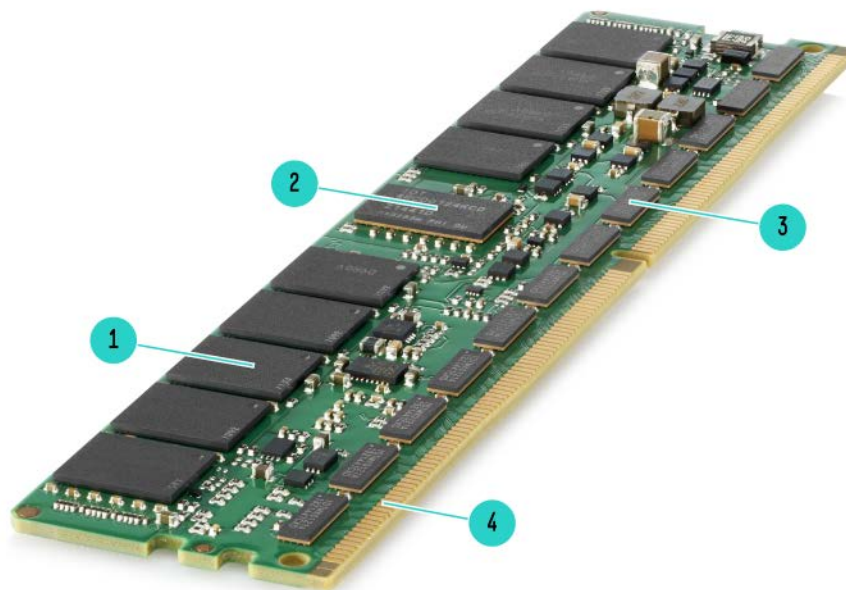


### Overview

#### HPE 8GB NVDIMM

Do you need to increase the performance of your data center database and analytics applications?

HPE Persistent Memory products deliver the performance of memory with the persistence of traditional storage. The HPE 8GB NVDIMM Module is the first offering in the HPE Persistent Memory product category. Customers are looking for offerings that enable faster business decisions and the HPE Persistent Memory portfolio delivers outstanding performance to put data to work more quickly in your business. The HPE 8GB NVDIMM Module has the resiliency you have come to expect from storage technology by utilizing higher endurance DRAM and components that help verify data is moved to non-volatile technology in the event of a power loss. HPE Persistent Memory offerings are not just new hardware technology but a complete software ecosystem designed to work with today's applications and workloads, including databases and analytics workloads.



- |  |   |
|--|---|
| 1. DRAM - Best Performance/lowest latency for fast data access | 3. Mux - Bus Isolation for backup and restore |
| 2. Register - Command/Address control for RDIMM operation      | 4. 12V Energy source, DIMM connector.         |

#### HPE 8GB NVDIMM Module

#### Models

HPE 8GB NVDIMM Single Rank x4 DDR4-2133 Module

782692-B21

---

## Standard Features

**Breakthrough Performance Enabling Faster business decisions** First and foremost, businesses are looking for offerings that allow them faster access to their data so they can put it to work more quickly in their business. Data growth is exponential and businesses are looking for ways to mine their data to gain a competitive edge in their line of business. Faster access to data can get you the answers you need more quickly to gain an advantage against a competitor – or enhance your cost savings – or even better, increase your revenue potential. While there are many choices for faster technology, our customers are looking for ways to deploy technology designed around their workloads and applications. What you need is a complete solution that delivers outstanding performance to help you make faster business decisions. This is exactly what the HPE 8GB NVDIMM delivers!

