Overview

HPE MR Gen10 Plus 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.

Accelerate performance of NVMe and SAS SSD's while minimizing power consumption

- HPE MR Gen10 PlusControllers offer up to 13,700 MBs of bandwidth, 3M Random Read IOPs, and 240K RAID5 Random Write IOPs; more than double previous Broadcom MegaRAID generations.
- Support for PCIe Gen 4.0 enables these adapters for high bandwidth by delivering twice the bandwidth and 75% more IOPs.
- Support up to 16 internal ports providing high IOPS performance and data protection.
- Provide low power consumption equating to power savings for any data center environment.

Hardware root of trust and secure encryption and decryption of critical drive data

- The HPE MR Gen10 Plus Controllers portfolio provides confidence in the security and data protection offered with hardware secure boot, as well as self-encrypting drives support.
- HPE MR Gen10 Plus Controllers manage SEDs attached to the RAID controller for higher levels of security of Data at Rest (DAR).
- SEDs constantly perform encryption and decryption of all drive contents, and the ability to lock a drive so that its contents remain safely beyond the reach of hackers and thieves is crucial.

Jobs to be done

- HPE MR216i-a / HPE MR216i-p Gen10 Plus Controllers are ideal for all virtualized environments where HBA / Pass-through mode is applicable offering high-bandwidth and 3M Random Write IOPs
- HPE MR416i-a / HPE MR416i-p Gen10 Plus Controllers are ideal for all data center environments where RAID is applicable offering reduced rebuild times, high-bandwidth and 240K RAID5 Random Write IOPs

HPE has enabled customers to go further, faster with the latest generation of Broadcom(R) Tri-Mode Controllers supporting PCIe Gen 4.0, Tri-Mode, and SED while enhancing SAS and NVMe RAID performance. The HPE MR Gen10 Plus Controllers use a new, user-friendly web-based interface called MR Storage Administrator (MRSA) that makes it easy to configure, monitor, maintain, and troubleshoot.

For those customers familiar with Broadcom MegaRAID technology the HPE MR Gen10 Plus Controllers use CLI Management Tool called StorCLI.

Notes: MR Storage Administrator and StorCLI can only be used on HPE MR Gen10 Plus Controllers.

Overview

Models

HPE MR416i-a Gen10 Plus x16 Lanes 4GB Cache NVMe/SAS 12G Controller   P26279-B21
HPE MR416i-p Gen10 Plus x16 Lanes 4GB Cache NVMe/SAS 12G Controller   P06367-B21
HPE MR216i-a Gen10 Plus x16 Lanes without Cache NVMe/SAS 12G Controller   P26325-B21
HPE MR216i-p Gen10 Plus x16 Lanes without Cache NVMe/SAS 12G Controller   P26324-B21

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

Compatibility

SKU	P26279-B21	P06367-B21	P26325-B21	P26324-B21
Description	HPE MR416i-a Gen10 Plus Cntlr	HPE MR416i-p Gen10 Plus Cntlr	HPE MR216i-a Gen10 Plus Cntlr	HPE MR216i-p Gen10 Plus Cntlr
ProLiant DL20 Gen10 Plus	✓	✓	✓	✓
ProLiant DL360 Gen10 *	✓*	✓*	✓*	✓*
ProLiant DL360 Gen10 Plus	✓	✓	✓	✓
ProLiant DL380 Gen10 *	✓*	✓*	✓*	✓*
ProLiant DL380 Gen10 Plus	✓	✓	✓	✓
ProLiant DL325 Gen10 Plus v2	✓	✓	✓	✓
ProLiant DL345 Gen10 Plus	✓	✓	✓	✓
ProLiant DL365 Gen10 Plus	✓	✓	✓	✓
ProLiant DL385 Gen10 Plus v2	✓	✓	✓	✓

*SAS/SATA drive support only. NVMe drives not supported.

Operating System Support

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

Notes: HPE MR Gen10 Plus Controllers are supported by the server operating system. 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
- HPE StorCLI
- UEFI System Utilities (storage configuration)

Additional Information

HPE MR Gen10 Plus Controllers For additional information on the features for HPE MR Gen10 Plus Controllers, please see the HPE MR Gen10 Plus Controller User Guide

Standard Features

GUI Management Tool
MR Storage Administrator

The MR Storage Administrator is a web-based application that enables you to monitor, maintain, troubleshoot, and configure the HPE MR Gen10 Plus Controllers. The MR Storage Administrator graphical user interface (GUI) helps you to view, create, and manage storage configurations.

- **Monitoring and Configuring:** MR Storage Administrator enables you to monitor the controllers and configure the drives on the controller. It displays the status of the controller cards, logical drives, and drives on the controller. 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.
- **Maintaining:** Using MR Storage Administrator, you can perform system maintenance tasks, such as updating the controller firmware.
- **Troubleshooting:** 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/devices that have issues and troubleshoot them. You can also download a complete report of the all the devices and their configurations, properties, and settings and send it to the Support Teams for further troubleshooting.

