

S3500 SATA MLC Enterprise Value SSDs for System x Product Guide (withdrawn product)

The S3500 SATA MLC Enterprise Value solid-state drives (SSDs) for System x® employ MLC NAND flash memory and a 6 Gbps SATA interface to provide an affordable solution with industry leading performance. They are targeted at workloads that require high I/O performance in random read operations, including content delivery, streaming video, and big data analytics.

Figure 1 shows the S3500 SATA 2.5-inch MLC Enterprise Value SSD.



Figure 1. S3500 SATA 2.5-inch MLC Enterprise Value SSD

Did you know?

Unlike client solid-state drives, S3500 SATA MLC Enterprise Value SSDs are designed to operate 24 hours per day, 7 days per week (24x7), and they are equipped with a robust suite of enterprise features, including SMART attributes, hot-plug support, high reliability, enhanced ruggedness, thermal throttling, and enhanced power loss protection. They also leverage full end-to-end data path protection to protect the integrity of the data that is transferred to and from the NAND flash memory or stored in the memory.

S3500 SATA MLC Enterprise Value SSDs provide outstanding IOPS/watt and cost/IOPS for read-intensive enterprise applications like web serving, content delivery, streaming video, and big data.

Rigorous testing of S3500 SATA MLC Enterprise Value SSDs by Lenovo through the ServerProven® program assures a high degree of confidence in storage subsystem compatibility and reliability. Providing an additional peace of mind, these drives are covered under Lenovo warranty.

Part number information

Table 1 lists the information for ordering part numbers and feature codes.

Table 1. Ordering part numbers and feature codes

Description	Part number	Feature code
1.8-inch SSDs (hot-swap or non-hot-swap)*		
S3500 80GB SATA 1.8" MLC Enterprise Value SSD for System x	00AJ040	A4KV
S3500 240GB SATA 1.8" MLC Enterprise Value SSD for System x	00AJ045	A4KW
S3500 400GB SATA 1.8" MLC Enterprise Value SSD for System x	00AJ050	A4KX
S3500 800GB SATA 1.8" MLC Enterprise Value SSD for System x	00AJ455	A58U
2.5-inch hot-swap SSDs		
S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD for System x	00AJ000	A4KM
S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD for System x	00AJ005	A4KN
S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD for System x	00AJ010	A4KP
S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD for System x	00AJ015	A4KQ
S3500 1.6TB SATA 2.5" MLC HS Enterprise Value SSD for System x	00FN268	A5U4
S3500 1.6TB SATA 2.5" MLC G3HS Enterprise Value SSD for System x	00FN278	A5U6
2.5-inch non-hot-swap SSDs		
S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD for System x	00AJ020	A4KR
S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD for System x	00AJ025	A4KS
S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD for System x	00AJ030	A4KT
S3500 480GB SATA 2.5" MLC Enterprise Value SSD for Flex System x222	00AJ330	A51U
S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD for System x	00AJ035	A4KU
S3500 1.6TB SATA 2.5" MLC SS Enterprise Value SSD for System x	00FN273	A5U5
S3500 1.6TB SATA 2.5" MLC Enterprise Value SSD for NeXtScale System	00FN293	A5U8
3.5-inch hot-swap SSDs		
S3500 120GB SATA 3.5" MLC HS Enterprise Value SSD for System x	00AJ460	A56C
S3500 240GB SATA 3.5" MLC HS Enterprise Value SSD for System x	00AJ465	A56D
S3500 480GB SATA 3.5" MLC HS Enterprise Value SSD for System x	00AJ470	A56E
S3500 800GB SATA 3.5" MLC HS Enterprise Value SSD for System x	00AJ475	A56F
S3500 1.6TB SATA 3.5" MLC HS Enterprise Value SSD for System x	00FN288	A5U7

* This SSD can be a hot-swap or non-hot-swap drive depending on the server in which it is installed.

