HPE Synergy 480 Gen10 Plus Compute Module - Product Information Reference

Part Number:
Published: August 2021
Edition:

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Abstract

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Summary



HPE Synergy, the first platform built from the ground up for Composable Infrastructure, offers an experience that empowers IT to create and deliver new value instantly and co ntinuously. It is a single infrastructure that reduces operational complexity for tradition al workloads and increases operational velocity for the new breed of applications and s ervices. Through a single interface, HPE Synergy composes physical and virtual compu te, storage and fabric pools into any configuration for any application. As an extensible platform, it easily enables a broad range of applications and operational models such a s virtualization, hybrid cloud and DevOps.

Standard Models

New RoHS compliant part numbers

To find the latest RoHS compliance information, please use the HPE PartSurfer (**Click here to visit HPE PartSurfer website**) and click on one of the linked model numbers. When locating RoHS information in PartSurfer, you can use the Option part number for the components, the sales order number for a system that the component is used in, or the Spare part number for a specific part. You can find the sales order numbers and Option part numbers in the Product QuickSpecs.

Base configuration

Description	Model Number
HPE Synergy 480 Gen10 Plus Configure-to-Order (CTO) compute module	P22139-B21 **Click here to obtain the parts list of this model**.
HPE Synergy 480 Gen10 Plus TAA CTO compute module	P22139-B22 **Click here to obtain the parts list of this model**.

Product Features

What's new

- Synergy 480 Gen10 Plus designed to provide increased performance and capacity.
- New optional drive cage options for 2 or 4 drive and drive-less for users needed SAN and VSAN workloads.
- HPE NS204i-d Gen10+ boot controller providing two M.2 480GB drives included for HW RAID operates with most of the drive cages options (All delivered as factory Installed or as users installable options).
- New PCIe GPU front cage option for single GPU workloads, plus New GPU PCIe expansion modules for 2, 4 and 8 standard PCIe GPUs.
- Intel 3rd Generation of Xeon Scalable family of processors
- 32 Memory Dual In-line Memory Modules (DIMMs) for up to 16 per processor up to 4TB Max, 8GB to 256GB capacities - speeds up to 3200 MT/s.
- PCIe 4.0 throughout the module to provide the best performance for boot, storage and IO.
- Regional certifications including energy star, EU Lot 9 and top eunner – Japan fully compliant .

Feature	Description
Platform information [1]	**Form factor**

Feature	Description
	• Single slot blade – Half-Height
	Chassis types • Single compute chassis for CTO • 2 SFF drive cage option(CTO/BTO), same as in use for Gen10 • 4 SFF NVMe drive cage solution with options for 2x NVMe and 2x SATA/SAS, (With MicroChip Smart RAID P416ie-m controller). • Drive less cage option • Front PCIe enablement kit
	System fans • Come with frame by default and not this product.
Synergy management	HPE Composer powered by OneView
On compute management chipset	HPE Integrated Lights-Out (HPE iLO) 5 ASIC
Processors	Up to 2 of the following:

Intel Xeon Models	CPU Frequency (GHz)	Cores	L3 Cache (MB)	Power (Watts)	UPI (GT/s)	DDR4 (MT/s)	SGX Enclave size (GB)
Platinum processors [1, 2]							
Platinum 8380 Processor	2.3 GHz	40	60MB	270 W	3 @ 11.2 GT/s	3200 MT/s	512GB
Platinum 8368 Processor	2.4 GHz	38	57MB	270 W	3 @ 11.2 GT/s	3200 MT/s	512GB
Platinum 8360Y Processor	• 2.4 GHz	• 36 • 32 • 24	54MB	• 250 W • 250 W	3 @ 11.2 GT/s	3200 MT/s	64GB

Feature	Description							
	Intel Xeon Models	**CPU Frequency (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (Watts)**	**UPI (GT/s)**	**DDR4 (MT/s)**	**SGX Enclave size (GB)**
		• 2.5 GHz • 2.6 GHz			• 220 W			
	Platinum 8358P Processor	2.6 GHz	32	48MB	240 W	3 @ 11.2 GT/s	3200 MT/s	8GB
	Platinum 8358 Processor	2.6 GHz	32	48MB	250 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Platinum 8352Y Processor	• 2.2 GHz • 2.3 GHz • 2.6 GHz	• 32 • 24 • 16	48MB	• 205 W • 185 W • 185 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Platinum 8352V Processor	• 2.1 GHz • 2.0 GHz • 2.0 GHz	• 36 • 32 • 24	54MB	• 195 W • 180 W • 155 W	3 @ 11.2 GT/s	2933 MT/s	8GB
	Platinum 8352S Processor	• 2.2 GHz • 2.3 GHz • 2.6 GHz	• 32 • 24 • 16	48MB	• 205 W • 185 W • 185 W	3 @ 11.2 GT/s	3200 MT/s	512GB

Feature	Description							
	Intel Xeon Models	**CPU Frequency (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (Watts)**	**UPI (GT/s)**	**DDR4 (MT/s)**	**SGX Enclave size (GB)**
	Gold processors[3]							
	Gold 6354 Processor	3.0 GHz	18	39MB	205 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6348 Processor	2.6 GHz	28	42MB	235 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6346 Processor	3.1 GHz	16	36MB	205 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6342 Processor	2.8 GHz	24	36MB	230 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6338N Processor	2.2 GHz	32	48MB	185 W	3 @ 11.2 GT/s	2667 MT/s	64GB
	Gold 6338 Processor	2.0 GHz	32	48MB	205 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6336Y Processor	• 2.4 GHz • 2.9 GHz • 3.1 GHz	• 24 • 12 • 8	36MB	• 1852 W • 105 W • 105 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6334 Processor	3.6 GHz	8	18MB	165 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 6330N P	2.2 GHz	28	42MB	165 W	3 @ 11.2 GT/s	2667 MT/s	64GB

Feature	Description							
	Intel Xeon Models	**CPU Frequency (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (Watts)**	**UPI (GT/s)**	**DDR4 (MT/s)**	**SGX Enclave size (GB)**
	rocessor							
	Gold 6330 Processor	2.0 GHz	28	42MB	205 W	3 @ 11.2 GT/s	2933 MT/s	64GB
	Gold 6326 Processor	2.9 GHz	16	24MB	185 W	3 @ 11.2 GT/s	3200 MT/s	64GB
	Gold 5320 Processor	2.2 GHz	26	39MB	185 W	3 @ 11.2 GT/s	2933 MT/s	64GB
	Gold 5318Y Processor	• 2.1 GHz • 1.9 GHz • 2.0 GHz	• 24 • 24 • 22	36MB	• 165 W • 150 W • 150 W	3 @ 11.2 GT/s	2933 MT/s	64GB
	Gold 5318S Processor	• 2.1 GHz • 1.9 GHz • 2.0 GHz	• 24 • 24 • 22	36MB	• 165 W • 150 W • 150 W	3 @ 11.2 GT/s	2933 MT/s	512GB
	Gold 5318N Processor	• 2.1 GHz • 2.0 GHz	• 24 • 20	36MB	• 150 W • 135 W	3 @ 11.2 GT/s	2667 MT/s	64GB

Feature	Description							
	Intel Xeon Models	**CPU Frequency (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (Watts)**	**UPI (GT/s)**	**DDR4 (MT/s)**	**SGX Enclave size (GB)**
	Gold 5317 Processor	3.0 GHz	12	18MB	150 W	3 @ 11.2 GT/s	2933 MT/s	64GB
	Gold 5315Y Processor	• 3.2 GHz • 3.2 GHz • 3.4 GHz	• 8 • 6 • 4	12MB	• 140 W • 125 W • 115 W	3 @ 11.2 GT/s	2933 MT/s	64GB
	Silver processors[4]							
	Silver 4316 Processor	2.3 GHz	20	30MB	150 W	2 @ 10.4	2667 MT/s	8GB
	Silver 4314 Processor	2.4 GHz	16	24MB	135 W	2 @ 10.4	2667 MT/s	8GB
	Silver 4310 Processor	2.1 GHz	12	18MB	120 W	2 @ 10.4	2667 MT/s	8GB
	Silver 4309Y Processor	• 2.8 GHz • 2.6 GHz • 2.3 GHz	• 8 • 8 • 8	12MB	• 105 W • 95 W • 85 W	2 @ 10.4	2667 MT/s	8GB
Chipset	Intel C621A chipset							
System management chipset	HPE iLO 5 ASIC							

Feature	Description

Memory [5]

Type	HPE DDR4 SmartMemory	Registered Dual In-line Memory Module (RDIMM), Load Reduced Dual In-line Memory Module (LRDIMM)
DDR$ DIMM slots available	32	16 DIMM slots per processor, 8 channels per processor, 2 DDR4 DIMMs per channel
Maximum capacity (RDIMM)	8.0TB	32 x 256GB LRDIMM - 3200 MT/s
Maximum capacity (RDIMM)	2.0TB	32 x 64GB RDIMM - 3200 MT/s
Maximum capacity (Optane and DDR4 Memory)	12.0TB	• 16 x 512GB Intel persistent memory 200 series for HPE plus • 16 x 256GB HPE DDR$ memory

One of the following depending on model: [6]

The following memory supports Intel Xeon Scalable Family processors 3nd generation (Models x3xx).

- HPE 8GB (1 x 8GB) single rank x8 DDR4-3200 CAS-22-22-22 registered smart memory kit.
- HPE 16GB (1 x 16GB) single rank x4 DDR4-3200 CAS-22-22-22 registered smart memory kit.
- HPE 16GB (1 x 16GB) dual rank x8 DDR4-3200 CAS-22-22-22 registered smart memory kit.
- HPE 32GB (1 x 32GB) dual rank x4 DDR4-3200 CAS-22-22-22 registered smart memory kit.
- HPE 32GB (1R x 4) dual rank x4 DDR4-3200 CAS-22-22-22 registered smart memory kit.
- HPE 64GB (1 x 64GB) dual rank x4 DDR4-3200 CAS-22-22-22 registered smart memory kit.
- HPE 128GB (1 x 128GB) quad rank x4 DDR4-3200 CAS-22-22-22 load reduced smart memory kit.

