



ServeRAID M5014 and M5015 SAS/SATA Controllers - Two x4 port internal 6 Gbps SAS/SATA solutions for high-density servers with the flexibility to use both SAS and SATA hard drives

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At a glance

ServeRAID™ M5014 and M5015 SAS/SATA Controllers can provide the performance required for extensive computations and the flexibility to use both SAS and SATA hard drives.

Features include:

- Low profile, half-length form factor that is ideal for space-limited server environments
- High-performance internal storage with connectivity to SAS/SATA drives
- Battery backup support: Intelligent BBU for more data protection; optional battery backup on the M5014 controller
- An Advanced RAID Management Suite that allows administrators to efficiently configure, monitor, and manage RAID volumes locally or over the network

ServeRAID M5000 Series Battery Kit can provide enterprise-grade reliability businesses seek without compromising performance and reliability.

Features include:

- Remote mount capability: Ideal for space-limited server environments
- Battery gas gauge: Provides enterprise-grade accuracy on battery life
- Li-Ion battery technology: Enables advanced features such as calibration and load testing

For technical support:

- Call the IBM® Support Center at 800-IBM-SERV (426-7378)
or
- Request technical information via the Web site at
<http://www.ibm.com/pc/support>

Overview

ServeRAID M5014 and M5015 SAS/SATA Controllers (46M0916 and 46M0829)

ServeRAID M5014 and M5015 SAS/SATA Controllers offer a cost-effective enterprise-grade RAID solution for internal HDDs and integrate emerging SAS

technology into an organization's storage infrastructure. At 6 Gbps, the M5014 and M5015 offer improved performance over their predecessors.

Ideal for supporting server mission-critical applications where high levels of sustained read and write operations are required, such as video streaming, Web content, video-on-demand, security and surveillance, fixed content, and reference data storage, the M5014 and M5015 offer RAID 0, 1, 5, 10, and 50. In addition, they are capable of Online Capacity Expansion (OCE), Online RAID Level Migration (RLM), single controller multipathing, load balancing, and other key RAID data protection features. M5014 comes with 256 MB of DDR2 SDRAM and supports an optional ServeRAID M5000 Series Battery Kit and M5015 comes with 512 MB of DDR2 SDRAM and an intelligent battery backup module. This memory attaches directly to the adapters, providing the performance demanded by today's enterprise client, and is x8 lane PCI Gen 2 compliant.

ServeRAID M5014 and M5015 SAS/SATA Controllers support SAS and SATA hard drive redundant configurations for server storage, thereby providing investment protection to our clients. The M5014 and M5015 can be easily configured and managed with MegaRAID Storage Manager (MSM) and MegaCLI (Command Line Interface) tools.

Providing that additional peace of mind, your ServeRAID M5014 and M5015 SAS/SATA Controllers are covered under IBM warranty. These adapters carry a one-year limited warranty or, when installed in a System x® server, assume your system's base warranty and any IBM ServicePac® upgrade.

Features and functions:

ServeRAID M5014 and M5015 SAS/SATA Controllers (46M0916 and 46M0829)

- Auto-resume after loss of system power during array rebuild or reconstruction (RLM)
- Single controller multipathing (failover)
- Load balancing
- Configurable stripe size up to 1 MB
- Fast initialization for quick array setup
- Consistency check for background data integrity
- Patrol read for media scanning and repairing
- 64 logical drive support
- Up to 64 TB LUN support
- DDF compliant Configuration on Disk (COD)
- S.M.A.R.T support
- Global and dedicated Hot Spare with Revertible Hot Spare support
- Automatic rebuild
- Enclosure affinity
- Up to 6 Gb/second of performance throughput for each port at full duplex
- Enclosure management
- SES (inband)
- SGPIO (sideband)

Warranty

ServeRAID M5014 and M5015 offer a one-year limited warranty¹.

ServeRAID M5000 Series Battery Kit (46M0917)

The kit provides an enterprise-grade battery for added performance on high-density servers that require battery-backed protection.

It adds a cost-effective enterprise-grade intelligent battery backup solution to an organization's storage infrastructure. With 48 hours of data retention time while on battery backup, data is guaranteed to be safe during an emergency. The kit offers the performance advantages of DRAM as a write cache medium.

