



# IBM 128 GB and 256 GB 1.8-inch solid-state drives offer an affordable, reliable, performance-driven solution for read-intensive applications using a 6 GBps SATA interface and MLC NAND technology

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## At a glance

The 128 GB and 256 GB solid-state drives (SSDs) provide affordable, reliable, and performance-driven solid-state storage solutions for read-intensive applications. These drives present an opportunity for you to simplify your local storage infrastructure to help maintain overall maintenance and cooling cost, while considering remote storage solutions for end-to-end data availability.

Benefits include:

- 1.8-inch standard form factor that allows the SSD to fit into a conventional disk-drive bay or a unique eXFlash backplane
- 128 and 256 GB capacities to accommodate loading applications along with OS booting
- Cost-effective multi-level cell (MLC) NAND technology with high read performance
- Energy saving with as little as 2.5-3.5 watt power consumption per drive
- Enterprise data protection to ensure NAND integrity
- Rigorous testing through the ServerProven® program, which instills confidence that your storage subsystem is compatible and will function reliably
- One-year limited warranty, or system warranty

## Overview

The new IBM® 128 GB and 256 GB solid-state drives employ cost-effective MLC NAND technology to bring an affordable, but performance-driven solution for read-intensive applications. The new SSDs will be available as 1.8-inch options.

These SSDs use a single-chip controller with a SATA interface on the system side and n-channels of Micron NAND flash internally. Packaged in an HDD replacement enclosure, these SSDs integrate easily in existing storage infrastructures. They are targeted at applications that require high I/O performance in random read operations in applications such as web or video serving or content delivery.

Providing that additional peace of mind, your 128 and 256 GB MLC SSDs are covered under IBM warranty. These drives carry a one-year limited warranty, or when installed in a System x® server these drives assume your system's base

warranty. Solid-state devices do have finite write or P/E cycles which are listed as Total Bytes Written (TBW). See [Limitations](#) and the device specifications for details.

Features and functions:

128 GB and 256 GB SATA MLC SSDs for IBM System x

- 1.8-inch industry-standard form factor that fits into a conventional disk-drive bay in the server
- Fits into unique eXFlash backplane on several systems to provide higher performance, capacity, and easy serviceability
- Utilizes industry-leading 25nm MLC
- Cost-effective MLC NAND technology with high read performance
- MLC SATA drive specifically designed to fulfill client needs in the enterprise value space
- Leverages enterprise data path protection
- Energy saving with as little as 2.5-3.5 watt power consumption per drive
- Absence of moving parts, which reduces potential failure points in the server

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### **Warranty**

128 GB and 256 GB SATA 1.8-inch MLC SSDs offer a one-year limited warranty<sup>1</sup>.

<sup>1</sup> For information on the IBM Statement of Limited Warranty, visit

[http://www.ibm.com/servers/support/machine\\_warranties/](http://www.ibm.com/servers/support/machine_warranties/)

Alternatively, this information is available through your IBM representative or reseller. Copies are available upon request.

With respect to on-site service, IBM sends a technician after attempting to diagnose and resolve the problem remotely.

### **Feature exchange**

None

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### **Key prerequisites**

IBM System x or BladeCenter® system with SATA capability

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### **Planned availability date**

January 22, 2013

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### **Description**

#### **IBM 128 GB and 256 GB SATA 1.8-inch MLC Enterprise Value SSDs**

These new drives bring solid-state reliability and low-power capabilities to on-blade storage. These new options will be available as single 1.8-inch MLC 2.5-watt drives.

#### **Configurator support**

- IBM Web Configurator (R2)
- Configuration and Options Guide (COG)
- Standalone Solutions Configuration Tool (SSCT)

- IBM Advanced Solutions Integration Tool (ASIT)

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## Product positioning

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These SATA MLC SSD options are positioned as optimal choices for read-intensive applications.

These SSDs support enterprise-level server and workstation applications such as:

- Web and video serving
- Streaming media
- Content delivery

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## Product number

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Single Entity Offerings (SEOs)

Description	SEO number
IBM 128 GB SATA 1.8-inch MLC Enterprise Value SSD	00W1222
IBM 256 GB SATA 1.8-inch MLC Enterprise Value SSD	00W1227

The following features are already announced for the 3331, 7143, 7147, 7871, 7915, and 8722 machine types:

Description	MT	Model	Feature
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	3331	HC1	A3TG
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	7143	AC1	
IBM 128GB SATA 1.8" MLC Enterprise value SSD	7147	AC1	
IBM 128GB SATA 1.8" MLC Enterprise value SSD	7871	AC1	
IBM 128GB SATA 1.8" MLC Enterprise value SSD	7915	AC1	
IBM 128GB SATA 1.8" MLC Enterprise value SSD	8722	AC1	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	3331	HC1	A3TH
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	7143	AC1	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	7147	AC1	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	7871	AC1	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	7915	AC1	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	8722	AC1	

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## Business Partner information

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If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=112-228>

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## Publications

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Publications are shipped with the announced products.