Feature	Description
	• HPE 256GB (1 x 256GB) octal rank x4 DDR4-3200 CAS-26-22-22 3DS l oad reduced smart memory kit (September release).
Memory prot ection	**Memory RAS technologies:** HPE Fast fault memory
	Advanced ECC: Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.
	Online spare: Memory online spare mode detects a rank that is degrading and switch es operation to the spare rank. **Click here to view the Memory RAS Technologies for HPE ProLiant/Sy nergy/Blade Gen10 Servers with Intel Xeon Scalable Processors**.
Memory prot ection	• **Advanced ECC:** Advanced ECC uses single device data correction t o detect and correct single and all multibit error that occurs within a single DRAM chip. • **Online spare:** Memory online spare mode detects a rank that is deg rading and switches operation to the spare rank. • **Online mode:** Memory online spare mode (Rank spare mode).
Intel Optane 200 series m emory for HP E	Optane or Persistent memory provides a unique combination of afforda ble larger capacity and support for data persistence. With innovative tec hnology offering distinctive operating modes, it adapts to users needs a cross workloads. • Boost performance with data persistence • PMem gives user access to more data in memory enabling user to p rocess large amounts of data faster. Unlike DRAM, data remains in P Mem allowing user to retain data even when powered off – helping p rotect users systems from data loss. • Greater memory capacity • Optane PMem enables user to affordably increase users memory ca pacity per socket, extract value from larger data sets and increase th e utility of each server. • Flexible configuration with two modes

Feature	Description
	• Operational modes in Optane persistent memory offer different functions giving user flexible configuration, the two modes are memory mode and app direct mode.
Hardware encryption[7]	Intel Optane persistent memory incorporates hardware encryption. With Advanced Encryption Standard (AES) 256-bit encryption, it helps protect data at rest from cyberattacks with minimal impact on performance. Options to choose from are • Intel Optane 128GB persistent memory 200 Series for HPE • Intel Optane 256GB persistent memory 200 Series for HPE • Intel Optane 512GB persistent memory 200 Series for HPE
System requirements	The following hardware components are required for a complete Synergy solution: • HPE SY480 Gen10 Plus with Third -generation Intel Xeon Scalable processors. • HPE DDR4 standard memory RDIMMs or LRDIMMs • Boot and storage solutions • Network and IO mezzanine • Synergy 12000 frame ◦ Composer/OneView ◦ Network and IO InterConnect modules Supported firmware versions: ◦ Latest system Read Only Memory (ROM) version ◦ Server Platform Services (SPS) firmware latest version ◦ HPE iLO firmware latest version ◦ HPE Innovation engine firmware latest version.
Client OS	With GPU options only • Windows and Enterprise Client OS • Red Hat Enterprise Linux Desktop/Workstation • SLES Desktop (64 bit - includes XEN & KVM)

Feature	Description
Mezzanine connectors (PCIe 4.0)	Three (3) I/O expansion mezzanine connectors: • **Mezzanine 1 - x16 PCIe 4.0 Type D:** Supports Type C and Type D mezzanine cards • **Mezzanine 2 -- x16 PCIe 4.0:** Supports Type C and Type D mezzanine cards • **Mezzanine 3 -- x16 PCIe 4.0:** Supports Type C mezzanine cards
	Network and storage adapters or mezzanine options include: • HPE Synergy 4820C 10/20/25Gb CNA converged network adapter • HPE Synergy 6820C 25/50Gb CNA converged network adapter • HPE Synergy 4610C 10/25Gb Ethernet adapter • HPE Synergy 6810C 25/50Gb Ethernet adapter • HPE Synergy 6410C 25/50Gb Ethernet adapter • HPE Synergy 6820C 25/50Gb converged Network adapter • HPE Synergy 5330C 32G fibre channel Host Bus Adapters (HBAs) • HPE Synergy 5830C 32G fibre channel HBAs
HPE Compute module ROM	HPE ROM is now digitally signed using the HPE Corporate signing service. As part of the secure start, this signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM. HPE Synergy Compute ROM is used to configure the following: • Processor and chipset status registers • System memory, memory map and memory initialization • System hardware configuration (Integrated PCI devices and optional PCIe mezzanine cards). • Users-specific BIOS configuration using the Unified Extensible Firmware Interface Forum (UEFI) system utilities.
Storage drive cages and controllers	One of the following depending on model **Drive cage options:** HPE SY480 Gen10 Plus standard 2drive kit • Supports 2 SFF SAS or SATA drives and/or up to 2 of the uFF dual drive options.

Feature	Description
	• Requires one E208i-c HBA or P204i-c HPE Smart Array controllers an d either one of below: ◦ Gen10 SATA board kit (872955-B21) or ◦ NS204i-d Gen10 Plus M.2 boot controller option • Supports 4x SFF NVMe (Requires P29009-B21, HPE SY480 Gen10+ 4 SFF direct connect cable option kit) • Supports 2x2 drive options. 2x NVMe and 2x SAS/SATA drives (Requ ires P29010-B21, HPE SY480 Gen10 Plus SlimSAS cable option kit + P 38721-B21, MicroChip Smart RAID P416ie-m x16 lanes 2GB cache SAS 12G controller for HPE for connection). • Works with HPE NS204i-d Gen10+ boot controller for HPE (Does not work with HPE Synergy FIO Gen10 SATA board kit, 872955-B21). HPE SY480 Gen10 Plus drive less kit: • Designed for the stateless or no drive solution where users boots fro m SAN or alternate boot and store devices such and the new HPE NS 204i-d Gen10+ M.2 boot controller. • Designed for those use cases where user need a single GPU.
Software RAI D solutions [8]	HPE Smart Array S100i SR Gen10 SW RAID
Hardware RA ID solutions	• **NVMe Boot Devices – HW RAID:** HPE NS204i-d Gen10 Plus boot con troller for HPE. [9] • **Essential RAID Controller:** HPE Smart Array E208i-c SR Gen10 12G SAS modular controller (8 Internal lanes/no cache). • **Performance RAID Controller:** ◦ HPE Smart Array P204i-c SR Gen10 12G SAS modular controller (4 Internal lanes/1GB cache). ◦ HPE Smart Array MicroChip Smart RAID P416ie-m SR Gen10 12G SAS mezzanine controller (8 Internal 8 external lanes/2GB cache for use with with Synergy D3940 storage modules). • **Premium backplane CTO compute module:** ◦ CTO offers a Premium backplane compute module for use with u p to 4 NVMe drives in front drive cage. Or, supports 2x NVMe dri

<table>
<tr><th>Feature</th><th>Description</th></tr>
<tr><td></td><td>ves and 2 SAS drives with MicroChip Smart RAID P416ie-m (P387 21-B21) with specific SAS cable connections allowing MicroChip S mart RAID P416ie-m (P38721) to manage 2x SATA or SAS drives in both front drive cage as well as drives on the Synergy D3940 sto rage module).</td></tr>
<tr><td>Maximum int ernal storage</td><td>
<table>
<tr><th>Drive</th><th>Capacity</th><th>Configuration</th></tr>
<tr><td>Hot plug SFF SAS SSD</td><td>30.6TB</td><td>2 x 15.3 TB (With stand ard front SFF drive cag e)</td></tr>
<tr><td>Hot plug SFF SATA SS D</td><td>15.36TB</td><td>2 x 7.68 TB (With stand ard front SFF drive cag e)</td></tr>
<tr><td>Hot plug SFF NVMe SS D</td><td>61.44TB</td><td>4 x 15.36TB (With Prem ium front SFF drive ca ge)</td></tr>
</table>
</td></tr>
<tr><td>Interfaces [10]</td><td>• One (1) internal USB 3.0 connector for USB flash media drive keys.
• One (1) internal microSD connection for boot.
• External USB 3.0 port for updates to server code.
• One (1) external USB 3.0 connector for USB flash media drive keys.
• One external iLO service port</td></tr>
<tr><td>Frames</td><td>HPE Synergy 12000 frame, is the base for all Synergy products and sup ports:
• Up to 12 half-height, 6 full-height single-wide or 3 full-height double -wide compute modules (Mixing allowed).
• Up to 5 half-height double-wide HPE Synergy D3940 storage modul es (Mixing with compute modules in any to any ratio allowed).
• One HPE Synergy 12000 frame will support up to twelve (12) HPE Sy nergy 480 Gen10 Plus compute modules.</td></tr>
<tr><td>Industry stan dard complia nce [11]</td><td>• Microsoft logo certifications
• WOL enabled on some adaptors</td></tr>
</table>

Feature	Description
	• PXE support enabled • USB 3.0 compliant; iLO USB 2.0 compliant • Trusted Platform Module (TPM) 2.0 support (RBSU support for TPM 1. 2) • IEEE (Specific IEEE standards depending on Ethernet adapter card(s) installed) • AES • Triple Data Encryption Standard (3DES) • SNMP v3 • SSL 2.0 • DMTF Systems Management Architecture for Server Hardware Com mand Line Protocol (SMASH CLP). • Active directory v1.0 • PCIe 3.0 compliant • UEFI • Redfish API (iLO5) • Energy star compliant • Top runner – Japan compliant • ErP Lot9 compliant (See Technical specifications **Click here to view t he " Environmental Declarations"**. for HPE Lot9 declarations, a whit e paper, FAQs and products list of verified products.
Graphics (iLO)	**Integrated Matrox G200eH2 video standard with 16MB of Video RAM :** • 1280 x 1024 (32 bp) • 1920 x 1200 (16 bp)
	HPE iLO 5 on system management memory: • 32MB Flash • 512MB with ECC (224MB after ECC and video)

Feature	Description
HPE Server UEFI/legacy ROM 12	UEFI is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with users server at boot time. HPE ProLiant Gen10 servers have a UEFI Class 2 implementation and support both UEFI mode (Default) and legacy BIOS mode. **UEFI enables numerous new capabilities specific to HPE Synergy compute modules such as:** • Secure boot and secure start enable for enhanced security • Operating system specific functionality • Support for > 2.2TB (Using GPT) boot drives • USB 3.0 stack • Embedded UEFI shell • Mass configuration deployment tool using iLO RESTful API that is Redfish API conformant. • PXE boot support for IPv6 networks • Workload profiles for simple performance optimization **UEFI boot mode only:** • TPM 2.0 support • NVMe boot support • Platform Trust Technology (PTT) can be enabled. • iSCSI software initiator support • HTTP/HTTPs boot support as a PXE alternative • Boot support for option cards that only support a UEFI option ROM
Embedded management	• HPE Synergy Composer powered by HPE OneView • HPE iLO **Click here to view the " HPE ILO"**. • UEFI **Click here to view the "UEFI"**. • Intelligent Provisioning

Feature	Description
	Click here to view the "Intelligent Provisioning". • iLO RESTful API **Click here to view the " iLO RESTful API Ecosystem "**.
Security	**Newest forms of security based on iLO 5 features:** • Secure start, with hardware root of trust. • HPE hardware designed logic in iLO chip validates iLO firmware burn ed in chip. • iLO then validates system/compute ROM firmware for digital signatu re. • iLO completes the chain of trust • ROM validates option ROMs and OS bootloader via UEFI secure boot . **Standard security features:** • Power-on password • Administrator's password • Keyboard password (QuickLock) • HPE iLO Management On System Management Chipset with SSL en cryption, Secure Shell version 2, AES and 3DES on browser, CLP and XML scripting interface, AES and RC4 encryption of video. • External USB port enable/disable • Network server mode • Serial interface control • TPM 1.2 or 2.0 option • AES • Intel Advanced Encryption Standard-New Instructions (AES-NI)
Server mana gement	• HPE OneView advanced • HPE iLO advanced (Standard with Synergy compute) • HPE Synergy 480 Gen10 Plus graphics accelerator options overview

Feature	Description
	• HPE Insight Cluster Management Utility (CMU)
Fibre channel support	Up to two (2) optional Fibre Channel mezzanine HBAs are supported on the HPE Synergy 480 Gen10: • HPE Synergy 5330C 32G Fibre Channel HBA • HPE Synergy 5830C 32G Fibre Channel HBA
Compatible SAN	HPE Synergy 480 Gen10 Plus compute modules are optimized for HPE MSA, EVA, 3PAR, XP and Storevirtual VSA.
One Config Simple (SCE)	SCE is a guided self-service tool to help sales and non-technical people provide users with initial configurations in 3 to 5 minutes. User may then send the configuration on for configuration help or use in users existing ordering processes. If user require "custom" rack configuration or configuration for products not available in SCE.

