



Power Systems
Memory modules





Power Systems
Memory modules

Note

Before using this information and the product it supports, read the information in “Notices,” on page 149, “Safety notices” on page vii, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

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

© Copyright IBM Corporation 2007, 2009.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Safety notices	vii
Memory modules	1
Chapter 1. What's new in Memory modules	3
Chapter 2. 8234-EMA, 9117-MMA, or 9406-MMA memory modules	5
Installing 8234-EMA, 9117-MMA, or 9406-MMA memory modules	5
Preparing an 8234-EMA, 9117-MMA, or 9406-MMA before installing memory modules	6
Determining memory slot locations for processor features 5620, 5622, 7380, 7387, 7388, and 7540	7
Determining memory slot locations for processor feature 5621	9
Installing 8234-EMA, 9117-MMA, or 9406-MMA memory modules	10
Completing the procedure for installing 8234-EMA, 9117-MMA, or 9406-MMA memory modules.	12
Removing 8234-EMA, 9117-MMA, or 9406-MMA memory modules.	13
Preparing an 8234-EMA, 9117-MMA, or 9406-MMA before removing memory modules	13
Removing memory modules from an 8234-EMA, 9117-MMA, or 9406-MMA.	15
Replacing 8234-EMA, 9117-MMA, or 9406-MMA memory modules	18
Preparing the system and replacing memory modules in an 8234-EMA, 9117-MMA, or 9406-MMA	18
Completing the procedure for replacing memory modules in an 8234-EMA, 9117-MMA, or 9406-MMA.	20
Chapter 3. 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules	23
Installing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules	23
Removing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules.	30
Replacing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules.	33
Chapter 4. 8204-E8A or 9409-M50 memory modules	37
Installing 8204-E8A or 9409-M50 memory modules	37
Removing 8204-E8A or 9409-M50 memory modules	41
Replacing 8204-E8A or 9409-M50 memory modules	43
Chapter 5. Common procedures for installable features	47
Before you begin	47
Identifying a failing part	49
Identifying a failing part on an AIX system or logical partition	49
Locating a failing part on an AIX system or logical partition	49
Activating the indicator light for the failing part	49
Identifying a failing part on an IBM i system or logical partition	50
Activating the failing-part indicator light	50
Deactivating the failing-part indicator light.	50
Identifying a failing part on a Linux system or logical partition	51
Locating a failing part on a Linux system or logical partition.	51
Finding the location code of a failing part in a Linux system or logical partition	51
Activating the indicator light for the failing part	51
Deactivating the failing-part indicator light.	51
Locating a failing part in a Virtual I/O Server system or logical partition.	51
Identifying a part using the Virtual I/O Server	52
Starting the system or logical partition	52
Starting a system that is not managed by a Hardware Management Console	52
Starting a system or logical partition using the Hardware Management Console	54
Starting a system or virtual server with the Systems Director Management Console	54
Stopping a system or logical partition	55
Stopping a system that is not managed by a Hardware Management Console	55
Stopping a system by using the Hardware Management Console	56
Stopping a system with the Systems Director Management Console	57

Disconnecting the SMP processor cable from a system	58
Reconnecting the SMP processor cable to a system	61
Removing and replacing covers and doors	64
Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	64
Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	65
Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	66
Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	67
Removing the front cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	68
Installing the front cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	69
Removing the door from the 8204-E8A or 9409-M50	70
Installing or replacing the door on the 8204-E8A or 9409-M50	70
Removing the front cover from the stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	70
Installing the front cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	71
Removing and replacing the front cover for the 8234-EMA, 9117-MMA, or 9406-MMA	72
Removing the front cover from the 8234-EMA, 9117-MMA, or 9406-MMA	72
Installing the front cover on the 8234-EMA, 9117-MMA, or 9406-MMA	73
Placing the rack-mounted system or expansion unit in the service position or operating position	74
Placing the rack-mounted system or expansion unit in the service position	74
Placing the rack-mounted system or expansion unit in the operating position	78
Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position	79
Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position	82
Installing a feature using the Hardware Management Console	84
Removing a part using the Hardware Management Console	84
Exchanging a part using the Hardware Management Console	84
Hardware service manager Verify option	85
Verifying an installed feature or replaced part on an AIX system or logical partition	85
Verifying an installed part on an IBM i system or logical partition	88
Deactivating the failing-part indicator light	88
Verifying the installed part on a Linux system or logical partition	89
Verifying an installed part using stand-alone diagnostics	89
Verifying an installed part using Hardware Management Console	90
Activating and deactivating LEDs	91
Deactivating a system attention LED or partition LED	91
Activating or deactivating identify LED	91
Viewing serviceable events	92
Verifying the installed part by using Systems Director Management Console	92
Activating and deactivating LEDs by using the SDMC	93
Deactivating a system attention LED or partition LED	93
Activating or deactivating identify LED by using the SDMC	93
Viewing serviceable events by using the IBM Systems Director Management Console	94
Verifying an installed feature or replaced part on a system or logical partition using Virtual I/O Server tools	94
Installing a part by using the Systems Director Management Console	97
Removing a part by using the Systems Director Management Console	97
Replacing a part by using the Systems Director Management Console	98
Converting the 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 from a stand-alone to a rack-mounted system	98
Removing the front cover from the stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	99
Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50	100
Removing the covers and base plate	100
Moving the control panel	101
Converting a 8203-E4A, 8261-E4S, 9407-M15, 9408-M25 from a rack mounted to a stand-alone system	123

Removing the front cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50.	124
Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position	125
Removing the 8203-E4A, 8261-E4S, 9407-M15, 9408-M25 from the rack	128
Moving the control panel	128
Attaching the base plate and handle.	146
Attaching the covers	146
Appendix. Notices	149
Trademarks	150
Electronic emission notices	150
Class A Notices.	150
Terms and conditions.	154

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 metalically 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 metalically 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.

Memory modules

Learn about installing, removing, or replacing memory modules in a server.

Chapter 1. What's new in Memory modules

Read about new or significantly changed information in Memory modules since the previous update of this topic collection.

October 2009

Added information about installing, removing, and replacing memory modules in an IBM Smart Cube (8261-E4S) server.

May 2009

The following updates have been made to the content:

- Added information about fan removal and replacement when installing, removing, and replacing memory modules in an 8203-E4A, 9407-M15, or 9408-M25 server
- Added information about removing and replacing the system processor assembly when installing, removing, and replacing memory modules in an 8204-E8A or 9409-M50 server

November 2008

The following updates have been made to the content:

- Added information about installing, removing, and replacing memory modules in an 8234-EMA server
- Added information about new memory module features for 8234-EMA, 9117-MMA, and 9406-MMA servers

Chapter 2. 8234-EMA, 9117-MMA, or 9406-MMA memory modules

Learn about installing, removing, or replacing dual inline memory modules (DIMMs) in an 8234-EMA, 9117-MMA, or 9406-MMA server.

If you are using a printed version of this topic collection, print the following topic collections as needed:

- Backplanes
- Control panels, control panel fillers, and signal cables
- System processor assembly
- Voltage regulators

Installing 8234-EMA, 9117-MMA, or 9406-MMA memory modules

Learn about installing memory modules in an 8234-EMA, 9117-MMA, or 9406-MMA server.

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see [IBM Prerequisite](#). If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see [Microcode downloads](#).
- To download Hardware Management Console (HMC) updates and fixes, see [Hardware Management Console Support and downloads](#).

If your system is managed by the HMC, see Table 1 on page 8 or Table 2 on page 10 for the order in which you must place the memory modules, and then use the HMC to complete the steps for installing memory modules. For information about using the HMC to install memory modules, see “Installing a feature using the Hardware Management Console” on page 84.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install memory modules in the server. For information about using the SDMC to install memory modules, see [Installing a feature by using the Systems Director Management Console](#).

If you do not have an HMC or SDMC, complete the following steps to install memory modules.

Related information

-  [IBM Prerequisite](#)
-  [Microcode downloads](#)
-  [Hardware Management Console Support and downloads](#)
-  [Backplanes](#)
-  [Control panels, control panel fillers, and signal cables](#)
-  [System processor assembly](#)
-  [Voltage regulators](#)

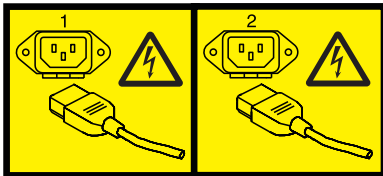
Preparing an 8234-EMA, 9117-MMA, or 9406-MMA before installing memory modules

Prepare the system before installing memory modules by completing the following steps:

1. Complete the prerequisite tasks described in “Before you begin” on page 47.
2. Stop the system, as described in “Stopping a system or logical partition” on page 55.
3. 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



4. Remove the front cover, as described in “Removing the front cover from the 8234-EMA, 9117-MMA, or 9406-MMA” on page 72.

5. Attach the wrist strap.

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. If necessary, disconnect the SMP processor cable from the system as described in “Disconnecting the SMP processor cable from a system” on page 58.
 7. Remove the control panel, as described in 8234-EMA, 9117-MMA, or 9406-MMA control panel.
 8. Remove the voltage regulator assembly, as described in Removing the 8234-EMA, 9117-MMA, or 9406-MMA voltage regulator assembly with power off.
 9. Remove the system backplane, as described in Removing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane. Skip any steps that you have already completed.
 10. Remove the system processor assembly cover (A) by unlocking the two retention knobs (B) and pulling back and lifting up the cover, as shown in Figure 1.

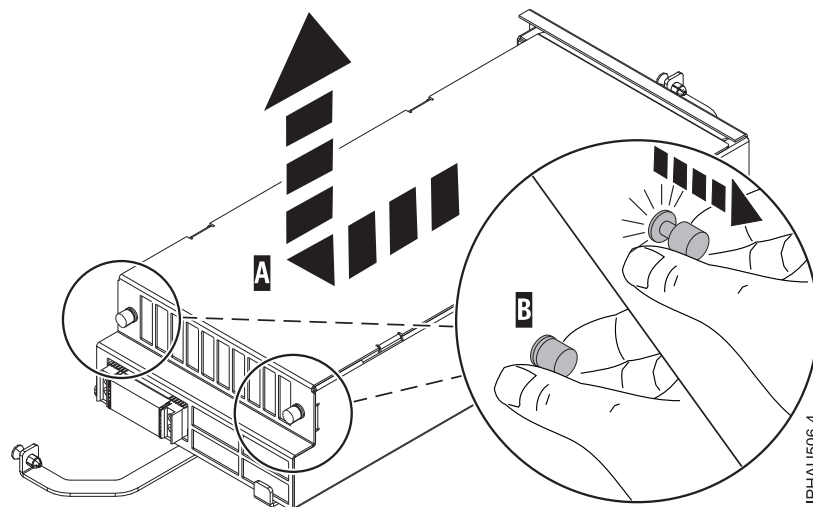


Figure 1. Removing the system processor assembly cover

11. If a plastic film cover is installed over the memory modules, remove the cover.
12. If necessary, remove memory modules from the processor card assembly as described in “Removing 8234-EMA, 9117-MMA, or 9406-MMA memory modules” on page 13
13. Remove the memory module filler, if one is present, by pushing the locking tabs out and then down. The lever action of the tabs forces the memory module filler out of the connector.

Determining memory slot locations for processor features 5620, 5622, 7380, 7387, 7388, and 7540

Determine the slots in which the memory modules will be placed.

Notes:

- All memory module configurations are ordered and installed with memory in groups of four (quads) in each processor assembly.
- A minimum of four memory modules is required in each processor assembly for proper system operation, and all four memory modules must be the same size.
- Every processor card must have at least 4 GB of memory installed.
- Each processor assembly has 12 memory module slots. See Figure 2 for the memory module slot locations in the processor assembly. The memory modules must be plugged into the slots in the following order:
 - Plug the first quad of memory modules into slots J0A, J0B, J0C, and J0D.
 - Plug the second quad of memory modules into slots J1A, J1B, J1C, and J1D.
 - Plug the third quad of memory modules into slots J2A, J2B, J2C, and J2D.

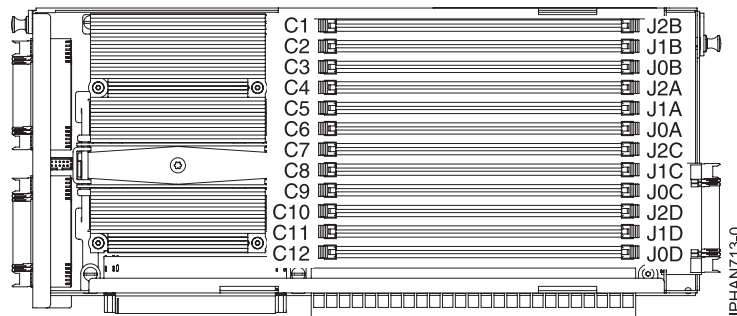


Figure 2. Memory module slot locations in the processor assembly for processor features 5620, 5622, 7380, 7387, 7388, and 7540

- A quad set of 8 GB memory modules cannot be mixed with memory modules of smaller size on a processor card.
- With the exception of the 8 GB and 16 GB memory modules, quads of memory can be mixed on a processor card. If the quads of memory are mixed, the memory will run at the lowest frequency of the installed memory.
- For a fully configured system, fill the quads according to the order shown in Table 1. When adding memory modules, begin with the first open quad. If the system is not fully configured, eliminate the appropriate number of enclosures and processor cards.

Table 1. Memory module plugging order for processor features 5620, 5622, 7380, 7387, 7388, and 7540

System unit	Slot locations for memory	Enclosure 1		Enclosure 2		Enclosure 3		Enclosure 4	
		Processor							
		1	2	3	4	5	6	7	8
Single-enclosure system	J0A, J0B, J0C, J0D	1							
	J1A, J1B, J1C, J1D	2							
	J2A, J2B, J2C, J2D	3							
Single-enclosure system	J0A, J0B, J0C, J0D	1	2						
	J1A, J1B, J1C, J1D	4	3						
	J2A, J2B, J2C, J2D	5	6						
Two-enclosure system	J0A, J0B, J0C, J0D	1	2	3	4				
	J1A, J1B, J1C, J1D	8	7	6	5				
	J2A, J2B, J2C, J2D	9	10	11	12				

Table 1. Memory module plugging order for processor features 5620, 5622, 7380, 7387, 7388, and 7540 (continued)

System unit	Slot locations for memory	Enclosure 1		Enclosure 2		Enclosure 3		Enclosure 4	
		Processor							
		1	2	3	4	5	6	7	8
Three-enclosure system	J0A, J0B, J0C, J0D	1	2	3	4	5	6		
	J1A, J1B, J1C, J1D	12	11	10	9	8	7		
	J2A, J2B, J2C, J2D	13	14	15	16	17	18		
Four-enclosure system	J0A, J0B, J0C, J0D	1	2	3	4	5	6	7	8
	J1A, J1B, J1C, J1D	16	15	14	13	12	11	10	9
	J2A, J2B, J2C, J2D	17	18	19	20	21	22	23	24

Determining memory slot locations for processor feature 5621

Determine the slots in which the memory modules will be placed.

Notes:

- All memory module configurations are ordered and installed with memory in groups of four (quads) in each processor assembly.
- A minimum of four memory modules is required in each processor assembly for proper system operation, and all four memory modules must be the same size.
- Every processor card must have at least 2 GB of memory installed.
- Each processor assembly has eight memory module slots. See Figure 3 for the memory module slot locations in the processor assembly. The memory modules must be plugged into the slots in the following order:
 - Plug the first quad of memory modules into slots J0A, J0B, J0C, and J0D.
 - Plug the second quad of memory modules into slots J1A, J1B, J1C, and J1D.

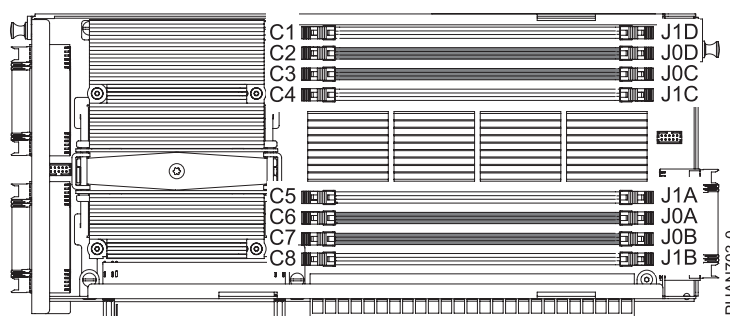


Figure 3. Memory module slot locations in the processor assembly for processor feature 5621

- Memory module features 4498 and 4499 cannot be mixed with memory modules of another type or frequency on a processor card. They must not be plugged next to any other 2 GB, 4 GB, 8 GB, or 16 GB quad set.
- Memory module features 4495, 4496, 4497, 4498, 4499, 7893, and 7894 are only supported on feature 5621 processor cards. They are not supported on feature 5620, 5622, and 7380 processor cards.
- Memory modules for processor feature 5621 cannot be mixed with memory modules of another type or frequency on a processor card.

- For a fully configured system, fill the quads according to the order shown in Table 2. When adding memory modules, begin with the first open quad. If the system not fully configured, eliminate the appropriate number of enclosures and processor cards.

Table 2. Memory module plugging order for processor feature 5621

System unit	Slot locations for memory	Enclosure 1		Enclosure 2		Enclosure 3		Enclosure 4	
		Processor							
		1	2	3	4	5	6	7	8
Single-enclosure system	J0A, J0B, J0C, J0D	1							
	J1A, J1B, J1C, J1D	2							
Single-enclosure system	J0A, J0B, J0C, J0D	1	2						
	J1A, J1B, J1C, J1D	4	3						
Two-enclosure system	J0A, J0B, J0C, J0D	1	2	3	4				
	J1A, J1B, J1C, J1D	8	7	6	5				
Three-enclosure system	J0A, J0B, J0C, J0D	1	2	3	4	5	6		
	J1A, J1B, J1C, J1D	12	11	10	9	8	7		
Four-enclosure system	J0A, J0B, J0C, J0D	1	2	3	4	5	6	7	8
	J1A, J1B, J1C, J1D	16	15	14	13	12	11	10	9

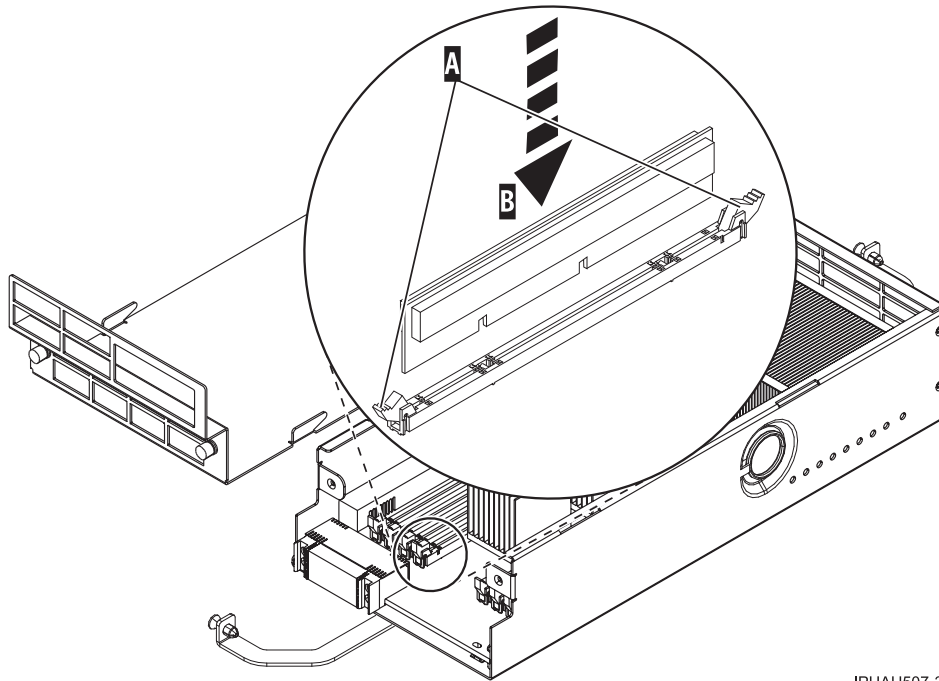
Installing 8234-EMA, 9117-MMA, or 9406-MMA memory modules

Complete the following steps to install the memory modules:

1. If necessary, remove the memory module from its antistatic package.
2. As shown in Figure 4 on page 11, ensure that the connector locking tabs **(A)** are pushed out into the unlocked position before installing a new memory module.
3. Carefully grasp the memory module **(B)** along two edges and align it with the connector.

Remember: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

4. Push the memory module **(B)** firmly into the connector until the connector locking tabs **(A)** engage.



IPHAU507-3

Figure 4. Replacing a memory module

5. If you have tall 4 GB or 8 GB memory modules, use the plastic film cover to prevent the memory modules from contacting the lid. When you have finished inserting the memory modules **(A)**, place the plastic film cover **(B)** over them as shown in Figure 5 on page 12. If you replace tall 4 GB or 8 GB memory modules with any other size memory modules, remove the plastic film cover. If you do not remove the plastic film cover, it might restrict airflow in the unit.

Attention: Do not install 8 GB memory modules on a processor assembly with any size memory modules other than 4 GB memory modules. Installing 8 GB memory modules with sizes other than 4 GB memory modules might unconfigure the other size memory modules, and you will see an associated system reference code. Your system might have other size memory modules on a different processor assembly.

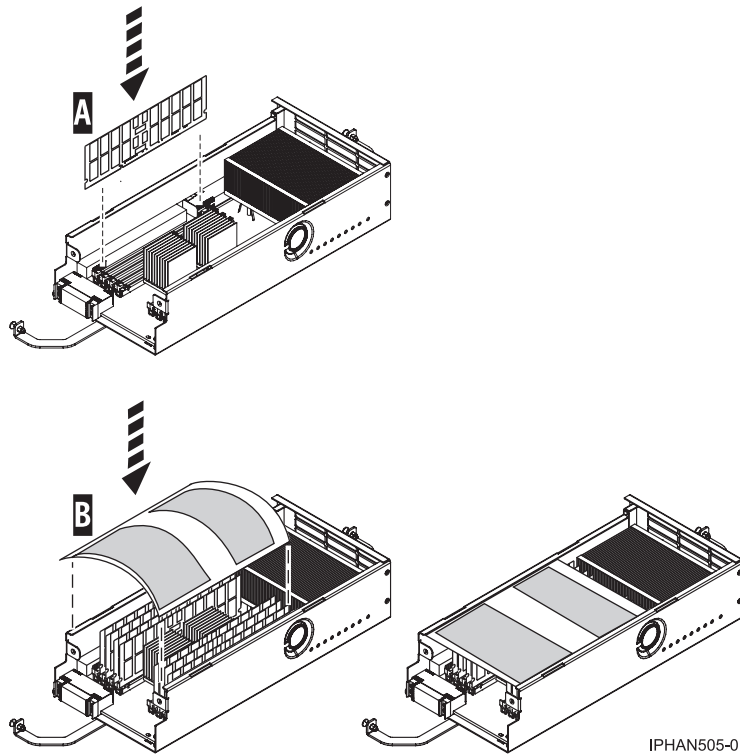


Figure 5. Plastic film cover placed over 4 GB or 8 GB memory modules

Completing the procedure for installing 8234-EMA, 9117-MMA, or 9406-MMA memory modules

Perform the following steps to complete the procedure for installing memory modules:

1. As shown in Figure 6, place the cover (A) on the processor assembly and then lock the two retention knobs (B).

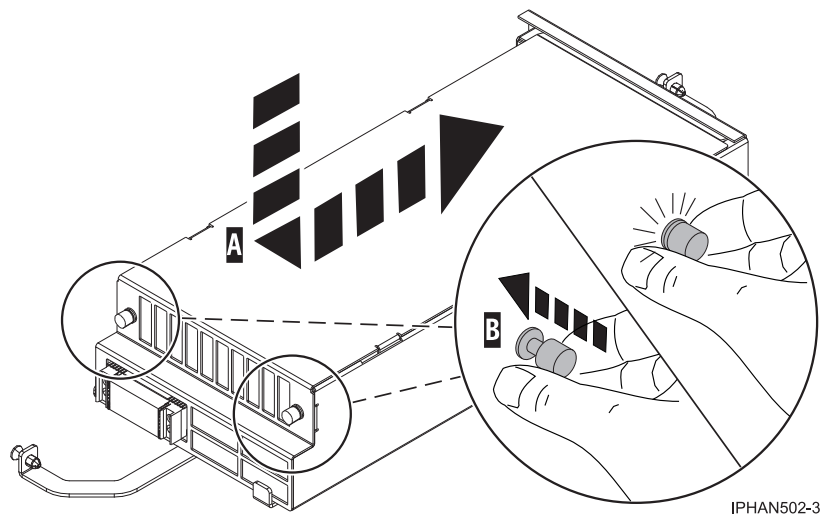


Figure 6. Replacing the system processor assembly cover

2. Replace the system backplane, as described in Replacing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane.
3. Replace the voltage regulator assembly, as described in Replacing the 8234-EMA, 9117-MMA, or 9406-MMA voltage regulator assembly with power off.
4. Replace the control panel, as described in 8234-EMA, 9117-MMA, or 9406-MMA control panel.
5. Install the front cover, as described in “Installing the front cover on the 8234-EMA, 9117-MMA, or 9406-MMA” on page 73.
6. Reconnect all power and signal cables to their respective connectors.
7. Start the system using the applicable method.
 - If the following conditions are true, then start the system as described in Power On.
 - You are installing or removing system memory.
 - The system is managed by the HMC.
 - The only logical partition is assigned all system resources.
 - For all other conditions, start the system as described in “Starting the system or logical partition” on page 52.
8. Verify the installed part, as described in “Hardware service manager Verify option” on page 85.

If you installed memory modules as part of another procedure, return to that procedure now.

Removing 8234-EMA, 9117-MMA, or 9406-MMA memory modules

Learn about removing memory modules from an 8234-EMA, 9117-MMA, or 9406-MMA server to replace a failing part or as part of another service procedure.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the memory module from the server. For information about using the SDMC to remove a memory module, see Removing a part by using the Systems Director Management Console.

If your system unit is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules. For information about using the HMC to remove memory modules, see “Removing a part using the Hardware Management Console” on page 84. If you do not have an HMC or SDMC, complete the following procedures to remove memory modules.

Related information



Backplanes



Control panels, control panel fillers, and signal cables



System processor assembly



Voltage regulators

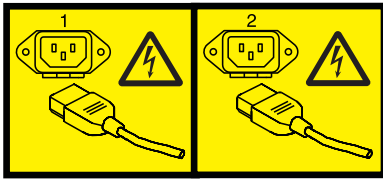
Preparing an 8234-EMA, 9117-MMA, or 9406-MMA before removing memory modules

Complete the following steps to prepare the system before removing memory modules:

1. Complete the prerequisite tasks described in “Before you begin” on page 47.
2. If you are removing the modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part as described in .
3. Stop the system, as described in “Stopping a system or logical partition” on page 55.
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, as described in “Removing the front cover from the 8234-EMA, 9117-MMA, or 9406-MMA” on page 72.
6. Attach the wrist strap.

Attention:

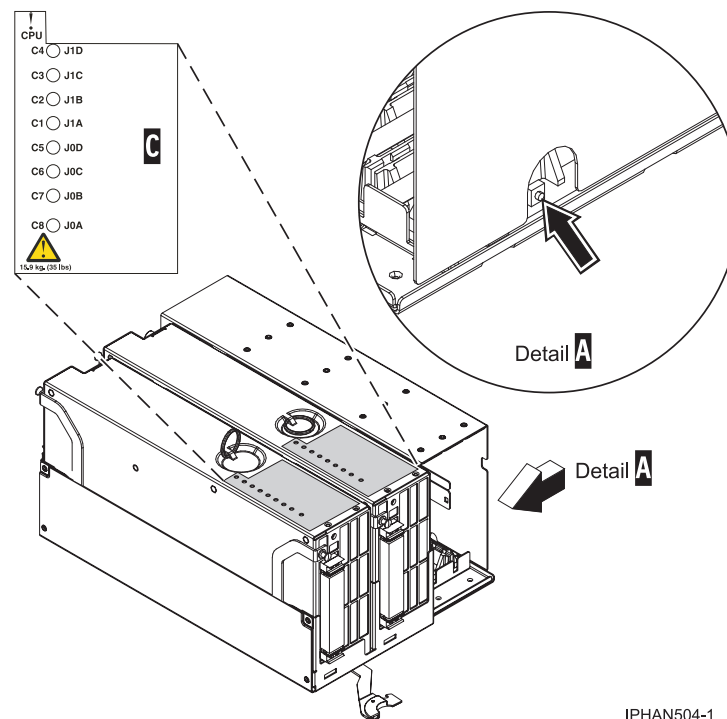
- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
 - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving 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.
7. If necessary, disconnect the SMP processor cable from the system as described in “Disconnecting the SMP processor cable from a system” on page 58.
 8. Remove the control panel, as described in 8234-EMA, 9117-MMA, or 9406-MMA control panel.
 9. Remove the voltage regulator assembly, as described in Removing the 8234-EMA, 9117-MMA, or 9406-MMA voltage regulator assembly with power off.
 10. Remove the system backplane, as described in Removing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane. Skip any steps that you have already completed.

Removing memory modules from an 8234-EMA, 9117-MMA, or 9406-MMA

Complete the following steps to remove memory modules:

1. If you are removing the memory modules because of a system failure, look at the light-emitting diodes (LEDs) (C) located on the top processor assembly to identify the location of the failing memory modules. See Figure 7. You can light the LEDs by doing the following steps:
 - If you used the service action log, Advanced System Management Interface (ASMI), or HMC to activate the identify function prior to removing the processor backplane, the LEDs located on the top processor card assembly can be illuminated to identify the failing memory modules.
 - To illuminate the location LED for the failing memory module, press the LED actuator button located on the right side of the assembly. See Figure 7 for the location of the LED actuator button (A).

Note: The actuator button must be used soon after the system backplane assembly is removed from the system. The assembly retains the energy to light the LEDs only for a short period of time after the assembly is disconnected from the system power source.



IPHAN504-1

Figure 7. Backplane assembly LED activation

2. As shown in Figure 8 on page 16, 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).

Tip: If you are removing more than one processor assembly to access memory modules, record the location of each processor assembly being removed for use during reinstallation.

