Overview

HPE BladeSystem PCI Expansion Blade

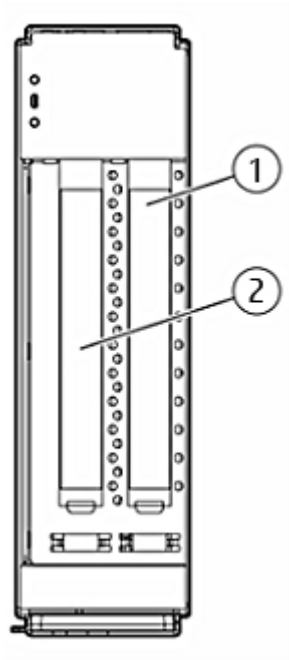
The HPE BladeSystem PCI Expansion Blade provides PCI card expansion slots to an adjacent c-Class server blade (known as a partner server blade). This blade expansion unit uses the c-Class midplane to pass standard PCI signals between adjacent enclosure bays allowing a c-Class blade server to add off-the-shelf PCI-X or PCIe cards. Up to eight PCI Expansion Blades are supported per c7000 enclosure and four per c3000 enclosure. Detailed expansion blade population best practices are provided in the c3000 and c7000 enclosure QuickSpecs available at **http://www.hp.com/go/bladesystem.**

The c-Class blade enclosure includes the capability for the signal communication from the server blade to the PCI Expansion Blade across the midplane. No external cables or additional options are required except when using the HPE ProLiant BL620c G7 Server Blade. When partnering a PCI Expansion Blade with a HPE ProLiant BL620c G7 Server Blade, an HPE PCI Express Mezzanine Pass-Thru Card for BladeSystem c-Class (431643-B21) is required. This card is installed in the mezzanine 3 connector in the server blade for the first PCI Expansion Blade installation and a second card in installed in the mezzanine 2 connector if a second PCI Expansion Blade is required.

The number of PCI Expansion Blades supported per server blade depends on the server blade form factor. Most half-height, single-wide server blades support one PCI Expansion Blade including the HPE ProLiant BL460c Gen8 and BL465c Gen8 Server Blades. Most full-height, single-wide server blades support two PCI Expansion Blades including the HPE ProLiant BL620c G7, BL660c Gen8, and BL685c G7 Server Blades. Full-height, double-wide or larger server blades do not support the PCI Expansion Blade, such as the HPE ProLiant BL680c G7 Server Blade. At least one PCI Expansion Blade is used for each supported c-Class server blade needing PCI card expansion. See the server support matrix below for the supported server blades and the number of PCI Expansion Blade(s) allowed per server.

NOTE: Any PCI card from third-party manufacturers that operates in HPE ProLiant ML and HPE ProLiant DL servers should work in the PCI Expansion Blade. Hewlett Packard Enterprise does not offer warranty or support for third-party PCI manufactured products.
NOTE: Hewlett Packard Enterprise does not support any Hewlett Packard Enterprise branded PCI cards for the PCI Expansion Blade.
NOTE: The PCI Expansion Blade is intended for use with specialty PCI cards offered and supported by third party PCI card manufacturers. In c-Class server blades, support for Ethernet adapters, Fibre Channel HBAs, InfiniBand adapters, and storage controllers are offered and supported as c-Class mezzanine adapter options. Please visit: **http://www.hp.com/go/bladesystem/** for a list of c-Class mezzanine adapters.

Overview



1. PCI Card #1
2. PCI Card #2

Models

NOTE: Order one or two PCI Expansion Blade(s) for each supported server blade needing standard PCI-X or PCIe expansion slots. See the server support matrix below for the supported server blades and the number of PCI Expansion Blade(s) allowed per server.

HPE PCI Expansion Blade 448018-B21

NOTE: Ships with one pre-installed PCI-X connector board. Also includes one PCIe connector board which requires installation.

NOTE: This option is not supported on the HPE ProLiant BL680c G7 and HPE Integrity BL860c i2, BL860c i4, BL870c i2, BL870c i4, BL890c i2, and BL890c i4 Server Blades.

Upgrade Options

PCI Express Mezzanine Pass-Thru card	HP BL c-Class PCI Express Mezzanine Pass Thru Option Kit **NOTE:** The PCI Express Mezzanine Pass-Thru Card is required to support the PCI Expansion Blade with the ProLiant BL620c G7 Server Blade. Up to two PCI Expansion Blades are supported per BL620c G7 server; one PCI Express Mezzanine Pass-Thru Card is required per each PCI Expansion Blade.	431643-B21

Standard Features

Key Features

The PCI Expansion Blade supports the following types of cards:

- One or two PCI-X cards (3.3V or "universal" at 3.3V and 5.0V) up to 25 watts per card. The cards may be any of the three PCI-X form factors that comply with the PCI-X standard: full-size (often called full height/full length), half-length, and low profile (often called half-height).
- One or two PCI Express cards (x1, x4, or x8) up to 25 watts per card at PCI Express v1 (gen1) speeds. The cards may be either the PCI Express long card or short card form factor per the PCI Express standard.
  NOTE: PCI Express cards that are PCI Express v2 or v3 may be used if backward compatible to v1, but operate at the v1 speed.

