



Hewlett Packard
Enterprise

Marvell Storage Controller User Guide for the HPE ProLiant MicroServer Gen10

Abstract

This user guide provides information on how to use the Marvell BIOS Utility and Marvell Storage Utility to create and manage RAID virtual disks and arrays. Hewlett Packard Enterprise assumes that the user is familiar with server storage configuration principles and has a basic understanding of server hardware and networking.

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Contents

Marvell storage controller utilities.....	5
Drive configuration tasks.....	5
Marvell BIOS Utility tasks.....	6
Accessing the MBU.....	6
Accessing the MBU in UEFI boot mode.....	6
Accessing the MBU in legacy boot mode.....	7
Creating a virtual disk.....	8
Deleting a virtual disk.....	11
Rebuilding a degraded virtual disk.....	13
Marvell Storage Utility tasks.....	17
Installing the Marvell Storage Utility.....	17
Virtual disk monitoring.....	17
Accessing the MSU.....	17
MSU-supported browsers.....	18
Enabling scripting.....	18
To access the MSU in Windows through the GUI.....	18
To access the MSU in Windows through the CLI.....	18
To access the MSU in Windows using a remote URL.....	19
To access the MSU in Linux using the GUI.....	19
To access the MSU in Linux through the CLI.....	19
To access the MSU in Linux using a remote URL.....	20
Logging in to the MSU.....	20
MSU user interface.....	21
Creating a virtual disk.....	22
Creating a customized virtual disk.....	24
Viewing the virtual disk properties.....	26
Renaming a virtual disk.....	26
Setting up event notifications.....	27
Controller events.....	27
Deleting a virtual disk.....	28
Erasing RAID configuration data from a foreign physical disk.....	29
Safety, warranty, and regulatory information.....	31
Regulatory information.....	31
Notices for Eurasian Economic Union.....	31
Turkey RoHS material content declaration.....	32
Ukraine RoHS material content declaration.....	32
Warranty information.....	32
Websites.....	33



Support and other resources..... 34

 Accessing Hewlett Packard Enterprise Support.....34

 ClearCARE technical support.....34

 Accessing updates..... 34

 Customer self repair.....35

 Documentation feedback..... 35



Marvell storage controller utilities

The Marvell 88SE9230 PCIe to SATA 6Gb/s Controller is the embedded storage controller in the HPE ProLiant MicroServer Gen10. This controller manages the SATA drives connected to the onboard LFF/SFF drive SATA port. RAID 0, 1, and 10 levels are supported.

There are two utilities to configure drives connected to the onboard LFF/SFF drive SATA port:

- Marvell BIOS Utility (MBU)—The MBU is built into the Marvell storage controller ROM embedded in the server. The MBU is accessible during server POST.
- Marvell Storage Utility (MSU)—The MSU is a browser-based utility that allows you to perform drive configuration tasks through a GUI or CLI.

Drive configuration tasks

A few drive configuration tasks can be performed using either MBU or MSU. However, some specific tasks can only be done with one or the other. See the following table for more information.

Drive configuration task	Use MBU	Use MSU
Creating a virtual disk	X	X
Creating a customized virtual disk		X
Monitoring a virtual disk		X
Viewing virtual disk properties		X
Renaming a virtual disk		X
Rebuilding a degraded virtual disk	X	
Deleting a virtual disk	X	X
Erasing RAID configuration data from a foreign physical disk		X
Setting up event notifications		X



Marvell BIOS Utility tasks

Accessing the MBU

The procedure to access the MBU depends on the enabled server boot mode—UEFI or legacy boot mode.

Accessing the MBU in UEFI boot mode

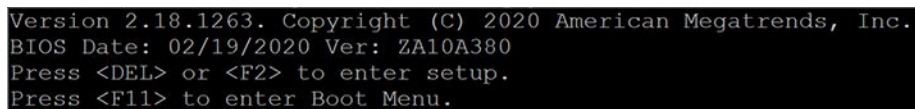
The UEFI boot mode is the server default boot mode.

Prerequisites

Accessing the MBU using the RAID command in the UEFI Shell prompt requires the system BIOS to be version A330 or later.

Procedure

1. Reboot the server.
2. During POST, press **Delete**.

A screenshot of a BIOS POST screen with a black background and white text. The text displays the BIOS version and date, and provides instructions on how to enter the setup or boot menu.

```
Version 2.18.1263. Copyright (C) 2020 American Megatrends, Inc.  
BIOS Date: 02/19/2020 Ver: ZA10A380  
Press <DEL> or <F2> to enter setup.  
Press <F11> to enter Boot Menu.
```

3. From the **Aptio Setup Utility** screen, select **Save & Exit tab** > **UEFI: Built-in EFI Shell**, and then press **Enter**.





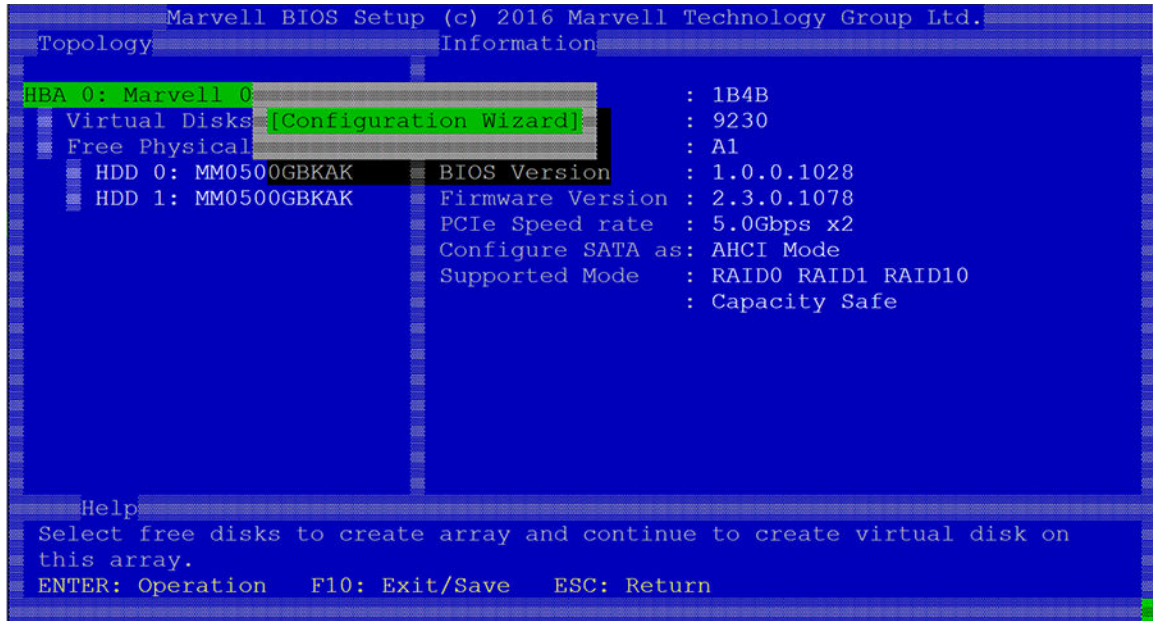
Accessing the MBU in legacy boot mode

1. Reboot the server.
2. On the POST drive information screen, press **Ctrl+M**.

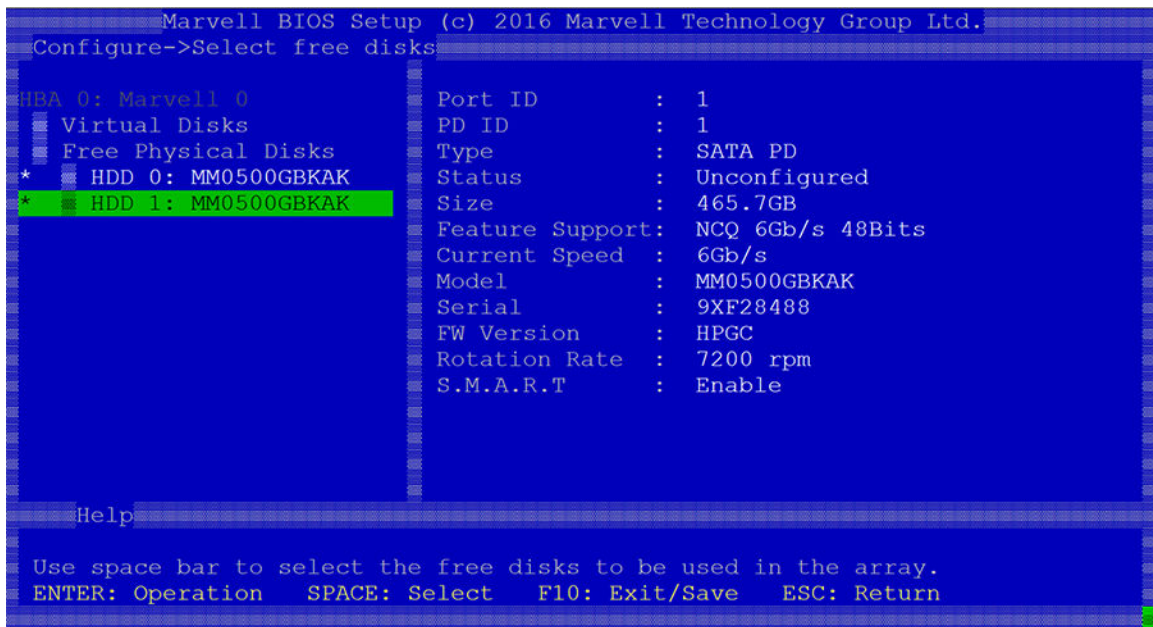
Creating a virtual disk

Procedure

1. In the **Topology** pane, select **HBA 0: Marvell 0**, and press **Enter**.
A pop-up menu appears.
2. Select **Configuration Wizard** and press **Enter**.



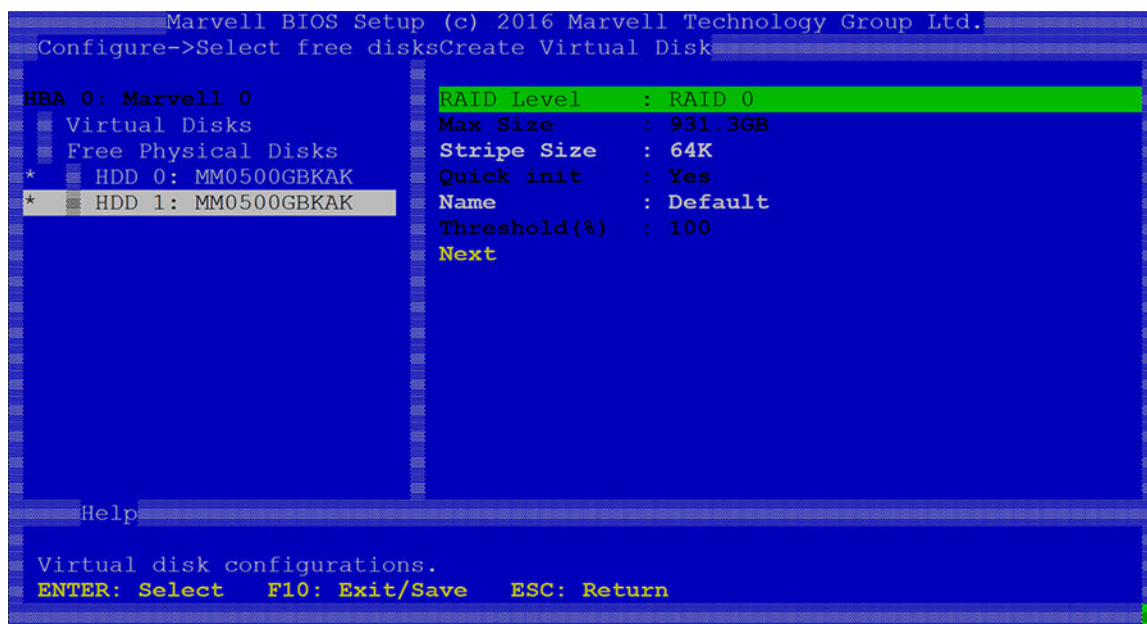
3. Use the arrow keys to scroll through the list of free physical disks. Press the **Space** bar to select or clear a disk.
When a disk is selected, an asterisk (*) appears on the left of the disk label.



