

Overview

HPE Scalable Persistent Memory

Ready to unlock new levels of performance from your business workloads?

HPE Scalable Persistent Memory in conjunction with the HPE ProLiant DL380 Gen10 server will transform your IT infrastructure, providing higher levels of performance while delivering increased levels of reliability and efficiency. It is part of an integrated storage solution that runs at memory speeds with TB scale capacity, unlocking new levels of compute performance with built-in persistence.

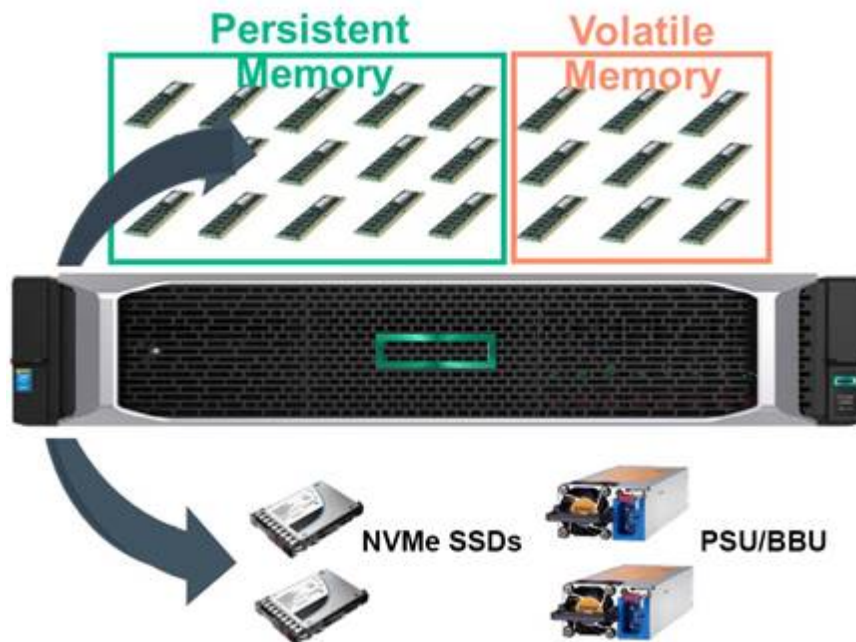
HPE Scalable Persistent Memory provides a complete hardware and software solution utilizing DRAM for application performance, a tier of flash for persistence and a backup power source to move data from DRAM to flash. Ideal for enabling in-memory compute with persistence and any workload that could benefit from low-latency DRAM-level performance:

- DRAM-level performance for fastest performing persistent memory
- Flexible capacity points ranging from 256 GB, 512 GB to 1 TB (coming in 2018)
- Complete solution using DRAM for application performance, flash tier for persistence and backup power for moving data to persistent store
- Up to 20x reduction in database restart time preserving maximum up-time[1]
- Up to 27x faster checkpoint operations enabling significantly faster business operations[2]

¹ HPE Internal Labs test. HPE Scalable Persistent Memory, restarting 1000GB Hekaton Database is as fast as restarting 200GB database or 20x, March 31, 2017

² TPC-C Benchmark Throughput with Checkpoint (trans/sec). Calculated Time to Checkpoint and Restore a Docker Container running MySQL, compare Persistent memory vs. SSD, March 31, 2017

Supported on HPE ProLiant DL380 Gen10



Persistent Memory: HPE SmartMemory (DRAM) marked as Persistent Memory by the server BIOS and used as fast storage

NVMe SSDs: Dedicated flash tier for data persistence

Volatile Memory: HPE SmartMemory (DRAM)

PSU/BBU: Power supply with battery backup for holding up power to move data from DRAM to flash

Models

HPE Scalable Persistent Memory 256GB 2-socket Server

876401-B21

NOTE: Available as HPE Factory Configure To Order (CTO) SKUs only.

NOTE: Includes 384GB of total memory (256GB for Scalable PMEM and 128GB for server memory) using either (24) 16GB or (12) 32GB DIMMs.

