

IBM Flex System FC3052 2-port 8Gb FC Adapter

IBM Redbooks Product Guide

The network architecture on the IBM Flex System platform has been specifically designed to address network challenges, giving you a scalable way to integrate, optimize, and automate your data center. The IBM Flex System™ FC3052 2-port 8Gb Fibre Channel Adapter enables high-speed access for IBM Flex System compute nodes to an external storage area network (SAN). This adapter is based on the proven Emulex Fibre Channel stack, and works with any of the 8 Gb or 16 Gb IBM Flex System Fibre Channel switch and pass-thru modules.

Figure 1 shows the IBM Flex System FC3052 2-port 8Gb FC Adapter.



Figure 1. IBM Flex System FC3052 2-port 8Gb FC Adapter

Did you know?

The performance bottleneck with Fibre Channel storage typically exists in the switching. By moving to 8 Gb adapters and switches, you can localize the bottleneck to the storage controller, where it can be managed by expanding the disks attached to storage. When compared to the previous generation 4 Gb adapters, the new generation 8 Gb adapters double the throughput speeds for Fibre Channel traffic. As a result, you can manage increased amounts of data and possibly benefit from a reduced hardware expense.

The adapter 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 can cover the investment in the chassis.

Part number information

Table 1 shows the part number to order this card.

Table 1. Part number and feature code for ordering

Description	Part number	Feature code (x-config)	Feature code (e-config)
IBM Flex System FC3052 2-port 8Gb FC Adapter	95Y2375	A2N5	EC25

The part number includes the following items:

- One IBM Flex System FC3052 2-port 8 Gb FC Adapter
- A documentation CD containing the adapter user's guide
- The *IBM@ Important Notices* document

Features

The IBM Flex System FC3052 2-port 8Gb FC Adapter has the following features and specifications:

- Based on the Emulex "Saturn" 8Gb Fibre Channel I/O Controller (IOC) chip
- Multifunction PCIe 2.0 device with two independent FC ports
- Auto-negotiation between 2-Gbps, 4-Gbps, or 8-Gbps FC link attachments
- Complies with the PCIe base and CEM 2.0 specifications
- Enablement of high-speed and dual-port connection to a Fibre Channel SAN
- Comprehensive virtualization capabilities with support for N_Port ID Virtualization (NPIV) and Virtual Fabric
- Simplified installation and configuration using common HBA drivers
- Common driver model that eases management and enables upgrades independent of HBA firmware
- Fibre Channel specifications:
 - Bandwidth: Burst transfer rate of up to 1600 MBps full-duplex per port
 - Support for point-to-point fabric connection: F-Port Fabric Login
 - Support for Fibre Channel Arbitrated Loop (FC-AL) and FCAL-2 FL-Port Login
 - Support for Fibre Channel services class 2 and 3
- Single-chip design with two independent 8 Gbps serial Fibre Channel ports, each of which provides:
 - Reduced instruction set computer (RISC) processor
 - Integrated serializer/deserializer
 - Receive direct memory access (DMA) sequencer
 - Frame buffer
- Onboard DMA: DMA controller for each port: Transmit and receive
- Frame buffer first in, first out (FIFO): Integrated transmit and receive frame buffer for each data channel
- Support for IBM Fabric Manager
- Support for UEFI
- Uses same FC/FCoE drivers as IBM Flex System CN4054 10Gb Virtual Fabric Adapter

Supported servers

The following table lists the IBM Flex System compute nodes that support the FC3052 2-port 8Gb FC Adapter.

Table 2. Supported servers

Description	Part number	x220	x240	x440	p24L	p260	p460
IBM Flex System FC3052 2-port 8Gb FC Adapter	95Y2375	Yes	Yes	Yes	No	No	No

See the IBM ServerProven website for the latest information about the expansion cards that are supported by each blade server type:

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

I/O adapter cards are installed in the slot in supported servers, such as the x240, as highlighted in the following figure.

