QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules for BladeCenter

Product Guide (withdrawn product)

The QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules for BladeCenter provide seamless integration of an BladeCenter solution into existing Fibre Channel storage networks using N_Port ID Virtualization (NPIV) technology. Each module concentrates multiple blade servers into the external ports, which in turn connect to external Fibre Channel switches that support NPIV. The pass-thru module presents one or more blade servers per port to the fabric. The module expands the fabric, but unlike a full fabric switch, it does not count against the fabric domain.

Figure 1 shows the QLogic 4/8 Gb Intelligent Pass-thru Module. The 8 Gb module has an identical port configuration.

Figure 1. QLogic 4/8 Gb Intelligent Pass-thru Module for BladeCenter

Did you know?

The QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules are the latest Fibre Channel NPIV switching option for the BladeCenter. The switch connects to the midplane directly, without having to use cables or small form-factor pluggable (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 shows the part numbers to order these modules.

Table 1. Part number and feature code for ordering

Description	Part number	Feature code
QLogic 8 Gb Intelligent Pass-thru Module for BladeCenter	44X1907*	5482
QLogic 4/8 Gb Intelligent Pass-thru Module for BladeCenter	88Y6410*	A24D

* Withdrawn from marketing

Each part number includes the following items:

- One QLogic 8 Gb Intelligent Pass-thru Module, or one QLogic 4/8 Gb Intelligent Pass-thru Module
- The Documentation CD
- The *IBM Important Notices* document

Each switch comes without small form-factor pluggable plus (SFP+) modules, and they must be ordered additionally. Table 2 lists the part numbers that are supported.

Table 2. Supported SFPs and SFPs+ for the QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules

Description	Part number	Feature code
IBM 8 Gb SFP+ SW Optical Transceiver	44X1964	5075
4 Gbps SW SFP Transceiver	39R6475	4804
4 Gbps shortwave SFP transceiver pair	26K7941	2410
4 Gbps SW SFP Transceiver 4 Pack	22R4897	2414
4 Gbps SW SFP Transceiver	22R4902	2410

Features

The QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules have the following features:

- Six external autosensing Fibre Channel ports (2, 4, or 8 Gbps for 8 Gb SFP+ transceivers, and 1, 2, or 4 Gbps for 4 Gb SFP transceivers) that operate as TF_Ports (Transparent Fabric Ports) at a maximum speed of 8 Gbps
- The QLogic 8 Gb Intelligent Pass-thru Module has 14 internal Fibre Channel ports that operate as TH_Ports (Transparent Host Ports) at 2, 4, or 8 Gbps depending on FC expansion cards installed into blades
- The QLogic 4/8 Gb Intelligent Pass-thru Module has 14 internal Fibre Channel ports that operate as TH_Ports (Transparent Host Ports) at 2, 4, or 8 Gbps depending on FC expansion cards installed into blades and the I/O module bays the module is installed in:
    - When installed in an MSIM (BladeCenter H only) or MSIM-HT (BladeCenter HT only), the internal ports operate at up to 8 Gbps
    - When installed in standard I/O module bays 3 or 4, the internal ports operate at up to 4 Gbps
    - When installed in a BladeCenter T chassis, the internal ports operate at 2 Gbps
- Two internal full-duplex 100 Mbps Ethernet interfaces
- N_Port ID Virtualization (NPIV) functionality
- Power-on self-test diagnostics and status reporting
- Support for Non-Disruptive Code Load Activation (NDCLA)
- Registered State Change Notification (RSCN)
- Support for standards-based FC-SW2 interoperability
- Error detection
    - Cyclic redundancy check (CRC)
    - 8-byte and 10-byte conversion
    - Parity
    - Long frame and short frame
    - D_ID mismatch
    - S_ID mismatch
- Frame bundling
    - No frame bundling (frames are intermixed from different source ports)
    - Soft lockdown (the I/O module waits for the sequence to be completed or a gap in the frame traffic to occur before it services requests from a different port)
- Configurable Fabric Address Notification (FAN)
- Support for up to 239 switches depending on configuration
- 8 Gb switch fabric aggregate bandwidth: 320 Gbps at full duplex
- Maximum frame size: 2148 bytes (2112 byte payload)
- Nonblocking architecture to prevent latency
- Support for Call Home function
- Support for Domain Name Service (DNS)
- Support for Internet protocol (IP) Version 6
- Support for Internet protocol security (IPsec)
- Support for separate trap community strings for each trap address
- Support for Simple Network Management Protocol (SNMP) Version 3

- Support for vital product data (VPD)
- Optional small form-factor pluggable plus (SFP+) modules

Note: Neither the QLogic 8 Gb Intelligent Pass-thru Module nor the QLogic 4/8 Gb Intelligent Pass-thru Module can be upgraded to a full-fabric switch module.

