

BladeCenter PCI Express Gen 2 Expansion Blade and PCI Express Gen 2 Expansion Blade II

Product Guide (withdrawn product)

The BladeCenter® PCI Express Gen 2 Expansion Blade and Expansion Blade II provide the capability to attach selected PCI Express cards on selected server blades. This capability is ideal for many applications that require special telecommunications network interfaces or hardware acceleration using a PCI Express card. They provide one full height, full length PCI Express slot and one full height, half length PCI Express slot with a 75 watt power supply for each slot integrating PCI Express card support capability into the BladeCenter architecture. Figure 1 shows the BladeCenter PCI Express Gen 2 Expansion Blade attached to an HS22 blade server.

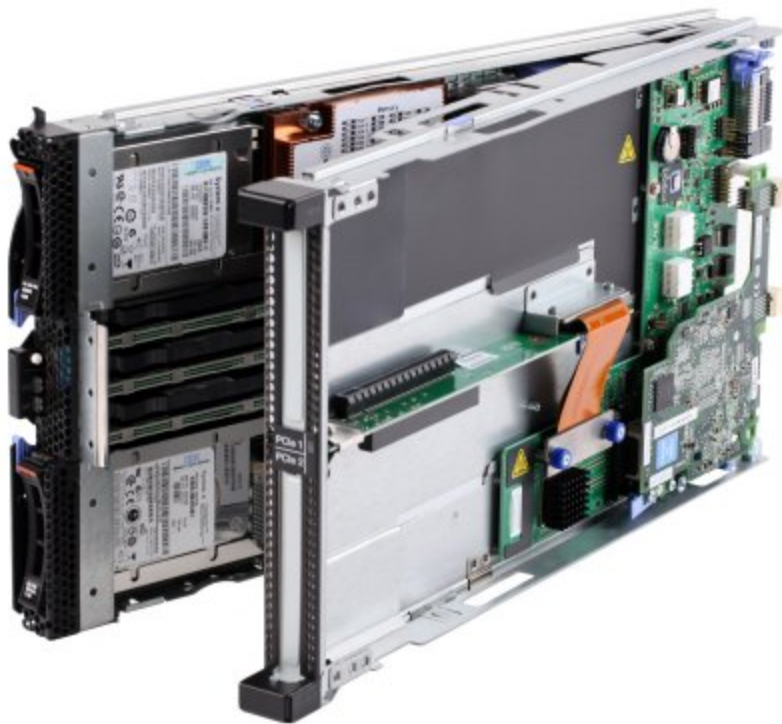


Figure 1. BladeCenter PCI Express

Gen 2 Expansion Blade (attached to a HS22 blade server)

Did you know?

The unique stacking capability of the BladeCenter PCI Express Gen 2 Expansion Blade and Expansion Blade II allow you to connect up to four of them (depending on the attached server) to a single blade server providing up to eight PCIe 2.0 slots. In addition, you can still use a CFFh I/O expansion card adapter by installing it in the top-most expansion blade.

Part number information

Table 1. Ordering part number and feature code

Description	Part number	Feature code
BladeCenter PCI Express Gen 2 Expansion Blade	46M6730*	9295*
BladeCenter PCI Express Gen 2 Expansion Blade II	68Y7484*	A247

* Withdrawn from marketing

These part numbers include the following items:

- BladeCenter PCI Express Gen 2 I/O Expansion Blade or Expansion Blade II
- Documentation package

The only difference between Expansion Blade and Expansion Blade II is cut-outs on the sides of Expansion Blade II, as shown in Figure 2.

