

Overview

HPE MR Gen11 Storage Controllers

A versatile, simplified, and flexible choice for data centers. HPE introduces an expansive and agile PCIe Gen 4.0 storage controller portfolio based on Broadcom® MegaRAID® technology delivering quality, performance, and security for mission-critical applications.

Key Features

- Standard PCI HH/HL and OCP NIC 3.0 form-factors
- Mixed Mode (RAID and/or JBOD) supporting RAID 0,1,10,5,50,6,60 (MR416i) or RAID 0,1,10 (MR216i)
- Up to 13.7 GBs of bandwidth, 3M Random Read IOPs, and 240K RAID5 Random Write IOPs
- 8 PCIe 4.0 host lanes
- 72b DDR4-2666 4GB (MR408i) or 8GB (MR416i) Flash-Backed Write Cache (energy pack is optional)
- 8 (MR408i) or 16 (MR416i) tri-mode NVMe, SAS, SATA internal lanes
- 16Gbs NVMe, 12Gbs SAS SSD/HDD, 6Gbs SATA SSD/HDD
- Up to 16 drives without expander
- DMTF Security Protection Data Model (SPDM) supports certificate-based authentication with HPE iLO6.
- Hardware Root of Trust (HWRoT) protects against malicious firmware
- Self-Encrypting Drives (SED) for data at rest encryption
- Windows, Linux, and VMWare
- MRSA, StorCLI, UEFI, and Redfish Management
- FASTPATH® (SSD acceleration)
- Online firmware updates for controllers, backplanes, and drives

Models

HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller	P47777-B21
HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller	P47781-B21
HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller	P47785-B21
HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller	P47789-B21
HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller	P58335-B21

Notes: An HPE Smart Storage energy pack (available in both battery and hybrid capacitor options) is optional with the HPE MR416i-o Gen11 and HPE MR416i-p Gen11 storage controller. See below for energy pack options.

Standard Features

Standard Features					
Description	HPE MR416i-p Gen11 SPDM Storage Cntlr	HPE MR416i-o Gen11 SPDM Storage Cntlr	HPE MR216i-p Gen11 SPDM Storage Cntlr	HPE MR216i-o Gen11 SPDM Storage Cntlr	HPE MR408i-o Gen11 SPDM Storage Cntlr
SKU	P47777-B21	P47781-B21	P47785-B21	P47789-B21	P58335-B21
Ports	2x8 SlimSAS	2x8 LP SlimSAS	2x8 SlimSAS	2x8 LP SlimSAS	1x8 LP SlimSAS
Storage Lanes	x16	x16	x16	x16	X8
ASIC	Broadcom Aero	Broadcom Aero	Broadcom Aero	Broadcom Aero	Broadcom Aero
Form Factor	PCI HH/HL	OCP NIC 3.0	PCI HH/HL	OCP NIC 3.0	OCP NIC 3.0
Host Interface	PCIe Gen 4.0 x8 host	PCIe Gen 4.0 x8 host	PCIe Gen 4.0 x8 host	PCIe Gen 4.0 x8 host	PCIe Gen 4.0 x8 host
Cache Size (FBWC)	8GB	8GB	N/A	N/A	4GB
Read Ahead Caching	✓	✓	✓	✓	✓
Write-back Caching	✓	✓	-	-	✓
Storage Protocol	16Gbs NVMe, 12Gbs SAS, 6Gbs SATA	16Gbs NVMe, 12Gbs SAS, 6Gbs SATA	16Gbs NVMe, 12Gbs SAS, 6Gbs SATA	16Gbs NVMe, 12Gbs SAS, 6Gbs SATA	16Gbs NVMe, 12Gbs SAS, 6Gbs SATA
Max Drives	16	16	16	16	8
Max Volumes	64	64	64	64	64
RAID:	0,1,5,6,10,50,60	0,1,5,6,10,50,60	0,1,10	0,1,10	0,1,5,6,10,50,60
Mixed Mode: (RAID & HBA)	✓	✓	✓	✓	✓

Feature	Description
SSD Accelerator	FASTPATH
Array Features	<ul style="list-style-type: none"> • Expand Array • Move Drives • Shrink Array • Spare Management



Standard Features

Volume Features	<ul style="list-style-type: none"> • Expand Logical Drive • Instant Secure Erase • Migrate RAID/Stripe Size • Modifying Cache Write Policy • Move Logical Drive • Re-enable Failed Logical Drive • Load balancing • Configurable stripe size up to 1 MB • Fast initialization for quick array setup • Check consistency for background data integrity • Patrol read for media scanning and repairing • Rebuild
Other Features	<ul style="list-style-type: none"> • Auto resume after loss of system power during array • SSD support with SSD Guard™ technology • DDF compliant Configuration on Disk • SSD Wear Gauge • SMART Predictive Drive Failure • Global and dedicated Hot Spare with Reversible Hot • Spare support: <ul style="list-style-type: none"> – Automatic rebuild – Enclosure affinity – Emergency SATA hot spare for SAS arrays • Enclosure management: <ul style="list-style-type: none"> – Universal Backplane Management (UBM) • Shield state drive diagnostic technology • SED Key Management (HKM, LKM, and RKM) • DRAM ECC detects and corrects data bit errors.
HPE OneView Support	Monitored Mode
Kit contents	Includes storage controller, information card, warranty statement, and backup power cable (MR408 & MR416)

Optional Accessories for HPE MR408i-o / MR416i-o / MR416i-p Gen11 SPDM Storage Controllers

Energy pack Options Sold Separately

HPE 96W Smart Storage Lithium-ion Battery with 145mm Cable Kit	P01366-B21
HPE 96W Smart Storage Lithium-ion Battery with 260mm Cable Kit	P01367-B21
HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit	P02377-B21
HPE Smart Storage Hybrid Capacitor with 260mm Cable Kit	P02381-B21

Notes:

- An HPE Smart Storage energy pack is optional
- Moving volumes or SED locked drives between SR and MR controllers is not supported.