In addition to the above, please note the following:

- When two PCI-X or PCI Express cards are installed, they share the single x4 PCI bandwidth between the server blade and the PCI Expansion Blade.
- This expansion blade will NOT support one PCI-X card and one PCIe card in the same expansion blade.
- This expansion blade is intended for use with specialty PCI cards offered and supported by third party PCI card manufacturers. Hewlett Packard Enterprise does not offer warranty or support for third-party PCI manufactured products.

LED Indicators

Front panel LEDs indicates power and system health status.

Density

The PCI Expansion Blade fits into a half -height bay in the BladeSystem c3000 and c7000 Enclosure. Up to eight PCI Expansion Blades are supported per c7000 enclosure and four per c3000 enclosure.

Manageability

The PCI Expansion Blade and its PCI boards are managed by the adjacent server blade and its operating system.

Product Kit Contents

PCI Expansion Blade with two PCI connector boards (one PCI-X and one PCI Express), warranty card, and installation guide.

Warranty

The PCI Expansion Blade is protected by HPE Services and a worldwide network of resellers and service providers. 3-year parts, 3-year Labor and 3-year on-site limited global warranty. Certain restrictions and exclusions apply.

Hewlett Packard Enterprise provides no warranty for third-party PCI cards, and Hewlett Packard Enterprise provides no support of the use of third-party PCI cards within the PCI Expansion Blade.

Hewlett Packard Enterprise does not provides support for any Hewlett Packard Enterprise branded PCI cards in the PCI Expansion blade.

PCI Expansion Blade server support matrix (shipping ProLiant server blades)

Server Blade	Form Factor	Number of PCI Expansion Blades Supported	Pass Thru-Card* Required	Mezzanine slot to support the 1st Pass-Thru Card	Mezzanine slot to support the 2nd Pass-Thru Card
HPE ProLiant Server Blades					

Standard Features

BL460c Gen8	Half-height, single-wide	1	No	n/a	n/a
BL460c Gen9		1	n/a	n/a	n/a
BL465c Gen8		1	No	n/a	n/a
BL660c Gen9	Full-height, single-wide	2			
BL620c G7		2	Yes	3	2
BL660c Gen8		2	No	n/a	n/a
BL685c G7		2	No	n/a	n/a
BL680c G7	Full-height, double-wide	Not supported	n/a	n/a	n/a
HPE Integrity Server Blades					
BL860c i2	Full-height, single-wide	Not supported	n/a	n/a	n/a
BL860c i4		Not supported	n/a	n/a	n/a
BL870c i2	Full-height, double-wide	Not supported	n/a	n/a	n/a
BL870c i4		Not supported	n/a	n/a	n/a
BL890c i2	Full-height, quad-wide	Not supported	n/a	n/a	n/a
BL890c i4		Not supported	n/a	n/a	n/a
* The PCI Express Mezzanine Pass-Thru Card (431643-B21).					

Service and Support

Service and Support

HPE Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI

When you buy HPE server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HPE Care Pack Services for servers and storage.

Protect your business beyond warranty

When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HPE Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

HPE Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively

Hewlett Packard Enterprise recommends Proactive Care for your BladeSystem servers, enclosures and components to prevent problems with proactive advice and assistance, resolve issues and rapidly recover by connecting to The Hewlett Packard Enterprise enhanced call experience and advanced technical expertise. In addition with HPE Proactive Select, you can acquire the specific proactive constancy and technical services. HPE Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, and environment and education services.

HPE server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HPE Factory Express provides customization, integration and deployment services for turnkey solutions. HPE Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HPE Financial solutions extend innovative financing and cost-effective asset management programs-from purchase to equipment retirement.

Learn more: **http://www.hp.com/services/servers** and **http://www.hp.com/services/storage**

NOTE: Care Pack Services availability may vary by product and country.

HPE Care Pack Services are sold by HPE and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Care Pack Services at **http://www.hp.com/go/lookuptool**

Recommended HPE Care Pack Services for optimal satisfaction with your HPE product

Recommended Services

Hardware Options Support

HPE Care Packs provide support for all HPE-branded hardware options qualified for inclusion in your server or storage solution. Any additional HPE-qualified options installed within the server are covered at the same service level and for the same period as the server and no additional cost.

