



HPE ProLiant DL380 Gen11 Server



Contents

Recommended configuration	3
How to perform firmware upgrade?	3
Optional method	4
RAID controller configuration	5
BIOS UEFI settings	9
How to configure HPE iLO remote access?	11

Recommended configuration

Readers are strongly encouraged to review the following links to configure the HPE ProLiant DL380 Gen11 Server in preparation to be a Veeam Hardened Repository appliance. In addition to these links, relevant screenshots and steps have also been included in this document.

Veeam Backup & Replication on HPE Alletra Storage Server 4120/4140 and HPE ProLiant DL380 Gen11 Server

HPE iLO 6 Security Technology Brief

Expand each section to see screenshots and documentation

How to perform firmware upgrade?

Firmware updates are mandatory for running a Veeam Hardened Repository on an HPE ProLiant DL380 Gen11 Server system. As the update process can change over time, follow the instructions in the HPE Firmware upgrade guide from the vendor.

Access the latest release notes with installation instructions

The following steps will update BIOS, firmware, and the HPE iLO management software. To complete this activity, download the most recent SPP, and using the HPE iLO remote console, boot the system directly from the SPP ISO image, select **Automatic Firmware Update**..., and follow the prompts:

1. Download the latest HPE SPP support bundle.

Be sure to select the specific hardware generation for your hardware. The downloaded file is a bootable ISO.

Always select the latest support bundle version.



2. Create a bootable USB stick out of the ISO and boot directly on the server or through the remote management (HPE iLO).

An USB stick can be created out of the ISO with the Rufus tool.

3. When the SPP tool is booted, select Automatic Firmware Update

Automatic Firmware Update

Interactive Firmware Update

Step 1	Step 2	Step 3		
Inventory of baseline	and node			
▼ Inventory of baseline				
Gen Service Pack for Pro	Liant Baseline successfully	added	Total components 350	
 Inventory of Localhost 				
Iocalhost Inventory in p	progress	Inventory	started.	
Abort Start Over				
Step 1	Ste	ep 2	Step 3 Deployment	
Deployment				
Iocalhost Deployr	nent in progress		Deployment completed	d.
Start Over Abo	ort Reboot			

4. Reboot the server

Optional method

An alternative to booting from the HPE ProLiant Support Pack would be updating firmware through the HPE iLO. In this case, you would <u>download the latest HPE iLO 6 package</u>, click **Firmware & OS Software** in the HPE iLO 6 home page, and follow the prompts to update firmware:

- 1. Download the latest HPE iLO 6 package from support.hpe.com
- 2. Click Firmware & OS Software in the HPE iLO 6 home page. There, you will see an Update Firmware option to click.
- 3. Choose your local file you just downloaded, check the box next to Confirm TPM override, and click Flash.

ile location	
Local fil	8
O Remote	file
.ocal file Choose File	lloó_163.fwpkg
Also s	tore in iLO Repository
CAUTIOI installed TP	N: Suspend or back up any software that uses the M or TM, or risk losing your data. Select the Confirm TPM override check box to proceed.
Confi	m TPM override

4. You will see a progress bar tick up to 100% a couple of times, and then the HPE iLO will restart. The restart may take a few minutes, so don't be alarmed if you lose connection with the HPE iLO. The page should return on its own.



5. Once the HPE iLO returns, verify the new HPE iLO version in **Information** on the HPE iLO home page.



IP Address	10.12.6.11
Link-Local IPv6 Address	FE80::5EED:8CFF:FEF1:D446
<u>iLO Hostname</u>	logan-ilo.tac1.net
iLO Dedicated Network Port	Enabled
iLOShared Network Port	Disabled
iLO Virtual NIC	Disabled
License Type	iLO Advanced
iLO Firmware Version	1.63 Sep 13 2024
iLO Date/Time	Thu Oct 3 11:20:06 2024

RAID controller configuration

Operating system boot devices

• **RAID card description:** This is HPE NS204i-u Gen11 NVMe Hot Plug Optimized Storage Device, which is the dedicated and preconfigured hardware RAID 1 OS boot device. It includes two HPE enterprise-class 480 GB NVMe M.2 SSDs on a single HPE Synergy add-in card. It auto-creates a RAID 1 volume during boot and therefore does not require configuration. Boot devices enable the deployed OS to be mirrored through a dedicated hardware RAID 1.