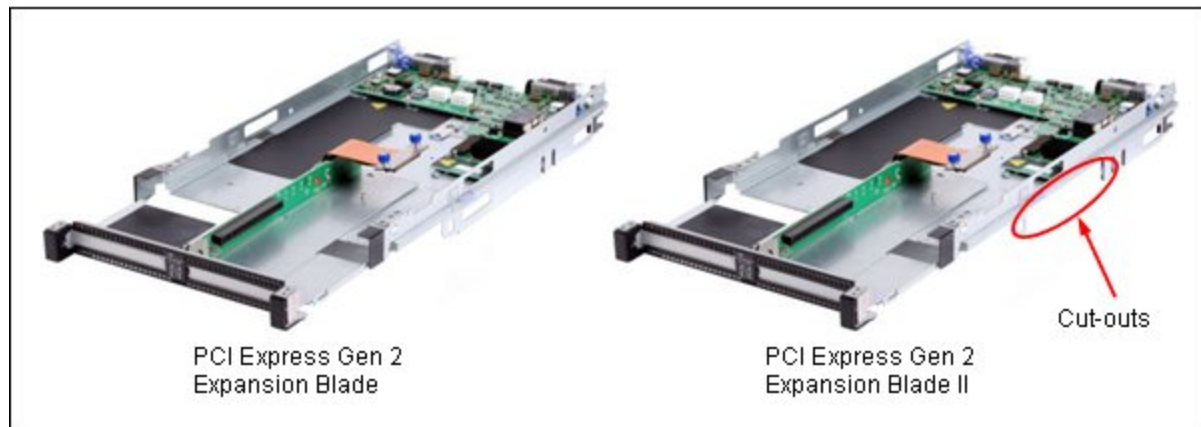


Figure 2. PCI Express Gen 2 Expansion Blade and Expansion Blade II

Features

The expansion blades have the following features:

- Support for PCIe 2.0 adapters in an expansion blade
The expansion blade lets you install one or two standard form factor PCIe 2.0 adapter cards in a BladeCenter environment, enabling the use of specialized adapters or adapters that wouldn't otherwise be available to BladeCenter customers. Each of the two adapters can consume up to 75W.
- Ability to stack up to four expansion blades on a single base blade
You can attach up to two, three or four expansion blades (depending on the attached server), thereby maintaining the BladeCenter density advantage while still giving you the option to install PCIe cards as needed without the need for each server blades and the added complexity and cost that brings. The first expansion blade connects to the server blade using the CFFh expansion slot of the server blade. The second expansion blade attaches to the CFFh connector on the first expansion blade, and so on.
- CFFh slot still available
The CFFh expansion connector is accessible on the top-most expansion blade (see Figure 3), even with four expansion blades attached. This lets you maintain the integrated networking capabilities of the blade server when installed in a BladeCenter H or BladeCenter HT chassis.

The layout of the expansion blade is shown in Figure 3.