NOTE

1. 8-Channel DDR4 - 3200 MT/s (Lower DDR4 speed may be used in segment optimized processors (i.e. Cloud, NFV, etc).
   - 2 socket capable, 3 UPI - 11.2 GT/s. Advanced RAS (Except 8358P), AVX-512 2 FMA, SGX 64GB, TME-MT 64 keys.
   - Support for all Optane 200 Series Memory
   - 1 Deterministic base frequency rating only applicable to VM workloads. Other workloads may see throttling.
   - Supports Intel Speed Select Performance Profile (SST-P), even though not being a “Y” processor.
2. 8-channel DDR4 - 3200 MT/s (Lower DDR4 speed may be used in segment optimized processors (i.e. NFV, etc).
   - 2 sockets capable, 3 UPI - 11.2 GT/s. Advanced RAS, AVX-512 2 FMA, SGX 64GB, TME-MT 64 keys.
   - Support for all Optane 200 series memory. 1 Deterministic base frequency rating only applicable for NFV workloads. Other workloads may see throttling.
   - Default speed select performance profile value.
3. 8-channel DDR4 - 2933 MT/s (Lower DDR4 speed may be used in segment optimized processors (i.e. NFV, etc).

Feature	Description

- 2 sockets capable, 3 UPI - 11.2 GT/s. Advanced RAS, AVX-512 2 FMA, SGX 64GB, TME-MT 64 keys.
- Support all Intel Optane 200 series memory. Supports Intel SST-P, even though not being a "Y" processor.
- 2 Deterministic base frequency rating only applicable for NFV work loads. Other workloads may see throttling. Default speed select pe rformance profile value.

4. 8-channel DDR4 @ 2667 MT/s. 2 sockets capable, 2 UPI @ 10.4 GT/s.
   - Standard RAS, AVX-512 2 FMA, SGX 8GB, TME-MT 64 keys. Does not support Intel Optain 200 series memory (Working future resolution).
   - Default speed select performance profile value.
5. All processors support up to 4TB memory per socket. Mixing of RDIMM and LRDIMM memory is not supported.
   - To realize the performance memory capabilities listed in this docum ent, HPE DDR4 SmartMemory is required.
   - For additional information, please see the **HPE DDR4 SmartMemo ry**.
   - Intel persistent memory 200 series only supported on Gold and Plat inum processors.
   - For general server memory and persistent memory population rules and guidelines for Gen10 Plus see details here:

     Click here to view the " Server Memory And Persistent Memory Population Rules for HPE Gen10 Plus Servers with 3rd Gen Intel Xeon Scalable Processors".
6. Important: Empty memory slots require DIMM slot blanks for improved t hermal control. (HPE DDR-4 DIMM Blanks kit, P07818-B21).
7. A maximum of 8 HPE Persistent memory kits per socket are supported on the following 3rd Generation Intel Xeon Scalable Processor series (Pl atinum 83xx, Gold 63xx/53xx and Silver 4314).
   - Supported on quantities of 1, 2, 4 or 8 per socket. Not supported wit h HPE 48 V dc power supply.

Feature	Description

8. HPE Smart Array S100i SR Gen10 SW RAID is off by default and can b e enabled RBSU. For legacy support select legacy mode settings part, 7 58959-B22.
9. Direct PCIe connection below drive cages and comes complete with 2x M.2 NVMe 480GB drives ready for boot.
10. The above options are intended for integrated hypervisor virtualization environments.
11. See requirements at end of this document or in OCA for valid configura tions to meet ErP Lot9 requirements.
12. For UEFI boot mode, boot environment and OS image installations sho uld be configured properly to support UEFI.
    - UEFI FIO setting (758959-B22) can be selected to configure the syst em in Legacy mode in the factory for users HPE Synergy Gen10 Plus Server.

Option Parts

New model specific parts lists

IMPORTANT: To obtain current part number information for a specific product model, use the Standard Models page for this product family.

Click here to go to the Standard Models page for all model specific information and to access the product model parts lists.

- The product Standard Models page now links the model SKU numbers to the spare parts list for each model found on the HPE PartSurfer web site. (To report missing or incorrect parts information in PartSurfer, please use the "Contact us" and "Missing or incorrect data" links within the PartSurfer web site utility.).
- To look up RoHS-compliant information in PartSurfer, use the component's option part number or the sales order number for a system in which the component is used (Available in the QuickSpecs or Standard Models page).

Drive cage and controller

Description	Option Part Number
HPE Synergy 480 Gen10 Plus standard 2drive kit	P36675-B21
Optional controllers for above drive cage	
HPE Synergy Gen10 SATA FIO board kit (Not supported with HPE NS204i-d M.2 boot controller)	872955-B21
HPE Smart array E208i-c SR Gen10 (8 Internal lanes/No cache) 12G SAS modular controller	823852-B21
HPE Smart array P204i-c SR Gen10 (4 Internal lanes/1GB cache) 12G SAS modular controller	804424-B21
HPE Synergy 480 Gen10 Plus Premium 4 drive kit	P36677-B21
Options include a cable for a 4 drive NVMe direct connect solution or a 2x NVMe and 2x SAS/SATA solution	
HPE Synergy 480 Gen10+ 4 Small Form Factor (SFF) direct cable option kit	P29009-B21
HPE Synergy 480 Gen10+ SlimSAS cable option kit	P29010-B21
SlimSAS cable requires	
MicroChip SmartRAID P416ie-m x16 lanes 2GB cache SAS 12G controller for HPE (Works with D3940 storage drive if installed in frame)	P38721-B21
HPE Synergy 480 Gen10 Plus without drive front cage kit	P36676-B21
HPE NS204i-d Gen10+ boot controller (M.2 HW RAID controller)	P2P1410-B21

NOTE

- Installs below any drive cage option and can be used with any of the drive cage options above.

Description	Option Part Number

- Cannot be used with HPE Synergy Gen10 SATA FIO board kit, 872955-B21.

Processor option kits

Description	Option Part Number
3rd Generation Intel Xeon-Platinum	
Intel Xeon-Platinum 8380 2.3 GHz 40-core 270 W processor for HPE	P36941-B21
Intel Xeon-Platinum 8368 2.4 GHz 38-core 270 W processor for HPE	P36940-B21
Intel Xeon-Platinum 8360Y 2.4 GHz 36-core 250 W processor for HPE	P36939-B21
Intel Xeon-Platinum 8358P 2.6 GHz 32-core 240 W processor for HPE	P37598-B21
Intel Xeon-Platinum 8358 2.6 GHz 32-core 250 W processor for HPE	P36938-B21
Intel Xeon-Platinum 8352Y 2.2 GHz 32-core 205 W processor for HPE	P36929-B21
Intel Xeon-Platinum 8352V 2.1 GHz 36-core 195 W processor for HPE	P37599-B21
Intel Xeon-Platinum 8352S 2.2 GHz 32-core 205 W processor for HPE	P37613-B21
3rd Generation Intel Xeon-Gold	
Intel Xeon-Gold 6354 3.0 GHz 18-core 205 W processor for HPE	P36935-B21
Intel Xeon-Gold 6348 2.6 GHz 28-core 235 W processor for HPE	P36937-B21
Intel Xeon-Gold 6346 3.1 GHz 16-core 205 W processor for HPE	P36934-B21
Intel Xeon-Gold 6342 2.8 GHz 24-core 230 W processor for HPE	P36936-B21
Intel Xeon-Gold 6338N 2.2 GHz 32-core 185 W processor for HPE	P37603-B21
Intel Xeon-Gold 6338 2.0 GHz 32-core 205 W processor for HPE	P36928-B21

Description	Option Part Number
Intel Xeon-Gold 6336Y 2.4 GHz 24-core 185 W processor for HPE	P36926-B21
Intel Xeon-Gold 6334 3.6 GHz 8-core 165 W processor for HPE	P36933-B21
Intel Xeon-Gold 6330N 2.2 GHz 28-core 165 W processor for HPE	P37604-B21
Intel Xeon-Gold 6330 2.0 GHz 28-core 205 W processor for HPE	P36927-B21
Intel Xeon-Gold 6326 2.9 GHz 16-core 185 W processor for HPE	P36932-B21
Intel Xeon-Gold 6314U 2.3 GHz 32-core 205 W processor for HPE	P37610-B21
Intel Xeon-Gold 6312U 2.4 GHz 24-core 185 W processor for HPE	P37611-B21
Intel Xeon-Gold 5320 2.2 GHz 26-core 185 W processor for HPE	P36925-B21
Intel Xeon-Gold 5318Y 2.1 GHz 24-core 165 W processor for HPE	P36924-B21
Intel Xeon-Gold 5318S 2.1 GHz 24-core 165 W processor for HPE	P37612-B21
Intel Xeon-Gold 5318N 2.1 GHz 24-core 150 W processor for HPE	P37605-B21
Intel Xeon-Gold 5317 3.0 GHz 12-core 150 W processor for HPE	P36931-B21
Intel Xeon-Gold 5315Y 3.2 GHz 8-core 140 W processor for HPE	P36930-B21
3rd Generation Intel Xeon-Silver	
Intel Xeon-Silver 4316 2.3 GHz 20-core 150 W processor for HPE	P36923-B21
Intel Xeon-Silver 4314 2.4 GHz 16-core 135 W processor for HPE	P36922-B21
Intel Xeon-Silver 4310 2.1 GHz 12-core 120 W processor for HPE	P36921-B21
Intel Xeon-Silver 4309Y 2.8 GHz 8-core 105 W processor for HPE	P36920-B21

Memory

Description	Option Part Number
Registered Dual In-line Memory Module (RDIMMs)	
HPE 8GB (1 x 8GB) single rank x8 DDR4-3200 CAS-22-22-22 registered smart memory kit	P07525-B21

Description	Option Part Number
HPE 16GB (1 x 16GB) dual rank x8 DDR4-3 200 CAS-22-22-22 registered smart memo ry kit	P06031-B21
HPE 16GB (1 x 16GB) single rank x4 DDR4-3 200 CAS-22-22-22 registered smart memo ry kit	P06029-B21
HPE 32GB (1 x 32GB) dual rank x4 DDR4-3 200 CAS-22-22-22 registered smart memo ry kit	P06033-B21
HPE 32GB (1 x 32GB) single rank x4 DDR4 -3200 CAS-22-22-22 registered smart mem ory kit	P40007-B21
HPE 64GB (1 x 64GB) dual rank x4 DDR4-3 200 CAS-22-22-22 registered smart memo ry kit	P06035-B21
Load Reduced Dual In-line Memory Module (LRDIMMs)	
HPE 128GB (1 x 128GB) quad rank x4 DDR4 -3200 CAS-22-22-22 load reduced smart m emory kit	P06037-B21
HPE 256GB (1 x 256GB) octal rank x4 DDR4 -3200 CAS-26-22-22 3DS load reduced sma rt memory kit	P06039-B21
HPE SY 256GB 8Rx4 PC4- 3200AA-L 3DS m emory	P45867-B21
HPE DDR4 DIMM blank kit	P07818-B21
Intel Optane 128GB persistent memory 20 0 series for HPE	P23532-B21
Intel Optane 256GB persistent memory 20 0 series for HPE	P23535-B21
Intel Optane 512GB persistent memory 20 0 series for HPE	P23538-B21

Networking adapters

Description	Option Part Number
HPE Synergy 4610C 10/25Gb Ethernet adapter	813890-B21
HPE Synergy 4820C 10/20/25Gb converged network adapte r	876449-B21
HPE Synergy 6810C 25/50Gb Ethernet adapter	867322-B21

Description	Option Part Number
HPE Synergy 6410C 25/50Gb Ethernet adapter	868779-B21
HPE Synergy 6820C 25/50Gb converged network adapter	P02054-B21

NOTE

- Only one or more of the following from each list unless otherwise note d.
- Networking adapters must have matched interconnect modules or inte rconnect links matched in the corresponding ICM slot on the rear of th e Synergy 12000 frame. See specifications section below for Mezzanin e to ICM best practices and matching requirements.

