

ServeRAID M5115 SAS/SATA Controller for Flex System

Product Guide (withdrawn product)

The ServeRAID M5115 SAS/SATA Controller is a high-performance offering for Flex System™ compute nodes. It enables a high-performance RAID solution composed of combinations of SAS or SATA drives or high-throughput solid-state drives (SSDs). The offering is designed around a base RAID adapter with a set of upgrades that are rich with features, designed to minimize parts-on-the-floor, optimized for storage performance, and consistent with existing industry-leading ServeRAID products.

The ServeRAID M5115 SAS/SATA Controller for Flex System is capable of delivering several focused solutions depending on business needs, offering two-drive HDD connectivity or support for up to eight 1.8-inch SSDs or combinations of HDDs and SSDs. Software upgrades include SSD performance features or an extra layer of redundancy with RAID 6. These solutions are realized by pairing M5115 with one or more available hardware kits and Lenovo Features-on-Demand (FoD) license upgrades.

The following figure shows the ServeRAID M5115 controller.



Figure 1. ServeRAID M5115 SAS/SATA Controller

Did you know?

The ServeRAID M5115 SAS/SATA controller is optimized for high-performance, internal data storage that integrates a dual-core chip architecture, DDR3 1333 MHz cache memory, and PCIe 3.0 host interface. Upgrade features, such as support for RAID 6/60, performance optimization, and caching with SSDs, no longer require a hardware key, as they are implemented through FoD software licenses.

Part number information

The following table provides the ordering part numbers and feature codes.

Withdrawn: The adapter and all associated upgrades are withdrawn from marketing.

Table 1. Ordering part numbers and feature codes

Part number	Feature code	Description
90Y4390	A2XW	ServeRAID M5115 SAS/SATA Controller for Flex System
Hardware enablement kits - Flex System x220 Compute Node		
90Y4424	A35L	ServeRAID M5100 Series Enablement Kit for Flex System x220
90Y4425	A35M	ServeRAID M5100 Series Flex System Flash Kit for x220
90Y4426	A35N	ServeRAID M5100 Series SSD Expansion Kit for Flex System x220
Hardware enablement kits - Flex System x240 Compute Node		
90Y4342	A2XX	ServeRAID M5100 Series Enablement Kit for Flex System x240
90Y4341*	A2XY*	ServeRAID M5100 Series Flex System Flash Kit for x240*
47C8808	A47D	ServeRAID M5100 Series Flex System Flash Kit v2 for x240
90Y4391	A2XZ	ServeRAID M5100 Series SSD Expansion Kit for Flex System x240
Hardware enablement kits - Flex System x440 Compute Node		
46C9030	A3DS	ServeRAID M5100 Series Enablement Kit for Flex System x440
46C9031	A3DT	ServeRAID M5100 Series Flex System Flash Kit for x440
47C8809	A47E	ServeRAID M5100 Series Flex System Flash Kit v2 for x440
46C9032	A3DU	ServeRAID M5100 Series SSD Expansion Kit for Flex System x440
Feature on demand licenses (for all three compute nodes)		
90Y4410	A2Y1	ServeRAID M5100 Series RAID 6 Upgrade for Flex System
90Y4412	A2Y2	ServeRAID M5100 Series Performance Upgrade for Flex System
90Y4447	A36G	ServeRAID M5100 Series SSD Caching Enabler for Flex System

* Not supported in x240 Compute Nodes with Intel Xeon E5-2600 v2 processors

Specifications

The ServeRAID M5115 controller has the following specifications:

- Eight internal 6 Gbps SAS/SATA ports
- PCI Express 3.0 x8 host interface
- 6 Gbps throughput per port
- 800 MHz dual-core IBM PowerPC® processor with LSI SAS2208 6 Gbps RAID on Chip (ROC) controller
- Onboard 1 GB data cache (DDR3 running at 1333 MHz)
- Support for RAID levels 0, 1, 10, 5, 50 standard; support for RAID 6 and 60 with optional upgrade using 90Y4411
- Optional flash backup (MegaRAID CacheVault technology) as part of the Enablement Kit 90Y4342
- Support for SAS and SATA HDDs and SSDs
- Support for intermixing SAS and SATA HDDs and SSDs; mixing different types of drives in the same array (drive group) is not recommended
- Support for self-encrypting drives (SEDs) with MegaRAID SafeStore