ServeRAID M5000 Series Battery Kit uses a battery "gas gauge" to accurately estimate the remaining energy capacity of the battery, similar to the way a cell phone or laptop computer does. In addition, it offers a monthly learn cycle where write caching for the system is turned off so that the battery can be discharged and recharged in order to recalibrate the gauge.

Features and functions:

- Li-Ion battery technology
- Local and remote mount options
- Smart monitoring that ensures no data lost due to insufficient DRT
- Gas gauge to ensure overcharging cannot happen
- Thermistor on cell to ensure cell temperature stays in a safe range

Warranty

Batteries are consumables; therefore, not covered under warranty.

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

http://www.ibm.com/servers/support/machine_warranties/

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

Key prerequisites

SAS/SATA Controllers can be used on supported System x servers with an available full-height PCI Express expansion slot.

Planned availability date

October 13, 2009

Description

These controllers are ideal for supporting server applications where high levels of sustained read and write operations are required.

Features:

- Investment protection
- Ease-of-use
- Compatibility

Compatibility

- Support for popular network operating systems
- ServerProven® testing, which verifies servers, HDDs, and the controllers will function properly

Product number

Options SEOS

Description	SEO number
ServerRAID M5015 SAS/SATA Controller	46M0829
ServerRAID M5014 SAS/SATA Controller	46M0916
ServerRAID M5000 Series Battery Kit	46M0917

The following are newly announced features for the x3400 M2 system:

Description	MT	Model	Feature
ServerRAID M5015 SAS/SATA Controller	7836	AC1 MC1	0093
	7837	AC1 MC1	0093
ServerRAID M5014 SAS/SATA Controller	7836	AC1 MC1	3877
	7837	AC1 MC1	3877
ServerRAID M5000 Series Battery Kit	7836	AC1 MC1	5744
	7837	AC1 MC1	5744

The following are newly announced features for the x3500 M2 system:

Description	MT	Model	Feature
ServerRAID M5015 SAS/SATA Controller	7839	AC1	0093
		MC1	
ServerRAID M5014 SAS/SATA Controller	7839	AC1	3877
		MC1	
ServerRAID M5000 Series Battery Kit	7839	AC1	5744
		MC1	

The following are newly announced features for the x3550 M2 system:

Description	MT	Model	Feature
ServerRAID M5015 SAS/SATA Controller	7946	AC1	0093
		MC1	
ServerRAID M5000 Series Battery Kit	7946	AC1	5744
		MC1	

The following are newly announced features for the x3650 M2 system:

Description	MT	Model	Feature
ServerRAID M5015 SAS/SATA Controller	7947	AC1	0093
		MC1	
ServerRAID M5000 Series Battery Kit	7947	AC1	5744
		MC1	

Product names

- ServerRAID M5015 SAS/SATA Controller (46M0829)
- ServerRAID M5014 SAS/SATA Controller (46M0916)
- ServerRAID M5000 Series Battery Kit (46M0917)

Technical information

Performance specifications

- Functions as an HDD RAID controller
- Supports RAID levels 0, 1, 5, 10, and 50
- Offers 8-lane Gen 2 PCI Express
- Offers up to 6 Gbps of performance throughput for each port at full duplex
- Supports independent and adjustable stripe unit sizes up to 1024 KB (default 256 KB)
- Includes Logical Drive Migration, Global Hot Spare, and Rebuild
- x8 PCI Express host interface

Physical specifications

ServeRAID M5015 SAS/SATA Controller (46M0829)

- Approximate height: 69.34 mm (2.73 in)
- Approximate width: 167.64 mm (6.6 in)
- Approximate depth: 12.7 mm (0.50 in)
- Approximate weight: 270 g (0.59 lb)

ServeRAID M5014 SAS/SATA Controller (46M0916)

- Approximate height: 69.34 mm (2.73 in)
- Approximate width: 167.64 mm (6.60 in)
- Approximate depth: 12.7 mm (0.50 in)
- Approximate weight: 220 g (0.48 lb)

ServeRAID M5000 Series battery (46M0917)

- Approximate height: 82.5 mm (3.25 in)
- Approximate width: 54.0 mm (2.125 in)
- Approximate depth: 16.0 mm (0.625 in)
- Approximate weight: 50 g (0.11 lb)

Operating environment

- Temperature
 - 10 to 35 degrees C (50 to 95 F) at 0 to 914 m (0 to 3000 ft)
 - 10 to 32 degrees C (50 to 90 F) at 914 m to 2,133 (3,000 to 7,000 ft)
- Relative humidity: 20% to 80% (noncondensing)

Agency approvals

- UI
- cUL
- TUV
- IEC950
- VDE

Energy Star compliance

Is this product Energy Star Compliant? No

Note: The Energy Star emblem does not represent EPA endorsement of any product or service.

