integrated xSeries Adapter (IXA) • SPCN Y-Cable • RS485 Cable	All	• 21P5840 • 04N2652 • 21P4162
2691	HSL I/O bridge	All (Except 270)	04N6907
2723	Ethernet IOA	All	21H9201
2743	Ethernet 1 Gb/sec IOA	All	41L6396
2744	Token Ring 100 Mb/sec IOA	All	23L4288
2745	Multiline Communications IOA	All	21H5490
2746	Twinaxial IOA	All	21H5497
2748	Storage IOA • Card (Non-Japan) • Card (Japan) • Cache Battery Pack(Non-Japan) • Cache Battery Pack (Japan) • Mode Jumper	All	• 91H3987 • 23L2841 • 44L0302 • 44L0301 • 23L3442
2749	Storage IOA (external removable media)	All	04N2296
2750	ISDN Communications IOA	All	97H7674
2751	ISDN Communications IOA	All	97H7675
2760	Ethernet 1 Gigabit/sec IOA	All	00P1690
2761	Integrated Modem IOA • United States • Europe • Germany • Australia • Spain • Czechoslovakia	All	• 97H7678 • 97H7679 • 97H7680 • 97H7681 • 97H7682 • 97H7683
2763	Storage IOA • Card • Cache Battery Pack	All	• 91H4082 • 44L0313
2765	Fibre Channel IOA (for removable media attachment only)	All	03N2451
2766	Fibre Channel IOA (for disk drive attachment only)	All	03N2453
2767	Storage IOA	All	04N2304
2768	Storage IOA (external removable media)	All	04N2310

Type	Description	Model	Part Number
2771	V.90/RVX IOA • All **EXCEPT** Australia, New Zealand • Australia, New Zealand	All	• 04N4519 • 04N4520
2772	2-port V.90 Socket Modem IOA • All **EXCEPT** Australia, New Zealand • Australia, New Zealand	All	• 04N4537 • 04N4539
2778	Storage IOA • Card • Cache Battery Pack • Mode Jumper	All	• 21P3735 • 44L0313 • 23L3442
2779	Business Adapter	All	21P5342
2815	ATM 155 Mbps IOA	All	21H7977
2816	ATM 155 Mbps IOA	All	21H7909
2817	ATM 155 Mbps IOA	All	04N2907
2818	ATM 155 Mbps IOA	All	21H7975
282D	System Unit Backplane	820	24L1460
282F	System Unit Backplane	270 (Processor Feature Codes 22A7, 22A8, 22AA, 22AB, 23F4, 23F5, 2423, 2424, 2454)	04N5658
2838	100 Mbps Ethernet IOA	All	21H5460
283B	Tower Card	FC 5075	04N4723
283C	Device Backplane (DB3)	All	04N6601
283D	Device Backplane (DB1 & DB2)	All	04N6602
283F	DASD Cage	270, 820	04N2472
2842	Combined Function IOP - 32 MB	270, FC 5075	04N5090
2843	Combined Function IOP - 64 MB	All, except 270	04N5095
284B	Embedded Combined Function IOP	FC 5075	04N4723
284C	Embedded Combined Function IOP	820	24L1460
284D	Embedded Combined Function IOP	270	See 2249
284E	Embedded Combined Function IOFP	270	See 282F
286C	Embedded Combined Function IOP	270	See 25B9
286D	Embedded Combined Function IOP	270	See 25BA
286F	Embedded Combined Function IOP	270	See 224A
2884	Memory Riser Card for DIMMs	820, 270	04N4801
2890-001	Integrated xSeries Server (IXS)	All	23L4306

Type	Description	Model	Part Number
2890-002	Integrated xSeries Server (IXS)	All	04N6176
2895	128 MB IXS memory module	270	29L0955
2896	256 MB IXS memory module	270	29L0956
2897	1 GB IXS memory module	270	29L0957
28AB	PCI Drawer (includes the tower card)	FC 5074, FC 5079	97H7307
28AE	PCI Drawer Assembly	FC 5078/0578, 820	04N6797
3002	128MB Main Storage	270, 820	21H6512
3003	256 MB Main Storage	270	90H958
3004	256MB Main Storage	270, 820	90H9359
3005	512MB Main Storage-DIMM	270, 820	97H6436
3006	512MB Main Storage-DIMM	270, 820	99H4341
3007	1GB 256 MB stacked Main Storage	820	23L7697
3008	32 MB Main Storage	270	24L1892
3009	128 MB (x8) Main Storage	820	04N5487
3022	128MB Main Storage	270	04N4524
3024	256MB Main Storage	270	04N4527
3025	512MB Main Storage	270	04N4530
3026	512MB Main Storage	270	04N5943
3027	1 GB Main Storage	270	04N6547
3029	128 MB (x8) Main Storage	270	04N5493
3031	128 MB Main Storage	270	09P0969
3032	256 MB Main Storage	270	09P0970
3033	512 MB Main Storage	270	09P0971
3034	1 GB Main Storage	270	09P0972
4322	Disk Unit and Carrier	All	21P7140
4323	Disk Unit and Carrier	All	21P7141
4758– 023	PCI Cryptographic Processor	All	10J0593
6321	CD-ROM	All	04N2568
6330	DVD	All	04N2569
6381	Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door.	• FC 5072, 5073, 5077 expansion towers • All other towers	• 21H7658 • 59H2742
6382	Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door.	• System model 270 and 820 system unit • FC 5072, 5073, 5077 expansion towers • FC 5065, 5066, 5074, 5079 expansion towers • All other towers	• 04N2564 • 21H7019 • 97H7331 • 59H3745
6383	Internal 1/4 Inch cartridge drive with MLR1-S on the front cover	• System model 270 and 820 system unit • FC 5072, 5073, 5077 expansion towers • FC 5065, 5066, 5074, 5079 expansion towers • All other towers	• 04N2565 • 97H7717 • 24L1064 • 59H4533

Type	Description	Model	Part Number
6386	Internal 1/4 inch cartridge drive with MLR3 on the front cover.	• System model 270 and 820 system unit • FC 5072, 5073, 5077 expansion towers • FC 5065, 5066, 5074, 5079 expansion towers • All other towers	• 04N2566 • 97H7528 • 24L1065 • 59H4130
6387	Internal 1/4 inch cartridge drive with SLR100 on the front cover.	• System Unit • FC 5065, 5074, 5079 expansion towers	• 04N2567 • 04N2351
6600	Disk Unit and Carrier. Remove the disk unit from the system to determine the part number of the failing component.	All	N/A
6607	Disk Unit and Carrier	All	44L0061
6713	Disk Unit and Carrier	All	44L0062
6714	Disk Unit and Carrier	All	44L0063
6717	Disk Unit and Carrier	All	97H7332
6718	Disk Unit and Carrier	All	04N2737
6719	Disk Unit and Carrier	All	04N4638
6731	Read Cache and Carrier	All	24L1095
7207 model 122	External 1/4 inch cartridge drive with QIC-4GB-DC on the door	All	59H4434

Power Cord Part Numbers and Receptacle Descriptions

The part numbers, countries, and descriptions associated with each power cord can be found at http://www.as400.ibm.com/tstudio/planning/index_rf.htm

This information is also in the Physical Planning PDF file on this service CD.

Chapter 6. Data Recovery Procedures and General System Information

Recovery Procedures

Disk Service Support

This section contains the procedures and information to recover from disk unit failures with a minimum loss of customer data.

The procedures in this section do not give support to rack-mounted disk units such as an IBM 9337. For disk service support on rack-mounted disk units, use the *FC 504x Problem Analysis and Repair and Parts, SY44–4934* information.

The procedures in this section do not give support to IBM 2105 disk units. Use the *"IBM 2105 maintenance"* information for disk service support.

Start all service actions at "Start Disk Service Here" on page 804 and follow the steps in the procedures to determine the following:

- The storage protection method that is used by the customer
- When and how to save customer data
- When to exchange a failing disk unit
- How to restore saved data
- How to resume storage protection

Start Disk Service Here

Before exchanging a disk unit, you must attempt to save customer data.

This procedure directs you to the correct recovery procedure to use when attempting to save customer data.

1. Is the disk unit a type 673x?

   No   Yes

   ↓   Type 673x is a read cache which does **NOT** contain data that needs to be saved. Exchange the read cache using the disk unit procedure in "Chapter 4. Removal and Installation Procedures" on page 593.

           Note: If you can get to a Dedicated Service Tools (DST) or System Service Tools (SST) screen use the concurrent maintenance procedure.

           This ends the procedure.

2. Do you know if your system has storage protection for the failing disk unit?

   Yes   No

   ↓   Perform "Determining Storage Protection Status". Then return here and continue with the next step of this procedure.

3. Does your system have mirrored protection for the failing disk unit?

   No   Yes

   ↓   Go to "Exchanging a Disk Unit with Mirrored Protection" on page 807.

           This ends the procedure.

4. Does your system have device parity protection for the failing disk unit?

   No   Yes

   ↓   Go to "Exchanging a Disk Unit with Device Parity Protection" on page 806.

           This ends the procedure.

5. You are exchanging the disk unit.

   To save the data by copying to tape:
   - Go to "Disk Unit Data Save and Initialize" on page 813.

   To save the data by copying to another disk:
   - Go to "Disk Unit Initialize and Disk to Disk Copy" on page 822.

   This ends the procedure.

Determining Storage Protection Status

The customer should know if the system has storage protection configured on it. The customer should know if the system is configured for storage protection and should have kept a printout of the storage protection configuration. Ask the customer for this information. If the customer does not know if the system has storage protection configured on it, **and** the system does not IPL to dedicated service tool (DST), then contact your next level of support. Otherwise, perform the following procedure.

1. Select the *Work with disk units* option on the System Service Tools (SST) display.

   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.

Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

2. Select the *Display disk configuration* option on the Work with Disk Units display.
3. Select the *Display disk configuration status* option on the Work with Disk Configuration display.

   A list of each auxiliary storage pool (ASP) displays, showing the disk units that are members of the ASP. The *Status* column shows one of the following protection statuses for the ASP:

   Unprotected

   Mirrored

   - Disk units in an ASP with a protection status of *Mirrored* are configured for mirrored protection.

     If the failing disk unit has mirrored protection, write down the status of the failing disk unit and its mirrored pair. You will need this information later in one of the recovery procedures.

   - An ASP that has a status of *Unprotected* may contain disk units that are data parity protected. Look in the *Status* column of the *Display disk configuration status* display. The status column shows one of the following protection status:

     – DPY/Active
     – DPY/Failed
     – DPY/HDW Failure
     – DPY/Degraded
     – DPY/Power Loss
     – DPY/Not Ready
     – DPY/Unknown

     A unit with one of these statuses has data parity protection only if all other units in the array are operational.

     A unit with any other status does not have data parity protection. For example, a unit that does not have data parity protection may have a status of:

     – DPY/Rebuild
     – DPY/Unprotected

     Examples:
     – Suppose one unit has a status of DPY/Failed while all other units have a status of DPY/Unprotected. In this case, only the unit with the DPY/Failed status is protected. Servicing the failed unit will not result in data loss. Removing any of the unprotected units could result in data loss.
     – If all units have a status of DPY/Active or DPY/Degraded, all units are protected. In this case, exchanging any unit will not result in data loss.

     For more information about the meaning of a status for any unit, use the Help key as indicated on the display.

Return to the procedure that sent you here.

This ends the procedure.

Exchanging a Disk Unit with Device Parity Protection

1. Does the failing unit have data parity protection that allows service without possible data loss (see "Determining Storage Protection Status" on page 804)?

   Yes   No

   ↓   Customer data may be lost if serviced. Ask your next level of support for assistance.

        This ends the procedure.

2. Record the disk unit location for later use. If you do not already have the disk unit location information, 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" on page 846. Use the address to find the location. See "Locations and Addresses" on page 671.

   Exchange the failing disk unit (See "Chapter 4. Removal and Installation Procedures" on page 593 for the model or FC that you are working on and perform "Disk Unit - Concurrent"). When finished, continue with the next step of this procedure.

   Note: If the concurrent procedure fails, go to step 5 of this procedure.

3. Perform the following:

   a. Select System Service Tools (SST).

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

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

   b. Select the *Work with disk units* option on the Service Tools display.

   c. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

   d. Select the *Rebuild disk unit data* option.

   Does the disk unit you just exchanged appear on the display as a unit that can be rebuilt?

   Yes   No

   ↓   It can take up to 5 minutes for the input-output processor (IOP) to report the device to the system. Keep trying the *Rebuild Disk Unit Data* option until the device is available. If the "Rebuild Disk Unit Data Failed" screen continues to appear even after 5 minutes, try a different disk unit or ask your next level of support for assistance.

4. Perform the following:

   a. Select the disk unit on the display that was installed in place of the failing disk unit.

   b. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).

      Note: Once the rebuild has started, it is not necessary to wait to verify the array rebuild completes successfully.

   c. Return to the procedure that sent you here.

   This ends the procedure.

5. Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593). When finished, continue with the next step of this procedure.
6. Perform the following:
   a. Ask the customer to stop all active applications on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.
   b. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).
   c. Select the *Work with disk units* option.
   d. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
   e. Select the *Rebuild disk unit data* option.
   f. Select the disk unit on the display that was installed in place of the failing disk unit.
   g. Rebuild the disk unit data. When the new disk unit is rebuilt, the display shows that the status is complete (this may take 30 minutes or longer).
   h. Press the Enter key after verifying that the status is complete.
7. Perform the following:
   a. Return to the Use Dedicated Service Tools (DST) display.
   b. Select the *Perform an IPL* option to complete the IPL.
8. Return to the procedure that sent you here.
   This ends the procedure.

Exchanging a Disk Unit with Mirrored Protection

Definitions:
- Local load source - A disk used as the source for IPL data.
  Primary Partition:
  – For system models 270 and 820, this disk unit must be located in position D01, D02, D03, or D04.
  – For system models 830, 840, SB2 and SB3, this disk unit must be located in position D31, D32, D33, or D34.

  Secondary Partition:
  – See 'Locating a Secondary Partition's Load Source From the Primary Partition's Console' in the *iSeries Service Functions* information
- Remote load source - A load source disk unit that is not a local load source.

  1. Display the disk unit status by performing the following:
     a. Select system service tools (SST).
        If you cannot get to SST, select dedicated service tools (DST) (see "Accessing Dedicated Service Tools" in the *iSeries Service Functions*).

        Note: If the customer is running applications on the system, do not power off the system or IPL the system to get to DST.

        If you cannot get to SST or DST, and the system fails during the IPL to DST, the local load source disk unit may be in the wrong location or in a failed state. SRCB1xx4504 is displayed during the IPL to DST if a functional load source disk unit is failing or not in one of the positions indicated by the local load source definition above.

Systems that have remote load source mirror protection can be recovered by using the steps in "Recover Remote Load Source" on page 827.

If you do know if this system has remote load source mirror protection, contact your next level of support.

b. Select the *Work with disk units* option on the Service Tools display.

c. Select the *Display disk configuration* option.

d. Select the *Display disk configuration status* option.

Does the failing disk unit have a status of "Suspended"?

No   **Yes**

↓   Go to step 15 of this procedure.

2. Does the disk unit that is mirrored to the failing disk unit have a status of "Suspended"?

Yes   **No**

↓   Go to step 12 of this procedure.

3. Is the failing disk unit the load source (disk unit 1)?

Yes   **No**

↓   Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

To save the data by copying to tape:
- Go to "Disk Unit Data Save and Initialize" on page 813.

To save the data by copying to another disk:
- Go to "Disk Unit Initialize and Disk to Disk Copy" on page 822.

4. Is the failing load source disk unit a local load source?

No   **Yes**

↓   Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

To save the data by copying to tape:
- Go to "Disk Unit Data Save and Initialize" on page 813.

To save the data by copying to another disk:
- Go to "Disk Unit Initialize and Disk to Disk Copy" on page 822.

5. You are at this step because the remote load source is failing and the local load source has a state of Suspended.

Perform the following to attempt to repair the local load source. Doing this procedure reduces the duration of the repair time.

a. Record the location of the local load source disk unit.

b. Exchange the local load source disk unit using concurrent maintenance for the model or FC that you are working on (see"Chapter 4. Removal and Installation Procedures" on page 593).

Was the disk unit exchanged successfully using the concurrent maintenance procedure?

No   Yes

↓   Go to step 8 of this procedure.

6. The following criteria was met which is why you are here:
   - The concurrent repair of the local load source disk unit did not succeed.
   - The system has remote mirrored load source protection.

   Ask the customer to stop all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

   Was the local load source disk unit exchanged using the dedicated maintenance procedures?

   No   Yes

   ↓   Go to "Recover Remote Load Source" on page 827.

   This ends the procedure.