NOTE: 128GB is minimum server memory for this solution. Additional server memory can be added if using 32GB DIMMs in this configuration.

NOTE: Available as HPE Factory Configure To Order (CTO) SKUs only.

NOTE: Includes 768GB of total memory (512GB for Scalable PMEM and 256GB for server memory) using either (24) 32GB or (12) 64GB DIMMs.

NOTE: 256GB is minimum server memory for this solution. Additional server memory can be added if using 64GB DIMMs in this configuration.

NOTE: Each HPE factory Configure To Order (CTO) SKU includes the required memory, NVMe SSDs + related infrastructure, (2) PSUs w/ battery backup and factory BIOS settings to support the specified amount of Scalable Persistent Memory.

NOTE: Please use **HPE Power Advisor** for sizing power requirements for your HPE Scalable Persistent Memory solution.

NOTE: No additional SSDs may be installed in Box 1.

NOTE: 64GB DIMM is the max memory DIMM size supported for HPE Scalable Persistent Memory.

NOTE: Supported only in datacenter environments with a max inlet air temperature of 25° C.

Standard Features

Storage at the Speed of Memory

- HPE Scalable Persistent Memory delivers new levels of application performance enabling you to conduct business operations faster.
- Up to 20x reduction in database restart time preserving increased uptime.¹
- Up to 27x faster checkpoint operations enabling significantly faster business operations.²

¹ HPE Internal Labs test. HPE Scalable Persistent Memory, restarting 1000GB Hekaton Database is as fast as restarting 200GB database or 20x, March 31, 2017

² TPC-C Benchmark Throughput with Checkpoint (trans/sec). Calculated Time to Checkpoint and Restore a Docker Container running MySQL, compare Persistent memory vs. SSD, March 31, 2017

Flexible Capacity Points

- HPE Scalable Persistent Memory supports terabyte-scale persistent memory enabling you to accelerate larger business workloads for faster and more efficient business operations.
- Scalable capacity that grows with your data needs.
- Flexible configurations designed to meet specific business application needs.

Designed to Address Common Application Storage Bottlenecks

- HPE Scalable Persistent Memory is optimized for industry-standard applications such as Microsoft® SQL Server® and Oracle® databases.
- Broad operating system support including Microsoft Windows® and Linux®.
- Benefits a broad range of workloads including large in-memory compute, databases, software defined storage, real time analytics, 3D graphics software and virtually any application that could benefit from the memory performance for storage applications.

Ideal Workloads

Large in-memory compute, faster checkpoints and restores, database storage bottlenecks and accelerating applications with memory performance.

Operating Systems

Microsoft Windows Server 2012 R2 (HPE driver)
Microsoft Windows Server 2016
Red Hat Enterprise Linux 7.3 or newer
SUSE Linux Enterprise Server 12 SP2 or newer

Warranty

For details on HPE Server Options Limited Warranty visit:
<http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty>

Other Resources

For information regarding HPE Persistent Memory visit:
<http://www.hpe.com/info/persistentmemory>
For the latest updates on HPE Server Options visit:
<http://www.hpe.com/info/serveroptions>

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 <http://www.hpe.com/services/hpsc>

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

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 details on the HPE Server Memory Options Population Rules, visit:

General Memory Population Rules and Guidelines

For HPE Gen10 Servers:

- 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.
- 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.
- Mixing of DIMM types (UDIMM, RDIMM, and LRDIMM) is not supported.
- 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 number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, the number and model of installed processors qualified on the platform.

