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HPE ProLiant Compute DL360 Gen12

QuickSpecs

This compact, rack-optimized two-socket server supports hybrid cloud workloads.

The HPE ProLiant Compute DL360 Gen12 is a compact 1U 2P server that delivers exceptional compute performance, memory density with scalability and high-speed data transfer rates to run your most demanding applications. This server offers the right balance of expandability and density.

Overview

HPE ProLiant Compute DL360 Gen12

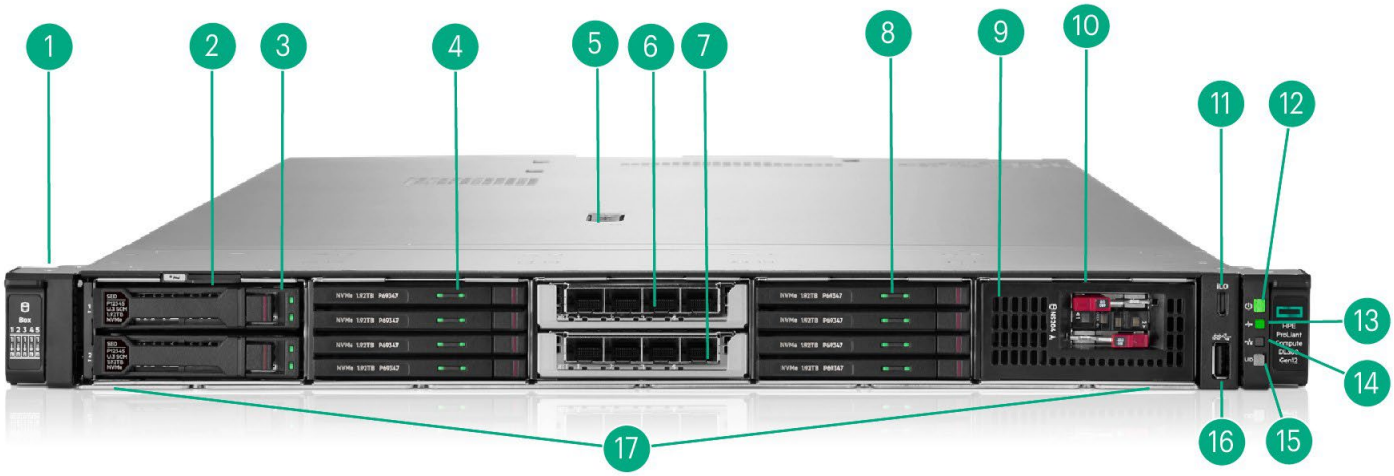
The HPE ProLiant Compute DL360 Gen12 is designed for supreme versatility and resiliency while backed by a comprehensive warranty.

Powered by Intel® Xeon® 6 Processors with up to 144 cores, plus up to 8 TB of DDR5 memory running at maximum 6400 MT/s, the DL360 Gen12 can be scaled with a variety of front storage support, ranging from 3.5" 4x LFF, 2.5" 10x SFF as well as 20x E3.S NVMe drives. High-performance networking OCP cards and RAID 1 OS Boot Device can be configured at front cage for healthy airflow.

The HPE ProLiant Compute DL360 Gen12 is an ideal hybrid cloud platform for enterprise applications and workloads. This is an intelligent server built on three pillars. Firstly, the intelligent multiple-purpose front cage design delivers extreme scalability through hybrid front storage including SFF, E3.S, OS Boot device and front OCP NIC (post-launch). Secondly, the intelligent leak detection feature provides easy maintenance of Closed-loop Liquid Cooling and Direct Liquid Cooling modules. Finally, the new DL360 Gen12 Smart Chassis configuration feature designed in the One Config Advanced (OCA) offers extended thermal configuration capability and high scalability associated with high power CPU and high-bandwidth networking cards for Compute Nodes and Networking Nodes. Smart Chassis delivers a reduction of configuration time on cables and maximizes the usage of multi-purpose front cage design.

The new generation HPE iLO7 Management Engine delivers robust reliability and Security Enclave from Silicon Root of Trust. The HPE ProLiant Compute DL360 Gen12 is engineered for your future, with next-level security, optimized performance and efficiency, and automated, AI-driven productivity. To be an excellent choice of daily business and workloads in General Compute, Database Management, Virtual Desktop Infrastructure, Content Delivery Network, EDA, CAD, Containers, Edge Acceleration and Intelligent Video Analytics.

Overview



Front View – 10SFF/20EDSFF Hybrid CTO Server – Multi-purpose Front Cages

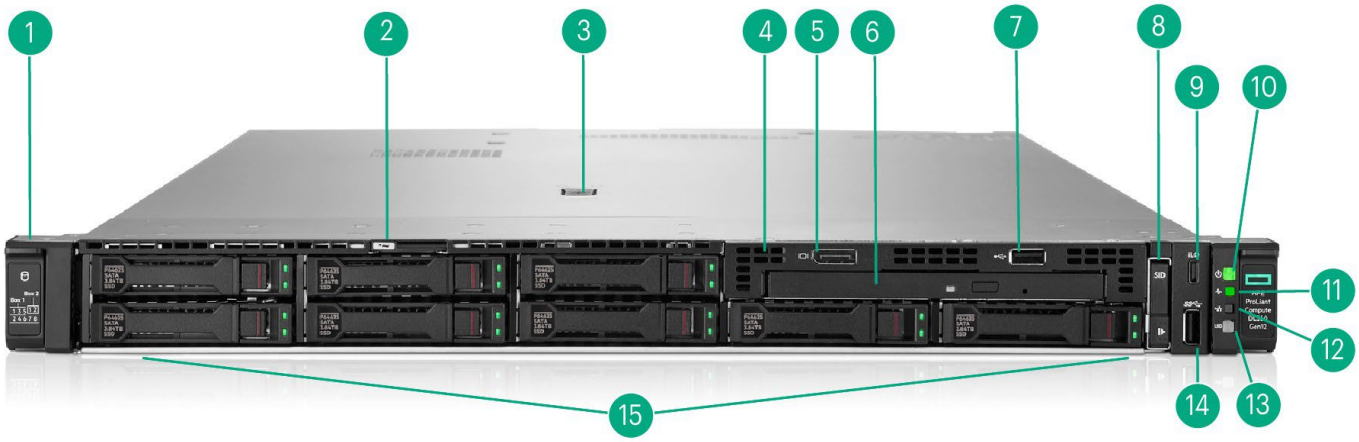
Item	Description	Item	Description
1.	Drive support label	9.	Box5 – Airflow vent hole (optional - shown)
2.	Serial number/iLO information pull tab	10.	Box5 (optional, four options) – Front RAID1 OS Boot Enablement Kit (shown)
3.	Box1 (must be selected, two options) - 2 SFF 24G x4 TriMode U.3 BC backplane cage (shown)	11.	iLO Service port in USB Type C
		12.	Power On/Standby button and system power LED
4.	Box2 (optional, two options) - 4 E3.S 32G x4 NVMe backplane cage (shown)	13.	Health LED
		14.	NIC status LED
5.	Quick removal access panel	15.	Unit ID button/LED
6.	Box3 Bay1 (optional, three options) - Secondary front OCP NIC enablement kit (shown)	16.	USB 3.2 Gen1 port
7.	Box 3 Bay3 (optional, three options) - Primary front OCP NIC enablement kit (shown)	17.	Front multi-purpose cage, Boxes 1 to 5 -Choice of 2 SFF, 4 E3.S, front RAID1 OS Boot, or front OCP NIC enablement kits
8.	Box4 (optional, three options) - 4 E3.S 32G x4 NVMe backplane cage (shown)		

