ESCALA Power7

Planning for CEC hot add and hot-node repair maintenance

REFERENCE
86 A1 43FF 04

ESCALA Power7

Planning for CEC hot add and hot-node repair maintenance

The ESCALA Power7 publications concern the following models:

- Bull Escala E5-700 (Power 750 / 8233-E8B)
- Bull Escala M6-700 (Power 770 / 9117-MMB)
- Bull Escala M6-705 (Power 770 / 9117-MMC)
- Bull Escala M7-700 (Power 780 / 9179-MHB)
- Bull Escala M7-705 (Power 780 / 9179-MHC)
- Bull Escala E1-700 (Power 710 / 8231-E2B)
- Bull Escala E1-705 (Power 710 / 8231-E1C)
- Bull Escala E2-700 / E2-700T (Power 720 / 8202-E4B)
- Bull Escala E2-705 / E2-705T (Power 720 / 8202-E4C)
- Bull Escala E3-700 (Power 730 / 8231-E2B)
- Bull Escala E3-705 (Power 730 / 8231-E2C)
- Bull Escala E4-700 / E4-700T (Power 740 / 8205-E6B)
- Bull Escala E4-705 (Power 740 / 8205-E6C)

References to Power 755 / 8236-E8C models are irrelevant.

Hardware

October 2011

BULL CEDOC

357 AVENUE PATTON

B.P.20845

49008 ANGERS CEDEX 01

FRANCE

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Contents

Safety notices . . . . . **v**

Planning for CEC hot-node add and hot-node repair maintenance. **1**
CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB. . 2
CEC hot-node add and hot-node repair maintenance operations checklists for model 9119-FHB. 6
Model 9117-MMB and 9179-MHB system firmware, HMC, and SDMC levels 10
Power 795 system firmware, HMC, and SDMC levels 12
Preparing for Hot Repair or Upgrade utility 14
Model 9117-MMB and 9179-MHB multi-drawer external SMP and FSP flex cabling 29
CEC hot-node add and hot-node repair maintenance on a 2-drawer system - Front 31
CEC hot-node add and hot-node repair maintenance on a 2-drawer system - Rear. 31
CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 1 front 32
CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 2 front 33
CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 3 front 33
CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 1 rear 34
CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 2 rear 34
CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 3 rear 35
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 1 front 36
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 2 front 36
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 3 front 37
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 4 front 37
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 1 rear 38
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 2 rear 38
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 3 rear 39
CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 4 rear 39

Notices **41**
Trademarks 42
Electronic emission notices 42
Class A Notices 42
Class B Notices 46
Terms and conditions 49

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Safety notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

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Laser safety information

IBM® servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

Laser compliance

IBM servers may be installed inside or outside of an IT equipment rack.

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DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- **Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.**
- **Do not open or service any power supply assembly.**
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.**
- **Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.**
- **Connect any equipment that will be attached to this product to properly wired outlets.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.**

  To Disconnect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Remove the power cords from the outlets.**
  3. **Remove the signal cables from the connectors.**
  4. **Remove all cables from the devices**

  To Connect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Attach all cables to the devices.**
  3. **Attach the signal cables to the connectors.**
  4. **Attach the power cords to the outlets.**
  5. **Turn on the devices.**

  (D005)

DANGER

Observe the following precautions when working on or around your IT rack system:

- **Heavy equipment–personal injury or equipment damage might result if mishandled.**
- **Always lower the leveling pads on the rack cabinet.**
- **Always install stabilizer brackets on the rack cabinet.**
- **To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.**
- **Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.**

- **Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.**
- **Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.**
- **An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.**

CAUTION

- **Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.**
- **Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.**
- **Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.**
- *(For sliding drawers.)* **Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.**
- *(For fixed drawers.)* **This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.**

(R001)

CAUTION:
Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building:

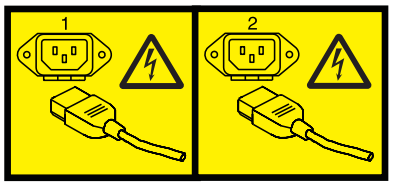
- **Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:**
  - **Remove all devices in the 32U position and above.**
  - **Ensure that the heaviest devices are installed in the bottom of the rack cabinet.**
  - **Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.**
- **If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.**
- **Inspect the route that you plan to take to eliminate potential hazards.**
- **Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.**
- **Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).**
- **Ensure that all devices, shelves, drawers, doors, and cables are secure.**
- **Ensure that the four leveling pads are raised to their highest position.**
- **Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.**
- **Do not use a ramp inclined at more than 10 degrees.**
- **When the rack cabinet is in the new location, complete the following steps:**
  - **Lower the four leveling pads.**
  - **Install stabilizer brackets on the rack cabinet.**
  - **If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.**
- **If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.**

(R002)

(L001)

(L002)

(L003)



or

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION:
This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

(C026)

CAUTION:
Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION:
This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

CAUTION:
Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

CAUTION:
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do Not:
- **___ Throw or immerse into water**
- **___ Heat to more than 100°C (212°F)**
- **___ Repair or disassemble**

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. (C003)

Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:
- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metallically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

Note: All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal *shall not* be connected to the chassis or frame ground.

Planning for CEC hot-node add and hot-node repair maintenance

CEC hot-node add and hot-node repair maintenance operations improve system availability by avoiding a scheduled system outage. Hardware can be added and repaired while the system is powered on, but all critical applications must be quiesced (stopped or powered off), or moved to another system using Live Partition Mobility (LPM). In addition, the Electronic Service Agent (ESA) must be enabled.

CEC hot-add and hot-repair tasks can be performed on 9117-MMB, 9179-MHB, and 9119-FHB systems that are managed by a Hardware Management Console (HMC) or an IBM Systems Director Management Console (SDMC).

CEC hot-add and hot-repair tasks provide the capability to perform maintenance (repair, add, or upgrade) on field replaceable units (FRUs) within a CEC while the system is powered on. Even though the system remains powered on, there may be impacts to the partitions and the performance of the system. For example, when a CEC node is physically removed from the system to repair a FRU, the processors, memory, and I/O resources hosted by that node will no longer be available to the partitions. The impacts on a specific system configuration will vary depending on a number of factors including spare memory resources, spare processor resources, and I/O redundancy configuration (mirroring or multipath).

For additional information about the CEC concurrent maintenance functions on Power 770, Power 780, and Power 795 systems, see the IBM® Power 770/780 and 795 Servers CEC Hot Add & Repair Maintenance Technical Overview white paper.

Prerequisites for CEC hot-add and hot-repair

The following prerequisites apply to CEC hot-node add and hot-node repair maintenance operations.

1. Before performing a CEC hot-add or hot-repair operation, the CEC hot-add or hot-repair operation distance learning course must be completed.
2. Verify that the HMC or SDMC level is the same as, or later than, the level shown in “Model 9117-MMB and 9179-MHB system firmware, HMC, and SDMC levels” on page 10 or “Power 795 system firmware, HMC, and SDMC levels” on page 12. If there are two HMCs or SDMCs attached to the system, both HMCs or SDMCs must be at the same level. If not, the HMC or SDMC that is not at the required level must be correctly disconnected from the managed system and powered off.

   For information about verifying the HMC code level and release, see .

   For information about verifying the SDMC code level and release, see Determining your Systems Director Management Console appliance code version and release.

   For information about disconnecting an HMC from a managed system, see .

   For information about disconnecting an SDMC from a managed system, see Correcting a connection problem between the Systems Director Management Console and a server
3. Carefully follow all ESD (electrostatic discharge) handing procedures.
4. When you perform multiple hot adds that include a node and GX adapter, the GX adapter must be installed in the node before the node is installed in the system. If this order is observed, the memory in the new node will be used for the 128 MB of memory that is required for the GX adapter. (The node must have approximately 128 MB of memory per GX adapter to support the adapter's translation control entry (TCE) table.) The GX adapter in the new node will be activated during the addition of the node (if the 128 MB memory requirement is met). If the GX adapter is installed after the new node is installed and activated, the plugging rules for GX adapters will be enforced. In this case, the GX adapter must be installed in another node with another hot add operation.

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Note: All of the hot add and repair activities must be performed by a service representative.

Checklists are available that list the prerequisite planning tasks that are required prior to performing hot maintenance.

Special considerations for CEC hot-add and hot-repair

The following special considerations need to be taken into account when performing CEC hot-node add and hot-node repair maintenance operations.

1. Only a single hot add or repair operation can be performed at one time from a single HMC or SDMC.
2. A second hot add or repair operation cannot be started until the first one has been completed without failure. If a hot operation fails, the same operation must be restarted and completed before attempting another operation.
3. Multiple hot add or repair operations must be completed by doing a series of single hot add or repair operations.

CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB

The planning checklists contain a list of tasks that must be completed before you perform CEC hot-node add and hot-node repair maintenance operations on 9117-MMB (IBM Power 770) and 9179-MHB (IBM Power 780) systems. It also lists which tasks are associated with each type of operation.

For guidelines that apply to all CEC adapter hot-add and hot-repair maintenance operations, see "Prerequisites for CEC hot-add and hot-repair" on page 1. These general guidelines must be followed as well as the items in the following checklist.

Table 1. CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB

Operations	Models 9117-MMB and 9179-MHB tasks	Responsibility
Hot node add	Ensure that sufficient space is available in the rack that contains the system for another node to be installed under the existing nodes.	Customer
Hot node add	Adding a node increases the power requirements of the system. If necessary, the power circuits that supply the system must be upgraded to handle these additional power requirements. This upgrade must be complete before the hot node add begins. The power requirements of additional nodes are detailed in Chapter 4, **Server Specifications** and Chapter 8, **Planning for Power** in Site and Hardware Planning.	Customer responsibility to perform the required site planning activities

Table 1. CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB (continued)

Operations	Models 9117-MMB and 9179-MHB tasks	Responsibility
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, and hot GX adapter repair	If the system is managed by a HMC, verify that the HMC level is the same as, or later than, the level shown in "Model 9117-MMB and 9179-MHB system firmware, HMC, and SDMC levels" on page 10. For information about disconnecting an HMC from a managed system, see Removing HMC connection data. If the system is managed by a SDMC, verify that the SDMC level is the same as, or later than, the level shown in "Model 9117-MMB and 9179-MHB system firmware, HMC, and SDMC levels" on page 10. For information about disconnecting an SDMC from a managed system, see Systems Director Management Console and system power on and power off procedures. Verify that the system firmware level is the same as, or later than, the level shown in "Model 9117-MMB and 9179-MHB system firmware, HMC, and SDMC levels" on page 10. For information about determining firmware levels using the Hardware Management Console (HMC), see Using the HMC to view the existing firmware levels. For information about verifying the SDMC code level and release, see Determining your Systems Director Management Console appliance code version and release.	Customer Service representative must verify
Hot node upgrade (memory), hot node add, and hot node repair	**CAUTION:** Observe the following with the Symmetric Multiprocessing (SMP) and the service processor cables on Power 770 and Power 780 systems when performing a CEC hot add or repair operation: • Verify that the SMP cable (on the front of the system) and the service processor cable (on the rear of the system) are layered correctly. See "Model 9117-MMB and 9179-MHB multi-drawer external SMP and FSP flex cabling" on page 29. Do not start the CEC hot add or repair operation if the layering is not correct. If the layering is not correct, schedule a system outage with the customer to correct the cabling and perform the CEC hot add or repair operation with the power off. • Do not disturb the SMP and the service processor cables on active nodes. If a node repair is being performed, remove only the cables on the node that is being repaired (powered off) unless otherwise directed by WCII instructions or the removal and replacement procedure.	Service representative must verify
Hot node upgrade (memory), hot node repair, and hot GX adapter repair	If there is only one partition running on the system, the system can be powered down if that partition must be shut down during the CEC hot add or repair operation. To verify or change the setting that controls this behavior, see **System power off policy** in **Controlling the system power using the ASMI** at Managing the Advanced System Management Interface.	Service representative

Table 1. CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB (continued)

Operations	Models 9117-MMB and 9179-MHB tasks	Responsibility
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, and hot GX adapter repair	Verify that service processor redundancy is enabled, except on a system with a single node. To enable service processor redundancy on the managed system on an HMC, in the navigation area, select **Serviceability** → **FSP Failover** → **Setup**. Failover status is displayed in the contents area and can be enabled or disabled. **Note:** The server must be power cycled for the enabling of service processor redundancy to take effect. If power cycling is required, the node can be added nonconcurrently (with power off). For information about redundancy on the HMC, see FSP Failover. For information about redundancy on the SDMC, see SDMC high availability.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, and hot GX adapter repair	If the system is managed by an HMC, verify the network connections between the system service processors and the HMC before the service representative arrives by using the service processor status function on the HMC. For information about testing the network connections on the HMC, see Testing the connection between the HMC and the managed system. If the system is managed by an SDMC, verify the network connections between the system service processors and the SDMC before the service representative arrives by using the service processor status function on the SDMC. For information about checking the network connections on the SDMC, see Correcting a connection problem between the Systems Director Management Console and a server.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, and hot GX adapter repair	Ensure that Electronic Service Agent™ (ESA) is enabled to **call home**. For additional details about the **call home** function on the HMC, see Manage Systems Call-Home. For information about the **call home** function on the SDMC, see Deciding which connectivity method to use for the call-home server.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), hot node repair, and hot GX adapter repair	The server must be quiesced before the hot node add begins. This means that all critical applications must be halted or moved to another server using Live Partition Mobility (LPM) before the operation begins. Noncritical applications can be left running. The partitions can be left running at the operating system command prompt. For additional information on a system managed by an HMC, see **Mobility** in the **Systems management for partitions** topic in Managing the Hardware Management Console. For additional information on a system managed by an SDMC, seePartition (virtual server) tasks.	Customer
Hot node add and hot node upgrade (memory)	Obtain and apply Capacity Upgrade on Demand (CUoD) activation codes prior to the operation so that the memory resources are available immediately after the hot add operation. For information about CUoD activation codes, see Capacity Upgrade on Demand activation codes.	Customer

