Power Systems

5796 and 7314 model G30 removal and replacement procedures

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Note

Before using this information and the product it supports, read the information in "Notices," on page 23, "Safety notices" on page v, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125–5823.

This edition applies to IBM Power Systems™ servers that contain the POWER6® processor and to all associated models.

Contents

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.

World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information in the booklet. You should also refer to the booklet any time you do not clearly understand any safety information in the U.S. English publications.

German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

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

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)

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.

Removal and replacement procedures

Here you will find installation and maintenance information for the 5796 and 7314-G30 expansion units.

Removal and replacement procedures

Use the removal and replacement procedures when you repair, maintain, or exchange your system parts.

Before you begin a replacement, perform these tasks:

1. If you are performing a replacement procedure that might put your data at risk, ensure, if possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
2. Review the installation or replacement procedure for the feature or part.
3. Note the significance of color on your system. Blue or Terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. **Terra-cotta** might also indicate that the part can be removed and replaced with the system or logical partition power on.
4. Ensure that you have access to a medium, flat-blade screwdriver.
5. If parts are incorrect, missing, or visibly damaged, contact your service provider or next level of support.

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)

Attention:

Failure to follow the step-by-step sequence for FRU removal and/or installation may result in FRU or system damage.

Use the following precautions whenever you handle electronic components or cables.

- The electrostatic discharge (ESD) kit and the ESD wrist strap must be used when handling logic cards, SCMs, MCMs, electronic boards, and disk drives.
- Keep all electronic components in the shipping container or envelope until you are ready to install them.
- If you remove, then reinstall an electronic component, temporarily place the component on an ESD pad or blanket.

GX Dual-Port 12X Channel Attach adapter

Use this procedure to service the GX Dual-Port 12X Channel Attach adapter.

This unit will be serviced nonconcurrently.

Power should be removed from the unit containing the FRU in the location field above. If this unit is powered on, power it off now. When the unit is completely powered off, disconnect the ac input source by removing the power cord from the unit. Do not apply power to the unit until directed to do so in this procedure.

You must also power down the server connected to the 7314-G30 or feature code 5796 if the server and system firmware combination is one of the following:

- 9406-MMA or 9117-MMA with system firmware level equal to or less than EM320_040_031 or EM310_069_048.
- 8204-E8A with system firmware level equal to or less than EL320_040_031.

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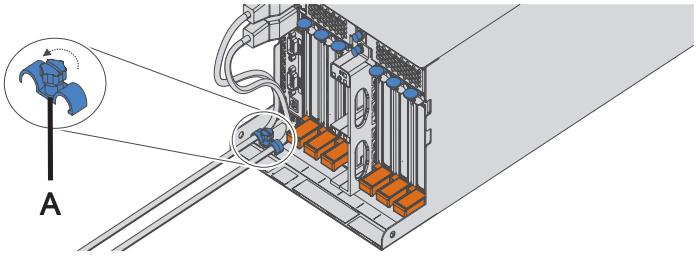
1. Remove the cable-management bracket

1. Label, then disconnect the ac power cords from the back of the system.
2. Remove the cable-management bracket retaining screw **(A)**.



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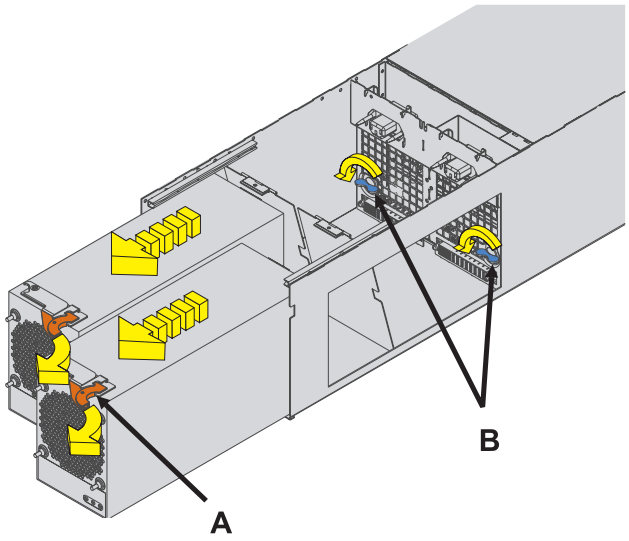
2. Remove the power supplies

1. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
2. Pull the power supply straight out from the I/O subsystem.
3. Repeat these steps to remove the other power supply.
4. Turn the blue thumbscrews **(B)** in the direction shown to unlock the PCI shuttle assembly.



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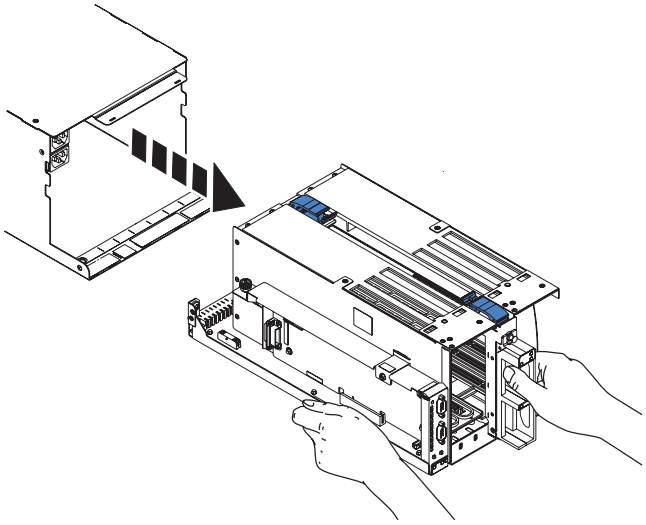
3. Remove the PCI shuttle assembly

Slide the PCI shuttle assembly from the I/O subsystem as shown in the diagram.