Notes:

- The optional Systems Insight Display (SID) module is not available in the 10SFF/20EDSFF Hybrid CTO Server.
- The Serial number/ iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information. Box 1 storage backplane/cage installation is required to hold the Serial number/ iLO information pull tab.
- Front OCP NIC enablement Kits will be available CQ2 2025, as post-launch feature.
- The operating system does not recognize the USB Type C iLO Service port as a USB port.
- Front NIC LED display does not support NIC LED ACT/LINK indication from OCP NIC without Scan Chain, or PCIe type NIC adapters.

Overview

– The installation rules of the valid combinations associated with backplane type, storage cables, storage controllers in each Box are embedded in HPE OneConfig Advanced according to the cable length and test result.



Front View – 8SFF CTO Server - 8SFF + optional Universal Media Bay (Optical drive, DisplayPort, USB 2.0)

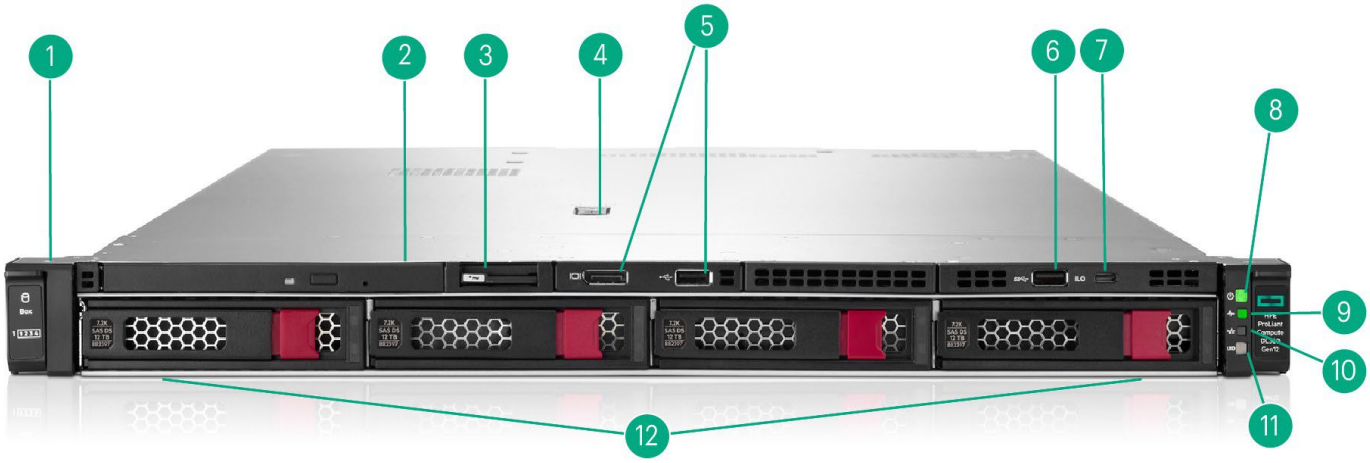
Item	Description	Item	Description
1.	Drive support label	8.	System Insight Display (SID) Module (optional - shown)
2.	Serial number/iLO information pull tab	9.	iLO Service port in USB Type C
3.	Quick removal access panel	10.	Power On/Standby button and system power LED
4.	Universal Media Bay (optional, two options): - Optical drive bay + DisplayPort and USB 2.0 kit (shown), or - 2 SFF 24G x4 TriMode U.3 BC backplane cage	11.	Health LED
		12.	NIC status LED
		13.	Unit ID button/LED
5	DisplayPort (optional - shown)	14.	USB 3.2 Gen1 port
6	Optical Drive (optional - shown)	15.	Front Drive Cage (optional) - 8 SFF 24G x1 TriMode U.3 backplane cage (shown)
7	USB 2.0 port (optional - shown)		

Notes:

– The operating system does not recognize the USB Type C iLO Service port as a USB port.

– Front NIC status LED does not support NIC LED ACT/LINK indication from OCP NIC without Scan Chain, or PCIe type NIC adapters.