- Optional support for SSD performance acceleration with MegaRAID FastPath and SSD caching with MegaRAID CacheCade Pro 2.0 (90Y4447)
- Support for up to 64 virtual drives, up to 128 drive groups, up to 16 virtual drives per one drive group, and up to 32 physical drives per one drive group
- Support for logical unit number (LUN) sizes up to 64 TB
- Configurable stripe size up to 1 MB
- Compliant with Disk Data Format (DDF) configuration on disk (COD)
- S.M.A.R.T. support
- MegaRAID Storage Manager management software

Optional add-ons to the ServeRAID M5115 controller are RAID 6 support, SSD performance accelerator, and SSD caching enabler. The feature upgrades are as listed in the following table. These are all FoD activations.

Table 2. Supported upgrade features

Part number	Feature code	Description
90Y4410	A2Y1	ServeRAID M5100 Series RAID 6 Upgrade for Flex System
90Y4412	A2Y2	ServeRAID M5100 Series Performance Upgrade for Flex System (MegaRAID FastPath)
90Y4447	A36G	ServeRAID M5100 Series SSD Caching Enabler for Flex System (MegaRAID CacheCade Pro 2.0)

These features are described as follows:

- RAID 6 Upgrade (90Y4410)
Adds support for RAID 6 and RAID 60. This is a Feature on Demand license.
- Performance Upgrade (90Y4412)
The Performance Upgrade for Flex System (implemented using the LSI MegaRAID FastPath software) provides high-performance I/O acceleration for SSD-based virtual drives by using an extremely low-latency I/O path to increase the maximum I/O per second (IOPS) capability of the controller. This feature boosts the performance of applications with a highly random data storage access pattern, such as transactional databases. Part number 90Y4412 is a Feature on Demand license.
- SSD Caching Enabler for traditional hard drives (90Y4447)
The SSD Caching Enabler for Flex System (implemented using the LSI MegaRAID CacheCade Pro 2.0) is designed to accelerate the performance of hard disk drive (HDD) arrays with only an incremental investment in solid-state drive (SSD) technology. The feature enables the SSDs to be configured as a dedicated cache to help maximize the I/O performance for transaction-intensive applications, such as databases and web serving. The feature tracks data storage access patterns and identifies the most frequently accessed data. The hot data is then automatically stored on the SSDs that are assigned as a dedicated cache pool on the ServeRAID controller. Part number 90Y4447 is a Feature on Demand license. This feature requires at least one SSD drive be installed.

Note: Not all SSDs support the SSD Caching Enabler (CacheCade) feature. See <https://support.lenovo.com/us/en/documents/MIGR-5094754> for details. Supported SSDs are listed in Table 5 and Table 7.

Supported servers

The following table lists the Flex System compute nodes that support the ServeRAID M5115 SAS/SATA Controller.

Table 3. Supported servers

Description	Part number	x220 (7906)	x222 (7916)	x240 (8737)	x240 (7162)	x240 M5 (9532)	x440 (7917)	x440 (7167)	x280 / x480 / x880 X6 (7903)	x280 / x480 / x880 X6 (7196)
ServeRAID M5115 SAS/SATA Controller	90Y4390	Y	N	Y	N	N	Y	Y	N	N

See ServerProven® at the following web address for the latest information about the expansion cards that are supported by each blade server type:

<http://www.lenovo.com/us/en/serverproven/flexsystem.shtml>

Supported configurations

With the ServeRAID M5115, the compute node can support contain up to eight 1.8-inch solid-state drives. The M5115 attaches to the I/O adapter 1 connector and can be attached even if the Compute Node Fabric Connector is installed (used to route the embedded Ethernet controller to chassis bays 1 and 2). The ServeRAID M5115 cannot be installed if an adapter is installed in I/O adapter slot 1.

The following figure shows where the ServeRAID M5115 is installed in an Flex System compute node (x240 is shown as an example).