4. After selecting the required disks, press **Enter**.

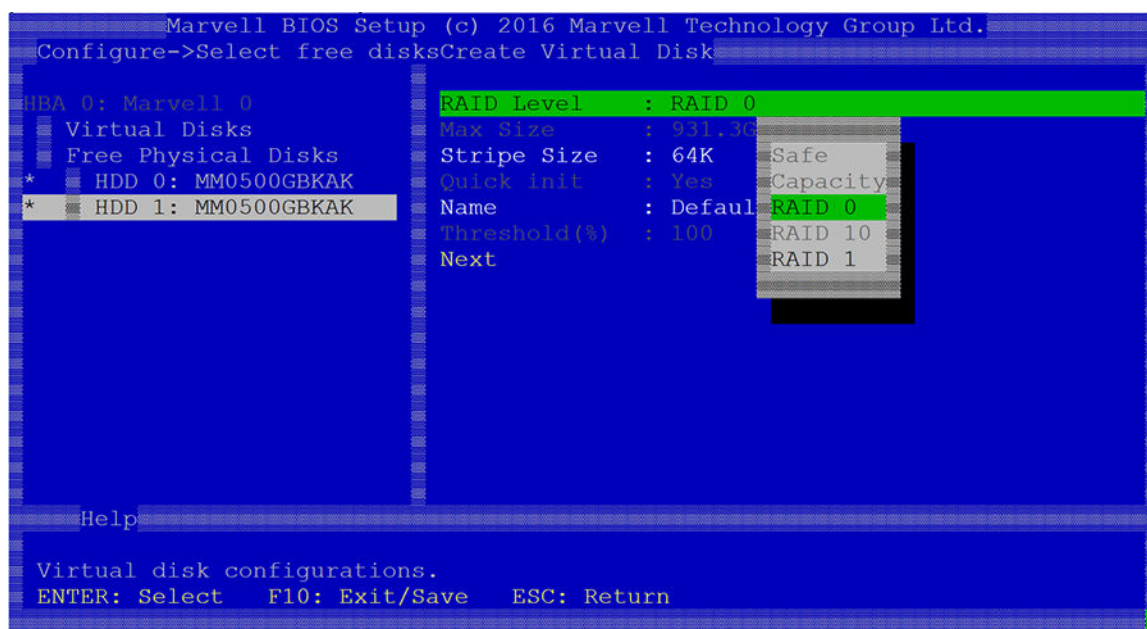


The **Create Virtual Disk** options appear in the **Information** pane. The **Help** pane displays the actions valid for a selected field.



5. Select **RAID Level** and press **Enter**.

A pop-up list of available RAID levels appears.

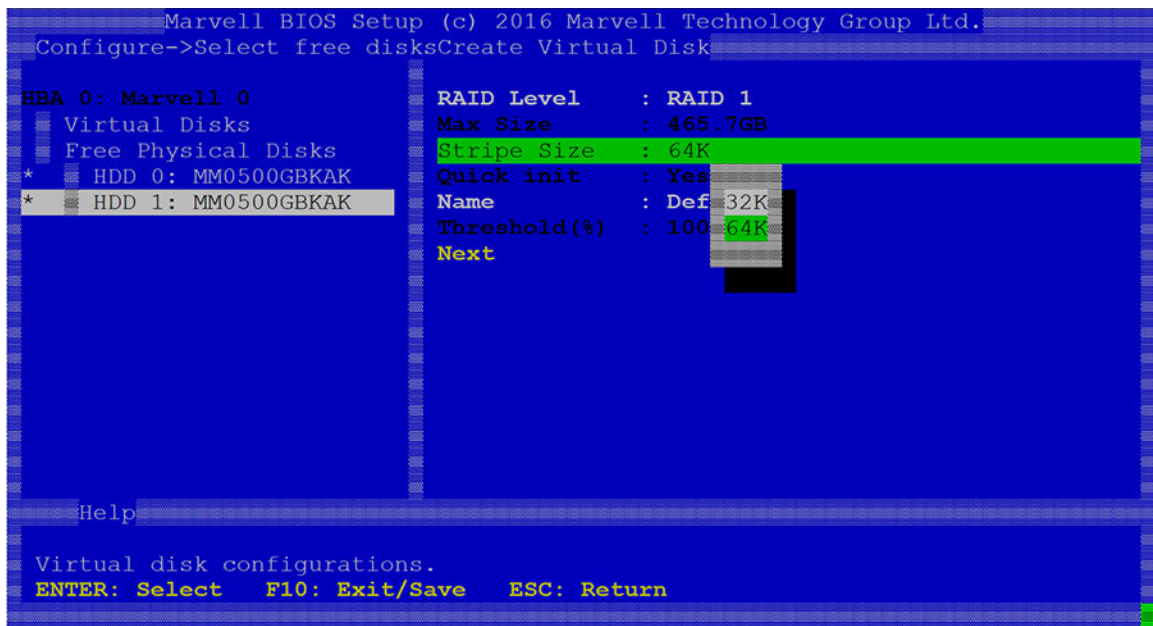


6. Select the preferred RAID level and press **Enter**.

7. Select **Stripe Size**, and press **Enter**.

A pop-up list of stripe sizes for the selected RAID level appears.

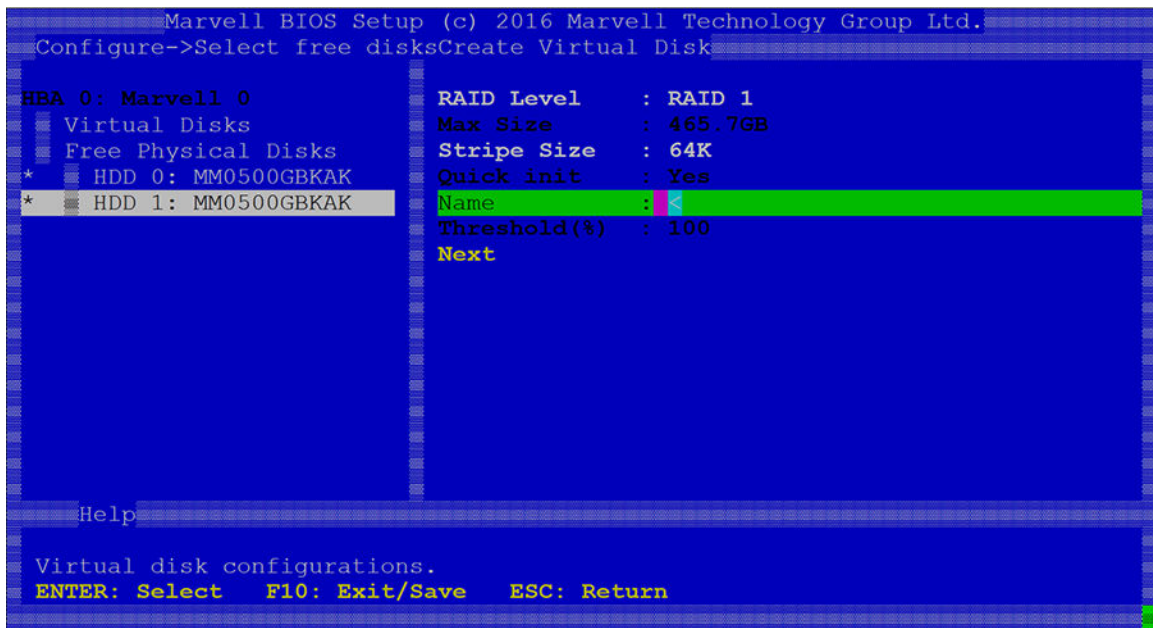




8. Select the preferred stripe size, and press **Enter**.

9. Select **Name**.

The Default name is cleared for a new name.

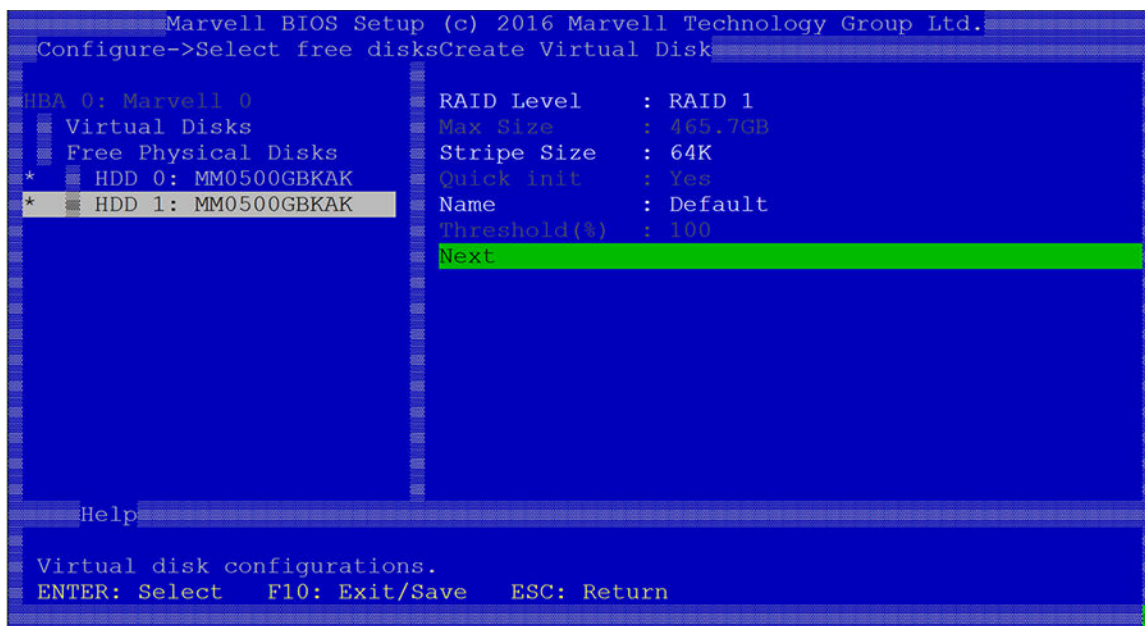


10. Type a name for the new virtual disk, and press **Enter**.

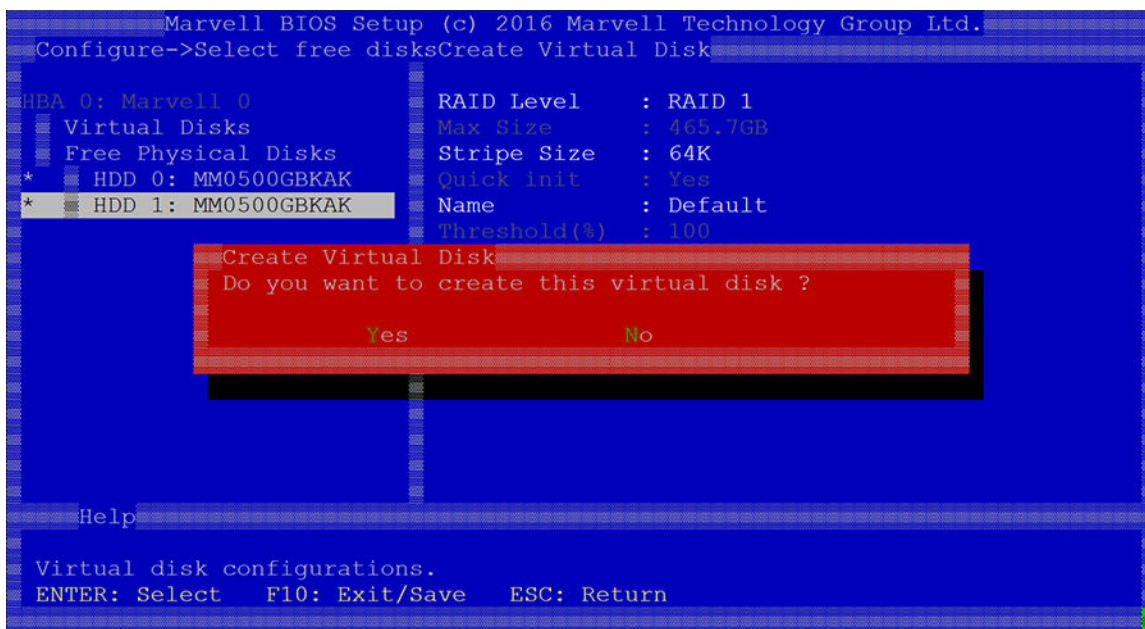
11. To create the new virtual disk, select **Next**, and press **Enter**.