Overview



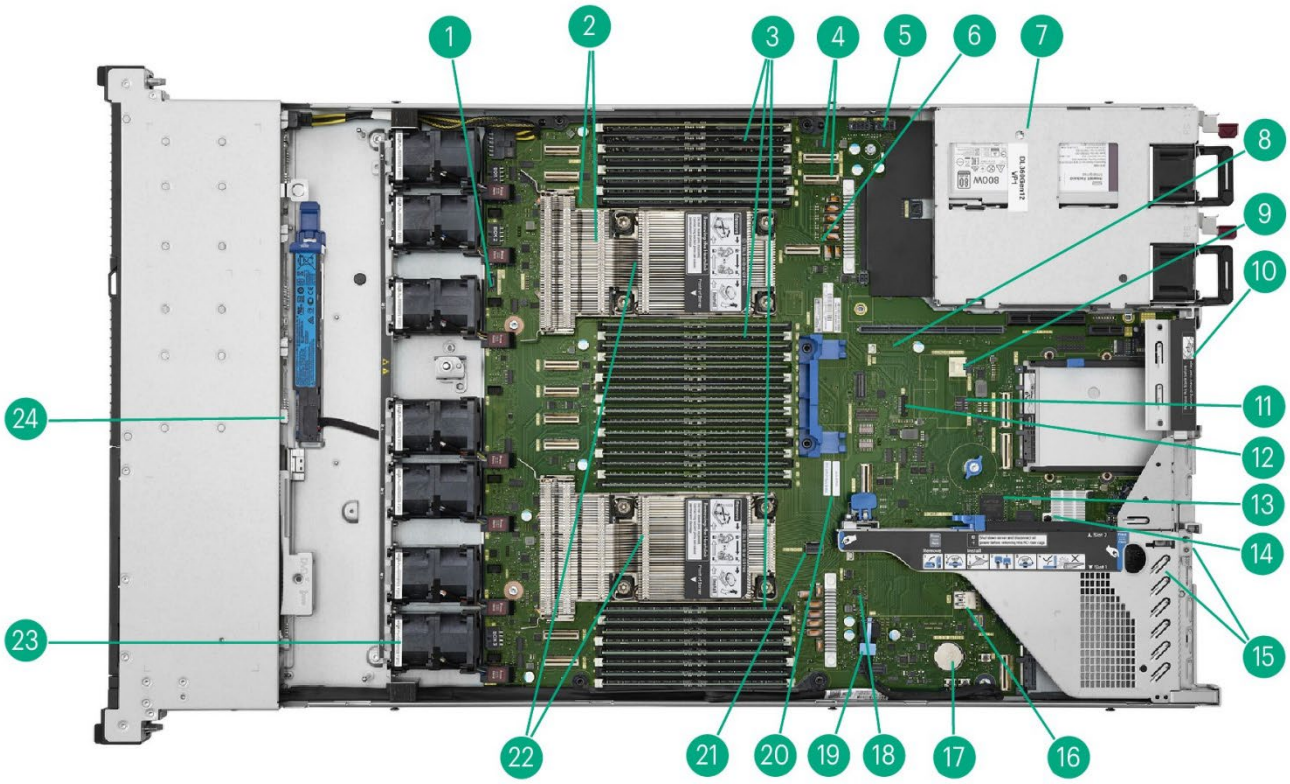
Front View – 4LFF CTO Server - 4 LFF + Optional optical drive, DisplayPort and USB2.0

Item	Description	Item	Description
1.	Drive support label	7.	iLO Service port in USB Type C
2.	Optical drive (optional - shown)	8.	Power On/Standby button and system power LED
3.	Serial number/iLO information pull tab (optional - shown)	9.	Health LED
4.	Quick removal access panel	10.	NIC status LED
5.	DisplayPort & USB 2.0 port bundle kit (optional - shown)	11.	Unit ID button/LED
6.	USB 3.2 Gen1 port	12.	Front Drive Cage: 12G x1 SAS LP backplane cage - Connect to a hardware controller card is required

Notes:

- The Systems Insight Display (SID) module is not available in the 4LFF CTO Server.
- The operating system does not recognize the USB Type C iLO Service port as a USB port.
- Front NIC status LED does not support NIC LED ACT/LINK indication from OCP NIC without Scan Chain, or PCIe type NIC
  Adapters.

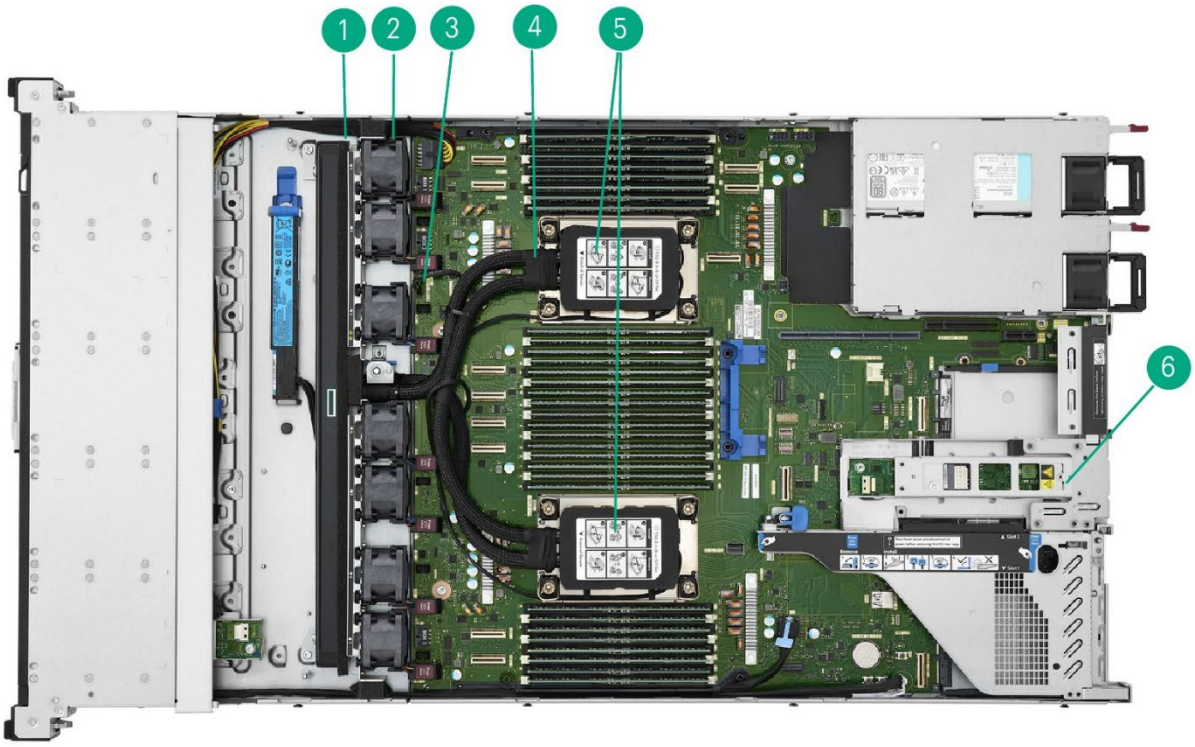
Overview



Internal View – Air Cooling

Item	Description	Item	Description
1.	Liquid Cooling Module Power & Signal Connector	13.	CPLD
2.	x8 lanes MCIO ports (#8 to #5 from CPU2, #4 to #1 from CPU1)	14.	iLO7 ASIC & Heatsink
3.	DDR5 DIMM Slots (fully populated 32 DIMMs shown)	15.	Primary (CPU 1) Riser PCIe 5.0 - 1x16 FH at Slot1 and 1x16 LP at Slot2
4.	x8 lanes MCIO ports (#9 & #10 from CPU2)		
5.	Rear Backplane Power connector (not supported)	16.	Internal USB 3.2 Gen1 Ports (Quantity 2, no HPE option kits)
6.	x8 lanes MCIO ports (#11 from CPU2)	17.	System Battery
7.	Redundant Power Supply (1 & 2 as shown)	18.	Voltage Backup Unit #1
8.	Voltage Backup Unit #2	19.	Front I/O Connector (SlimSAS)
9.	Energy Pack (Megacell) Power Connector	20.	x8 lanes MCIO Ports (#12 from CPU1)
10.	Secondary (CPU2) Riser PCIe 5.0 (optional, shown as blank) - Low Profile x16, or - Full Height x16 (lost Slot 2 on Primary Riser)	21.	OS Boot Device Signal Connector (SlimSAS)
		22.	CPU2, CPU1 and Performance Heatsink Kit (top down)
		23.	Hot plug/dual rotor 4056 High-performance Fan Kit (7pcs)
11.	OS Boot Device Power Connector	24.	Energy Pack holder (for HPE Hybrid Capacitor or HPE Storage Battery)
12.	SID Power & Signal Connector (Optional, 8SFF CTO server)		

