



## 10Gb Ethernet Pass-Thru Module for IBM BladeCenter

### IBM Redbooks Product Guide

The 10Gb Ethernet Pass-Thru Module for IBM BladeCenter is ideal for clients looking to enable end-to-end non-blocking 10Gb setup within the chassis. This device supports both Ethernet and Converged Enhanced Ethernet (CEE) packets, which allows clients to connect a BladeCenter Chassis to an FCoE-capable top-of-rack switch.

The 14 10Gb Uplink ports are based on optical SFP+ technology to offer the highest performance while maintaining industry standard connectivity. This offering will also work with BladeCenter Open Fabric Manager, providing all the benefits of I/O Virtualization at 10Gb speeds.

Figure 1 shows the pass-thru module.



Figure 1. 10Gb Ethernet Pass-Thru Module for IBM BladeCenter

### Did you know?

Clients can use this module along with the 2-port 10Gb Converged Network Adapter (CNA) and connect to a converged top-of-rack switch such as the IBM Converged Switch B32. This setup allows clients to reduce hardware, as well as power and cooling costs, while boosting performance by operating at 10Gb bandwidth.

## Part number information

Table 1 shows the part numbers to order this module and additional options.

Table 1. Part number and feature code for ordering

Description	IBM Part number	IBM Feature code
10Gb Ethernet Pass-Thru Module for IBM BladeCenter	46M6181	1641
IBM 10GBase-SR 10GbE 850 nm Fiber SFP+ Transceiver	44W4408	4942

The module part numbers include the following items:

- 10Gb Ethernet Pass-Thru Module
- One HSSM filler module
- Important Notices document
- Documentation CD-ROM

Note: SFP+ (small form-factor pluggable plus) transceivers are not included and must be purchased separately.

## Features and specifications

The 10Gb Ethernet Pass-Thru Module includes the following features and functions:

- Single-wide high-speed switch module
- 14 internal 10Gb ports to the server blades (no auto-negotiation)
- Up to fourteen 10Gb SFP+ uplink ports (SFP+ modules are not included)
- Support for SR, LR, and DAC copper cables
- Direct one-to-one mappings of external and internal ports (no configuration required)
- Simple setup and monitoring through advanced management module
- Management-module inter-integrated Circuit (I2C) interface that provides vital product data (VPD) and register access
- Provides self-test and diagnostics capability
- No Serial over LAN (SOL) support

## Supported BladeCenter chassis and expansion cards

The 10Gb Ethernet Pass-Thru Module is supported in the IBM BladeCenter chassis listed in Table 2.

Table 2. IBM BladeCenter chassis that support the 10Gb Ethernet Pass-Thru Module

I/O module	Part number	BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT	MSIM	MSIM-HT
10Gb Ethernet Pass-Thru Module	46M6181	N	N	Y	N	Y	N	N

The BladeCenter H and HT chassis have the following bays:

- BladeCenter H has four standard I/O bays (1, 2, 3, and 4), two bridge bays (5 and 6), and four high-speed bays (7, 8, 9, and 10)
- BladeCenter HT has four standard I/O bays (1, 2, 3, and 4) and four high-speed bays (7, 8, 9, and 10)

The 10Gb Ethernet Pass-Thru Module fits in one of the high-speed I/O bay (bays 7-10).

Table 3 lists the expansion cards that the 10Gb Ethernet Pass-Thru Module supports. This table also lists the chassis bays in which the switch module must be installed when used with each expansion card.