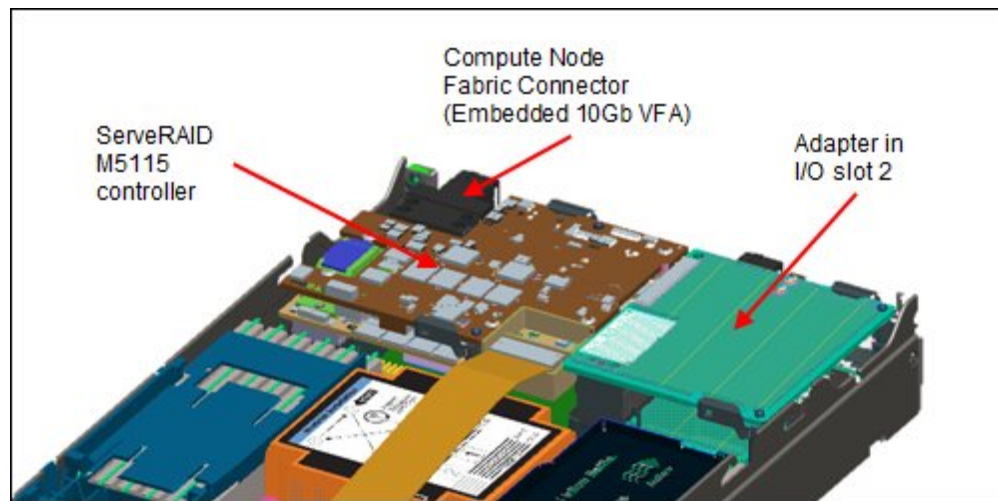


Figure 2. ServeRAID M5115 installed in the x240 Compute Node

The ServeRAID M5115 supports combinations of 2.5-inch drives and 1.8-inch solid state drives:

- Up to two 2.5-inch drives only
- Up to four 1.8-inch drives only
- Up to two 2.5-inch drives, plus up to four 1.8-inch solid state drives
- Up to eight 1.8-inch solid state drives

The ServeRAID M5115 provides an advanced RAID controller supporting RAID 0, 1, 10, 5, 50, and, optionally, 6 and 60. It includes 1 GB of cache, which can be backed up to flash memory when attached to the supercapacitor included with the optional ServeRAID M5100 Series Enablement Kit (90Y4342).

At least one hardware kit is required with the ServeRAID M5115 controller, and there are three hardware kits that are supported that enable specific drive support:

- **ServeRAID M5100 Series Enablement Kit for Flex System x240** (90Y4342) or **Flex System x220** (90Y4424) or **Flex System x440** (46C9030) enables support for up to two 2.5-inch HDDs or SSDs in the hot-swap bays in the front of the server. It includes a CacheVault unit, which enables MegaRAID CacheVault flash cache protection. This enablement kit replaces the standard two-bay backplane (which is attached through the planar to an onboard controller) with a new backplane that attaches to an included flex cable to the M5115 controller. It also includes an air baffle, which also serves as an attachment for the CacheVault unit.

MegaRAID CacheVault flash cache protection uses NAND flash memory powered by a supercapacitor to protect data stored in the controller cache. This module eliminates the need for a lithium-ion battery commonly used to protect DRAM cache memory on PCI RAID controllers. To avoid the possibility of data loss or corruption during a power or server failure, CacheVault technology transfers the contents of the DRAM cache to NAND flash memory using power from the supercapacitor. After the power is restored to the RAID controller, the saved data is transferred from the NAND flash back to the DRAM cache, which can then be flushed to disk.

Tip: The Enablement Kit is only required if 2.5-inch drives are used. If you plan to install four or eight 1.8-inch SSDs only, then this kit is not required.

- **ServeRAID M5100 Series Flex System Flash Kit for x240** (90Y4341, 47C8808) or **Flex System x220** (90Y4425) or **Flex System x440** (46C9031, 47C8809) enables support for up to four 1.8-inch SSDs. This kit replaces the standard two-bay backplane with a four-bay SSD backplane that attaches to an included flex cable to the M5115 controller. Because only SSDs are supported, a CacheVault unit is not required, and therefore this kit does not have a supercap.

The v2 Flash Kits (47C8808 for x240, 47C8809 for x440) provide support for the latest high-performance SSDs that the older Flash Kits (90Y4341 for x240, 46C9031 for x440) do not support.