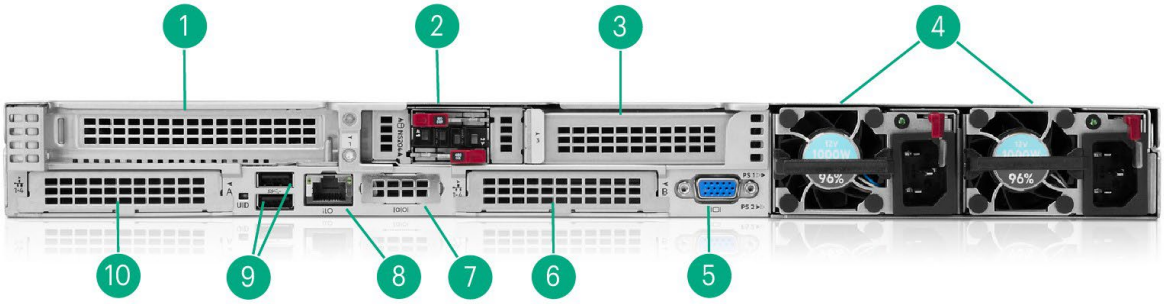
Overview



Internal View – Closed Loop Liquid Cooling Heatsink & Fan Kit

Item	Description	Item	Description
1.	Closed-loop Liquid Cooling Radiator	4.	Closed-loop Liquid Cooling Tubes & Leak Detection cables
2.	Closed-loop Liquid Cooling Hot Plug Fan Kits (7x 4028 fans)	5.	Closed-loop Liquid Cooling Cold Plates and Pumps (redundancy)
3.	Liquid Cooling Module Power & Signal Connector	6.	Rear (Hot Plug) RAID1 OS Boot Device (at PCIe Slot2)

Overview



Rear View - Standard for all DL360 Gen12

Item	Description	Item	Description
1.	Slot 1: x16 PCIe 5.0 – Full Height	6.	Slot 15 OCP B: x16 PCIe 5.0 (Requires 2nd CPU)
2.	Slot 2: x16 PCIe 5.0 – Low Profile. OS Boot Device installed (optional - shown)	7.	Serial port (optional, blank shown)
3.	Optional: Slot 3 x16 PCIe 5.0 (Requires 2nd CPU) - Low Profile and Full Height riser cards	8.	iLO Management Port
4.	Redundant Power Supply (1 & 2 as shown from right to left)	9.	USB 3.2 Gen1 Ports
5.	Video (VGA) port	10.	Slot 14 OCP A: x16 PCIe 5.0

Notes:

- Both OCP Slots support OCP NIC 3.0 cards.
- CPU1 can support Slot 14 OCP A with x8 PCIe 5.0 as default, no cable connection is required.
- CPU1 can support Slot 14 OCP A with x16 PCIe 5.0 with selection of “P72201-B21, CPU1 to Rear OCP SlotA x16 Cable Kit”.
- Or CPU1 can support supports Slot 15 OCP B with x8 PCIe 5.0 with selection of “P72203-B21, CPU1 to Rear OCP SlotB x8 Cable Kit”.

What’s New

- All new DL360 Gen12 server
- DL360 Gen12 10SFF/20EDSFF Hybrid NC CTO Server, with multi-purpose front cage
- Intel® Xeon® 6 Processors
- Full-speed x4 PCIe 5.0 support
- HPE ProLiant Compute DDR5 Smart Memory – 6400 MT/s
- HPE iLO ASIC and iLO7 support
- DL360 Gen11/Gen12 x16 Primary Riser Kit
- DL360 Gen12 High-performance Heat Sink Kit
- HPE NS204i-u V2 480GB NVMe Hot Plug Boot Optimized Storage Device, at front, rear, internal
- Intel® Virtual RAID on CPU (Intel® VROC) for HPE ProLiant Servers
- HPE MR Gen11 Storage Controllers

Overview

- HPE Storage SSD and HDD support
- NVIDIA L4 GPU support
- Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 Adapter for HPE
- Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 OCP3 Adapter for HPE
- HPE 15.36TB NVMe Gen5 High-performance Read Intensive E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD
- HPE MR408i-p Gen11 x8 Lanes 4GB Cache PCI SPDM Plug-in Storage Controller
- Extending air cooling support from 270Watt to 350Watt CPU with limited configuration
- Intel® Xeon® 6 Processors - socket scalable
- HPE 30.72TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD
- Intel® Xeon® 6745P 3.1GHz 32-core 300W Processor for HPE
- HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC
- HPE NS204i-u v2 960GB NVMe (SED) Hot Plug Boot Optimized Storage Device
- HPE ProLiant Compute DL360 Gen12 Cold Plate Module FIO Kit from NS204 PCIe Slot2
- HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Field Upgrade Heat Sink Kit (Field upgrade only)
- HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Field Upgrade Fan Kit (Field upgrade only)
- HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Field Upgrade Handle Tool Kit (Field upgrade only- Non-installation SKU)
- HPE 7.68 TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 SPDM 7500 SSD
- HPE 3.84 TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 SPDM 7500 SSD
- Intel® E610-IT4 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE
- HPE 15.36TB NVMe Gen4 Mainstream Performance Read Intensive BC U.3 Static V2 SPDM Multi Vendor SSD
- HPE 15.36TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 SPDM 7500b SSD
- HPE ProLiant Compute DL360 Gen12 2SFF Side-by-Side x4 Rear OCP SlotB Controller Power Cable Kit
- HPE ProLiant Compute DL360 Gen12 8SFF x1 Rear OCP SlotB Controller Power Cable Kit
- HPE InfiniBand XDR400/Ethernet 400GbE 2-port QSFP112 PCIe6 x16 HHHL CX8 Crypto Adapter
- HPE InfiniBand XDR/Ethernet 2x400GbE 1-port OSFP PCIe6 x16 HHHL CX8 Crypto Adapter
- HPE InfiniBand XDR PCIe Gen6 x16 Multi Host/Socket Direct Auxiliary Card with 250mm MCIO Cable Kit
- HPE InfiniBand NDR PCIe Gen5x16 Adapter SKU transition from B21/22/23 to H21/22/23
- HPE ProLiant Compute DL360 Gen12 2SFF Side-by-Side x4 Rear OCP SlotB Controller Power Cable Kit
- HPE ProLiant Compute DL360 Gen12 8SFF x1 Rear OCP SlotB Controller Power Cable Kit
- HPE 3.84TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-3 PM7 SSD
- HPE 1.6TB SAS Mixed Use SFF BC Self-encrypting FIPS 140-3 PM7 SSD
- Intel® Xeon® 6725P 3.7GHz 16-core 235W Processor for HPE
- HPE ProLiant Compute DL360 Gen12 Air Baffle Kit
- HPE 30.72TB NVMe Gen5 High Performance Read Intensive E3.S EC1 EDSFF SPDM 9550 SSD
- HPE 7.68 TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-2 PM7 SSD
- HPE 26TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD
- HPE 26TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD
- HPE InfiniBand NDR200/Ethernet 200Gb 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Adapter