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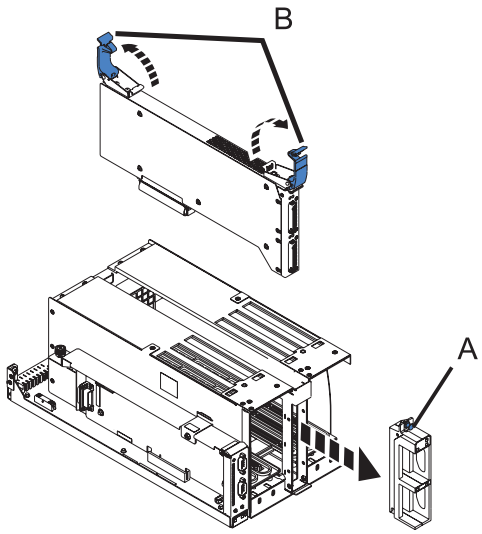
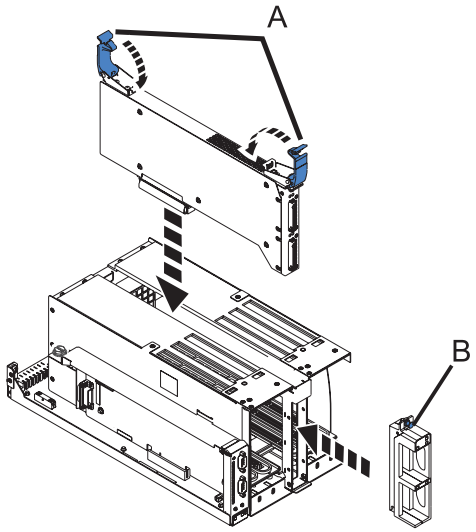
4. Remove the GX Card

1. Pull out the locking knob **(A)** and remove the front GX card cover.
2. Squeeze the release latches **(B)** to release them from the card and rotate in the direction shown.
3. Carefully pull the card out of the slot.



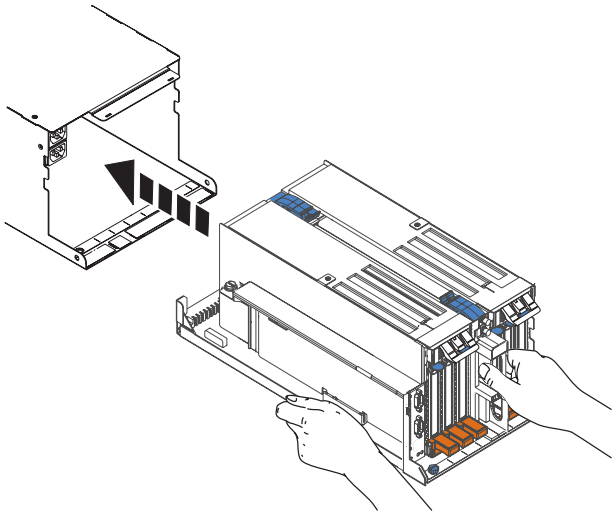
5. Install the GX Card

1. Carefully push the card into the slot.
2. Rotate the release latches **(A)** in the direction shown, then push them down to secure the card.
3. Install the front GX card cover and push in the locking knob **(B)**.



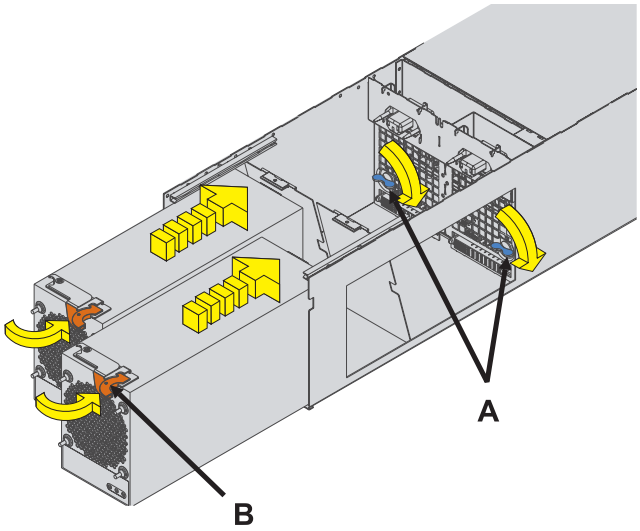
6. Install the PCI shuttle assembly

1. Slide the PCI shuttle assembly into the I/O subsystem as shown in the diagram.
2. Reconnect all PCI and SPCN cables previously removed from their adapters.
3. Connect the cable that was previously removed to the GX card.



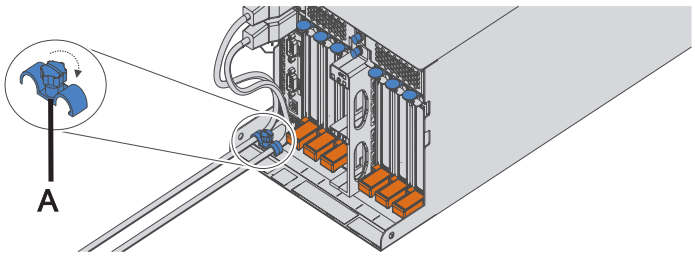
7. Install the power supplies

1. Turn the blue thumbscrews **(A)** in the direction shown to lock the PCI shuttle assembly.
2. Push the power supply straight into the I/O subsystem.
3. Rotate the power supply handle **(B)** in the direction shown to seat the power supply.
4. Repeat the steps to install the other power supply.