Backup storage drives

- Cache policy: 8 GB flash-backed write cache (10% read / 90% write)
- Strip size used: 256K
- Data protection method: RAID 6 (13+2, 1 hot spare)

Considerations for LUN configuration

- Default initialization method—Full. Use this method, otherwise, the initialization will complete slowly and in background, impacting performance for days.
- Assign only 10% of the controller cache to read.
- Number of logical volumes

If you have a dedicated boot device, such as the HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device, Hewlett Packard Enterprise recommends using the entire array capacity for a single logical volume.

If, instead, you plan to boot from this array, HPE recommends creating two volumes: a smaller ~250 GB one to be used as a boot volume and a second larger volume with all the remaining capacity to be used by the Veeam backup repositories.

Backup storage drive configuration

Create one RAID 6 volume consisting of 15 drives plus 1 hot spare. This will be a total of 16 data drives. The RAID 6 volume is entirely managed by a single HPE MR416i-p smart array controller card in the HPE ProLiant DL380 Gen11 Server and is thus offloaded from the OS.

Press F9 on boot to enter System Utilities, and then choose System Configuration

Ø=0	10.12.6.11	
Hewlett Packard System Util	ities	≁? < ⊕ ♡ ₺
ightarrow System Utilities $ightarrow$		
HPE ProLiant DL380 Gen11 Server SN: 2M202030G ILO IPM: 612.6.11 ILO IPM: FE80-SEED SOFF-FEF1:D446 User Default OFF Secure Boot: Disabled System ROM: US4 v2:30 (08/09/2024)	System Configuration One-Time Boot Menu Embedded Applications System Information System Health Exit and resume system boot Reboot the System	
	Select Language	English 🗸
Erdar: Svelect ESC: Ext F3: Help F7: Load Defaults F12: Save and Ext F12: Save and F12:	Setup Browser Selection	GUI 🗸
Exit O Changes Pending	Reboot Required F7: Load Defaults	F10: Save F12: Save and Exit
1024 x 768	POST Code : 0040	😰 🔒 SSL 📀 🔿 🎃

Choose the **MR RAID** card

System Configuration



On the next screen, choose **Configure** in the **ACTIONS** section

ACTIONS:

Configure 📀

Set Factory Defaults

Choose Create Logical Drive

Configuration Management

Create Logical Drive
Create Profile Based Logical Drive
Make JBOD
Clear Configuration

Create the logical drive by choosing the various options and click Save Configuration.





Configuration of spare disks on HPE ProLiant DL380 Gen11 Server

The HPE MR416i-p Gen11 Storage Controller used on the HPE ProLiant DL380 Gen11 Server provides two options for configuring the spare drives: Dedicated spare and global spare. A dedicated spare is dedicated to one array with a specific RAID configuration and a global spare replaces a failed drive in any type of RAID array. To assign a drive as a global spare, from the UEFI System Utilities of the server, select System Configuration \rightarrow HPE MR416 Gen11 \rightarrow Main Menu \rightarrow Drive Management. In Drive Management, select a drive of your choice, and in the drive screen, select Assign Global Spare Drive from the Operation drop-down list.

🕸 🗐 💿 👘 👘 👘 👘	192.168.22.83	top Security and Anthen Results The Day 27 (
Hewlett Packard System C	Configuration	ې 🖉 کې 🕹 کې 🕹
≡ More Forms > Drive Manage	ement Port 21, Box 7, 1	Bay 4: SAS, HDD, 20TB, Unconfigured Good
HPE ProLiant DL380 Gen11	Port 2I, Box 7, E Unconfigured G	Bay 4: SAS, HDD, 20TB, ood
Server SN: 2M233802CY iLO IPv4: 192.168.22.83 iLO IPv6: FE80-5FED:8CFF:FEB4:1014	Operation	Aesign Global Spare 🗸 🗸
User Default: OFF Secure Boot: Disabled System ROM: U54 v1.46 (09/26/2023)	Go () BASIC PROPERTIES:	
	Device ID	7
	Connection	Port 21
	Enclosure Position	1
Enter Select ESC Ext F1 Help	Slot Number	
F7: Load Defaults F10: Save F12: Save and Exit	Status	Unconfigured Good
	Size	20.TB
	Туре	Disk
	Model	MB020000J0MTP
http://www.hpe.com/support/UEFIGen11-UG-en	Serial Number	ZVT8:9CD
Ext O Dunges Pand	ing O Reboot Required	
1024 × 760		尚 台 💷 😪 🔾 🌒

By default, the HPE MR416i-p Storage Controller allocates the configured spare drive as a persistent spare, which means that replacing a spare drive in the same slot will automatically configure the new drive as spare. Also, the **Replace Drive** option that allows copying all the data from a spare drive to a data drive is enabled. Both these options need to be disabled to avoid overhead on the system during the data copy process and enable any replacement drive to be configured as a spare drive. To perform these settings, launch **System Utilities System Configuration** \rightarrow **HPE MR416 Gen11** \rightarrow **Main Menu** \rightarrow **Controller Management** \rightarrow **Advanced Controller Properties** \rightarrow **Spare**.



