

## ServeRAID H1110 SAS/SATA Controller

### Product Guide (withdrawn product)

The ServeRAID H1110 SAS/SATA Controller for System x offers a low-cost enterprise-grade RAID solution for internal HDDs and integrates popular SAS technology into an organization's storage infrastructure. Ideal for supporting four HDDs in a space-constrained server configuration, the ServeRAID H1110 comes in a standard PCIe form factor, enabling it to support a wide array of servers. It features a PCI Express x4 Gen 2 host interface, MD0 form factor, and robust hardware RAID processing engine based on the LSI SAS2004 RAID on Chip (ROC) controller. Figure 1 shows the adapter.

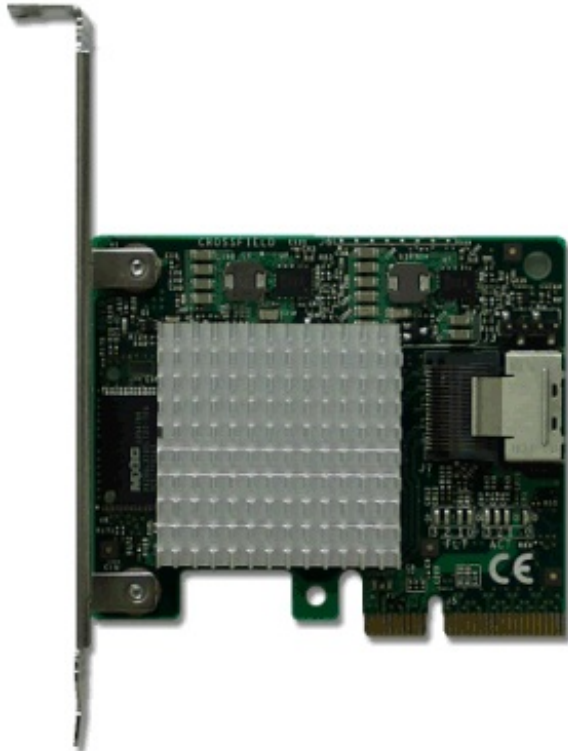


Figure 1. ServeRAID H1110 SAS/SATA Controller for System x

### 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.

Hardware RAID offers better reliability, performance, and lower CPU utilization in server environments compared to software RAID implementations.

## Part number information

Table 1. Ordering part number and feature code

Description	Part number	Feature code
ServeRAID H1110 SAS/SATA Controller	81Y4492	A1XL

The ServeRAID H1110 option part number includes the following items:

- One ServeRAID H1110 adapter card (without brackets)
- One full-height (3U) bracket
- One low-profile (2U) bracket
- Documentation package

## Specifications

The ServeRAID H1110 adapter has the following specifications:

- Four internal 6 Gbps SAS/SATA ports
- One x4 mini-SAS internal connector (SFF-8087)
- 6 Gbps throughput per port
- Based on LSI SAS2004 6 Gbps RAID on Chip (ROC) controller
- x4 PCI Express 2.0 host interface
- Supports RAID 0, 1, 1E, and 10
- Connects to up to four SAS or SATA drives
- SAS and SATA drives are supported, but the mixing of SAS and SATA in the same integrated volume is not supported
- Supports simple-swap SATA and hot-swap SAS and SATA drives
- Supports up to two integrated volumes
- Supports up to two global hot-spare drives
- Supports drive sizes greater than 2 TB for RAID 0, 1E, and 10 (not RAID 1)
- Fixed stripe size of 64 KB
- Compliant with Disk Data Format (DDF)
- S.M.A.R.T. support

## Features

The ServeRAID H1110 adapter has the following features:

