

Blackplanes and Cards



REFERENCE
86 A1 65EW 04

ESCALA

Blackplanes and Cards

Hardware

May 2009

BULL CEDOC
357 AVENUE PATTON
B.P.20845
49008 ANGERS CEDEX 01
FRANCE

REFERENCE
86 A1 65EW 04

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Safety notices

Safety notices may be printed throughout this guide:

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

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.

Backplanes

Learn about removing, replacing, or installing a system backplane in the server.

Chapter 1. Removing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane

Learn about removing the system backplane from the server.

Related information

 Model 8234-EMA, 9117-MMA, or 9406-MMA control panel

 Voltage regulators

Preparing the system

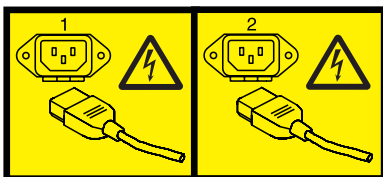
If you have a SCSI disk enclosure attached to the system, you might want to disconnect the SCSI cable at the enclosure to prevent a potential SCSI address conflict on the attached enclosure when you power off the system.

To prepare the system for removing the system backplane, complete the following steps:

1. Perform prerequisite tasks as described in Chapter 5, “Before you begin,” on page 39.
2. Identify the system backplane assembly that you need to remove. For instructions, see Chapter 7, “Service action log,” on page 49.
3. Stop the system or logical partition. For instructions, see “Stopping a system or logical partition” on page 57.
4. Disconnect the power source from the system by unplugging the system.

Note: This system is 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. Remove the front cover. For instructions, see “Removing the front cover from the 8234-EMA, 9117-MMA, or 9406-MMA” on page 80.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Remove the SMP cable, if present, from the front of the processor. For instructions, see Chapter 9, “Disconnecting the SMP processor cable from a system,” on page 61.
 7. Remove the control panel. For instructions, see Control panel, control panel fillers, and signal cables.
 8. Remove the voltage regulator modules. Record the location of each voltage regulator module being removed. For instructions, see Voltage regulators.

Removing the system backplane

You can remove the system backplane.

To remove the system backplane, complete the following steps:

1. Locate the blue handle, which is below the processor assembly.

Attention: The system backplane assembly is of substantial weight; do not use the blue lever to pull out the system backplane assembly. Grasp the system backplane assembly firmly with both hands when it is free of the system.

2. As shown in the following figure, push the blue lever **(A)** to the left and out from the system to unlock the system backplane assembly, then use both hands to pull the system backplane assembly **(B)** out of the system.

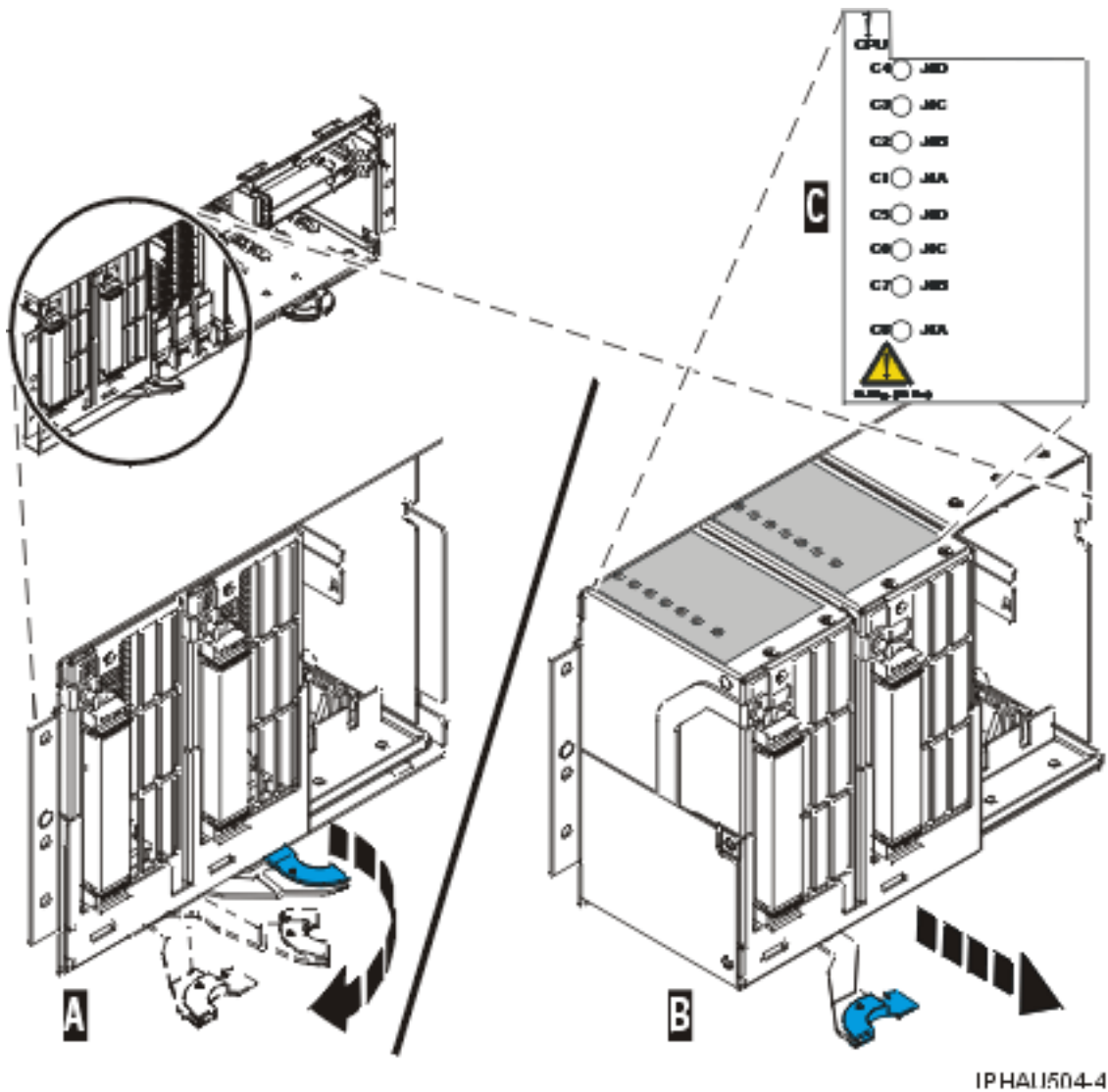


Figure 1. Sliding the 8234-EMA , 9117-MMA, or 9406-MMA system backplane assembly out of the system unit

3. If you are removing the system backplane as a part of another procedure, return to that procedure. If you are removing the system backplane because it is damaged or failing to operate correctly, continue to the next step.
4. Pull out the bracket by removing the screws at the top of the bracket, and tipping the bracket back.
5. As shown in the following figure, pull out on the locking knobs (A) until you feel them unlock. Push the locking arms (B) down and out to unlock the processor assembly, and then lift it out of the system backplane assembly (C). Remove all processor assemblies (or fillers) from the system backplane assembly.

Tip: Record the location of each processor assembly being removed for use during reinstallation.

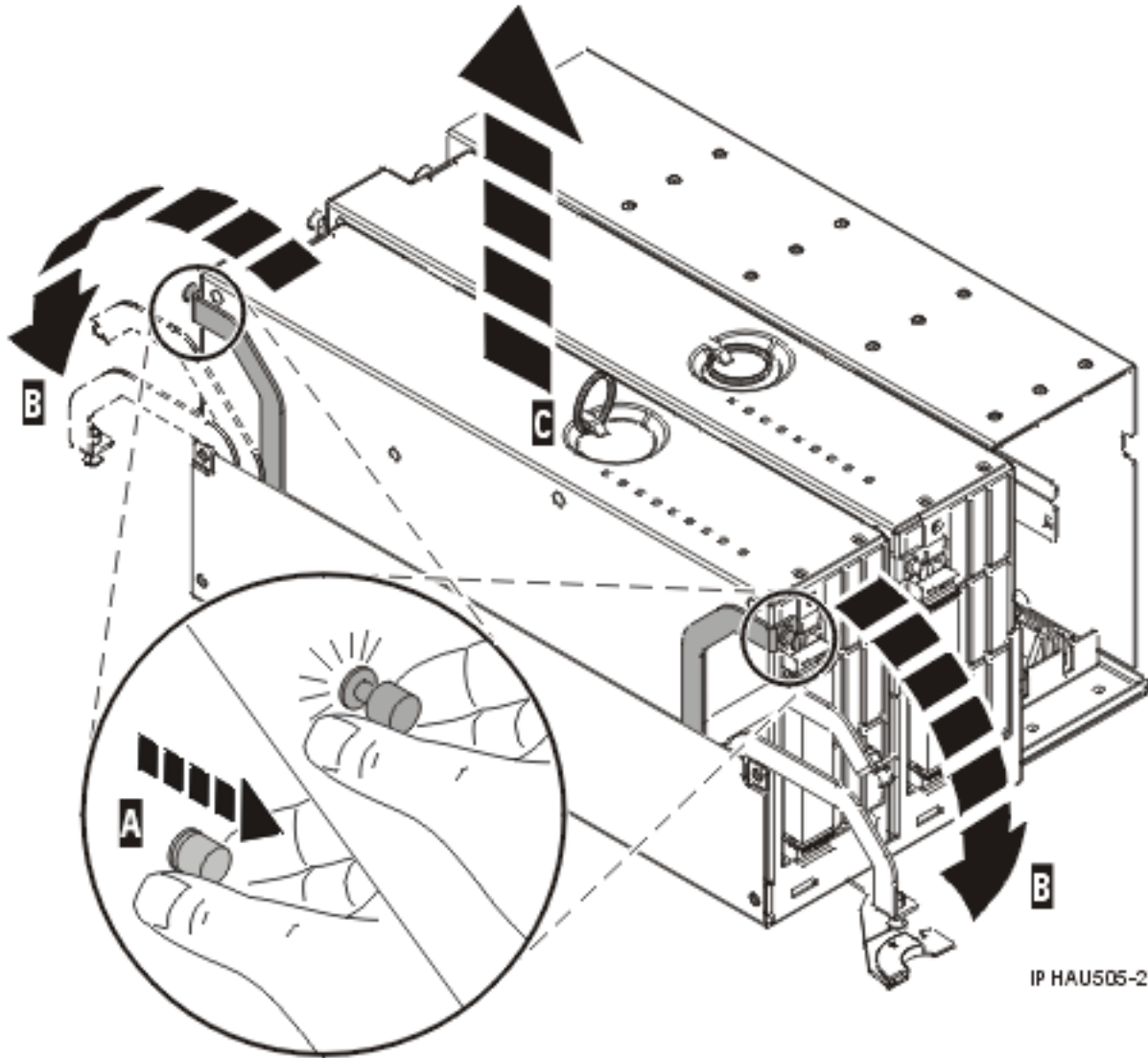


Figure 2. Removing the processor assembly from the 8234-EMA, 9117-MMA, or 9406-MMA backplane assembly

6. Place the processor assembly on a surface that is safe from electrostatic discharge.
7. Replace the system backplane. For instructions, see Chapter 2, "Replacing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane," on page 7.

Chapter 2. Replacing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane

Learn about replacing the system backplane in the server.

To complete this procedure, you must have already completed the removal procedure. See Chapter 1, "Removing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane," on page 3.

Related information



Voltage regulators



Control panel, control panel fillers, and signal cables

Replacing the system backplane

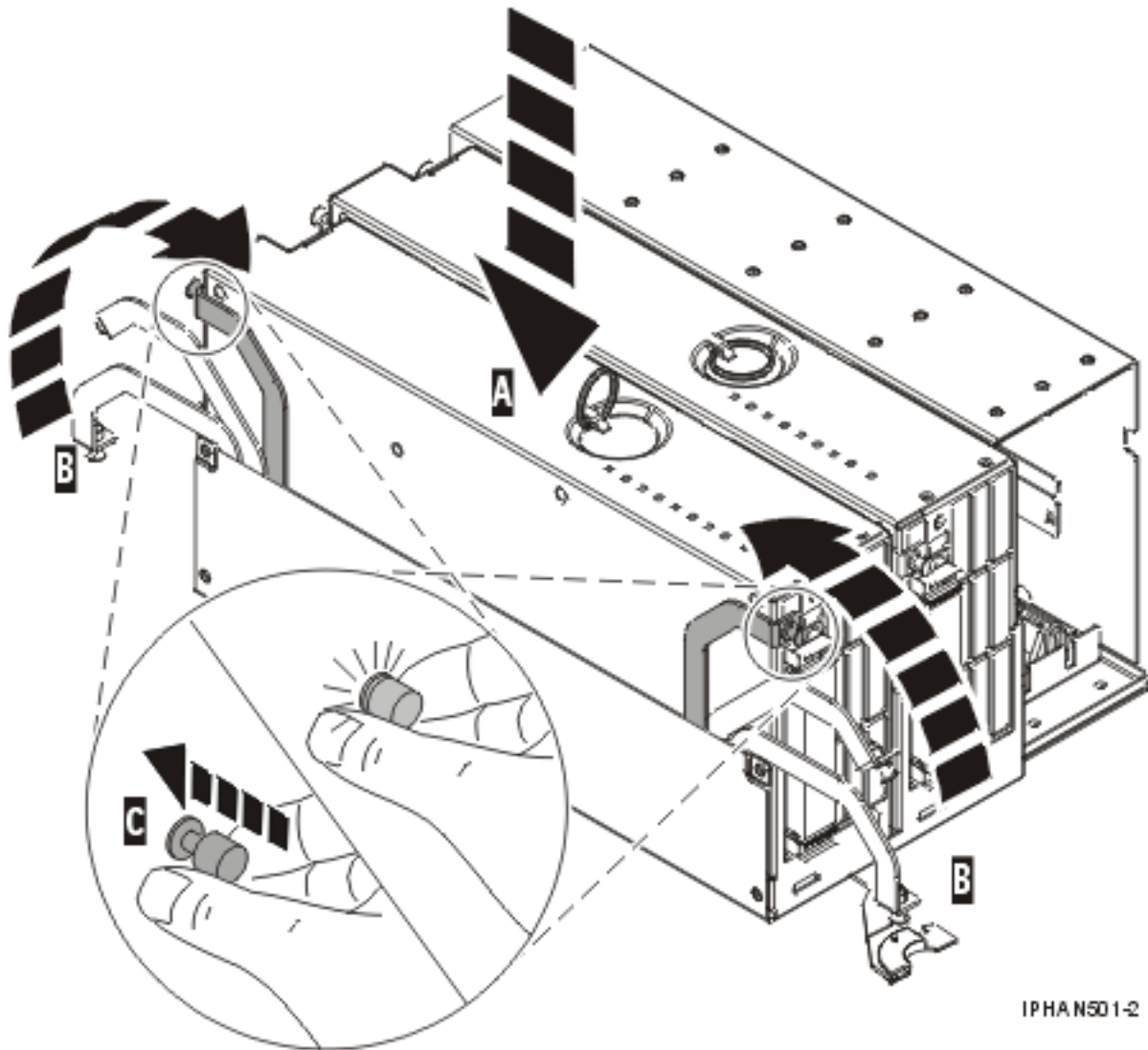
Learn about replacing the system backplane in the server.

To replace the system backplane, perform the following steps:

1. As shown in Figure 3 on page 8, place the system processor assembly into the system backplane assembly **(A)**, using the location information that you recorded during the removal procedure.
2. Lock the system processor assembly into place with the locking arms **(B)**. Press in on the locking knobs **(C)** until you feel them lock into place.
3. Replace all processor assemblies that were removed earlier.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.



IPHAN501-2

Figure 3. Replacing the 8234-EMA, 9117-MMA, or 9406-MMA backplane assembly

4. Align the system backplane assembly with the slot in the system.
5. Slide the system backplane assembly into the system (A), as shown in Figure 4 on page 9.
6. Push the blue lever (B) to the right and in toward the system to lock the system backplane assembly.

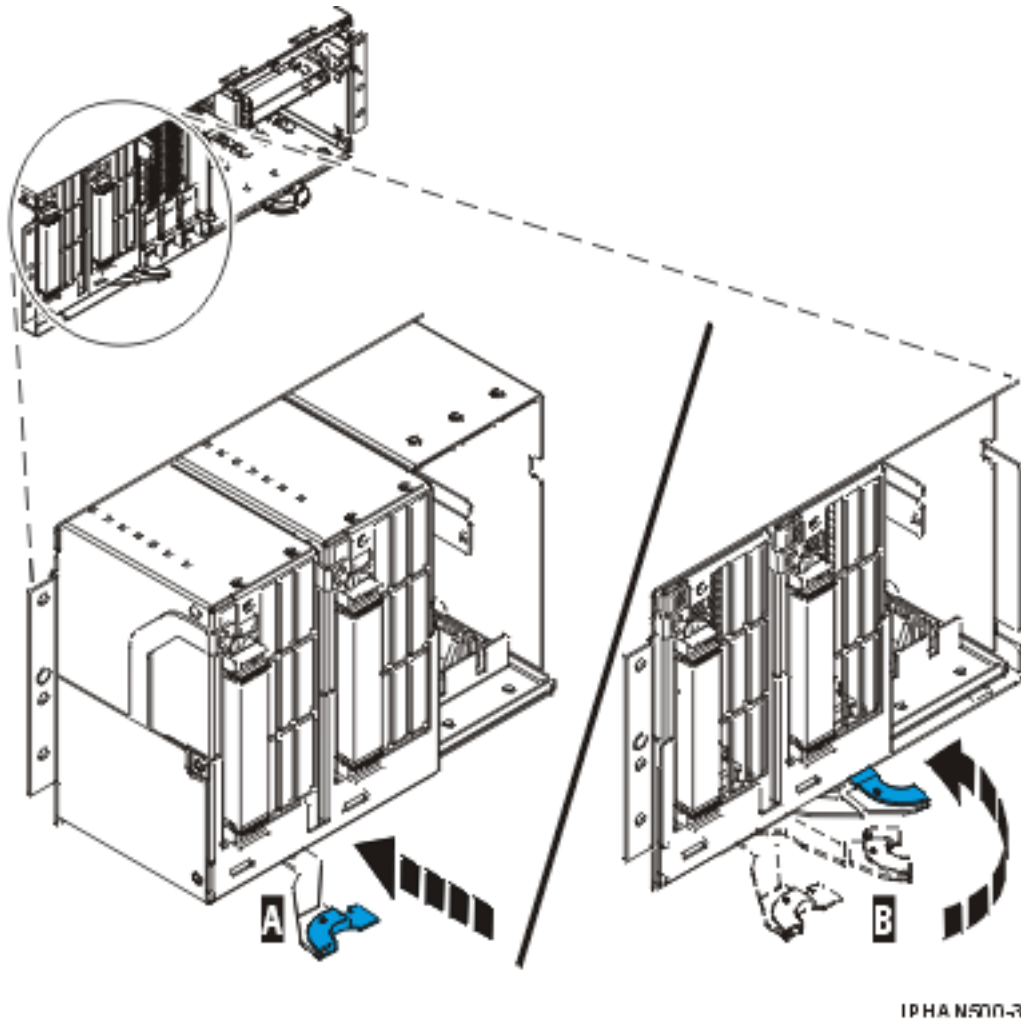


Figure 4. Sliding the 8234-EMA, 9117-MMA, or 9406-MMA system backplane assembly into the system unit

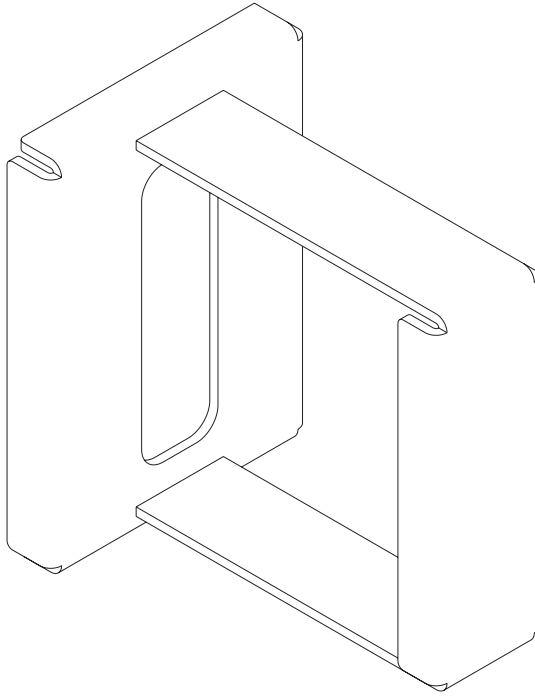
Completing the procedure

If you removed the voltage regulator, control panel or SMP cable to replace the backplane in the system, you might need to replace those parts again. Use the procedure in this section to perform these tasks.

To replace the voltage regulator modules, control panel, or SMP cable, complete the following steps:

1. Replace the voltage regulator modules. For instructions, see Voltage regulators.
2. Replace the control panel. For instructions, see Control panel, control panel fillers, and signal cables.
3. Replace the SMP cable, if it was removed. For instructions, see Chapter 10, "Reconnecting the SMP processor cable to a system," on page 65.

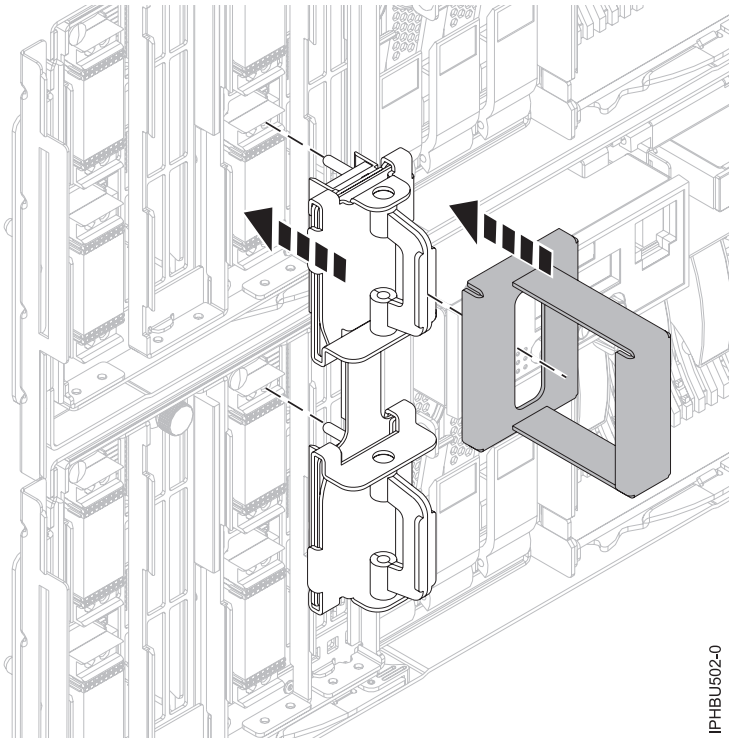
Use the SMP cable tool shown in the following figure, where available, to ensure full connector seating with the cable-end.



IPHBUS01-0

Figure 5. SMP cable tool

Evenly press the connector in place, using firm straight pressure on both the top and bottom of each cable-end. At the same time, press evenly at the top and bottom of each cable-end. Use the SMP tool to seat the cable as shown in the following figure.



IPHBU502-0

Figure 6. SMP cable tool usage

4. Replace the front cover. For instructions, see “Installing the front cover on the 8234-EMA, 9117-MMA, or 9406-MMA” on page 81.
5. Start the system or logical partition. For instructions, see “Starting the system or logical partition” on page 53.
6. Do one of the following steps:
 - a. If you replaced the system backplane as part of another procedure, return to that procedure now.
 - b. If you replaced the system backplane because it was not operational, verify that the new resource is operational. For instructions, see Chapter 16, “Hardware Service Manager — Verify,” on page 97.

Chapter 3. Removing and replacing the 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 disk drive backplane

You can remove, replace, or install the disk drive backplane in the server.