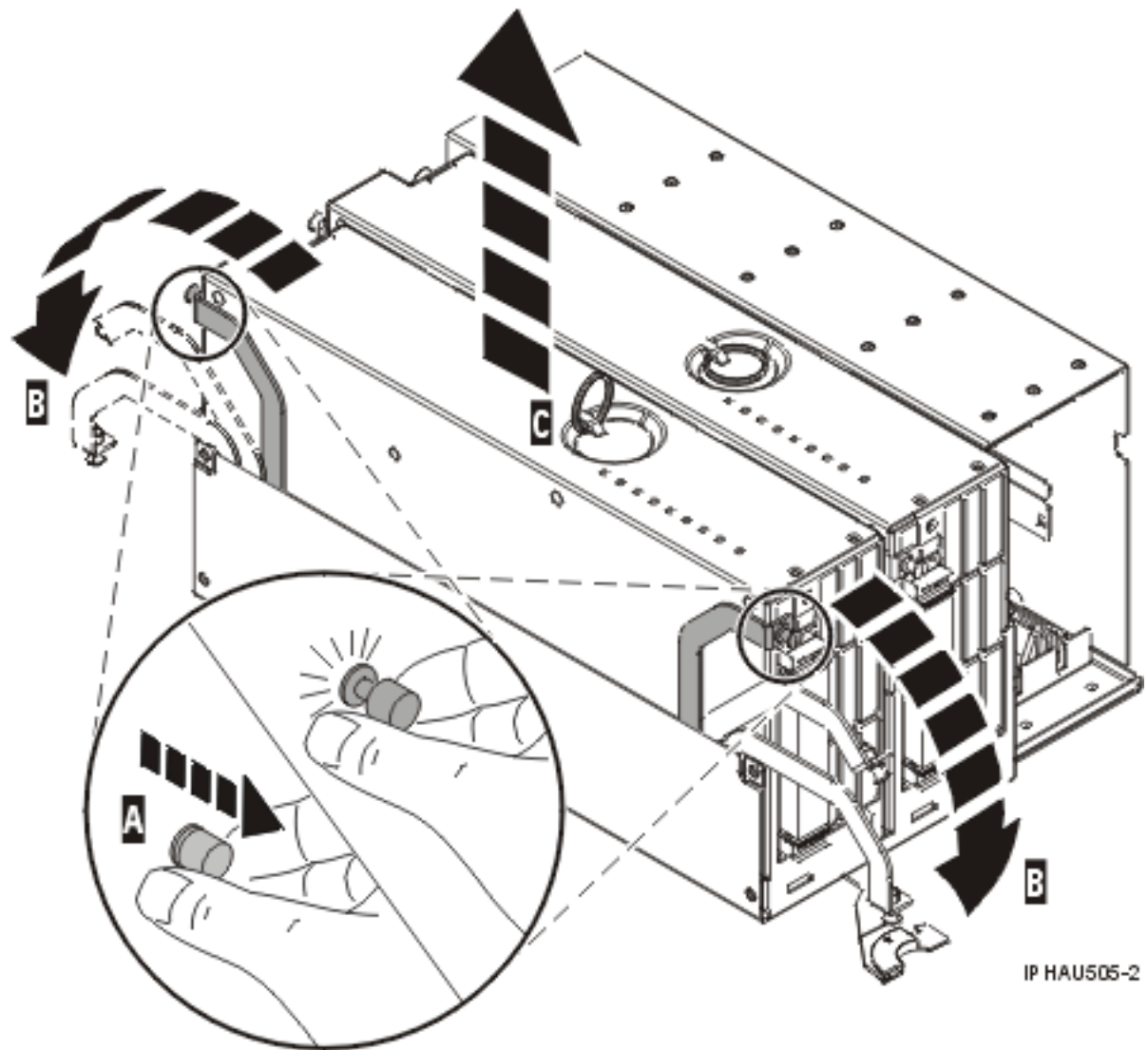


Figure 8. Removing the system processor assembly from the system backplane assembly

3. Remove the system processor assembly cover (A) by unlocking the two retention knobs (B) and pulling back and lifting up the cover, as shown in Figure 9 on page 17.

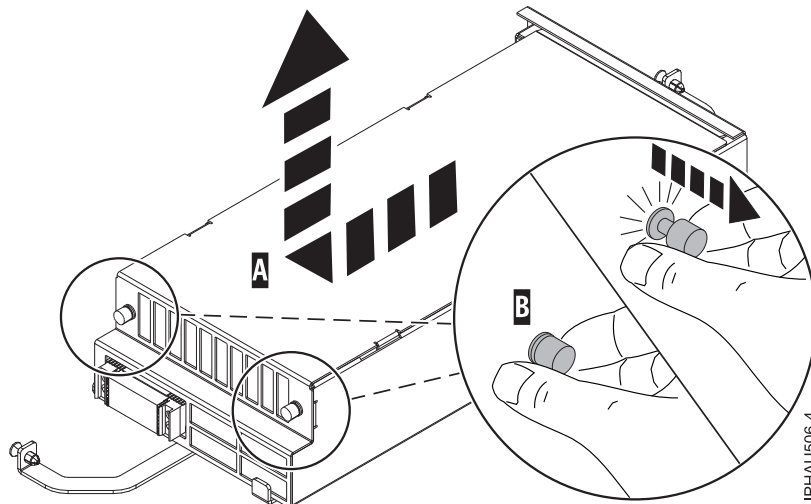


Figure 9. Removing the system processor assembly cover

4. If a Mylar cover is installed over the memory modules, remove the cover.
5. Locate the memory module you want to remove.
6. As shown in Figure 10, unlock the memory module by pushing the connector tabs **(A)** out. The lever action of the tabs forces the memory module **(B)** out of the connector.
7. Lift the memory module **(B)** out of the connector.

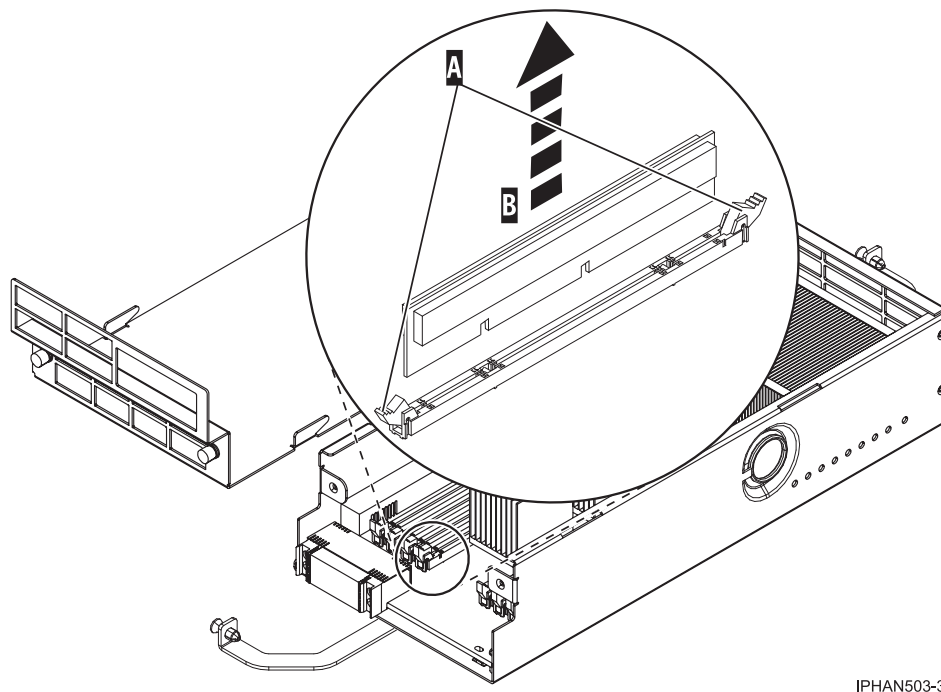


Figure 10. Removing a memory module

If you need to replace memory modules that you removed, see “Replacing 8234-EMA, 9117-MMA, or 9406-MMA memory modules” on page 18.

Replacing 8234-EMA, 9117-MMA, or 9406-MMA memory modules

Learn about replacing memory modules in an 8234-EMA, 9117-MMA, or 9406-MMA server if you removed them as a part of another procedure.

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see [IBM Prerequisite](#). If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see [Microcode downloads](#).
- To download Hardware Management Console (HMC) updates and fixes, see [Hardware Management Console Support and downloads](#).

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the memory module in the server. For information about using the SDMC to replace a memory module, see [Replacing a part by using the Systems Director Management Console](#).

If your system is managed by the HMC, use the HMC to complete the steps for replacing memory modules in the server. For information about using the HMC to replace memory modules, see “Exchanging a part using the Hardware Management Console” on page 84. If you do not have an HMC or SDMC, complete the following steps to replace memory modules.

Related information

-  [IBM Prerequisite](#)
-  [Microcode downloads](#)
-  [Hardware Management Console Support and downloads](#)
-  [Backplanes](#)
-  [Control panels, control panel fillers, and signal cables](#)
-  [System processor assembly](#)
-  [Voltage regulators](#)

Preparing the system and replacing memory modules in an 8234-EMA, 9117-MMA, or 9406-MMA

Complete the following steps to prepare the system and remove memory modules:

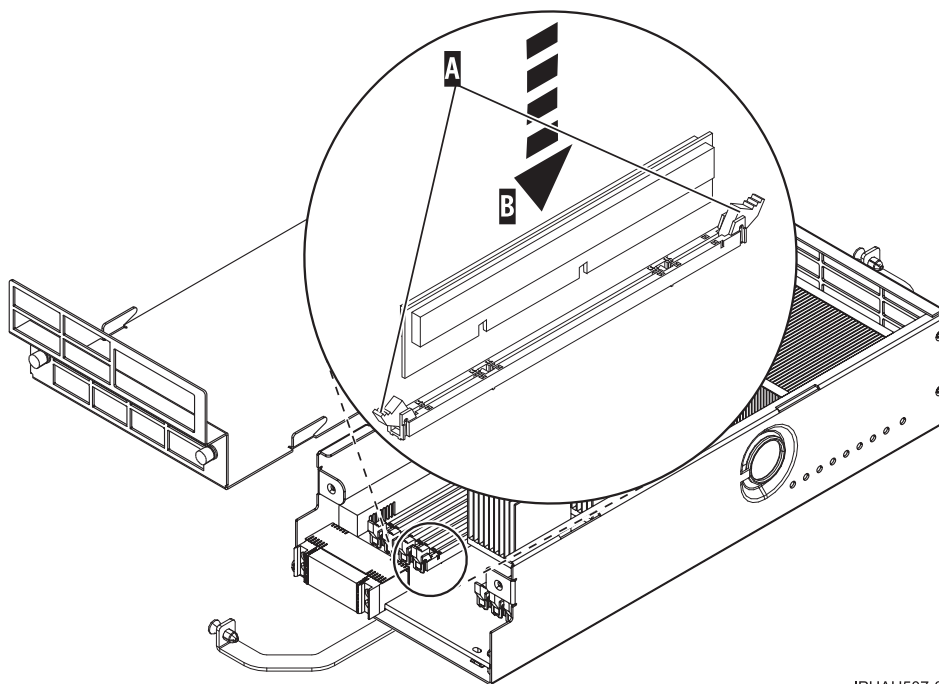
1. Complete the prerequisite tasks described in “Before you begin” on page 47.
2. If necessary, remove memory modules from the processor card assembly as described in “Removing 8234-EMA, 9117-MMA, or 9406-MMA memory modules” on page 13.
3. Attach the wrist strap.

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.
4. If necessary, remove the memory module from its antistatic package.
 5. Ensure that the connector locking tabs (A) are pushed out into the unlocked position before installing a new memory module, as shown in Figure 11.
 6. Carefully grasp the memory module (B) along two edges and align it with the connector.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

7. Push the memory module (B) firmly into the connector until the connector locking tabs engage.



IPHAU507-3

Figure 11. Replacing a memory module

8. If you have tall 4 GB or 8 GB memory modules, use the plastic film cover to prevent the memory modules from contacting the lid. When you have finished inserting the memory modules (A), place the plastic film cover (B) over them, as shown in Figure 12 on page 20. If you replace tall 4 GB or 8 GB memory modules with any other size memory modules, remove the plastic film cover. Failing to remove the plastic film cover might restrict airflow in the unit.

Attention: Do not install 8 GB memory modules on a processor assembly with any size memory modules other than 4 GB memory modules. Installing 8 GB memory modules with sizes other than 4 GB memory modules might unconfigure the other size memory modules, and you will see an associated system reference code of B123F688. Your system might have other size memory modules on a different processor assembly.

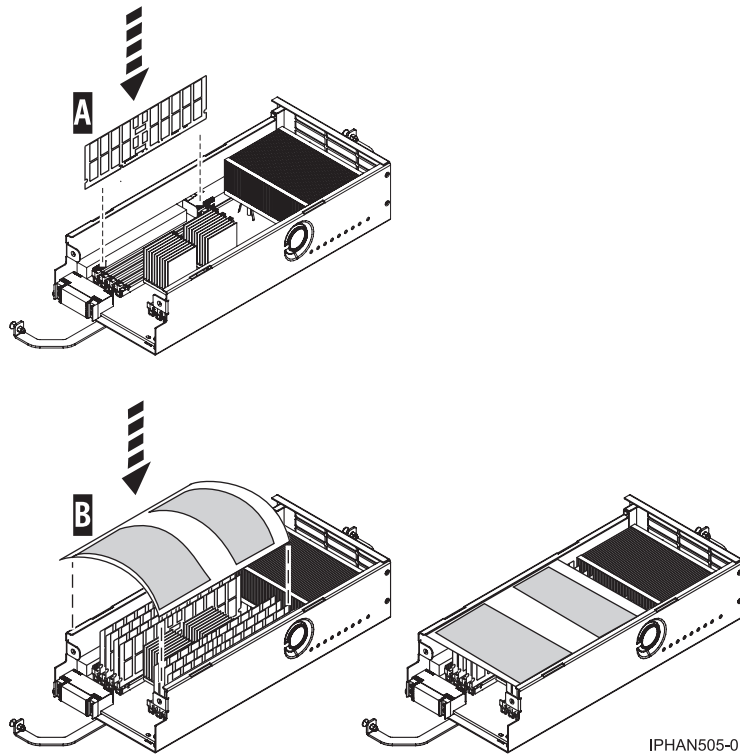


Figure 12. Plastic film cover placed over 4 GB or 8 GB memory modules

9. Place the cover (A) on the processor card assembly, and then lock the two retention knobs (B), as shown in Figure 13.

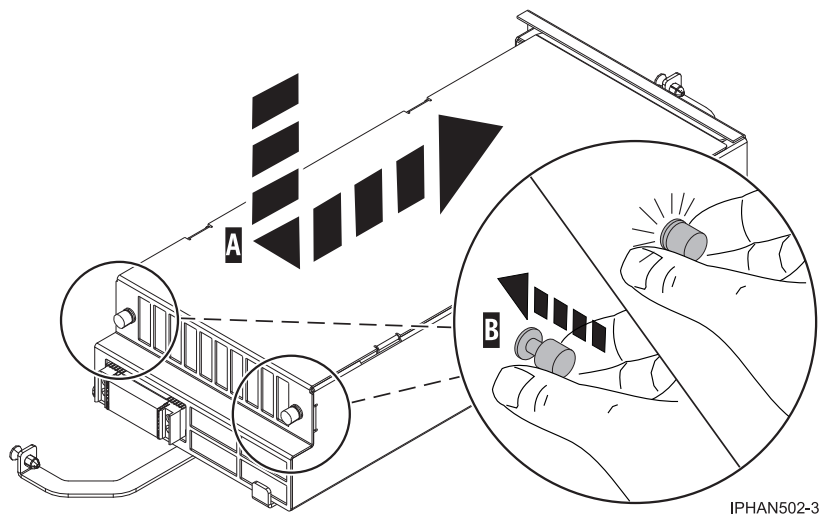


Figure 13. Replacing the system processor assembly cover replacement

Completing the procedure for replacing memory modules in an 8234-EMA, 9117-MMA, or 9406-MMA

Perform the following steps to complete the procedure for removing memory modules:

1. Replace the system backplane, as described in Replacing the 8234-EMA, 9117-MMA, or 9406-MMA system backplane.

2. Replace the voltage regulator assembly, as described in Replacing the 8234-EMA, 9117-MMA, or 9406-MMA voltage regulator assembly with power off.
3. Replace the control panel, as described in 8234-EMA, 9117-MMA, or 9406-MMA control panel.
4. Reconnect the SMP processor cable, as described in “Reconnecting the SMP processor cable to a system” on page 61.
5. Install the front cover, as described in “Installing the front cover on the 8234-EMA, 9117-MMA, or 9406-MMA” on page 73.
6. Reconnect all power and signal cables to their respective connectors.
7. Start the system using the applicable method.
 - If the following conditions are true, then start the system as described in Power On.
 - You are installing or removing system memory.
 - The system is managed by the HMC.
 - The only logical partition is assigned all system resources.
 - For all other conditions, start the system as described in “Starting the system or logical partition” on page 52.
8. Verify the installed part, as described in “Hardware service manager Verify option” on page 85.

If you replaced memory modules as part of another service procedure, return to that procedure now or continue with any other service procedures you need to perform.

Chapter 3. 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules

Learn about installing, removing, or replacing dual inline memory modules (DIMMs) in an 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 server.

If you are using a printed version of this topic collection, print the following topic collections as needed:

- Backplanes
- Control panels, control panel fillers, and signal cables
- System processor assembly
- Voltage regulators

Installing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules

Learn about installing memory modules in an 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 server.

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see IBM Prerequisite. If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see Microcode downloads.
- To download Hardware Management Console (HMC) updates and fixes, see Hardware Management Console Support and downloads.

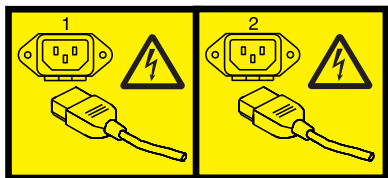
If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install memory modules in the server. For information about using the SDMC to install memory modules, see Installing a feature by using the Systems Director Management Console.

If your system is managed by the HMC, use the HMC to complete the steps for installing memory modules in the server. For information about using the HMC to install memory modules, see “Installing a feature using the Hardware Management Console” on page 84. If you do not have an HMC or SDMC, complete the following steps to install memory modules:

1. Complete the prerequisite tasks described in “Before you begin” on page 47.
2. Stop the system, as described in “Stopping a system or logical partition” on page 55.
3. 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



4. If you have a rack-mounted system, place it in the service position, as described in “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 79.
5. Remove the service access cover, as described in “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 64 or “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 66.
6. Remove the fans by lifting each of the fan pull tabs **(A)** and lifting the fans **(B)** out of the system as shown in Figure 14.

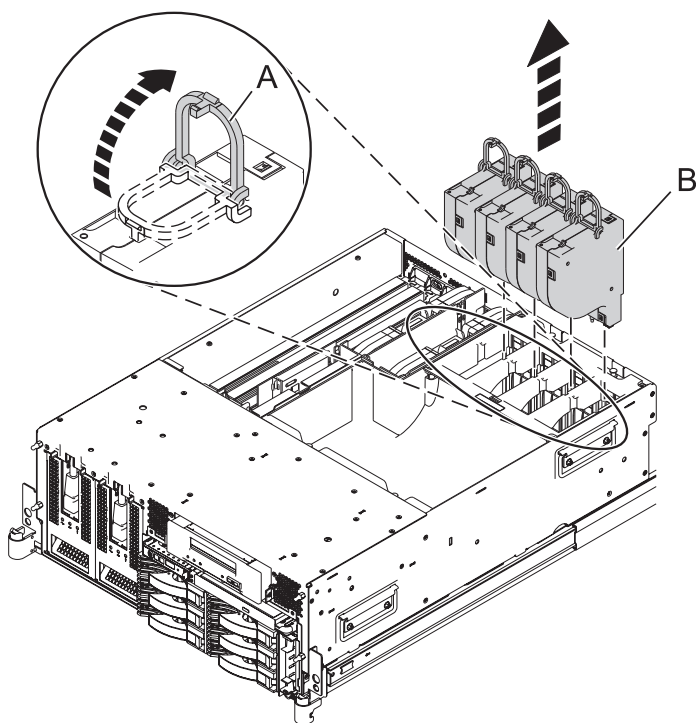


Figure 14. Removing the fans

7. Remove the air baffle by lifting each of the four locking tabs (A) and lifting the baffle (B) out of the system as shown in Figure 15.

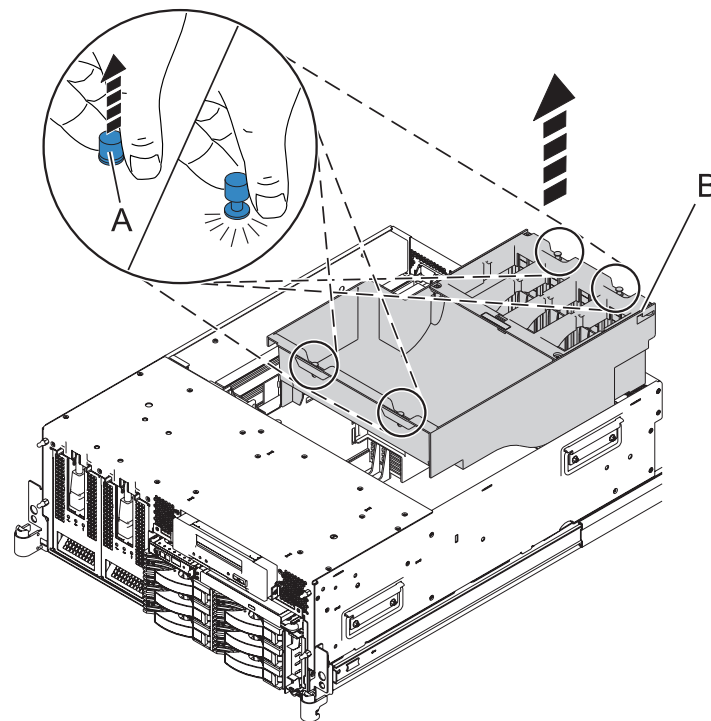


Figure 15. Removing the air baffle

8. If necessary, remove the memory modules from the system as described in “Removing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules” on page 30.
9. Determine the slots in which the memory modules will be placed. Four-core processor systems use all eight memory module slots. One- and two-core processor systems use only slots P1-C14 through P1-C17. See Figure 16 on page 27 for memory module slot locations in the system. The memory modules should be plugged into the slots as shown in the following tables:
 - 8203-E4A Table 3
 - 8261-E4S Table 4 on page 26
 - 9407-M15 Table 5 on page 26
 - 9408-M25 Table 6 on page 27

Table 3. Memory module balancing 8203-E4A

Processors and memory	Where to install memory modules
One-core processor, memory plugged in pairs	• Plug the first pair of memory modules into memory module slots P1-C14 and P1-C16. • Plug the second pair of memory modules into memory module slots P1-C15 and P1-C17. Restriction: All pairs must consist of identical memory features. There must be a minimum of one pair installed. Important: Memory feature 4524 is not available on systems with processor feature 5633.

Table 3. Memory module balancing 8203-E4A (continued)

Processors and memory	Where to install memory modules
Two-core processor, memory plugged in pairs	- Plug the first pair of memory modules into slots P1-C14 and P1-C16. - Plug the second pair of memory modules into slots P1-C15 and P1-C17. Restriction: All pairs must consist of identical memory features. There must be a minimum of one pair installed. Important: Memory features 4520, 4521, and 4522 are not available on systems with processor features 5577 or 5587.
Four-core processor, memory plugged in pairs	For each pair of memory modules added to one processor card, add another pair to the other processor so that memory is balanced between the two for optimum system performance. - Plug the first pair of memory modules into slots P1-C14 and P1-C16 behind the first processor module. - Plug the second pair of memory modules into slots P1-C21 and P1-C23 behind the second processor module. - Plug the third pair of memory modules into slots P1-C15 and P1-C17 behind the first processor module. - Plug the fourth pair of memory modules into slots P1-C22 and P1-C24 behind the second processor module. Restriction: Memory must be added in pairs. Memory modules on the same processor module must always be identical in size, speed, and feature code. However, memory module feature codes can be different between processor assemblies. Important: Memory features 4520, 4521, and 4522 are not available on systems with processor features 5577 or 5587.

Table 4. Memory module balancing 8261-E4S

Processors and memory	Where to install memory modules
Memory plugged in pairs	- Plug the first pair of memory modules into memory module slots P1-C14 and P1-C16. - Plug the second pair of memory modules into memory module slots P1-C15 and P1-C17. Restriction: All pairs must consist of identical memory features. There must be a minimum of one pair installed.

Table 5. Memory module balancing 9407-M15

Processors and memory	Where to install memory modules
Memory plugged in pairs	- Plug the first pair of memory modules into memory module slots P1-C14 and P1-C16. - Plug the second pair of memory modules into memory module slots P1-C15 and P1-C17. Restriction: All pairs must be the same size and speed memory. There must be a minimum of one pair installed.

Table 6. Memory module balancing 9408-M25

Processors and memory	Where to install memory modules
Memory plugged in pairs	- Plug the first pair of memory modules into memory module slots P1-C14 and P1-C16. - Plug the second pair of memory modules into memory module slots P1-C15 and P1-C17. Restriction: All pairs must be the same size and speed memory. There must be a minimum of one pair installed.

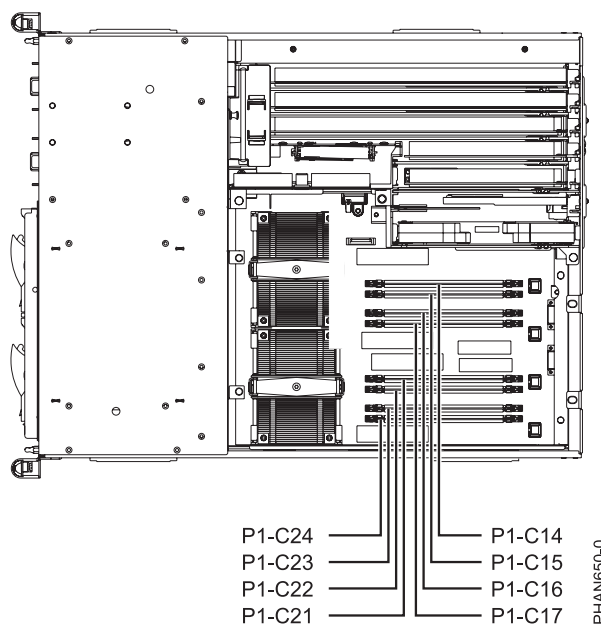


Figure 16. Memory module slot locations

- Ensure that the connector is ready to receive the memory module. Remove the memory module filler, if one is present, by pushing the tabs **(A)** out and then down, as shown in Figure 17 on page 28. The lever action of the tabs forces the memory module filler out of the connector.
- If necessary, remove the memory module from its antistatic package.
- Ensure that the connector locking tabs **(A)** are pushed out into the unlocked position before installing a new memory module.
- Carefully grasp the memory module **(B)** along two edges and align it with the connector.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.
- Push the memory module **(B)** firmly into the connector until the connector locking tabs engage.

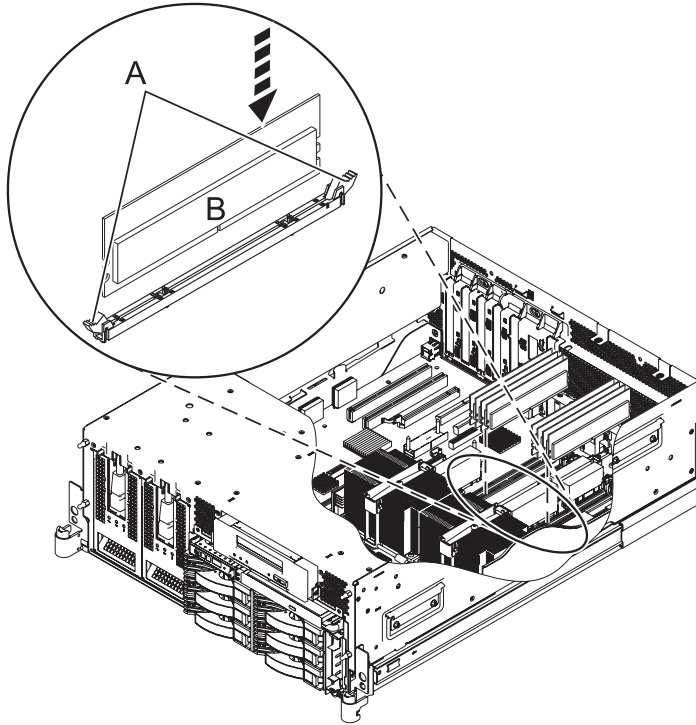


Figure 17. Replacing a memory module

15. Replace the air baffle by inserting the baffle and securing the four locking tabs as shown in Figure 18.

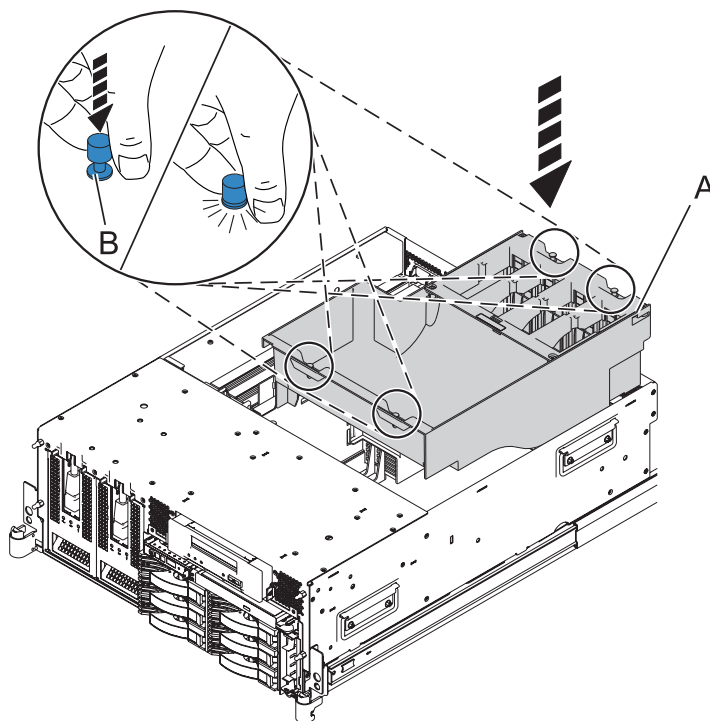


Figure 18. Replacing the air baffle

16. Replace the fans **(A)** and secure each of the fan pull tabs **(B)** as shown in Figure 19.

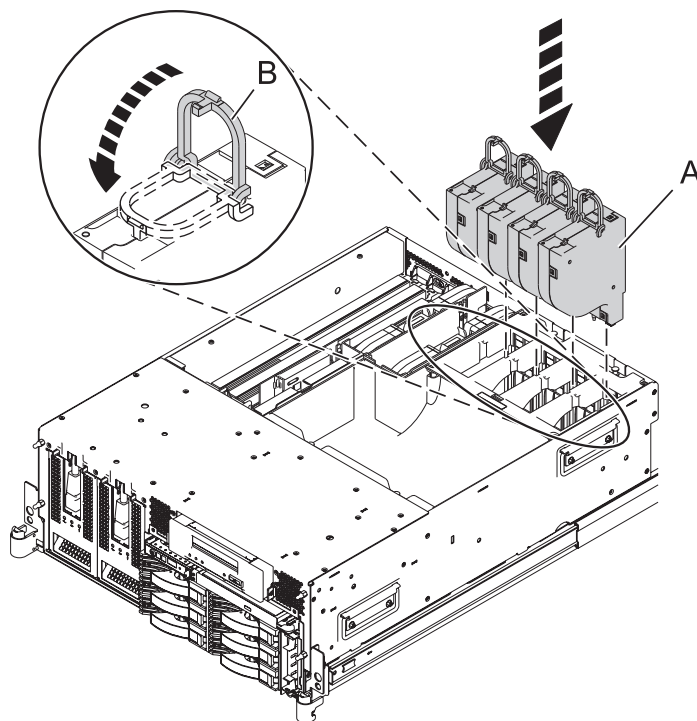


Figure 19. Replacing the fans

17. Replace the service access cover, as described in “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 65 or “Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 67.
18. Place the system in the operating position, as described in “Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 82.
19. Start the system using the applicable method.
 - If the following conditions are true, then start the system as described in Power On.
 - You are installing or removing system memory.
 - The system is managed by the HMC.
 - The only logical partition is assigned all system resources.
 - For all other conditions, start the system as described in “Starting the system or logical partition” on page 52.
20. Verify the installed part, as described in “Hardware service manager Verify option” on page 85.

If you installed memory modules as part of another procedure, return to that procedure now.