A confirmation prompt message appears.





12. Press **Y** to confirm the new virtual disk.



The new virtual disk is listed in the **Topology** pane.

Deleting a virtual disk

A virtual disk with a [D] mark means that the RAID VD metadata has changed.

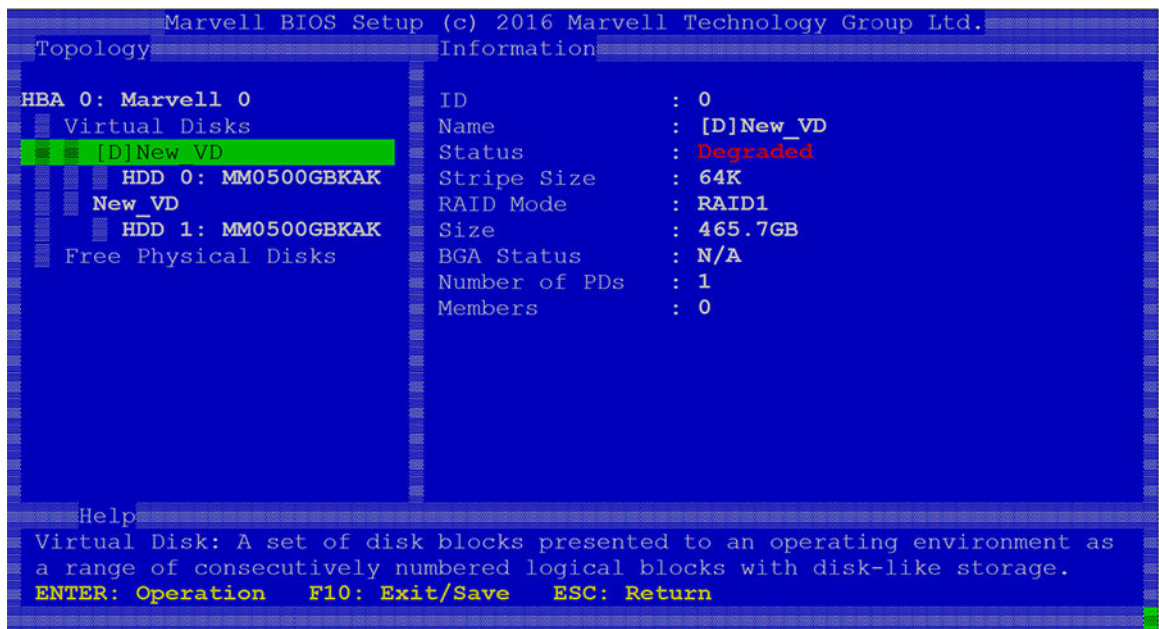
CAUTION: Deleting a virtual disk permanently erases all data on that virtual disk. After deleting a virtual disk, the physical disks containing the virtual disk will be available for use in other virtual disks.

Procedure

1. In the **Topology** pane, select the degraded disk to delete, and press **Enter**.



A pop-up menu appears.



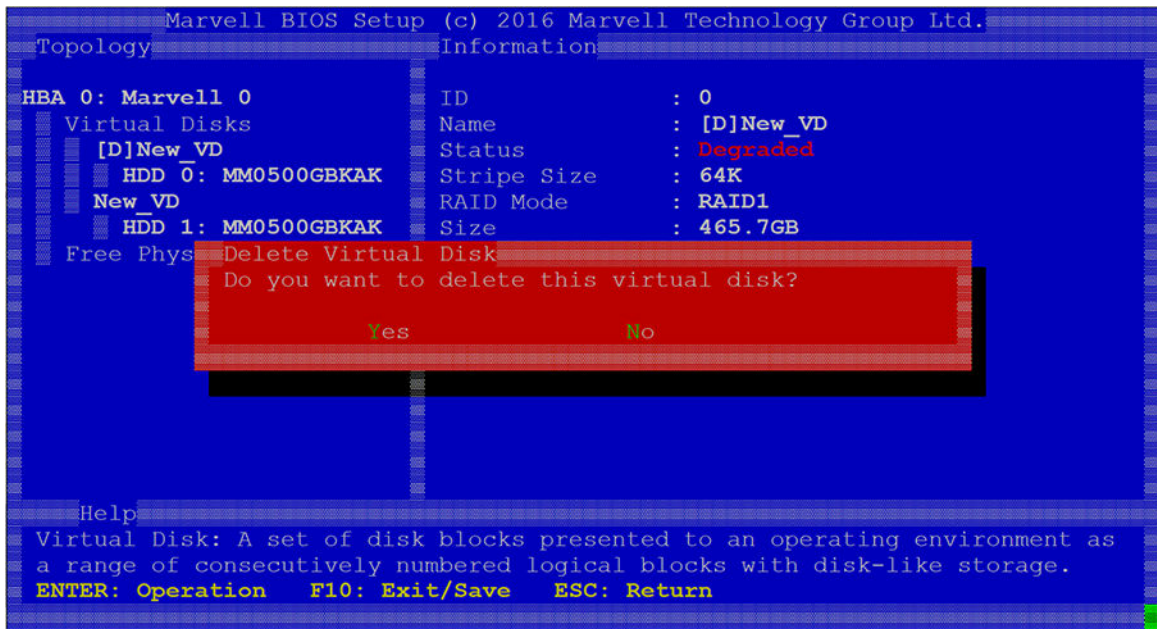
2. Select **Delete**, and press **Enter**.

A deletion prompt message appears.



3. Press **Y** to delete the virtual disk.

A prompt message to delete the master boot record (MBR) partition appears.



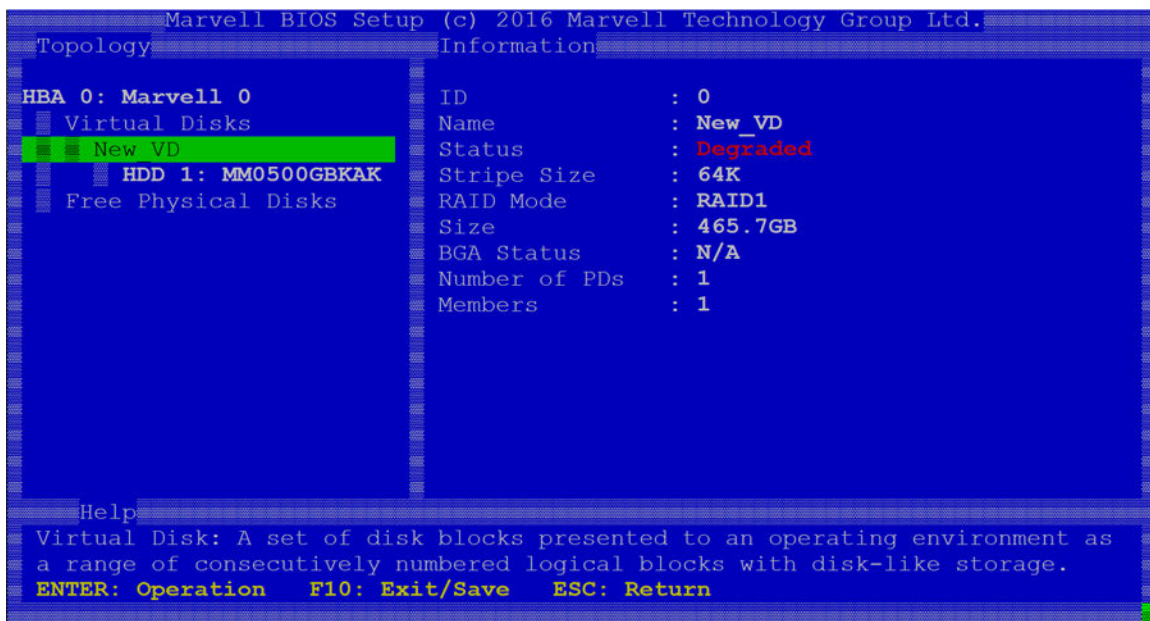
4. Press **Y** to delete the MBR partition from the virtual disk.

Rebuilding a degraded virtual disk

CAUTION: The Marvell 88SE9230 controller only supports rebuilding virtual disks using the Marvell BIOS Utility. Do **NOT** use the Marvell Storage Utility to initiate, resume, or complete the process of rebuilding a virtual disk. Any attempt to do so will apply the rebuild process to the wrong drive and lead to data loss.

This procedure is applicable to a RAID 1 virtual disk. HyperDuo virtual disks created in Safe Mode may also be partially rebuilt if the SSD fails.

In the **Information** pane, the status of degraded virtual disk changes from Functional to Degraded.



Prerequisites

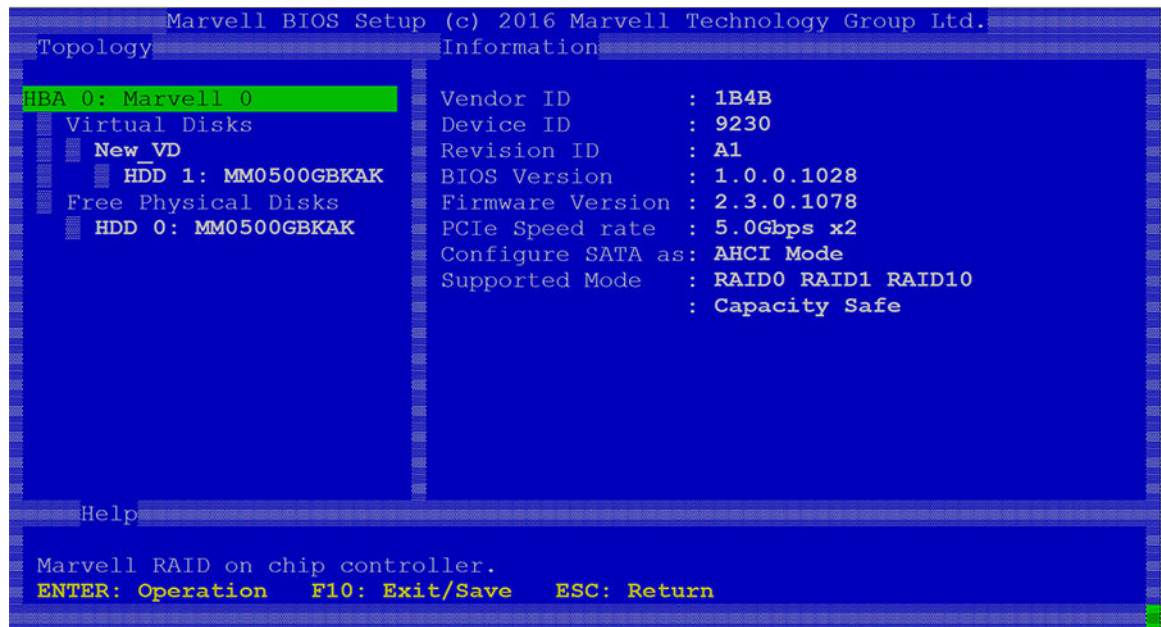
If you plan to reuse the same degraded physical disk in rebuilding a virtual disk, **delete all data on the degraded virtual disk**.

