



New High IOPS Modular Adapters for IBM System x offer ultra-high-performance storage with robust management, low latency, and minimal CPU burden

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At a glance

These solid-state drive (SSD)-based, high-performance, server-class storage adapters can provide the performance required for extensive computations while utilizing a reduced storage footprint.

Features:

- Improved environmental factors: significantly lower power and cooling costs, low management overhead, smaller storage footprint in the data center, and a much greener storage solution
- An alternative to SSD-based hard drives: accelerates applications, improves response times, and boosts efficiency
- IBM® branding: a single point of serviceability and enterprise-grade warranty to enable interoperability with a variety of IBM and partner products
- The ability to do more with less during these tough economic times: lower operational expenditure (OPEX) and capital expenditure (CAPEX) in applications that require high Input/Output Operations per Second (IOPS) compared to solutions that use a larger number of hard disk drive (HDD) and SSD devices to achieve equivalent IOPS

Overview

The new family of IBM High IOPS Modular Adapters are the ultimate performance solution for embedded direct-attached storage (DAS). The offerings will include 300 GB, 600 GB, and 800 GB Multi Level Cell (MLC) adapters and a 300 GB Single Level Cell (SLC) adapter. Designed to offer high performance with low latency and a low CPU burden, they accelerate applications such as web serving, data warehousing, data mining, online transaction processing, and high-performance computing. Their PCIe host interface, industry-standard drivers, and small form factor make them more flexible and easier to integrate into today's low-profile, high-performance system chassis. These adapters are designed to improve the performance of applications regardless of the mix of reads and writes.

The IBM High IOPS Modular Adapters are built on the latest enterprise-level solid-state technologies and include sophisticated advanced features to help deliver consistently high levels of performance, endurance, and reliability under some of the most demanding conditions. In addition, they are built to provide modular serviceability, reducing maintenance and replacement costs. The robust technology in these adapters helps optimize the number of program cycles to the flash storage,

efficiently extending the rated endurance of flash storage by 20x more when compared to standard controllers.

These adapters use NAND flash memory as the basic building block of solid-state storage and contain no moving parts, thus are less sensitive to issues associated with vibration, noise, and mechanical failure. These adapters are built as block devices on a PCIe bus with advanced wear-leveling, ECC, and N+1 chip-level redundancy providing unparalleled reliability and efficiency.

Whether enabling high-performance computing or reducing the storage footprint, IBM offers High IOPS Modular Adapters to meet your computational requirements. These adapters are compatible with a wide variety of System x® servers.

Providing that additional peace of mind, your High IOPS Modular Adapter purchase is covered under IBM warranty.

Features and functions:

IBM 300 GB High IOPS MLC Modular Adapter (90Y4361)
IBM 600 GB High IOPS MLC Modular Adapter (90Y4365)
IBM 800 GB High IOPS MLC Modular Adapter (90Y4369)
IBM 300 GB High IOPS SLC Modular Adapter (90Y4373)

- Standard PCIe design
- Enterprise reliability
- High-capacity design with MLC NAND technology and SLC NAND technology
- Capacity options from 300 GB to 800 GB storage
- Installation as a single drive with no user configuration required, just plug and-play
- Low host burden - no static CPU and memory overhead
- Lower space, power, cooling, and management costs than traditional HDD solutions
- Robust flash management with ease of use

Warranty: One-year limited warranty¹ or system.

Note: 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.

Note:

- 11.5 petabytes lifetime writes on the 300 GB MLC Modular Adapter
- 23.0 petabytes lifetime writes on the 600 GB MLC Modular Adapter
- 30.7 petabytes lifetime writes on the 800 GB MLC Modular Adapter
- 76.8 petabytes lifetime writes on the 300 GB SLC Modular Adapter

1 petabyte = 1024 terabytes of writes. Writes are tracked and reported by the adapter's management utility and may be affected by application writes, data patterns, and maintenance designed to maximize data integrity.

¹ For information on the IBM Statement of Limited Warranty, visit

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.

