Power Systems

PCI adapter placement for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T

IBM

Power Systems

PCI adapter placement for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T

IBM

This edition applies to IBM Power Systems™ servers that contain the POWER7 processor and to all associated models.

Contents

Safety notices

Safety notices may be printed throughout this guide:

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

World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, safety information documentation is included in the publications package (such as in printed documentation, on DVD, or as part of the product) shipped with the product. The documentation 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 documentation. You should also refer to the safety information documentation any time you do not clearly understand any safety information in the U.S. English publications.

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

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

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

DANGER

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

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

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

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

  (D005)

DANGER

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

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

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

CAUTION

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

(R001)

CAUTION:

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

- **Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:**
  - **Remove all devices in the 32U position and above.**
  - **Ensure that the heaviest devices are installed in the bottom of the rack cabinet.**
  - **Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.**
- **If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.**
- **Inspect the route that you plan to take to eliminate potential hazards.**
- **Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.**
- **Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).**
- **Ensure that all devices, shelves, drawers, doors, and cables are secure.**
- **Ensure that the four leveling pads are raised to their highest position.**
- **Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.**
- **Do not use a ramp inclined at more than 10 degrees.**
- **When the rack cabinet is in the new location, complete the following steps:**
  - **Lower the four leveling pads.**
  - **Install stabilizer brackets on the rack cabinet.**
  - **If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.**
- **If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.**
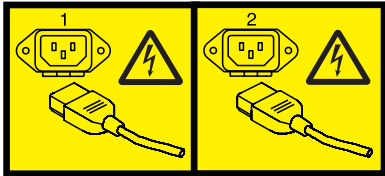
(R002)

(L001)

(L002)

(L003)

or

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

CAUTION:
This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:
- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

(C026)

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

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

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

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

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

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)

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

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

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

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

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

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

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

PCI adapter placement for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T

Find information about the Peripheral Component Interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters that are supported for the IBM PowerLinux™ 7R1 (8246-L1C, 8246-L1D, 8246-L1S, or 8246-L1T) and the IBM PowerLinux 7R2 (8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T) systems that contain the POWER7® processor and the associated I/O expansion units.

The following features are electromagnetic compatibility (EMC) Class B features. See the Class B Notices in the Hardware Notices section.

Table 1. Electromagnetic compatibility (EMC) Class B features

Feature	Description
1912, 5736	PCI-X DDR 2.0 Dual Channel Ultra320 SCSI Adapter
1983, 5706	Port 10/100/1000 Base-TX Ethernet PCI-X Adapter
1986, 5713	1 Gb iSCSI TOE PCI-X Adapter
2728	4-port USB PCIe Adapter
4764	PCI-X Cryptographic Coprocessor
4807	PCIe Cryptographic Coprocessor
5717	4-port 10/100/1000 Base-TX PCI Express Adapter
5732	10 Gb Ethernet-CX4 PCI Express Adapter
5748	POWER® GXT145 PCI Express Graphics Accelerator
5767	2-port 10/100/1000 Base-TX Ethernet PCI Express Adapter
5768	2-port Gb Ethernet-SX PCI Express Adapter
5769	10 Gb Ethernet-SR PCI Express Adapter
5772	10 Gb Ethernet-LR PCI Express Adapter
5785	4 Port Async EIA-232 PCIe Adapter
EC2G and EL39	PCIe LP 2-Port 10 GbE SFN6122F Adapter
EC2H and EL3A	PCIe LP 2-Port 10 GbE SFN5162F Adapter
EC2J	PCIe 2-Port 10 GbE SFN6122F Adapter
EC2K	PCIe 2-Port 10 GbE SFN5162F Adapter

Supported PCI adapters for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T

Find information about the placement rules and slot priorities for the Peripheral Component Interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters that are supported for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T systems.

Find reference information that information technology (IT) personnel and service representatives can use in determining where to install PCI adapters in the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T.

Adapters supported on the Linux operating system

Table 2 lists the adapters that are supported in systems running the Linux operating system.

Important:
- This document does not replace the latest sales and marketing publications and tools that document supported features.
- Before adding or rearranging adapters, use the System Planning Tool to validate the new adapter configuration. See the IBM System Planning Tool website (www.ibm.com/systems/support/tools/systemplanningtool/).
- If you are installing a new feature, ensure that you have the software required to support the new feature and determine whether you must install any existing program temporary fix (PTF) prerequisites. To do this, use the IBM Prerequisite website (www-912.ibm.com/e_dir/eServerPrereq.nsf).

Table 2 lists the supported PCIe adapters.

The adapters are listed with their feature codes (FC), customer card identification number (CCIN), along with their description, and the systems on which they are supported.

Table 2. PCIe adapters supported on the Linux operating system

Feature code	CCIN	Description	System
5277	57D2	4-port Async EIA-232 PCIe 1X LP Adapter (FC 5277; CCIN 57D2) • Low-profile adapter • Extra-high bandwidth • Short, x1 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5289	57D4	PCIe 2-port Async EIA-232 PCIe 1X LPC Adapter (FC 5289; CCIN 57D4) • Short, x1 • PCIe 1.1 • Two ports through RJ45 by using the DB9 connector • EIA-232 Compatible • OS support: Linux operating system	8246-L2S and 8246-L2T
5290	57D4	PCIe LP 2-port Async EIA-232 Adapter (FC 5290; CCIN 57D4) • Low-profile adapter • PCIe 1.1 • Short, x8 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 compatible • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
2053	57CD	PCIe RAID and SSD SAS Adapter 3 Gb Low-profile (FC 2053; CCIN 57CD) • Short, x8 • Double-wide, low-profile adapter, requires two slots • OS support: Linux operating system • VIOS attachment requires version 2.2, or later	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
2055	57CD	PCIe RAID and SSD SAS Adapter 3 Gb with Blind-Swap Cassette (FC 2055; CCIN 57CD) • Short, x8 • Double-wide, low-profile adapter, requires two slots • OS support: Linux operating system • VIOS attachment requires version 2.2, or later	8246-L2S and 8246-L2T
5805	574E	PCIe 380 MB Cache Dual - x4 3 Gb SAS RAID Adapter (FC 5805; CCIN 574E) • Short, dual x4 • SAS RAID adapter • Installed in pairs • OS support: Linux operating system	8246-L2S and 8246-L2T
5901	57B3	PCIe Dual - x4 SAS Adapter (FC 5901; CCIN 57B3) • Short • Extra-high bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
5913	57B5	PCIe2 1.8 GB Cache RAID SAS Tri-port 6 Gb Adapter (FC 5913; CCIN 57B5) • Full-height, short, PCIe2 x8 • Transfer speed of 6 Gbps • Write cache backup of 1.8 GB • One PCIe x8 slot per adapter • Adapters are installed in pairs • OS support: Linux operating system	8246-L2S and 8246-L2T
EL10	57B3	PCIe LP 2-port SAS Adapter 3 Gb (FC EL10; CCIN 57B3) • Short, low-profile, x4 • Extra-high bandwidth • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EL2K	57C4	PCIe2 RAID SAS Adapter Dual-port 6 Gb LP (FC EL2K; CCIN 57C4) • Short, low-profile • PCIe generation 2, x8 • High-performance solid-state drives (SSD) controller functions • OS support: Linux operating system	8246-L1S, 8246-L1T, 8246-L2S, and 8246-L2T
ESA1	57B4	PCIe2 RAID SAS Adapter Dual-port 6 Gb (FC ESA1; CCIN 57B4) • Regular-height adapter • PCIe generation 2, x8 • OS support: Linux operating system	8246-L2S and 8246-L2T
5273	577D	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC 5273; CCIN 577D) • Low-profile adapter • Short, x8 • OS support: Linux operating system	8246-L2C and 8246-L2S