8. Install the cable-management bracket

1. From the back of the rack, install the cable-management bracket retaining screw **(A)**.
2. Reconnect the ac power cords to the back of the system.



9. **Verify the repair**

Go to Verification Procedures.

PCI adapter

Use this procedure to service a PCI adapter.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing and replacing a PCI adapter. For instructions, see Removing a part using the Hardware Management Console.

The PCI adapter is serviced concurrently. Select the procedure below based on your operating system.

If you are doing a concurrent repair using the AIX® operating system, go to Removing and replacing a PCI adapter contained in a cassette in an AIX partition that is powered on.

If you are doing a concurrent repair using the IBM i operating system, go to Removing and replacing a PCI adapter contained in a cassette in an IBM i partition that is powered on.

If you are doing a concurrent repair using the Linux operating system, go to Removing and replacing a PCI adapter contained in a cassette in a Linux partition that is powered on.

PCI shuttle assembly

Use this procedure to service the PCI shuttle assembly.

1.

This unit will be serviced nonconcurrently.

Power should be removed from the unit containing the FRU in the location field above. If this unit is powered on, power it off now. When the unit is completely powered off, disconnect the ac input source by removing the power cord from the unit. Do not apply power to the unit until directed to do so in this procedure.

You must also power down the server connected to the 7314-G30 or feature code 5796 if the server and system firmware combination is one of the following:

- 9406-MMA or 9117-MMA with system firmware level equal to or less than EM320_040_031 or EM310_069_048.
- 8204-E8A with system firmware level equal to or less than EL320_040_031.

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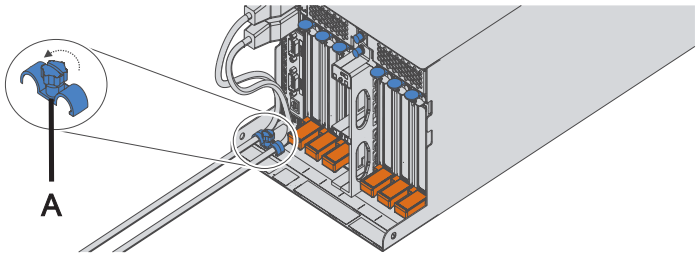
2. Remove the cable-management bracket

1. Label, then disconnect the ac power cords from the back of the system.
2. Remove the cable-management bracket retaining screw **(A)**.



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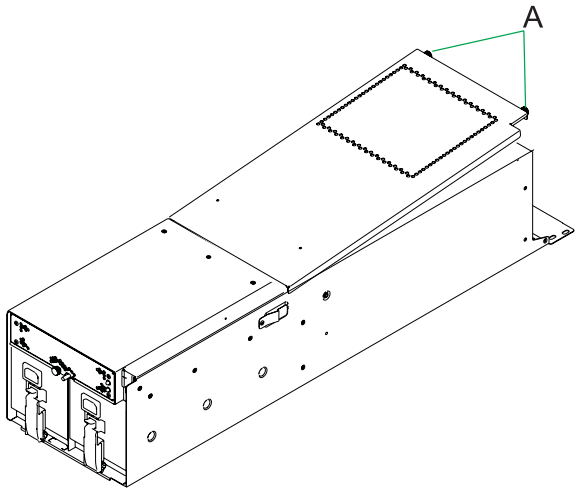
3. Remove the I/O Subsystem Service Access Cover

1. Loosen the two captive thumbscrews **(A)** located at the rear of the cover.
2. From the rear of the I/O subsystem, lift the cover and slide it backwards until the front disengages.
3. Lift the cover off the I/O subsystem unit.



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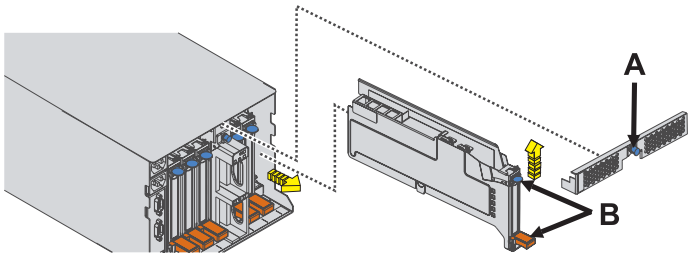
4. Remove all PCI Adapters

1. Remove both EMC Shields (if present) by pressing the tabs **(A)** while sliding them out.
2. Label, then disconnect all GX, PCI, and SPCN cables from their adapters.
3. Lift up the PCI handles **(B)** and pull the PCI adapter straight out from the PCI shuttle assembly.
4. Repeat these steps until all PCI adapters have been removed.



