IBM

Power Systems

Serial-attached SCSI RAID enablement

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Note

Before using this information and the product it supports, read the information in "Notices" on page 89, "Safety notices" on page vii, 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.

SAS RAID enablement

You might need to configure redundant array of independent disks (RAID) on your serial-attached SCSI (SAS) disk drives. Use these instructions to install features to enable RAID on your system.

The following instructions will enable you to install SAS RAID cards to prepare your system to use SAS disk drives.

To find information on installing adapters or configuring RAID on your system see the following links:

- To view the PDF file of PCI adapters, approximately 40 MB in size, see

  http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/iphak/iphak.pdf
- To view the PDF file of SAS RAID controllers for Linux, approximately 2 MB in size, see

  http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/arebk/arebk.pdf
- To view the PDF file of SAS RAID controllers for AIX®, approximately 2 MB in size, see

  http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/arebj/arebj.pdf
- IBM i Information Center Web site at http://www.ibm.com/systems/i/infocenter
- http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/ared5/ared5.pdf

Chapter 1. RAID enablement card and auxiliary cache card in a model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25

Installing these features will allow you to set up Redundant Array of Independent Disks (RAID) protection for your system.

The SAS RAID Enablement feature code 5679 consists of two separate adapters. The SAS RAID Enablement card and the SAS Auxiliary Cache card. These cards must always be installed together for this feature.

Replacing this feature is a customer task. You can perform this task yourself, or contact an authorized service provider to perform the task for you. You might be charged a fee by the authorized service provider for this service.

Installing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card

You might need to install a auxiliary cache card in the server as part of enabling redundant array of independent disks (RAID). Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your system before you install the auxiliary cache card. Use the procedure in this section to perform this task.

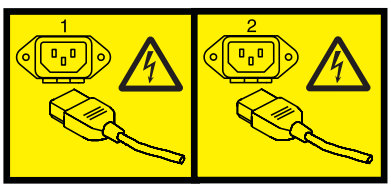
To prepare the system for the installation of an auxiliary cache card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
3. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

4. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
5. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Installing the auxiliary cache card

You might need to install an auxiliary cache card. Use this procedure to install an auxiliary cache card.

To install an auxiliary cache card, perform the following steps:

1. Locate the auxiliary cache card slot **P1-C9**.

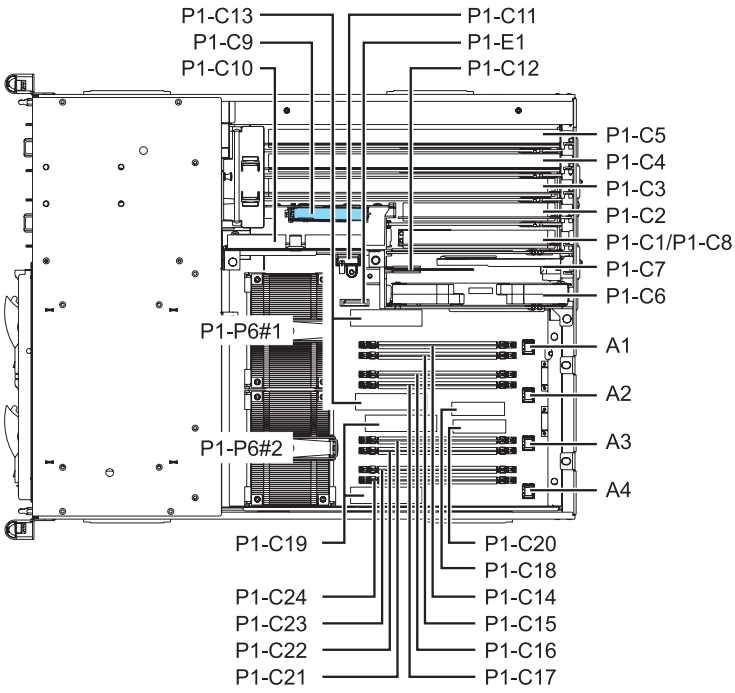


Figure 1. Model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card location

2. Squeeze the tab **(A)** and lift the latch, as shown in the following figure.
3. Align the auxiliary cache card with the slot in the system.
4. Slide the auxiliary cache card **(C)** fully into the system until the tab **(B)** locks into place.

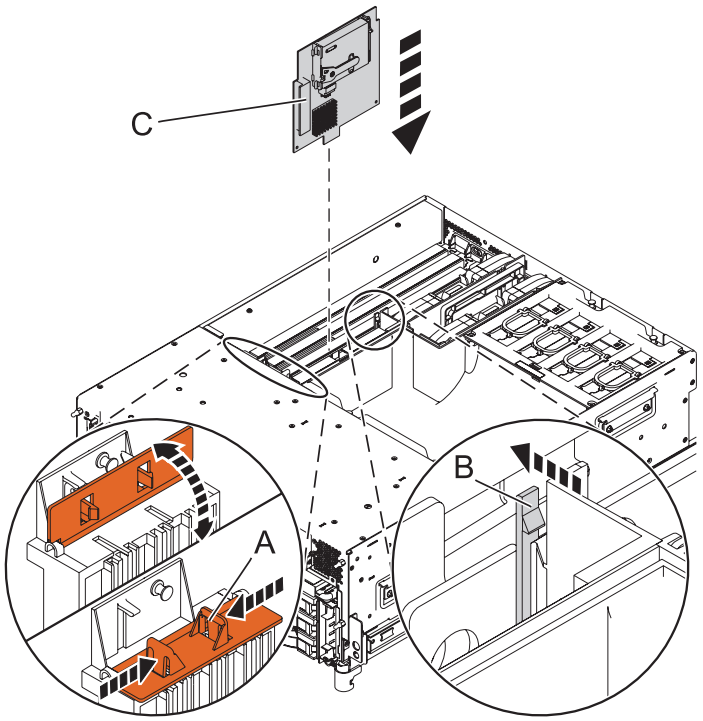


Figure 2. Model 8203-E4A, 8261-E4S, or 9408-M25 RAID auxiliary cache card installation

5. Close the latch **(A)** as shown in the preceding figure. If you will also be installing the SAS RAID enablement card, refer to the "Installing the RAID enablement card" on page 12 section now.
6. Replace the service access cover:
   - For a rack-mounted system unit, see "Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 58.
   - For a desk-side system unit, see "Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 60.
7. If you are working on a rack-mounted system unit, place the system in the operating position. See "Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position" on page 75.
8. Start the system. For instructions, see "Starting the system or logical partition" on page 52.
9. Verify that the new resource is functional. For instructions, see "Hardware service manager Verify option" on page 77.

Removing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card

You might need to remove an auxiliary cache card from the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your server for removal of the auxiliary cache card. Use the procedure in this section to perform this task.

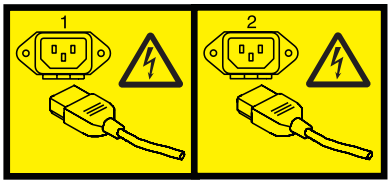
To prepare the system for the removal of an auxiliary cache card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Identify the auxiliary cache card that you need to remove. For instructions, see “Identifying a failing part” on page 49.
3. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
4. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)

   or

5. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
6. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Removing the auxiliary cache card

You might need to remove the auxiliary cache card from your server. Use the procedure in this section to perform this task.

To remove an auxiliary cache card, perform the following steps:

1. Locate the auxiliary cache card you wish to remove in card slot **C1-P9**.

2. Squeeze the tab **(A)** and lift the latch, as shown in the following figure.
3. Press the tab **(B)** and lift the cache card **(C)** out of the system.

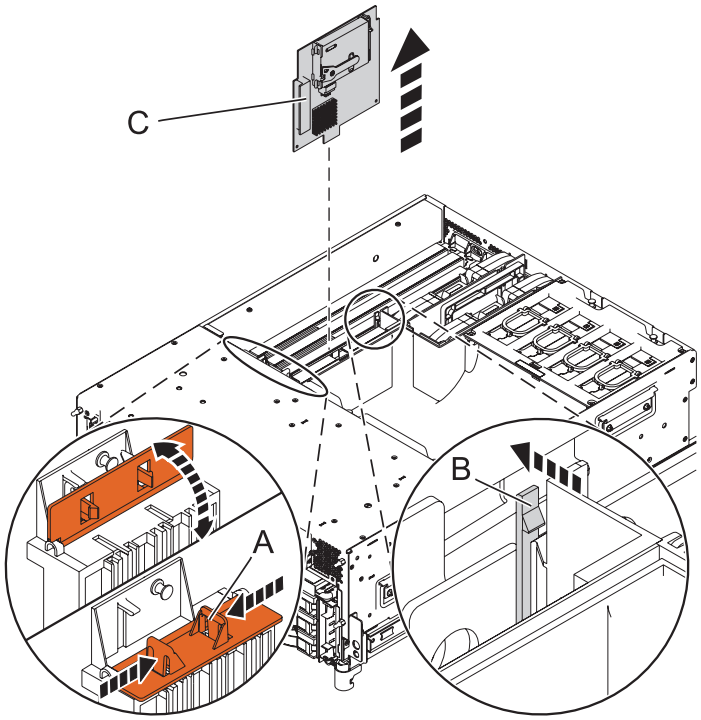


Figure 3. Removing an auxiliary cache card

4. Replace the auxiliary cache card. For instructions, see "Replacing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card."

Replacing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card

If you removed the auxiliary cache card as a part of another procedure, you might need to replace the card. Use the procedure in this section to perform this task.

You must have already completed the procedure "Removing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card" on page 6.

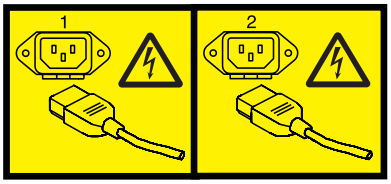
To replace an auxiliary cache card complete the following steps:

1. Perform prerequisite tasks as described in "Before you begin" on page 47.
2. Stop the system. For instructions, see "Stopping a system or logical partition" on page 55.
3. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



or

4. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
5. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.
6. Locate the slot, P1–C9, where the card will be placed, as shown in the following figure.

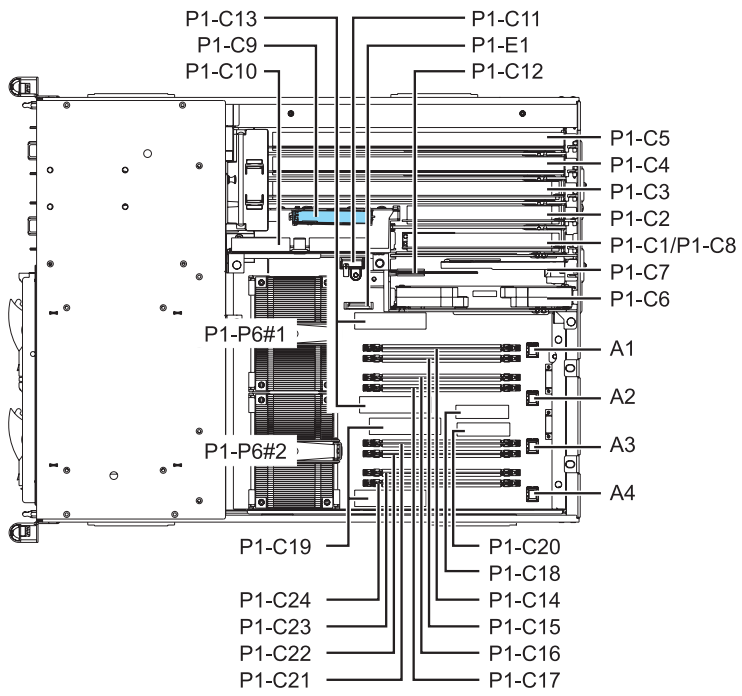


Figure 4. Model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 auxiliary cache card location

7. Align the auxiliary cache card with the slot in the system.
8. Slide the auxiliary cache card **(C)** fully into the system, as shown in the following figure.

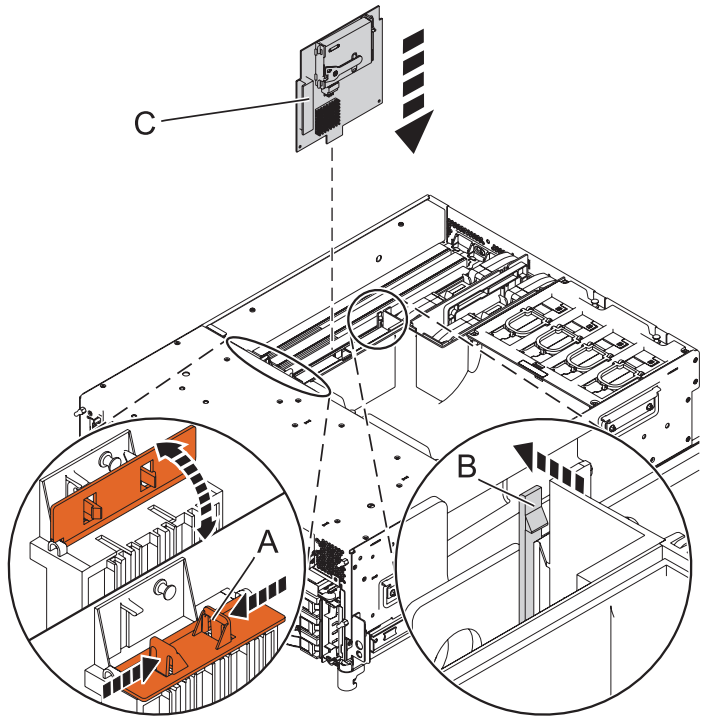


Figure 5. Model 8203-E4A,8261-E4S, 9407-M15, or 9408-M25 RAID auxiliary cache card replacement

9. Close and secure the latch **(A)**, as shown in the preceding figure.
10. Replace the service access cover:
    - For a rack-mounted system unit, see “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 58.
    - For a desk-side system unit, see “Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 60.
11. If you are working on a rack-mounted system unit, place the system in the operating position. See “Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 75.
12. Start the system. For instructions, see “Starting the system or logical partition” on page 52.
13. If you replaced the auxiliary cache card as part of another procedure, return to that procedure now. For instructions, see “Hardware service manager Verify option” on page 77.

Installing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 Redundant Array of Independent Disks enablement card

You might need to install a Redundant Array of Independent Disks (RAID) enablement card in the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

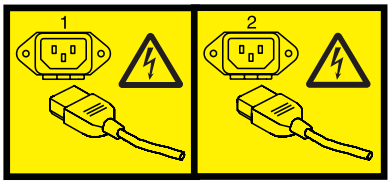
You might need to prepare your system before you install the RAID enablement card. Use the procedure in this section to perform this task.

To prepare the system for the installation of a RAID enablement card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
3. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   (L003)



   or

4. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
5. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Installing the RAID enablement card

You might need to install a RAID enablement card. Use this procedure to install a RAID enablement card.

To install a RAID enablement card, perform the following steps:

1. Locate the RAID enablement card slot, P1–C10, as shown in the following figure. Remove the filler if present.

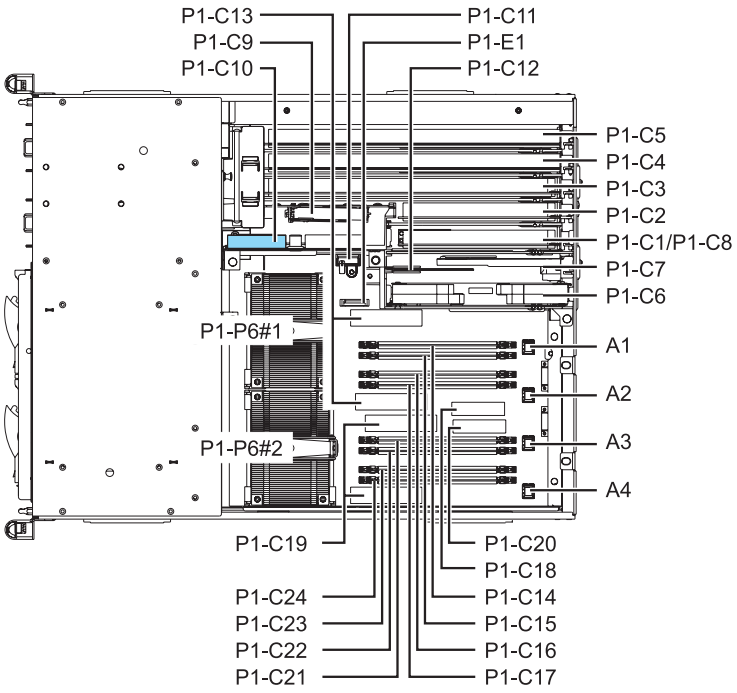


Figure 6. Model 8203-E4A,8261-E4S, 9407-M15, 9408-M25 RAID enablement card slot location

2. Align the RAID enablement card with the slot in the system. The RAID enablement card has a metal plate **(B)** attached to it as shown in the following figures.
3. Slide the RAID enablement card fully into the system until the tab **(A)** locks into place. If you will also be installing the SAS auxiliary cache card, refer to the "Installing the auxiliary cache card" on page 4 section now.

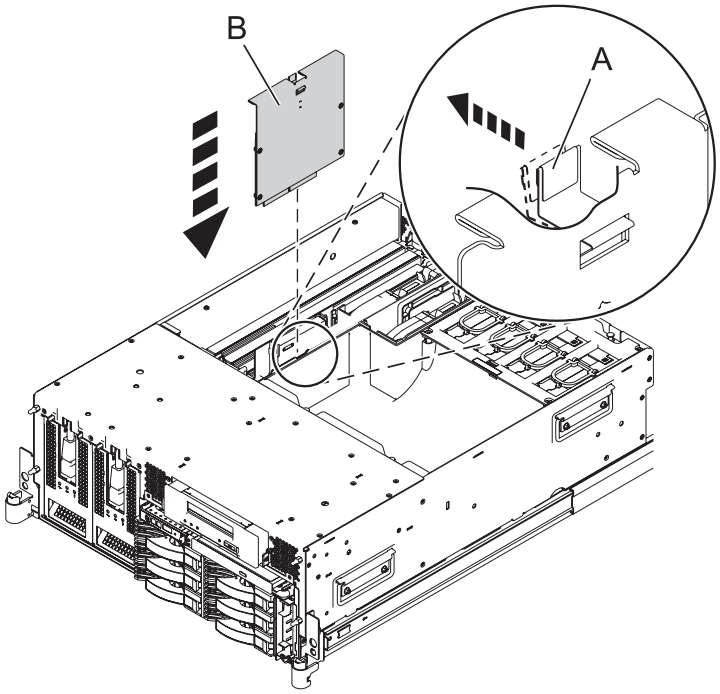


Figure 7. Model 8203-E4A, 8261-E4S, 9407-M15, 9408-M25 RAID enablement card replacement

4. Replace the service access cover:
   - For a rack-mounted system unit, see "Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 58.
   - For a desk-side system unit, see "Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 60.
5. If you are working on a rack-mounted system unit, place the system in the operating position. See "Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position" on page 75.
6. Start the system. For instructions, see "Starting the system or logical partition" on page 52.
7. Verify that the new resource is functional. For instructions, see "Hardware service manager Verify option" on page 77.

Removing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 Redundant Array of Independent Disks enablement card

You might need to remove a Redundant Array of Independent Disks (RAID) enablement card from the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your server for removal of the RAID enablement card. Use the procedure in this section to perform this task.

To prepare the system for the removal of a RAID enablement card, perform the following steps:

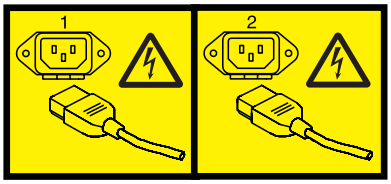
1. Perform prerequisite tasks as described in "Before you begin" on page 47.