Factory Integratable Options (FIO)

Description	Option Part Number
HPE Storage controllers	
HPE FIO enable smart array SW RAID [1]	784308-B21
HPE Synergy compute chipset SATA FIO board kit [1]	872955-B21
HPE NS204i-d Gen10 Plus NVMe PCIe3 x4 M.2 OS boot devic e [2]	P21410-B21
HPE Smart array E208i-c SR Gen10 (8 Internal lanes/No cach e) 12G SAS modular controller [3]	823852-B21
HPE Smart array P204i-c SR Gen10 (4 Internal lanes/1GB cac he) 12G SAS modular controller [3]	804424-B21
HPE 96 W smart storage Lithium-ion battery with 260 mm ca ble kit [3]	P01367-B21
HPE Smart storage hybrid capacitor with 260 mm cable kit [3]	P02381-B21
Microchip SmartRAID P416ie-m x16 lanes 2GB cache SAS 12 G controller for HPE [3]	P38721-B21

NOTE

1. HPE Synergy compute chipset SATA FIO board kit cannot be used with HPE NS204i-d Gen10 Plus boot controller.
2. HPE NS204i-d Gen10 Plus boot controller cannot be used with HPE Syn ergy compute chipset SATA FIO board kit.

Description	Option Part Number

3. New MicroChip Smart RAID P416ie-m is for SATA/SAS drive use with 4 drive premium cage module (Front local drives). Also, links directly to Synergy D3940 storage module and offers 2 SASSATA drive options for the 4 drive premium cage with SAS cable defined in drive cage sections of documents.

HPE I/O expansion options

Description	Option Part Number
HPE Synergy 6810C 25/50Gb Ethernet adapter	867322-B21
HPE Synergy 6410C 25/50Gb Ethernet adapter	868779-B21
HPE Synergy 4610C 10/25Gb Ethernet adapter	813890-B21
HPE Synergy 6820C 25/50Gb converged network adapter	P02054-B21
HPE Synergy 4820C 10/20/25Gb converged network adapter	876449-B21
HPE Synergy 5330C 32Gb fibre channel Host Bus Adapter (HBA)	870828-B21
HPE Synergy 5830C 32Gb fibre channel HBA	777456-B21

NOTE

1. See specfications sections below for best practices and requirements for options placement in correct mezzanine slots that match with Interconnect model slotting for correct operations.

HPE Synergy operational services

Description	Option Part Number
HPE 5Y tech care essential service	HU4A6A5
HPE 5Y tech care critical service	HU4A3A5
HPE 5Y datacenter care addon essential service	HU4D5A5
HPE 5Y datacenter care addon critical service	HU4D2A5
HPE 3Y tech care basic service	HU4B2A3
HPE 3Y tech care basic with defective media retention service	HU4B3A3

Description	Option Part Number
HPE 3Y tech care basic with comprehensive defective material retention service	HU4B4A3
HPE 3Y Datacenter care addon basic service	HU4D8A3
HPE 3Y Datacenter care addon basic with defective media retent ion service	HU4D9A3
HPE 3Y Datacenter care addon basic with comprehensive defect ive material retention service	HU4E0A3
HPE 3Y tech care essential service	HU4A6A3
HPE 3Y tech care essential with defective media retention servic e	HU4A7A3
HPE 3Y tech care essential with comprehensive defective materi al retention service	HU4A8A3
HPE 3Y Datacenter care addon essential service	HU4D5A3
HPE 3Y Datacenter care addon essential with defective media re tention service	HU4D6A3
HPE 3Y Datacenter care addon essential with comprehensive de fective material retention service	HU4D7A3
HPE 3Y tech care critical service	HU4A3A3
HPE 3Y tech care critical with defective media retention service	HU4A4A3
HPE 3Y tech care critical with comprehensive defective material retention service	HU4A5A3
HPE 3Y Datacenter care addon critical service	HU4D2A3
HPE 3Y Datacenter care addon critical with defective media rete ntion service	HU4D3A3
HPE 3Y Datacenter care addon critical with comprehensive defe ctive material retention service	HU4D4A3
HPE 4Y tech care basic service	HU4B2A4
HPE 4Y tech care basic with defective media retention service	HU4B3A4
HPE 4Y tech care basic with comprehensive defective material retention service	HU4B4A4
HPE 4Y Datacenter care addon basic service	HU4D8A4
HPE 4Y Datacenter care addon basic with defective media retent ion service	HU4D9A4
HPE 4Y Datacenter care addon basic with comprehensive defect ive material retention service	HU4E0A4
HPE 4Y tech care essential service	HU4A6A4

Description	Option Part Number
HPE 4Y tech care essential with defective media retention service	HU4A7A4
HPE 4Y tech care essential with comprehensive defective material retention service	HU4A8A4
HPE 4Y Datacenter care addon essential service	HU4D5A4
HPE 4Y Datacenter care addon essential with defective media retention service	HU4D6A4
HPE 4Y Datacenter care addon essential with comprehensive defective material retention service	HU4D7A4
HPE 4Y tech care critical service	HU4A3A4
HPE 4Y tech care critical with defective media retention service	HU4A4A4
HPE 4Y tech care critical with comprehensive defective material retention service	HU4A5A4
HPE 4Y Datacenter care addon critical service	HU4D2A4
HPE 4Y Datacenter care addon critical with defective media retention service	HU4D3A4
HPE 4Y Datacenter care addon critical with comprehensive defective material retention service	HU4D4A4
HPE 5Y tech care basic service	HU4B2A5
HPE 5Y tech care basic with defective media retention service	HU4B3A5
HPE 5Y tech care basic with comprehensive defective material retention service	HU4B4A5
HPE 5Y Datacenter care addon basic service	HU4D8A5
HPE 5Y Datacenter care addon basic with defective media retention service	HU4D9A5
HPE 5Y Datacenter care addon basic with comprehensive defective material retention service	HU4E0A5
HPE 5Y tech care essential service	HU4A6A5
HPE 5Y tech care essential with defective media retention service	HU4A7A5
HPE 5Y tech care essential with comprehensive defective material retention service	HU4A8A5
HPE 5Y Datacenter care addon essential service	HU4D5A5
HPE 5Y Datacenter care addon essential with defective media retention service	HU4D6A5
HPE 5Y Datacenter care addon essential with comprehensive defective material retention service	HU4D7A5

Description	Option Part Number
HPE 5Y tech care critical service	HU4A3A5
HPE 5Y tech care critical with defective media retention service	HU4A4A5
HPE 5Y tech care critical with comprehensive defective material retention service	HU4A5A5
HPE 5Y Datacenter care addon critical service	HU4D2A5
HPE 5Y Datacenter care addon critical with defective media rete ntion services	HU4D3A5
HPE 5Y Datacenter care addon critical with comprehensive defe ctive material retention service	HU4D4A5

NOTE

- The HPE Synergy 480 Gen10 Plus compute module supports the HPE h ot-plug SFF smart drive carrier for enhanced management and reduced maintenance errors. HPE drives from generation G7 servers and before are not compatible with the HPE Synergy 480 Gen10 drive bays.
- The mixing of standard SAS drives with SAS SSD is supported within th e compute module, but limits the RAID configuration to two separate R AID 0 volumes. Mixing of other drives types is not supported.
- The drive options are not required when configuring a drive-less model.

HPE Drives

Description	Option Part Number
SATA drives (Listed by capacity)	
HPE 1.92TB SATA 6G very read optimized SFF SC 5210 SSD	P23487-B21
HPE 1TB SATA 6G Midline (MDL) 7.2K SFF (2.5 in) SC 1-year war ranty Digitally Signed (DS) firmware HDD	655710-B21
HPE 2TB SATA 6G MDL 7.2K SFF (2.5 in) SC 1-year warranty 512 e DS firmware HDD	765455-B21
HPE 3.84TB SATA 6G very read optimized SFF SC 5210 SSD	P23489-B21
HPE 7.68TB SATA 6G very read optimized SFF SC 5210 SSD	P23493-B21
HPE 1.92TB SATA 6G Read Intensive (RI) SFF SC 5300P SSD	P19941-B21
HPE 1.92TB SATA 6G RI SFF SC multi vendor SSD	P18426-B21

Description	Option Part Number
HPE 1.92TB SATA 6G RI SFF SC PM883 SSD	P04566-B21
HPE 1.92TB SATA 6G RI SFF SC S4510 SSD	P05938-B21
HPE 240GB SATA 6G RI SFF SC 5300P SSD	P19935-B21
HPE 240GB SATA 6G RI SFF SC multi vendor SSD	P18420-B21
HPE 240GB SATA 6G RI SFF SC PM883 SSD	P04556-B21
HPE 240GB SATA 6G RI SFF SC S4510 SSD	P05924-B21
HPE Dual 240GB SATA 6G RI M.2 to SFF SCM 5300B SSD kit	P19894-B21
HPE Dual 480GB SATA 6G RI M.2 to SFF SCM 5300P SSD kit	P19896-B21
HPE 3.84TB SATA 6G RI SFF SC 5300P SSD	P19943-B21
HPE 3.84TB SATA 6G RI SFF SC multi vendor SSD	P18428-B21
HPE 3.84TB SATA 6G RI SFF SC PM883 SSD	P04570-B21
HPE 3.84TB SATA 6G RI SFF SC S4510 SSD	P05946-B21
HPE 480GB SATA 6G RI SFF SC 5300P SSD	P19937-B21
HPE 480GB SATA 6G RI SFF SC multi vendor SSD	P18422-B21
HPE 480GB SATA 6G RI SFF SC PM883 SSD	P04560-B21
HPE 480GB SATA 6G RI SFF SC S4510 SSD	P05928-B21
HPE 7.68TB SATA 6G RI SFF SC 5300P SSD	P19945-B21
HPE 7.68TB SATA 6G RI SFF SC multi vendor SSD	P18430-B21
HPE 960GB SATA 6G RI SFF SC 5300P SSD	P19939-B21
HPE 960GB SATA 6G RI SFF SC multi vendor SSD	P18424-B21
HPE 960GB SATA 6G RI SFF SC PM883 SSD	P04564-B21
HPE 960GB SATA 6G RI SFF SC S4510 SSD	P05932-B21
HPE 1.92TB SATA 6G Mixed Use (MU) SFF SC 5300M SSD	P19951-B21
HPE 1.92TB SATA 6G MU SFF SC multi vendor SSD	P18436-B21
HPE 1.92TB SATA 6G MU SFF SC S4610 SSD	P05986-B21
HPE 1.92TB SATA 6G MU SFF SC SM883 SSD	P09722-B21
HPE 3.84TB SATA 6G MU SFF SC 5300M SSD	P19953-B21
HPE 3.84TB SATA 6G MU SFF SC multi vendor SSD	P18438-B21
HPE 3.84TB SATA 6G MU SFF SC S4610 SSD	P05994-B21
HPE 3.84TB SATA 6G MU SFF SC SM883 SSD	P21517-B21
HPE 480GB SATA 6G MU SFF SC 5300M SSD	P19947-B21
HPE 480GB SATA 6G MU SFF SC multi vendor SSD	P18432-B21
HPE 480GB SATA 6G MU SFF SC S4610 SSD	P05976-B21

