

IBM 6 Gb SAS Host Bus Adapter for System x

Lenovo Press Product Guide

The IBM 6 Gb SAS HBA is an economical storage enabler to attach RAID-capable external storage enclosures and provide 3 Gbps or 6 Gbps tape storage connectivity for data archiving applications to achieve a higher level of performance.

The PCIe small form-factor IBM 6 Gb SAS HBA is based on the LSI SAS2008 controller and can handle medium to large capacity server storage applications by connecting an 8-lane PCI Express adapter with one external x4 SFF-8088 connector and four internal SATA connectors.

The IBM 6 Gb SAS Host Bus Adapter is shown in Figure 1 (with the 3U bracket removed).



Figure 1. IBM 6Gb SAS Host Bus Adapter

Did you know?

6 Gbps SAS 2.0 technology has been introduced to address data off-load bottlenecks in the direct-access storage environment. This new throughput doubles the transfer rate of the previous generation. SAS 2.0 is designed for backward compatibility with 3 Gbps SAS as well as with 3 Gbps SATA hard drives and tape drives.

Part number information

Table 1 shows the part number to order these HBAs.

Table 1. Part number and feature code for ordering

Description	Part number	Feature code
IBM 6Gb SAS HBA	46M0907	3875

Part number 46M0907 includes the following items:

- One 6 Gb SAS Host Bus Adapter with 3U bracket attached
- 2U bracket
- Quick Install Guide
- Documentation CD
- *IBM Important Notices* document

Features and specifications

The IBM 6 Gb SAS Host Bus Adapter has the following specifications:

- SAS Controller: LSI SAS2008
- Eight SAS/SATA ports (four external, four internal)
- Up to 6 Gbps per port data transfer rate
- Four internal SATA x1 connectors
- One external SAS x4 connector (SFF-8088)
- PCI Express x8 2.0 host interface
- MD2 small form factor
- High performance I/O Processor: PowerPC 440 @ 533 MHz
- uEFI support
- RAID levels: None (uses RAID as provided by external disk enclosures)
- Maximum endpoint devices: 512
- Power consumption: 13.5 W

The IBM 6 Gb SAS Host Bus Adapter has the following key features:

- Connection to supported internal and external tape drives
- Connection to supported external storage controllers
- Power management support
- Support for SSP, SMP, STP and SATA protocols - flexible to optimize costs
- Environmentally friendly due to low power consumption
- LSI Fusion-MPT architecture drives more than 290,000 I/Os per second
- End-to-End CRC with Advanced Error Reporting
- T-10 Protection Model for early detection of and recovery from data corruption
- Spread Spectrum Clocking for EMI reductions

Warranty

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

Supported servers

The compatibility information for the IBM 6 Gb SAS Host Bus Adapter and System x, IBM iDataPlex®, and IBM NeXtScale servers is listed in Table 2.

Table 2. Server compatibility, part 1 (M5 systems with v3 processors)

Part number	Description	x3100 M5 (5457)	x3250 M5 (5458)	x3550 M5 (5463)	x3650 M5 (5462)	nx360 M5 (5465)
46M0907	IBM 6Gb SAS HBA	Y	N	N	N	N

Table 2. Server compatibility, part 2 (M4 and X6 systems with 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, E5-4600 v2)	x3850 X6/x3950 X6 (3837)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
46M0907	IBM 6Gb SAS HBA	Y	Y	Y	Y	Y	N	N	N	N	Y	N

Table 2. Server compatibility, part 3 (M4 and X5 systems with v1 processors)

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3530 M4 (7160)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158)	x3650 M4 (7915, E5-2600)	x3690 X5 (7147)	x3750 M4 (8722)	x3850 X5 (7143)	dx360 M4 (7912, E5-2600)
46M0907	IBM 6Gb SAS HBA	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 2. Server compatibility, part 4 (M3 systems)

Part number	Description	x3200 M3 (7327, 7328)	x3250 M3 (4251, 4252)	x3400 M3 (7378, 7379)	x3500 M3 (7380)	x3550 M3 (7944)	x3620 M3 (7376)	x3630 M3 (7377)	x3650 M3 (7945)	x3755 M3 (7164)	dx360 M3 (6391)
46M0907	IBM 6Gb SAS HBA	N	Y	Y	Y	Y	Y	Y	Y	Y	Y

See the IBM ServerProven Web site for the latest information about the adapters supported by each System x server type: <http://ibm.com/servers/eserver/serverproven/compat/us/>.