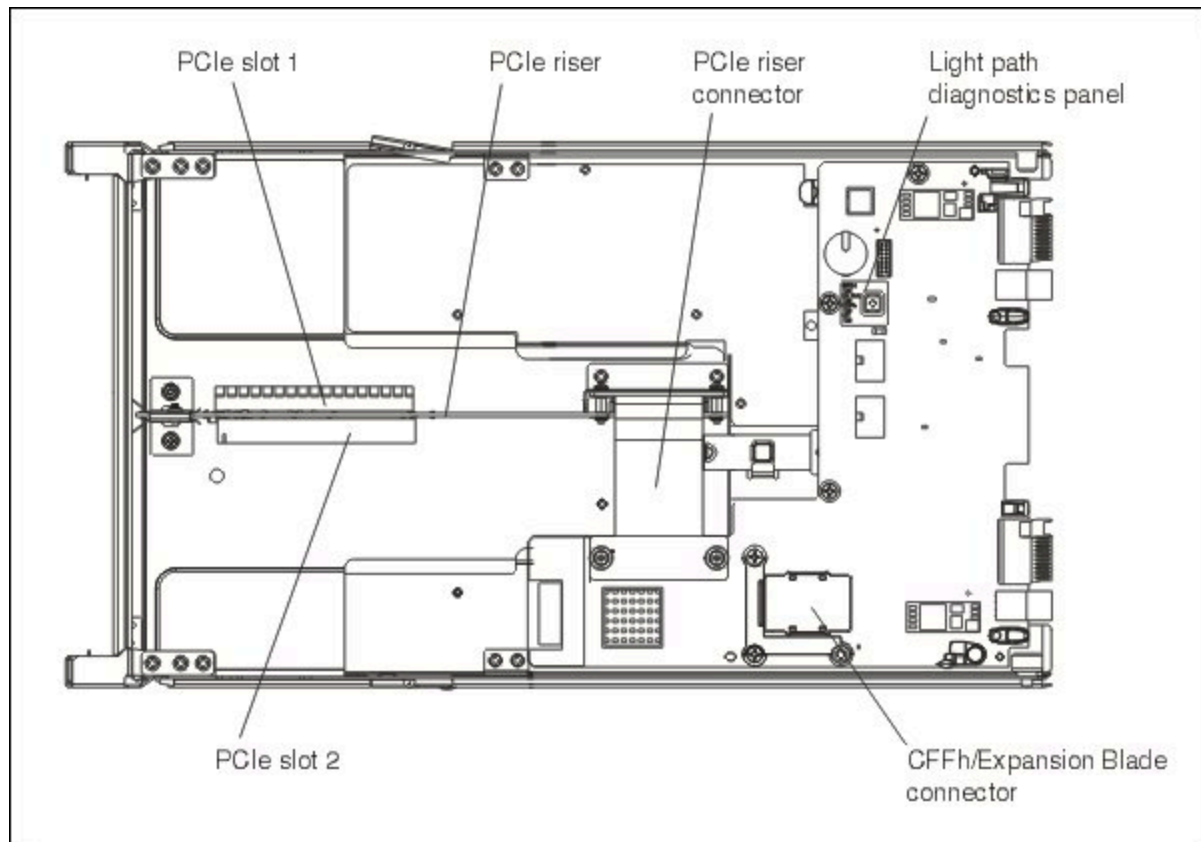


Figure 3. Layout of the expansion blade

Specifications

The expansion blades have the following specifications:

- 30 mm expansion blade, attaches to a supported server blade
- Two PCI Express 2.0 slots:
 - Each slot x8 electrically, x16 mechanically
 - Each slot supports adapters up to 75W power consumption
 - Slot 1 supports full-length/full-height cards
 - Slot 2 supports half-length/full-height cards
 - Supported cards are listed in Table 4.
- Up to four expansion blades can be attached to the base server, depending on the server they are attached to (see Table 2 for supported server and expansion blade combinations):
 - HS22: Up to four expansion blades
 - HS23: Up to four expansion blades
 - Single-node HX5: Up to three expansion blades
 - Two-node HX5: Up to two expansion blades
- The CFFh slot remains usable on the top-most expansion blade, for use in BladeCenter H and HT configurations. Supported CFFh cards are listed in Table 5.

Supported servers

The BladeCenter PCI Express Gen 2 Expansion Blade and Expansion Blade II are supported attached to the BladeCenter servers listed in Table 2.

Table 2. Supported servers

		HS12 (8028)	HS21 (8853)	HS21 XM (7995)	HS22 (7870)	HS22V (7871)	HS23 (7875)	HS23E (8038)	HX5 (7872)	HX5 (7873)	JS12 (7998-60X)	JS23/43 (7778)	LS22 (7901)	LS42 (7902)	PS700/1/2 (8406)	PS703/4 (7891)
BladeCenter PCI Express Gen 2 Expansion Blade	46M6730	N	N	N	Y	N	N	N	Y	Y	N	N	N	N	N	N
BladeCenter PCI Express Gen 2 Expansion Blade II	68Y7484	N	N	N	Y	N	Y	Y	N	Y	N	N	N	N	N	N

The maximum number of expansion blades that can be attached is as follows:

- HS22: Up to four expansion blades (total width will be 150 mm)
- HS23: Up to four expansion blades (total width will be 150 mm)
- HS23E: Up to four expansion blades (total width will be 150 mm)
- Single-node HX5: Up to three expansion blades (total width will be 120 mm)
- Two-node HX5: Up to two expansion blades (total width will be 120 mm)

The Expansion Blade attaches to the blade server unit through the CFFh connector on the system board of the server blade. The top cover of the blade server needs to be removed and the Expansion Blade attaches to it, forming a double-width blade server unit. Additional PCI Express Gen 2 Expansion Blade can be attached up to the supported maximum for the server type. A supported CFFh adapter can be attached to the top-most Expansion Blade if the server unit is installed in a BladeCenter H or HT chassis.

Supported BladeCenter chassis

BladeCenter chassis support is based on the blade server type in which the expansion card is installed. Consult IBM ServerProven to see which chassis each blade server type is supported at the following address:

<http://ibm.com/servers/eserver/serverproven/compat/us/>

Table 3 lists the supported chassis in which the BladeCenter PCI Express Gen 2 Expansion Blade can be installed.