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

<http://publib14.boulder.ibm.com/infocenter/systems>

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### **IBM Publications Center Portal**

<http://www.ibm.com/shop/publications/order>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

#### **Displayable softcopy publications**

None

#### **Source file publications**

None

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## **Services**

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### **Global Technology Services**

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

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### **System x and BladeCenter support services**

#### ***Recommended core technical support***

When you buy IBM System x technology, include the support services you need -- to help keep both your hardware and software working for you, day after day, at peak performance. It's your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-time options to fit your business needs. And we'll help you get started with a core support package that includes:

- **Continuous system monitoring**

Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**

World-class remote and on-site hardware problem determination and repair services.

- **Software technical support**

Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

<http://www.ibm.com/servers/eserver/xseries/services.html>

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## Technical information

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### **Specified operating environment**

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#### ***Physical specifications***

IBM 128 GB and 256 GB SATA 1.8-inch MLC Enterprise Value SSDs

- Approximate height: 5.0 mm (0.197 in)
- Approximate width: 54.0 mm (2.13 in)
- Approximate depth: 78.5 mm (3.09 in)
- Approximate weight: 45 gm (0.10 lb)

#### **Shipping dimensions**

IBM 128 GB and 256 GB SATA 1.8-inch MLC Enterprise Value SSDs

- Height: 32.0 mm (1.26 in)
- Width: 226.0 mm (8.90 in)
- Depth: 150.0 mm (5.90 in)
- Weight: 150 gm (0.33 lb)

#### **Agency approvals**

- UL
- CSA
- TUV
- FCC
- EMC
- VCCI
- CE Mark
- C-Tick Mark
- IEC
- Taiwan (BSMI Certification)
- Korea EMI

#### **Standards**

None

### **Operating environment**

Temperature: 0° to 70°C (32° to 158°F)

Relative humidity: 8% to 85% (noncondensing)

Maximum altitude: 3,050 m (10,000 ft)

### **Hardware requirements**

These SSDs must be installed in selected System x or BladeCenter servers.

### **Software requirements**

The new IBM SATA SSDs work with most operating systems.

For further information, contact your IBM representative.

### **Compatibility**

For latest compatibility information, visit

<http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us/>

**Note:** Some configurations may not be compatible.

### **Limitations**

Solid-state memory cells have an intrinsic, finite number of write cycles that each cell can incur. As a result each solid-state device has a maximum amount of write cycles it can be subjected to documented as TBW (Total Bytes Written). IBM is not responsible for replacement of hardware that has reached the maximum guaranteed number of write cycles. This limit may be revealed as the SSD failing to respond to system-generated commands or becoming incapable of being written to. It is important to distinguish these enterprise value drives from other enterprise-level drives. Enterprise-level drives have much higher write endurance and as a result can withstand a greater number of writes over the lifetime of the device compared to enterprise value drives. SSD write endurance is an important factor to consider because unlike spinning disk media, NAND flash has a finite number of writes it will accept. SSD write endurance is typically measured by the number of program/erase, or P/E, cycles the drive incurs over its lifetime, which per device is listed as Total Bytes Written (TBW) in the device specification. This statistic can be used to give an estimate of the drive's remaining life left based on the workload the drive will be subjected to. The TBW value assigned to a solid-state device is the total bytes of written data (based on number of P/E cycles) a drive can be guaranteed to complete. Reaching this limit does not cause the drive to immediately fail; it simply denotes the maximum number of writes that can be guaranteed. A solid-state device will not fail upon reaching the specified TBW. At some point based on manufacturing variance margin, after surpassing the TBW value, the drive will reach the end of life point, at which the drive will go into a "read only" mode.

As a result of the technology limitations of enterprise value solid-state devices, care must be taken to use them in write environments that will not exceed the TBW of the drive prior to the required life expectancy of the application.

As an example, let's assume an access pattern of 50% random data and 50% sequential data with block size mixes: 5% of the data is 4k block size, 5% of the data is 8k block size, 10% of the data is 16k block size, 35% of the data is 64k block size, and 35% of the data is 128k block size. For enterprise value drives capable of 72 TB of lifetime writes, assuming an approximation of the workload stated above as being worse case, the drive workload must be limited to no more than 40 GB of writes per day to last 5 years and stay inside the 72 TBW limit. For the device to last 3 years, the drive write workload must be limited to no more than 65 GB of writes per day.