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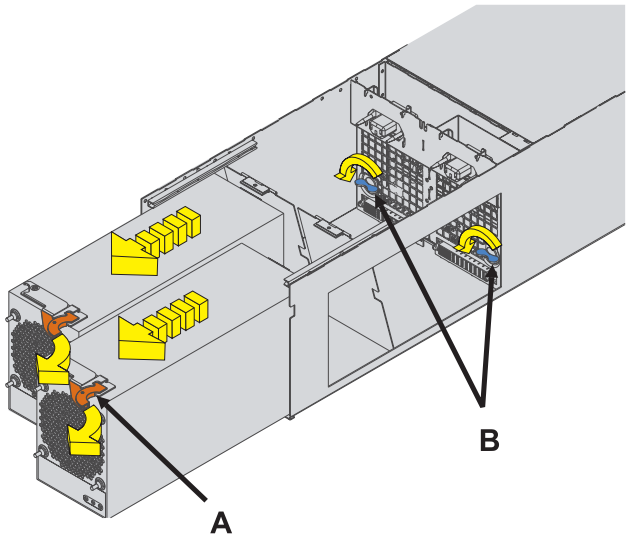
5. Remove the power supplies

1. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
2. Pull the power supply straight out from the I/O subsystem.
3. Repeat these steps to remove the other power supply.
4. Turn the blue thumbscrews **(B)** in the direction shown to unlock the PCI shuttle assembly.



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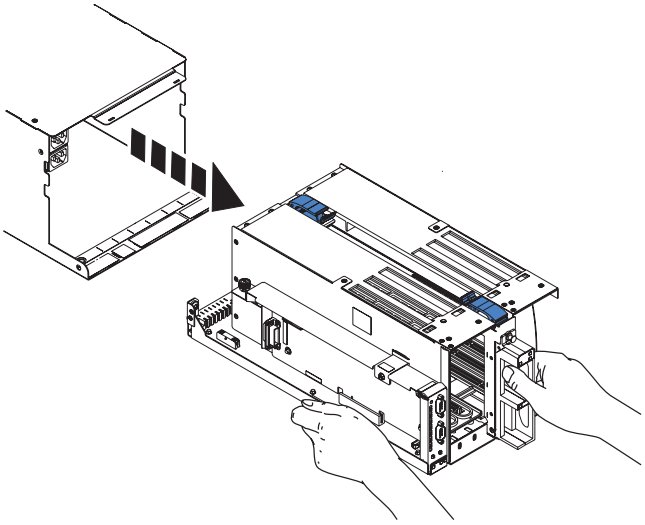
6. **Remove the PCI shuttle assembly**

   For information on servicing the GX card, see “GX Dual-Port 12X Channel Attach adapter” on page 3

   For information on servicing the SPCN card, see “SPCN card” on page 17

Slide the PCI shuttle assembly from the I/O subsystem as shown in the diagram.



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7. **Install the PCI shuttle assembly**

Slide the PCI shuttle assembly into the I/O subsystem.

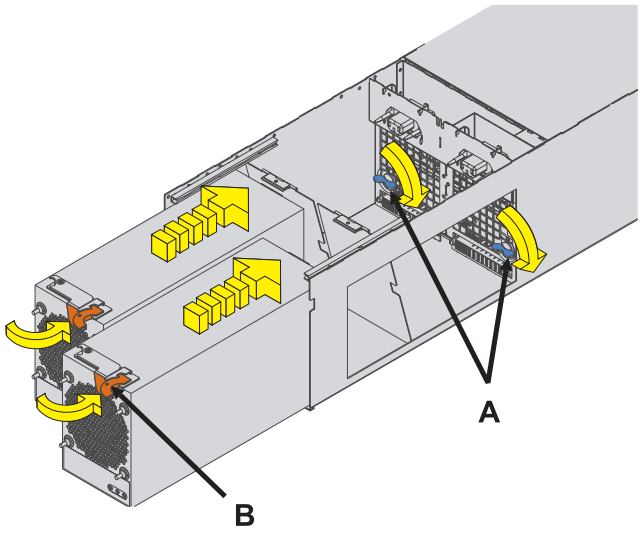
8. Update the Vital Product Data

Perform the procedures to update the Vital Product Data (VPD) information with the machine type, model, and serial number for the HMC.

For more information, see Setting the system enclosure type.

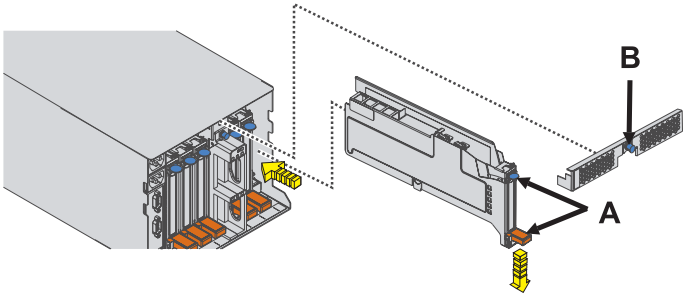
9. Install the power supplies

1. Turn the blue thumbscrews **(A)** in the direction shown to lock the PCI shuttle assembly.
2. Push the power supply straight into the I/O subsystem.
3. Rotate the power supply handle **(B)** in the direction shown to seat the power supply.
4. Repeat the steps to install the other power supply.



10. Install all PCI Adapters

1. Slide the PCI Adapter straight into its slot in the PCI shuttle assembly.
2. Push down on the PCI handles **(A)** to secure the adapter in place.
3. Repeat these steps to install the other PCI adapters.
4. Install the EMC Shields **(B)** by sliding them into their slots near the top of the shuttle assembly.
5. Reconnect all GX, PCI, and SPCN cables previously removed from their adapters.