Related information



IBM Prerequisite



Microcode downloads



Hardware Management Console Support and downloads

Removing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules

Learn about removing memory modules from an 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 server to replace a failing part or as part of a memory upgrade or other service procedure.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the memory module from the server. For information about using the SDMC to remove a memory module, see *Removing a part by using the Systems Director Management Console*.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For information about using the HMC to remove memory modules, see *“Removing a part using the Hardware Management Console”* on page 84. If you do not have an HMC or SDMC, complete the following steps to remove memory modules:

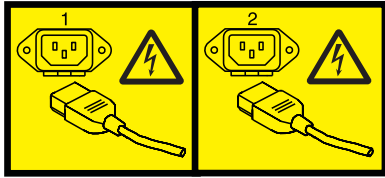
1. Complete the prerequisite tasks described in *“Before you begin”* on page 47.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part as described in *“Identifying a failing part”* on page 49.
3. Stop the system, as described in *“Stopping a system or logical partition”* on page 55.
4. Attach the wrist strap.

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.
5. If you have a rack-mounted system, place it in the service position, as described in *“Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position”* on page 79.
 6. Remove the service access cover, as described in *“Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50”* on page 64 or *“Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50”* on page 66.
 7. Locate the memory module that you want to remove by observing the service indicator light-emitting diodes (LEDs).
 8. 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



9. Remove the fans by lifting each of the fan pull tabs **(A)** and lifting the fans **(B)** out of the system as shown in Figure 20 on page 32.

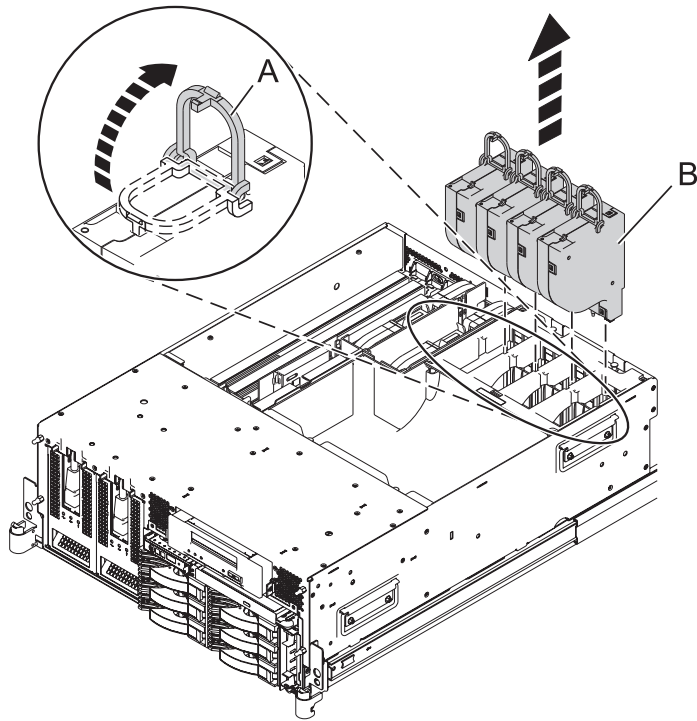


Figure 20. Removing the fans

10. Remove the air baffle by lifting each of the four locking tabs (A) and lifting the baffle (B) out of the system as shown in Figure 21.

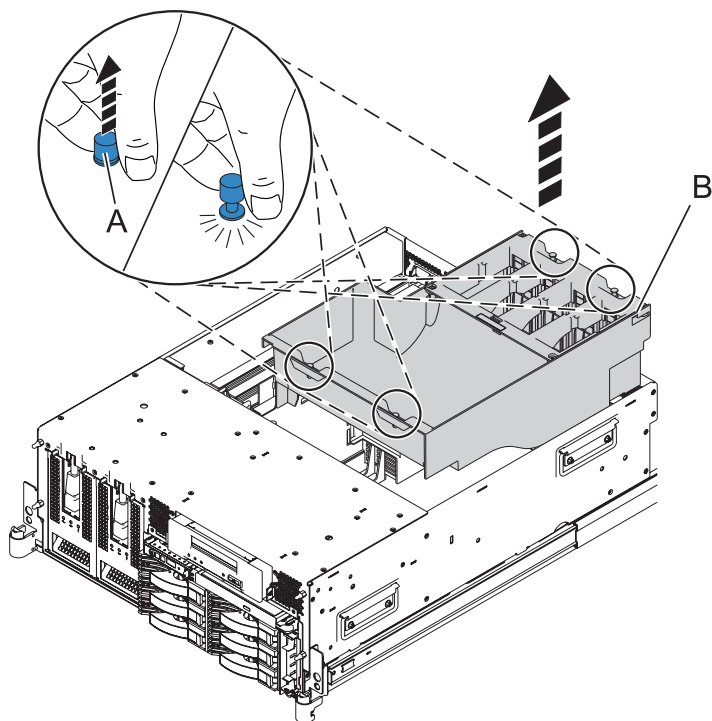


Figure 21. Removing the air baffle

11. Unlock the memory module that you identified in step 7 on page 30 by pushing the locking tabs (A) shown in Figure 22 out and then down. The lever action of the tabs forces the memory module out of the connector.

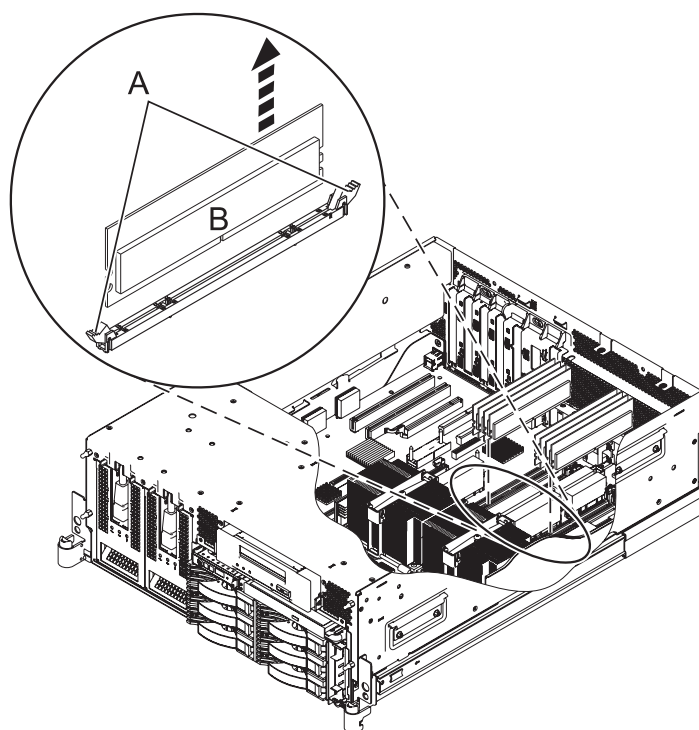


Figure 22. Removing a memory module

12. Lift the memory module out of the connector, as shown in Figure 22.

To replace the memory module you removed or to install new memory modules, see the following topics:

- To replace a failed memory module with the same size and type of memory, see “Replacing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules.”
- To install new memory as part of a memory upgrade or to change a memory feature, see “Installing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules” on page 23.

Replacing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules

Learn about replacing memory modules in an 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 server if you removed memory modules to replace a failing part, or as part of a memory upgrade or other service procedure.

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see IBM Prerequisite. If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see Microcode downloads.
- To download Hardware Management Console (HMC) updates and fixes, see Hardware Management Console Support and downloads.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the memory module in the server. For information about using the SDMC to replace a memory module, see *Replacing a part by using the Systems Director Management Console*.

If your system is managed by the HMC, use the HMC to complete the steps for replacing the memory modules in the server. For information about using the HMC to replace memory modules, see *“Exchanging a part using the Hardware Management Console”* on page 84. If you do not have an HMC or SDMC, complete the following steps to replace memory modules.

Restriction: Use these instructions only as a part of removing and replacing memory modules of the same size and speed. If you are installing new memory or upgrading memory, see *“Installing 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 memory modules”* on page 23.

1. Complete the prerequisite tasks described in *“Before you begin”* on page 47.
2. If necessary, remove the memory module from its antistatic package.
3. Ensure that the connector locking tabs **(A)** are pushed out in the unlocked position, as shown in Figure 23, before installing a new memory module.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

4. Carefully grasp the memory module along two edges and align the connector.
5. Insert the memory module firmly into the connector.
6. Secure the memory module **(B)** with the locking tabs **(A)** located at each end of the memory module connector, as shown in Figure 23.

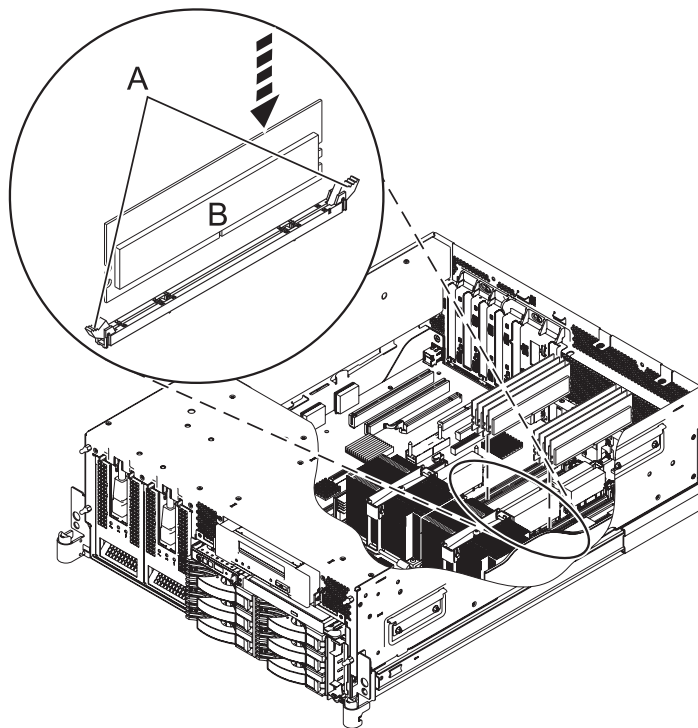


Figure 23. Replacing a memory module

7. Replace the air baffle by inserting the baffle and securing the four locking tabs as shown in Figure 24 on page 35.

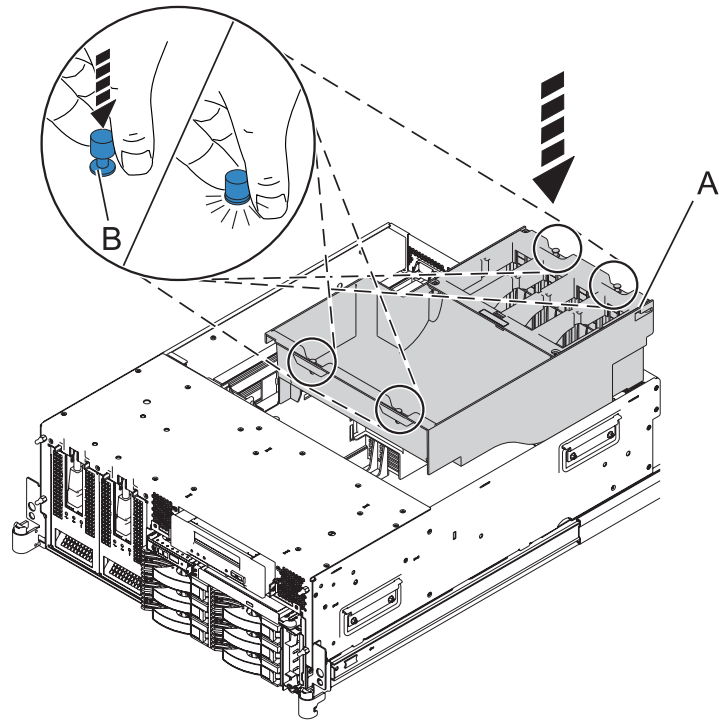


Figure 24. Replacing the air baffle

8. Replace the fans (A) and secure each of the fan pull tabs (B) as shown in Figure 25.

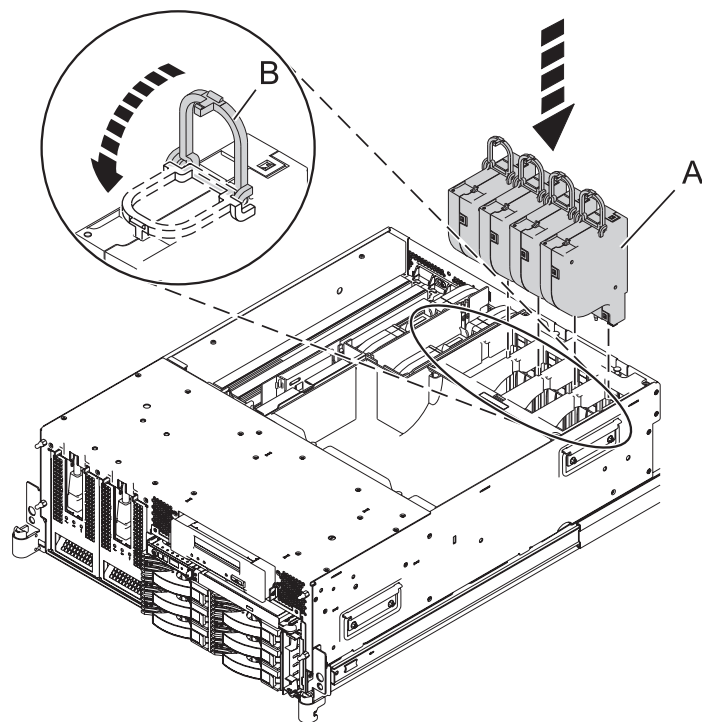


Figure 25. Replacing the fans

9. Replace the service access cover, as described in “Installing the service access cover on a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 65 or “Installing the service access cover on a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 67.
10. Place the system in the operating position, as described in “Placing the rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position” on page 82.
11. Start the system using the applicable method.
 - If the following conditions are true, then start the system as described in Power On.
 - You are installing or removing system memory.
 - The system is managed by the HMC.
 - The only logical partition is assigned all system resources.
 - For all other conditions, start the system as described in “Starting the system or logical partition” on page 52.
12. Verify the installed part, as described in “Hardware service manager Verify option” on page 85.

Continue with any other service procedures you need to perform.

Related information

-  [IBM Prerequisite](#)
-  [Microcode downloads](#)
-  [Hardware Management Console Support and downloads](#)

Chapter 4. 8204-E8A or 9409-M50 memory modules

Learn about installing, removing, or replacing memory modules in an 8204-E8A or 9409-M50 server.

If you are using a printed version of this topic collection, print the following topic collections as needed:

- Backplanes
- Control panels, control panel fillers, and signal cables
- System processor assembly
- Voltage regulators

Installing 8204-E8A or 9409-M50 memory modules

Learn about installing memory modules in an 8204-E8A or 9409-M50 server.

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see IBM Prerequisite. If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see Microcode downloads.
- To download Hardware Management Console (HMC) updates and fixes, see Hardware Management Console Support and downloads.

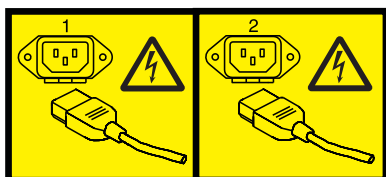
If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install memory modules in the server. For information about using the SDMC to install memory modules, see Installing a feature by using the Systems Director Management Console.

If your system is managed by the HMC, see Table 7 on page 39 for the order in which you must place the memory modules, and then use the HMC to complete the steps for installing memory modules in the server. For information about using the HMC to install memory modules, see “Installing a feature using the Hardware Management Console” on page 84. If you do not have an HMC or SDMC, complete the following steps to install memory modules:

1. Complete the prerequisite tasks described in “Before you begin” on page 47.
2. Stop the system, as described in “Stopping a system or logical partition” on page 55.
3. 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



4. If you have a rack-mounted system, place it in the service position, as described in “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 79.
5. Remove the service access cover, as described in “Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 64.
6. Attach the wrist strap.

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.
7. Remove the system processor assembly and protective cover, as described in Removing the 8204-E8A or 9409-M50 system processor assembly. Skip any steps that you have already completed.
 8. If necessary, remove the memory modules from the system processor assembly as described in “Removing 8204-E8A or 9409-M50 memory modules” on page 41.
 9. Determine the slots in which the memory modules will be placed. Each system processor assembly has eight memory module slots. See Table 7 on page 39 to ensure that memory modules are balanced on each processor assembly. The memory modules should be plugged into the slots shown in the table. For the memory module slot locations in the system processor assembly, see Figure 26 on page 39.

Notes:

- Memory modules installed on the same processor assembly must be identical in size, speed, and feature code.
- Memory modules installed on different processor assemblies can be different sizes and speeds.
- Each memory feature consists of one pair of dual inline memory modules (DIMMs). Each processor card can have two, four, or eight DIMMs.
- When two processors are installed, alternate installing memory modules between the first processor and the second processor.

- Memory features 4520, 4521, and 4522 are not available with processor feature 4967.

Table 7. Memory module balancing

Processors and memory	Where to install memory modules
Memory plugged in pairs	Plug the first pair of memory modules into memory module slots P1-Cn-C2 and P1-Cn-C7. Plug the second pair of memory modules into memory module slots P1-Cn-C4 and P1-Cn-C9. Important: Memory modules installed on the same processor assembly must be identical in size, speed, and feature code. After the second pair of memory modules, the memory modules become a quad.
One processor card, memory plugged in quads	• Plug the first quad of memory modules into memory module slots P1-Cn-C2, P1-Cn-C4, P1-Cn-C7, and P1-Cn-C9. • Plug the second quad of memory modules into memory module slots P1-Cn-C1, P1-Cn-C3, P1-Cn-C6, and P1-Cn-C8. Important: Memory modules installed on the same processor assembly must be identical in size, speed, and feature code. After the second pair of memory modules, the memory modules become a quad.
Multiple processor cards, memory plugged in quads	Memory should be balanced on each processor card, unless you have an odd number of memory modules. • Plug the first quad of memory modules into memory module slots P1-Cn-C2, P1-Cn-C4, P1-Cn-C7, and P1-Cn-C9 on each processor card. • Plug the second quad of memory modules in slots P1-Cn-C1, P1-Cn-C3, P1-Cn-C6, and P1-Cn-C8 on each processor card. Important: Ensure that the memory modules installed on the same processor assembly are identical in size, speed, and feature code. However, memory module feature codes can be different between processor assemblies.

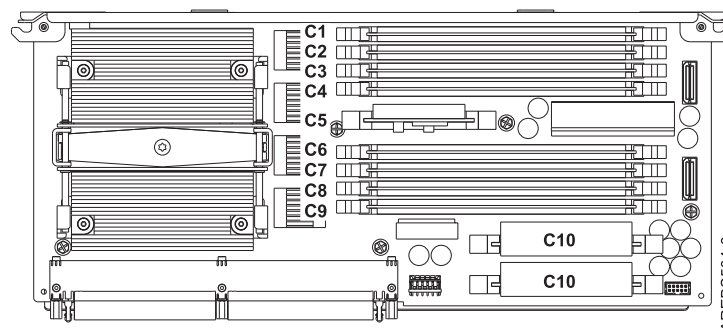


Figure 26. Memory module slot locations in the processor assembly

10. Ensure that the connector is ready to receive the memory module. Remove the memory module filler, if one is present, by pushing the tabs **(A)** out and then down. The lever action of the tabs forces the memory module filler out of the connector.
11. If necessary, remove the memory module from its antistatic package.
12. Ensure that the connector locking tabs **(A)** are pushed out into the unlocked position, as shown in Figure 27, before installing a new memory module.
13. Carefully grasp the memory module **(B)** along two edges and align it with the connector.
Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.
14. Push the memory module **(B)** firmly into the connector until the connector locking tabs engage.

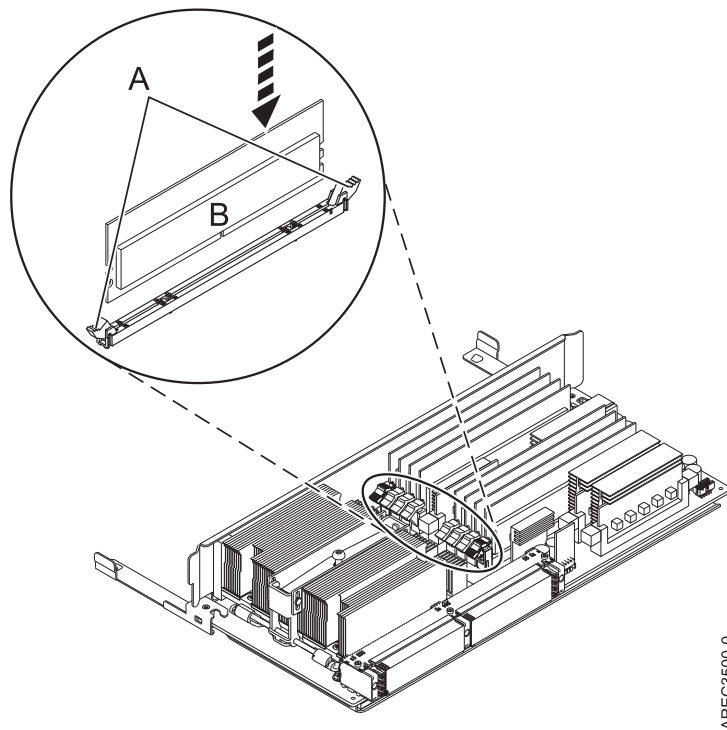


Figure 27. Replacing a memory module

15. Replace the system processor assembly. See Replacing the 8204-E8A or 9409-M50 system processor assembly for information about replacing the system processor assembly and covers, restoring power, and starting the system. Skip any steps that you have already completed.
16. Verify the installed part, as described in “Hardware service manager Verify option” on page 85.

If you are installing memory modules as part of another procedure, return to that procedure now.

Related information

-  [IBM Prerequisite](#)
-  [Microcode downloads](#)
-  [Hardware Management Console Support and downloads](#)
-  [System processor assembly](#)

Removing 8204-E8A or 9409-M50 memory modules

Learn about removing memory modules from an 8204-E8A or 9409-M50 server to replace a failing part or as part of a memory upgrade or other service procedure.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the memory module from the server. For information about using the SDMC to remove a memory module, see [Removing a part by using the Systems Director Management Console](#).

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For information about using the HMC to remove memory modules, see [“Removing a part using the Hardware Management Console”](#) on page 84. If you do not have an HMC or SDMC, complete the following steps to remove memory modules:

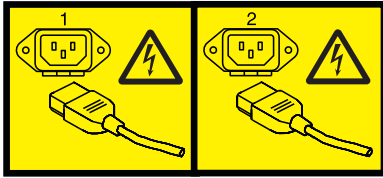
1. Complete the prerequisite tasks described in [“Before you begin”](#) on page 47.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part as described in [“Identifying a failing part”](#) on page 49. Identification light-emitting diodes (LEDs) for failing memory modules are located on the top of the system processor assembly.
3. Stop the system, as described in [“Stopping a system or logical partition”](#) on page 55.
4. Attach the wrist strap.

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.
5. If you have a rack-mounted system, place it in the service position, as described in [“Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position”](#) on page 79.
 6. Remove the service access cover, as described in [“Removing the service access cover from a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50”](#) on page 64 or [“Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50”](#) on page 66.
 7. Locate the memory module that you want to remove by observing the service indicator light-emitting diodes (LEDs).
 8. 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



9. Remove the system processor assembly and protective cover, as described in Removing the 8204-E8A or 9409-M50 system processor assembly. Skip any steps that you have already completed.
10. Unlock the memory module by pushing the locking tabs **(A)** out and then down, as shown in Figure 28 on page 43. The lever action of the tabs forces the memory module out of the connector.
11. Lift the memory module out of the connector.

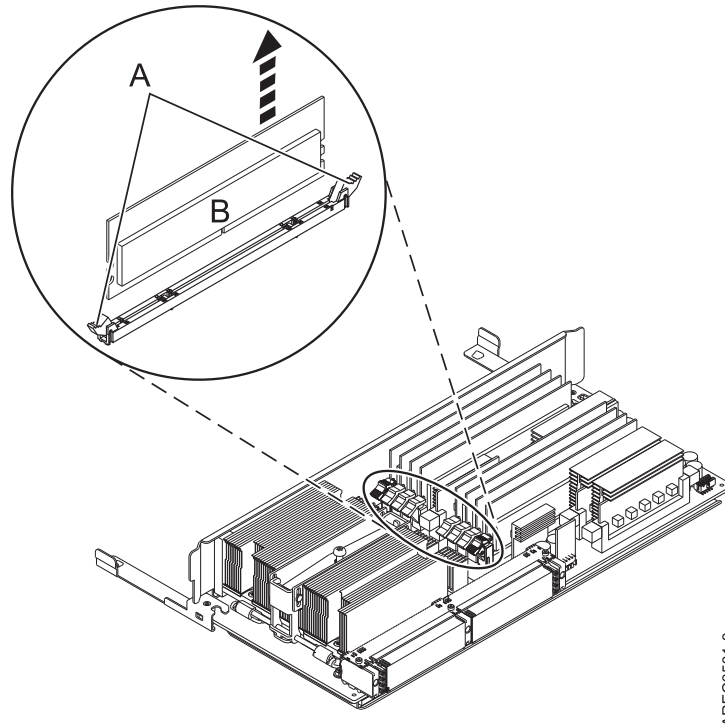


Figure 28. Removing a memory module

To replace the memory module you removed or to install new memory modules, see the following topics:

- To replace a failed memory module with the same size and type of memory, see “Replacing 8204-E8A or 9409-M50 memory modules” and complete the procedure beginning at step 3 on page 44.
- To install new memory as part of a memory upgrade or to change a memory feature, see “Installing 8204-E8A or 9409-M50 memory modules” on page 37. Skip any steps that you have already completed.

Related information



System processor assembly

Replacing 8204-E8A or 9409-M50 memory modules

Learn about replacing memory modules in an 8204-E8A or 9409-M50 server if you removed memory modules to replace a failing part, or as part of a memory upgrade or other service procedure.

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see IBM Prerequisite. If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see Microcode downloads.
- To download Hardware Management Console (HMC) updates and fixes, see Hardware Management Console Support and downloads.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the memory module in the server. For information about using the SDMC to replace a memory module, see Replacing a part by using the Systems Director Management Console.

If your system is managed by the HMC, use the HMC to complete the steps for replacing the memory modules in the server. For information about using the HMC to replace memory modules, see

“Exchanging a part using the Hardware Management Console” on page 84. If you do not have an HMC or SDMC, complete the following steps to replace memory modules.

Restriction: Use these instructions only as a part of removing and replacing memory modules of the same size and speed. If you are installing new memory or upgrading memory, see “Installing 8204-E8A or 9409-M50 memory modules” on page 37.

1. Complete the prerequisite tasks described in “Before you begin” on page 47.
2. Attach the wrist strap.

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.
3. If necessary, remove the memory module from its antistatic package.
 4. Ensure that the connector locking tabs are pushed out in the unlocked position before installing a new memory module.

Attention: Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the locations of the key tabs within the memory module connector before attempting to install the memory module.

5. Carefully grasp the memory module along two edges and align the connector.
6. Insert the memory module firmly into the connector.

Note: If you are adding new memory modules, ensure that the memory modules are balanced correctly. See Table 7 on page 39.

7. Secure the memory module with the locking tabs **(A)** located at each end of the memory module connector, as shown in Figure 29 on page 45.

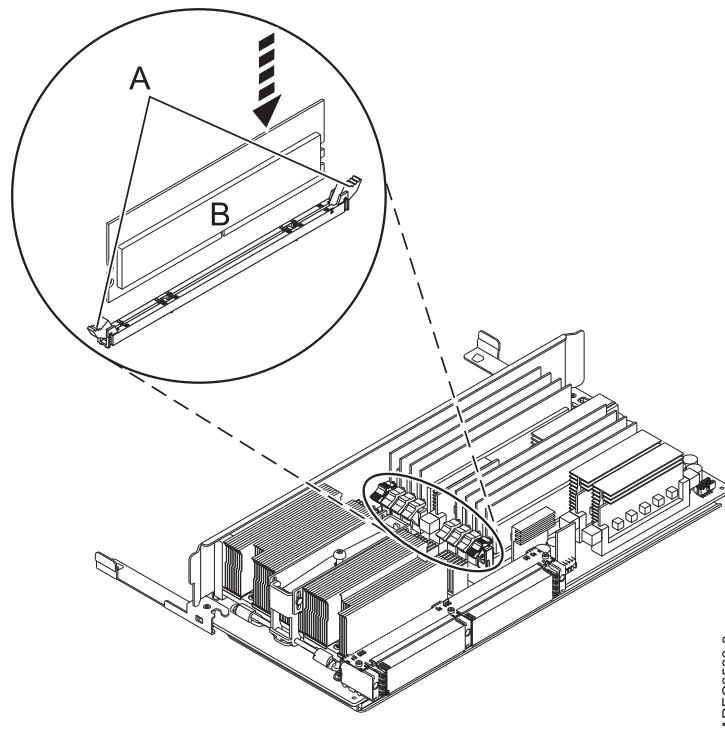


Figure 29. Replacing a memory module

8. Replace the system processor assembly. See Replacing the 8204-E8A or 9409-M50 system processor assembly for information about replacing the system processor assembly and covers, restoring power, and starting the system. Skip any steps that you have already completed.
9. Verify the installed part, as described in “Hardware service manager Verify option” on page 85.

Continue with any other service procedures you need to perform.

Related information

-  [IBM Prerequisite](#)
-  [Microcode downloads](#)
-  [Hardware Management Console Support and downloads](#)
-  [System processor assembly](#)

Chapter 5. Common procedures for installable features

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

Before you begin

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

DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

DANGER

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

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



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

CAUTION

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

(R001)

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

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

Blue or terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. Terra-cotta might also indicate that the part can be removed and replaced with the system or logical partition power on.

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

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

<http://www.ibm.com/planetwide>

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

Identifying a failing part

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

Identifying a failing part on an AIX system or logical partition

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

Locating a failing part on an AIX system or logical partition

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

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

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

Activating the indicator light for the failing part

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

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

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

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

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

Activating the failing-part indicator light

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

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

Note: If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by a Hardware Management Console (HMC), use the Service Focal Point[™] utilities to get to the Dedicated Service Tools (DST) display.

3. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.

Remember: The service tools password is case-sensitive.

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

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

12. Look for the enclosure indicator light to locate the enclosure that contains the failing part.

Deactivating the failing-part indicator light

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

To deactivate the indicator light, follow these steps:

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

Identifying a failing part on a Linux system or logical partition

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

Starting the system or logical partition

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

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

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

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

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

Tip: The system attention light, as shown in the following figure, does not appear on the control panel on the model 9117-MMA.

3. Press the power button (A), as shown in the following figure, on the control panel.

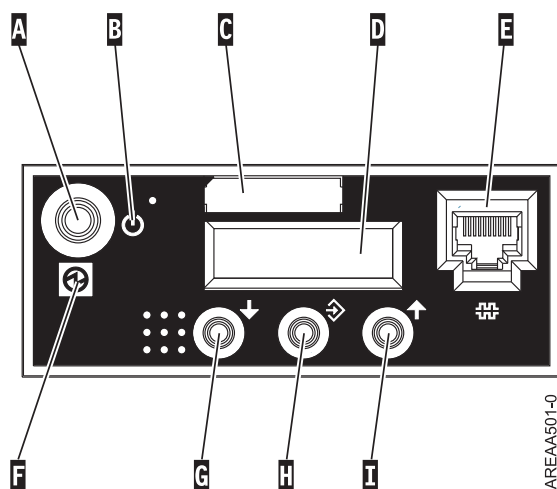


Figure 30. 570 control panel

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

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

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

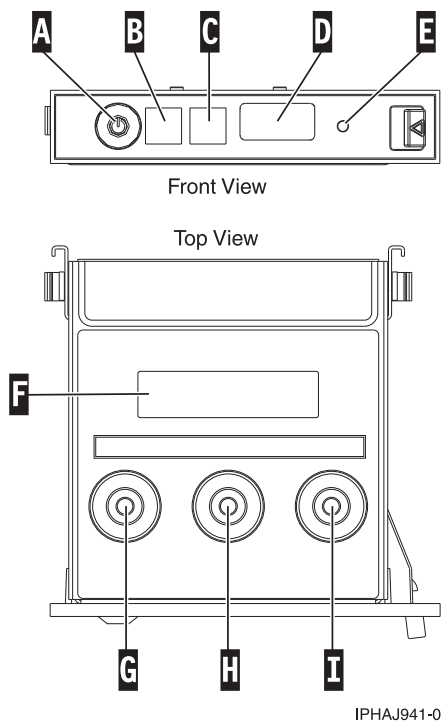


Figure 31. Control panel for the 8203-E4A, 8261-E4S, 8204-E8A, 9407-M15, 9408-M25, and 9409-M50.