Overview

- HPE MR932i-p x32 Lanes PCIe Gen5 SPDM Plug-in Storage Controller
- Intel® Xeon® 6732P 3.8GHz 32-core 350W Processor for HPE
- HPE 16W Smart Hybrid Capacitor with 145mm Cable
- Intel® Xeon® 6762P 2.9GHz 64-core 350W Processor for HPE
- HPE COM Standard and Advanced SaaS for Smart Choice
- HPE 16GB (1x16GB) Single Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit
- HPE 32GB (1x32GB) Dual Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit
- HPE 64GB (1x64GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit
- HPE 96GB (1x96GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit
- HPE 128GB (1x128GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit
- HPE 256GB (1x256GB) Quad Rank x4 DDR5-6400 CAS-60-52-52 EC8 Registered 3DS Smart FIO Memory Kit
- HPE 3.2TB and 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Static PM1755 SSD
- HPE 3.84TB, 7.68TB and 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Static PM1753 SSD
- HPE 3.2TB and 6.4TB NVMe Gen5 High Performance Mixed Use E3.S EC1 PM1755 SSD
- HPE 7,68TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-3 PM7 SSD
- HPE 30.72TB and 61.44TB NVMe Gen5 Mainstream Performance Very Read Optimized EC1 EDSFF Self-encrypting 6550 SSD
- HPE 30.72TB and 61.44TB NVMe Gen5 Mainstream Performance Very Read Optimized E3.S EC1 EDSFF 6550 SSD
- HPE InfiniBand NDR/Ethernet 400Gb 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Generic Adapter
- AMD Solarflare X4522-PLUS 10/25GbE 2-port SFP56 Adapter for HPE
- HPE 12.8TB, 6.4TB and 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM 9550 SSD
- HPE 15.36TB, 7.68TB and 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM 9550 SSD
- HPE 30.72TB, 15.36TB, 7.68TB, 3.84TB and 1.92TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PM9D3a SSD
- HPE 30.72TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF Self-encrypting PM9D3a SSD
- HPE 15.36TB, 7.68TB and 3.84TB NVMe Gen5 High Performance Read Intensive E3.S EC1 PM1753 SSD

Overview

Platform Information

Form Factor

- 1U rack

Chassis Types

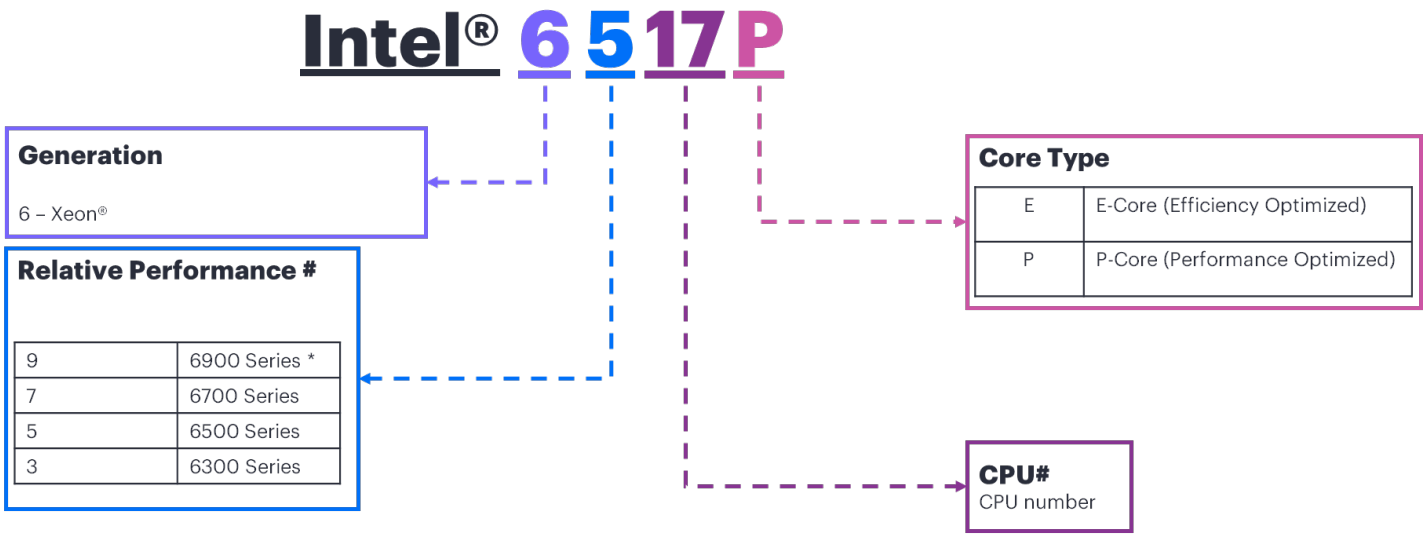
- 10 SFF Basic Carriers (BC) drive cages, or 20 E3.S drive cage: 24G x2/x4 TriMode U.3, or 32G x2/x4 NVMe (can be mixed)
- (8+2) SFF BC drive cages:
  - 8SFF 24G x1 TriMode U.3, and
  - Optional:
- 2SFF BC drive cage: 24G x4 TriMode U.3
- Universal Media Bay: Optical drive, 1x USB2.0 and 1x DisplayPort
- 4 LFF Low Profile (LP) drive bays: 12G x1 TriMode U.3
  - Optional:
    1. Optical drive
    2. 1x USB3.2 Gen1 and 1x DisplayPort

System Fans

- Choice of 1P (one processor) Standard Fan Kit, 2P (two processors) Standard Fan Kit, and Performance Fan Kits
- Choice of Closed-loop Liquid Cooling Heatsink Fan FIO Bundle Kit

Notes: Please refer to the later cooling solution section regarding CPU heatsink and Fan support matrix.