Procedure

1. Replace the faulty physical disk with a good disk of identical specifications.

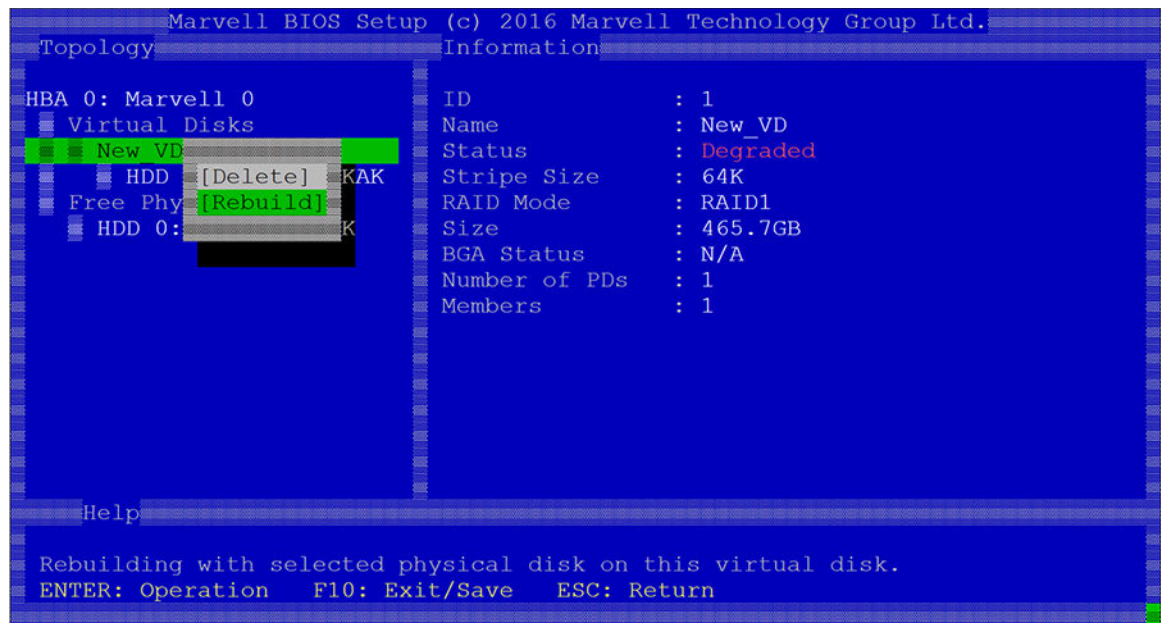
For replacement procedures, see the *HPE ProLiant MicroServer Gen10 Maintenance and Service Guide* (<https://www.hpe.com/support/microservergen10-msg>).

The new physical disk is listed under **Free Physical Disks** in the **Topology** pane.

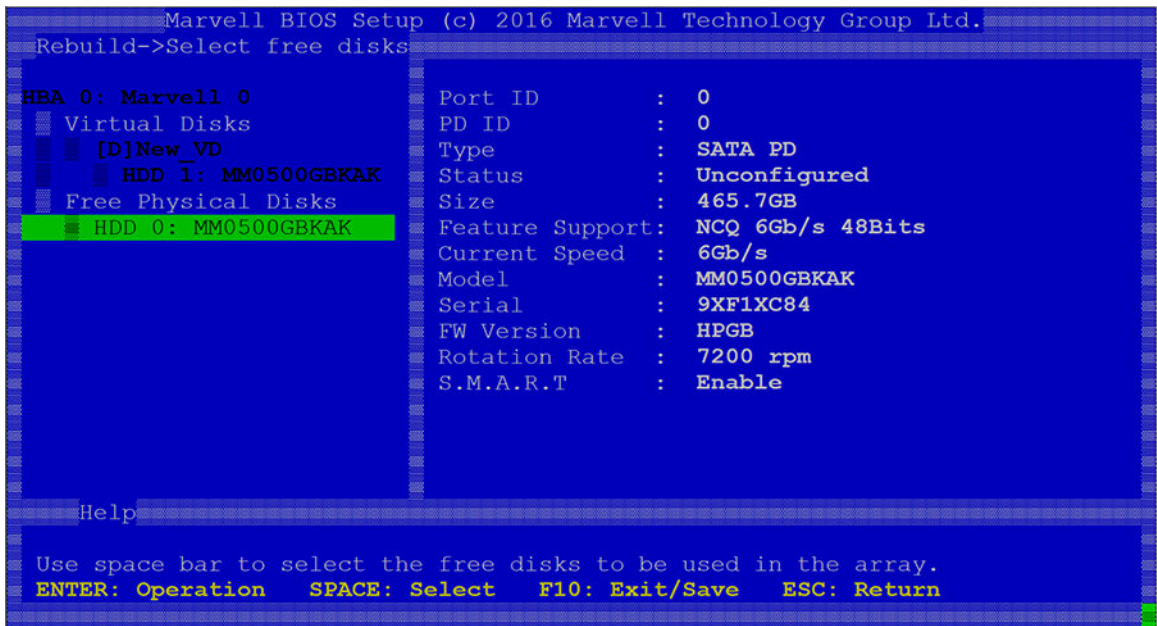


2. In the **Topology** pane, select **Virtual Disks**, and press **Enter**.

A pop-up menu appears.

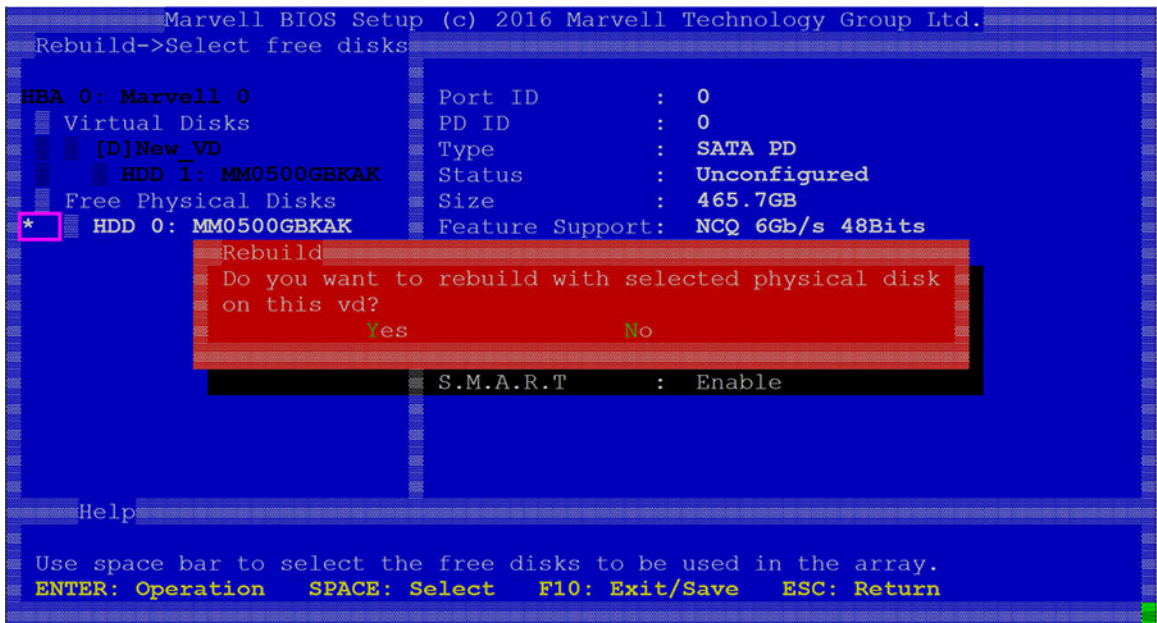


3. Select **Rebuild** and press **Enter**.
 4. Use the arrow keys to scroll through the list of free physical disks. Press the **Space** bar to select or clear a disk.
- When a disk is selected, an asterisk (*) appears on the left of the disk label.

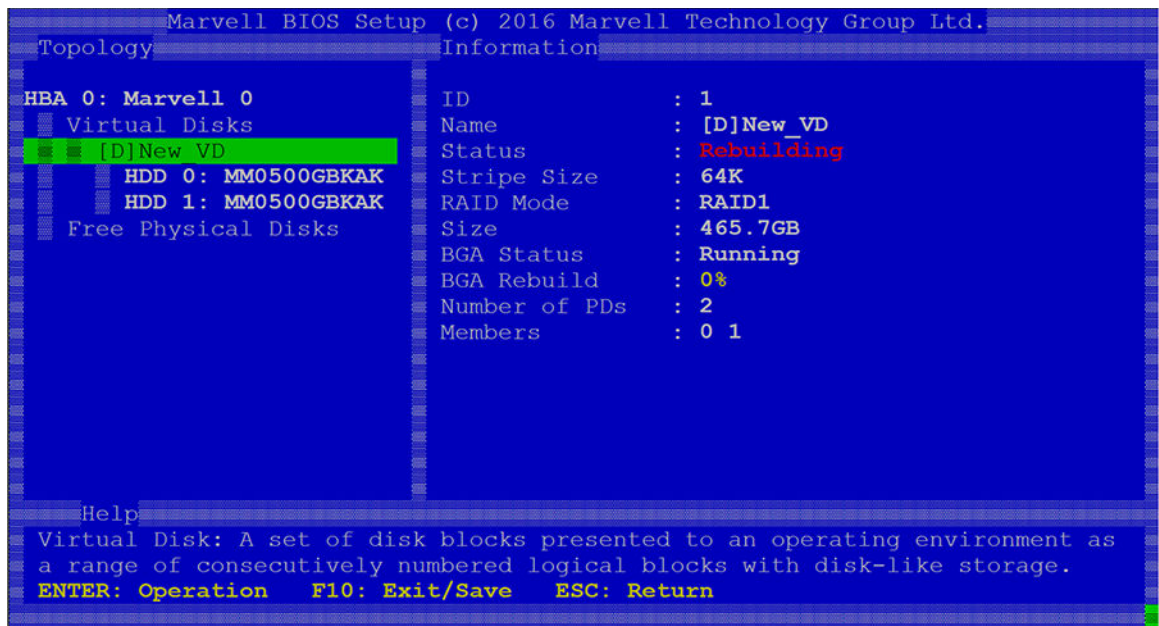


CAUTION: Do not delete the virtual disk or remove the replacement physical disk during the rebuild process. Doing so interrupts the rebuild process and can lead to data loss or system damage.

5. Press **Y** to start the rebuild process.



The Status field in the **Information** pane indicates the rebuilding progress.



Marvell Storage Utility tasks

Installing the Marvell Storage Utility

Prerequisites

Access to some HPESC downloads might require product entitlement. You must have an HPE Passport set up with relevant entitlements.

Procedure

1. Go to the HPE ProLiant MicroServer Gen10 download page:
<https://www.hpe.com/downloads/microservergen10>
2. Under **Software Type** select **Utility**.
3. Download the Marvell Storage Utility (MSU) for HPE MicroServer Gen10 Server package compatible with the target server OS.
4. Unzip the package and open the Marvell_MSU folder.
5. Follow the installation procedure described in the `instructions.txt` file.

Virtual disk monitoring

After installing the MSU, the **Marvell MSU Tray Application** icon appears in the system tray. This allows the background monitoring of the physical and virtual disks manage by the Marvell 88SE9230 controller.



Accessing the MSU

The MSU is accessed through a GUI, CLI, or remote URL in a Windows or Linux environment. A login prompt appears after accessing the MSU.