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

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

- **C:** Attention light
- **D:** USB port

- **E:** Pinhole reset button
 - **F:** Function/Data display
 - **G:** Decrement button
 - **H:** Enter button
 - **I:** Increment button
4. Observe the following after pressing the power button:
- The power-on light begins to flash faster.
 - The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
 - Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops flashing and remains on, indicating that system power is on.

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

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

Starting a system or logical partition using the Hardware Management Console

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

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

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

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

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

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

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

Stopping a system or logical partition

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

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

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

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

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

Before you stop the system, follow these steps:

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

Attention: Failure to do so can result in the loss of data.

4. Record the IPL type and IPL mode from the control panel display to help you return the system to this state when the installation or replacement procedure is completed.

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

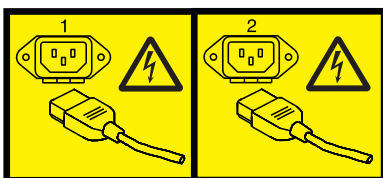
1. Log in to the system as a user with the authority to run the shutdown or pwrdownsys (Power Down System) command.
2. At the command line, enter one of the following commands:
 - If your system is running the AIX operating system, type **shutdown**.
 - If your system is running the Linux operating system,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

The command stops the operating system. The system power turns off, the power-on light begins to slowly blink, and the system goes into a standby state.

3. Set the power switches of any devices connected to the system to off.
4. Unplug any power cables that are attached to the unit from electrical outlets. Ensure that you unplug power cables from peripheral devices, such as printers and expansion units.

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

(L003)



or



Stopping a system by using the Hardware Management Console

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

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

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

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

- Super administrator
- Service representative
- Operator
- Product engineer

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

Related information

 Shutting down and restarting logical partitions

Stopping a system with the Systems Director Management Console

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

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

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

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

- Super administrator
 - Service representative
 - Operator
 - Product engineer
1. In the Power Systems™ Resource area, select the managed system you want to power off.
 2. From the **Actions** menu, select **Operations** → **Power Off**.
 3. Select the appropriate power-off mode and click **OK**.

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.

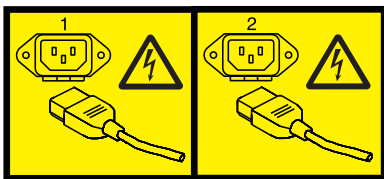
(D005)

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 72.
4. Remove the left edge of the trim kit on the system rack to expose the left edge of the SMP processor cable.

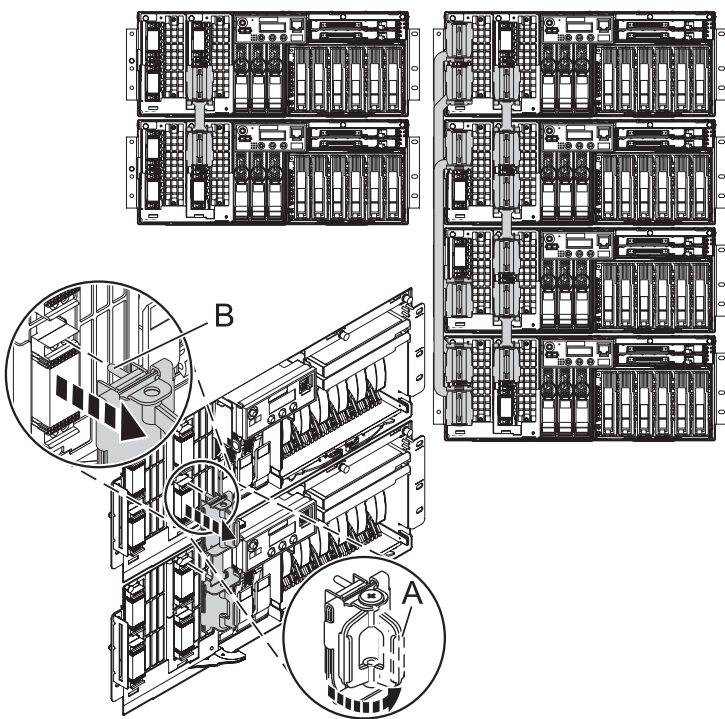
Attention:

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.

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.

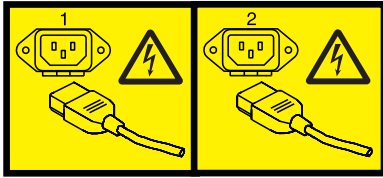
(D005)

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

1. Perform prerequisite tasks as described in “Before you begin” on page 47.
2. Stop all system units. Refer to Stopping a system or logical partition.
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)



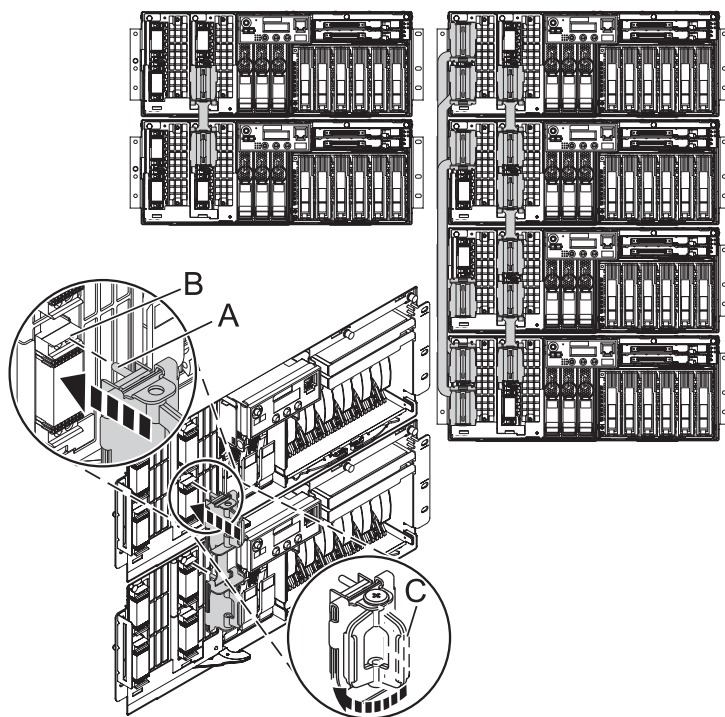
or



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

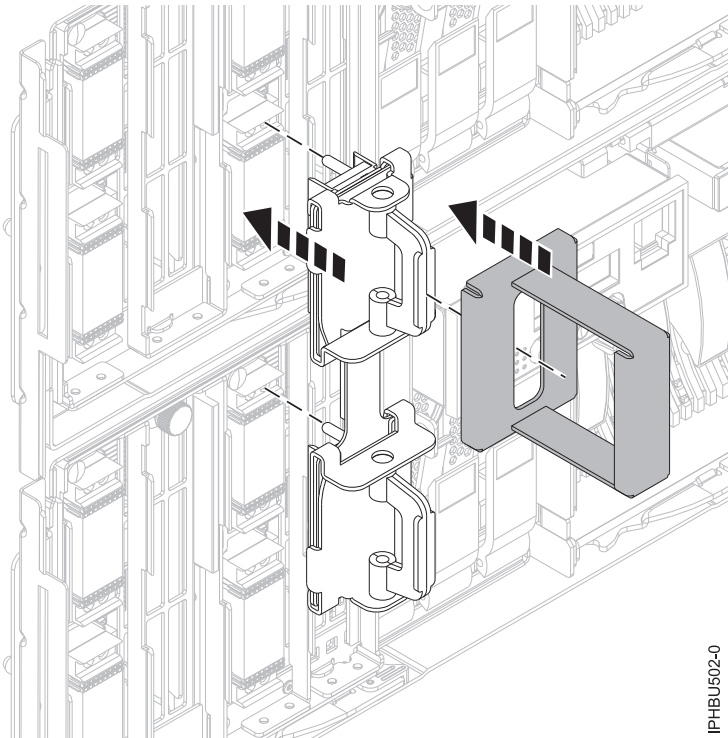
Attention:

- 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 32. 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 73.
12. Close the front rack door.

Removing and replacing covers and doors

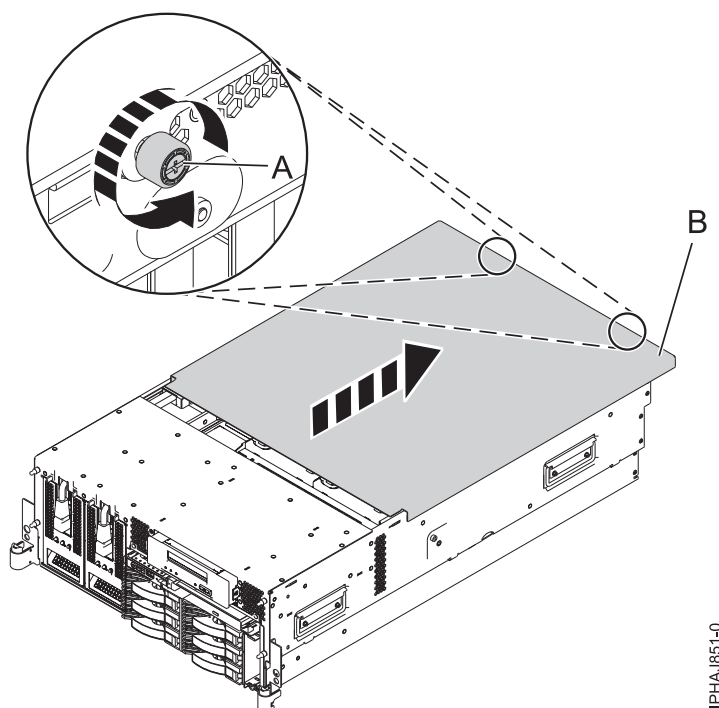
Use these instructions to remove, replace, or install covers to access components or perform service.

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

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

1. Place the system into the service position. For instructions, see “Placing a rack-mounted 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the service position” on page 79.
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.



IPHAJ851-0

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, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

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

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

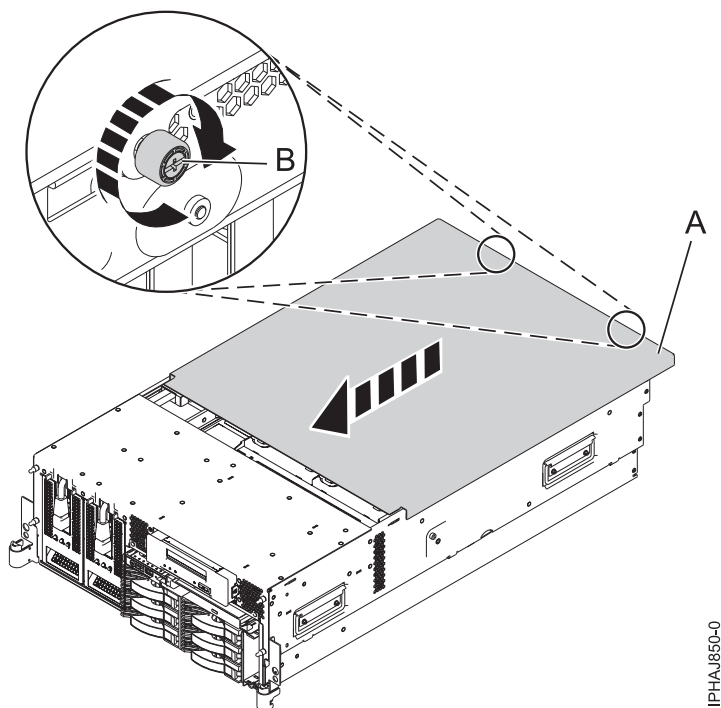


Figure 34. Install the service access cover on the rack-mounted model

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

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

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

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

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

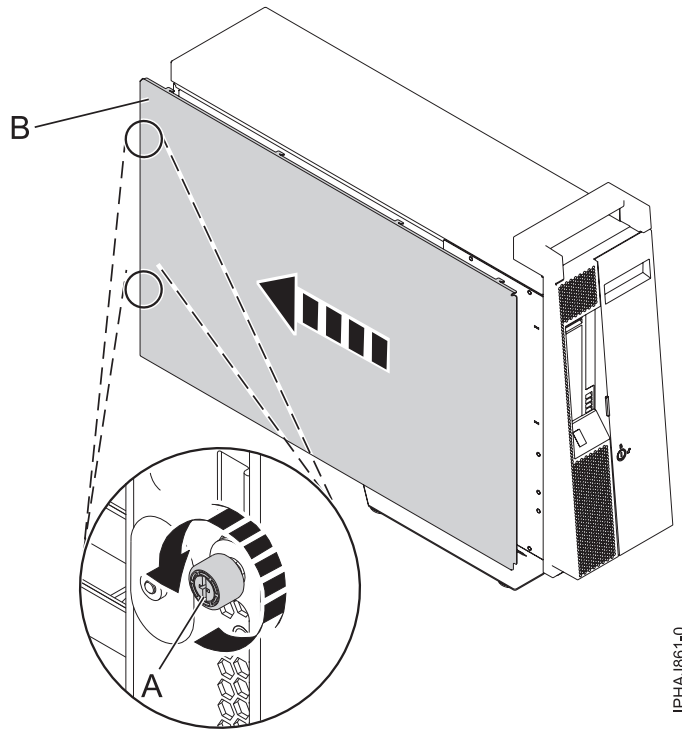


Figure 35. Removing the service access cover from the stand-alone model

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

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

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

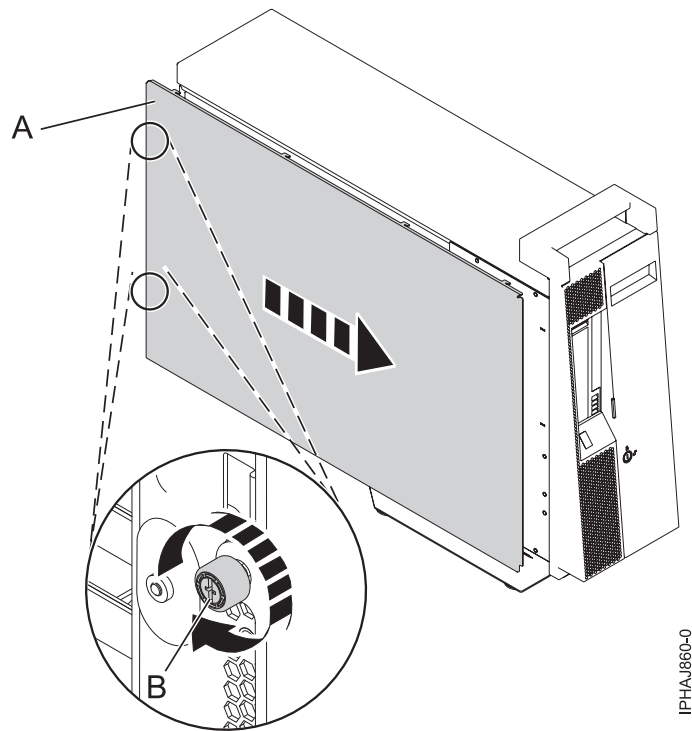


Figure 36. Installing the service access cover on a stand-alone model

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

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

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

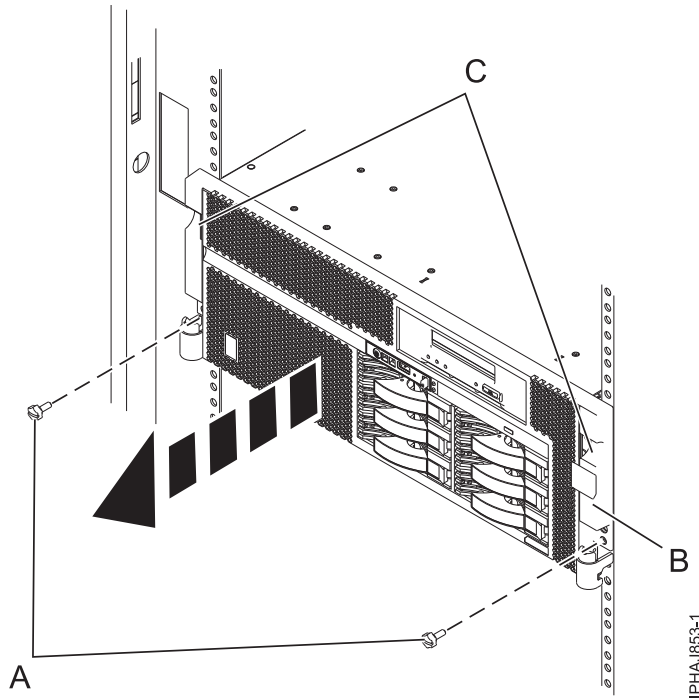


Figure 37. Removing the front cover from a rack-mounted model

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

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

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

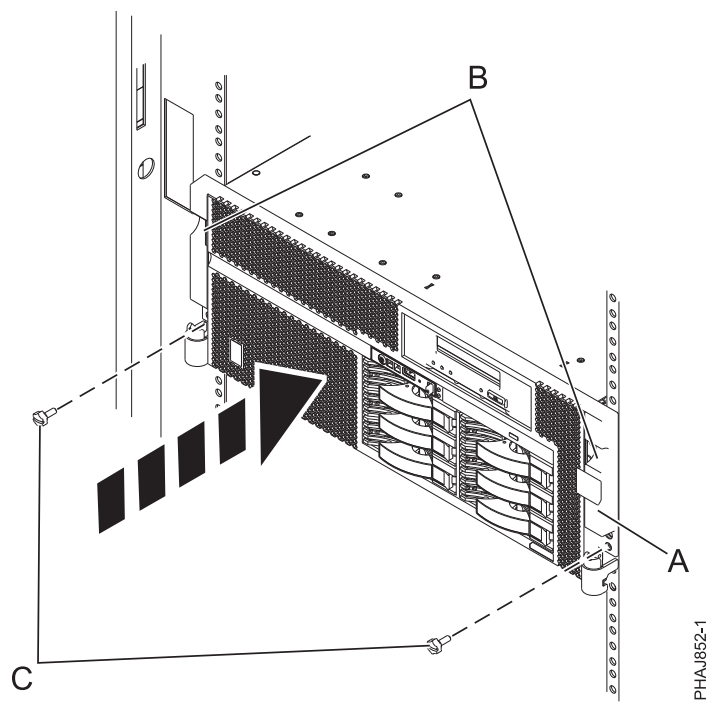


Figure 38. Installing the front cover on a rack-mounted model

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, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

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

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

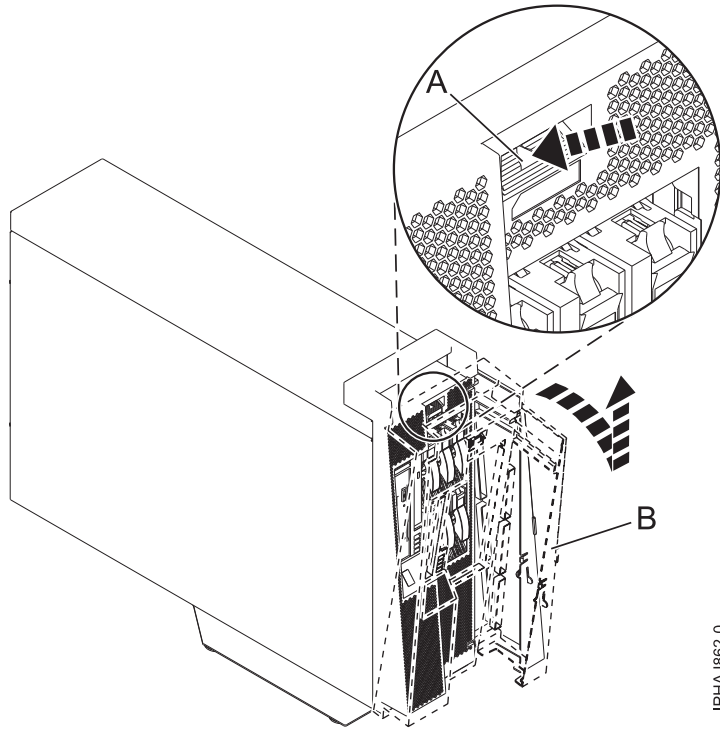


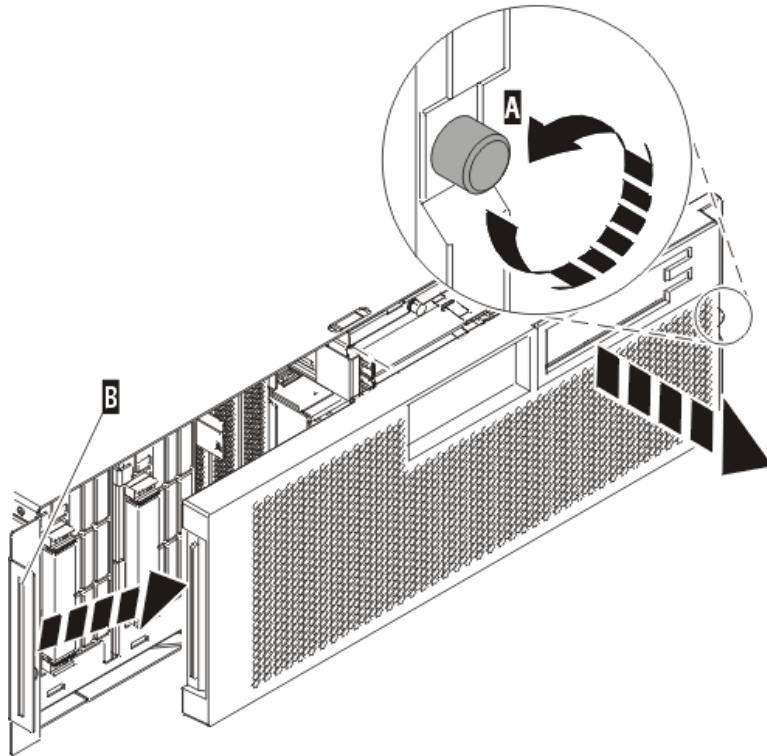
Figure 39. Remove the door from the model

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

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

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

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



IPHA1011-1

Figure 41. Removing the front cover

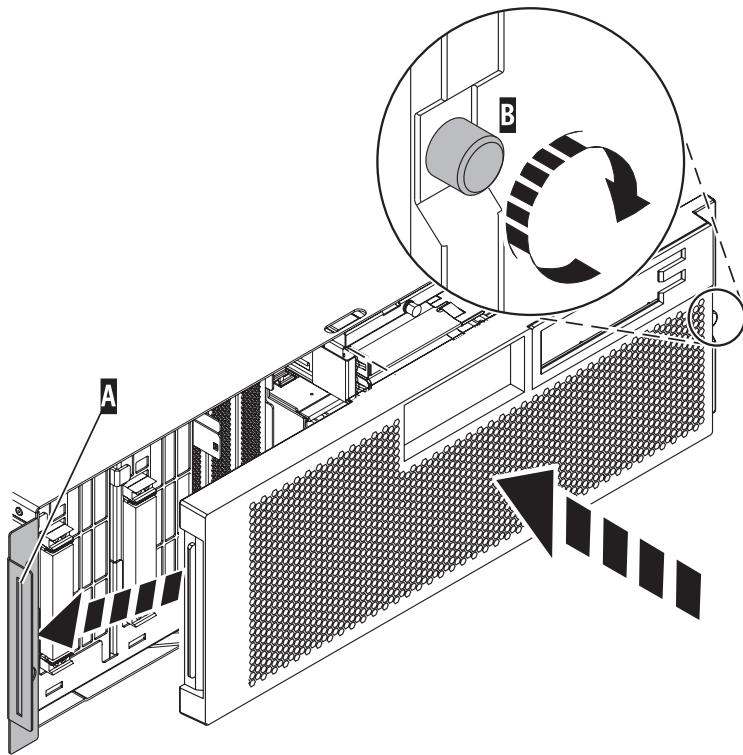
3. Slide the cover to the right, and remove it from the system unit.

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.

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.

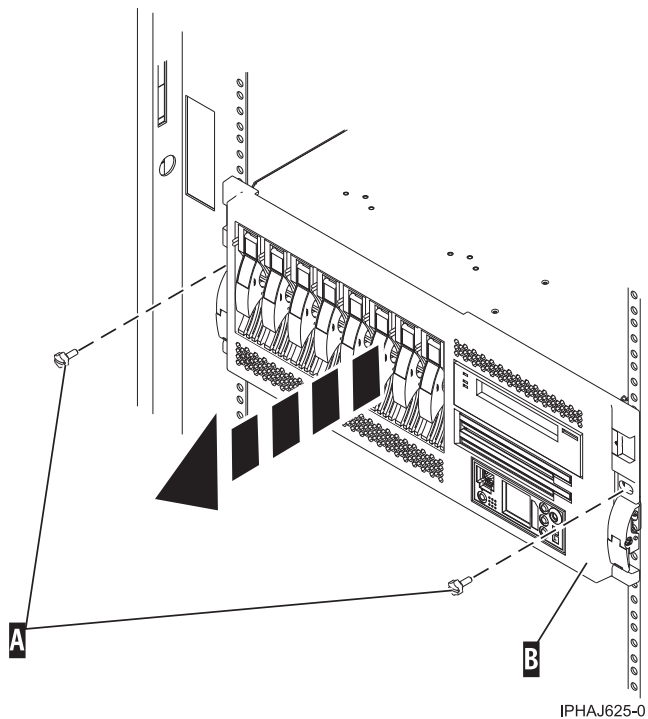


Figure 43. Removing the thumbscrews from the system and rack

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

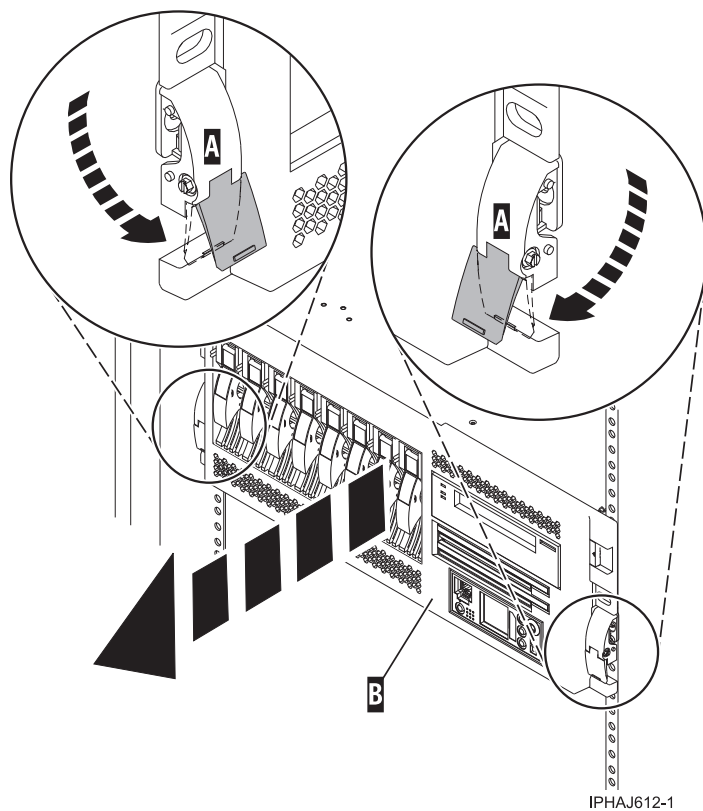


Figure 44. Releasing the rack latches

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

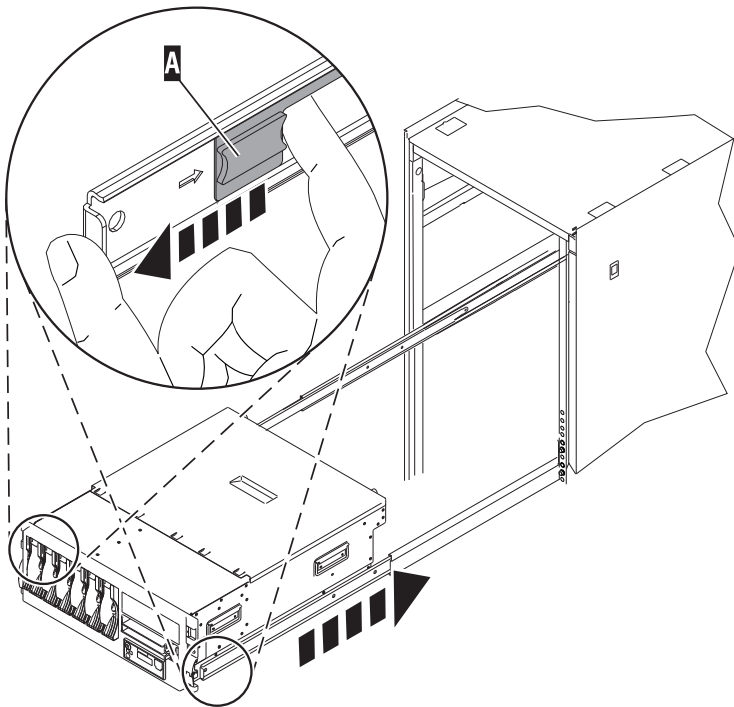
Use this procedure to place the rack-mounted system or expansion unit in the operating position to make the unit available for use.

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.