Table 1. CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB (continued)

Operations	Models 9117-MMB and 9179-MHB tasks	Responsibility
Hot node add and hot node upgrade (memory)	If the customer wants to dynamically add the new processors and memory resources to activated partitions after the hot node add, the profiles that were used to activate the partitions must have the maximums for memory set to the appropriate values. When the hot node add is complete, the processor and memory resources can be added to the partitions using dynamic logical partitions (DLPAR). For information about DLPAR, see Dynamic logical partitioning.	Customer
Hot node upgrade (memory)	Verify that more than one node is present in the system. Hot node upgrade (memory) cannot be done if the system has only one node.	Customer Service representative must verify
Hot node repair, hot GX adapter repair, and hot node upgrade (memory)	Run the Preparing for Hot Repair or Upgrade utility on the HMC or SDMC to determine if the system is prepared for a node upgrade (memory). For more information about the utility, see Preparing for hot repair or upgrade.	Customer Service representative must verify
Hot node add and concurrent GX adapter add	System firmware enforces the node and GX adapter plugging order. Only the next GX adapter slot or node position based on the plugging order is available	Customer Service representative must verify
Concurrent GX adapter add	Ensure that there is a GX adapter slot reservation for each GX adapter that is being added. Each installed GX adapter and GX adapter slot reservation consumes approximately 128 MB of memory. Additional GX adapter slots can be reserved using the Advanced System Management Interface (ASMI). New GX adapter slot reservations take effect the next time the system is powered on.	Customer
Concurrent GX adapter add	The GX adapter cannot be added to a node that has been deconfigured. The node must be repaired and reconfigured before another GX adapter can be added. To verify that all nodes in the system are configured, see Using the ASMI to view deconfigured resources.	Customer Service representative must verify onsite[1]
Hot node add	When multiple hot adds are planned that include node and GX adapter adds, the GX adapter(s) should be installed in the node prior to the node being installed in the system.	Service representative
Hot node add and concurrent GX adapter add	For multiple upgrades that include node or GX adapter adds, as well as I/O drawer adds, the node or GX adapter add must be completed first. The I/O drawer can then be added as a separate concurrent I/O drawer add.	Service representative
Hot node repair and hot GX adapter repair	Ensure that the replacement parts are the same type as the parts that are being removed.	Service representative
Hot node repair and hot GX adapter repair	Replace only the existing parts. New hardware must not be added during a hot node repair or a hot GX adapter repair.	Service representative
Hot node repair	Ensure that existing node hardware is not moved during the hot node repair.	Service representative

Table 1. CEC hot-node add and hot-node repair maintenance operations checklists for models 9117-MMB and 9179-MHB (continued)

Operations	Models 9117-MMB and 9179-MHB tasks	Responsibility
[1] Hardware in a node can fail at any time. When this happens a node can become unconfigured during system IPL to isolate the failure. The failure and unconfigured event can occur after the hardware upgrade package has arrived at the customer site and the service representative has been dispatched. The service representative must ask the customer if the system has any outstanding deferred repairs. **Note:** The hot node add function adds and enables the I/O adapters only in the new node.		

CEC hot-node add and hot-node repair maintenance operations checklists for model 9119-FHB

The planning checklists contain a list of tasks that must be completed before you perform CEC hot-node add and hot-node repair maintenance operations on a 9119-FHB (IBM Power 795) system. It also lists which tasks are associated with each type of operation.

For guidelines that apply to all CEC adapter hot-add and hot-repair maintenance operations, see "Prerequisites for CEC hot-add and hot-repair" on page 1. These general guidelines must be followed as well as the items in the following checklist.

Table 2. CEC hot-node add and hot-node repair maintenance operations checklists for model 9119-FHB

Operations	Model 9119-FHB tasks	Responsibility
Hot node add, hot node upgrade (memory), and hot node repair	Engineering change announcement (ECA) 256 must be installed on the system before starting a CEC hot-node add and hot-node repair maintenance operation. This ECA insures that the system controllers are at the minimum hardware EC level that is required to perform one of these operations on a model 9119-FHB (Power 795). Contact your authorized service provider for more information on ECA 256.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, and hot GX adapter repair	If the system is managed by a HMC, verify that the HMC level is the same as, or later than, the level shown in "Power 795 system firmware, HMC, and SDMC levels" on page 12. For information about disconnecting an HMC from a managed system, see Removing HMC connection data. If the system is managed by a SDMC, verify that the SDMC level is the same as, or later than, the level shown in "Power 795 system firmware, HMC, and SDMC levels" on page 12. For information about disconnecting an SDMC from a managed system, see Systems Director Management Console and system power on and power off procedures. Verify that the system firmware level is the same as, or later than, the level shown in "Power 795 system firmware, HMC, and SDMC levels" on page 12. For information about determining firmware levels using the Hardware Management Console (HMC), see Using the HMC to view the existing firmware levels. For information about verifying the SDMC code level and release, see Determining your Systems Director Management Console appliance code version and release.	Customer Service representative must verify

Table 2. CEC hot-node add and hot-node repair maintenance operations checklists for model 9119-FHB (continued)

Operations	Model 9119-FHB tasks	Responsibility
Hot node upgrade (memory), hot node repair, and hot GX adapter repair	If the system has one or more partitions running IBM i, PTF MF52971 must be must be downloaded from the Fix Central (http://www-933.ibm.com/support/fixcentral) website and installed.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), and concurrent GX adapter add	All serviceable hardware events must be repaired and closed before starting a hot add or upgrade operation. This eliminates the possibility that an existing hardware failure will cause the hot add operation to fail. Prior to a hot node add operation, the existing nodes in the system must be in a functional state.	Service representative
Hot node repair and hot GX adapter repair	Other hardware serviceable events outside of the CEC must be repaired before starting a hot repair operation. This eliminates the possibility of other hardware failures interfering with the hot repair operation.	Service representative
Hot node upgrade (memory), hot node repair, and hot GX adapter repair	• The Prepare for Hot Repair or Upgrade (PHRU) utility must be run by the system administrator to determine the processor, memory and I/O resources that need to be freed. • All resources identified by the PHRU utility must be freed up by the system administrator prior to the start of hot upgrade or repair procedure by the SSR.	Customer Service representative must verify
Hot node upgrade (memory), hot node repair, and hot GX adapter repair	If there is only one partition running on the system, the system can be powered down if that partition must be shut down during the CEC hot add or repair operation. To verify or change the setting that controls this behavior, see **System power off policy** in **Controlling the system power using the ASMI** at Managing the Advanced System Management Interface.	Service representative
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, hot GX adapter repair	Verify that service processor redundancy is enabled. To enable service processor redundancy on the managed system on an HMC, in the navigation area, select **Serviceability** → **FSP Failover** → **Setup**. Failover status is displayed in the contents area and can be enabled or disabled. **Note:** The server must be power cycled for the enabling of service processor redundancy to take effect. If power cycling is required, the node can be added nonconcurrently (with power off). For information about redundancy on the HMC, see FSP Failover. For information about redundancy on the SDMC, see SDMC high availability.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, hot GX adapter repair	If the system is managed by an HMC, verify the network connections between the system service processors and the HMC before the service representative arrives by using the service processor status function on the HMC. For information about testing the network connections on the HMC, see Testing the connection between the HMC and the managed system. If the system is managed by an SDMC, verify the network connections between the system service processors and the SDMC before the service representative arrives by using the service processor status function on the SDMC. For information about checking the network connections on the SDMC, see Correcting a connection problem between the Systems Director Management Console and a server.	Customer Service representative must verify

Table 2. CEC hot-node add and hot-node repair maintenance operations checklists for model 9119-FHB (continued)

Operations	Model 9119-FHB tasks	Responsibility
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, hot GX adapter repair	Ensure that Electronic Service Agent (ESA) is enabled to **call home**. For additional details about the **call home** function on the HMC, see Manage Systems Call-Home. For information about the **call home** function on the SDMC, see Deciding which connectivity method to use for the call-home server.	Customer Service representative must verify
Hot node add, hot node upgrade (memory), hot node repair, and hot GX adapter repair	The server must be quiesced before the hot node add begins. This means that all critical applications must be halted or moved to another server using Live Partition Mobility (LPM) before the operation begins. Noncritical applications can be left running. The partitions can be left running at the operating system command prompt. For additional information on a system managed by an HMC, see **Mobility** in the **Systems management for partitions** topic in Managing the Hardware Management Console. For additional information on a system managed by an SDMC, seePartition (virtual server) tasks.	Customer
Hot node upgrade (memory)	Verify that more than one node is present in the system. Hot node upgrade (memory) cannot be done if the system has only one node.	Customer Service representative must verify
Hot node add and hot node upgrade (memory)	Obtain and apply Capacity Upgrade on Demand (CUoD) activation codes prior to the operation so that the memory resources are available immediately after the hot add operation. For information about CUoD activation codes, see Capacity Upgrade on Demand activation codes.	Customer
Hot node upgrade (memory)	If the customer wants to dynamically add the new processors and memory resources to activated partitions after the hot node add, the profiles that were used to activate the partitions must have the maximums for memory set to the appropriate values. When the hot node add is complete, the processor and memory resources can be added to the partitions using dynamic logical partitions (DLPAR). For information about DLPAR, see Dynamic logical partitioning.	Customer

Table 2. CEC hot-node add and hot-node repair maintenance operations checklists for model 9119-FHB (continued)

Operations	Model 9119-FHB tasks	Responsibility
Hot node upgrade (memory), hot node repair, and hot GX adapter repair	Features and capabilities that do not support resource relocation, which is required for a hot node upgrade (memory), hot node repair, and GX adapter repair: • Systems clustered using RIO-SAN technology. This technology is used only by IBM i customers with clustered systems using switchable towers and virtual OptiConnect technologies. • Systems clustered using InfiniBand technology. This capability is typically used by high performance computing customers using an InfiniBand switch. • I/O Processors (IOPs) used by IBM i partitions do not support node evacuation. Any IBM i partition that has an IOP assigned must either have the IOP powered off, or the partition must be powered off. • 16 GB memory pages, also known as huge pages, do not support memory relocation. Partitions with 16 GB pages must be powered off to allow CEC hot-node add and hot-node repair maintenance operations	Customer
Hot node add and concurrent GX adapter add	System firmware enforces the node and GX adapter plugging order. Only the next GX adapter slot or node position based on the plugging order is available	Customer Service representative must verify
Concurrent GX adapter add	Ensure that there is a GX adapter slot reservation for each GX adapter that is being added. Each installed GX adapter and GX adapter slot reservation consumes approximately 128 MB of memory. Additional GX adapter slots can be reserved using the Advanced System Management Interface (ASMI). New GX adapter slot reservations take effect the next time the system is powered on.	Customer
Hot node add and concurrent GX adapter add	When multiple hot adds are planned that include node and GX adapter adds, the GX adapter(s) should be installed in the node prior to the node being installed in the system.	Service representative
Hot node add and concurrent GX adapter add	For multiple upgrades that include node or GX adapter adds, as well as I/O drawer adds, the node or GX adapter add must be completed first. The I/O drawer can then be added as a separate concurrent I/O drawer add.	Service representative
Hot node add, hot node upgrade (memory), hot node repair, concurrent GX adapter add, and hot GX adapter repair	On systems with large amounts of memory, Reliable Scalable Cluster Technology (RSCT) PTF 3.1.0.4 must be downloaded from the Fix Central (http://www-933.ibm.com/support/fixcentral) website and installed.	Customer Service representative must verify
Hot node repair and hot GX adapter repair	Repairs must be done with the same field replaceable unit (FRU) type.	Service representative
Hot node repair and hot GX adapter repair	Hardware upgrades and downgrades are not supported during a repair operation.	Service representative

Model 9117-MMB and 9179-MHB system firmware, HMC, and SDMC levels

This information provides the minimum and recommended system firmware, Hardware Management Console (HMC) levels, and IBM Systems Director Management Console (SDMC) levels for CEC hot-node add and hot-node repair maintenance operations on 9117-MMB (IBM Power 770) and 9179-MHB (IBM Power 780) systems.

Notes: The following terms and abbreviations are used in the following tables.

1. FC is the abbreviation for feature code.
2. Package is a bundle of feature codes of the same type.
3. CEC is the central electronics complex.