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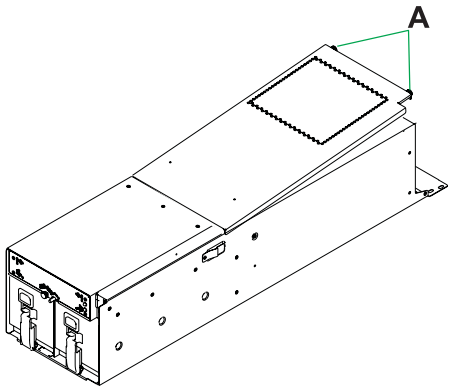
11. Install the I/O Subsystem Service Access Covers

1. Position the cover over the rear of the I/O subsytem.
2. Align the service access cover with the I/O subsystem so that the front portion of the cover engages with the front part of the I/O subsystem chassis. The flanges on the left and right sides of the cover should be on the outside of the I/O subsystem chassis.
3. Hold the cover down and slide it forward toward the front of the I/O subsystem. The front edge of the service access cover engages the front portion of the I/O subsystem.
4. Push in to engage and then tighten the thumbscrews **(A)** located at the rear of the cover.



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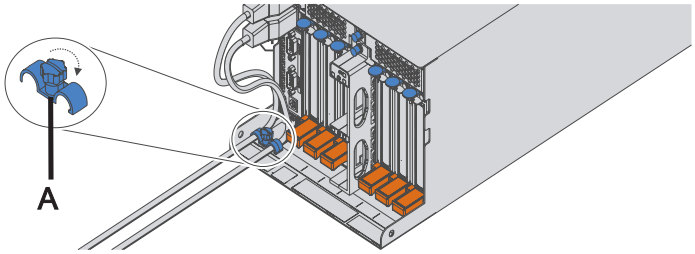
12. Install the cable-management bracket

1. From the back of the rack, install the cable-management bracket retaining screw **(A)**.
2. Reconnect the ac power cords to the back of the system.



13. **Verify the repair**

Go to Verification Procedures.

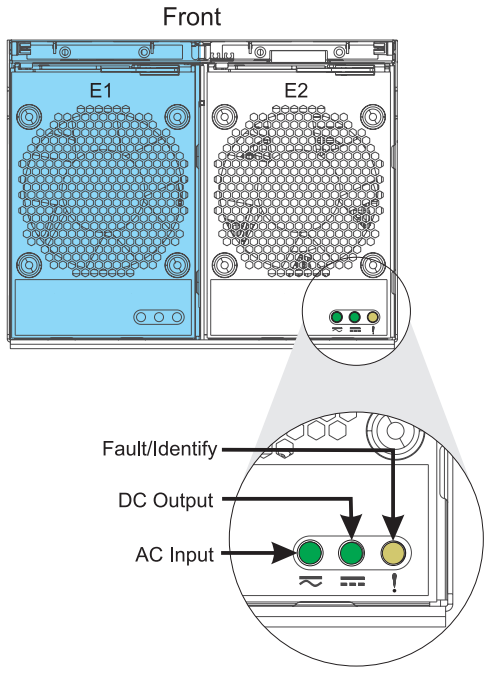
Power supply

Use this procedure to service the power supply.

1. **Determine if this procedure can continue concurrently**

To continue the repair concurrently, the following conditions must be true:

- A properly functioning power supply must already be installed in the system. This power supply has three LEDs, which must be set as follows:
- ac Input - on, not blinking
- dc Output - on, not blinking
- Fault/Identify - off



Is there a functioning power supply meeting these conditions?

Yes	No
↓	Go to step 4

---

2. **Determine if you are able to exchange concurrently**

Attention: If you are performing this procedure concurrently, from the moment the power cord is disconnected, the exchange of the power supply must be completed in *less than two minutes*. If you cannot replace the power supply in less than two minutes, the system will automatically shut down.

READ the following steps, have the replacement power supply ready, then decide if you are ready and able to continue this repair within the two-minute limit.

Remove the power supply:

Read the following steps. *Do not* perform them yet.

1. At the back of the system, disconnect the power cord that corresponds to the power supply being serviced.
2. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
3. Pull the power supply straight out from the I/O subsystem.

Install the new Power Supply:

1. Push the power supply straight into the I/O subsystem.
2. Rotate the power supply handle **(A)** in the direction shown to seat the power supply.
3. At the back of the system, reconnect the power cord to the corresponding power supply.

Are you ready to perform this repair in less than two minutes?

Yes, continue concurrently	No, continue with power off	No
↓	Go to step 4	**This ends the procedure.**

3.

The power supply will be serviced concurrently. The unit will stay powered on while the power cord that corresponds to the power supply is removed. The unit can only run for a couple minutes with one power supply. Do not remove the power cord until instructed to do so.

Go to step 7 - Concurrent.

4.

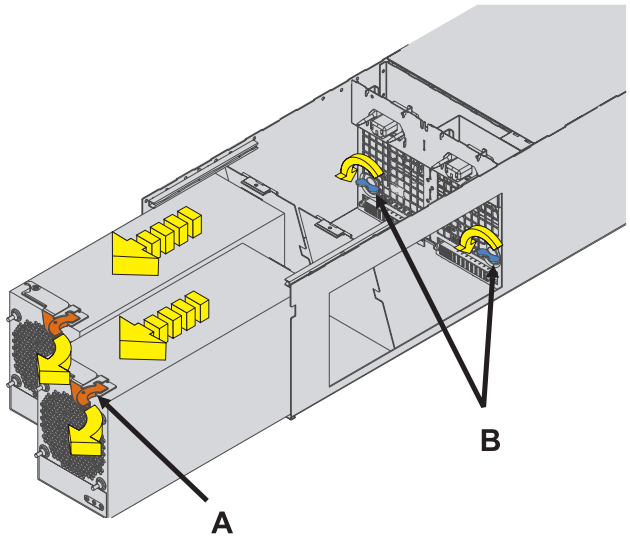
The procedure can only be performed with power off.