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
5735	577D	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC 5735; CCIN 577D) • Short, x8 • Extra-high bandwidth: If only one port is planned to be active in normal operation, the adapter is counted as an extra-high bandwidth adapter. If both ports are planned to be active, the adapter must be treated as two extra-high bandwidth adapters. • OS support: Linux operating system	8246-L2S and 8246-L2T
5774	5774	4 Gb PCI Express Dual-port Fibre Channel Adapter (FC 5774; CCIN 5774) • Short, x4 • Extra-high bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
EL09	5774	PCIe LP 4 Gb 2-port Fibre Channel Adapter (FC EL09; CCIN 5774) • Short, x4 • Extra-high bandwidth • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EL2N	577D	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC EL2N; CCIN 577D) • Low-profile adapter • Short, x8 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EN0B	577F	PCIe2 LP 16 Gb 2-port Fibre Channel Adapter (FC EN0B; CCIN 577F) • Short, low-profile, x8 • Extra-high bandwidth • OS support: Linux operating system	8246-L1D, 8246-L1T, 8246-L2D, and 8246-L2T
EN0Y	EN0Y	PCIe2 LP 8Gb 4-port Fibre Channel Adapter (FC EN0Y; CCIN EN0Y) • Short, low-profile • PCIe generation 2, x8 • Short form factor plus (SFF+) Host Bus Adapter (HBA) • Extra-high bandwidth • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5269	5269	POWER GXT145 PCI Express Graphics Accelerator (FC 5269; CCIN 5269) • Low-profile adapter • Short, x1 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
EC41		PCIe2 LP 3D Graphics Adapter x1 (FC EC41) • PCIe 2.1, single lane (x1) • Short, low-profile, half-length adapter • Not hot-pluggable • Passive cooling • Supports two DVI-I displays with a required breakout cable • OS support: Linux operating system • Supported on Firmware level 7.8, or later	8246-L1D, 8246-L1T, 8246-L2D, and 8246-L2T
5748	5748	POWER GXT145 PCI Express Graphics Accelerator (FC 5748; CCIN 5748) • Short, x1 • Not hot-pluggable • OS support: Linux operating system	8246-L2S and 8246-L2T
EJ0J	57B4	PCIe3 RAID SAS Adapter (FC EJ0J; CCIN 57B4) • Regular-height adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • No write cache • One PCIe x8 slot per adapter • Adapters can be installed singly or in pairs • OS support: Linux operating system	8246-L2T
EJ0L	57CE	PCIe3 12 GB Cache RAID SAS quad-port 6 Gb Adapter (FC EJ0L; CCIN 57CE) • Regular-height adapter, short • PCIe3 x8 • Transfer speed of 6 Gbps • 12 GB write cache • One PCIe x8 slot per adapter • Adapters are installed in pairs • OS support: Linux operating system	8246-L2T
EJ10	57B4	PCIe3 4 x8 SAS Port Adapter (FC EJ10; CCIN 57B4) • Regular-height adapter • PCIe3 x8 • Transfer speed of 6 Gbps • Supports DVD and tape drives • No write cache • One PCIe x8 slot per adapter • OS support: Linux operating system	8246-L2T

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
EL3B	57B4	PCIe3 LP RAID SAS Adapter (FC EL3B; CCIN 57B4) • Low-profile adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • No write cache • One PCIe x8 slot per adapter • Adapters can be installed singly or in pairs • OS support: Linux operating system	8246-L1T and 8246-L2T
EL60	57B4	PCIe3 LP 4 x8 SAS Port Adapter (FC EJ60; CCIN 57B4) • Low-profile adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • Supports DVD and tape drives • No write cache • One PCIe x8 slot per adapter • OS support: Linux operating system	8246-L1T and 8246-L2T
5260	576F	PCIe2 LP 4-port 1 GbE Adapter (FC 5260; CCIN 576F) • Low-profile adapter • PCIe generation 1 or generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5270	2B3B	10 Gb FCoE PCIe Dual-port Adapter (FC 5270; CCIN 2B3B) • Low-profile adapter • Short, x8 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5271	5717	4-port 10/100/1000 Base-TX PCI Express Adapter (FC 5271; CCIN 5717) • Low-profile adapter • Short, x4 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5272	5732	10 Gb Ethernet-CX4 PCI Express Adapter (FC 5272; CCIN 5272) • Low-profile adapter • Short, x8 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5274	5768	2-port Gb Ethernet-SX PCI Express Adapter (FC 5274; CCIN 5768) • Low-profile adapter • Short, x4 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T