Removing the 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 disk drive backplane

Learn about removing the disk drive backplane from the server.

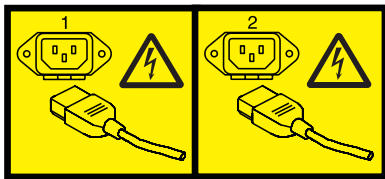
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the disk drive backplane from the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to remove the disk drive backplane:

1. Perform the prerequisite tasks described in Chapter 5, “Before you begin,” on page 39.
2. Do one of the following steps, as applicable:
 - a. If you are removing the disk drive backplane for a system upgrade or as part of another procedure, continue to the next step.
 - b. If you are removing the disk drive backplane because of a system failure, use the service action log to help identify the failing part. See Chapter 7, “Service action log,” on page 49.
3. Stop the system or logical partition. For instructions, see “Stopping a system or logical partition” on page 57.
4. Disconnect the power source from the system by unplugging the system.

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

(L003)



or



5. Remove the front cover. See “Removing the front cover from a rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 76 or “Removing the front cover from the stand-alone 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 78.

Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Place the system into the service position. See “Placing a rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 87.
 7. Remove the service access cover. See “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 73 or “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 74
 8. Remove the fans and either the airflow cover or the fan cage, depending on your system:
 - a. For the 8204-E8A or 9409-M50, perform the following steps:
 - 1) To remove the fans, squeeze the tab (A) and lift the fan out of the fan cage as shown in Figure 7 on page 15.

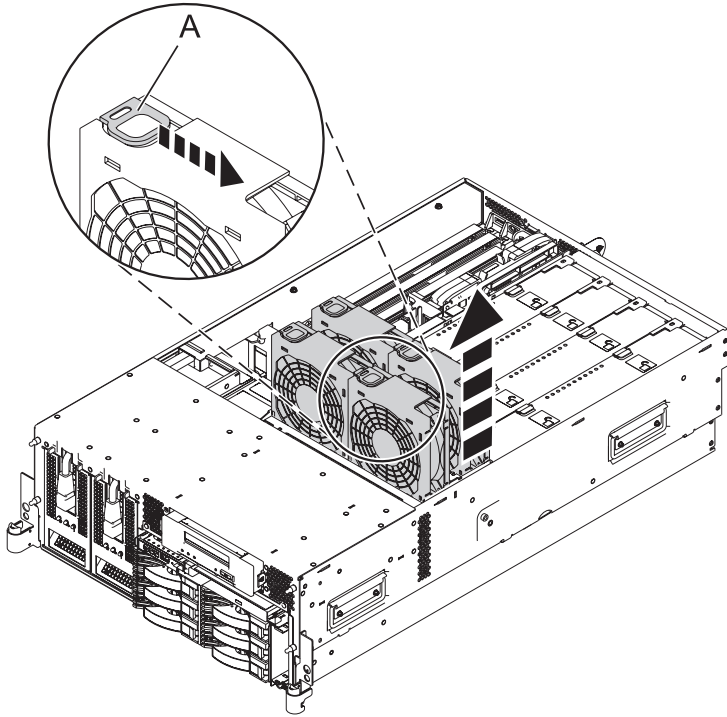


Figure 7. Removing the fan from the 8204-E8A or 9409-M50 fan cage

- 2) To remove the air baffles, grasp and pull the air baffle out of the fan cage, as shown in Figure 8.

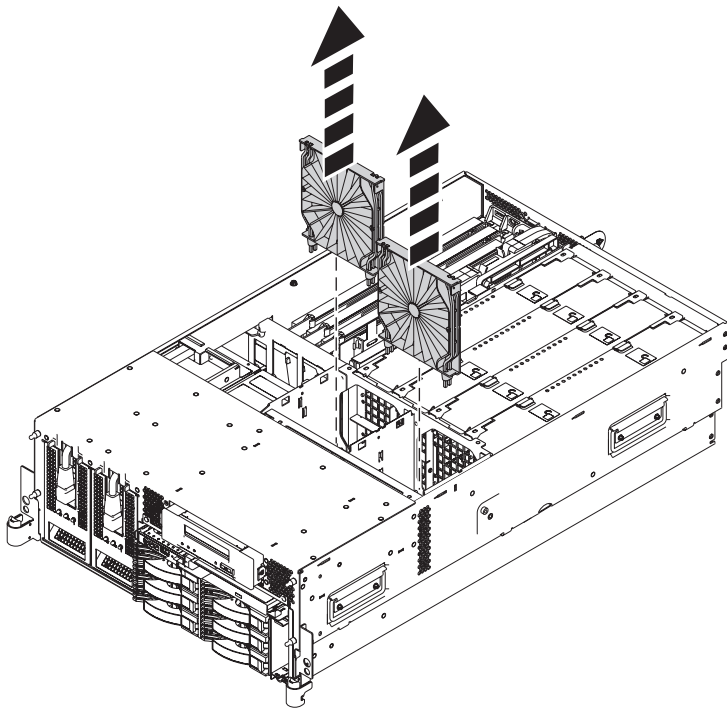


Figure 8. Removing the air baffles from the 8204-E8A or 9409-M50 fan cage

- 3) To remove the fan cage, loosen the two thumbscrews (A) and lift the fan cage (B) out of the system as shown in Figure 9.

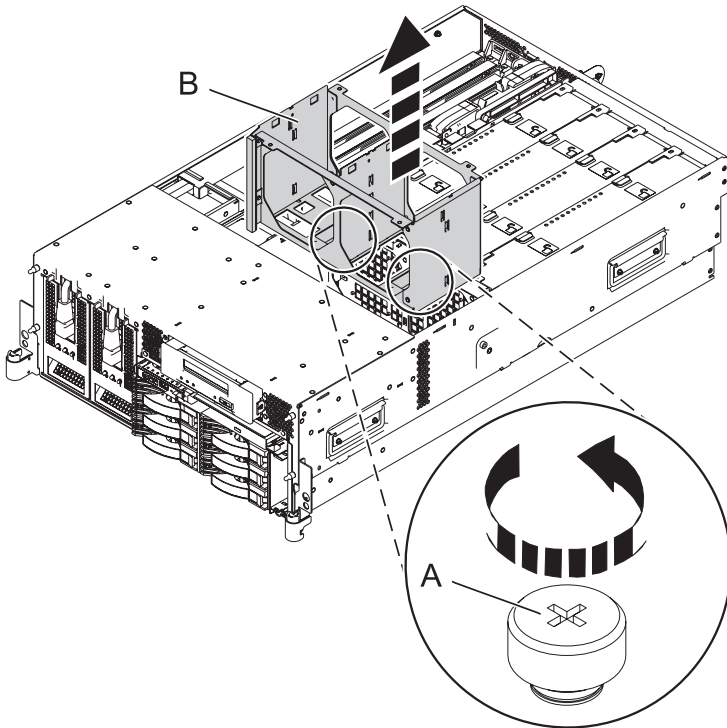


Figure 9. Removing the fan cage from the 8204-E8A or 9409-M50 system

- b. For the 8203-E4A, 9407-M15, or 9408-M25, perform the following steps:
 - 1) To remove the fans, lift the latch (A) upward and pull each fan (B) out of the airflow cover as shown in Figure 10 on page 17.

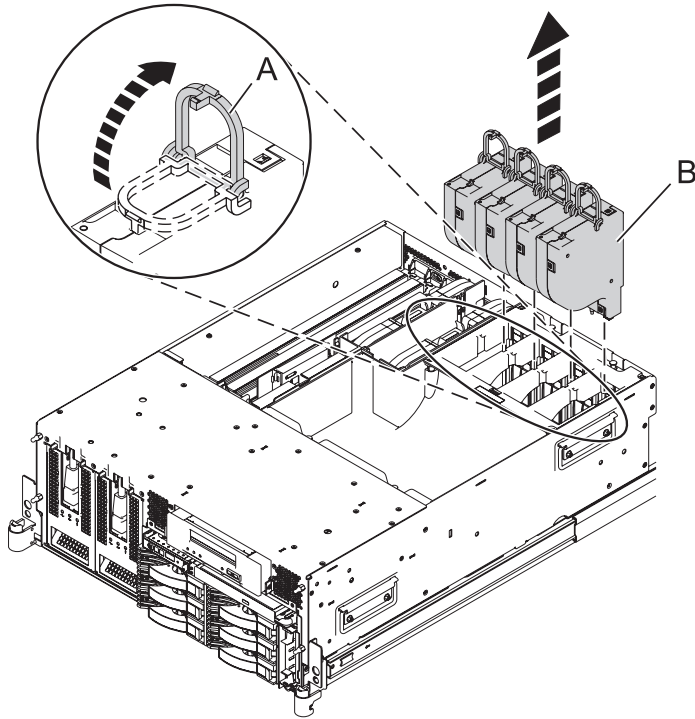


Figure 10. Removing the fans from the 8203-E4A, 9407-M15, or 9408-M25 airflow cover

- 2) To remove the airflow cover (B), lift each of the four tabs (A) to release the cover, and lift the cover off of the system, as shown in Figure 11.

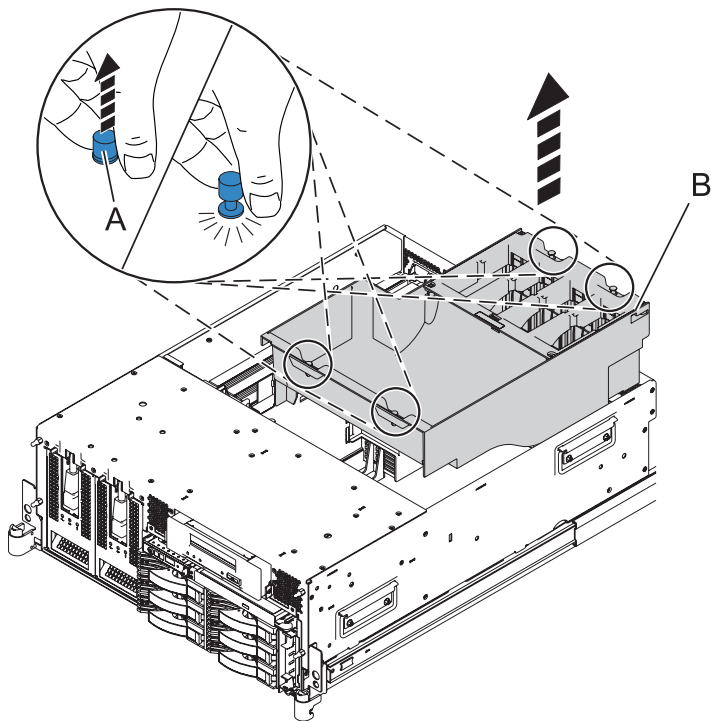


Figure 11. Removing the airflow cover from the 8203-E4A, 9407-M15, or 9408-M25 system

9. Disconnect the cables from the back of the disk drive backplane, as shown in the following figure.

Note: Ensure that you have disconnected all cables from the backplane. Some of the cables might not be shown in the following figure.

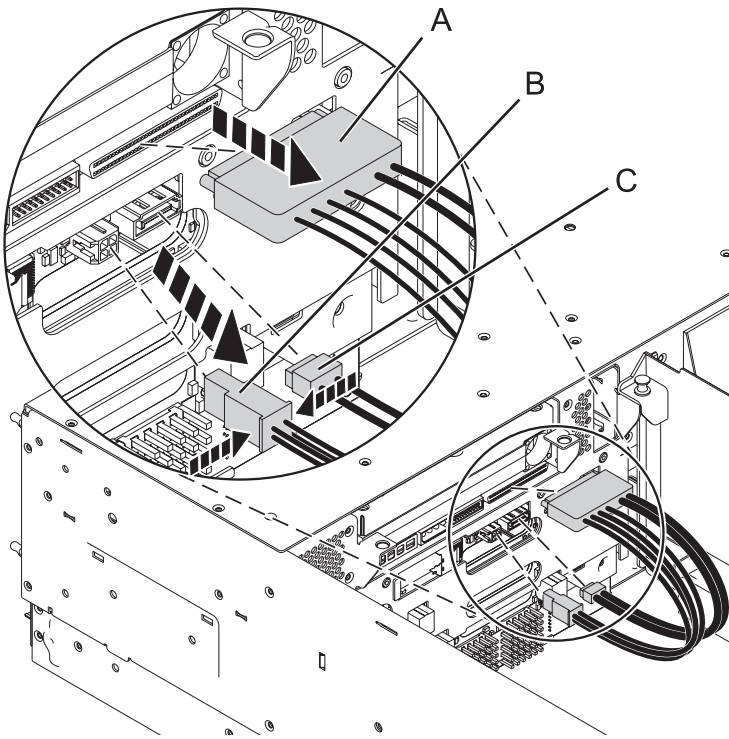
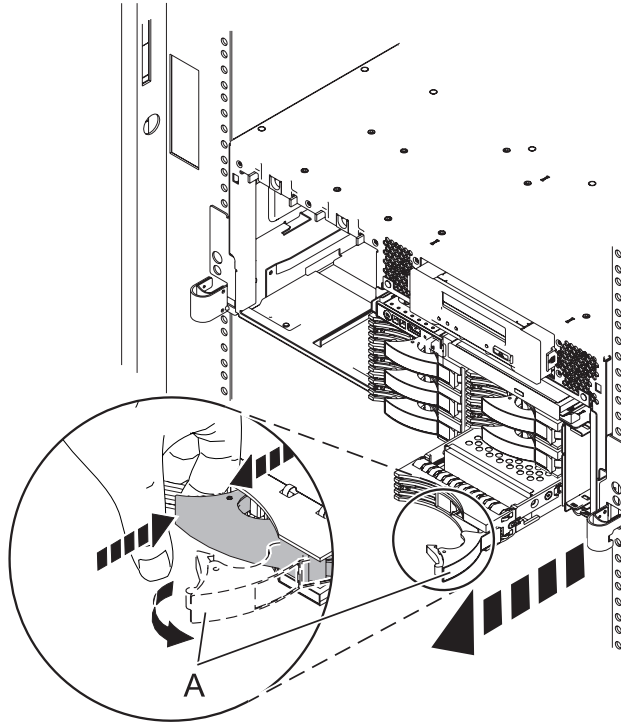


Figure 12. Disconnecting the media device cables

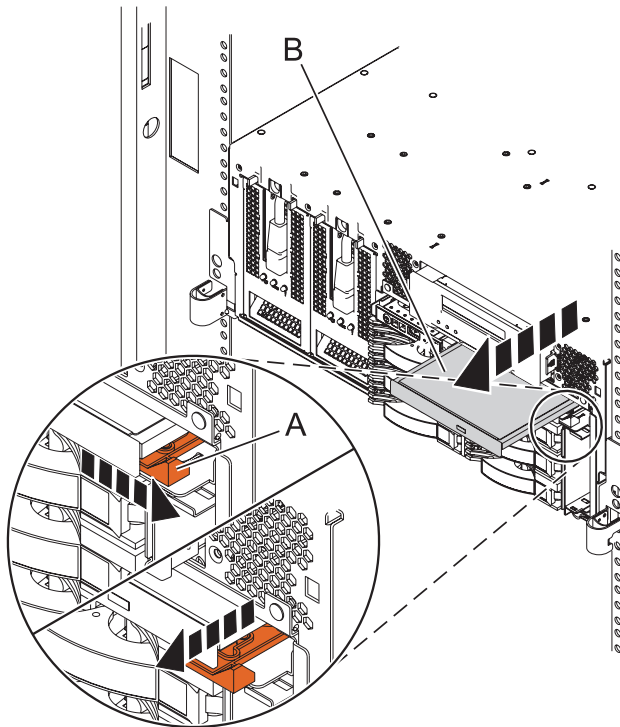
10. If you need to replace the backplane because of an upgrade or system failure, remove the disk drives from the backplane.

Note: If you remove a backplane that is populated with disk drives, the backplane will be heavy. Ensure that you can safely complete the procedure.

- a. Lift the lever (**A**) to unseat the disk drive.
- b. Place one hand under the disk drive and carefully pull the drive out of the system as shown in the following figure.



11. Remove the media device by pressing in on the latch (A) and sliding the media device out of the system, as shown in the following figure.



12. Unlock the disk drive backplane by pulling the handles open from the center of the backplane, as shown in the following figure.
13. Pull the backplane out of the server, as shown in the following figures.

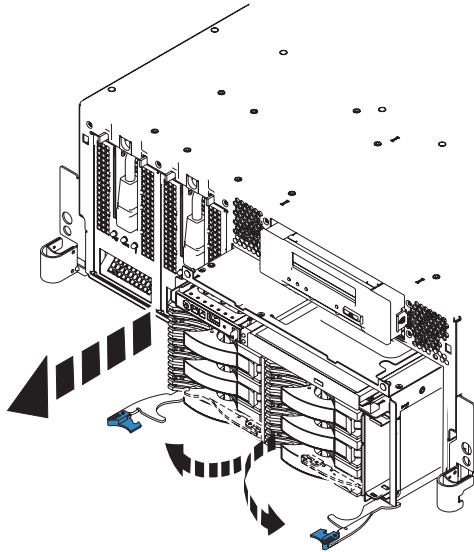


Figure 13. Removing the populated disk drive backplane

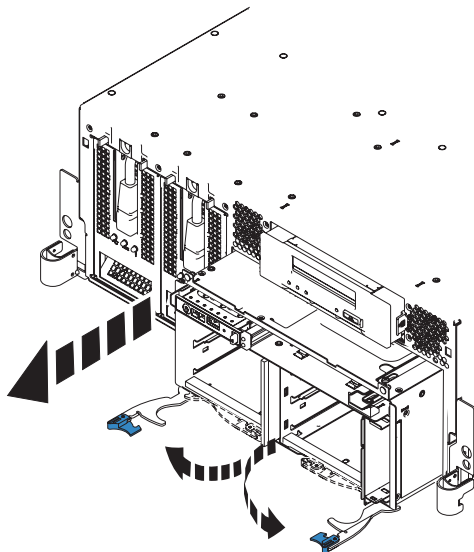


Figure 14. Removing the unpopulated disk drive backplane

14. Remove the control panel and signal cable from the backplane to use in the replacement backplane. For instructions, see Control panel, control panel fillers, and signal cables.

15. If you removed the backplane as a part of another procedure, continue with that procedure. To replace the backplane or install a new backplane, see “Replacing the 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 disk drive backplane.”

Replacing the 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 disk drive backplane

If you removed the disk drive backplane as a part of another procedure, you might need to use the procedure in this section to replace the disk drive backplane.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the disk drive backplane in the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to replace the disk drive backplane:

1. Perform the prerequisite tasks described in Chapter 5, “Before you begin,” on page 39.
2. Install the control panel and signal cable. For instructions, see Control panel, control panel fillers, and signal cables.
3. Carefully lift the backplane along two sides and align with the slot in the server.

Important: If you remove a backplane that is populated with disk drives, the backplane will be heavy. Ensure that you can safely perform this task before you begin.

4. Insert the backplane firmly into the server, as shown in the following figures.
5. Secure the backplane with the locking tabs.

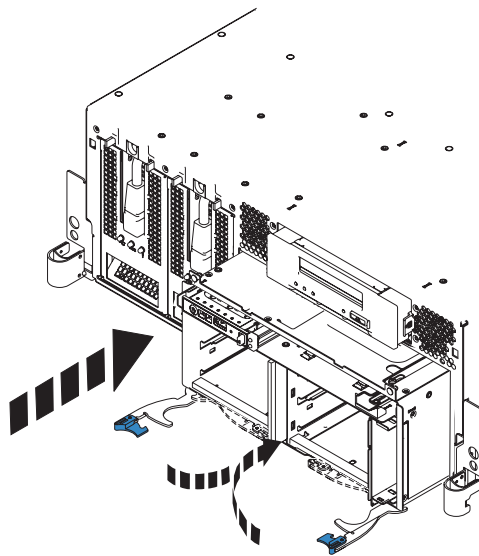


Figure 15. Installing the unpopulated disk drive backplane on a rack-mounted model

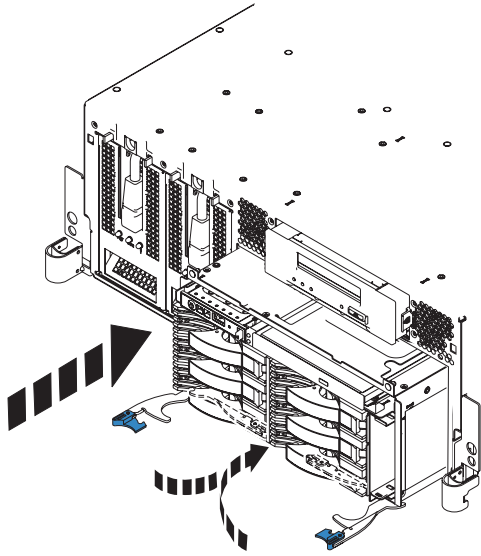
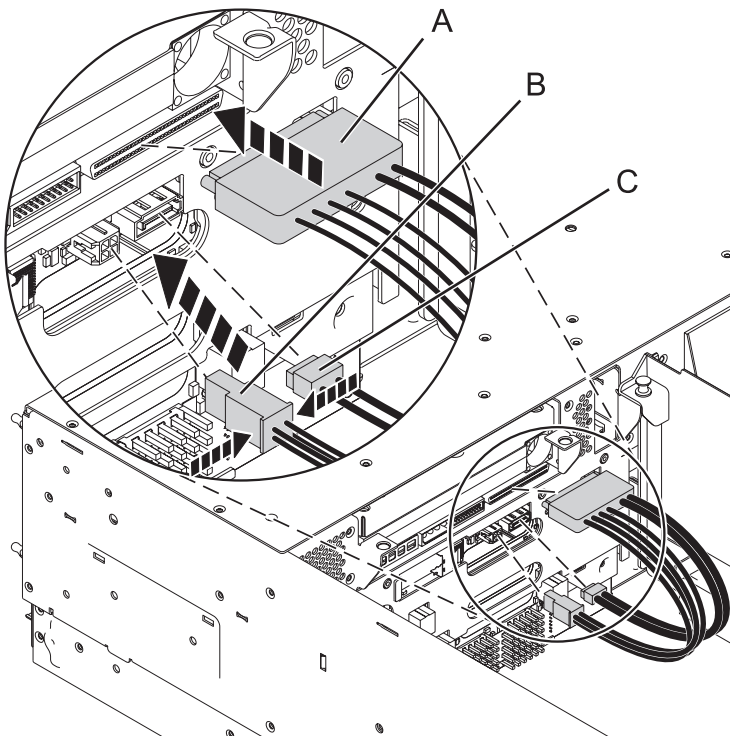


Figure 16. Installing the populated disk drive backplane on a rack-mounted model

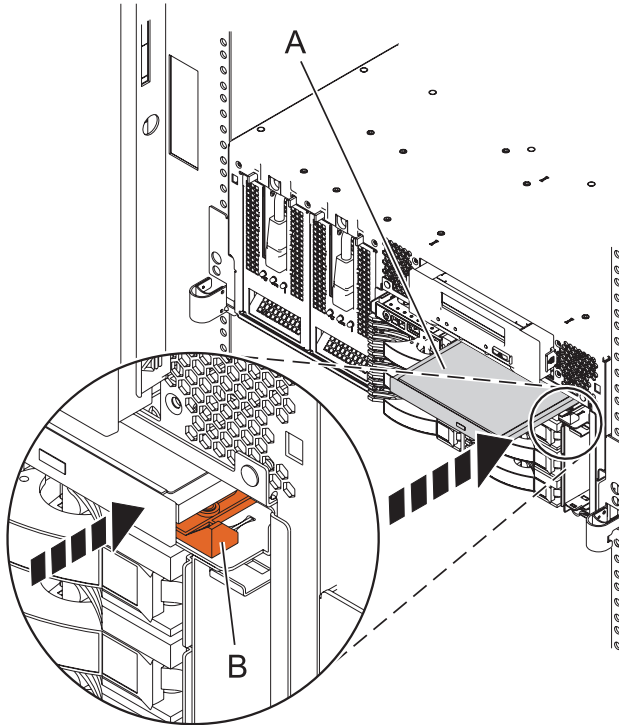
6. Connect the cables to the backplane, as shown in the following figure.