Table 3. System firmware, HMC levels, and SDMC levels for hot node add, hot memory addition or upgrade, hot GX adapter additions, and drawer additions and removals for 9117-MMB and 9179-MHB systems

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
Node add Supported FCs for 9117-MMB: 5659 (IBM), 5669 (OEM) Supported FCs for 9179-MHB: 5597 (IBM), 5598 (OEM)	AM720_064 or later V7R7.2.0 + MH01235 or AM730_035 or later 6.730.0 + MF53082	AM720_101 or later V7R7.2.0 + MH01246 or AM730_035 or later 6.730.0 + MF53082
Memory addition or upgrade Standard FCs for 9117-MMB and 9179-MHB: 5600, 5601, 5602 Package FCs for 9117-MMB and 9179-MHB: none	AM720_064 or later V7R7.2.0 + MH01235 or AM730_035 or later 6.730.0 + MF53082	AM720_101 or later V7R7.2.0 + MH01246 or AM730_035 or later 6.730.0 + MF53082
GX adapter addition Supported FCs for 9117-MMB and 9179-MHB: 1808	All levels V7R7.1.0 or AM730_035 or later 6.730.0 + MF53082	AM720_101 or later V7R7.2.0 + MH01246 or AM730_035 or later 6.730.0 + MF53082
19-inch I/O expansion unit addition This operation is supported on all 19-inch I/O expansion units Supported FCs for 9117-MMB and 9179-MHB: 5796, 5802, 5877, 7314-G30	All levels V7R7.1.0 or AM730_035 or later 6.730.0 + MF53082	All levels V7R7.1.0 or AM730_035 or later 6.730.0 + MF53082

Table 3. System firmware, HMC levels, and SDMC levels for hot node add, hot memory addition or upgrade, hot GX adapter additions, and drawer additions and removals for 9117-MMB and 9179-MHB systems (continued)

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
19-inch I/O drawer removal Supported on all 19-inch I/O expansion units	All levels V7R7.1.0 or AM730_035 or later 6.730.0 + MF53082	All levels V7R7.1.0 or AM730_035 or later 6.730.0 + MF53082

Table 4. System firmware, HMC, and SDMC levels for repairs for 9117-MMB and 9179-MHB systems

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
Hot node repair	AM720_064 or later V7R7.2.0 + MH01235 or AM730_035 or later 6.730.0 + MF53082	AM720_101 or later V7R7.2.0 + MH01246 or AM730_035 or later 6.730.0 + MF53082
Hot GX adapter repair	AM720_064 or later V7R7.2.0 + MH01235 or AM730_035 or later 6.730.0 + MF53082	AM720_101 or later V7R7.2.0 + MH01246 or AM730_035 or later 6.730.0 + MF53082
19-inch CEC drawer power supply and fan	All levels or AM730_035 or later 6.730.0 + MF53082	All levels or AM730_035 or later 6.730.0 + MF53082
19-inch I/O drawer repair This operation is supported on all 19-inch I/O expansion units	All levels or AM730_035 or later 6.730.0 + MF53082	All levels or AM730_035 or later 6.730.0 + MF53082
Operator (control) panel replacement	All levels or AM730_035 or later 6.730.0 + MF53082	All levels or AM730_035 or later 6.730.0 + MF53082

Table 4. System firmware, HMC, and SDMC levels for repairs for 9117-MMB and 9179-MHB systems (continued)

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
PCI adapter replacement	All levels or AM730_035 or later 6.730.0 + MF53082	All levels or AM730_035 or later 6.730.0 + MF53082

Power 795 system firmware, HMC, and SDMC levels

This information provides the minimum and recommended system firmware, Hardware Management Console (HMC) levels, and IBM Systems Director Management Console (SDMC) levels for CEC hot-node add and hot-node repair maintenance operations on IBM Power 795 systems.

Notes: The following terms and abbreviations are used in the following tables.

1. FC is the abbreviation for feature code.
2. Package is a bundle of feature codes of the same type.
3. CEC is the central electronics complex.
4. CBU, or capacity back-up, indicates that the feature code includes conditions on usage as well as hardware.

Table 5. System firmware, HMC levels, and SDMC levels for hot node add, hot memory addition or upgrade, hot GX adapter additions, and drawer additions and removals for Power 795

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
Node add Supported FCs for the 9119-FHB chassis: Standard: 4700, 4702 CBU: 7560, 7562	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082
Memory addition or upgrade Supported FCs: Standard: 5600, 5601, 5602	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082
GX adapter addition Supported FCs: 1816	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082

Table 5. System firmware, HMC levels, and SDMC levels for hot node add, hot memory addition or upgrade, hot GX adapter additions, and drawer additions and removals for Power 795 (continued)

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
24-inch I/O expansion unit addition Supported FCs: 5798, 5797, 5803, 5873	All levels V7R7.2.0 or AM730_035 or later 6.730.0 + MF53082	All levels V7R7.2.0 or AM730_035 or later 6.730.0 + MF53082
24-inch I/O drawer removal Supported on all 24-inch I/O expansion units	All levels V7R7.2.0 or AM730_035 or later 6.730.0 + MF53082	All levels V7R7.2.0 or AM730_035 or later 6.730.0 + MF53082
Bulk power Supported FCs: 6954 (self-powered expansion rack with 6954 bolt-on rack)	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082

Table 6. System firmware, HMC, and SDMC levels for repairs for Power 795

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
Hot node repair	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082
Hot GX adapter repair	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082

Table 6. System firmware, HMC, and SDMC levels for repairs for Power 795 (continued)

Function	Minimum system firmware, HMC levels, and SDMC levels	Recommended system firmware, HMC levels, and SDMC levels
System controller repair	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082
24-inch I/O drawer repair This operation is supported on all 24-inch I/O expansion units	All levels or AM730_035 or later 6.730.0 + MF53082	All levels or AM730_035 or later 6.730.0 + MF53082
Bulk power	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082	AH730_035 or later V7R7.3.0 + MH01257 or AM730_035 or later 6.730.0 + MF53082
PCI adapter replacement	All levels or AM730_035 or later 6.730.0 + MF53082	All levels or AM730_035 or later 6.730.0 + MF53082

Preparing for Hot Repair or Upgrade utility

The Prepare for Hot Repair or Upgrade utility is a tool for the system administrator to identify the impacts to system resources in preparation for a hot node repair, hot node upgrade, or hot GX adapter repair operation. This utility provides an overview of platform conditions, partition I/O, and processor and memory resources that must be freed up for a node evacuation. (A node is a drawer in a 9117-MMB or 9179-MHB system. A node is a processor book in a 9119-FHB system.)

All resources identified by the Prepare for Hot Repair or Upgrade utility must be freed up by the system administrator prior to the start of the hot upgrade or repair procedure by the SSR.

The Prepare for Hot Repair or Upgrade utility is automatically run during every service procedure requiring the evacuation of a node. This ensures that all impacts are addressed prior to the execution of the repair or upgrade procedure.

There is no impact to existing system resources when a hot node or GX adapter add operation is performed, so running this utility is not required for those operations.

Node evacuation is a process that is required during a hot node repair or a memory upgrade. During the node evacuation process, the POWER Hypervisor™ is used to complete the following tasks:

- Moving the contents of the memory in the target node to the memory in the other nodes in the system.

- Moving the programs running on dedicated processors assigned to the partitions, and the programs running on processors assigned to the shared processor pool, from the target node to other nodes on the system.
- Locking all the I/O slots that are attached to the target node to prevent the slots from being used during the repair or upgrade.

If the system is managed by a Hardware Management Console (HMC), use this procedure.

To prepare for a Hot Repair or Upgrade procedure, complete the following steps:

1. In the navigation pane, select **Systems Management** → **Servers**.
2. In the work pane, select the server name on which the procedure will be performed.
3. In the tasks area, select **Serviceability** → **Hardware** → **Prepare for Hot Repair/Upgrade**.
4. Select the base location code that contains the field-replaceable unit (FRU) to be serviced or the GX adapter card to be replaced as shown in Figure 1 on page 16.

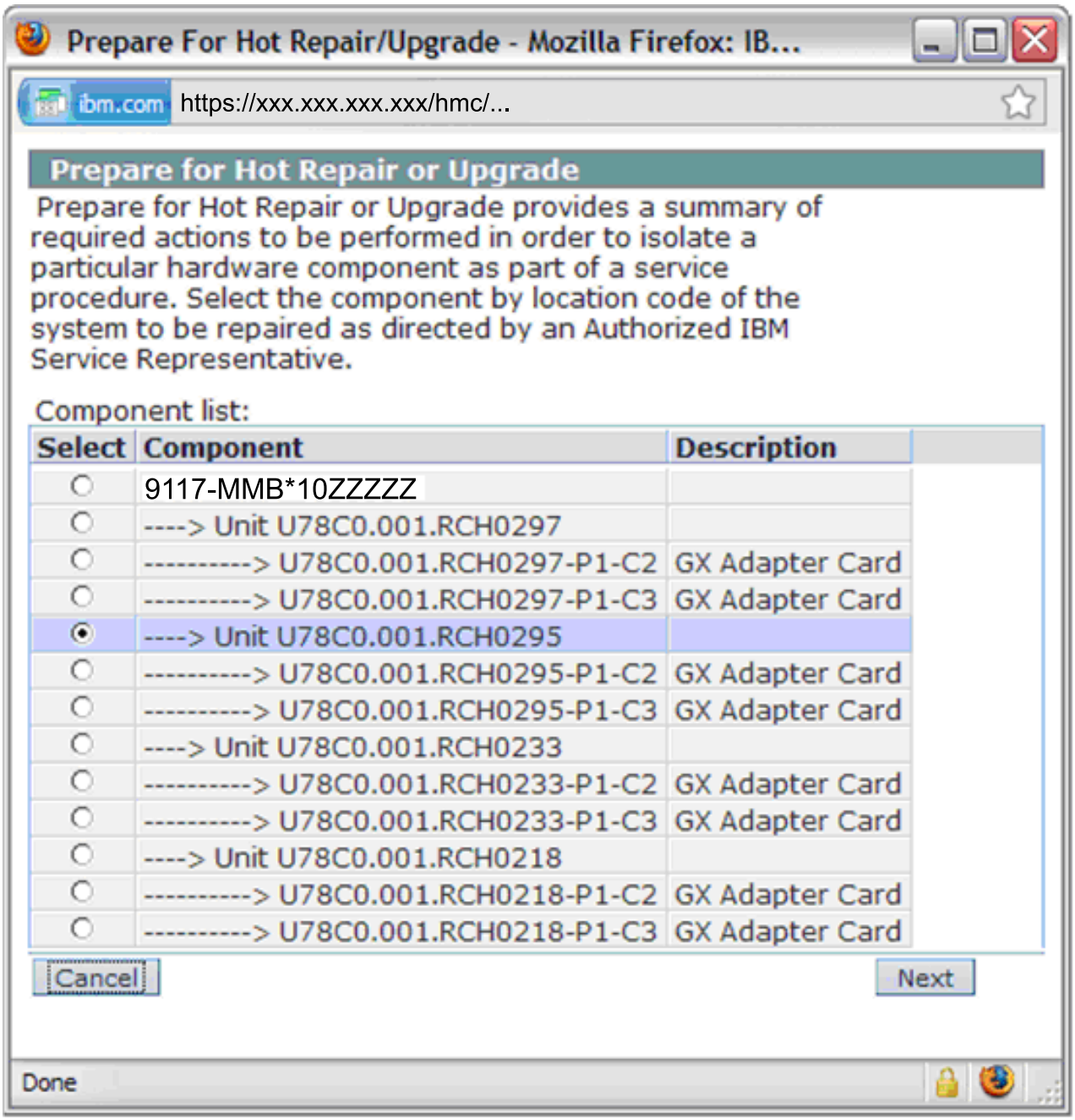

Figure 1. FRU selection within Prepare For Hot Repair or Upgrade Utility

5. Click **Next**.
6. Click **OK** when prompted to continue with the Advanced Power Control command.

   The Prepare for Hot Repair or Upgrade utility displays one of the following:

   - A message indicates why a node evacuation of the selected node is not allowed.
   - A window lists the set of actions that must be performed (prior to the CEC hot-node add and hot-node repair maintenance operation) for the node evacuation to be successful. An example of this window is shown in Figure 2 on page 17.