Select an action

Non-concurrent repair. Power off the unit and continue the repair.
↓
This ends the procedure.

5.

1. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
2. Pull the power supply straight out from the I/O subsystem.
3. Repeat these steps to remove the other power supply.
4. Turn the blue thumbscrews **(B)** in the direction shown to unlock the PCI shuttle assembly.



6.

Are you performing a miscellaneous equipment specification (MES) install operation?

Yes	**No**
↓	Go to step 7

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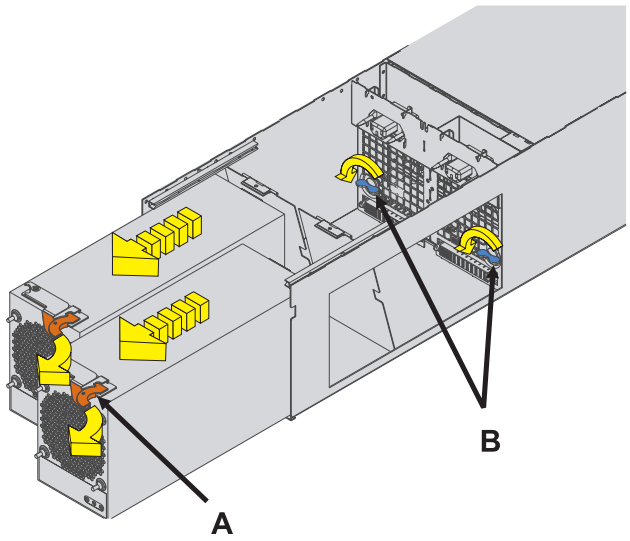
7. **Remove the Power Supply**

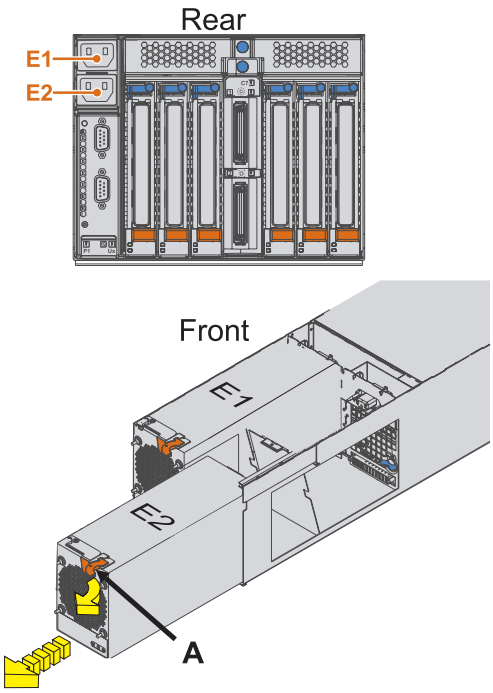
   Non-concurrent

1. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
2. Pull the power supply straight out from the I/O subsystem.
3. Repeat these steps to remove the other power supply.
4. Turn the blue thumbscrews **(B)** in the direction shown to unlock the PCI shuttle assembly.



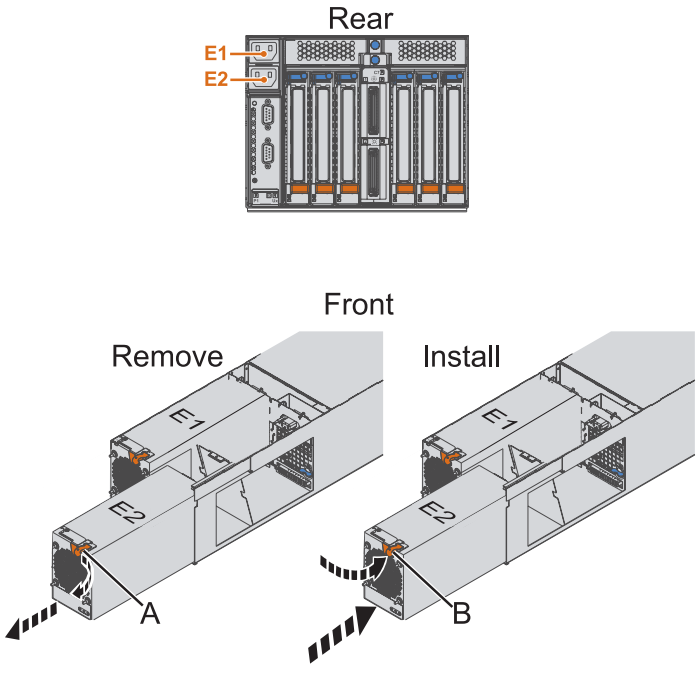
Concurrent

1. At the back of the system, disconnect the power cord that corresponds to the power supply being serviced. This action begins the two-minute time limit to exchange the power supply.
2. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
3. Pull the power supply straight out from the I/O subsystem.