7. Exchange the failing local load source disk unit by using the dedicated maintenance procedures for the model or FC that you are working on (see "Chapter 4. Removal and Installation Procedures" on page 593).

   After exchanging the disk unit, go to "Recover Remote Load Source" on page 827.

   This ends the procedure.

8. Perform the following:
   a. Select System Service Tools (SST).

      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. Select the *Work with disk units* option.
   c. Select the *Display disk configuration* option.
   d. Select the *Display non-configured units* option.

   Does the disk unit you just exchanged appear as a non-configured unit on the display?

   Yes   No

   ↓   It can take up to 5 minutes for the IOP to report the device to the system. Wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step of this procedure.

9. Format and initialize the disk unit by doing the following:
   a. Select the *Work with disk units* option on the Service Tools display.
   b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.
   c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.
   d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.
   e. On the display, select the disk unit you just installed.

f. Initialize and format the 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).

10. Perform the following:

   a. Return to the Work with Disk Unit Recovery display.

   b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.

   c. Select the configured disk unit to exchange, on the Select Configured Unit to Replace display.

   d. Select the replacement disk unit on the Select Replacement Unit display.

11. Return to the procedure that sent you here.

   This ends the procedure.

12. Is the disk unit that is mirrored to the failing disk unit, missing?

   Note: If a disk unit is missing, a note at the bottom of the display with an asterisk (*) indicates the unit missing from the configuration.

Yes	**No**
↓	Go to step 14 of this procedure.

13. **Ensure that the customer is not running any jobs before continuing with this step of the procedure**.

   Power off the system.

   Go to "LIC PIP11" on page 332 and use cause code 0002.

   If you cannot determine why the unit is missing, contact your next level of support.

   If you correct the missing disk unit problem, go to "Start Disk Service Here" on page 804 to locate and perform the correct recovery procedure.

   This ends the procedure.

14. Does the disk unit that is mirrored to the failing disk unit have a status of "Active"?

No	**Yes**
↓	Suspend mirrored protection on the failing disk unit by performing the following:
	a. Return to the *Work with disk units* menu.
	b. Select the *Work with disk unit recovery* option.
	c. Select the *Suspend mirrored protection* option.
	d. Follow the instructions on the display to suspend mirrored protection on the failing disk unit.

15. Record the disk unit location for later use.

   Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593). When finished, continue with the next step of this procedure.

   Note: If the concurrent procedure fails, go to step 20 of this procedure.

16. Perform the following:

   a. Select System Service Tools (SST).

   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. Select the *Work with disk units* option.

  c. Select the *Display disk configuration* option.

  d. Select the *Display non-configured units* option.

Does the disk unit that you just exchanged appear as a non-configured unit on the display?

Yes   No

↓   It can take up to 5 minutes for the IOP to report the device to the system. Wait a few minutes. Then, press F5 to refresh the display. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step of this procedure.

17. Format and initialize the disk unit by doing the following:

  a. Select the *Work with disk units* option on the Service Tools display.

  b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

  c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.

  d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.

  e. On the display, select the disk unit you just installed.

  f. Initialize and format the 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).

18. Perform the following:

  a. Return to the Work with Disk Unit Recovery display.

  b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.

  c. Select the configured disk unit that you are exchanging on the Select Configured Unit to Replace display.

  d. Select the replacement disk unit on the Select Replacement Unit display.

19. Return to the procedure that sent you here.

    This ends the procedure.

20. You are at this step because the disk unit-concurrent repair procedures did not work.

Is the failing disk unit a load source?

Yes   No

↓   Go to step 23 of this procedure.

21. Is the disk unit that is mirrored to the failing disk unit also a local load source?

No   Yes

↓   Go to step 23 of this procedure.

22. You are at this step because **all** of the following are true:

- The local load source disk unit is failing.
- Concurrent maintenance procedures did not work.
- Remote load source protection started.

Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

Go to "Recover Remote Load Source" on page 827.

This ends the procedure.

23. Ask the customer to end all applications that are running on the system and power the system off with the *Power Down System (PWRDWNSYS)* command.

    Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593). When finished, continue with the next step of this procedure.

24. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

25. Format and initialize the disk unit by doing the following:

    a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

    b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

    c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.

    d. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.

    e. On the display, select the disk unit you just installed.

    f. Initialize and format the 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).

26. Perform the following:

    a. Return to the Work with Disk Unit Recovery display.

    b. Select the *Replace configured unit* option on the Work with Disk Unit Recovery display.

    c. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.

    d. Select the replacement disk unit on the Select Replacement Unit display.

27. Perform the following:

    a. Return to the Use Dedicated Service Tools (DST) display.

    b. Select the *Perform an IPL* option to complete the IPL. The system copies data to the new disk unit during the IPL.

28. Return to the procedure that sent you here.

    This ends the procedure.

Resuming Mirrored Protection

Use this procedure to resume mirrored protection on suspended disk units.

1. Select the *Work with disk units* option on the System Service Tools (system service tool (SST)) display or on the Use Dedicated Service Tools (DST) display.

2. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

3. Select the *Resume mirrored protection* option on the Work with Disk Unit Recovery display.

4. On the Resume Mirrored Protection display, select the disk unit that you just replaced. It has a status of suspended.
5. Is the disk unit in an Independent ASP?

   No   **Yes**

   ↓   The disk unit that you selected will become active when the Independent ASP is varied on.

             This ends the procedure.

6. Are you in SST?

   No   **Yes**

   ↓   The disk unit that you selected will become active when the system is operational.

             This ends the procedure.

7. Perform the following:
   a. Return to the Use Dedicated Service Tools (DST) display.
   b. Perform an IPL.

      Note: The disk unit you selected becomes active during the IPL.

   This ends the procedure.

Disk Unit Data Save and Initialize

Note: To complete this procedure, you may need the latest set of Save System (SAVSYS) or SAVSTG tapes that were made before the problem occurred. You will also need three blank tapes.

1. Are you exchanging a disk unit because a disk unit failure caused system operations to stop completely?

   Yes   **No**

   ↓   You may be able to use the Remove Units from Configuration function of DST. This function allows you to move all data from the disk unit you want to exchange, to the other disk units in the same auxiliary storage pool (ASP).

              Go to step 20 of this procedure.

2. Perform an IPL to dedicated service tool (DST) (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

   Does the Use Dedicated Service Tools (DST) display appear?

   Yes   **No**

   ↓   If any messages regarding missing disk units appear, ignore the message and go to step 3 of this procedure.

              Repeat this step.

              If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 5 on page 814 of this procedure.

              If a different SRC occurs, use it to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59).

              This ends the procedure.

3. From the Use Dedicated Service Tools (DST) display, perform the following to save the customer data from the failing disk unit:

   a. Select the *Work with disk units* option.

   b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

   c. Select the *Save disk unit data* option on the Work with Disk Unit Recovery display.

   d. Select the disk unit that you want the data saved from on the Select Disk Unit Data to Save display.

      Record the ASP of the disk unit you are saving.

      If the disk unit is missing, you cannot save the customer data to tape at this time. Go to step 5 of this procedure.

   e. Install a tape in the tape unit.

   f. The Specify Volume Identifier prompt appears. Enter the volume identifier for the tape. Write down the tape volume identifier. You will use the tape volume identifier later in this procedure.

   g. The Select Tape Unit prompt appears.

      Select the tape unit that you loaded with a tape.

      Note: If the tape volume identifier you entered does not match the tape volume identifier on the tape you loaded, the Device Intervention Required prompt appears. The message "Wrong volume loaded" appears at the bottom of the display. Select the Format option and press the Enter key to continue the save operation.

      The Function Status display shows the percent of disk data saved.

   h. If the tape is full, the Device Intervention display appears. The message "Load next volume" appears at the bottom of the display.

      1) Insert the next tape into the tape unit.

      2) Select the option to retry and press the Enter key to continue the save operation.

   i. Continue saving the disk unit data until the status of the save is complete.

   Customer data is not recoverable if one of the following occurs:
   - The copy operation does not complete.
   - There is a large number of unreadable pages to copy from the disk unit.

   Continue with the next step of this procedure.

4. Does the display show that the status of the save is complete?

   No   Yes

   ↓   Perform the following:

            a. Power off the system.

            b. Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593).

            c. Go to step 7 of this procedure.

5. Have you already exchanged the storage IOA?

   Yes   No

   ↓   Perform the following:

a. Power off the system.

b. Exchange the storage IOA (see "Chapter 4. Removal and Installation Procedures" on page 593). If you do not know the part number, see "Type, Model, and Part Number list" on page 797.

c. Perform an IPL to dedicated service tools (DST) (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information). If the same SRC occurs, go to step 6 of this procedure. If a different SRC occurs, use it to correct the problem (see "Chapter 2. Unit Reference Codes" on page 59). If no SRC occurs, then the problem was solved by exchanging the IOA.

This ends the procedure.

6. Perform the following:

a. Power off the system.

b. Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593).

7. Did you just exchange disk unit 1 in the system unit?

No   Yes

↓   Go to step 11 of this procedure.

8. Format and initialize the new disk unit by doing the following:

a. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

If any messages regarding missing disk units appear, ignore the message.

b. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

c. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.

d. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.

e. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.

f. Select the disk unit on the display to initialize and format.

g. Press the F10 key on the confirmation display.

h. The system format and initializes the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).

9. Is most of the customer data recoverable (see step 3 of this procedure)?

Yes   No

↓   Go to step 18 of this procedure.

10. Restore the customer data from the tape to the new disk unit by doing the following:

a. Return to the Work With Disk Unit Recovery display.

b. Select the *Restore disk unit data* option from the Work with Disk Unit Recovery display.

c. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.

d. Install the first tape that the data was saved to in the tape unit.

e. Select the tape unit that you want the data restored from on the Select Tape Unit display.

f. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.

g. Press F10 to confirm the restore.

The Function Status display shows the percent of customer data restored.

The system will IPL to the *Use Dedicated Service Tools* (DST) display when the restore has completed.

> **Note:** Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

This ends the procedure.

11. Is the customer data recoverable (see step 3 of this procedure)?

Yes   No

↓   Go to step 15 of this procedure.

12. Perform an IPL from removable media and select the option to install Licensed Internal Code and restore disk unit data. (See "Installing Licensed Internal Code" in the *iSeries Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)

13. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

No   Yes

↓   You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.

b. Enter the password 22222222.

> **Note:** If this password is not valid, ask the customer for the correct password.

c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.

d. Select the Recover configuration data option on the Work with System Partitions display.

e. Select the Recover primary partition configuration data on the Recover Configuration Data display.

f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step of this procedure.

14. Restore the customer data from the tape to the new disk unit by doing the following:

a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.

b. Enter the password 22222222.

> **Note:** If this password is not valid, ask the customer for the correct password.

c. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

d. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.

e. Select the *Restore disk unit data* option on the Work with Disk Unit Recovery display.

f. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.

g. Install the first tape that the data was saved to in the tape unit.

h. Select the tape unit that you want the data restored from on the Select Tape Unit display.

i. Select the disk unit that you want the data restored to on the Restore Disk Unit Data display.

j. Press F10 to confirm the restore.

The Function Status display shows the percent of customer data restored.

> **Note:** When the load-source disk is restored, the system automatically performs an IPL to the Use Dedicated Service Tools (DST) display. This occurs after the restore operation completes.

When all customer data from the tape to the disk restores successfully, the display shows that the status of the restore operation is complete.

k. Press the Enter key to complete the restore operation.

l. Power off the system.

> **Note:** Any damaged objects that were restored must be loaded again by the customer (have the customer see the *Backup and Recovery* information).

The system is ready for the next IPL.

This ends the procedure.

15. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover configuration. (See "Installing Licensed Internal Code" in the *iSeries Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)

16. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

No   Yes

↓   You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

    a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.

    b. Enter the password 22222222.

>   **Note:** If this password is not valid, ask the customer for the correct password.

c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.

d. Select the Recover configuration data option on the Work with System Partitions display.

e. Select the Recover primary partition configuration data on the Recover Configuration Data display.

f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

Continue with the next step of this procedure.

17. The system ASP will be cleared because customer data was not recoverable.

Recover the configuration to disk unit 1 in the system unit by doing the following:

a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.

b. Enter the password 22222222.

   Note: If this password is not valid, ask the customer for the correct password.

c. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

d. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.

e. Select the *Recover configuration* option on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

   Notes:
   1) A warning message appears stating that recovering the configuration destroys all system data.
   2) If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit. Continue with the next step of this procedure.

f. Go to step 19 of this procedure.

18. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:

a. Return to the Work with Disk Units display.

b. Select the *Work with disk configuration* option.

c. Select the *Work with ASP configuration* option.

d. Select the *Delete ASP data* option.

e. Enter the *Delete* option for the ASP you recorded in step 3 of this procedure.

f. Confirm the Delete ASP Data.

g. Return to the Work with Disk Units display.

h. Select the *Work with disk unit recovery* option.

i. Select the *Replace configured unit* option.

j. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.

k. Select the replacement disk unit on the Select Replacement Unit display.

l. Press the Enter key to confirm the replace operation (this operation takes 10 to 15 minutes to complete).

Attention: The auxiliary storage pool to which the disk unit is assigned is erased. The customer must restore the data to the auxiliary storage pool (have the customer see the *Backup and Recovery* information).

19. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:

- If the disk unit you exchanged is in ASP 1, have the customer see the *Backup and Recovery* information. The customer must restore the operating system (OS/400 Licensed Program) and all customer data.

- If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the *Backup and Recovery* information.

This ends the procedure.

20. The remaining steps of this procedure require a dedicated system.

Have the customer do a normal power-off procedure of the system.

21. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

Is the IPL or Install the System display shown, or is DST available?

Yes **No**

↓ Go to step 2 of this procedure.

22. Select the *Use dedicated service tools (DST)* option on the display or use a function key. You need the customer password to get to the Use Dedicated Service Tools (DST) display.

23. Perform the following:

a. On the Use Dedicated Service Tools (DST) display, select the *Work with disk units* option.

b. Select the *Work with disk configuration* option.

c. Select the *Display disk configuration* option.

d. Select the *Display disk configuration status* option.

e. Record the ASP, unit, serial number, type, and resource name of the disk unit.

f. On the Display Disk Configuration Status display, ensure the following:

- The disk unit is not the load-source disk unit (disk unit 1).

- No disk units are missing from the configuration.

  Note: An asterisk (*) next to the unit number indicates a missing unit.

- The status field of the disk unit to be removed shows *Configured*.

Are all these conditions true?

Yes **No**

↓ You cannot use the Remove Units from Configuration function.

Go to step 2 of this procedure.

24. Perform the following:

a. Return to the Display Disk Configuration display.
b. Select the *Display disk configuration capacity* option.

Does the *% Used* field for the disk unit to be removed show an asterisk (*)?

No   **Yes**

↓   You cannot use the Remove Units from Configuration function.

       Go to step 2 of this procedure.

25. Return to the Work with Disk Units display.
26. Perform the following:
    a. On the Work with Disk Units display, select the *Work with disk unit recovery* option.
    b. Select the *Disk unit problem recovery procedures* option.
    c. Select the *Analyze disk unit surface* option.
    d. Select the disk unit to analyze.
    e. Press F10 to analyze the disk unit surface.
    f. Wait until the Analyze function is complete.

       Note: This takes several minutes.

    Is the number of pages with errors zero?

    Yes   **No**

    ↓   You cannot use the Remove Units from Configuration function.

           Go to step 2 of this procedure.

27. Return to the Work with Disk Units display.
28. Perform the following:
    a. On the Work with Disk Units display, select the *Work with disk configuration* option.
    b. Select the *Work with ASP configuration* option.
    c. Select the *Remove units from configuration* option.
    d. Select the disk unit to be removed.

       Note: If the disk unit does not display, go to step 2 of this procedure.
    e. If the Confirm Continuation display appears, press the Enter key to continue. Wait for the next display.
    f. If there is enough storage in the ASP, the Confirm Remove Disk Units display appears. If there is not enough storage, an error message display appears.

    Does any error message display appear?

    No   **Yes**

    ↓   Go to step 2 of this procedure.

29. Press the Enter key to verify the Remove Disk Units function.

    The Remove Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.

    Was the Remove Disk Units function successful?

    Yes   **No**

     ↓   Go to step 2 of this procedure.

30. On the Work with ASP Configuration display, select the *Display disk configuration capacity* option.

31. Press F11 twice to display non-configured units.

    Is the unit you removed shown as a non-configured unit?

    Yes   No

    ↓   Go to step 2 of this procedure.

32. Do you want to exchange the disk unit now?

    Note: You can exchange the disk unit at a later time because the disk unit is removed from the configuration.

    Yes   No

    ↓   **This ends the procedure.**

33. Perform the following:

    a. Power off the system.

    b. Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593).