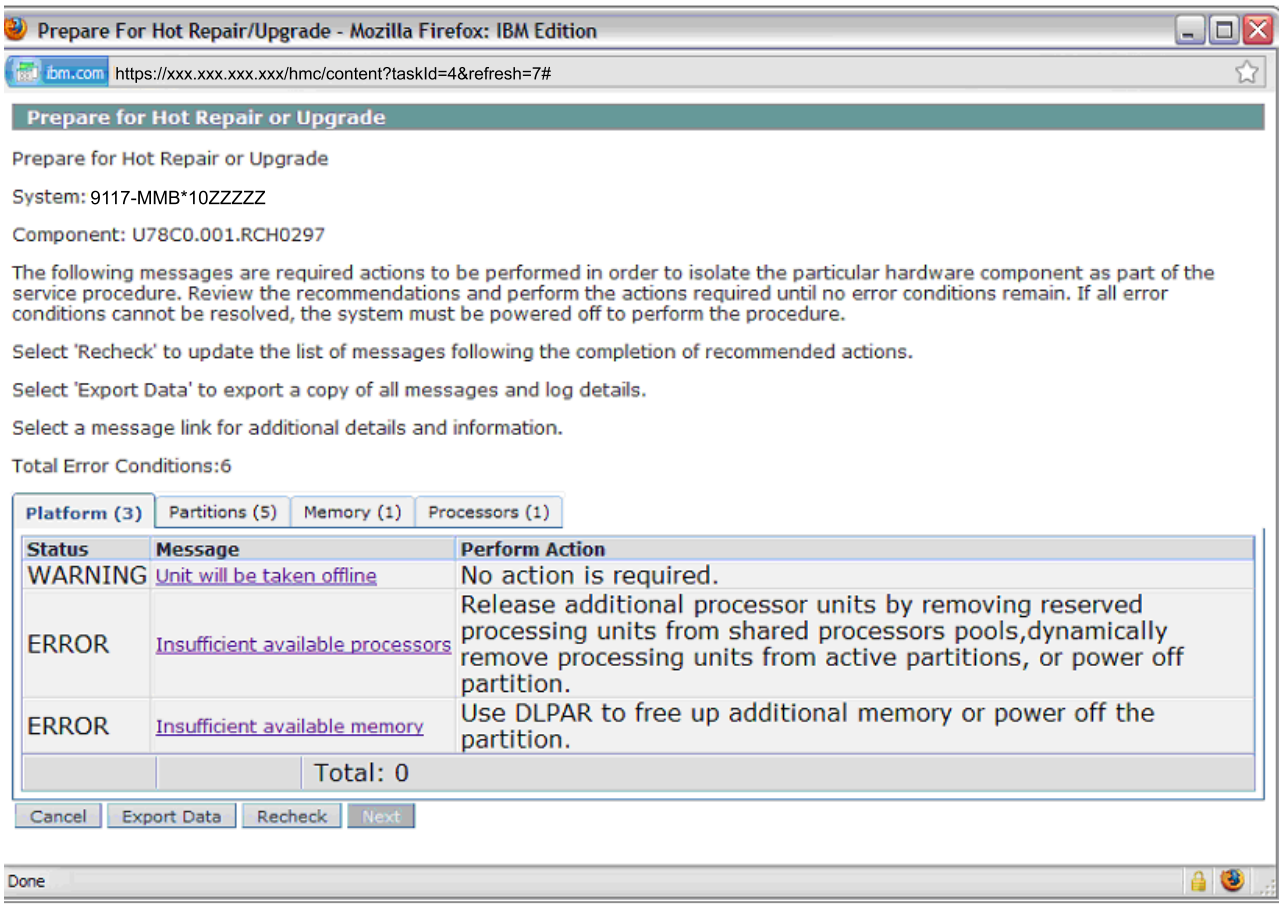

Figure 2. Prepare for Hot Repair or Upgrade Main window

The Prepare for Hot Repair or Upgrade window displays a summary of conditions that must be corrected before staring the node evacuation process. Use the four tabs (**Platform**, **Partitions**, **Memory**, and **Processors**) to display errors or warnings. An individual message can be selected to display additional details.

7. All error conditions must be corrected prior to the evacuation of the selected node as part of a CEC hot-node add and hot-node repair maintenance operation. Warning conditions might affect the system or partitions, but do not prevent the hot repair or upgrade from proceeding.

   Note: The **Next** button on this utility is not active when the utility is launched outside an actual service procedure as described here. When an IBM service provider initiates a service procedure to repair or upgrade the system, the **Next** button is active.
8. Click **Recheck** to reevaluate the systems readiness for node evacuation without restarting the utility.
9. Click **Cancel** to exit the Prepare for Hot Repair or Upgrade utility.
10. When all error conditions are corrected, an IBM service provider can proceed with the repair or upgrade procedure.

When working with the warning and error messages shown in the Prepare for Hot Repair or Upgrade utility, resolve the Platform and Partition messages first. The impacts to the platform and partitions noted in these messages might cause partitions to be shut down for various reasons (such as I/O resources being used by the partition in the target node). Working with the warning and error messages in this order avoids the situation in which memory and processor resources are removed from partitions using DLPAR operations, only to discover that additional partitions must be shutdown prior to the node evacuation later.

Note: Shutting down a partition frees up memory and processor resources. If a partition must be shut down, click **Recheck** to reevaluate the memory and processor resources.

Common messages for Prepare for Hot Repair or Upgrade

Some of the common error conditions and warning messages that are displayed in the Prepare for Hot Repair or Upgrade utility for node evacuation. Additional details are available for each of the error or warning message displayed by this utility to describe the condition. They can be displayed by clicking on the message.

If the error condition cannot be resolved, the node evacuation cannot continue. Contact your authorized service provider for assistance or proceed with a nonconcurrent repair, which will require the system to be powered off.

Table 7. Common error conditions and information messages

Message type	Common error condition or information message	Description
Processor message	Insufficient available processors	This message indicates that the remaining nodes do not have enough processors to support the currently active logical partitions on the system. Use the **Processors** tab to display information about this error condition, and the processing resources that must be made available to proceed with the node evacuation, as shown in Figure 3 on page 22. Processing units can be made available in several ways, including removing reserved processing units from shared processor pools, dynamically removing processing units from active partitions, and powering off partitions. See Removing processor resources dynamically using the Hardware Management Console. Following the completion of the service procedure, the processing resources are not automatically returned to the logical partitions. Use dynamic logical partitioning (DLPAR) operations to return the processing resources to the logical partitions.
Memory message	Insufficient available memory	This message indicates that the remaining nodes do not have enough memory to support the currently active logical partitions on the system. Use the **Memory** tab to display information about this error condition and the memory resources that must be made available to proceed with the node evacuation. Partitions can be deactivated or DLPAR can be used to decrease the memory resources used by active logical partitions. See Removing memory dynamically using the Hardware Management Console. Following the completion of the service procedure, the memory resources are not automatically returned to the logical partitions. Use DLPAR operations to return the memory resources to the logical partitions.

Table 7. Common error conditions and information messages (continued)

Message type	Common error condition or information message	Description
Platform messages	Unit will be taken offline	This message is a warning message that indicates a system unit or expansion unit will be varied off during the service procedure. Click the message text to display more details about this warning message, as shown in Figure 4 on page 23. **Note:** No specific action is required for this warning message. Resources that require action or attention from the system administrator, such as PCI adapters that must be deconfigured, will be identified separately in error or warning messages.
Partition messages	In-use I/O resource	This message indicates that an I/O resource is in use by an active IBM i logical partition that will be affected by the node evacuation procedure. This message includes information about what must be done to correct the error. Click the message text to display information about the resources being used, as shown in Figure 5 on page 24. For IBM i resources that are being used, the system does not allow the targeted system node to be evacuated unless all configuration descriptions that use resources in the target system unit node are varied off. For more information, see the Vary Configuration (VRYCFG) command.
	Critical disk resource attached	This error message that indicates that disk units that are being used by an active IBM i partition is affected by the service action. Click the message text to display details about these disk units and logical partitions that are affected, as shown in Figure 6 on page 25. The logical partitions listed in the detailed information must be powered before the node evacuation can proceed.
	I/O resource in use by AIX® partition	This message indicates that an I/O resource is being used by an active AIX logical partition that will be affected by the node evacuation procedure. An example of this message on the Partition tab is shown in Figure 7 on page 26. The HMC uses resource monitoring and control (RMC) flows to query the logical partition about resources. RMC must be active on a logical partition for these queries to succeed. An error in response to this query command indicates that an I/O resource must be deconfigured before the node evacuation proceeds. Click the message text to display information about the resources being used, as shown in Figure 8 on page 27. For this message, the targeted node cannot be evacuated unless the resources are deconfigured. This is done by using the rmdev command. If logical devices that use resources in the system node cannot be deconfigured, the operation must be delayed until they can be deconfigured or the logical partitions that own the resources must be powered off. For more information, see the AIX Remove device (rmdev) command.

Table 7. Common error conditions and information messages (continued)

Message type	Common error condition or information message	Description
Partition messages	I/O resource in use by Linux partition	This message indicates that an I/O resource that is being used by an active Linux logical partition is impacted by the node evacuation procedure. An example of this message on the **Partitions** tab is shown in Figure 9 on page 28. The HMC uses resource monitoring and control (RMC) flows to query the logical partition about resources. RMC must be active on a logical partition for these queries to succeed. An error in response to this query command indicates that an I/O resource must be deconfigured before the node evacuation proceeds. Click the message text to display information about the resources being used, as shown in Figure 10 on page 29. The utility allows the targeted node to be evacuated even if logical device resources that use physical resources in the target node remain configured in a Linux logical partition. The procedure continues even if the Linux logical partition might be affected by the removal of resources from the partition during of the service action. This general policy of fewer restrictions on resources owned by Linux logical partitions during CEC hot-node add and hot-node repair maintenance operations is consistent with the Linux operating system guidelines. However, the system administrator must assess the impact to the Linux environment of the loss of the resources identified by these messages. The resources identified in this window can be deconfigured if the system administrator wants to do so.
	Connection to partition cannot be established	This error message indicates that the resource monitoring and control (RMC) connection to one of the logical partitions cannot be established. Click the message text to display more details for this error. The concurrent maintenance procedure cannot be done unless the RMC connection is working or the logical partition identified in the detailed error information is powered down. You can verify the RMC connection between the partition and the HMC (Hardware Management Console) using the Verifying RMC connections for the mobile partition procedure. To learn more about configuring and using RMC, see Understanding RMC and resource managers in the RCST Administration Guide.
	Connection to partition was lost	This error message indicates that the RMC connection to one of the logical partitions was lost. Click on the message text to display more details for this error. The concurrent maintenance procedure cannot be done unless the RMC connection is working, or the logical partition identified in the detailed error information is powered down. You can verify the RMC connection between the partition and the Hardware Management Console (HMC) using the Verifying RMC connections for the mobile partition procedure. To learn more about configuring and using RMC, see Understanding RMC and resource managers in the RCST Administration Guide.

Table 7. Common error conditions and information messages (continued)

Message type	Common error condition or information message	Description
Partition messages	Partition not node evacuation-capable	This error message indicates that an IBM i partition is not capable of supporting the node evacuation function. Click on the message text to display the name of the partition that does not support node evacuation. The partition must be shut down or upgraded to complete the procedure. IBM i V5R4M5 and V6R1M0 support the node evacuation process when the following enablement PTFs are installed: • V5R4M5 - MF45678 • V6R1M0 - MF45581
	VIO Client Impacted	In a virtualized environment, a VIOS (Virtualized I/O Server) partition hosts the I/O resources for other partitions on the system. Error messages are provided for I/O resources that are impacted by the service procedure that is owned by the VIOS partition. In addition, the VIOS client impacted warning message indicates the hosted partitions that might also be impacted. Click the message text to display the names of the partitions that might be impacted.

