Broadcom 10 Gb Gen 2 2-port and 4-port Ethernet Expansion Cards (CFFh) for BladeCenter
Product Guide (withdrawn product)

BladeCenter was the first to offer end-to-end 10 Gb Ethernet in a blade server configuration, and these expansion cards are part of that offering. IBM offers two new versions of the card, 2-port and 4-port, both based on the new Broadcom 57711 controller. The existing cards, based on the proven Broadcom 57710 module, will continue to be available to support customers who want to maintain a consistent hardware configuration.

Figure 1 shows the Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh). The 4-port card has a second Broadcom module under the heatsink and is almost identical.

Figure 1. Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh)

Did you know?

Installing a Broadcom 10 Gb 4-port Gen 2 Ethernet Expansion Card to every blade server in a BladeCenter H chassis, plus the addition of four High-Speed I/O Modules, allows up to 40 Gbps of Ethernet bandwidth to every server in the chassis. This has the potential of meeting even the most bandwidth-intensive application needs, such as virtualization.

The adapter connects to the midplane directly, without having to use cables or SFP modules. By eliminating these components for up to 14 servers, the resulting savings alone cover the BladeCenter chassis investment.

Part number information

Table 1. Ordering part number and feature code

Description	Part number	Feature code
Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh)	46M6168*	0099
Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)	46M6164*	0098

* Withdrawn from marketing

These part numbers include the following items:

- One 2-port card (part number 46M6168) or one 4-port card (part number 46M6164)
- Documentation package

Features

The expansion card has the following features and benefits:

- Offers an end-to-end solution up to 10 Gb
- Based on the Broadcom 57711 module
- One (two-port card) or two (four-port card) PCI Express 2.0 x8 host interfaces for high-speed connection
- Connectivity to high-speed I/O module bays in BladeCenter H and BladeCenter HT chassis
- Enables two or four 10 Gb ports from the blade server to the external network
- Supports failover
- Supports BladeCenter Open Fabric Manager
- Supports iSCSI BladeBoot
- Supports Wake-on-LAN
- Out-of-box support for SOL and cKVM over the high-speed network

Performance features:

- TCP offload engine (TOE)
- Full fast-path TCP offload
- TCP/IP checksum offload
- TCP/IP segmentation offload
- Improved performance over the Broadcom BCM57710 module

The expansion card has the following specifications:

- BladeCenter form factor: CFFh
- Host data transfer: PCI Express 2.0 x8
    - One x8 interface for the two-port card
    - Two x8 interfaces for the four-port card
- Operating power: Less than 15 watts
- Communication module: Broadcom BCM57711

Operating environment

The expansion card is supported in the following environments:

- Temperature: 10 to 35 °C (50 to 95 °F)
- Relative humidity: 8% to 80% (non-condensing)

Supported servers

The Broadcom 2-Port and 4-Port 10 Gb Ethernet Expansion Cards (CFFh) are supported in the BladeCenter servers that we listed in Table 2.

Table 2. Supported servers

		HS12	HS22	HS22V	HS23	HS23E	HX5	JS12	JS21	JS22	JS23/JS43
Broadcom 10 Gb Gen 2 2-port Ethernet Exp. Card (CFFh)	46M6168	Y	Y	Y	Y	Y	Y	N	N	N	N
Broadcom 10 Gb Gen 2 4-port Ethernet Exp. Card (CFFh)	46M6164	Y	Y	Y	Y	Y	Y	N	N	N	N