34. Format and initialize the new disk unit by doing the following:

    a. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

    b. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

    c. Select the *Work with disk unit recovery* option on the Work with Disk Unit display.

    d. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.

    e. Select the *Initialize and format disk unit* option on the Disk Unit Problem Recovery Procedures display.

    f. Select the disk unit on the display to initialize and format.

    g. Press the F10 key on the confirmation display.

    h. The system initializes and formats the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).

35. In this step, you use the ASP, unit, serial number, type, and resource name information you recorded in step 23 of this procedure.

    Perform the following:

    a. Return to the Work with Disk Units display.

    b. On the Work with Disk Units display, select the *Work with disk configuration* option.

    c. Select the *Work with ASP configuration* option.

    d. Select the *Add units to ASPs* option.

    e. Specify the ASP from which the disk units were removed.

    f. Select the unit to add to the ASP.

    g. When the Confirm Add Units display appears, press the Enter key to continue. Wait for the next display.

36. The Add Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.

    Was the Add Disk Units function successful?

No   **Yes**

↓   On the Work with ASP Configuration display, select the *Display disk configuration capacity* option. The unit you added should be shown in the correct ASP.

       This ends the procedure.

37. Do you have more FRUs to exchange?

    No   **Yes**

↓   Go to step 33 of this procedure.

38. Ask your next level of support for assistance.

   This ends the procedure.

Disk Unit Initialize and Disk to Disk Copy

1. Perform an IPL to dedicated service tool (DST) (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

 Does the Use Dedicated Service Tools (DST) display appear?

 Yes   **No**

 ↓   Repeat this step.

      If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 14 on page 824.

      If a different SRC occurs, use it to correct the problem.

      This ends the procedure.

2. Is this a single disk unit system?

 No   **Yes**

 ↓   Perform "Disk Unit Data Save and Initialize" on page 813.

      This ends the procedure.

3. Is the failing disk unit the load-source disk unit?

 Note: Disk unit 1 contains the load-source disk unit.

      Yes   **No**

      ↓   Go to step 20 of this procedure.

4. Find another disk unit on the system.

5. Perform the following to install the new disk unit on the system:
   a. Power off the system.
   b. Slide the disk unit you found in step 4 of this procedure out of the system (see "Chapter 4. Removal and Installation Procedures" on page 593).
   c. Be very careful with the disk unit. You will install it again when the service actions to the failing load-source disk unit are complete.
   d. Install the new disk unit.

6. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

 Does the Use Dedicated Service Tools (DST) display appear?

 Yes   **No**

 ↓   Repeat step 1 of this procedure.

7. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive you installed in step 5 on page 822 of this procedure:

   a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

   b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

   c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.

   d. Select the *Initialize and format disk unit* option on the Problem Recovery Procedures display.

   e. Select the non-configured unit you installed in step 5 of this procedure as the unit to work with.

   f. Verify the initialization and formatting by pressing F10. The initialization and formatting may take 30 minutes or longer to complete.

   g. Return to the Work with Disk Unit Recovery display.

8. Perform the following to copy data from the load-source disk unit to the disk drive you installed in step 4 of this procedure:

   a. Select the *Copy disk unit data* option on the Work with Disk Unit Recovery display.

   b. Select the load-source disk unit (disk unit 1) as the unit to copy.

   c. Select the non-configured unit you installed in step 5 of this procedure as the unit to copy to.

   d. The console displays the percent of the data copied. If the number of unreadable pages displays, write down the number of unreadable pages. You will use the number of unreadable pages later in this procedure.

   e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:

      • The copy operation does not complete.

      • There is a large number of unreadable pages to copy from the disk unit.

      Continue with the next step of this procedure.

9. Perform the following to remove the failing load-source disk unit from the system:

   a. Power off the system.

   b. Find the load-source disk unit. Slide the disk unit out of the system (see "Chapter 4. Removal and Installation Procedures" on page 593).

10. Perform the following to move the new disk unit into the load-source disk unit location:

    a. Slide the disk unit at the location you found in step 4 on page 822 of this procedure out of the system (see "Chapter 4. Removal and Installation Procedures" on page 593).

    b. Be very careful with the disk unit. It contains the load-source data.

    c. Install the new disk unit into the location that used to contain the load-source disk unit.

11. Install the disk unit you removed in step 5 on page 822 of this procedure.

12. Were any pages unreadable during the copy operation?

    No   Yes

    ↓   Go to step 19 on page 825 of this procedure.

13. The system is ready for the next IPL.

    This ends the procedure.

14. Perform the following to remove the failing load-source disk unit on the system:

    a. Power off the system.

    b. Find the load-source disk unit. Slide the disk unit out of the system (see "Chapter 4. Removal and Installation Procedures" on page 593).

    c. Install the new disk unit.

15. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover the configuration. (See "Installing Licensed Internal Code" in the *iSeries Service Functions* information, which performs an IPL and installs the Licensed Internal Code.)

16. Did you get a Disk Configuration Error Report with a "*Unit has incorrect logical partition configuration*" warning?

    No   **Yes**

    ↓   You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure.

               Perform the following:

               a. Enter the *Use Dedicated Service Tools (DST)* option from the IPL or Install the System display.

               b. Enter the password 22222222.

                  Note: If this password is not valid, ask the customer for the correct password.

               c. Select the *Work with system partitions* option on the Use Dedicated Service Tools (DST) display.

               d. Select the *Recover configuration data* option on the Work with System Partitions display.

               e. Select the *Recover primary partition configuration data* option on the Recover Configuration Data display.

               f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter.

               g. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

                  Continue with the next step of this procedure.

17.

    The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by doing the following:

    a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.

    b. Enter the password 22222222.

       Note: If this password is not valid, ask the customer for the correct password.

    c. Select the Work with disk units option on the Use Dedicated Service Tools (DST) display.

d. Select the Work with disk unit recovery option on the Work with Disk Unit display.

e. Select the Recover configuration option on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

Notes:

a. A warning message appears stating that recovering the configuration destroys all system data.

b. If you have a system with only one disk unit, a message may appear stating that your request to recover the configuration was not successful. The recover configuration function cannot be performed on a system with only one disk unit.

Continue with the next step of this procedure.

18. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:

- If the disk unit you exchanged is in ASP 1, have the customer see the Backup and Recovery information. You must restore the operating system (OS/400 Licensed Program) and all customer data.

- If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the Backup and Recovery information.

This ends the procedure.

19. Perform an IPL from removable media and restore the Licensed Internal Code (see "Restoring Licensed Internal Code" in the *iSeries Service Functions* information). This information shows you how to perform an IPL and restore the Licensed Internal Code.

Note: Some objects may be damaged. The customer may have to load the damaged objects again (see the *Backup and Recovery* information).

This ends the procedure.

20. Is the failing unit missing from the configuration?

No   Yes

↓   Go to step 31 of this procedure.

21. Find another disk unit on the system, other than the load-source disk unit.

22. Perform the following to install a new disk unit on the system:

a. Power off the system.

b. Slide the disk unit you found in step 21 of this procedure out of the system (see "Chapter 4. Removal and Installation Procedures" on page 593).

c. Be very careful with the disk unit. You will install it again when the repair actions to the failing disk unit are complete.

d. Install the new disk unit.

23. Perform an IPL to DST (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

Does the Use Dedicated Service Tools (DST) display appear?

Yes   No

↓   Repeat step 1 of this procedure.

24. From the Use Dedicated Service Tools (DST) display, perform the following to format and initialize the disk drive you installed in step 22 of this procedure:

   a. Select the *Work with disk units* option on the Use Dedicated Service Tools (DST) display.

   b. Select the *Work with disk unit recovery* option on the Work with Disk Units display.

   c. Select the *Disk unit problem recovery procedures* option on the Work with Disk Unit Recovery display.

   d. Select the *Initialize and format disk unit* option on the Problem Recovery Procedures display.

   e. Select the non-configured disk unit you installed in step 22 of this procedure as the unit to work with.

   f. Verify the initialization and formatting by pressing F10. The initialization and formatting may take 30 minutes or longer to complete.

   g. Return to the Work with Disk Unit Recovery display.

25. Perform the following to copy data from the failing disk drive to the disk drive you installed in step 22 on page 825 of this procedure:

   a. Select the *Copy disk unit data* option on the Work with Disk Unit Recovery display.

   b. Select the failing unit as the unit to copy.

   c. Select the non-configured unit you installed in step 22 on page 825 of this procedure as the unit to copy to.

   d. The console displays the percent of the data copied. If the number of unreadable pages displays, write down the number of unreadable pages. You will use the number of unreadable pages later in this procedure.

   e. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:

      • The copy operation does not complete.

      • There is a large number of unreadable pages to copy from the disk unit.

      Continue with the next step of this procedure.

26. Perform the following to remove the failing disk unit on the system:

   a. Power off the system.

   b. Find the failing disk unit. Slide the disk unit out of the system.

27. Perform the following to move the new disk unit into the location that held the failing disk unit:

   a. Remove the new disk unit from the location you found in step 21 on page 825 of this procedure. Be very careful with the disk unit. It contains the disk unit data.

   b. Install the new disk unit into the location that contained the failing disk unit. You removed the failing disk unit in step 26 of this procedure.

28. Install the disk unit you removed in step 22 on page 825 of this procedure.

29. Were any pages unreadable during the copy operation?

   No   Yes

   ↓   Some objects may be damaged. The customer may have to load the damaged objects again. Have the customer see the *Backup and Recovery* information.

           This ends the procedure.

30. The system is ready for the next IPL.

    This ends the procedure.

31. Are there multiple failing disk units under the same IOA?

    No   Yes

    ↓   Perform the following:

           a. Power off the system.

           b. Exchange the storage IOA (see "Chapter 4. Removal and Installation Procedures" on page 593). If you do not know the part number, see "Type, Model, and Part Number list" on page 797.

           c. Go to step 1 of this procedure.

32. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:

    a. Return to the Work with Disk Units display.

    b. Select the Work with disk configuration option.

    c. Select the Work with ASP configuration option.

    d. Select the Delete ASP data option.

    e. Enter the Delete option for the ASP you recorded in step 3 on page 822 of this procedure.

    f. Confirm the Delete ASP Data.

    g. Return to the Work with Disk Units display.

    h. Select the Work with disk unit recovery option.

    i. Select the Replace configured unit option.

    j. Select the configured disk unit to exchange on the Select Configured Unit to Replace display.

    k. Select the replacement disk unit on the Select Replacement Unit display.

    l. Press the Enter key to confirm the replace operation (this operation takes 10 to 15 minutes to complete).

       Attention: The auxiliary storage pool to which the disk unit is assigned is erased. The customer must restore the data to the auxiliary storage pool (have the customer see the Backup and Recovery information).

33. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:

    • If the disk unit you exchanged is in ASP 1, have the customer see the Backup and Recovery information. You must restore the operating system (OS/400 Licensed Program) and all customer data.

    • If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See the Backup and Recovery information.

    This ends the procedure.

DST Procedures

Recover Remote Load Source

Definitions:

• Local load source - A disk used as the source for IPL data.

  Primary Partition:

  – For system models 270 and 820, this disk unit must be located in position D01, D02, D03, or D04.

– For system models 830, 840, SB2 and SB3, this disk unit must be located in position D31, D32, D33, or D34.

Secondary Partition:

– See 'Locating a Secondary Partition's Load Source From the Primary Partition's Console' in the *iSeries Service Functions* information.

- Remote load source - A load source disk unit that is not a local load source.

  1. Have you exchanged the local load source disk unit?

     Yes   No

     ↓   Exchange the failing disk unit (see "Chapter 4. Removal and Installation Procedures" on page 593 and perform "Disk Unit - Concurrent" for the model or FC that you are working on).

  2. Perform an alternate IPL to dedicated service tool (DST) (Type D IPL) (see "Dedicated Service Tools (DST)" in the *iSeries Service Functions* information).

     The Install Licensed Internal Code display appears on the system console.

  3. Select the *Install Licensed Internal Code* option (see "Install Licensed Internal Code Utility" in the *iSeries Service Functions* information).

     When the install is complete, the system automatically performs an IPL from disk. The Disk Configuration Attention Report displays. Press F3 to exit to Dedicated Service Tools (DST). **Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover Remote Load source procedure.**

     Note: At this time, the load source disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

  4. Did you get a Disk Configuration Error Report with a "Unit has incorrect logical partition configuration" warning?

     No   Yes

     ↓   You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:

            a. Enter the Use Dedicated Service Tools (DST) option from the IPL or Install the System display.

            b. Enter the password 22222222.

               Note: If this password is not valid, ask the customer for the correct password.

            c. Select the Work with system partitions option on the Use Dedicated Service Tools (DST) display.

            d. Select the Recover configuration data option on the Work with System Partitions display.

            e. Select the Recover primary partition configuration data on the Recover Configuration Data display.

            f. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and correct system serial number and press enter.

            g. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL. The Disk Configuration Attention Report displays. Press F3 to exit to

Dedicated Service Tools (DST). Do not select F10 from the Disk Configuration Attention Report display when you are performing this Recover Remote Load source procedure.

Note: At this time, the load source disk is the only configured disk unit in the system. The following steps ensure that the destruction of customer data and programs will not occur.

Continue with the next step of this procedure.

5. Select the *Start the Dedicated Service Tools* option.
6. Sign on to DST.

   Use 22222222 as both the used ID and password. If the customer has changed the ID or password, ask the customer for the correct values.

7. Select the *Work with disk units* option.
8. Select the *Work with disk unit recovery* option.
9. Select the *Recover Mirrored Load source* option.

   This function, checks the disk units that are attached to the system. If remote mirroring became enabled and a mirror protected, load source disk unit is located, a confirmation display appears. If a mirror protected, load source disk unit is not located, an error display appears.

10. After the confirmation display appears, press F10 to confirm the selection and begin the recover function.

    While the Recover Remote Load source function is running, SRC C6xx 4205 (xx represents the percentage of recovery completed) displays on the system control panel.

    When the Recover Remote Load source function completes. The system automatically performs an IPL from disk to the IPL or Install the System display. All of the system data, user data, and user ASPs are now available to the system.

    This ends the procedure.

Copy the Contents of LIC Log

Attention: The file does not close until you select the *End Licensed Internal Code* option. If you remove the tape or diskette before selecting this option, do not use the information that is on the tape or diskette.

1. Select the *Start a Service Tool* option on the Use Dedicated Service Tools (DST) display.
2. Select the *Licensed Internal Code log* option.
3. Select either:
   - Dump entries to tape from the LIC log
   - Dump entries to diskette from the LIC log
4. Perform the following:
   a. At the bottom of the Dump entries to tape (or diskette) from LIC log display, type a 3 (Dump entry header and complete entry).
   b. Press the Enter key.
5. The system will prompt you through the remainder of the displays that are used in this procedure.

   When the copy of the LIC log contents finishes, a message appears indicating that the dump (copy) completed.
   a. Press the Enter key.

b. Select the *End Licensed Internal Code* option.

Note: Remember that the file does not close until you select the *End Licensed Internal Code* option.

This ends the procedure.

Verifying the Repair

1. Were you sent here after completing a concurrent maintenance procedure?

   No   **Yes**

   ↓   Go to "Verify Concurrent Repair" on page 831.

           This ends the procedure.

2. Go to "Verify Dedicated Repair".

   This ends the procedure.

Verify Dedicated Repair

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. Select the IPL type and mode that the customer uses (see *iSeries Service Functions* in "Powering On and Powering Off the System and Logical Partitions" on page 832).

   Note: If you select Normal mode when you power on the system, the *Dedicated service tools* option will not be shown.

3. Start an IPL by powering on the system (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

   Did the system complete the IPL?

   Yes   **No**

   ↓   This may be a new problem. Go to "Starting Point for All Problems" on page 4.

           This ends the procedure.

4. Use the service action log to look for any system reference codes (system reference code (SRC)) that are related to this IPL (see "Using the Service Action Log" on page 9).

   Are there any SRCs that are related to this IPL?

   Yes   **No**

   ↓   Perform the "Verification Procedures" (in the Hardware Service Manager chapter) in the *iSeries Service Functions* information to verify that the problem is corrected.

           The verification procedures only cover removable media, communications and diskette problems.

           Then return the system to the customer.

           Ensure that the customer verifies the system date and time.

           This ends the procedure.

5. Is the SRC the same as the original SRC?

Yes   No

↓   A new symptom may have occurred.

       Use the SRC information and go to "Chapter 2. Unit Reference Codes" on page 59 to determine the cause of the problem.

       This ends the procedure.

6. Are there any other failing items that remain to be exchanged?

    Yes   No

    ↓   Ask your next level of support for assistance.

       This ends the procedure.