To access the MSU in Windows, choose one of the following methods:

- **To access the MSU in Windows using the GUI**
- **To access the MSU in Windows using the CLI**
- **To access the MSU in Windows using a remote URL**

To access the MSU in Linux, choose one of the following methods:



- To access the MSU in Linux using the GUI
- To access the MSU in Linux using the CLI
- To access the MSU in Linux using a remote URL

MSU-supported browsers

The MSU supports the following browsers:

- Microsoft Internet Explorer 6.0 and later versions
- Firefox 3.0 and later versions
- Google Chrome

Enabling scripting

Before accessing the MSU, verify that scripting is enabled in the browser.

- Active Scripting in Internet Explorer
- JavaScript in Firefox

See the browser documentation for instructions.

To access the MSU in Windows through the GUI

Procedure



Double-click the **MarvellTray** desktop icon

To access the MSU in Windows through the CLI

This MSU access option is only available if the `Command Line Interface` component was selected during the MSU installation.

Procedure

1. Do one of the following:



- Double-click the **MarvellCLI** desktop icon.
- In Windows Explorer, open the `C:\Program Files (x86)\Storage\Interface` folder, and double-click the `mvsetup.exe` file.

2. To view a list of command instructions, enter **help** or **?**.



To access the MSU in Windows using a remote URL

Prerequisites

Before accessing the MSU remotely, verify that remote access is enabled in the server firewall settings. See the OS documentation for instructions.

Procedure

In the address bar of a supported browser, enter the following URL:

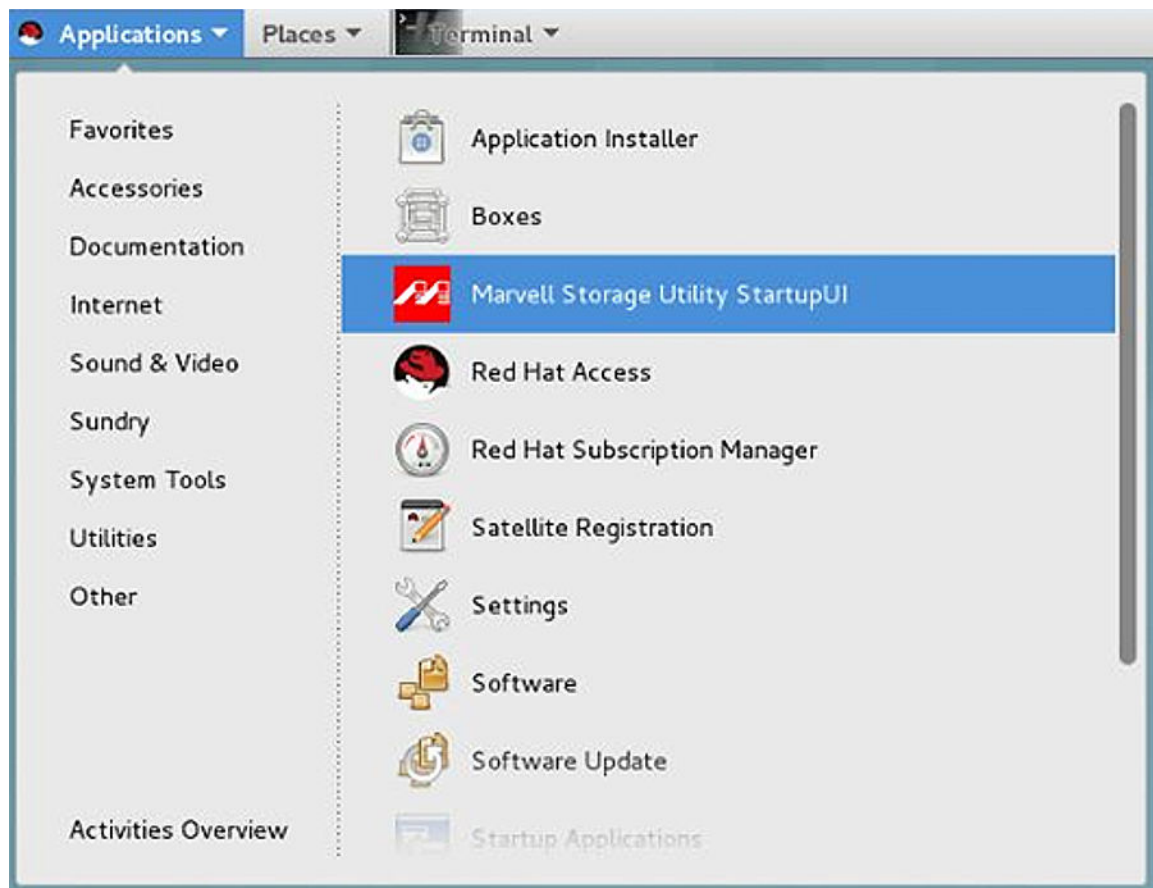
`http://ip_address:8845/MSU/JumpPage.php?Target=StoragePage`

Where *ip_address* is the target server IP or the system name when the server is in an internal network.

To access the MSU in Linux using the GUI

Procedure

Click **Applications > System Tools > Marvell Storage Utility StartupUI**.



To access the MSU in Linux through the CLI

Procedure

1. In the Linux terminal, enter the following command:



```
opt/marvell/storage/cli
```

2. Execute **mvcli**.
3. To view a list of command instructions, enter **help** or **?**.

To access the MSU in Linux using a remote URL

Prerequisites

Before accessing the MSU remotely, verify that remote access is enabled in the server firewall settings. See the OS documentation for instructions.

Procedure

In the address bar of a supported browser, enter the following URL:

```
http://ip_address:8845/MSU/JumpPage.php?Target=StoragePage
```

Where *ip_address* is the target server IP or the system name when the server is in an internal network.

Logging in to the MSU

Accessing the MSU displays the login page.

Procedure

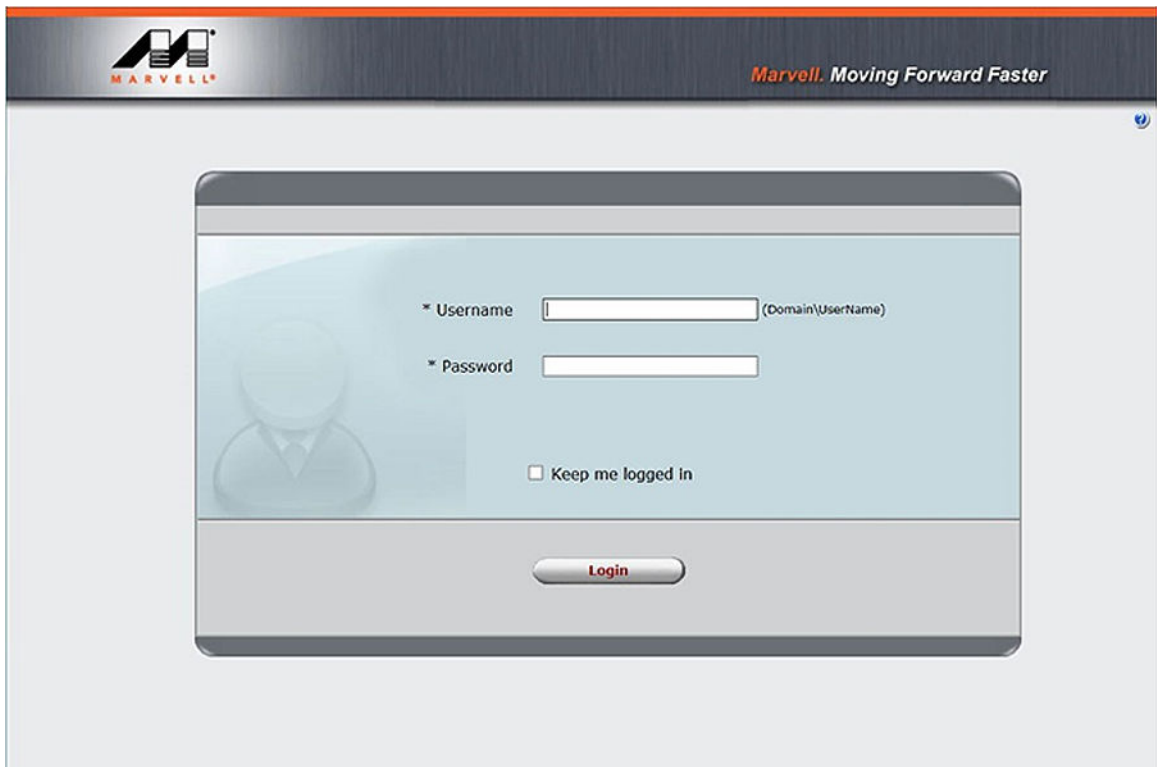
1. Enter an OS user name and password.

If there is no password, leave the **Password** field blank.

2. If the server is in a network, add the network domain name and a backslash before the user name.

To skip the login page the next time the MSU is accessed, select the **Keep me logged in** check box.





MSU user interface

Marvell Storage Management

Device

- Adapter 0
 - Physical Devices
 - Physical Disk: port 0
 - Physical Disk: port 2
 - Physical Disk: port 3
 - Management
 - Account Management
 - Email Notify Setting
 - BGA Schedule Setting

Property Operation

BIOS Version	1.0.0.1028
Firmware Version	2.3.0.1078
Boot Loader Version	2.1.0.1009
Driver Version	N/A
Chip Revision ID	A1
Vendor ID	1B4B
Sub Vendor ID	1B4B
Device ID	9230
Sub Device ID	9230
Port Count	4
Max PCIe Speed	5Gb/s

Event Logs(6~25/Total Events:25)

Adapter	Class	Time	Description
0	PD Event	07/03/2017 17:51	Physical disk 1 is unplugged
0	PD Event	07/03/2017 17:51	Physical disk 2 is plugged in
0	PD Event	07/03/2017 17:50	Physical disk 1 is plugged in
0	PD Event	07/03/2017 17:49	Physical disk 2 is unplugged
0	VD Event	07/03/2017 17:49	Virtual Disk 0 is deleted

- **Marvell Storage Management (MSU)**—This system pane uses a tree view that displays the relationship between the physical and virtual devices attached to the server.
- **Properties**—This pane lists the properties of the device selected in the system pane. Depending on the device selected in the System pane, one of more of the following tabs appear.
 - **Property**—Select this tab to view and modify the properties of the selected device.
 - **Operation**—Hover the mouse over this tab to view a menu of operations that can be performed on the drive selected in the System pane.
 - **Programs**—Select this tab to configure a virtual disk.
 - **Schedule**—Select this tab to schedule regular maintenance tasks.
- **Event Logs**—This pane list the storage controller events.