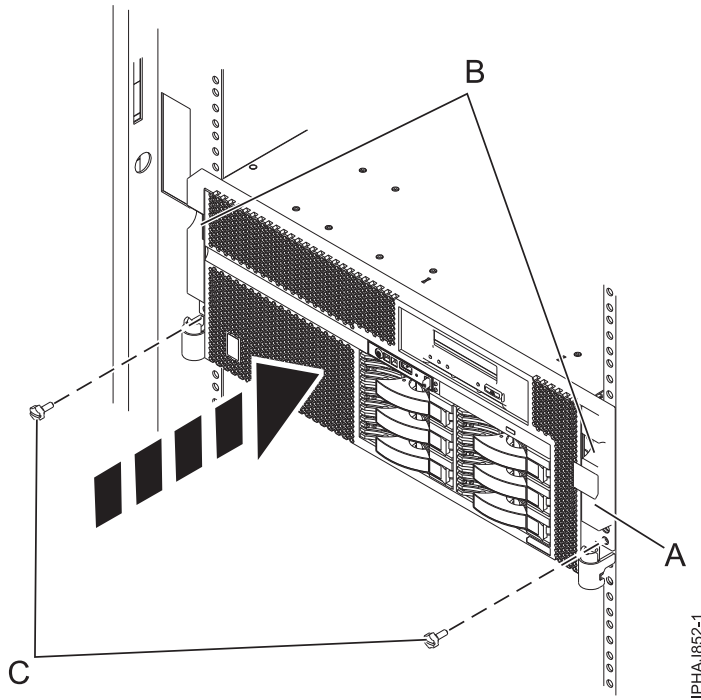


Figure 46. Pushing the system into the rack and attaching the thumbscrews

3. Close the front rack door.

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

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

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

DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

DANGER

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

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



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

CAUTION

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

(R001)

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

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

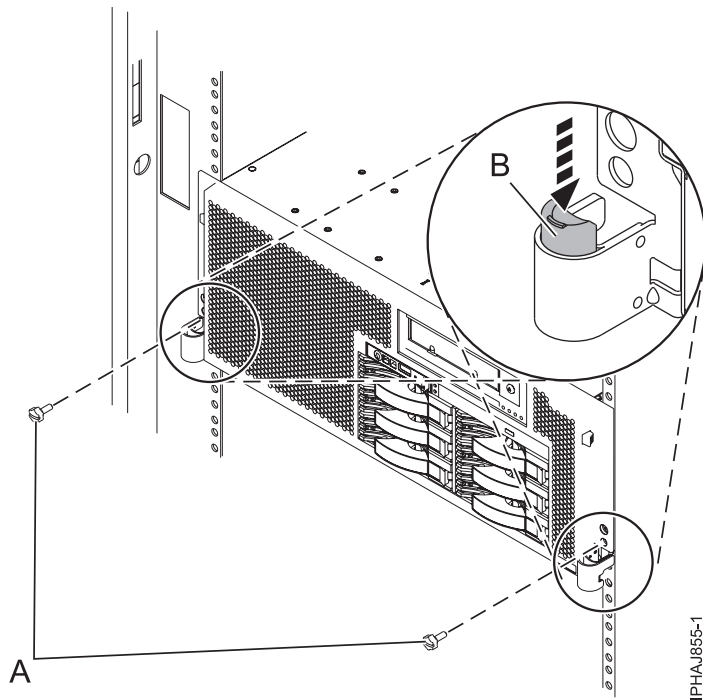


Figure 47. Releasing the rack latches

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, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50 in the operating position

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

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

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

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

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

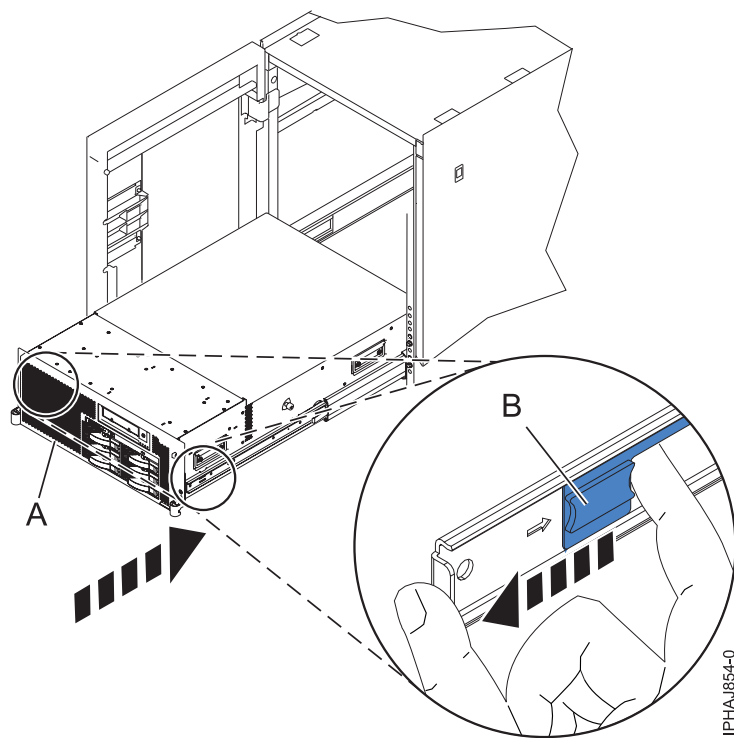


Figure 48. Releasing the rail safety latches

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.

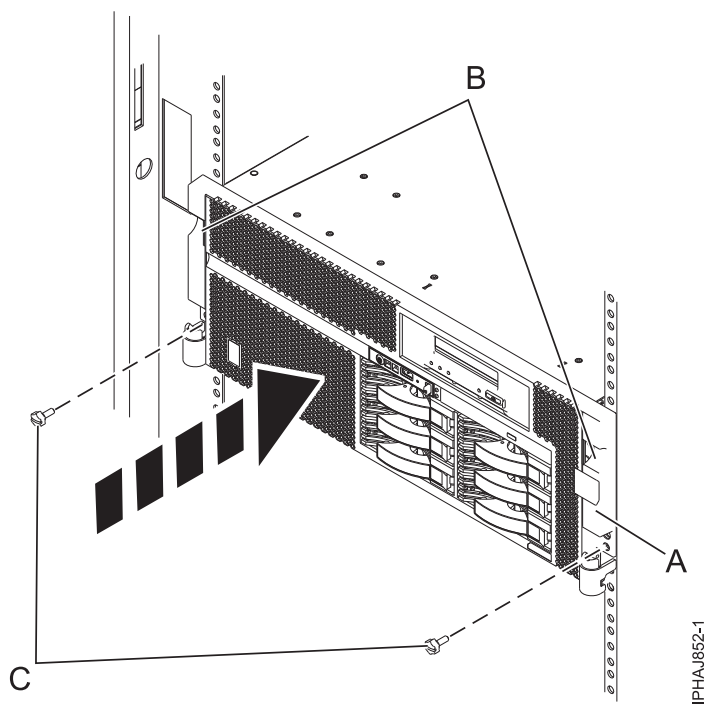


Figure 49. Replacing the thumbscrews

3. Close the front rack door.

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.

Hardware service manager Verify option

Use the hardware service manager to verify communications or devices.

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

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

1. From the Start a Service Tool display, select the *Hardware Service Manager* option.
2. From the Hardware Service Manager display, select the *Logical hardware resources* option.
3. From the Logical Hardware Resources display, select the *System bus resources* option.
This display lists all the I/O processors.
4. Select the *Resources associated with IOP* option for the attached IOP in the list.
5. Select the *Verify* option for the communications, tape, optical storage unit, or File Server adapter that you want to test.
6. When the test completes, the system responds with either a Test is successful message or a Test failed message.

This ends the procedure.

Notes:

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

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

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

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

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

Verify the installed feature using AIX:

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

Verify the replacement part using AIX:

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

1. Did you use either the AIX operating system or the online diagnostics service aid concurrent (hot-swap) service to replace the part?
 - No:** Go to step 2.
 - Yes:** Go to step 5 on page 87.
2. Is the system powered off?
 - No:** Go to step 4.
 - Yes:** If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.
3. Start the system and wait until the AIX operating system login prompt is displayed or until apparent system activity on the operator panel or display has stopped.

Did the AIX login prompt display?

 - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.
If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
 - **Yes:** Go to step 4.
4. At the command prompt, type `diag -a` and press Enter to check for missing resources. If you see a command prompt, go to step 5 on page 87.

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 on page 88.

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 on page 88
Yes: Go to step 8.
8. Select the parent or child of the resource for the replaced part from the **Resource Repair Action** menu if necessary. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the **Resource Repair Action** menu appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

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

- a. From the **Resource Repair Action** menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the resource list, select **sysplanar0** and press Enter.
- b. Select **Commit** after you make your selections.

- c. If the **No Trouble Found** display appears, go to step 9.
9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the values they had prior to servicing the system.
10. Did you do any hot-plug procedures before doing this procedure?
 - No:** Go to step 11.
 - Yes:** Go to step 12.
11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?
 - No:** Contact your service provider. **This ends the procedure.**
 - Yes:** Go to step 12.
12. Are the indicator lights still on?
 - **No. This ends the procedure.**
 - **Yes.** Turn off the lights. See the following for instructions: Changing service indicators.

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

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

To verify the installed part follow these steps:

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

Note: If you cannot get to the System Service Tools display, use function 21 from the control panel. Alternatively, if the system is managed by Hardware Management Console (HMC), use the Service Focal Point Utilities to get to the Dedicated Service Tools (DST) display.

4. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display and press Enter.

Note: The service tools password is case-sensitive.

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

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

Deactivating the failing-part indicator light

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

To deactivate the indicator light, follow these steps:

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

Verifying the installed part on a Linux system or logical partition

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

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

Verifying an installed part using stand-alone diagnostics

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

- If this server is directly attached to another server or attached to a network, ensure communications with the other servers has stopped.
- The stand-alone diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- The stand-alone diagnostics require access to the system console.

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

To use stand-alone diagnostics, follow these steps:

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

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

Note: If you received an SRN or any other reference code when you attempted to start the system, contact your service provider for assistance..

7. If the terminal type is requested, select the **Initialize Terminal** option on the Function Selection menu to initialize the operating system.
8. From the Function Selection menu, select **Advanced Diagnostics Routines** and press Enter.
9. From the Diagnostic Mode Selection menu, select **System Verification** and press Enter.

10. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part and press Enter.
11. Did the Testing Complete, No trouble was found message appear?
 - **No:** There is still a problem. Contact your service provider.
 - **Yes:** Go to step 12.
12. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.
13. If the indicator lights are still on, follow these steps:
 - a. Select **Identify and Attention Indicators** from the Task Selection menu to turn off the system attention and indicator lights and press Enter.
 - b. Select **Set System Attention Indicator to NORMAL** and press Enter.
 - c. Select **Set All Identify Indicators to NORMAL** and press Enter.
 - d. Choose **Commit**.

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

- e. Exit to the command line.

Verifying an installed part using Hardware Management Console

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

To verify an installed part, complete these steps:

1. At the HMC, examine the service action event log for any open service action events. See Viewing serviceable events for details.
2. Are there any service action events that are open?
 - No:** If the system attention or identify LED is still on, use the HMC to turn off the LED. See Activating and Deactivating LEDs. **This ends the procedure.**
 - Yes:** Continue with the next step.
3. Record the list of open service action events.
4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.
 - **No:** Select one of the following options:
 - Review the other serviceable events, find one that does match, and continue with the next step.
 - If the log does not match what you had gathered earlier, contact your service provider.
 - **Yes:** Continue with the next step.
5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
6. Click **Close Event**.
7. Add comments for the serviceable event. Include any unique additional information. Click **OK**.
8. Did you replace, add, or modify a field replaceable unit (FRU) of the open service action event?
 - **No:** Select the **No FRU Replaced for this Serviceable Event** option, and click **OK** to close the service action event.
 - **Yes:** Perform the following steps:
 - a. From the FRU list, select a FRU that you need to update.

- b. Double-click the FRU and update the FRU information.
 - c. Click **OK** to close the service action event.
9. If you continue to have problems, contact your service provider.

Activating and deactivating LEDs

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

Choose from the following:

- “Deactivating a system attention LED or partition LED”
- “Activating or deactivating identify LED”

Deactivating a system attention LED or partition LED:

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

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

Activating or deactivating identify LED:

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

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

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

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

1. In the navigation area, open **Systems Management**.

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

Viewing serviceable events

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

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

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

To view serviceable events, follow these steps:

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

Verifying the installed part by using Systems Director Management Console

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

To verify the installed part, complete these steps:

1. From the SDMC, examine the service action event log for any open service action events. See “Viewing serviceable events by using the IBM Systems Director Management Console” on page 94 for details.
2. Are there any service action events that are open?
 - No:** If the system attention LED is still on, use the SDMC to turn off the LED. See “Activating and deactivating LEDs by using the SDMC.” **This ends the procedure.**
 - Yes:** Continue with the next step.
3. Record the list of open service action events.
4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.
 - **No:** Select one of the following options:
 - Review the other serviceable events, find one that does match, and continue with the next step.
 - If the log does not match what you had gathered earlier, contact your service provider.
 - **Yes:** Continue with the next step.
5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
6. Click **Delete** or **Ignore**.

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

Activating and deactivating LEDs by using the SDMC

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

Choose from the following:

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

Deactivating a system attention LED or partition LED:

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

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

Activating or deactivating identify LED by using the SDMC:

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

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

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

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

1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** → **Service and Support** → **Hardware** → **Identify LED**.
3. In the Identify LED, Select Enclosure window, select the system unit or enclosure.
4. To activate or deactivate an identify LED, click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.
5. To activate or deactivate an identify LED for a FRU, select a system or enclosure from the table, and then select **List FRUs....**
6. Select one or more FRUs from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.

Viewing serviceable events by using the IBM Systems Director Management Console

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

To view serviceable events, follow these steps:

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

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

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

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

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

Verify the installed feature using VIOS:

1. Log in as root user.
2. At the command line, type `diagmenu` and press Enter.
3. Select **Advanced Diagnostics Routines** and press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.

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

Verify the replacement part using VIOS:

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

1. Did you replace the part using either VIOS or the online diagnostics service aid's concurrent (hot-swap) service operation?
 - No:** Go to step 2.
 - Yes:** Go to step 5 on page 96.
2. Is the system powered off?
 - No:** Go to step 4.
 - Yes:** If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.
3. Start the system and wait until the VIOS operating system login prompt displays or until apparent system activity on the operator panel or display has stopped.

Did the VIOS login prompt display?

 - **No:** If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.
 - If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.
 - **Yes:** Go to step 4
4. At the command prompt, type `diag -a` and press Enter to check for missing resources. If you see a command prompt, go to step 5 on page 96.

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 on page 96.

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.
11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?
- No:** Contact your service provider. **This ends the procedure.**
Yes: Go to step 12.
12. Are the indicator lights still on?
- **No. This ends the procedure.**
 - **Yes.** Turn off the lights. For instructions, see Changing service indicators

Installing a part by using the Systems Director Management Console

You can use the IBM Systems Director Management Console (SDMC) to perform many service actions, including the installation of a new field-replaceable unit (FRU) or part.

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

1. In the Power Systems Resources area, select the system on which you want to install a part.
2. From the **Actions** menu, expand **Service and Support** → **Hardware** → **MES Tasks** → **Add FRU**.
3. On the **ADD FRU** tab, select the system or enclosure type.
4. Select the FRU type you are installing from the menu and click **Next**
5. Select the location code for where you want to install the part, and click **Add**.
6. After the FRU is placed in the **pending actions** category, click **Launch Procedure** and follow the instructions to install the part.

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

Removing a part by using the Systems Director Management Console

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

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

1. In the Power Systems Resources area, select the managed system from which you are removing a part.
2. Select one of the following options:
 - If you are installing a new part as part of an upgrade, from the **Actions** menu, expand **Service and Support** → **Hardware** → **MES Tasks**.
 - If you are removing a part as part of a service action, from the **Actions** menu, expand **Service and Support** → **Hardware** → **Exchange FRU**.
3. To install a new part as part of an upgrade, select **Add FRU**. To replace a part as part of a service action, select **Exchange FRU**.
4. On the Add FRU tab or the Exchange FRU tab, select the system or expansion unit from which you are removing the part.
5. Select the type of part you are removing from the menu and click **Next**.
6. Select the location of the part you are removing and click **Add**.
7. After the part is listed in the **Pending Actions** window, click **Launch Procedure** and follow the instructions to remove the part.

Note: The SDMC might open external instructions for removing the part. If so, follow those instructions to remove the part.

Replacing a part by using the Systems Director Management Console

You can use the IBM Systems Director Management Console (SDMC) 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.

1. In the Power Systems Resource area, select the managed system in which you are exchanging a part.
2. Select one of the following options:
 - If you are replacing a part that is not part of a serviceable event, from the **Actions** menu, expand **Service and Support** → **Hardware** → **Exchange FRU**.
 - If you are exchanging a part to repair a serviceable event, see Starting a repair action.
3. To replace a part as part of a service action, select **Exchange FRU**.
4. From the Exchange FRU tab, select the system or expansion unit in which you want to exchange a part.
5. Select the type of part you want to exchange from the menu and click **Next**.
6. Select the location code of the part you want to exchange from the menu and click **Add**.
7. After the FRU is placed in the **Pending actions** window, click **Launch Procedure** and follow the instructions to exchange the part.

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

Converting the 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 from a stand-alone to a rack-mounted system

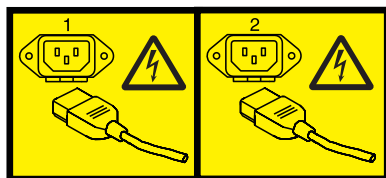
Use these procedures to convert a stand-alone system to a rack-mounted system.

Perform the prerequisite tasks as described in “Before you begin” on page 47.

1. Stop the system. For instructions, see “Stopping a system or logical partition” on page 55.
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)



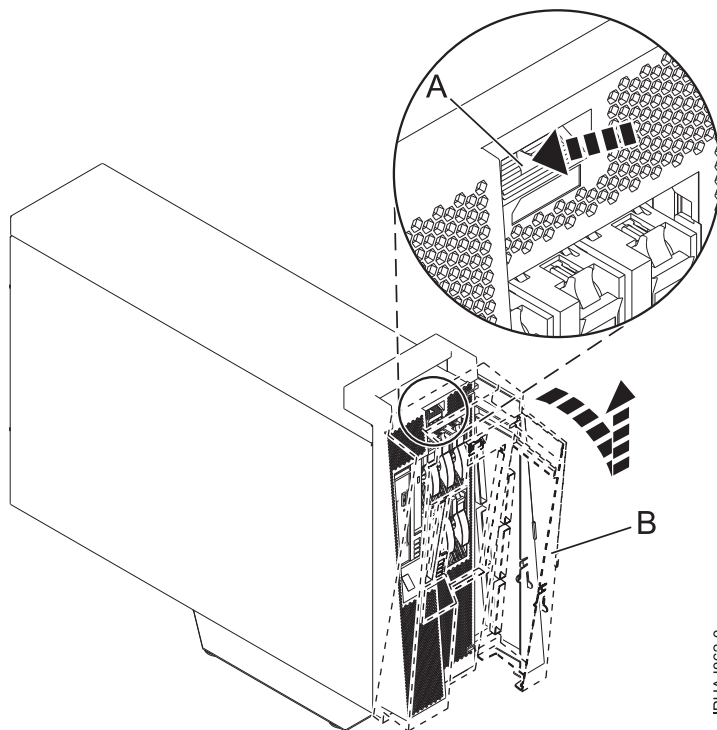
or



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

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

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



IPHAJ862-0

Figure 50. 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, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50

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

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

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

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

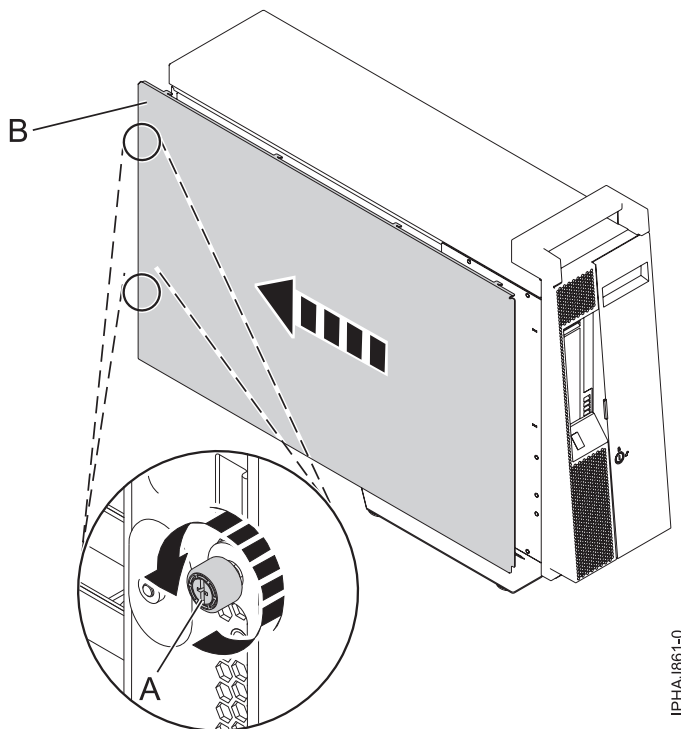


Figure 51. Removing the service access cover from the stand-alone model

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. Remove the screw attached to the top of the back cover and 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.

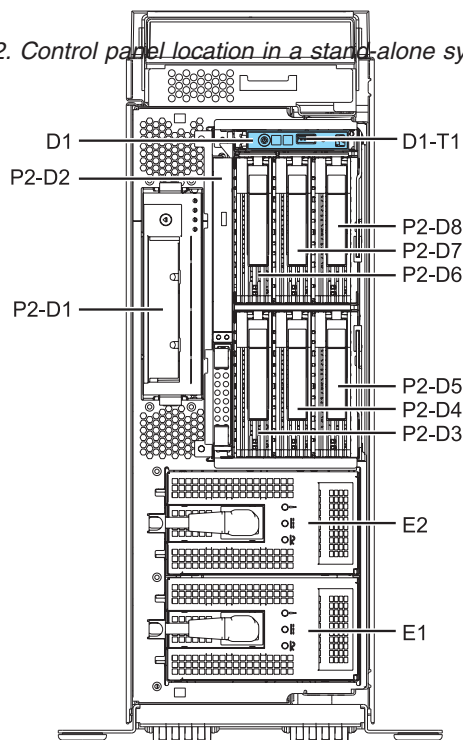
Moving the control panel

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.

To complete the conversion you must move the control panel from the desk position to the rack mounted position. If you ordered a new disk-drive backplane with the conversion you must move the control panel from the old backplane to the new one.

Tip: The figures below show a system with 3.5-inch disk drives, the control panel position for 2.5-inch disk drives is the same.

Figure 52. Control panel location in a stand-alone system



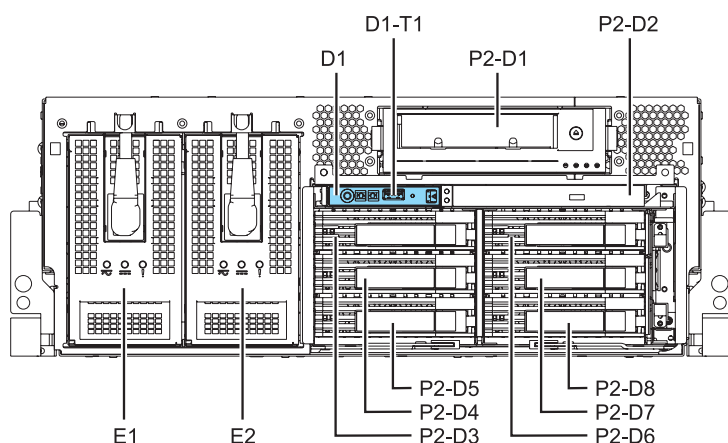


Figure 53. Control panel location in a rack-mounted system

1. Remove the control panel filler from the rack-mounted position shown in the preceding figure, by pressing the locking tabs located on either side of the filler, grasping the edges of the panel, and pulling it out of its bay.

Remember: Save the control panel filler as you will need to reinstall it in the stand-alone position after you move the control panel.

2. Unlock the control panel by pressing release button (A), and then pull it out of the system as shown in the following figures. Disconnect the control-panel signal cable (B) and USB cable from the back of the control panel. 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.

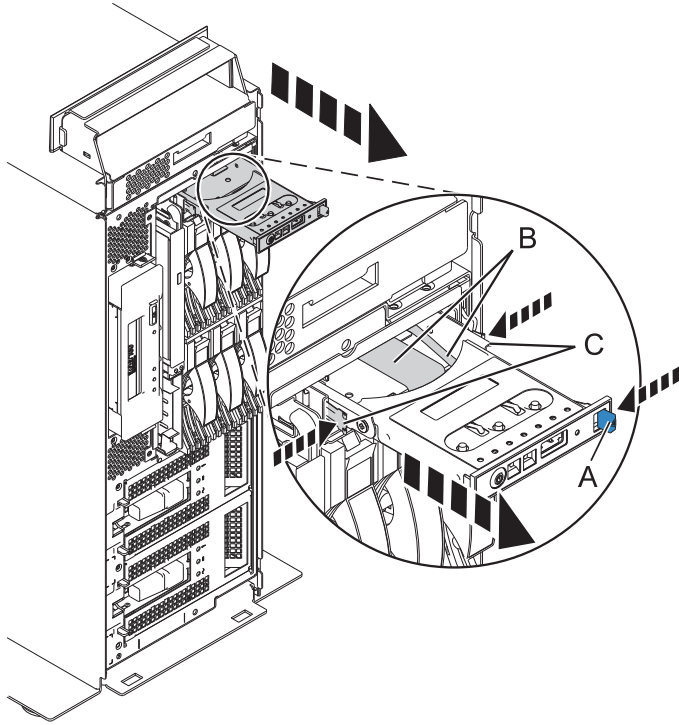


Figure 54. Removing the control panel from a stand-alone system

3. Remove the service access cover. For instructions, see “Removing the service access cover from a stand-alone 8203-E4A, 8204-E8A, 8261-E4S, 9407-M15, 9408-M25, or 9409-M50” on page 66.
4. 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.

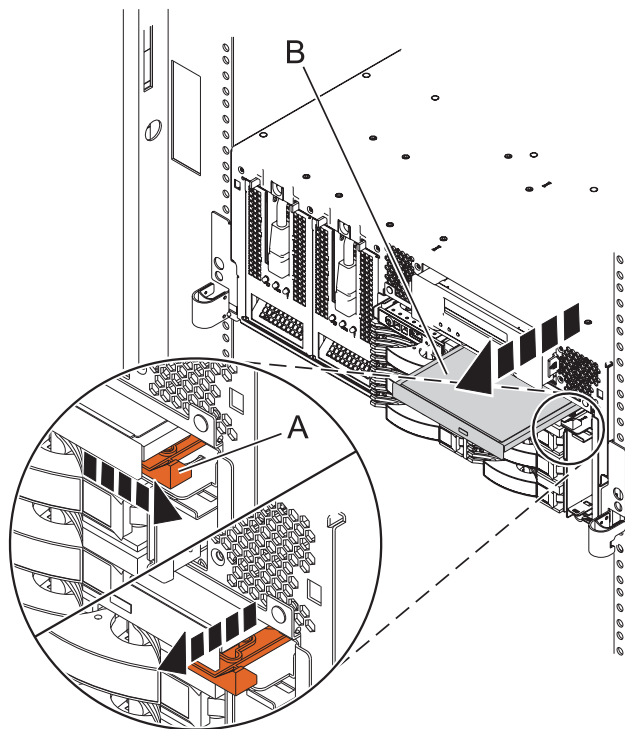


Figure 55. Removing the media device from the disk drive backplane

5. To remove the fans, lift the latch (A) upward and pull each fan (B) out of the airflow cover as shown in the following figure

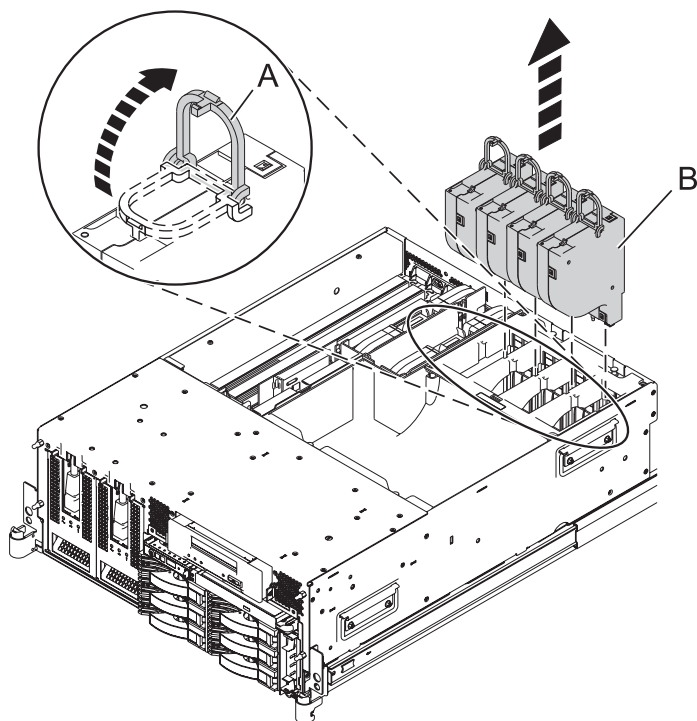


Figure 56. Removing the fans from the 8203-E4A, 8261-E4S, 9407-M15, or 9408-M25 airflow cover

6. 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.

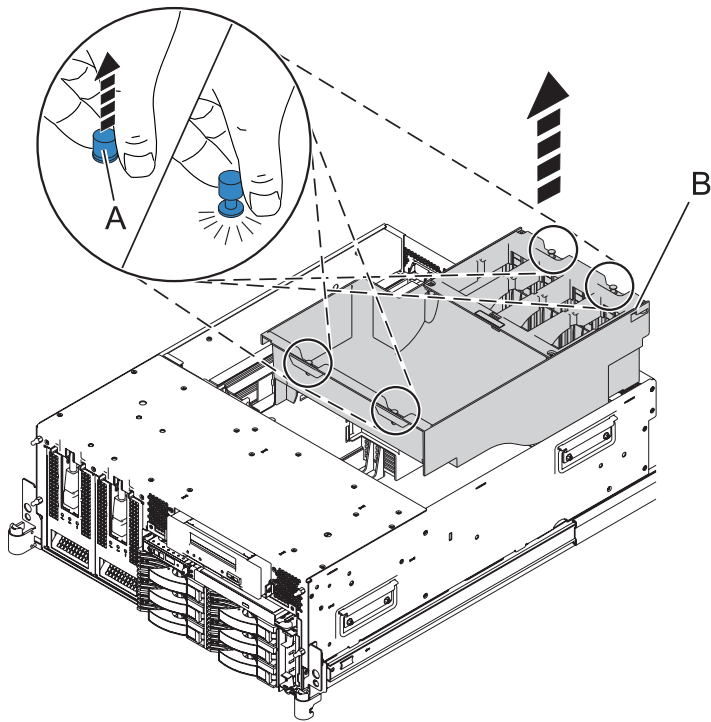


Figure 57. Removing the airflow cover

7. Disconnect the cables from the back of the disk drive backplane, as shown in the following figures.

Note: Ensure that you have disconnected all cables from the backplane. Some of the cables might not be shown in the following figures. If you have a USB disk drive, see Removing a universal serial bus disk drive from the 8203-E4A, 8261-E4S, 8204-E8A

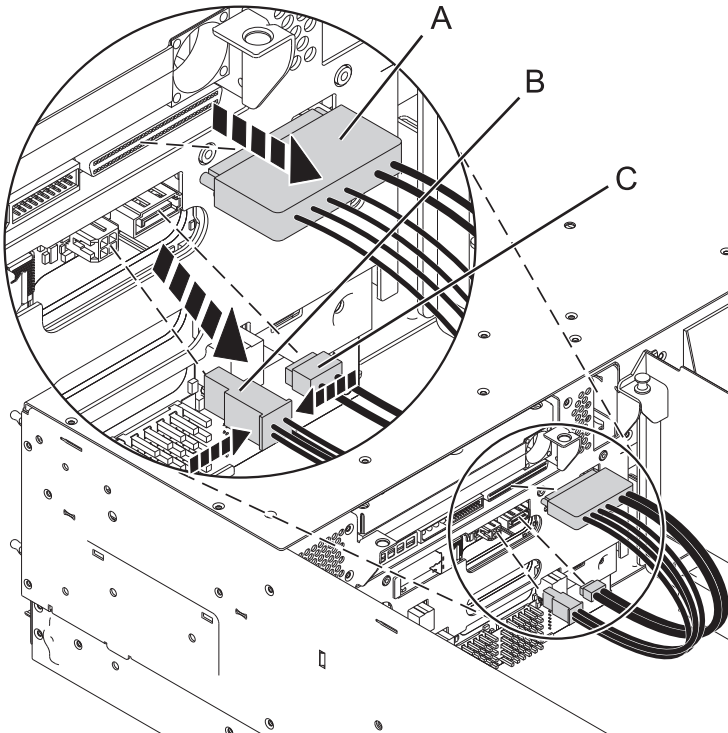


Figure 58. Disconnecting the media device cables from the 3.5 inch disk drive backplane

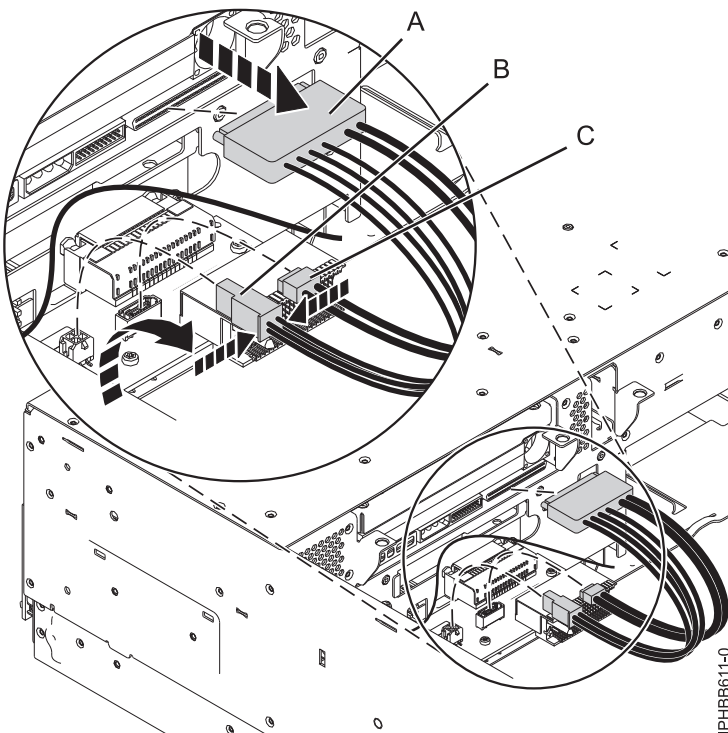


Figure 59. Disconnecting the media device cables from the 2.5 inch small form disk drive backplane

8. 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.