7. Exchange the next failing item listed for this URC.

    This ends the procedure.

Verify Concurrent Repair

1. Was concurrent maintenance just performed on an optical storage unit?

    No   Yes

    ↓   The Product Activity Log, in most cases, contains an SRC for the optical storage unit after concurrent maintenance.

       Perform the "Verification Procedures" in the *iSeries Service Functions* information to verify that the problem is corrected.

       Then return the system to the customer.

       Ensure that the customer verifies the system date and time.

       This ends the procedure.

2. Use the service action log to look for any new SRCs (see "Using the Service Action Log" on page 9).

    Are there any new SRCs?

    No   Yes

    ↓   Go to step 6 on page 832 of this procedure.

3. Are you working with a tape device?

    No   Yes

    ↓   Perform the "Verification Procedures" in the *iSeries Service Functions* information, to verify that the problem is corrected.

       After the verification test has completed, the tape device description will be set to the *"Failed"* state because a resource change was detected. You will need to vary the tape device description off and back on before it can be used.

       Then return the system to the customer.

       Ensure that the customer verifies the system date and time.

       This ends the procedure.

4. Are you working with an IOP or an IOA?

    No   Yes

    ↓   Use the display hardware configuration service function to check for any missing or failed hardware.

To display missing or failed hardware perform the following:

a. On the command line, enter 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*.

d. On the Start a Service Tool display, select the *Hardware service manager*.

e. On the Hardware Service Manager display, select *Logical hardware resources*.

f. On the Logical Hardware Resources display, select *System bus resources*.

g. Select the function keys for *failed or non-reporting resources*.

If the IOP or IOA that you just replaced is a *failed* or *non-reporting resource*, the problem has not been fixed. Continue to the next failing item in the failing item list.

This ends the procedure.

5. Perform the Verification Procedures in the *iSeries Service Functions*, to verify that the problem is corrected.

   Resources which normally vary on automatically during IPL or which were previously varied on manually, may need to be varied back on after Verification Procedures have been completed. Then return the system to the customer.

   Ensure that the customer verifies the system date and time.

   This ends the procedure.

6. Is the SRC the same as the original SRC?

   Yes   No

   ↓   A new symptom may have occurred.

          Use the SRC information and go to "Chapter 2. Unit Reference Codes" on page 59 to determine the cause of the problem.

   This ends the procedure.

7. Are there any other failing items that remain to be exchanged?

   Yes   No

   ↓   Ask your next level of support for assistance.

   This ends the procedure.

8. Exchange the next failing item listed for this URC.

   This ends the procedure.

Powering On and Powering Off the System and Logical Partitions

Powering On the System

1. Open the control panel cover.
2. Press the Power (white) button on the control panel.

3. The Power On light starts blinking at the fast rate of one blink per second as the system is powered on. The light stops blinking and stays on when power on is complete.

4. If the system has multiple partitions, some secondary partitions may not power on if they have been configured to *"Hold"*. To determine if a secondary partition has been configured to *"Hold"* check the *"Sys IPL Action"* for the partition on the *Work with partition status* screen. See *iSeries Service Functions*. If you need to IPL a secondary partition with a *"Sys IPL Action"* of *"Hold"* see "Powering On a Secondary Partition".

   This ends the procedure.

Powering On a Secondary Partition

Attention: Powering on a secondary partition will not power on any expansion I/O towers that the logical partition owns. If it is necessary to power on expansion towers owned by the secondary partition, use the "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836 before powering on the secondary partition.

1. Go to the console of the Primary partition.

2. From the *Use Dedicated Service Tools (DST)* screen select the *Work with system partitions* option.

3. At the *Work with system partitions* screen:

   a. Select *Work with Partition Status*.

   b. Select the *Power On* option next to the logical partition that you want to IPL and press enter.

Powering Off the System

Attention: Power off and power on of a system with multiple partitions are different than a system with a single partition. Read and understand the power off and power on procedures referenced when a procedure directs you to power on or power off a system or partition.

If the system is operating under Dedicated Service Tools (DST), power off the system by selecting the *Power off the system* option on the Start a Service Tool display.

If the system is operating under OS/400, enter the **PWRDWNSYS** command to power off the system.

Note: For consoles that run Client Access, a delayed power-off operation by using the **PWRDWNSYS** command is required. You **must** stop all applications, including console applications, and subsystems that are running, before the delayed power-off operation is complete.

If you cannot use these methods, you can power off the system by using the "Control Panel Power Button" procedure.

Control Panel Power Button

Attention: Using the control panel Power push-button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

1. Open the control panel cover.

2. The system must be in Manual mode to power off. To select Manual mode, see *iSeries Service Functions*.

3. Press the Power button (white) on the control panel.

   The Data-Function display shows **O?** (the international power-off symbol).
4. Press the Power button (white) on the control panel again.

   Note: To cancel the power-off operation, do not press the Power button a
   second time. Instead, press any other control panel button.
5. The Power On light starts blinking at the fast rate of one blink per second as
   the system powers off. The light starts blinking at the slow rate of one blink
   per three seconds when the power-off operation is complete.

   Does the system power off successfully?

   No   Yes

   ↓   This ends the procedure.
6. Perform the following:

   a. Press the ↑ or the ↓ button until function 08 is shown in the Function
      display.
   b. Press the Enter button.
   c. SRC A100 8008 is on the Data display.
7. Press the Power button (white) on the control panel.

   The Data-Function display shows **O?** (the international power-off symbol).
8. Press the Power button (white) on the control panel again.

   The system powers off, and the Power On light blinks at the slow rate of one
   blink per three seconds.

   Note: To cancel the power-off operation, do not select function 08. Instead,
   press any other control panel button.

   This ends the procedure.

Powering Off a System With Multiple Logical Partitions
Determine if the system must be powered off or if only the secondary partition
that you are servicing must be powered off by using the following table as a guide.

The Service Action is:	Go to:
A power or system power control network problem.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console" on page 835.
A processor, system storage or processor clock problem.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console" on page 835.
A problem with any resource owned by the Primary partition.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console" on page 835.
The SRC came from the system control panel.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console" on page 835.

The Service Action is:	Go to:
The part to remove or install or isolate is in the system unit. The part to remove or install or isolate is in the system expansion unit.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console".
The part to remove or install or isolate is in an expansion tower. • AND The expansion tower can be powered down using the Hardware Service Manager in the **Secondary** partition that you are servicing.	Power off the secondary partition using the "Powering Off a Secondary Partition" on page 836, then power off the expansion tower using the "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836.
The part to remove or install or isolate is in an expansion tower. • AND The expansion tower cannot be powered off from the secondary partition that owns it. The tower can only be powered off using the Hardware Service Manager in the **Primary** partition.	Power off the secondary partition using the "Powering Off a Secondary Partition" on page 836, then power off the expansion tower using the "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure" on page 836.
Powering off a secondary partition failed.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console".
From the Primary partition you were instructed to power down the system.	"Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console".

Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console

Attention: This procedure will result in powering off the entire system including all secondary partitions. Be certain that all secondary partitions are able to be powered off at this time. Do not continue with this procedure until the customer will allow all logical partitions to be powered off.

Note: Abnormal IPL's in the secondary partitions can result from powering off the Primary partition. To avoid abnormal IPLs in secondary partitions, power off all secondary partitions, when possible, before powering off the Primary partition.

If the Primary partition is under Dedicated Service Tools (DST), power off the system from the Primary partition by selecting the *Power Off the System* option on the *Start a Service Tool (SST)* display of the Primary partition's console.

If the Primary partition is operating under OS/400, from the Primary partition's console enter the *PWRDWNSYS* command to power off the system.

If you cannot use these methods, you can power off the system by using the procedure"Control Panel Power Button" on page 833.

Note: For consoles on the Primary partition that run Client Access, a delayed power-off operation by using the *PWRDWNSYS* command is required. You

must stop all applications, including console applications, and subsystems that are running in **all** logical partitions, before the delayed power-off operation is complete.

Attention: Using the control panel power push-button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

Powering Off a Secondary Partition

Attention: Powering off a secondary partition will not power off any expansion tower(s) that the partition owns. If it is necessary to power off the expansion tower(s) owned by the secondary partition, use the "Expansion Tower and SPCN Controlled Expansion Unit Power Procedure". Power off the secondary partition(s) before powering off the expansion tower(s) owned by the logical partition(s).

If the secondary partition is operating under Dedicated Service Tools (DST), power off the logical partition by selecting the *Power Off the System* option on the *Start a Service Tool (SST)* display of the secondary partition's console.

Note: To locate the secondary partition's console or alternative console, see *iSeries Service Functions*.

If the secondary partition is operating under OS/400, from the logical partition's console enter the *PWRDWNSYS* command to power off the secondary partition.

Note: For consoles on the secondary partition that run Client Access, a delayed power-off operation by using the *PWRDWNSYS* command is required. You **must** stop all applications, including console applications, and subsystems that are running in the **secondary** partition before the delayed power-off operation is complete.

If the secondary partition fails to power off **or** if the console of the secondary partition is not functioning:

1. Go to the console of the Primary partition.
2. From the *Use Dedicated Service Tools (DST)* screen, select the *Work with System Partitions* option.
3. At the *Work with System Partitions* screen:
   a. Select the *Work with Partition Status* option.
   b. Select the *Power off Delayed* option and press enter.

   If the secondary partition fails to power off then go to "Powering Off a System with Multiple Logical Partitions Using the Control Panel or Primary Partition's Console" on page 835.

Expansion Tower and SPCN Controlled Expansion Unit Power Procedure

Attention: If there is an SPD migrated tower on the HSL loop with this tower, then follow this procedure very carefully. This procedure will help you determine if the SPD migrated tower is the next tower (leading link) or the previous tower (trailing link) from this tower on the loop. Powering down a tower when the next tower or the previous tower on the loop is an SPD migrated tower will cause a machine check that will crash the entire system.

Note: If the system has logical partitions, then all operations on the console refer to the console of the logical partition in which you are working.

Note: To locate a secondary partition's console go to *iSeries Service Functions*.

Use this procedure only to power off an expansion tower or unit when you are performing one of the following:

- Removing or replacing a failing part within an expansion tower or unit.
- Adding, moving, removing, or replacing a failing item within an expansion tower or unit.

Do not use this procedure on the system unit or the system unit's integrated expansion unit. For system units and system unit integrated expansion units use the "Powering On and Powering Off the System and Logical Partitions" on page 832 procedure.

Do not use this procedure to replace disk units that are supported under device concurrent maintenance. Use device concurrent maintenance instead.

Do not use this procedure on FC 503x, FC 5076 and FC 5077 SPD migrated towers. For those towers, use the "Powering On and Powering Off the System and Logical Partitions" on page 832 procedure.

Do not use this procedure for Feature code 504x towers. If you are powering off a 504x tower, then power off the system unit. Go to "Powering On and Powering Off the System and Logical Partitions" on page 832.

Attention: Perform this action only with the assistance of the customer.

1. Is the expansion tower or unit a FC 5074, 5079?

    Yes   No

    ↓   The expansion tower or unit cannot be configured as "switchable" under HSL OptiConnect. Go to step 9 on page 838 of this procedure.

2. Determine if the tower is configured as a switchable tower under iSeries 400 OptiConnect for high-speed link (HSL). To determine this: ask the customer or refer to "Service Reference Procedures" in the *iSeries Service Functions* information.

    Is the tower configured as a switchable tower?

    Yes   No

    ↓   The expansion tower or unit is privately owned by this system. Go to step 9 on page 838 of this procedure.

3. Determine if the system which controls the SPCN for this tower is also the system which owns the tower's HSL I/O bridge resource. To determine this, refer to the "Service Reference Procedures" in the *iSeries Service Functions* information.

    Is the tower's SPCN controlling system the same as the tower's HSL I/O bridge owner?

    No   Yes

    ↓   Go to step 7 on page 838 of this procedure.

4. Is the tower's SPCN controlling system already IPL'd and running OS/400 or DST?

Yes   No

↓   You cannot power off the tower at this time. The SPCN controlling system must be running OS/400 or at SST/DST to power off the tower. Correct that problem first, then perform this procedure again.

This ends the procedure.

5. Work with the customer to switch ownership of the tower's HSL I/O bridge resource to the tower's SPCN controlling system. To do this use the *OptiConnect for OS/400* information.

Were you able to switch ownership of the tower's HSL I/O bridge resource to the tower's SPCN controlling system using the *OptiConnect for OS/400* information?

No   Yes

↓   Go to step 7 of this procedure.

6. Working with the customer, use Hardware Service Manager (HSM) to switch ownership of the tower's switchable resources to the tower's SPCN (Power) controlling system. To do this use the ″Service Reference Procedures″ in the *iSeries Service Functions* information.

Were you able to switch ownership of the tower's switchable resources to the tower's SPCN (Power) controlling system using the ″Service Reference Procedures″ in the *iSeries Service Functions* information?

Yes   No

↓   Contact your next level of support.

This ends the procedure.

7. Perform this procedure from the SPCN controlling system's Primary partition until you are directed to do otherwise.

Work with the customer to end the Cluster Resource Group (CRG) containing DASD units configured as independent ASPs (IASP) under the tower's HSL I/O Bridge resource. Refer to the *OptiConnect for OS/400* information.

Were you able to end the CRG using the *OptiConnect for OS/400* information?

No   Yes

↓   Go to step 9 of this procedure.

8. Working with the customer, use Hardware Service Manager to switch the towers mode to **Private** using the ″Service Reference Procedures″ in the *iSeries Service Functions* information.

Were you able to to switch the towers mode to **Private** using the ″Service Reference Procedures″ in the *iSeries Service Functions* information?

Yes   No

↓   Contact your next level of support.

This ends the procedure.

9. Check to see that no other towers, controlled by this system's SPCN, are powered off at this time. Perform "BUS PIP HSL-05" on page 286, then return here and continue with the next step of this procedure.

Attention: During this procedure only one tower connected to this system can be powered off! You must not have more than one tower powered off at any given time during this service action!

10. Using table "Appendix F. HSL Loop Configuration and Status Form" on page 873, identify the tower that you are working on. Look at the ″Link

status" of the other rows to see if there are any "*failed*" links, **other** than the links that you recorded for the tower that you are working on.

Are there any **other** *failed* links that are **not** associated with the tower that you are working on?

Yes   No

↓   Go to step 12 of this procedure.

11. Using table "Appendix F. HSL Loop Configuration and Status Form" on page 873, look to see if there are any *operational* links between this tower and a *failed* link.

    Are there any such *operational* links?

    No   Yes

    ↓   You can **not** use this procedure to power off the tower. Doing so will cause resources to be lost and a possible system failure. You **must** power down the system to continue working on this tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    This ends the procedure.

12. Examine table "Appendix F. HSL Loop Configuration and Status Form" on page 873, to determine if the tower that you are working on is linked to an SPD migrated tower (FC 5033, 5034, 5035, or 5077).

    Is an SPD migrated tower (FC 5033, 5034, 5035, or 5077), the **next link** (leading or trailing) from the tower that you are working on?

    No   Yes

    ↓   You can **not** use this procedure to power off the tower. Doing so will cause a system failure. You **must** power down the system to continue working on this tower (see "Powering On and Powering Off the System and Logical Partitions" on page 832).

    This ends the procedure.

13. Are you working in a **FC 5079** expansion tower or unit?

    No   Yes

    ↓   Power off **only** the expansion tower or unit (FC 5074) that you are servicing.

            Attention: Only one expansion tower inside the 1.8 meter rack may be powered off at any given time!

            Continue with step 14 of this procedure.

14. Were you directed to power off the tower to set the SPCN configuration ID?

    No   Yes

    ↓   Go to step 17 on page 840 of this procedure.

15. Verify that the "type numbers" (ie; IOPs, IOAs, etc.) contained in the expansion tower or unit that you are powering off, matches what is shown on the system by performing the following:

    a. From the SST or DST menu, select the *Start a service tool* option.

    b. Select the *Hardware service manager* option.

    c. Select the *Packaging Hardware Resources (systems, frames, cards, etc.)* option.

Note: If you have only the resource name, select the *Locate Resource by Resource Name* option and display the *Associated packaging resource(s)* for the selected resource. Use the Frame ID shown for the selected resource in step 15d.

  d. Select the *Hardware contained within package* option for the Frame ID of the Expansion Unit. Ensure that all of the resources displayed match the resources in the expansion tower or unit that you are powering off.

16. Work with the customer to end all bus activity in the tower by performing one of the following:

Note: If multiple logical partitions own IOPs on the bus, then the customer will be directed to end all of the bus activity in each of those partitions.