Feature code	CCIN	Description	System
5275	2B54	10 Gb Ethernet-SR PCI Express Adapter (FC 5275; CCIN 2B54) • Low-profile adapter • Short, x8 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2B, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5279	2B52	PCIe2 LP 2x10 GbE SFP+ Copper 2x1 GbE UTP Adapter (FC 5279; CCIN 2B52) • Low-profile, Short, x8 • PCIe 2 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5280	2B54	PCIe2 LP 2x10 GbE SR 2x1 GbE UTP Adapter (FC 5280; CCIN 2B54) • Low-profile, short, x8 • PCIe 2 • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5281	5767	1 Gb Ethernet UTP 2-port PCIe Adapter (FC 5281; CCIN 5767) • Low-profile, short, x8 • PCIe 2 • OS support: Linux operating system	8246-L2B, 8246-L2C and 8246-L2S
5284	5287	PCIe2 LP 2-port 10 GbE SR Adapter (FC 5284; CCIN 5287) • Generation 2, x8 • Low-profile adapter • Extra-high bandwidth • 10 GBASE-SR short-reach optics • OS support: Linux operating system	8246-L2C and 8246-L2S
5286	5288	PCIe2 LP 2-port 10 GbE SFP+ Copper Adapter (FC 5286; CCIN 5288) • Generation 2, low-profile adapter • Two 10 Gb Ethernet ports • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
5708	2B3B	10 Gb FCoE PCIe Dual-port Adapter (FC 5708; CCIN 2B3B) • Low-profile capable • Extra-high bandwidth • PCIe 2.0 adapter with x8 generation 1 • Convergence enhanced Ethernet (CEE) supported • OS support: Linux operating system with VIOS	8246-L2S and 8246-L2T
5717	5717	4-port 10/100/1000 Base-TX PCI Express Adapter (FC 5717; CCIN 5717) • Short, x4 • High bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
5732	2B43	10 Gb Ethernet-CX4 PCI Express Adapter (FC 5732; CCIN 2B43) • Short, x8 • Extra-high bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
5767	5767	2-port 10/100/1000 Base-TX Ethernet PCI Express Adapter (FC 5767; CCIN 5767) • Short, x4 • High bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
5768	5768	2-port Gigabit Ethernet-SX PCI Express Adapter (FC 5768; CCIN 5768) • Short, x4 • High bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
5769	2B44	10 Gb Ethernet-SR PCI Express Adapter (FC 5769; CCIN 2B44) • Short, full-high, x8 • Regular-height • Extra-high bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
5772	576E	10 Gb Ethernet-LR PCI Express Adapter (FC 5772; CCIN 576E) • Short, x8 • Regular-height card • Extra-high bandwidth • OS support: Linux operating system	8246-L2S and 8246-L2T
5899	576F	PCIe2 4-port 1 GbE Adapter (FC 5899; CCIN 576F) • Regular-height adapter • PCIe generation 1 or generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	8246-L2S and 8246-L2T
EC29	EC29	PCIe2 LP 2-port 10 GbE RoCE SR adapter (FC EC29; CCIN EC29) • Low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • Firmware level 7.6, or later • OS support: Linux operating system	8246-L1C, 8246-L1S, 8246-L2C, and 8246-L2S

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
EL11	576F	PCIe2 LP 4-port 1 GbE Adapter (FC EL11; CCIN 576F) • Low-profile adapter • PCIe generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EL27	EC27	PCIe2 2-port 10 GbE RoCE SFP+ adapter (FC EL27; CCIN EC27) • low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EL2M	5767	PCIe LP 2-port 1 GbE TX Adapter (FC EL2M; CCIN 5767) • Short, low-profile • PCIe 1.0a compliant • Dual 1 Gb Ethernet (GbE) ports • OS support: Linux operating system	8246-L2C and 8246-L2S
EL2P	5287	PCIe2 LP 2-port 10 GbE SR Adapter (FC EL2P; CCIN 5287) • Generation 2, regular-height card, high-performance adapter • Capable of transferring data to a distance of 300 m over MMF-850 nm fiber cable • OS support: Red Hat Enterprise Linux and SUSE Linux Enterprise Server	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EL2Z	EC29	PCIe2 LP 2-port 10 GbE RoCE SR adapter (FC EL2Z; CCIN EC29) • Low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • Firmware level 7.6, or later • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EL38	2B93	PCIe2 LP 4-port (10 Gb FCoE, 1 GbE) SFP+ Adapter (FC EL38, CCIN 2B93) • Extra-high bandwidth • OS support: Linux operating system	8246-L1D, 8246-L1T, 8246-L2D, and 8246-L2T
EL39	EC2G	PCIe LP 2-Port 10 GbE SFN6122F Adapter (FC EL39; CCIN EC2G) • High bandwidth • Low-profile adapter • Supports Solarflare OpenOnload • OS support: Linux operating system	8246-L1D, 8246-L1T, 8246-L2D, and 8246-L2T
EL3A	EC2H	PCIe LP 2-Port 10 GbE SFN5162F Adapter (FC EL3A; CCIN EC2H) • High bandwidth • Low-profile adapter • OS support: Linux operating system	8246-L1D, 8246-L1T, 8246-L2D, and 8246-L2T

Table 2. PCIe adapters supported on the Linux operating system (continued)

Feature code	CCIN	Description	System
EL3C	2CC1	PCIe2 LP 4-port (10Gb FCoE and 1GbE) Copper and RJ45 Adapter (FC EL3C; CCIN 2CC1) • Low-profile adapter • Fibre Channel over Ethernet (FCoE) converged network adapter (CNA) • Provides network interface controller (NIC) • Single root I/O virtualization (SR-IOV) capable • OS support: Linux operating system	8246-L1D, 8246-L1T, 8246-L2D, and 8246-L2T
EL3Z	2CC4	PCIe2 LP 2-port 10 GbE BaseT RJ45 Adapter (FC EL3Z; CCIN 2CC4) • Short, low-profile • PCIe generation 2, x8 • Two 10 Gb RJ45 ports • Local area network (LAN) adapter • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EN0T	2CC3	PCIe2 LP 4-port (10Gb+1GbE) SR+RJ45 Adapter (FC EN0T; CCIN 2CC3) • Short, low-profile • PCIe generation 2, x8 • two 10 Gb SR optical ports and two 1 Gb RJ45 ports • NIC network convergence adapter • Local are network (LAN) adapter • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
EN0V	2CC3	PCIe2 LP 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter (FC EN0V; CCIN 2CC3) • Short, low-profile • PCIe generation 2, x8 • Two 10 Gb copper twinax small form-factor pluggable (SFP+) ports • Two 1 Gb RJ45 ports • Ethernet network interface controller (NIC) function • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
2893	576C	PCI Express 2-Line WAN with Modem (FC 2893; CCIN 576C) • Short, x4 • Non-CIM • OS support: Linux operating system	8246-L2S and 8246-L2T
2894	576C	PCI Express 2-Line WAN with Modem (FC 2894; CCIN 576C) • Short, x4 • CIM • OS support: Linux operating system	8246-L2S and 8246-L2T

Feature code	CCIN	Description	System
2728	57D1	4-port USB PCIe Adapter (FC 2728; CCIN 57D1) • Regular-height adapter • Single-slot, half-length PCIe adapter • PCIe 1.1 • OS support: Linux operating system	8246-L2S and 8246-L2T
5283	58E2	PCIe2 LP 2-port 4X InfiniBand QDR Adapter (FC 5283; CCIN 58E2) • Generation 2 low-profile adapter • Extra-high bandwidth • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, and 8246-L2T
ES09	578A	IBM Flash Adapter 90 (PCIe2 0.9TB) (FC ES09; CCIN 578A) • PCIe generation 2, x8 • 900 GB eMLC Flash storage • One PCIe x8 slot per adapter • Adapters are installed in pairs to enable mirroring • OS support: Linux operating system	8246-L2T

PCI adapters placement rules and slot priorities for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T

Find information about the placement rules and slot priorities for the Peripheral Component Interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters that are supported for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T systems.