Key prerequisites

These SSD PCIe Adapters can be used on supported System x and BladeCenter® servers.

Note: In order to be used with BladeCenter servers, the IBM BladeCenter PCI Express® Gen 2 Expansion Blade II is required.

Planned availability date

December 14, 2012:

- IBM 300 GB High IOPS MLC Modular Adapter (90Y4361)
- IBM 600 GB High IOPS MLC Modular Adapter (90Y4365)
- IBM 800 GB High IOPS MLC Modular Adapter (90Y4369)
- IBM 300 GB High IOPS SLC Modular Adapter (90Y4373)

Note: These modular products will not support Systems x3850 X5/x3950 X5 (7145) and x3850 X5/x3950 X5-Ref. (7143) until January 8, 2013.

December 11, 2012:

- IBM System x3850 X5 with Virtualized Essentials Support - Models 7143A2G, 7143A5G, and 7143A7G.

Description

Ideal for businesses requiring high-performance storage without sacrificing capacity, these adapters provide an opportunity to lower power and cooling costs while simplifying management overhead and reducing the overall storage footprint. They offer:

- Reduced power, cooling, and management costs through storage "in server" versus disk arrays and controllers
- A predictable lifetime (compared to sporadic failure of disk drives), in which to plan your hardware upgrades in a timely and scheduled manner
- N+1 chip-level redundancy providing increased reliability and efficiency
- Availability as industry-standard PCIe adapters

Compatibility

- Support for popular network operating systems
- ServerProven® testing to verify servers and PCIe adapters function properly
- Investment protection
- Ease of use

Product number

Option Offerings (SEOs)

Description	Option number
IBM 300 GB High IOPS MLC Modular Adapter	90Y4361
IBM 600 GB High IOPS MLC Modular Adapter	90Y4365
IBM 800 GB High IOPS MLC Modular Adapter	90Y4369
IBM 300 GB High IOPS SLC Modular Adapter	90Y4373

The following are features already announced for the 3331, 7143, 7875, and 7915 machine types:

Description	MT	Model	Feature
IBM 300GB High IOPS MLC Modular Adapter	3331	HC1	A3MZ
IBM 300GB High IOPS MLC Modular Adapter	7143	AC1 MC1	
IBM 300GB High IOPS MLC Modular Adapter	7875	AC1 MC1	
IBM 300GB High IOPS MLC Modular Adapter	7915	AC1 MC1	
IBM 600GB High IOPS MLC Modular Adapter	3331	HC1	A3N0
IBM 600GB High IOPS MLC Modular Adapter	7143	AC1 MC1	
IBM 600GB High IOPS MLC Modular Adapter	7875	AC1 MC1	
IBM 600GB High IOPS MLC Modular Adapter	7915	AC1 MC1	
IBM 800GB High IOPS MLC Modular Adapter	3331	HC1	A3N1
IBM 800GB High IOPS MLC Modular Adapter	7143	AC1 MC1	
IBM 800GB High IOPS MLC Modular Adapter	7875	AC1 MC1	
IBM 800GB High IOPS MLC Modular Adapter	7915	AC1 MC1	
IBM 300GB High IOPS SLC Modular Adapter	3331	HC1	A3N2
IBM 300GB High IOPS SLC Modular Adapter	7143	AC1 MC1	
IBM 300GB High IOPS SLC Modular Adapter	7875	AC1 MC1	
IBM 300GB High IOPS SLC Modular Adapter	7915	AC1 MC1	

Note: The following does not apply to other products in this announcement. This announcement is being used to get the feature numbers announced.

The following are newly announced features on the IBM machine type 3331 model HC1.

Description	MT	Model	Feature
.5m IBM Passive DAC SFP+ Cable	3331	HC1	A3RG
7m IBM Passive DAC SFP+ Cable	3331	HC1	A3RH

Publications

Publications are shipped with the announced product.

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>

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

Business Partner information

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=112-213>

Services

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.