---

**Resilient technology designed for increased uptime** For most businesses, data is the lifeline of the business and without the data – there is no business! When choosing technology, reliability must always be top of mind because it doesn't really matter how fast that technology is if the technology is not reliable. Businesses are often asked to get more value out of their IT budgets and buy products that have the endurance to handle ever demanding workloads. Persistent memory helps to solve this problem by using components like DRAM which have higher endurance when compared to NAND Flash. Take a write-intensive workload that is written on NAND flash media today. What if you could move those writes onto higher endurance DRAM – which also increases overall workload performance – and increase the longevity of your NAND flash storage? So not only do you get faster performance on higher endurance DRAM, you reduce the wear and tear on your NAND flash which can increase the life of that storage device for use in other areas of the datacenter. DRAM is very fast and reliable but lacks the ability to retain data when power is lost and typically costs more than traditional storage mediums like NAND Flash. NAND Flash technology which is used in SSDs and other storage devices retains data without power and is more cost effective than DRAM but has lower performance and endurance relative to DRAM. What the market needs is a solution that can run at the speeds with the reliability of DRAM but has the persistence of traditional storage. This is exactly what we provide with the HPE 8GB NVDIMM. When the HPE 8GB NVDIMM is used as a traditional storage device, persistence is achieved by combining the speed and endurance of DRAM with the persistence of NAND Flash. We utilize our HPE Smart Storage Battery to provide a backup power source in the event of a surprise power loss allowing any data in flight on the DRAM to be moved to the non-volatile NAND Flash. HPE 8GB NVDIMM provides you the great performance and resiliency you have come to expect in storage solutions from Hewlett Packard Enterprise.

---

**Complete solutions designed around databases and analytics workloads** Our customers want to hear about solutions that are designed around their real world applications and workloads that are the backbone of their business. HPE 8GB NVDIMM Module hardware is only half of the puzzle – with the other half being the software ecosystem enablement we are driving in the industry. Hewlett Packard Enterprise is working directly with software application and operating system partners to develop the software ecosystem for HPE Persistent Memory to verify customers can take full advantage of the performance potential of this exciting new product category. Whether you are talking about databases or analytics workloads, Hewlett Packard Enterprise is focusing our efforts on enabling these real world applications to bring you real business value. From operating system driver development to a Linux® Software Development Kit (SDK), Hewlett Packard Enterprise is leading the charge with our industry partners to make sure our hardware offerings are ready to integrate into your data center.

---

**Optimized for HPE ProLiant Gen9 servers featuring Intel® E5-2600v4 processors** The HPE 8GB NVDIMM is designed for HPE ProLiant Gen9 servers featuring Intel® E5-2600v4 processors. The first 2 servers supporting HPE 8GB NVDIMM Modules include the HPE ProLiant DL360 Gen9 and HPE ProLiant DL380 Gen9 servers featuring Intel® E5-2600v4 processors. Stay tuned to <http://www.hpe.com/servers/persistentmemory> for additional HPE ProLiant Gen9 servers supporting this emerging technology.

---

---

## Standard Features

<b>Ideal Workloads</b>	The HPE 8GB NVDIMM is ideal for accelerating databases and analytics workloads. With up to 128GB capacity in a single server, the HPE 8GB NVDIMM is ideal for improving application performance by reducing traditional storage hardware bottlenecks like write latency. The HPE 8GB NVDIMM complements existing storage technology such as SSDs and PCIe Workload Accelerators by becoming one of the fastest tiers of storage on HPE ProLiant Gen9 servers. The HPE 8GB NVDIMM can also benefit other workloads and applications where traditional storage bottlenecks could benefit from a lower latency storage tier of HPE Persistent Memory.
<b>Operating Systems</b>	<b>Windows Server 2012 R2:</b> Beta driver from HPE (April 2016) <b>Windows Server 2016 Technical Preview 5</b>
<b>Warranty</b>	For details on HPE Qualified Options Limited Warranty visit: <a href="http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html">http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html</a>
<b>Other Resources</b>	For information regarding HPE Persistent Memory visit: <a href="http://www.hpe.com/servers/persistentmemory">http://www.hpe.com/servers/persistentmemory</a> For the latest updates on HPE Qualified Options visit: <a href="http://www.hpe.com/info/serveroptions">http://www.hpe.com/info/serveroptions</a>

---

## Service and Support

### Service and Support **HPE Technology Services for ProLiant Servers**

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

#### **Protect your business beyond warranty with HPE Support Services**

HPE Support Services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the selected support.