The part numbers include the following items:

- One SSD without a drive tray (1.8-inch SSDs) or one SSD with a 2.5-inch hot-swap or simple-swap drive tray (2.5-inch SSDs) or one SSD with a 3.5-inch hot-swap drive tray (3.5-inch SSDs)
- Support Flyer for SSD
- Warranty Flyer
- *Important Notices* document

Features

The S3500 SATA MLC Enterprise Value SSDs have the following features:

- Industry standard 1.8-inch, 2.5-inch, or 3.5-inch form factors
- Support for a conventional 2.5-inch drive bay (2.5-inch SSDs), 3.5-inch drive bay (3.5-inch SSDs), eXFlash drive bay (1.8-inch SSDs), or SSD drive bay (1.8-inch SSDs) on selected System x, iDataPlex®, BladeCenter®, and Flex System™ servers
- Cost-effective Intel 20 nm MLC NAND flash memory
- SATA MLC solid-state drive with high read performance and consistently low latencies to fulfill client needs in the enterprise space
- High reliability and enhanced ruggedness
- Energy saving, with as little as 5 W power consumption per drive
- Absence of moving parts to reduce potential failure points in the server
- S.M.A.R.T. support
- Advanced Encrypting Standard (AES) 256-bit encryption
- Full end-to-end data path protection
- Thermal throttling to extend the life of the drive
- Enhanced power loss data protection

Enterprise Value SSDs and Enterprise SSDs have similar read IOPS performance, but the key differences between them is their endurance (or life expectancy) and write IOPS performance. SSDs have a huge but finite number of program/erase (P/E) cycles, which affect how long they can perform write operations and thus their life expectancy. Enterprise Value SSDs have a better cost per read IOPS ratio but lower endurance and write IOPS performance compared to Enterprise SSDs. SSD write endurance is typically measured by the number of program/erase cycles that the drive can incur over its lifetime, which is listed as TBW in the device specification.

The TBW value that is assigned to a solid-state device is the total bytes of written data that a drive can be guaranteed to complete. Reaching this limit does not cause the drive to immediately fail; the TBW simply denotes the maximum number of writes that can be guaranteed. A solid-state device does not fail upon reaching the specified TBW, but at some point after surpassing the TBW value (and based on manufacturing variance margins), the drive reaches the end-of-life point, at which time the drive goes into read-only mode. Because of such behavior, careful planning must be done to use SSDs in the application environments to ensure that the TBW of the drive is not exceeded before the required life expectancy.

For example, for the S3500 240GB SATA 2.5-inch MLC Enterprise Value SSD to last in five years inside of the 140 TB of TBW, the drive write workload must be limited to no more than 77 GB of writes per day. For the device to last in three years, the drive write workload must be limited to no more than 128 GB of writes per day.

Technical specifications

Table 2 presents technical specifications for the S3500 SATA MLC Enterprise Value SSDs.

Table 2. S3500 SATA MLC Enterprise Value SSD technical specifications (Part 1)

Feature	80 GB	120 GB			240 GB				400 GB
Part number	00AJ040	00AJ000	00AJ020	00AJ460	00AJ045	00AJ005	00AJ025	00AJ465	00AJ050
Hot-swap drive	Yes§	Yes	No	Yes	Yes§	Yes	No	Yes	Yes§
Form factor	1.8-inch	2.5-inch	2.5-inch	3.5-inch	1.8-inch	2.5-inch	2.5-inch	3.5-inch	1.8-inch
Interface	6 Gbps SATA	6 Gbps SATA			6 Gbps SATA				6 Gbps SATA
Capacity	80 GB	120 GB			240 GB				400 GB
Endurance	45 TB TBW	70 TB TBW			140 TB TBW				225 TB TBW
Data reliability	< 1 in 10 ¹⁷ bits read	< 1 in 10 ¹⁷ bits read			< 1 in 10 ¹⁷ bits read				< 1 in 10 ¹⁷ bits read
MTBF, hours	2,000,000	2,000,000			2,000,000				2,000,000
IOPS reads*	70,000	75,000			75,000				75,000
IOPS writes*	7,000	4,600			7,500				11,000
Sequential read rate†	340 MBps	445 MBps			500 MBps				500 MBps
Sequential write rate†	100 MBps	135 MBps			260 MBps				380 MBps
Read latency	50 ?s	50 ?s			50 ?s				50 ?s
Write latency	65 ?s	65 ?s			65 ?s				65 ?s
Shock, operating	1000 g, 0.5 ms	1000 g, 0.5 ms			1000 g, 0.5 ms				1000 g, 0.5 ms
Vibration, operating	2.17 g rms 5-700 Hz	2.17 g rms 5-700 Hz			2.17 g rms 5-700 Hz				2.17 g rms 5-700 Hz
Vibration, non-operating	3.13 g rms 5-800 Hz	3.13 g rms 5-800 Hz			3.13 g rms 5-800 Hz				3.13 g rms 5-800 Hz
Typical power	5 W	5 W			5 W				5 W