PCI adapter placement rules and slot priorities for the 8246-L1C, 8246-L1D, 8246-L1S, or 8246-L1T

Some adapters must be placed in specific PCI Express (PCIe) slots to function correctly or to perform optimally. Learn how to determine the slot to install PCI adapters for your system.

PCI slot descriptions

The 8246-L1C, 8246-L1D, 8246-L1S, or 8246-L1T system has five PCIe x8, generation-2, low-profile slots and one PCIe x4 low-profile slot. All slots support enhanced error handling (EEH), but are not hot pluggable. Figure 1 on page 12 shows the rear view of the system with the location codes for the PCI adapter slots. Table 3 on page 12 provides information about the slots. All slots in this system are low-profile slots only. Each PCIe is a separate PCI host bridge (PHB). PCIe slots 1 and 4 have an x16 connector and the other slots have x8 connector.

For the information about the maximum adapters that are supported on your system, see Table 4 on page 12.
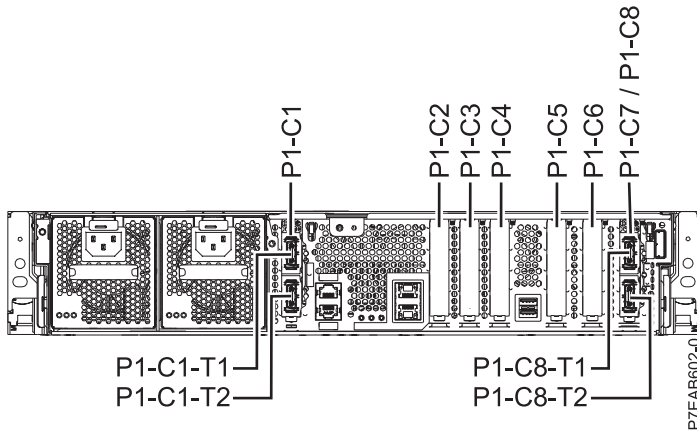
Figure 1. Rear view of the system with location codes

Table 3. PCI slot locations and descriptions

Slot	Location code	Description	PHB	Adapter size	Direct memory access (DMA) capable
Slot 1	P1-C2	PCIe x8 G2	PCIe-PHB5	Low-profile	64-bit
Slot 2	P1-C3	PCIe x8 G2	PCIe-PHB4	Low-profile	32-bit
Slot 3	P1-C4	PCIe x8 G2	PCIe-PHB3	Low-profile	32-bit
Slot 4	P1-C5	PCIe x8 G2	PCIe-PHB2	Low-profile	64-bit
Slot 5	P1-C6	PCIe x8 G2	PCIe-PHB1	Low-profile	32-bit
Slot 6 [1]	P1-C7	PCIe x4 G2	PCIe-PHB0	Low-profile	32-bit
[1]The following PCIe adapters are not supported at PCIe slot 6 (P1-C7): • FC 5269 • FC 5277 • FC EL39 • FC EL3A					

PCIe adapters

Use this information to identify slot placement priorities and the maximum number of specified adapters that you can install. Verify whether the adapter is supported for your system. For details about the supported adapters, see "Supported PCI adapters for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T" on page 1.

Table 4. Adapter slot priorities and maximums for PCIe adapters

Feature code	Description	Slot priorities	Maximum number of adapters supported
5277[1]	4-port Async EIA-232 PCIe 1X LP Adapter (FC 5277; CCIN 57D2) • Low-profile adapter • Extra-high bandwidth • Short, x1 • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 4. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
5290[1]	PCIe LP 2-port Async EIA-232 Adapter (FC 5290; CCIN 57D4) • Low-profile adapter • PCIe 1.1 • Short, x8 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 compatible • OS support: Linux operating system	1, 2, 3, 4, 5	5
2053	PCIe RAID and SSD SAS Adapter 3 Gb Low-profile (FC 2053; CCIN 57CD) • Short, x8 • Double-wide, low-profile adapter, requires two slots • OS support: Linux operating system • VIOS attachment requires version 2.2, or later	2, 5 or 3	2
EL10[1]	PCIe LP 2-port SAS Adapter 3 Gb (FC EL10; CCIN 57B3) • Short, low-profile, x4 • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL2K[1]	PCIe2 RAID SAS Adapter Dual-port 6 Gb LP (FC EL2K; CCIN 57C4) • Short, low-profile • PCIe generation 2, x8 • High-performance solid-state drives (SSD) controller functions • OS support: Linux operating system	1, 2, 3, 4, 5	2
EL09[1]	PCIe LP 4 Gb 2-port Fibre Channel Adapter (FC EL09; CCIN 5774) • Short, x4 • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL2N[1]	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC EL2N; CCIN 577D) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
EN0B[1]	PCIe2 LP 16 Gb 2-port Fibre Channel Adapter (FC EN0B; CCIN 577F) • Short, low-profile, x8 • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 4. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EN0Y[1]	PCIe2 LP 8Gb 4-port Fibre Channel Adapter (FC EN0Y; CCIN EN0Y) • Short, low-profile • PCIe generation 2, x8 • Short form factor plus (SFF+) Host Bus Adapter (HBA) • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
5269[1]	POWER GXT145 PCI Express Graphics Accelerator (FC 5269; CCIN 5269) • Low-profile adapter • Short, x1 • OS support: Linux operating system	1, 2, 3, 4, 5	4
EC41	PCIe2 LP 3D Graphics Adapter x1 (FC EC41) • PCIe 2.1, single lane (x1) • Short, low-profile, half-length adapter • Not hot-pluggable • Passive cooling • Supports two DVI-I displays with a required breakout cable • OS support: Linux operating system • Supported on Firmware level 7.8, or later	1, 2, 3, 4, 5	4
5260	PCIe2 LP 4-port 1 GbE Adapter (FC 5260; CCIN 576F) • Low-profile adapter • PCIe generation 1 or generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	1, 2, 3, 4, 5, 6	6
5270[1]	10 Gb FCoE PCIe Dual-port Adapter (FC 5270; CCIN 2B3B) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5271[1]	4-port 10/100/1000 Base-TX PCI Express Adapter (FC 5271; CCIN 5717) • Low-profile adapter • Short, x4 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5272[1]	10 Gb Ethernet-CX4 PCI Express Adapter (FC 5272; CCIN 5272) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 4. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
5274[1]	2-port Gb Ethernet-SX PCI Express Adapter (FC 5274; CCIN 5768) • Low-profile adapter • Short, x4 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5275[1]	10 Gb Ethernet-SR PCI Express Adapter (FC 5275; CCIN 2B54) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5279[1]	PCIe2 LP 2x10 GbE SFP+ Copper 2x1 GbE UTP Adapter (FC 5279; CCIN 2B52) • Low-profile, Short, x8 • PCIe 2 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5280[1]	PCIe2 LP 2x10 GbE SR 2x1 GbE UTP Adapter (FC 5280; CCIN 2B54) • Low-profile, short, x8 • PCIe 2 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5286[1]	PCIe2 LP 2-port 10 GbE SFP+ Copper Adapter (FC 5286; CCIN 5288) • Generation 2, low-profile adapter • Two 10 Gb Ethernet ports • OS support: Linux operating system	1, 2, 3, 4, 5	5
EC29[1]	PCIe2 LP 2-port 10 GbE RoCE SR adapter (FC EC29; CCIN EC29) • Low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • Firmware level 7.6, or later • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL11	PCIe2 LP 4-port 1 GbE Adapter (FC EL11; CCIN 576F) • Low-profile adapter • PCIe generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	6	1
EL27[1]	PCIe2 2-port 10 GbE RoCE SFP+ adapter (FC EL27; CCIN EC27) • low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet	1, 2, 3, 4, 5	5