Please refer to the **https://www.hpe.com/support/MRSA** for more detailed information.
Notes: The HPE MR Gen10 Plus Controllers is managed through the HPE MR Storage Administrator only.

CLI Management Tool

The Storage Command Line Interface (StorCLI) tool is the command line management software designed for the Broadcom MegaRAID product line. The StorCLI tool is a command line interface that is designed to be easy to use, consistent, and easy to script. This chapter provides information on how to install and use the StorCLI tool and explains the various features of the StorCLI tool.

Please refer to the **StorCLI User Guide** for more detailed information.
https://www.hpe.com/support/StorCLI

Know your choices when it comes to HPE ProLiant and data storage		
	HPE MR Gen10 Plus Controllers	**HPE SR Gen10 Plus Controllers**
Type	MegaRAID	SmartRAID
GUI Management Tool	✓ MR Storage Administrator	✓ Smart Storage Administrator
CLI Management Tool	✓ StorCLI	✓ SSACLI

Standard Features

Key Features

- High performance including up to 13,700 MBs of bandwidth, 3M Random Read IOPs, and 240K RAID5 Random Write IOPs
- Tri-Mode Storage Interface that supports NVMe4/SAS3/SATA
    - 2x8 SlimSAS
    - 16Gb/s PCIe 12Gb/s SAS, 6Gb/s SATA technology
    - Mix-and-match SAS, SATA, and NVMe drives to the same controller.
- HW based Root of Trust for Firmware Authentication
- Self-Encrypting Drives to ensure protection for data at rest and the prevention of malware.
- Support for all major OS's including but not limited to Windows, Linux, and VMWare. Full tool suite including Command Line Interface, Web Based Management, and Out of Band Management support.
- Mixed Mode (RAID volumes and HBA physical drives simultaneously)
- UEFI System Utilities (storage configuration)
- Up to 16 NVMe devices
- FASTPATH(R) (SSD acceleration)
- Online firmware updates

Notes: HPE MR Gen10 Plus Controllers do not support the same software or features as the HPE SR Gen10 Plus Controllers such as HPE SSA and SR Secure Encryption.

Description	HPE MR416i-a Gen10 Plus x16 Lanes 4GB Cache NVMe/SAS 12G Storage Controller	HPE MR416i-p Gen10 Plus x16 Lanes 4GB Cache NVMe/SAS 12G Storage Controller	HPE MR216i-a Gen10 Plus x16 Lanes without Cache NVMe/SAS 12G Storage Controller	HPE MR216i-p Gen10 Plus x16 Lanes without Cache NVMe/SAS 12G Storage Controller
SKU	P26279-B21	P06367-B21	P26325-B21	P26324-B21
Ports	x16 internal tri-mode	x16 internal tri-mode	x16 internal tri-mode	x16 internal tri-mode
Internal Storage lanes	x16	x16	x16	x16
RAID on Chip Controller	SAS3916 - Broadcom(R) Aero			
Form Factor	Type A Modular	PCIe HH/HL	Type A Modular	PCIe HH/HL
Performance Host Interface	PCIe Gen4 x8 host			

Standard Features

Cache Size (FBWC)	4GB	4GB		
Read Ahead Caching	✓	✓	✓	✓
Write-back Caching Read Ahead Caching	✓	✓		
Storage Protocol	16Gbps NVMe SAS, 6Gbps SASB, / 6Gbps SATA, 16Gb/s NVMe PCIe	16Gbps NVMe SAS, 6Gbps SASB, / 6Gbps SATA, 16Gb/s NVMe PCIe	16Gbps NVMe SAS, 6Gbps SASB, / 6Gbps SATA, 16Gb/s NVMe PCIe	16Gbps NVMe SAS, 6Gbps SASB, / 6Gbps SATA, 16Gb/s NVMe PCIe
Maximum Physical Drives	16	16	16	16
Maximum Logical Drives (up to)	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
Mixed Mode: (RAID & HBA):	✓	✓	✓	✓
SKU	**P26279-B21**	**P06367-B21**	**P26325-B21**	**P26324-B21**
Description	**MR416i-a Gen10 Plus x16 Lanes 4GB Cache NVMe/SAS 12G Storage Controller**	**HPE MR416i-p Gen10 Plus x16 Lanes 4GB Cache NVMe/SAS 12G Storage Controller**	**HPE MR216i-a Gen10 Plus x16 Lanes without Cache NVMe/SAS 12G Storage Controller**	**HPE MR216i-p Gen10 Plus x16 Lanes without Cache NVMe/SAS 12G Storage Controller**
Boot Mode: Legacy and UEFI	✓	✓	✓	✓
SSD Accelerator	FASTPATH®			
Other features:	• Online Capacity Expansion (OCE)			