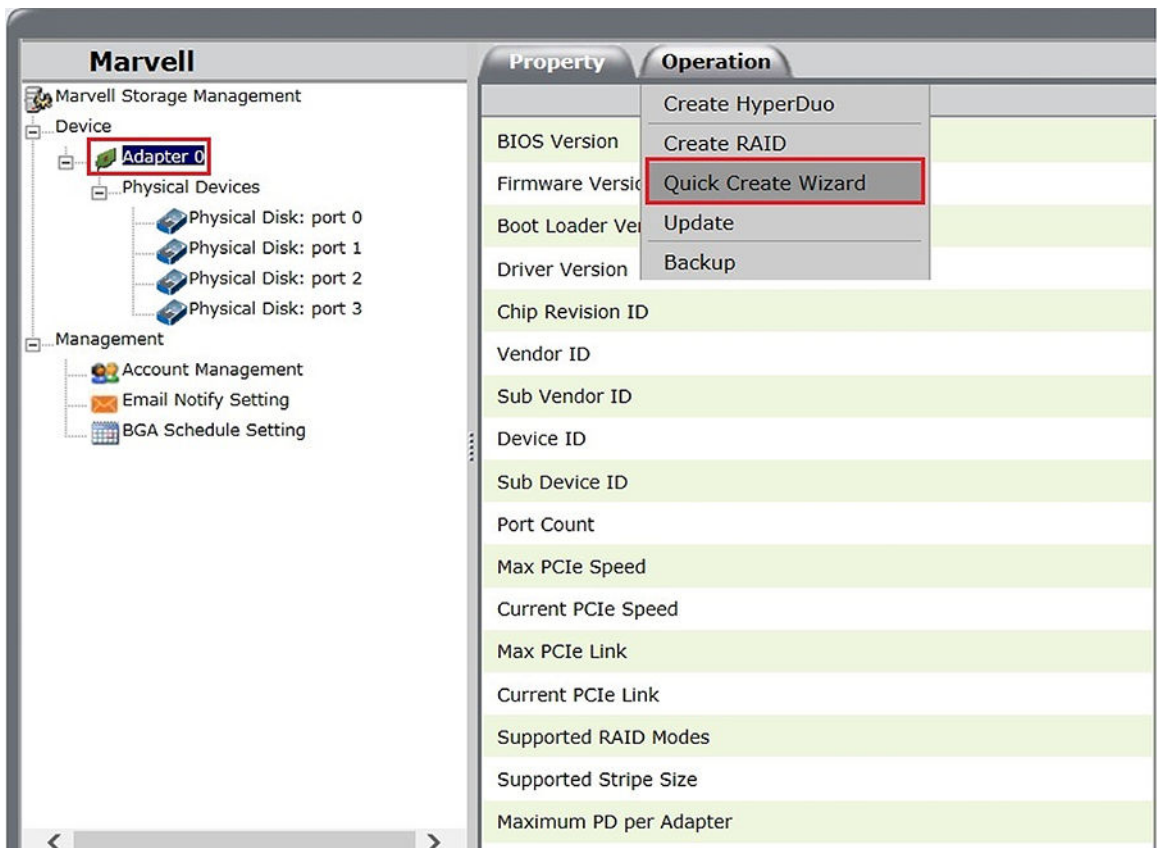
To access more information on the MSU interface, click **?**. Some of the information in the general help user guide might not apply to all HPE servers.

Creating a virtual disk

If you are new to RAID technology and are unsure of which RAID level to use, use the **Quick Create Wizard** to create a virtual disk.

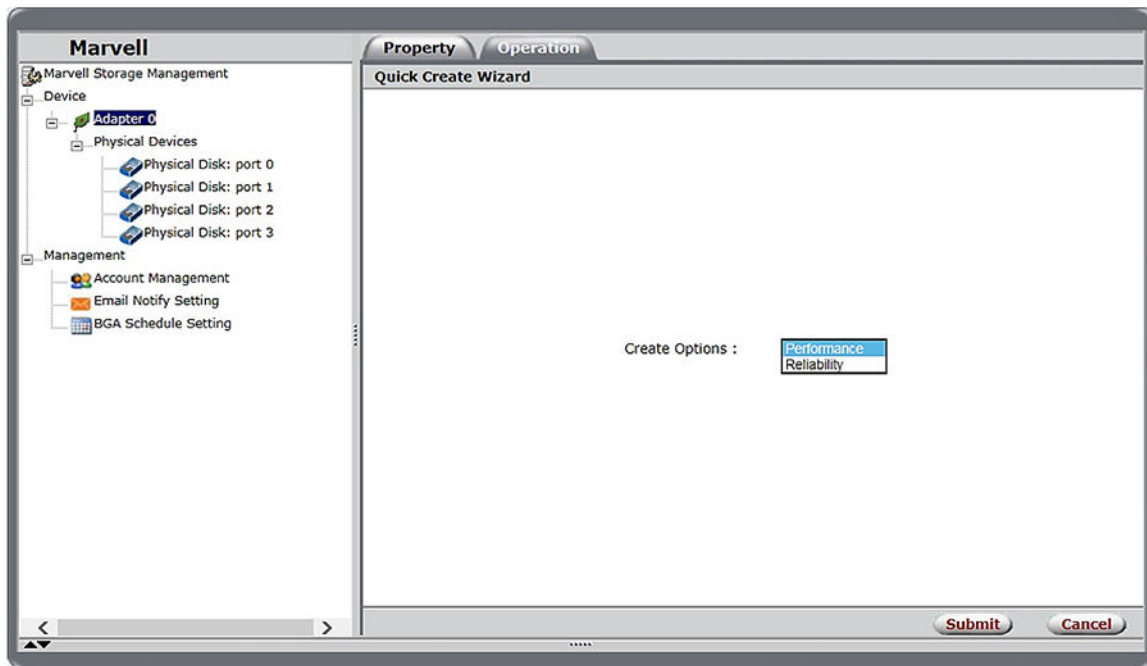
Procedure

1. In the System pane, select **Marvell Storage Management > Device > Adapter 0**.
2. Hover the mouse over the **Operation** tab and click **Quick Create Wizard**.



3. In the **Create Options** field, select the preferred virtual disk profile.

- **Performance**—Create a virtual disk that is optimized for read/write performance.
- **Reliability**—Create a virtual disk that is optimized for fault tolerance.

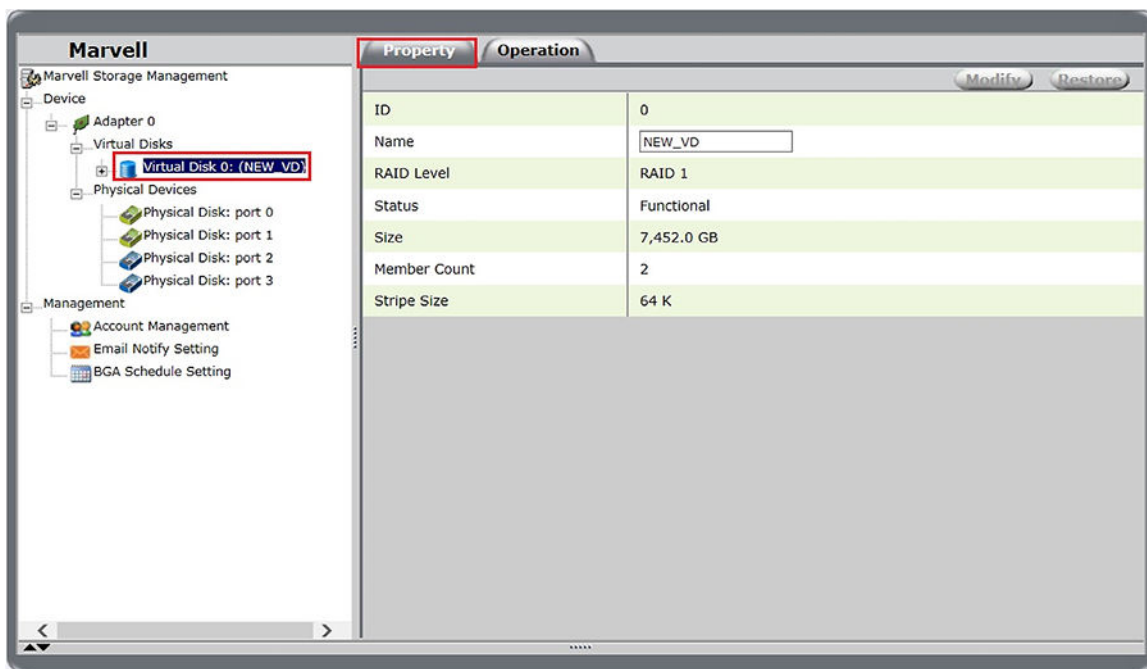


4. Click **Submit**.

A confirmation prompt message appears.

5. Click **OK**.

The MSU lists the new virtual disk in the **System** pane and its corresponding **Property** tab.

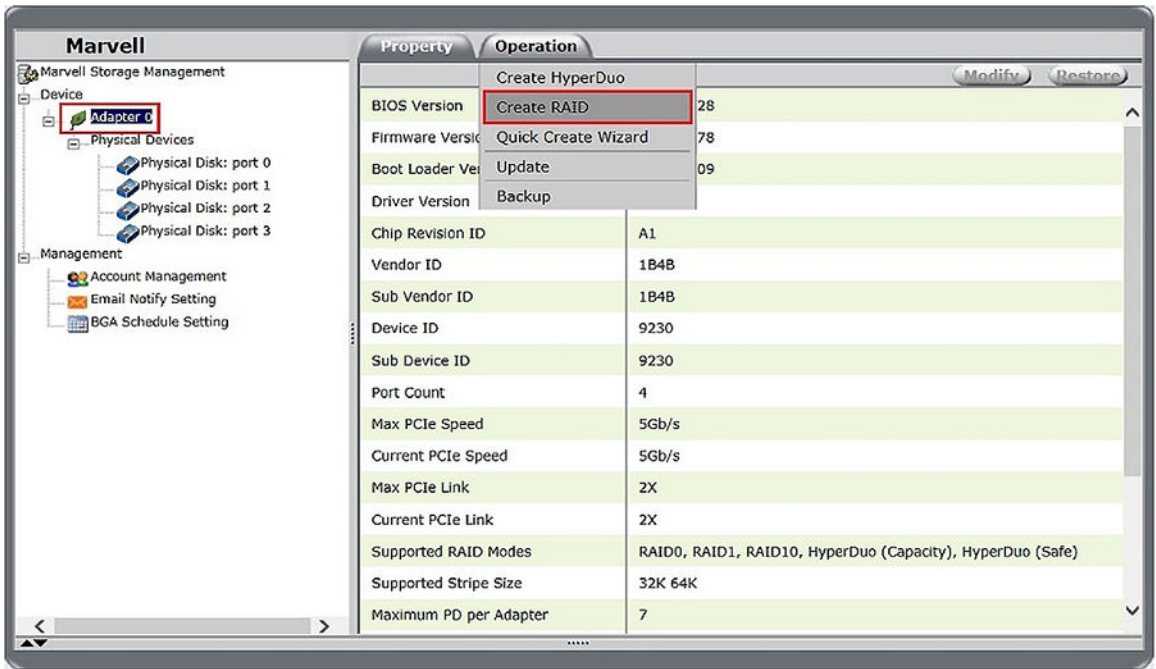


Creating a customized virtual disk

To manually create a virtual disk with customized RAID settings, use the **Create RAID** operation.

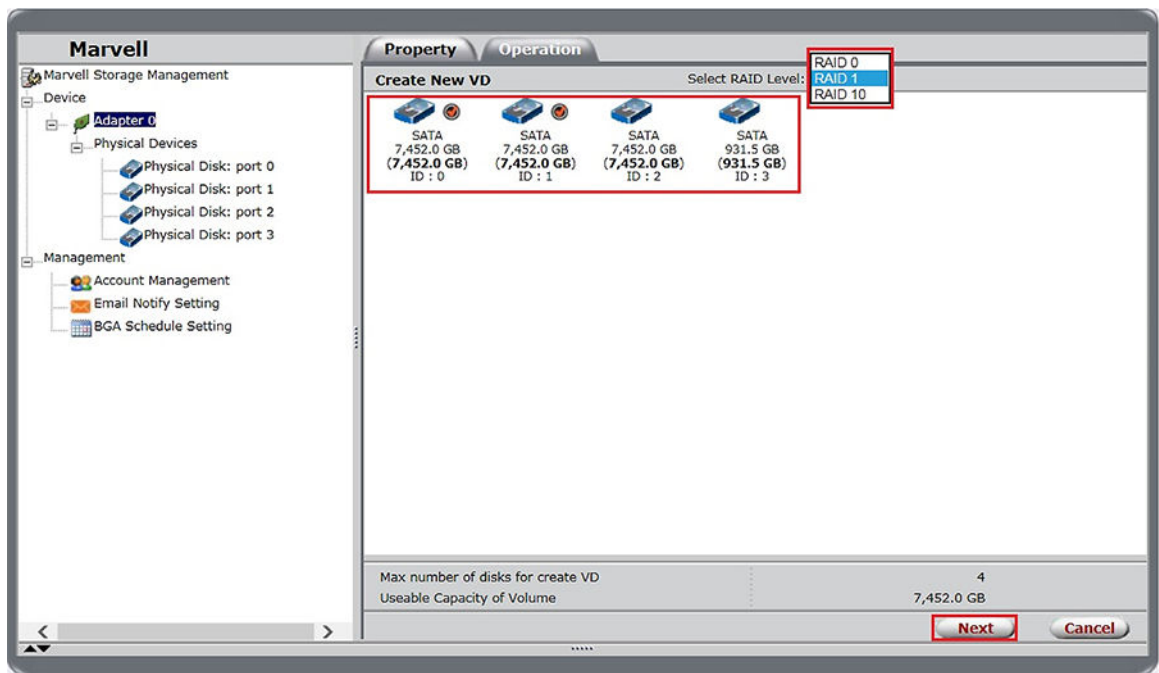
Procedure

1. In the **System** pane, select **Marvell Storage Management > Device > Adapter 0**.
2. Hover the mouse over the **Operation** tab and click **Create RAID**.

