



QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter

IBM BladeCenter at-a-glance guide

The QLogic 4Gb Fibre Channel Expansion Card (CIOv) for BladeCenter enables you to quickly and simply connect the BladeCenter servers with CIOv expansion slots to a Fibre Channel SAN. Simply pick any Fibre Channel storage solution from the IBM System Storage DS3000, DS4000, DS5000, and DS8000 series, and begin accessing data over a high-speed interconnect.

This card is installed into the PCI Express CIOv slot of a supported blade server. It provides connections to Fibre Channel-compatible modules located in bays 3 and 4 of supported BladeCenter chassis. A maximum of one QLogic 4Gb Fibre Channel Expansion Card (CIOv) is supported per single-wide (30 mm) blade server.

The QLogic 4Gb Fibre Channel Expansion Card (CIOv) is shown in Figure 1.



Figure 1. QLogic 4Gb Fibre Channel Expansion Card (CIOv)

Did you know?

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.

The adapter is based on the PCI Express bus, which can be thought of as a high-speed serial replacement of the older technology. Its use offers many benefits, including higher speeds and the ability to send and receive data at the same time.

When using the CIOv adapter, you can simultaneously use a CFFh adapter to enable more types of I/O to supported blade servers such as the HS22 when installed in the IBM BladeCenter H chassis. The innovative design of the CIOv adapter works with the CFFh adapter to support this combination.

Part number information

The part number to order this card is shown in Table 1.

Table 1. Ordering part number and feature code

Description	Part number	Feature code
QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	46M6065	3594

The part number includes the following items:

- One QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter
- The Documentation CD that contains *QLogic 4Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter Installation and User's Guide*
- The *IBM Important Notices* document

Features

The QLogic 4Gb Fibre Channel Expansion Card (CIOv) has the following features:

- CIOv form factor
- PCI Express 2.0 host interface
- Support for two full-duplex Fibre Channel ports at 4 Gbps maximum per channel (8 Gbps per port in full-duplex)
- Support for Fibre Channel Protocol SCSI (FCP-SCSI) and Fibre Channel Internet Protocol (FC-IP)
- Support for Fibre Channel service (class 3)
- Support for switched fabric, point-to-point, and Fibre Channel Arbitrated Loop (FC-AL) connections
- Configuration and boot support in BIOS and UEFI

Operating environment

The expansion card is supported in this environment:

- Temperature:
 - 10 to 35°C (50 to 95°F) at 0 to 914 m (0 to 3,000 ft)
 - 10 to 32°C (50 to 90°F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Relative humidity: 8% to 80%
- Maximum altitude: 2,133 m (7,000 ft)

Supported servers and I/O modules

The QLogic 4Gb Fibre Channel Expansion Card (CIOv) is supported in the IBM BladeCenter servers listed in Table 2.

Table 2. Supported servers

Expansion card	Part number	HS12	HS21	HS21 XM	HS22	LS22	LS42	JS12	JS22	QS22
QLogic 4Gb Fibre Channel Expansion Card (CIOv)	46M6065	No	No	No	Yes	No	No	No	No	No

See IBM ServerProven for the latest information on the expansion cards supported by each blade server type: <http://ibm.com/servers/eserver/serverproven/compat/us/>.

CIOv expansion cards are installed in the CIOv slot in supported servers such as the HS22 as highlighted in red in Figure 2.



Figure 2. Location of the CIOv slot in the IBM BladeCenter HS22

The QLogic 4Gb Fibre Channel Expansion Card (CIOv) requires that a supported I/O module is installed in bay 3 and bay 4 of the chassis that the cards and servers are installed in. The supported I/O modules are:

- Any Brocade, QLogic or Cisco Fibre Channel Switch Module
- QLogic 4 Gb and 8 Gb Intelligent Pass-thru Modules
- IBM Optical Pass-thru Module (supported at 2 Gbps speeds only)

Popular configurations

This section illustrates how the QLogic 4Gb Fibre Channel Expansion Card (CIOv) can be used in configurations. Figure 3 shows the CIOv card installed in a supported blade server, which is in turn installed in a BladeCenter chassis. The chassis is connected to the IBM System Storage DS3400. The RAID functionality is provided by the external storage system.

