

PCI Adapter Placement for E2-700, E2-700T, E2-705, E2-705T, E4-700, E4-700T or E4-705

ESCALA Power7



REFERENCE
86 A1 88FF 04

ESCALA Power7

PCI Adapter Placement for E2-700, E2-700T, E2-705, E2-705T, E4-700, E4-700T or E4-705

The ESCALA Power7 publications concern the following models:

- Bull Escala E5-700 (Power 750 / 8233-E8B)
- Bull Escala M6-700 (Power 770 / 9117-MMB)
- Bull Escala M6-705 (Power 770 / 9117-MMC)
- Bull Escala M7-700 (Power 780 / 9179-MHB)
- Bull Escala M7-705 (Power 780 / 9179-MHC)
- Bull Escala E1-700 (Power 710 / 8231-E2B)
- Bull Escala E1-705 (Power 710 / 8231-E1C)
- Bull Escala E2-700 / E2-700T (Power 720 / 8202-E4B)
- Bull Escala E2-705 / E2-705T (Power 720 / 8202-E4C)
- Bull Escala E3-700 (Power 730 / 8231-E2B)
- Bull Escala E3-705 (Power 730 / 8231-E2C)
- Bull Escala E4-700 / E4-700T (Power 740 / 8205-E6B)
- Bull Escala E4-705 (Power 740 / 8205-E6C)

References to Power 755 / 8236-E8C models are irrelevant.

Hardware

May 2012

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Safety notices

Safety notices may be printed throughout this guide.

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

World Trade safety information

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

Laser safety information

The servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

Laser compliance

The 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 provided power cord. Do not use the 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.

(D005a)

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 approved part. Recycle or discard the battery as instructed by local regulations. (C003a)

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

The following comments apply to the 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 02E/4B, 02E/4C, 05F/6B, or 05E/6C

Find information about the peripheral component interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters that are supported for the 7/20 (02E/4B and 02E/4C) and 7/40 (05F/6B and 05E/6C) 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 area.

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 Gigabit 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 Gigabit 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 Gigabit Ethernet-SX PCI Express Adapter
5769	10 Gigabit Ethernet-SR PCI Express Adapter
5772	10 Gigabit Ethernet-LR PCI Express Adapter
5785	4 Port Async EIA-232 PCIe Adapter

Supported PCI adapters for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C

Find information about the peripheral component interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters that are supported for the 7/20 (02E/4B and 02E/4C) and 7/40 (05F/6B and 05E/6C) systems that contain the POWER7 processor, and the associated I/O expansion units.

This section provides reference information that information technology (IT) personnel and service representatives can use in determining where to place PCI, PCI-X, and PCIe adapters in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C system and the associated I/O expansion units.

Adapters supported on the AIX[®], , or Linux operating system

Table 2 on page 2 and Table 3 on page 3 list the adapters supported on the AIX, , or Linux operating systems. Not all adapters are supported on all operating systems. Exceptions are noted in the Description column.

PCI and PCI-X adapters

The following table lists PCI and PCI-X adapters supported for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C.

Table 2. PCI and PCI-X adapters supported on the AIX, , or Linux operating system

Server	Feature code/CCIN	Description
02E/4B, 02E/4C, 05F/6B, and 05E/6C	2943	8-Port asynchronous EIA-232E/RS-422A PCI Adapter (FC 2943) <ul style="list-style-type: none"> • PCI bus • 8 Async ports • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	4764	PCI-X Cryptographic Coprocessor (FC 4764) <ul style="list-style-type: none"> • Short, 64-bit, 3.3 V • OS support: AIX and
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5706	2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter (FC 5706) <ul style="list-style-type: none"> • Short, 32-bit or 64-bit 3.3 V or 5 V • High bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5713	1 Gigabit-TX iSCSI TOE PCI-X Adapter (FC 5713) <ul style="list-style-type: none"> • Short, 32-bit or 64-bit 3.3 V or 5 V • High bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5736/571A	PCI-X DDR 2.0 Dual Channel Ultra320 SCSI Adapter (FC 5736) <ul style="list-style-type: none"> • Short, 32 bit or 64-bit, 3.3 V • High bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5749/576B	4 Gigabit Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 5749)
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5759/5759	4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 5759) <ul style="list-style-type: none"> • Short, 64-bit, 3.3 V • Extra-high bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5908/572F and 575C	PCI-X DDR 1.5GB cache SAS RAID Adapter (FC 5908) <ul style="list-style-type: none"> • Long, 64-bit, 3.3 V • Extra-high bandwidth • Double-wide adapter requires two adjacent slots: <ul style="list-style-type: none"> – 572F is the CCIN number on the SAS controller side of the double-wide adapter. – 575C is the CCIN number on the write-cache side of the double-wide adapter. • The different feature codes indicate whether a blind-swap cassette is used and its type: <ul style="list-style-type: none"> – 5904 indicates no blind-swap cassette. – 5906 indicates a generation-2.5 blind-swap cassette. – 5908 indicates a generation-3 blind-swap cassette. • OS support: AIX, , and Linux

Table 2. PCI and PCI-X adapters supported on the AIX, , or Linux operating system (continued)

Server	Feature code/CCIN	Description
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5912/572A	PCI-X DDR Dual-x4 3Gb SAS Adapter (FC 5912) <ul style="list-style-type: none"> • Short, 64-bit, 3.3 V • Extra-high bandwidth • Supports a dual controller mode, multi-initiator configuration • OS support: AIX, , and Linux

PCIe adapters

The following table lists PCIe adapters.