- If the expansion tower or unit does not contain disk unit IOPs, work with the customer to end all jobs and vary off all devices, lines, and controllers for that expansion tower or unit.
- If the expansion tower or unit contains disk unit IOPs and the disk units are **not** mirrored to disk units in other expansion towers or units, work with the customer to end all communications activities to these disk units by ending all subsystems.
- If the expansion tower or unit contains disk unit IOPs and these disk units **are** mirrored to disk units in other expansion towers or units, you do not need to end all subsystems. Mirroring will assist during the service action.
- If the system has a non-redundant (single hub configuration) OptiConnect bus, work with the customer to end all jobs and vary off the QSOC resources on the affected system.

  Note: Use the WRKOPCACT command to work with the QSOC resources on the affected system.

- If the system has a redundant (dual hub configuration) OptiConnect bus, you do not need to end subsystems or vary off the resources. Redundancy will assist during the service action.

17. Power off the expansion tower or unit by performing the following:

Attention: If any console for a logical partition resides on the bus that you are powering off, then powering off the bus will result in the loss of that partition's console. **If this condition exists** for the partition that you are working in, you will need to perform this procedure from the primary partition's console.

  a. Use the system console and get to the SST or DST menu. Select the *Start a service tool* option.
  b. Select the *Hardware service manager* option.
  c. Select the *Packaging Hardware Resources (systems, frames, cards etc.)* option.
  d. From the Packaging Hardware Resources display, specify the *Concurrent Maintenance* option for the expansion tower or unit that you are powering off, then press the power off **PF** key.

  Note: If resources on the bus or buses are active, you will receive a message indicating which resources are in use and the expansion tower or unit will not power off. Return to step 16 of this procedure and ensure that all resources on the bus are varied off. Follow the instructions on the screen for locating the active resources and varying them off.

> **Note:** If the system has logical partitions and multiple logical partitions own IOPs on the bus, then you must do the power off from the Primary partition's console. When instructed to power on the expansion tower or unit, do it from the console of the Primary partition.

e. The *"Confirm Power Off"* display appears. Follow the instructions on the display.

> **Note:** You may be directed to perform a function 68 to power the tower down **and** a function 69 to power the tower back on, or you may be directed to do only a function 69 to power the tower back on. **Make a note of what you were instructed to do at this time!** You will need this information to complete the repair.

Ensure that the frame ID displayed is correct for the expansion tower or unit that you intend to power off, and press the Enter key.

f. Wait for the expansion tower or unit to power off. This may take up to 15 minutes depending on the I/O configuration and number of buses in the system power control network.

When the power off action is initiated, DST reports that the expansion tower or unit is powered off successfully. However, to ensure that the expansion tower or unit is actually powered off; verify that **one** of the two air moving devices (AMD) in the expansion tower or unit has stopped and that the power LED indicator on the expansion tower or unit control panel is off.

> **Note:** If the expansion tower or unit contains disk IOPs, an attention SRC may appear on the control panel. Note the following:
> - Ignore the SRCs if the expansion tower or unit completes the power off procedure.
> - If the expansion tower or unit does not power off in the maximum time allowed, the system may be hung. You must power off the entire system from the control panel to do the repair.

18. Were you directed to power off the tower to set the SPCN configuration ID?

   No   **Yes**

   ↓   You can now set the configuration ID in the Tower Card. When you are instructed to power the tower on, go to step 28b on page 842 of this procedure.

19. Is this an expansion tower with AC power cords connected from this tower's AC input/charger to an SPCN controlled expansion unit? (For example: an FC 5078/0578 PCI expansion unit)?

   Yes   **No**

   ↓   This expansion tower or unit can be serviced without affecting an SPCN controlled expansion unit. Go to step 26 on page 842 of this procedure.

20. Servicing this expansion tower may affect an SPCN controlled expansion unit that is receiving AC power from this tower. Continue with the next step in this procedure.

21. You may be able to maintain AC power to the expansion unit and remove power from this expansion tower so that you can service this tower. The following steps will help you to determine what you can do.

22. Are you here to exchange the AC input/charger, any of the device boards or the power board?

Yes   No

↓   You can main maintain AC power to the expansion unit while you are servicing this tower. When the expansion tower is powered off, open the rear cover and trace the AC jumper cords from the three power supplies to the AC Input Charger. Then disconnect them at the AC charger. Power is now removed from the components that you will be working with or near. Go to step 27 of this procedure.

23. You must search for an alternate AC power source for the expansion unit. An adapter cord for AC wall power outlets may be available at the customer site or an alternate expansion tower with AC power outlets may be close enough to the expansion unit, for the expansion unit's AC power cords to reach. Continue with the next step in this procedure.

24. Can you find an alternate AC power source for the expansion unit?

No   Yes

↓   Move only one of the expansion unit's AC power cords at a time to the alternate AC power source to prevent the expansion unit from loosing AC power. When you have completed moving both AC power cords to the alternate AC power source then go to step 26 of this procedure.

25. You must power off the system to service this tower. Do **not** attempt to power off the expansion unit. You **must** power on this expansion tower and then, use dedicated service to power off the system for the FRU you are exchanging. Go to step 28 of this procedure, to power on this expansion tower.

26. When the expansion tower or unit is powered off, disconnect the power cord.

27. Remove or install the part, then continue with the next step.

    Notes:

    a. Ensure that you replace the failing IOP, IOA, or feature card with the same type and model.

    b. When IOPs and feature cards are moved or removed, ensure that the configuration rules are followed. (For example, two empty card positions are not allowed between IOPs or feature cards.)

28. Perform the following:

    a. Reconnect the AC power cord that you disconnected in step 26 or the power supply cords that you disconnected in step 22 of this procedure.

       Note: The tower will automatically power on however, you will need to finish the steps in this procedure to complete the power on and restore the system to normal operation.

    b. Were you instructed to perform a function 69 to power the tower on?

       Yes   No

       ↓   Go to step 28f on page 843 of this procedure.

    c. Are you working on a system that has multiple partitions?

       Yes   No

       ↓   Perform the function 69 (with the control panel set to Manual Mode) from the control panel (See "Control Panel Functions" in the *iSeries Service Functions* information). Then, go to step 29 on page 843 of this procedure.

d. Are you working in the Primary partition?

   No **Yes**

   ↓ Perform the function 69 (with the control panel set to Manual Mode) from the control panel (See "Control Panel Functions" in the *iSeries Service Functions* information). Then, go to step 29 of this procedure.

e. Perform function 69 from the *Work with partition status* screen in the Primary partition. Then, go to step 29 of this procedure.

f. If the Packaging Hardware Resources display is available, specify the *Power on* option for the expansion tower or unit you were working on and press the Enter key.

g. If the Packaging Hardware Resources display is **not** available, select (with the control panel set to Manual Mode) the SPCN control panel function to power on the expansion tower or unit.

   Note: See "Control Panel Functions" in the *iSeries Service Functions* information.

   1) Select function 07 and press enter.

   2) Increment to 01 and press enter.

      This will send out a Rack Power On command on the SPCN Network which will restore power to the expansion tower or unit, which has become powered off.

29. From the Packaging Hardware Resources display, select the *Associated Logical Resource(s)* option for the expansion tower or unit.

    The Logical Hardware Resources Associated a Packaging Resource display shows the status of devices and IOPs.

30. When all expected resources appear with an operational status, work with the customer to bring the system to the operational state.

    Note: For V4R3 and following (more recent) releases, a resource that has been removed will show a status of *Not Connected*. For earlier systems the status will show as *Disabled*.

    Work with the customer to restart all bus activity:
    - Start all subsystems that were ended.
    - Vary on all devices, lines, and controllers for the expansion tower or unit that was powered off.
    - Start customer applications.

31. Was the tower configured as a switchable tower under iSeries 400 OptiConnect for HSL when you entered this procedure?

    Yes **No**

    ↓ If you moved the AC power cords of an expansion unit from this tower to an alternate AC power source during this procedure, then move them back to this expansion tower. Move only one of the expansion unit's AC power cords at a time to this tower, to prevent the expansion unit from loosing AC power.

       This ends the procedure.

32. Did you change the tower's mode to *"Private"* using HSM?

    No **Yes**

↓   Work with the customer to restore the mode of the tower to
"*Switchable*" using the "Service Reference Procedures" in the *iSeries
Service Functions* information.

Continue with the next step of this procedure.

33. Work with the customer to start the CRG that you ended during this
procedure. Refer to the *OptiConnect for OS/400* information.

Were you able to start the CRG using the

Yes   No

↓   Contact your next level of support.

34. Work with the customer to restore ownership of the tower's HSL I/O bridge
resource to the system that the customer prefers. Refer to the *OptiConnect for
OS/400* information.

Were you able to restore the ownership of the tower's HSL I/O bridge
resource to the system that the customer prefers?

No   Yes

↓   **This ends the procedure.**

35. Contact your next level of support.

This ends the procedure.

Storage I/O card modes and jumpers

The 2748 and 2778 I/O card can run in either compression mode or enhanced
mode.

Compression Mode
Compression mode should only be used when you want to run Integrated
Hardware Disk Compression. In compression mode, the write cache size is
4 MB.

Enhanced Mode
Enhanced mode has an enhanced write cache size. In Enhanced mode, the
write cache size for the 2748 I/O Card is 26MB, and the maximum
compressed write cache size for the 2778 I/O Card is 104MB. Enhanced
mode also provides support for Extended Adaptive Cache (by attachment
of a read cache device) and Extended Adaptive Cache Simulator.

You can set or change the mode of the I/O card by locating the three pins on the
card's rear.

When an error regarding the mode of the storage I/O card appears, the error
message indicates whether the jumper is missing or overridden.

- If the error message is CPPEA20, the I/O card has overridden the mode set by
the jumper. See Mode jumper has been overridden.
- If the error message is CPPEA21, the I/O card has detected that the jumper is
missing. See Mode jumper is missing.

Setting or changing the mode of an I/O card

The 2748 and 2778 I/O card supports two modes, compression and enhanced. The
rear of the I/O card is marked with a **C**, indicating compression mode, and an **E**,
indicating enhanced mode. Three pins on the rear of the I/O card determine the
mode of the card, depending on which of the pins have a jumper placed on them.

The jumper may be moved at any time, but changes only take effect during a system IPL.

Refer to the illustration below while changing the mode jumper.

RZAHC500-0
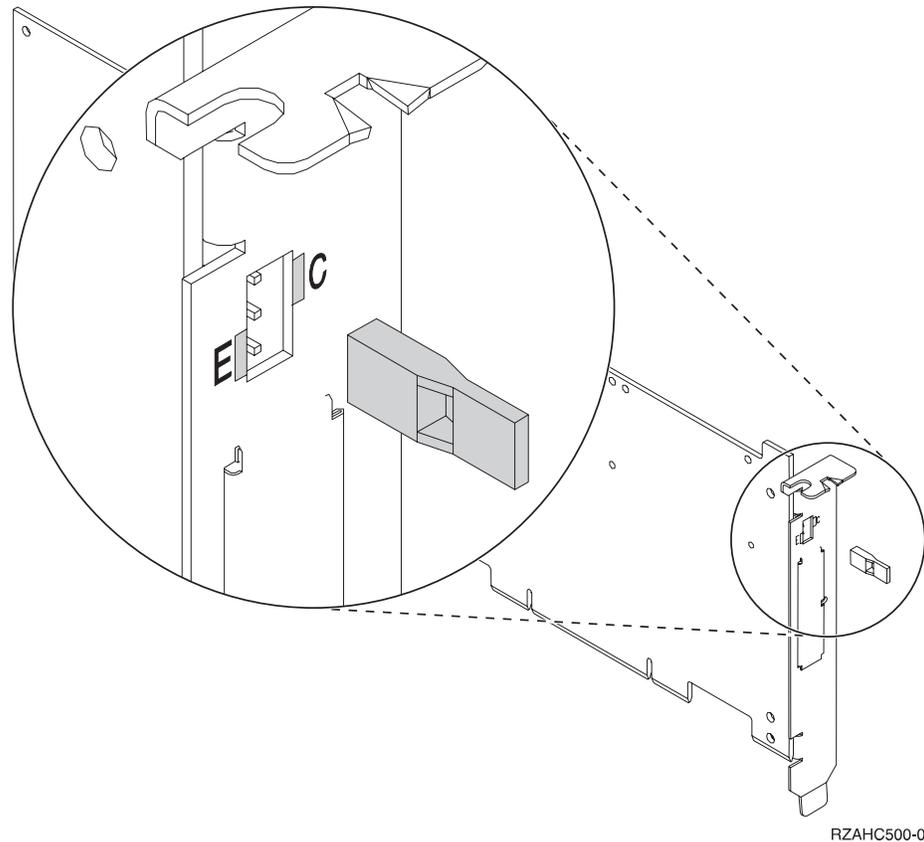
1. Power off the system, ensuring that no jobs are currently processing. (See "Starting and Stopping the System" in the Information Center at http://www.ibm.com/eserver/iseries/infocenter).
2. To set the mode of the card to Compressed (**C**), place the jumper on the top and middle pins.

   To set the mode of the card to Enhanced (**E**), place the jumper on the middle and bottom pins.
3. Select the IPL type and mode (see *iSeries Service Functions* information).
4. Power on the system.

For information on disk compression, see the Backup and Recovery section of the Information Center.

Mode jumper has been overridden

The error message **CPPEA20** appears when the mode jumper has been overridden. This is due to cache data that is in a conflicting mode.

To begin correcting this error, examine the mode jumpers in the rear section of the storage I/O card.

Note: The mode jumper is accessible without requiring the removal of the I/O card.

If the mode jumper is not in the desired position follow the steps in "Setting or changing the mode of an I/O card" on page 844.

If the mode jumper is in the desired position and any other I/O card or device system reference codes (SRCs) occurred at about the same time as this error, contact your service representative.

If the mode jumper is in the desired position and no other I/O card or device system reference codes (SRCs) occurred at about the same time as this error, then power the system down normally and IPL (see "Starting and Stopping the System" the Information Center at http://www.ibm.com/eserver/iseries/infocenter).

Mode jumper is missing

The error message **CPPEA21** appears when the mode jumper is missing from the storage I/O card.

1. Locate the jumper.
2. Power off the system (see "Starting and Stopping the System" in the Information Center at http://www.ibm.com/eserver/iseries/infocenter).
3. Install the jumper in the correct position (see "Setting or changing the mode of an I/O card" on page 844).
4. Power on the system.

SRC Address Formats

Use this section to determine the IOP, IOA, or device address from either a control panel or a console display.

1. Was the SRC and addressing information obtained either from a control panel display or the Main Storage Dump Manager screen?

   No   **Yes**

   ↓   Go to step 7 of this procedure.

2. Are you using the Service Action Log?

   No   **Yes**

   ↓   Go to step 5 of this procedure.

3. Are you using OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, or ANZPRB?

   No   **Yes**

   ↓   Go to step 11 on page 848 of this procedure.

4. Go to step 10 on page 847 of this procedure.

5. Display the FRU details for the problem that you are attempting to fix. The location information in the field-replacable unit detail is only available for IOPs, IOAs, and devices.

   Is the field-replaceable unit an IOP, IOA, or device *and* is there location information in the Location field of the display?

   No   **Yes**

   ↓   Use the location information and return to the procedure that sent you here.

6. Go to "Hexadecimal Product Activity Log Data" in the *iSeries Service Functions* book to obtain the address information. When that procedure instructs you to return to the previous procedure, return to step 8 of this procedure.

7. Addressing information is in the Bus-Bus-Bus-Bus/Card-card/board-board (BBBBCcbb) format as follows:
   - If characters 7 and 8 of the top 16 character line of function 12 (word 2) are 60:
     – The IOP address is characters 1-8 of the bottom 16 character line of function 12 (word 4) in the format "BBBBCcbb".
     – The device address is characters 9-16 of the bottom 16 character line of function 12 (word 5) in the format "abcd efgh".
   - If characters 7 and 8 of the top 16 character line of function 12 (word 2) are 13, 17, 27, or 29:
     – The IOP address is characters 9-16 of the top 16 character line of function 12 (word 3) in the format "BBBBCcbb".
     – The device address is characters 1-8 of the bottom 16 character line of function 12 (word 4) in the format "abcd efgh".
   - If characters 7 and 8 of the top 16 character line of function 12 (word 2) are 62:
     – The IOP address may be characters 9-16 of the top 16 character line of function 13 (word 7) in the format "BBBBCcbb".
     – The device address may be characters 1-8 of the top 16 character line of function 13 (word 6) in the format "abcd efgh".

8. The BBBBCcbb format is the hexadecimal direct select address of a card location in the system unit. The format definition is:

    BBBB—System Bus
     Cc—System Card
     bb—System Board

9. Go to step 12 of this procedure for IOA and device address information.

10. Addressing information is in the Bus/Board/Card format.

    Note: This format shows the system bus number in decimal form.