2. Identify the RAID enablement card that you need to remove. For instructions, see “Identifying a failing part” on page 49.
3. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
4. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

5. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
6. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Removing the RAID enablement card

You might need to remove the RAID enablement card from your server. Use the procedure in this section to perform this task.

To remove a RAID enablement card, perform the following steps:

1. Locate the RAID enablement card you wish to remove.
2. Press the tab **(A)** to slide the RAID enablement card out of the system, as shown in the following figures. The RAID enablement card is attached to a metal plate **(B)**. You will slide the metal plate out

of the system to remove the RAID enablement card.

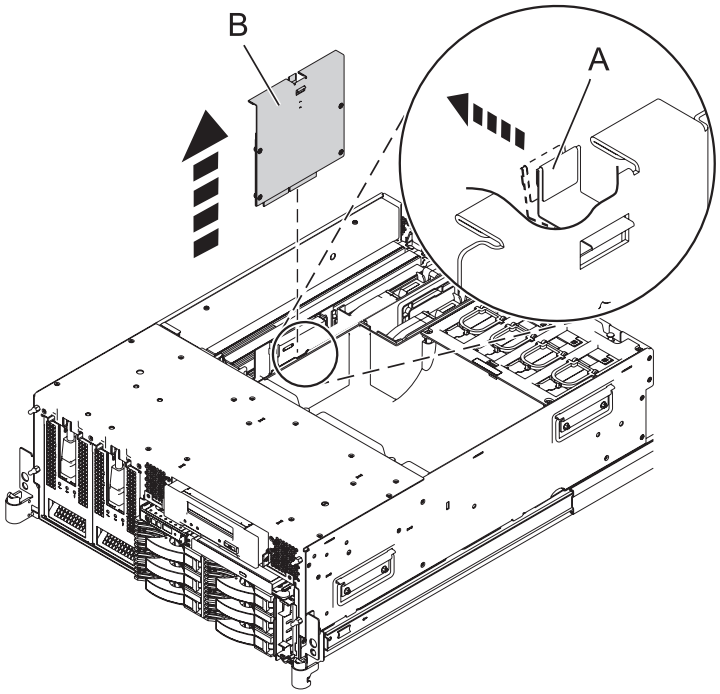


Figure 8. RAID enablement card removal

3. Replace the RAID enablement card. For instructions, see "Replacing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 Redundant Array of Independent Disks enablement card."

Replacing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 Redundant Array of Independent Disks enablement card

If you removed the Redundant Array of Independent Disks (RAID) enablement card as a part of another procedure, you might need to replace the card. Use the procedure in this section to perform this task.

You must have already completed the procedure "Removing the model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 Redundant Array of Independent Disks enablement card" on page 14.

To replace a RAID enablement card, complete the following steps:

1. Align the RAID enablement card with the slot in the system.
2. Slide the RAID enablement card fully into the system until the tab **(A)** locks into place.

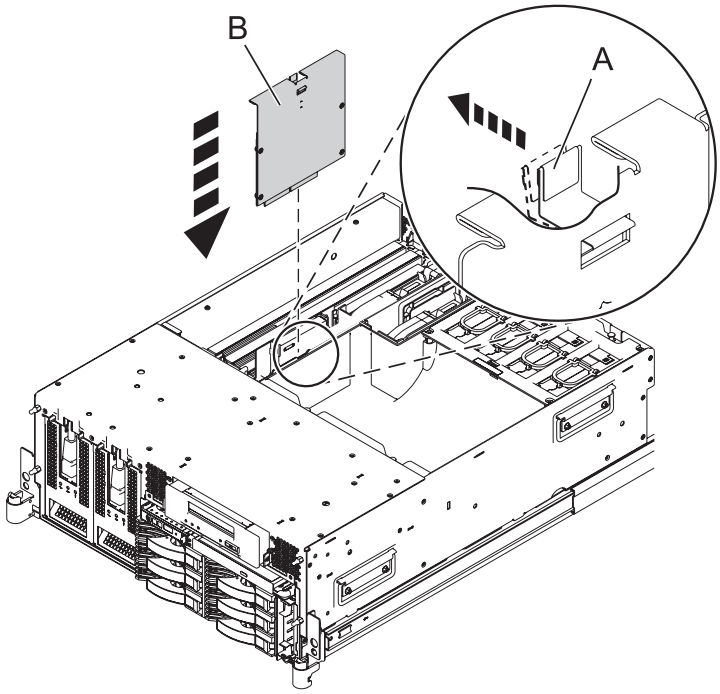


Figure 9. Model 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 RAID enablement card replacement

3. Replace the service access cover:
   - For a rack-mounted system unit, see "Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 58.
   - For a desk-side system unit, see "Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 60.
4. If you are working on a rack-mounted system unit, place the system in the operating position. See "Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position" on page 75.
5. Start the system. For instructions, see "Starting the system or logical partition" on page 52.
6. Verify that the new resource is functional. For instructions, see "Hardware service manager Verify option" on page 77.

Chapter 2. RAID enablement card and auxiliary cache card in a model 8204-E8A or 9409-M50

Installing these features will allow you to set up Redundant Array of Independent Disks (RAID) protection for your system.

The SAS RAID Enablement feature code 5679 consists of two separate adapters. The SAS RAID Enablement card and the SAS Auxiliary Cache card. These cards must always be installed together for this feature.

Replacing this feature is a customer task. You can perform this task yourself, or contact an authorized service provider to perform the task for you. You might be charged a fee by the authorized service provider for this service.

Installing the model 8204-E8A or 9409-M50 auxiliary cache card

You might need to install an auxiliary cache card in the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your system before you install the auxiliary cache card. Use the procedure in this section to perform this task.

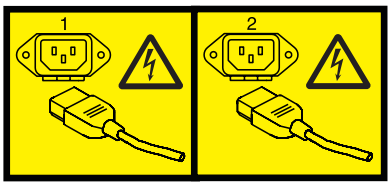
To prepare the system for the installation of an auxiliary cache card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
3. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

4. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
5. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Installing the auxiliary cache card

You might need to install an auxiliary cache card. Use this procedure to install an auxiliary cache card.

To install an auxiliary cache card, perform the following steps:

1. Locate the auxiliary cache card slot (P1–C10). Remove the filler if present.

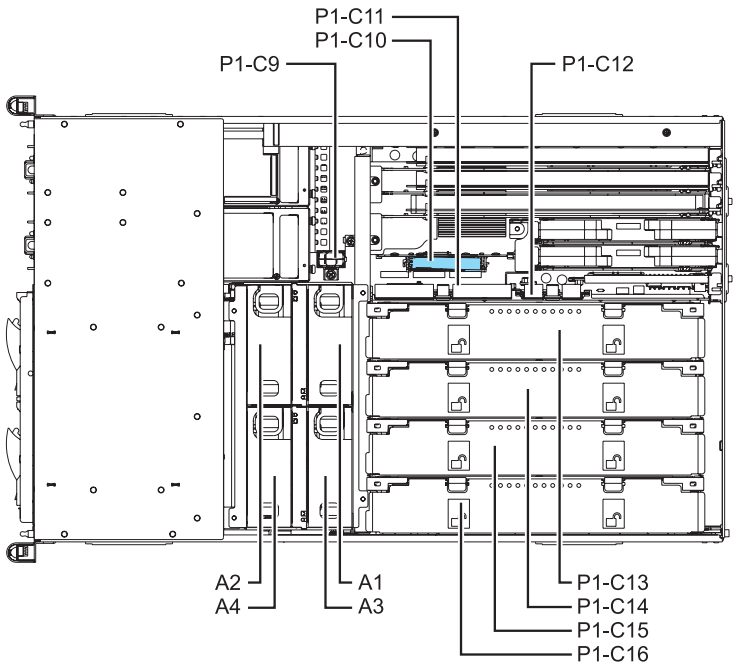


Figure 10. Slot location for model 8204-E8A or 9409-M50 RAID enablement card installation

2. Align the auxiliary cache card with the slot in the system.
3. Slide the auxiliary cache card **(A)** fully into the system until the tab **(B)** locks into place, as shown in the following figures. If you will also be installing the SAS RAID enablement card, refer to the "Installing the RAID enablement card" on page 28 section now.

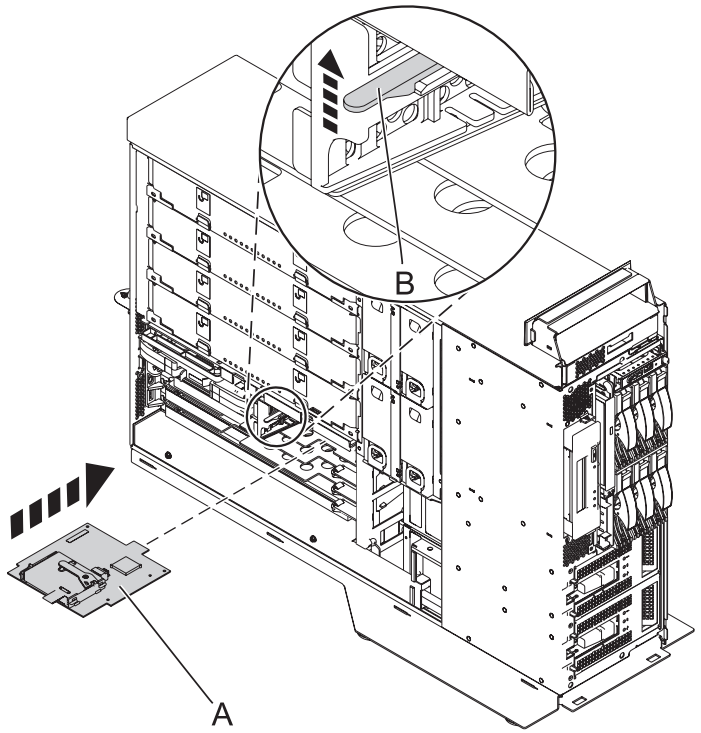


Figure 11. Stand-alone model 8204-E8A or 9409-M50 RAID auxiliary cache card replacement

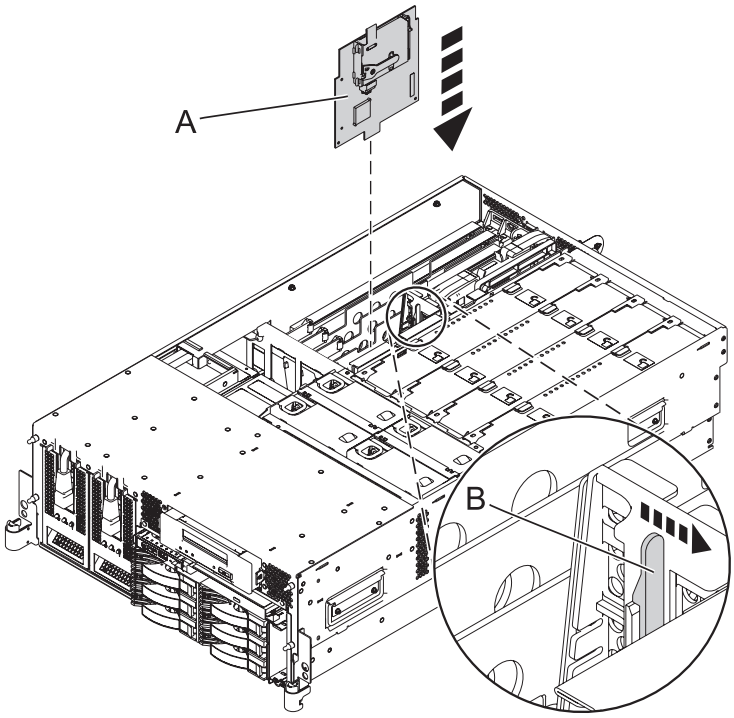


Figure 12. Rack-mounted model 8204-E8A or 9409-M50 RAID auxiliary cache card replacement

4. Replace the service access cover:

- For a rack-mounted system unit, see “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 58.
- For a desk-side system unit, see “Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 60.

5. If you are working on a rack-mounted system unit, place the system in the operating position. See “Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 75.
6. Start the system. For instructions, see “Starting the system or logical partition” on page 52.
7. Verify that the new resource is functional. For instructions, see “Hardware service manager Verify option” on page 77.

Removing the model 8204-E8A or 9409-M50 auxiliary cache card

You might need to remove an auxiliary cache card from the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your server for removal of the auxiliary cache card. Use the procedure in this section to perform this task.

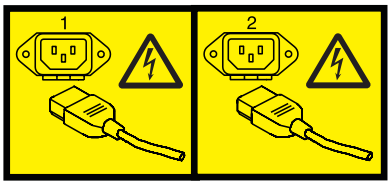
To prepare the system for the removal of a auxiliary cache card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Identify the auxiliary cache card that you need to remove. For instructions, see “Identifying a failing part” on page 49.
3. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
4. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

5. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
6. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Removing the auxiliary cache card

You might need to remove the auxiliary cache card from your server. Use the procedure in this section to perform this task.

To remove an auxiliary cache card, perform the following steps:

1. Press the tab **(A)** and lift the cache card **(B)** up and out of the system, as shown in the following figure.

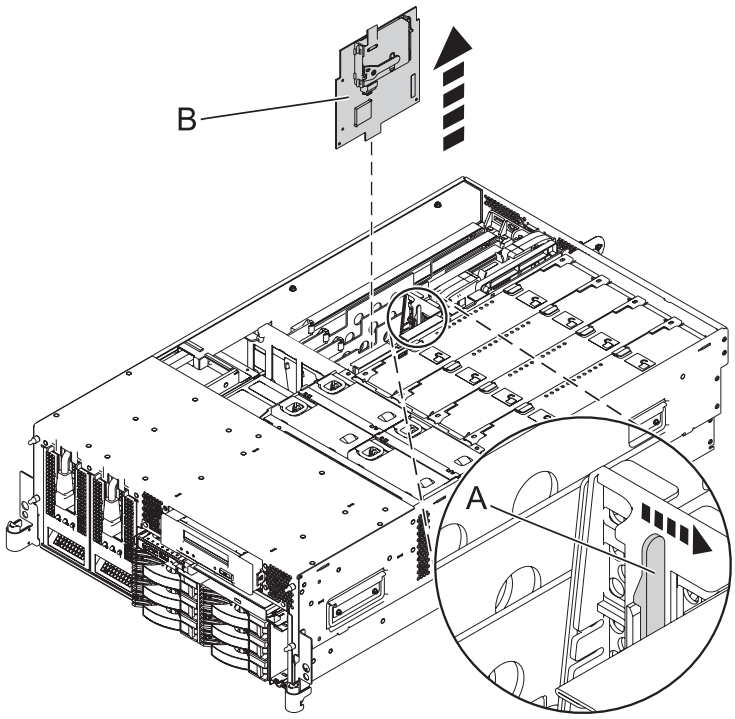


Figure 13. RAID cache card removal from a rack-mounted system unit

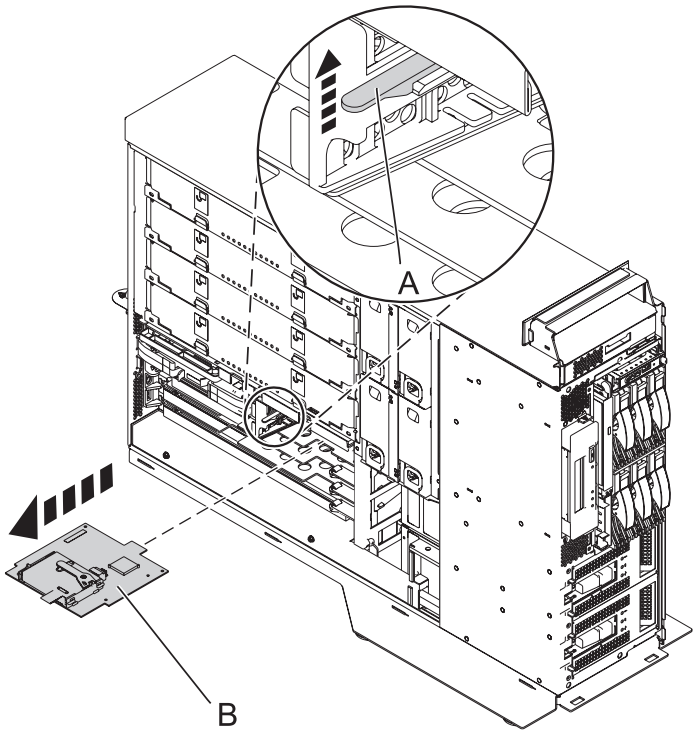


Figure 14. RAID cache card removal from a stand-alone system unit

2. Replace the RAID enablement card. For instructions, see "Replacing the model 8204-E8A or 9409-M50 auxiliary cache card" on page 26.

Replacing the model 8204-E8A or 9409-M50 auxiliary cache card

If you removed the auxiliary cache card as a part of another procedure, you might need to replace the card. Use the procedure in this section to perform this task.

You must have already completed the procedure “Removing the model 8204-E8A or 9409-M50 auxiliary cache card” on page 23.

To replace an auxiliary cache card, complete the following steps:

1. Align the auxiliary cache card with the slot in the system.
2. Slide the auxiliary cache card**(A)** into the system until the tab **(B)** locks into place.

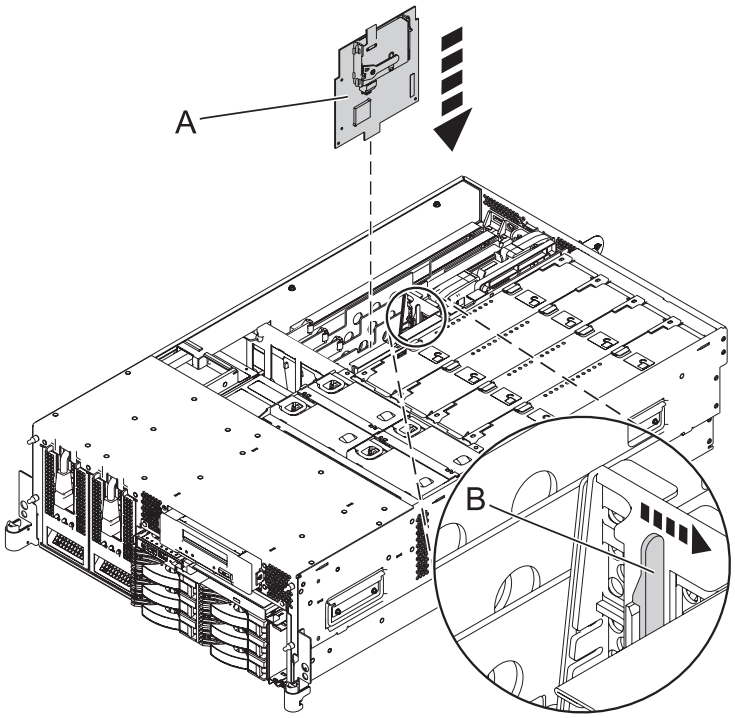


Figure 15. Rack-mounted model 8204-E8A or 9409-M50 RAID auxiliary cache card replacement

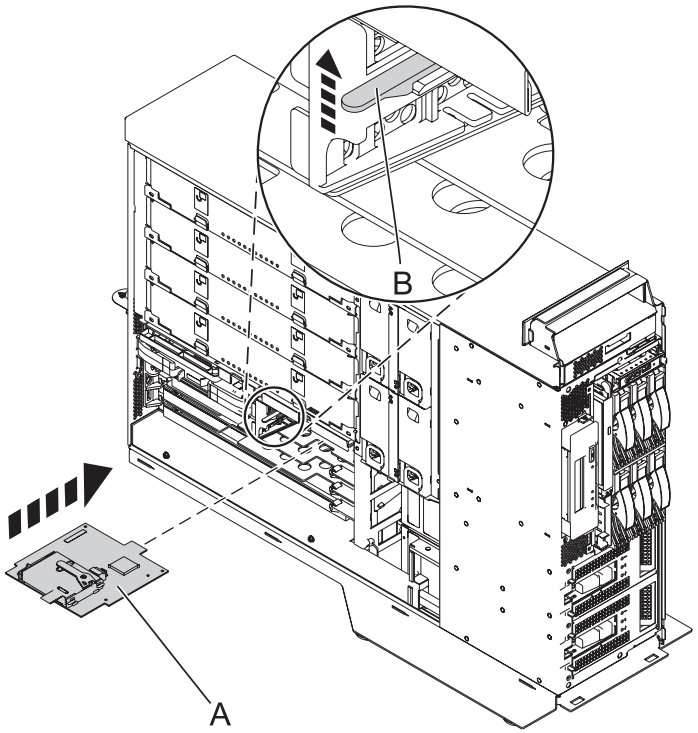


Figure 16. Stand-alone model 8204-E8A or 9409-M50 RAID auxiliary cache card replacement

3. Replace the service access cover:
   - For a rack-mounted system unit, see "Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 58.
   - For a desk-side system unit, see "Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50" on page 60.
4. If you are working on a rack-mounted system unit, place the system in the operating position. See "Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position" on page 75.
5. Start the system. For instructions, see "Starting the system or logical partition" on page 52.
6. Verify that the new resource is functional. For instructions, see "Hardware service manager Verify option" on page 77.