**NOTE: This option is covered under the HPE Support Service(s) applied to the compute module. No separate HPE Support Service(s) need to be purchased.**

---

### **HPE Support Center**

Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more at

**<https://www.hpe.com/us/en/support.html>**

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 personalize IT support anywhere, anytime.

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

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

---

### **Parts and materials**

Hewlett Packard Enterprise will provide Hewlett Packard Enterprise-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.

---

### **Warranty / Service Coverage**

For ProLiant servers and storage systems, this service covers Hewlett Packard Enterprise-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by Hewlett Packard Enterprise as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

---

### **For more information**

To learn more on services for HPE ESSN Options, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit:

**<http://www.hpe.com/services/proliant>**

---

## Technical Specifications

For detailed memory configuration rules and guidelines, please use the HPE Server Memory Configurator:

<http://h22195.www2.hp.com/DDR4memoryconfig/Home/Legal>

### General Server Memory and NVDIMM Population Rules and Guidelines:

- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
- When two processors are installed, balance the DIMMs across the two processors.
- White DIMM slots denote the first slot to be populated in a channel.
- Place the DIMMs with the highest number of ranks in the white slot when mixing DIMMs of different ranks on the same channel.
- Do not mix UDIMMs, RDIMMs or LRDIMMs. RDIMMs can be mixed with NVDIMMs only.
- Quad rank RDIMMs are not supported in HPE ProLiant Gen8 servers.
- Quad rank LRDIMMs are capable of up to three DIMMs per channel.
- RDIMMs operating at either 1.35V or 1.5V may be mixed in any order, but the system will power them at the higher voltage.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.

### NVDIMM Population Rules and Guidelines:

- NVDIMMs follow the general memory population rules & guidance (*above*)
- Can be mixed with RDIMMs only. [No mixing with LRDIMM or UDIMM]
- When installing NVDIMM(s) on the same memory channel as RDIMM(s), populate the RDIMM(s) first / farthest from the processor, then populate the NVDIMM(s) last / closer to the processor.
- When NVDIMMs exist in the system, there must be a minimum of one (1) RDIMM installed in any DIMM slot in the first CPU socket.
- Maximum NVDIMM by Server:
  - DL360/DL380 Gen9 servers = 16
- One processor may have more than 8 NVDIMMs, but the total number of NVDIMMs among the two processors may not exceed 16. Balanced memory configuration between the two processors and between memory channels is still recommended to maximize performance.
- The HPE Smart Storage Battery provides the battery backup source for NVDIMMs. NVDIMMs can only be installed in servers supporting the HPE Smart Storage Battery.
- Supported only on HPE ProLiant DL360 Gen9 and HPE ProLiant DL380 Gen9 servers featuring Intel® E5-2600v4 processors.

---

**NVDIMM Type:** NVDIMM-N

**NVDIMM Rank:** Single Rank

**NVDIMM Capacity:** 8GB

**Native Speed (MT/s):** 2,133

**Non-volatile media:** NAND Flash

**Backup power source:** HPE Smart Storage Battery

**Max number of NVDIMMs:** 16

**Max NVDIMM capacity (single server):** 128GB

**Compatible DIMM Types:** RDIMMs only

**What's included in kit:** HPE 8GB NVDIMM Module

## Technical Specifications

**Imperial Dimensions (W x D x H):** 5.25 in x .25 in x 1.23 in

**Metric Dimensions (W x D x H):** 2.54 cm x .64 cm x 3.12 cm

**Imperial Weight:** .5 lbs

**Metric Weight:** .24kg

---

<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	<p>Hewlett Packard Enterprise offers end-of-life HPE product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell HPE equipment.</p>
---	---	--

## Technical Specifications



**Sign up for updates**

★ Rate this document



---

© Copyright 2016 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.

Xeon and Intel are registered trademarks of Intel Corporation.

c04939369 - 15555 - Worldwide - V1 - 31-March-2016