    If no address information is available in the console error message, check the product activity log entry that is associated with the console error message. Figure 52 on page 848 is an example of a product activity log display for a storage device. Other devices (for example, workstations or communications) have similar displays. For more information about the product activity log, see "Product Activity Log" in *iSeries Service Functions*.

SRC Address Formats

```
Display Address Information for Resource


                                Serial                 Resource
Name           Type      Model  Number                 Name
Storage        6607      050    83-00834               DD001

Physical Location
Frame ID  . . . . . . . : 1

Device Position . . . . : L01

Logical Address:
SPD Bus:                        Storage:
System Bus  . . . . . . :    1   I/O Adapter . . . . . . :    0
System Board  . . . . . :    0   I/O Bus . . . . . . . . :    0
System Card . . . . . . :    1   Controller. . . . . . . :    1
                                 Device  . . . . . . . . :    0
```

Figure 52. Product Activity Log display example

In the above example, the contents of "Storage" are defined as follows:

Reference
> **Description**

I/O Bus
> This is the SCSI bus to which the device is connected.

I/O Adapter
> This is the adapter that the I/O bus connects to on the I/O processor.

Controller
> This is the logical controller for the addressed device.

Device
> This is the *logical* device that is attached to the *logical* device controller.

11. Use Figure 53 on page 849 to understand how addresses in the Bus/Board/Card format relate to the Bus-Bus-Bus-Bus/Card-Card/Board-Board format. You can also use Figure 53 on page 849 to understand how addresses in the Bus/Board/Card format relate to the direct select addresses used in "Locations and Addresses" on page 671.

```
                                                  Bus
                                            ┌──── Card
                                         ┌──┼──── Board
                                    ┌──┬─┼──┼──┐
                                    ▼ ▼▼ ▼  ▼  ▼▼
Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address  0001-01-00
                                    ▲ ▲▲ ▲  ▲  ▲▲
                                    ▼ ▼▼ ▼  ▼  ▼▼
                   Direct Select Address  0001-01-00
                                        ▲          ▲
                                        │          │
                                        ▼          ▼
          Bus/Board/Card format Address   1/0/1
                                        ▲
```

```
                                        RZAG5500-1
```
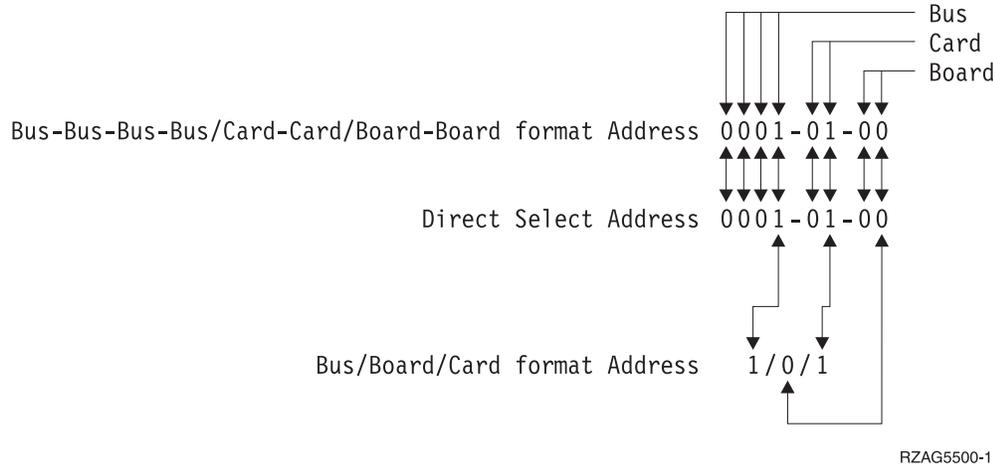
Figure 53. Format Conversion

> **Note:** When converting from Bus/Board/Card format to Bus-Bus-Bus-Bus/Card-Card/Board-Board format, the numbers must be converted from Decimal to Hexadecimal.

12. Unit (Device) Address Definitions are explained in an "abcd efgh" format. For example, if the unit address is 0100 FFFF or 0001 00FF, the address relates to the "abcd efgh" format as follows:

```
Disk Unit example              Disk Unit example
without I/O adapter            with I/O adapter
(Address Type A)               (Address Type B)

0 1 0 0   F F F F              0 0 0 1   0 0 F F
↑ ↑ ↑ ↑   ↑ ↑ ↑ ↑      OR      ↑ ↑ ↑ ↑   ↑ ↑ ↑ ↑
↓ ↓ ↓ ↓   ↓ ↓ ↓ ↓             ↓ ↓ ↓ ↓   ↓ ↓ ↓ ↓
a b c d   e f g h             a b c d   e f g h
```
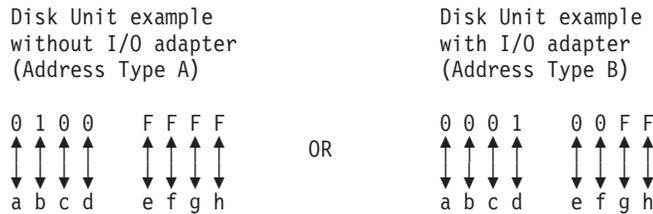
```
Note: Type A IOPs that do not have the additional adapter addressing are
      2621, 2624, 2644, 6112, 6500, 6501, 6502, 6512, 6513, 6530, 916x,
      and 918x. All other IOPs or storage adapters have the additional
      adapter addressing and use the Type B address format.
```

Figure 54.

The characters "abcd efgh" can have different meanings, depending on the subsystem that reports the problem. However, they define the information that is contained in the unit (device) address as follows:

Communications		**Disk, Tape, or Optical without I/O adapter address (Type A)**	
a	I/O Bus	**a**	I/O Bus
b	Adapter	**b**	Controller
c	0	**c**	0
d	Port	**d**	Device
e	0	**efgh**	FFFF
f	Channel		
gh	FF		

SRC Address Formats

Workstation		Disk, Tape, or Optical with I/O adapter address (Type B)	
a	I/O Bus	a	I/O Adapter
b	Adapter	b	I/O Bus
cd	Port	cd	Controller
e	0	ef	Device
f	Device	gh	FF
g	0		
h	Session		

> **Note:** If the unit (device) address appears as FFFF FFFF, the address cannot be determined.

13. OS/400 communication-diagnostic panels that are displayed by the commands VFYCMN, WRKPRB, and ANZPRB use the following address format:

   x1 x2 x3x4

Table 78. Decimal Address Values

Value	Description
x1 = System bus	The one, two, or three digit decimal representation of the hexadecimal **Bus** value of the **Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address** at the top of Figure 53 on page 849.
x2 = System board	The one or two digit decimal representation of the hexadecimal **Board** value of the **Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address** at the top of Figure 53 on page 849.
x3 = System card	The one or two digit decimal representation of the hexadecimal **Card** value of the **Bus-Bus-Bus-Bus/Card-Card/Board-Board format Address** at the top of Figure 53 on page 849.
x4 = Adapter location	The one or two digit decimal representation of the hexadecimal **b Adapter** value of the **Communications unit address** value in step 12 on page 849.

Return to the information that sent you to this procedure.

This ends the procedure.

Hardware SRC Formats

Table 79. SRC format examples (other formats exist; if necessary contact your next level of support)

SRC Word Number	Panel Function, Digits x to y (from left to right)	IOP SRC Format 13	IOP SRC Format 17	Device SRC Format 27	LIC SRC Format 60	LIC SRC Format 61	LIC SRC Format 62	LIC SRC Format 63
1	11, 1-8	TTTT RRRR	TTTT RRRR	tttt rrrr	A6xx RRRR	B6xx RRRR	ww00 RRRR	A600 RRRR
2	12, 1-8	MIGV EP13	MIGV EP17	MIGV EP27	MIGV EP60	MIGV EP61	MIGV EP62	MIGV EP63
3	12, 9-16	BBBB Ccbb	BBBB Ccbb	BBBB Ccbb	PPPP 0000	cccc cccc	cccc cccc	AAAA BBBB

Table 79. SRC format examples (other formats exist; if necessary contact your next level of support) (continued)

SRC Word Number	Panel Function, Digits x to y (from left to right)	IOP SRC Format 13	IOP SRC Format 17	Device SRC Format 27	LIC SRC Format 60	LIC SRC Format 61	LIC SRC Format 62	LIC SRC Format 63
4	12, 17-24	aaaa aaaa	aaaa aaaa	aaaa aaaa	BBBB Ccbb	pppp pppp	pppp pppp	CCCC DDDD
5	12, 25-32	TTTT LMMM	TTTT LMMM	tttt lmmm	aaaa aaaa	qqqq qqqq	RRRR rrrr	EEEE FFFF
6	13, 1-8	uuuu uuuu	tttt lmmm	TTTT LMMM	tttt mmmm	qqqq qqqq	aaaa aaaa	GGGG HHHH
7	13, 9-16	uuuu uuuu	ZZZZ rrrr	ZZZZ RRRR	ssss ssss	0000 0000	BBBB Ccbb	JJJJ KKKK
8	13, 17-24	uuuu uuuu	ssss ssss	ssss ssss	NNNN 0000	0000 0000	tttt lmmm	TTTT 0MMM
9	13, 25-32	uuuu uuuu	uuuu uuuu	uuuu uuuu	0000 0000	0000 0000	ZZZZ ZZZZ	SSSS SSSS

For further definition of the "Logical Address Format" - see *iSeries Service Functions* "Logical Address Format" information.

AAAA
Type of I/O Bus (see Logical Address Format - field 'A')

aaaa Unit address

BBBB System Bus Number (see Logical Address Format - field 'B')

BBBBCcbb
Bus, bus, bus, bus, card, card, and board, board address (Direct Select Address or DSA)

- For PCI system busses 0001-0003 and 0018---FF the Cc field is a one digit multi-adapter bridge number and a one digit multi-adapter bridge function number.
- For SPD system busses 0004-0017 the Cc field is a two digit card number.

CCCC System Board Number (see Logical Address Format - field 'C')

cccc cccc
Component reference code. Format 62 varies by component.

DDDD
System Card Number (see Logical Address Format - field 'D')

EEEE (see Logical Address Format - Unit Address type - field 'E')

FFFF (see Logical Address Format - Unit Address data - field 'F')

GGGG
(see Logical Address Format - Unit Address data - field 'G')

HHHH
(see Logical Address Format - Unit Address data - field 'H')

JJJJ (see Logical Address Format - Unit Address data - field 'J')

KKKK
(see Logical Address Format - Unit Address data - field 'K')

SRC Address Formats

0MMM
Model number of failing device (i.e. MMM='001')

SSSSSSSS
System Reference Code - this SRC is used to determine why the primary console failed to respond.

PPPP Cause code

lmmm Level indicator plus 3″digit model number of failing device

LMMM
Level indicator plus 3″digit model number (for example, 0001)

MIGV EP
General system status.

NNNN
Number of disk device facilities that are missing

PPPP PPPP
Programming reference code

qqqq qqqq
Programming reference code qualifier

rrrr Outboard failing unit reference code (URC)

RRRR Unit reference code (URC)

ssss Serial number of failing unit

tttt Outboard failing unit type number (for example, 6607)

TTTT Type number or card identification number (hex)

uuuu Unit-specific data

ww SRC type

ZZZZ Reserved

> **Note:** Function 20 displays the machine type (940x), model number, and processor feature code.

Determining if the System Has Logical Partitions

This procedure instructs the user on how to determine if the system has logical partitions.

1. Go to the Primary partition system console.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* screen:
   a. Note the *Partition manager release*.
   b. Note the *Number of partitions*.
4. Each system will always have at least one (1) or more logical partition(s). The first partition in the system will always be named the "Primary" partition. Some systems have the Primary partition and multiple (secondary) partitions configured.

   Is the number of partitions one (1)?

   No   **Yes**

   ↓   The system does not have multiple logical partitions. You are working

with a system that has a Primary partition only. Return to the procedure, failing item or symbolic FRU that sent you here.

5. The system has multiple logical partitions. Read and understand the logical partitions information in *iSeries Service Functions*. Then return to the procedure, Failing Item, or Symbolic FRU that sent you here.

Determining if the System Has Guest Partitions

This procedure instructs the user on how to determine if the system has Guest Partitions.

1. Go to the Primary partition system console.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* display, the number of partitions and the partition manager release level are shown. This is the release level of the Primary partition.
4. At the *Work with system partitions* display, select the *Display partition information* option.
5. At the *Display partition information* display, select the *Display partition operating environment* option.
6. At the *Display partition operating environment* display, the partition identifier, partition name, operating system type ("OS/400" or "Guest") and operating system version /release will be displayed for each system partition.
7. Any partition with an indication that the partition is a "Guest" means that the system has guest partitions.
8. Record the partition ID, partition name, operating system type and version/release of the guest partition(s) for later use.

Determining the Release Level of a Guest Partition

This procedure instructs the user on how to determine the release level of the operating system environment in a guest partition.

1. Go to the Primary partition system console or the console of the hosting partition for a guest partition (see definitions of hosting partition and guest partition for clarification). For information on determining the hosting partition for a guest partition see "Determining the Hosting Partition of a Guest Partition" on page 854.

   Note: The hosting partition may not have a console session established via TELNET. In that case use the Primary partition's console.

2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* display, select the *Display partition information* option.
4. At the *Display partition information* display, select the *Display partition operating environment* option.
5. At the *Display partition operating environment* display, the operating system **(Kernel)** and the operating system's **(Kernel's)** version level will be displayed.

   Note: The guest partition must have been IPL'd at least once for the version to be displayed/correct.

6. Record the partition ID, partition name, operating system and operating system version of the of the guest partition for later use.

Determining the Hosting Partition of a Guest Partition

This procedure instructs the user on how to determine the partition ID and partition name of the hosting partition of a guest partition.

1. Go to the Primary partition system console.
2. From the SST or DST screen select the *Work with system partitions* option.
3. At the *Work with system partitions* display, select the *Display partition information* option.
4. At the *Display partition information* display, select the *Display guest environment host information* option.
5. At the *Display guest environment host information* display, the hosting partition for a guest partition will be displayed.
6. Record the hosting partition information of the guest partition that you are working on for later use.

Determining the Load Source Disk and Alternate IPL Device

Introduction

If you have a system configuration list that shows the load source disk unit and the alternate IPL device, use that information. If not, use the following information and, when found, make a note of the locations (see "Locations and Addresses" on page 671).

Finding the Load-Source Disk on Systems without Mirrored Protection

The load source disk is disk unit 1 in the system unit.

What You Should Know about Load Source Disks on Systems with Mirrored Protection

- Local load source - A disk used as the source for IPL data.

  Primary Partition:
  - For system models 270 and 820, this disk unit must be located in position D01, D02, D03, or D04.

  Secondary Partition:
  - See 'Locating a Secondary Partition's Load Source From the Primary Partition's Console' in the *iSeries Service Functions* information.

- Remote load source - A load source disk unit that is not a local load source. A load source that is not in one of the positions described for 'Local load source'.

For systems in which both of the mirrored load source disk units are local load sources:

The system can use either disk as its source for IPL data. The disk that first reports to the service processor is the one that is used. The system starts the IPL with this device and later synchronizes the second load source disk with the first.

If the first load source disk fails after the Licensed Internal Code determines that the system has mirrored protection, the Licensed Internal Code performs the IPL by using the second load source disk.

If the first load source disk fails before the Licensed Internal Code determines that the system has mirrored protection, the IPL stops with a system reference code (SRC) displayed.

If the system starts the IPL on a load source disk that contains data which is backlevel compared to the data on the other load source, the Licensed Internal Code attempts to start the IPL from the second load source disk. If the second attempt fails, the IPL stops with an SRC displayed.

For systems in which one of the mirror load source disk units is a local load source, and one load source is a remote load source:

The system can use only the local load source as its source for IPL data. The system starts the IPL with this local load source device and later synchronizes the remote load source disk with the data on the local load source. If the local load source disk fails, the IPL stops with a system reference code (SRC) displayed.

Finding the Load Source Disks on Systems with Mirrored Protection

When the system auxiliary storage pool (ASP1) has mirrored protection, the system has two disk units that are load source disks.

Use the *Work with disk units* option under dedicated service tool (DST) or system service tool (SST) to display the configuration.

Alternate IPL Device

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

Attention: If the system has logical partitions, this procedure is for the Primary partition **only**. To locate the alternate IPL device for a secondary partition see *iSeries Service Functions*.

The process of performing an IPL from removable media is an alternate or Type D IPL. The device that contains the IPL media is the alternate IPL device. The system searches for the alternate IPL device in a specific sequence (see "Search Sequence for the Alternate IPL Device").