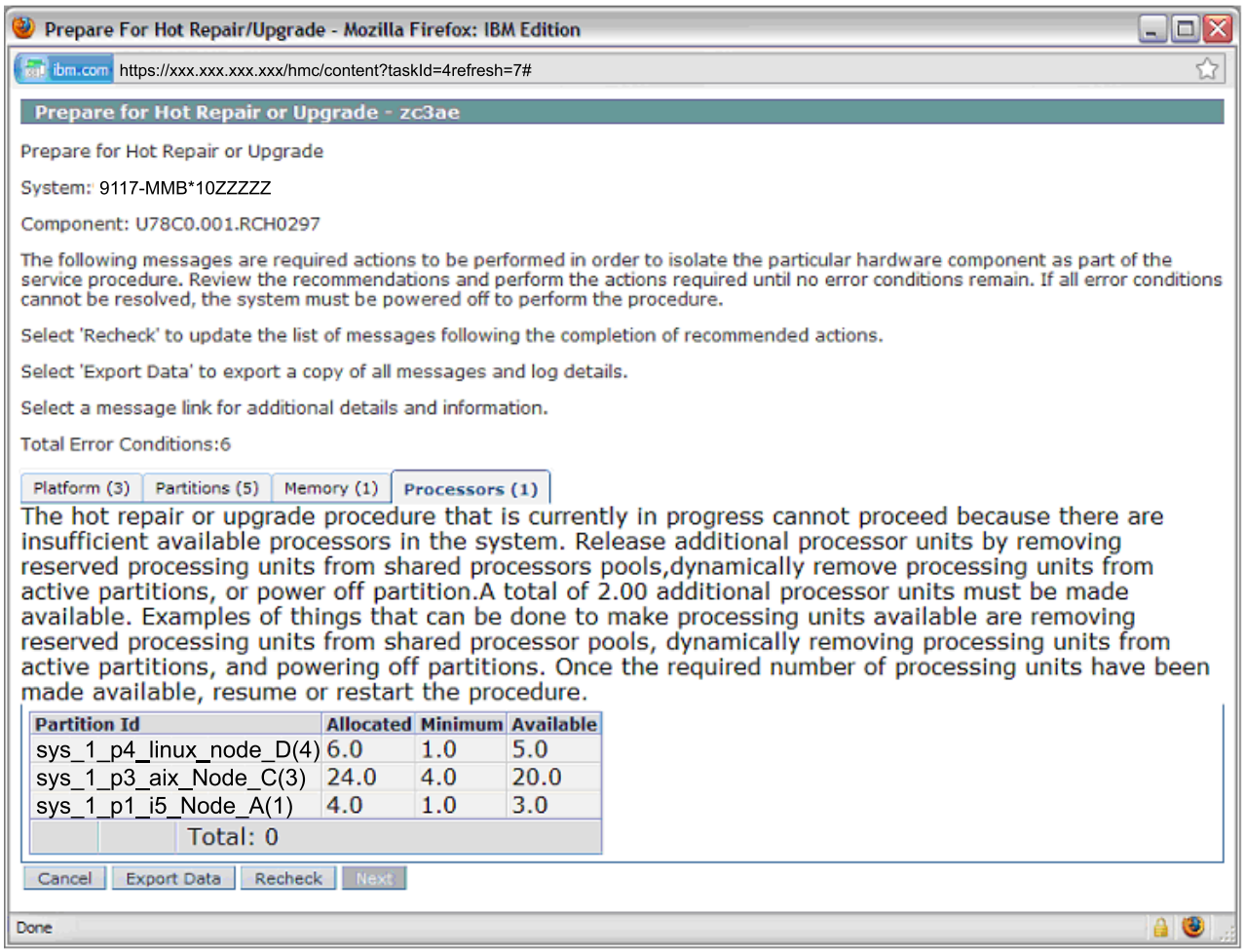

Figure 3. **Processors** *tab showing insufficient processors condition*

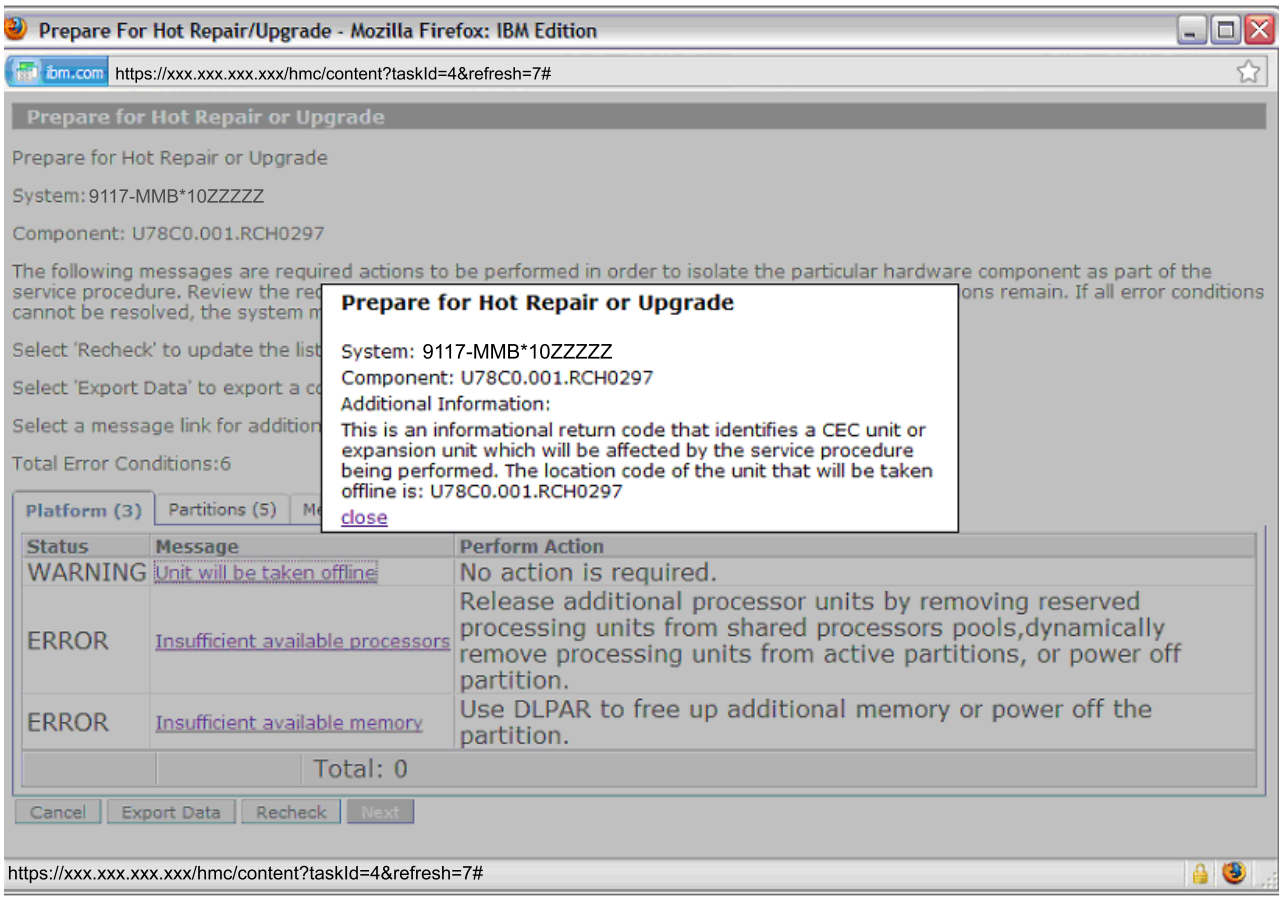

Figure 4. Details for the Unit will be taken offline message

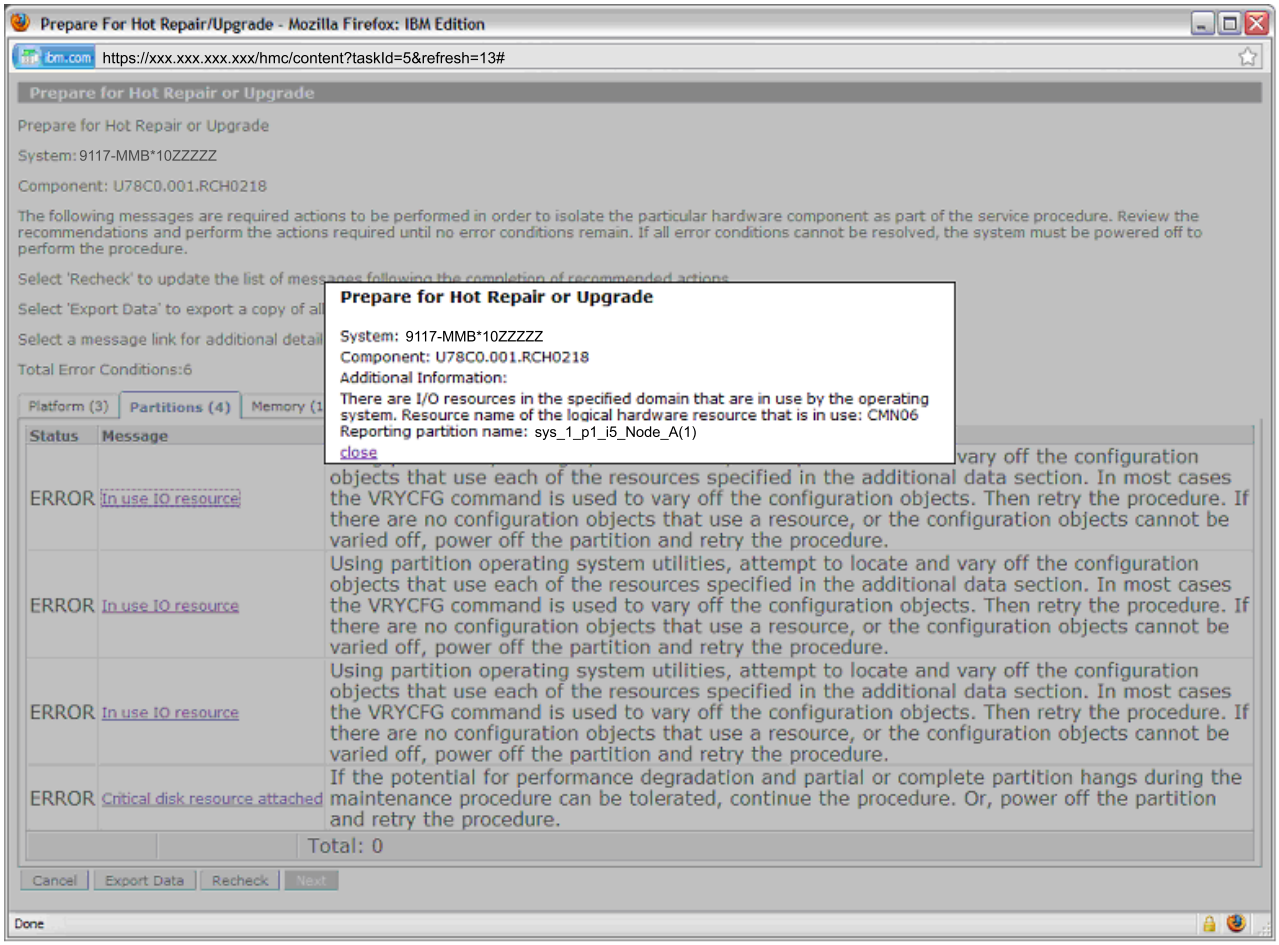

Figure 5. Details for the IBM i In use IO resource message

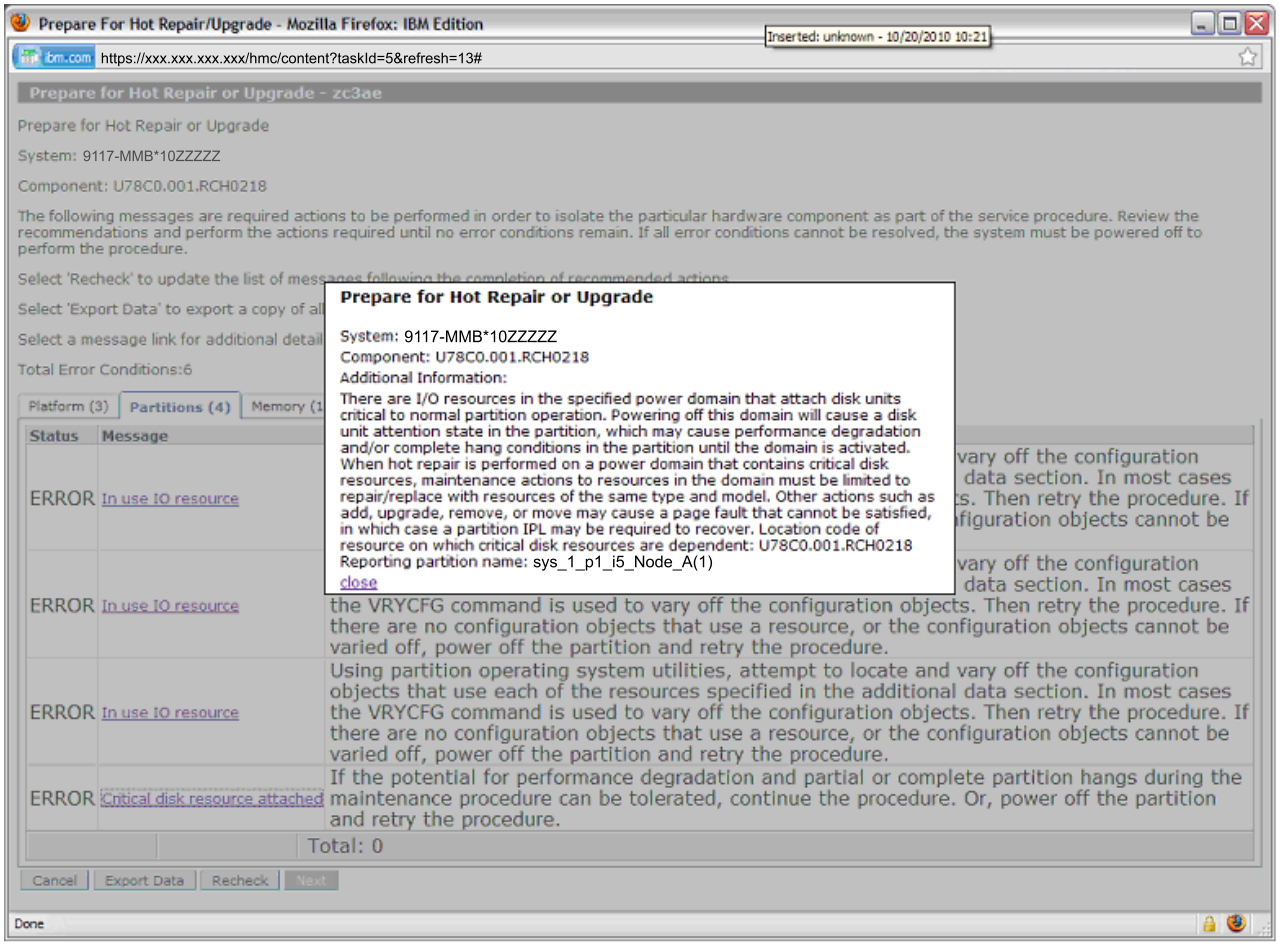

Figure 6. Details for the Critical disk resource attached message

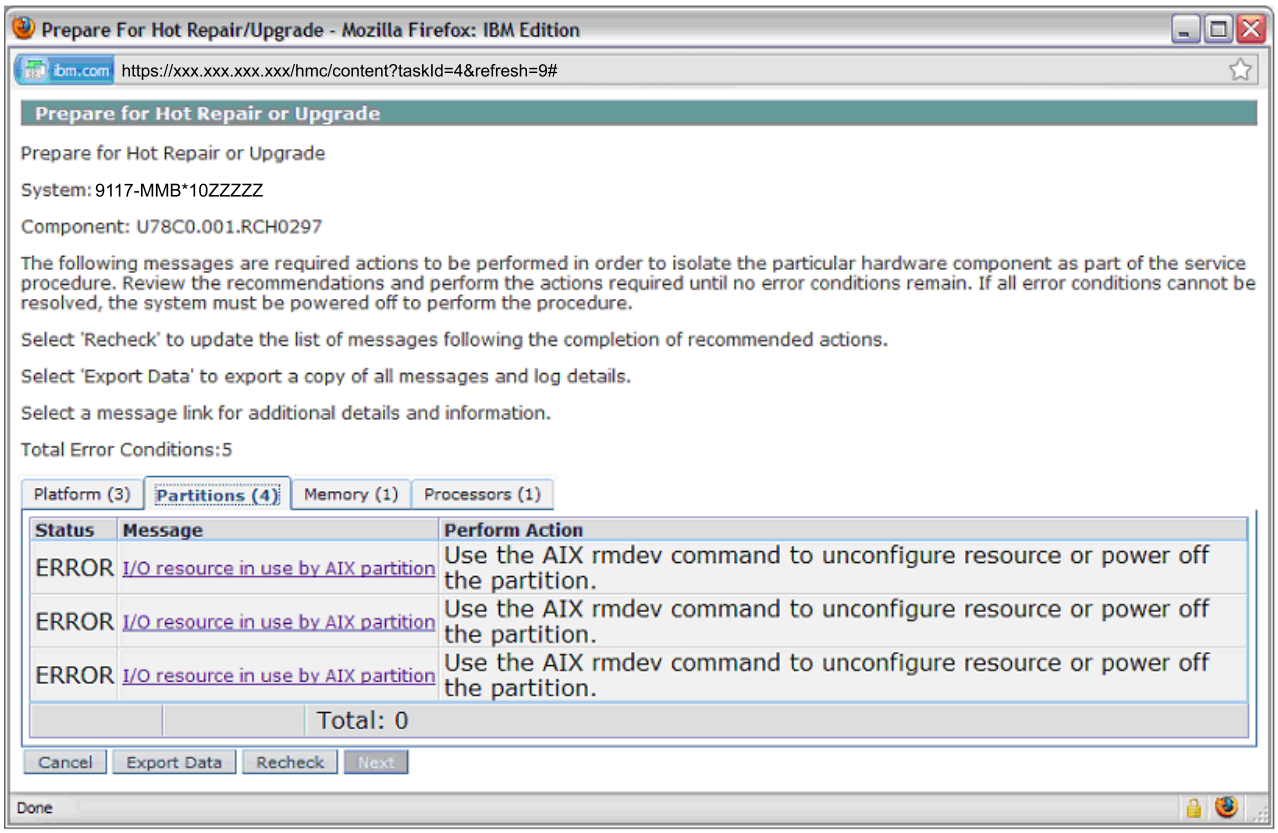

Figure 7. **Partitions** *tab showing error messages for AIX resources*