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>

Technical information

Specified operating environment

Physical specifications

300 GB High IOPS MLC Modular Adapter for IBM System x
600 GB High IOPS MLC Modular Adapter for IBM System x
800 GB High IOPS MLC Modular Adapter for IBM System x
300 GB High IOPS SLC Modular Adapter for IBM System x

All adapters have same dimensions.

- Approximate height: 16 mm (0.63 in)
- Approximate width: 68 mm (2.68 in)
- Approximate depth: 167.65 mm (6.60 in)
- Approximate weight: 227 g (0.50 lb)

Shipping dimensions

- Approximate height: 11.4 cm (4.5 in)
- Approximate width: 24.1 cm (9.5 in)
- Approximate depth: 31.8 cm (12.5 in)
- Approximate weight: 648 g (1.43 lb)

Agency approvals

- UL
- cUL
- IEC60950
- EMC
- FCC
- TUV
- VDE
- CE
- VCCI
- BSMI
- C-tick
- MIC
- KCC

Standards

None

Operating environment

Temperature:

- Operational: - 5° to 40°C (41° to 104°F) at 0 to 3,048 m (0 to 10,000 ft)
- Nonoperational: - 40° to 60°C (-40° to 140°F) at 10,700 m (35,105 ft)

Relative humidity: 8% to 85% (noncondensing)

Maximum altitude: 10,700 m (35,105 ft)

Hardware requirements

The controller must be installed in a selected System x server system.

Software requirements

The 300 GB, 600 GB, 800 GB High IOPS MLC adapters and 300 GB High IOPS SLC adapter support the following major 64-bit operating systems:

- Microsoft™ Windows™ 2008 SP1 (64 bit only)
- Windows 2008 R2 SP1
- Windows 2012
- vSphere5
- Red Hat Enterprise Linux™ 5.6
- Red Hat Enterprise Linux 5.7
- Red Hat Enterprise Linux 6.0
- Red Hat Enterprise Linux 6.1
- SUSE Linux Enterprise Server 10 SP4
- SUSE Linux Enterprise Server 11 SP1
- VMware ESX 4.0 U4
- VMware ESX 4.1 U2
- VMware ESXi 4.1 U2
- VMware ESXi 5.0

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

300 GB, 600 GB, 800 GB High IOPS MLC Modular and 300 GB High IOPS SLC Modular Adapters

Solid-state memory cells have an intrinsic, finite number of write cycles that each cell can incur.

As a result, solid-state storage has a maximum amount of write cycles to which it can be subjected, documented as Total Bytes Written (TBW).

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 device failing to respond to system-generated commands or becoming incapable of being written to.

Additional information is available at

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

Customer responsibilities

SSD PCIe High IOPS Adapter products are designated as a customer replacement setup. Customer installation instructions are shipped with the option part.

Cable orders

No.

Note: If purchasing a 7915 and four or more 2.4 TB adapters (90Y4397), cable part number 46C9060 must be ordered.

Installability

The High IOPS MLC and SLC Adapters require about 20 minutes for installation.

Installation includes unpacking, setting up, and powering on.

Packaging

300 GB, 600 and 800 GB High IOPS MLC and 300 GB SLC Adapters

Product	Package description	Boxes
300 GB, 600 GB, 800 GB MLC and 300 GB SLC High IOPS Adapters for IBM System x	Option Unit Box	1

Contents:

IBM 300 GB, 600 GB, 800 GB High IOPS MLC Modular or
300 GB High IOPS SLC Modular Adapter with full
height bracket attached
Half height bracket loose
USB Key with documentation
Quick Install Guide
Importances Notice Doc (IBM doc)
Warranty doc (IBM doc)
Technical Flyer

The 300 GB, 600 GB, 800 GB MLC and 300 GB SLC High IOPS Adapters are shipped as a single package. Other items are in zipped bags.

Retail only

Packaging dimensions and weight

All High IOPS MLC Modular Adapters and SLC Modular Adapter

- Approximate height: 11.4 cm (4.5 in)
- Approximate width: 24.1 cm (9.5 in)
- Approximate depth: 31.8 cm (12.5 in)
- Approximate weight: 648 g (1.43 lb)

Note: All measurements are approximate.