- **Resynchronization with Concurrent Host I/O Operation:**  
Host's I/O operations are not halted when the volume is re-synchronized because of a hot-spare activation or disk replacement, thereby avoiding downtime.
- **Online Capacity Expansion for Integrated Mirroring (RAID 1) volumes:**  
Online Capacity Expansion (OCE) allows the capacity of a two-drive integrated mirroring volume (RAID 1) to be expanded by replacing existing physical disks with larger capacity disks without disrupting volume operations.
- **Write Journaling for data integrity:**  
Write Journaling is used to verify that the disks in a mirrored volume are synchronized. It automatically synchronizes potentially inconsistent data after the unexpected loss of electrical power.
- **Background initialization for quick volume setup:**  
Background initialization allows host I/O operations on a newly created mirrored volume without waiting for the process of copying data from the primary disks to secondary disks to complete.
- **Consistency Check for background data integrity:**  
Consistency Check verifies that all data on the primary and secondary disks in a mirrored volume are identical.
- **Global Hot Spare support:**  
A hot spare rebuilds data from a failed drive in an integrated volume that supports data redundancy. ServeRAID provides the ability to define a physical disk as a global hot spare to replace a failed drive. A global hot spare allows any physical drive to be designated as a hot spare for all configured integrated volumes.

## Server support

The ServeRAID H1110 adapter is supported in the servers that are listed in the following tables.

### Support for System x and dense servers with Xeon E5/E7 v4 and E3 v5 processors

Table 2. Support for System x and dense servers with Xeon E5/E7 v4 and E3 v5 processors

Part number	Description	x3250 M6 (3943)	x3250 M6 (3633)	x3550 M5 (8869)	x3650 M5 (8871)	x3850 X6/x3950 X6 (6241, E7 v4)	nx360 M5 (5465, E5-2600 v4)	sd350 (5493)
81Y4492	ServeRAID H1110 SAS/SATA Controller for IBM System x	N	N	N	N	N	N	N

## Support for servers with Intel Xeon v3 processors

Table 3. 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)
81Y4492	ServeRAID H1110 SAS/SATA Controller	Y	Y	N	N	N	N	N

## Support for servers with Intel Xeon v2 processors

Table 4. 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)
81Y4492	ServeRAID H1110 SAS/SATA Controller	N	Y	Y	Y	N	Y	Y	N	N	N	N	Y	Y

## Support for servers with Intel Xeon v1 processors

Table 5. 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)
81Y4492	ServeRAID H1110 SAS/SATA Controller	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y

See ServerProven for the latest information about the System x servers that support each adapter:  
<http://www.lenovo.com/us/en/serverproven/xseries/controllers/matrix.shtml>

## Drive support

The ServeRAID H1110 adapter supports both simple-swap and hot-swap disk drives. The card supports SAS and SATA disk drives. SATA solid state drives (SSDs) are also supported; however, this adapter is not performance optimized for SSDs. The maximum quantity of drives supported by ServeRAID H1110 is four.

The following tables list currently available disk drives that can be used with the ServeRAID H1110 adapter if they are supported in a particular server.

- Table 5: [1.8-inch SSDs](#)
- Table 6: [2.5-inch hot-swap 6 Gb SAS/SATA HDDs](#)
- Table 7: [2.5-inch hot-swap 6 Gb SAS/SATA SSDs](#)
- Table 8: [3.5-inch hot-swap 6 Gb SAS/SATA HDDs](#)
- Table 9: [3.5-inch hot-swap 6 Gb SAS/SATA SSDs](#)
- Table 10: [3.5-inch simple-swap 6 Gb SAS/SATA HDDs](#)
- Table 11: [2.5-inch internal 6 Gb HDDs for NeXtScale](#)

Table 6. 1.8-inch SSDs

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>1.8-inch hot-swap SSDs - 6 Gb SATA - Enterprise Mainstream (3-5 DWPD)</b>																
00AJ335	120GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
00AJ340	240GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
00AJ345	480GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
00AJ350	800GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
<b>1.8-inch hot-swap SSDs - 6 Gb SATA - Enterprise Entry (&lt;3 DWPD)</b>																
00AJ040*	S3500 80GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	N
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N
00AJ455*	S3500 800GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N