Note: Ensure that you connect any additional cables not shown in the figure.



7. Replace the disk drives, if you removed them earlier:

- a. Support the bottom of the disk drive as you align it with the guide rails in the system or expansion unit. Do not hold the disk drive by the handle.
 - b. Slide the disk drive all the way into the system or expansion unit, and then lock it in place by pushing in the disk drive handle.
8. Replace the Slimline media device by inserting it into the slot and pushing it in until the lever **(B)** locks into place, as shown in the following figure.



9. Replace the fans and either the airflow cover or the fan cage, depending on your system:
- a. For the 8204-E8A or 9409-M50, perform the following steps:
 - 1) To Install the fan cage **(A)** into the system, align the locator pins through the holes, and tighten the two thumbscrews **(B)**, as shown in Figure 17 on page 24.

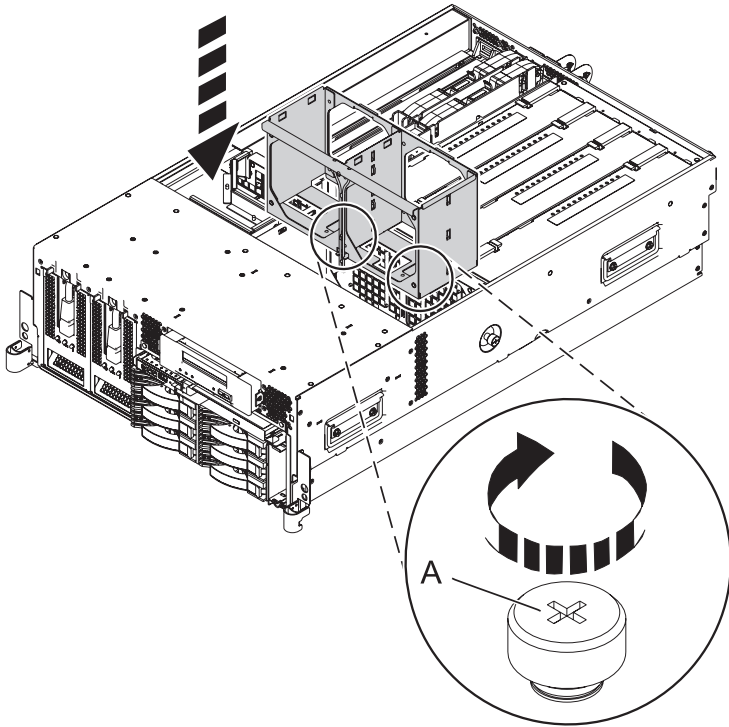


Figure 17. Installing the fan cage in the 8204-E8A or 9409-M50 system

- 2) To install the air baffles, insert the air baffles into their location in the fan cage, and push down until they lock into place, as shown in Figure 18.

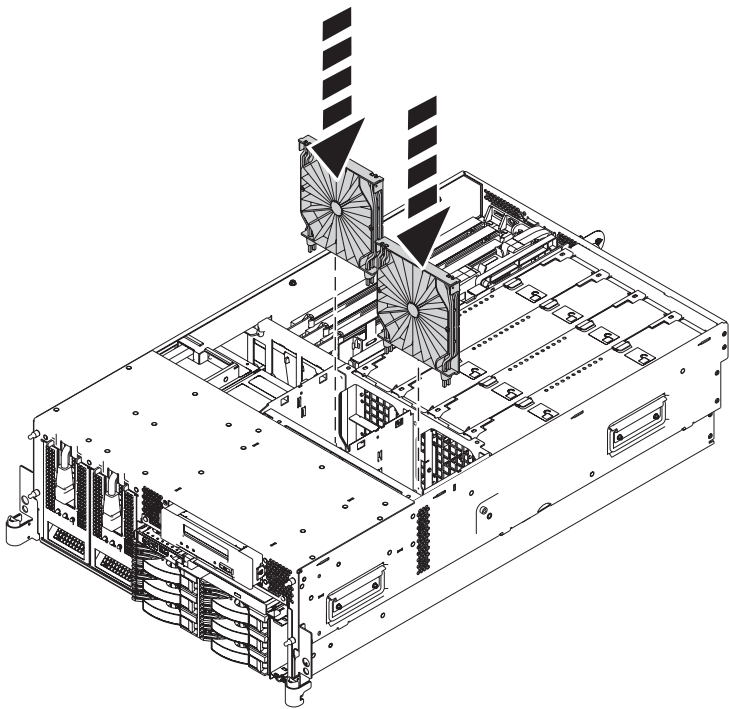


Figure 18. Installing the air baffles in the 8204-E8A or 9409-M50 fan cage

- 3) To install the fans, insert the fans into their location in the fan cage, and push down on the fan until it locks into place, as shown in Figure 19.

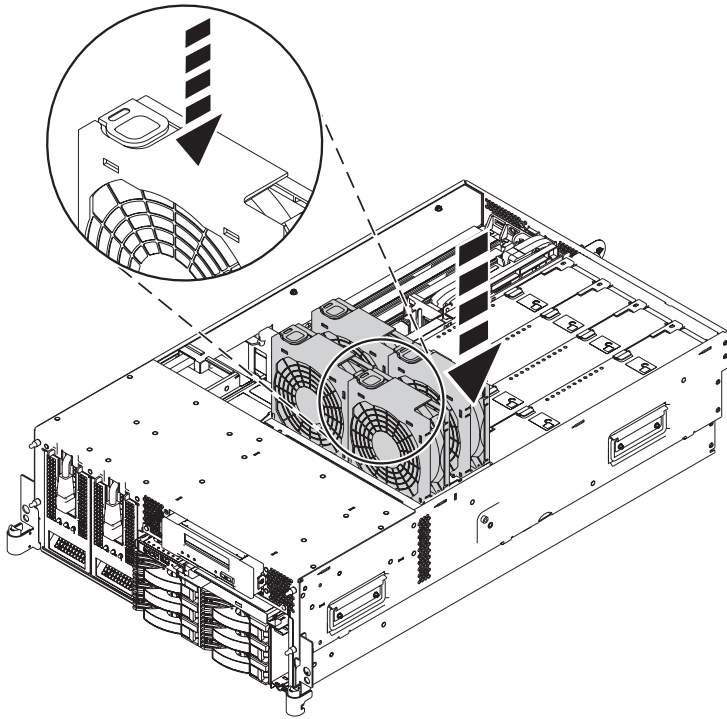


Figure 19. Installing the fans in the 8204-E8A or 9409-M50 fan cage

- b. For the 8203-E4A, 9407-M15, or 9408-M25, perform the following steps:
 - 1) To install the airflow cover, check that the four retaining tabs (A) are in open position, place the airflow cover (A) into its location, aligning the blue tabs with the holes. Push firmly on the cover to position it, and push the four locking tabs down to secure the cover, as shown in Figure 20 on page 26.

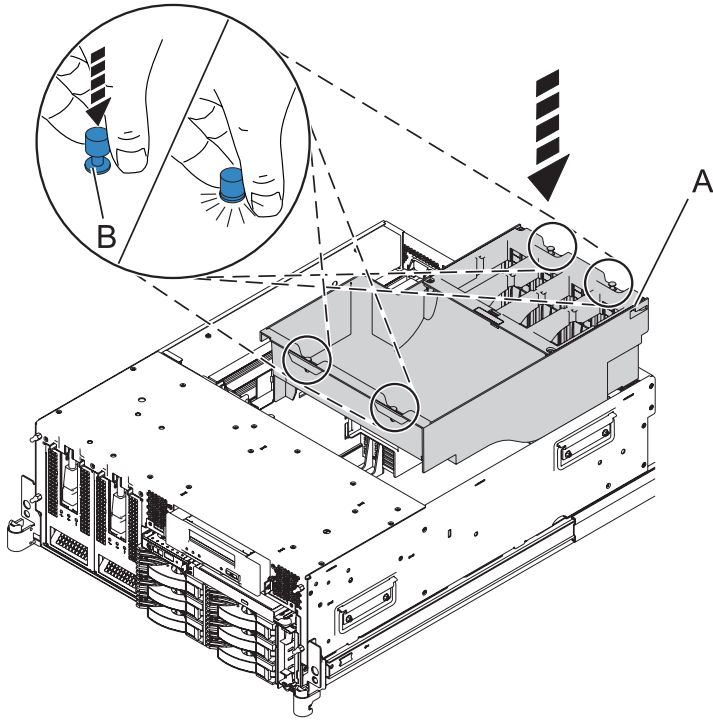


Figure 20. Installing the airflow cover in the 8203-E4A, 9407-M15, or 9408-M25 system

- 2) To install the fans, insert each fan (A) into its location in the airflow cover, push down on the fan until it locks into place, and close the latch (B), as shown in Figure 21.

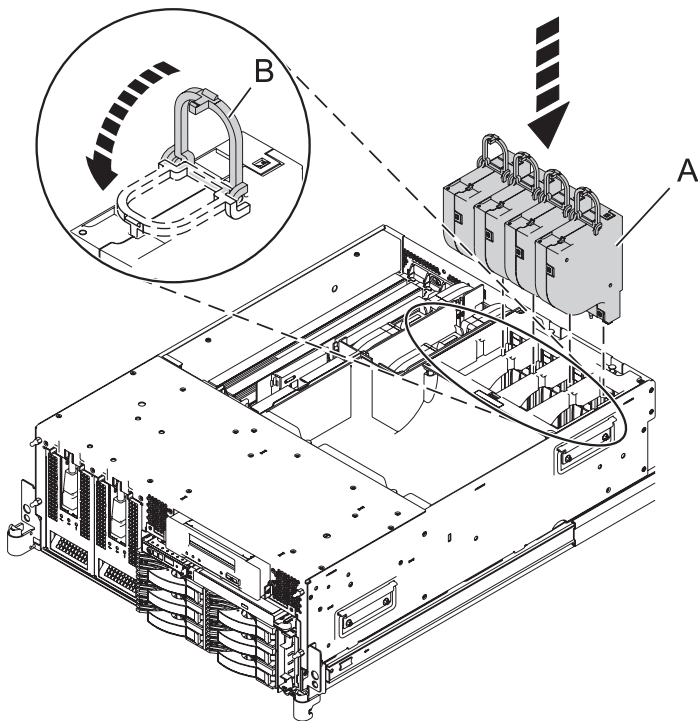


Figure 21. Installing the fans in the 8203-E4A, 9407-M15, or 9408-M25 airflow cover

10. Replace the service access cover. See “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 73.
11. Replace the front cover. See “Installing the front cover on a rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 77 or see “Installing the front cover on a stand-alone 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 79 “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 73.
12. Place the system in the operating position. For rack mounted models, see “Placing the rack-mounted 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 90.
13. Start the system or logical partition.. See “Starting the system or logical partition” on page 53.
14. Verify the installed part. For instructions, see Chapter 16, “Hardware Service Manager — Verify,” on page 97.

Chapter 4. Removing and replacing the 5802 expansion unit backplane

Learn about removing and replacing the disk drive backplane in the 5802 expansion unit.

Removing the backplane from the 5802 expansion unit

You can remove the disk drive backplane from the 5802 expansion unit.

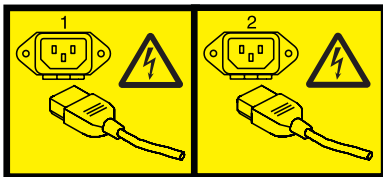
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the disk drive backplane from the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to remove the disk drive backplane:

1. Perform the prerequisite tasks as described in Chapter 5, “Before you begin,” on page 39.
2. Do one of the following steps, as applicable:
 - a. If you are removing the disk drive backplane for a system upgrade or as part of another procedure, continue to step 3.
 - b. If you are removing the disk drive backplane because of a system failure, use the service action log to help identify the failing part. See Chapter 7, “Service action log,” on page 49.
3. Stop the system or logical partition. For instructions, see “Stopping a system or logical partition” on page 57.
4. Disconnect the power source from the system by unplugging the system.

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

(L003)



or



5. Open the front rack door.
6. Remove the disk drives and fillers as shown in Figure 22.
 - a. Squeeze the latch of the disk drive and pull the handle (A) toward you to release the drives.
 - b. Supporting the bottom of the disk drive with your hand, slide it out of the backplane.

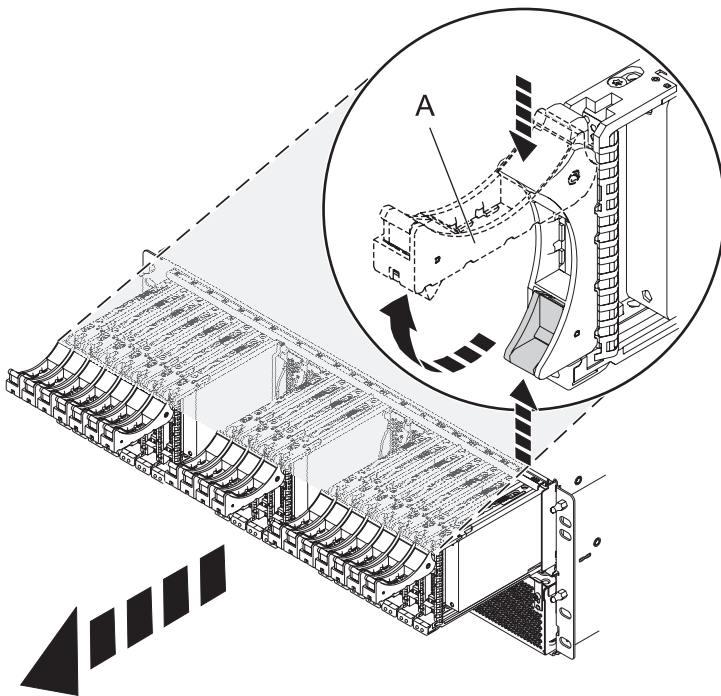


Figure 22. Removing the disk drives from the backplane

7. Remove the port cards and fillers as shown in Figure 23 on page 31.
 - a. Grasp the end of the latching handle (A) and pull it upward to unlock the port card.
 - b. Using your hand to support the bottom of the port card, slide it out of the backplane.

- c. Place the port card on an electrostatic discharge (ESD) surface.

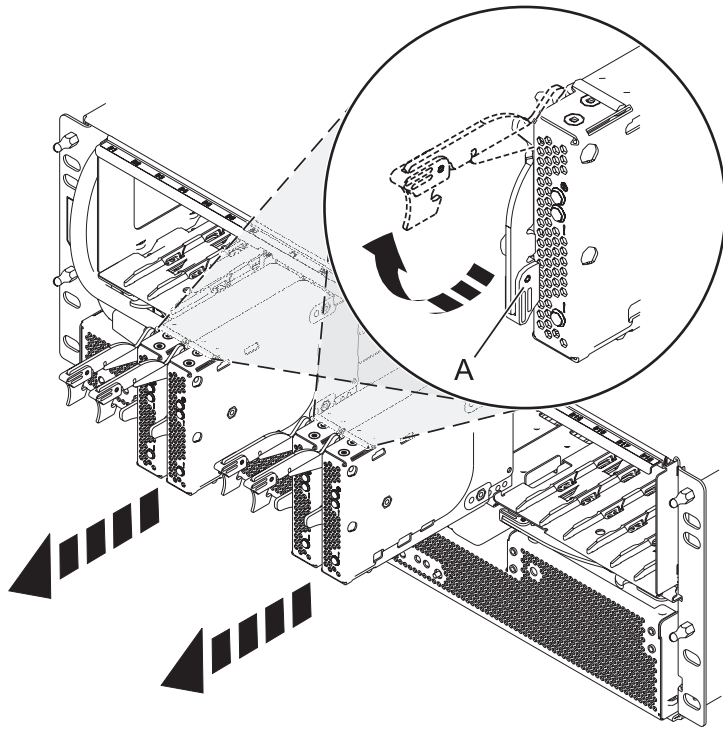


Figure 23. Removing the port card from the backplane

8. Remove the backplane as shown in Figure 24 on page 32.

CAUTION:

The backplane might be heavy. Ensure that you can safely complete the procedure.

- a. Squeeze the blue latches (A) to unlock the handles.
- b. Pull the handles (B) outward in the direction shown to release the backplane.
- c. Slide the backplane out of the enclosure, using your hand to support the bottom of the backplane.

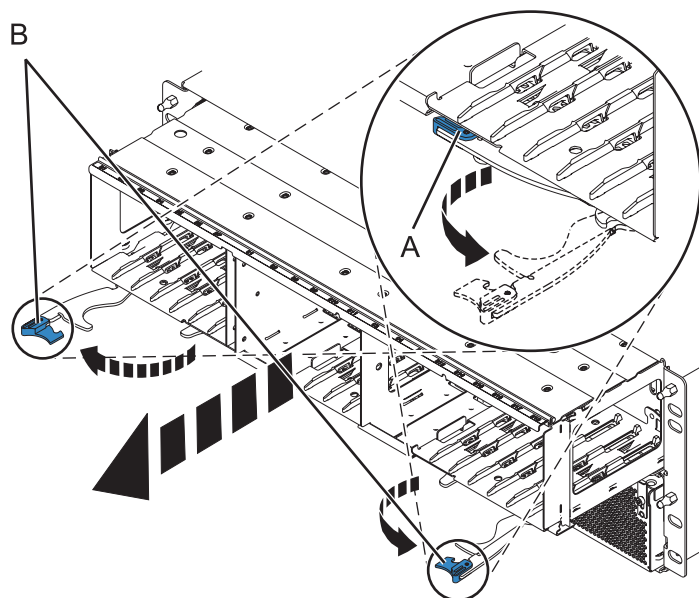


Figure 24. Removing the backplane from the enclosure

Replacing the backplane in the 5802 expansion unit

Learn about replacing the disk drive backplane.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the disk drive backplane in the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to replace the backplane:

1. Perform the prerequisite tasks as described in Chapter 5, “Before you begin,” on page 39.
2. To replace the disk drive backplane, lift the backplane along the two sides and align with the guide rails in the expansion unit.

CAUTION:

The backplane may be heavy. Ensure that you can safely perform this task before you begin.

3. Using your hand to support the bottom of the backplane, slide it into the expansion unit as shown in Figure 25 on page 33.
4. Secure the backplane in place by moving the locking tabs from the open position (B) to the locked position (A).

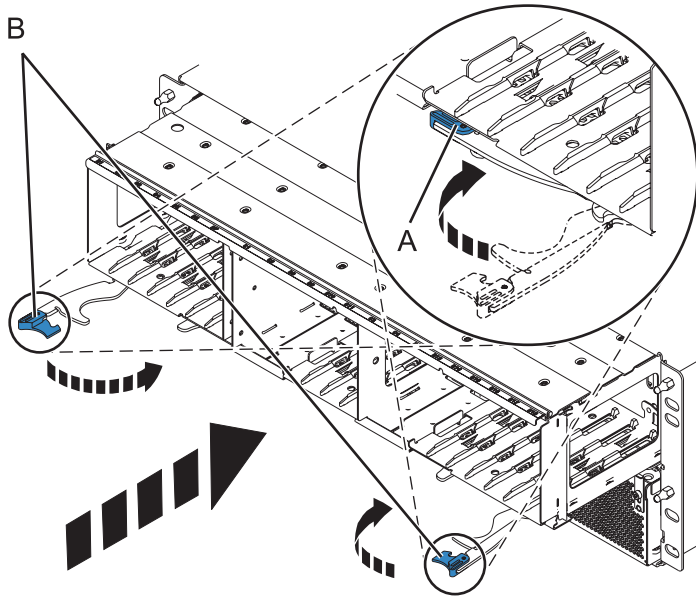
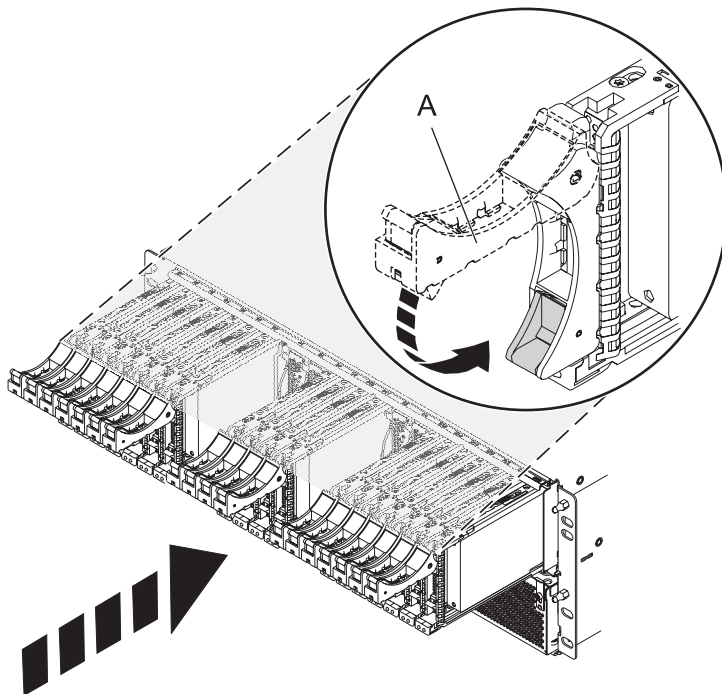
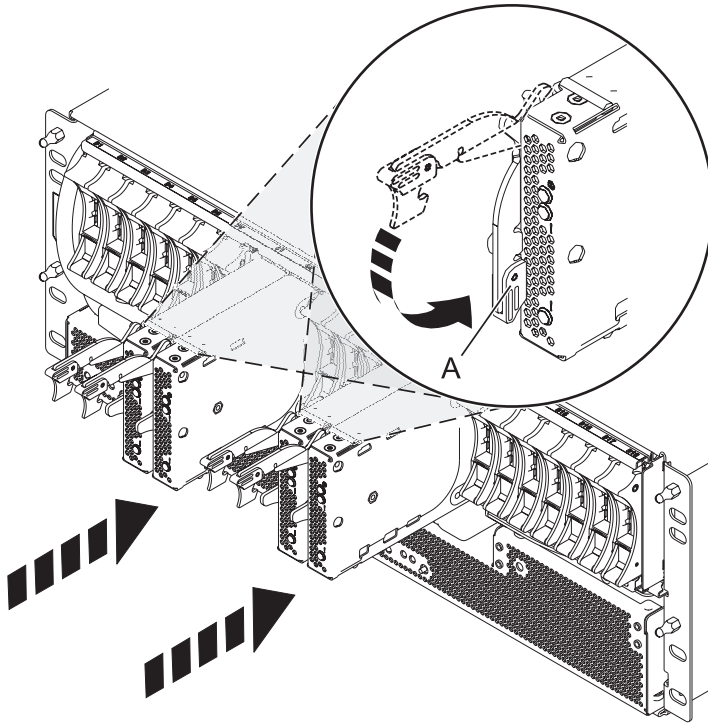


Figure 25. Installing the backplane on a rack-mounted model

5. Replace all disk drive units and fillers, if you removed them earlier.
 - a. Support the bottom of the disk drive unit as you align it with the guide rails in the backplane.
 - b. Slide the disk drive unit all the way into the backplane.
 - c. Push the handle (A) toward the disk drive unit to lock it into place.



6. Replace all expander cards and fillers, if you removed them earlier.
 - a. Supporting the bottom of the expander card with your hand, align it with the guide rails in the backplane.
 - b. Slide the expander card all the way into the backplane.
 - c. Push the handle (A) toward the card to lock it into place.