Installing the model 8204-E8A or 9409-M50 Redundant Array of Independent Disks enablement card

You might need to install a Redundant Array of Independent Disks (RAID) enablement card in the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your system before you install the RAID enablement card. Use the procedure in this section to perform this task.

To prepare the system for the installation of a RAID enablement card, perform the following steps:

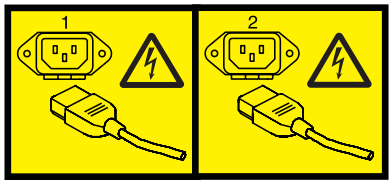
1. Perform prerequisite tasks as described in "Before you begin" on page 47.

2. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
3. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

4. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
5. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Installing the RAID enablement card

You will need to install the RAID enablement card to support RAID protection on your system. Use this procedure to install a RAID enablement card.

To install a RAID enablement card, perform the following steps:

1. Locate the RAID enablement card slot (P1–C11). Remove the filler if present.

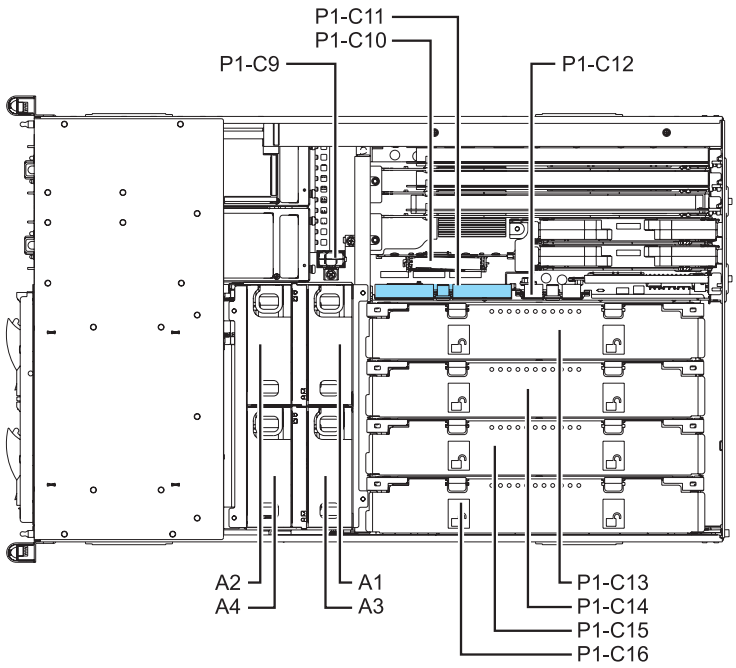


Figure 17. Slot location for model 8204-E8A or 9409-M50 RAID enablement card installation

2. Align the RAID enablement card with the slot in the system. The RAID enablement card has a metal plate **(B)** attached to it as shown in the following figures.
3. Slide the RAID enablement card into the system until the tab **(A)** locks into place as shown in the following figures. If you will also be installing the SAS auxiliary cache card, refer to the "Installing the auxiliary cache card" on page 20section now.

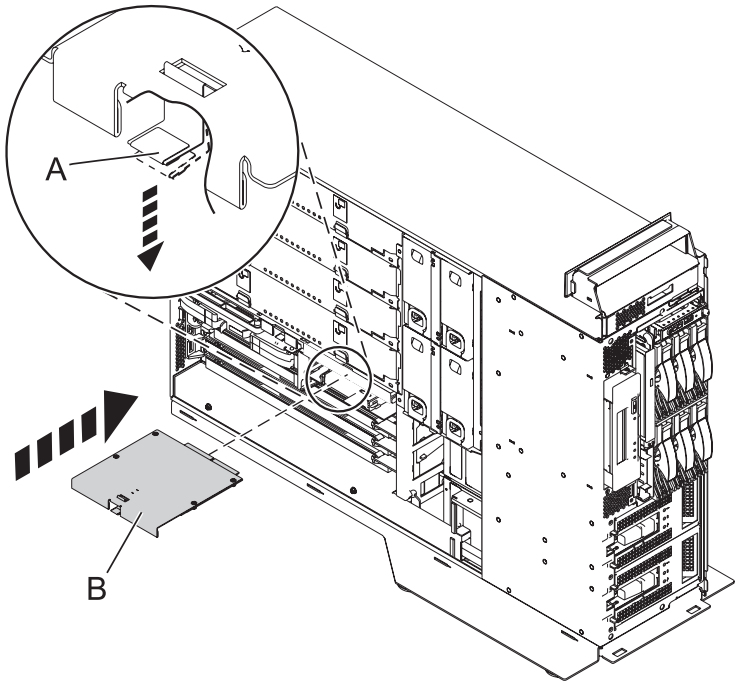


Figure 18. Stand-alone model 8204-E8A or 9409-M50 RAID enablement card installation

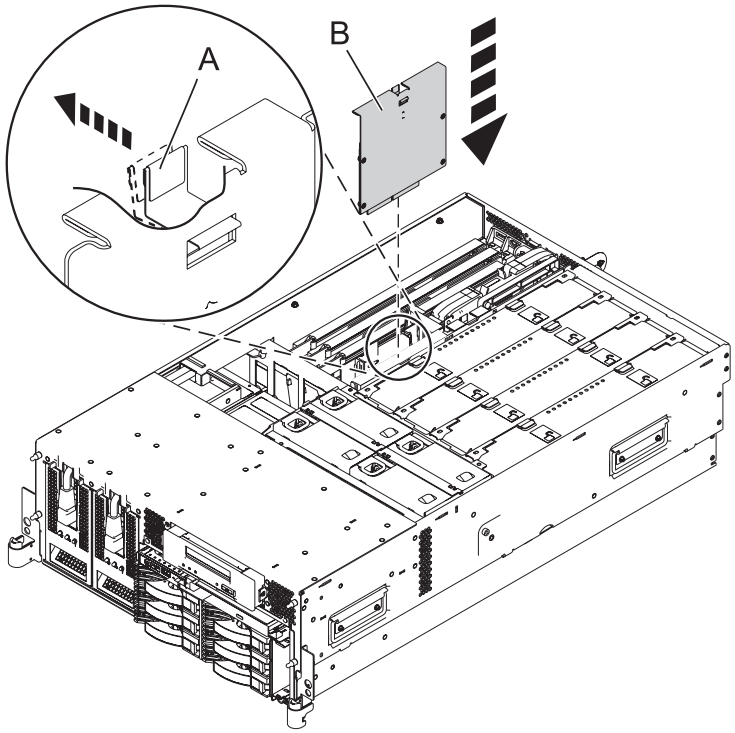


Figure 19. Rack-mounted model 8204-E8A or 9409-M50 RAID enablement card replacement

4. Replace the service access cover:

- For a rack-mounted system unit, see “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 58.
- For a desk-side system unit, see “Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 60.

5. If you are working on a rack-mounted system unit, place the system in the operating position. See “Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 75.
6. Start the system. For instructions, see “Starting the system or logical partition” on page 52.
7. Verify that the new resource is functional. For instructions, see “Hardware service manager Verify option” on page 77.

Removing the model 8204-E8A or 9409-M50 Redundant Array of Independent Disks enablement card

You might need to remove a Redundant Array of Independent Disks (RAID) enablement card from the server. Use the procedure in this section to perform this task.

Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

Preparing the system

You might need to prepare your server for removal of the RAID enablement card. Use the procedure in this section to perform this task.

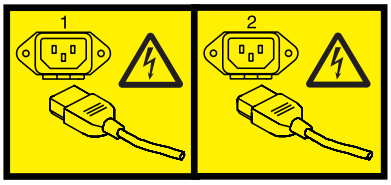
To prepare the system for the removal of a RAID enablement card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Identify the auxiliary cache card that you need to remove. For instructions, see “Identifying a failing part” on page 49.
3. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
4. Disconnect the power source from the system by unplugging the system.

   Attention: You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

   Note: This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

5. If you have a rack-mounted system, place it in the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 72.
6. Remove the access cover.
   - For a rack-mounted system unit, see “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 57.
   - For a desk-side system unit, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 59.

Removing the RAID enablement card

You might need to remove the RAID enablement card from your server. Use the procedure in this section to perform this task.

To remove a RAID enablement card, perform the following steps:

1. Locate the RAID enablement card you wish to remove.
2. Press the tab **(B)** and slide the card out of the system as shown in the following figures. The RAID enablement card is attached to a metal plate **(A)**. You will slide the metal plate out of the system to remove the RAID enablement card.

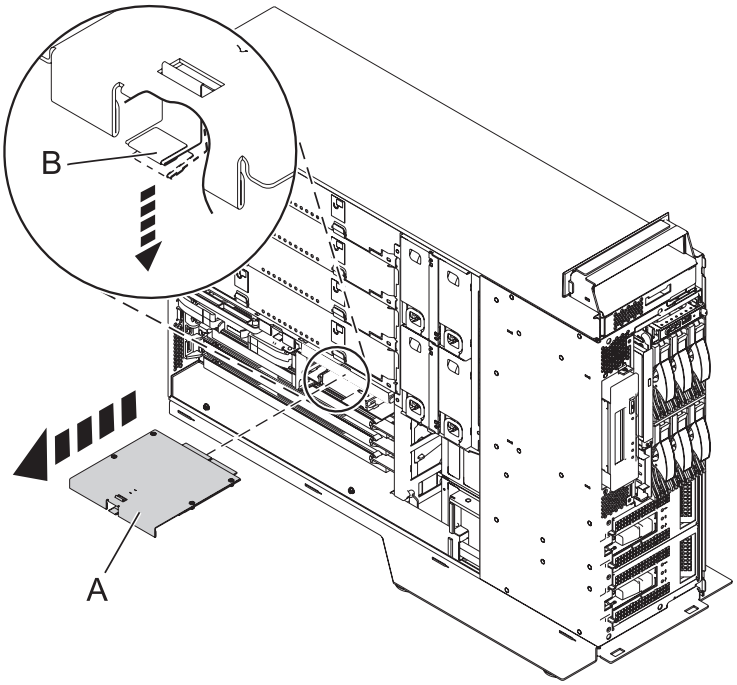


Figure 20. RAID enablement card removal from a stand-alone system unit

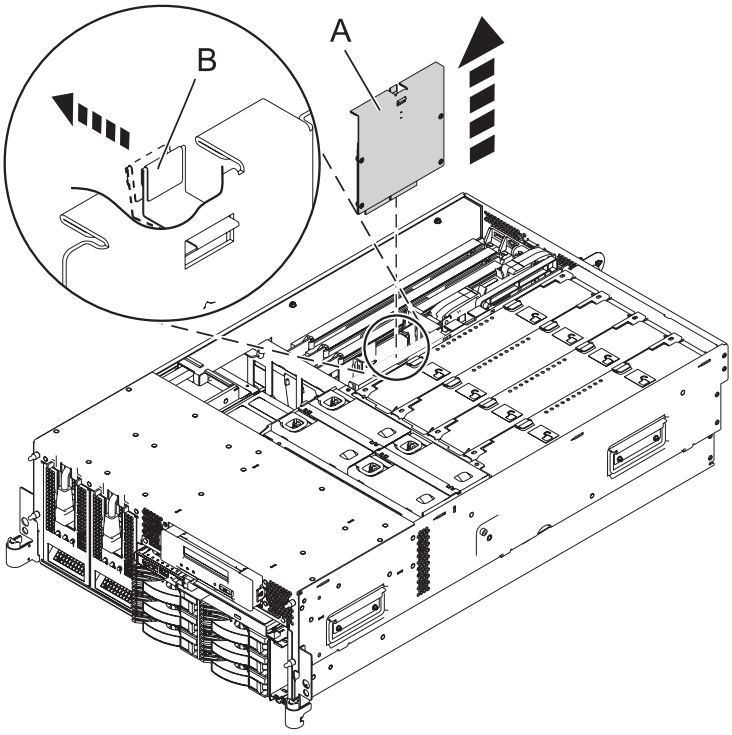


Figure 21. RAID enablement card removal from a rack-mounted system unit

3. Replace the RAID enablement card. For instructions, see "Replacing the model 8204-E8A or 9409-M50 Redundant Array of Independent Disks enablement card" on page 34.

Replacing the model 8204-E8A or 9409-M50 Redundant Array of Independent Disks enablement card

If you removed the Redundant Array of Independent Disks (RAID) enablement card as a part of another procedure, you might need to replace the card. Use the procedure in this section to perform this task.

You must have already completed the procedure “Removing the model 8204-E8A or 9409-M50 Redundant Array of Independent Disks enablement card” on page 31.

To replace a RAID enablement card, complete the following steps:

1. Locate the slot for the RAID enablement card

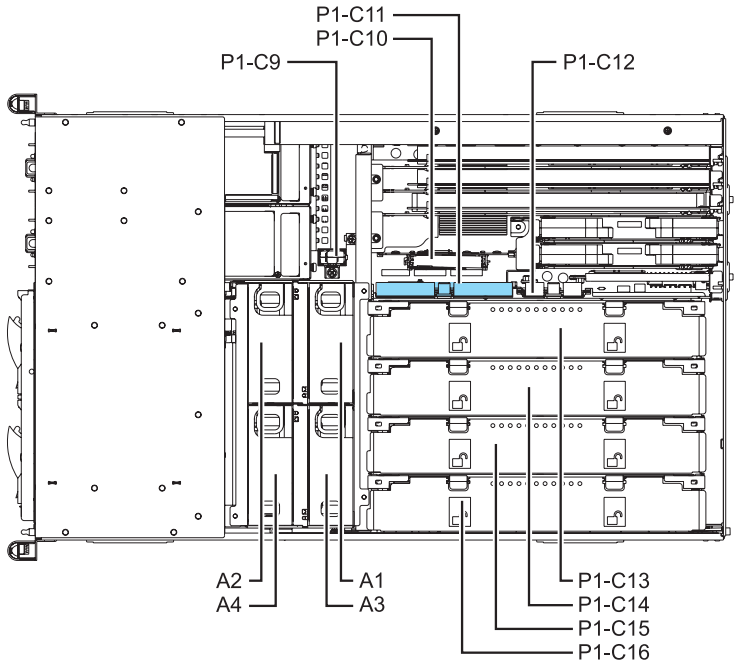


Figure 22. Slot location for model 8204-E8A or 9409-M50 RAID enablement card installation

2. Align the RAID enablement card with the slot in the system.
3. Slide the RAID enablement card fully into the system until the tab **(A)** locks into place.

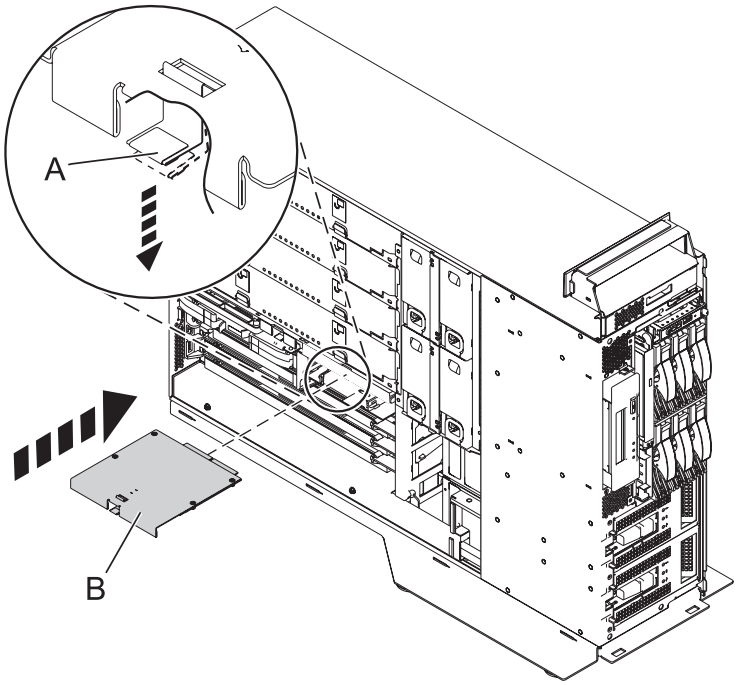


Figure 23. RAID enablement card replacement in a stand-alone system unit

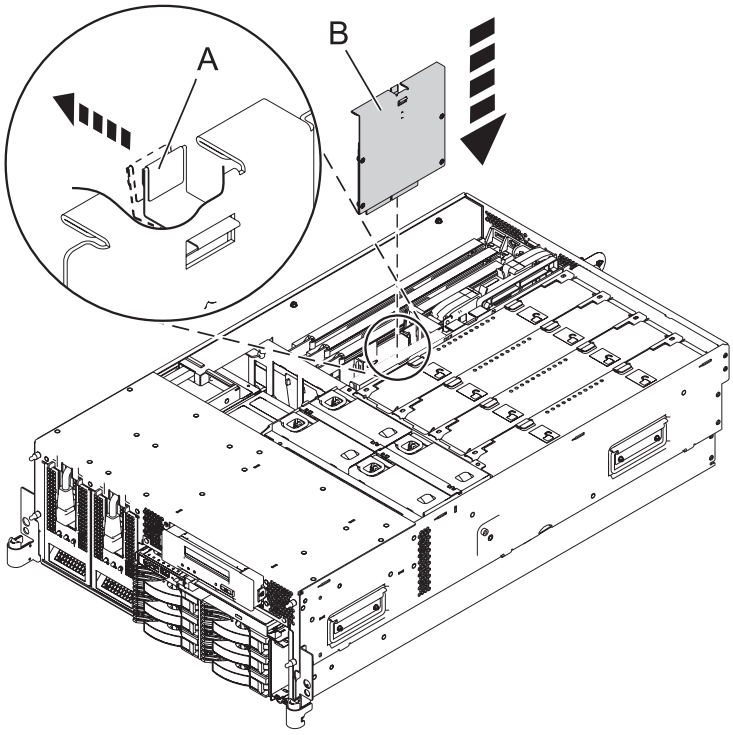


Figure 24. RAID enablement card replacement in a rack-mounted system unit

4. Replace the service access cover:

- For a rack-mounted system unit, see “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 58.
- For a desk-side system unit, see “Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 60.

5. If you are working on a rack-mounted system unit, place the system in the operating position. See “Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 75.
6. Start the system. For instructions, see “Starting the system or logical partition” on page 52.
7. If you replaced the RAID enablement card as part of another procedure, return to that procedure now. If you replaced the RAID enablement card because it was not operational, verify that the new resource is functional. For instructions, see “Hardware service manager Verify option” on page 77.

Chapter 3. RAID Enablement card and Auxiliary cache card cache battery pack

You might need to remove or replace the cache battery from its controller. This section includes procedures so that you can perform these tasks.

