

Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter

IBM BladeCenter at-a-glance guide

The Brocade 2-port 10GbE Converged Network Adapter together with the Brocade Converged 10GbE Switch Module is a part of a leading Converged Ethernet solution for IBM BladeCenter that offers native Ethernet and Fibre Channel connectivity, maximum bandwidth and performance, and simplicity in a converged environment.

This card combines the functions of a Host Bus Adapter (HBA) and Network Interface Card (NIC) on one PCIe 2.0 x8 card. It supports full Fibre Channel over Ethernet (FCoE) protocol offload and allows Fibre Channel traffic to converge onto 10 Gbps Converged Enhanced Ethernet (CEE) networks. FCoE and 10 Gbps CEE operations run simultaneously. Figure 1 shows the expansion card.



Figure 1. Brocade 2-port 10GbE Converged Network Adapter

Did you know?

The Brocade CNA and Brocade Converged 10GbE Switch Module for IBM BladeCenter form the industry's first truly converged FCoE BladeCenter solution with native Fibre Channel and Ethernet ports built into one switch module. The FCoE switching provides up-front reduction in SAN/LAN cost and complexity and increases rack utilization. It requires less cabling, cooling, and power, which means up-front reduction in network investment.

Part number information

Table 1. Ordering part number and feature code

Description	Part number	Feature code
Brocade 2-port 10GbE Converged Network Adapter	81Y1650	5437

These part numbers include the following items:

- One Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter
- IBM Important Notices document
- IBM Warranty Information booklet
- Documentation CD, which contains the following documents:
 - Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter Installation and User's Guide
 - IBM Environmental Notices and User Guide
 - IBM Warranty Information booklet
 - IBM Safety Information document (multilingual)

Features

The expansion card has the following features:

- CFFh form factor
- PCI Express x8 Gen 2 host interface
- Communication module: two 400MHz processors ASIC
- Two ports with XAUI interfaces for PCIe x8 to the high-speed switch module
- Support for up to two Brocade Converged 10GbE Switch Modules in a BC-H or BC-HT chassis
- Support for IPv4 and IPv6
- Support for BladeCenter Open Fabric Manager for BIOS and UEFI
- Brocade Host Connectivity Manager (HCM) device management and Brocade Command Line Utility (BCU) tools
- Unified management with IBM System Storage Data Center Fabric Manager (DCFM) and IBM Systems Director

- CEE support
 - 10 Gbps throughput per port full duplex
 - 1.8 million packets per second per port in each direction (700 byte packets, latency < 2 μs)
 - Checksum/CRC offloads for FCoE packets, IPv4/IPv6 TCP and UDP packets, and IPv4 header
 - VLAN support, VLAN tagging
 - Jumbo frame support (up to 9600 bytes)
 - Header data split (HDS) feature for advanced link layer
 - Receive side scaling (RSS) feature for advanced link layer
 - TCP segmentation offload (TSO) and large send offload (LSO)
 - Link aggregation (NIC teaming)
 - Priority-based Flow Control (802.1Qbb)
 - Enhanced Transmission Selection (802.1Qaz)
 - Data Center Bridging eXchange Protocol (DCBX)
- FCoE support
 - 10 Gbps throughput per port full duplex
 - Full hardware-based FCoE protocol offload
 - 500,000 IOPS per port for maximum IO transfer rates
 - Target rate limiting
 - N_Port ID Virtualization (NPIV)
 - SAN Boot
 - Fabric-based boot LUN discovery
 - Persistent binding
 - Fibre Channel-Security Protocol (FC-SP)
 - FCoE Initialization Protocol (FIP)

Operating environment

The expansion card has the following physical specifications:

- Dimensions:
 - Approximate height: 13 mm (0.5 in)
 - Approximate width: 160 mm (6.3 in)
 - Approximate depth: 124 mm (4.9 in)
 - Approximate weight: 127 g (0.28 lb)
- Operating:
 - 0 to 50° C (32 to 122° F) at 0 to 3,048 m (0 to 10,000 ft) operating
- Non-operating:
 - 40 to 73° C (-40 to 163° F) at 0 to 12,193 m (0 to 40,000 ft) storage
- Humidity:
 - 10% to 93% (non-condensing)

Supported servers and I/O modules

The Brocade 2-port 10GbE Converged Network Adapter is supported in the IBM BladeCenter servers that are listed in Table 2.