Table 3. PCIe adapters supported on the AIX, , or Linux operating system

Server	Feature/CCIN	Description
02E/4B, 02E/4C, and 05F/6B	2053/57CD	PCIe RAID and SSD SAS Adapter 3Gb Low-profile (FC 2053) <ul style="list-style-type: none"> • Low-profile adapter, requires two slots • Short, x8 • OS support: AIX, , and Linux • VIOS attachment requires version 2.2, or later
02E/4B, 02E/4C, and 05E/6C	2054/57CD	PCIe RAID and SSD SAS Adapter 3Gb Low-profile (FC 2054) <ul style="list-style-type: none"> • Low-profile adapter, requires two slots • Short, x8 • OS support: AIX, , and Linux • VIOS attachment requires version 2.2, or later
02E/4B, 02E/4C, 05F/6B, and 05E/6C	2055/57CD	PCIe RAID and SSD SAS Adapter 3Gb with Blind-Swap Cassette (FC 2055) <ul style="list-style-type: none"> • Low-profile adapter, requires two slots • Short, x8 • OS support: AIX, , and Linux • VIOS attachment requires version 2.2, or later
02E/4B, 02E/4C, 05F/6B, and 05E/6C	2728/57D1	4-Port USB PCIe Adapter (FC 2728) <ul style="list-style-type: none"> • Low-profile adapter • Single-slot, half-length PCIe adapter • PCIe 1.1 • OS support: AIX and Linux
02E/4B, 02E/4C, and 05E/6C	2893/576C	PCI Express 2-Line WAN with Modem (FC 2893) <ul style="list-style-type: none"> • Short, x4 • Non-CIM • OS support: AIX, , and Linux
02E/4B, 02E/4C, and 05E/6C	2894/576C	PCI Express 2-Line WAN with Modem (FC 2894) <ul style="list-style-type: none"> • Short, x4 • CIM • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	4808	PCIe Cryptographic Coprocessor (FC 4808) <ul style="list-style-type: none"> • Generation-3 blind-swap cassette • PCIe x4, full-height, half-length • OS support: AIX and

Table 3. PCIe adapters supported on the AIX, , or Linux operating system (continued)

Server	Feature/CCIN	Description
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5260	PCIe2 LP 4-port 1GbE Adapter (FC 5260) <ul style="list-style-type: none"> • Low-profile adapter • PCIe generation-1 or generation-2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: AIX, Linux, and
02E/4C and 05E/6C	ESA1	PCIe2 RAID SAS Adapter Dual-port 6Gb (FC ESA1) <ul style="list-style-type: none"> • Regular-height adapter • PCIe generation-2, x8 • OS support: AIX, , and Linux
02E/4C and 05E/6C	ESA2	PCIe2 RAID SAS Adapter Dual-port 6Gb LP (FC ESA2) <ul style="list-style-type: none"> • Short, low-profile • PCIe generation-2, x8 • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	EN0Y	PCIe2 LP 8Gb 4-port Fibre Channel Adapter (FC EN0Y) <ul style="list-style-type: none"> • Short, low-profile • PCIe generation-2, x8 • Short form factor plus (SFF+) Host Bus Adapter (HBA) • Extra-high bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5269	POWER GXT145 PCI Express Graphics Accelerator (FC 5269) <ul style="list-style-type: none"> • Low-profile adapter • Short, x1 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5270	10Gb FCoE PCIe Dual Port Adapter (FC 5270) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5271	4-Port 10/100/1000 Base-TX PCI Express Adapter (FC 5271) <ul style="list-style-type: none"> • Low-profile adapter • Short, x4 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5272	10 Gigabit Ethernet-CX4 PCI Express Adapter (FC 5272) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5273	8 Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5273) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5274	2-Port Gigabit Ethernet-SX PCI Express Adapter (FC 5274) <ul style="list-style-type: none"> • Low-profile adapter • Short, x4 • OS support: AIX, , and Linux

Table 3. PCIe adapters supported on the AIX, , or Linux operating system (continued)

Server	Feature/CCIN	Description
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5275	10 Gigabit Ethernet-SR PCI Express Adapter (FC 5275) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5276	4-Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5276) <ul style="list-style-type: none"> • Low-profile adapter • Short, x4 • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5277	4-Port Async EIA-232 PCIe 1X LP Adapter (FC 5277) <ul style="list-style-type: none"> • Low-profile adapter • Short, x1 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5278	PCIe Dual-x4 SAS Adapter (FC 5278) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5289	PCIe 2-port Async EIA-232 PCIe 1X LPC Adapter (FC 5289) <ul style="list-style-type: none"> • Short, x8, full-height adapter • PCIe 1.1 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 Compatible • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5290	PCIe LP 2-port Async EIA-232 Adapter (FC 5290) <ul style="list-style-type: none"> • Low-profile adapter • PCIe 1.1 • Short, x8 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 compatible • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5708/2B3B	10Gb FCoE PCIe Dual Port Adapter (FC 5708) <ul style="list-style-type: none"> • Regular full-height • PCIe 2.0 adapter with x8 Generation-1 • Convergence enhanced Ethernet (CEE) supported • OS support: AIX, Linux, and with VIOS.
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5717/5717	4-Port 10/100/1000 Base-TX PCI Express Adapter (FC 5717) <ul style="list-style-type: none"> • Short, x4 • High bandwidth • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5723	2-Port Asynchronous EIA-232 PCI Adapter (FC 5723) <ul style="list-style-type: none"> • PCI adapter • 2-port EIA-232 asynchronous serial communications • 16C850 UART equivalent • OS support: AIX and Linux

Table 3. PCIe adapters supported on the AIX, , or Linux operating system (continued)