Description	Option Part Number
HPE 480GB SATA 6G MU SFF SC SM883 SSD	P09712-B21
HPE 960GB SATA 6G MU SFF SC 5300M SSD	P19949-B21
HPE 960GB SATA 6G MU SFF SC multi vendor SSD	P18434-B21
HPE 960GB SATA 6G MU SFF SC S4610 SSD	P05980-B21
HPE 960GB SATA 6G MU SFF SC SM883 SSD	P09716-B21
SAS drives (Listed by capacity)	
HPE 1.2TB SAS 12G enterprise 10K SFF (2.5 in) SC 3-year warranty DS firmware HDD	872479-B21
HPE 1.8TB SAS 12G enterprise 10K SFF (2.5 in) SC 3-year warranty 512e DS firmware HDD	872481-B21
HPE 1TB SAS 12G MDL 7.2K SFF (2.5 in) SC 1-year warranty DS firmware HDD	832514-B21
HPE 2TB SAS 12G MDL 7.2K SFF (2.5 in) SC 1-year warranty 512e HDD	765466-B21
HPE 2.4TB SAS 12G enterprise 10K SFF (2.5 in) SC 3-year warranty 512e DS firmware HDD	881457-B21
HPE 300GB SAS 12G enterprise 10K SFF (2.5 in) SC 3-year warranty DS firmware HDD	872475-B21
HPE 300GB SAS 12G enterprise 15K SFF (2.5 in) SC 3-year warranty DS firmware HDD	870753-B21
HPE 600GB SAS 12G enterprise 10K SFF (2.5 in) SC 3-year warranty DS firmware HDD	872477-B21
HPE 600GB SAS 12G enterprise 15K SFF (2.5 in) SC 3-year warranty DS firmware HDD	870757-B21
HPE 900GB SAS 12G enterprise 15K SFF (2.5 in) SC 3-year warranty DS firmware HDD	870759-B21
HPE 1.92TB SAS 12G RI SFF SC PM1643a SSD	P19905-B21
HPE 1.92TB SAS 24G RI SFF SC PM6 SSD	P26302-B21
HPE 1.92TB SAS 12G RI SFF SC SS540 SSD	P21141-B21
HPE 1.92TB SAS 12G RI SFF SC value SAS multi vendor SSD	P36999-B21
HPE 15.36TB SAS 12G RI SFF SC PM1643a SSD	P19911-B21
HPE 15.3TB SAS 24G RI SFF SC PM6 SSD	P26314-B21
HPE 3.84TB SAS 12G RI SFF SC PM1643a SSD	P19907-B21
HPE 3.84TB SAS 24G RI SFF SC PM6 SSD	P26306-B21
HPE 3.84TB SAS 12G RI SFF SC SS540 SSD	P21143-B21
HPE 3.84TB SAS 12G RI SFF SC value SAS multi vendor SSD	P37001-B21

Description	Option Part Number
HPE 7.68TB SAS 12G RI SFF SC PM1643a SSD	P19909-B21
HPE 7.68TB SAS 24G RI SFF SC PM6 SSD	P26310-B21
HPE 1.6TB SAS 24G Write Intensive (WI) SFF SC PM6 SSD	P26376-B21
HPE 400GB SAS 24G WI SFF SC PM6 SSD	P26295-B21
HPE 400GB SAS 12G WI SFF SC SS540 SSD	P21125-B21
HPE 1.6TB SAS 12G MU SFF SC PM1645a SSD	P19915-B21
HPE 1.6TB SAS 24G MU SFF SC PM6 SSD	P26354-B21
HPE 1.6TB SAS 12G MU SFF SC SS540 SSD	P21133-B21
HPE 1.92TB SAS 12G MU SFF SC value SAS multi vendor SSD	P37011-B21
HPE 3.2TB SAS 12G MU SFF SC PM1645a SSD	P19917-B21
HPE 3.2TB SAS 24G MU SFF SC PM6 SSD	P26358-B21
HPE 3.2TB SAS 12G MU SFF SC SS540 SSD	P21135-B21
HPE 3.84TB SAS 12G MU SFF SC value SAS multi vendor SSD	P37017-B21
HPE 6.4TB SAS 12G MU SFF SC PM1645a SSD	P19919-B21
HPE 6.4TB SAS 24G MU SFF SC PM6 SSD	P26362-B21
HPE 6.4TB SAS 12G MU SFF SC SS540 SSD	P21137-B21
NVMe drives (Listed by capacity)	
HPE 1.6TB NVMe Gen4 mainstream performance MU SFF SC U.3 PE8030 SSD	P19827-B21
HPE 1.92TB NVMe Gen4 mainstream performance RI SFF SC U.3 PE8010 SSD	P19811-B21
HPE 15.36TB NVMe Gen4 high performance RI SFF SC U.3 PM1733 SSD	P26109-B21
HPE 3.2TB NVMe Gen4 mainstream performance MU SFF SCN U.3 PE8030 SSD	P19831-B21
HPE 3.84TB NVMe Gen4 mainstream performance RI SFF SC U.3 PE8010 SSD	P19815-B21
HPE 6.4TB NVMe Gen4 mainstream performance MU SFF SC U.3 PE8030 SSD	P19835-B21
HPE 6.4TB NVMe Gen4 high performance MU SFF SC U.3 PM1735 SSD	P26124-B21
HPE 7.68TB NVMe Gen4 mainstream performance RI SFF SC U.3 PE8010 SSD	P19819-B21
HPE 7.68TB NVMe Gen4 high performance RI SFF SC U.3 PM1733 SSD	P26104-B21

Description	Option Part Number
HPE 800GB NVMe Gen4 mainstream performance MU SFF SC U.3 PE8030 SSD	P19823-B21
HPE 800GB NVMe Gen4 high performance MU SFF SC U.3 PM 1735 SSD	P26543-B21
HPE 960GB NVMe Gen4 mainstream performance RI SFF SC U.3 PE8010 SSD	P19807-B21
M.2 drive options	
HPE NS204i-d Gen10 Plus NVMe PCIe3 x4 M.2 OS boot devic e	P21410-B21

NOTE

- The Trusted Platform Module (TPM) is a microcontroller chip that can s ecurely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Wind ows BitLocker drive encryption (BitLocker) is a data protection feature available in Windows Server 2012. BitLocker leverages the enhanced se curity capabilities of a TPM version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Se rver 2012 has not been tampered with while the system was offline.
- HPE Synergy OS pre-installed units will come with the partition require d for TPM deployment.
- The TPM key is unique to every TPM deployed server and must be retain ed. Misplacing or losing the key could result in data loss.

HPE Security

Description	Option Part Number
HPE TPM 2.0 Gen10 Plus black rivets kit	P13771-B21
HPE Gen10 TPM 1.2 FIO setting	872108-B21
HPE iLO common password FIO setting	P08040-B21

NOTE

- The TPM is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwo

Description	Option Part Number
rds, certificates and encryption keys. Windows BitLocker drive encrypt ion (BitLocker) is a data protection feature available in Windows Serve r 2012. BitLocker leverages the enhanced security capabilities of a TPM version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2012 has not been tam pered with while the system was offline. • HPE Synergy OS pre-installed units will come with the partition require d for TPM deployment. • The TPM key is unique to every TPM deployed server and must be retain ed. Misplacing or losing the key could result in data loss.	

HPE Networking mezzanine CNA's

Description	Option Part Number
HPE Synergy 4610C 10/25Gb Ethernet adapter	813890-B21
HPE Synergy 4820C 10/20/25Gb converged network adapter	876449-B21
HPE Synergy 6410C 25/50Gb Ethernet adapter	868779-B21
HPE Synergy 6810C 25/50Gb Ethernet adapter	867322-B21
HPE Synergy 6820C 25/50Gb converged network adapter	P02054-B21
HPE Fibre Channel	
HPE Synergy 5330C 32Gb fibre channel HBA	870828-B21
HPE Synergy 5830C 32Gb fibre channel HBA	777456-B21
HPE Storage controllers	
HPE Synergy compute chipset SATA FIO board kit	872955-B21
HPE Smart array P204i-c SR Gen10 (4 Internal lanes/1GB cache) 12G SAS modular controller	804424-B21
HPE SY480 Gen10+ SlimSAS cable opt kit	P29010-B21
HPE Synergy 480 Gen10 Plus x4 NVMe direct attach cable kit	P29009-B21
HPE FIO enable smart array SW RAID	784308-B21
HPE 96 W smart storage Lithium-ion battery with 260 mm cabl e kit	P01367-B21
HPE Smart storage hybrid capacitor with 260 mm cable kit	P02381-B21

Description	Option Part Number
HPE Smart array E208i-c SR Gen10 (8 Internal lanes/No cache) 12G SAS modular controller	823852-B21
HPE NS204i-d Gen10 Plus NVMe PCIe3 x4 M.2 OS boot device	P21410-B21

NOTE

Contains 2x M.2 NVMe 480GB drives.

HPE Flash media kits

Description	Option Part Number
HPE Enterprise mainstream flash media kits for memory cards	
HPE 32GB microSD flash memory card	700139-B21
HPE 32GB microSD RAID 1 USB boot drive	P21868-B21
GPU expansion PCIe modules	
HPE Synergy 480 Gen10 Plus 2-slot PCIe expansion module	P14256-B21
HPE Synergy 480 Gen10 Plus 4-slot PCIe expansion module	P14257-B21
HPE Synergy 480 Gen10 Plus 8-slot PCIe expansion module	P14258-B21
HPE Synergy 480 Gen10 Plus front PCIe GPU enablement kit	P15825-B21

PCIe expansion module cable kit options

Description	Option Part Number
Cable kit option	
HPE Synergy 1x 8-pin 2-pack GPU cable	P25493-B21
HPE Synergy 2x 8-pin 0.14 m 2-pack cable	P25497-B21

NOTE

Compatible expansion modules are required to add these cards on Synergy (See expansion modules section above). If the expansion modules have already been purchased, compatible cable kits may need to be purchased for adding the new GPUs.

Physical

Specification	Description
Dimensions (H x W x D)	**With Bezel:** 6.35 x 21.4 x 60.0 cm (2.5 x 8.43 x 23.62 in)
Weight (Approximate)	• **Maximum: All processors, 24 DIMMs, drives, mezzanine cards and one flash cache battery installed** ◦ 8.16 kg (18 lb) • **Minimum: one processor and 1 DIMM installed** ◦ 6.57 kg (14.5 lb)

Environmental

Specifications	Description
System inlet temperature	**Standard operating temperature:** • 10° to 35° C (50° to 95° F) • The upper limit may be limited by the type and numbe r of options installed. • System performance may be reduced if operating with a fan fault.
	Non-operating temperature: • -30° to 60° C (-22° to 140° F)
Extended ambient operati ng support	Qualifications for extended ambient configurations are de tailed at: **Click here to view the " Extended Ambient Tem perature Guidelines for Gen10 Plus HPE ProLiant and HP E Apollo servers and HPE Synergy"**.
Relative humidity (Non-co ndensing)	**Operating relative humidity:** • 10% to 90% - 28° C (82.4° F)

Specifications	Description
	Non-operating relative humidity: • 5% to 95% - 38.7° C (101.7° F)
Acoustic noise[1]	For acoustic noise specifications, please see the HPE Synergy 12000 Frame QuickSpecs.

Electrical

Specification	Description
Power specifications	For power specifications including input requirements, BTU rating and power supply output, please see the HPE Synergy Frame QuickSpecs. • To review typical system power ratings use the HPE Power advisor which is available via the online tool located at **Click here to view the " Rack and Power Infrastructure"**.