Configuration of smart array internal cache on HPE ProLiant DL380 Gen11 Server

The HPE MR416i-p Gen11 Controller used on the HPE ProLiant DL380 Gen11 Server is built with 8 GB of persistent cache. The cache read/write policy for the backup repository volume can be selected during the creation of the logical drive. The **Write Policy** should be set to **Write Back**. In this mode, the controller sends a data transfer completion signal to the host when the controller cache has received all the data in a transaction. This option provides a good balance between data protection and performance as the controller switches between write back and write through depending on the controller status. The **Read Policy** is set to No Read Ahead (default option).

@=0	192.168.22.83	aparty Ling - Active Design (1997)	$\Box e^{\pi} \times$
Hewlett Packard System Co	onfiguration	🕨 ? Q 🖷	CB
≡ More Forms > Main Menu	Configuration Management	Create Logical Drive	
HPE ProLiant DL380 Gen11	Select Drives	ETERS:	
ILO IPv4: 192.168.22.83 ILO IPv6: FEB0::SEED &CFE FEB4:1014	Logical Drive Name	vbr256kraid6	
User Default: OFF Secure Boot: Disabled	Logical Drive Size	236,469	
System ROM: U54 v1.46 (09/26/2023)	Logical Drive Size Unit	TiB	~
	Strip Size	256 KB	~
	Read Policy	No Read Ahead	\sim
	Write Policy	Write Back	~
Enter Select	VO Policy	Direct	~
ESC EIT F1: Help F7: Load Defaults	Access Policy	Read/Write	~
F10: Save F12: Save and Exit	Drive Cache	Unchanged	\sim
IN YOUR	Disable Background Initialization	No	\sim
	Default Initialization	Full	~
	Emulation Type	Default	~
Htp://www.htps.com/aupport/UEFIGen11-UG-en	Save Configuration		
Ext O Changes Pandin	O Reboot Required F7: Lond D	Telfaulte F10: Save F12: So	re and Exit
1014 5 700		101 11 59	

Page 9

BIOS UEFI settings

Step-by-step installation instructions

- 1. From the HPE iLO interface, click Administration
- 2. Click the **Boot Order** tab
- 3. Scroll to the bottom, then click the Boot to System Setup Utilities button
- 4. Power on or restart the server
- 5. Disable USB support
 - a. Select System Configuration
 - b. Select BIOS/Platform Configuration (RBSU)
 - c. Select System Options
 - d. Select USB Options
 - e. Select USB Boot Support

USB Options	
USB Control	All USB Ports Enabled
USB Boot Support	Enabled

- f. Select Disabled to disable USB Boot Support
- g. Press F10 to save your options and then click the System Options menu

- 6. Set Power Button Mode to Always Power On
 - a. Back in the System Options menu, select Server Availability. If you were navigating to this from the System Utilities main menu after pressing F9 during POST, the path would be BIOS/Platform Configuration-->System Options-->Server **Availability**
 - b. Select Automatic Power-On and set it to Always Power On
 - c. Select POST ASR and set it to POST ASR On
 - d. Press F10 to save and then click the Main Menu

Hewitet Packard BIOS/Platform Configuration (RBSU) / ? Q				
\equiv More Forms $ ightarrow$ BIOS/Platform Configuration (RBSU) $ ightarrow$ System Options $ ightarrow$ Server Availability $ ightarrow$				
HPE Brol jant DI 380 Con11	Server Availability			
Server SN: 2M2D0Z03DG	Wake-On LAN	Enabled V		
iLO IPv4: 10.12.6.11 iLO IPv6: FE80:5EED:8CFF:FEF1:D446	POST F1 Prompt	Delayed 20 seconds 🗸 🗸		
User Default: OFF Secure Boot: Disabled System POM: U54 v2 20 (08/09/2024)	Power Button Mode	Enabled 🗸		
System ROM. 054 v2.30 (08/09/2024)	Automatic Power-On	Always Power Off 🗸 🗸		
N.	Power-On Delay	No Delay		
	POSTASR	POST ASR Off V		
	POST ASR Timer	30 Minute Timer 💛		
Enter: Select ESC: Exit F1: Help	IPMI Watchdog Timer	Disabled 🗸		
F7: Load Defaults F10: Save	IPMI Watchdog Timer Timeout	30 Minutes		
F12. Save and Exit	IPMI Watchdog Timer Action	Power Cycle 💛		