Note:
Replacing this feature is a customer task. You can perform this task yourself, or contact an authorized service provider to perform the task for you. You might be charged a fee by the authorized service provider for this service.

Cache battery pack

Use this procedure to service the cache battery pack.

1. **Begin with power on**

To prevent data loss, the cache battery pack must be in an error state before it is removed from the system.

If you have powered the machine off, power it on before you continue.

2.

Select your operating system:

AIX	Linux	IBM i
↓	Go to step 5 on page 38.	Go to step 7 on page 39.

3. **Force the cache battery pack into an error state using the AIX operating system**

To force the cache battery pack into an error state (to prevent possible data loss), do the following steps:

1. Navigate to the IBM SAS Disk Array Manager by using the following steps:
2.
   - At the command prompt, type `smit`, and press Enter.
   - Select **Devices**.
   - Select **Disk Array**.
   - Select **IBM SAS Disk Array**.
   - Select **IBM SAS Disk Array Manager** from the menu with options for configuring and managing the IBM SAS RAID Controller.
3. Select **Diagnostics and Recovery Options**.
4. Select **Controller Rechargeable Battery Maintenance**.
5. Select **Force Controller Rechargeable Battery Error**.
6. Select the **IBM SAS RAID Controller** whose battery you want to replace.
7. **Note:** Using this option places the battery into the error state, which requires it to be replaced.
8. Press Enter.
9. Determine that it is safe to replace the Cache Battery Pack. Refer to **Displaying Rechargeable Battery Information** below. It is safe to replace the Cache Battery Pack when Yes is displayed next to Battery pack can be safely replaced. You may need to reselect the option to **Display Controller Rechargeable Battery Information** multiple times as it may take several minutes before it is safe to replace the Cache Battery Pack.

Displaying rechargeable battery information

1. Navigate to the **IBM SAS Disk Array Manager** by using the steps above.
2. Select **Diagnostics and Recovery Options**.
3. Select **Controller Rechargeable Battery Maintenance**.
4. Select **Display Controller Rechargeable Battery Information**.
5. Select the **IBM SAS RAID Controller**.

4.

Go to step 8 on page 39.

---

5. **Force the cache battery pack into an error state using the Linux operating system**

To force the cache battery pack into an error state (to prevent possible data loss), do the following steps:

1. Run the iprconfig utility by typing `iprconfig`.
2. Select **Work with disk unit recovery**.
3. Select **Work with resources containing cache battery packs.**
4. Select your adapter and type **2**. Then press Enter to force the battery error.
   Note: Using this option places the battery into the error state, which requires it to be replaced.
5. If you are sure you want to force a battery error, type `c` to confirm. If you do not want to force a battery error, type **q** to cancel.
6. Determine that it is safe to replace the Cache Battery Pack. Refer to **Displaying rechargeable battery information** below.
7. It is safe to replace the Cache Battery Pack when Yes is displayed next to Battery pack can be safely replaced. You may need to reselect the option to **Display Controller Rechargeable Battery Information** multiple times as it may take several minutes before it is safe to replace the Cache Battery Pack.

Displaying rechargeable battery information

1. Navigate to the **IBM SAS Disk Array Manager** by using the steps above.
2. Select **Diagnostics and Recovery Options**
3. Select **Controller Rechargeable Battery Maintenance**.
4. Select **Display Controller Rechargeable Battery Information**.
5. Select the **IBM SAS RAID Controller**.

6.

Go to step 8.

---

7. Force the cache battery pack into an error state on using the IBM i operating system

To force the cache battery pack into an error state in order to prevent possible data loss, proceed as follows on the system or partition containing the adapter:

1. Be sure that you are signed on to the system with at least service level authority.
2. Type `strsst` on the command line and press Enter.
3. Type your service tools userid and service tools password on the **System Service Tools (SST) Sign On** display. Press Enter.
4. Select **Start a Service Tool** from the **System Service Tools (SST)** display. Press Enter.
5. Select **Hardware Service Manager** from the **Start a Service Tool** display. Press Enter.
6. Select **Work with resources containing cache battery packs** from the **Hardware Service Manager** display. Press Enter.
7. Select **Force battery pack into error state** for the I/O card you are working with from the **Work with Resources containing cache battery packs** display. Press Enter.
8. On the **Force Battery Packs Into Error State** display, verify that the correct I/O adapter has been selected and press the function key that confirms your choice.
9. Return to the Work with Resources containing cache battery packs display and select **Display battery information**. Ensure that the field **Safe to replace cache battery** is set to **Yes**. **Note**: This may take several minutes and you may need to press the refresh key to see the field update.

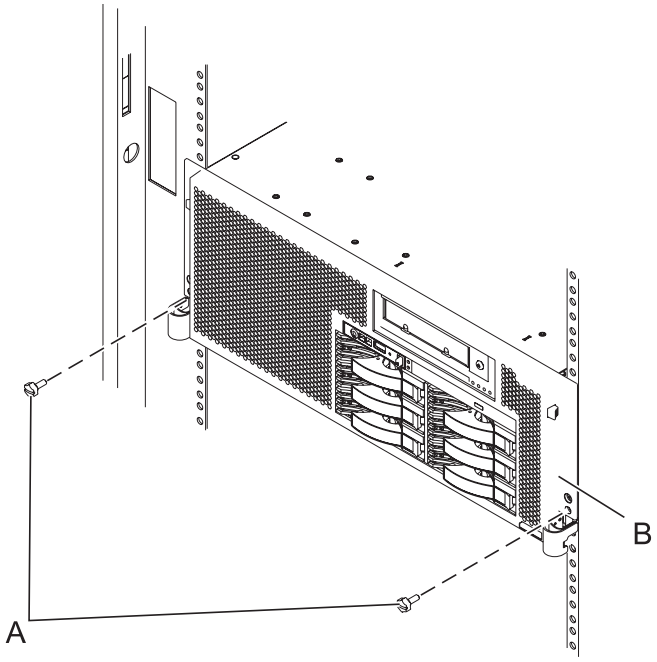
---

8. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

Attention: When placing the model rack into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling. Ensure that only one system unit is in the service position at a time.

Remove two screws **(A)** securing the system unit **(B)** to the rack.



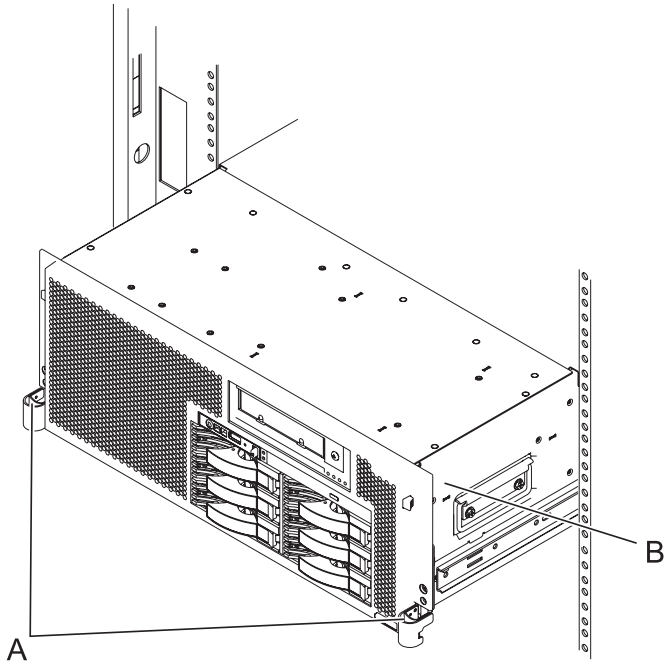
---

9. Place into service position (continued)

While holding the system unit release latches **(A)** down on both the left and right sides, pull the system unit **(B)** out from the rack until the rails are fully extended and locked.

Notes:

1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

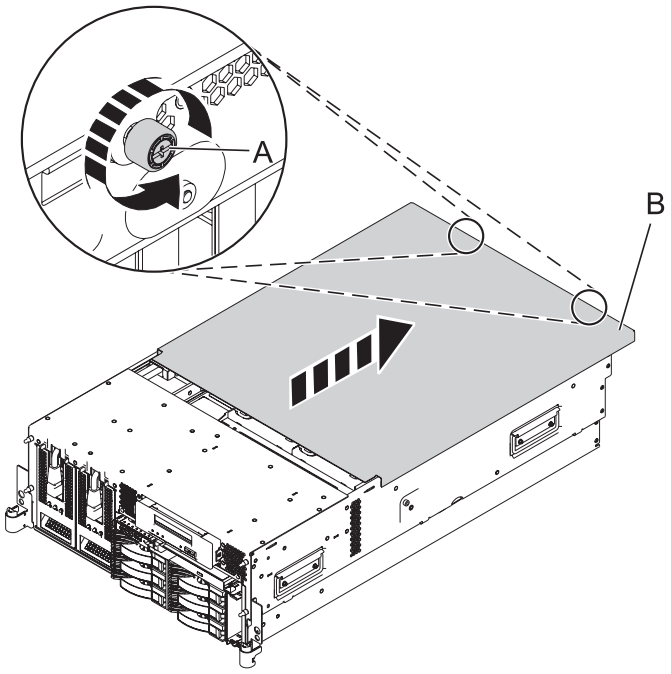


---

10. Remove the service access cover

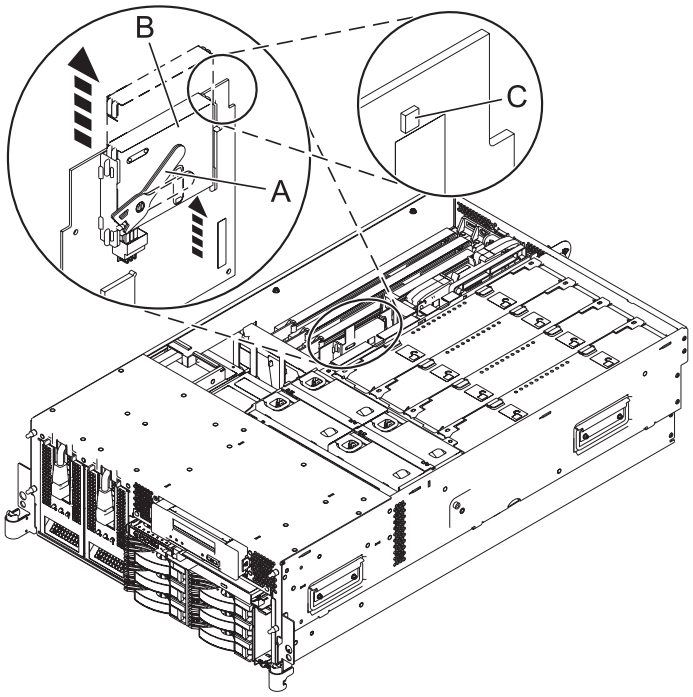
1. Loosen the two thumbscrews **(A)** located at the back of the cover.
2. Slide the cover **(B)** toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

Attention: For proper cooling and airflow, replace the cover before turning on the system. Operating the system without the cover for more than 30 minutes could damage the system components.



11. Check cache battery LED

Examine the LED on the cache battery pack. It is located in area C in the graphic to the right.

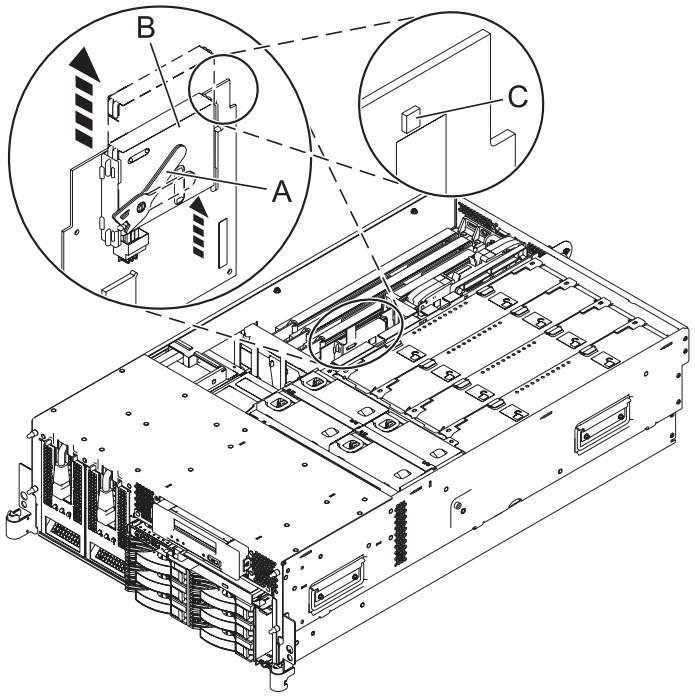


Is the cache battery LED flashing?

Yes, the LED is flashing	No, the LED is not flashing
↓	Go to step 13

12. Stop removing the cache battery pack

The flashing LED indicates that there is cached data on the battery that has not been saved. This data will be lost if the battery is removed at this time. Please complete this service procedure without replacing the battery, then retry it to ensure all cache data is saved before the battery is replaced.

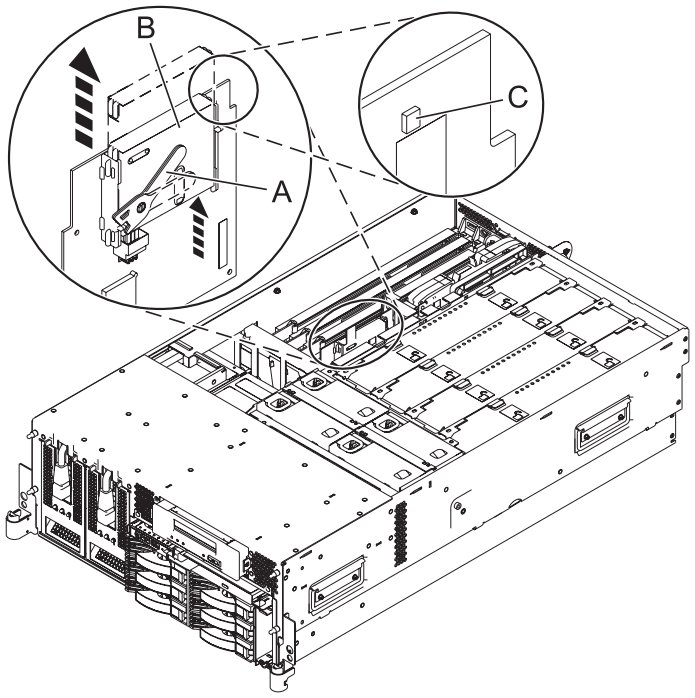


Go to step 15.

---

13. Remove the cache battery pack

1. While applying pressure downward on the card to ensure that it remains seated, move the cache battery lever **(A)** away from the connector to disengage the battery from the connector.
2. Slide the cache battery pack **(B)** out of the mounting guides and remove it from the controller.
3. **Attention:** Do not remove battery if LED **(C)** is flashing; cache data exists.



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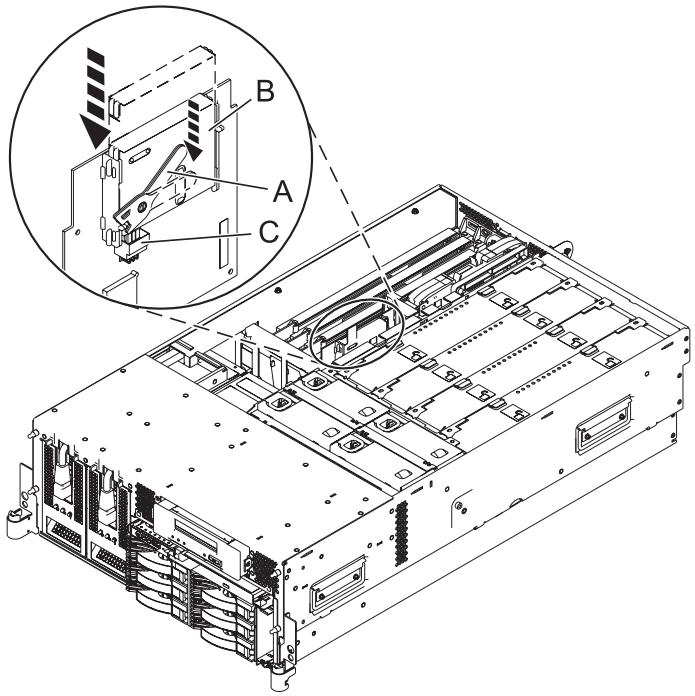
14. Install the cache battery pack

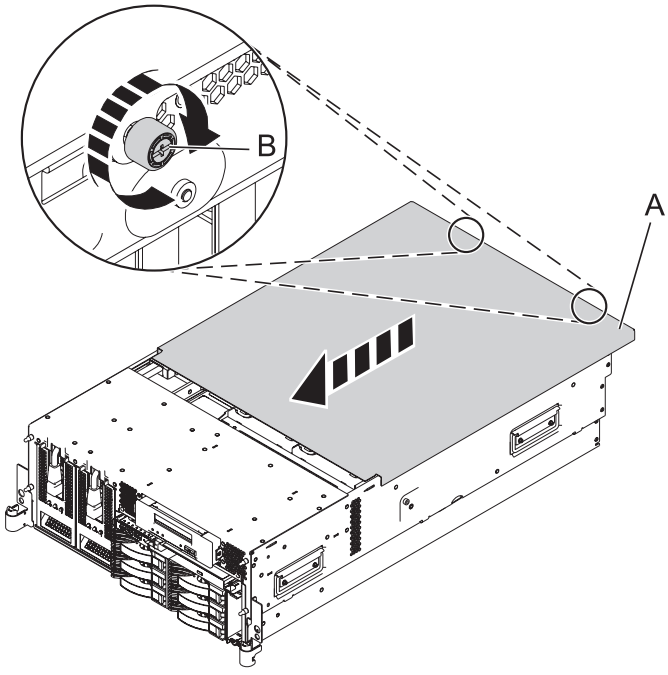
Note: Ensure that the cache battery pack is disconnected for at least **60** seconds before connecting the new battery. This is the minimum amount of time needed for the card to recognize that the battery has been replaced.

1. Slide the cache battery pack **(B)** into the mounting guides on the controller until it is seated in the battery connector **(C)**.
2. Once the battery is seated in the connector, move the lever **(A)** to the latched position to fully seat the battery into the connector.



15. Install the service access cover

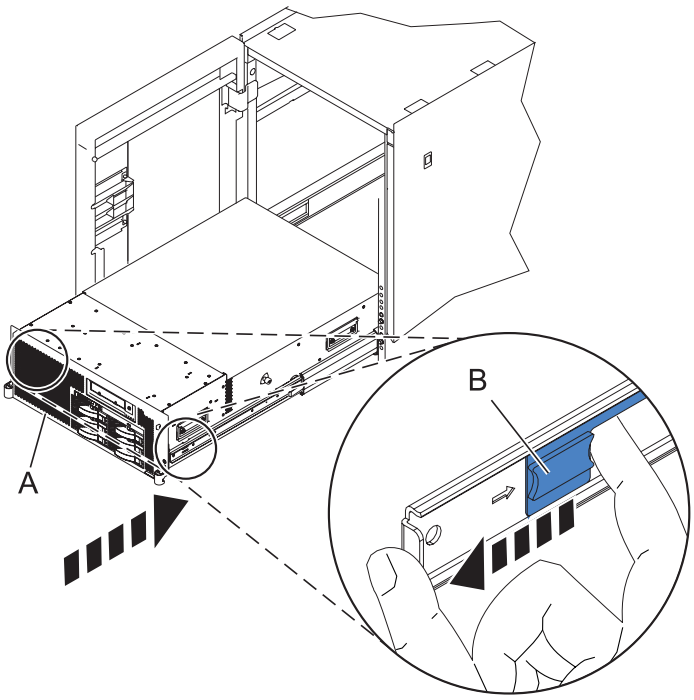
1. Place the service access cover **(A)** on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align the two thumbscrews **(B)** located on the back of the service access cover with the two holes on the back of the system chassis.
4. Tighten the thumbscrews to secure the service access cover.