7. Connect the power cords to the back of the enclosure as shown in Figure 26 on page 35.

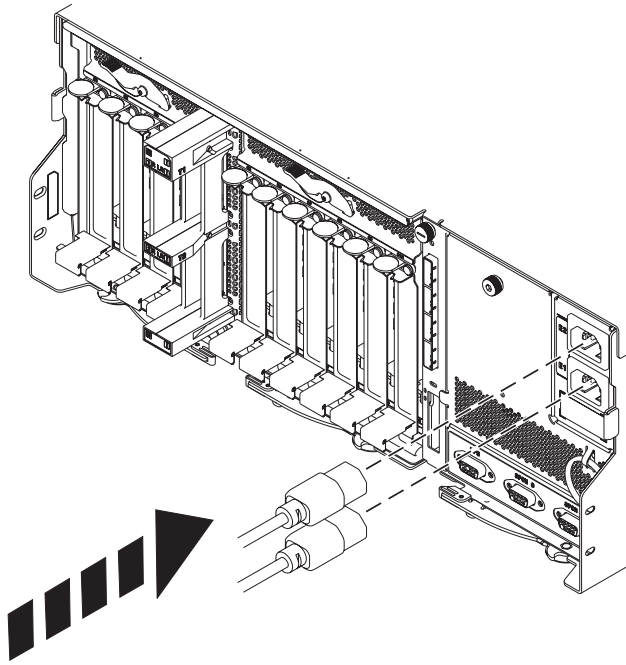


Figure 26. Connecting the power cords

8. Close the front rack door.
9. Place the system in the operating position. For instruction, see “Placing the rack-mounted system or expansion unit in the operating position” on page 86.
10. Start the system. See “Starting the system or logical partition” on page 53.
11. Verify the installed part. For instructions, see Chapter 16, “Hardware Service Manager — Verify,” on page 97.

Common procedures

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

Chapter 5. 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.
6. If parts are incorrect, missing, or visibly damaged, do the following:
 - If you are replacing a part, contact your service provider or next level of support.
 - If you are installing a feature, contact one of the following service organizations:
 - Your service provider 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.

Chapter 6. Managing the Advanced System Management Interface

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power.

The ASMI might also be referred to as the service processor menus.

Accessing the ASMI without an HMC

You can access the ASMI through a Web browser or an ASCII terminal.

Accessing the ASMI using a PC or notebook and Web browser

If your system is not managed by a Hardware Management Console (HMC), you can connect a PC or notebook to the server to access the Advanced System Management Interface (ASMI). You will need to configure the Ethernet interface on the PC or notebook to communicate with the server.

The Web interface to the ASMI is available during all phases of system operation including the initial program load (IPL) and run time. The ASMI is used to perform general and administrator-level service tasks. These tasks include reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power.

The following instructions apply to systems that are *not* connected to an HMC. If you are managing the server using an HMC, you will access the ASMI using the HMC.

To set up the Web browser for direct or remote access to the ASMI, complete the following tasks:

1. To attach the power cords, perform the following steps:
 - a. Connect your power cord or cords to the server.
 - b. Plug the power cord or cords into the power source.
 - c. Wait for the control panel to display 01. There will be a series of progress codes before 01 appears.

Important: Do not connect an Ethernet cable to either the HMC1 port or the HMC2 port until you are directed to do so later in this procedure.

2. Select a PC or notebook that has Netscape 9.0.0.4, Microsoft Internet Explorer 7.0, Opera 9.24 and Mozilla Firefox 2.0.0.11 to connect to your server.

Note: If the PC or notebook on which you are viewing this document does not have two Ethernet connections, another PC or notebook will need to be connected to your server to access the ASMI.

If you do not plan to connect your server to your network, this PC or notebook will be your ASMI console.

If you plan to connect your server to your network, this PC or notebook will be temporarily connected directly to the server for setup purposes only. After setup, you can use any PC or notebook on your network that is running Netscape 9.0.0.4, Microsoft Internet Explorer 7.0, Opera 9.24 or Mozilla Firefox 2.0.0.11 as your ASMI console.

3. Connect an Ethernet cable from the PC or notebook to the Ethernet port labeled HMC1 on the back of the managed system. If HMC1 is occupied, connect an Ethernet cable from the PC or notebook to the Ethernet port labeled HMC2 on the back of the managed system.

Important: If you attach an Ethernet cable to the service processor before alternating current (ac) power is applied, the IP address shown in Table 1 might not be valid. If a cable is attached and not connected to anything, nothing will happen. The address could potentially change, if an Ethernet cable that is attached to a network is connected to that port, and the system is turned on. If you are unable to access the ASMI using a network connection, you must perform one of the following tasks:

- Attach an ASCII terminal to the service processor using a serial cable. For details, see Accessing the ASMI using an ASCII terminal.
 - Move the reset toggle switches on the service processor from their current position to the opposite position. To perform this task, you must remove and replace the service processor. For details, contact your next level of support.
4. Use Table 1 to help you determine and record the information you will need in order to set the service processor’s IP address on the PC or notebook. The Ethernet interface on the PC or notebook will need to be configured within the same subnet mask as the service processor so that they can communicate with each other. For example, if you connected your PC or notebook to HMC1, the IP address for your PC or notebook could be 169.254.2.100 and the subnet mask would be 255.255.255.0. Set the gateway IP address to the same IP address as the PC or notebook

Table 1. Service processor network configuration information

Service processor	Server connector	Subnet mask	IP address
Service processor A	HMC1	255.255.255.0	169.254.2.147
	HMC2	255.255.255.0	169.254.3.147
Service processor B (if installed)	HMC1	255.255.255.0	169.254.2.146
	HMC2	255.255.255.0	169.254.3.146

5. Set the IP address on your PC or notebook using the values from step 4. For details, see “Setting the IP address on your PC or notebook” on page 45.
6. To access the ASMI using a Web browser, perform the following steps:
- a. Use Table 1 to determine the IP address of the service processor Ethernet port that your PC or notebook is connected to.
 - b. Type the IP address in the Address field of your PC’s or notebook’s Web browser. For example, if you connected your PC or notebook to HMC1, type `https://169.254.2.147` in your PC’s or notebook’s Web browser.

Note: It might take up to two minutes for the ASMI login display to appear in the Web browser after the Ethernet cable is plugged into the service processor in step 3 on page 43. During this time, if you use control panel function 30 to view the service processor’s IP addresses, incomplete or inaccurate data will be displayed.

7. When the login display appears, enter one of the following default user IDs and passwords:

Note: If you are setting up a Virtual I/O Server, you will need to use the admin User ID and password.

Table 2. Default user IDs and passwords for the Web interface

User ID	Password
general	general
admin	admin

8. Change the default password when prompted. For information, see ASMI authority levels.
9. Choose from the following options:
- If you plan to connect your PC or notebook to your network, continue with step 10 on page 45.

- If you do not plan to connect your PC or notebook to your network, continue with step 11.
10. If you plan to connect your PC or notebook to your network, complete the following steps:
 - a. From the navigation area, expand **Network Services**.
 - b. Click **Network Configuration**.
 - c. If your PC or notebook is connected to HMC1, fill in the section labeled Network interface eth0. If your PC or notebook is connected to HMC2, fill in the section labeled Network interface eth1. Ensure that the following fields are filled in correctly.

Table 3. Fields and values for network configuration

Field	Value
Configure this interface?	Selected
Type of IP address	Static
Host name	Enter a new value.
Domain name	Enter a new value.
IP address	This is a set IP address obtained from the network administrator. Note: To verify you are using the correct IP address, perform a function 30 on the control panel to show the service processor IP address and port location.
Subnet mask	This is a set subnet mask obtained from the network administrator.

Note: For information about the other fields and values, refer to Configuring network interfaces.

- d. Click **Continue**.
 - e. Click **Save Settings**.
 - f. Disconnect your PC or notebook from the server.
 - g. Connect the server to your company network.
 - h. Go to any PC or notebook on your company network that is running Netscape 9.0.0.4, Microsoft Internet Explorer 7.0, Opera 9.24 or Mozilla Firefox 2.0.0.11, and type the following in the Address field of your browser:
https://host name.domain name

where *host name* and *domain name* are the host name and domain name you entered when completing step 10c.
 - i. Log in to the ASMI.
11. Change the time of the day on the server.
 12. If you were sent here from another procedure, return to that procedure now.

Setting the IP address on your PC or notebook

To access the ASMI through a Web browser, you first need to set the IP address on your PC or notebook. The following procedures describe setting the IP address on PC and notebooks running the Microsoft® Windows® XP, 2000, and Vista, and Linux® operating systems.

ASMI authority levels

Several authority levels are available for accessing the service processor menus by using the ASMI.

The following levels of access are supported:

General user

The menu options presented to the general user are a subset of the options available to the

administrator and authorized service provider. Users with general authority can view settings in the ASMI menus. The login ID is `general` and the default password is `general`.

Administrator

The menu options presented to the administrator are a subset of the options available to the authorized service provider. Users with administrator authority can write to persistent storage, and view and change settings that affect the server's behavior. The first time a user logs into the ASMI after the server is installed, a new password must be selected. The login ID is `admin` and the default password is `admin`.

Authorized service provider

This login gives the authorized service provider access to all functions that could be used to gather additional debug information from a failing system, such as viewing persistent storage, and clearing all deconfiguration errors. There are three authorized service provider login IDs: **celogin**, **celogin1**, and **celogin2**.

- **celogin** is the primary service provider account. It is enabled by default, and it can enable or disable the other two service provider IDs (**celogin1** and **celogin2**). The login ID is **celogin**; the password is generated dynamically and must be obtained by calling IBM technical support. **celogin** can be disabled by the **admin** user.
- **celogin1** and **celogin2** are disabled by default. If the IDs are enabled, a static password must be set for them. The default password for both IDs is **celogin**. The default password must be changed the first time the ID is enabled. The **admin** user can also disable and enable these login IDs.
- To reset the password for **celogin1** or **celogin2**, the **admin** user can disable, then re-enable the ID. As soon as the ID is re-enabled, the password must be changed.
- If enabled, **celogin**, **celogin1**, or **celogin2** can be used to reset the admin password, if necessary.

During the initial administrator and general user logins, the only menu option available is **Change Password**. In order to gain access to additional ASMI menus, you must change the administrator and general user default passwords. If you are an authorized service provider, you cannot change your password.

Changing ASMI passwords:

Change the general user, administrator, and HMC access passwords.

You can change the general user, administrator, and HMC access passwords. If you are a general user, you can change only your own password. If you are an administrator, you can change your password and the passwords for general user accounts. If you are an authorized service provider, you can change your password, the passwords for general and administrator user accounts, and the HMC access password.

Passwords can be any combination of up to 64 alphanumeric characters. The default password for the general user ID is `general`, and the default password for the administrator ID is `admin`. After your initial login to the ASMI and after the reset toggle jumpers are moved, the general user and administrator passwords must be changed.

The HMC access password is usually set from the HMC during initial login. If you change this password using the ASMI, the change takes effect immediately.

To change a password, follow these steps:

Note: As a security measure, you are required to enter the current user's password into the **Current password for current user** field. This password is not the password for the user ID you want to change.

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.

2. In the navigation area, expand **Login Profile**.
3. Select **Change Password**.
4. Specify the required information, and click **Continue**.

Configuring network interfaces

You can configure network interfaces on the system. The number and type of interfaces vary according to the specific needs of your system.

Attention: This operation can be performed when the system is powered on as well as powered off. Because network configuration changes occur immediately, existing network sessions, such as HMC connections, are stopped. If a firmware update is in progress, do not perform this operation. The new settings must be used to re-establish any network connections. Additional errors might also be logged if the system is powered on.

You can change the network configurations when the system is in any state.

To perform this operation, you must have one of the following authority levels:

- Administrator
- Authorized service provider

To configure network interfaces, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **Network Services**.
3. Select **Network Configuration**.

Important: If you are attempting to configure a network connection on a multi-drawer system, you must select the primary or secondary service processor, and then click **Continue**.

4. In the right pane, locate the interface that you want to change. Select the box corresponding to the **Configure this interface?** field of the identified interface. If this box is not selected, the corresponding field changes are ignored.
5. Select the **Type of IP address** from the following options:

Static The IP address, subnet mask, broadcast address, default gateway and first DNS server address must be entered. The second and third DNS server addresses are optional.

Dynamic

No additional input is required.

6. Click **Continue**. The next screen allows you to verify the IP settings that have been entered.

Attention: If incorrect network configuration information is entered, you may not be able to use the ASMI after the changes are made. To remedy this situation, you must reset the service processor to the default settings by removing the service processor assembly from the server and moving the reset jumpers. Resetting the service processor also resets all user IDs and passwords to their default values.

Note: To reset network configuration settings to the default factory settings, click **Reset Network Configuration**.

7. Click **Save settings** to make the changes.

Changing the time of day

You can display and change the system's current date and time. The date and time can only be changed when the system is powered off. The time is stored as UTC (Coordinated Universal Time), formerly expressed as Greenwich mean time (GMT).

To perform this operation, your authority level must be one of the following:

- Administrator

- Authorized service provider

Note: You can change the time of day only when the system is powered off.

To change the time of day, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration**.
3. Select **Time of Day**. If the system is powered off, the right pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, seconds).
4. Change either the date value or the time value or both, and click **Save settings**.

Accessing the ASMI using the HMC

Complete these steps to access the ASMI through the HMC interface.

To access the Advanced System Management Interface (ASMI) using the HMC, complete the following steps:

1. From the **System Management** tasks list, select **Operations**.
2. From the Operations task list, select **Advanced System Management (ASM)**.

Chapter 7. Service action log

The service action log (SAL) is a subset of the product activity log.

To access the SAL, select the following options, in order, from a DST or SST menu:

- Start a service tool
- Hardware service manager
- Work with service action log

The SAL is a utility that scans the PAL and displays entries that require service representative action. It pulls out the relevant information from those entries and formats it to the display to show service information, such as failing resource names, field replaceable unit (FRU) part numbers, and FRU locations. If FRU part numbers and locations cannot be determined, the SAL display shows symbolic FRU names and isolation procedure names, which then correspond to problem analysis procedures for the service representative. The SAL runs before the operating system is operational.

A **shadow** log is maintained by Licensed Internal Code on the load source disk. The 128 K-byte shadow log contains a duplicate of the most recent or latest product activity log entries that occurred before IPL began and those entries that were logged since the beginning of IPL. The *Product activity log* option uses the shadow log when the system is operating in limited paging environment.

If product activity log initialization is not complete, only the shadow log is accessible to this option. Also, the *Product activity log* menu offers only a few specific product activity log options. The Main menu informs the user that log initialization has not completed, that all product activity log entries are not accessible, and to IPL the operating system to complete initialization. If initialization completes after the *Product activity log* option has been selected, the option must be selected again to make all product activity log options available for use and to generate reports that show all the log entries.

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” on page 50.

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 complete 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.

Chapter 8. Starting or stopping the system or logical partition

Learn how to start or stop a system or logical partition to perform a service action or restart the system.

Starting the system or logical partition

To start a system or logical partition after performing a service action or system upgrade, use this procedure.

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 blinking.
 - 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.

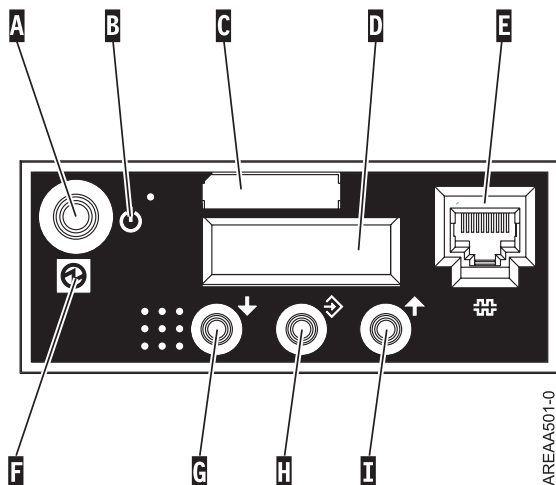


Figure 27. 570 control panel

- 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 blinking 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 blinking to solid. During the transition period, you might observe the blinking intervals speed up.

- **G:** Decrement button
- **H:** Enter button
- **I:** Increment button

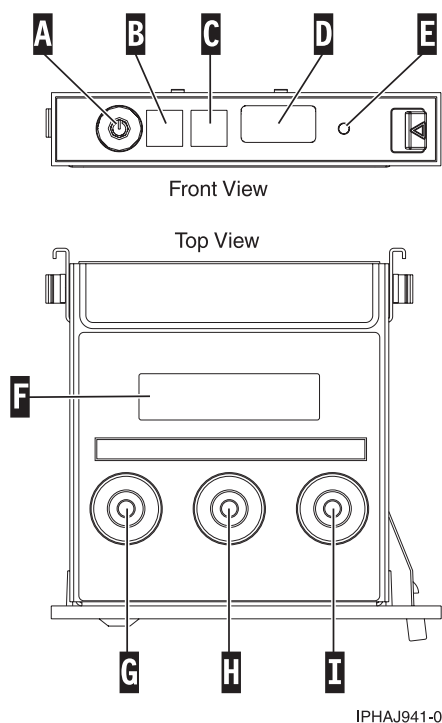


Figure 28. Control panel for the 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, and 9409-M50.

- **A:** Power-on button
- **B:** Power LED
 - A blinking 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 blinking to solid. During the transition period, you might observe the blinking intervals speed up.

- **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 blink 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 blinking 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 Chapter 6, “Managing the Advanced System Management Interface,” on page 43.
2. Start the system using the ASMI. For instructions, see “Powering the system on and off.”

Powering the system on and off

View and customize various initial program load (IPL) parameters.

You can start and shut down the system in addition to setting IPL options.

To perform these operations, your authority level must be one of the following:

- Administrator
- Authorized service provider

Several IPL options that you can set pertain to the server firmware. Firmware is an integral part of the server that is stored in *flash memory*, whose contents are preserved when the system is powered off. The firmware is code that automatically starts when the server is turned on. Its main purpose is to bring the server to a state where it is ready to operate, which means the server is ready to install or boot an operating system. Firmware also enables the handling of exception conditions in the hardware and provides extensions to the functions of the server hardware platform. You can view the server’s current firmware level on the Advanced System Management Interface (ASMI) Welcome pane.

This server has a permanent firmware boot side, or P side, and a temporary firmware boot side, or T side. When updating the firmware, install new levels of firmware on the temporary side first to test the compatibility with your applications. When the new level of firmware has been approved, copy it to the permanent side.

To view and change IPL settings, perform the following steps:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **Power/Restart Control** and select **Power On/Off System**.
3. Set the following desired boot settings.

Note: On systems with the EM310_xxx release of system firmware installed, *slow* and *fast* are the only two boot speeds available.

System boot speed

Select the speed for the next boot:

Slow All IPL diagnostic tests are run, and the full memory test is run.

Fast Several IPL diagnostic test are skipped, and a shorter memory test is run.

Note: This is the default setting on systems with firmware EX310_xxx or later installed.

Hyper This option is available only when hyperboot is enabled. The majority of the initial program load (IPL) diagnostics are skipped, and cached data is used for vital product data (VPD), system configuration, and main store data. Since there is minimal VPD verification that the hardware is the same as the previous boot, this speed setting should only be used if there have not been any hardware changes since the last system boot.

Firmware boot side for next boot

Select the side from which the firmware boots the next time: **Permanent** or **Temporary**. Test firmware updates by booting from the temporary side before being copied into the permanent side.

System operating mode

Select the operating mode: **Manual** or **Normal**. Manual mode overrides various automatic power-on functions, such as auto-power restart, and enables the power button.

Boot to system server firmware

Select the state for the server firmware: **Standby** or **Running**. When the server is in the server firmware standby state, logical partitions can be set up and activated.

System power off policy

Select the system power off policy. The system power off policy is a system parameter that controls the system's behavior when the last partition (or the only partition in the case of a system that is not managed by an HMC) is powered off.

IBM i partition mode boot

This option is available only when the system is not managed by an HMC. Select the IBM i partition mode for the next system boot.

Default partition environment

Select **Default** (valid only if the BR keyword is not S0), **AIX**, **IBM i**, or **Linux**.

Notes:

- If the default partition environment is changed from any other value to IBM i, the IBM i enable/disable setting is automatically changed to Enabled.
- If the default partition environment is changed from IBM i to any other value, the IBM i enable/disable setting is not affected.

IBM i enable/disable

Depending on the machine type and model of the system, this option may or may not appear on the ASMI power on/off menu. If it is displayed on the menu, you can enable or disable IBM i. When this option is set to disabled, an existing IBM i partition cannot be powered on, and a new IBM i partition cannot be created. The enable/disable setting takes effect on the next system IPL.

Note: If the IBM i field does not show Enabled or Disabled, but is blank, the setting is not initialized. If you try to click any of the radio buttons for the save settings options and the value is still not initialized, the ASMI will reject the request and instruct you to update the RB keyword in the system vital product data (VPD).

Current® hyperboot mode state

This setting is displayed if the hyperboot feature is activated for the system. The hyperboot mode states are: **Capable** and **Enabled**. When the mode state is changed to **Enabled**, the mode state initializes in the ASMI and displays **Capable** until the system is restarted. After the system has restarted the state changes to **Enabled**. Any time you restart the system in the enabled state, it starts in hyperboot mode.

4. Perform one of the following steps:

- Click **Save settings** to save the selected options. The power state does not change.

- Click **Save settings and power on/off**. All selected options are saved and the system turns on or off. The power-on option is available only if the system is powered off. The power-off option is available only if the system is powered on.
- Click **Save settings and continue server firmware boot** to save the selected options, and turn the server firmware on or off. This option is available only if the server firmware is in *standby* mode.

Starting the 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.

Powering on a managed system

Understand how to power on a managed system using the HMC.

You can use the HMC to power on a managed system and to monitor the power-on state.

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

- super administrator
- service representative
- operator
- product engineer

To power on a managed system, complete the following steps:

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 On**.
5. Select the desired power-on mode and click **OK**.

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).

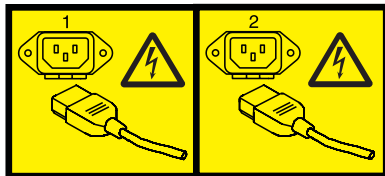
1. Log in to the system as a user with the authority to run the shutdown or pwrdownsys (Power Down System) command.
2. At the command line, enter one of the following commands:
 - If your system is running the AIX operating system, type **shutdown**.
 - If your system is running the Linux operating system, 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 or logical partition 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.

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 desired power-off mode and click **OK**.

Chapter 9. Disconnecting the SMP processor cable from a system

You might need to disconnect this cable to add or remove memory or processors. Use the procedure in this section to accomplish this task.

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.

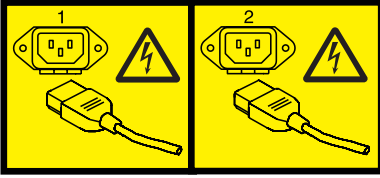
(D005)

To disconnect an SMP processor cable connection from a system, complete the following steps:

1. If necessary, open the front door of the rack.
2. Disconnect the power source from the system by unplugging the system.

Note: This system can be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



OR



3. Remove the front cover. For instructions, see “Removing the front cover from the 8234-EMA, 9117-MMA, or 9406-MMA” on page 80.
4. Remove the left edge of the trim kit on the system rack to expose the left edge of the SMP processor cable.