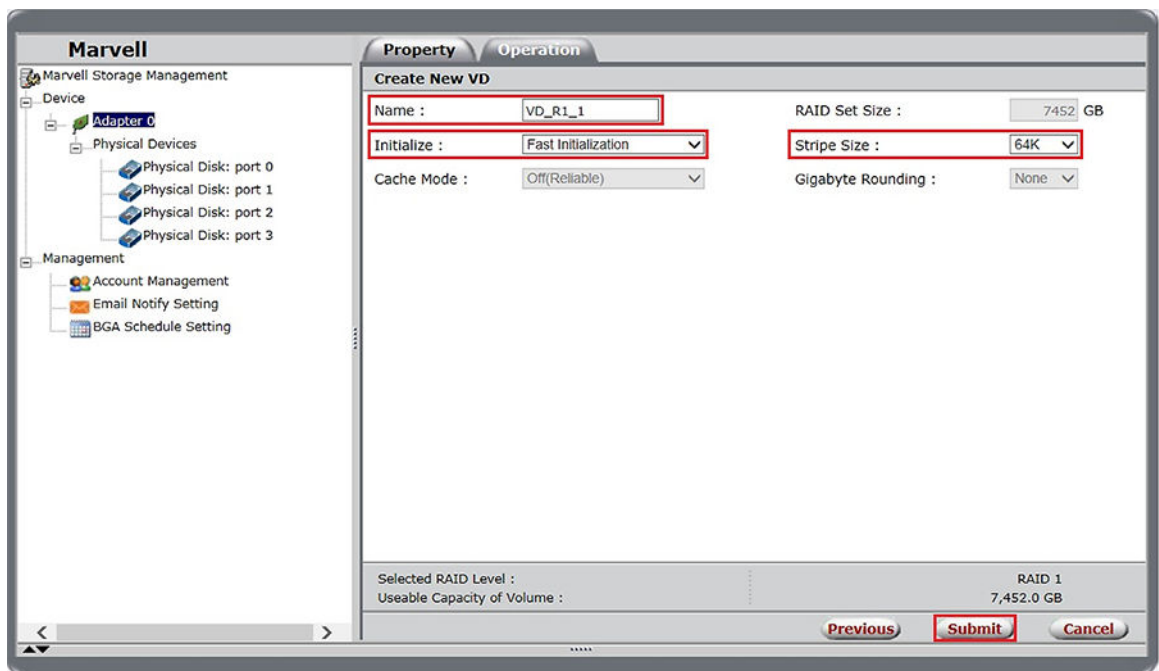


3. Click the **Select RAID Level** drop-down menu and select the preferred RAID level.
 - **RAID 0**—RAID 0 (disk striping) is recommended for applications that require high read/write performance, but do not require fault tolerance. This RAID level requires at least two physical drives.
 - **RAID 1**—RAID 1 (disk mirroring) is recommended for applications that require read performance and fault tolerance. This RAID level requires exactly two physical drives.
 - **RAID 10**—RAID 10 (disk striping and mirroring) is recommended for applications that require high read performance and fault tolerance. This RAID level requires a minimum of four physical drives.





4. Select the physical disks for the new virtual disk.
5. Click **Next**.
6. Configure the new virtual disk:
 - **Name**—Retain the default name or set a custom name for the virtual disk.
 - **Initialize**—Selecting Fast Initialization cleans, formats, and prepares the virtual disk for data storage.
 - **Stripe Size**—Select the stripe size for the virtual disk.



7. Click **Submit**.



A confirmation prompt message appears.

8. Click **OK**.

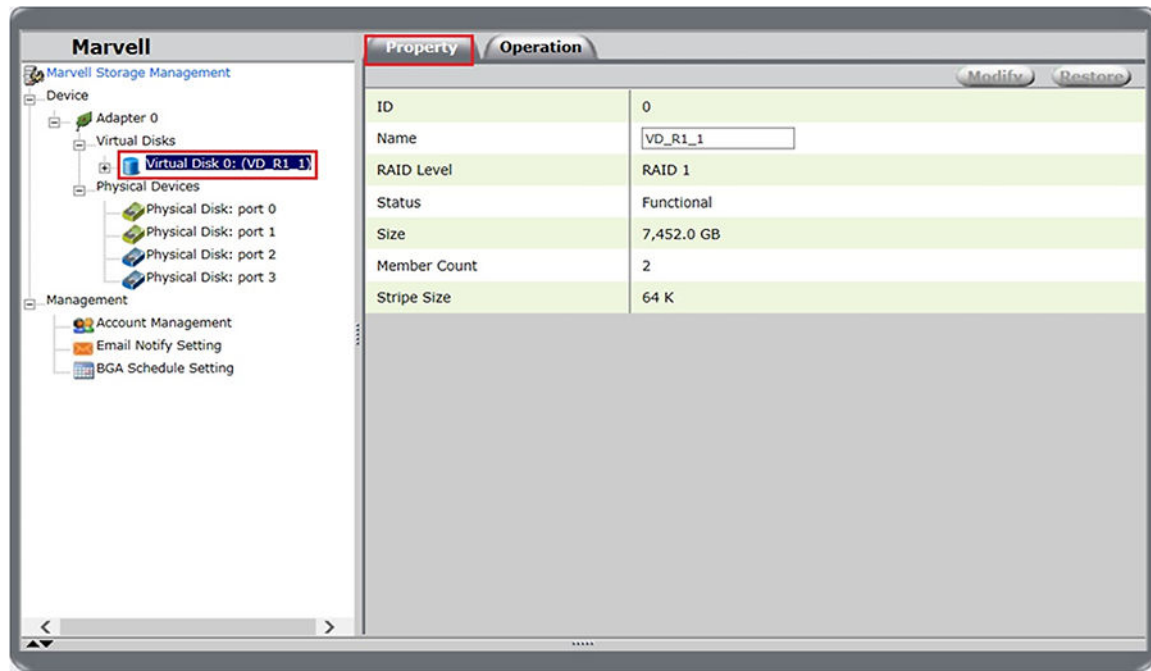
The MSU lists the new virtual disk in the **System** pane and its corresponding **Property** tab.

Viewing the virtual disk properties

Procedure

1. In the **System** pane, select **Marvell Storage Management > Device > Adapter 0 > Virtual Disks**.
2. Select the virtual disk.

The MSU displays the **Property** tab for the selected virtual disk.



Renaming a virtual disk

Procedure

1. In the **System** pane, select **Marvell Storage Management > Device > Adapter 0 > Virtual Disks**.
2. Select the virtual disk to rename.

The MSU displays the **Property** tab for the selected virtual disk.

3. Select the **Name** field and enter the new name.
4. Click **Modify**.



Setting up event notifications

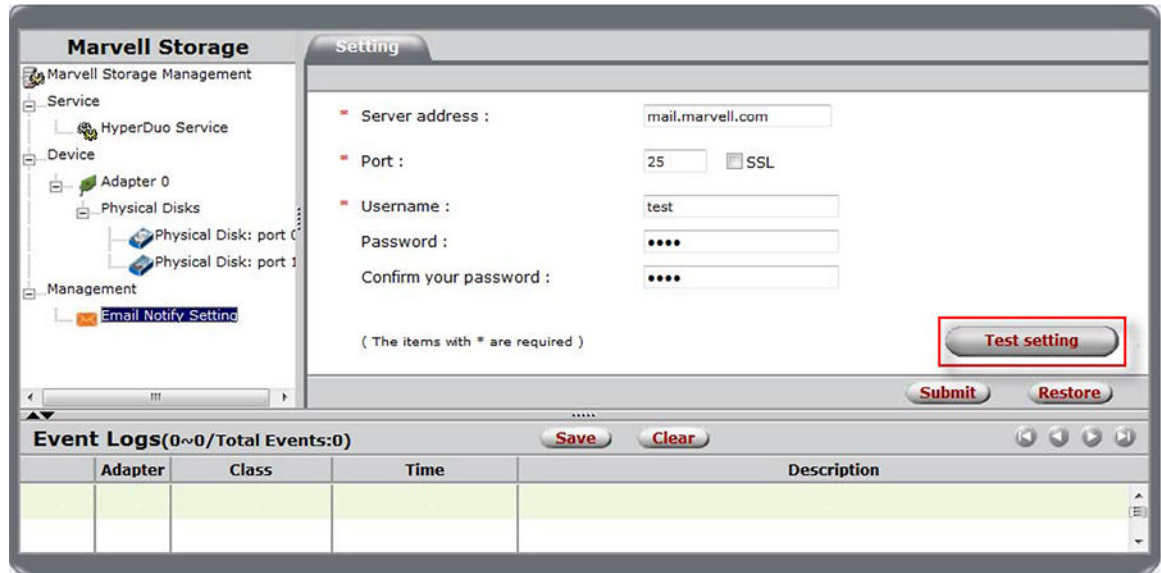
Prerequisites

To configure the MSU to send event notifications to an email account, a working SMTP email server is required.

Procedure

1. In the **System** pane, select **Marvell Storage Management** > **Management** > **Email Notify Setting**.
2. Configure the email server settings, and then click **Test setting**.

The MSU sends a test email to the configured email address. If the test email is received, the settings are working correctly.



3. Click **Submit**.

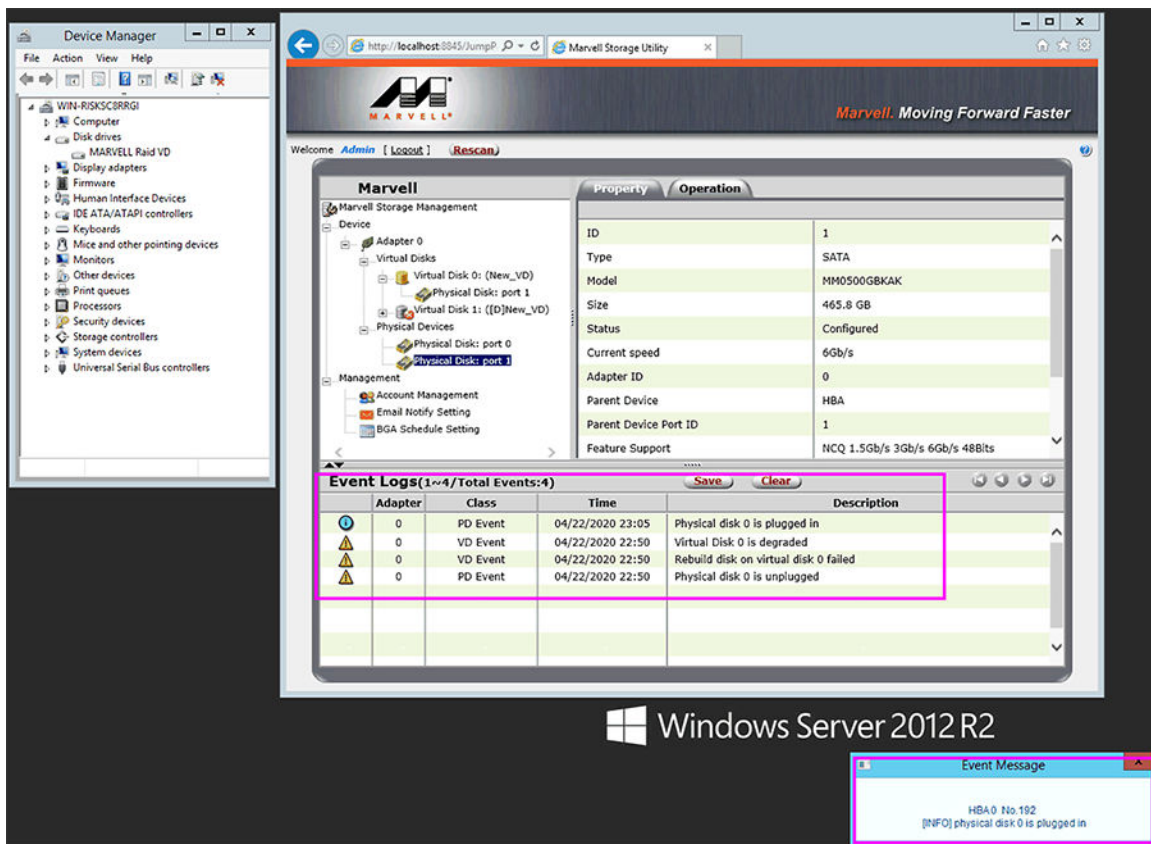
A confirmation message appears.