- **ServeRAID M5100 Series SSD Expansion Kit for Flex System x240** (90Y4391) or **Flex System x220** (90Y4426) or **Flex System x440** (46C9032) enables support for up to four internal 1.8-inch SSDs. This kit includes two air baffles which can attach two 1.8-inch SSD attachment locations and Flex cables for attachment to up to four 1.8-inch SSDs.

The following table shows the kits required for each combination of drives. For example, if you plan to install eight 1.8-inch SSDs, then you need the M5115 controller, the Flash kit, and the SSD Expansion kit.

Table 4. ServeRAID M5115 hardware kits

Desired drive support			Components required			
Maximum number of 2.5-inch drives	Maximum number of 1.8-inch SSDs		ServeRAID M5115	Enablement Kits	Flash Kits	SSD Expansion Kits
2	0	=>	Required	Required		
0	4 (front)	=>	Required		Required	
2	4 (internal)	=>	Required	Required		Required
0	8 (both)	=>	Required		Required	Required

The following figure shows how the ServeRAID M5115 and the Enablement Kit are installed in the x240 to support two 2.5-inch drives with MegaRAID CacheVault flash cache protection (row 1 of the preceding table). The configuration is the same for the x220.

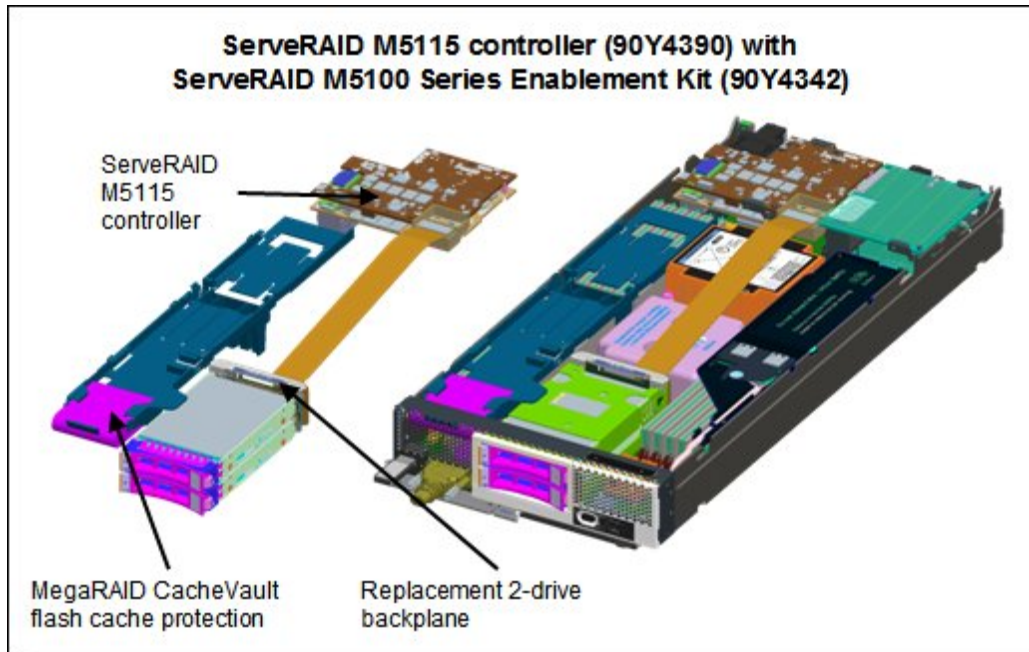


Figure 3. The ServeRAID M5115 and the Enablement Kit installed (x240)

The following figure shows how the ServeRAID M5115 and Flash and SSD Expansion Kits are installed in the x240 to support eight 1.8-inch solid-state drives (row 4 of the preceding table). The configuration is the same for the x220.