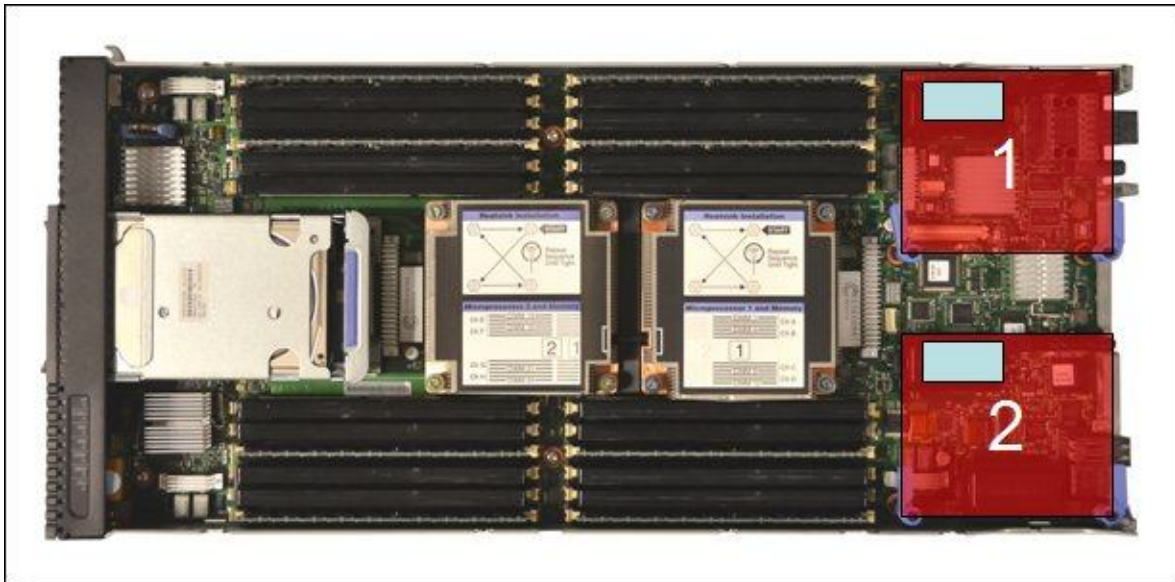


Figure 2. Location of the I/O adapter slots in the IBM Flex System x240 Compute Node

Supported I/O modules

The FC3052 2-port 8Gb FC Adapter supports the I/O modules listed in the following table. One or two compatible switches must be installed in the corresponding I/O bays in the chassis. Installing two switches means that both ports of the adapter are enabled. When the adapter is paired with a 16 Gb switch, those internal switch ports will operate at 8 Gbps.

Table 3. I/O modules supported with the FC3052 2-port 8Gb FC Adapter

Description	Part number	Support the FC3052 adapter
IBM Flex System FC3171 8Gb SAN Switch	69Y1930	Yes
IBM Flex System FC3171 8Gb SAN Pass-thru	69Y1934	Yes
IBM Flex System FC5022 16Gb SAN Scalable Switch	88Y6374	Yes
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	90Y9356	Yes

The following table shows the connections between adapters installed in the compute nodes and the switch bays in the chassis.

Table 4. Adapter to I/O bay correspondence

I/O adapter slot in the server	Port on the adapter	Corresponding I/O module bay in the chassis
Slot 1	Port 1	Module bay 1
	Port 2	Module bay 2
Slot 2	Port 1	Module bay 3
	Port 2	Module bay 4

The connections between the adapters installed in the compute nodes and the switch bays in the chassis are shown diagrammatically in the following figure.

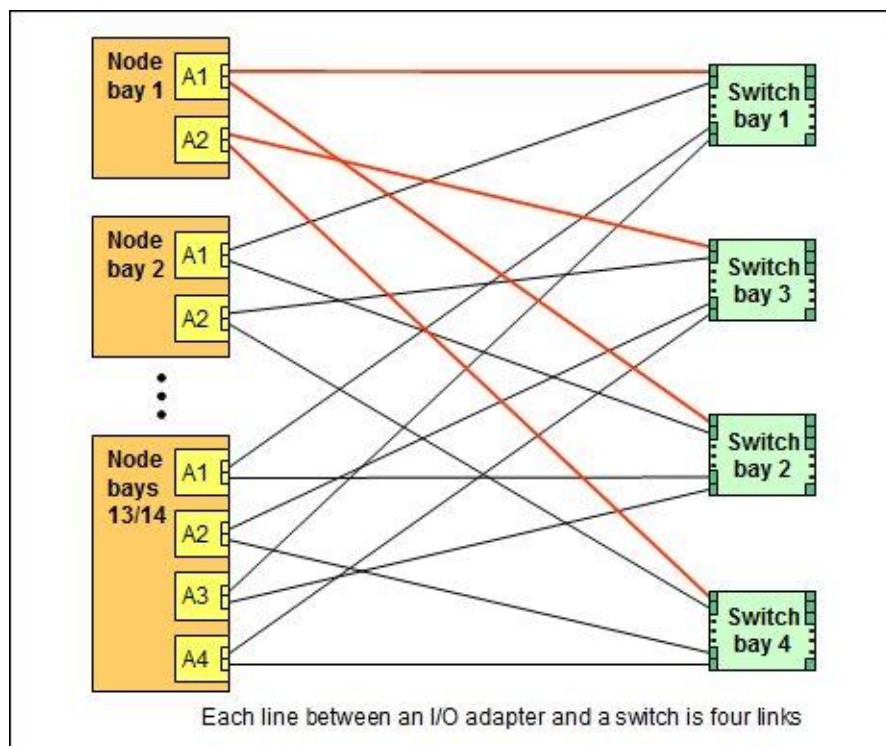


Figure 3. Logical layout of the interconnects between I/O adapters and I/O modules

Supported operating systems

The FC3052 2-port 8Gb FC Adapter supports the following operating systems:

- Microsoft Windows Server 2008 HPC Edition
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Datacenter x64 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 for AMD64/EM64T
- SUSE LINUX Enterprise Server 11 with Xen for AMD64/EM64T
- VMware ESX 4.1
- VMware ESXi 4.1
- VMware vSphere 5
- VMware vSphere 5.1

See the IBM ServerProven website for the latest information about the specific versions and service packs that are supported:

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

Regulatory compliance

The adapter conforms to the following standards:

- United States FCC 47 CFR Part 15, Subpart B, ANSI C63.4 (2003), Class A
- United States UL 60950-1, Second Edition
- IEC/EN 60950-1, Second Edition
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- UL/IEC 60950-1
- CSA C22.2 No. 60950-1-03
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22:2006, Class A
- IEC 60950-1(CB Certificate and CB Test Report)
- Taiwan BSMI CNS13438, Class A
- Korea KN22, Class A; KN24
- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A

Physical specifications

The dimensions and weight of the adapter are as follows:

- Width: 100 mm (3.9 in)
- Depth: 80 mm (3.1 in)
- Weight: 13 g (0.3 lb)

Shipping dimensions and weight (approximate):

- Height: 58 mm (2.3 in)
- Width: 229 mm (9.0 in)
- Depth: 208 mm (8.2 in)
- Weight: 0.4 kg (0.89 lb)

Popular configurations

The FC3052 2-port 8Gb FC Adapter can be used in various configurations. The following figure shows the I/O installed in an I/O adapter slot 2 of the x240, which in turn is installed in the chassis. The chassis is connected to an IBM System Storage V7000. The RAID functionality is provided by the external storage system.

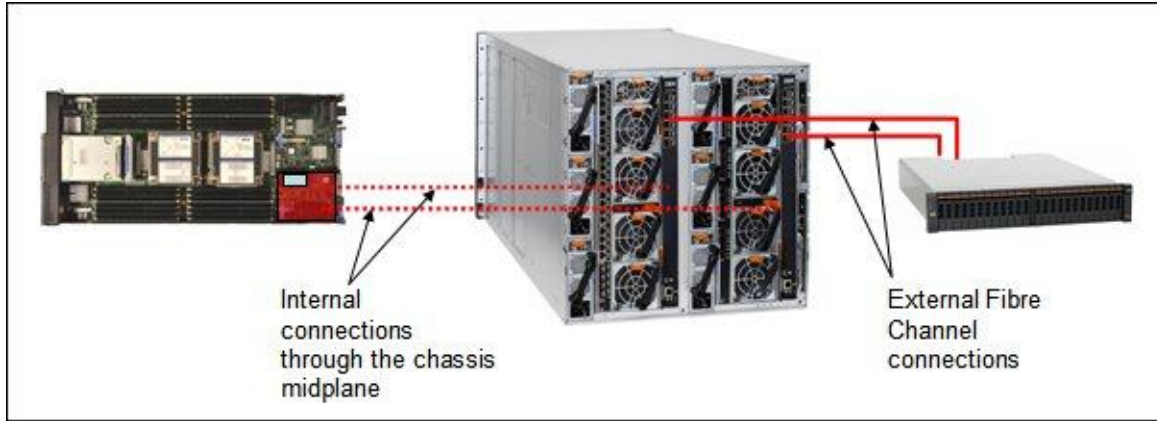


Figure 4. Example configuration

The following table lists the parts that are used in the configuration.

Table 5. Components used when connecting the FC3052 2-port 8Gb FC Adapter to external disk storage

Part number/machine type	Description	Quantity
8737	IBM Flex System x240 Compute Node or other supported server	1 to 14
95Y2375	FC3052 2-port 8Gb FC Adapter	1 per server
8721-A1x	IBM Flex System Enterprise Chassis	1
69Y1930	IBM Flex System FC3171 8Gb SAN Switch	1 or 2
44X1964	IBM 8Gb SFP+ SW Optical Transceiver	1 per FC cable
39M5698	IBM 1m LC-LC Fiber Channel Cable	1 for each V7000 connection
2076-124	IBM System Storage V7000	1

This configuration also requires additional V7000 features, such as drives and software licenses. These are not listed in the table.

Related publications

For more information, see the following resources:

- *IBM Flex System FC3171 8Gb SAN Switch and Pass-thru Product Guide*
<http://www.redbooks.ibm.com/abstracts/tips0866.html>
- *IBM Flex System FC5022 16Gb SAN Scalable Switch Product Guide*
<http://www.redbooks.ibm.com/abstracts/tips0870.html>
- IBM Flex System x240 Compute Node Product Guide
<http://www.redbooks.ibm.com/abstracts/tips0860.html>
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- IBM Redbooks Product Guides for IBM Flex System servers and options
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- *FC3052 2-port 8Gb FC Adapter Installation and User Guide*
<http://www.ibm.com/support>
- *IBM Flex System Interoperability Guide*
<http://www.ibm.com/support>

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