The following software feature comes with each module:

- QuickTools Web interface

Each module supports the following fabric management (all management connections go through the management module):

- Web interface through QuickTools
- Command-line interface (CLI) through the Telnet program
- Enterprise Fabric Suite 2007 application
- Switch SNMP agent, which enables a network management workstation to receive configuration values, traffic information, and FC failure data through SNMP and the Ethernet interface

Supported BladeCenter chassis and expansion cards

The QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules are supported in the BladeCenter chassis as listed in Table 3. The I/O module fits in a standard I/O bay (bays 3 & 4) and, with the addition of the Multi-Switch Interconnect Module (MSIM) in the BladeCenter H and HT, can also fit in a high-speed I/O bay (bays 7-10). Installing both QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Module in the one chassis is not supported.

Table 3. BladeCenter chassis that support the QLogic 4/8 Gb Intelligent Pass-thru Module

I/O module	Part number	BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT	MSIM	MSIM-HT
QLogic 8 Gb Intelligent Pass-thru Module	44X1907	Y	Y	Y	Y	Y	Y	Y
QLogic 4/8 Gb Intelligent Pass-thru Module	88Y6410	Y	Y	Y	Y	Y	Y	Y

Speed maximums with the QLogic 8 Gb Intelligent Pass-thru Module:

- When the I/O module is installed in an MSIM (BladeCenter H) or MSIM-HT (BladeCenter HT), or switch bays 3 or 4 of a BladeCenter E, S, H or HT chassis, both the internal ports and external ports operate at speeds up to 8 Gbps.
- When the I/O module is installed in switch bays 3 or 4 of a BladeCenter T chassis, the internal ports operate at 2 Gbps, and the external ports operate at speeds up to 8 Gbps.

Speed maximums with the QLogic 4/8 Gb Intelligent Pass-thru Module:

- When the I/O module is installed in an MSIM (BladeCenter H) or MSIM-HT (BladeCenter HT), both the internal ports and external ports operate at speeds up to 8 Gbps.
- When the I/O module is installed in switch bays 3 or 4 of a BladeCenter E, S, H or HT chassis, the internal ports operate at speeds up to 4 Gbps, and the external ports operate up to 8 Gbps.
- When the I/O module is installed in switch bays 3 or 4 of a BladeCenter T chassis, the internal ports operate at 2 Gbps, and the external ports operate at speeds up to 8 Gbps.

The QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules support the expansion cards listed in Table 4. Table 4 also lists the chassis bays in which the switch module must be installed when used with each expansion card.

Table 4. Expansion card support and Chassis I/O bay support

Supported expansion cards	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)

QLogic 4 Gb FC Expansion Card (CFFv)	41Y8527	N	N	Y	Y	N	N	N	N	N	N
QLogic 4 Gb FC Expansion Card (CIOv)	46M6065	N	N	Y	Y	N	N	N	N	N	N
QLogic Ethernet and 8 Gb FC Card (CFFh)	44X1940	N	N	N	N	N	N	N	Y	N	Y
Emulex 8Gb Fibre Channel Exp. Card (CIOv)	46M6140	N	N	Y*	Y*	N	N	N	N	N	N
QLogic 8Gb Fibre Channel Exp. Card (CIOv)	44X1945	N	N	Y*	Y*	N	N	N	N	N	N

* The internal ports of the QLogic 4/8 Gb Intelligent Pass-thru Module operate at speeds up to 4 Gbps (with BladeCenter T, the maximum is 2 Gbps)

Popular configurations

Figure 2 shows the QLogic 8 Gb Intelligent Pass-thru Module that is installed in standard I/O bays in the BladeCenter chassis. The chassis is connected to the IBM System Storage SAN40B-4 Fibre Channel fabric switch. The servers in the chassis each have compatible CFFv or CIOv Fibre Channel expansion cards.

Tip: Had the QLogic 4/8 Gb Intelligent Pass-thru Module been used in this configuration, the internal ports of the Pass-thru Module operate at 4 Gbps.