Spare Parts

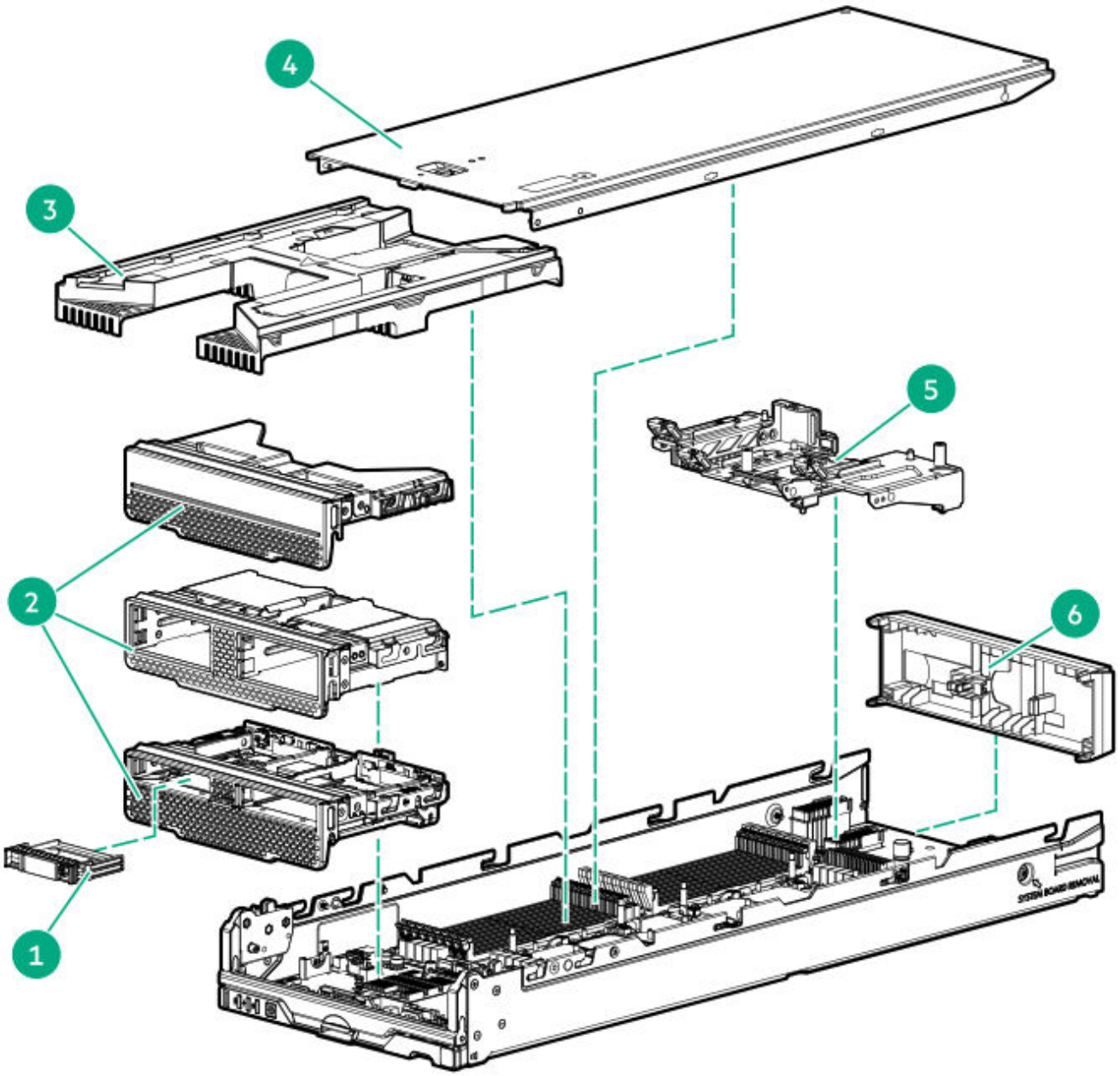
New model specific parts lists

Important: To obtain current part number information for a specific product model, use the Standard Models page for this product family.

Click here to go to the Standard Models page for all model specific information and to access the product model parts lists.

- The product Standard Models page now links the model SKU numbers to the spare parts list for each model found on the HPE PartSurfer web site. (To report missing or incorrect parts information in PartSurfer, please use the "Contact us" and "Missing or incorrect data" links within the PartSurfer web site utility.).
- To look up RoHS-compliant information in PartSurfer, use the component's option part number or the sales order number for a system in which the component is used (Available in the QuickSpecs or Standard Models page).

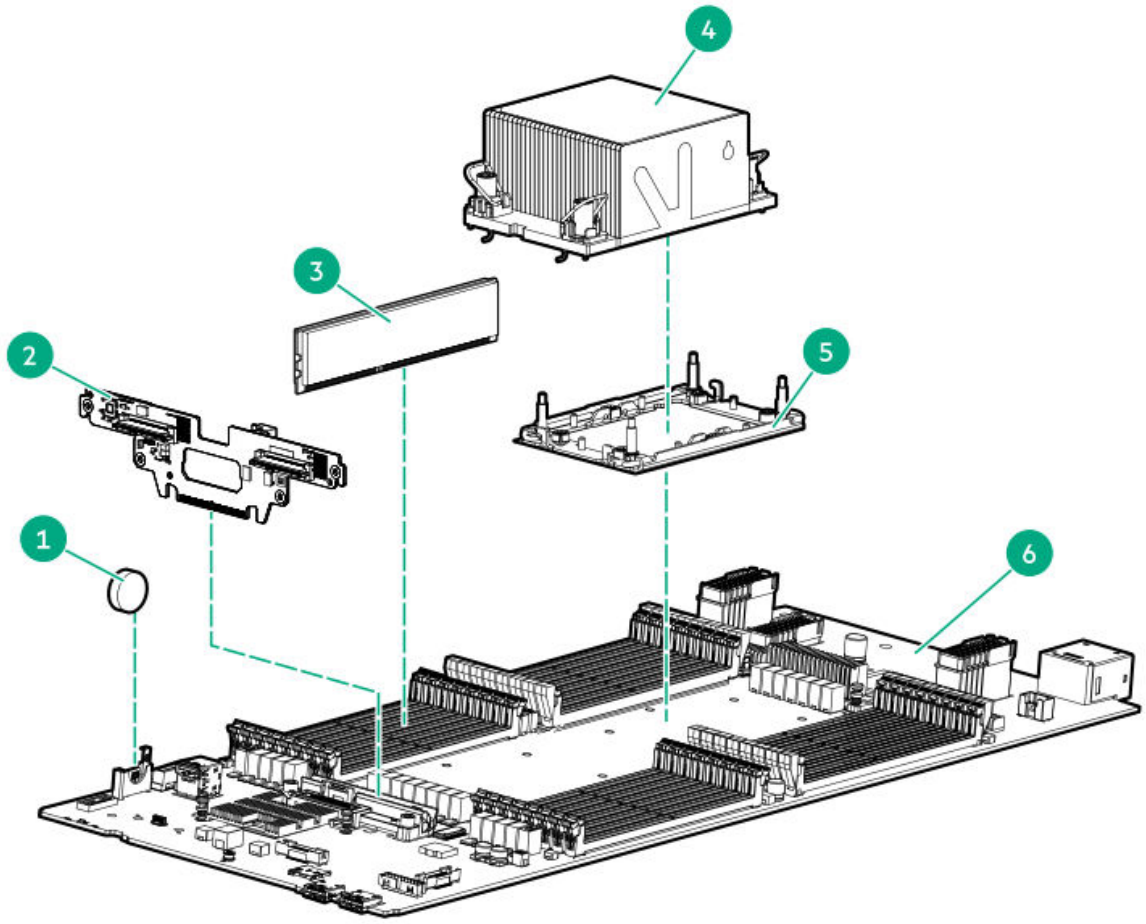
Mechanical components



Item	Description	Spare Part Number
1	**SFF drive blank spare part**	
	Hard drive blank (cover) - To fill empty Small Form Factor (SFF) drive bays - for Gen8 s ervers	670033-001
2	**Front drive cage assembly spare parts**	
	SPS-HDD cage 4SFF, Prem	P27547-001

Item	Description	Spare Part Number
	CA, X8 LP SlimSAS toX4 SlimSAS	P30345-001
	4SFF Direct with brkt and housing	P30344-001
	Performance and Coverage Analyser (PCA) NROC P416ie-M SR G10 Controller (RS)	P42977-001
	Drive cage with Bezel (No drives)	830892-001
	Hard drive cage with Bezel for Synergy 480 Gen10	873079-001
	Serial label pull tab for Synergy 480 Gen10	873074-001
3	**DIMM baffle spare part**	
	Baffle, DIMM, Univers	P27546-001
4	**Access panel spare part**	
	Top cover SY480 Gen10+	P27717-001
5	**Rear heatsink blank spare part**	
	Rear heatsink blank for Synergy 480 Gen10	873080-001
6	**Compute module end cap spare part**	
	Cap blade end	813579-001
7	**Mezzanine assembly spare part**	
	Mezz Frame SY480	P27545-001