Table 3. 10Gb Ethernet Pass-Thru Module and BladeCenter chassis I/O bays support

Description	Part number	Bay 1 (Standard)	Bay 2 (Standard)	Bay 3 (Standard)	Bay 4 (Standard)	Bay 5 (Bridge)	Bay 6 (Bridge)	Bay 7 (High-speed)	Bay 8 (High-speed)	Bay 9 (High-speed)	Bay 10 (High-speed)
2/4 Port Ethernet Expansion Card (CFFh)	44W4479	N	N	N	N	N	N	N	N	N	N
Broadcom 10 Gb Gen 2 2-port Ethernet Exp. Card	46M6168	N	N	N	N	N	N	Y	N	Y	N
Broadcom 10 Gb Gen 2 4-port Ethernet Exp. Card	46M6164	N	N	N	N	N	N	Y	Y	Y	Y
Broadcom 10Gb 2-port Ethernet Expansion Card	44W4466	N	N	N	N	N	N	N	N	N	N
Broadcom 10Gb 4-port Ethernet Expansion Card	44W4465	N	N	N	N	N	N	N	N	N	N
Broadcom 2-port 10Gb Virtual Fabric Adapter	81Y3133	N	N	N	N	N	N	Y	N	Y	N
Brocade 2-port 10GbE CNA (CFFh)	81Y1650	N	N	N	N	N	N	N	N	N	N
Emulex 10GbE Virtual Fabric Adapter	49Y4235	N	N	N	N	N	N	N	N	N	N
Emulex 10GbE Virtual Fabric Adapter Advanced	49Y4275	N	N	N	N	N	N	N	N	N	N
Emulex 10GbE Virtual Fabric Adapter II	90Y3550	N	N	N	N	N	N	Y	N	Y	N
Emulex 10GbE Virtual Fabric Adapter II Advanced	90Y3566	N	N	N	N	N	N	Y	N	Y	N
Emulex 10GbE VFA II for IBM BladeCenter HS23	81Y3120	N	N	N	N	N	N	N	Y	N	Y
Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23	90Y9332	N	N	N	N	N	N	N	Y	N	Y
HS23 Integrated 10Gb Virtual Fabric LOM	None	N	N	N	N	N	N	Y	N	Y	N
Intel 2-port 10Gb Ethernet Expansion Card	42C1810	N	N	N	N	N	N	N	N	N	N
Mellanox 2-port 10Gb Ethernet Expansion Card	90Y3570	N	N	N	N	N	N	N	N	N	N
NetXen 10Gb Ethernet Expansion Card	39Y9271	N	N	N	N	N	N	N	N	N	N
QLogic 2-port 10Gb Converged Network Adapter	42C1830	N	N	N	N	N	N	Y	N	Y	N
QLogic 2-port 10Gb Converged Network Adapter	00Y3280	N	N	N	N	N	N	Y	N	Y	N
QLogic 10Gb Virtual Fabric Adapter	00Y3332	N	N	N	N	N	N	Y	N	Y	N
QLogic 10Gb Virtual Fabric CNA	00Y5618	N	N	N	N	N	N	Y	N	Y	N
QLogic Ethernet and 4Gb FC Card (CFFh)	39Y9306	N	N	N	N	N	N	N	N	N	N
QLogic Ethernet and 8Gb FC Card (CFFh)	44X1940	N	N	N	N	N	N	N	N	N	N

## Popular configurations

The 10Gb Ethernet Pass-Thru Module can be used in the following configuration.

### Two-port configuration with FCoCEE support

Figure 2 shows the use of 10Gb Ethernet Pass-Thru Modules to route two Ethernet ports from QLogic 2-port 10Gb Converged Network Adapter (CFFh) installed into each server. Two 10Gb Ethernet Pass-Thru Modules are installed in bay 7 and bay 9 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. External (Top Of Rack) switches that support FCoCEE and cabling are required for the pass-thru module to operate.