Table 2. Supported servers

Expansion card	Part number	HS12	HS21	HS21 XM	HS22	HS22V	HX5	LS21	LS22	LS41	LS42	JS12	JS21	JS22	JS23/JS43	PS700/1/2
Brocade 2-port 10GbE CNA	81Y1650	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N

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

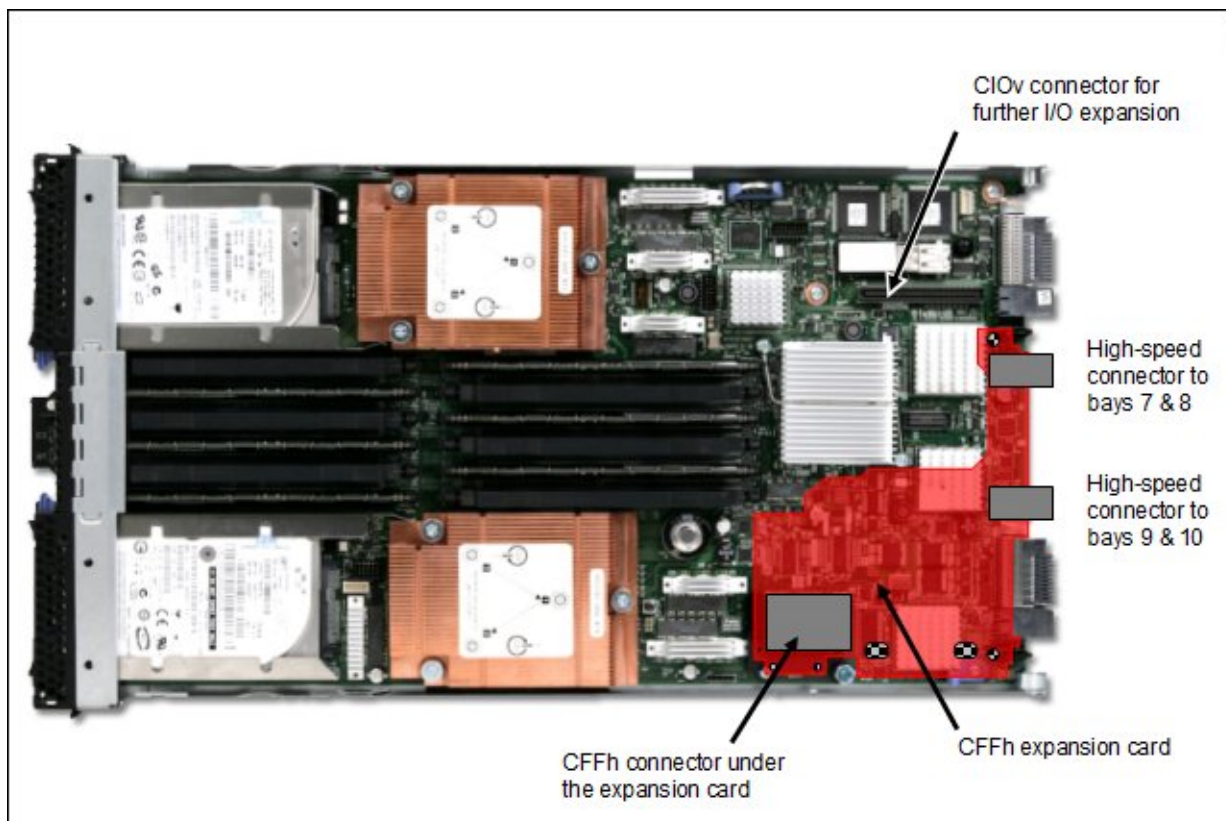


Figure 2. Location on the BladeCenter server planar where the CFFh card is installed

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

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

Table 3 lists the I/O modules that can be used to connect to the Brocade 2-port 10GbE Converged Network Adapter.