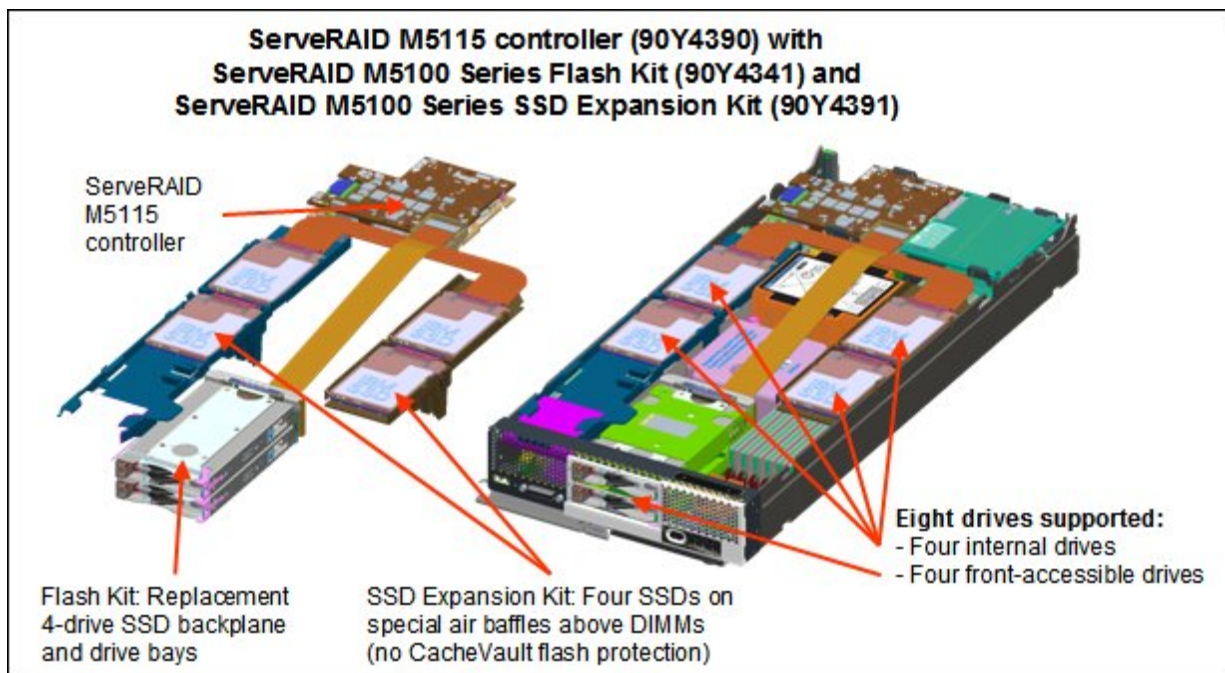


Figure 4. ServeRAID M5115 with Flash Kit and SSD Expansion Kits installed (x240)

The eight SSDs are installed in the following locations:

- Four in the front of the system in place of the two 2.5-inch drive bays
- Two in a tray above one the memory banks for processor 1
- Two in a tray above one the memory banks for processor 2

The following figure shows how the ServeRAID M5115 and Flash and SSD Expansion Kits are installed in the x440 to support eight 1.8-inch solid-state drives.