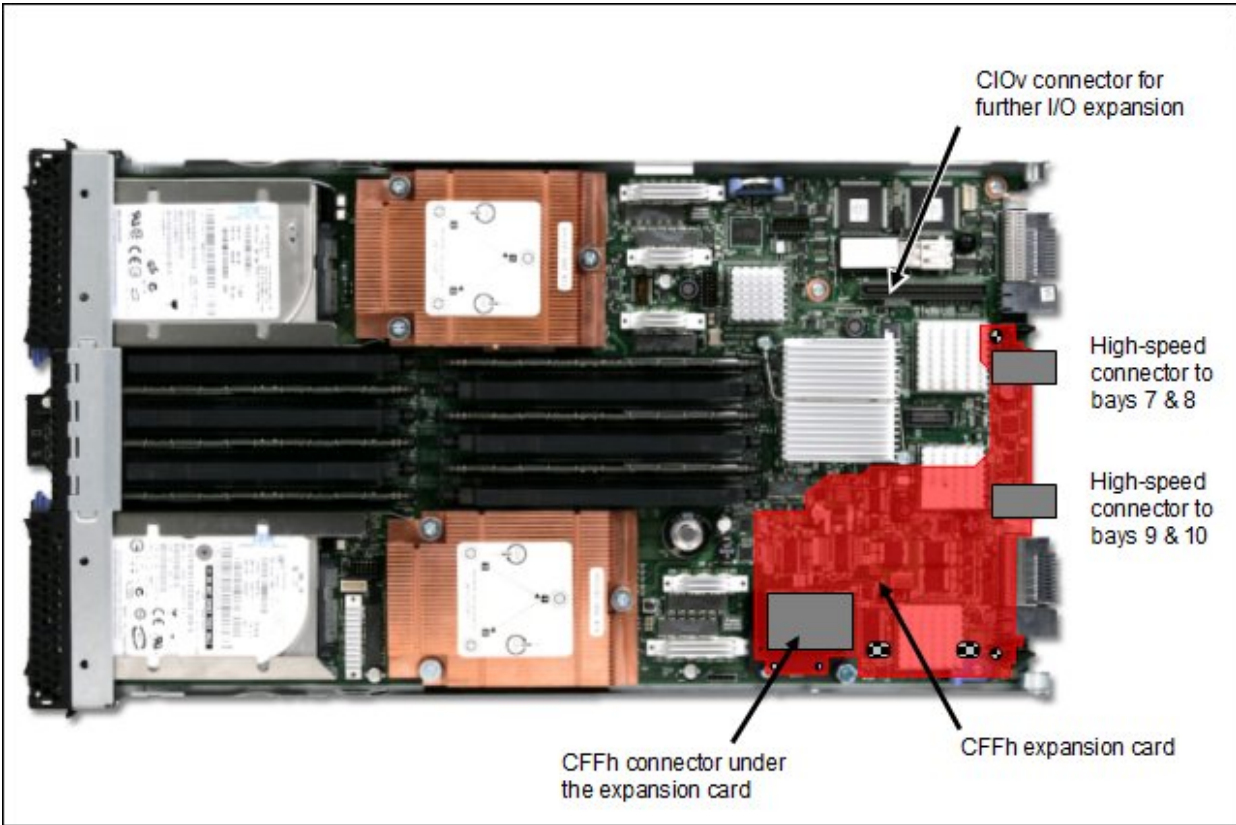Figure 2 shows where the CFFh card is installed in a BladeCenter server.

Figure 2. Location on the BladeCenter server planar where the CFFh card is installed

BladeCenter chassis support is based on the blade server type in which the expansion card is installed. Consult ServerProven to see which chassis each blade server type is supported in:
http://ibm.com/servers/eserver/serverproven/compat/us/.

Supported I/O modules

Table 3 lists the I/O modules that can be used to connect to the Broadcom 10 Gb Gen 2 2-port and 4-port Ethernet Expansion Cards (CFFh).

Table 3. I/O modules supported with the Broadcom 10 Gb Gen 2 2-port and 4-port Ethernet Expansion Cards

		BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT	MSIM	MSIM-HT
BNT 6-port 10 Gb High Speed Switch Module	39Y9267	N	N	Y	N	Y	N	N
10 Gb Ethernet Pass-Thru Module for BladeCenter	46M6181	N	N	Y	N	Y	N	N
BNT Virtual Fabric 10Gb Switch Module	46C7191	N	N	Y	N	Y	N	N
Cisco Nexus 4001I Switch Module	46M6071	N	N	Y	N	Y	N	N

The I/O module listed in Table 3 is supported in BladeCenter H and BladeCenter HT chassis only.