Standard Features

	• Auto resume after loss of system power during array rebuild
	• Load balancing
	• Configurable stripe size up to 1 MB
	• Fast initialization for quick array setup
	• Check consistency for background data integrity
	• SSD support with SSD Guard™ technology
	• Patrol read for media scanning and repairing
	• DDF compliant Configuration on Disk
	• S.M.A.R.T. support
	• Global and dedicated Hot Spare with Revertible Hot
	• Spare support:
	• Automatic rebuild
	• Enclosure affinity
	• Emergency SATA hot spare for SAS arrays
	• Enclosure management:
	• Universal Backplane Management (UBM)
	• Shield state drive diagnostic technology
	• SED Key Management FASTPATH(R)
Array Configuration Features:	• Expand Array
	• Move Drives

Standard Features

- Shrink Array

- Spare Management Online Capacity Expansion (OCE)

- Auto resume after loss of system power during array rebuild

- Load balancing

- Configurable stripe size up to 1 MB

- Fast initialization for quick array setup

- Check consistency for background data integrity

- SSD support with SSD Guard™ technology

- Patrol read for media scanning and repairing

- DDF compliant Configuration on Disk

- S.M.A.R.T. support

- Global and dedicated Hot Spare with Revertible Hot

- Spare support:

  - Automatic rebuild

  - Enclosure affinity

  - Emergency SATA hot spare for SAS arrays

- Enclosure management:

  - Universal Backplane Management (UBM)

- Shield state drive diagnostic technology

Standard Features

	• SED Key Management
Logical Drive Configuration Features:	• Extend Logical Drive
	• Instant Secure Erase
	• Migrate RAID/Stripe Size
	• Modifying Cache Write Policy
	• Move Logical Drive
	• Re-enable Failed Logical DriveExpand Array
	• Move Drives
	• Shrink Array
	• Spare Management
HPE OneView Support:	• Monitored ModeExtend Logical Drive
	• Instant Secure Erase
	• Migrate RAID/Stripe Size
	• Modifying Cache Write Policy
	• Move Logical Drive
	• Re-enable Failed Logical Drive
Kit contents:	Includes controller, documentation information card, warranty statement, and backup power cable (MR416 only)

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.

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

Standard Features

Fault Recovery

- Minimizes downtime, reconstructs data, and facilitates a quick recovery from drive failure.
- On-Line Spares: There is no limit to the number of spare drives that can be installed prior to drive failure. If a failure occurs, recovery begins with an On-Line Spare and data is reconstructed automatically.
- DRAM ECC detects and corrects data bit errors.

Related Options

Required Accessories for HPE MR416i-a / MR416i-p Gen10 Plus 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 required when using Cache based storage controllers.
- The Smart Storage 96W Battery supports multiple devices. See server QuickSpecs for compatibility.

Service and Support

HPE Services

No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.

https://www.hpe.com/services

Consulting Services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

https://www.hpe.com/services/consulting

HPE Managed Services

HPE runs your IT operations, providing 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.

HPE Managed Services | HPE

Operational services

Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.

https://www.hpe.com/services/operational

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service 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/completecare

HPE Tech Care Service

HPE Tech Care Service is the operational support service experience for HPE products. The service 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 Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service 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

Service and Support

HPE Lifecycle Services
HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:
- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:
https://www.hpe.com/services/lifecycle

For a list of the most frequently purchased services using service credits, see the **HPE Service Credits Menu**

Other Related Services from HPE Services:
HPE Education Services
Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.
https://www.hpe.com/services/training

Defective Media Retention
An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

Parts and Materials
HPE 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 quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

How to Purchase Services
Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:
- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at **https://ssc.hpe.com/portal/site/ssc/**

Service and Support

AI Powered and Digitally Enabled Support Experience
Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.
https://support.hpe.com/hpesc/public/home/signin

Consume IT On Your Terms
HPE GreenLake edge-to-cloud platform 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 edge-to-cloud platform 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

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html

For more information
www.hpe.com/services

Summary of Changes

Date	Version History	Action	Description of Change
04-Dec-2023	Version 9	Changed	Service and Support Section was updated
02-Oct-2023	Version 8	Changed	Overview Section was updated
14-Aug-2023	Version 7	Changed	Models Section was updated
05-Jun-2023	Version 6	Changed	Models Section was Updated
03-Apr-2023	Version 5	Changed	Names were Updated
02-May-2022	Version 4	Changed	Overview Section was updated
04-Oct-2021	Version 3	Changed	Service and Support Section was updated
07-Jun-2021	Version 2	Changed	Descriptions were updated
06-Apr-2021	Version 1	New	New QuickSpecs

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