The alternate IPL device is attached either internally (in the system unit) or attached externally to the system.

The system configuration list shows the alternate IPL devices. For information on how to print the system configuration list, see "Hardware Service Manager" in the *iSeries Service Functions* information.

Search Sequence for the Alternate IPL Device

The system attempts an IPL from the first alternate IPL device it finds that is ready and contains IPL media.

The system uses the following search sequence:

The system will search system bus 1 for storage IOAs. The IOA slots are searched in the order shown below:

Determining Load Source, Alternate IPL

Model 270 systems: C07, C01, C06, C05, C04, C03, C02.

Model 820 systems: C06, C05, C04, C03, C02, C01

Whenever a storage IOA is detected the system will then search for an alternate IPL device attached to that IOA. The following search sequence is used to search for an alternate IPL device attached to a storage IOA:

1. Device attached to SCSI bus 0 with a controller address of 7.
2. Device attached to SCSI bus 0 with a controller address of 6.
3. Device attached to SCSI bus 0 with a controller address of 5.
4. Device attached to SCSI bus 1 with a controller address of 7.
5. Device attached to SCSI bus 1 with a controller address of 6.
6. Device attached to SCSI bus 1 with a controller address of 5.
7. Device attached to SCSI bus 2 with a controller address of 7.
8. Device attached to SCSI bus 2 with a controller address of 6.
9. Device attached to SCSI bus 2 with a controller address of 5.

If the system cannot find a device to use as the alternate IPL device, it displays an SRC on the control panel.

Note: The SRC that is displayed, is for the most severe error that is found during the search sequence for the alternate IPL device. There may not be an association between the error and the alternate IPL device that you are using. Before using the displayed SRC to analyze the problem, ensure that the alternate IPL device is ready and contains the correct IPL media.

External Device Addressing
The external alternate IPL device must have a controller address of 7, 6, or 5. For most devices, the controller comes with the address preset to 7, and you cannot alter it. For devices that have changeable addresses, use the following information:

- For 34xx, 35xx, and 7208 model 342 tape devices you must set the SCSI address to address 0, 1, or 2. For an IBM 9427 8mm Tape Cartridge Library, you must set the tape library address for the drive that is used as the alternate IPL device to address 0, 1, or 2.

For the location of the address switch on external devices, see the information in the device installation service manual.

Reclaim IOP Cache Storage

1. If you are not already using dedicated service tools, perform an IPL to DST (see "Dedicated Service Tools (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.

2. Reclaim the cache storage by doing the following:

   Did you get to DST with a Type D IPL?

   Yes   No

   ↓   Go to step 2d on page 857 of this procedure.

   a. Select the *Work with disk units* option.

   b. Select the *Reclaim IOP cache storage* option.

   c. Follow the on-line instructions to reclaim cache storage. The system will Automatically perform an IPL to a Disk Configuration Warning Report

screen. Take the option to display the report. Because the Reclaim Cache Storage was selected after a D-IPL, the system will now require another Reclaim Cache Storage to be performed.

d. Select the *Work with disk units* option.

e. Select the *Work with disk unit recovery* option.

f. Select the *Reclaim IOP Cache Storage* option.

g. Follow the on-line instructions to reclaim cache storage. Depending on the reason for performing the Reclaim IOP Cache procedure, there may be a message requiring the ASP be cleared before performing this option, or a message stating the number of lost sectors.

> **Note:** If there are lost sectors, some objects may be damaged. The customer may have to load the damaged objects again. (see the *Backup and Recovery* for more information.)

> **Note:** When the IOP performs a Reset/Reload, if there is a storage IOA attached that is running the local load source, Cxxx xxxx codes will be displayed in the system control panel. The DST console may then have a blank screen with 01B displayed on the system control panel for up to 15 minutes before it is restored.

This ends the procedure.

Reclaim Storage

Part 3. Appendixes

Appendix A. Problem Summary Form

Use this problem summary form in this appendix to record information displayed on the control panel when a problem occurs on the system.

Note: Determine if the system has logical partitions. Go to "Determining if the System Has Logical Partitions" on page 852, before continuing with this procedure.

If the system has logical partitions, then use this form to record information displayed on either the control panel or the *Work with Partition Status* screen. To access the panel functions of a logically partitioned system go to *iSeries Service Functions*.

Note: You may copy this form as necessary.
1. Describe the problem.
2. Record the date and time.
3. Record any control panel lights that are on.
   - Power Active
   - Processor Active
   - Attention
4. Does the system have logical partitions?

   No   **Yes**

   ↓   Record the following information:

Partition Information	
Partition's ID	
Partition's Name (Not Req'd)	
Partition's State Examples: Failed, Hold, etc.	
Partition's OS/400 Version and Release Example: V4R4	
Record the Date and Time system values set in the partition if possible.	

5. Use the following table to record the information shown for functions 1, 5, 11 through 13, and 20.

   Note: If the system has logical partitions and the problem is in a secondary partition, then some of the functions may not be available. Use the system control panel or option 20 on the *Work with Partition Status* screen to record function 20 information.

Note: All functions may not display, depending on the failure.

Functions	Descriptions	SRC Words
Function 1	IPL Mode/Type	
Function 5	Power SRC (if applicable)	
Function 11	SRC word 1, extended SRC characters 9–32	
Function 12	SRC words 2, 3, 4, 5	
Function 13	SRC words 6, 7, 8, 9	
Function 20	System Model, Type, and Processor Feature	

6. Return to the procedure that sent you here.

Appendix B. Preventive Maintenance (PM)

Scheduled preventative maintenance (PM) is no longer required.

Loading and applying all PTFs is the responsibility of the customer. Refer the customer to the Information Center at http://www.ibm.com/eserver/iseries/infocenter.

Appendix C. Working with Electrostatic Discharge-Sensitive Parts

When holding or installing electrostatic discharge-sensitive (ESD) parts, use the ESD handling kit (IBM* part 6428316) or similar. Read the instructions inside the top cover of the carrying case.

All system logic cards are sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive logic cards, follow these instructions:

- Switch off power to the system or device before removing logic cards.
- Keep the ESD-sensitive card in the original shipping container until you install the card in the machine.
- When holding logic cards, move your body as little as possible to prevent an increase of static electricity from clothing fibers, carpet fibers, and furniture.
- Just before touching the ESD-sensitive card, discharge any static electricity in your body by touching the metal frame or cover of the machine. If possible, keep one hand on the frame when, for example, you are installing or removing a logic card.
- Hold the ESD-sensitive card by the edge or connector shroud cover. Do not touch the pins. If you are removing a field-replaceable module, use the correct tool.
- Return the card to the special container when it is not being used. Do not place the ESD-sensitive card on the machine cover or on a metal table. Machine covers and metal tables are electrical grounds. They make a discharge path from the ESD-sensitive card through your body to ground, increasing the risk of damage to the card. Large metal objects can be discharge paths without being grounded.
- Prevent ESD-sensitive cards from being touched accidentally by other persons. Reinstall machine covers when you are not working on the machine. Do not place unprotected ESD-sensitive cards on a table.
- Be careful when working with ESD-sensitive cards during cold weather heating. Cold weather heating causes low humidity and increases the risk of static electricity.

Appendix D. System Safety Inspection

Introduction

A safety inspection for the system should be performed:
- When it is inspected for an IBM maintenance agreement
- When IBM service is requested and no service has recently been performed by IBM
- When an alterations and attachments review is performed
- When changes have been made to the equipment that might affect its safety

If the inspection indicates safety conditions that are not acceptable, the conditions must be corrected before IBM services the machine.

Note: The correction of any unsafe condition is the responsibility of the owner of the system.

While performing this inspection, special attention must be given to these areas:
- Feature and model changes and engineering change (EC) upgrades
- Additions of non-IBM power supplies or attachments
- Missing safety covers
- Removed, faded, or painted-over safety labels
- Replacement requirements concerning parts for primary power
- Any other items relating to the product's safety

Before you start, you must have completed the *Electrical Safety Education Course for IBM Service Representatives* (self-study course 77170 or equivalent).

You will need these items:
- An IBM service representative tool kit (or equivalent)
- A copy of AS/400 Service Memorandums (SMs), which include engineering change announcements (ECAs) and service aids (SAs) documents for the system
- Latest machine history, if possible
- *Electrical Safety for IBM Service Representatives*, S229-8124
- A Fluke** 8060A digital voltmeter (part 8496278) or equivalent

Perform each safety check on the following pages and place a check mark in front of each item as you complete it.

Covers – All Models

1. Check for damaged or missing covers.
2. Check covers for sharp edges.

AC Power Cord(s) – All Models

1. With machine powered off, remove the power cord from the electrical outlet.
2. Check the power cord and power plug for visible cracks, wear, or damage.

3. Check for 1.0 ohm or less of resistance between the power cord ground and the power supply frame.
4. Ensure that the power cord is fully inserted and secured into position on the machine end.
5. Ensure that the power cord required for your country and system is installed.

AC Safety Grounds

1. Ensure that all power supply mounting screws are tight.
2. Ensure that the mounting screws of the AC module or internal UPS are tight.

Safety Labels

Ensure that all the safety labels are visible and readable:

1. Main power rating attached to the right side frame at the back of the machine.
2. 240 V AC attached to each 23 pin connector (J2 and J3) on AC modules that have SPCN connectors (J15 and J16) (46G3576).
3. Danger up to 240 V AC attached to the bottom frame under the power supplies (46G3575).
4. Weight restriction label attached under the handle on the cover of the External Battery Backup Unit (74F9976).
1. Main power rating attached to the left side frame at the back of the machine.
2. Danger up to 240 V AC attached to the bottom frame under each power supply (90H6275).
3. Caution Lead Acid battery attached to side of internal battery unit (21H7089).
4. Weight restriction label attached to top of internal battery (74F9976).
5. Weight restriction label attached to top of power sub-frame assembly (74F9976).
6. Models 640, 730 and S30 only: Two weight restriction labels attached to SPD/DASD cage sub-frame assembly (74F9976).
7. Two weight restriction labels attached to active back plane assembly (74F9976).
8. Main power rating attached to back plate on external battery unit.
9. Caution lead Acid battery label attached to back plate on external battery unit (21H7089).
10. Weight restriction label attached to base at rear of external battery unit (74F9978).

Power Off and On (System Unit) – All Models

1. Ensure that the system powers off correctly.
2. Ensure that the system powers on correctly.

Internal Mechanical Inspection

1. Ensure that AMD shields are installed on the AC module AMD assembly.
2. Ensure that the EMC access plate is installed over the power supplies.
3. Ensure that the card retainers are installed on the front and back of the card enclosure.
4. Ensure that the latch to lock the bottom adapter card is installed on all Magnetic Storage IOP (2624) cards with part number 86G8317.

5. Ensure that the safety shield is installed over the left side of the expansion unit AMD assembly.
6. Check the external battery backup power supply cable (if present) for visible cracks, wear, or damage.
1. Models 640, 730, and S30 only: Ensure that the retainer that holds the vertical SPD card separators is in place.
2. Ensure that the vertical rods between DASD units are in place (model 640, 730 and S30 only).
3. Ensure that the EMC access plate is installed over the charger and internal battery unit.
4. Ensure that the EMC access plates are installed over all cages.

Appendix E. Service Log

Machine Type _____

Serial Number _____

Logical Partition _____

Date	Description of Problem/Action Taken (Do not record hours or part numbers.)	Service Representative

Date	Description of Problem/Action Taken (Do not record hours or part numbers.)	Service Representative

Appendix F. HSL Loop Configuration and Status Form

Use this HSL Loop Configuration and Status Form to record the status of the HSL ports in the loop.

Note: You may copy this form as necessary.

HSL Loop Configuration and Status Worksheet for System _____, Loop Number _____

Table 80. HSL Loop Configuration and Status Form

Leading Link From This Resource		Link status (Operational / Failed)	Trailing Link From This Resource	
HSL Resource Type (NIC or I/O Adapter), Resourse Name, and tower Type/Model/Feature Code	As Frame ID and Port		As Port and Frame ID	HSL Resource Type (NIC or I/O Adapter), Resource Name, and tower Type/Model/Feature Code
Resource Type: **NIC** Name: _____ System T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____

Table 80. HSL Loop Configuration and Status Form (continued)

Leading Link From This Resource		Link status (Operational / Failed)	Trailing Link From This Resource	
HSL Resource Type (NIC or I/O Adapter), Resourse Name, and tower Type/Model/Feature Code	As Frame ID and Port		As Port and Frame ID	HSL Resource Type (NIC or I/O Adapter), Resource Name, and tower Type/Model/Feature Code
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____

Table 80. HSL Loop Configuration and Status Form (continued)

Leading Link From This Resource		Link status (Operational / Failed)	Trailing Link From This Resource	
HSL Resource Type (NIC or I/O Adapter), Resourse Name, and tower Type/Model/Feature Code	**As Frame ID and Port**		**As Port and Frame ID**	**HSL Resource Type (NIC or I/O Adapter), Resource Name, and tower Type/Model/Feature Code**
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____
Resource Type: _____ Name: _____ System/Tower T/M/FC _____	Frame _____ Port _____		Port _____ Frame _____	Resource Type: _____ Name: _____ System/Tower T/M/FC _____

Appendix G. HSL Link Status Diagnosis Form

Use this HSL Link Status Diagnosis Form to record the status of the HSL links.

Note: You may copy this form as necessary.

Table 81. HSL Link Status Diagnosis Chart

Resource With Failing Link	Column A (starting status)		Column B (Status after step 14 on page 272)	Column C (column A is "Failed" and column B is "Failed")	Column D (Status after step 22 on page 273)	Column E (column B is "Failed" and column D is "Failed")
	Port Info	Port Status	Port Status		Port Status	
First	Frame ID ——— Card Position ——— Port # ———	Port _0 (or Internal) ———	Port _0 (or Internal) ———		Port _0 (or Internal) ———	
		Port _1 (or Internal) ———	Port _1 (or Internal) ———		Port _1 (or Internal) ———	
Second	Frame ID ——— Card Position ——— Port # ———	Port _0 (or Internal) ———	Port _0 (or Internal) ———		Port _0 (or Internal) ———	
		Port _1 (or Internal) ———	Port _1 (or Internal) ———		Port _1 (or Internal) ———	

Appendix H. Installed Features in a PCI Bridge Set Form

Use this Installed Features in a PCI Bridge Set Form to record the ″PCI Bridge Set″ card positions, and multi-adapter bridge function numbers.

Note: You may copy this form as necessary.

Table 82. Installed Features in a PCI Bridge Set

PCI Bridge Set Card Positions	Multi-adapter Bridge Function Number	Record if ″IOP″ or ″IOA″ is installed.
	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Appendix I. HSL Cable Location Form

Use this worksheet to determine the loop number, frame ID, and HSL port label for an HSL cable that you will be replacing. Record information in the table below when you are directed to do so.

Note: You may copy this form as necessary.