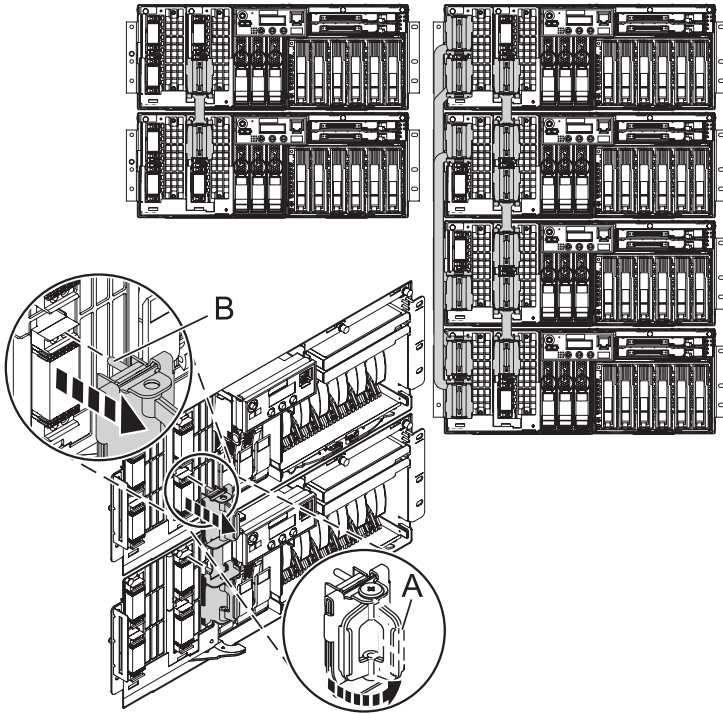
Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

5. Unlatch the plastic fastener (A), as shown in the following figure.
6. Lift the latch handle (B) until the connector is unseated.



7. Carefully pull the connector from the system.
8. When the guide pins are free, carefully pull the cable away from the system unit.

Chapter 10. Reconnecting the SMP processor cable to a system

You might need to reconnect this cable after adding or removing memory or processors. Use the procedure in this section to accomplish this task.

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.

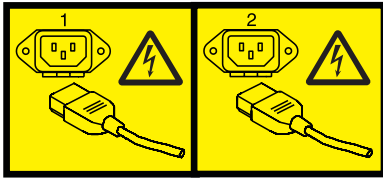
(D005)

To connect an SMP processor cable to a single system, complete the following steps:

1. Perform prerequisite tasks as described in Chapter 5, "Before you begin," on page 39.
2. Stop all system units. Refer to "Stopping a system or logical partition" on page 57.
3. If necessary, open the front rack door.
4. Disconnect the power source from the system by unplugging the system.

Note: This system can be equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



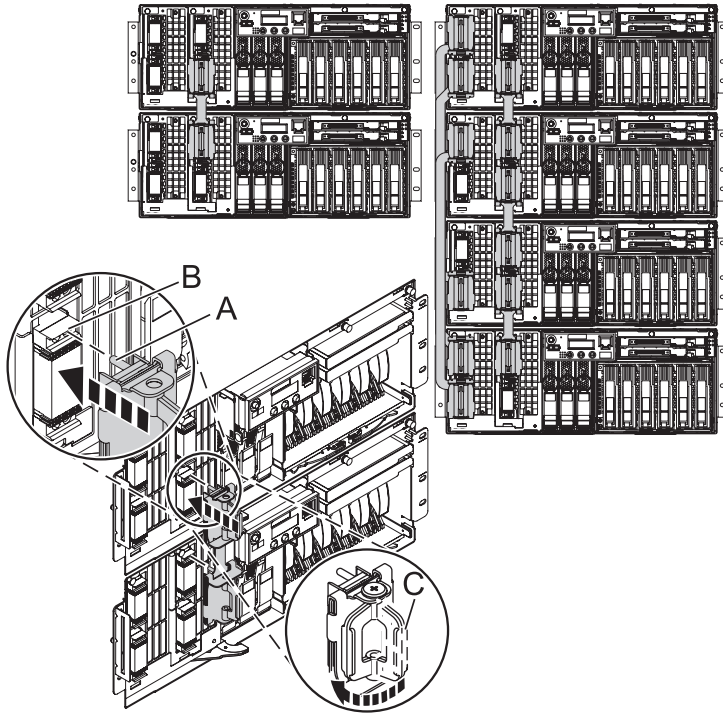
or



5. If necessary, remove the left edge of the trim kit on the system rack.

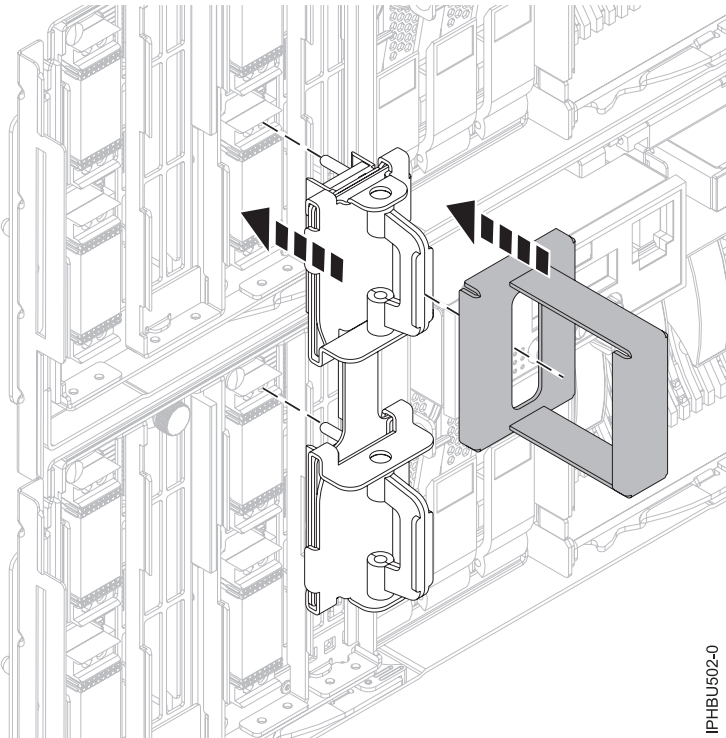
Attention:

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
6. Lift the latch handle (C) to the open position.



7. Align the guide pins (A) with the connector (B) on the system.
8. Carefully push the cable connector into the system connection.

Note: Evenly press the connector in place, using firm straight pressure on both the top and bottom of each cable-end. At the same time, press evenly at the top and bottom of each cable-end. Use the SMP tool to seat the cable as shown in the following figure.



IPHBU502-0

Figure 29. Using the SMP cable tool

9. Push the latch handle down to seat the pins.
10. Replace the left edge of the trim kit.
11. Install the front cover. For instructions, see “Installing the front cover on the 8234-EMA, 9117-MMA, or 9406-MMA” on page 81.
12. Close the front rack door.

Chapter 11. Removing and replacing expansion unit cover or door

You might need to remove, replace, or install covers or doors on an expansion unit as a part of accessing components or performing a service action.

Removing the front cover on the 7314-G30 or 5796

You might need to remove the front cover to perform service to the system.

To remove the front cover follow these steps.

1. Remove the two thumbscrews (**B**) located on the left and right of the cover.

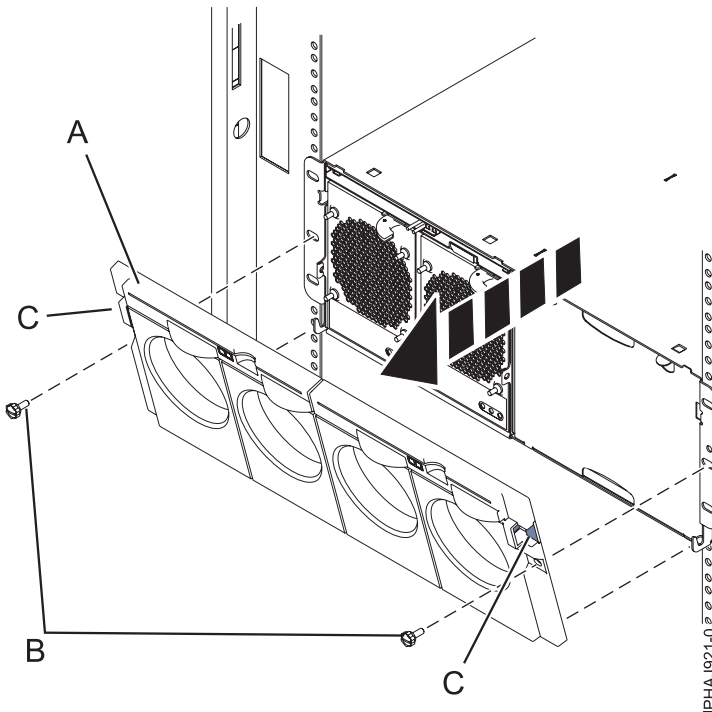


Figure 30. Remove the front cover for model 7314-G30 or 5796

2. Press in on the two latches (**C**) located left and right of the cover to release the cover.
3. Lift the cover (**A**) out and away from the chassis.

Tip: If an airflow block is present on an unpopulated side of the chassis do not remove it unless you are populating that side of the chassis.

Installing the front cover on the 7314-G30 or 5796

Use this procedure to install the front cover after installing the system or performing a service action.

If you only have one side of the chassis populated, ensure that the airflow block is present on the unpopulated side.

1. Insert the posts on the bottom of the cover (A) into the hooks on the chassis of the enclosure.
2. Press in on the two latches (C) on the right and left of the front cover.

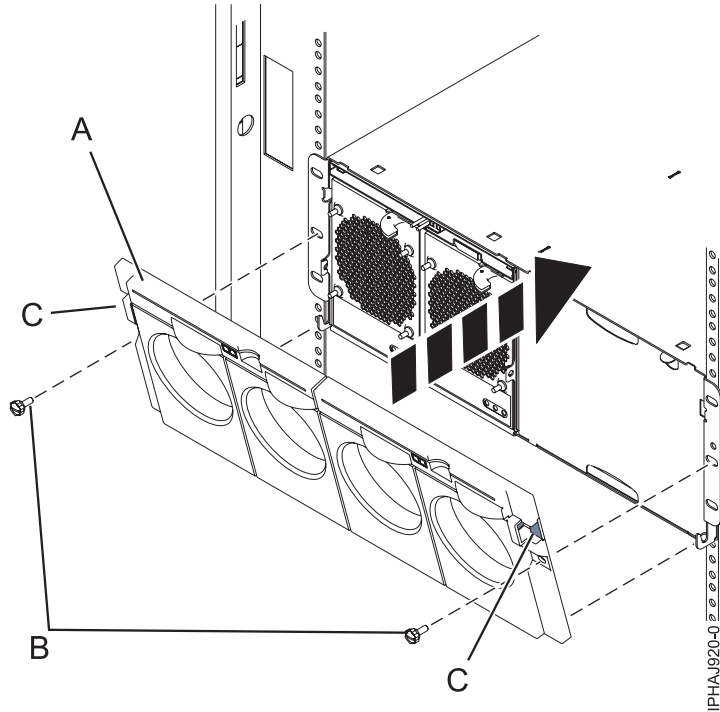


Figure 31. Front cover on a model 7314-G30 or 5796

3. Push the cover onto the chassis and release the latches. The cover should securely snap into place.
4. Replace the two thumbscrews (B) into the slots on the left and right of the front cover.

Removing the front cover from a 7311-D11, 5791, or 5794 expansion unit

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

To remove the front cover, follow these steps:

1. Open the rack front door, if necessary.
2. Press down on both release tabs and pivot the cover from the top forward.
3. Pull the cover out and away from the expansion unit.

Installing the front cover on a 7311-D11, 5791, or 5794 expansion unit

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 expansion unit so that the pins on the cover line up with the slots on the front of the expansion unit.
2. Insert the tabs on the bottom of the cover into the slots at the front of the expansion unit.
3. Push the cover up and forward until the tabs on the top secure the cover in place.

Removing the front cover from a 7311-D20 expansion unit

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

To remove the expansion unit front cover, follow these steps:

1. If necessary, open the front rack door.
2. Remove the thumbs screws that are securing the covers to the rack.
3. Push both cover-release latches in the direction of the arrows to release the cover as shown in the following figure.

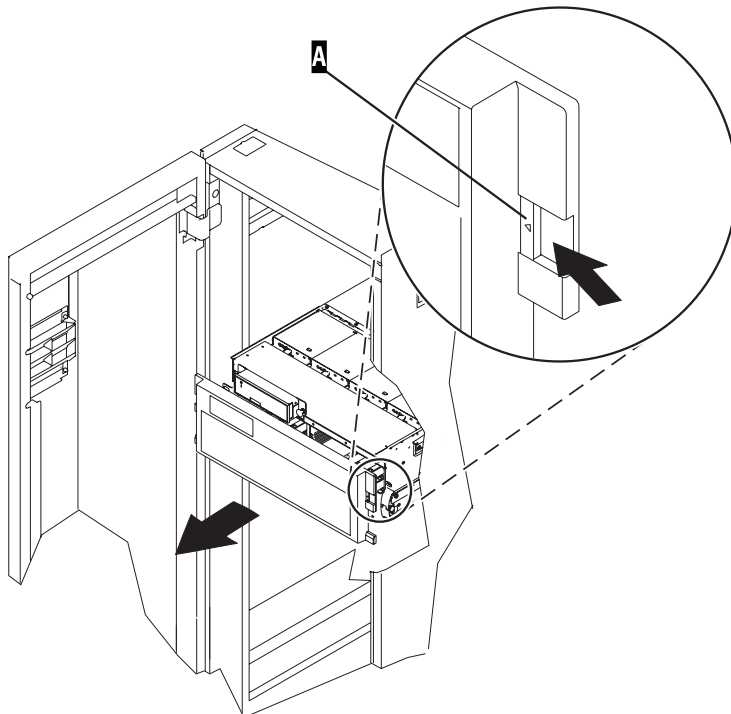


Figure 32. Removing the front cover

4. Pivot the cover from the bottom and swing the top of the cover out.
5. Pull the bottom of the cover up and then away from the expansion unit. This releases the two tabs located on the bottom of the cover.
6. Put the cover in a safe place.

Installing the front cover on a 7311-D20 expansion unit

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

To install the expansion unit front cover, follow these steps:

1. If necessary, open the front rack door.
2. Insert the two tabs located on the bottom edge of the cover into their locking slots, located on the expansion unit frame.
3. Pivot the front cover up toward the top of the expansion unit frame.

4. Align the tabs to the matching slots located on the front of the expansion unit frame.
5. Gently push the tabs into the slots until the cover seats against the front of the expansion unit.
6. Install the thumbs screws to secure the covers to the rack.
7. Close the front rack door.

Chapter 12. 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, 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, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 87.
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.

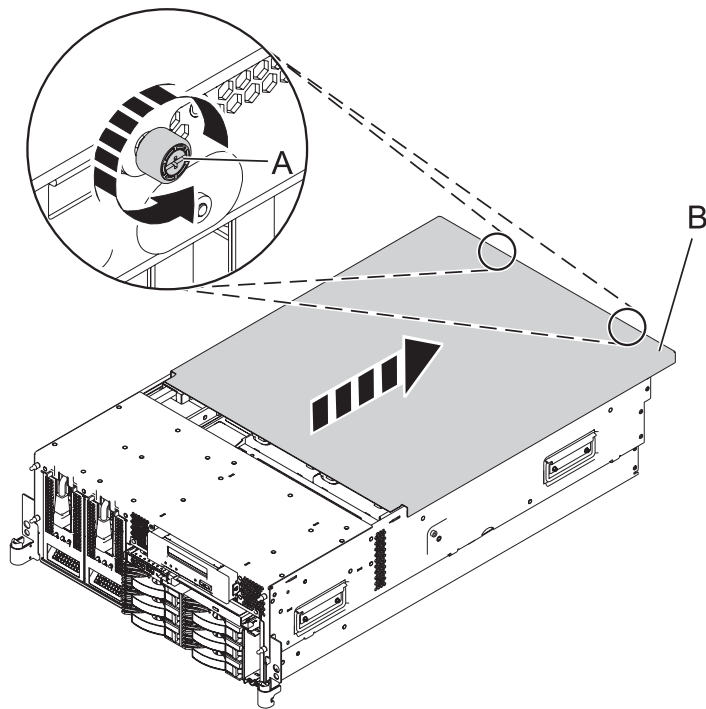


Figure 33. Remove the service access cover from a rack-mounted model

Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 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.

Important: Ensure that the fan LED cables do not get caught on the front edge of the service access cover as you move it forward.

3. Tighten the thumbscrews (B) located at the back of the cover.

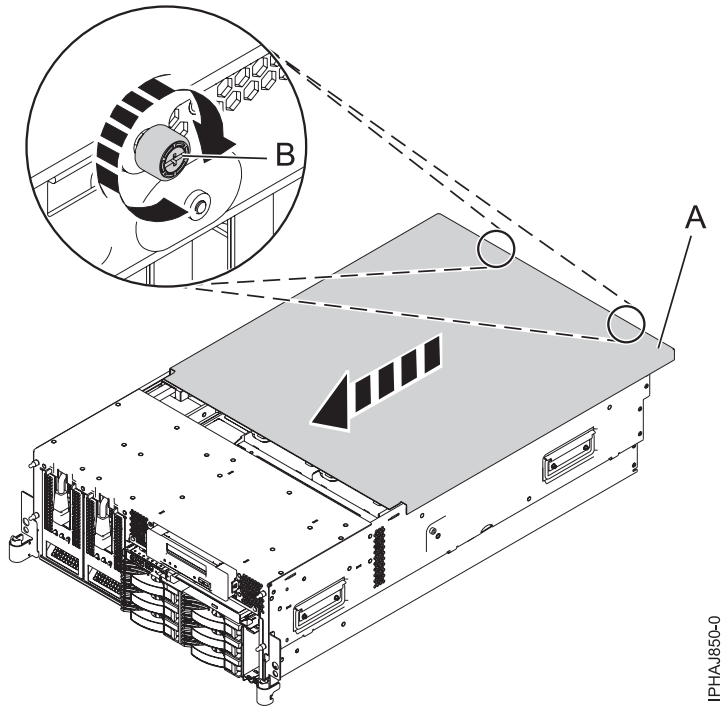


Figure 34. Install the service access cover on the rack-mounted model

Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 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.

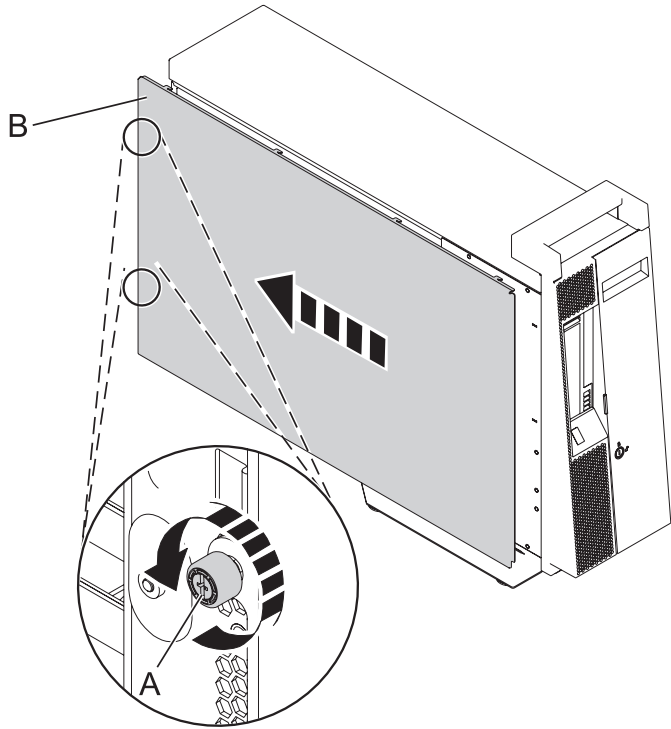
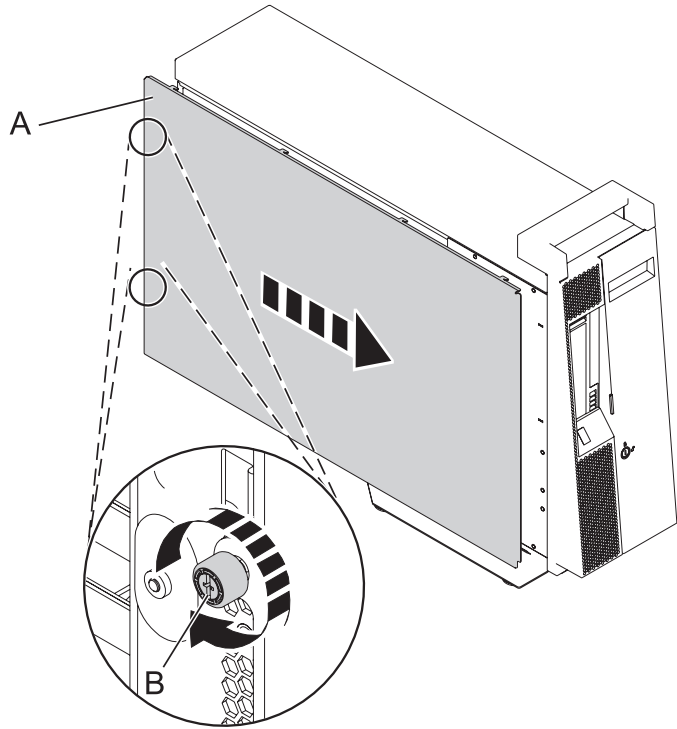


Figure 35. Removing the service access cover from the stand-alone model

Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 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.



IPHAJ860-0

Figure 36. Installing the service access cover on a stand-alone model

Removing the front cover from a rack-mounted 8203-E4A, 8204-E8A, 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.

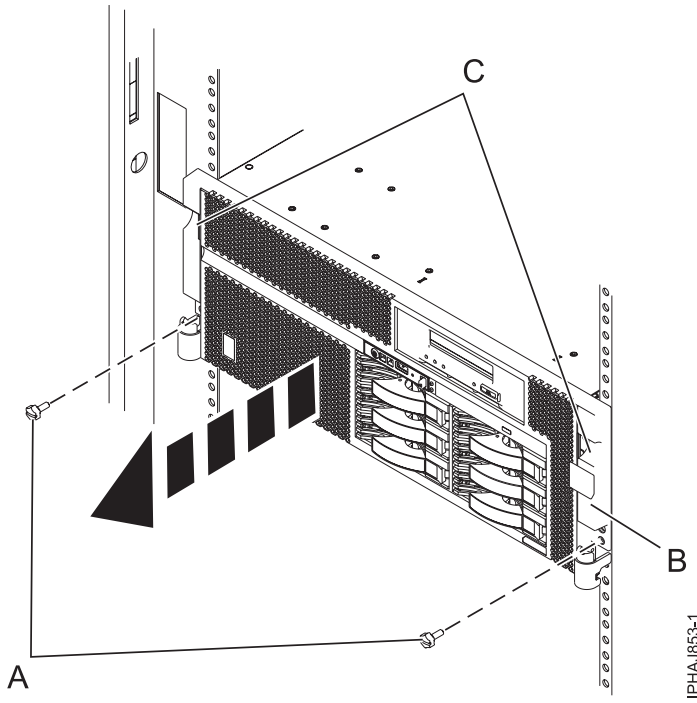


Figure 37. Removing the front cover from a rack-mounted model

Installing the front cover on a rack-mounted 8203-E4A, 8204-E8A, 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)**.

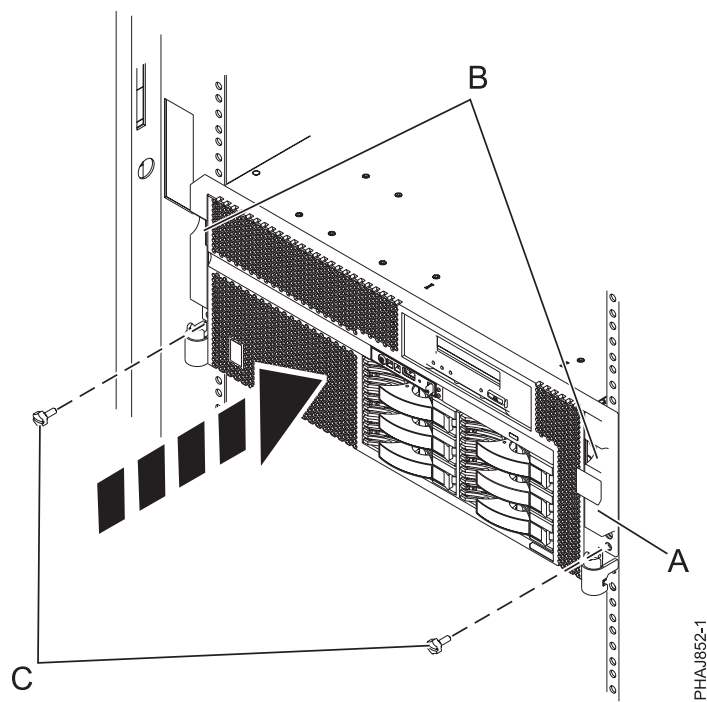


Figure 38. Installing the front cover on a rack-mounted model

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, 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.