System components

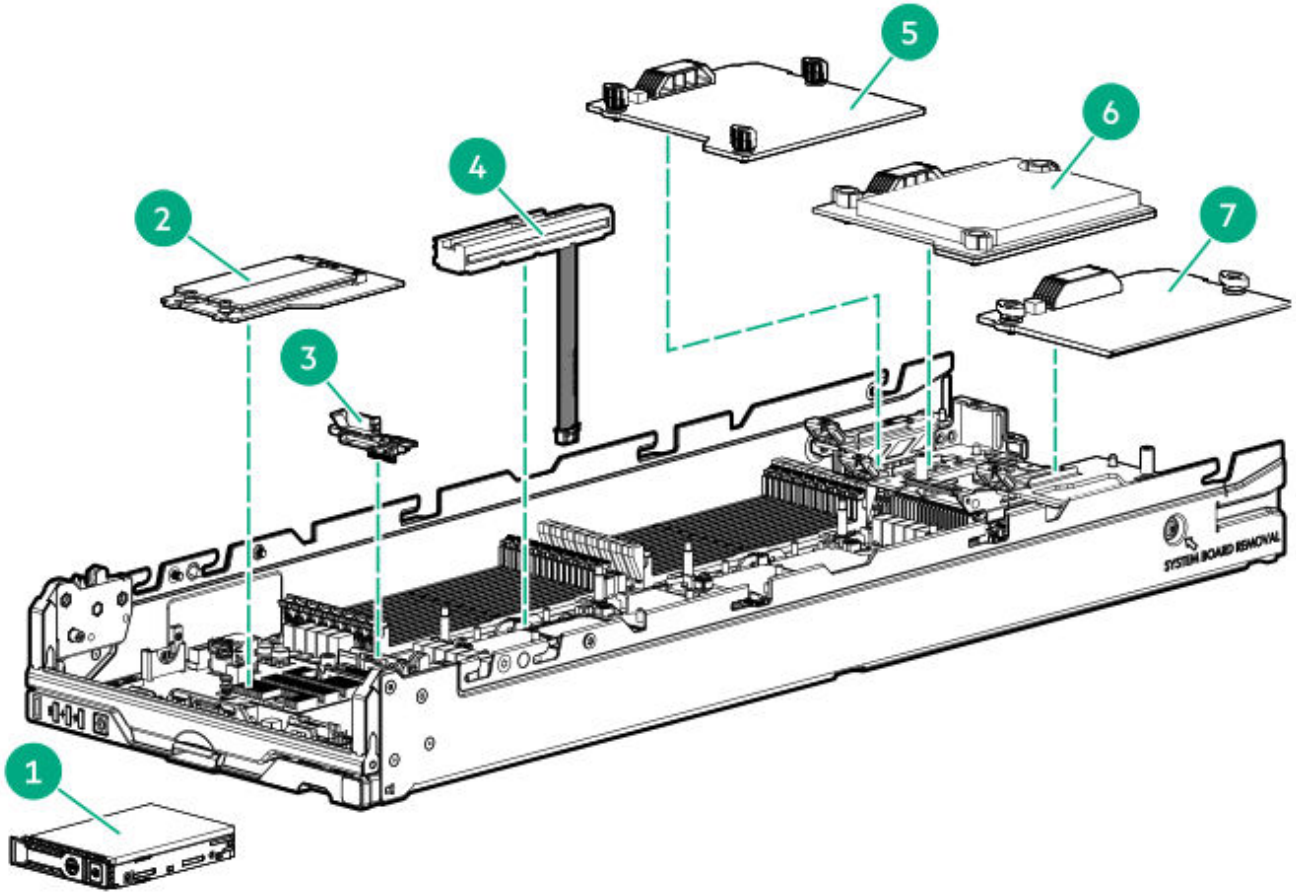


Item	Description	Spare Part Number
1	**System battery spare part**	
	System battery	234556-001
2	**Drive assembly spare parts**	
	Hard drive backplane, Synergy 480 Gen10, stand	873075-001
	HDD BKPLN,SY480 G10Plus 4SFF	P43545-001
3	**DIMM - Registered DIMMs (RDIMMs)**	
	DIMM, 16GB PC4-3200AA-R,2Gx4	P21672-001
	DIMM, 16GB PC4-3200AA-R,1Gx8	P21673-001
	DIMM, 32GB PC4-3200AA-R,2Gx4	P21674-001
	DIMM, 8GB PC4-3200AA-R,1Gx8	P21671-001
	DIMM, 32GB PC4-3200AA-R,4Gx4	P41682-001
	DIMM, 64GB PC4-3200AA-R,4Gx4	P21676-001

Item	Description	Spare Part Number
4	**Persistent memory module spare parts**	
	PMM, 128GB 3200 MT/s PMEM	P31373-001
	PMM, 256GB 3200 MT/s PMEM	P31374-001
	PMM, 512GB 3200 MT/s PMEM	P31375-001
5	**Processor heatsink spare parts**	
	Front, GNRC, heatsink, STD	P27548-001
	Rear, GNRC, heatsink, STD	P27549-001
6	**System board spare parts**	
	System board with base pan, compatible with third generation Intel Xeon Scalable Processors	P27543-001
7	**Third-Generation Intel Xeon Scalable Processor - 83xx processor (Intel Xeon-Platinum)**	
	CPU Xeon-P 8352S 2.2 GHz 32c 205 W	P41728-001
	CPU Xeon-P 8352V 2.1 GHz 36c 195 W	P41722-001
	CPU Xeon-P 8352Y 2.2 GHz 32c 205 W	P41713-001
	CPU Xeon-P 8358 2.6 GHz 32c 250 W	P41717-001
	Intel Xeon-Platinum 8358P 2.6 GHz 32-core 240 W Processor for HPE	P41721-001
	CPU Xeon-P 8360Y 2.4 GHz 36c 250 W	P41718-001
	CPU Xeon-P 8368 2.4 GHz 38c 270 W	P41719-001
	CPU Xeon-P 8380 2.3 GHz 40c 270 W	P41720-001
	53xx and 63xx processors (Intel Xeon-Gold)	
	CPU Xeon-G 5315Y 3.2G, 8C, 140 W	P44443-001
	CPU Xeon-G 5317 3.0G, 12C, 150 W	P44442-001
	CPU Xeon-G 5318N 2.1G, 24C, 150 W	P44438-001
	Intel Xeon-Gold 5318S 2.1 GHz 24-core 165 W Processor for HPE	P44433-001
	CPU Xeon-G 5318Y 2.1G, 24C, 165 W	P44446-001
	CPU Xeon-G 5320 2.2G, 26C, 185 W	P44445-001
	Intel Xeon-Gold 6326 2.9 GHz, 16-core 185 W Processor Kit	P44441-001
	CPU Xeon-G 6330 2.0 GHz 28c 205 W	P41711-001

Item	Description	Spare Part Number
	CPU Xeon-G 6330N 2.2 GHz 28c 165 W	P41726-001
	CPU Xeon-G 6334 3.6G, 8C, 165 W	P44440-001
	CPU Xeon-G 6336Y 2.4G, 24C, 185 W	P44444-001
	CPU Xeon-G 6338 2.0 GHz 32c 205 W	P41712-001
	CPU ICX6 6338N 2.2 GHz 32c 185 W	P41725-001
	CPU Xeon-G 6342 2.8G, 24C, 230 W	P44439-001
	Intel Xeon-Gold 6346 3.1 GHz 16-core 205 W Processor Kit for HPE ProLiant XL2x0n Gen10 Plus	P41714-001
	-CPU Xeon-G 6348 2.6 GHz 28c 235 W	P41716-001
	CPU Xeon-G 6354 3.0 GHz 18c 205 W	P41715-001
	43xx processor (Intel Xeon-Silver)	
	CPU Xeon-S 4309Y 2.8G, 8C, 105 W	P44450-001
	CPU Xeon-S 4310 2.1G, 12C, 120 W	P44449-001
	CPU Xeon-S 4314 2.4G, 16C, 135 W	P44448-001
	CPU ICX6 4316 2.3G, 20C, 150 W	P44447-001

Compute module options



Item	Description	Spare Part Number
1	**HPE NS204i-d Gen10 Plus Boot Controller (M.2 HW RAID Controller) spare parts**	
	BR B204i +Controller	P27544-001
	480GB Solid State Drive (SSD) - NVMe x4 M.2 22110	P24886-001
	HPE 480GB NVMe Gen3 Mainstream Performance Read Intensive M.2 Multi Vendor SSD	P41538-001
2	**HPE Trusted Platform Module (TPM) 2.0 Gen10 Plus spare part**	
	TPM PCA with cover	P23625-001
	Cover, TPM	P24306-001
3	**Energy pack options - HPE Smart Storage Battery spare part**	
	Battery, 96 W Megacell, 260 mm-b	878644-001

Item	Description	Spare Part Number
4	**HPE Smart Storage Hybrid Capacitor spare part**	
	3CAP hybridcap module, wit h 260 mm cable	P07474-001
5	**Mezzanine option spare parts**	
	Mezzanine C G3 2p 25 GbE Adapter	877647-001
	Mezzanine G3 2port 32G Fib er Channel	872164-001
	Mezzanine G3 2port 32G Fib er Channel, Host Bus Adapt er	782831-001
	Network Adapter Mezzanine G3 2p 25/50GB	P02424-001
6	**HPE Synergy Internal SATA board spare part**	
	PCA, Chipset SATA, Gen10	873085-001
7	**Drive - SFF SAS HDD**	
	1.2TB Serial Attached SCSI (SAS) hard drive - 12 Gb/s int erface, 10,000 RPM, 2.5 in S FF, Smart Carrier (SC), Digita lly Signed (DS) firmware	872737-001
	1.8TB SAS hard drive - 12 G b/s interface, 10,000 RPM, 2.5 in SFF, Enterprise drive, 512e format, DS firmware	872738-001
	1TB SAS drive - 12Gb/s trans fer rate, 7,500 RPM,2.5 in SF F, Midline (MDL), SC - For us e with Gen8/Gen9 or newer	832984-001
	2TB hot-plug SAS hard disk drive - 12 Gb/s transfer rate, 7,200 RPM, 2.5 in SFF, MDL, 512e format, SmartDrive Car rier (SC) - For use with Gen 8/Gen9 or newer	765873-001
	2.4TB SAS hot-plug hard dri ve - 10,000 RPM, 2.5 in SFF, 1 2 Gb/s interface, SC, 512e fo rmat, SC, DS Firmware	881507-001

Item	Description	Spare Part Number
	300GB SAS hard drive - 12 Gb/s interface, 10,000 RPM, 2.5 in SFF, SC, DS firmware	872735-001
	300GB SAS hard drive - 12 Gb/s interface, 15,000 RPM, 2.5 in SFF, enterprise drive, SC, DS firmware	870792-001
	600GB SAS hard drive - 12 Gb/s interface, 10,000 RPM, 2.5 in SFF, SC, DS firmware	872736-001
	600GB SAS hard drive - 12 Gb/s interface, 15,000 RPM, 2.5 in SFF, enterprise drive, SC, DS firmware	870794-001
	900GB SAS hard drive - 12 Gb/s interface, 15,000 RPM, 2.5 in SFF, enterprise drive, SC, DS firmware	870795-001
	SFF SATA HDD	
	1TB hot-plug SATA hard disk drive - 7,200 RPM, 6 Gb/s transfer rate, 2.5 in SFF, MDL, SmartDrive Carrier (SC) - Not for use in MSA products	656108-001
	2TB hot-plug SATA hard disk drive - 6 Gb/s transfer rate, 7,200 RPM, 2.5 in SFF, MDL, 512e sector format, SmartDrive Carrier (SC)	765869-001
	SFF SAS SSD	
	1.92TB SAS SSD - 2.5 in SFF, Read Intensive, Smart Carrier	P20834-001
	Drive SSD 1.92TB SFF SAS Read intensive (RI) SC	P37167-001
	Drive SSD 1.92TB SFF SAS SC	P22636-001
	Drive SSD 1.92TB SFF SAS RI SC MV DS	P37065-001
	15.3TB SAS SSD - 2.5 in SFF, RI, SC	P20837-001

Item	Description	Spare Part Number
	HPE 15.3TB SAS 24G RI, SFF, Smart Carrier PM6 SSD, Sm art Carrier	P37170-001
	3.84TB SAS SSD - 2.5 in SFF, RI, Smart Carrier	P20835-001
	Drive SSD 3.84TB SFF SAS RI SC	P37168-001
	Drive SSD 3.84TB SFF SAS SC	P22637-001
	Drive SSD 3.84TB SFF SAS RI SC MV DS	P37066-001
	7.68TB SAS SSD - 2.5 in SFF, RI, Smart Carrier	P20836-001
	Drive SSD 7.68TB SFF SAS RI SC	P37169-001
	Drive SSD 1.6TB SFF SAS WI SC	P37178-001
	Drive SSD 400GB SFF SAS WI SC	P37176-001
	Drive SSD 400GB SFF SAS SC	P22585-001
	1.6TB SAS SSD - 2.5 in SFF, M ixed Use (MU), Smart Carrier	P20839-001
	Drive SSD 1.6TB SFF SAS MU SC	P37172-001
	Drive SSD 1.6TB SFF SAS SC	P22582-001
	HPE 1.92TB SAS SSD - 2.5 SF F, 12G, MU, Smart Carrier Val ue, Multi Vendor, DS Firmwa re	P37071-001
	3.2TB SAS SSD - 2.5 in SFF, MU, Smart Carrier	P20840-001
	HPE 3.2TB SAS SSD - 24G M U SFF, Smart Carrier PM6	P37173-001
	Drive SSD 3.2TB SFF SAS SC	P22583-001
	Drive SSD 3.84TB SFF SAS M U SC MV	P37074-001
	6.4TB SAS SSD - 2.5 in SFF, MU, Smart Carrier	P20841-001