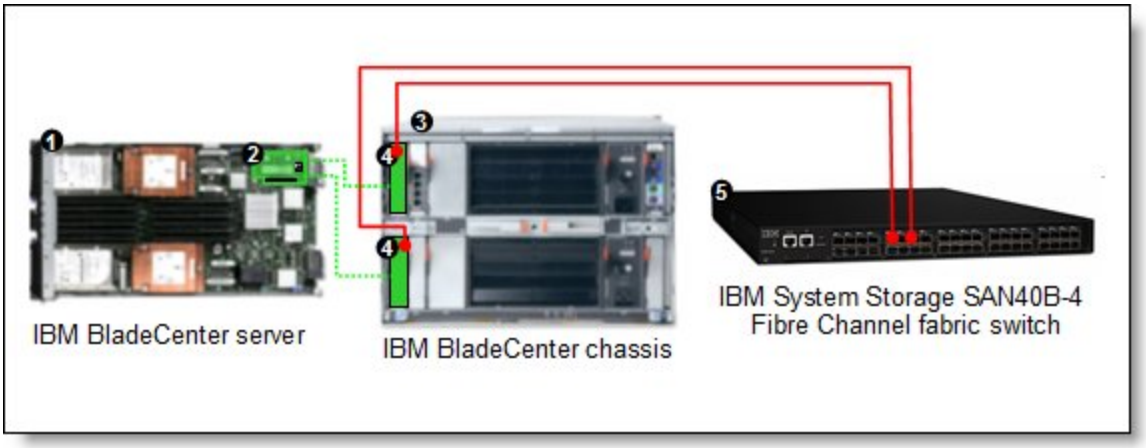

Figure 2. BladeCenter connected to an external fabric switch using the QLogic 8 Gb Intelligent Pass-thru Module

Table 5 lists the parts that are used in this configuration.

Table 5. Components used as shown in Figure 2

Diagram reference	Part number / Machine type	Description	Quantity
1	Varies	BladeCenter HS22, HS21, or other supported server	1 to 14
2	Varies	Supported CIOv or CFFv expansion card (see Table 4)	1 per server
3	Varies	Supported BladeCenter chassis (See Table 3)	1
4	44X1907	QLogic 8 Gb Intelligent Pass-thru Module	1 or 2
4	44X1964	IBM 8 Gb SFP+ SW Optical Transceiver	Up to 12
5	2498-B40	IBM System Storage SAN40B-4 Fibre Channel fabric switch	1

This configuration also requires cabling between the chassis and the fabric switch. (The cable part numbers are not listed in the table.)

Connectors and LEDs

The front panel of the QLogic 8 Gb and 4/8 Gb Intelligent Pass-thru Modules contain the following components, as shown in Figure 3:

- Information LEDs that display the status of the I/O module and its network connections.
- Six external Fibre Channel ports to connect Fibre Channel devices and switches. These ports are labeled 0, 15, 16, 17, 18, and 19 (from top to bottom) on the I/O module.