Warranty

The warranty for this device is 3 years parts only.

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4 hours.
- Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days.
- Duration - Select duration of coverage for a period of 1, 3, or 5 years.



Standard Features

Warranty upgrade options can come in the form of HPE Pointnext operational, which are sold at the HPE System level to which this product attaches.

Operating System Support

- [Microsoft Windows Server](#)
- [Red Hat Enterprise Linux \(RHEL\)](#)
- [SUSE Linux Enterprise Server \(SLES\)](#)
- [VMware ESXi](#)
- [Canonical Ubuntu](#)
- [CentOS](#)

Notes: HPE MR Gen11 Storage Controllers supports the server operating systems. For more information on HPE's server operating systems and virtualization software, please visit: <http://www.hpe.com/info/ossupport>

Storage Management Software Suite

- HPE MR Storage Administrator (MRSA)
- HPE StorCLI
- UEFI System Utilities (storage configuration)
- HPE iLO6 Redfish

Please refer to <https://www.hpe.com/info/scmo> for more detailed information.

HPE MR Storage Administrator

The MR Storage Administrator is a web-based application that enables you to configure, monitor and troubleshoot MegaRAID (MR) storage controllers. The MR Storage Administrator graphical user interface (GUI) helps you to view, create, and manage storage configurations.

- **Configuring:** HPE MR Storage Administrator enables you to configure and view status of the controllers, volumes, and drives. The device status icons are displayed on their respective pages to notify you in case of drive failures and other events that require your immediate attention. Real-time email notifications on the status of the server are sent based on your alert settings. The system errors and events are recorded and displayed in an event log file. Additionally, you can also import or clear foreign configurations.
- **Monitor:** HPE MR Storage Administrator (MRSA) allows you to selectively deliver alerts to the OS system log, event log, or email based upon severity level. Additionally, individual storage devices can be viewed within the GUI.
- **Troubleshooting:** HPE MR Storage Administrator displays information related to drive failures, device failures, and so on. It also provides recommendations and displays contextual links, helping you to easily locate the drives that have issues and troubleshoot them. You can also download a support log containing the devices, properties, configurations, and logs and send it to the HPE support teams for further troubleshooting.

Please refer to <https://www.hpe.com/support/MRSA> for more detailed information.

StorCLI Management Tool

The Storage Command Line Interface (StorCLI) tool is the command line management software designed for the MegaRAID product line. The StorCLI tool is designed to be easy to use, and script.

Please refer to <https://www.hpe.com/support/StorCLI> for more detailed information.



Service and Support

HPE Pointnext - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services** focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms

HPE GreenLake brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

Managed services to run your IT operations

HPE GreenLake Management Services provides services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

Recommended Services

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward.

HPE Pointnext Tech Care is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

<https://www.hpe.com/services/techcare>

HPE Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

<https://www.hpe.com/services/complecare>



Service and Support

HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class today and learn how to get the most from your technology investment. <http://www.hpe.com/ww/learn>

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers.

Learn more <http://www.hpe.com/support/hpesc>

The HPE Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.

Notes: *HPE Support Center Mobile App is subject to local availability

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Related Services

HPE Server Hardware Installation

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf>

HPE Installation and Startup Service provides for the installation and startup of HPE technology including BladeSystems, C-Class enclosure, HPE ProLiant c-Class and Integrity server blades, storage blades, SAN switch blades, HPE Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and InfiniBand, as well as the installation of one supported operating system type (Windows® or Linux).

Warranty and Support Services will extend to include HPE options configured with your server or storage device. The price of support service is not impacted by configuration details. HPE sourced options that are compatible with your product will be covered under your server support at the same level of coverage allowing you to upgrade freely. Installation for HPE options is available as needed. To keep support costs low for everyone, some high value options will require additional support. Additional support is only required on select high value workload accelerators, fibre switches, InfiniBand and UPS batteries over 12KVA. See the specific high value options that require additional support [HERE](#).

For more information

Visit the Hewlett Packard Enterprise Service and Support [website](#).



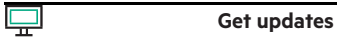
Summary of Changes

Date	Version History	Action	Description of Change
11-Sep-2023	Version 3	Changed	Models Section was Updated
14-Aug-2023	Version 2	Changed	Compatibility Section was updated
10-Nov-2022	Version 1	New	New QuickSpecs



Copyright

**Make the right purchase decision.
Contact our presales specialists.**



© Copyright 2023 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries.

a50004311enw - 16915 - Worldwide - V3 - 11-September-2023