Table 3. Supported BladeCenter chassis

		BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT
BladeCenter PCI Express Gen 2 Expansion Blade	46M6730	N	Y	Y	N	Y
BladeCenter PCI Express Gen 2 Expansion Blade II	68Y7484	N	Y	Y	N	Y

Supported PCIe adapter cards

Table 4 lists the PCIe adapters that are supported in the PCI Express Gen 2 Expansion Blade and Expansion Blade II and the number of adapters supported.

Table 4. Supported adapter cards

Part number	Feature code	Description	PCI Express Gen 2 Expansion Blade, 46M6730	PCI Express Gen 2 Expansion Blade II, 68Y7484
46M0878	0097	IBM 320GB High IOPS SD Class SSD PCIe Adapter	Supported - 2	Supported - 2
46C9078	A3J3	IBM 365GB High IOPS MLC Mono Adapter	No	Supported - 2
46C9081	A3J4	IBM 785GB High IOPS MLC Mono Adapter	No	Supported - 2
90Y4377	A3DY	IBM 1.2TB High IOPS MLC Mono Adapter	No	Supported - 2
90Y4397	A3DZ	IBM 2.4TB High IOPS MLC Duo Adapter	No	Supported - 1

Consult IBM ServerProven to see the latest list of adapter cards that are supported in the Expansion Blades:

<http://ibm.com/systems/info/x86servers/serverproven/compat/us/peu/46M6730.html>

<http://ibm.com/systems/info/x86servers/serverproven/compat/us/peu/68Y7484.html>

Note: If the PCI Express adapter that you require is not on the ServerProven, web site use the IBM ServerProven Opportunity Request for Evaluation (SPORE) process to confirm compatibility in the desired configuration.

Supported CFFh expansion cards

Table 5 lists the CFFh expansion cards that are supported in the PCI Express Gen 2 Expansion Blade and Expansion Blade II.

Table 5. Supported CFFh expansion cards

Description	Part number	Feature code	PCI Express Gen 2 Expansion Blade, 46M6730	PCI Express Gen 2 Expansion Blade II, 68Y7484
2/4 Port Ethernet Expansion Card (CFFh)	44W4479	5476	Yes	Yes
2-Port 40 Gb InfiniBand Expansion Card (CFFh)	46M6001	0056	Yes	Yes
Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh)	46M6168	0099	Yes	Yes
Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)	46M6164	0098	Yes	Yes
Brocade 2-port 10GbE Converged Network Adapter	81Y1650	5437	No	Yes
Emulex Virtual Fabric Adapter (CFFh)	49Y4235	5755	Yes	Yes
Emulex Virtual Fabric Adapter Advanced (CFFh)	49Y4275	2435	No	Yes
Emulex 10GbE Virtual Fabric Adapter II (CFFh)	90Y3550	A1XG	No	Yes
Emulex 10GbE Virtual Fabric Adapter Advanced II (CFFh)	90Y3566	A1XH	No	Yes
InfiniBand 4X DDR Expansion Card (CFFh)	43W4423	2991	Yes	No
Mellanox 2-port 10Gb E'net Expansion Card (CFFh)	90Y3570	A1NW	No	Yes
QLogic 2-port 10 Gb Converged Network Adapter (CFFh)	42C1830	3592	Yes	Yes
QLogic Ethernet and 8 Gb Fibre Channel Expansion Card (CFFh)	44X1940	5485	Yes	Yes

Consult IBM ServerProven to see the latest list of CFFh expansion cards that are supported in the Expansion Blades:

<http://ibm.com/systems/info/x86servers/serverproven/compat/us/peu/46M6730.html>

<http://ibm.com/systems/info/x86servers/serverproven/compat/us/peu/68Y7484.html>

Operating environment

This unit is supported in the following environment:

- Temperature: 10° C to 35° C (50° F to 95° F)
- Operating power: Approximately 200 watts
- Dimensions: 24.5 cm x 5.9 cm x 45.7 cm (9.7 in. x 2.3 in. x 18.0 in.)

Related publications

For more information, refer to these documents:

- US Announcement Letter for PCI Express Gen 2 Expansion Blade II
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS112-044>
- *BladeCenter PCI Express Gen 2 Expansion Blade Installation and User's Guide*
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5085445>
- *BladeCenter Interoperability Guide*
<http://lenovopress.com/bcig>
- *BladeCenter Products and Technology, SG24-7523*
<http://lenovopress.com/sg247523>

Related product families

Product families related to this document are the following:

- [Blade Servers](#)

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