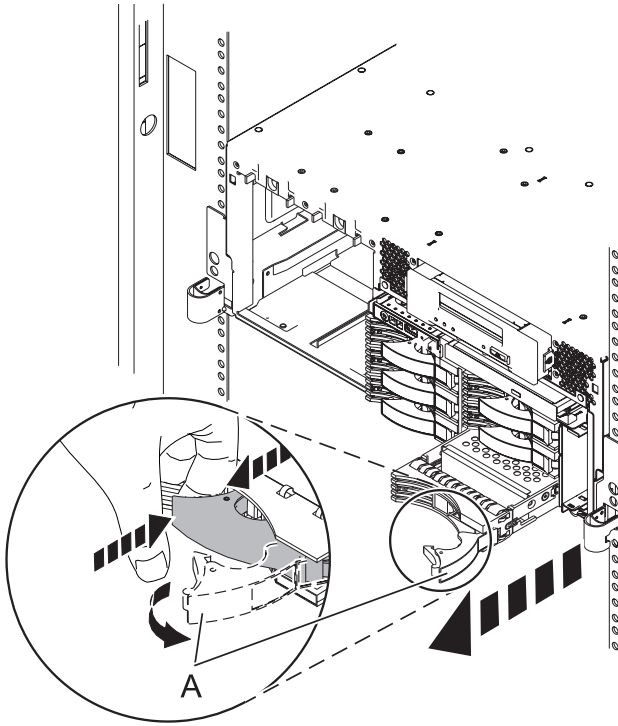


Figure 60. Remove disk drives

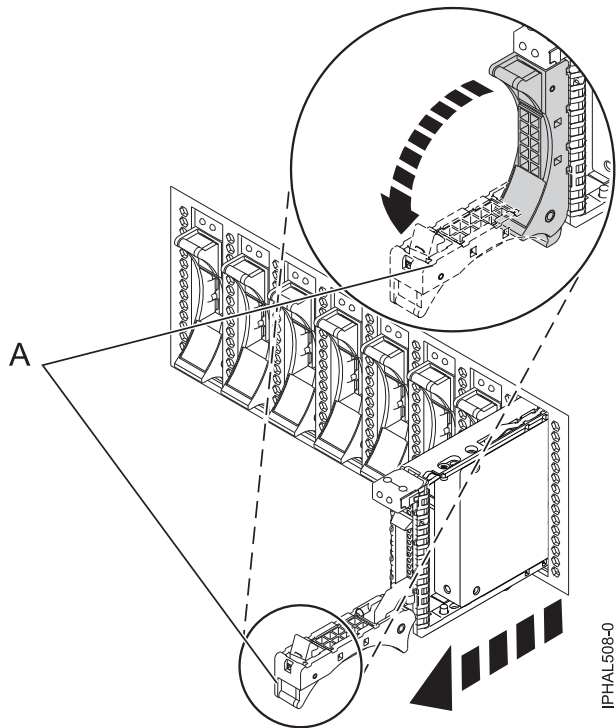


Figure 61. Removing a small-form factor disk drive

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

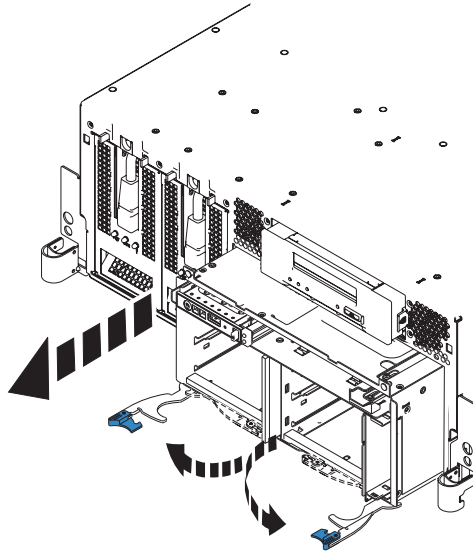


Figure 62. Removing the unpopulated disk drive backplane

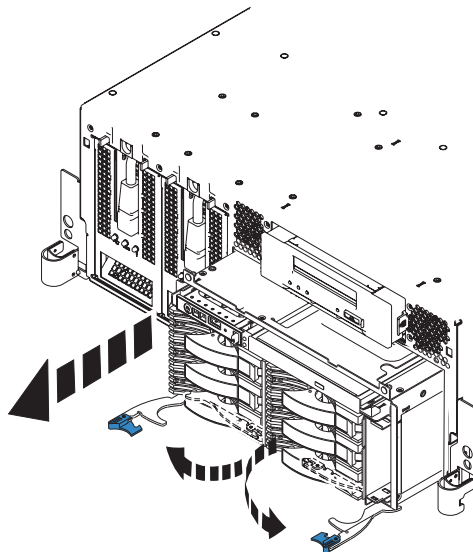


Figure 63. Removing the populated disk drive backplane

11. Determine which disk-drive backplane you have using the following figures and follow the steps to remove and reposition the control panel signal cable.

To remove and reposition the control-panel signal cable from a 2.5-inch disk drive backplane do the following steps:

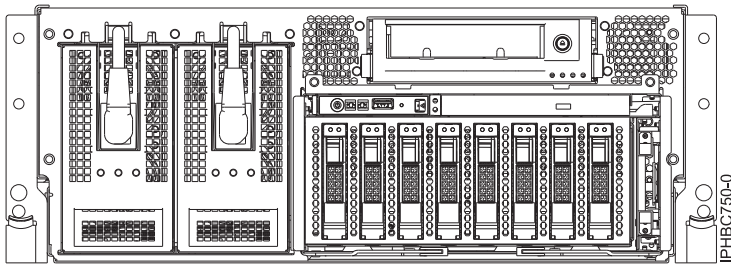


Figure 64. 2.5-inch disk drive

- a. In a stand-alone system, disconnect the signal and USB cables (**B**) from port (**A**) on the back of the backplane and lift the cables out of the system.

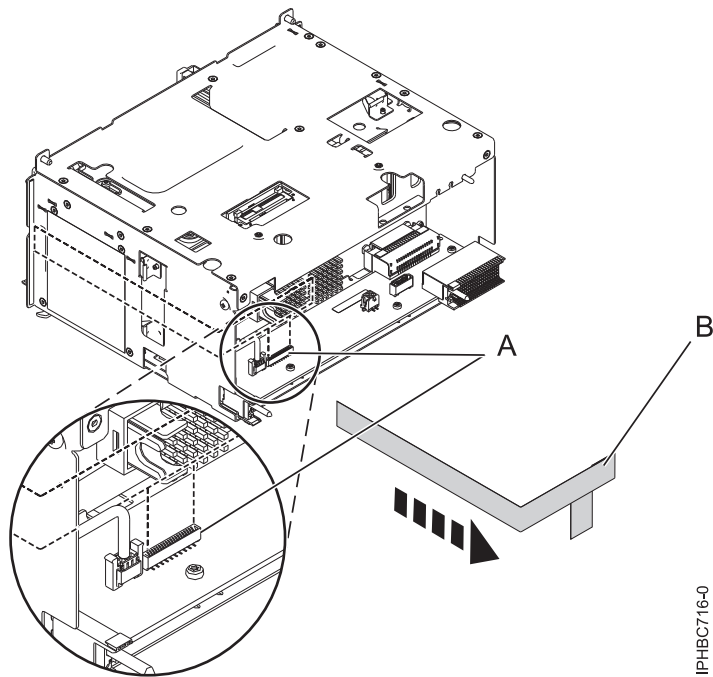


Figure 65. Removal of a signal cable in a stand-alone system

- b. Attach the signal cable to port (**A**) on the back of the backplane.

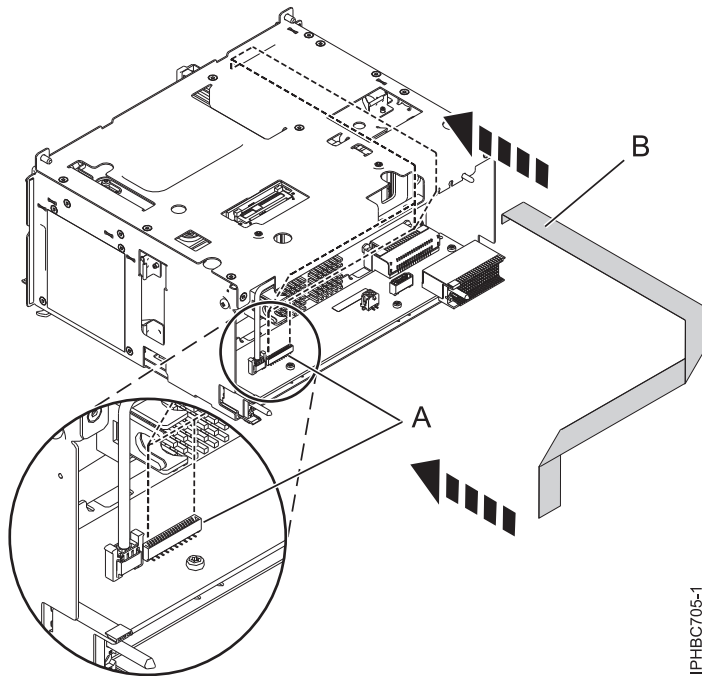


Figure 66. Installation of a signal cable in a rack-mounted system

- c. Route the signal cable to the front of the system, leaving extra cable length to the back of the system.
- d. Carefully form an S-shaped loop with the signal cable and tuck the loop into the open area at the back of the system.
- e. Install USB cable along the same route as the signal cable.

To remove and reposition the control panel signal cable from a 3.5-inch disk drive backplane do the following steps:

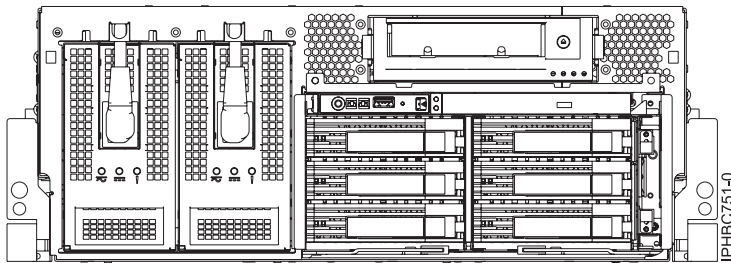


Figure 67. 3.5-inch disk drive

- a. In a desk-side system, remove the DVD interposer card (C) by gently pressing down on light pipes (D) and the tab (E). With thumbs and with both forefingers, pull the card forward until notches (F) line up with the side openings of the card. Pull the card all the way out.

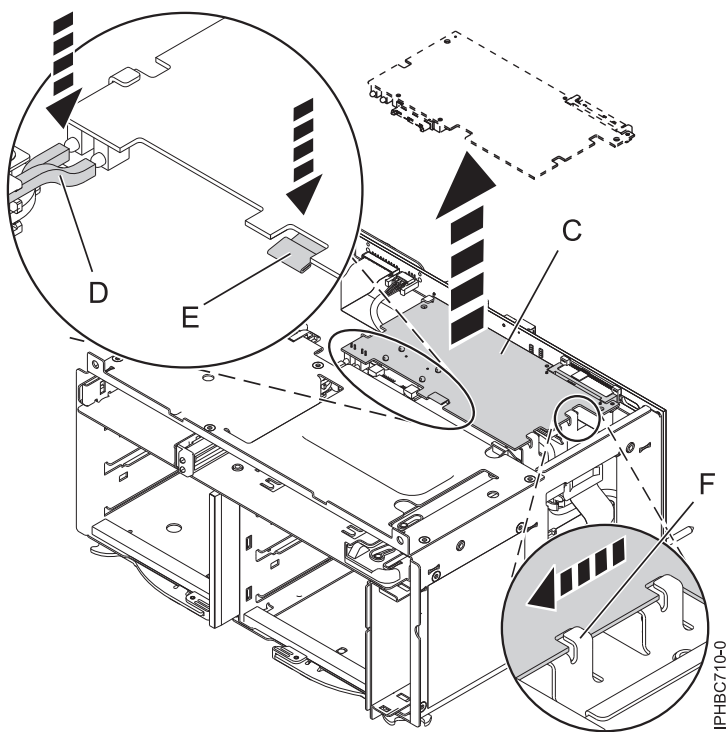


Figure 68. Removing the DVD interposer card

Disconnect the signal cable from port (A) on the back of the backplane and lift the cable out of the system.

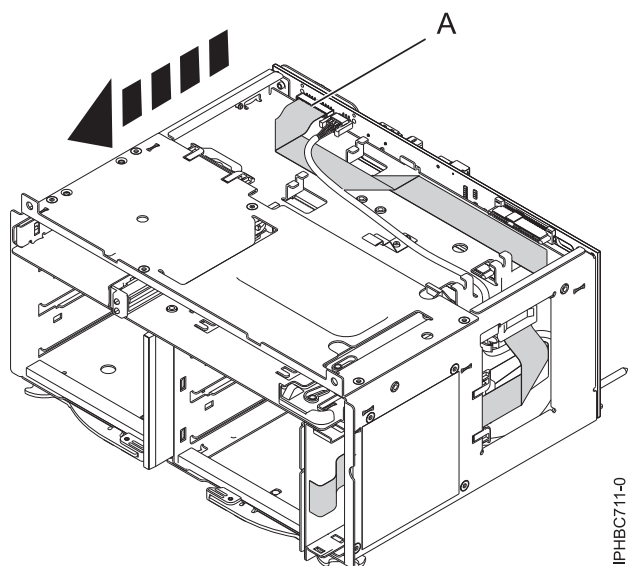


Figure 69. Removal of a signal cable in a stand-alone system

- b. Attach the signal cable to port (A) on the back of the backplane.
- c. Thread the signal cable through clip (G).

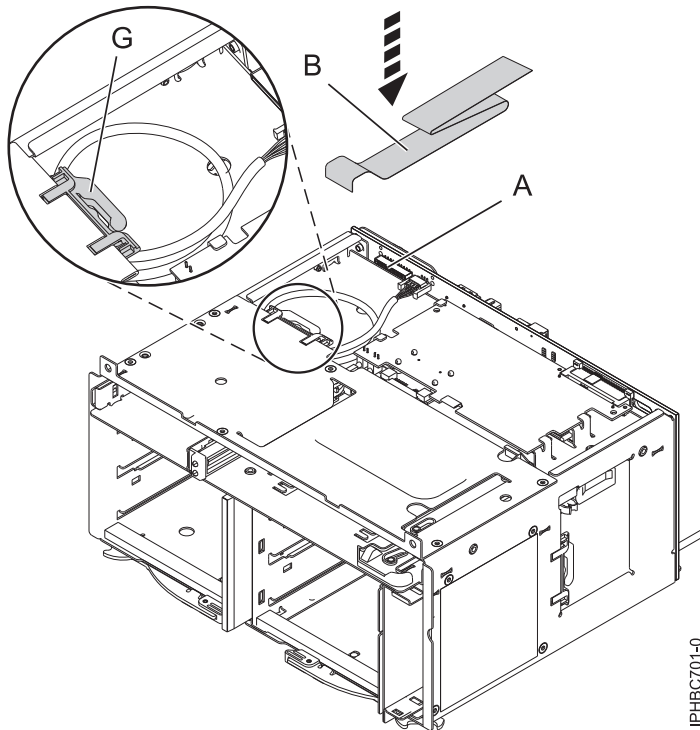


Figure 70. Installation of a signal cable in a rack-mounted system

- d. Route the signal cable to the front of the system, leaving extra cable length to the back of the system.
- e. Carefully form an S-shaped loop with the signal cable and tuck the loop into the open area at the back of the system.
- f. Install the USB cable along the same rout as the signal cable and create the loop shown in the preceding figure.
- g. Insert the DVD interposer card (C) by lining up notches (F) with the side openings of the card and carefully push the card back and down until tab (E) clicks in place.

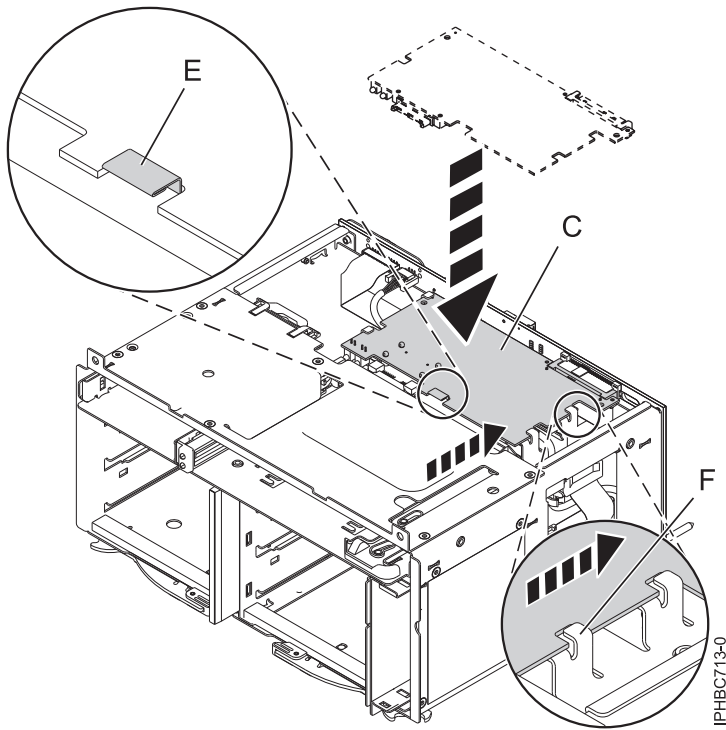


Figure 71. Installation of the DVD interposer card in the stand-alone system

12. If you have the 2.5-inch disk drive backplane do the following steps. If you have a 3.5-inch backplane continue to step 14 on page 115. If you have a USB disk drive, see Installing a universal serial bus disk drive in the 8203-E4A, 8261-E4S, 8204-E8A.
 - a. Connect the media device cable (as applicable) to the port on the bottom of the backplane.

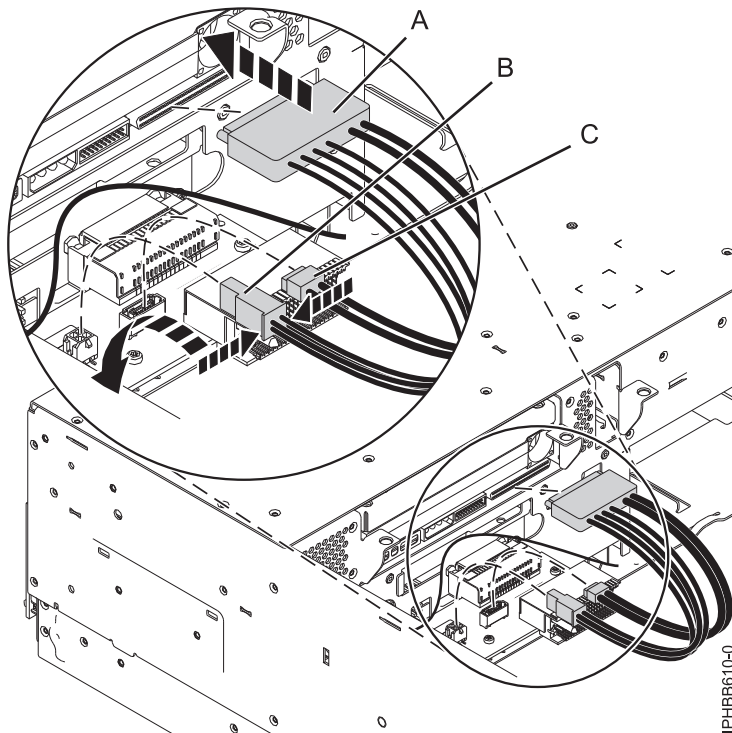


Figure 72. Connecting the cables to the 2.5 inch small form disk drive backplane

- b. Slide the cable and the disk-drive backplane into the slot on the server until you can reach the cable through the plate on the back of the enclosure. I

Note: Ensure the media device cable does not catch or bind as you push the backplane into the system.

- c. Pull the media device cable through the slot on the plate in the server as you push the disk-drive backplane into the slot.
- d. Continue to step 14
13. Align the backplane with the slot in the server.
14. Insert the backplane firmly into the server, as shown in the following figures.
15. Secure the backplane with the locking tabs.

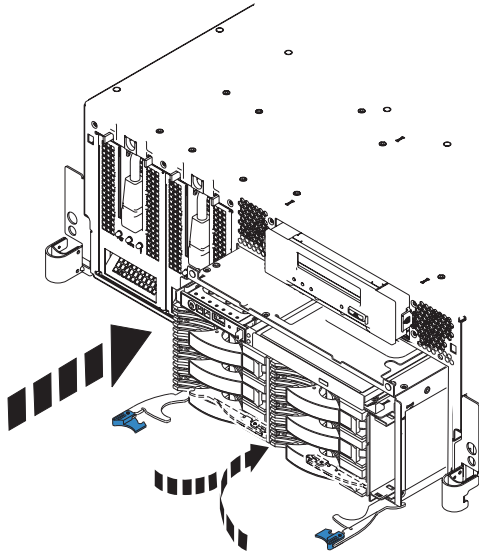


Figure 73. Installing the populated disk drive backplane on a rack-mounted model

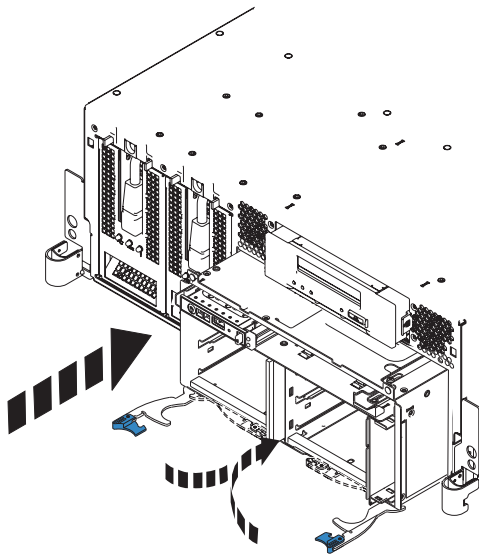


Figure 74. Installing the unpopulated disk drive backplane on a rack-mounted model

16. If you have an internal SAS cable attached to the disk-drive backplane you have, complete one of the following choices:

- If you can see the SAS connection in the center of the disk-drive backplane (**D**) attach the cable to the connection and continue to step 17
- If you can see the SAS cable shroud extending from the disk-drive backplane continue to the next step.

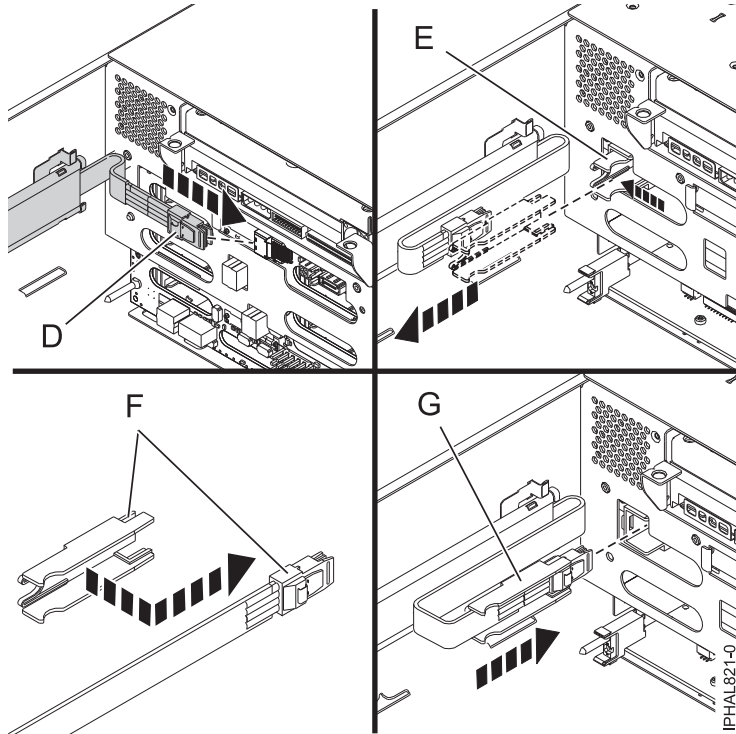


Figure 75. SAS cable connections

- Locate the SAS cable shroud (**E**) on the disk-drive backplane and pull the back of the shroud away from the side of the system to unseat the shroud.
 - Pull the shroud out of the SAS port.
 - Attach the shroud to the male SAS connector (**F**) on the cable assembly by sliding the shroud over the top of the cable connector (**F**) from behind. The SAS connector on the cable should fit into the two slots at the front of the shroud, and the connector should extend away from the shroud so it can be seated in the port.
 - Slide the cable and shroud (**G**) into the SAS port until it is firmly seated in place.
17. Install the control panel, if you have not already done so, by doing the following steps:
- Carefully slide the control panel into the control panel bay until you feel the locking tabs lock in place.

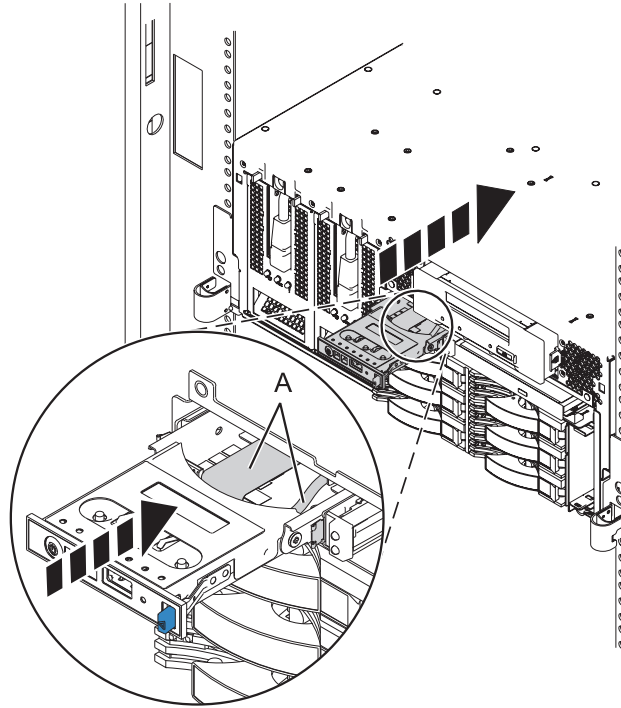


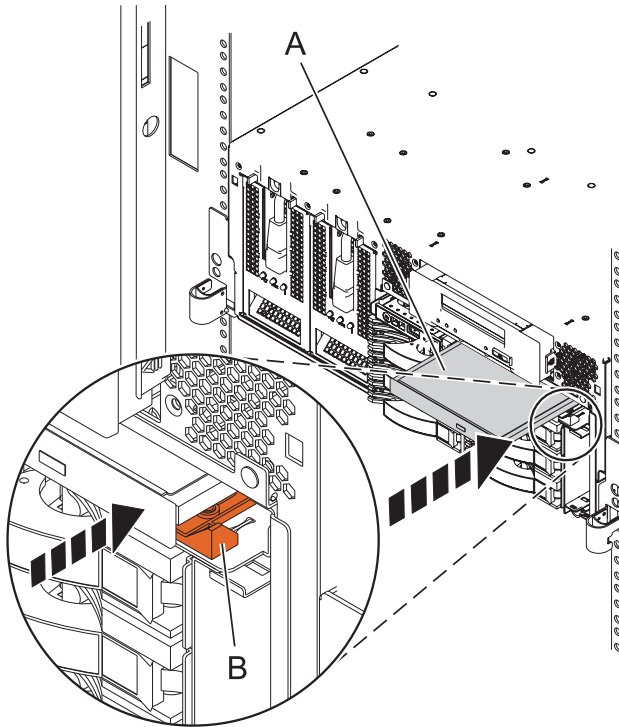
Figure 76. Replacing the control panel in a rack-mounted system

- b. Attach the USB and signal cable (A) to the slots at the back of the control panel.
 - c. Lift the control panel and slide it all the way into the system until you feel it latch in place.
18. Install the control-panel filler into the stand alone position that is now empty.

Important: Installing the control panel filler ensures proper airflow.

19. 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.

Restriction: If you are upgrading your disk-drive backplane as a part of your order, install the new media device that came with your order.