Service and Support

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW

Hewlett Packard Enterprise recommends Proactive Care for your BladeSystem servers, enclosures and components to prevent problems with proactive advice and assistance, resolve issues and rapidly recover by connecting to The Hewlett Packard Enterprise enhanced call experience and advanced technical expertise.

HPE Installation and Startup of HPE ProLiant Servers
Provides for the installation of your new HPE ProLiant server and operating system to assist you in bringing your new HPE ProLiant server and operating system into operation in a timely and professional manner.

This service provides a trained HPE service specialist to perform an installation that meets Hewlett Packard Enterprise quality standards, for:

- Delivery of the service at a mutually scheduled time convenient to your organization
- Availability of an HPE service specialist to answer basic questions during the onsite delivery of this service
- Custom installation as detailed in "Delivery specifications" or in a Statement of Work (SOW)
- Verification prior to installation that all service prerequisites are met

https://www.hpe.com/h20195/v2/getpdf.aspx/5982-7572enn.pdf

Optional HPE Care Pack Services that will enhance your HPE product experience

Optional Services

HPE Proactive Select Service
Customer needs on demand access to consulting, technical proactive services and education courses

Provides a flexible way to purchase HPE best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf

eSupport

HPE eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HPE support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools

Service and Support

- Proactive notification of relevant information

Access to certain features of the support portal requires an HPE service agreement. To access the support portal, visit: **http://www.hp.com/support**

HPE Insight Remote Support software delivers secure remote support for your Hewlett Packard Enterprise servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

Customer Technical Training

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, Hewlett Packard Enterprise offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

HPE Services Awards

HPE Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

Additional Services Information

To learn more on HPE ProLiant servers, HPE BladeSystem servers and HPE storage products, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit: **http://www.hp.com/services/proliant** or **http://www.hp.com/services/bladesystem** or **http://www.hp.com/services/storage**

Technical Specifications

HPE PCI Expansion Blade	**Dimensions**	Height	2.207 in (5.61 cm)
		Depth	20.058 in (50.95 cm)
		Width	7.154 in (18.17 cm)
	Weight	Maximum	10.0 lbs (4.54 kg)
	Temperature Range*	Operating	10° to 35° C (50° to 95° F)
		Non-Operating	-40° to 60° C (-40° to 140° F)
		Storage	-20° to 60° C (-4° to 140° F)
		Maximum Wet Bulb Temperature	-30° C (86° F)
	Relative Humidity**	Operating	10% to 90%
		Shipping	10% to 90%
		Storage	10% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8° F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048 m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia. **Storage maximum humidity of 95% is based on a maximum temperature of 45° C (113° F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to **http://www.hp.com/go/green**. To recycle your product, please go to: **http://www.hp.com/go/green** or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: **http://www.hp.com/go/green**. These instructions may be used by recyclers and other WEEE treatment facilities as well as HPE OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
14-Oct-2016	From Version 15 to 16	Changed	Rebranding edition
16-Jan-2015	From Version 14 to 15	Changed	Standard Features section was updated
10-Oct-2014	From Version 13 to 14	Changed	Updated Overview and Standard Features.
17-Sep-2014	From Version 12 to 13	Changed	Updated Overview and Standard Features.
18-Apr-2014	From Version 11 to 12	Changed	Changes made in Service and Support section.
12-Oct-2012	From Version 10 to 11	Changed	Change made to URL in Service and Support section.
14-Nov-2011	From Version 9 to 10	Changed	Changes were made in Service and Support.
23-Jun-2011	From Version 8 to 9	Changed	Link was corrected in Service and Support.
28-Jan-2011	From Version 7 to 8	Added	HPE Integrity BL860c i2 and BL870c i2 Server Blades were added to HPE PCI Expansion Blade note in Models.
05-Oct-2010	From Version 6 to 7	Changed	Product Highlights was changed to Standard Features Warranty was moved into Standard Features Service and Support was added
02-Jul-2010	From Version 5 to 6	Added	The PCI Expansion Blade will accept full-height/full-length PCI-X cards note was added to Key Features.
22-Jun-2010	From Version 4 to 5	Added	NOTE was added to HPE PCI Expansion Blade and PCI Express Mezzanine Pass-Thru Card in Models.
04-Apr-2008	From Version 3 to 4	Changed	Changes made in the Overview, Product Highlights and Service and Support sections.
12-Sep-2007	From Version 2 to 3	Changed/Added	Changes made in the Product Highlights and Service and Support sections.
			Added the What's New and Environment-friendly sections.
27-Jul-2007	From Version 1 to 2	Changed	Change made in the Key Features section only.

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