Table 4. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EL2P[1]	PCIe2 LP 2-port 10 GbE SR Adapter (FC EL2P; CCIN 5287) • Generation 2, regular-height card, high-performance adapter • Capable of transferring data to a distance of 300 m over MMF-850 nm fiber cable • OS support: Red Hat Enterprise Linux and SUSE Linux Enterprise Server	1, 2, 3, 4, 5	5
EL2Z[1]	PCIe2 LP 2-port 10 GbE RoCE SR adapter (FC EL2Z; CCIN EC29) • Low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • Firmware level 7.6, or later • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL38[1]	PCIe2 LP 4-port (10 Gb FCoE, 1 GbE) SFP+ Adapter (FC EL38, CCIN 2B93) • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL39[1]	PCIe LP 2-Port 10 GbE SFN6122F Adapter (FC EL39; CCIN EC2G) • High bandwidth • Low-profile adapter • Supports Solarflare OpenOnload • OS support: Linux operating system	2, 3, 5, 1, 4	4
EL3A[1]	PCIe LP 2-Port 10 GbE SFN5162F Adapter (FC EL3A; CCIN EC2H) • High bandwidth • Low-profile adapter • OS support: Linux operating system	2, 3, 5, 1, 4	4
EL3B[1]	PCIe3 LP RAID SAS Adapter (FC EL3B; CCIN 57B4) • Low-profile adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • No write cache • One PCIe x8 slot per adapter • Adapters can be installed singly or in pairs • OS support: Linux operating system	1, 2, 3, 4, 5	2

Table 4. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EL3C[1]	PCIe2 LP 4-port (10Gb FCoE and 1GbE) Copper and RJ45 Adapter (FC EL3C; CCIN 2CC1) • Low-profile adapter • Fibre Channel over Ethernet (FCoE) converged network adapter (CNA) • Provides network interface controller (NIC) • Single root I/O virtualization (SR-IOV) capable • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL3Z[1]	PCIe2 LP 2-port 10 GbE BaseT RJ45 Adapter (FC EL3Z; CCIN 2CC4) • Short, low-profile • PCIe generation 2, x8 • Two 10 Gb RJ45 ports • Local area network (LAN) adapter • OS support: Linux operating system	1, 4, 2, 3, 5	5
EN0T[1]	PCIe2 LP 4-port (10Gb+1GbE) SR+RJ45 Adapter (FC EN0T; CCIN 2CC3) • Short, low-profile • PCIe generation 2, x8 • two 10 Gb SR optical ports and two 1 Gb RJ45 ports • NIC network convergence adapter • Local are network (LAN) adapter • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	1, 4, 2, 3, 5	5
EN0V[1]	PCIe2 LP 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter (FC EN0V; CCIN 2CC3) • Short, low-profile • PCIe generation 2, x8 • Two 10 Gb copper twinax small form-factor pluggable (SFP+) ports • Two 1 Gb RJ45 ports • Ethernet network interface controller (NIC) function • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	1, 4, 2, 3, 5	5
EL60[1]	PCIe3 LP 4 x8 SAS Port Adapter (FC EJ60; CCIN 57B4) • Low-profile adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • Supports DVD and tape drives • No write cache • One PCIe x8 slot per adapter • OS support: Linux operating system	1, 2, 3, 4, 5	4

Table 4. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
5283[1]	PCIe2 LP 2-port 4X InfiniBand QDR Adapter (FC 5283; CCIN 58E2) • Generation 2 low-profile adapter • Extra-high bandwidth • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	1, 2, 3, 4, 5	2
[1]The adapter can be installed in any slot other than slot 6 and is not supported in slot 6.			

PCI adapter placement rules and slot priorities for the 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T

Some adapters must be placed in specific PCI Express (PCIe) slots to function correctly or to perform optimally. Learn how to determine the slot to install PCI adapters for your system.

PCI slot descriptions

The 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T system has five PCIe x8 G2 low-profile slots and one PCIe x4 low-profile slot. All slots support enhanced error handling (EEH), but are not hot pluggable. Figure 2 shows the rear view of the system with the location codes for the PCI adapter slots. Table 5 on page 19 provides information about the slots. All slots in this system are low-profile slots only. Each PCIe is a separate PCI host bridge (PHB). PCIe slots 1 and 4 have an x16 connector and the other slots have x8 connector.

For the information about the maximum adapters that are supported on your system, see Table 6 on page 19.
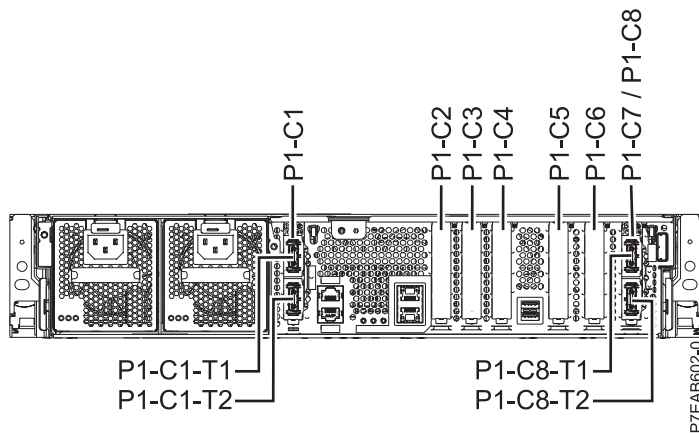