Supplies

For end users: The 300 GB, 600 GB, 800 GB MLC and the 300 GB SLC High IOPS Modular Adapters can be purchased through dealers around the world.

Security, auditability, and control

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.

IBM Electronic Services

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>

Terms and conditions

Field installable features

Yes

Warranty period

One year.

300 GB, 600 GB, 800 GB MLC and 300 GB SLC High IOPS Modular Adapters offer a one-year limited warranty¹ or system.

Note: 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.

Note:

- 11.5 petabytes lifetime writes on the 300 GB MLC Modular Adapter
- 23.0 petabytes lifetime writes on the 600 GB MLC Modular Adapter
- 30.7 petabytes lifetime writes on the 800 GB MLC Modular Adapter
- 76.8 petabytes lifetime writes on the 300 GB SLC Modular Adapter

1 petabyte = 1024 terabytes of writes. Writes are tracked and reported by the adapter's management utility and may be affected by application writes, data patterns, and maintenance designed to maximize data integrity.

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

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.

FRU replacement

- 300 GB MLC Modular (90Y4362)
- 600 GB MLC Modular (90Y4366)
- 800 GB MLC Modular (90Y4370)
- 300 GB SLC Modular (90Y4374)

Customer setup

Yes, as a replacement FRU only

Machine code

No license terms apply.

Note: Machine type 7143

Warranty period

Three years

ANNOUNCEMENT COUNTRIES

The following countries only:

- France
- Italy

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 300 GB High IOPS MLC Modular Adapter	90Y4361
IBM 600 GB High IOPS MLC Modular Adapter	90Y4365
IBM 800 GB High IOPS MLC Modular Adapter	90Y4369
IBM 300 GB High IOPS SLC Modular Adapter	90Y4373

Field	Plant	MES	Cables
install only	install only	removal	required
N	N	N	Yes - conditional

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

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 300GB High IOPS MLC Modular Adapter	HC1	A3MZ	MES	
IBM 600GB High IOPS MLC Modular Adapter	HC1	A3N0	MES	
IBM 800GB High IOPS MLC Modular Adapter	HC1	A3N1	MES	
IBM 300GB High IOPS SLC Modular Adapter	HC1	A3N2	MES	
.5m IBM Passive DAC SFP+ Cable	HC1	A3RG	MES	
7m IBM Passive DAC SFP+ Cable	HC1	A3RH	MES	

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

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 300GB High IOPS MLC Modular Adapter	AC1	A3MZ	Initial	
	MC1		Initial	
IBM 600GB High IOPS MLC Modular Adapter	AC1	A3N0	Initial	
	MC1		Initial	
IBM 800GB High IOPS MLC Modular Adapter	AC1	A3N1	Initial	
	MC1		Initial	
IBM 300GB High IOPS SLC Modular Adapter	AC1	A3N2	Initial	
	MC1		Initial	

The following are features already announced for the 7875 machine type:

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 300GB High IOPS MLC Modular Adapter	AC1	A3MZ	Initial	
	MC1		Initial	
IBM 600GB High IOPS MLC Modular Adapter	AC1	A3N0	Initial	
	MC1		Initial	
IBM 800GB High IOPS MLC Modular Adapter	AC1	A3N1	Initial	
	MC1		Initial	
IBM 300GB High IOPS SLC Modular Adapter	AC1	A3N2	Initial	
	MC1		Initial	

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

Description	Model number	Feature number	Initial/MES/Both support	RP CSU MES
IBM 300GB High IOPS MLC Modular Adapter	AC1	A3MZ	Initial	
	MC1		Initial	
IBM 600GB High IOPS MLC Modular Adapter	AC1	A3N0	Initial	
	MC1		Initial	
IBM 800GB High IOPS MLC Modular Adapter	AC1	A3N1	Initial	
	MC1		Initial	
IBM 300GB High IOPS SLC Modular Adapter	AC1	A3N2	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/>