§ This SSD can be a hot-swap or non-hot-swap drive depending on the server in which it is installed.

* 4 KB block transfers

† 128 KB block transfers

Table 2. S3500 SATA MLC Enterprise Value SSD technical specifications (Part 2)

Feature	480 GB			800 GB				1.6 TB		
Part number	00AJ010	00AJ030	00AJ470	00AJ455	00AJ015	00AJ035	00AJ475	00FN268 00FN278	00FN273 00FN293	00FN288
Hot-swap drive	Yes	No	Yes	Yes§	Yes	No	Yes	Yes	No	Yes
Form factor	2.5-inch	2.5-inch	3.5-inch	1.8-inch	2.5-inch	2.5-inch	3.5-inch	2.5-inch	2.5-inch	3.5-inch
Interface	6 Gbps SATA			6 Gbps SATA				6 Gbps SATA		
Capacity	480 GB			800 GB				1.6 TB		
Endurance	275 TB TBW			450 TB TBW				880 TB TBW		
Data reliability	< 1 in 10 ¹⁷ bits read			< 1 in 10 ¹⁷ bits read				< 1 in 10 ¹⁷ bits read		
MTBF, hours	2,000,000			2,000,000				2,000,000		
IOPS reads*	75,000			75,000				65,000		
IOPS writes*	11,000			11,500				14,600		
Sequential read rate†	500 MBps			500 MBps				500 MBps		
Sequential write rate†	410 MBps			450 MBps				460 MBps		
Read latency	50 ?s			50 ?s				50 ?s		
Write latency	65 ?s			65 ?s				65 ?s		
Shock, operating	1000 g, 0.5 ms			1000 g, 0.5 ms				1000 g, 0.5 ms		
Vibration, operating	2.17 g rms 5-700 Hz			2.17 g rms 5-700 Hz				2.17 g rms 5-700 Hz		
Vibration, non-operating	3.13 g rms 5-800 Hz			3.13 g rms 5-800 Hz				3.13 g rms 5-800 Hz		
Typical power	5 W			5 W				5 W		

§ This SSD can be a hot-swap or non-hot-swap drive depending on the server in which it is installed.

* 4 KB block transfers

† 128 KB block transfers

Supported servers

The S3500 SATA MLC Enterprise Value SSDs and supported RAID controllers can be installed in the System x, iDataPlex, and NeXtScale servers that are listed in Table 3 and the BladeCenter and Flex System servers that are listed in Table 4.

Table 4. System x, iDataPlex, and NeXtScale compatibility (Part 1)