Controller events

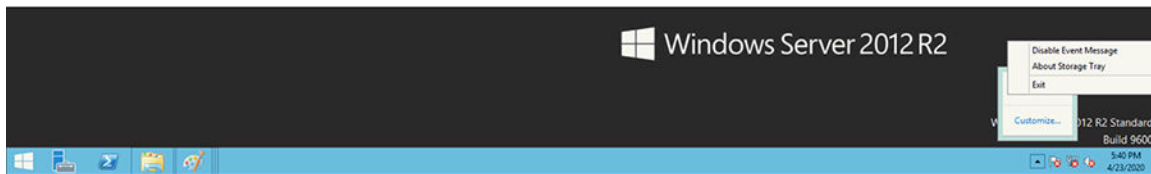
The **Event Logs** pane displays a list of critical controller events and the RAID status of the physical and virtual disks. These events are triggered by the Windows driver so this feature is only valid for Windows systems.

Event messages are pop-up messages that appear above the **Marvell MSU Tray Application** icon in the system tray. This feature is enabled by default.





To disable the event messages feature, right-click on the **Marvell MSU Tray Application** icon, and select **Disable Event Messages**.

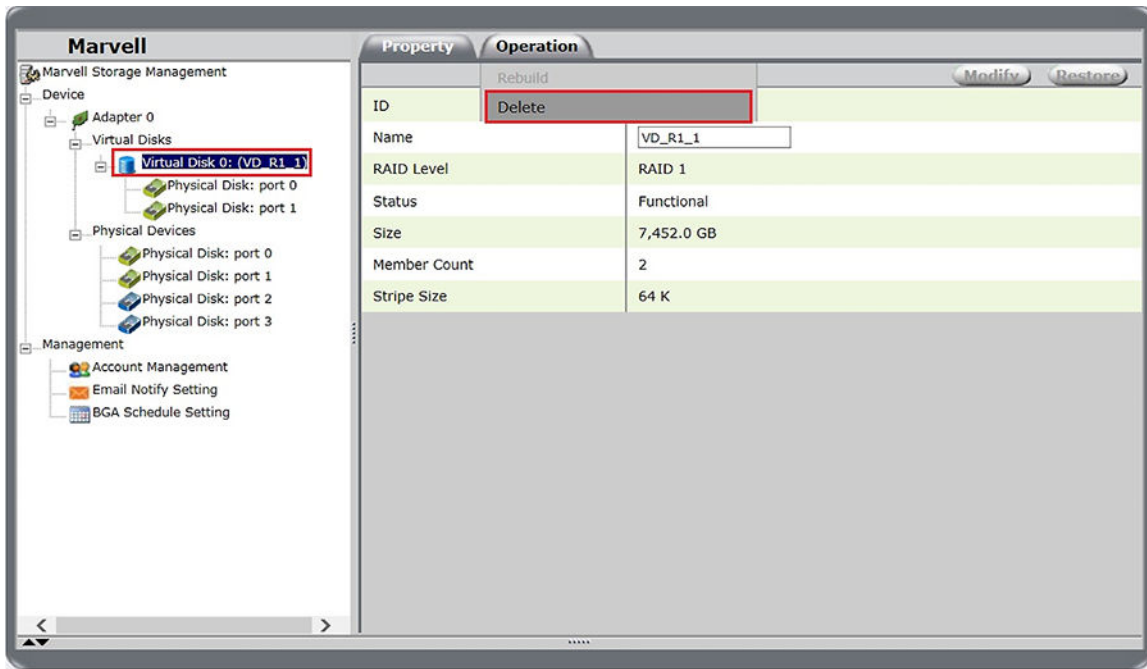


Deleting a virtual disk

CAUTION: Deleting a virtual disk permanently erases all data on that virtual disk. After deleting a virtual disk, the physical disks containing the virtual disk will be available for use in other virtual disks.

Procedure

1. In the **System** pane, select **Marvell Storage Management** > **Device** > **Adapter 0** > **Virtual Disks**.
2. Select the virtual disk to delete.



3. Hover the mouse over the **Operation** tab and click **Delete**.
A warning message about erasing the data appears.
4. Click **OK** to acknowledge the warning.
A deletion prompt message appears.
5. Click **OK** to delete the virtual disk.
If the virtual disk has partition information, a prompt to delete or retain the partition appears.
6. Click **OK** to delete the partition or click **Cancel** to keep the partition information.

Erasing RAID configuration data from a foreign physical disk

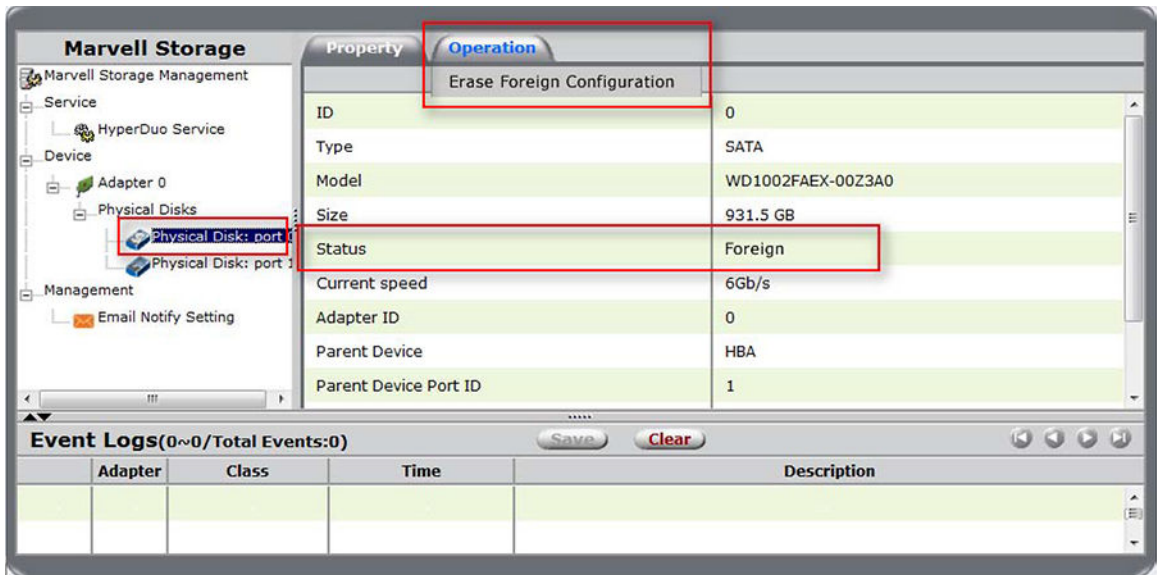
RAID configuration data is stored on all physical disks that are part of a virtual disk. When this physical disk is moved from one system to another, that disk is flagged as a foreign disk. To use this flagged disk in another virtual disk in the destination system, the original configuration data must be erased.

CAUTION: When erasing a foreign configuration from a physical disk, all data on that disk is erased. If the physical disk was originally part of another virtual disk, erasing the RAID configuration data might damage that virtual disk.

Procedure

1. In the **System** pane, select **Marvell Storage Management > Device > Adapter 0 > Physical Devices**.
2. Select the foreign disk.
3. Hover the mouse over the **Operation** tab and click **Erase Foreign Configuration**.





Safety, warranty, and regulatory information

Regulatory information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the Hewlett Packard Enterprise Support Center:

<https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

<https://www.hpe.com/info/reach>

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

<https://www.hpe.com/info/ecodata>

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

<https://www.hpe.com/info/environment>

Notices for Eurasian Economic Union



Manufacturer and Local Representative Information

Manufacturer information:

Hewlett Packard Enterprise, 6280 America Center Drive, San Jose, CA 95002 U.S.

Local representative information Russian:

- **Russia**

ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677

- **Kazakhstan**

ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

Local representative information Kazakh:

- **Russia**

ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677

- **Kazakhstan**



ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы қ., Бостандық ауданы,
Әл-Фараби даңғылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (product serial number format)

WW = Week of manufacture (calendar week)
Y = Year of manufacture (decade, year)

If you need help identifying the manufacturing date, contact tre@hpe.com.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

To view the warranty information for your product, see the links provided below:

HPE ProLiant and IA-32 Servers and Options

<https://www.hpe.com/support/ProLiantServers-Warranties>

HPE Enterprise and Cloudline Servers

<https://www.hpe.com/support/EnterpriseServers-Warranties>

HPE Storage Products

<https://www.hpe.com/support/Storage-Warranties>

HPE Networking Products

<https://www.hpe.com/support/Networking-Warranties>



Websites

General websites

Hewlett Packard Enterprise Information Library

<https://www.hpe.com/info/EIL>

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

<https://www.hpe.com/storage/spock>

Storage white papers and analyst reports

<https://www.hpe.com/storage/whitepapers>

For additional websites, see **[Support and other resources](#)**.

Product websites

HPE ProLiant MicroServer Gen10 product page

<https://www.hpe.com/servers/microserver>

HPE ProLiant MicroServer Gen10 support page

<https://www.hpe.com/support/microservergen10>

HPE ProLiant MicroServer Gen10 user documents

<https://www.hpe.com/info/microservergen10-docs>



Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
<https://www.hpe.com/info/assistance>
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
<https://www.hpe.com/support/hpesc>

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

ClearCARE technical support

Support for ClearOS and ClearVM is not provided by Hewlett Packard Enterprise. Support for ClearOS and ClearVM is purchased and delivered by ClearCenter. You can purchase single support incidents by submitting a support ticket to ClearCenter, or you can purchase a Bronze, Silver, Gold, or Platinum ClearCARE subscription. For more information, go to the ClearOS website:

<https://www.clearos.com/>

Several levels of professional technical support are available to licensed users. For more information, go to the ClearCARE support website:

<https://www.clearos.com/products/support/clearcare-overview>

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

Hewlett Packard Enterprise Support Center

<https://www.hpe.com/support/hpesc>



Hewlett Packard Enterprise Support Center: Software downloads

<https://www.hpe.com/support/downloads>

My HPE Software Center

<https://www.hpe.com/software/hpesoftwarecenter>

- To subscribe to eNewsletters and alerts:

<https://www.hpe.com/support/e-updates>

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

<https://www.hpe.com/support/AccessToSupportMaterials>

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- ❗ **IMPORTANT:** Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.
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Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider.

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hpe.com). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.