Server Platform(s): HPE ProLiant DL380 Gen10

Solution Capacity: 256GB, 512GB and 1,024GB (coming in 2018)

DIMM Type: RDIMMs and LRDIMMs

DIMM Capacity: 16GB, 32GB and 64GB only (see Memory Configuration Rules)

Dedicated Backup Drives: Select NVMe SSDs (see Dedicated Flash Backup Tier Rules) (

Backup Power: HPE Scalable PMEM 800W PSU/400W BBU (Qty: 2)

HPE Scalable Persistent Memory - Memory Configuration Rules

SKU	Total Memory	Scalable PMEM Size	Server Memory Size	Supported Memory Configuration		Notes
876401-B21	384GB	256GB	256GB	DIMM Type(s):	RDIMM LRDIMM	NOTE: Must use either (24) 16GB or (12) 32GB DIMMs. NOTE: 128GB is minimum server memory for this solution. Additional server memory can be added if using 32GB DIMMs in this configuration. NOTE: 64GB DIMM is max memory DIMM size supported.
				16GB DIMMs:	24	
				32GB DIMMs:	12	
876402-B21	768GB	512GB	256GB	DIMM Type(s):	RDIMM LRDIMM	NOTE: Must use either (24) 32GB or (12) 64GB DIMMs. NOTE: 256GB is minimum server memory for this solution. Additional server memory can be added if using 64GB DIMMs in this configuration. NOTE: 64GB DIMM is max memory DIMM size supported.
				32GB DIMMs:	24	
				64GB DIMMs:	12	

HPE Scalable Persistent Memory - Dedicated Flash Backup Tier Rules

SKU	NVMe SKU	NVMe Description	Required NVMe Qty	Notes
876401-B21	877994-B21	HPE 1.6TB NVMe x4 MU SFF SCN DS SSD	2	NOTE: Must use 877994-B21 and required QTY to achieve bandwidth targets and backup power timeframe. Must be installed in Box 3.

876402-B21	877994-B21	HPE 1.6TB NVMe x4 MU SFF SCN DS SSD	4	NOTE: Must use 877994-B21 and required QTY to achieve bandwidth targets and backup power timeframe. Must be installed in Box 3.
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HPE Scalable Persistent Memory - Backup Power Rules

SKU	PSU/BBU SKU	PSU/BBU Description	Required SKU Qty	Notes
876401-B21	827608-B21	HPE Scalable PMEM 800W PSU/400W BBU FIO SKU	1	NOTE: Each SKU contains 2 PSU/BBU units for redundancy and is available as a HPE factory configuration Configure To Order (CTO) SKU only. NOTE: Includes required air baffle for DL380 Gen10. NOTE: Please use HPE Power Advisor for sizing power requirements for your HPE Scalable Persistent Memory solution.
876402-B21	827608-B21	HPE Scalable PMEM 800W PSU/400W BBU	1	NOTE: Each SKU contains 2 PSU/BBU units for redundancy and is available as a HPE factory configuration Configure To Order (CTO) SKU only. NOTE: Please use HPE Power Advisor for sizing power requirements for your HPE Scalable Persistent Memory solution.

HPE Scalable Persistent Memory - Required Infrastructure Rules

SKU	Required Infrastructure		Notes
876401-B21	826689-B21	HPE DL38X NVMe 8 Solid State Drive Express Bay Enablement Kit	NOTE: HPE Scalable PMEM 256GB SKU (876401-B21) defaults these required infrastructure components. NOTE: No SSDs may be installed in Box 1.
	867807-B21	HPE DL38X Gen10 4-port 8 NVMe Slim SAS Riser	
	867810-B21	HPE DL38X Gen10 High Performance Temperature Fan Kit	
876402-B21	826689-B21	HPE DL38X NVMe 8 Solid State Drive Express Bay Enablement Kit	NOTE: HPE Scalable PMEM 512GB SKU (876402-B21) defaults these required infrastructure components.

	867807-B21	HPE DL38X Gen10 4-port 8 NVMe Slim SAS Riser	NOTE: No SSDs may be installed in Box 1.
	867810-B21	HPE DL38X Gen10 High Performance Temperature Fan Kit	

Environment-friendly Products and Approach - End-of-life Management and Recycling

Hewlett Packard Enterprise offers **end-of-life product return, trade-in, and recycling programs**, in many geographic areas, for our products. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. 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. 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 Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
8-Jan-2018	Version 2	Changed	Parts and Materials & Persistent Memory URL updated
18-Dec-2017	Version 1	New	New QuickSpecs.






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