Table 83. HSL Cable Location Form

Loop Number	From Frame ID	From HSL Port Label	To Frame ID	To HSL Port Label
Hexadecimal loop # _____ Decimal loop # _____	Hexadecimal frame ID _____ Decimal frame ID _____		Hexadecimal frame ID _____ Decimal frame ID _____	
Cable Type (Optical or Copper) _____				

Part Number Index

Part Number	Asm–Index	Page	Part Number	Asm–Index	Page	Part Number	Asm–Index	Page
00G1268	14–14	787	1621811	14–21	787	21P5016	17–	794
00G1268	14–17	787	1621811	9–2	765	21P5144	6–6	757
00G1268	14–19	787	1621811	9–5	765	21P5145	1–6	743
00G1268	14–2	785	1621811	9–7	765	21P5146	4–6	753
00G1268	14–8	785	1621816	10–36	775	21P6094	14–	787
00P2200	16–1	791	1621817	10–12	769	21P6303	14–7	785
00P2201	16–1	791	1621817	10–7	769	21P6325	17–	794
00P2202	16–1	791	1621838	10–18	771	21P6326	17–	794
00P2203	16–1	791	1622678	7–6	759	21P6417	12–6	779
00P2382	14–13	787	1624779	16–2	791	21P6417	7–25	761
04N2472	7–16	761	1624779	16–5	791	21P6427	7–	761
04N3038	14–	787	16G5609	18–	797	21P6687	14–7	785
04N3392	12–4A	779	16G8095	10–37	775	21P6691	7–	761
04N3392	2–32	749	16G8095	2–14	747	24L0558	15–9	789
04N3392	5–6	755	16G8095	2–4	745	24L0821	10–4	767
04N3392	7–18	761	16G8095	7–24	761	24L0823	10–21	773
04N4498	14–20	787	17G2642	18–	797	24L0824	13–4	783
04N4499	14–3	785	19P0484	18–	797	24L0824	9–4	765
04N4500	14–5	785	19P0489	18–	797	24L0825	9–1	765
04N4523	14–1	785	21F5093	17–	793	24L0891	10–35	775
04N5682	18–	797	21F9358	17–	794	24L0892	10–16	771
04N5698	5–1	755	21F9359	17–	794	24L0940	10–26	773
04N5701	4–1	753	21F9360	17–	794	24L0962	10–1	767
04N5712	4–3	753	21F9415	17–	794	24L0962	14–6	785
04N6111	12–9	781	21F9469	17–	794	24L1029	10–17	771
04N6797	14–18	787	21H3547	18–	797	24L1067	10–8	769
04N7014	17–	794	21H3548	18–	797	24L1069	13–6	783
05N6809	15–1	789	21H3761	18–	797	24L1069	15–8	789
07G3794	17–	793	21H3762	18–	797	24L1069	9–8	765
08J0653	18–	797	21H3763	18–	797	24L1078	9–6	765
11K1107	14–4	785	21H3790	18–	797	24L1079	9–3	765
12K0024	15–7	789	21H3791	18–	797	24L1402	5–2	755
12K0032	15–3	789	21H4811	18–	797	24L1546	7–4	759
12K0034	15–2	789	21H4902	17–	793	24L1551	2–2	745
15F8409	18–	797	21H4903	17–	793	24L1591	2–27	749
1621811	10–11	769	21H4904	17–	793	24L1592	12–1	779
1621811	10–15	771	21H4905	17–	793	24L1605	7–7	759
1621811	10–20	771	21L1740	2–23	749	24L1609	2–1	745
1621811	10–23	773	21P4225	16–4	791	24L1630	1–2	743
1621811	10–27	773	21P4612	6–6	757	24L1630	11–1	777
1621811	10–29	773	21P4614	1–6	743	24L1631	6–2	757
1621811	10–31	773	21P4626	4–6	753	24L1632	1–4	743
1621811	10–34	775	21P4745	18–	797	24L1632	1–7	743
1621811	10–6	769	21P4894	14–11	787	24L1632	11–4	777
1621811	10–9	769	21P4970	14–9	787	24L1632	11–7	777
1621811	13–2	783	21P4986	13–1	783	24L1632	4–4	753
1621811	13–5	783	21P5014	17–	794	24L1632	4–7	753
1621811	14–12	787	21P5015	17–	794	24L1632	6–4	757

Part Number	Asm–Index	Page	Part Number	Asm–Index	Page	Part Number	Asm–Index	Page
24L1649	7–8	759	44H7502	17–	793	75G3806	17–	793
24L1652	1–1	743	44H8406	10–2	767	75G3807	17–	793
24L1652	11–3	777	44H8676	17–	793	75G3808	17–	793
24L1654	11–6	777	44H8677	17–	793	75G3809	17–	793
24L1664	6–1	757	44K0243	14–15	787	75G3810	17–	793
24L1723	7–25	761	44L0005	17–	793	75G3811	17–	793
24L1730	12–2	779	44L0007	17–	793	75G3812	17–	793
24L1730	7–2	759	44L0023	10–24	773	76H5078	18–	797
24L1737	7–3	759	44L0082	18–	797	81F8902	18–	797
24L1747	2–17	747	44L0247	13–3	783	87G1626	18–	797
24L1747	2–8	745	44L0252	13–7	783	87G6235	17–	794
24L1827	12–5	779	45H2364	18–	797	87G6236	17–	793
24L1827	2–28	749	46G0298	18–	797	90H6629	10–25	773
24L1827	5–7	755	46G6844	18–	797	97H7307	10–33	775
24L1827	7–14	761	59H3661	18–	797	97H7316	10–32	773
24L1829	7–23	761	59H4127	18–	797	97H7320	10–28	773
24L1831	7–21	761	59H4366	18–	797	97H7385	17–	793
24L1946	1–8	743	59X4262	18–	797	97H7386	17–	793
24L1946	11–5	777	6165899	18–	797	97H7387	17–	793
24L1946	4–8	753	6339098	17–	793	97H7388	17–	793
24L1946	6–5	757	74F1823	16–3	791	97H7486	17–	794
31L7519	15–5	789	75G2865	17–	793	97H7487	17–	794
31L7523	15–6	789	75G2878	1–3	743	97H7490	17–	793
35L0967	18–	797	75G2878	1–5	743	97H7604	17–	794
41L5206	14–16	787	75G2878	11–2	777	97H7699	17–	793
41L5448	14–10	787	75G2878	11–8	777	97H7745	18–	797
41L5649	14–	787	75G2878	12–10	781	97H7749	18–	797
41L5650	14–	787	75G2878	12–12	781	97H7754	18–	797
41L5652	14–	787	75G2878	12–14	781	97H9137	2–26	749
42H0540	18–	797	75G2878	12–4	779	97H9754	15–4	789
44H7479	18–	797	75G2878	12–8	781	97H9755	15–4	789
44H7480	17–	793	75G2878	2–11	745	97H9756	15–4	789
44H7481	17–	793	75G2878	2–13	745	NONUM	10–10	769
44H7482	17–	793	75G2878	2–16	747	NONUM	10–14	771
44H7483	17–	793	75G2878	2–18	747	NONUM	10–19	771
44H7484	17–	793	75G2878	2–22	747	NONUM	10–22	773
44H7485	17–	793	75G2878	2–3	745	NONUM	10–30	773
44H7486	17–	793	75G2878	2–31	749	NONUM	10–5	769
44H7487	17–	793	75G2878	2–6	745	NONUM	12–11	781
44H7488	17–	793	75G2878	2–9	745	NONUM	12–13	781
44H7489	17–	793	75G2878	4–2	753	NONUM	12–3	779
44H7490	17–	793	75G2878	4–5	753	NONUM	12–5A	779
44H7491	17–	793	75G2878	5–3	755	NONUM	12–7	781
44H7491	17–	793	75G2878	5–5	755	NONUM	2–10	745
44H7492	17–	793	75G2878	6–3	757	NONUM	2–12	745
44H7494	17–	793	75G2878	7–17	761	NONUM	2–15	747
44H7495	17–	793	75G2878	7–20	761	NONUM	2–19	747
44H7496	17–	793	75G2878	7–5	759	NONUM	2–20	747
44H7497	17–	793	75G2878	7–9	759	NONUM	2–21	747
44H7498	17–	793	75G3802	17–	793	NONUM	2–24	749
44H7499	17–	793	75G3803	17–	793	NONUM	2–25	749
44H7500	17–	793	75G3804	17–	793	NONUM	2–29	749
44H7501	17–	793	75G3805	17–	793	NONUM	2–30	749

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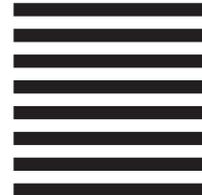
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Glossary

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ac. Alternating current.

adapter card. A smaller card that attaches to a full-size card.

allocate. To assign.

alternative console. A display device assigned by the operating system to function as the console if the console is not working.

American National Standards Institute. An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

ANSI. American National Standards Institute. An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

APAR. Authorized program analysis report. A request for correction of a problem in a release of an IBM-supplied program.

ASC. Asynchronous.

ASP. Auxiliary storage pool. A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

authorized program analysis report. A request for correction of a problem in a release of an IBM-supplied program.

auxiliary storage pool. A group of disk units defined from the auxiliary storage devices. See also *system ASP* and *user ASP*.

backplane. A hardware part that has (in one or more planes) logic paths, low-voltage distribution paths, and grounding paths of a section of a machine.

basic assurance test. An automatic testing of a machine when the power is switched on.

BAT. basic assurance test. An automatic testing of a machine when the power is switched on.

battery power unit. A source of electrical power that can be used when the normal utility power fails.

BBBBCcbb. Addressing scheme for the bus (BBBB), card (Cc), and board (bb).

bring up. The process of starting a computer system or a subsystem that is to operate under the control of the system.

BSC. Bisynchronous.

card enclosure. The area in the system unit that contains the logic cards.

CCM. Concurrent maintenance. The process of removing or replacing hardware while the system is in use.

CD. Compact disk; an optical storage medium.

CFIOP. Combined Function Input Output Processor.

concurrent maintenance. The process of removing or replacing hardware while the system is in use.

configure. To describe to a system the devices, optional features, and programs installed on the system.

cryptography. A method of transforming customer data to conceal its meaning. Cryptographic services include data encryption and message authentication.

DASD. Direct access storage device. Also referred to as disk unit.

dc. Direct current.

debug. To check, diagnose, and remove errors in programs.

Glossary

dedicated service tools. The part of the service function used to service the system when the operating system is not working.

device parity protection. A function that protects data stored on a disk unit subsystem from being lost because of the failure of a single disk unit in the disk unit subsystem. When a disk unit subsystem has device parity protection and one of the disk units in the subsystem fails, the system continues to run. The disk unit subsystem reconstructs the data after the disk unit in the subsystem is repaired or exchanged.

DFCI. Disk file control interface.

DIMM. Dual in-line memory module.

disk enclosure. The part of a disk unit that contains the read and write heads, the magnetic disks, and the actuators.

download. To transfer data from a processing unit to an attached device, such as a microcomputer, for processing.

DST. Dedicated service tools. The part of the service function used to service the system when the operating system is not working.

EMC. Electromagnetic compatibility.

EMI. Electromagnetic interference.

EPO. Emergency power-off.

ERC. Extended reference code

ESD. Electrostatic discharge.

expansion unit. An expansion unit contains I/O hardware such as cards, tapes and disk units. The system may have multiple expansion units.

An expansion unit can be bolted directly to the side of a system unit and is contained within the system unit covers.

An expansion unit can also be mounted on top of a rack or tower and has its own covers.

Internal signal cables interconnect the expansion unit to the system unit, rack, or tower.

FAX. Facsimile machine.

FC. Feature code.

FDS. Flexible distribution system.

FRU. Field-replaceable unit.

GND. Ground (electrical).

Guest partition. This is a secondary partition which is running an operating system other than OS/400. The guest partition requires another partition to host it. The purpose of the hosting partition is to supply paths from virtual I/O in the guest partition's operating system to real I/O hardware drivers in the hosting partition. The guest partition requires a console in order to provide an interface to DST console functions. TELNET is used to establish a guest console from the hosting partition. The guest partition's console should not be confused with the console used by the operating system running in the guest partition. They are separate console sessions.

high-speed link (HSL). A hardware connectivity architecture that links system processors to input/output processors (IOPs) and other system units.

Hosting partition. This is a partition, either the Primary or a secondary partition that is not a guest partition. The hosting partition has the real I/O devices that the virtual I/O device drivers in a guest partition connect to. The hosting partition also supplies the guest partition's DST console session, via a TELNET connection into the hosting partition. The guest partition's console is not part of the hosting partition's console. The host partition's console, the guest partition's console session and the guest partition's operating system's console are all different console sessions.

HSL Ring. High Speed Link Ring (shown as "System Interconnect" on the display). This is a logical ring of HSL connections originating from the HSL Controller of a processor unit, sequentially connecting I/O or other processor units and ending back at the HSL Controller where the ring originated.

ID. Identification.

input/output processor. A device that processes programmed instructions and controls one or more I/O devices or adapters.

I/O. Input/output.

IOA. Input/output adapter.

IOP. Input/output processor. A device that processes programmed instructions and controls one or more I/O devices or adapters.

IPL. Initial program load.

IXA. Integrated xSeries Adaptor (IXA)

IXS. Integrated xSeries Server (IXS)

LAN. Local area network. A computer network located on a user's premises within a limited geographical area.

LIC. Licensed Internal Code.

license. A permission granted by competent authority to engage in a business or occupation or in an action otherwise unlawful.

Licensed Internal Code. Programming that defines logical operations on data.

LICTR. Licensed Internal Code trouble report.

local area network. A computer network located on a user's premises within a limited geographical area.

logo. An identifying statement.

media. Magnetic disks or tapes and compact disks (CD).

Multi-adapter bridge domain. This is the set of all card locations controlled by one multi-adapter bridge.

Multi-adapter bridge Function. This identifies a single PCI adapter card location under an multi-adapter bridge. The multi-adapter bridge function number is part of the Direct Select Address for a PCI I/O adapter. The multi-adapter bridge number and the multi-adapter bridge function number together indicate a unique card location connected to a given system PCI bus. The bus number and the multi-adapter bridge number and the multi-adapter bridge function number together identify a unique PCI I/O resource in the system.

MES. Miscellaneous equipment specification.

The process of either an upgrade of your existing system or moving parts from an existing system to a new system, are called miscellaneous equipment specification (MES).

MFIOP. Multiple Function I/O Processor.

mirrored protection. A function that protects data by duplicating all disk unit data on one storage unit in an auxiliary storage pool to another storage unit in the same auxiliary storage pool.

MSD. Main store dump.

MSIOP. Magnetic Storage I/O Processor.

Multi-adapter Bridge. This is a PCI bridge resource in the I/O hardware which provides for the connection of PCI adapters to the system PCI I/O bus. Each PCI adapter connected under an multi-adapter bridge is controlled individually by the multi-adapter bridge. The multi-adapter bridge number identifies an multi-adapter bridge on a given system PCI I/O bus and is part of the Direct Select Address for a PCI I/O adapter. The bus number and the multi-adapter bridge number together identify a unique multi-adapter bridge in the system.

network interface controller (NIC). Hardware that provides the interface control between system main storage and external high-speed link (HSL) ports.

OEM. Original equipment manufacturer.

odd/even bus pair. An optical link card supports a pair of buses; one has an even number and the other has an odd number (for example, bus 2 and 3).

optical redundancy. A second optical path used to keep the system operational when a hardware failure occurs.

overview. A general survey or summary.

PAR. Problem analysis and resolution.

PCC. Power control compartment.

PIP. Problem isolation procedure. Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

plenum. A space used for environmental air.

PM. Preventive maintenance.

pool. (1) A readily available supply. (2) A designated place to store data.

power off. To turn off the power.

power on. To turn on the power.

primary link. The optical connection between a local optical link card and a remote bus adapter card.

problem isolation procedure. Written information used by service representatives to repair IBM equipment. A problem isolation procedure contains actions and yes/no questions that send the user to the failing part of the equipment.

program temporary fix. A temporary solution to, or bypass of, a problem in a licensed program.

PTF. Program temporary fix. A temporary solution to, or bypass of, a problem in a licensed program.

reallocate. To allocate again.

restore. To return to an original value or image; for example, to restore data to main storage from auxiliary storage.

SAL. Service action log

SAVSYS tape. A tape that is generated by the SAVSYS command, on which system data is recorded and saved.

SCSI. Small Computer System Interface

SDIOP. Storage Device I/O Processor.

secondary link. The optical connection between two remote bus adapter cards.

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sign-on. The procedure by which the user starts working at a workstation.

SIMM. Single in-line memory module.

single bus connection. Only one bus is connected to the optical link card. One connector is not used.

SPCN. System Power Control Network.

SPD bus. An AS/400 input/output bus architecture.

SRC. System reference code. A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

system ASP. The auxiliary storage pool where system programs and data reside. It is the storage pool used if a storage pool is not defined by the user. See also *auxiliary storage pool* and *user ASP*.

system reference code. A group of characters that identifies the machine status or a specific error condition. The system reference code can be displayed on the console from the problem log.

tower. A frame-like structure that, since the introduction of the 3xx/4xx models, has been used to repackage devices formerly housed in racks. Towers provide the equivalent function of racks and have since replaced racks.

A tower can be used for either the system unit or for system expansion. The system unit always contains the processor(s). Towers are standalone and usually have black covers. Like racks, towers can vary in height.

UEPO. Unit emergency power-off.

upgrade. To change the system configuration to a later level.

URC. Unit reference code. Last 4 characters of SRC.

user ASP. One or more auxiliary storage pools used to isolate journals, journal receivers, and save files from the other system objects stored in the system ASP. See also *auxiliary storage pool* and *system ASP*.

vital product data. A structured description of a device or program. For devices, it is recorded in the device at manufacture and includes at least the type, model, serial number, and installed features. It may include the manufacturer's ID and other fields. For programs, it is compiled as a data area accompanying the program and includes the name of the licensed program or Licensed Internal Code group, the release and modification, the program module names, the national language or languages selected, and possibly other fields. Vital product data is transferred from the device to the system and is retained for display. Vital product data is also visible on the device name plate or a similar tag.

VLIC. Vertical Licensed Internal Code.

VPD. See *vital product data*.

workstation I/O processor. An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

WSIOP. Workstation I/O processor. An I/O processor card in the card enclosure that provides the direct connection of local workstations to the system.

X.25. In data communications, a specification of the CCITT that defines the interface to an X.25 (packet-switching) network.

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