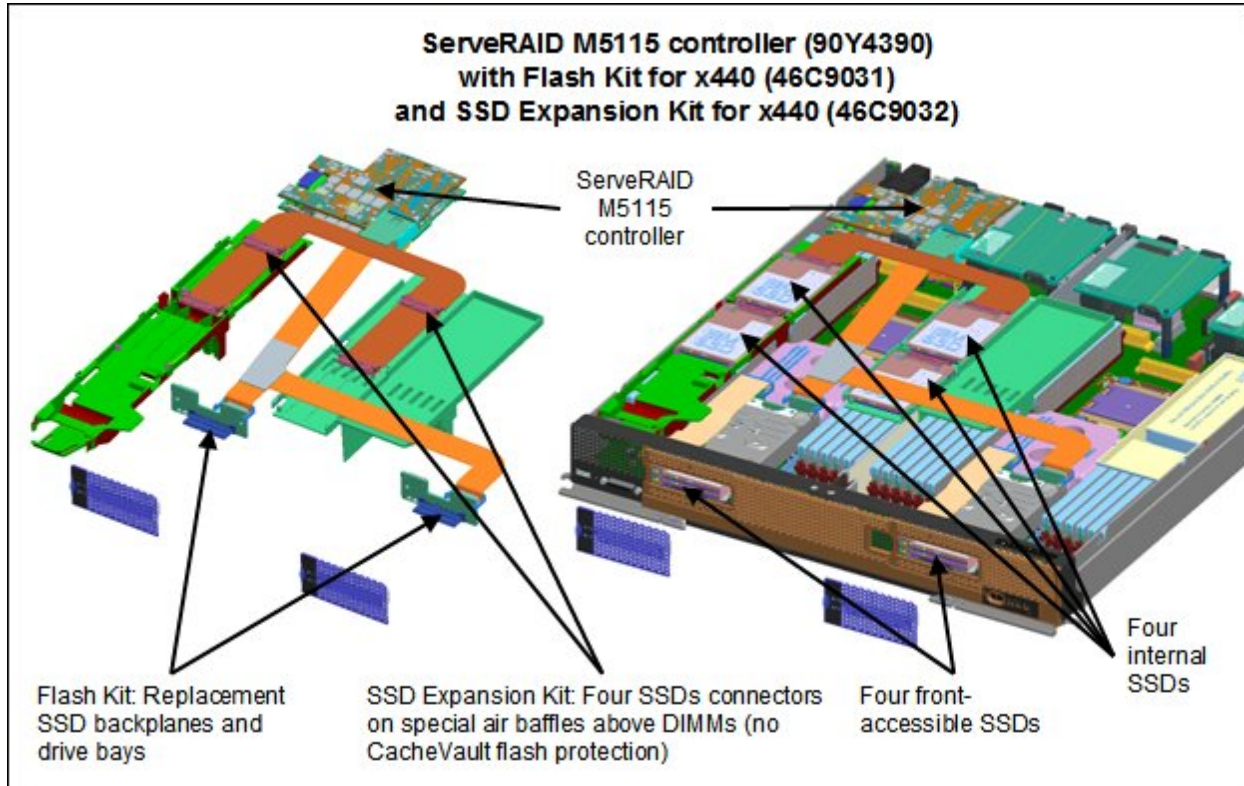


Figure 5. ServeRAID M5115 with Flash and SSD Expansion Kits installed (x440)

Components shipped with each option

The ServeRAID M5115 SAS/SATA Controller for Flex System part number includes the following items:

- ServeRAID M5115 controller
- Documentation package

The ServeRAID M5100 Series Enablement Kit part number (90Y4342 or 90Y4424 or 46C9030) includes the following items:

- Air baffle to replace the standard air baffle (over the memory DIMMs) to hold the Power Module
- 2.5-inch backplane for the installation of up to two 2.5-inch SAS HDDs, SATA HDDs, or SSDs
- Power Module
- Power Module cable
- Flex cable
- Documentation package

The ServeRAID M5100 Series Flex System Flash Kit part number includes the following items:

- 1.8-inch backplane for the installation of up to four SSDs
- Flex cable
- Drive caddies for four SSDs
- Bezel
- Documentation package

The ServeRAID M5100 Series SSD Expansion Kit part number (90Y4391 or 90Y4426 or 46C9032) includes the following items:

- Two air baffles where up to four SSDs are mounted
- Flex cable
- Documentation package

The following part numbers come in form of a flyer with the M5100 Series upgrade activation key and instructions:

- ServeRAID M5100 Series RAID 6 Upgrade for Flex System (90Y4410)
- ServeRAID M5100 Series Performance Upgrade for Flex System (90Y4412)
- ServeRAID M5100 Series SSD Caching Enabler for Flex System (90Y4447)

Supported HDDs and SSDs

The 1.8-inch solid-state drives supported with the Flash Kit and SSD Expansion Kit are listed in the following table. The table also lists if the drives support SSD Caching Enabler (CacheCade), part number 90Y4447.