Hardware requirements

The following systems are supported for ServeRAID M5014 and M5015 Controllers and M5000 Battery Kit.

System	Machine number	Models
x3400 M2	7836,7837	All
x3500 M2	7839	All
x3550 M2	7946	All
x3650 M2	7947	All

Software requirements

The ServeRAID M5015 supports all major operating systems:

- Microsoft® Windows® 2003
- Microsoft Windows 2008
- Red Hat Enterprise Linux® 4
- Red Hat Enterprise Linux 5
- SUSE Linux Enterprise Server 11

Compatibility

For the latest compatibility information, visit

<http://www.ibm.com/servers/eserver/serverproven/compat/us/>

Note: Some configurations may not be compatible.

Limitations

None

Planning information

Additional cable orders required: No

Approximate installation time: 20 minutes

Packaging

One box

Shipment group, M5015

- ServeRAID M5015 adapter
- Battery
- Battery Flyer
- 2U bracket
- Quick install guide
- CD with pub
- Important Notices Flyer

Shipment group, M5014

- ServeRAID M5014 adapter
- 2U bracket
- Quick Install Guide
- CD with pub
- Important Notices Flyer

Shipment group, M5000

- SR M5000 Battery
- Battery Flyer
- Quick Install Guide
- Important Notices Flyer

Security, auditability, and control

These products use the security and auditability features of the host hardware, host software, and application software.

Terms and conditions

Features and options only

Field installable	Yes
Customer setup	Yes
Warranty period*	1 yr*
Service type (CCE/CCR/CRU)	CRU**
Maintenance agreement	No
Optional upgrade	No
Licensed programs	Yes

The IBM SAS/SATA Controllers are covered by a one-year, limited warranty. Batteries are consumables; therefore, not covered under this warranty. The battery option ships in its own packaging separate from the adapter.

Note: Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the feature or option. All other terms and conditions are the same as those applicable to the IBM machine type in which the feature is installed.

* To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or call IBM.

** These optional features are designated as Customer Replacement Units (CRU).

CRU Service: IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service specified below, On-site Service.

Based upon availability, a CRU will be shipped for next business day (NBD) delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following have been designated as a Tier 1 CRU:

- ServeRAID M5015 SAS/SATA Controller
- ServeRAID M5014 SAS/SATA Controller
- ServeRAID M5000 Series Battery Kit

Licensed machine code

IBM machine code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www-1.ibm.com/servers/support/machine_warranties/machine_code.html

IBM may release changes to the machine code. IBM plans to make the machine code changes available for download from the IBM System x technical support Web site

<http://www-304.ibm.com/systems/support/>

If the machine does not function as warranted and your problem can be resolved through your application of downloadable machine code, you are responsible for downloading and installing these designated machine code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable machine code changes; however, you may be charged for that service. **Note:** Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the feature or option. All other terms and conditions are the same as those applicable to the IBM machine type in which the feature is installed. In the United States, call 800-IBM-SERV (426-7378), or write to: Warranty Information, P.O. Box 12195, RTP, NC, 27709, Attn: Dept JDJA/B203.

Help and service information -- Features and options

During the warranty period, you can obtain technical support using IBM's online services or by calling the IBM Support Center at 800-426-7378 24 hours a day, 7 days a week, to answer any questions regarding your new IBM option. Response time will vary depending on the number and nature of calls received. If you need warranty service, return or exchange is available. In addition, if your IBM option is installed in an IBM computer, you may be entitled to service at your location. For general questions related to the use of your options, fee-based support is available. Your technical support representative can help you determine the best alternative.

Accessing IBM online services

Visit

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

Placing the call to IBM

Within the United States, call the IBM Support Center at 800-426-7378.

Charges

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

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

Options SE0s

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ServerRAID M5014 SAS/SATA Controller	46M0916
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<http://www.ibm.com/planetwide/us/>

Corrections

(Corrected on October 2, 2009)

The list of supported systems was revised.