Server	Feature/CCIN	Description
02E/4C and 05E/6C	5729	PCIe2 FH 4-Port 8Gb Fibre Channel Adapter (FC 5729) <ul style="list-style-type: none"> • PCIe 2.1, x8 • Full-height, full length adapter with standard-size bracket • OS support: AIX
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5732/5732	10 Gigabit Ethernet-CX4 PCI Express Adapter (FC 5732) <ul style="list-style-type: none"> • Short, x8 • Extra-high bandwidth • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5735/577D	8-Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5735) <ul style="list-style-type: none"> • 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: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5748/5748	POWER GXT145 PCI Express Graphics Accelerator (FC 5748) <ul style="list-style-type: none"> • Short, x1 • Not hot-pluggable • OS support: AIX and Linux
02E/4B, 02E/4C, and 05E/6C	5767/5767	2-Port 10/100/1000 Base-TX Ethernet PCI Express Adapter (FC 5767) <ul style="list-style-type: none"> • Short, x4 • High bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, and 05E/6C	5768/5768	2-Port Gigabit Ethernet-SX PCI Express Adapter (FC 5768) <ul style="list-style-type: none"> • Short, x4 • High bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, and 05E/6C	5769/5769	10 Gigabit Ethernet-SR PCI Express Adapter (FC 5769) <ul style="list-style-type: none"> • Short, full-high, x8 • Low-profile capable • High bandwidth • OS support: AIX and Linux
02E/4B, 02E/4C, and 05E/6C	5772/576E	10 Gigabit Ethernet-LR PCI Express Adapter (FC 5772) <ul style="list-style-type: none"> • Short, x8 • Low-profile capable • Extra-high bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5774/5774	4 Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5774) <ul style="list-style-type: none"> • Short, x4 • Extra-high bandwidth • OS support: AIX, , and Linux

Table 3. PCIe adapters supported on the AIX, , or Linux operating system (continued)

Server	Feature/CCIN	Description
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5782	PCI-X Dual Channel Ultra320 SCSI RAID Adapter with Auxiliary Write Cache (double-wide) (FC 5782) <ul style="list-style-type: none"> • Long, 64-bit, 3.3 V, 266 MHz • Dual-mode capable adapter • Extra-high bandwidth • Double-wide adapter, requires two, adjacent slots. The SCSI controller side of the adapter pair requires a 64-bit slot. The controller side is the side with the external SCSI connectors. • OS support:
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5785	4 Port Async EIA-232 PCIe Adapter (FC 5785) <ul style="list-style-type: none"> • Short, x1 • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5899	PCIe2 4-port 1GbE Adapter (FC 5899) <ul style="list-style-type: none"> • Regular-height adapter • PCIe generation-1 or generation-2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: AIX, Linux, and
02E/4C and 05E/6C	EC27	PCIe2 LP 2-Port 10GbE RoCE SFP+ adapter (FC EC27) <ul style="list-style-type: none"> • Short, low-profile • PCIe generation-2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • OS support: AIX
02E/4C and 05E/6C	EC28	PCIe2 2-Port 10GbE RoCE SFP+ adapter (FC EC28) <ul style="list-style-type: none"> • Regular-height adapter • PCIe generation-2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • OS support: AIX
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5901/57B3	PCIe Dual - x4 SAS Adapter (FC 5901) <ul style="list-style-type: none"> • Short, x8 • Extra-high bandwidth • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5805/574E	PCIe 380 MB Cache Dual - x4 3 Gb SAS RAID Adapter (FC 5805) <ul style="list-style-type: none"> • Short, dual x4 • SAS RAID adapter • Installed in pairs • OS support: AIX, , and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5913/57B5	PCIe2 1.8-GB Cache RAID SAS Tri-port 6Gb Adapter (FC 5913) <ul style="list-style-type: none"> • 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: AIX, , and Linux

Table 3. PCIe adapters supported on the AIX, , or Linux operating system (continued)

Server	Feature/CCIN	Description
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5283	PCIe2 LP 2-Port 4X InfiniBand QDR Adapter (FC 5283) <ul style="list-style-type: none"> • Generation-2 low-profile adapter • Extra-high bandwidth • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation-2) • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5284	PCIe2 LP 2-port 10GbE SR Adapter (FC 5284) <ul style="list-style-type: none"> • Generation-2, low-profile capable, high-performance adapter • Capable of transferring data to a distance of 300 m over MMF-850 nm fiber cable • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation-2) • OS support: AIX, supported only through VIOS, Red Hat Enterprise Linux and SUSE Linux Enterprise Server
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5286	PCIe2 LP 2-Port 10GbE SFP+ Copper Adapter (FC 5286) <ul style="list-style-type: none"> • Generation-2, low-profile adapter • Two 10-Gb Ethernet ports • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation-2) • OS support: AIX and Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5279	PCIe2 LP 2x10GbE SFP+ Copper 2x1GbE UTP Adapter (FC 5279) <ul style="list-style-type: none"> • Low-profile, Short, x8 • PCIe 2 • OS support: Linux
02E/4B, 02E/4C, 05F/6B, and 05E/6C	5280	PCIe2 LP 2x10GbE SR 2x1GbE UTP Adapter (FC 5280) <ul style="list-style-type: none"> • Low-profile, short, x8 • PCIe 2 • OS support: Linux
02E/4C and 05E/6C	5744	PCIe2 2x10GbE SR 2x1GbE UTP Adapter (FC 5744) <ul style="list-style-type: none"> • Short, x8 • PCIe 2 • OS support: Linux
02E/4C and 05E/6C	5745	PCIe2 2x10GbE SFP+ Copper 2x1GbE UTP Adapter (FC 5745) <ul style="list-style-type: none"> • Short, x8 • PCIe 2 • OS support: Linux

PCI adapter placement rules and slot priorities for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C

Some adapters must be placed in specific peripheral component interconnect (PCI), peripheral component interconnect-X (PCI-X), or PCI Express (PCIe) slots to function correctly or to perform optimally. Learn how to determine the slots in the server or expansion units where you can install the PCI adapters.

PCI slot descriptions for the 02E/4B and 05F/6B

Figure 1 on page 9 shows the rear view of the server with the location codes for the PCI adapter slots. Figure 2 on page 9 shows the four PCIe x8 low-profile slots as an optional PCIe expansion feature. The PCIe expansion feature is installed at the GX++ slot 1. Each PCIe is a separate PCI host bridge (PHB).