16. Place into operating position

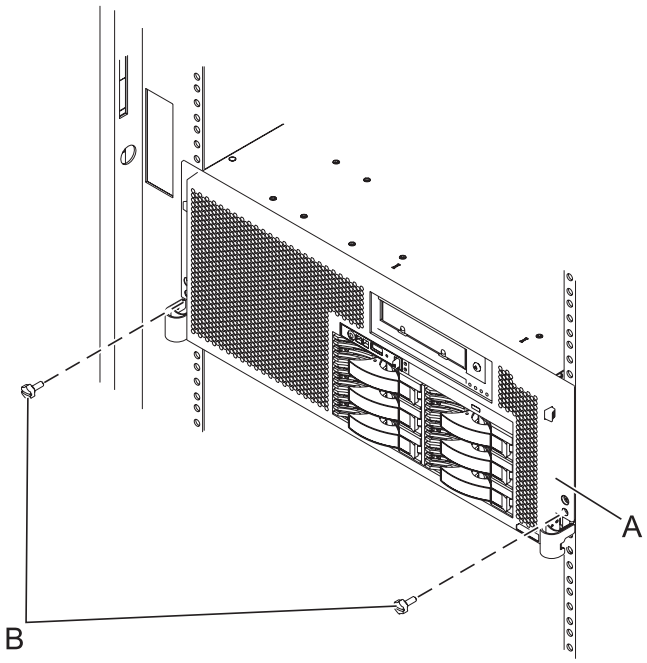
1. To unlock the rail safety latches **(B)**, slide the latches towards the front of the system.
2. Push the system unit **(A)** back into the rack until both system-unit release latches have locked into position.

   Note: Ensure that the cables at the back of the system do not catch or bind as you push the system unit back into the rack.



17. Place into operating position (continued)

Replace and tighten the two screws **(B)** that secure the system unit **(A)** to the rack.



18. Close the back door

Close the back rack door on the unit you are servicing.

19.

Was the cache battery LED flashing during steps 11 and 12 of this procedure?

Yes, the LED was flashing. Do not restart the adapter's write cache.	No, the LED was not flashing. Restart the adapter's write cache.
Go to step 2 on page 37 or contact your next level of support.	Continue with the next step.

20. Restart the adapter's write cache by doing the following steps:

    Select your operating system:

- AIX: Go to step 21.
- Linux: Go to step 22.
- IBM i: Go to step 23.

21. Perform the following steps:

- Navigate to the IBM SAS Disk Array Manager by using the information in step 3a.
- Select **Diagnostics and Recovery Options**.
- Select **Controller Rechargeable Battery Maintenance**.
- Select **Start Adapter Cache**.
- Select the controller with the battery you just replaced and press Enter.
- Go to Verifying a repair.

22. Perform the following steps:

- Run the iprconfig utility by typing iprconfig.
- Select **Work with disk unit recovery**.
- Select **Work with resources containing cache battery packs**.
- Start the I/O adapter cache on the adapter for the battery that you just replaced by typing 3 and press Enter.
- Go to Verifying a repair.

23. Perform the following steps:

- Return to the Work with Resources containing Cache Battery Packs display using the information in step 7a to 7f and select the **Start IOA cache**. Press Enter.
- Ensure that you get the message Cache was started.
- Go to Verifying a repair.

Chapter 4. Common procedures for installable features

This section contains all the common procedures that are related to installing, removing, and replacing features.

Before you begin

Understand prerequisites for installing, removing, or replacing features and parts.

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)

Before you begin a replacement or installation procedure, perform these tasks:

1. If you are installing a new feature, ensure that you have the software required to support the new feature.

   To do this, go to the following Web site: http://www-912.ibm.com/e_dir/eServerPrereq.nsf
2. If you are performing an installation or replacement procedure that might put your data at risk, ensure, wherever possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
3. Review the installation or replacement procedure for the feature or part.
4. 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.

5. Ensure that you have access to a medium, flat-blade screwdriver, a Phillips screwdriver, and a pair of scissors.
6. If parts are incorrect, missing, or visibly damaged, do the following:
   - If you are replacing a part, contact the provider of your parts or next level of support.
   - If you are installing a feature, contact one of the following service organizations:
     - The provider of your parts or next level of support.
     - In the United States, the IBM Rochester Manufacturing Automated Information Line (R–MAIL) at 1–800–300–8751.

   In countries and regions outside of the United States, use the following Web site to locate your service and support telephone numbers:

   `http://www.ibm.com/planetwide`
7. If you encounter difficulties during the installation, contact your service provider, your IBM reseller, or your next level of support.
8. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see Logical Partitioning.

Identifying a failing part

Use these instructions to learn how to locate and identify a failing part on your system or expansion unit using the appropriate method for your system.

Identifying a failing part on an AIX system or logical partition

Use these instructions to learn how to locate a failing part, and then activate the indicator light for that part on a system or logical partition running the AIX operating system.

Locating a failing part on an AIX system or logical partition

You might need to use AIX tools, before activating the indicator light, to locate a part that is failing.

1. Log in as root user or `celogin-`.
2. At the command line, type `diag` and press Enter.
3. From the Function Selection menu, select **Task Selection** and press Enter.
4. Select **Display Previous Diagnostic Results** and press Enter.
5. From the Display Previous Diagnostic Results display, select **Display Diagnostic Log Summary**. The Display Diagnostic Log display shows a chronological list of events.
6. Look in the **T** column for the most recent **S** entry. Select this row in the table and press Enter.
7. Select **Commit**. The details of this log entry are shown.
8. Record the location information and the SRN value shown near the end of the entry.
9. Exit to the command line.

Use the location information for the failing part to activate the indicator light that identifies the failing part. “Activating the indicator light for the failing part.”

Activating the indicator light for the failing part

Use these instructions to help physically identify the location of a part you are servicing.

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. From the Function Selection menu, select **Task Selection** and press Enter.
4. From the Task Selection menu, select **Identify and Attention Indicators** and press Enter.

5. From the list of lights, select the location code for the failing part and press Enter.
6. Select **Commit**. This turns on the system attention and indicator light for the failing part.
7. Exit to the command line.

Identifying a failing part on an IBM i system or logical partition

You can activate or deactivate the indicator light by using IBM i to assist in locating a failing part.

Activating the failing-part indicator light

You can search the service action log for an entry that matches the time, reference code, or resource of a problem, and then activate the indicator light for a failing part.

1. Sign on to an IBM i session, **with at least service level authority**.
2. On the command line of the session, type `strsst` and press Enter.

   Note: If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by a Hardware Management Console (HMC), use the Service Focal Point™ utilities to get to the Dedicated Service Tools (DST) display.
3. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

   Remember: The service tools password is case-sensitive.
4. Select **Start a service tool** from the System Service Tools (SST) display and press Enter.
5. Select **Hardware service manager** from the Start a Service Tool display and press Enter.
6. Select **Work with service action log** from the Hardware Service Manager display and press Enter.
7. On the Select Timeframe display, change the **From: Date and Time** field to a date and time prior to when the problem occurred.
8. Search for an entry that matches one or more conditions of the problem:
   - System Reference code
   - Resource
   - Date and time
   - Failing item list
9. Select option **2** (Display failing item information) to display the service action log entry.
10. Select option **2** (Display details) to display location information for the failing part to be replaced. The information displayed in the date and time fields is the date and time for the first occurrence of the specific System reference code for the resource displayed during the time range selected.
11. If location information is available, select option **6** (Indicator on) to turn on the failing part's indicator light.

    Tip: If the failing part does not contain a physical indicator light, a higher-level indicator light is activated. For example, the indicator light for the backplane or unit that contains the failing part might be lit. In this case, use the location information to locate the actual failing part.
12. Look for the enclosure indicator light to locate the enclosure that contains the failing part.

Deactivating the failing-part indicator light

Use this procedure to turn off any indicator light that you turned on as a part of a service action.

To deactivate the indicator light, follow these steps:

1. Select option **7** (Indicator off) to turn off the indicator light.
2. Select the **Acknowledge all errors** function at the bottom of the Service Action Log display, if all problems have been resolved.
3. Close the log entry by selecting option **8** (Close new entry) on the Service Action Log Report display.

Identifying a failing part on a Linux system or logical partition

If the service aids have been installed on a system or logical partition, you can activate or deactivate the indicator lights to locate a part or compete a service action.

Locating a failing part on a Linux system or logical partition

If the service aids have been installed on a system or logical partition, you need to activate the indicator lights to locate a part.

Finding the location code of a failing part in a Linux system or logical partition

To retrieve the location code of the failing part, if you do not know the location code, use the procedure in this topic.

To locate the failing part in a system or logical partition follow these steps:

1. Log in as root user.
2. At the command line, type `grep diagela /var/log/platform` and press Enter.
3. Look for the most recent entry that contains a system reference code (SRC).
4. Record the location information.

Activating the indicator light for the failing part

If you know the location code of the failing part, activate the indicator light to help you locate which part to replace.

To activate the indicator light, follow these steps:

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s identify -l`*location code* and press Enter.
3. Look for the system attention light to identify the enclosure that contains the failing part.

Deactivating the failing-part indicator light

After you complete a removal and replacement procedure, you must deactivate the failing-part indicator light.

To deactivate the indicator light, follow these steps:

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s normal -l`*location code* and press Enter.

Locating a failing part in a Virtual I/O Server system or logical partition

You can use Virtual I/O Server (VIOS) tools, before activating the indicator light, to locate a part that is failing.

1. Log in as root user or `celogin-`.
2. At the command line, type `diagmenu` and press Enter.
3. From the **Function Selection** menu, select **Task Selection** and press Enter.
4. Select **Display Previous Diagnostic Results** and press Enter.
5. From the **Display Previous Diagnostic Results** display, select **Display Diagnostic Log Summary**. A **Display Diagnostic Log** display appears. This display contains a chronological list of events.
6. Look in the **T** column for the most recent **S** entry. Select this row in the table and press Enter.
7. Choose **Commit**. The details of this log entry are shown.
8. Record the location information and the SRN value shown near the end of the entry.
9. Exit to the command line.

Use the location information for the failing part to activate the indicator light that identifies the failing part. For instructions, see Identifying a part using the Virtual I/O Server.

Identifying a part using the Virtual I/O Server

Use these instructions to turn on the indicator light to help you physically locate a part using the Virtual I/O Server (VIOS).

1. Log in as root user.
2. At the command line, type `diagmenu` and press Enter.
3. From the Function Selection menu, select **Task Selection**. Press Enter.
4. From the Task Selection menu, select **Identify and Attention Indicators**. Press Enter.
5. From the list of lights, select the location code for the failing part and press Enter.
6. Select **Commit**. This turns on the system attention and indicator light for the failing part.
7. Exit to the command line.

Starting the system or logical partition

Learn how to start a system or logical partition after performing a service action or system upgrade.

Starting a system that is not managed by a Hardware Management Console

You can use the power button or the Advanced System Management Interface to start a system that is not managed by a Hardware Management Console.

To start a system that is not managed by a Hardware Management Console (HMC), follow these steps:

1. On a rack-mounted system unit, open the front rack door, if necessary. On a stand-alone system unit, open the front door.
2. Before you press the power button on the control panel, ensure that power is connected to the system unit as follows:
   - All system power cables are connected to a power source.
   - The power-on light, as shown in the following figure, is slowly flashing.
   - The top of the display, as shown in the following figure, shows `01 V=F`.

   Tip: The system attention light, as shown in the following figure, does not appear on the control panel on the model 9117-MMA.
3. Press the power button **(A)**, as shown in the following figure, on the control panel.

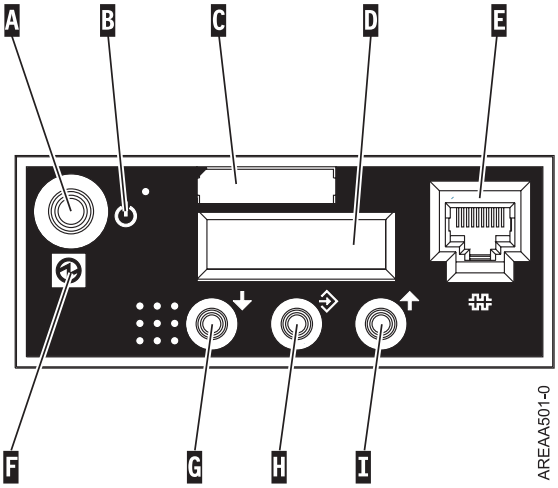


Figure 25. 570 control panel

- **A**: Power-on button
- **B**: On/off power symbol
- **C**: Serial number label
- **D**: Function/Data display
- **E**: System port (S1)
- **F**: Power LED
  - A flashing light indicates standby power to the unit.
  - A constant light indicates full system power to the unit.

  Note: There is approximately a 30 second transition period from the time the power-on button is pressed to when the power LED goes from flashing to solid. During the transition period, you might observe the flashing intervals speed up.
- **G**: Decrement button
- **H**: Enter button
- **I**: Increment button

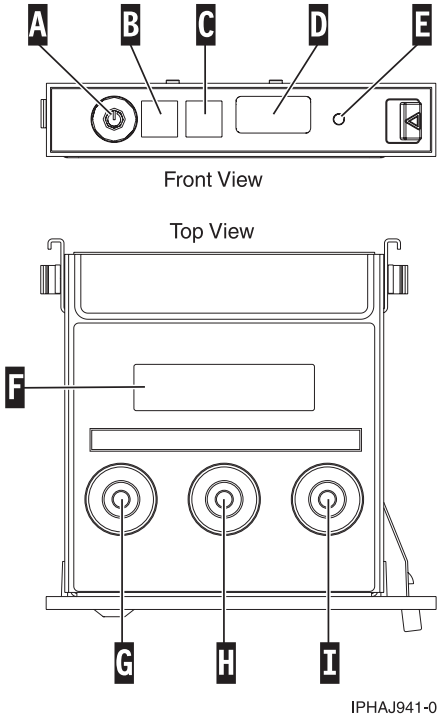


Figure 26. Control panel for the 8203-E4A, 8261-E4S, 8204-E8A, 9407-M15,9408-M25, and 9409-M50.

- **A**: Power-on button
- **B**: Power LED
  - A flashing light indicates standby power to the unit.
  - A constant light indicates full system power to the unit.

  Note: There is approximately a 30 second transition period from the time the power-on button is pressed to when the power LED goes from flashing to solid. During the transition period, you might observe the LED flashing faster.
- **C**: Attention light
- **D**: USB port

- **E**: Pinhole reset button
- **F**: Function/Data display
- **G**: Decrement button
- **H**: Enter button
- **I**: Increment button

4. Observe the following after pressing the power button:
   - The power-on light begins to flash faster.
   - The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
   - Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops flashing and remains on, indicating that system power is on.

Tip: If pressing the power button does not start the system, do the following steps to start the system using the Advanced System Management Interface (ASMI):

1. Set up access to the ASMI. For instructions, see Accessing the ASMI.
2. Start the system using the ASMI. For instructions, see Powering the system on and off.

Starting a system or logical partition using the Hardware Management Console

You can use the Hardware Management Console (HMC) user interface to start the system or logical partition after the required cables are installed and the power cables are connected to a power source.

For instructions on working with the HMC, see Managing the Hardware Management Console. For instructions on starting a logical partition, see Logical partitioning. For instructions on starting the system, see Powering on the managed system.

Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. When the power-on light on the control panel stops blinking and remains on, the system power is on.

Starting a system or virtual server with the Systems Director Management Console

You can use the IBM Systems Director Management Console (SDMC) user interface to start the system or virtual server after the required cables are installed and the power cables are connected to a power source.

For instructions on working with the SDMC, see Managing and configuring the SDMC. For instructions on starting a virtual server, see Managing virtual servers. For instructions on shutting down and restarting virtual servers, see Shutting down and restarting virtual servers.

Progress indicators, also known as checkpoints, display on the control panel while the system is being started. When the power-on light on the control panel stops flashing and remains on, the system power is on.

Stopping a system or logical partition

Learn how to stop a system or logical partition as a part of a system upgrade or service action.

Attention: Using either the power-on button on the control panel or entering commands at the Hardware Management Console (HMC) to stop the system can cause unpredictable results in the data files. Also, the next time you start the system, it might take longer if all applications are not ended before stopping the system.

To stop the system or logical partition, select the appropriate procedure.

Stopping a system that is not managed by a Hardware Management Console

You might need to stop the system to perform another task. Use these instructions to stop the system using the power button or Advanced System Management Interface.

Before you stop the system, follow these steps:

1. If an Integrated xSeries® Adapter (IXA) is present on the system, shut it down using IBM i options.
2. Ensure that all jobs are completed and end all applications.
3. Ensure that the operating system is stopped.

   Attention: Failure to do so can result in the loss of data.
4. Record the IPL type and IPL mode from the control panel display to help you return the system to this state when the installation or replacement procedure is completed.

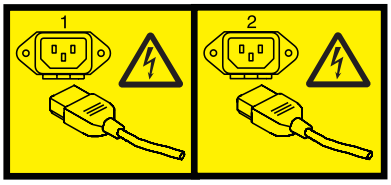
The following procedure describes how to stop a system that is not managed by a Hardware Management Console (HMC).

1. Log in to the system as a user with the authority to run the **shutdown** or **pwrdwnsys** (Power Down System) command.
2. At the command line, enter one of the following commands:
   - If your system is running the AIX operating system, type **shutdown**.
   - If your system is running the Linux operating system, type **shutdown -h now**.
   - If your system is running the IBM i operating system, type **pwrdwnsys**. If your system is partitioned, use the **pwrdwnsys** command to power down each of the secondary partitions. Then, use the **pwrdwnsys** command to power down the primary partition.

   The command stops the operating system. The system power turns off, the power-on light begins to slowly blink, and the system goes into a standby state.
3. Set the power switches of any devices connected to the system to off.
4. Unplug any power cables that are attached to the unit from electrical outlets. Ensure that you unplug power cables from peripheral devices, such as printers and expansion units.

   Important: The system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

   (L003)



   or

Stopping a system by using the Hardware Management Console

You can use the Hardware Management Console (HMC) user interface to stop the system or a logical partition. Use the following steps to accomplish this task.

By default, the managed system is set to power off automatically when you shut down the last running logical partition on the managed system. If you set the managed system properties on the HMC so that the managed system does not power off automatically, you must use this procedure to power off your managed system.

Attention: If possible, shut down the running logical partitions on the managed system before powering off the managed system. Powering off the managed system without shutting down the logical partitions first causes the logical partitions to shut down abnormally and can cause data loss. If you use a Virtual I/O Server (VIOS) logical partition, ensure that all clients are shut down or that the clients have access to their devices using an alternate method.

To power off a managed system, you must be a member of one of the following roles:

- Super administrator
- Service representative
- Operator
- Product engineer

1. In the Navigation area, expand the **Systems Management** folder.
2. Click the **Servers** icon.
3. In the Contents area, select the managed system.
4. Select **Tasks**, then **Operations**, and then **Power Off**
5. Select the appropriate power-off mode and click **OK**.

Related information:

Shutting down and restarting logical partitions

Stopping a system with the Systems Director Management Console

You can use the IBM Systems Director Management Console (SDMC) user interface to stop the system or a virtual server. Use the following steps to accomplish this task.

By default, the managed system is set to power off automatically when you shut down the last running virtual server on the managed system. If you set the managed system properties on the SDMC so that the managed system does not power off automatically, you must use this procedure to power off your managed system.

Attention: If possible, shut down the running virtual servers on the managed system before powering off the managed system. Powering off the managed system without shutting down the virtual servers first causes the virtual servers to shut down abnormally and can cause data loss. If you use a Virtual I/O Server (VIOS) logical partition, ensure that all clients are shut down or that the clients have access to their devices with an alternate method.