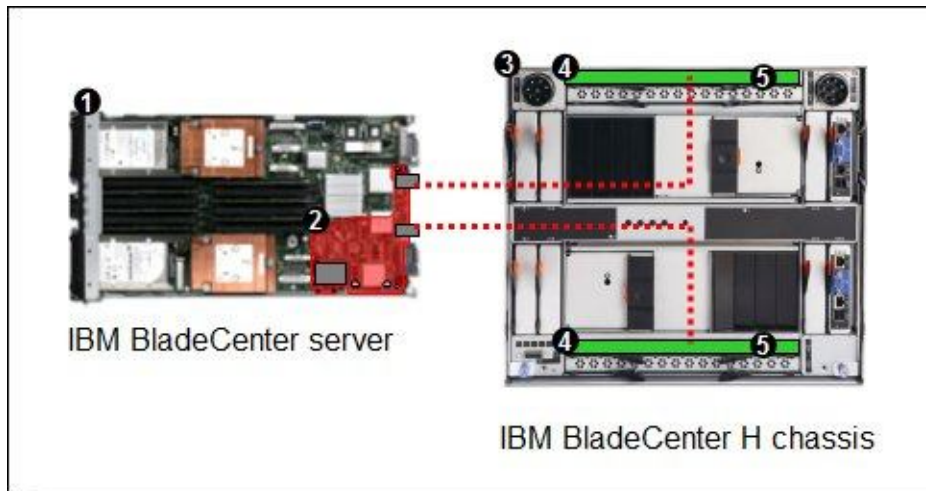


Figure 2. A converged 20Gb solution using two 10Gb Ethernet Pass-Thru Modules

The components used in this configuration are listed in Table 4.

Table 4. Components used when connecting QLogic 2-port 10Gb Converged Network Adapter (CFFh) to two 10Gb Ethernet Pass-Thru Modules

Diagram reference	Part number/machine type	Description	Quantity
1	Varies	IBM BladeCenter HS22 or other supported server	1 to 14
2		QLogic 2-port 10Gb Converged Network Adapter (CFFh)	1 per server
3	8852 or 8740/8750	BladeCenter H or BladeCenter HT	1
4	46M6181	10Gb Ethernet Pass-Thru Module	2
5	44W4408	IBM 10GBase-SR SFP+ Transceiver	Up to 28*

\*The 10Gb Ethernet Pass-Thru Module has 14 external 10Gb ports. You must have one transceiver for each 10Gb port in an I/O module.

## Four-port configuration

Figure 3 shows the use of 10Gb Ethernet Pass-Thru Modules to route four Ethernet ports from Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card installed into each server. Four 10Gb Ethernet Pass-Thru Modules are installed in bay 7, bay 8, bay 9, and bay 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. External (Top Of Rack) switches and cabling are required for pass-thru module to operate.

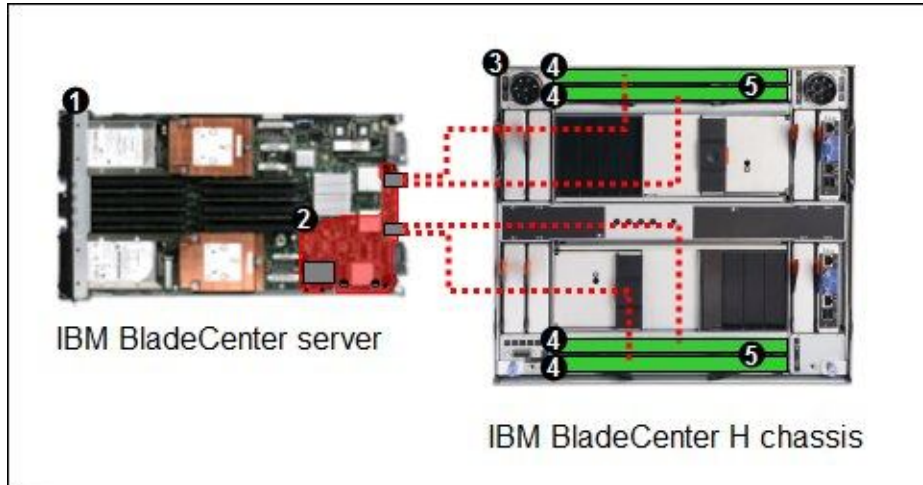


Figure 3. A 40Gb solution using four 10Gb Ethernet Pass-Thru Modules

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

Table 5. Components used when connecting Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card to four 10Gb Ethernet Pass-Thru Modules

Diagram reference	Part number/machine type	Description	Quantity
1	Varies	IBM BladeCenter HS22 or other supported server	1 to 14
2	46M6164	Broadcom 10 Gb Gen 2 4-port Ethernet Expansion Card	1 per server
3	8852 or 8740/8750	BladeCenter H or BladeCenter HT	1
4	46M6181	10Gb Ethernet Pass-Thru Module	4
5	44W4408	IBM 10GBase-SR SFP+ Transceiver	Up to 56*

\*The 10Gb Ethernet Pass-Thru Module has 14 external 10Gb ports. You must have one transceiver for each 10Gb port in an I/O module.