Figure 2. Rear view of the system with location codes

Table 5. PCI slot locations and descriptions

Slot	Location code	Description	PHB	Adapter size	Direct memory access (DMA) capable
Slot 1	P1-C2	PCIe x8 G2	PCIe-PHB5	Low-profile	64-bit
Slot 2	P1-C3	PCIe x8 G2	PCIe-PHB4	Low-profile	32-bit
Slot 3	P1-C4	PCIe x8 G2	PCIe-PHB3	Low-profile	32-bit
Slot 4	P1-C5	PCIe x8 G2	PCIe-PHB2	Low-profile	64-bit
Slot 5	P1-C6	PCIe x8 G2	PCIe-PHB1	Low-profile	32-bit
Slot 6 [1]	P1-C7	PCIe x4 G2	PCIe-PHB0	Low-profile	32-bit
[1]The following PCIe adapters are the only adapters that are supported at PCIe slot 6 (P1-C7): • FC 5260 • FC EL2M • FC EL11					

PCIe adapters

Use this information to identify slot placement priorities and the maximum number of specified adapters that you can install. Verify whether the adapter is supported for your system. For details about the supported adapters, see "Supported PCI adapters for the 8246-L1C, 8246-L1D, 8246-L1S, 8246-L1T, 8246-L2C, 8246-L2D, 8246-L2S, or 8246-L2T" on page 1.

Table 6. Adapter slot priorities and maximums for PCIe adapters

Feature code	Description	Slot priorities	Maximum number of adapters supported
5277[1]	4-port Async EIA-232 PCIe 1X LP Adapter (FC 5277; CCIN 57D2) • Low-profile adapter • Extra-high bandwidth • Short, x1 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5289	PCIe 2-port Async EIA-232 PCIe 1X LPC Adapter (FC 5289; CCIN 57D4) • Short, x1 • PCIe 1.1 • Two ports through RJ45 by using the DB9 connector • EIA-232 Compatible • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5290[1]	PCIe LP 2-port Async EIA-232 Adapter (FC 5290; CCIN 57D4) • Low-profile adapter • PCIe 1.1 • Short, x8 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 compatible • OS support: Linux operating system	1, 2, 3, 4, 5	2

Feature code	Description	Slot priorities	Maximum number of adapters supported
5785	4 Port Async EIA-232 PCIe Adapter (FC 5785; CCIN 57D2) • Short, x1 • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
2053[2]	PCIe RAID and SSD SAS Adapter 3 Gb Low-profile (FC 2053; CCIN 57CD) • Short, x8 • Double-wide, low-profile adapter, requires two slots • OS support: Linux operating system • VIOS attachment requires version 2.2, or later	2, 3, 5	2
2055[2]	PCIe RAID and SSD SAS Adapter 3 Gb with Blind-Swap Cassette (FC 2055; CCIN 57CD) • Short, x8 • Double-wide, low-profile adapter, requires two slots • OS support: Linux operating system • VIOS attachment requires version 2.2, or later	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	2
5805	PCIe 380 MB Cache Dual - x4 3 Gb SAS RAID Adapter (FC 5805; CCIN 574E) • Short, dual x4 • SAS RAID adapter • Installed in pairs • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5901	PCIe Dual - x4 SAS Adapter (FC 5901; CCIN 57B3) • Short • Extra-high bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5913	PCIe2 1.8 GB Cache RAID SAS Tri-port 6 Gb Adapter (FC 5913; CCIN 57B5) • Full-height, short, PCIe2 x8 • Transfer speed of 6 Gbps • Write cache backup of 1.8 GB • One PCIe x8 slot per adapter • Adapters are installed in pairs • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	16
EL10[1]	PCIe LP 2-port SAS Adapter 3 Gb (FC EL10; CCIN 57B3) • Short, low-profile, x4 • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EL2K[1]	PCIe2 RAID SAS Adapter Dual-port 6 Gb LP (FC EL2K; CCIN 57C4) • Short, low-profile • PCIe generation 2, x8 • High-performance solid-state drives (SSD) controller functions • OS support: Linux operating system	1, 2, 3, 4, 5	2
ESA1	PCIe2 RAID SAS Adapter Dual-port 6 Gb (FC ESA1; CCIN 57B4) • Regular-height adapter • PCIe generation 2, x8 • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5273[1]	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC 5273; CCIN 577D) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5735	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC 5735; CCIN 577D) • Short, x8 • Extra-high bandwidth: If only one port is planned to be active in normal operation, the adapter is counted as an extra-high bandwidth adapter. If both ports are planned to be active, the adapter must be treated as two extra-high bandwidth adapters. • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5774	4 Gb PCI Express Dual-port Fibre Channel Adapter (FC 5774; CCIN 5774) • Short, x4 • Extra-high bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
EL09[1]	PCIe LP 4 Gb 2-port Fibre Channel Adapter (FC EL09; CCIN 5774) • Short, x4 • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL2N[1]	8 Gb PCI Express Dual-port Fibre Channel Adapter (FC EL2N; CCIN 577D) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EN0B[1]	PCIe2 LP 16 Gb 2-port Fibre Channel Adapter (FC EN0B; CCIN 577F) • Short, low-profile, x8 • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
EN0Y[1]	PCIe2 LP 8Gb 4-port Fibre Channel Adapter (FC EN0Y; CCIN EN0Y) • Short, low-profile • PCIe generation 2, x8 • Short form factor plus (SFF+) Host Bus Adapter (HBA) • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
5269[1]	POWER GXT145 PCI Express Graphics Accelerator (FC 5269; CCIN 5269) • Low-profile adapter • Short, x1 • OS support: Linux operating system	1, 2, 3, 4, 5	4
EC41	PCIe2 LP 3D Graphics Adapter x1 (FC EC41) • PCIe 2.1, single lane (x1) • Short, low-profile, half-length adapter • Not hot-pluggable • Passive cooling • Supports two DVI-I displays with a required breakout cable • OS support: Linux operating system • Supported on Firmware level 7.8, or later	1, 2, 3, 4, 5	4
5748	POWER GXT145 PCI Express Graphics Accelerator (FC 5748; CCIN 5748) • Short, x1 • Not hot-pluggable • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	8
EJ0J	PCIe3 RAID SAS Adapter (FC EJ0J; CCIN 57B4) • Regular-height adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • No write cache • One PCIe x8 slot per adapter • Adapters can be installed singly or in pairs • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	5