Part number	Description	x3100 M5 (5457)	x3250 M5 (5458)	x3550 M5 (5463)	x3650 M5 (5462)	nx360 M5 (5465)
1.8" SSDs						
00AJ040	S3500 80GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y
00AJ045	S3500 240GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	N
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y
00AJ455	S3500 800GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	N
2.5" SSDs (hot-swap)						
00AJ000	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00AJ005	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00AJ010	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00AJ015	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	N	N	N	N
00FN268	S3500 1.6TB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	N	N	N
00FN278	S3500 1.6TB SATA 2.5" MLC G3HS Enterprise Value SSD for System x	N	N	N	N	N
2.5" SSDs (non-hot-swap)						
00AJ020	S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N
00AJ025	S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N
00AJ030	S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N
00AJ330	S3500 480GB SATA 2.5" MLC Enterprise Value SSD for Flex System x222	N	N	N	N	N
00AJ035	S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N
00FN273	S3500 1.6TB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	N
00FN293	S3500 1.6TB SATA 2.5" MLC Enterprise Value SSD for NeXtScale System	N	N	N	N	N
3.5" SSDs (hot-swap)						
00AJ460	S3500 120GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00AJ465	S3500 240GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00AJ470	S3500 480GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00AJ475	S3500 800GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N
00FN288	S3500 1.6TB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N

Table 3. System x, iDataPlex, and NeXtScale compatibility (Part 2)

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)	x3850 X6/x3950 X6 (3837)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
1.8" SSDs												
00AJ040	S3500 80GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	N	Y	Y	N	Y	N
00AJ045	S3500 240GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	N	Y	Y	N	N	N
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	N	Y	Y	N	N	N
00AJ455	S3500 800GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	N	Y	Y	Y	N	N
2.5" SSDs (hot-swap)												
00AJ000	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	N	Y	N	Y	Y	N	N	N
00AJ005	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	N	Y	N	Y	Y	N	N	N
00AJ010	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	N	Y	N	Y	Y	N	N	N
00AJ015	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	N	Y	N	Y	Y	N	N	N
00FN268	S3500 1.6TB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	N	Y	N	Y	Y	N	N	N
00FN278	S3500 1.6TB SATA 2.5" MLC G3HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N
2.5" SSDs (non-hot-swap)												
00AJ020	S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	N	N	Y	N
00AJ025	S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	N	N	Y	N
00AJ030	S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	N	N	Y	N
00AJ330	S3500 480GB SATA 2.5" MLC Enterprise Value SSD for Flex System x222	N	N	N	N	N	N	N	N	N	N	N
00AJ035	S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	N	N	Y	N

Part number	Description	Compatibility Matrix										
		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)	x3850 X6/x3950 X6 (3837)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
00FN273	S3500 1.6TB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	N	N	Y	N
00FN293	S3500 1.6TB SATA 2.5" MLC Enterprise Value SSD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	Y
3.5" SSDs (hot-swap)												
00AJ460	S3500 120GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	Y	N	N	N	N	N	N	N
00AJ465	S3500 240GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	Y	N	N	N	N	N	N	N
00AJ470	S3500 480GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	Y	N	N	N	N	N	N	N
00AJ475	S3500 800GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	Y	N	N	N	N	N	N	N
00FN288	S3500 1.6TB SATA 3.5" MLC HS Enterprise Value SSD for System x	Y	N	N	Y	N	Y	N	N	N	N	N

Table 3. System x, iDataPlex, and NeXtScale compatibility (Part 3)

Part number	Description	Compatibility Matrix										
		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/x3950 X5 (7143)
1.8" SSDs												
00AJ040	S3500 80GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	N	N	N	Y	Y	Y	Y
00AJ045	S3500 240GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	N	N	N	Y	Y	Y	N

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/x3950 X5 (7143)	dx360 M4 (7912, E5-2600)
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	N	N	N	Y	Y	Y	Y	N
00AJ455	S3500 800GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	N	N	N	Y	Y	Y	Y	N
2.5" SSDs (hot-swap)													
00AJ000	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N
00AJ005	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N
00AJ010	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N
00AJ015	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N
00FN268	S3500 1.6TB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N
00FN278	S3500 1.6TB SATA 2.5" MLC G3HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
2.5" SSDs (non-hot-swap)													
00AJ020	S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	Y	N	N	N	Y
00AJ025	S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	Y	N	N	N	Y
00AJ030	S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	Y	N	N	N	Y
00AJ330	S3500 480GB SATA 2.5" MLC Enterprise Value SSD for Flex System x222	N	N	N	N	N	N	N	N	N	N	N	N
00AJ035	S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	Y	N	N	N	Y
00FN273	S3500 1.6TB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	Y	N	N	Y	N	N	Y	N	N	N	Y
00FN293	S3500 1.6TB SATA 2.5" MLC Enterprise Value SSD for NeXtScale System	N	N	N	N	N	N	N	N	N	N	N	N
3.5" SSDs (hot-swap)													
00AJ460	S3500 120GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	Y	N	N	N	N	N