Table 7. 2.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>2.5-inch hot-swap HDDs - 6 Gb SAS 10K</b>																
90Y8877	300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
90Y8872	600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
81Y9650	900GB 10K 6Gbps SAS 2.5" SFF HS HDD	Y	Y	Y	Y	Y	N	N	N	Y	N	N	Y	N	Y	Y
00AD075	1.2TB 10K 6Gbps SAS 2.5" G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
00NA441	1.8TB 10K 6Gbps SAS 2.5" G2HS 512e HDD	N	N	N	N	Y	N	N	N	Y	N	N	Y	N	N	Y
<b>2.5-inch hot-swap HDDs - 6 Gb SAS 15K</b>																
90Y8926	146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
81Y9670	300GB 15K 6Gbps SAS 2.5" G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
00AJ300	600GB 15K 6Gbps SAS 2.5" G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	N	Y
<b>2.5-inch hot-swap HDDs - 6 Gb NL SAS</b>																
90Y8953	500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
81Y9690	1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
<b>2.5-inch hot-swap HDDs - 6 Gb NL SATA</b>																
81Y9726	500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y
81Y9730	1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	Y

Table 8. 2.5-inch hot-swap 6 Gb SAS/SATA SSDs

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>2.5-inch hot-swap SSDs - 6 Gb SAS - Enterprise Performance (10+ DWPD)</b>																
49Y6129	200GB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
49Y6134	400GB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
49Y6139	800GB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
49Y6195	1.6TB SAS 2.5" MLC HS Enterprise SSD	Y	Y	Y	Y	Y	N	N	N	Y	N	N	Y	N	N	N
<b>2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Mainstream (3-5 DWPD)</b>																
00AJ355	120GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
00AJ360	240GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
00AJ365	480GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
00AJ370	800GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	Y
<b>2.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Entry (&lt;3 DWPD)</b>																
00AJ000	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
00AJ005	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
00AJ010	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
00AJ015	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	Y	N
00YC365	120GB Enterprise Entry SATA HS 2.5" SSD	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	Y
00YC370	240GB Enterprise Entry SATA HS 2.5" SSD	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	Y
00YC375	480GB Enterprise Entry SATA HS 2.5" SSD	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	Y
00YC380	960GB Enterprise Entry SATA HS 2.5" SSD	N	N	N	N	Y	N	N	N	Y	N	N	N	N	N	Y

Table 9. 3.5-inch hot-swap 6 Gb SAS/SATA HDDs

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>3.5-inch hot-swap HDDs - 6 Gb SAS 15K</b>																
49Y6092	300GB 15K 6Gbps SAS 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
49Y6102	600GB 15K 6Gbps SAS 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
<b>3.5-inch hot-swap HDDs - 6 Gb NL SAS</b>																
90Y8567	1TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N
90Y8572	2TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N
49Y6210	4TB 7.2K 6Gbps NL SAS 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	N	N
00ML213	6TB 7.2K 6Gbps NL SAS 3.5" G2HS 512e HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
<b>3.5-inch hot-swap HDDs - 6 Gb NL SATA</b>																
81Y9786	500GB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
81Y9790	1TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
81Y9794	2TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
00FN113	2TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
00FN143	4TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y
00FN173	6TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	N	N	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y



Table 10. 3.5-inch hot-swap 6 Gb SAS/SATA SSDs

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>3.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Performance (10+ DDP)</b>																
00YC340	Intel S3710 400GB Enterprise Performance SATA HS 3.5" SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y
00YC345	Intel S3710 800GB Enterprise Performance SATA HS 3.5" SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y
<b>3.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Mainstream (3-5 DDP)</b>																
00AJ435	120GB SATA 3.5" MLC HS Enterprise Value SSD	N	N	N	N	N	Y	N	N	N	Y	Y	N	N	N	N
00AJ445	480GB SATA 3.5" MLC HS Enterprise Value SSD	N	N	N	N	N	Y	N	N	N	Y	Y	N	N	N	N
<b>3.5-inch hot-swap SSDs - 6 Gb SATA - Enterprise Entry (&lt;3 DDP)</b>																
00WG770	Intel S3510 120GB Enterprise Entry SATA HS 3.5" SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
00WG775	Intel S3510 240GB Enterprise Entry SATA HS 3.5" SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
00WG780	Intel S3510 480GB Enterprise Entry SATA HS 3.5" SSD	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N
00YC420	960GB Enterprise Entry SATA HS 3.5" SSD	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	Y

