Brocade 16Gb FC Single-port and Dual-port HBAs
Product Guide (withdrawn product)

The Brocade 16 Gb Fibre Channel (FC) host bus adapters (HBAs) from QLogic are part of a family of high-performance FC HBA solutions for System x. These HBAs deliver exceptional performance, enabling small and medium businesses to experience unsurpassed robustness and reliability for a wide spectrum of servers, storage, and SANs.

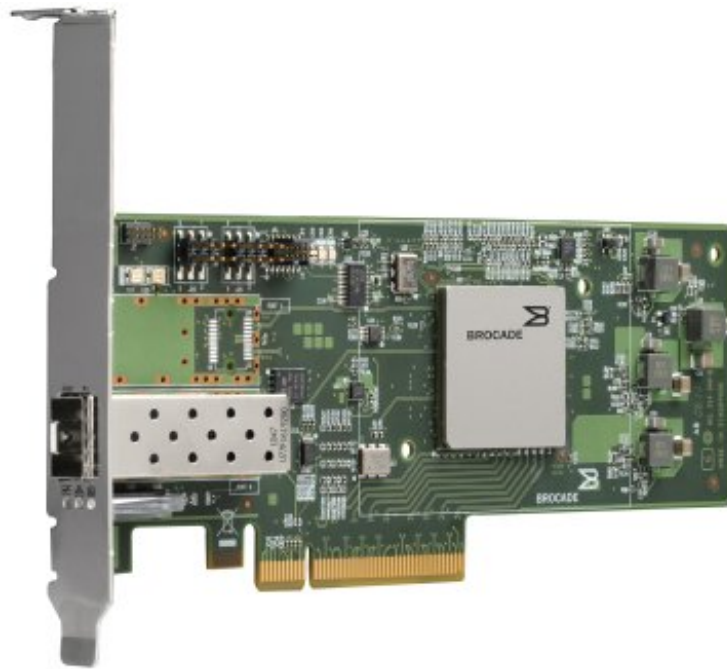Figure 1 shows the single-port adapter (SFP+ is not present).

Figure 1. Brocade 16Gb FC Single-port adapter (with 3U bracket attached, standard SFP+ is not present)

Did you know?

Brocade 16Gb FC HBAs enhance availability via a unified driver with integrated firmware and simplified broadcast of driver updates across the fabric, including a proactive driver/firmware check of version levels to ensure synchronization. Fabric boot LUN discovery allows a server to boot-from-SAN, simplifying startup and reducing image management complexity. Fabric Assigned World Wide Name (FA-WWN) auto-assigns the switch port WWN upon install, simplifying server deployment and ongoing management.

Diagnostic Ports (D_Ports) are a new port type supported by the Brocade 16Gb HBAs that enables administrators to quickly identify and isolate 16 Gbps optics, port and cable problems, reducing fabric deployment and diagnostic times. If the optical media is found to be the source of the problem, it can be transparently replaced, as 16 Gbps optics are hot-pluggable.

Part number information

Table 1. Ordering part numbers and feature codes

Part number	Feature code	Description
81Y1668	A2XU	Brocade 16Gb FC Single-port HBA
81Y1675	A2XV	Brocade 16Gb FC Dual-port HBA

The part numbers for the Brocade 16Gb FC Single-port and Dual-port HBAs include the following items:

- FC HBA adapter with one or two short-wave (SWL) 16 Gb (16/8/4 Gb support) SFP+ installed and 3U bracket attached
- Quick install guide
- Documentation CD
- Low profile (2U) bracket
- Warranty Flyer
- Important Notices Flyer

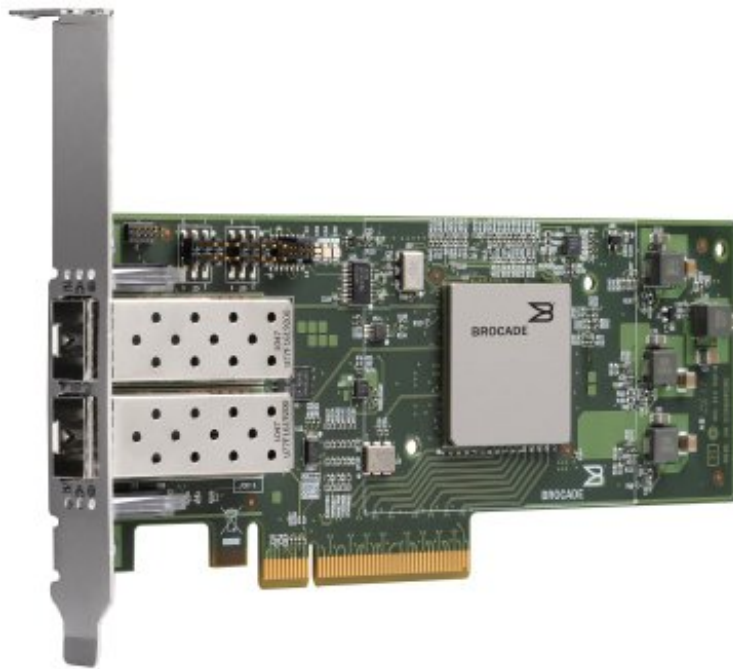Figure 2 shows the dual-port adapter (SFP+ is not present).