The Table 4 on page 10 lists the adapter slot locations and details for the 02E/4B and 05F/6B.

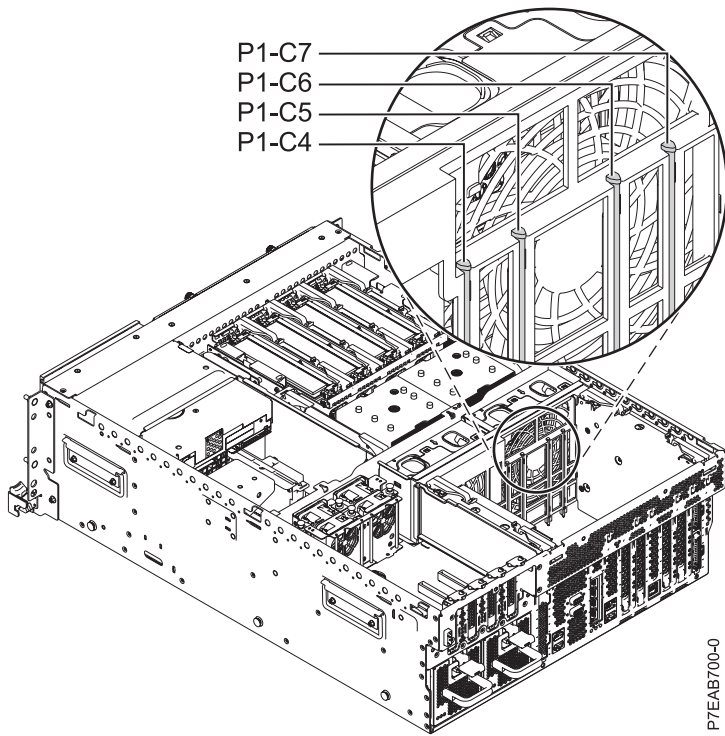


Figure 1. Rear view of the 02E/4B and the 05F/6B system with PCI slots location codes

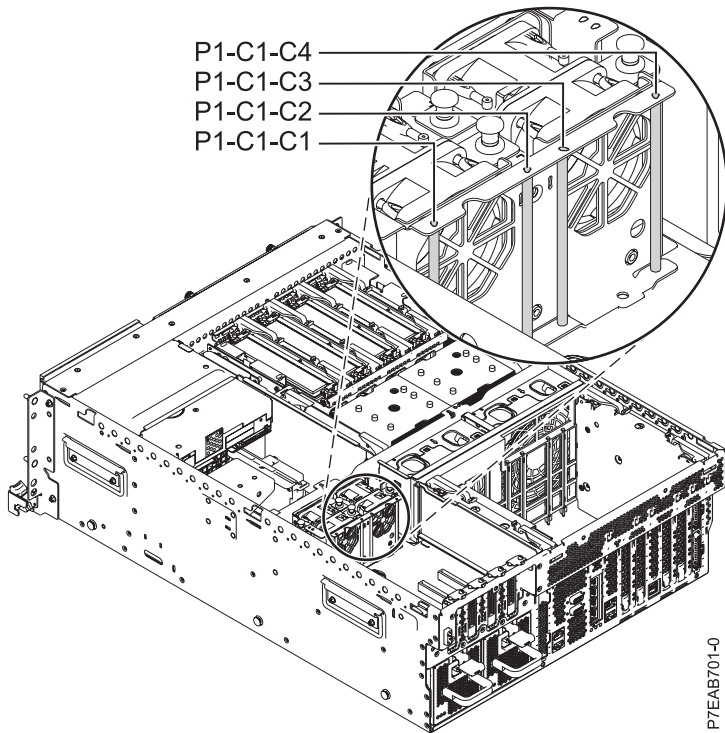


Figure 2. Rear view of the 02E/4B and the 05F/6B system, showing the PCI riser expansion with location codes

Table 4. PCI slot locations and descriptions for the 02E/4B and the 05F/6B

Slot	Location code	Description	PHB	Adapter size
Slot 1	P1-C4	PCIe x8	PCIe PHB0 module A	Short
Slot 2	P1-C5	PCIe x8	PCIe PHB1 module A	Short
Slot 3	P1-C6	PCIe x8	PCIe PHB2 module A	Short
Slot 4	P1-C7	PCIe x8	PCIe PHB3 module A	Short
Slot 5	P1-C1-C1	PCIe x8 low-profile	PCIe PHB0 module B	Low-profile
Slot 6	P1-C1-C2	PCIe x8 low-profile	PCIe PHB1 module B	Low-profile
Slot 7	P1-C1-C3	PCIe x8 low-profile	PCIe PHB3 module B	Low-profile
Slot 8	P1-C1-C4	PCIe x8 low-profile	PCIe PHB4 module B	Low-profile

- Regular full-height adapters can be installed only in the four full-height slots: P1-C4 to P1-C7.
- The low-profile adapters can be installed only in slot P1-C1-C1 to slot P1-C1-C4.
- The low-profile and full-height adapters are the same adapters but with different brackets for installing in the slots. Install the low-height cards in low-profile slots and full-height cards in full-height slots.
- Slots 5 - 8 are optional low-profile slots and are available only if the feature 5610 or 5685, is connected at one of the GX++ slots.
- All slots support enhanced error handling (EEH).
- None of the internal PCIe slots are hot swappable. Turn off the system before inserting any of the PCIe adapters.
- Only the carriers that are used in the I/O expansion units are hot swappable.

PCI slot descriptions for 02E/4C and 05E/6C servers

Figure 3 shows the PCI slots and their location codes for 02E/4C and 05E/6C systems. The 02E/4C and 05E/6C systems have five PCIe x8 G2 full-height half-length slots and one PCIe x4 full-height half-length slot. All slots support enhanced error handling (EEH), but are not hot pluggable. The PCIe slot 1 and slot 4 have an x16 connector, and the other slots have x8 connector. Table 5 on page 11 lists the adapter slot locations and details for the 02E/4C and 05E/6C.