Table 3. I/O modules supported with the Brocade 2-port 10GbE Converged Network Adapter

I/O module	Part number	BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT	MSIM	MSIM-HT
Brocade Converged 10GbE Switch Module	69Y1909	N	N	Y	N	Y	N	N

The I/O module that is 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.

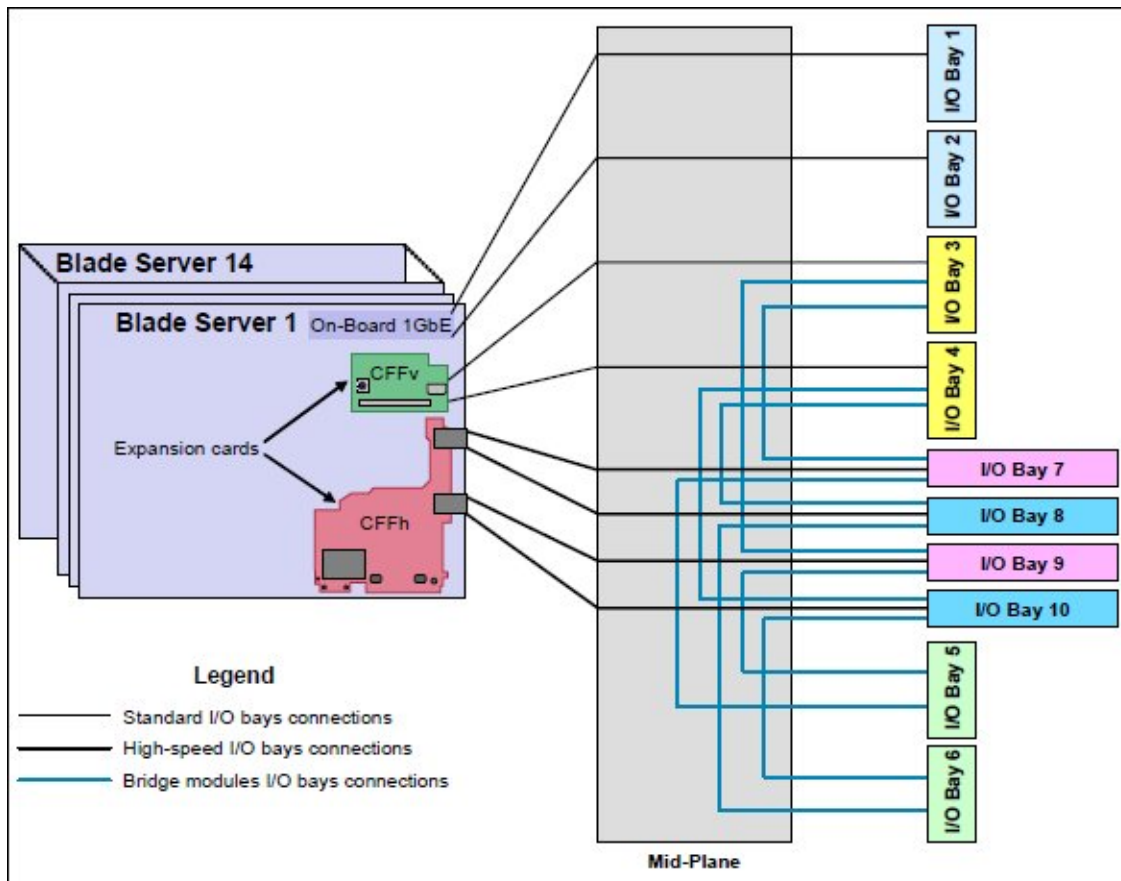


Figure 3. IBM BladeCenter H I/O topology showing the I/O paths from CFFh expansion cards

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

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
Brocade 2-port 10GbE CNA	Supported I/O module		Supported I/O module	

Popular configurations

Figure 4 shows the use of Brocade Converged 10GbE Switch Modules to route two 10 Gb Converged Enhanced Ethernet ports from a Brocade 2-port 10GbE Converged Network Adapter installed into each server. Two Brocade Converged 10GbE Switch Modules are installed in bays 7/8 and bays 9/10 of the BladeCenter H chassis. All connections between the controller, card, and the switch modules are internal to the chassis. No internal cabling is needed.