Figure 2. Brocade 16Gb FC Dual-port adapter (with 3U bracket attached, standard SFP+ is not present)

Features

The Brocade 16Gb FC Single-port and Dual-port HBAs have the following features:

- 16 Gbps Fibre Channel
  16 Gb FC enables I/O consolidation of multiple 2/4/8 Gbps Fibre Channel HBAs into a single adapter to dramatically reduce CapEx/OpEx costs. It can also provide 50% server rack space savings by reducing from a 2U to 1U rack-mount server with fewer PCIe adapter slots.

- Over 500,000 IOPS per port
  The industry's most powerful FC adapter that achieves the highest transaction performance to maximize density of VMs per server, performance of 315,000 IOPS for E-mail Exchange, and 205,000 IOPS for SQL Database.

- 16 Gbps and 8 Gbps optical media support
  Investment protection for existing previous-generation 8 Gbps optics.

- Fabric Assigned World Wide Name (FA-WWN)
  FA-WWN virtualizes host WWNs to simplify server deployment by enabling pre-provisioning prior to initial install and to eliminate time-consuming fabric reconfigurations when replacing adapters and servers.

- Boot-From-SAN
  Automate SAN Boot LUN discovery to simplify boot from SAN and reduce image management complexity and support for Direct Attached Storage (DAS point-to-point topology).

- Brocade Server Application Optimization (SAO)
  Quality of Service (QoS) levels assignable to VM applications and support for N_Port Trunking of 2×16 Gbps links into a single logical 32 Gbps link to improve application performance and availability.

- Direct I/O
  This enables native (direct) I/O performance by allowing VMs to bypass the hypervisor and communicate directly with the adapter.

- Brocade Network Advisor
  This simplifies and unifies the management of Brocade adapter, SAN, and LAN resources through a single pane-of-glass.

- Brocade Diagnostics (D-Port)
  This improves detection and isolation of 16 Gbps optics problems between adapters and switches.

- LUN Masking
  Initiator-based LUN masking for storage traffic isolation.

- Target Rate Limiting (TRL)
  This throttles data traffic when accessing slower speed storage targets to avoid back pressure problems.

Technical specifications

The Brocade 16Gb FC Single-port and Dual-port HBAs have the following specifications:

- Host interface: PCI Express Gen 2 x8
- Data rate: 14.025 Gbps (1600 MBps); 8.5 Gbps (800 MBps); 4.25 Gbps (400 MBps); 2.125 Gbps (200 MBps) autosensing (per port); full duplex
- Performance: over 500,000 IOPS per port (1,000,000 IOPS per dual-port adapter)
- Boot support: Boot from SAN, Fabric-based Boot LUN Discovery
- Protocols: SCSI-FCP, FCP-2, FCP-3, FC-SP
- Topology: Point-to-point (N_Port), switched fabric (N_Port)
- N_Port Trunking of 2×16 Gbps links into a single logical 32 Gbps link
- Supported media: Brocade 16 Gbps and 8 Gbps Fibre Channel LC-style pluggable (SFP+), SWL (850 nm), hot-pluggable
- Distance support:
  - 15 m at 16 Gbps on 62.5/125 µm (OM1) Multi-Mode Fiber (MMF)
  - 35 m at 16 Gbps on 50/125 µm OM2 MMF
  - 100 m at 16 Gbps on 50/125 µm OM3 MMF
  - 125 m at 16 Gbps on 50/125 µm OM4 MMF
- Management software:
  - Brocade Host Connectivity Manager (HCM)
  - Brocade Configuration Utility (BCU) Command Line Interface (CLI)
  - Brocade Network Advisor

Server support

The Brocade 16Gb FC Single-port and Dual-port HBAs are supported on the servers that are listed in the following tables.