Item	Description	Spare Part Number
	Drive SSD 6.4TB SFF SAS M U SC	P37174-001
	Drive, SSD 6.4TB SFF SAS SC	P22584-001
	SFF SATA SSD	
	1.92TB 69G SFF SATA SC SS D drive	P25239-001
	Drive SSD 3.84TB 6G SFF SATA SC	P25240-001
	Drive SSD 7.68TB 6G LFF SATA SC	P25242-001
	Drive SSD 1.92TB SATA SFF R I SC	P21083-001
	1.92TB SATA SSD - 2.5 in SFF SC, RI	P18484-001
	1.92TB SATA SSD - 2.5 in SFF, RI, SC, DS Firmware	P05322-001
	1.92TB SATA SSD - 2.5 in SFF, RI, SC, DS Firmware	P08572-001
	DRV SSD 240GB SATA SFF RI SC	P21080-001
	240GB SATA SSD - 2.5 in SFF SC, RI	P18481-001
	240GB SATA SSD - 2.5 in SFF, RI, SC, DS Firmware	P05319-001
	240GB SATA SSD - 2.5 in SFF, RI, SC, DS Firmware	P08565-001
	Drive SSD 240GB 6G LFF SATA LPC	P25248-001
	DRV SSD 480GB SATA M.2 RI SCM	P25249-001
	DRV SSD 3.84TB SATA SFF RI SC	P21084-001
	3.84TB SATA SSD - 2.5 in SFF SC, RI	P18485-001
	3.84TB SATA SSD - 2.5 in SFF, RI, SC, DS Firmware	P05323-001
	3.84TB SATA SSD - 2.5 in SFF, RI, SC, DS Firmware	P08575-001

Item	Description	Spare Part Number
	480GB SATA SSD - 2.5 in SF F, Read Intensive, Smart Car rier	P21081-001
	480GB SATA SSD - 2.5 in SFF SC, RI	P18482-001
	480GB SATA SSD - 2.5 in SF F, RI, SC, DS Firmware	P05320-001
	480GB SATA SSD - 2.5 in SF F, RI, SC, DS Firmware	P08567-001
	DRV SSD 7.68TB SATA SFF RI SC	P21085-001
	7.68TB SATA SSD - 2.5 in SFF SC, RI	P18486-001
	960GB SATA SFF RI SC SSD drive	P21082-001
	960GB SATA SSD - 2.5 in SFF SC, RI	P18483-001
	960GB SATA SSD - 2.5 in SF F, RI, SC, DS Firmware	P05321-001
	960GB SATA SSD - 2.5 in SF F, RI, SC, DS Firmware	P08569-001
	DRV SSD 1.92TB SATA SFF M U SC	P21090-001
	HPE 1.92TB SATA 6G MU SFF SC Multi Vendor SSD	P18479-001
		P19695-001
	1.92TB SATA SSD - 2.5 in SFF, MU (MU), SC, DS Firmware	P08625-001
	1.92TB SATA SSD - 2.5 in SFF, MU, SC, DS Firmware	P09912-001
	Drive SSD 3.84TB SATA SFF MU SC	P21091-001
	3.84TB SSD - 2.5 in SFF, SC, MU	P18480-001
	3.84TB SATA SSD - 2.5 in SFF, MU, SC, DS Firmware	P08632-001
	3.84TB SATA SSD - 2.5 in SFF, Smart Carrier	P22588-001
	Drive SSD 480GB SATA SFF MU SC	P21088-001

Item	Description	Spare Part Number
	480GB SATA SSD - 2.5 in SFF SC, MU	P18477-001
	480GB SATA SSD - 2.5 in SF F, MU, SC, DS Firmware	P08620-001
	480GB SATA SSD - 2.5 in SF F, MU, SC, DS Firmware	P09907-001
	DRV SSD 960GB SATA SFF M U SC	P21089-001
	960GB SATA SSD - 2.5 in SFF SC, MU	P18478-001
	960GB SATA SSD - 2.5 in SF F, MU, SC, DS Firmware	P08622-001
	960GB SATA SSD - 2.5 in SF F, MU, SC, DS Firmware	P09909-001
	SFF NVMe SSD	
	DRV SSD 1.6TB NVMe U.3 MU SC	P20599-001
	DRV SSD 1.92TB NVMe RI SC	P20612-001
	DRV SSD 15.36TB SFF NVMe U.3 RI SC	P26961-001
	DRV SSD 3.84TB NVMe RI SC	P20614-001
	HPE 6.4TB NVMe Gen4 Mai nstream Performance Mixed Use SFF SC U.3 PE8030 SSD	P20603-001
	DRV SSD 6.4TB SFF NVMe U.3 MU SC	P26963-001
	DRV SSD 7.68TB NVMe U.3 RI SC	P20605-001
	DRV SSD 7.68TB SFF NVMe U.3 RI SC	P26960-001
	DRV SSD 800GB NVMe U.3 MU SC	P20597-001
	Drive SSD 800GB SFF NVMe U.3 MU SC	P26965-001
	DRV SSD 960GB NVMe U.3 RI SC	P20610-001
	DRV SSD 7.68TB SFF NVMe U.3 RI SC	P26960-001

Item	Description	Spare Part Number
	DRV SSD 15.36TB SFF NVMe U.3 RI SC	P26961-001
	DRV SSD 6.4TB SFF NVMe U.3 MU SC	P26963-001
8	**USB and microSDHC option spare parts**	
	32GB USB Secure Digital High Capacity (SDHC) flash media drive card	704502-001
	Drive dual 32GB USD to USB dongle	P23103-001
9	**Storage controller spare parts**	
	Performance and Coverage Analyser (PCA), Chipset SATA, Gen10	873085-001
	PCA, NROC E208i-c SR Gen10 controller	836276-001
	PCA, NROC P204i-c SR Gen10 controller	836274-001

OS Compatibility

Feature	Description
Operating Systems (OS) and virtualization software support	• Microsoft Windows Server • Microsoft Hyper-V Server • Red Hat Enterprise Linux • SUSE Linux Enterprise Server • VMware ESXi • VMware vSphere • Canonical Ubuntu • Oracle Linux • XenServer • SAP Linux

Feature	Description
	• Wind River Linux • Oracle Solaris • Community Enterprise Linux (CentOS, Alma Linux, Rocky Linux, openEuler)
Client OS	**With GPU options only:** • Windows and Enterprise Client OS • Red Hat Enterprise Linux Desktop/Workstation • SLES Desktop (64 bit - includes XEN &KVM)

NOTE

1. OS support may change. To get the most updated information, please go to the HPE OS support matrix at: **Click here to view the " HPE Discover 2021 "**.

Hardware Compatibility

Feature	Description
Hardware encryption [1]	Intel Optane persistent memory incorporates hardware encryption. With Advanced Encryption Standard (AES) 256-bit encryption, it helps protect data at rest from cyber attacks with minimal impact on performance. Options to choose from are • Intel Optane 128GB persistent memory 200 Series for HPE • Intel Optane 256GB persistent memory 200 Series for HPE • Intel Optane 512GB persistent memory 200 Series for HPE
System requirements [2]	The following hardware components are required for a complete Synergy solution:

Feature	Description
	• HPE SY480 Gen10 Plus with Third -generation Intel Xeon Scalable processors. • HPE DDR4 standard memory RDIMMs or LRDIMMs • Boot and storage solutions • Network and IO mezzanine • Synergy 12000 frame ◦ Composer/OneView ◦ Network and IO InterConnect modules Supported firmware versions: ◦ Latest system Read Only Memory (ROM) version ◦ Server Platform Services (SPS) firmware latest version ◦ HPE iLO firmware latest version ◦ HPE Innovation engine firmware latest version.
HPE Compute module ROM	HPE ROM is now digitally signed using the HPE Corporate sig ning service. As part of the secure start, this signature is veri fied before the flash process starts, reducing accidental prog ramming and preventing malicious efforts to corrupt system ROM. HPE Synergy compute ROM is used to configure the followin g: • Processor and chipset status registers • System memory, memory map and memory initialization • System hardware configuration (Integrated PCI devices a nd optional PCIe mezzanine cards). • Users-specific BIOS configuration using the Unified Exten sible Firmware Interface Forum (UEFI) system utilities.
Hardware RAID solution s	• **NVMe Boot Devices – HW RAID:** HPE NS204i-d Gen10 Pl us boot controller for HPE.[3] • **Essential RAID Controller:** HPE Smart Array E208i-c SR Gen10 12G SAS modular controller (8 Internal lanes/no ca che).

Feature	Description
	• **Performance RAID Controller:** ◦ HPE Smart Array P204i-c SR Gen10 12G SAS modular controller (4 Internal lanes/1GB cache). ◦ HPE Smart Array MicroChip Smart RAID P416ie-m SR Gen10 12G SAS mezzanine controller (8 Internal 8 exte rnal lanes/2GB cache for use with with Synergy D3940 storage modules). • **Premium backplane CTO compute module:** ◦ CTO offers a Premium backplane compute module fo r use with up to 4 NVMe drives in front drive cage. Or, supports 2x NVMe drives and 2 SAS drives with Micro Chip Smart RAID P416ie-m (P38721-B21) with specific SAS cable connections allowing MicroChip Smart RAI D P416ie-m (P38721) to manage 2x SATA or SAS drives in both front drive cage as well as drives on the Syne rgy D3940 storage module).
Security	**Newest forms of security based on iLO 5 features:** • Secure start, with hardware root of trust. • HPE hardware designed logic in iLO chip validates iLO fir mware burned in chip. • iLO then validates system/compute ROM firmware for digi tal signature. • iLO completes the chain of trust • ROM validates option ROMs and OS bootloader via UEFI s ecure boot.
	Standard security features: • Power-on password • Administrator's password • Keyboard password (QuickLock) • HPE iLO Management On System Management Chipset w ith SSL encryption, Secure Shell version 2, AES and 3DES

Feature	Description
	on browser, CLP and XML scripting interface, AES and RC 4 encryption of video. • External USB port enable/disable • Network server mode • Serial interface control • TPM 1.2 or 2.0 option • AES • Intel Advanced Encryption Standard-New Instructions (A ES-NI)

NOTE

1. A maximum of 8 HPE Persistent memory kits per socket are supported on the following 3rd Generation Intel Xeon Scalable processor series (P latinum 83xx, Gold 63xx/53xx and Silver 4314).
   - Supported on quantities of 1, 2, 4 or 8 per socket.
   - Not supported with HPE 48 V dc power supply
2. Hewlett Packard Enterprise recommends that user implement best pra ctice configurations for High Availability (HA) such as clustered configu rations.
3. Direct PCIe connection below drive cages and comes complete with 2x M.2 NVMe 480GB drives ready for boot.

Software Compatibility

Feature	Description
Software RAID solutions [1]	HPE Smart Array S100i SR Gen10 SW RAID

Feature	Description
Embedded management	• HPE Synergy Composer powered by HP E OneView • HPE iLO **Click here to view the " HPE ILO"**. • UEFI **Click here to view the "UEFI"**. • Intelligent Provisioning **Click here to view the "Intelligent Provisioning"**. • iLO RESTful API **Click here to view the " iLO RESTful API Ecosystem "**.

NOTE

1. HPE Smart Array S100i SR Gen10 SW RAID is off by default and can be enabled RBSU.
    - For legacy support select legacy mode settings part, 758959-B22.

Memory Matrix

Click here to access Memory matrix page for HPE ProLiant Gen10 Servers.

Hard Drive Matrix

Click here to access Hard Drive Model Number Matrix page.