Processors



Intel® Xeon® 6 processor naming convention

Notes:

- * CPU Series not supported on HPE ProLiant Compute Gen12 platforms.
- All information provided here is subject to change without notice. Intel® may make changes to specifications and product descriptions at any time, without notice. Please contact your Intel® representative to obtain the latest Intel® product specifications and roadmaps.
- For Xeon® 6 CPU has Intel® Speed Select Technology - Performance Profile (Intel® SST-PP) which allows the customer to change the default CPU profile to increase the base frequency.
- For more information regarding Intel® Xeon® 6 processors, please see the following http://www.intel.com/xeon.

The HPE ProLiant DL360 Gen12 server supports Intel® Xeon 6® Processors

- Up to 2 of the following, depending on model.
- Efficient Core (E-Core) and Performance-Core (P-Core) processors.
- Public support SKUs as below.

Intel® Xeon 6® Processors with Efficient-Cores (E-Cores)								
Performance per Watt Processors								
Intel® Xeon® Models	**Base Speed (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (W)**	**UPI**	**DDR5 (MT/s)**	**SGX Enclave size (GB)**	**Die**
6710E	2.4	64	96	205	4	5600	512	HDCC
6731E	2.2	96	96	250	0	5600	512	HDCC
6740E	2.4	96	96	250	4	6400	512	HDCC
6746E	2.0	112	96	250	4	5600	512	HDCC
6756E	1.8	128	96	225	4	6400	512	HDCC
6766E	1.9	144	108	250	4	6400	512	HDCC
6780E	2.2	144	108	330	4	6400	512	HDCC

Optional Features

Intel® Xeon 6® Processors with Performance-Cores (P-Cores)								
Performance General Purpose Processors								
Intel® Xeon® Models	**Base Speed (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (W)**	**UPI**	**DDR5 (MT/s)***	**SGX Enclave size (GB)**	**Die**
6507P	3.5	8	48	150	3	6400	512	LCC
6517P	3.2	16	72	190	3	6400	512	LCC
6527P	3.0	24	144	255	4	6400	512	HCC
6725P	3.7	16	192	235	4	6400	512	HCC
6730P	2.5	32	288	250	4	6400	512	XCC
6732P	3.8	32	144	350	4	6400	512	HCC
6736P	2.0	36	144	205	4	6400	512	HCC
6737P	2.9	32	144	270	4	6400	512	HCC
6745P	3.1	32	336	300	4	6400	512	XCC
6747P	2.7	48	288	330	4	6400	512	XCC
6762P	2.9	64	320	350	4	6400	512	XCC
6767P	2.4	64	336	350	4	6400	512	XCC
6787P	2.0	86	336	350	4	6400	512	XCC
Mainline Processors								
Intel® Xeon® Models	**Base Speed (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (W)**	**UPI**	**DDR5 (MT/s)***	**SGX Enclave size (GB)**	**Die**
6505P	2.2	12	48	150	3	6400	128	LCC
6515P	2.3	16	72	150	3	6400	128	LCC
6520P	2.4	24	144	210	4	6400	128	HCC
6530P	2.3	32	144	225	4	6400	128	HCC
6740P	2.1	48	288	270	4	6400	128	XCC
6760P	2.2	64	320	330	4	6400	128	XCC
Socket Scalable Processors								
Intel® Xeon® Models	**Base Speed (GHz)**	**Cores**	**L3 Cache (MB)**	**Power (W)**	**UPI**	**DDR5 (MT/s)***	**SGX Enclave size (GB)**	**Die**
6714P	4.0	8	48	165	3	6400	512	LCC
6724P	3.6	16	72	210	3	6400	512	LCC
6728P	2.7	24	144	210	4	6400	512	HCC
6738P	2.9	32	144	270	4	6400	512	HCC
6748P	2.5	48	192	300	4	6400	512	HCC
6768P	2.4	64	336	330	4	6400	512	XCC
6788P	2.0	86	336	350	4	6400	512	XCC

Notes:

- Xeon® 6 P-core CPUs support 6400 MT/s at 1DPC and 5200 MT/s at 2DPC
- 6725P and 6732P are Low Tcase SKUs which require Liquid Cooling heatsink solution (Closed-loop Liquid Cooling or Direct Liquid Cooling)

Optional Features

Cooling solution options vs Processor TDP

- Optional: Quantity 1 or 2
- Thermal requirements.

CPU TDP (Wattage)	Heatsink (HS)	Fan Kit	Availability
<=185W	Standard HS	Standard Fan Kit (5/7ea)	Full Support
186W- 250W	Performance HS	Performance Fan Kit	Full Support
251W - 270W	Performance HS	Performance Fan Kit	Limited Configuration
271W -350W	Performance HS	Performance Fan Kit	Limited Configuration
<=270W (1P only)	Closed-loop HS	Closed-loop Fan Kit	Full Support
271W – 350W	Closed-loop HS	Closed-loop Fan Kit	Full Support
<=350W	DLC CPM	DLC Fan kit (Perf. Fan Kit)	Full Support

Notes: Several specific share options or configurations will trigger High-performance Fan Kits from thermal requirements. Please refer to the later section “Fan support matrix”.

Thermal configuration using DAC/ACC cables

- FAN kit selection (Standard Fan Kit or Perf. Fan Kit) will be decided if any GPU, NS204, SAS4 SSD, high-performance DIMM or NIC. Please refer to the separate section “FAN support matrix”.
- Thermal support matrix for CPU TDP vs Cooling solutions

2x CPU w/DAC or ACC	Cooling Solution	Allowed System Inlet Temperature (Without backplane quantity & downstream cards limitation)
<=270W	Air Cooling or CL LC	30 C
271 W – 350W	CL LC	25 C
0W-350W	DLC*	30-35 C

Notes: * With DLC installation, AOC or Transceiver is allowed for server operation at 30-35C system inlet temperature.