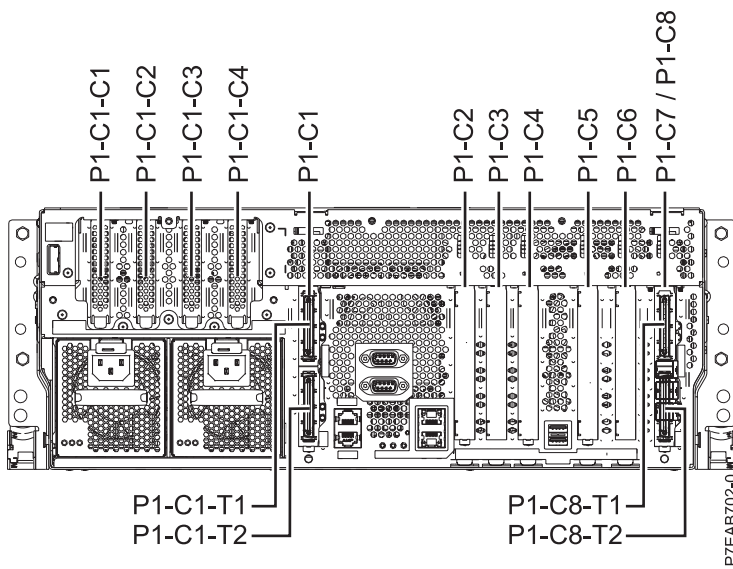


Figure 3. Rear view of the 02E/4C and 05E/6C, showing the PCI slots with their location codes

Table 5. PCI slot locations and descriptions for the 02E/4C and 05E/6C

Slot	Location code	Description	PHB	Adapter size
Slot 1	P1-C2	PCIe x8 G2	PCIe-PHB5	Full-height Half-length
Slot 2	P1-C3	PCIe x8 G2	PCIe-PHB4	Full-height Half-length
Slot 3	P1-C4	PCIe x8 G2	PCIe-PHB3	Full-height Half-length
Slot 4	P1-C5	PCIe x8 G2	PCIe-PHB2	Full-height Half-length
Slot 5	P1-C6	PCIe x8 G2	PCIe-PHB1	Full-height Half-length
Slot 6	P1-C7	PCIe x4 G2	PCIe-PHB0	Full-height Half-length

- All slots support enhanced error handling (EEH).
- None of the internal PCIe slots are hot swappable. Turn off the system before inserting any of the PCIe adapters.

PCIe expansion units

PCIe expansion units, feature code (FC) 5685, provides connector slots for four low-profile generation-1 or generation-2 PCIe adapters and can be installed in slots C1-C1 to C1-C4. FC 5610 provides connector slots for four low-profile PCIe generation-1 adapters and can be installed in slots C1-C1 to C1-C4. The PCIe generation-2 adapters work best on FC 5685. PCIe expansion unit, FC 58/77 and FC 58/02 are supported on the system running AIX or Linux. The system can be configured to support up to two I/O expansion units per GX adapter.

Restriction: A GX channel adapter that has one or two of 58/77 or 58/02 expansion units, or one of each 58/77 and 58/02 expansion unit connected cannot have any other devices connected to that adapter.

Note: For optimum performance, you might want to limit the total number of expansion units containing high bandwidth and extra-high bandwidth adapters. See “Performance notes” on page 20.

The expansion units attach to a 4X channel adapter installed in the GX slots available in the system.

The maximum number of attached remote I/O drawers depends on the number of processor chip module units in the system.

- Systems with one processor chip module unit support up to four 58/02 or 58/77 expansion units, that is, two per GX channel adapter.
- Systems with two processor chip module units support up to eight 58/02 or 58/77 expansion units, that is, two per GX channel adapter.

02E/4B or 02E/4C:

- If you install feature code 5610 or 5685 in the 02E/4B, you cannot install the 5615 expansion unit and any I/O expansion drawers. This results in a total of eight internal slots.
- If you do not install feature code 5610 or 5685 in the 02E/4B, a total of four internal slots are available and you can install an I/O expansion unit.

05F/6B or 05E/6C:

- If you install the feature code 5610 or 5685 in the 05F/6B, only one 5615 expansion unit can be installed and results in a total of eight internal slots.
- If you do not install feature code 5610 or 5685 in the 05F/6B, a total of four internal slots are available.

PCI, PCI-X, and PCIe adapters

Use this information to identify slot placement priorities and the maximum number of adapters that can be installed.

FCs 5767, 5768, and 9055 are the only adapters that can be installed in slot 6 (P1-C7). If a GX adapter is installed in GX++ slot 2 (P1-C8), FCs 5767, 5768, and 9055 must be installed in the other PCIe x8 slot.

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5908 ²	PCI-X DDR 1.5GB cache SAS RAID Adapter (FC 5908) <ul style="list-style-type: none"> • Long, 64-bit, 3.3 V • Extra-high bandwidth • Double-wide adapter requires two adjacent slots: <ul style="list-style-type: none"> – 572F is the CCIN number on the SAS controller side of the double-wide adapter. – 575C is the CCIN number on the write-cache side of the double-wide adapter. • The different feature codes indicate whether a blind-swap cassette is used and its type: <ul style="list-style-type: none"> – 5904 indicates no blind-swap cassette. – 5906 indicates a generation-2.5 blind-swap cassette. – 5908 indicates a generation-3 blind-swap cassette. • OS support: AIX, , and Linux 	All slots have the same priority	16	All slots have the same priority	24
5912 ²	PCI-X DDR Dual-x4 3Gb SAS Adapter (FC 5912) <ul style="list-style-type: none"> • Short, 64-bit, 3.3 V • Extra-high bandwidth • Supports a dual controller mode, multi-initiator configuration • OS support: AIX, , and Linux 	All slots have the same priority	48	All slots have the same priority	48
5759 ²	4 Gb Dual-Port Fibre Channel PCI-X 2.0 DDR Adapter (FC 5759) <ul style="list-style-type: none"> • Short, 64-bit, 3.3 V • Extra-high bandwidth • OS support: AIX, , and Linux 	All slots have the same priority	24 and 48	All slots have the same priority	24 and 48