Support for servers with Intel Xeon v3 processors

Table 2. Support for servers with Intel Xeon v3 processors

Part number	Description	x3100 M5 (5457)	x3250 M5 (5458)	x3500 M5 (5464)	x3550 M5 (5463)	x3650 M5 (5462)	x3850 X6/x3950 X6 (6241, E7 v3)	nx360 M5 (5465)
81Y1668	Brocade 16Gb FC Single-port HBA	Y	Y	Y	Y	Y	Y	Y
81Y1675	Brocade 16Gb FC Dual-port HBA	Y	Y	Y	Y	Y	Y	Y

Support for servers with Intel Xeon v2 processors

Table 3. Support for servers with Intel Xeon v2 processors

Part number	Description	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 (7915, E5-2600 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	x3750 M4 (8752)	x3750 M4 (8753)	x3850 X6/x3950 X6 (3837)	x3850 X6/x3950 X6 (6241, E7 v2)	dx360 M4 (E5-2600 v2)	nx360 M4 (5455)
81Y1668	Brocade 16Gb FC Single-port HBA	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
81Y1675	Brocade 16Gb FC Dual-port HBA	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Support for servers with Intel Xeon v1 processors

Table 4. Support for servers with Intel Xeon v1 processors

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	x3650 M4 (7915, E5-2600)	x3690 X5 (7147)	x3750 M4 (8722)	x3850 X5 (7143)	dx360 M4 (7912, E5-2600)
81Y1668	Brocade 16Gb FC Single-port HBA	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
81Y1675	Brocade 16Gb FC Dual-port HBA	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

See the ServerProven® website for the latest information about the System x servers that support each adapter: http://www.lenovo.com/us/en/serverproven/xseries/sharedstorage/samatrix.shtml

Operating system support

The Brocade 16Gb FC Single-port and Dual-port HBAs for System x support the following operating systems:

- Microsoft Windows Server 2008 R2
- 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 Server 2012
- Microsoft Windows Server 2012 R2
- 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 with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 6 Server Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 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
- SUSE Linux Enterprise Server 12
- SUSE Linux Enterprise Server 12 with XEN
- VMware ESX 4.1
- VMware ESXi 4.1
- VMware vSphere 5.0 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.5 (ESXi)
- VMware vSphere 6.0 (ESXi)

See the ServerProven website for the latest information about the specific versions and service packs supported: http://www.lenovo.com/us/en/serverproven/xseries/sharedstorage/samatrix.shtml

Click the check mark associated with the server in question to see the operating system support details.

Physical specifications

The Brocade 16Gb FC Single-port and Dual-port HBAs have the following physical specifications.

Dimensions and weight (approximate):

- Height: 69 mm (2.7 in)
- Width: 168 mm (6.6 in)
- Depth: 18 mm (0.7 in)
- Weight: 127 g (0.28 lb)

Shipping dimensions and weight (approximate):

- Height: 48 mm (1.9 in)
- Width: 217 mm (8.5 in)
- Depth: 140 mm (5.5 in)
- Weight: 450 g (1.0 lb)

Operating environment

The adapters are supported in the following environment:

- Temperature:
  - Operating: 0 - 55 °C (32 - 131 °F)
  - Storage: -43 - 73 °C (-40 - 163 °F)
- Relative humidity:
  - Operating: 5 - 93% (relative, non-condensing)
  - Non-operating: 5 - 95% (relative, non-condensing)

Warranty

One-year limited warranty. When installed in a System x server, these cards assume the system's base warranty and any warranty upgrade.

Agency approvals

The adapter conforms to the following standards:

- United States Bi-Nat UL/CSA 60950-1 2nd Ed; ANSI C63.4; cCSAus; FCC Class B
- Canada Bi-Nat UL/CSA 60950-1 2nd Ed; ICES-003 Class B; cCSAus
- Japan CISPR22 Class B and JEIDA (Harmonics); VCCI-B
- European Union EN60950-1; EN55022 Class B and EN55024; TUVBauart, CE Mark
- Australia, New Zealand EN55022 and CISPR22 Class B or AS/NZS CISPR22; C-Tick
- Russia IEC60950-1; 51318.22-99 and .24-99; GOST Mark
- Korea KN22 and KN24; KC Mark Class B
- Taiwan CNS 13438(95) Class A; BSMI Mark

Related publications

For more information, refer to these documents:

- US Announcement Letter for the Brocade 16Gb FC Single-port and Dual-port HBAs
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS112-047
- Lenovo product page for Fibre Channel HBAs:
  http://shop.lenovo.com/us/en/systems/servers/options/systemx/storage/raid-adapters/
  fibre-channel-hba/
- QLogic page for Lenovo products, including product information and drivers
  http://qlogic.com/go/lenovo
- ServerProven compatibility information for System x HBAs
  http://www.lenovo.com/us/en/serverproven/xseries/sharedstorage/samatrix.shtml
- System x Configuration and Options Guide
  http://ibm.com/systems/xbc/cog/

Related product families

Product families related to this document are the following:

- Host Bus Adapters

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