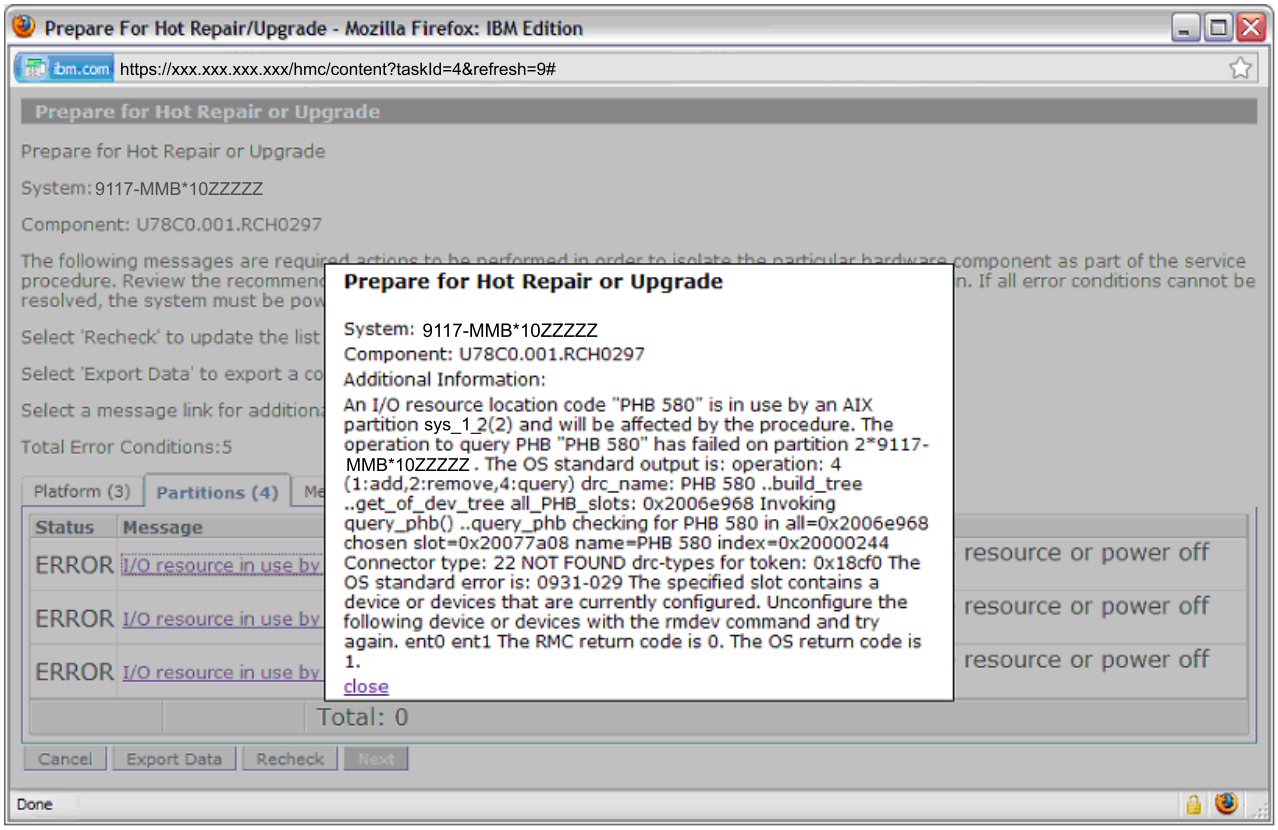

Figure 8. Details for the I/O resource in use by AIX partition message

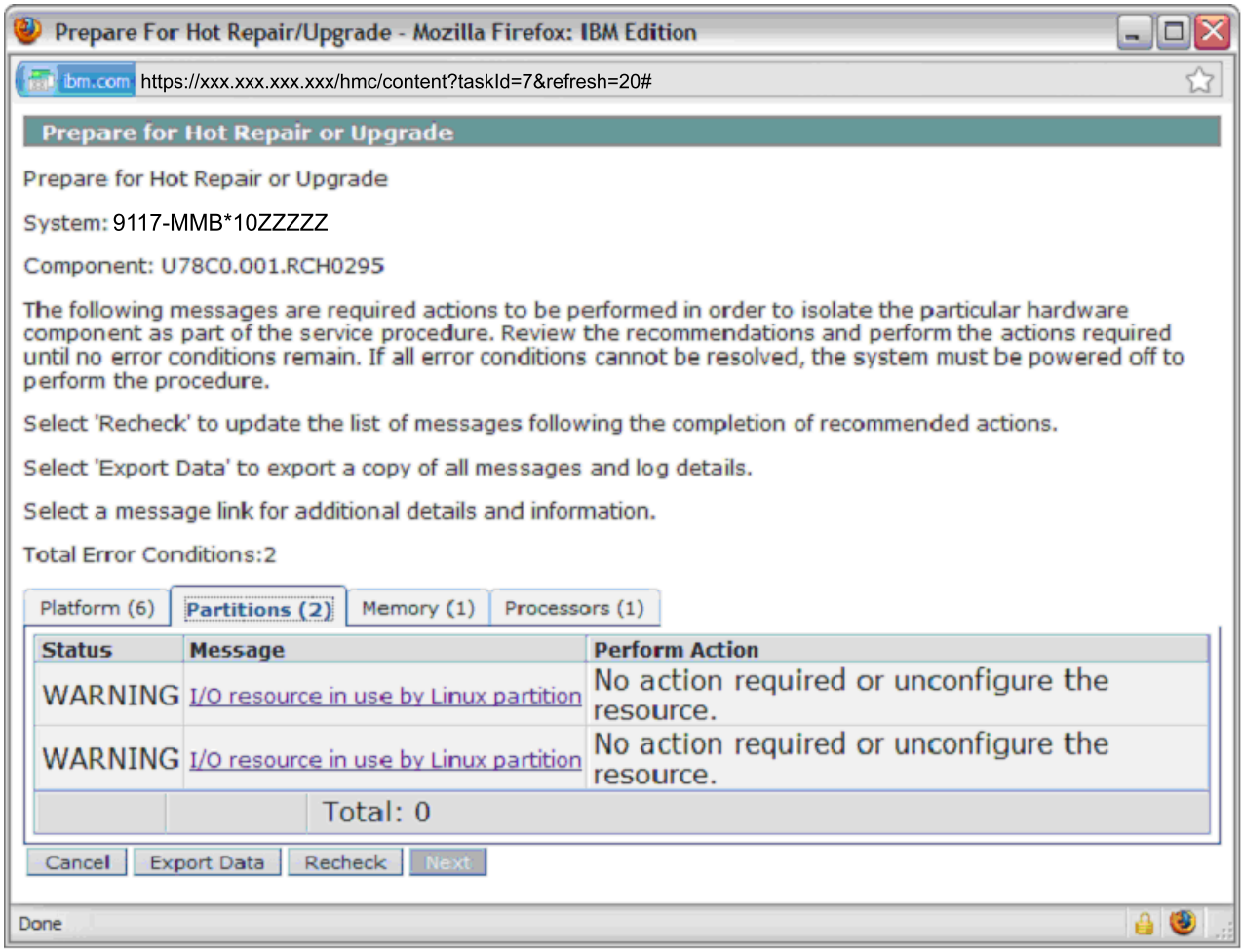

Figure 9. **Partitions** *tab showing error messages for Linux resources*

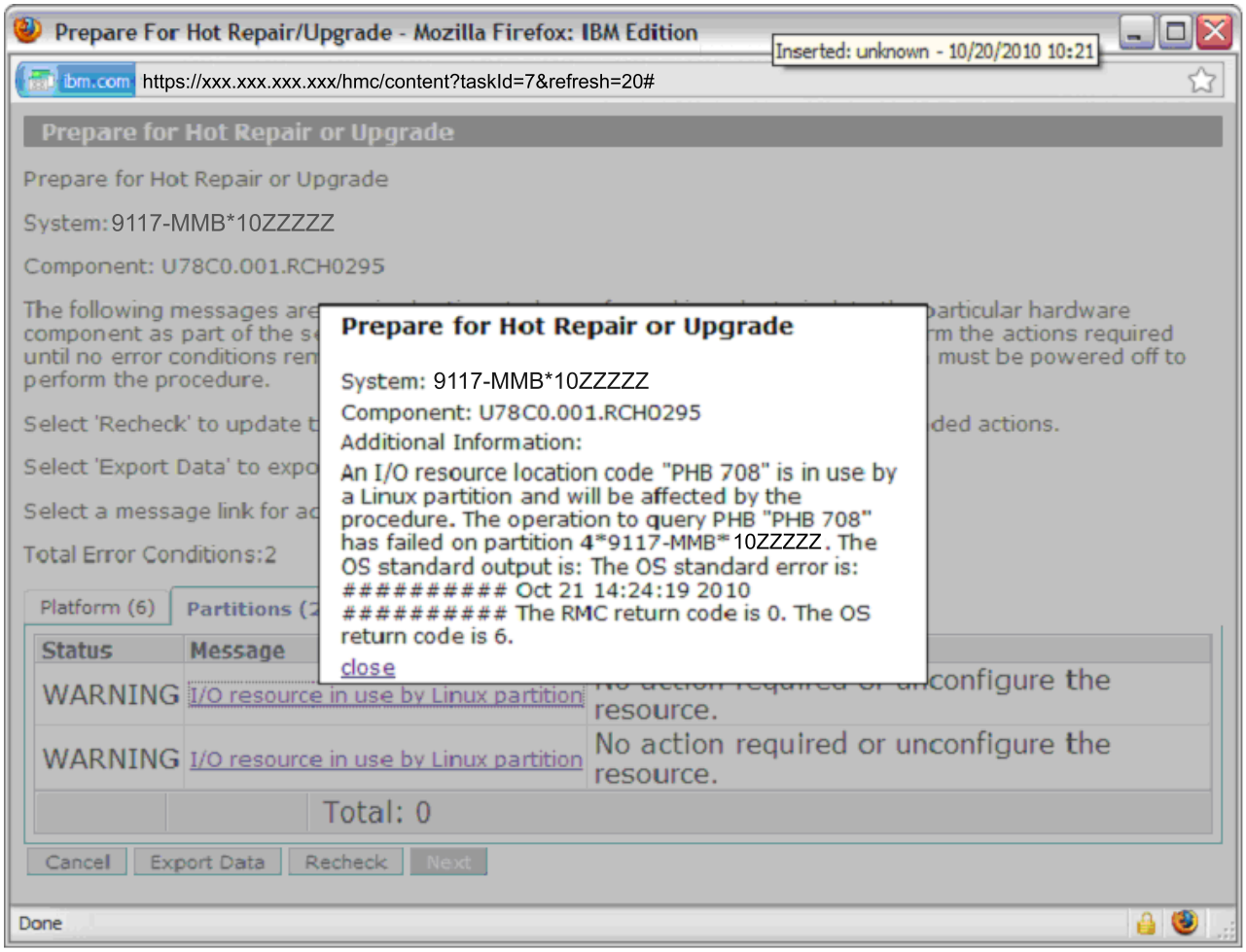

Figure 10. Details for the I/O resource in use by Linux partition message

Model 9117-MMB and 9179-MHB multi-drawer external SMP and FSP flex cabling

Use this information to perform CEC hot-node add and hot-node repair maintenance operations on model 9117-MMB and 9179-MHB systems.