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5706 ¹	2-Port 10/100/1000 Base-TX Ethernet PCI-X Adapter (FC 5706) <ul style="list-style-type: none"> • Short, 32-bit or 64-bit 3.3 V or 5 V • High bandwidth • OS support: AIX, , and Linux 	All slots have the same priority	48	All slots have the same priority	48
5713 ¹	1 Gigabit-TX iSCSI TOE PCI-X Adapter (FC 5713) <ul style="list-style-type: none"> • Short, 32-bit or 64-bit 3.3 V or 5 V • High bandwidth • OS support: AIX, , and Linux 	All slots have the same priority	48	All slots have the same priority	48
5723	2-Port Asynchronous EIA-232 PCI Adapter (FC 5723) <ul style="list-style-type: none"> • PCI adapter • 2-port EIA-232 asynchronous serial communications • 16C850 UART equivalent • OS support: AIX and Linux 	All slots have the same priority	24 and 48	All slots have the same priority	24 and 48
5729	PCIe2 FH 4-Port 8Gb Fibre Channel Adapter (FC 5729) <ul style="list-style-type: none"> • PCIe 2.1, x8 • Full-height, full length adapter with standard-size bracket • OS support: AIX 	Not supported		1, 2, 3, 4, 5, 6	5
5736 ¹	PCI-X DDR 2.0 Dual Channel Ultra320 SCSI Adapter (FC 5736) <ul style="list-style-type: none"> • Short, 32 bit or 64-bit, 3.3 V • High bandwidth • OS support: AIX, , and Linux 	All slots have the same priority	48	All slots have the same priority	48
5744	PCIe2 2x10GbE SR 2x1GbE UTP Adapter (FC 5744) <ul style="list-style-type: none"> • Short, x8 • PCIe 2 • OS support: Linux 	Not supported		1, 2, 3, 4, 5, 6	5
5745	PCIe2 2x10GbE SFP+ Copper 2x1GbE UTP Adapter (FC 5745) <ul style="list-style-type: none"> • Short, x8 • PCIe 2 • OS support: Linux 	Not supported		1, 2, 3, 4, 5, 6	5
4764	PCI-X Cryptographic Coprocessor (FC 4764) <ul style="list-style-type: none"> • Short, 64-bit, 3.3 V • OS support: AIX and 	All slots have the same priority	48	All slots have the same priority	48

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5913	PCIe2 1.8-GB Cache RAID SAS Tri-port 6Gb Adapter (FC 5913) <ul style="list-style-type: none"> • 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: AIX, , and Linux 	1, 3, 2, 4	2	1, 2, 3, 4, 5, 6	2
5283	PCIe2 LP 2-Port 4X InfiniBand QDR Adapter (FC 5283) <ul style="list-style-type: none"> • Generation-2 low-profile adapter • Extra-high bandwidth • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation-2) • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5284	PCIe2 LP 2-port 10GbE SR Adapter (FC 5284) <ul style="list-style-type: none"> • Generation-2, low-profile capable, high-performance adapter • Capable of transferring data to a distance of 300 m over MMF-850 nm fiber cable • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation-2) • OS support: AIX, supported only through VIOS, Red Hat Enterprise Linux and SUSE Linux Enterprise Server 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5286	PCIe2 LP 2-Port 10GbE SFP+ Copper Adapter (FC 5286) <ul style="list-style-type: none"> • Generation-2, low-profile adapter • Two 10-Gb Ethernet ports • Requires available PCIe slot in the FC 5685 PCIe Riser Card (generation-2) • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
4808	PCIe Cryptographic Coprocessor (FC 4808) <ul style="list-style-type: none"> • Generation-3 blind-swap cassette • PCIe x4, full-height, half-length • OS support: AIX and 	1, 3, 2, 4	8	1, 2, 3, 4, 5, 6	8

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5732 ²	10 Gigabit Ethernet-CX4 PCI Express Adapter (FC 5732) <ul style="list-style-type: none"> • Short, x8 • Extra-high bandwidth • OS support: AIX and Linux 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45
5269	POWER GXT145 PCI Express Graphics Accelerator (FC 5269) <ul style="list-style-type: none"> • Low-profile adapter • Short, x1 • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5270	10Gb FCoE PCIe Dual Port Adapter (FC 5270) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5271	4-Port 10/100/1000 Base-TX PCI Express Adapter (FC 5271) <ul style="list-style-type: none"> • Low-profile adapter • Short, x4 • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5272	10 Gigabit Ethernet-CX4 PCI Express Adapter (FC 5272) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5273	8 Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5273) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX, , and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5274	2-Port Gigabit Ethernet-SX PCI Express Adapter (FC 5274) <ul style="list-style-type: none"> • Low-profile adapter • Short, x4 • OS support: AIX, , and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4
5275	10 Gigabit Ethernet-SR PCI Express Adapter (FC 5275) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	4