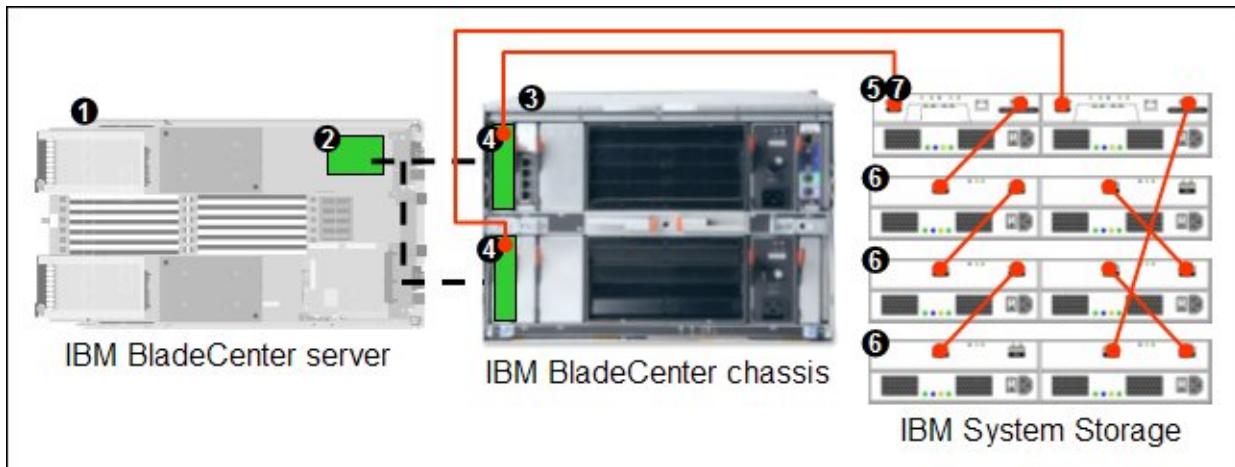


Figure 3. IBM BladeCenter connected to an external IBM System Storage DS3400 storage solution

The parts used in this configuration are listed in Table 3.

Table 3. Components used when connecting the QLogic 4Gb Fibre Channel Expansion Card (CIOv) to external disk storage (as shown in Figure 3)

Diagram reference	Part number / Machine type	Description	Quantity
1	Varies	IBM BladeCenter HS22 or other supported server	1 to 14
2	46M6065	QLogic 4Gb Fibre Channel Expansion Card (CIOv)	1 per server
3	8677 or 8852*	IBM BladeCenter E, BladeCenter H, or BladeCenter S*	1
4	Varies	Any Brocade, QLogic or Cisco Fibre Channel Switch module or Optical Pass-thru module	1 or 2
5	1726-41X or 1726-42X	IBM System Storage DS3400 (Single or Dual Controller)	1
6	1727	Optional IBM System Storage EXP3000 (Single or Dual ESM)	1 to 3
7	39R6536	DS3000 Partition Expansion License	1

*Note: The expansion card can be installed in servers in the BladeCenter S (8886). However, by doing so you will lose the ability to connect to the BladeCenter S Disk Storage Modules (DSMs). The Fibre Channel expansion card will go in the place of the SAS expansion card needed to connect to the DSMs.

This configuration will also require cabling between the chassis and the storage server and between the storage server and expansion units. (The cable part numbers are not listed in Table 3.)

Take these considerations into account when planning external DS3400-based disk storage system attachments:

- DS3400 is supported for both data storage and boot from SAN when attached to the supported BladeCenter chassis.
- DS3400 Dual Controller version (1726-42X) and DS3200 Single Controller version (1726-41X) are both supported.
- Redundant paths from FC switch modules to the same RAID controller unit installed in DS3400 are supported.
- Up to 48 hot swap 3.5" disk drives with a SAS or SATA interface are supported, and up to three EXP3000 expansion units are supported. The intermixing of SAS and SATA drives is supported. Note, however, that you cannot use both SAS and SATA drives in the same array.
- DS3400 can be attached to up to 28 blade servers (two chassis). A Partition Expansion License is required to support more than four host server blades.
- RAID levels 0, 1, 10, 3, 5, and 6 are supported by the DS3400.
 - A maximum of 48 drives is supported in a single RAID 0, 1, and 10 array.
 - A maximum of 30 drives is supported in a single RAID array for other RAID levels (3, 5, and 6).
 - The logical volume size can be greater than 2 TB.
- Optional FlashCopy and VolumeCopy options are available.

Supported operating systems

The QLogic 4Gb Fibre Channel Expansion Card (CIOv) supports the following operating systems:

- Microsoft Windows Server 2008, Web x64 and x86 Editions
- Microsoft Windows Server 2008, Standard x64 and x86 Editions
- Microsoft Windows Server 2008, Enterprise x64 and x86 Editions
- Microsoft Windows Server 2008, Datacenter x64 and x86 Editions
- Microsoft Windows Server 2003 and 2003 R2, Standard x64 and x86 Editions
- Microsoft Windows Server 2003 and 2003 R2, Enterprise x64 and x86 Editions
- Microsoft Windows Server 2003 and 2003 R2, Datacenter x64 and x86 Editions
- Microsoft Windows Small Business Server 2003 and 2003 R2 Standard and Premium Editions
- Microsoft Windows Small Business Server 2008 x64 Standard and Premium Editions
- Microsoft Windows Essential Business Server 2008 Standard and Premium Editions
- Microsoft Windows Server 2003, Web Edition
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 5 Server with Xen Edition
- Red Hat Enterprise Linux 5 Server x64 with Xen Edition
- SUSE Linux Enterprise Server 10 for x86
- SUSE Linux Enterprise Server 10 for AMD64/EM64T
- SUSE Linux Enterprise Server 10 with Xen for AMD64/EM64T
- SUSE Linux Enterprise Server 10 with Xen for x86

See IBM ServerProven for the latest information on 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:

- *QLogic 4Gb Fibre Channel Expansion Card (CIOv) Installation and User Guide*,
<http://www.ibm.com/support>
- IBM Redbooks publication *IBM BladeCenter Products and Technology*,
<http://www.redbooks.ibm.com/abstracts/sg247523.html>

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