Table 11. 3.5-inch simple-swap 6 Gb SAS/SATA HDDs

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>3.5-inch simple-swap HDDs - 6 Gb NL SATA</b>																
81Y9802	500GB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y
81Y9806	1TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y
81Y9810	2TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y

Table 12. 2.5-inch internal 6 Gb HDDs for NeXtScale

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	dx360 M4 (7912, E5-2600)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	nx360 M4 (5455)	x3100 M5 (5457)	x3250 M5 (5458)
<b>2.5-inch NeXtScale HDDs - 6 Gb SATA HDDs</b>																
00AD035	500GB 7.2K 6Gbps SATA 2.5" HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N
00AD040	1TB 7.2K 6Gbps SATA 2.5" HDD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N

## Operating environment

The ServeRAID H1110 adapter has the following dimensions:

- Height: 17 mm (0.67 in)
- Width: 64 mm (2.54 in)
- Depth: 79 mm (3.12 in)
- Weight: 47 g (0.11 lb)

The ServeRAID H1110 adapter has the following shipping dimensions:

- Height: 51 mm (2.0 in)
- Width: 143 mm (5.63 in)
- Depth: 238 mm (9.38 in)
- Weight: 222 g (0.49 lb)

The ServeRAID H1110 adapter is supported in the following environment:

- Temperature:
  - 10 to 35° C (50 to 95° F) at 0 to 914m (0 to 3,000 ft)
  - 10 to 32° C (50 to 90° F) at 914 to 2133 m (3,000 to 7,000 ft)
- Relative humidity: 20% to 80% (noncondensing)
- Maximum altitude: 2,133 m (7,000 ft)

## Regulatory Compliance

The ServeRAID H1110 conforms to the following international standards:

- EN55022
- EN55024
- EN60950 / CE
- EN 61000-3-2
- EN 61000-3-3
- IEC 950 CB Scheme
- FCC Class A
- UL 1950
- CSA C22.2 950-95
- VCCI
- NZ AS3548 / C-tick
- RRL for MIC (KCC)
- BSMI
- UL 94-/V

## Warranty

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

## Operating system support

The adapter supports the following operating systems:

**Tip:** This table is automatically generated based on data from [Lenovo ServerProven](#). Note that older servers are not listed in the table. Consult ServerProven for details of those servers.

Table 13. Operating system support for ServeRAID H1110 SAS/SATA Controller, 81Y4492

	x3100 M5 (5457)	x3250 M5 (5458)
<b>Operating systems</b>		
Microsoft Windows Server 2008 R2	Y	Y
Microsoft Windows Server 2012	Y	Y
Microsoft Windows Server 2012 R2	Y	Y
Red Hat Enterprise Linux 5 Server Edition	Y	Y
Red Hat Enterprise Linux 5 Server with Xen x64 Edition	N	Y
Red Hat Enterprise Linux 5 Server x64 Edition	Y	Y
Red Hat Enterprise Linux 6 Server Edition	Y	Y
Red Hat Enterprise Linux 6 Server x64 Edition	N	Y
SUSE Linux Enterprise Server 11 for AMD64/EM64T	Y	Y
SUSE Linux Enterprise Server 11 for x86	Y	Y
SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T	N	Y
VMware vSphere 5.1 (ESXi)	Y	Y
VMware vSphere Hypervisor (ESXi) 5.5	Y	Y

## Related publications

For more information, refer to the following documents:

- System x HBA products home page:  
<https://www3.lenovo.com/us/en/raid-controllers-and-storage-adapters/12gb-s-sas-sata-host-bus-adapters/c/sas-sata-hba>
- H1110 Installation and User's Guide  
<https://support.lenovo.com/docs/UM103405>
- System x Configuration and Options Guide:  
<https://support.lenovo.com/us/en/documents/SCOD-3ZVQ5W>

## Related product families

Product families related to this document are the following:

- [RAID Adapters](#)

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