## Connectors and LEDs

The following figure shows the front panel of the 10Gb Ethernet Pass-Thru Module and the numbering of the ports when installed in a BladeCenter H chassis. When the module is installed in a BladeCenter H chassis, the ports and LEDs are numbered from right to left, as shown in the figure.

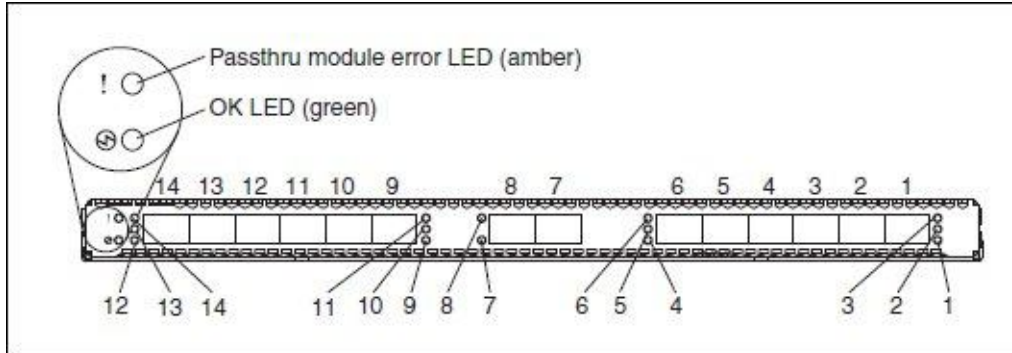


Figure 3. Front panel of the 10Gb Ethernet Pass-Thru Module for BladeCenter H chassis

The following figure shows the numbering of the ports when installed in a BladeCenter HT chassis. When the module is installed in a BladeCenter HT unit, the ports and LEDs are numbered from left to right, as shown in the figure.

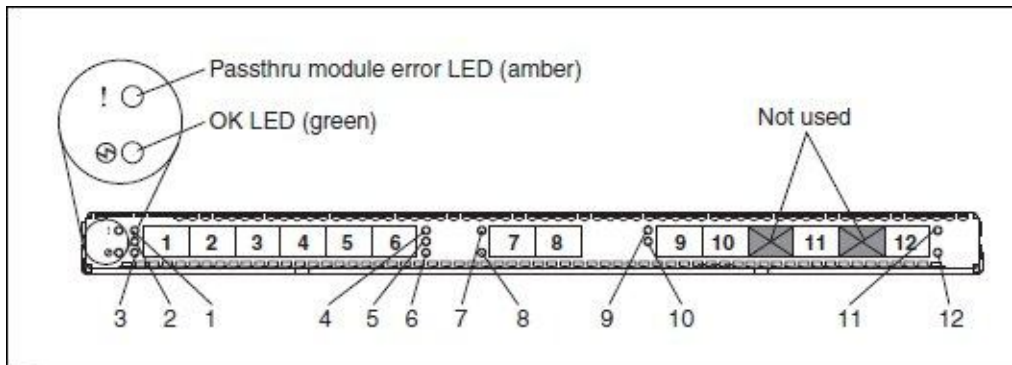


Figure 4. Front panel of the 10Gb Ethernet Pass-Thru Module for BladeCenter HT chassis

The front panel contains the following components:

- LEDs display the status of the pass-thru module and the network:
  - OK (indicating that the switch module has passed the power-on self-test (POST) with no critical faults and is operational)
  - Pass-thru module error (indicating that the switch module has failed the POST or detected an operational fault).
- 14 SFP+ port connectors to attach SFP+ modules.
- Each external SFP+ port on the pass-thru module contains an link status LED - the port number associated with each LED is indicated in Figures 4 and 5.

## Network cabling requirements

The following network cables are required for the 10Gb Ethernet Pass-Thru Module:

- 10GBASE-SR for 10Gb ports: 850 Nm wavelength, multimode fiber, 50  $\mu$  or 62.5  $\mu$  (300 meters maximum), with LC duplex connector

## Related publications

For more information, see the following documents:

- 10Gb Ethernet Pass-Thru Module Installation Guide  
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5080966>
- IBM Redpaper, *IBM Converged Switch B32*, REDP-4588-00  
<http://www.redbooks.ibm.com/abstracts/redp4588.html>
- IBM US Announcement Letter  
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