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EJ0L	PCIe3 12 GB Cache RAID SAS quad-port 6 Gb Adapter (FC EJ0L; CCIN 57CE) • Regular-height adapter, short • PCIe3 x8 • Transfer speed of 6 Gbps • 12 GB write cache • One PCIe x8 slot per adapter • Adapters are installed in pairs • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	5
EJ10	PCIe3 4 x8 SAS Port Adapter (FC EJ10; CCIN 57B4) • Regular-height adapter • PCIe3 x8 • Transfer speed of 6 Gbps • Supports DVD and tape drives • No write cache • One PCIe x8 slot per adapter • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	5
5260	PCIe2 LP 4-port 1 GbE Adapter (FC 5260; CCIN 576F) • Low-profile adapter • PCIe generation 1 or generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	6, 1, 2, 3, 4, 5	6
5270[1]	10 Gb FCoE PCIe Dual-port Adapter (FC 5270; CCIN 2B3B) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5271[1]	4-port 10/100/1000 Base-TX PCI Express Adapter (FC 5271; CCIN 5717) • Low-profile adapter • Short, x4 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5272[1]	10 Gb Ethernet-CX4 PCI Express Adapter (FC 5272; CCIN 5272) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5274[1]	2-port Gb Ethernet-SX PCI Express Adapter (FC 5274; CCIN 5768) • Low-profile adapter • Short, x4 • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
5275[1]	10 Gb Ethernet-SR PCI Express Adapter (FC 5275; CCIN 2B54) • Low-profile adapter • Short, x8 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5279[1]	PCIe2 LP 2x10 GbE SFP+ Copper 2x1 GbE UTP Adapter (FC 5279; CCIN 2B52) • Low-profile, Short, x8 • PCIe 2 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5280[1]	PCIe2 LP 2x10 GbE SR 2x1 GbE UTP Adapter (FC 5280; CCIN 2B54) • Low-profile, short, x8 • PCIe 2 • OS support: Linux operating system	1, 2, 3, 4, 5	5
5281[1]	1 Gb Ethernet UTP 2-port PCIe Adapter (FC 5281; CCIN 5767) • Low-profile, short, x8 • PCIe 2 • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL2P or 5284[1]	PCIe2 LP 2-port 10 GbE SR Adapter (FC 5284; CCIN 5287) • Generation 2, x8 • Low-profile adapter • Extra-high bandwidth • 10 GBASE-SR short-reach optics • OS support: Linux operating system	1, 2, 3, 4, 5	5
5286[1]	PCIe2 LP 2-port 10 GbE SFP+ Copper Adapter (FC 5286; CCIN 5288) • Generation 2, low-profile adapter • Two 10 Gb Ethernet ports • OS support: Linux operating system	1, 2, 3, 4, 5	5
5708	10 Gb FCoE PCIe Dual-port Adapter (FC 5708; CCIN 2B3B) • Low-profile capable • Extra-high bandwidth • PCIe 2.0 adapter with x8 generation 1 • Convergence enhanced Ethernet (CEE) supported • OS support: Linux operating system with VIOS	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5717	4-port 10/100/1000 Base-TX PCI Express Adapter (FC 5717; CCIN 5717) • Short, x4 • High bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
5732	10 Gb Ethernet-CX4 PCI Express Adapter (FC 5732; CCIN 2B43) • Short, x8 • Extra-high bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5767	2-port 10/100/1000 Base-TX Ethernet PCI Express Adapter (FC 5767; CCIN 5767) • Short, x4 • High bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5768	2-port Gigabit Ethernet-SX PCI Express Adapter (FC 5768; CCIN 5768) • Short, x4 • High bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5769	10 Gb Ethernet-SR PCI Express Adapter (FC 5769; CCIN 2B44) • Short, full-high, x8 • Regular-height • Extra-high bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5772	10 Gb Ethernet-LR PCI Express Adapter (FC 5772; CCIN 576E) • Short, x8 • Regular-height card • Extra-high bandwidth • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5899	PCIe2 4-port 1 GbE Adapter (FC 5899; CCIN 576F) • Regular-height adapter • PCIe generation 1 or generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
EC29[1]	PCIe2 LP 2-port 10 GbE RoCE SR adapter (FC EC29; CCIN EC29) • Low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • Firmware level 7.6, or later • OS support: Linux operating system	1, 2, 3, 4, 5	5

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EL11	PCIe2 LP 4-port 1 GbE Adapter (FC EL11; CCIN 576F) • Low-profile adapter • PCIe generation 2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: Linux operating system	6, 1, 2, 3, 4, 5	1
EL27[1]	PCIe2 2-port 10 GbE RoCE SFP+ adapter (FC EL27; CCIN EC27) • low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet	1, 2, 3, 4, 5	5
EL2M	PCIe LP 2-port 1 GbE TX Adapter (FC EL2M; CCIN 5767) • Short, low-profile • PCIe 1.0a compliant • Dual 1 Gb Ethernet (GbE) ports • OS support: Linux operating system	6, 1, 2, 3, 4, 5	1
EL2P[1]	PCIe2 LP 2-port 10 GbE SR Adapter (FC EL2P; CCIN 5287) • Generation 2, regular-height card, high-performance adapter • Capable of transferring data to a distance of 300 m over MMF-850 nm fiber cable • OS support: Red Hat Enterprise Linux and SUSE Linux Enterprise Server	1, 2, 3, 4, 5	5
EL2Z[1]	PCIe2 LP 2-port 10 GbE RoCE SR adapter (FC EL2Z; CCIN EC29) • Low-profile adapter • PCIe generation 2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • Firmware level 7.6, or later • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL38[1]	PCIe2 LP 4-port (10 Gb FCoE, 1 GbE) SFP+ Adapter (FC EL38, CCIN 2B93) • Extra-high bandwidth • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL39[1]	PCIe LP 2-Port 10 GbE SFN6122F Adapter (FC EL39; CCIN EC2G) • High bandwidth • Low-profile adapter • Supports Solarflare OpenOnload • OS support: Linux operating system	2,3,5,1,4	4

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EL3A[1]	PCIe LP 2-Port 10 GbE SFN5162F Adapter (FC EL3A; CCIN EC2H) • High bandwidth • Low-profile adapter • OS support: Linux operating system	2,3,5,1,4	4
EL3B[1]	PCIe3 LP RAID SAS Adapter (FC EL3B; CCIN 57B4) • Low-profile adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • No write cache • One PCIe x8 slot per adapter • Adapters can be installed singly or in pairs • OS support: Linux operating system	1, 2, 3, 4, 5	2
EL3C[1]	PCIe2 LP 4-port (10Gb FCoE and 1GbE) Copper and RJ45 Adapter (FC EL3C; CCIN 2CC1) • Low-profile adapter • Fibre Channel over Ethernet (FCoE) converged network adapter (CNA) • Provides network interface controller (NIC) • Single root I/O virtualization (SR-IOV) capable • OS support: Linux operating system	1, 2, 3, 4, 5	5
EL3Z[1]	PCIe2 LP 2-port 10 GbE BaseT RJ45 Adapter (FC EL3Z; CCIN 2CC4) • Short, low-profile • PCIe generation 2, x8 • Two 10 Gb RJ45 ports • Local area network (LAN) adapter • OS support: Linux operating system	1, 4, 2, 3, 5	5
EN0T[1]	PCIe2 LP 4-port (10Gb+1GbE) SR+RJ45 Adapter (FC EN0T; CCIN 2CC3) • Short, low-profile • PCIe generation 2, x8 • two 10 Gb SR optical ports and two 1 Gb RJ45 ports • NIC network convergence adapter • Local are network (LAN) adapter • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	1, 4, 2, 3, 5	5