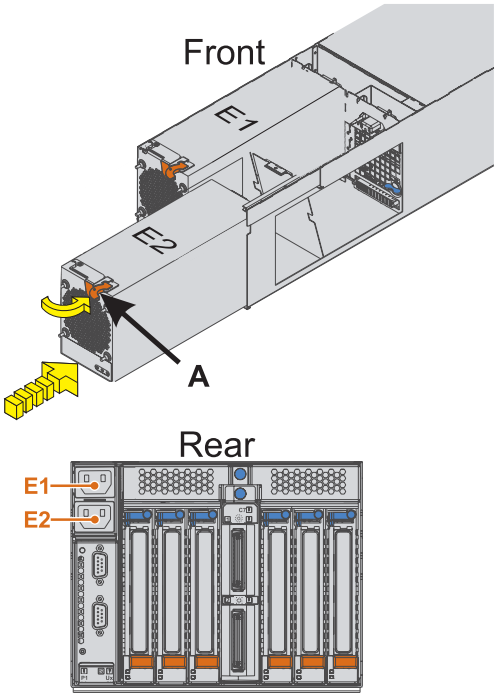
8. Exchange the Power Supply

1. At the back of the system, disconnect the power cord that corresponds to the power supply being serviced. This begins the two-minute time limit to exchange the power supply concurrently.
2. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
3. Pull the power supply straight out from the I/O subsystem.
4. Push the replacement power supply straight into the I/O subsystem.
5. Rotate the power supply handle **(B)** in the direction shown to seat the power supply.
6. At the back of the system, reconnect the power cord to the corresponding power supply. This actionends the two-minute time limit to exchange the power supply concurrently.



9. Install the Power Supply

1. Push the power supply straight into the I/O subsystem.
2. Rotate the power supply handle **(A)** in the direction shown to seat the power supply.
3. At the back of the system, reconnect the power cord to the corresponding power supply.



10. **Verify the repair**

Go to Verifying a repair.

SPCN card

Use this procedure to service the system power control network (SPCN) card.

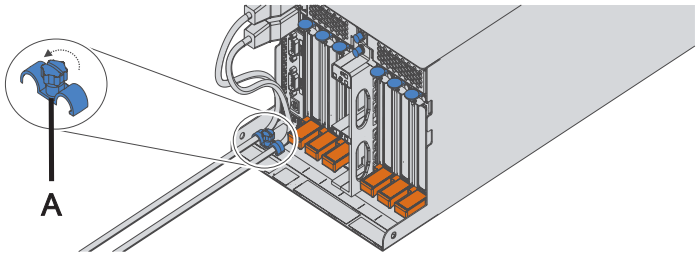
1.

This unit will be serviced nonconcurrently.

Power should be removed from the unit containing the FRU in the location field above. If this unit is powered on, power it off now. When the unit is completely powered off, disconnect the ac input source by removing the power cord from the unit. Do not apply power to the unit until directed to do so in this procedure.

2. **Remove the cable-management bracket**

1. Label, then disconnect the ac power cords from the back of the system.
2. Remove the cable-management bracket retaining screw **(A)**.



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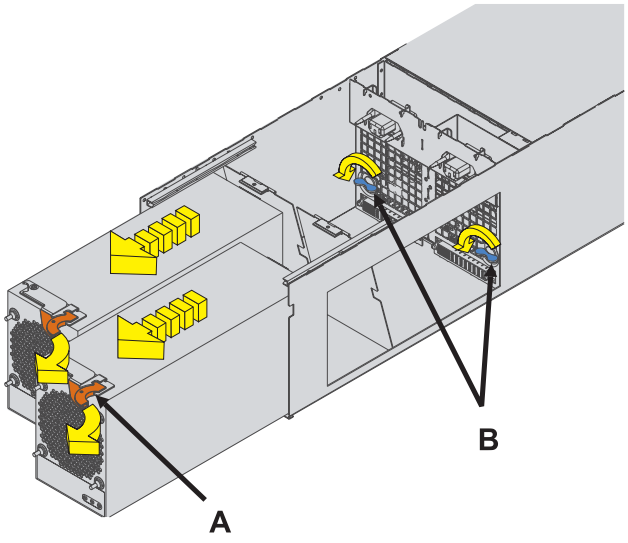
3. Remove the power supplies

1. Rotate the power supply handle **(A)** in the direction shown to unseat the power supply.
2. Pull the power supply straight out from the I/O subsystem.
3. Repeat these steps to remove the other power supply.
4. Turn the blue thumbscrews **(B)** in the direction shown to unlock the PCI shuttle assembly.



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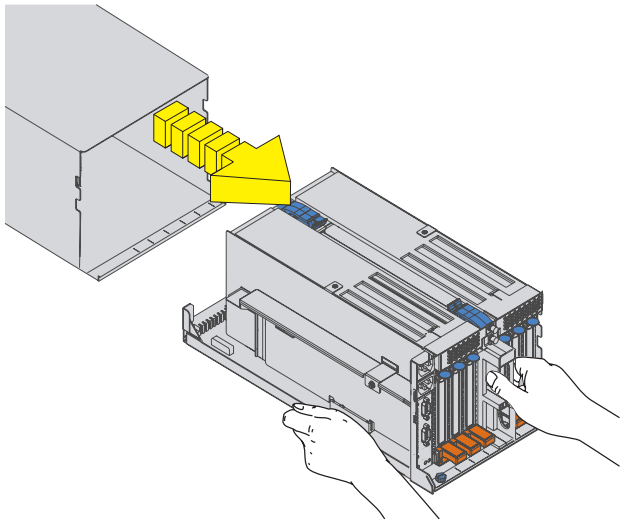
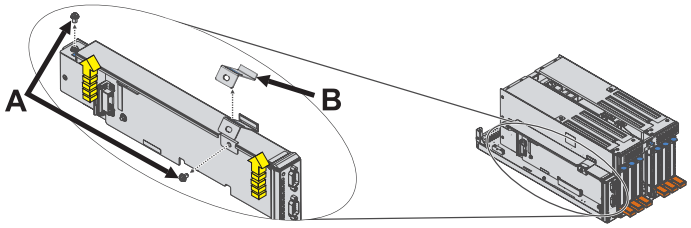
4. Remove the PCI shuttle assembly