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/x3950 X5 (7143)	dx360 M4 (7912, E5-2600)
00AJ465	S3500 240GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	Y	N	N	N	N	N
00AJ470	S3500 480GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	Y	N	N	N	N	N
00AJ475	S3500 800GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	Y	N	N	N	N	N
00FN288	S3500 1.6TB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	Y	N	N	Y	N	N	N	N	N

Table 4. BladeCenter and Flex System compatibility

Part number	Description	HS22 (7870)	HS23 (7875, E5-2600)	HS23 (7875, E5-2600 v2)	HS23E (8038)	HX5 (7873)	x220 (7906)	x222 (7916)	x240 (8737, E5-2600)	x240 (8737, E5-2600 v2)	x240 M5 (9532)	x440 (7917)	x280/480/880 X6 (7903)
1.8" SSDs													
00AJ040	S3500 80GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N
00AJ045	S3500 240GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	N
00AJ455	S3500 800GB SATA 1.8" MLC Enterprise Value SSD for System x	N	N	N	N	Y	N	Y	Y	Y	Y	Y	N
2.5" SSDs (hot-swap)													
00AJ000	S3500 120GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	N
00AJ005	S3500 240GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	N

Part number	Description	HS22 (7870)	HS23 (7875, E5-2600)	HS23 (7875, E5-2600 v2)	HS23E (8038)	HX5 (7873)	x220 (7906)	x222 (7916)	x240 (8737, E5-2600)	x240 (8737, E5-2600 v2)	x240 M5 (9532)	x440 (7917)	x280/480/880 X6 (7903)
00AJ010	S3500 480GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	N
00AJ015	S3500 800GB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	N
00FN268	S3500 1.6TB SATA 2.5" MLC HS Enterprise Value SSD for System x	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	N
00FN278	S3500 1.6TB SATA 2.5" MLC G3HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	Y
2.5" SSDs (non-hot-swap)													
00AJ020	S3500 120GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00AJ030	S3500 480GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00AJ025	S3500 240GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00AJ330	S3500 480GB SATA 2.5" MLC Enterprise Value SSD for Flex System x222	N	N	N	N	N	N	Y	N	N	N	N	N
00AJ035	S3500 800GB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00FN273	S3500 1.6TB SATA 2.5" MLC SS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00FN293	S3500 1.6TB SATA 2.5" MLC Enterprise Value SSD for NeXTScale System	N	N	N	N	N	N	N	N	N	N	N	N
3.5" SSDs (hot-swap)													
00AJ460	S3500 120GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00AJ465	S3500 240GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00AJ470	S3500 480GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00AJ475	S3500 800GB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N
00FN288	S3500 1.6TB SATA 3.5" MLC HS Enterprise Value SSD for System x	N	N	N	N	N	N	N	N	N	N	N	N

For the latest compatibility information for System x, BladeCenter, iDataPlex, and Flex System servers, see the ServerProven® website: <http://ibm.com/servers/eserver/serverproven/compat/us/>

Supported storage controllers

The S3500 SATA MLC Enterprise Value SSDs require a supported disk controller. Tables 5 and 6 list the System x, BladeCenter, and Flex System controllers that support the SSDs that are installed in a supported server.

SSD Caching support: The S3500 SATA MLC Enterprise Value SSDs do not support MegaRAID CacheCade feature of the supported ServeRAID controllers.