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
EN0V[1]	PCIe2 LP 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter (FC EN0V; CCIN 2CC3) • Short, low-profile • PCIe generation 2, x8 • Two 10 Gb copper twinax small form-factor pluggable (SFP+) ports • Two 1 Gb RJ45 ports • Ethernet network interface controller (NIC) function • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	1, 4, 2, 3, 5	5
EL60[1]	PCIe3 LP 4 x8 SAS Port Adapter (FC EJ60; CCIN 57B4) • Low-profile adapter • PCIe3, short, x8 • Transfer speed of 6 Gbps • Supports DVD and tape drives • No write cache • One PCIe x8 slot per adapter • OS support: Linux operating system	1, 2, 3, 4, 5	4
2893[1]	PCI Express 2-Line WAN with Modem (FC 2893; CCIN 576C) • Short, x4 • Non-CIM • OS support: Linux operating system	1, 2, 3, 4, 5	20
2894[1]	PCI Express 2-Line WAN with Modem (FC 2894; CCIN 576C) • Short, x4 • CIM • OS support: Linux operating system	1, 2, 3, 4, 5	20
2728	4-port USB PCIe Adapter (FC 2728; CCIN 57D1) • Regular-height adapter • Single-slot, half-length PCIe adapter • PCIe 1.1 • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	20
5283[1]	PCIe2 LP 2-port 4X InfiniBand QDR Adapter (FC 5283; CCIN 58E2) • Generation 2 low-profile adapter • Extra-high bandwidth • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation 2) • OS support: Linux operating system	1 and 4	2

Table 6. Adapter slot priorities and maximums for PCIe adapters (continued)

Feature code	Description	Slot priorities	Maximum number of adapters supported
ES09	IBM Flash Adapter 90 (PCIe2 0.9TB) (FC ES09; CCIN 578A) • PCIe generation 2, x8 • 900 GB eMLC Flash storage • One PCIe x8 slot per adapter • Adapters are installed in pairs to enable mirroring • OS support: Linux operating system	Not supported in the system. Can be placed only in expansion units (FC 5802, FC 5877, FC EL36, or FC EL37)	4
[1]The adapter can be installed in any slot other than slot 6 and is not supported in slot 6. [2]The adapter requires two adjacent slots.			

I/O expansion units

Find information about the Peripheral Component Interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters supported in the I/O expansion units that are supported for the IBM PowerLinux 7R1 and IBM PowerLinux 7R2 servers that contain the POWER7 processor.

PCI slot priorities for the 5802 and 5877 expansion units

Learn about the PCI Express (PCIe) slots in the 5802 and 5877 expansion units.

System description

The 5802 and 5877 expansion units are 19-inch, rack-mountable, I/O expansion drawers that are designed to be attached to the system by using 12X double data rate (DDR) cables.

The expansion units can accommodate 10 generation-3 cassettes. These cassettes can be installed and removed without removing the drawer from the rack. The expansion units do not support I/O processor (IOP) adapters.

Note: PCIe2 adapters that provide extra-high bandwidths are not supported in the 5802 and 5877 expansion units.
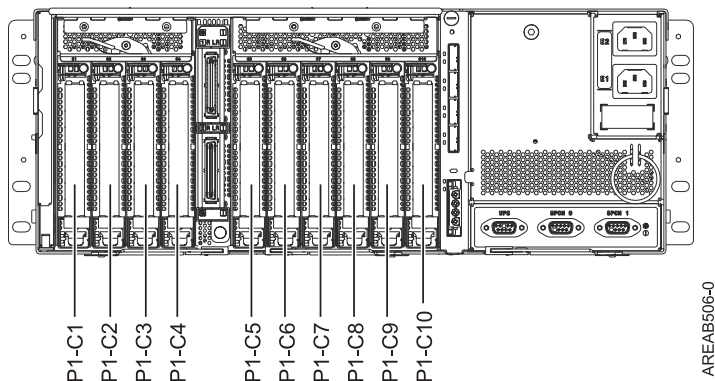

Figure 3. Rear view. This figure shows the rear view of the expansion unit.

Table 7. Location code descriptions

Location code	I/O chip	PCI host bridge (PHB)	Description
P1-C1	I/O chip 1	PHB1	PCIe x8 slot
P1-C2		PHB2	
P1-C3		PHB3	
P1-C4	I/O chip 2	PHB4	
P1-C5		PHB5	
P1-C6		PHB6	
P1-C7	I/O chip 3	PHB7	
P1-C8		PHB8	
P1-C9		PHB9	
P1-C10		PHB10	

Slot priority

The slot priority for all adapters is P1-C1, P1-C4, P1-C2, P1-C5, P1-C3, P1-C6, P1-C7, P1-C8, P1-C9, and P1-C10.

There are three I/O chips. Each I/O chip controls three or four PCI host bridges (PHBs) and each PCIe slot connects directly to a PHB.
- One I/O chip controls slots P1-C1, P1-C2, and P1-C3.
- A second I/O chip controls slots P1-C4, P1-C5, and P1-C6.
- A third I/O chips controls slots P1-C7, P1-C8, P1-C9, and P1-C10.

For best performance, fill P1-C1, P1-C4, P1-C2, P1-C5, P1-C3, and P1-C6 first with the highest bandwidth adapters. Then fill the remaining slots.

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Germany Compliance Statement

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

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

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

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

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

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

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Regulations, Abteilung M372
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 7032 15 2941
email: lugi@de.ibm.com

Generelle Informationen:

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

Electromagnetic Interference (EMI) Statement - Russia

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

Class B Notices

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

Federal Communications Commission (FCC) statement

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

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

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

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

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

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

Industry Canada Compliance Statement

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

Avis de conformité à la réglementation d'Industrie Canada

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

European Community Compliance Statement

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

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

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
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Tele: +49 7032 15 2941
email: lugi@de.ibm.com

VCCI Statement - Japan

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

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

高調波ガイドライン適合品

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

高調波ガイドライン準用品

IBM Taiwan Contact Information

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

Electromagnetic Interference (EMI) Statement - Korea

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Germany Compliance Statement

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

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

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Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

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

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

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
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Tel: +49 7032 15 2941
email: lugi@de.ibm.com

Generelle Informationen:

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

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