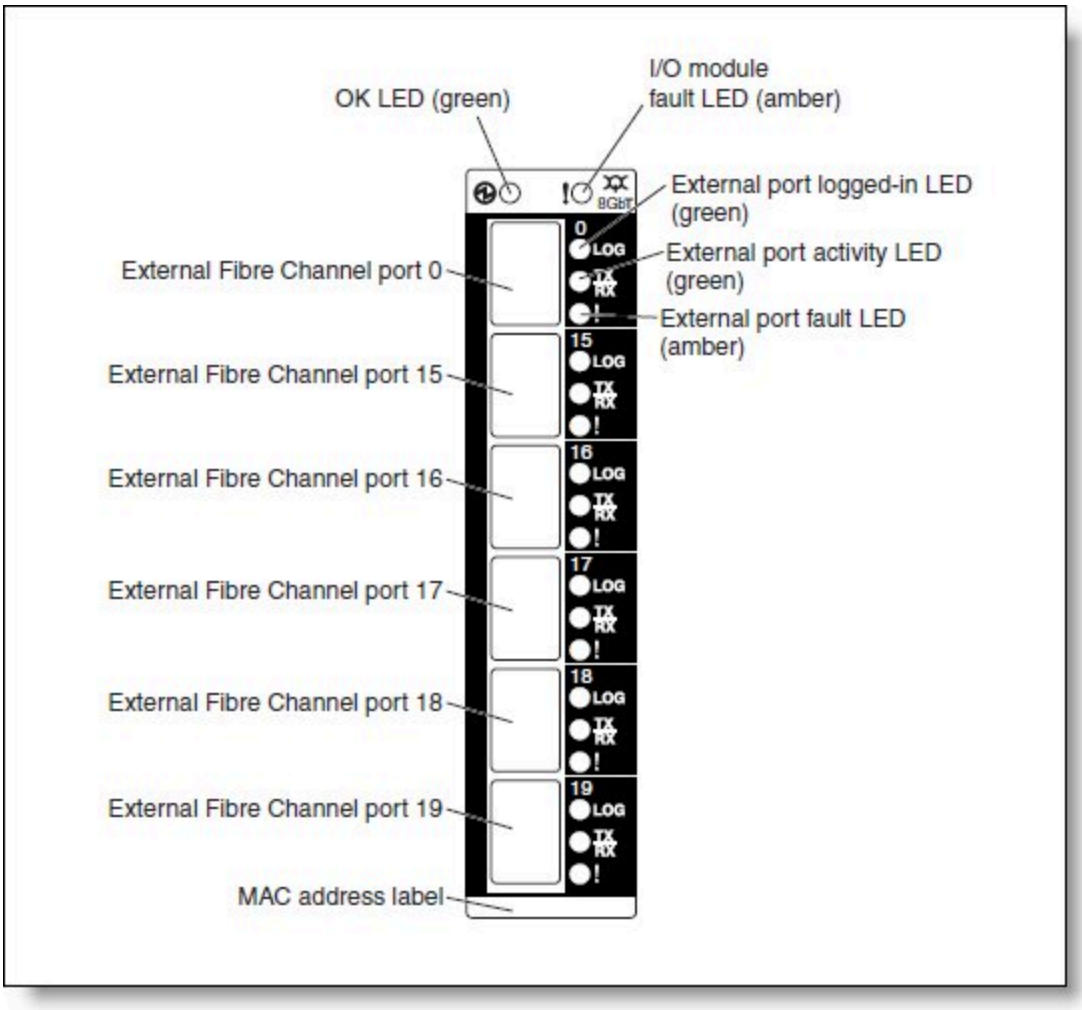

Figure 3.

Front panel of the I/O module

Table 6 lists the LEDs on the front panel and their meanings.

Table 6. LEDs on the front panel

LED name	LED description
OK	This green LED is at the top left of the I/O module on the front panel and indicates that the module is working properly.

! (I/O module fault)	This amber LED is at the top right of the I/O module on the front panel. This LED indicates that the I/O module has a fault. If the I/O module fails the POST, this fault LED is lit.
External port logged-in (LOG)	There are six green external port logged-in (LOG) LEDs. When one of these LEDs is lit, it indicates that there is a connection (or link) to a device on that port.
External port activity (TX/RX)	There are six green external port activity (TX/RX) LEDs. When one of these LEDs flashes, it indicates that data is being received or transmitted (that is, activity is occurring) on that port. The flash frequency is proportional to the amount of traffic on that port.
External port fault (!)	There are six amber external port fault (!) LEDs. When an external port fault LED is lit, it indicates that the external port has failed the internal, external, or online port diagnostics tests.

Operating environment

The environment has the following temperature and altitude requirements:

- Operating:
  - 10 - 52 °C (50 - 125 °F) at an altitude of 0 to 914 m (0 to 3,000 ft)
  - 10 - 49 °C (50 - 20 °F) at an altitude of 0 to 3,000 m (0 to 10,000 ft)
- Non-operating:
  - 40 - 65 °C (-40 - 149 °F) at an altitude of 0 to 12,000 m (0 to 39,370 ft)

The environment has the following humidity level requirements:

- Operating: 8% to 80%, noncondensing
- Non-operating: 5% to 80%, noncondensing

Related publications

For more information, see the following documents:

- *QLogic 8 Gb Intelligent Pass-thru Module and 20-port 8 Gb SAN Switch Module Installation and User's Guide*
  http://ibm.com/support/entry/portal/docdisplay?lndocid=MIGR-5079302
- IBM US Announcement Letter *BladeCenter support options expand with new selection of higher capacity QLogic products*
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS108-862
- *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 Storage Modules
- Embedded SAN Switches

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This document, TIPS0694, was created or updated on June 15, 2011.

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