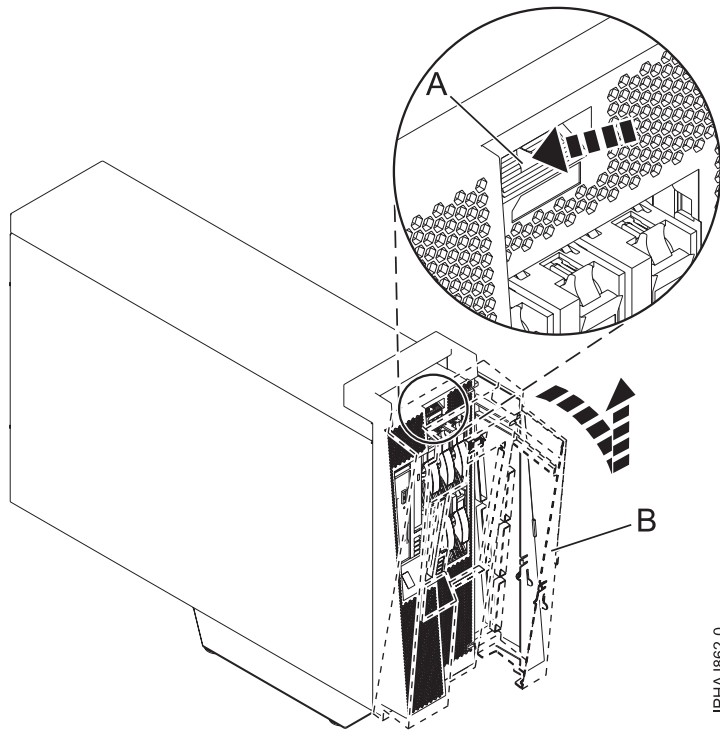


Figure 39. Remove the door from the model

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

Installing the front cover on a stand-alone 8203-E4A, 8204-E8A, 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.

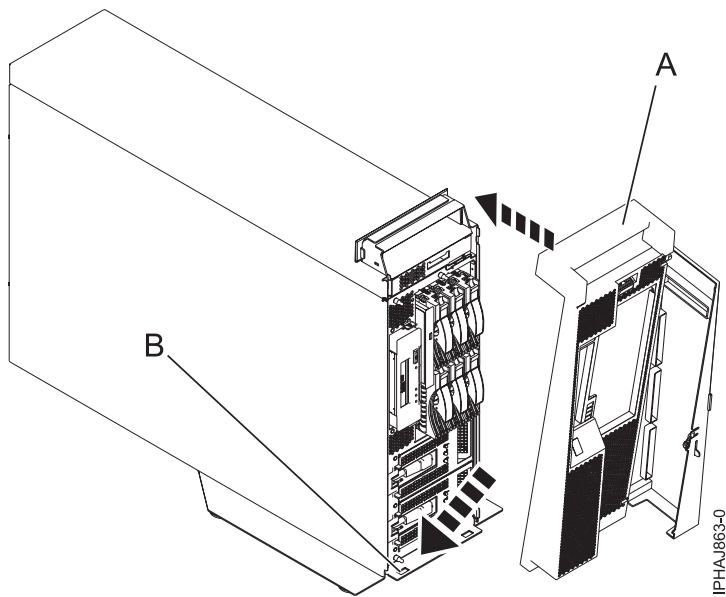


Figure 40. Replacing the cover on the model

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.

Front cover for the 8234-EMA, 9117-MMA, or 9406-MMA

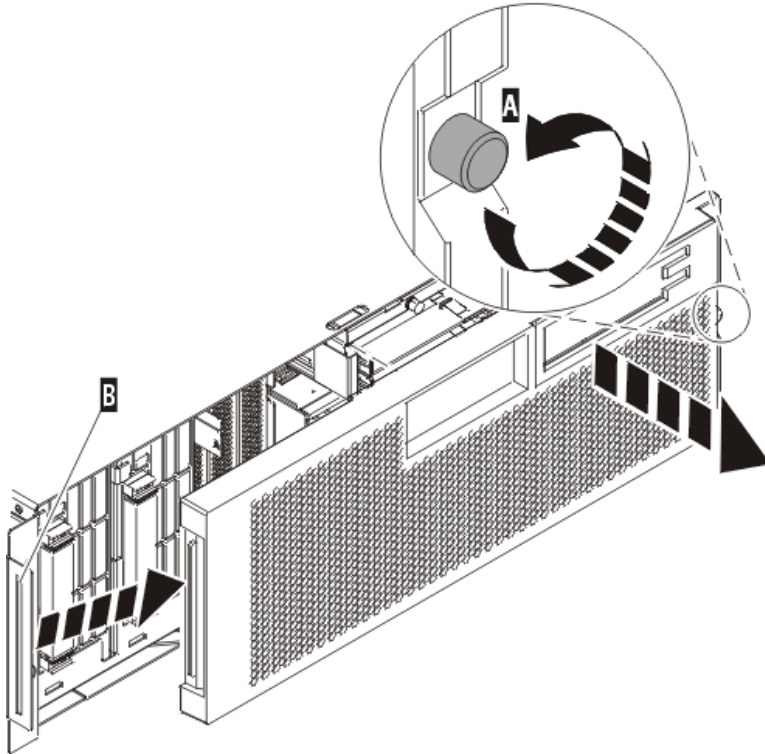
Use these procedures to remove and replace the cover to access components or perform service.

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.



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Figure 41. Removing the front cover

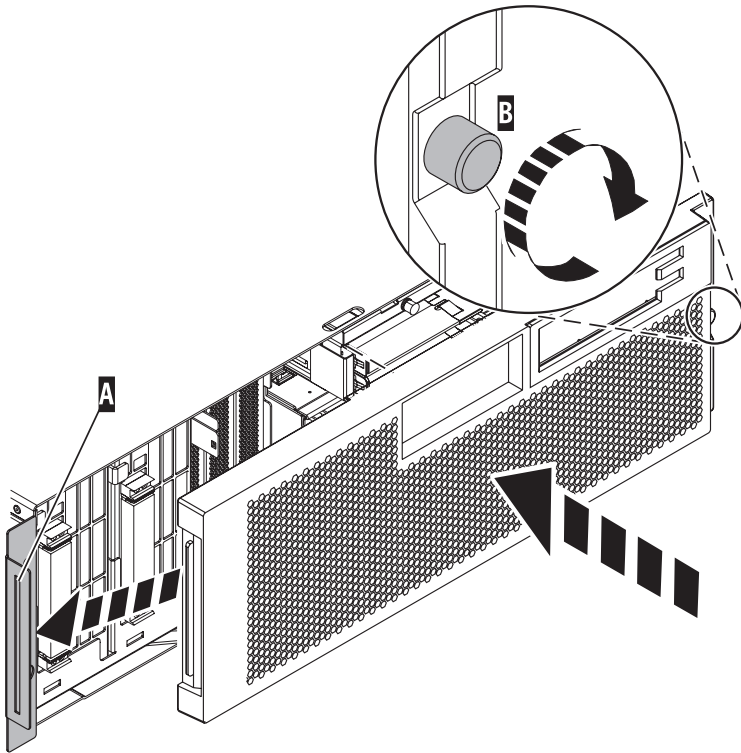
3. Slide the cover to the right, and remove it from the system unit.

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.



IPHAJ500-1

Figure 42. Installing the front cover

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

Chapter 13. 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 43. 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.

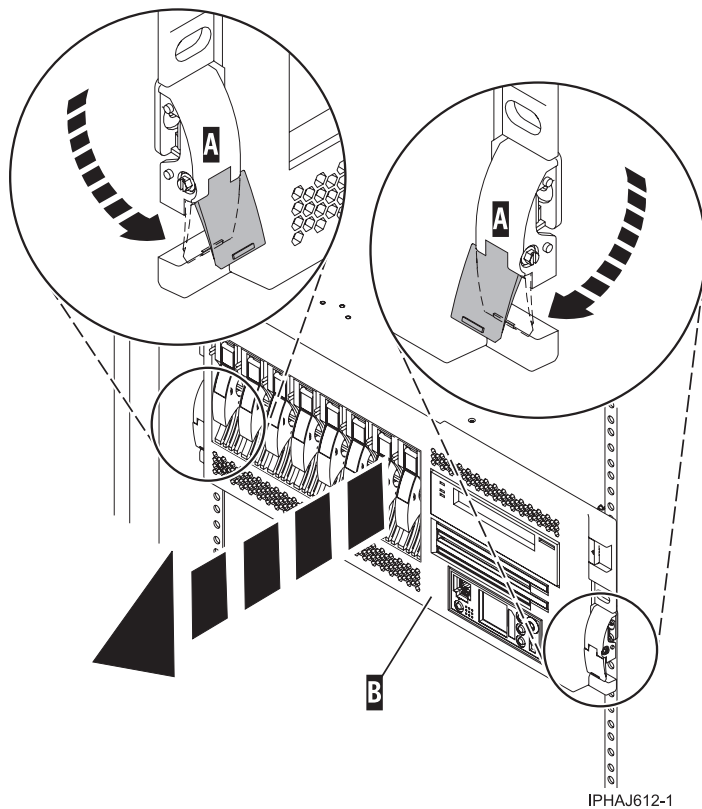


Figure 44. Releasing the rack latches

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

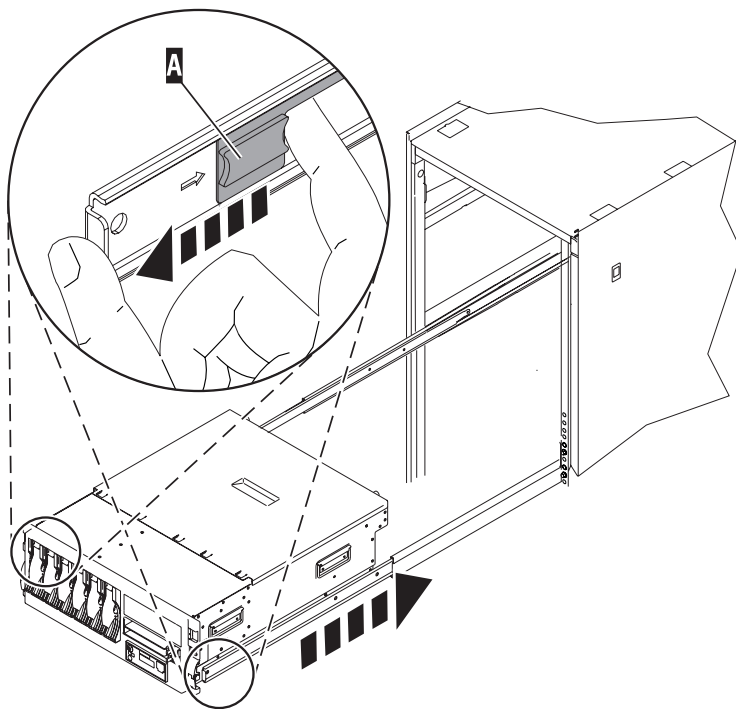
Use this procedure to place the rack-mounted system or expansion unit in the operating position to make the unit available for use.

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.



IPHBF509-1

Figure 45. 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.

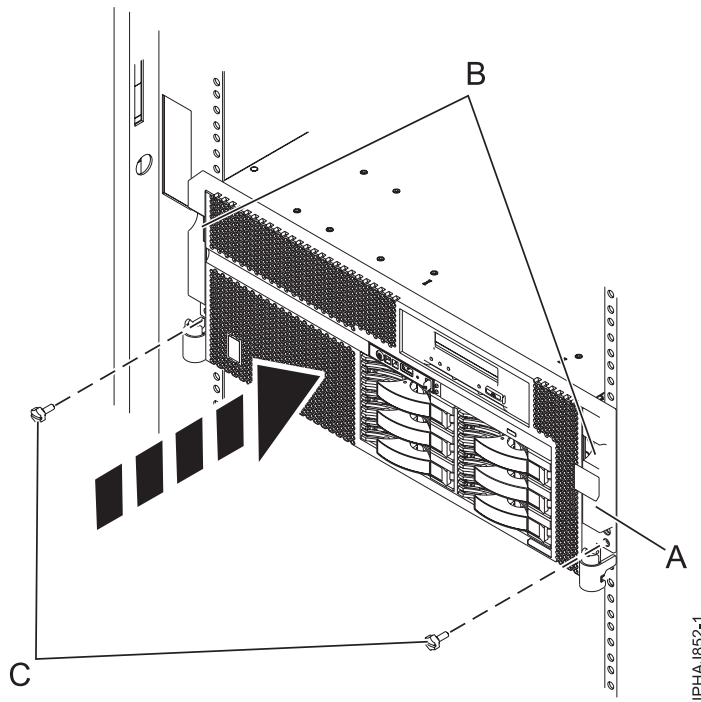


Figure 46. Pushing the system into the rack and attaching the thumbscrews

3. Close the front rack door.

Placing a rack-mounted 8203-E4A, 8204-E8A, 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.

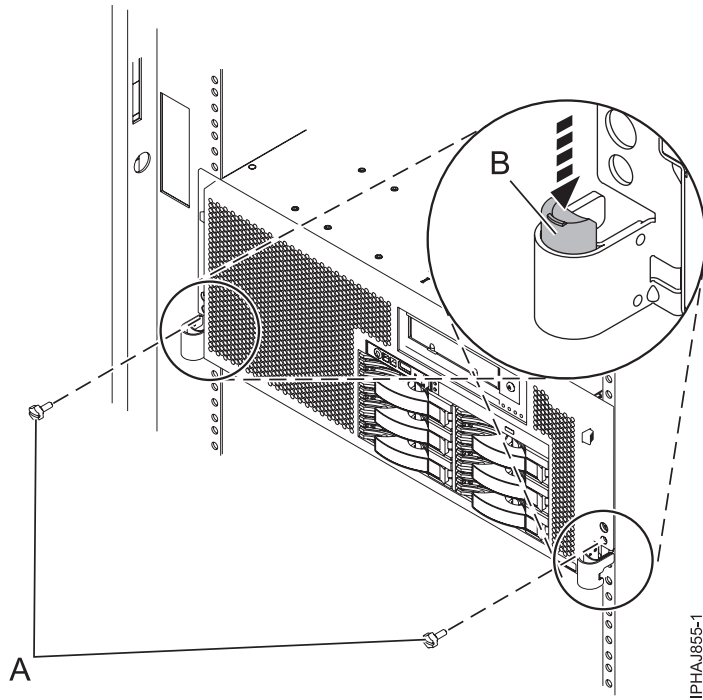


Figure 47. Releasing the rack latches

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, 9407-M15, 9408-M25, or 9409-M50 in the operating position

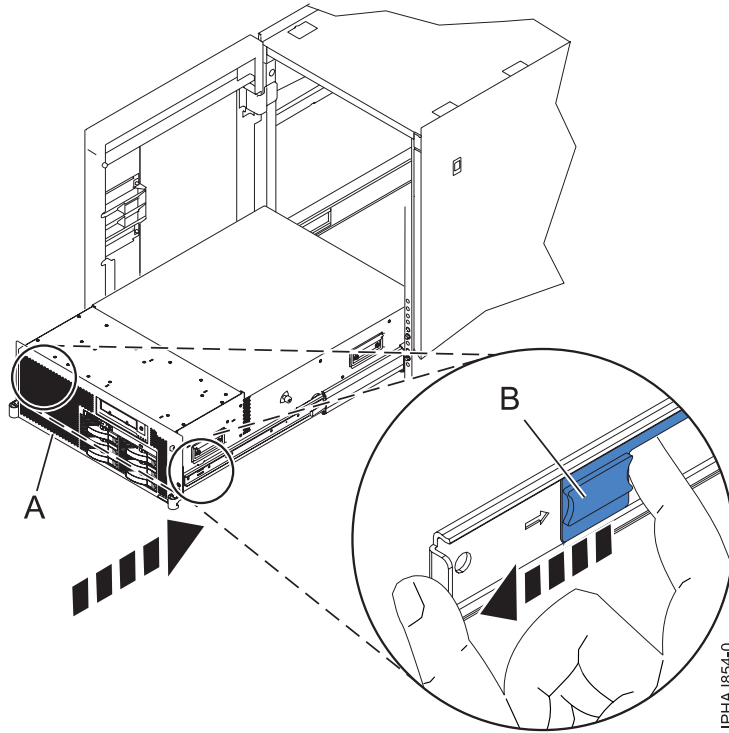
Use this procedure to place the rack-mounted system or expansion unit in the operating position to make the unit available for use.

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.

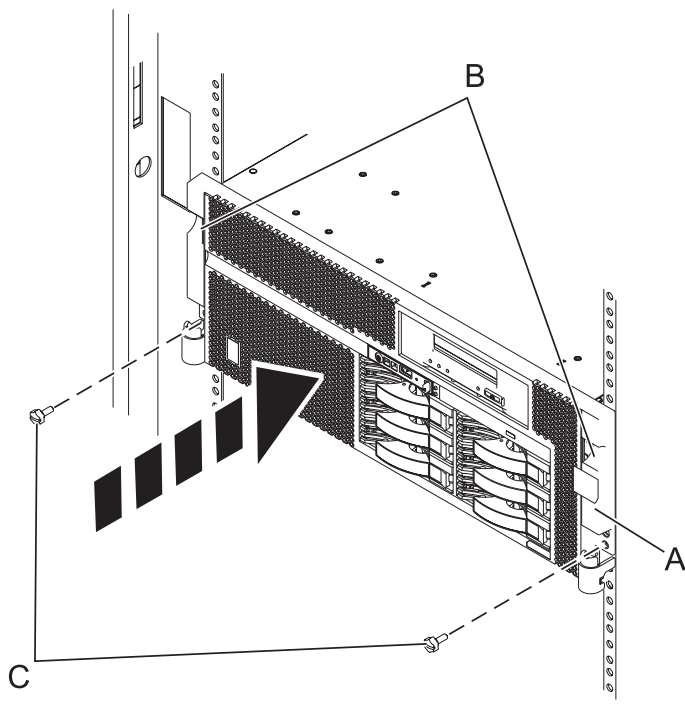
Note: Ensure that the cables at the rear of the system or expansion unit do not catch or bind as you push the unit back into the rack.



IPHAJ854-0

Figure 48. 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.



IPHAJ852-1

Figure 49. Replacing the thumbscrews

3. Close the front rack door.

Chapter 14. Viewing existing firmware levels

Find out how to view the level of firmware that currently runs on your server.

You can view the current and backup levels of server firmware on the managed system.

Using the HMC to view the existing firmware levels

Learn how to view the level of firmware that currently runs on your server using the HMC.

1. In the Navigation area, click **Updates**.
2. Ensure that the managed system Status is Power Off, Standby, or Operating.
3. Record the level that appears in the EC Number field. For example, 01EM310.

Using the ASMI to view the existing level of server firmware

Find out how to use the ASMI to view the level of firmware that currently runs on your server.

On the ASMI Welcome pane, view the existing level of server firmware in the upper-right corner below the copyright statement, for example, 01EM310.

Chapter 15. Installing a feature using the Hardware Management Console

You can use the Hardware Management Console to perform many service actions, including the installation of a new feature or part.

To use the Hardware Management Console user interface to install a feature or part into a system or expansion unit that is managed by an HMC, follow these steps:

1. In the navigation area, expand **Systems Management** → **Servers**.
2. Select the managed system you will install the part in.
3. In the Tasks area expand **Serviceability** → **Hardware**.
4. Select **Add FRU** (field replaceable unit).
5. In the Add/Install/Remove Hardware window select the system or enclosure into which you are installing the feature.
6. Select the type of feature you are installing from the menu and click **Next**
7. Select the location code for where you will install the feature, and click **Add**.
8. After the FRU is placed in the **pending actions** category click **Launch Procedure** and follow the instructions to install the feature.

Note: The HMC might open external instructions for installing the feature. If so, follow those instructions to install the feature.

Removing a part using the Hardware Management Console

You can use the Hardware Management Console (HMC) to perform many service actions, including the removal of a field replaceable unit (FRU) or part.

To use the Hardware Management Console user interface to remove a part in a system or expansion unit that is managed by an HMC, follow these steps:

1. In the navigation area, expand **Systems Management** → **Servers**.
2. Select the managed system from which you are removing a part.
3. In the Tasks area, expand **Serviceability** → **Hardware**.
4. Select **Remove FRU**.
5. In the Add/Install/Remove Hardware - Remove FRU, Select FRU Type window, select the system or enclosure from which you are removing the part.
6. Select the type of part you are removing from the menu and click **Next**.
7. Select the location of the part you are removing and click **Add**.
8. After the part is listed in the **Pending Actions** display click **Launch Procedure** and follow the instructions to remove the part.

Note: The HMC might open the information center instructions for removing the part. If so, follow those instructions to remove the part.

Exchanging a part using the Hardware Management Console

You can use the Hardware Management Console (HMC) to perform many service actions, including exchanging a field replaceable unit (FRU) or part.

If you are exchanging a part to repair a serviceable event follow those instructions. If you are exchanging a part as a part of any other procedure using HMC Version 7 or later use these steps:

1. In the navigation area, expand **Systems Management** → **Servers**.
2. Select the managed system in which you are exchanging a part.
3. In the Tasks area expand **Serviceability** → **Hardware**.
4. Select **Exchange FRU**.
5. In the Replace Hardware - Replace FRU, Select FRU Type window select the system or enclosure in which you will exchange a part from the list.
6. Select the type of part you will exchange from the menu and click **Next**.
7. Select the location code of the part you will exchange from the menu and click **Add**.
8. After the FRU is placed in the **pending actions** category click **Launch Procedure** and follow the instructions to exchange the feature.

Note: The HMC might open external instructions for replacing the part. If so, follow those instructions to replace the part.

Chapter 16. Hardware Service Manager — Verify

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 “Using the HMC to perform a slow boot” on page 100.
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 reseal 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 on page 100.

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 on page 100.

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” on page 101.

Using the HMC to perform a slow boot

Learn how to perform a slow boot using the HMC.

In some cases, you need to perform a slow-mode boot in order to perform extended diagnostic testing.

Note: A slow-mode boot might yield a new reference code on the control panel, or new errors in the service processor error log. When the server reports a new error code, record it for use in subsequent steps.

1. Record any reference codes appearing on the control panel or HMC. For details, see Collecting reference codes and system information.
2. Shut down all logical partitions and the server.
3. In the navigation area, select **Systems Management** → **Servers**.
4. Select the server you want to perform a slow boot on.
5. In the **Tasks** portion of the content area, select **Properties**.
6. Click the **Power-On Parameters** tab.
7. Record the current boot setting in the Power-on speed override box.
8. Select **slow** in the Power-on speed override list.

Note: These settings will apply to all future boots. After you complete the service action, change the settings back to what you recorded in step 7.

9. Click **OK**.
10. After you are done, return to the step in the procedure that caused you to perform a slow boot. **This ends the procedure.**

Using the control panel to collect reference codes and system information

When selected, functions 11 - 20 on the control panel display reference codes and system information.

Note: Ensure you have a printed copy of the appropriate problem reporting form to document the information you collect here.