To power off a managed system, you must be a member of one of the following roles:

- Super administrator
- Service representative
- Operator
- Product engineer

1. In the Power Systems™ Resource area, select the managed system you want to power off.
2. From the **Actions** menu, select **Operations** > **Power Off**.
3. Select the appropriate power-off mode and click **OK**.

Removing and replacing covers and doors

Use these instructions to remove, replace, or install covers to access components or perform service.

Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to remove the service access cover to perform service or to gain access to internal components.

1. Place the system into the service position. For instructions, see "Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position" on page 72.
2. Loosen the two thumbscrews **(A)** located at the back of the cover.
3. Slide the cover **(B)** toward the back of the system unit. When the front of the service access cover clears the upper frame ledge, lift the cover up and off the system unit.

Attention: For proper cooling and airflow, install the cover before starting the system. Operating the system without the cover for more than 30 minutes could damage the system components.

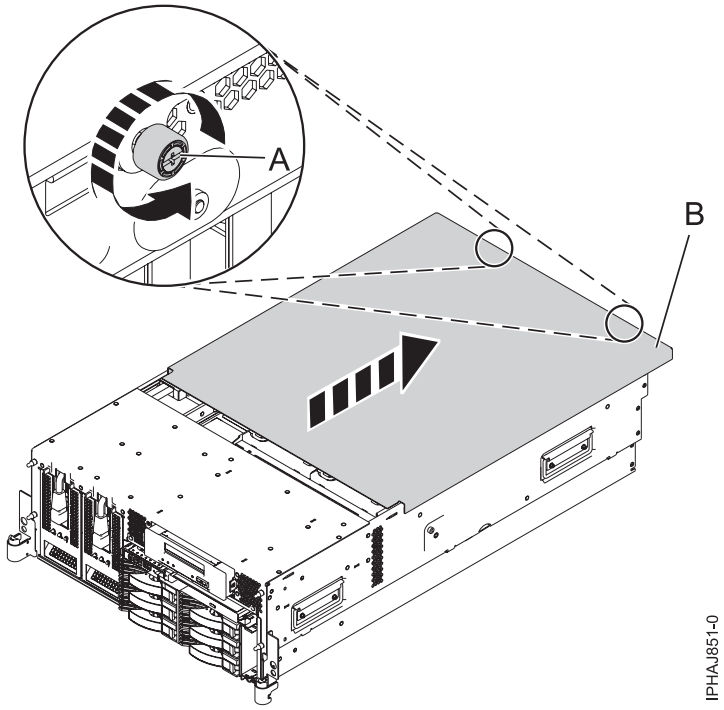


Figure 27. Remove the service access cover from a rack-mounted model

Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to install the service access cover after performing service or accessing internal components.

1. Place the service access cover **(A)** on the top of the system unit, approximately 25 mm (1 in.) from the front of the system unit.
2. Hold the service access cover against the system unit, and slide it toward the front of the system.

   The tabs on the service access cover slide beneath the upper chassis ledge, and the two thumbscrews align with the screw holes at the back of the system unit.
3. Tighten the thumbscrews **(B)** located at the back of the cover.

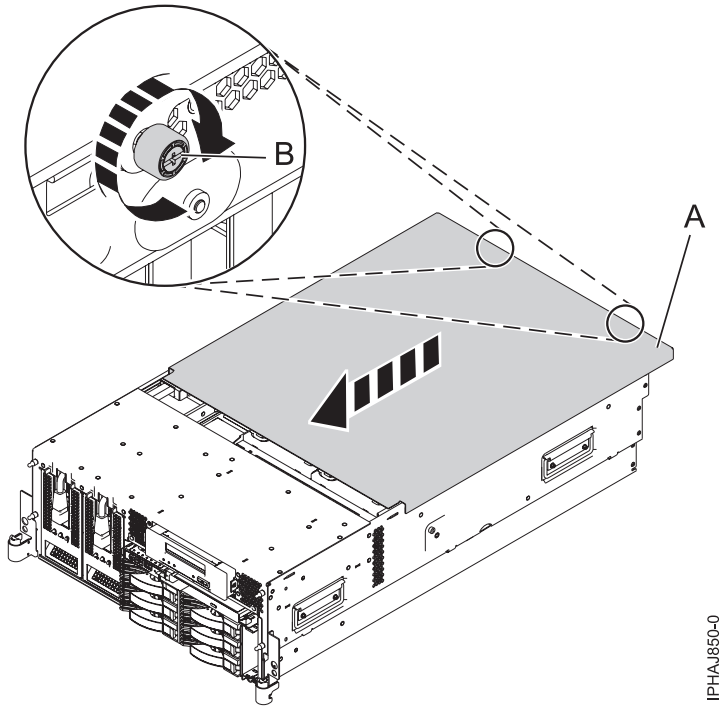


Figure 28. Install the service access cover on the rack-mounted model

Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to remove the service access cover to perform service or to gain access to internal components.

To remove the service access cover from a stand-alone model, do the following steps:

1. Loosen the two thumbscrews **(A)** located at the back of the service access cover as shown in the following figure.
2. Slide the service access cover **(B)** toward the back of the system. When the front of the cover clears the front frame ledge, lift the cover off the system.

   Attention: For proper cooling and airflow, install the cover before starting the system. Operating the system without the cover for more than 30 minutes might damage the system components.

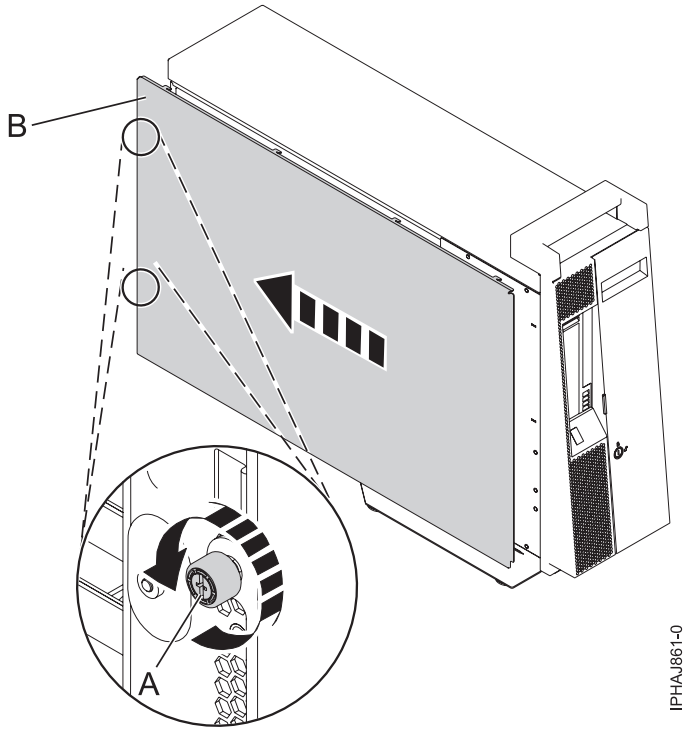


Figure 29. Removing the service access cover from the stand-alone model

Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to install the service access cover after performing service or accessing internal components.

1. Align the service access cover pins with the slots in the system. The flanges on the top and bottom of the cover wrap around the system frame.
2. Hold the service access cover against the system unit **(A)** and slide it toward the front of the system.
3. Tighten the two thumbscrews **(B)** located at the back of the cover.

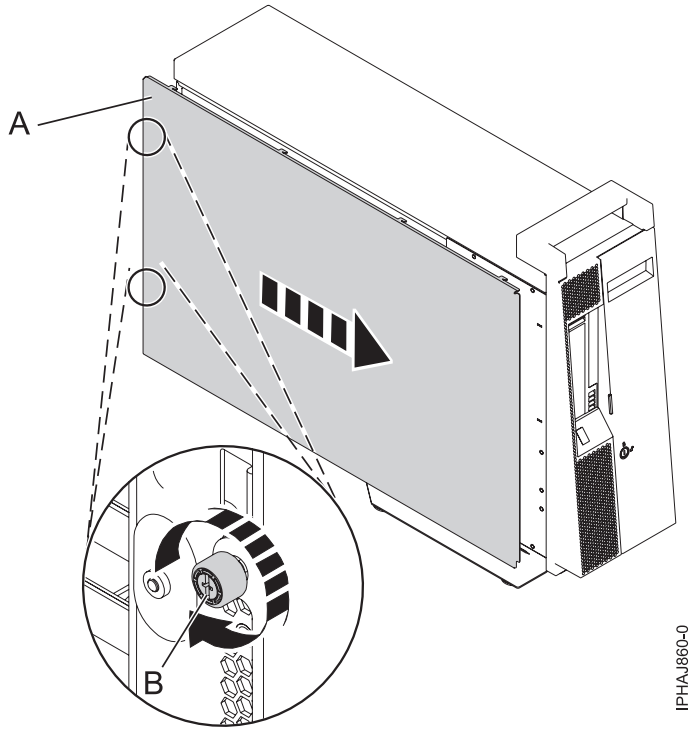


Figure 30. Installing the service access cover on a stand-alone model

Removing the front cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to remove the cover to access components or perform service.

1. Remove the two thumbscrews **(A)** that secure the system to the rack **(B)** as shown in the following figure.
2. Push in the release latches **(C)** and pull the cover away from the system.

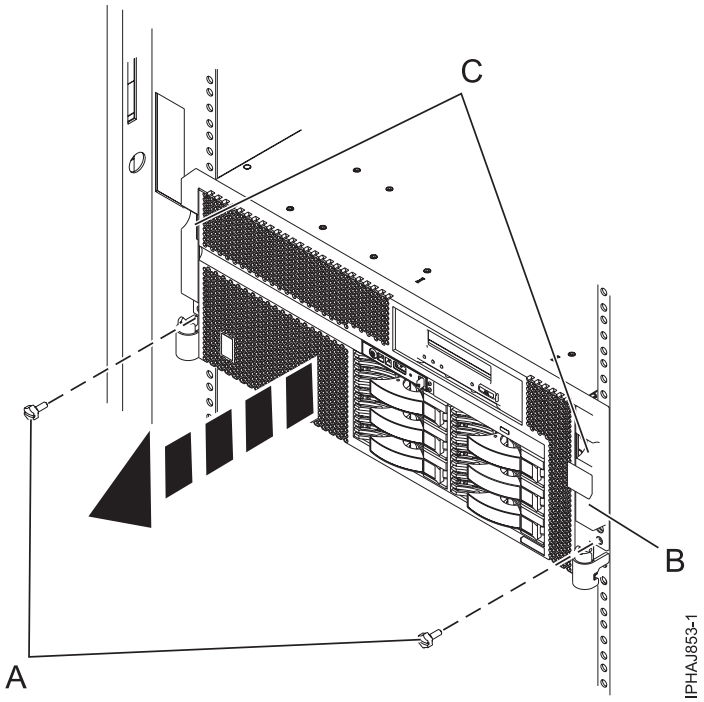


Figure 31. Removing the front cover from a rack-mounted model

Installing the front cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to install the cover after accessing components or performing service.

1. Push in the release latches **(B)** and push the cover onto the system.
2. Gently push the cover in until the two cover-release latches **(B)** are seated in their respective slots as shown in the following figure.
3. Replace the two thumbscrews **(C)** that secure the system to the rack **(A)**.

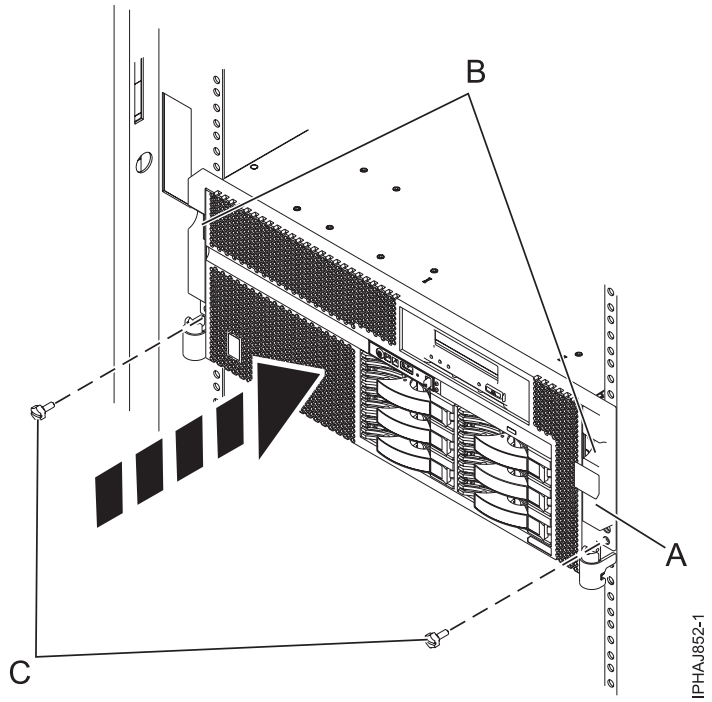


Figure 32. Installing the front cover on a rack-mounted model

Removing the door from the 8204-E8A or 9409-M50

Use this procedure to remove the door to access components or perform service.

1. Open the front door by grasping the door handle and pulling the door out and away from the system unit.
2. To remove the door, press down on the top back edge of the door.
3. Gently swivel the top back edge of the door forward and out past the top of the system unit.
4. Lift the door up to release it from the lower retaining post.

Installing or replacing the door on the 8204-E8A or 9409-M50

Use this procedure to install the door after accessing components or performing service.

1. Set the door on the lower retaining post.
2. Rotate the door toward the top of the system unit.
3. Press down on the lower back edge of the door, and seat the top post into its matching slot.
4. Close and secure the door.

Removing the front cover from the stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to remove the cover to access components or perform service.

1. Open the door that covers the disk drives by unlocking and pulling the door open.
2. Press down on the cover-release tab **(A)** as shown in the following figure.
3. Pull the top of the cover **(B)** out and away from the system.

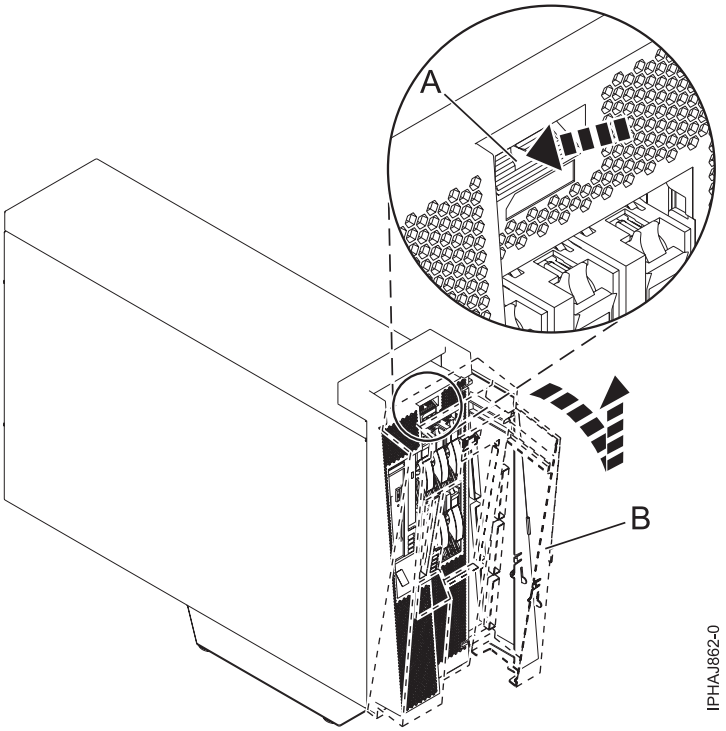


Figure 33. Remove the door from the model

4. Gently pull the cover up and off the base.

Installing the front cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

Use this procedure to install the cover after accessing components or performing service.

1. Place the two lower cover-locking tabs into the retaining slots located on the base of the system unit as shown in the following figure.

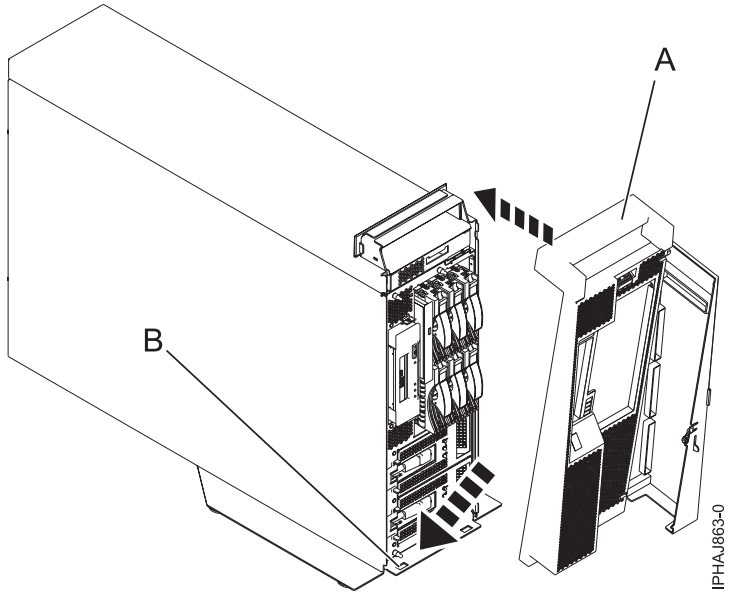


Figure 34. Replacing the cover on the model

2. Push the cover up toward the top of the system **(A)**, ensuring that the aligning pins are aligned with their matching slots **(B)** located on the system.
3. Gently push the cover in until the cover-release tab snaps into place.
4. Close and secure the door.

Removing and replacing the front cover for the 8234-EMA, 9117-MMA, or 9406-MMA

Use these procedures to remove and replace the cover to access components or perform service.

Removing the front cover from the 8234-EMA, 9117-MMA, or 9406-MMA

Use this procedure to remove the cover to access components or perform service.

To remove the front cover follow these steps:

1. If necessary, open the front rack door.
2. Loosen the thumbscrew on the right side of the cover as shown in the following figure.

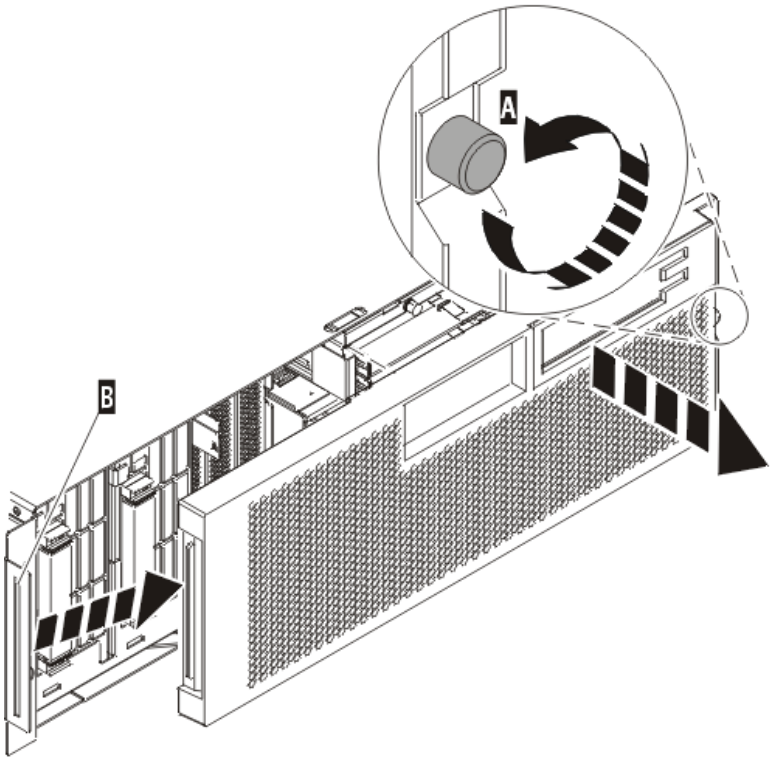


Figure 35. Removing the front cover

3. Slide the cover to the right, and remove it from the system unit.

Installing the front cover on the 8234-EMA, 9117-MMA, or 9406-MMA

Use this procedure to install the cover after accessing components or performing service.