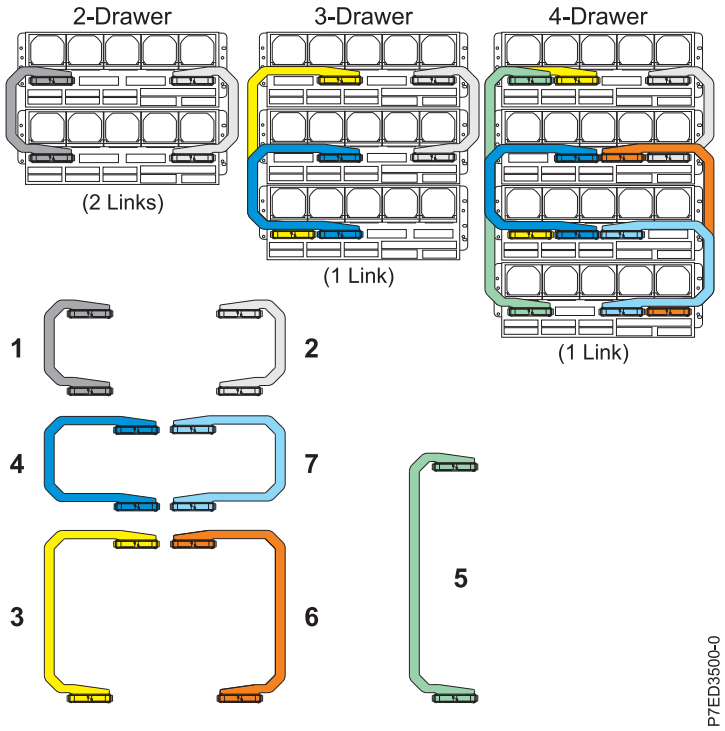

Figure 11. Model 9117-MMB and 9179-MHB multi-drawer SMP flex cabling

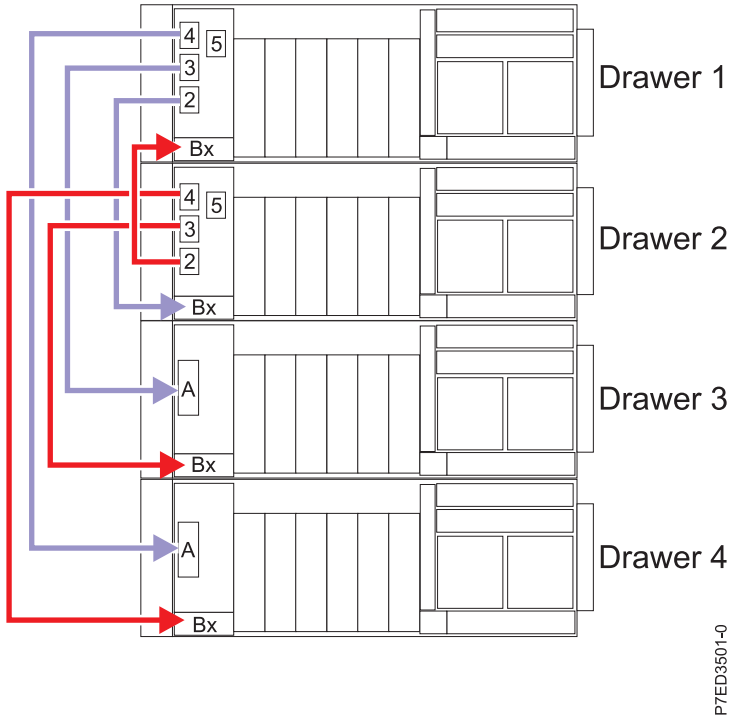

Figure 12. Model 9117-MMB and 9179-MHB multi-drawer FSP flex cabling

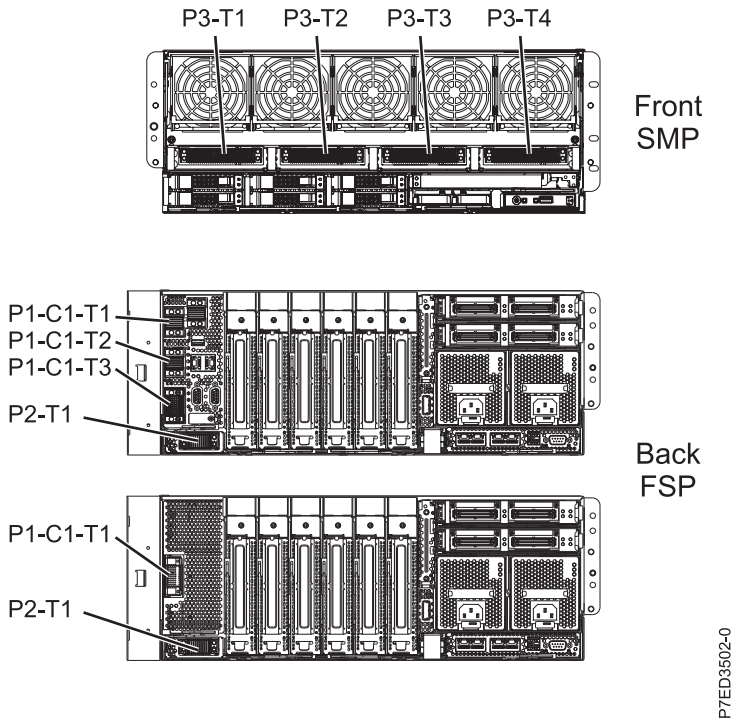

Figure 13. Model 9117-MMB and 9179-MHB multi-drawer flex cabling connector location codes

CEC hot-node add and hot-node repair maintenance on a 2-drawer system - Front

Either drawer 1 or drawer 2 - Front CEC (central processing unit, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1
2. Remove front bezel from drawer 2.
3. Remove SMP flex assembly A
4. Remove SMP flex assembly B
5. Perform necessary maintenance operation
6. Reinstall SMP flex assembly A to connector P3-T1 on drawer 1 and to connector P3-T1 on drawer 2
7. Reinstall SMP flex assembly B to connector P3-T4 on drawer 1 and to connector P3-T4 on drawer 2
8. Reinstall front bezel on drawer 1
9. Reinstall front bezel on drawer 2

CEC hot-node add and hot-node repair maintenance on a 2-drawer system - Rear

Either drawer 1 or drawer 2 - Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 1.
2. Remove FSP cover from drawer 2.
3. Remove FSP flex assembly C.
4. Perform necessary maintenance operation.

5. Reconnect FSP flex assembly C to connectors P1-C1-T3 and P2-T1 on drawer 1 and to connectors P1-C1-T3 and P2-T1 on drawer 2.
6. Reinstall FSP cover from drawer 1.
7. Reinstall FSP cover from drawer 2.

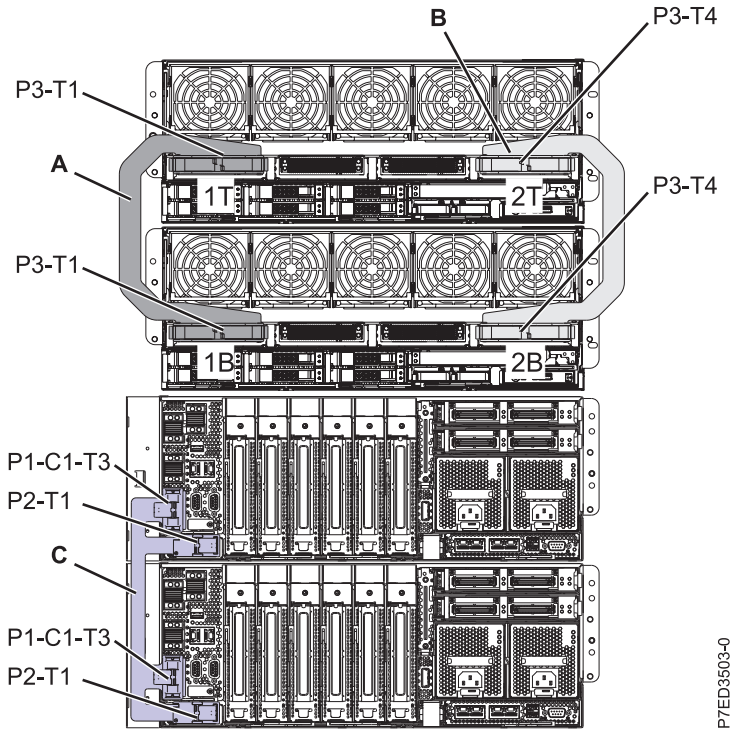

Figure 14. Model 9117-MMB and 9179-MHB 2 drawer flex cabling

CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 1 front

Drawer 1 – Front CEC (CPU, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1.
2. Remove front bezel from drawer 2.
3. Remove SMP flex assembly A.
4. Disconnect SMP Flex Assembly latch # 3T from Drawer 1.
5. Bend Flex assembly out of the way.
6. Perform necessary maintenance operation.
7. Reconnect SMP Flex Assembly latch # 3T to connector P3-T2 on Drawer 1.
8. Reinstall SMP Flex Assembly A to connector P3-T4 on Drawer 1 and to connector P3-T4 on Drawer 2.
9. Reinstall front bezel on drawer 1.
10. Reinstall front bezel on drawer 2.

CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 2 front

Drawer 2 – Front CEC (CPU, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1.
2. Remove front bezel from drawer 2.
3. Remove front bezel from drawer 3.
4. Remove SMP flex assembly A.
5. Remove SMP flex assembly C.
6. Perform necessary maintenance operation.
7. Reinstall SMP Flex Assembly C to connector P3-T2 on Drawer 2 and to connector P3-T2 on Drawer 3
8. Reinstall SMP Flex Assembly A to connector P3-T4 on Drawer 1 and to connector P3-T4 on Drawer 2
9. Reinstall front bezel on drawer 1.
10. Reinstall front bezel on drawer 2.
11. Reinstall front bezel on drawer 3.

CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 3 front

Drawer 3 – Front CEC (CPU, Memory, Regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1.
2. Remove front bezel from drawer 2.
3. Remove front bezel from drawer 3.
4. Remove SMP flex assembly C.
5. Remove SMP flex assembly B.
6. Perform necessary maintenance operation.
7. Reinstall SMP Flex Assembly B to connector P3-T2 on drawer 1 and to connector P3-T1 on drawer 3.
8. Reinstall SMP Flex Assembly C to connector P3-T2 on drawer 2 and to connector P3-T2 on drawer 3.
9. Reinstall front bezel on drawer 1.
10. Reinstall front bezel on drawer 2.
11. Reinstall front bezel on drawer 3.

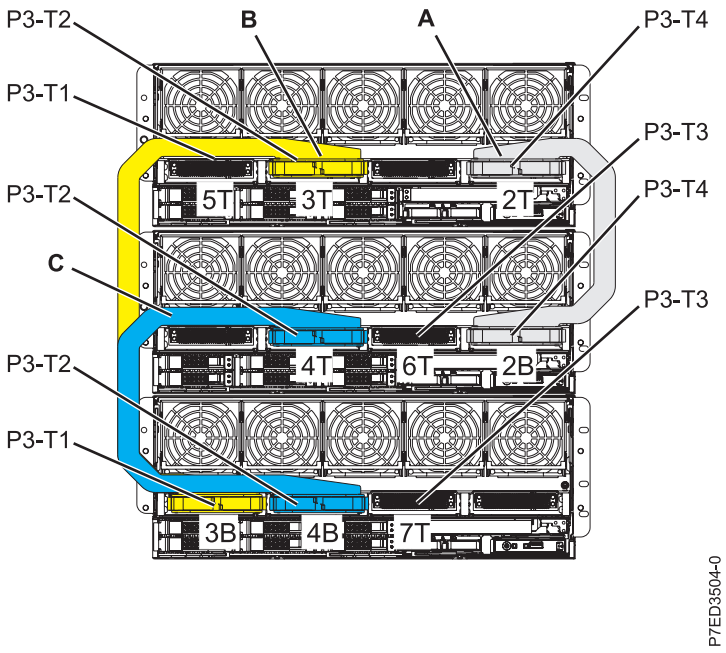

Figure 15. Model 9117-MMB and 9179-MHB 3 drawer flex cabling - front

CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 1 rear

Drawer 1 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 1.
2. Remove FSP cover from drawer 2.
3. Disconnect B drawer flex connector P1-C1-T2 from drawer 1.
4. Disconnect A drawer flex connectors P1-C1-T3 and P2-T1 from drawer 1.
5. Bend flex assembly out of the way.
6. Perform necessary maintenance operation.
7. Reconnect A drawer flex connectors P1-C1-T3 and P2-T1 to drawer 1.
8. Reconnect B drawer flex connector P1-C1-T2 to drawer 1.
9. Reinstall FSP cover on drawer 1.
10. Reinstall FSP cover on drawer 2.

CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 2 rear

Drawer 2 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 1.
2. Remove FSP cover from drawer 2.
3. Remove FSP cover from drawer 3.
4. Disconnect B drawer flex connector P1-C1-T2 from drawer 2.

5. Disconnect A drawer flex connectors P1-C1-T3 and P2-T1 from drawer 2.
6. Bend the three connectors out of the way.
7. Perform necessary maintenance operation.
8. Reconnect A drawer flex connectors P1-C1-T3 and P2-T1 to drawer 2.
9. Reconnect B drawer flex connector P1-C1-T2 to drawer 2.
10. Reinstall FSP cover on drawer 1.
11. Reinstall FSP cover on drawer 2.
12. Reinstall FSP cover on drawer 3.