20. Install the disk drives

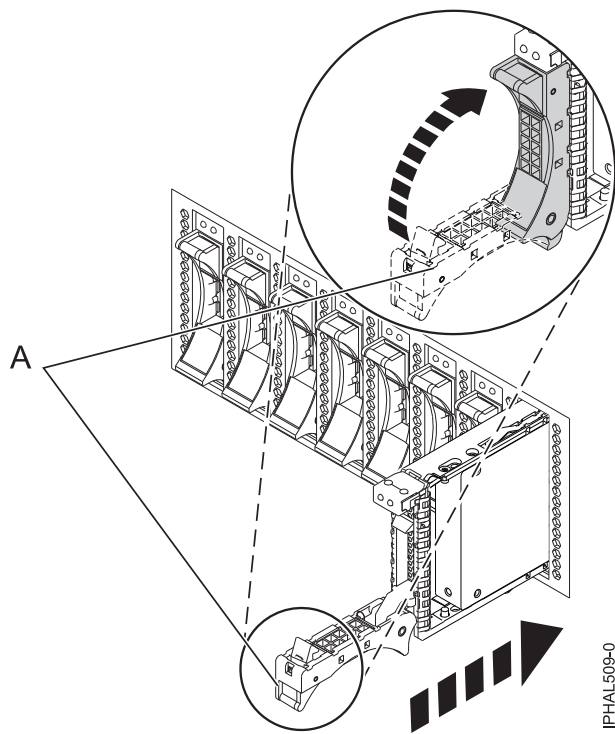


Figure 77. Installing a small-form factor disk drive

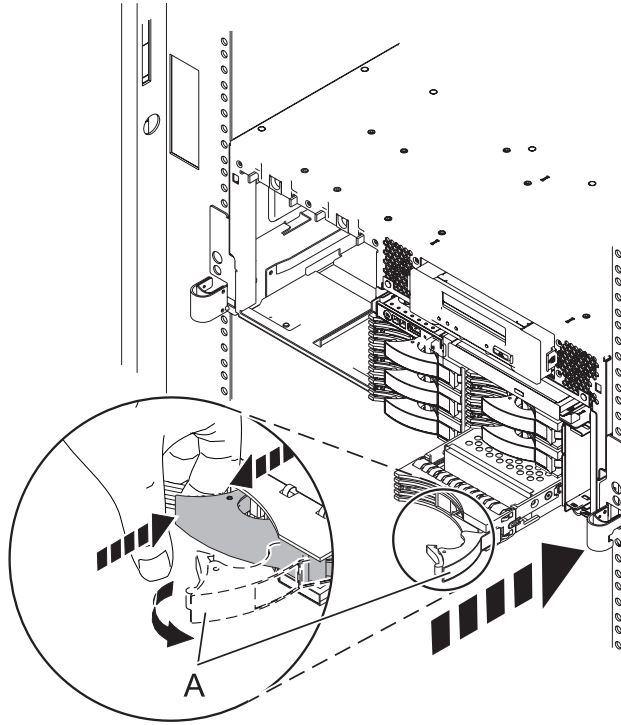
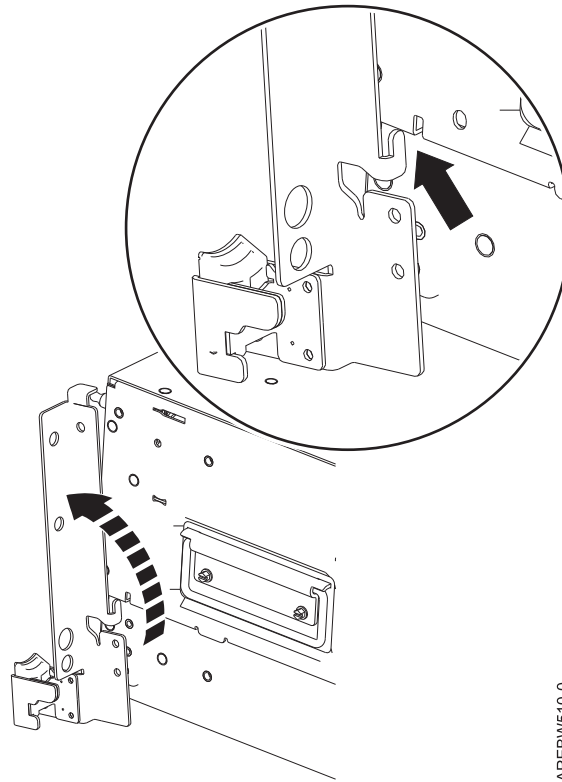


Figure 78. Installing a disk drive

21. Locate the two latch brackets, and install them using the following procedure:
 - a. Rotate the top of the bracket out as shown in the following graphic.



AREBW510-0

Figure 79. Rotate the top of the bracket out

- b. Align the bracket with the slot on the side of the server as shown in the following graphic.

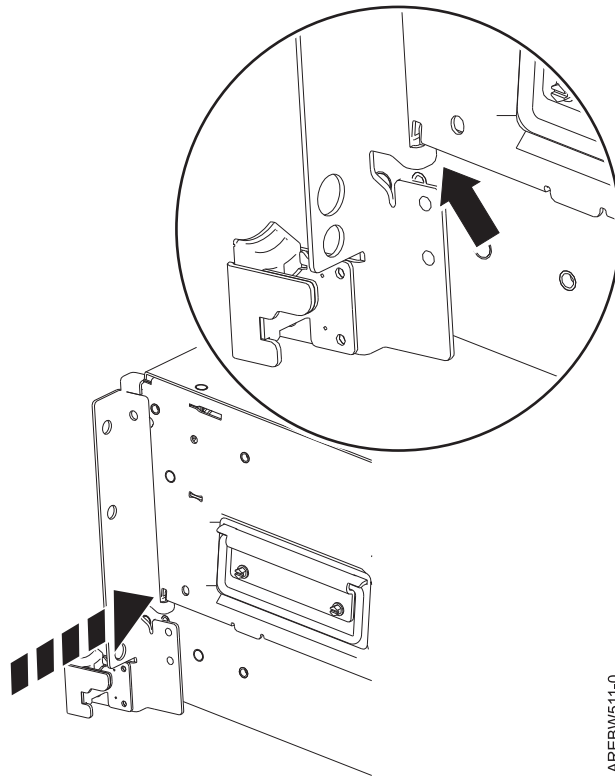


Figure 80. Align the bracket with the slot on the side of the server

- c. Move the bracket up to engage the tab as shown in the following graphic.

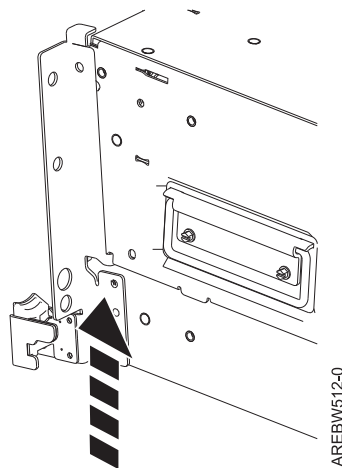


Figure 81. Move the bracket up to engage the tab

- d. Rotate the top of the bracket back to align with the top of the chassis and install the screws using a T-10 torque screw driver as shown in the following graphic.

Note: There are two screws in each bracket.

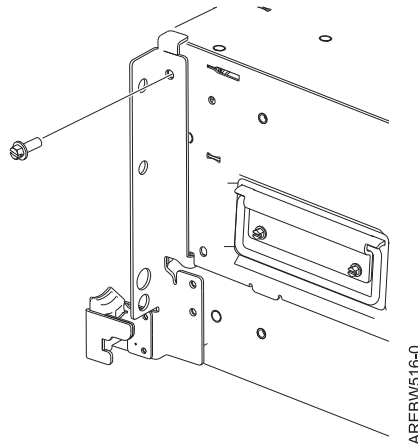


Figure 82. Rotate the top of the bracket back so that top tab is on top of the chassis and install the screws

22. 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.
23. Replace the airflow cover, the fans, and replace the service access cover.

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

Converting a 8203-E4A, 8261-E4S, 9407-M15, 9408-M25 from a rack mounted to a stand-alone system

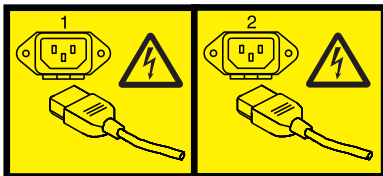
Converting a system from a rack-mounted to a stand-alone version requires removing the system from the rack, replacing covers, repositioning control panels, and attaching other parts. Follow the procedures in this section to successfully complete the conversion.

Perform the prerequisite tasks described in “Before you begin” on page 47.

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

Note: This system may 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. Disconnect all cables from the system.

Note: Label and document each cable as you disconnect it to ensure you have an accurate record.

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

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

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

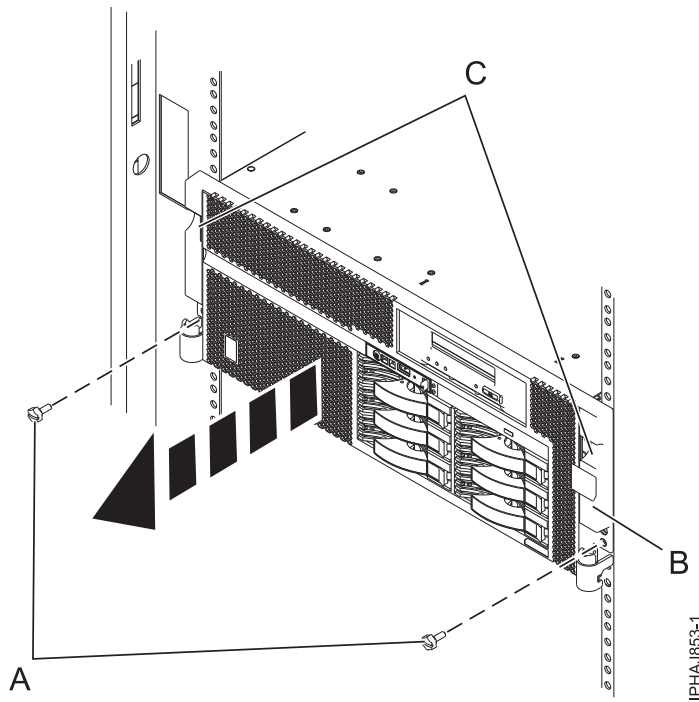


Figure 83. Removing the front cover from a rack-mounted model

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

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

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

DANGER

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

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

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

To Disconnect:

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

To Connect:

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

(D005)

DANGER

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

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



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

CAUTION

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

(R001)

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

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

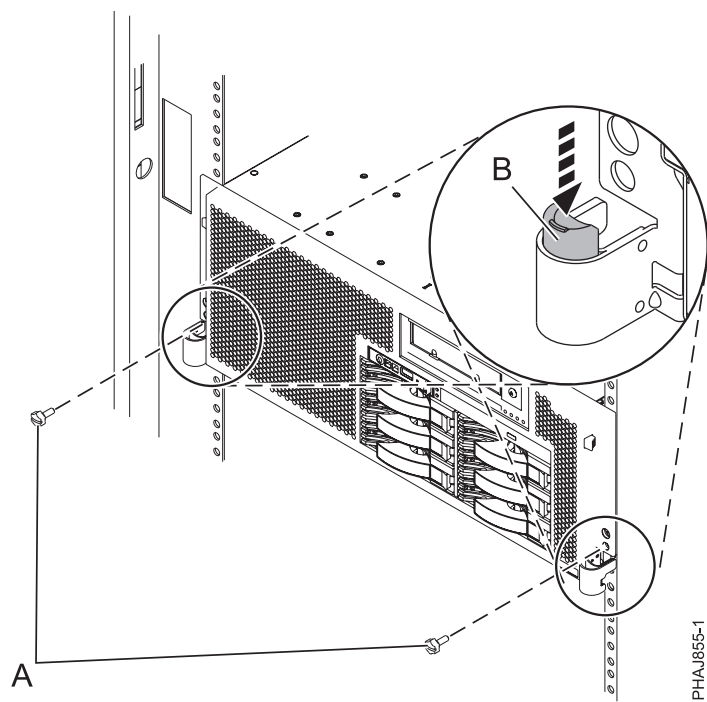


Figure 84. Releasing the rack latches

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.

Removing the 8203-E4A, 8261-E4S, 9407-M15, 9408-M25 from the rack

You must remove the system from the rack to convert a system from rack-mounted to stand-alone or to ship the system.

1. Remove the four front cover mounting pins located at the edges of the system.
2. Push the two release buttons located just above the rails in the middle of the system up to disengage the system from the rack.

CAUTION:

This system is heavy ensure you have two people to safely remove the system from the rack.

3. Pull the system forward to disengage the system from the rails, and lift the system off of the rails.
4. Place the system on a safe surface.

Moving the control panel

You must remove and replace several other parts to complete the conversion from a rack-mounted to a stand-alone system. Some of the figures in this section may not look exactly like your system however, the procedures are the same.

To complete the conversion from a rack-mounted to a stand-alone system you must move the control panel from one position to another. If you are upgrading or changing your disk-drive backplane as a part of this conversion you will have to remove the control panel and reinstall it in the new backplane.

Tip: The figures below show a system with 3.5-inch disk drives, the control panel position for 2.5-inch disk drives is the same.

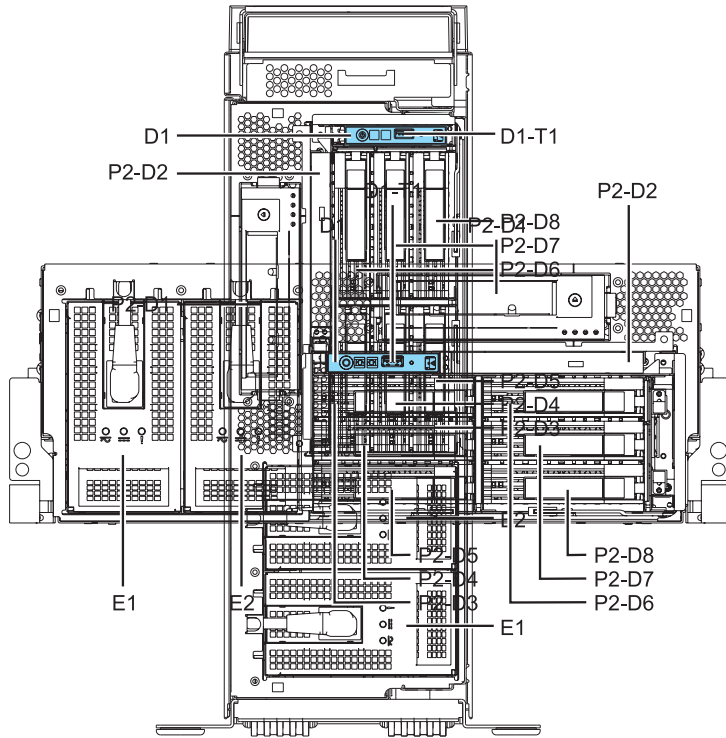


Figure 85. Control panel location in a rack-mounted system

Figure 86. Control panel location in a stand-alone system

1. Remove the control-panel filler from the stand alone position shown in the preceding figure.

Remember: Save the control-panel filler as you will need to reinstall it into the rack mounted position after you move the control panel.

2. Unlock the control panel by pressing release button (A), and then pull it out of the system as shown in the following figures. Disconnect the control-panel signal cable (B) and USB cable from the back of the control panel. 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.

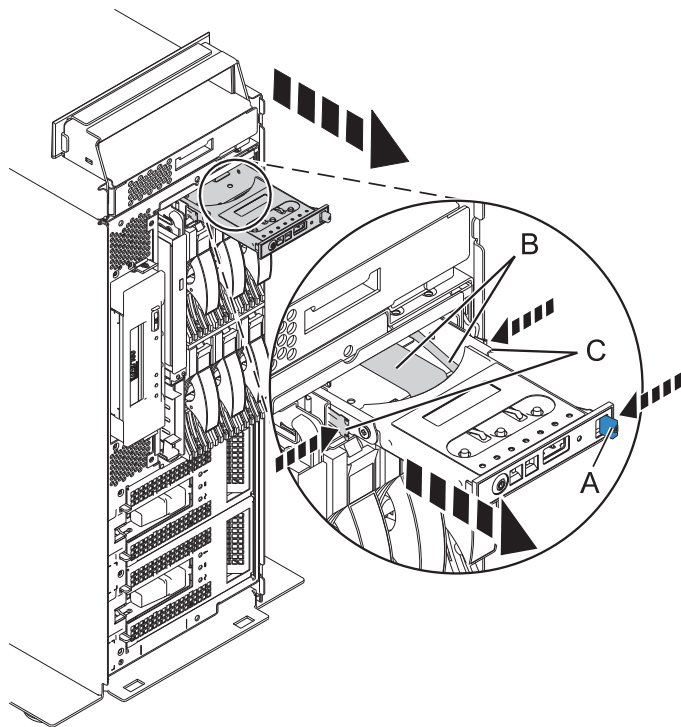


Figure 87. Control panel removal from a stand-alone system unit

3. 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.

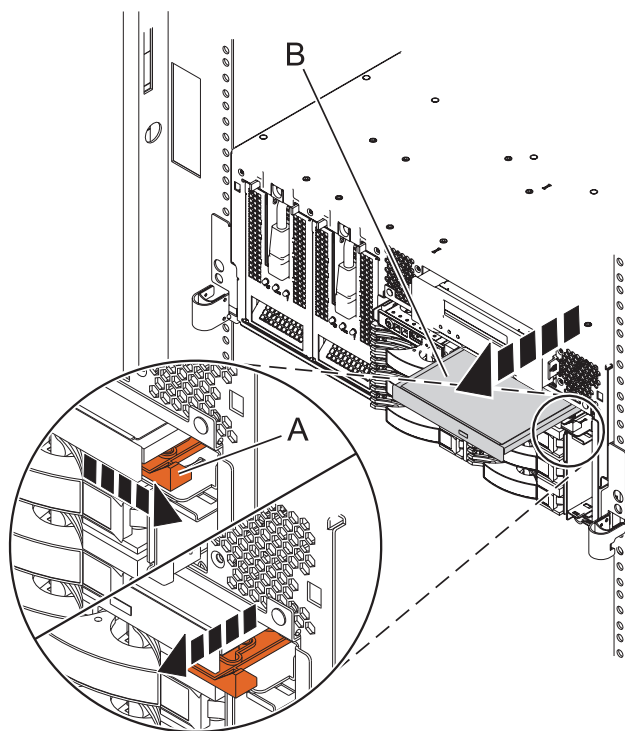


Figure 88. Removing the media device from the disk drive backplane

4. Remove the fans by lifting the latch (A) upward and pulling each fan (B) out of the airflow cover as shown in the following figure

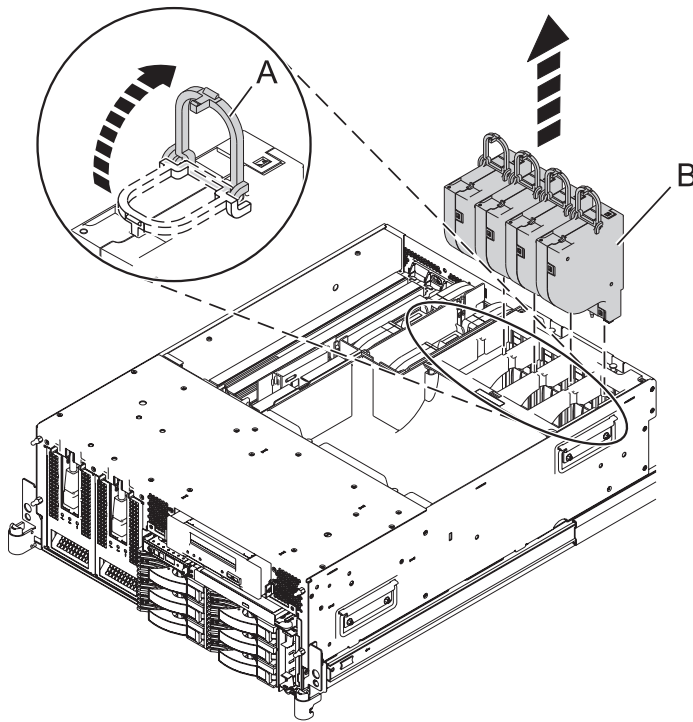


Figure 89. Removing the fans from the 8203-E4A, 9407-M15, or 9408-M25 airflow cover

5. Remove the air flow cover (B) by lifting each of the four tabs (A) to release the cover, and lift the cover from the system, as shown in the following figure.

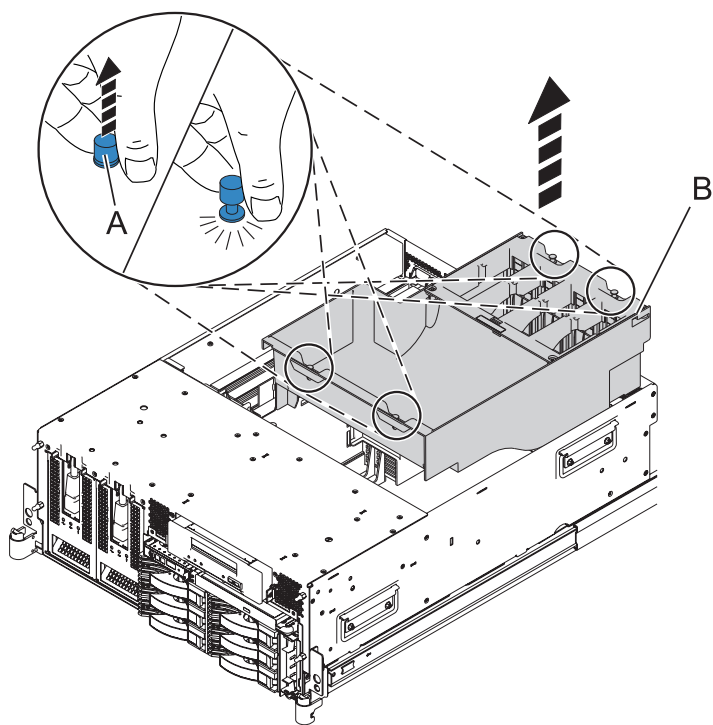


Figure 90. Removing the air flow cover

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. If you have a USB disk drive, see Removing a universal serial bus disk drive from the 8203-E4A, 8261-E4S, 8204-E8A

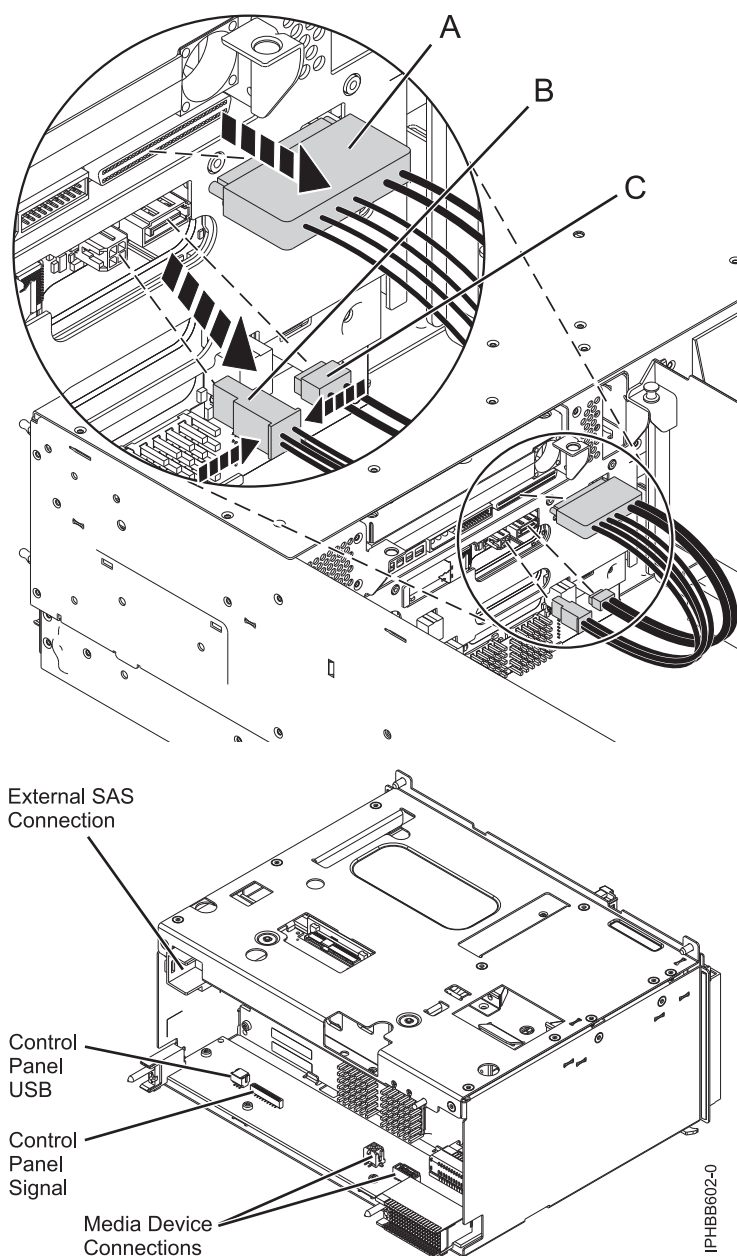


Figure 91. Remove media device cables

7. 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.

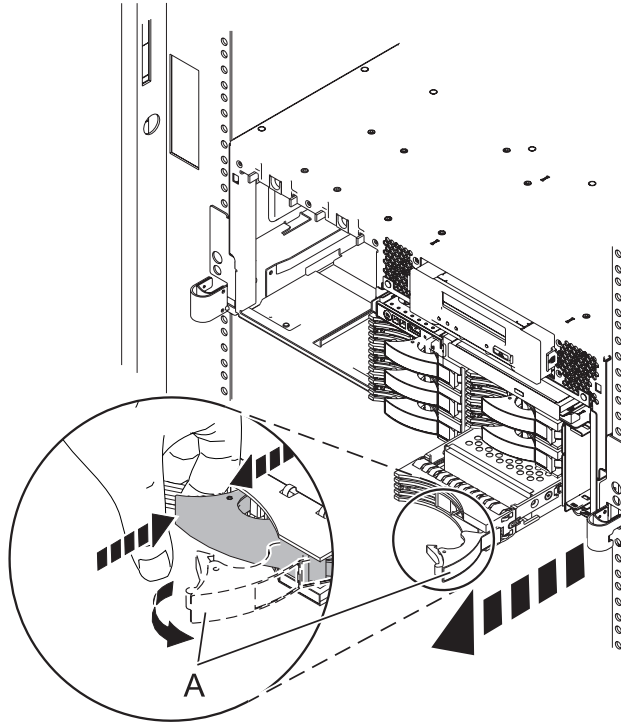
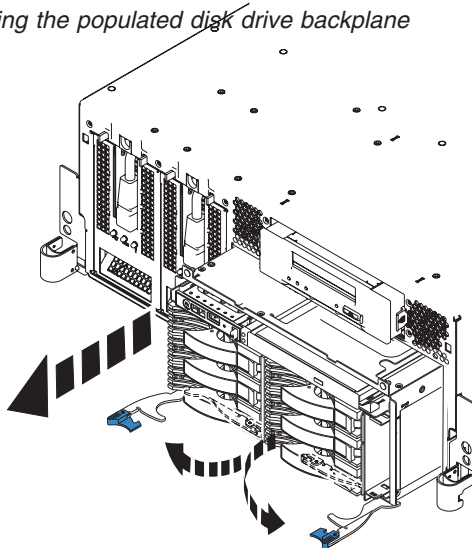


Figure 92. Remove disk drives

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 93. Removing the populated disk drive backplane



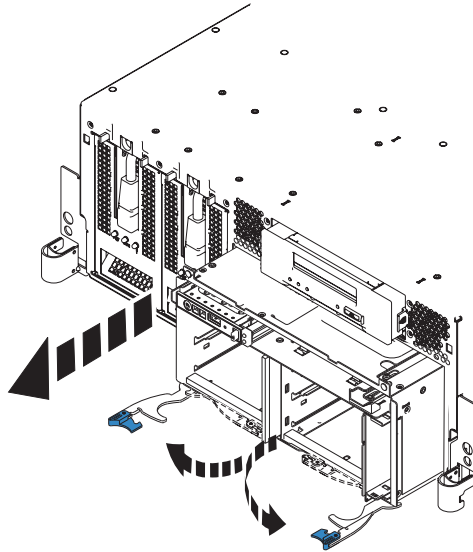


Figure 94. Removing the unpopulated disk drive backplane

10. Determine which disk-drive backplane you have using the following figures and follow the steps to remove and reposition the control panel signal cable.

To remove and reposition the control-panel signal cable from a 2.5-inch disk drive backplane do the following steps:

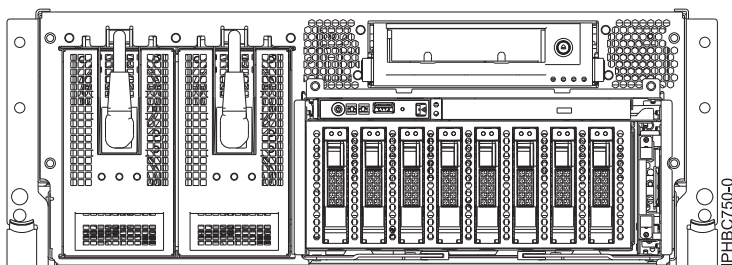
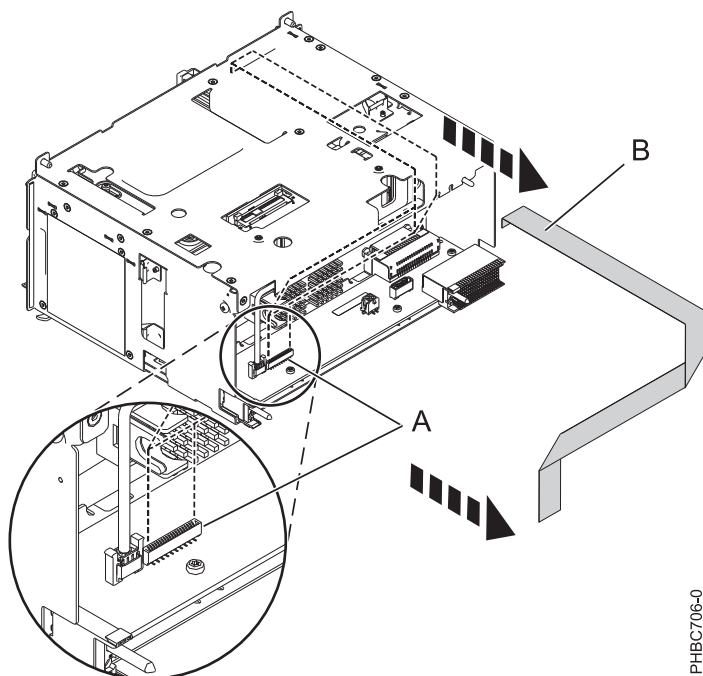


Figure 95. 2.5-inch disk drive

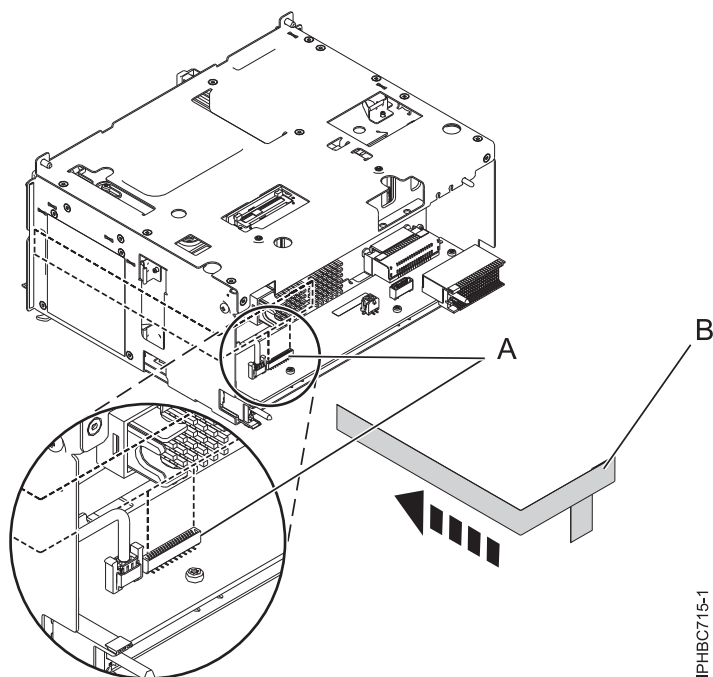
- a. In a rack-mounted system, disconnect the signal cable **(B)** from port **(A)** on the back of the backplane and lift the cable out of the system.



IPHBC706-0

Figure 96. Removal of a signal cable in a rack-mounted system

- b. Disconnect and remove the USB the same as the signal cable.
- c. Attach the signal cable to port (A) on the back of the backplane.
- d. Route the signal cable to the side of the system as shown in the following figure.
- e. Route the USB cable along the same path as the signal cable.
- f. Continue routing the signal cable to the front of the system, leaving extra cable length to the side of the system.