Table 5. Controllers for System x, iDataPlex, and NeXtScale servers supported with the SSDs (Part 1)

Part number	Description	x3100 M5 (5457)	x3250 M5 (5458)	x3550 M5 (5463)	x3650 M5 (5462)	nx360 M5 (5465)
Onboard	ServeRAID M5210e SAS/SATA Controller	N	N	N	N	N
46C9110	ServeRAID M5210 SAS/SATA Controller	N	N	N	N	Y
Onboard	ServeRAID M5110e SAS/SATA Controller	N	N	N	N	N
81Y4481	ServeRAID M5110 SAS/SATA Controller	Y	Y	N	N	N
81Y4448	ServeRAID M1115 SAS/SATA Controller	Y	Y	N	N	N
81Y4492	ServeRAID H1110 SAS/SATA Controller	Y	Y	N	N	N
90Y4304	ServeRAID M5016 SAS/SATA Controller	N	N	N	N	N
46M0829	ServeRAID M5015 SAS/SATA Controller	N	N	N	N	N
46M0916	ServeRAID M5014 SAS/SATA Controller	N	N	N	N	N
46M0831	ServeRAID M1015 SAS/SATA Controller	N	N	N	N	N
Onboard	ServeRAID C105	N	N	N	N	N
Onboard	ServeRAID C100	N	N	N	N	N
46M0912	6Gb Performance Optimized HBA	N	N	N	N	N
46C8988	N2115 SAS/SATA HBA	Y	Y	N	N	N
47C8675	N2215 SAS/SATA HBA	N	N	N	N	Y

Table 5. Controllers for System x, iDataPlex, and NeXtScale servers supported with the SSDs (Part 2)

Part number	Product 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)	x3850 X6/x3950 X6 (3837)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
Onboard	ServeRAID M5210e SAS/SATA Controller	N	N	N	N	N	N	Y	Y	N	N	N
46C9110	ServeRAID M5210 SAS/SATA Controller	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N
Onboard	ServeRAID M5110e SAS/SATA Controller	N	N	N	N	Y	N	N	N	N	N	N
81Y4481	ServeRAID M5110 SAS/SATA Controller	Y	Y	Y	Y	Y	Y	N	N	N	Y	N
81Y4448	ServeRAID M1115 SAS/SATA Controller	Y	Y	Y	Y	N	Y	N	N	N	Y	Y
81Y4492	ServeRAID H1110 SAS/SATA Controller	N	Y	Y	Y	N	Y	Y	N	N	Y	Y
90Y4304	ServeRAID M5016 SAS/SATA Controller	N	N	N	N	N	N	N	N	N	N	N
46M0829	ServeRAID M5015 SAS/SATA Controller	N	N	N	N	N	N	N	N	N	N	N
46M0916	ServeRAID M5014 SAS/SATA Controller	N	N	N	N	N	N	N	N	N	N	N
46M0831	ServeRAID M1015 SAS/SATA Controller	N	N	N	N	N	N	N	N	N	N	N
Onboard	ServeRAID C105	N	N	N	N	N	N	N	N	N	N	N
Onboard	ServeRAID C100	N	N	N	N	N	N	N	N	N	N	Y
46M0912	6Gb Performance Optimized HBA	Y	Y	Y	Y	Y	N	N	N	N	Y	N
46C8988	N2115 SAS/SATA HBA	Y	N	Y	Y	Y	Y	N	N	N	N	Y
47C8675	N2215 SAS/SATA HBA	Y	N	Y	N	Y	Y	Y	Y	Y	N	N

Table 5. Controllers for System x, iDataPlex, and NeXtScale servers supported with the SSDs (Part 3)