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5278	PCIe Dual-x4 SAS Adapter (FC 5278) <ul style="list-style-type: none"> • Low-profile adapter • Short, x8 • OS support: AIX, , and Linux 	1, 3, 2, 4	4	1, 2, 3, 4, 5, 6	4
5748	POWER GXT145 PCI Express Graphics Accelerator (FC 5748) <ul style="list-style-type: none"> • Short, x1 • Not hot-pluggable • OS support: AIX and Linux 	All slots have the same priority	8	All slots have the same priority	45
5769	10 Gigabit Ethernet-SR PCI Express Adapter (FC 5769) <ul style="list-style-type: none"> • Short, full-high, x8 • Low-profile capable • High bandwidth • OS support: AIX and Linux 	5, 7, 6, 8	44	1, 2, 3, 4, 5, 6	45
5772 ²	10 Gigabit Ethernet-LR PCI Express Adapter (FC 5772) <ul style="list-style-type: none"> • Short, x8 • Low-profile capable • Extra-high bandwidth • OS support: AIX, , and Linux 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45
5708 ²	10Gb FCoE PCIe Dual Port Adapter (FC 5708) <ul style="list-style-type: none"> • Regular full-height • PCIe 2.0 adapter with x8 Generation-1 • Convergence enhanced Ethernet (CEE) supported • OS support: AIX, Linux, and with VIOS. 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45
5735 ²	8-Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5735) <ul style="list-style-type: none"> • 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: AIX, , and Linux 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5805/ 574E	PCIe 380 MB Cache Dual - x4 3 Gb SAS RAID Adapter (FC 5805) <ul style="list-style-type: none"> • Short, dual x4 • SAS RAID adapter • Installed in pairs • OS support: AIX, , and Linux 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45
5901 ²	PCIe Dual - x4 SAS Adapter (FC 5901) <ul style="list-style-type: none"> • Short, x8 • Extra-high bandwidth • OS support: AIX, , and Linux 	1, 3, 2, 4	44	5, 4, 3, 2, 1	45
5767 ¹	2-Port 10/100/1000 Base-TX Ethernet PCI Express Adapter (FC 5767) <ul style="list-style-type: none"> • Short, x4 • High bandwidth • OS support: AIX, , and Linux 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45
5768 ¹	2-Port Gigabit Ethernet-SX PCI Express Adapter (FC 5768) <ul style="list-style-type: none"> • Short, x4 • High bandwidth • OS support: AIX, , and Linux 	1, 3, 2, 4	44	6, 5, 4, 3, 2, 1	45
5717 ¹	4-Port 10/100/1000 Base-TX PCI Express Adapter (FC 5717) <ul style="list-style-type: none"> • Short, x4 • High bandwidth • OS support: AIX and Linux 	1, 3, 2, 4	44	1, 2, 3, 4, 5, 6	45
5774 ²	4 Gigabit PCI Express Dual Port Fibre Channel Adapter (FC 5774) <ul style="list-style-type: none"> • Short, x4 • Extra-high bandwidth • OS support: AIX, , and Linux 	1, 3, 2, 4	44	6, 5, 4, 3, 2, 1	45
5277	4-Port Async EIA-232 PCIe 1X LP Adapter (FC 5277) <ul style="list-style-type: none"> • Low-profile adapter • Short, x1 • OS support: AIX and Linux 	5, 7, 6, 8	4	1, 2, 3, 4, 5, 6	45

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
5290	PCIe LP 2-port Async EIA-232 Adapter (FC 5290) <ul style="list-style-type: none"> • Low-profile adapter • PCIe 1.1 • Short, x8 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 compatible • OS support: AIX and Linux 	5, 7, 6, 8	2	6, 5, 4, 3, 2, 1	2
5782	PCI-X Dual Channel Ultra320 SCSI RAID Adapter with Auxiliary Write Cache (double-wide) (FC 5782) <ul style="list-style-type: none"> • Long, 64-bit, 3.3 V, 266 MHz • Dual-mode capable adapter • Extra-high bandwidth • Double-wide adapter, requires two, adjacent slots. The SCSI controller side of the adapter pair requires a 64-bit slot. The controller side is the side with the external SCSI connectors. • OS support: 	All slots have same priority	8	All slots have same priority	8 and 16
5785	4 Port Async EIA-232 PCIe Adapter (FC 5785) <ul style="list-style-type: none"> • Short, x1 • OS support: AIX and Linux 	1, 3, 2, 4	44	5, 4, 3, 2, 1	45
2728	4-Port USB PCIe Adapter (FC 2728) <ul style="list-style-type: none"> • Low-profile adapter • Single-slot, half-length PCIe adapter • PCIe 1.1 • OS support: AIX and Linux 	5, 7, 6, 8	44	5, 4, 3, 2, 1	45
2053, 2054/57CD	PCIe RAID and SSD SAS Adapter 3Gb Low-profile (FC 2053) <ul style="list-style-type: none"> • Low-profile adapter, requires two slots • Short, x8 • OS support: AIX, , and Linux • VIOS attachment requires version 2.2, or later 	5, 7, 6, 8	2	1, 2, 3, 4, 5, 6	2
2055/57CD	PCIe RAID and SSD SAS Adapter 3Gb with Blind-Swap Cassette (FC 2055) <ul style="list-style-type: none"> • Low-profile adapter, requires two slots • Short, x8 • OS support: AIX, , and Linux • VIOS attachment requires version 2.2, or later 	5, 7, 6, 8	20	1, 2, 3, 4, 5, 6	20