IPHBC715-1

Figure 97. Installation of a signal cable in a stand-alone system

To remove and reposition the control panel signal cable from a 3.5-inch disk drive backplane do the following steps:

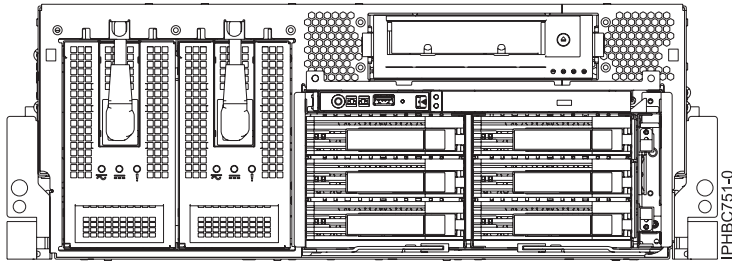


Figure 98. 3.5-inch disk drive

- a. In a rack-mounted system, disconnect the signal cable from port (A) on the back of the backplane and lift the cable out of the system.

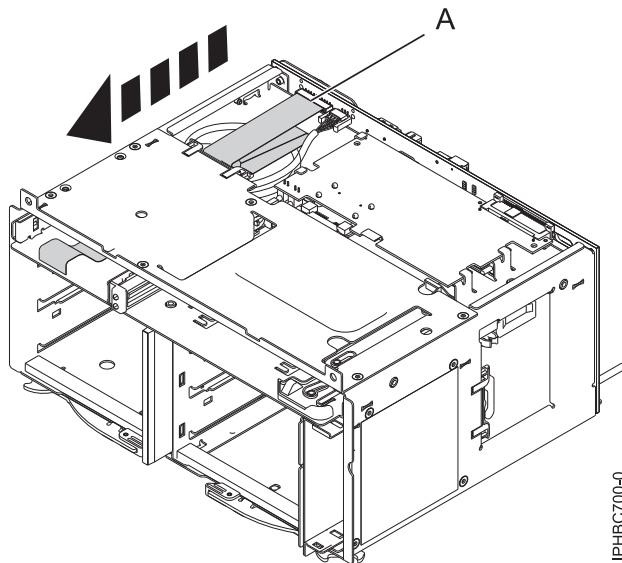


Figure 99. Removal of a signal cable in a rack-mounted system

- b. Remove the DVD interposer card (C) by gently pressing down on light pipes (D) and the tab (E). With thumbs and with both forefingers, pull the card forward until notches (F) line up with the side openings of the card. Pull the card all the way out.

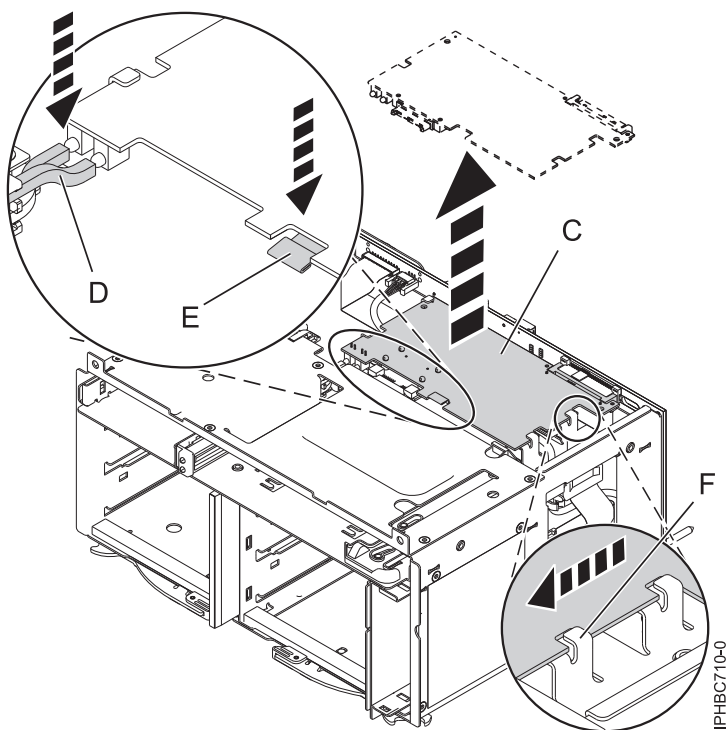


Figure 100. Removing the DVD interposer card

- c. Attach the signal cable to port **(A)** on the back of the backplane.
- d. Route the signal cable to the side of the system as shown.
- e. Thread the signal cable through clamp **(H)** and clip **(G)**.
- f. Continue routing the signal cable to the front of the system, leaving extra cable length to the side of the system.

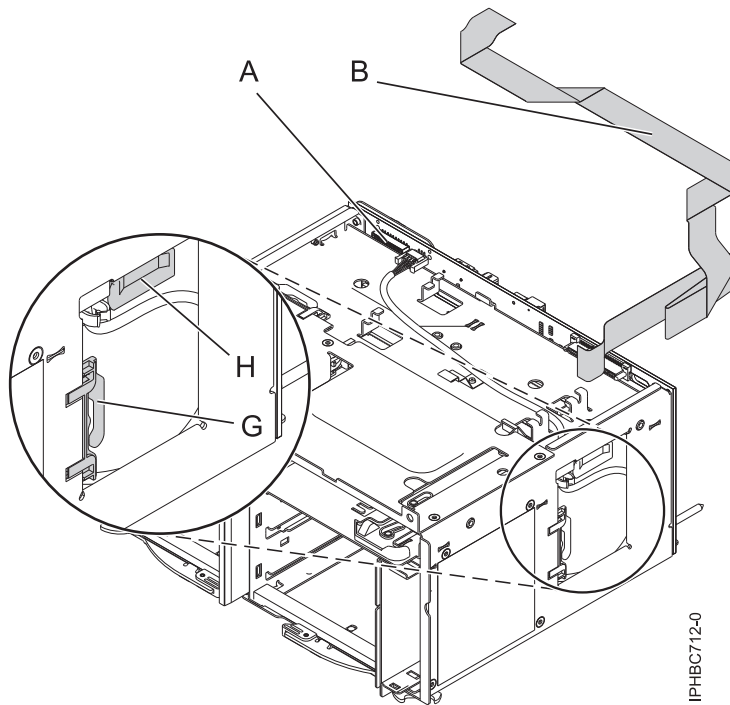


Figure 101. Installation of a signal cable in a stand-alone system

- g. Rout the USB cable along the same path as the signal cable.
- h. Insert the DVD interposer card (C) by lining up notches (F) with the side openings of the card and carefully push the card back and down until tab (E) clicks in place.

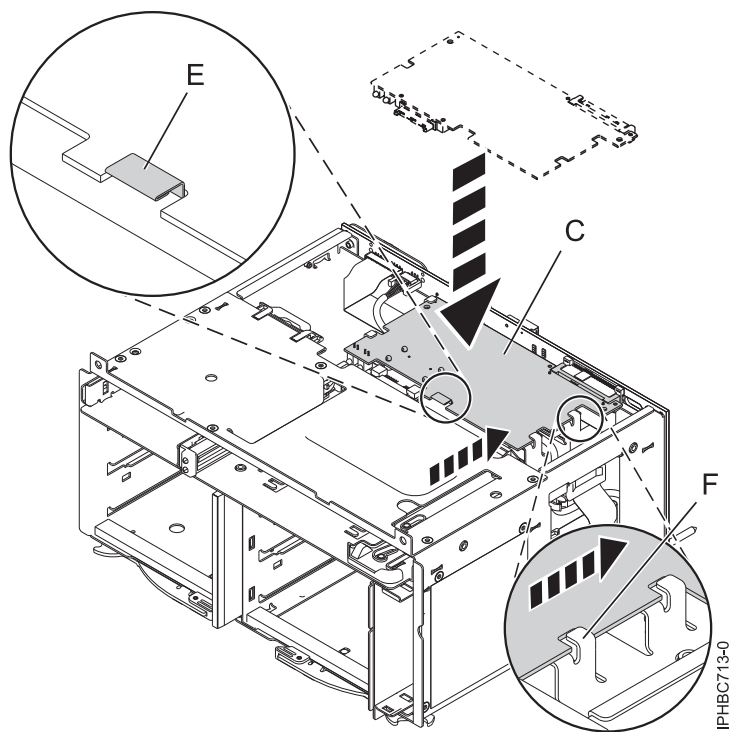


Figure 102. Installation of the DVD interposer card in the stand-alone system

11. If you have the 2.5-inch disk drive backplane do the following steps. If you have a 3.5-inch backplane continue to step 13. If you have a USB disk drive, see Installing a universal serial bus disk drive in the 8203-E4A, 8261-E4S, 8204-E8A and return here when you are complete.
 - a. Connect the media device cable to the port on the bottom of the backplane.

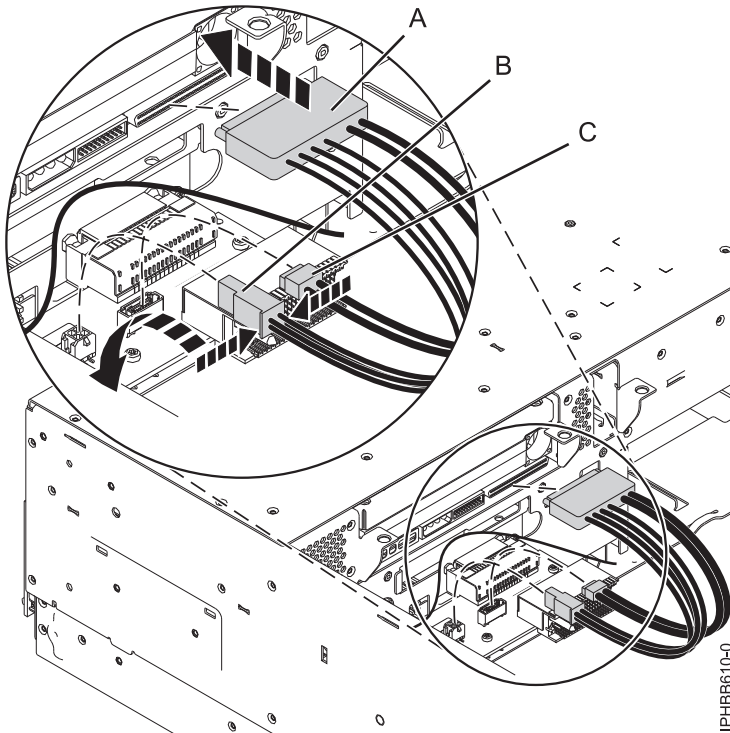


Figure 103. Connecting the cables to the 2.5 inch small form disk drive backplane

- b. Slide the cable and the disk-drive backplane into the slot on the server until you can reach the cable through the plate on the back of the enclosure. I
 - Note:** Ensure the media device cable does not catch or bind as you push the backplane into the system.
 - c. Pull the media device cable through the slot on the plate in the server as you push the disk-drive backplane into the slot.
 - d. Continue to step 13
12. Align the backplane with the slot in the server.
- Important:** If the backplane is populated with disk drives, the backplane will be heavy. Ensure that you can safely perform this task before you begin.
13. Insert the backplane firmly into the server, as shown in the following figures.
14. Secure the backplane with the locking tabs.

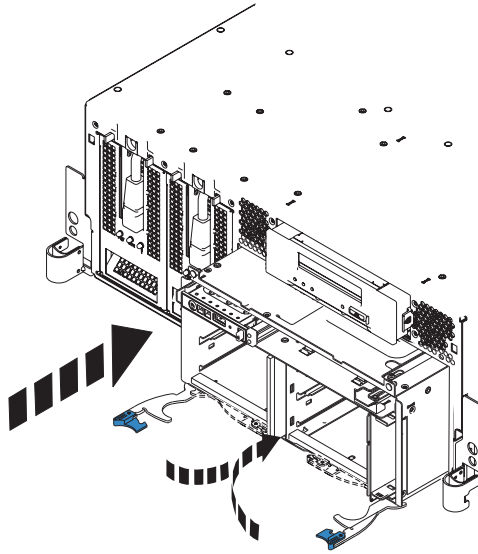


Figure 104. Installing the unpopulated disk drive backplane on a rack-mounted model

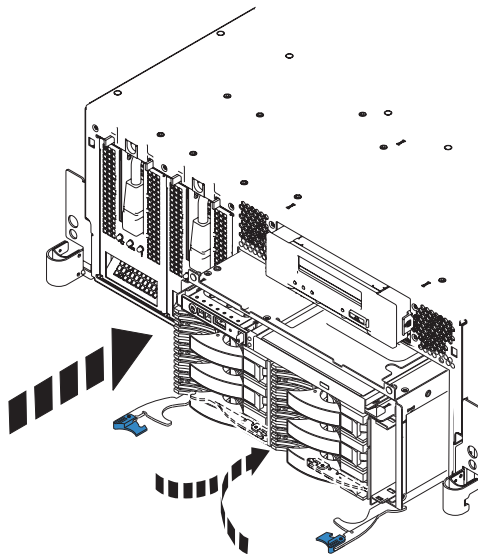
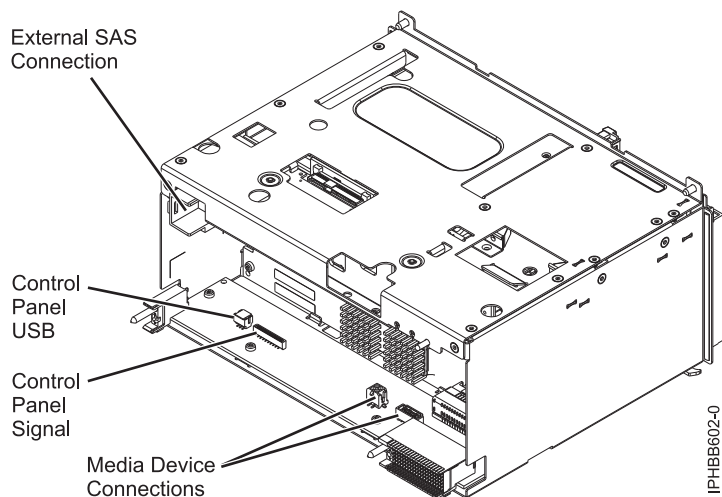
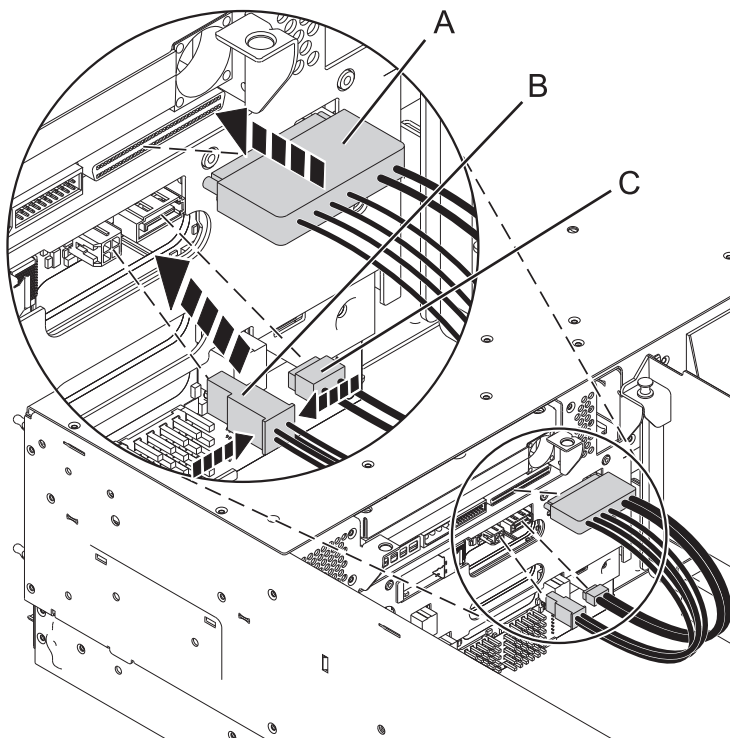


Figure 105. Installing the populated disk drive backplane on a rack-mounted model

15. If you have a 2.5-inch disk drive, attach the media-device connections to the media device if present. The connection for the media device is located just under the top of the disk drive backplane.



16. If you have a 3.5-inch disk drive, attach cable **(A)** to the media device, and attach cables **(B)** and **(C)** to the system backplane as shown.



17. Depending on the disk-drive backplane you have complete one of the following choices:
- If you can see the SAS connection in the center of the disk-drive backplane **(D)** attach the cable to the connection and continue to step 20 on page 145
 - If you can see the SAS cable shroud extending from the disk-drive backplane continue to the next step.

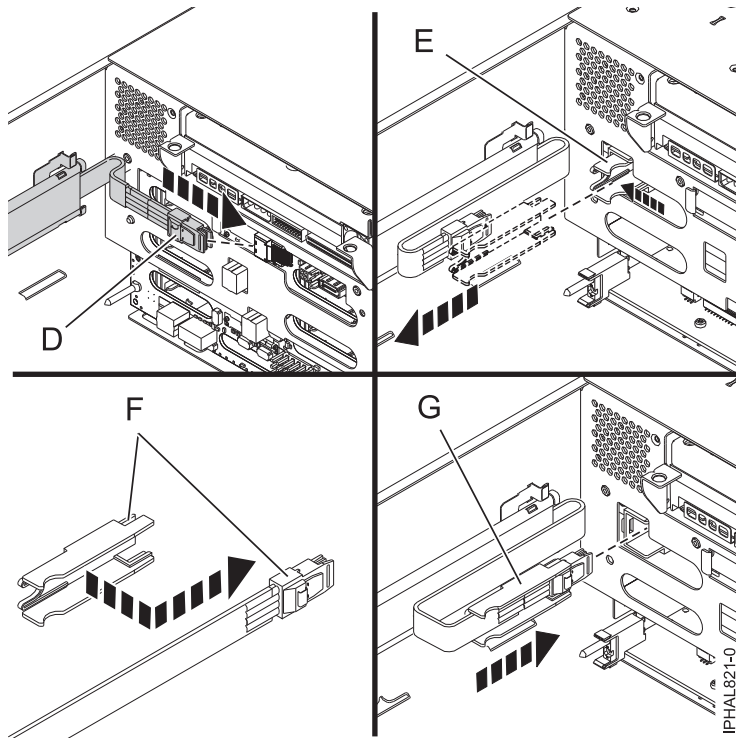


Figure 106. SAS cable connections

- a. Locate the SAS cable shroud (E) on the disk-drive backplane and pull the back of the shroud away from the side of the system to unseat the shroud.
 - b. Pull the shroud out of the SAS port.
 - c. Attach the shroud to the male SAS connector (F) on the cable assembly by sliding the shroud over the top of the cable connector (F) from behind. The SAS connector on the cable should fit into the two slots at the front of the shroud, and the connector should extend away from the shroud so it can be seated in the port.
 - d. Slide the cable and shroud (G) into the SAS port until it is firmly seated in place.
18. Install the disk drives

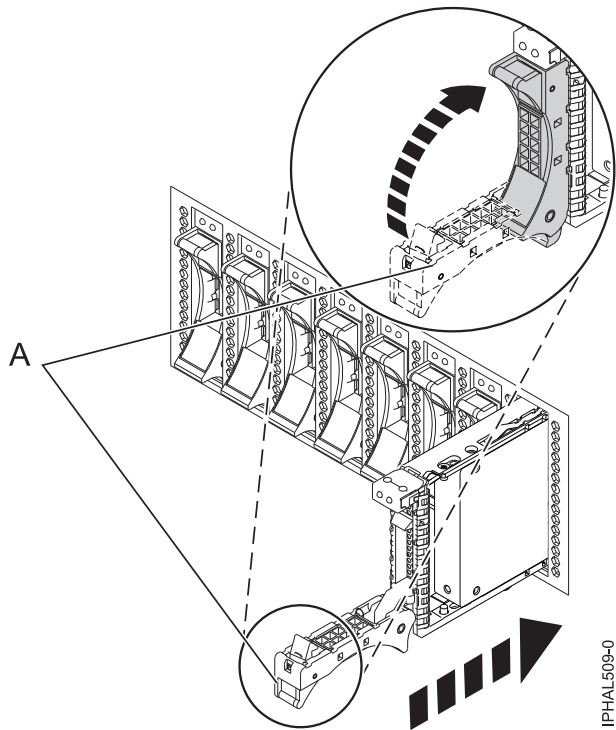


Figure 107. Installing a small-form factor disk drive

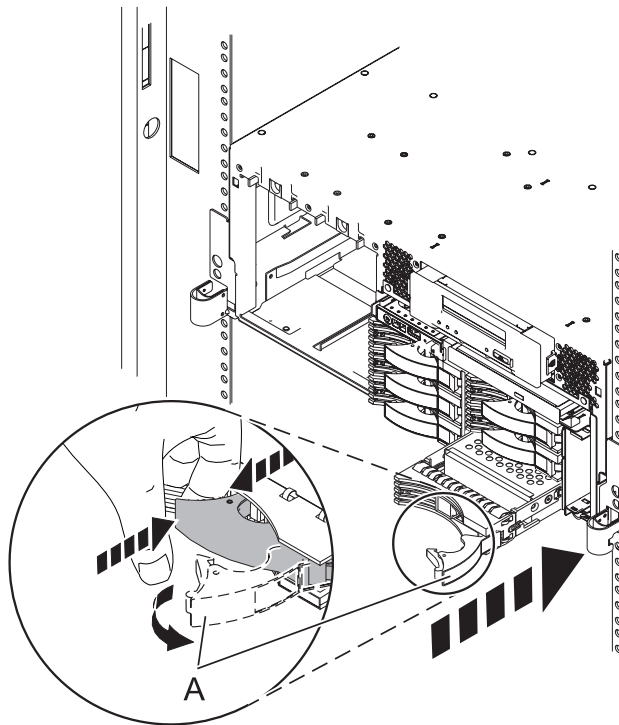
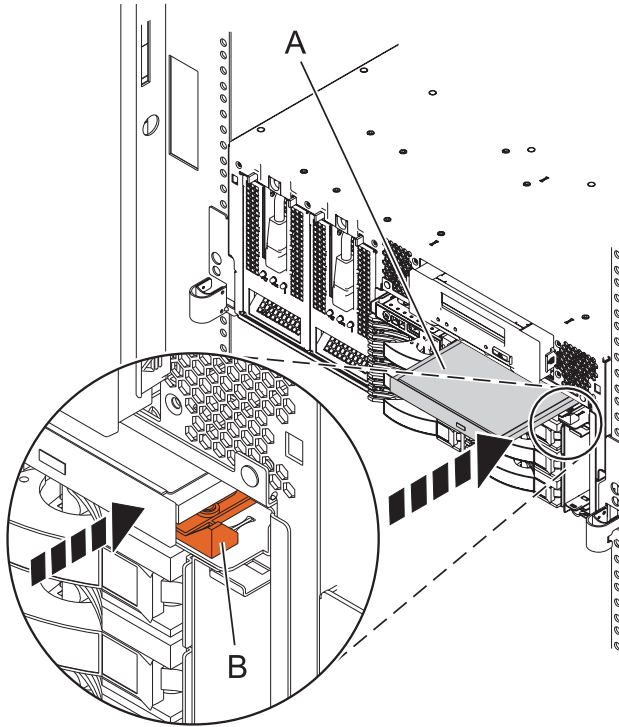


Figure 108. Installing a disk drive

19. 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.

Restriction: If you are upgrading your disk-drive backplane as a part of your order, install the new media device that came with your order.



20. Install the control panel, if you have not already done so, by doing the following:
 - a. Carefully slide the control panel into the control panel bay until you feel the locking tabs lock in place.
 - b. Attach the USB and signal cables (**A**) to the back of the control panel. The USB cable is smaller and is keyed to only attach one way. Do not force the cable.

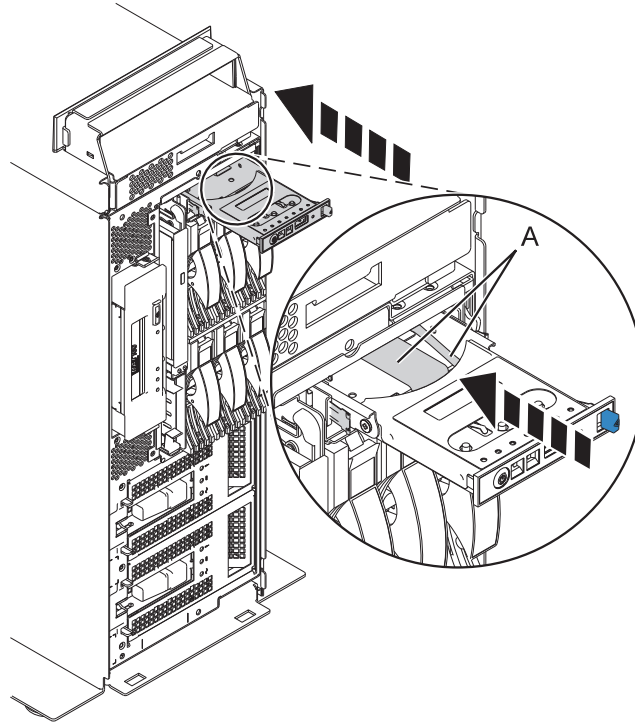


Figure 109. Control panel replacement in a stand-alone system unit

- c. Lift the control panel and push it into the system until it latches into place.
21. Insert the control panel filler into the rack mounted position, which is now empty, until it latches into place.

Attaching the base plate and handle

Attaching the base plate gives the stand-alone system stability and allows the system to be serviced while standing upright.

1. Remove the four lift handles from the system, if they are present, by removing the two screws and detaching each handle.
2. Turn the system on to the right side while facing the front of the system so that the power supplies are up and the control panel is down. I

Attention: Ensure the system is on a stable and flat surface and that you can maintain this position to avoid system damage.

3. Align the pins on the bottom of the base plate with the holes in the system. The base plate should align with the front and the back of the system and all four screw holes should be visible.
4. Attach the four screws and tighten.
5. Carefully turn the system over so that it is standing on the base plate.
6. Attach the metal handle to the top and front of the system, and secure it with the four screws.

Attaching the covers:

Attaching the covers allows the system to be operational.

1. Attach the side panel by locating the slots on the side of the system and placing the tabs along the lower edge of the side panel into them. Then push the panel forward to lock it in place.

Tip: You might have to slightly push the top of the side panel out while attaching the bottom portion.

2. 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.
3. Hold the service access cover against the system unit **(A)** and slide it toward the front of the system.
4. Tighten the two thumbscrews **(B)** located at the back of the cover.

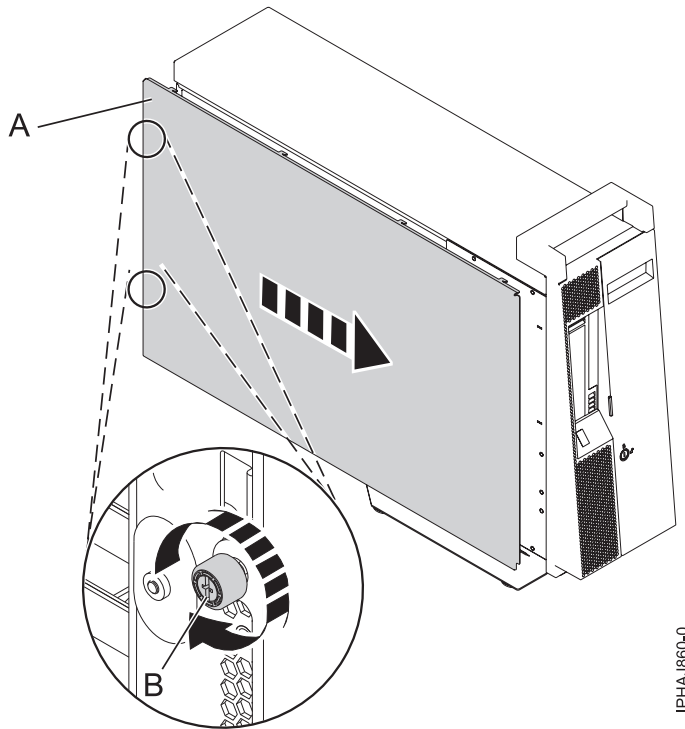


Figure 110. Installing the service access cover on a stand-alone model

5. Place the plastic insert under the metal handle so the raised edge faces the back of the system.
6. Push the plastic insert under the handle until it snaps in place.
7. 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.

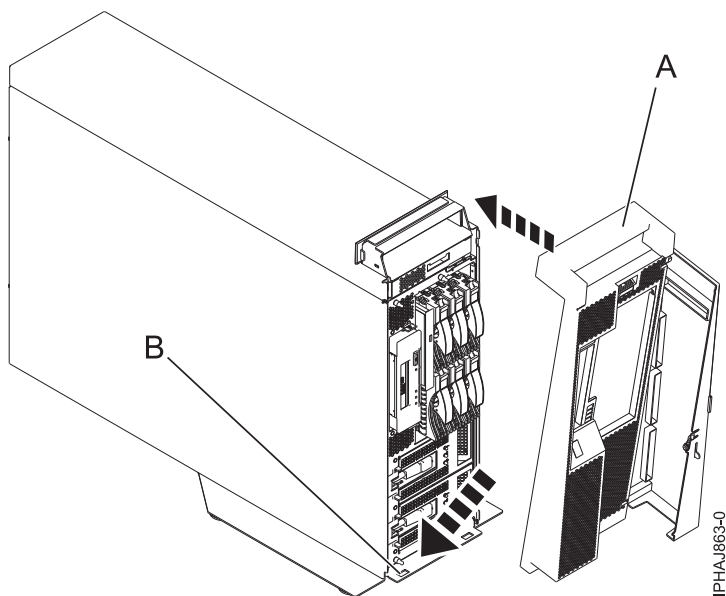


Figure 111. Replacing the cover on the model

8. 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.
9. Gently push the cover in until the cover-release tab snaps into place.
10. Close and secure the door.
11. Attach the mounting bracket to the bottom of the system, and secure it with the two screws.
12. Attach the mounting bracket to the top of the system, and secure it with the two screws.

Preparing the system to operate:

1. Place the system where it will operate.
2. Attach the cables and power cords. For information, see *Cabling the 8203-E4A or 8261-E4S*.
3. Attach the back cover, if included, by placing the opening over the cables and inserting the two top and two bottom mounting pins into the holes on the cover.
4. Start the system. For instructions, see "Starting the system or logical partition" on page 52.

Appendix. Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

The manufacturer may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to the manufacturer.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: THIS INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. The manufacturer may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to Web sites not owned by the manufacturer are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this product and use of those Web sites is at your own risk.

The manufacturer may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning products not produced by this manufacturer was obtained from the suppliers of those products, their published announcements or other publicly available sources. This manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products not produced by this manufacturer. Questions on the capabilities of products not produced by this manufacturer should be addressed to the suppliers of those products.

All statements regarding the manufacturer's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The manufacturer's prices shown are the manufacturer's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information in softcopy, the photographs and color illustrations may not appear.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of the manufacturer.

The manufacturer has prepared this information for use with the specific machines indicated. The manufacturer makes no representations that it is suitable for any other purpose.

The manufacturer's computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check the manufacturer's support websites for updated information and fixes applicable to the system and related software.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Electronic emission notices

Class A Notices

The following Class A statements apply to the IBM servers that contain the POWER6 processor.

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

Industry Canada Compliance Statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

European Community Compliance Statement

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

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

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

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

VCCI Statement - Japan

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

VCCI-A

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

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

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

高調波ガイドライン適合品

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

高調波ガイドライン準用品

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

声 明

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

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

Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者：

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

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

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

IBM Taiwan Contact Information:

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

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this equipment has obtained EMC registration for commercial use. In the event that it has been mistakenly sold or purchased, please exchange it for equipment certified for home use.

Germany Compliance Statement

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

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

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

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

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

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

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

Generelle Informationen:

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

Electromagnetic Interference (EMI) Statement - Russia

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

Terms and conditions

Permissions for the use of these publications is granted subject to the following terms and conditions.

Personal Use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these publications, or any portion thereof, without the express consent of the manufacturer.

Commercial Use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of the manufacturer.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

The manufacturer reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by the manufacturer, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

THE MANUFACTURER MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THESE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.



Printed in USA