Optional Features

When CPU equals or above 270W TDP with Performance HS

2x CPU w/DAC or ACC, Perf. HS & Fan	10SFF/20EDSFF CTO Server P72176-B21	8SFF CTO Server P72175-B21	4LFF CTO Server P72174-B21
	System Ambient Temperature vs Max backplane Quantity		
Qty 2 x 350W	(30 C, 27 C, Not support) 25 C, Max 3 23 C, Max 4 20 C, Max 5 + 2C if air baffle included	(30 C, 27 C, Not support) 25 C/23 C, Max 1 20 C, Max 2 + 2C if air baffle included	(30 C, 27 C, Not support) 25 C, max 1 + 2C if air baffle included
Qty 2 x 330W	(30 C, Not Support) 27 C, Max 2 25 C, Max 5 + 2C if air baffle included	(30 C, Not Support) 27 C, Max 1 25 C, Max 2 + 2C if air baffle included	(30 C, Not Support) 27 C, max 1 + 3C if air baffle included
Qty 2 x 300W	(30 C, Not Support) 27 C, Max 3 25 C, Max 5 + 2C if air baffle included	(30 C, Not Support) 27 C, Max 1 25 C, Max 2 + 2C if air baffle included	(30 C, Not Support) 27 C, Max 1 + 3C if air baffle included

Notes:

- P72176-B21: Require minimum quantity one storage backplane to be installed at Box1 to hold the "Serial number/iLO information pull tab" as mechanical requirement.
- P72175-B21: The 2SFF side-by-side backplane cannot be installed without 8SFF L-shape backplane.
- P72175-B21: Optical drive installation through Universal Media Bay does not require the installation of 8SFF backplane. No special restrictions.

Thermal configuration using AOC or Transceiver

- DLC supports 30-35C
- Air Cooling or CL LC installation:

Refer to "**Cooling level for PCIe NIC with AOC/ Transceiver**" & "**Cooling level for OCP NIC with AOC/ Transceiver**" In the later "Core Option" section. The matrix presents the valid configuration overview while AOC or Transceiver (active cable) is connecting to NIC card at downstream /rear wall.

Chipset

- No PCH for Intel® Xeon 6® Processors
- SATA signal is not available

Notes: For more information regarding Intel® chipsets, please see the following URL: https://www.intel.com/content/www/us/en/products/chipsets/server-chipsets.html

System Management Chipset

- HPE iLO 7 ASIC

Notes: Read and learn more in the iLO QuickSpecs.

Graphics

Integrated video standard

- Video modes up to 1920 x 1200 @ 60 Hz (32 bpp)
- 16 MB Video Memory

Memory Controller

- 8 channels DDR5 per socket
- 2 DIMMs-per-channel (2DPC), 32 DIMMs in total
- DDR5 – Up to 6400 MT/s 1DPC, 5200 2DPC
- VR-on-DIMM Architecture
- System board supports registered DIMM (RDIMM) with ECC, and Multiplexed Rank DIMM/Monument Creek (MRDIMM/MCR), up to 8000 1DPC (2 slots per channel). Yet MRDIMM/MCR kits are not publicly available in ProLiant Compute share option portfolio. Please contact your HPE representative for further qualification if any business demand.
- Supports single-rank (SR), dual-rank (DR), quad-rank (QR), and octal-rank (8R) DIMM modules
- 8 TB max memory limit (4TB per processor)
- RAS – Advanced ECC, Mirroring, and ADDDC

Memory		
Type	**HPE DDR5 Smart Memory**	**Registered (RDIMM)**
DIMM Slots Available	32 Slots	16 DIMM slots per processor, 8 channels per processor, 2 DIMMs per channel
Maximum capacity (RDIMM)	8.0 TB	32 x 256 GB RDIMM 6400 MT/s @ 1DPC and 5200MT/s @ 2DPC

Notes:

- All processors support up to 4TB memory per socket.
- The maximum memory speed is limited by the processor selection.
- To realize the performance memory capabilities listed in this document, HPE DDR5 Smart Memory is required.
- The -B21 memory SKUs shown in this document are to be used when ordering stand-alone memory only. For each -B21 SKU, there is a corresponding -F21 SKU which is to be used when configuring servers with integrated memory DIMMs.
- For additional information, please visit the HPE Memory QuickSpecs and Technical White Papers**or** HPE DDR5 Smart Memory QuickSpecs or Server memory population rules for HPE Gen12 servers with 6th Gen Intel Xeon Scalable processors

PCIe Lanes

88 PCIe Gen5 Lanes per CPU socket, including 56 Lanes North and 32 Lanes South.

PCIe Expansion Slots

Primary Riser (default in chassis)					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**CPU**	**Slot Form Factor**
1	PCIe 5.0	x16	x16	CPU 1	Full-height, up to 9.5" length (or half-length card)
2	PCIe 5.0	x16	x16	CPU 1	Half-height (Low-profile), up to 9.5" length (or half-length card)

Notes: The specifications above correspond with the default primary butterfly riser, which comes with CTO chassis.

Primary Riser (default in chassis)					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**CPU**	**Slot Form Factor**
1	PCIe 5.0	x16	x16	CPU 1	Full-height, up to 9.5" length (or half-length card)
2	PCIe 5.0	x16	x16	CPU 1	Half-height (Low-profile), up to 9.5" length (or half-length card)

Notes:

- All PCIe Slots support Wake-on-LAN (WoL) feature.
- If secondary riser is selected, then 2 Processors must be selected.
- Field upgrade kit for Primary riser cards setting (for Slot2) after factory installation and shipment is now available with P75407-B21 (HPE ProLiant Compute DL360 Gen11/Gen12 x16 Primary Riser Kit).
- Slot 1 & slot 3 have the connector on the right side, while slot 2 on the left side. The NIC or HBA cards on slot 2 would have port numbering reversed compared to those on slot 1 & 3.

OCP Expansion Slots

Rear OCP3.0 Slots				
Technology	**Bus Width**	**Connector Width**	**CPU**	**Slot Form Factor**
PCIe 5.0	x16	x16	CPU 1	x8 lanes embedded from MLB; optional cable for x16
PCIe 5.0	x16	x16	CPU1 or CPU2	Optional cables for x8 or x16

Internal Storage Devices

- **Optical Drive**
  Available as an option
- **Hard Drives**
  None ship standard

Internal Network Controller

There is no embedded network controller included from system board. The HPE ProLiant Compute DL360 Gen12 server offers the customer a variety of networking options which are outlined in the Core Options selection in this document.