In BladeCenter H, the ports of CFFh cards are routed through the midplane to I/O bays 7, 8, 9, and 10, as shown in Figure 3. The BladeCenter HT is similar in that the CFFh cards are also routed through the midplane to I/O bays 7, 8, 9, and 10.
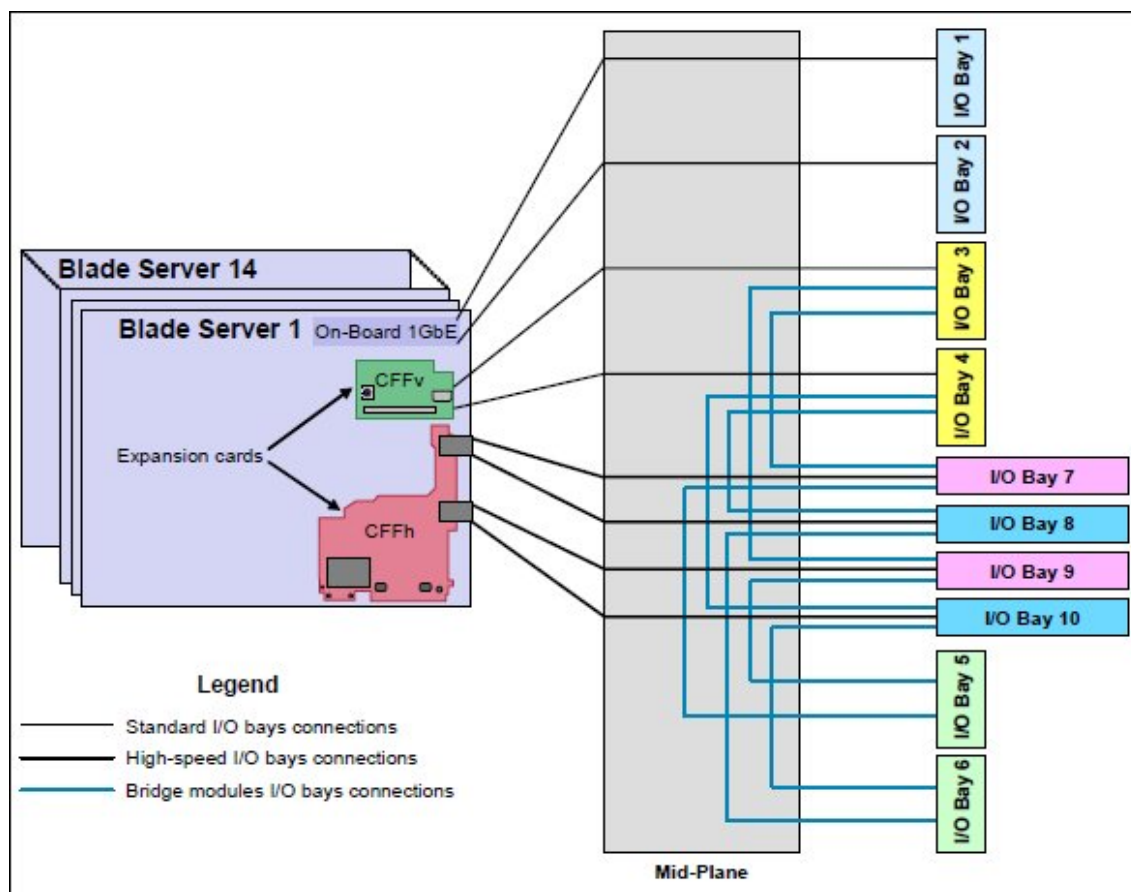

Figure 3. BladeCenter H I/O topology showing the I/O paths from CFFh expansion cards

One I/O module must be installed in the chassis for each Ethernet port that you want to use on the expansion card. Table 4 lists the specific I/O bays in the chassis.

- For the Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh), you must install an I/O module in I/O bays 7 and 9 (that is, two I/O modules).
- For the Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh), you must install an I/O module in I/O bays 7, 8, 9, and 10 (that is, four I/O modules).

Table 4. Locations of I/O modules required to connect to the expansion card

Expansion card	I/O bay 7	I/O bay 8	I/O bay 9	I/O bay 10
Broadcom 10 Gb Gen 2 2-port Ethernet Expansion Card (CFFh)	Supported I/O module	Not used	Supported I/O module	Not used
Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)	Supported I/O module	Supported I/O module	Supported I/O module	Supported I/O module

Wake-on-LAN support

Wake-on-LAN (WOL) is supported on all servers listed in Table 2, with the exception of:

- BladeCenter HS21
- BladeCenter HS21 XM

In addition, when used with the four-port card, WOL is only supported with the switch modules in bays 7 and 9 only. WOL is not supported with bays 8 and 10.