To install the front cover follow these steps:

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot on the left side of the system unit as shown in the following figure.

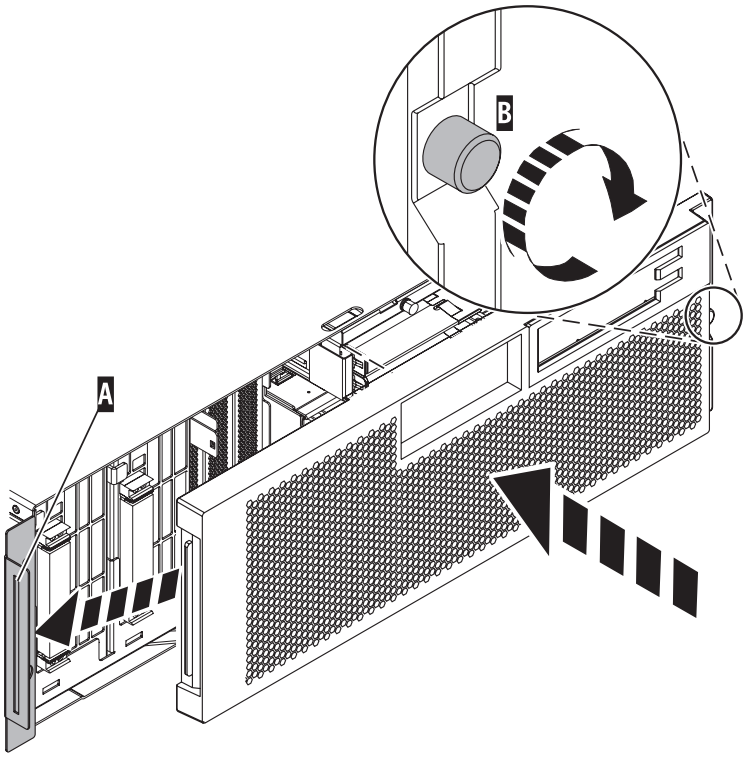


Figure 36. Installing the front cover

2. Tighten the thumbscrew on the right side of the cover.
3. Close the front rack door.

Placing the rack-mounted system or expansion unit in the service position or operating position

Use these procedures to place a system or expansion unit into the service position or operating position to perform service or to gain access to internal components.

Placing the rack-mounted system or expansion unit in the service position

Use this procedure to perform service or gain access to internal components by placing the rack-mounted system or expansion unit in the service position.

Note: Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

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)

To place a rack-mounted system or expansion unit into the service position, follow these steps:

1. If necessary, open the front rack door.
2. Remove the two thumbscrews **(A)** that secure the system or expansion unit **(B)** to the rack as shown in the following figure.

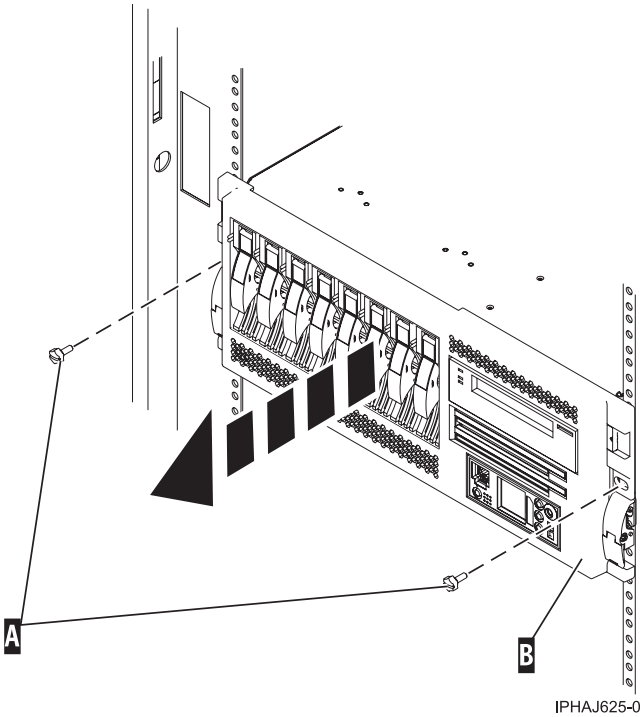


Figure 37. Removing the thumbscrews from the system and rack

3. Release the rack latches **(A)** on both the left and right sides as shown in the following figure.

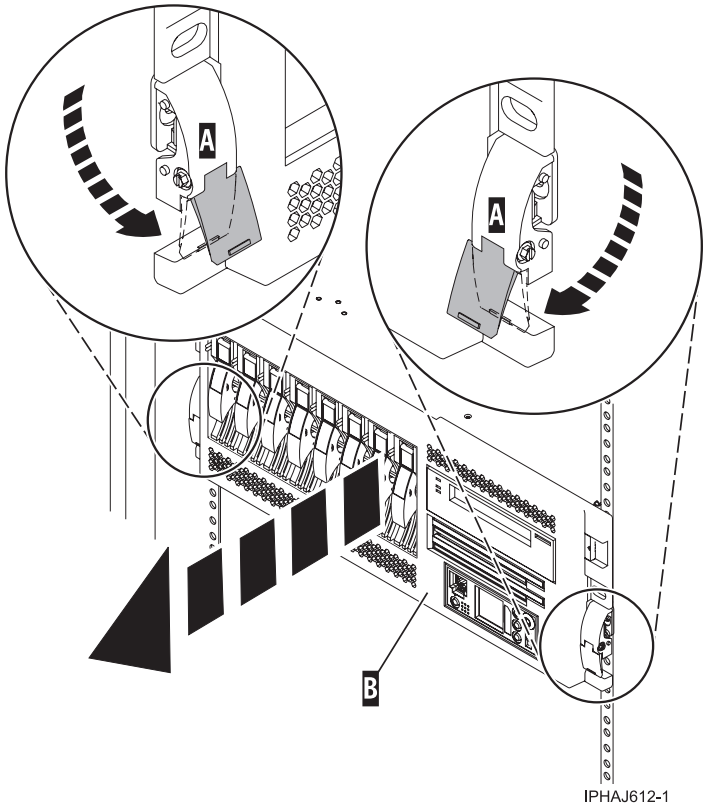


Figure 38. Releasing the rack latches

4. Read the following note, and then slowly pull the system or expansion unit out from the rack until the rails are fully extended and locked.

   Remember:

   - If the procedure you are performing requires you to unplug cables from the back of the system or expansion unit, do so before you pull the unit out from the rack.
   - Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you pull the unit out from the rack.
   - Ensure the rails are fully extended. When the rails are fully extended, the rail safety latches lock into place. This action prevents the system or expansion unit from being pulled out too far.

Placing the rack-mounted system or expansion unit in the operating position

Use this procedure to place the rack-mounted system or expansion unit in the operating position to make the unit available for use.

Tip: Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

To place the rack-mounted system or expansion unit into the operating position, follow these steps:

1. Simultaneously release the blue rail safety latches **(A)**, located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

   Note: Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you push the unit back into the rack.

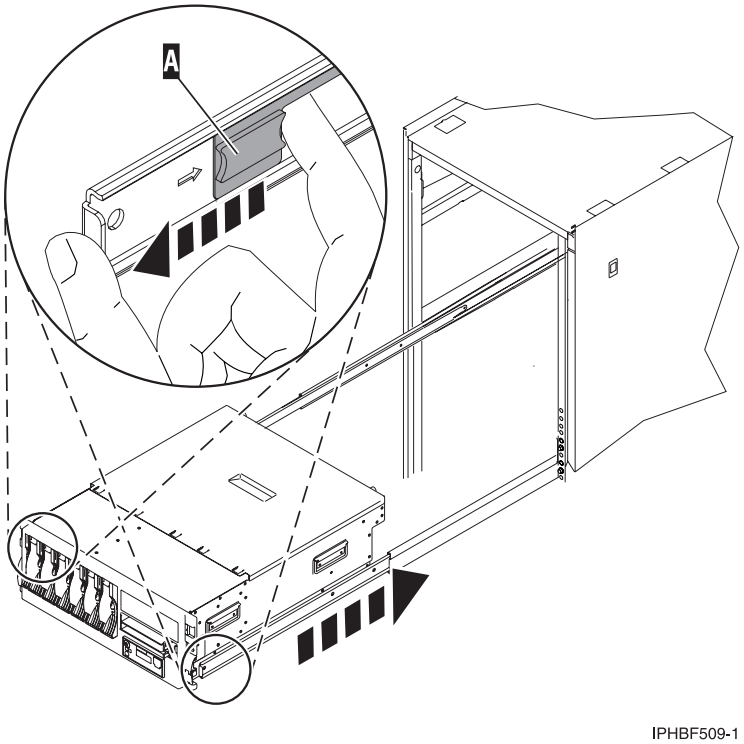


Figure 39. Releasing the rail safety latches

2. Replace and tighten the two thumbscrews **(C)** that secure the system or expansion unit **(A)** to the rack as shown in the following figure.

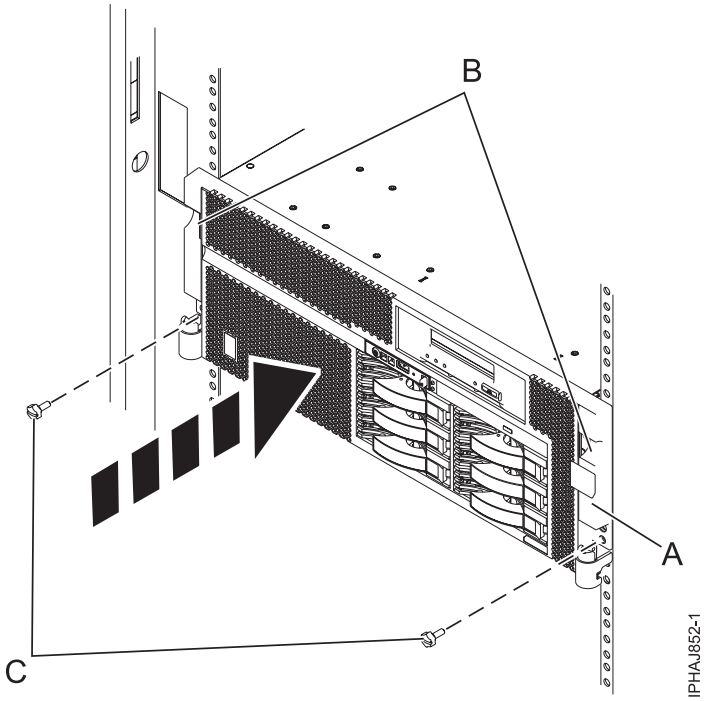


Figure 40. Pushing the system into the rack and attaching the thumbscrews

3. Close the front rack door.

Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position

Use this procedure to perform service or gain access to internal components by placing the rack-mounted system or expansion unit in the service position.

Note: Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

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)

To place the rack-mounted system or expansion unit into the service position, follow these steps:

1. If necessary, open the front rack door.
2. Remove the two thumbscrews **(A)** that secure the system unit to the rack as shown in the following figure.
3. Release the rack latches **(B)** on both the left and right sides as shown in the following figure.

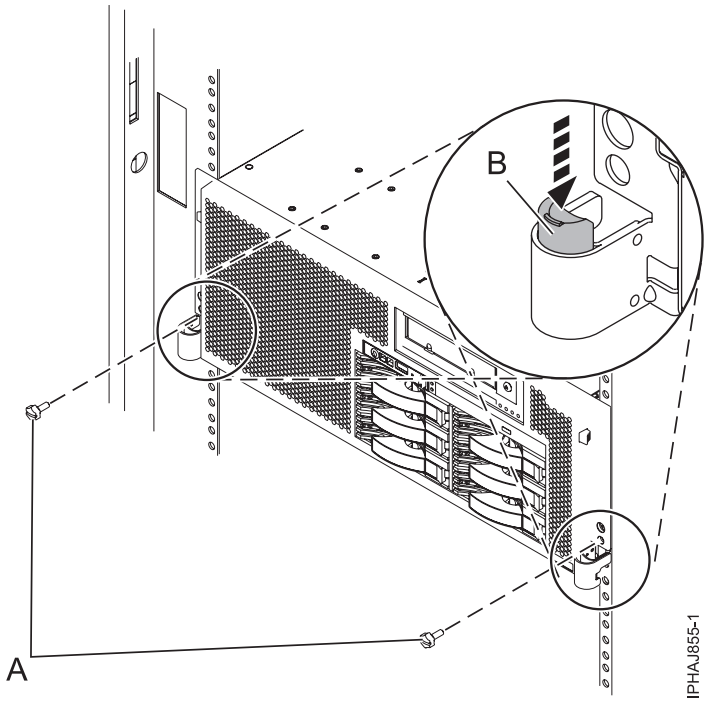


Figure 41. Releasing the rack latches

4. Read the following note, and then slowly pull the system or expansion unit out from the rack until the rails are fully extended and locked.

   Remember:
   - If the procedure you are performing requires you to unplug cables from the back of the system or expansion unit, do so before you pull the unit out from the rack.
   - Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you pull the unit out from the rack.
   - Ensure the rails are fully extended. When the rails are fully extended, the rail safety latches lock into place. This action prevents the system or expansion unit from being pulled out too far.

Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position

Use this procedure to place the rack-mounted system or expansion unit in the operating position to make the unit available for use.

To place the rack-mounted model into the operating position follow these steps:

Tip: Some of the figures in these procedures might not look exactly like the system or expansion unit that you have. However, the steps to perform the task are the same.

1. Simultaneously release the blue rail safety latches **(B)**, located near the front of each rail, and push the system or expansion unit into the rack as shown in the following figure.

   Note: Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you push the unit back into the rack.

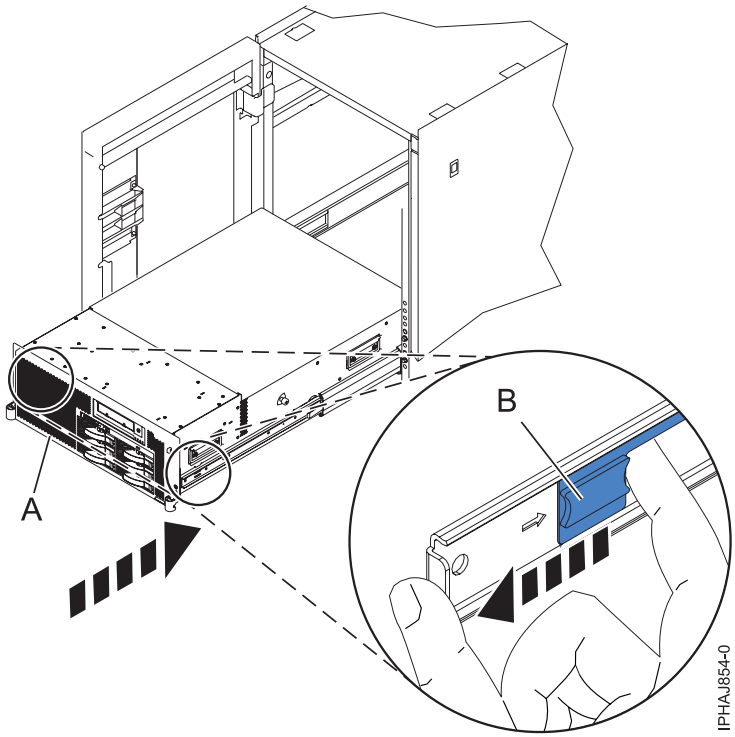


Figure 42. Releasing the rail safety latches

2. Replace and tighten the two thumbscrews **(C)** that secure the system or expansion unit **(A)** to the rack as shown in the following figure.

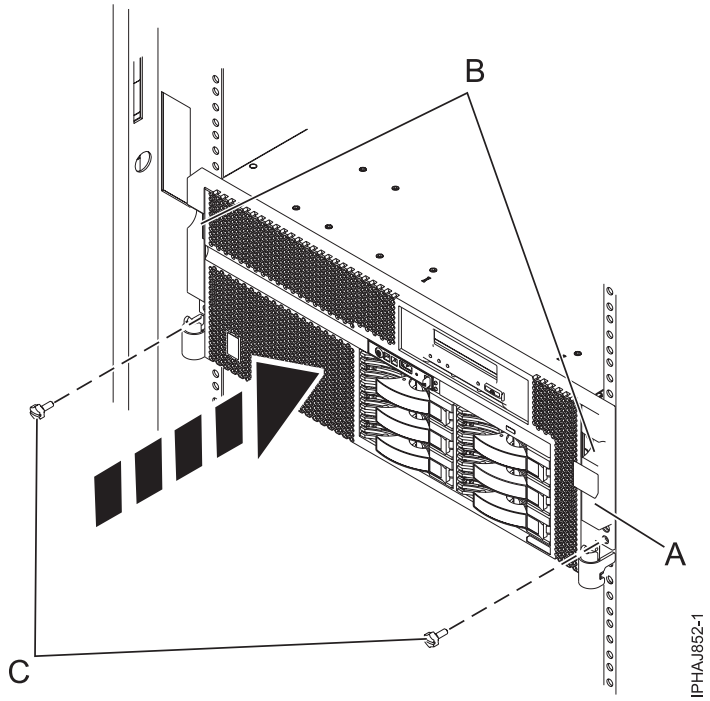


Figure 43. Replacing the thumbscrews

3. Close the front rack door.

Hardware service manager Verify option

Use the hardware service manager to verify communications or devices.

To verify communications or devices on any System i® model using the hardware service manager *Verify* option, perform the following procedure:

Note: Before running a verification test, ensure that the customer is not using the resource you want to test and that all communication jobs on the resource to be tested are ended.

1. From the Start a Service Tool display, select the *Hardware Service Manager* option.
2. From the Hardware Service Manager display, select the *Logical hardware resources* option.
3. From the Logical Hardware Resources display, select the *System bus resources* option.

   This display lists all the I/O processors.
4. Select the *Resources associated with IOP* option for the attached IOP in the list.
5. Select the *Verify* option for the communications, tape, optical storage unit, or File Server adapter that you want to test.
6. When the test completes, the system responds with either a `Test is successful` message or a `Test failed` message.

   This ends the procedure.

Notes:

1. Hardware units might perform automatic self-tests when they are powered on.
2. You can test some workstations by using the *Test Request* function key while the operating system Sign On display is shown.
3. See the specific device information for possible off-line tests that you can run.

Verifying an installed feature or replaced part on an AIX system or logical partition

If you installed feature or replaced a part, you might want to use the tools in AIX to verify that the feature or part is recognized by the system or logical partition.

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:

- Verify the installed feature using AIX
- Verifying the replaced part using AIX

Verify the installed feature using AIX:

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. Select **Advanced Diagnostics Routines** and press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
5. When the **Advanced Diagnostic Selection** menu appears, do one of the following:
   - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
   - To test all the resources available to the operating system, select **All Resources** and press Enter.
6. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message `No trouble was found`?

- **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the installation procedures to ensure that the new feature is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system is running in logical partitioning (LPAR) mode, note the logical partition in which you installed the feature. Contact your service provider for assistance.
- **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify the replacement part using AIX:

To verify the operation of a newly installed feature or replacement part, follow these steps:

1. Did you use either the AIX operating system or the online diagnostics service aid concurrent (hot-swap) service to replace the part?

   No: Go to step 2.

   Yes: Go to step 5.
2. Is the system powered off?

   No: Go to step 4.

   Yes: If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.
3. Start the system and wait until the AIX operating system login prompt is displayed or until apparent system activity on the operator panel or display has stopped.

   Did the AIX login prompt display?

   - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.

     If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
   - **Yes:** Go to step 4.
4. At the command prompt, type `diag –a` and press Enter to check for missing resources. If you see a command prompt, go to step 5.

   If the **Diagnostic selection** menu is shown with **M** appearing next to any resource, follow these steps:

   a. Select the resource and press Enter.
   b. Select **Commit**.
   c. Follow any instructions that are shown.
   d. If the *Do you want to review the previously displayed error?* message is shown, select **Yes** and press Enter.
   e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and contact your service provider for assistance.
   f. If no SRN is shown, go to step 5.
5. Test the part by doing the following steps:

   a. At the command line, type `diag` and press Enter.
   b. From the **Function Selection** menu, select **Advanced Diagnostics Routines** and press Enter.
   c. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
   d. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced and any devices that are attached to the part you replaced and press Enter.

      Did the **Resource Repair Action** menu appear?

No: Go to step 6.

Yes: Go to step 7.

6. Did the *Testing Complete, No trouble was found* message appear?
   - **No:** There is still a problem. Contact your service provider. **This ends the procedure.**
   - **Yes:** Select **Log Repair Action**, if not previously logged, from the **Task Selection** menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0** and press Enter.

     Tip: This action changes the indicator light for the part from the fault state to the normal state. Go to step 9.
7. Select the resource for the replaced part from the **Resource Repair Action** menu. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the **Resource Repair Action** menu appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

   Note: On systems with an indicator light for the failing part, this action changes the indicator light to the normal state.

   a. Select the resource that has been replaced from the **Resource Repair Action** menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the resource list, select **sysplanar0** and press Enter.
   b. Select **Commit** after you make your selections. Did another **Resource Repair Action** display appear?

      No: If the **No Trouble Found** display appears, go to step 9

      Yes: Go to step 8.
8. Select the parent or child of the resource for the replaced part from the **Resource Repair Action** menu if necessary. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the **Resource Repair Action** menu appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

   Note: This action changes the indicator light for the part from the fault state to the normal state.

   a. From the **Resource Repair Action** menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the resource list, select **sysplanar0** and press Enter.
   b. Select **Commit** after you make your selections.
   c. If the **No Trouble Found** display appears, go to step 9.
9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the values they had prior to servicing the system.
10. Did you do any hot-plug procedures before doing this procedure?

    No: Go to step 11.

    Yes: Go to step 12.
11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?

    No: Contact your service provider. **This ends the procedure.**

    Yes: Go to step 12.
12. Are the indicator lights still on?

- **No. This ends the procedure.**
- **Yes.** Turn off the lights. See the following for instructions: Changing service indicators.

Verifying an installed part on an IBM i system or logical partition

If you have installed a new feature or part, verify the feature or part by using the IBM i system service tools.

To verify the installed part follow these steps:

1. Deactivate the failing item indicator light. For instructions, see "Deactivating the failing-part indicator light" on page 50.
2. Sign on **with at least service level authority**.
3. On the command line of the IBM i session, type `strsst` and press Enter.

   Note: If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by Hardware Management Console (HMC), use the Service Focal Point Utilities to get to the Dedicated Service Tools (DST) display.
4. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display and press Enter.

   Note: The service tools password is case-sensitive.
5. Select **Start a service tool** from the System Service Tools (SST) display and press Enter.
6. Select **Hardware service manager** from the Start a Service Tool display and press Enter.
7. Select **Logical hardware resources (buses, IOPs, controllers)** from the Hardware Service Manager display and press Enter. This option allows you to display and work with logical resources. Logical hardware resources are the functional resources of the system used by the operating system.

With the Logical Hardware Resources display, you can show logical hardware resource status or information, and associated packaging hardware resources. Use the online Help information to better understand specific functions, fields, or symbols.

Deactivating the failing-part indicator light

Use this procedure to turn off any indicator light that you turned on as a part of a service action.

To deactivate the indicator light, follow these steps:

1. Select option **7** (Indicator off) to turn off the indicator light.
2. Select the **Acknowledge all errors** function at the bottom of the Service Action Log display, if all problems have been resolved.
3. Close the log entry by selecting option **8** (Close new entry) on the Service Action Log Report display.

Verifying the installed part on a Linux system or logical partition

If you have installed a new part, learn how to verify that the system recognizes the part.

To verify the newly installed or replaced part, continue with Verifying an installed part using stand-alone diagnostics.

Verifying an installed part using stand-alone diagnostics

If you have installed or replaced a part, verify that the system recognizes the new part. You can use stand-alone diagnostics to verify an installed part in a Linux system, expansion unit, or logical partition.

- If this server is directly attached to another server or attached to a network, ensure communications with the other servers has stopped.

- The stand-alone diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- The stand-alone diagnostics require access to the system console.

You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the Network Installation Management (NIM) server, see Running stand-alone diagnostics from a Network Installation Management server.

To use stand-alone diagnostics, follow these steps:

1. Stop all jobs and applications and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power. The next step boots the server or logical partition from the stand-alone diagnostics CD-ROM. If the optical drive is not available as the boot device on the server or logical partition on which you are working, follow these steps:
   a. Access the ASMI. See Accessing the ASMI for information on using the ASMI.
   b. On the ASMI main menu, click on **Power/Restart Control**.
   c. Click Power On/Off System.
   d. Select the **Service mode boot from default boot list** option in the AIX or Linux logical partition mode boot drop-down menu.
   e. Click **Save settings and power on**. As soon as the optical drive has power, insert the standalone diagnostic CD-ROM.
4. After the **keyboard** POST indicator displays on the system console and before the last POST indicator (**speaker**) displays, press the numeric 5 key on the system console to indicate that a service mode boot should be initiated using the default-service mode boot list.
5. Enter any requested password.
6. At the **Diagnostic Operating Instructions** display, press Enter.

   Tip: If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection.

   Note: If you received an SRN or any other reference code when you attempted to start the system, contact your service provider for assistance..
7. If the terminal type is requested, select the **Initialize Terminal** option on the Function Selection menu to initialize the operating system.
8. From the Function Selection menu, select **Advanced Diagnostics Routines** and press Enter.
9. From the Diagnostic Mode Selection menu, select **System Verification** and press Enter.
10. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part and press Enter.
11. Did the `Testing Complete, No trouble was found` message appear?
    - **No:** There is still a problem. Contact your service provider.
    - **Yes:** Go to step 12.
12. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
13. If the indicator lights are still on, follow these steps:
    a. Select **Identify and Attention Indicators** from the Task Selection menu to turn off the system attention and indicator lights and press Enter.
    b. Select **Set System Attention Indicator to NORMAL** and press Enter.
    c. Select **Set All Identify Indicators to NORMAL** and press Enter.

d. Choose **Commit**.

   Note: This changes the system attention and identify indicators from the *Fault* state to the *Normal* state.

e. Exit to the command line.

Verifying an installed part using Hardware Management Console

If you have installed or replaced a part, use the Hardware Management Console (HMC) to update your HMC records after you have completed a service action on your server. If you have reference codes, symptoms, or location codes that you used during the service action, locate the records for use during this procedure.

To verify an installed part, complete these steps:

1. At the HMC, examine the service action event log for any open service action events. See Viewing serviceable events for details.
2. Are there any service action events that are open?

   No: If the system attention or identify LED is still on, use the HMC to turn off the LED. See Activating and Deactivating LEDs. **This ends the procedure.**

   Yes: Continue with the next step.
3. Record the list of open service action events.
4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.
   - **No**: Select one of the following options:
     - Review the other serviceable events, find one that does match, and continue with the next step.
     - If the log does not match what you had gathered earlier, contact your service provider.
   - **Yes**: Continue with the next step.
5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
6. Click **Close Event**.
7. Add comments for the serviceable event. Include any unique additional information. Click **OK**.
8. Did you replace, add, or modify a field replaceable unit (FRU) of the open service action event?
   - **No**: Select the **No FRU Replaced for this Serviceable Event** option, and click **OK** to close the service action event.
   - **Yes**: Perform the following steps:
     a. From the FRU list, select a FRU that you need to update.
     b. Double-click the FRU and update the FRU information.
     c. Click **OK** to close the service action event.
9. If you continue to have problems, contact your service provider.

Activating and deactivating LEDs

Use this procedure to activate or deactivate LEDs using Service Focal Point for the HMC.

Choose from the following:

- "Deactivating a system attention LED or partition LED"
- "Activating or deactivating identify LED" on page 83

Deactivating a system attention LED or partition LED:

You can deactivate a system attention LED or a logical partition LED. For example, you might determine that a problem is not a high priority and decide to repair the problem at a later time. However, you want to be alerted if another problem occurs, so you must deactivate the system attention LED so that it can be activated again if another problem occurs.

1. In the navigation area, open **Systems Management**.
2. Open **Servers** and select the appropriate system.
3. In the content area, check the box for the appropriate Partition.
4. Select **Tasks**, then **Operations**, and then **Manage Attention LED**.
5. Select the appropriate Partition.
6. Select **Deactivate System Attention LED** from the **Action** menu. A confirmation window is displayed that provides the following information:
   - A verification that the system attention LED was deactivated.
   - An indication that there still might be open problems within the system.
   - An indication that you cannot activate the system attention LED.
7. Select one of the logical partitions in the lower table, and select **Deactivate partition LED** from the **Partition Operations** menu. A confirmation window is displayed that provides the following information:
   - A verification that the logical partition LED was deactivated.
   - An indication that there still might be open problems within the logical partition.
   - An indication that you cannot activate the logical partition LED.

Activating or deactivating identify LED:

The system provides several LEDs that help identify various components, such as enclosures or field replaceable units (FRUs), in the system. For this reason, they are called identify LEDs.

You can activate or deactivate the following types of identify LEDs:

- **Identify LED for an enclosure** If you want to add an adapter to a specific drawer (enclosure), you need to know the machine type, model, and serial number (MTMS) of the drawer. To determine whether you have the correct MTMS for the drawer that needs the new adapter, you can activate the LED in a drawer and verify that the MTMS corresponds to the drawer that requires the new adapter.
- **Identify LED for a FRU associated with a specified enclosure** If you want to hook up a cable to a specific I/O adapter, you can activate the LED for the adapter which is a field replaceable unit (FRU), and then physically check to see where you should hook up the cable. This is especially useful when you have several adapters with open ports.

To activate or deactivate an identify LED for an enclosure or FRU, follow these steps:

1. In the navigation area, open **Systems Management**.
2. Select **Servers**.
3. In the content area, check the box for the appropriate system.
4. Select **Tasks**, then **Operations**, then **LED Status**, and then **Identify LED**.
5. To activate or deactivate an identify LED for an enclosure, select an enclosure from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.
6. To activate or deactivate an identify LED for a FRU, select an enclosure from the table, select **Selected** > **List FRUs**.
7. Select one or more FRUs from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.

Viewing serviceable events

Use this procedure to view a serviceable event, including details, comments, and service history.

To view serviceable events and other information about the events, you must be a member of one of the following roles:

- Super administrator
- Service representative
- Operator
- Product engineer
- Viewer

To view serviceable events, follow these steps:

1. In the navigation area, select **Service Management**.
2. Select **Manage Serviceable Events**.
3. Select the criteria for the serviceable events that you want to view, and click **OK**. The Serviceable Event Overview window opens. The list shows all serviceable events that match your selection criteria. You can use the menu options to perform actions on the serviceable events.
4. Select a line in the Serviceable Event Overview window, and select **Selected** > **View Details** The Serviceable Event Details window opens, showing detailed information about the serviceable event. The upper table shows information, such as problem number and reference code. The lower table shows the field replaceable units (FRUs) associated with this event.
5. Select the error for which you want to view comments and history, and follow these steps:
   a. Select **Actions** > **View Comments**.
   b. When you are finished viewing the comments, click **Close**.
   c. Select **Actions** > **View Service History**. The Service History window opens, showing service history associated with the selected error.
   d. When you are finished viewing the service history, click **Close**.
6. When you are finished, click **Cancel** twice to close the Serviceable Event Details window and the Serviceable Event Overview window.

Verifying the installed part by using Systems Director Management Console

If you installed or replaced a part, use the IBM Systems Director Management Console (SDMC) to update your SDMC records after you have completed a service action on your server. If you have reference codes, symptoms, or location codes that you used during the service action, locate the records for use during this procedure.

To verify the installed part, complete these steps:

1. From the SDMC, examine the service action event log for any open service action events. See "Viewing serviceable events by using the IBM Systems Director Management Console" on page 86 for details.
2. Are there any service action events that are open?

   No: If the system attention LED is still on, use the SDMC to turn off the LED. See "Activating and deactivating LEDs by using the SDMC" on page 85. **This ends the procedure.**

   Yes: Continue with the next step.
3. Record the list of open service action events.
4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.
   - **No**: Select one of the following options:
     – Review the other serviceable events, find one that does match, and continue with the next step.
     – If the log does not match what you had gathered earlier, contact your service provider.
   - **Yes**: Continue with the next step.

5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
6. Click **Delete** or **Ignore**.

   Note: These options are only available from the problem event log.

Activating and deactivating LEDs by using the SDMC

Use this procedure to activate or deactivate LEDs by using the IBM Systems Director Management Console (SDMC).

Choose from the following:

- "Deactivating a system attention LED or partition LED"
- "Activating or deactivating identify LED by using the SDMC"

Deactivating a system attention LED or partition LED:

You can deactivate a system attention LED or a logical partition LED. For example, you might determine that a problem is not a high priority and decide to repair the problem at a later time. However, you want to be alerted if another problem occurs, so you must deactivate the system attention LED so that it can be activated again if another problem occurs.

1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** > **Service and Support** > **Hardware** > **System Attention LED**.
3. Select **Deactivate System Attention LED**. A confirmation window is displayed that provides the following information:
   - A verification that the system attention LED was deactivated.
   - An indication that there still might be open problems within the system.
   - An indication that you cannot activate the system attention LED.
4. Select one of the virtual servers, and select **Deactivate System Attention LED**. A confirmation window is displayed that provides the following information:
   - A verification that the system attention LED was deactivated.
   - An indication that there still might be open problems within the logical partition.
   - An indication that you cannot activate the virtual server LED.

Activating or deactivating identify LED by using the SDMC:

The system provides several LEDs that help identify various components, such as enclosures or field replaceable units (FRUs). For this reason, they are called *identify LEDs*.

You can activate or deactivate the following types of identify LEDs:

- **Identify LED for an enclosure** If you want to add an adapter to a specific drawer (enclosure), you need to know the machine type, model, and serial number (MTMS) of the drawer. To determine whether you have the correct MTMS for the drawer that needs the new adapter, you can activate the LED for a drawer and verify that the MTMS corresponds to the drawer that requires the new adapter.
- **Identify LED for a FRU associated with a specified enclosure** If you want to hook up a cable to a specific I/O adapter, you can activate the LED for the adapter which is a field replaceable unit (FRU), and then physically check to see where you should hook up the cable. This is especially useful when you have several adapters with open ports.

To activate or deactivate an identify LED for an enclosure or FRU, follow these steps:

1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** > **Service and Support** > **Hardware** > **Identify LED**.
3. In the Identify LED, Select Enclosure window, select the system unit or enclosure.

4. To activate or deactivate an identify LED, click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.
5. To activate or deactivate an identify LED for a FRU, select a system or enclosure from the table, and then select **List FRUs...**.
6. Select one or more FRUs from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.

Viewing serviceable events by using the IBM Systems Director Management Console

Use this procedure to view a serviceable event, including details, comments, and service history.

To view serviceable events, follow these steps:

1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** > **System Status and Health** > **Event Log**.
3. Optional: You can narrow the event criteria using the Event filter menu.
4. Select a line in the Events window, and select **Actions** > **Properties** The Properties window opens, showing detailed information about the serviceable event. The table shows information, such as problem number, reference code, and the field replaceable units (FRUs) associated with this event.

Verifying an installed feature or replaced part on a system or logical partition using Virtual I/O Server tools

If you installed feature or replaced a part, you might want to use the tools in Virtual I/O Server (VIOS) to verify that the feature or part is recognized by the system or logical partition.

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:

- Verify the installed feature using VIOS
- Verifying the replaced part using VIOS

Verify the installed feature using VIOS:

1. Log in as root user.
2. At the command line, type `diagmenu` and press Enter.
3. Select **Advanced Diagnostics Routines** and press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
5. When the **Advanced Diagnostic Selection** menu appears, do one of the following:
   - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
   - To test all the resources available to the operating system, select **All Resources** and press Enter.
6. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message `No trouble was found`?
   - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the installation procedures to ensure that the new feature is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system is running in LPAR mode, note the logical partition in which you installed the feature. Contact your service provider for assistance.
   - **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify the replacement part using VIOS:

To verify the operation of a newly installed feature or replacement part, follow these steps:

1. Did you replace the part using either VIOS or the online diagnostics service aid's concurrent (hot-swap) service operation?

   No: Go to step 2.

   Yes: Go to step 5.

2. Is the system powered off?

   No: Go to step 4.

   Yes: If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.

3. Start the system and wait until the VIOS operating system login prompt displays or until apparent system activity on the operator panel or display has stopped.

   Did the VIOS login prompt display?

   - **No:** If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.

     If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
   - **Yes:** Go to step 4

4. At the command prompt, type `diag –a` and press Enter to check for missing resources. If you see a command prompt, go to step 5.

   If the **Diagnostic selection** menu is shown with **M** appearing next to any resource, follow these steps:

   a. Select the resource and press Enter.
   b. Select **Commit**.
   c. Follow any instructions that are shown.
   d. If a *Do you want to review the previously displayed error?* message is shown, select **Yes** and press Enter.
   e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and contact your service provider for assistance..
   f. If no SRN is shown, go to 5.

5. Test the part by doing the following:

   a. At the command line, type `diagmenu` and press Enter.
   b. From the **Function Selection** menu, select **Advanced Diagnostics Routines** and press Enter.
   c. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
   d. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced, and any devices that are attached to the part you replaced and press Enter.

      Did the **Resource Repair Action** menu appear?

      No: Go to step 6.

      Yes: Go to step 7 on page 88.

6. Did the *Testing Complete, No trouble was found* message appear?

   - **No:** There is still a problem. Contact your service provider. **This ends the procedure.**
   - **Yes:** Select **Log Repair Action**, if not previously logged, from the **Task Selection** menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the Resource List, select **sysplanar0** and press Enter.

Tip: This action changes the indicator light for the part from the fault state to the normal state. Go to step 9.

7. Select the resource for the replaced part from the **Resource Repair Action** menu. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the **Resource Repair Action** menu appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

   Note: On systems with a indicator light for the failing part, this changes the indicator light to the normal state.

   a. Select the resource that has been replaced from the **Resource Repair Action** menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
   b. Select **Commit** after you make your selections. Did another **Resource Repair Action** display appear?

      No: If the **No Trouble Found** display appears, go to step 9.

      Yes: Go to step 8.

8. Select the parent or child of the resource for the replaced part from the **Resource Repair Action** menu if necessary. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the **Resource Repair Action** menu appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

   Note: This changes the indicator light for the part from the fault state to the normal state.

   a. From the **Resource Repair Action** menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.
   b. Select **Commit** after you make your selections.
   c. If the **No Trouble Found** display appears, go to step 9.

9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the values they had prior to servicing the system.
10. Did you do any hot-plug procedures before doing this procedure?

    No: Go to step 11.

    Yes: Go to step 12.

11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?

    No: Contact your service provider. **This ends the procedure.**

    Yes: Go to step 12.

12. Are the indicator lights still on?

    - **No. This ends the procedure.**
    - **Yes.** Turn off the lights. For instructions, see Changing service indicators

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Avis de conformité à la réglementation d'Industrie Canada

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European Community contact:
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Pascalstr. 100, Stuttgart, Germany 70569
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Verantwortlich für die Konformitätserklärung nach des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

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