1. Label, then disconnect all GX, PCI, and SPCN cables from their adapters.
2. Slide the PCI shuttle assembly from the I/O subsystem as shown in the diagram.



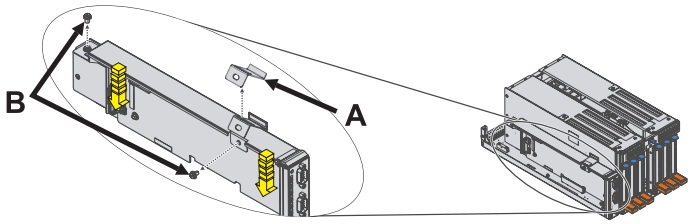
5. Remove the SPCN card

1. Remove the screw **(A)**.
2. Carefully pull the SPCN card from the PCI shuttle assembly, retaining clip **(B)** by lifting it, as shown in the figure.



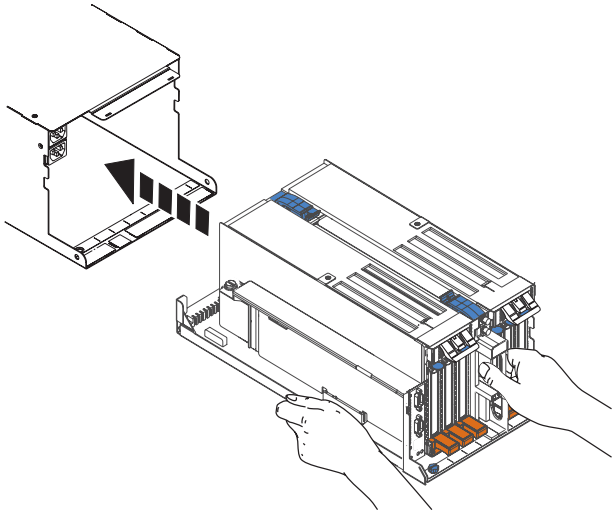
6. Install the SPCN card

1. Carefully push the SPCN card into its slot in the PCI shuttle assembly.
2. Install the screw **(A)**.



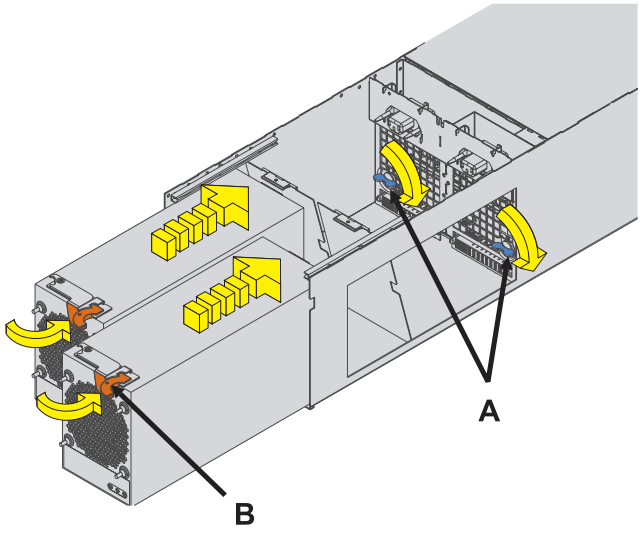
7. Install the PCI shuttle assembly

1. Slide the PCI shuttle assembly into the I/O subsystem as shown in the diagram.
2. Connect all GX, PCI, and SPCN cables that were previously removed from their adapters.



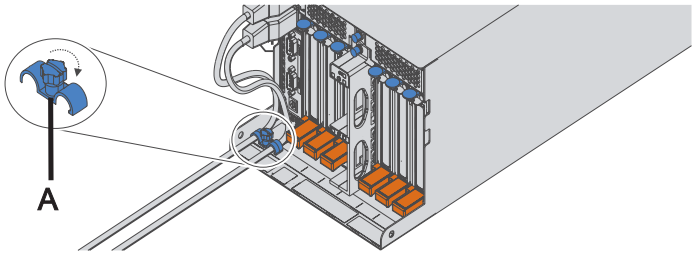
8. Install the power supplies

1. Turn the blue thumbscrews **(A)** in the direction shown to lock the PCI shuttle assembly.
2. Push the power supply straight into the I/O subsystem.
3. Rotate the power supply handle **(B)** in the direction shown to seat the power supply.
4. Repeat the steps to install the other power supply.



9. Install the cable-management bracket

1. From the back of the rack, install the cable-management bracket retaining screw **(A)**.
2. Reconnect the ac power cords to the back of the system.



10. Verify the repair

Go to Verification Procedures.

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Industry Canada Compliance Statement

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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.

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European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Tele: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

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IBM Taiwan Contact Information:

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Verantwortlich für die Konformitätserklärung nach des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

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