Part number	Product 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/x3950 X5 (7143)	dx360 M4 (7912, E5-2600)
Onboard	ServeRAID M5210e SAS/SATA Controller	N	N	N	N	N	N	N	N	N	N	N	N
46C9110	ServeRAID M5210 SAS/SATA Controller	N	N	N	Y	N	Y	N	Y	N	N	N	Y
Onboard	ServeRAID M5110e SAS/SATA Controller	N	N	N	N	N	N	N	Y	N	Y	N	N
81Y4481	ServeRAID M5110 SAS/SATA Controller	N	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y
81Y4448	ServeRAID M1115 SAS/SATA Controller	N	N	Y	Y	Y	Y	Y	N	N	Y	N	Y
81Y4492	ServeRAID H1110 SAS/SATA Controller	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y
90Y4304	ServeRAID M5016 SAS/SATA Controller	N	N	N	N	N	N	N	N	Y	N	Y	N
46M0829	ServeRAID M5015 SAS/SATA Controller	Y	Y	N	N	N	N	N	N	Y	N	Y	N
46M0916	ServeRAID M5014 SAS/SATA Controller	Y	Y	N	N	N	N	N	N	Y	N	Y	N
46M0831	ServeRAID M1015 SAS/SATA Controller	Y	Y	N	N	N	N	N	N	N	N	N	N
Onboard	ServeRAID C105	N	N	N	N	N	N	N	N	N	N	N	N
Onboard	ServeRAID C100	N	N	N	N	N	N	N	N	N	N	N	N
46M0912	6Gb Performance Optimized HBA	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46C8988	N2115 SAS/SATA HBA	N	N	N	Y	N	Y	Y	Y	N	Y	Y	N
47C8675	N2215 SAS/SATA HBA	N	N	N	Y	N	Y	N	Y	N	N	N	N

Table 6. BladeCenter and Flex System compatibility

Part number	Description	HS22 (7870)	HS23 (7875, E5-2600)	HS23 (7875, E5-2600 v2)	HS23E (8038)	HX5 (7873)	x220 (7906)	x222 (7916)	x240 (8737, E5-2600)	x240 (8737, E5-2600 v2)	x240 M5 (9532)	x440 (7917)	x280/480/880 X6 (7903)
90Y4390	ServeRAID M5115 SAS/SATA Controller	N	N	N	N	N	Y	N	Y	Y	N	Y	N
Onboard	ServeRAID M1210e SAS/SATA Controller	N	N	N	N	N	N	N	N	N	N	N	Y
90Y4750	ServeRAID H1135 Controller	N	N	N	Y	N	Y	N	N	N	N	N	N
Onboard	ServeRAID C105	N	N	N	N	N	N	N	N	N	N	N	N
Onboard	Integrated LSI SAS3004	N	N	N	N	N	N	N	N	N	Y	N	N
Onboard	Integrated LSI SAS2004	N	Y	Y	N	N	N	N	Y	Y	N	Y	N
Onboard	Integrated SATA Controller (Intel C600 chipset)	N	N	N	N	N	N	Y	N	N	N	N	N
46C7167	ServeRAID-MR10ie (C10v) Controller	N	N	N	N	N	N	N	N	N	N	N	N
Onboard	Integrated LSI SAS1064e	Y	N	N	N	N	N	N	N	N	N	N	N
46M6908	SSD Expansion Card for BladeCenter HX5	N	N	N	N	Y	N	N	N	N	N	N	N

For the latest information about the adapters that are supported by each System x server type, see the ServerProven website: <http://ibm.com/servers/eserver/serverproven/compat/us/>

Supported operating systems

SSDs operate transparently to users, storage systems, applications, databases, and operating systems. The controllers that support SSDs are supported by the following operating systems:

- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2012
- 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 2008 Foundation
- Microsoft Windows Server 2008 HPC Edition
- Microsoft Windows HPC Server 2008
- Microsoft Windows Small Business Server 2008 Premium Edition
- Microsoft Windows Small Business Server 2008 Standard Edition
- Microsoft Windows Essential Business Server 2008 Premium Edition
- Microsoft Windows Essential Business Server 2008 Standard Edition
- Red Hat Enterprise Linux 6 Server Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server Edition with Xen
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- Red Hat Enterprise Linux 4 AS for AMD64/EM64T
- Red Hat Enterprise Linux 4 AS 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 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 10 with Xen for x86
- VMware vSphere 5.5 (ESXi)
- VMware vSphere 5.1 (ESXi)
- VMware vSphere 5.0 (ESXi)
- VMware ESX 4.1
- VMware ESXi 4.1
- VMware ESX 4.0
- VMware ESXi 4.0

For the latest information about the specific supported operating system versions and service packs, see ServerProven:

<http://www.lenovo.com/us/en/serverproven/xseries/controllers/matrix.shtml>

Select the check mark box that is associated with the Controller and server combination in question to see the details about operating system support.