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
ESA1	PCIe2 RAID SAS Adapter Dual-port 6Gb (FC ESA1) <ul style="list-style-type: none"> • Regular-height adapter • PCIe generation-2, x8 • OS support: AIX, , and Linux 	Not supported		1, 2, 3, 4, 5, 6	20 and 40
ESA2	PCIe2 RAID SAS Adapter Dual-port 6Gb LP (FC ESA2) <ul style="list-style-type: none"> • Short, low-profile • PCIe generation-2, x8 • OS support: AIX, , and Linux 	Not supported		1, 2, 3, 4, 5, 6	2
5289	PCIe 2-port Async EIA-232 PCIe 1X LPC Adapter (FC 5289) <ul style="list-style-type: none"> • Short, x8, full-height adapter • PCIe 1.1 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 Compatible • OS support: AIX and Linux 	5, 7, 6, 8	12	1, 2, 3, 4, 5, 6	12
5290	PCIe LP 2-port Async EIA-232 Adapter (FC 5290) <ul style="list-style-type: none"> • Low-profile adapter • PCIe 1.1 • Short, x8 • 2 Ports through RJ45 by using the DB9 connector • EIA-232 compatible • OS support: AIX and Linux 	5, 7, 6, 8	2	1, 2, 3, 4, 5, 6	2
5899	PCIe2 4-port 1GbE Adapter (FC 5899) <ul style="list-style-type: none"> • Regular-height adapter • PCIe generation-1 or generation-2, x4 • High bandwidth • Four-port 1 Gb Ethernet • OS support: AIX, Linux, and 	5, 7, 6, 8 ¹	24 and 44	1, 2, 3, 4, 5, 6 ¹	26 and 45
EC27	PCIe2 LP 2-Port 10GbE RoCE SFP+ adapter (FC EC27) <ul style="list-style-type: none"> • Short, low-profile • PCIe generation-2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • OS support: AIX 	Not supported		1, 2, 3, 4, 5, 6 ²	4

Table 6. Adapter slot priorities and maximum PCI, PCI-X, and PCIe adapters supported (continued)

Feature code	Description	02E/4B and 05F/6B		02E/4C and 05E/6C	
		Slot priorities ³	Maximum number of adapters supported	Slot priorities ³	Maximum number of adapters supported
EC28	PCIe2 2-Port 10GbE RoCE SFP+ adapter (FC EC28) <ul style="list-style-type: none"> • Regular-height adapter • PCIe generation-2, x8 • Extra-high bandwidth, low latency 10 Gb Ethernet • OS support: AIX 	Not supported		1, 2, 3, 4, 5, 6 ²	4
EN0Y	PCIe2 LP 8Gb 4-port Fibre Channel Adapter (FC EN0Y) <ul style="list-style-type: none"> • Short, low-profile • PCIe generation-2, x8 • Short form factor plus (SFF+) Host Bus Adapter (HBA) • Extra-high bandwidth • OS support: AIX, , and Linux 	5, 7, 6, 8 ²	4	1, 2, 3, 4, 5, 6 ²	4

¹ High-bandwidth storage adapter. See the “Performance notes” before installing this adapter.

² Extra high-bandwidth adapter. See the “Performance notes” before installing this adapter.

³ The adapters are spread across the system unit and placed in this order for the best performance.

Performance notes

Use the information in this section to determine the maximum number of adapters that can be placed in a system while still maintaining optimum performance.

Performance notes regarding GX++ channel adapters and I/O expansion units

The I/O expansion units must be limited to one expansion unit per GX++ channel controller (FC 5615) Do not connect multiple expansion units to the same GX++ channel controller.

Table 6 on page 12 shows the slot placement priorities and the maximum number of specified adapters that can be installed for connectivity. However, for optimum performance, you might want to further limit the total number of high bandwidth and extra-high bandwidth adapters. If you must expand the I/O capacity of the system for extra-high bandwidth adapters, use high-performance I/O expansion units such as 5610, 5685, 57/96, 58/02, or 58/77.

The following tables provide guidelines on the maximum number of high bandwidth and extra-high bandwidth adapters you can use and still maintain optimum performance.

Note: Because of the many types of application workloads, these guidelines cannot cover all cases. The numbers in the following tables are suggestions for single types of adapters that are running exclusively. For systems with mixed adapter types or that have high aggregate bandwidth requirements, consult a support representative for additional guidelines.

Extra-high bandwidth storage adapters

Table 7. Maximum number of extra-high bandwidth storage adapters for best performance

System configuration	Adapters in system slots C4 to C7	Low profile adapters in system slots C1-C1 to C1-C4 if FC 5610 or 5685 is used	Adapters per 5615 with one or more 57/96	Adapters per 5615 with one or two 58/02 or 58/77	System maximum
System with one processor chip module unit	3 (2 for 5735)	3 ¹ (2 for 5237)	4	6 (4 for 5735)	9
System with two processor chip module units	3 (2 for 5735)	3 ¹ (2 for 5237)	4 (8 in 2 drawers)	6 (12 in 2 drawers) (4 / 8 for 5735)	15 (10 for 5735)

¹Split adapters across both internal slots C4 to C7 and the four-slot riser slots C1-C1 to C1-C4 if FC 5610 or 5685 is used.

You can install extra high-performance adapters in three out of the four base slots and in three out of four of FC 5610 or 5685 slots.

Extra-high bandwidth Ethernet adapters

Table 8. Maximum number of extra-high bandwidth Ethernet adapters for best performance

System configuration	Adapters in system slots C4 - C7	Low profile adapters in system slots C1-C1 to C1-C4 if FC 5610 or FC 5685 is used	Adapters per 5615 with one or more 57/96	Adapters per 5615 with one or two 58/02 or 58/77	System maximum
System with one processor chip module unit	2	2	2	4	4
System with two processor chip module units	2	2	2 (4 in 2 drawers)	4 (8 in 2 drawers)	8

For best performance, extra high-bandwidth Ethernet adapters must be installed in 58/02 or 58/77 expansion drawers when available, instead of using internal system unit slots. A maximum of two adapters in slots P1-C4 through P1-C7, and a maximum of two adapters in slots P1-C1-C1 through P1-C1-C4 can be installed.

I/O expansion units

Learn about I/O expansion units that are supported on the systems systems that contain the POWER7 processor.

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

Avis de conformité à la réglementation d'Industrie Canada

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European Community contact:
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Tele: +49 7032 15-2937
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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

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International Business Machines Corp.
New Orchard Road
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Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:

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Tel: +49 7032 15-2937
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Generelle Informationen:

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- Increase the separation between the equipment and receiver.

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Industry Canada Compliance Statement

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International Business Machines Corp.

New Orchard Road

Armonk, New York 10504

Tel: 914-499-1900

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Technical Regulations, Abteilung M456

IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 7032 15-2937
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