Table 5. Supported 1.8-inch solid-state drives

Part number	Feature code	Description	Supports CacheCade	x220	x222	x240	x440
Enterprise SSDs							
43W7726	5428	50GB SATA 1.8" MLC SSD	No	Yes	No	Yes	Yes
43W7746	5420	200GB SATA 1.8" MLC SSD	Yes	Yes	No	Yes	Yes
49Y6124	A3AP	400GB SATA 1.8" MLC Enterprise SSD	Yes	Yes	No	Yes*	Yes**
49Y6119	A3AN	200GB SATA 1.8" MLC Enterprise SSD	Yes	Yes	Yes	Yes*	Yes**
00W1120	A3HQ	100GB SATA 1.8" MLC Enterprise SSD	Yes	Yes	Yes	Yes*	Yes**
41Y8366	A4FS	S3700 200GB SATA 1.8" MLC Enterprise SSD	Yes	Yes	No	Yes*	Yes**
41Y8371	A4FT	S3700 400GB SATA 1.8" MLC Enterprise SSD	Yes	Yes	No	Yes*	Yes**
Enterprise Value SSDs							
49Y5834	A3AQ	64GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	No	Yes*	Yes**
49Y5993	A3AR	512GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	No	Yes*	Yes**
00W1222	A3TG	128GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	No	Yes*	Yes**
00W1227	A3TH	256GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	No	Yes*	Yes**
00AJ040	A4KV	S3500 80GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	Yes	Yes*	Yes**
00AJ045	A4KW	S3500 240GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	Yes	Yes*	Yes**
00AJ050	A4KX	S3500 400GB SATA 1.8" MLC Enterprise Value SSD	No	Yes	Yes	Yes*	Yes**
00AJ455	A58U	S3500 800GB SATA 1.8" MLC Enterprise Value SSD	No	No	Yes	Yes*	Yes**

* Requires ServeRAID M5100 Series Flex System Flash Kit v2 for x240 (47C8808). Flash Kit 90Y4341 is not supported.

** Requires ServeRAID M5100 Series Flex System Flash Kit v2 for x440 (47C8809). Flash Kit 46C9031 is not supported.

The 2.5-inch drive bays in the Enablement Kit (90Y4342 or 90Y4424 or 46C9030) support SAS or SATA hard disk drives (HDDs) or SATA solid state drives (SSDs). The following table lists the supported 2.5-inch HDD options.

Table 6. 2.5-inch HDDs supported with the M5115 controller

Part number	Feature code	Description	x220	x240	x440
Self-encrypting drives (SEDs)*					
44W2264	5413	300GB 10K 6Gbps SAS 2.5" SFF Slim-HS SED	N	Y	Y
90Y8944	A2ZK	146GB 15K 6Gbps SAS 2.5" SFF G2HS SED	Y	Y	Y
44W2294	5412	146GB 15K 6Gbps SAS 2.5" SFF Slim-HS SED	N	Y	N
90Y8913	A2XF	300GB 10K 6Gbps SAS 2.5" SFF G2HS SED	Y	Y	Y
90Y8908	A3EF	600GB 10K 6Gbps SAS 2.5" SFF G2HS SED	Y	Y	Y
81Y9662	A3EG	900GB 10K 6Gbps SAS 2.5" SFF G2HS SED	Y	Y	Y
00AD085	A48T	1.2TB 10K 6Gbps SAS 2.5" G2HS SED	Y	Y	Y
10K SAS hard disk drives					
90Y8877	A2XC	300GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y
42D0637	5599	300GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	Y	Y	N
90Y8872	A2XD	600GB 10K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y
49Y2003	5433	600GB 10K 6Gbps SAS 2.5" SFF Slim-HS HDD	Y	Y	N
81Y9650	A282	900GB 10K 6Gbps SAS 2.5" SFF HS HDD	Y	Y	Y
00AD075	A48S	1.2TB 10K 6Gbps SAS 2.5" G2HS HDD	Y	Y	Y
15K SAS hard disk drives					
90Y8926	A2XB	146GB 15K 6Gbps SAS 2.5" SFF G2HS HDD	Y	Y	Y
42D0677	5536	146GB 15K 6Gbps SAS 2.5" SFF Slim-HS HDD	Y	Y	N
81Y9670	A283	300GB 15K 6Gbps SAS 2.5" SFF HS HDD	Y	Y	Y
NL SAS hard disk drives					
81Y9690	A1P3	1TB 7.2K 6Gbps NL SAS 2.5" SFF HS HDD	Y	Y	Y
90Y8953	A2XE	500GB 7.2K 6Gbps NL SAS 2.5" SFF G2HS HDD	Y	Y	Y
42D0707	5409	500GB 7200 6Gbps NL SAS 2.5" SFF HS HDD	Y	Y	N
NL SATA hard disk drives					
81Y9730	A1AV	1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y
81Y9722	A1NX	250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y
81Y9726	A1NZ	500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y

* Supports self-encrypting drive (SED) technology. For more information, see Self-Encrypting Drives for System x at <http://lenovopress.com/tips0761>.