Warranty

The S3500 SATA MLC Enterprise Value SSDs carry a one-year, customer-replaceable unit (CRU) limited warranty. When the SSDs are installed in a supported server, these drives assume the system's base warranty and any warranty upgrades.

Solid-state memory cells have an intrinsic, finite number of program/erase cycles that each cell can incur. As a result, each solid state device has a maximum amount of program/erase cycles to which it can be subjected. The warranty for Lenovo solid-state drives (SSDs) is limited to drives that have not reached the maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the SSD product. A drive that reaches this limit may fail to operate according to its Specifications.

Physical specifications

The S3500 SATA 1.8-inch MLC Enterprise Value SSDs have the following physical specifications.

Dimensions and weight (approximate):

- Height: 5 mm (0.2 in.)
- Width: 54 mm (2.1 in.)
- Depth: 79 mm (3.1 in.)
- Weight: 49 g (0.1 lb)

Shipping dimensions and weight (approximate):

- Height: 32 mm (1.3 in.)
- Width: 226 mm (8.9 in.)
- Depth: 150 mm (5.9 in.)
- Weight: 399 g (0.9 lb)

The S3500 SATA 2.5-inch MLC Enterprise Value SSDs have the following physical specifications.

Dimensions and weight (approximate):

- Height: 7 mm (0.3 in.)
- Width: 70 mm (2.8 in.)
- Depth: 100 mm (4.0 in.)
- Weight: 70 g (0.15 lb)

Shipping dimensions and weight (approximate):

- Height: 63 mm (2.5 in.)
- Width: 174 mm (6.9 in.)
- Depth: 133 mm (5.2 in.)
- Weight: 434 g (1.0 lb)

The S3500 SATA 3.5-inch MLC Enterprise Value SSDs have the following physical specifications.

Dimensions and weight (approximate, without a 3.5-inch tray):

- Height: 7 mm (0.3 in.)
- Width: 70 mm (2.8 in.)
- Depth: 100 mm (4.0 in.)
- Weight: 70 g (0.2 lb)

Shipping dimensions and weight (approximate):

- Height: 95 mm (3.7 in.)
- Width: 257 mm (10.1 in.)
- Depth: 193 mm (7.6 in.)
- Weight: 484 g (1.1 lb)

Operating environment

The S3500 SATA MLC Enterprise Value SSDs are supported in the following environment:

- Temperature: 0 - 70 °C (32 - 158°F)
- Relative humidity: 8 - 85% (noncondensing)
- Maximum altitude: 3,050 m (10,000 ft)

Agency approvals

The S3500 SATA MLC Enterprise Value SSDs conform to the following regulations:

- UL
- CB
- CE Mark
- C-Tick Mark
- Taiwan (BSMI Certification)
- KCC
- VCCI

Related publications

For more information, see the following documents:

- US Announcement Letter for the S3500 1.6 TB SATA MLC Enterprise Value SSDs
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-137>
- US Announcement Letter for the S3500 SATA 3.5-inch MLC Enterprise Value SSDs
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-019>
- US Announcement Letter for the S3500 SATA 1.8-inch and 2.5-inch MLC Enterprise Value SSDs
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS113-137>
- ServeRAID Adapter Quick Reference
<http://lenovopress.com/tips0054>
- *System x Configuration and Options Guide*
<http://www.ibm.com/systems/xbc/cog/>
- ServerProven
<http://ibm.com/servers/eserver/serverproven/compat/us/>

Related product families

Product families related to this document are the following:

- [Drives](#)

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