7. Configure password complexity

a. Security-->Access Settings-->Account Service

You can set these features to your requirements. Enabling password complexity enforces the following on passwords:

- b. At least one uppercase ASCII character
- c. At least one lowercase ASCII character
- d. At least one ASCII digit
- e. At least one other type of character (for example, a symbol, a special character, or a punctuation)

Account Service	
Authentication Failures Before Delay	1 failure causes no delay

Admention failures before belay	T IBIICI C COCOCO NO OCIDY
Authentication Failure Delay Time	10 seconds
Authentication Failure Logging	Enabled - Every 3rd Failure
Minimum Password Length	8
Password Complexity	Disabled

- 8. Enable Secure Boot, power on password, and admin password
 - a. Select Server Security. If you were navigating to this from the System Utilities main menu after pressing F9 during POST, the path would be System Configuration-->BIOS/Platform Configuration-->Server Security

In this same screen, you'll be able to set a power on password, an admin password, and enable Secure Boot.

Server Secur	ity	
Set Power On Passwo	Secure Boot Settings	6
Set Admin Password	Select this option to display the Secure Boot Configuration menu. Use this menu to enable or disable Secure Boot Mode, and to add or remove certificates in the Secure Boot databases.	6
Secure Boot Settings	8	

- b. Select Secure Boot Settings
- c. Select Attempt Secure Boot
- d. A notice will be displayed that a reboot is required. Press the Enter keyboard button to continue

Secure Boot Settings

Current Secure Boot State	Disabled						
Attempt Secure Boot	Enabled	\sim					
Advanced Secure Boot Options 💿	2						

- e. Press F10 to save your configuration and then click the Server Security menu
- f. Press the F12 keyboard button to save and exit.



How to configure HPE iLO remote access?

As HPE iLO remote access and additional management port (Intel®/BMC/...) are an attack vector for a ransomware hacker to destroy data on the disk systems of the server, it is recommended to shield the system with firewall or switch port access rules that allow only SMTP/SNMP management to the management system and deactivate any incoming message. If possible, implement hardware management on a completely different infrastructure that does not have any network interaction capability with production. Another option is to disconnect the management ports and monitor the systems manually in the data center.



We also recommend to follow the HPE best practices for HPE iLO hardening:

Threat to be defeated

ISO boot attack is a type of attack frequently attempted by cybercriminals. Be informed, stay protected!

Solutions

Enable as many of the following security features to protect access to the HPE iLO, even if you disable access. Someone by accident could connect the interface and you need to stay protected.

- Enable Kerberos and multifactor authentication (MFA)
- Enable Smartcard authentication
- Power-on password
- Enable firewall / access port switch rules to let only SMTP/SNMP out and do not let any communication in including management and WebUI (see the previous screenshot).
- Disconnect HPE iLO physically

More details from HPE for security settings: <u>HPE iLO 5 Security Technology Brief</u> and <u>HPE Gen10 and Gen10 Plus Security</u> <u>Reference Guide</u>

Restrict HPE iLO user access

The HPE iLO does have an option to restrict user access. A user could be created with read-only access by going to **Administration-->User Administration** after logging into the HPE iLO. In the image, you'll see that a **user2** was created with only login access.

Local Users

Login Name	User Name	Status	÷	<u> </u>	\bigcirc	8	Ē	Ŋ	2~	品		鸣
Administrator	Administrator	Enabled	~	1	~	~	~	~	~	~	~	~
user2	user2	Enabled	~	×	×	×	×	×	×	×	×	×

This user will be able to view all HPE iLO settings, but the user will not be able to launch a remote console, make any configuration changes, or take any disruptive or destructive actions such as power cycling the server or booting from an ISO.

Contact

Web: support.hpe.com



Solution guide

Learn more at

HPE.com/us/en/alliance/Veeam



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