To collect reference codes and system information using the control panel, perform the following steps:

1. On the control panel, press the increment button until function 11 is shown on the function/data display.
2. Press the middle button.
3. Record the data.
4. Repeat steps 1 - 3 for functions 12 - 20, until you have recorded the machine type, model, and serial number shown by function 20.

Notes:

1. If 11 is shown in the function/data display on the control panel display, the numbers that follow are the reference codes.
2. If a number other than 11 is shown in the function/data display, the number might not indicate a problem with the system. These reference codes might indicate functions you select from the control panel display.

3. If you have a console with type and reference code columns on it, record the data under the type column as the first 4 characters of function 11 on the problem reporting form. If an A, B, C, or D is displayed as the first character in the type column, use the data in the reference code column as the last 4 characters of function 11.

Changing service indicators

Turn off the system attention indicator, enable enclosure indicators, change indicators by location code, and perform an LED test on the control panel.

The service indicators alert you that the system requires attention or service. It also provides a method for identifying a field-replaceable unit (FRU) or a specific enclosure within the system.

A hierarchical relationship exists between FRU indicators and enclosure indicators. If any FRU indicator is in an *identify* state, then the corresponding enclosure indicator will change to an *identify* state automatically. You cannot turn off the enclosure indicator until all FRU indicators within that enclosure are in an *off* state.

Turning off the system attention indicator

The system attention indicator provides a visual signal that the system as a whole requires attention or service.

Each system has a single system attention indicator. When an event occurs that either needs your intervention or that of service and support, the system attention indicator lights continuously. The system attention indicator is turned on when an entry is made in the service processor error log. The error entry is transmitted to the system level and operating system error logs.

To perform this operation, your authority level must be one of the following:

- Administrator
- Authorized service provider

To turn off the system attention indicator, do the following:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** and **Service Indicators**.
3. Select **System Attention Indicator**.
4. In the right pane, click **Turn off system attention indicator**. If the attempt is unsuccessful, an error message is displayed.

Verifying the presence of an installed part on an IBM i system or logical partition

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

To verify the presence of an installed part follow these steps:

1. Deactivate the failing item indicator light. For instructions, see “Deactivating the failing-part indicator light” on page 51.
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” on page 103.

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 without an HMC” on page 43 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.
 - f. Go to step 5.
4. Turn on the system unit power and immediately insert the diagnostics CD-ROM into the optical drive.
 5. 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.
 6. Enter any requested password.
 7. 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..

8. If the terminal type is requested, select the **Initialize Terminal** option on the Function Selection menu to initialize the operating system.
9. From the Function Selection menu, select **Advanced Diagnostics Routines** and press Enter.
10. From the Diagnostic Mode Selection menu, select **System Verification** and press Enter.
11. 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.
12. Did the Testing Complete, No trouble was found message appear?
 - **No:** There is still a problem. Contact your service provider.
 - **Yes:** Go to step 13.
13. 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.
14. 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.

Running stand-alone diagnostics from a Network Installation Management server

If you have AIX installed but it cannot be started or you have Linux installed, you can run the diagnostics from a Network Installation Management (NIM) server.

Note: Only perform this procedure if you are directed to by another procedure or by your next level of support.

Diagnostics, which are available for systems and logical partitions running in the AIX or Linux environments, can help you perform hardware analysis. If a problem is found, you will receive a service request number (SRN) that can help identify the problem and determine a corrective action.

A client system connected to a network with a NIM server can boot stand-alone diagnostics from the NIM server if the client-specific settings on both the NIM server and client are correctly configured.

Notes:

- For NIM clients that have adapters that would typically require supplemental media to be installed when stand-alone diagnostics are run from CD, the support code for these adapters must be installed into the directory pointed to by the NIM SPOT from which you want to boot that client. Before running stand-alone diagnostics on these clients from the NIM server, the NIM server system administrator must ensure that support for these devices is installed on the server.
- All operations for configuring the NIM server require root user authority.
- If you replace the network adapter in the client, the network adapter hardware address settings for the client must be updated on the NIM server.
- Ensure that the **Cstate** for each stand-alone diagnostics client on the NIM server is kept in the *diagnostic boot has been enabled* state.
- On the client system, the NIM server network adapter should be put in the bootlist after the boot disk drive. This allows the system to boot in stand-alone diagnostics from the NIM server if there is a problem booting from the disk drive.

Configuring the NIM server

For information about performing the following tasks, refer to the "Performing advanced NIM configuration tasks" topic in the *AIX Installation and Migration* guide. The guide is available at <http://publib.boulder.ibm.com/infocenter/pseries/v5r3/topic/com.ibm.aix.install/doc/insgdrf/insgdrf.pdf>.

- Registering a client on the NIM server
- Enabling a client to run diagnostics from the NIM server

To verify that the client system is registered on the NIM server and the diagnostic boot is enabled, run this command from the command prompt on the NIM server: `lsnim -a Cstate -z ClientName`. Refer to the following table for system responses.

Note: The *ClientName* is the name of the system on which you want to run stand-alone diagnostics.

Table 4. Verification that the client system is registered on the NIM server and the diagnostic boot is enabled

System response	Client status
#name:Cstate:ClientName:diagnostic boot has been enabled:	The client system is registered on the NIM server and enabled to run diagnostics from the NIM server.
#name:Cstate:ClientName:ready for a NIM operation: or #name:Cstate:ClientName:BOS installation has been enabled:	The client is registered on the NIM server but not enabled to run diagnostics from the NIM server. Note: If the client system is registered on the NIM server but Cstate has not been set, no data will be returned.
0042-053 lsnim: there is no NIM object named "ClientName"	The client is not registered on the NIM server.

Configuring the client and running the stand-alone diagnostics from a NIM server

Perform the following steps to run stand-alone diagnostics on a client from the NIM server:

1. Inform the system administrator and system users that the system unit might be shut down.
2. Stop all programs including the AIX or Linux operating system. If you need help, contact the system administrator.
3. Remove all tapes, diskettes, and CDs.
4. Choose from the following options:
 - If you are running stand-alone diagnostics in a full system partition profile, verify with the system administrator and system users that the system can shut down using the shutdown command. Then power down the system.
 - If you are running on a logical partition, make sure the CD drive is available to the partition used to run stand-alone diagnostics. Verify with the system administrator and system users using that partition that all applications on that partition must be stopped, and that the partition will be restarted. Stop all programs on that partition, including the operating system.
5. Choose from the following options:
 - If you are in a full system partition, power on the system to run stand-alone diagnostics.
 - If you are in a logical partition, restart the partition to run stand-alone diagnostics.
6. When the keyboard indicator is displayed (the word *keyboard* on an HMC virtual terminal window or the keyboard icon on a graphical display) type 1 to display the SMS menus.
7. Enter any requested passwords.
8. Select **Set Up Remote IPL** (initial program load).
9. Enter the client address, server address, gateway address, if applicable, and subnet mask. If there is no gateway between the NIM server and the client, set the gateway address to 0.0.0.0.
To determine if there is a gateway, either ask the system network administrator or compare the first three octets of the NIM server address and the client address. If they are the same, (for example, if the NIM server address is 9.3.126.16 and the client address is 9.3.126.42, the first three octets (9.3.126) are the same), then set the gateway address in the **remote IPL field** to 0.0.0.0.
10. If the NIM server is set up to allow pinging from the client system, use the ping test option in the remote IPL option to verify that the client system can ping the NIM server.
11. Under the ping test option, choose the network adapter that provides the attachment to the NIM server to do the ping operation. If the ping returns with an OK prompt, the client is prepared to boot from the NIM server. If ping returns with a FAILED prompt, the client cannot proceed with the NIM boot.

Note: If the ping fails, refer to the "Troubleshooting NIM" topic in the *AIX Installation and Migration* guide.
12. Return to the SMS main menu.
13. Select **Select Boot Options** → **Install or Boot a Device** → **Network**.
14. Record the current bootlist settings so that you can set the bootlist back to the original settings after running diagnostics from the NIM server.
15. Change the bootlist so the network adapter attached to the NIM is first in the bootlist.
16. Set the network parameters for the adapter from which you want to boot.
17. Exit completely from SMS. The system will start loading packets while doing a BOOTP operation from the network.
18. Follow the on-screen instructions.
 - If Diagnostic Operating Instructions Version *x.x.x* is displayed, stand-alone diagnostics have booted successfully. Continue with step 20 on page 106.
 - If the AIX login prompt displays, stand-alone diagnostics did not load. Continue with step 19.
19. If the diagnostics did not load, check the following items:
 - Ensure that the bootlist on the client is correct.

- Ensure that the **Cstate** on the NIM server is correct.
 - Verify that you do not have network problems that might be preventing you from connecting to the NIM server.
 - Verify the settings and the status of the network. If you continue to have problems, refer to the "Troubleshooting NIM" topic in the *AIX Installation and migration* guide.
20. After running diagnostics, restart the system and use SMS to change the IP settings and bootlist sequence back to the original settings.

Verifying the presence of 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 the presence of 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" on page 108 for details.
2. Are there any service action events that are open?
 - No:** If the system attention 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" on page 107
- "Activating or deactivating identify LED" on page 107

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 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. 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 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 "Using the HMC to perform a slow boot" on page 100.
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.

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 on page 111.

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.**

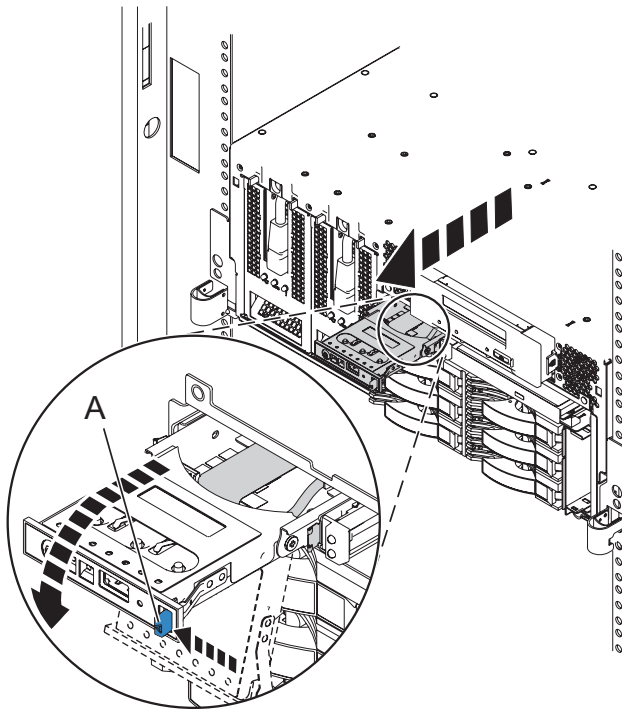
- Yes:** Go to step 12.
12. Are the indicator lights still on?
- **No. This ends the procedure.**
 - **Yes.** Turn off the lights. See one of the following for instructions: “Changing service indicators” on page 101

Chapter 17. Accessing control panels for the 8204-E8A, 8203-E4A, 9407-M15, 9408-M25, or 9409-M50

Only part of the control panel is visible from the front of the serve. You might want to gain access to all of the control panel's features, including the display.

To access all of the control panel's features, complete the following steps:

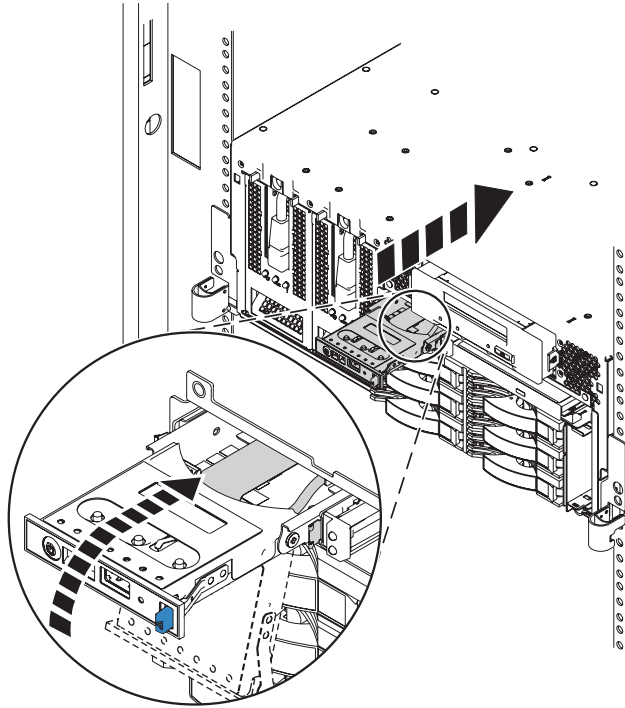
1. Press inward on the spring-loaded tab (A) located on the right side of the control panel so that it pops out slightly, as shown in the following figure.



IPHAJ870-0

Figure 50. Opening the control panel

2. Pull the control panel out, toward the front of the system, until it can be pivoted downward on its hinge.
3. To move the control panel back into the device enclosure, lift the control panel up to align it with the opening and push it into place until you feel the tab lock, as shown in the following figure.



IPHAJ871-0

Figure 51. Placing the control panel back into the enclosure

Chapter 18. Replacing the 5802 I/O planar

If you removed the I/O planar as a part of another procedure, you might need to use the procedure in this section to replace the planar.

To remove the I/O planar, see Chapter 19, “Removing the 5802 I/O planar,” on page 117.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the I/O planar in the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to replace the I/O planar:

1. Perform the prerequisite tasks as described in Chapter 5, “Before you begin,” on page 39.
2. Carefully lift and align the I/O planar with the slot at the back of the expansion unit.
3. Insert the I/O planar firmly into the server, as shown in the following figure.
4. Secure the I/O planar with the locking tabs (A) as shown in the following figure.

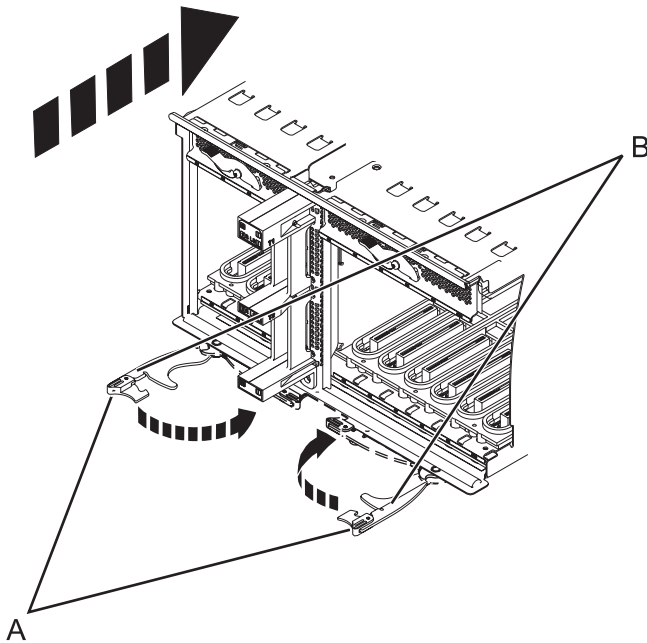


Figure 52. Install the I/O planar on a rack mounted model

If you are replacing the I/O planar as a part of another procedure, return to that procedure now.

If you are replacing the I/O planar to repair a failed unit, you can now reinstall the adapters and resume operation. For instructions, see Model 5802 and 5877 expansion units, PCI adapters, and cassettes.

Chapter 19. Removing the 5802 I/O planar

Use the procedure in this section to remove the I/O planar from the expansion unit.

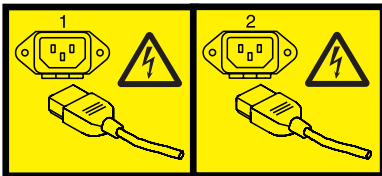
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the I/O planar from the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to remove the I/O planar:

1. Perform the prerequisite tasks described in Chapter 5, “Before you begin,” on page 39.
2. Do one of the following steps as appropriate:
 - If you are removing the I/O planar for a system upgrade or as part of another procedure, continue to step 3.
 - If you are removing the I/O planar because of a system failure, use the service action log to help identify the failing part. See Chapter 7, “Service action log,” on page 49.
3. Stop the system. For instructions, see “Stopping a system or logical partition” on page 57.
4. Disconnect the power source from the system by unplugging the system.

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

(L003)



or



5. Disconnect the cables from the back of the I/O planar.

6. If you need to replace the I/O planar because of an upgrade or system failure, remove the adapters from the I/O planar. For instructions, see Model 5802 and 5877 expansion units, PCI adapters, and cassettes.
7. Squeeze the release latches (**A**) and pull the levers (**B**) out away from the system, as shown in the following figure.

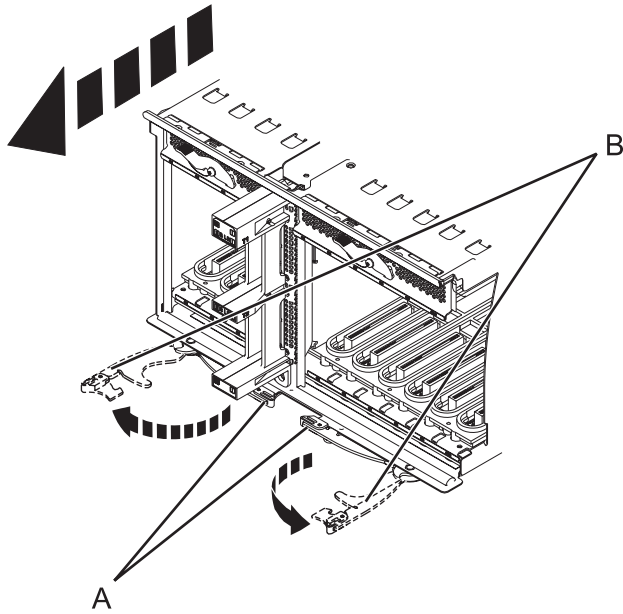


Figure 53. Removing the I/O planar

8. Slide the planar out of the system.

Chapter 20. Removing the 5802 enclosure management controller

You might need to remove the enclosure management controller from the server to complete a repair or as a part of another service procedure.

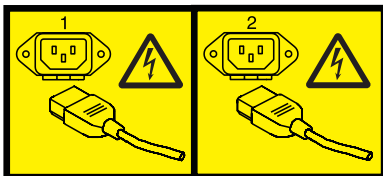
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the enclosure management controller from the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to remove the enclosure management controller:

1. Perform the prerequisite tasks as described in Chapter 5, “Before you begin,” on page 39.
2. Complete one of the following choices as appropriate:
 - If you are removing the enclosure management controller for a system upgrade or as part of another procedure, continue to the next step.
 - If you are removing the enclosure management controller because of a system failure, use the service action log to help identify the failing part. For instructions, see Chapter 7, “Service action log,” on page 49.
3. Stop the system. For instructions, see “Stopping a system or logical partition” on page 57.
4. Disconnect the power source from the system by unplugging the system.

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

(L003)



or



5. Disconnect and label the cables from the enclosure management controller.
6. Squeeze in on the latch **(B)** and pull the lever **(A)** away from the system as shown in the following figure.

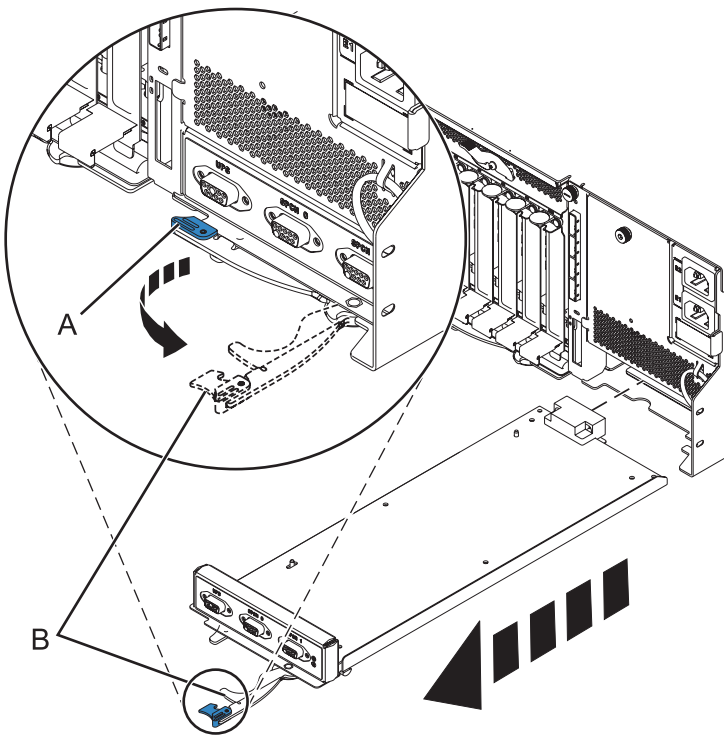


Figure 54. Removing the enclosure management controller from the system

7. Pull the enclosure management controller out of the system.
 - If you removed the enclosure management controller as a part of another procedure, continue with that procedure.
 - To replace the enclosure management controller or install a new controller, see Chapter 21, “Replacing the 5802 enclosure management controller,” on page 121.

Chapter 21. Replacing the 5802 enclosure management controller

If you removed the enclosure management controller as part of another procedure, use the procedure in this section to replace the enclosure management controller.

To remove the enclosure management controller, see Chapter 20, “Removing the 5802 enclosure management controller,” on page 119.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the enclosure management controller in the server. For instructions, see “Exchanging a part using the Hardware Management Console” on page 95.

If you do not have an HMC, complete the following steps to replace the enclosure management controller:

1. Perform the prerequisite tasks as described in Chapter 5, “Before you begin,” on page 39.
2. Carefully slide the enclosure management controller into the system and close the latch (A) as shown in the following figure.

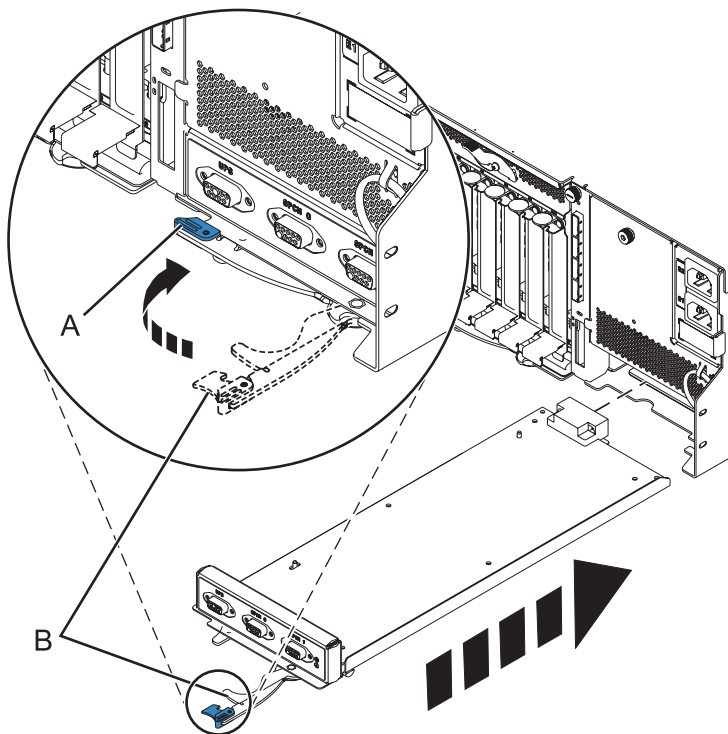


Figure 55. Replacing the enclosure management controller

3. Start the system. For instructions see, “Starting the system or logical partition” on page 53.
4. Verify the installed part. For instructions, see Chapter 16, “Hardware Service Manager — Verify,” on page 97.

Chapter 22. Converting a 8203-E4A, 9407-M15 or, 9408-M25 from a stand-alone to a rack-mounted system

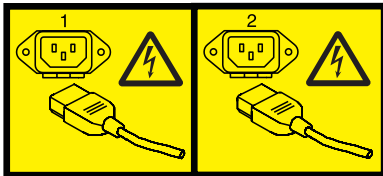
Use these procedures to convert a stand-alone system to a rack-mounted system.