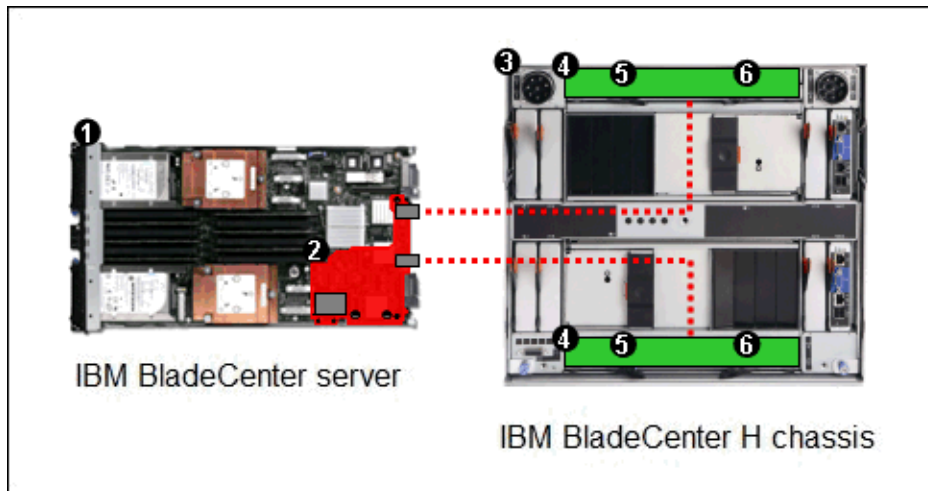


Figure 4. A converged solution using two Brocade Converged 10GbE Switch Modules

The components used in this configuration are listed in Table 5.

Table 5. Components used in Figure 4

Diagram reference	Part number	Description	Quantity
1	Varies	IBM BladeCenter HS22 or other supported server	1-14 or 1-12
2	81Y1650	Brocade 2-port 10GbE Converged Network Adapter	1 per server
3	8852 or 8740/8750	BladeCenter H or BladeCenter HT	1
4	69Y1909	Brocade Converged 10GbE Switch Module	2
5	49Y4216	Brocade 10Gb SFP+ SR Optical Transceiver	Up to 16*
6	44X1962	Brocade 8Gb SFP+ SW Optical Transceiver	Up to 16*

*The Brocade Converged 10GbE Switch Module has 16 external ports - eight 10 Gb CEE ports and eight 8 Gb Fibre Channel ports. You must have one transceiver for each port in an I/O module.

Operating system support

The Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter supports the following operating systems:

- Microsoft Windows Server 2008 R2
- 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, Datacenter x64 Edition
- Microsoft Windows Server 2008, Datacenter x86 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Enterprise x86 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Standard x86 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2008, Web x86 Edition
- Microsoft Windows Small Business Server 2003/2003 R2 Premium Edition
- Microsoft Windows Small Business Server 2003/2003 R2 Standard Edition
- Microsoft Windows Small Business Server 2008 Premium Edition
- Microsoft Windows Small Business Server 2008 Standard Edition
- 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 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 for x86
- SUSE LINUX Enterprise Server 10 with Xen for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 with Xen for x86
- 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 ESX 4.1
- VMware ESXi 4.0
- VMware ESXi 4.1

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:

- IBM Redbooks at-a-glance guide for the Brocade Converged 10GbE Switch Module for IBM BladeCenter
<http://www.redbooks.ibm.com/abstracts/tips0789.html>
- *Brocade 2-port 10GbE Converged Network Adapter for IBM BladeCenter Installation and User's Guide*
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5088151>
- IBM BladeCenter Interoperability Guide
<http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5073016>
- IBM Redbooks publication *IBM BladeCenter Products and Technology*, SG24-7523
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