The following table lists the supported 2.5-inch SSD options. The table also lists if the drives support SSD Caching Enabler (CacheCade), part number 90Y4447.

Table 7. 2.5-inch SSDs supported with the M5115 controller

Solid-state drives - Enterprise							
49Y6129	A3EW	200GB SAS 2.5" MLC HS Enterprise SSD	Yes	Y	Y	Y	Y
49Y6134	A3EY	400GB SAS 2.5" MLC HS Enterprise SSD	Yes	Y	Y	Y	Y
49Y6139	A3F0	800GB SAS 2.5" MLC HS Enterprise SSD	Yes	Y	Y	Y	Y
00W1125	A3HR	100GB SATA 2.5" MLC HS Enterprise SSD	Yes	Y	Y	Y	Y
43W7718	A2FN	200GB SATA 2.5" MLC HS SSD	Yes	Y	Y	Y	Y
Solid-state drives - Enterprise value							
49Y5839	A3AS	64GB SATA 2.5" MLC HS Enterprise Value SSD	No	Y	Y	Y	Y
49Y5844	A3AU	512GB SATA 2.5" MLC HS Enterprise Value SSD	No	Y	Y	Y	Y
90Y8648	A2U4	128GB SATA 2.5" MLC HS Enterprise Value SSD	No	Y	Y	Y	Y
90Y8643	A2U3	256GB SATA 2.5" MLC HS Enterprise Value SSD	No	Y	Y	Y	Y

Supported operating systems

The ServeRAID M5115 SAS/SATA Controller support the following operating systems:

- 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
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- 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
- Red Hat Enterprise Linux 7
- 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 5.0 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.5 (ESXi)

See the Operating System Interoperability Guide for the latest information about the specific versions and service levels supported and any other prerequisites:

<http://lenovopress.com/osig>

Physical specifications

The ServeRAID M5115 SAS/SATA Controller has the following physical specifications:

Dimensions (approximate):

- Height: 38 mm (1.5 in.)
- Width: 96 mm (3.75 in.)
- Depth: 120 mm (4.75 in.)
- Weight: 142 g (0.36 lb)

Shipping dimensions (approximate):

- Height: 128 mm (5.0 in.)
- Width: 128 mm (5.0 in.)
- Depth: 128 mm (5.0 in.)
- Weight: 908 g (2.0 lb)

Operating environment

The ServeRAID M5115 SAS/SATA Controller is supported in the following environment:

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

Warranty

The adapter has a 1-year limited warranty. When installed on an Flex System Compute Node, the adapter assumes the system's base warranty and any warranty upgrades.

Agency approvals

The adapter conforms to the following standards:

- EN55022
- EN55024
- EN60950 / CE
- EN 61000-3-2
- EN 61000-3-3
- IEC 950 CB Scheme
- FCC Part 15 Class A, and Class B
- UL 1950
- CSA C22.2 950-95
- VCCI
- NZ AS3548 / C-tick
- RRL for MIC (KCC)
- BSMI
- UL 94-/V

Related publications

For more information, see the following documents:

- Flex System Information Center (User's Guides for servers and options)
<http://publib.boulder.ibm.com/infocenter/flexsys/information>
- *Flex System Interoperability Guide*
<http://lenovopress.com/fsig>
- *Flex System Products and Technology by Lenovo, SG24-8255*
<http://lenovopress.com/sg248255>
- System x and Cluster Solutions configurator (x-config)
<https://lesc.lenovo.com/products/hardware/configurator/worldwide/bhui/asit/>
- ServeRAID software matrix:
<http://www.ibm.com/support/entry/portal/docdisplay?Indocid=SERV-RAID>
- ServerProven for Flex System
<http://www.lenovo.com/us/en/serverproven/flexsystem.shtml>

Related product families

Product families related to this document are the following:

- [Blade Storage Adapters](#)

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This document, TIPS0884, was created or updated on February 9, 2018.

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