Popular configurations

Figure 4 shows a configuration using the Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh). This solution enables four 10 Gbps Ethernet connections from each blade server.
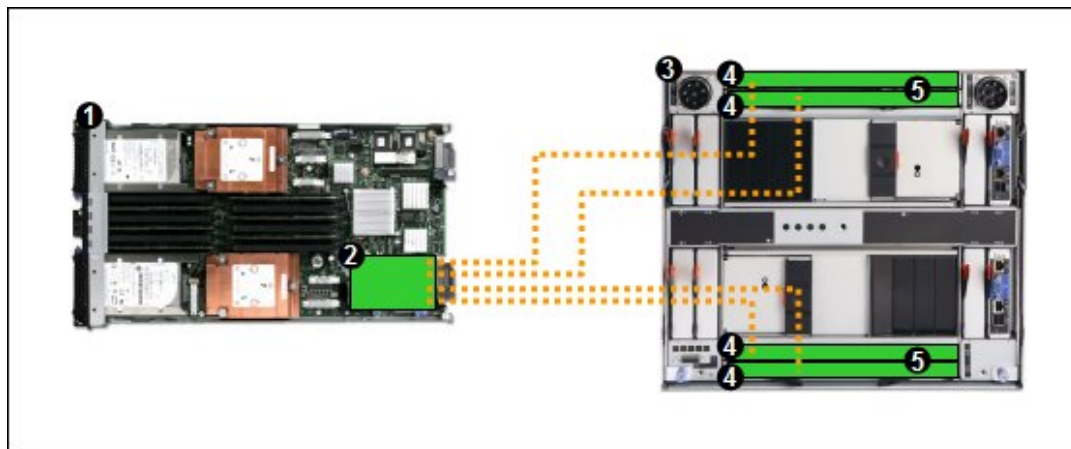

Figure 4. 40 Gb solution using the Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)

Table 5 provides the components used in this configuration.

Table 5. Components used when connecting Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh) to four BNT Virtual Fabric 10Gb Switch Modules

Diagram reference	Part number/ machine type	Description	Quantity
❶	Varies	BladeCenter HS22 or other supported server	1 to 14
❷	46M6164	Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card (CFFh)	1 per server
❸	8852 or 8740/8750	BladeCenter H or BladeCenter HT	1
❹	46C7191	BNT Virtual Fabric 10Gb Switch Module	4
❺	44W4408	IBM 10 GBase-SR 10 GbE 850 nm Fiber SFP+ Transceiver	Up to 40*

* You must have one transceiver for each 10 Gb port in an I/O module.

Operating system support

The Broadcom 10 Gb Gen 2 2-port and 4-port Ethernet Expansion Cards (CFFh) support the following operating systems:

- Microsoft Windows Server 2003, Web Edition
- Microsoft Windows Server 2003/2003 R2, Datacenter Edition
- Microsoft Windows Server 2003/2003 R2, Datacenter x64 Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise x64 Edition
- Microsoft Windows Server 2003/2003 R2, Standard Edition
- Microsoft Windows Server 2003/2003 R2, Standard x64 Edition
- Microsoft Windows Server 2008/2008 R2, Datacenter x64 Edition
- Microsoft Windows Server 2008/2008 R2, Datacenter x86 Edition
- Microsoft Windows Server 2008/2008 R2, Enterprise x64 Edition
- Microsoft Windows Server 2008/2008 R2, Enterprise x86 Edition
- Microsoft Windows Server 2008/2008 R2, Standard x64 Edition
- Microsoft Windows Server 2008/2008 R2, Standard x86 Edition
- Microsoft Windows Server 2008/2008 R2, Web x64 Edition
- Microsoft Windows Server 2008/2008 R2, Web x86 Edition
- Red Hat Enterprise Linux 4 AS for AMD64/EM64T
- Red Hat Enterprise Linux 4 AS for x86
- Red Hat Enterprise Linux 4 ES for AMD64/EM64T
- Red Hat Enterprise Linux 4 ES for x86
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server Edition with Xen
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for x86
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware ESX 3.5
- VMware ESX 4.0
- VMware ESXi 3.5
- VMware ESXi 4.0

Support for operating systems is based on the combination of the expansion card and the blade server in which it is installed. See IBM ServerProven for the latest information about the specific versions and service packs supported: http://ibm.com/servers/eserver/serverproven/compat/us/. Select the blade server and then select the expansion card to see the supported operating systems.

Related publications

For more information, refer to these documents:

- *Broadcom 10 Gb 2-port and 4-port Ethernet Expansion Cards (CFFh) for BladeCenter Installation and User's Guide*
  http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5079889
- 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 Network Adapters

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