Supported tape drives and disk enclosures

The IBM 6 Gb SAS Host Bus Adapter supports connectivity to the following internal tape drives:

- IBM Half High LTO Gen 3 SAS Tape Drive, 43W8478
- IBM Half High LTO Gen 4 SAS Tape Drive, 44E8895
- IBM Half-High LTO Generation 5 SAS Tape Drive, 49Y9898
- IBM Half High LTO Ultrium Gen 6 Internal SAS Tape Drive, 00D8924
- IBM DDS Gen 5 SATA Tape Drive, 43W8480
- IBM GoVault Internal Dock, 42D8771

Internal tape drives are connected to the IBM 6 Gb SAS HBA using the internal SAS or SATA cable supplied with the tape drive.

The adapter supports connectivity to the following 6 Gbps SAS external storage systems:

- IBM System Storage DS3512 Express Single Controller Storage System (1746A2S)
- IBM System Storage DS3512 Express Dual Controller Storage System (1746A2D)
- IBM System Storage DS3524 Express Single Controller Storage System (1746A4S)
- IBM System Storage DS3524 Express Dual Controller Storage System (1746A4D)
- IBM Storwize® V3700 LFF Dual Control Enclosure (2072L2C)
- IBM Storwize V3700 SFF Dual Control Enclosure (2072S2C)

The adapter supports connectivity to the following SAS external tape backup units:

- IBM System Storage TS2230 Half-High LTO 3 SAS Tape Drive, 3580S3V
- IBM System Storage TS2240 Half-High LTO 4 SAS Tape Drive, 3580S4V
- IBM System Storage TS2250 Half-High LTO 5 SAS Tape Drive, 3580S5E
- IBM System Storage TS2260 Half-High LTO 6 SAS Tape Drive, 3580S6E
- IBM System Storage TS2350 LTO 5 SAS Tape Drive, 3580S5X
- IBM System Storage TS2360 LTO 6 SAS Tape Drive, 3580S6X
- IBM System Storage TS2900 Tape Autoloader with these items:
 - Half-High LTO 4 SAS Tape Drive, 3572S4R
 - Half-High LTO 5 SAS Tape Drive, 3572S5R
 - Half-High LTO 6 SAS Tape Drive, 3572S6R
- IBM System Storage TS3100 Tape Library 35732UL (driveless) with these items:
 - Ultrium 3 Half-High SAS Drive V2
 - Ultrium 4 Half-High SAS Drive V2
 - Ultrium 4 SAS Drive
 - Ultrium 5 Half-High SAS Drive
 - Ultrium 5 SAS Drive
 - Ultrium 6 Half-High SAS Drive
- IBM System Storage TS3200 Tape Library 35734UL (driveless) with these items:
 - Ultrium 3 Half-High SAS Drive V2
 - Ultrium 4 Half-High SAS Drive V2
 - Ultrium 4 SAS Drive
 - Ultrium 5 Half-High SAS Drive
 - Ultrium 5 SAS Drive
 - Ultrium 6 Half-High SAS Drive

The following external cables are supported:

- IBM 3 m SAS Cable, part number 39R6531
- IBM 1 m SAS Cable, part number 39R6529

Note: The adapter does not support internal disk drives.

Supported operating systems

The adapter supports 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
- 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 10 with Xen for AMD64/EM64T
- 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
- VMware ESX 4.1
- VMware ESXi 4.1
- VMware vSphere 5.0 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.5 (ESXi)

See the IBM ServerProven Web site for the latest information about the specific versions and service packs supported: <http://ibm.com/servers/eserver/serverproven/compat/us/>. Click **System x servers**, then **Disk controllers** to see the support matrix. Click the check mark that is associated with the System x server in question to see details about the operating system support.

Operating environment

The IBM 6Gb SAS Host Bus Adapter is supported in the following environment:

Temperature:

- 10 to 35 °C (50 to 95 °F) at an altitude of 0 to 914 m (0 to 3,000 ft)
- 10 to 32 °C (50 to 90 °F) at an altitude of 0 to 2,100 m (0 to 7,000 ft)

Humidity: 20% to 80%, non-condensing

Maximum altitude: 2,100 m (7,000 ft)

Related publications

For more information refer to the following documents:

- IBM Announcement Letter
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS110-013>
- IBM 6Gb SAS Host Bus Adapter Installation and User's Guide
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5084780>
- IBM ServeRAID Adapter Quick Reference
<http://www.redbooks.ibm.com/abstracts/tips0054.html?Open>
- IBM System x Configuration and Options Guide:
<http://ibm.com/systems/xbc/cog/>
- IBM System Storage Interoperation Center (SSIC)
<http://www.ibm.com/systems/support/storage/config/ssic>

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