CEC hot-node add and hot-node repair maintenance on a 3-drawer system - Drawer 3 rear

Drawer 3 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 2.
2. Remove FSP cover from drawer 3.
3. Disconnect B drawer flex connectors P1-C1-T1 and P2-T1 from drawer 3.
4. Bend the B drawer flex out of the way.
5. Perform necessary maintenance operation.
6. Reconnect B drawer flex connectors P1-C1-T1 and P2-T1 to drawer 3.
7. Reinstall FSP cover on drawer 2.
8. Reinstall FSP cover on drawer 3.

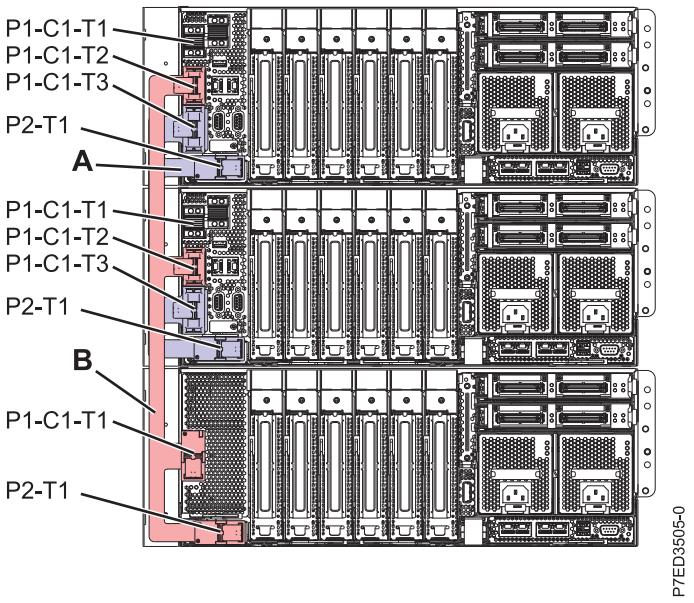

Figure 16. Model 9117-MMB and 9179-MHB 3 drawer flex cabling - rear

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 1 front

Drawer 1 – Front CEC (CPU, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1.
2. Remove front bezel from drawer 2.
3. Remove front bezel from drawer 3.
4. Remove front bezel from drawer 4.
5. Remove SMP flex assembly D.
6. Disconnect SMP flex assembly latch # 3T from drawer 1.
7. Disconnect SMP flex assembly latch # 2T from drawer 1.
8. Bend both flex assemblies out of the way.
9. Perform necessary maintenance operation.
10. Reconnect SMP flex assembly latch # 2T to connector P3-T4 on drawer 1.
11. Reconnect SMP flex assembly latch # 3T to connector P3-T2 on drawer 1.
12. Reinstall SMP flex assembly D to connector P3-T1 on drawer 1 and to connector P3-T1 on drawer 4.
13. Reinstall front bezel on drawer 1.
14. Reinstall front bezel on drawer 2.
15. Reinstall front bezel on drawer 3.
16. Reinstall front bezel on drawer 4.

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 2 front

Drawer 2 – Front CEC (CPU, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1.
2. Remove front bezel from drawer 2.
3. Remove front bezel from drawer 3.
4. Remove SMP flex assembly C.
5. Disconnect SMP flex assembly latch # 6T from Drawer 2.
6. Remove SMP flex assembly A.
7. Bend flex assembly E out of the way
8. Perform necessary maintenance operation.
9. Reinstall flex assembly A to connector P3-T4 on drawer 1 and to connector P3-T4 on drawer 2.
10. Reconnect SMP flex assembly latch # 6T to connector P3-T3 on drawer 2.
11. Reinstall flex assembly C to connector P3-T2 on drawer 2 and to connector P3-T2 on drawer 3.
12. Reinstall front bezel on drawer 1.
13. Reinstall front bezel on drawer 2.
14. Reinstall front bezel on drawer 3.

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 3 front

Drawer 3 – Front CEC (CPU, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 2.
2. Remove front bezel from drawer 3.
3. Remove front bezel from drawer 4.
4. Remove SMP flex assembly C.
5. Remove SMP flex assembly F.
6. Disconnect SMP flex assembly latch # 3B from Drawer 3.
7. Bend flex assembly B out of the way.
8. Perform necessary maintenance operation.
9. Reconnect SMP flex assembly latch # 3B to connector P3-T1 on drawer 3.
10. Reinstall flex assembly F to connector P3-T3 on drawer 3 and to connector P3-T3 on drawer 4.
11. Reinstall flex assembly C to connector P3-T2 on drawer 2 and to connector P3-T2 on drawer 3.
12. Reinstall front bezel on drawer 2.
13. Reinstall front bezel on drawer 3.
14. Reinstall front bezel on drawer 4.

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 4 front

Drawer 4 – Front CEC (CPU, memory, regs, and so on.) or drawer replace. Not necessary for DASD/Media or Assembly.

1. Remove front bezel from drawer 1.
2. Remove front bezel from drawer 2.
3. Remove front bezel from drawer 3.
4. Remove front bezel from drawer 4.
5. Remove SMP flex assembly D.
6. Remove SMP flex assembly F.
7. Remove SMP flex assembly E.
8. Perform necessary maintenance operation.
9. Reinstall SMP flex assembly E to connector P3-T3 on drawer 2 and to connector P3-T4 on drawer 4.
10. Reinstall SMP flex assembly F to connector P3-T3 on drawer 3 and to connector P3-T3 on drawer 4.
11. Reinstall SMP flex assembly D to connector P3-T1 on drawer 1 and to connector P3-T1 on drawer 4.
12. Reinstall front bezel on drawer 1.
13. Reinstall front bezel on drawer 2.
14. Reinstall front bezel on drawer 3.
15. Reinstall front bezel on drawer 4.

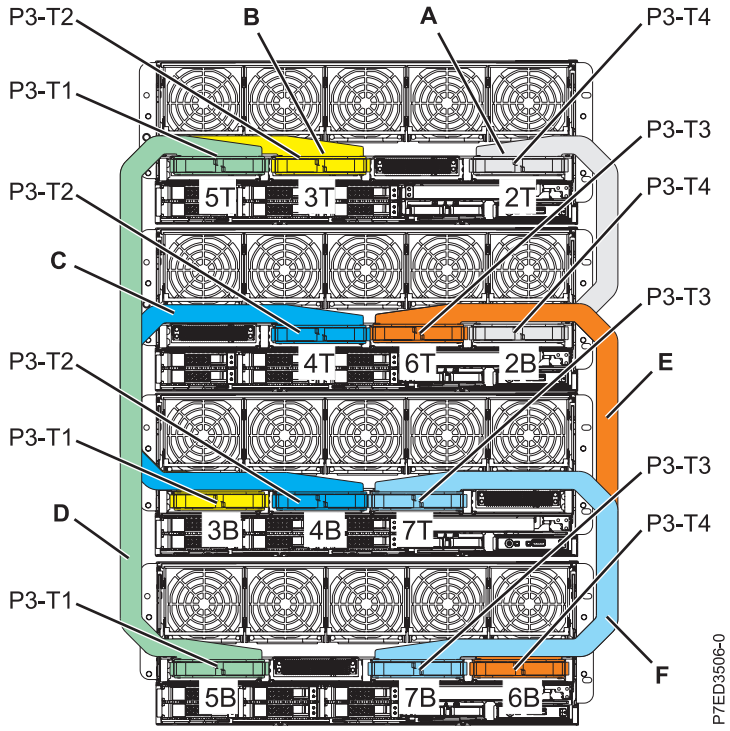

Figure 17. Model 9117-MMB and 9179-MHB 4 drawer flex cabling - front

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 1 rear

Drawer 1 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 1.
2. Remove FSP cover from drawer 2.
3. Disconnect C drawer flex connector P1-C1-T1 from drawer 1.
4. Disconnect B drawer flex connector P1-C1-T2 from drawer 1.
5. Disconnect A drawer flex connectors P1-C1-T3 and P2-T1 from drawer 1.
6. Bend all three flex assemblies out of the way.
7. Perform necessary maintenance operation.
8. Reconnect A drawer flex connectors P1-C1-T3 and P2-T1 to drawer 1.
9. Reconnect B drawer flex connector P1-C1-T2 to drawer 1.
10. Reconnect C drawer flex connector P1-C1-T1 to drawer 1.
11. Reinstall FSP cover on drawer 1.
12. Reinstall FSP cover on drawer 2.

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 2 rear

Drawer 2 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 1.
2. Remove FSP cover from drawer 2.

3. Remove FSP cover from drawer 3.
4. Disconnect C drawer flex connector P1-C1-T1 from drawer 2.
5. Disconnect B drawer flex connector P1-C1-T2 from drawer 2.
6. Disconnect A drawer flex connectors P1-C1-T3 and P2-T1 from drawer 2.
7. Bend the four connectors out of the way.
8. Perform necessary maintenance operation.
9. Reconnect A drawer flex connectors P1-C1-T3 and P2-T1 to drawer 2.
10. Reconnect B drawer flex connector P1-C1-T2 to drawer 2.
11. Reconnect C drawer flex connector P1-C1-T1 to drawer 2.
12. Reinstall FSP cover on drawer 1.
13. Reinstall FSP cover on drawer 2.
14. Reinstall FSP cover on drawer 3.

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 3 rear

Drawer 3 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 2.
2. Remove FSP cover from drawer 3.
3. Remove FSP cover from drawer 4.
4. Disconnect B drawer flex connectors P1-C1-T1 and P2-T1 from drawer 3.
5. Bend the B drawer flex out of the way.
6. Perform necessary maintenance operation.
7. Reconnect B drawer flex connectors P1-C1-T1 and P2-T1 to drawer 3.
8. Reinstall FSP cover on drawer 2.
9. Reinstall FSP cover on drawer 3.
10. Reinstall FSP cover on drawer 4.

CEC hot-node add and hot-node repair maintenance on a 4-drawer system - Drawer 4 rear

Drawer 4 – Rear FSP or drawer replace only.

1. Remove FSP cover from drawer 3.
2. Remove FSP cover from drawer 4.
3. Disconnect C drawer flex connectors P1-C1-T1 and P2-T1 from drawer 4.
4. Bend the C drawer flex out of the way.
5. Perform necessary maintenance operation.
6. Reconnect C drawer flex connectors P1-C1-T1 and P2-T1 to drawer 4.
7. Reinstall FSP cover on drawer 3.
8. Reinstall FSP cover on drawer 4.

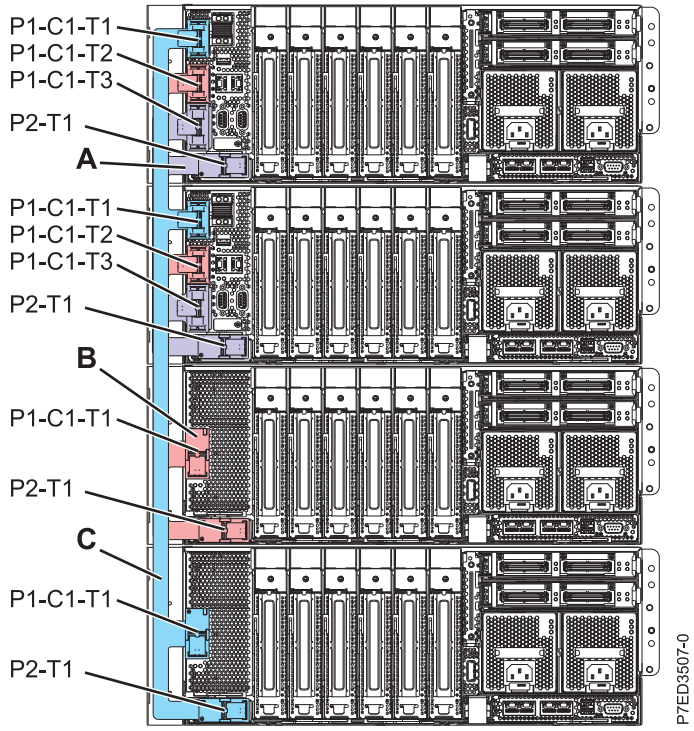

Figure 18. Model 9117-MMB and 9179-MHB 4 drawer flex cabling - rear

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This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M456
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 7032 15-2937
email: tjahn@de.ibm.com

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

VCCI Statement - Japan

この装置は、クラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害
を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求され
ることがあります。 VCCI－A

The following is a summary of the VCCI Japanese statement in the box above:

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

高調波ガイドライン準用品

Electromagnetic Interference (EMI) Statement - People's Republic of China

声 明

此为A级产品，在生活环境中，
该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其
干扰采取切实可行的措施。

Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

The following is a summary of the EMI Taiwan statement above.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user will be required to take adequate measures.

IBM Taiwan Contact Information:

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용(A급)으로 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:
"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem “Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)“. Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Regulations, Abteilung M456
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 7032 15-2937
email: tjahn@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать
радиопомехи, для снижения которых необходимы
дополнительные меры

Class B Notices

The following Class B statements apply to features designated as electromagnetic compatibility (EMC) Class B in the feature installation information.

Federal Communications Commission (FCC) statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
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email: tjahn@de.ibm.com

VCCI Statement - Japan

この装置は，クラスB情報技術装置です。この装置は，家庭環境で使用
することを目的としていますが，この装置がラジオやテレビジョン受信機に
近接して使用されると，受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　VCCI－B

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

高調波ガイドライン準用品

IBM Taiwan Contact Information

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Electromagnetic Interference (EMI) Statement - Korea

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며, 모든 지역에서 사용할 수 있습니다.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse B EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse B ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse B

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
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Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Regulations, Abteilung M456
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 7032 15-2937
email: tjahn@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse B.

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