Additional information is available at

<http://www-03.ibm.com/systems/x/options/storage/solidstate/index.html>

### ***User group requirements***

This announcement satisfies or partially satisfies the requirements from one or more of the worldwide user group communities. Groups include COMMON, COMMON Europe, Guide Share Europe (GSE), InterAction (Australia/New Zealand), Japan Guide Share (JGS), and SHARE Inc.

### **Planning information**

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#### ***Customer responsibilities***

The new IBM SATA 1.8-inch MLC Enterprise Value SSD products are designed as customer setup. Customer installation instructions are shipped with each option part.

#### ***Cable orders***

None

#### ***Installability***

The IBM SATA SSDs require about 20 minutes for installation.

Installation includes unpacking, attaching a customer-provided line cord, setting up, and powering on.

#### ***Packaging***

##### **IBM 128 GB and 256 GB SATA 1.8-inch MLC SSDs**

Product	Package description	Boxes
IBM 128 GB and 256 GB SATA 1.8-inch MLC Enterprise Value SSDs	Option Unit Box	1

#### Contents:

SSD  
Important Notices and IBM Warranty Publication  
SSD Information Flyer

The SSDs are shipped as a single package. Other items are in zipped bags.

#### **Retail only**

##### *Packaging dimensions/weight - 1.8-inch SSDs*

- Single box (HxWxD): 32.0 mm (1.26 in) x 226.0 mm (8.90 in) x 150.0 mm (5.90 in)
- Package weight: 150 gm (0.33 lb)

**Note:** All measurements are approximate.

#### ***Supplies***

**For end users:** IBM SATA 1.8-inch SSDs can be purchased through dealers around the world.

## Security, auditability, and control

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It is a customer's responsibility to ensure that the server is secure to prevent sensitive data from being removed.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

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## IBM Electronic Services

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IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

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## Terms and conditions

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### ***MES discount applicable***

No

### ***Field-installable feature***

Yes

### ***Warranty period***

One-year limited warranty<sup>1</sup>, or system warranty.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.



- Warranty period: One year
- Service type (IOR/IOE/CCE/CCR): CRU
- Maintenance agreement: No
- Optional upgrade: No

**Customer setup**

Yes

**Machine code**

No license terms apply.

**Optional features warranty period**

- Optional features: One-year limited warranty<sup>1</sup> .

Solid-state memory cells have an intrinsic, finite number of program/erase cycles that each cell can incur. As a result, solid-state storage has a maximum amount of program/erase cycles to which it can be subjected. IBM's warranty for the solid-state storage is limited to devices that have not reached the maximum guaranteed number of program/erase cycles, as documented in the *Official Published Specifications* for the product. Solid-state storage that reaches this limit may fail to operate according to its specifications.

Maximum warranted writes per drive:

- 72 TB TBW on the 128 GB SSD
- 72 TB TBW on the 256 GB SSD

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**Pricing**

For current prices, contact IBM at 888-Shop-IBM (746-7426) or visit

<http://www-03.ibm.com/systems/x/>

To locate the web price, search on the feature number in the Search field.

Description	Part number
IBM 128 GB SATA 1.8-inch MLC Enterprise Value SSD	00w1222
IBM 256 GB SATA 1.8-inch MLC Enterprise Value SSD	00w1227

Field install only	Plant install only	MES removal	Cables required
N	N	N	N

If field installed on a purchased machine, parts removed or replaced become the property of IBM and must be returned.

The following features are already announced for the 3331 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU	MES
IBM 128GB SATA 1.8" MLC Enterprise value SSD					

	HC1	A3TG	MES
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	HC1	A3TH	MES

The following features are already announced for the 7143 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TG	Initial	
	MC1		Initial	
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TH	Initial	
	MC1		Initial	

The following features are already announced for the 7147 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TG	Initial	
	MC1		Initial	
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TH	Initial	
	MC1		Initial	

The following features are already announced for the 7871 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TG	Initial	
	MC1		Initial	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	AC1	A3TH	Initial	
	MC1		Initial	

The following features are already announced for the 7915 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 128GB SATA 1.8" MLC Enterprise value SSD	AC1	A3TG	Initial	
	MC1		Initial	
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TH	Initial	
	MC1		Initial	

The following features are already announced for the 8722 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 128GB SATA 1.8" MLC Enterprise value SSD	AC1	A3TG	Initial	
	MC1		Initial	
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TH	Initial	
	MC1		Initial	

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For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page

<http://www.ibm.com/planetwide/us/>