Perform the prerequisite tasks as described in Chapter 5, "Before you begin," on page 39.

1. Stop the system. For instructions, see "Stopping a system or logical partition" on page 57.
2. Disconnect the power source from the system by unplugging the system.

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

(L003)



or



Removing the front cover from the stand-alone 8203-E4A, 8204-E8A, 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.

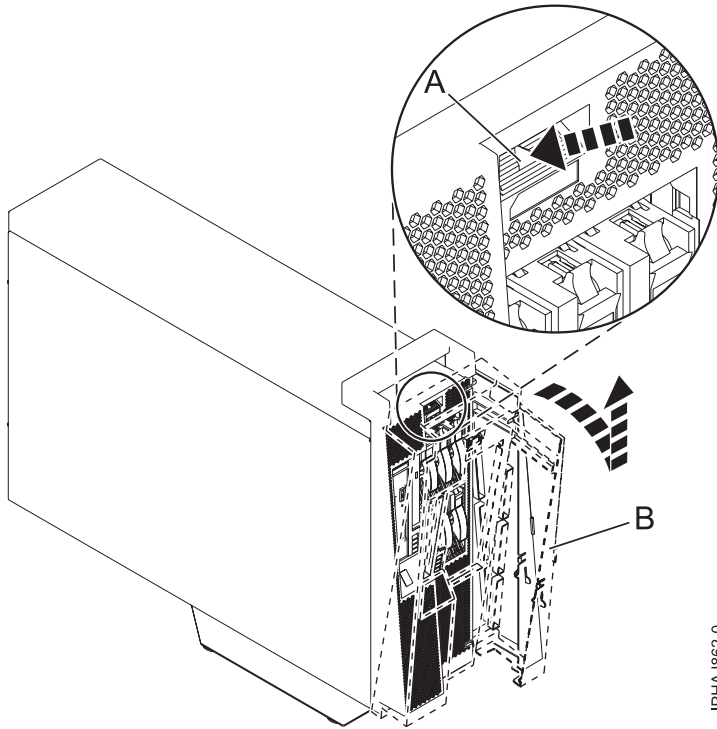


Figure 56. Remove the door from the model

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

Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 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.

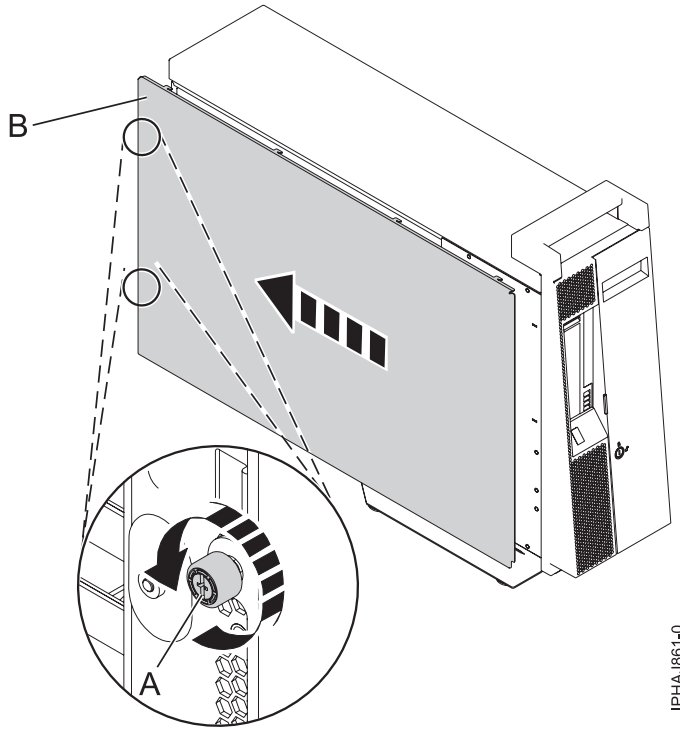


Figure 57. Removing the service access cover from the stand-alone model

Removing the covers and base plate

To convert the model to a rack-mounted model or to ship the system, you must remove the covers and base plate.

1. Remove the plastic insert on the back of the handle by pushing a flat-head screwdriver into the slot in the middle of the metal handle and pulling the plastic insert out from the same side.
2. Pull the cover back from the rear of the system, then pull the side panel out slightly, and lift the cover up and away from the system.
3. Remove the handle from the system by removing the four screws and lifting the handle away from the system.
4. Rotate the system until the base plate is facing up.

Attention: Be careful when you turn the system as it is heavy and system damage can occur if it is dropped. Additionally, ensure the system is standing on a flat, secure surface so that it does not tip and fall when removing the base plate.
5. Remove the four screws from the bottom of the base, and lift the base away from the system.
6. Place the system down flat with the exposed side facing up.
7. Attach the four lift handles by placing them into the indented spaces and securing them with the two screws.
8. Place the system on a safe surface to complete the conversion, or packing process.

Completing the conversion

You must remove and replace several other parts to complete the conversion from a stand-alone to a rack-mounted system. Some of the figures in this section represent the rack-mounted version; however, the procedures are the same for the stand-alone model.

1. Unlock the control panel by pressing release button (A), and then pull it out of the system as shown in the following figures. Remove the control panel by pressing the locking tabs (C) located on either side of the panel, grasping the edges of the panel, and pulling it out of its bay.

Attention: Disconnect the control-panel signal cable (B) from the back of the control panel.

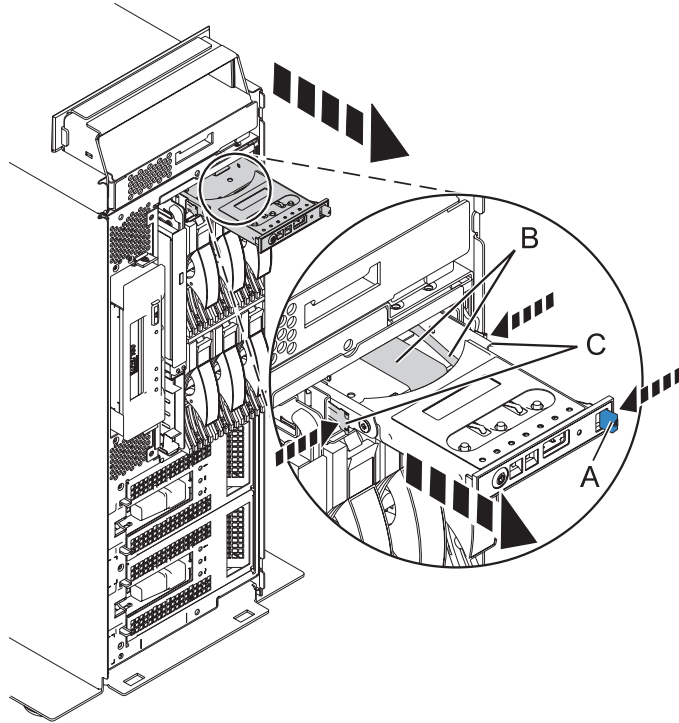


Figure 58. Removing the control panel from a stand-alone system

2. Press the retaining tab (A) away from the Slimline media device, until it unseats the device as shown in the following figure.

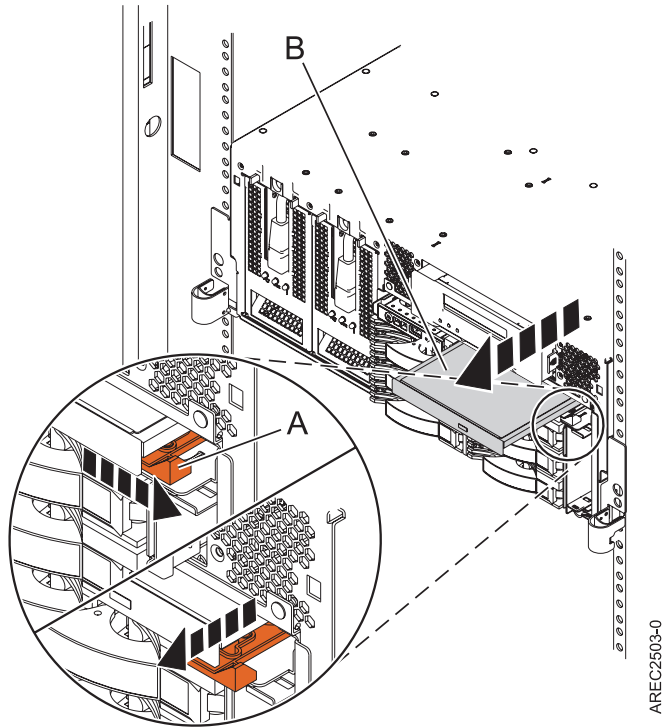


Figure 59. Removing the Slimline media device

3. Pull the Slimline media device **(B)** away from the system.
4. Remove the service access cover. For instructions, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50” on page 74.
5. Remove the fans or the airflow cover by doing one of the following steps:
 - a. Remove the airflow cover **(B)** by lifting each of the four tabs **(A)** to release the cover and lifting the cover from the system, as shown in the following figure.

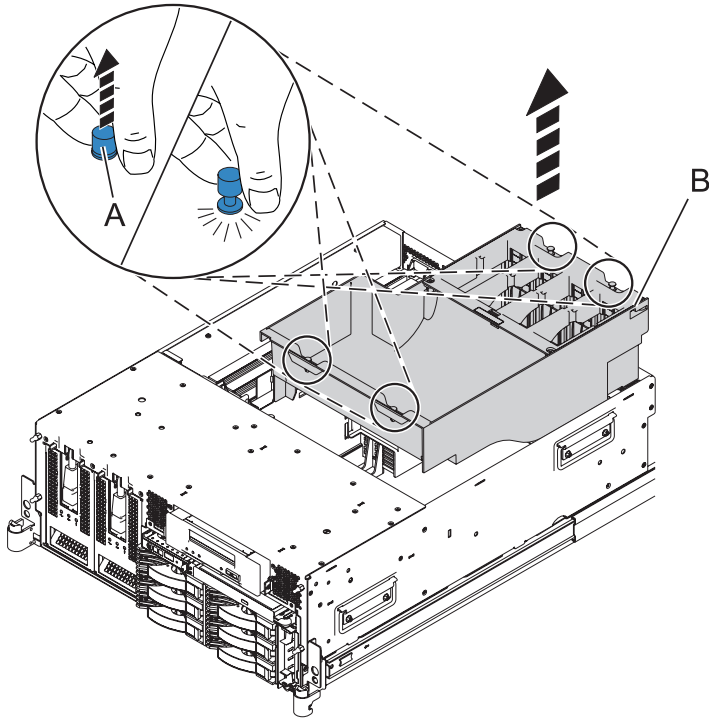


Figure 60. Removing the airflow cover

6. Disconnect the cables from the back of the disk drive backplane, as shown in the following figure.

Note: Ensure that you have disconnected all cables from the backplane. Some of the cables might not be shown in the following figure.

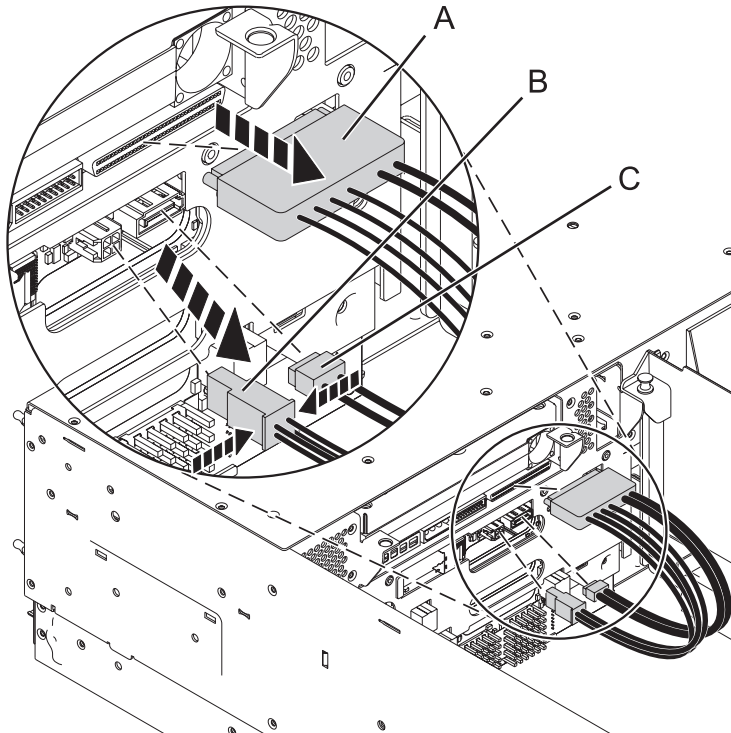


Figure 61. Removing media device cables

7. Remove the disk drives from the backplane.

CAUTION:

If you remove a backplane that is populated with disk drives, the backplane will be heavy. Ensure that you can safely complete the procedure.

- a. Lift the lever (A) to unseat the disk drive.
- b. Place one hand under the disk drive and carefully pull the drive out of the system as shown in the following figure.

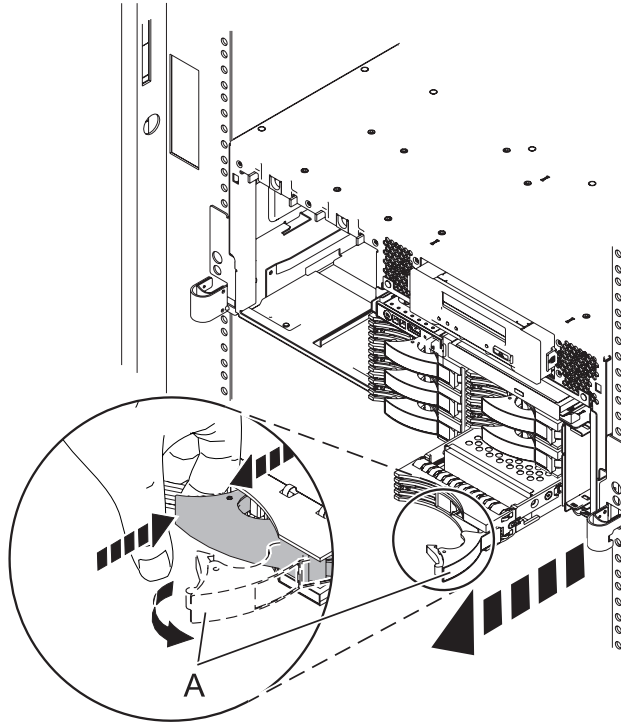


Figure 62. Remove disk drives

8. Unlock the disk drive backplane by pulling the handles open from the center of the backplane, as shown in the following figure.
9. Pull the backplane out of the server, as shown in the following figures.

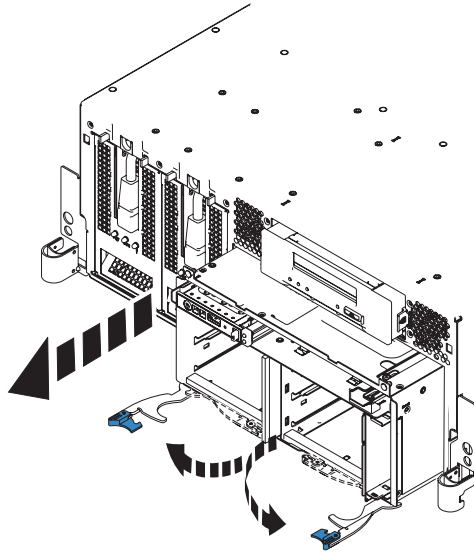


Figure 63. Removing the populated disk drive backplane

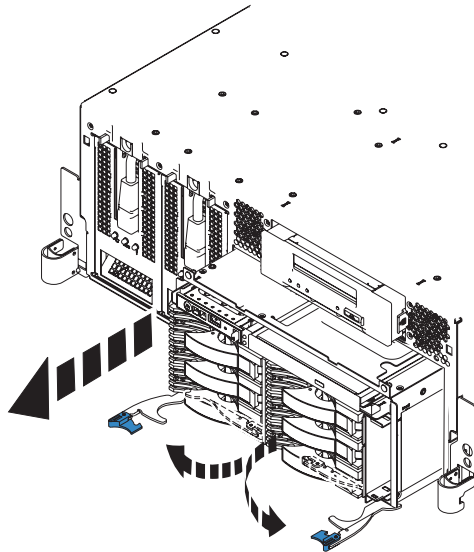


Figure 64. Removing the unpopulated disk drive backplane

10. Remove the control signal cable from the old backplane and install it in the new backplane, then return to these instructions. For instructions see Removing and replacing the 8203-E4A, 8204-E8A, 9407-M15, 9408-M25, or 9409-M50 control-panel signal cable.
11. Carefully align the backplane with the slot in the server.
12. Insert the backplane firmly into the server, as shown in the following figures.
13. Secure the backplane with the locking tabs.

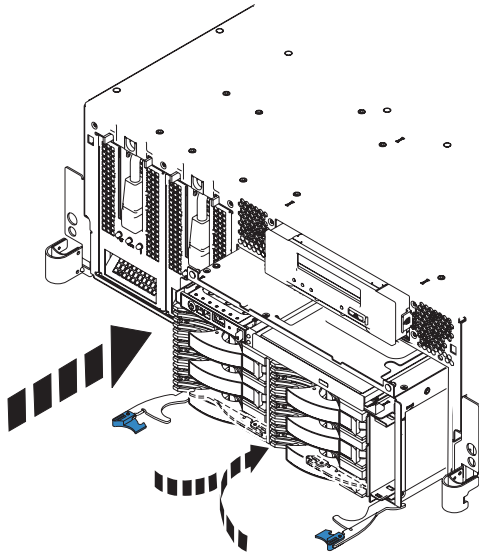


Figure 65. Installing the populated disk drive backplane on a rack-mounted model

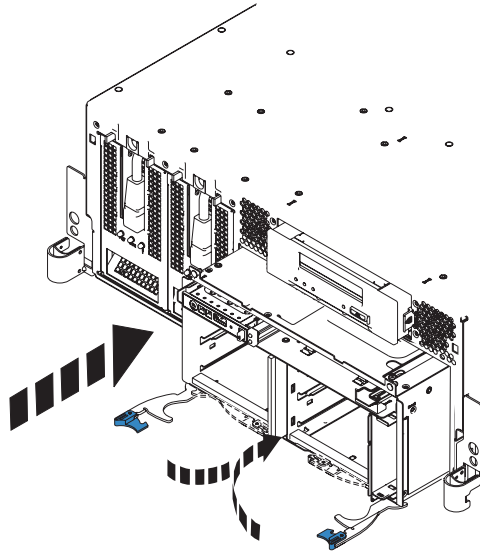


Figure 66. Installing the unpopulated disk drive backplane on a rack-mounted model

14. Install the control panel, if you have not already done so, by doing the following steps:
 - a. Carefully slide the control panel into the control panel bay until you feel the locking tabs lock in place.

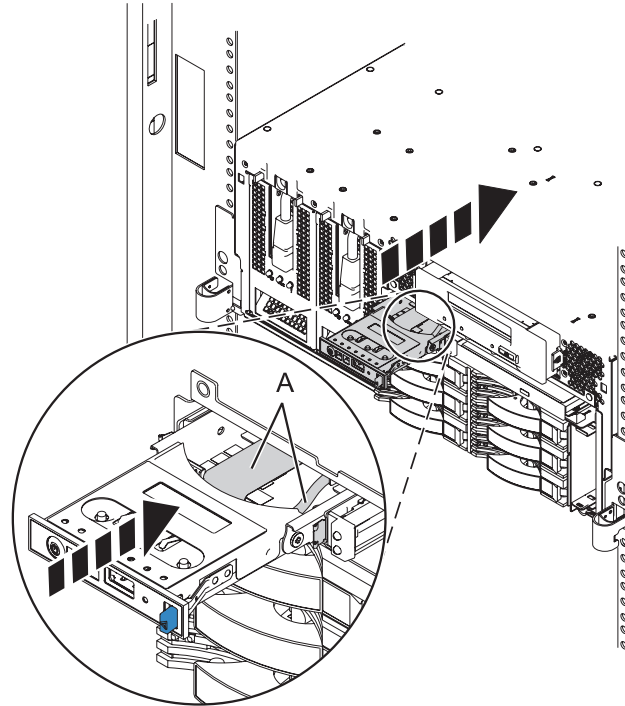


Figure 67. Replacing the control panel in a rack-mounted system

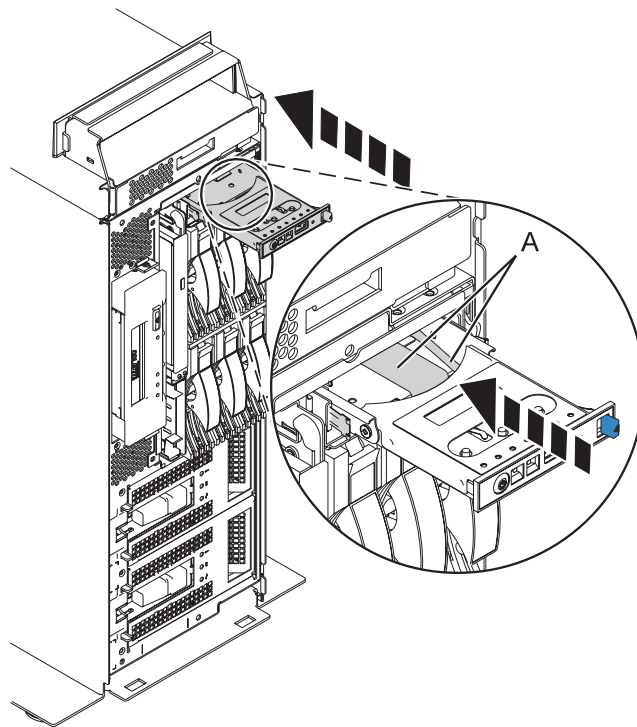


Figure 68. Replacing the control panel in a stand-alone system

15. Align the media device with the Slimline media bay, and support the bottom of the device as you slide it halfway into the system.

16. While holding the plastic retaining tab (B), push the device (A) fully into the system, as shown in the following figure.

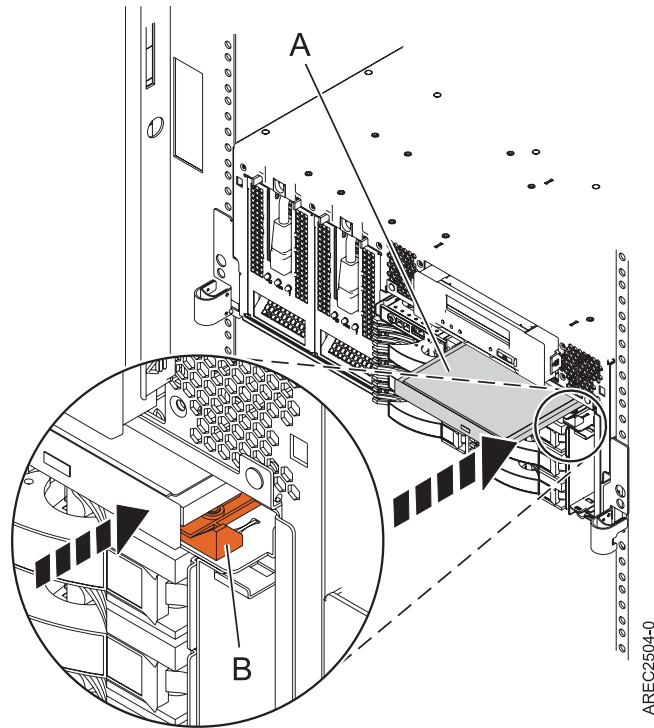


Figure 69. Installing the Slimline media-device

17. Attach the four front-cover mounting pins into the open holes at the edges of the front of the system. Use the wrench that is provided to tighten the mounting pins.

The conversion is now complete. Install the converted system into the rack. For instructions see, Road map to installing the IBM Power 520 Express™.

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