Storage Controllers options

HPE Boot Devices option

- HPE NS204i-u V2 480GB NVMe Hot Plug Boot Optimized Storage Device (P78279-B21) [1]
- HPE NS204i-u v2 960GB NVMe Hot Plug Boot Optimized Storage Device (P81160-B21)
- HPE NS204i-u v2 960GB NVMe SED Hot Plug Boot Optimized Storage Device (P81162-B21)
- HPE ProLiant Compute DL3XX Gen12 1U NS204i-u Front Enablement Kit (P77198-B21)
- HPE ProLiant Compute DL360 Gen12 NS204i-u Rear Enablement Kit (P72197-B21)
- HPE ProLiant Compute DL360 Gen12 NS204i-u Internal Enablement Kit (P72595-B21)

DL360 Gen12 Boot Device Enablement Kit options				
Enablement Kit	**CTO Server competibility**	**Field Inst.**	**Location**	**Hot-plug Capability**
P77198-B21	10SFF/20EDSFF Hybrid NC CTO Server	Yes	Front Cage Box5	Yes
P72197-B21	10SFF/20EDSFF Hybrid NC CTO Server 8SFF NC CTO Server 4LFF NC CTO Server	Yes	PCIe Slot 2[2]	Yes
P72595-B21	10SFF/20EDSFF Hybrid NC CTO Server 8SFF NC CTO Server 4LFF NC CTO Server	Yes	Internal	Not Supported

Notes:

- [1]x4 PCIe Gen3.0 OS Boot device includes 2x 480GB M.2 NVMe SSDs, with preconfigured hardware RAID1.
- [2]For field update NS204i-u V2, removing the original PCIe Slot 2 cage and re-install the dedicated DL360 Gen12 NS204i-u cage, latch, and cables in the P72197-B21.
- [2]The NS204i-u will take up PCIe Slot 2 space only. The PCIe Slot 1 (FHHL) and PCIe Slot 3 (to be Low Profile) are available in the system with the selection of optional "HPE ProLiant Compute DL360 Gen11 x16 LP Riser Kit (P48903-B21)".
- For additional information, please see the HPE OS Boot Device Options QuickSpecs or HPE NS204i Boot Device User Guide

Intel® Virtual RAID on CPU (VROC)

Maximum physical drive per array varies with platform maximum storage specification. More technical details are available at

Intel® VROC for HPE QuickSpecs

Intel® Virtual RAID on CPU for HPE User Guide

Intel® Virtual RAID on CPU (Intel® VROC) RAID Levels Support List

Optional Features

Intel® Virtual RAID on CPU (VROC) for HPE ProLiant

- Intel® Virtual RAID on CPU Premium E-RTU for HPE
- Intel® Virtual RAID on CPU RAID 1 E-RTU for HPE

Notes:

- All models feature 4 x8 PCIe 5.0 connectors per socket for NVMe connectivity, provide support for up to 8 direct attach x4 NVMe bays.
- RAID 0 requires at least 2 drives.
  RAID 1 requires at least 2 or an even number of drives.
  RAID 1 with Spare requires at least 3 drives
  RAID 5 requires at least 3 drives.
  RAID 5 with Spare requires at least 4 drives
- Only supported on SFF & EDSFF models.
- Intel® VROC for HPE ProLiant is an enterprise, hybrid RAID solution specifically designed for NVMe SSDs connected directly to the CPU. Intel® VROC is a software-based solution utilizing Intel® CPU to RAID or HBA direct connected drives.
- Host Tools- Windows GUI/CLI, Linux CLI.
- UEFI Support- HII Utility, OBSE.
- Active health monitoring of NVMe M.2 drives requires use of SMART tools.
- Intel® VROC NVMe for HPE ProLiant will operate in UEFI mode only. For legacy support, an additional Tri-Mode controller will be needed.
- For NVMe SSDs only, no PCIe cards support.
- The separate Intel® VROC and LED Management Tool, which was available for earlier versions of ESXi (like 7.x and 8.x). Please refer to Downloading Intel® VROC tools and drivers for VMware | Intel® Virtual RAID on CPU for HPE User Guide
- The Intel® VROC and LED Management Tool is discontinued for ESXi 9.0, and only an inbox Intel® VROC driver is provided. Intel® VROC support for VMWare is temporarily not available (no VMDR CLi tool and Driver above ESXi 9.0). For more details, please refer to Download Intel Drivers and Software
- Intel® VROC support for Windows OS is temporarily not available for Xeon® 6 CPU family (no Driver and Firmware update). Please refer to the support list in Intel® VROC Release Notes (EGS) for Windows

Hardware RAID Controller Options

- HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller
- HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller
- HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller
- HPE MR408i-p Gen11 x8 Lanes 4GB Cache PCI SPDM Plug-in Storage Controller
- HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller
- HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller
- HPE MR932i-p x32 Lanes PCIe Gen5 SPDM Plug-in Storage Controller

Notes:

- PE80xx NVMe drives are not supported.
- For more information, please visit HPE Compute MR Gen11 Controllers QuickSpecs, HPE MR Gen11 Controller User Guide, HPE MR Storage Administrator User Guide or HPE StorCLI User Guide.

Maximum Storage

Storage	Capacity	Configuration
Hot Plug SFF SAS HDD	24.0 TB	10 x 2.4 TB
Hot Plug SFF SAS SSD	153.6 TB	10 x 15.36 TB
Hot Plug SFF SATA SSD	76.8 TB	10 x 7.68 TB
Hot Plug SFF U.3 NVMe PCIe SSD	153.6 TB	10 x 15.36 TB
Hot Plug LFF SAS HDD	104.0 TB	4 x 26 TB
Hot Plug LFF SATA HDD	104.0 TB	4 x 26 TB
Hot Plug LFF SAS SSD	3.84 TB	4 x 960 GB (in LPC)
Hot Plug LFF SATA SSD	3.84 TB	4 x 960 GB (in LPC)
M.2 NVMe SSD	1.92 TB	2 x 960 GB (shipped with optional HPE NS204i-u V2 Gen12 NVMe Hot Plug Boot Optimized Storage Device): Available with external or internal version
EDSFF NVMe SSD	1228.8 TB	20 x 61.44 TB
Hot Plug SFF SAS HDD	24.0 TB	10 x 2.4 TB

Power Supply

- HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
  Notes: Available in 94% efficiency.
- HPE 1000W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit
  Notes: Available in 96% efficiency. Energy Star 4.0 compliant.
- HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit
- HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
  Notes:
  - Available in 94% efficiency.
  - 1600W Platinum Power supplies only support high line voltage (200 VAC to 240 VAC).
- HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit
  Notes:
  - Available in 96% efficiency. Energy Star 4.0 compliant.
  - 1800-2200W Titanium Power supply only supports high line voltage (200 VAC to 240 VAC).

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, tool-less installation into HPE ProLiant Compute DL360 Gen12 Performance Server. Flex Slot power supplies are certified for high-efficiency operation and offer multiple power output options, allowing users to "right-size" a power supply for specific server configurations. This flexibility helps to reduce power waste, lower overall energy costs, and avoid "trapped" power capacity in the data center.

Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, Ireland, Switzerland or Turkey, must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers P03178-B21 and P44712-B21 are 96% efficient, thus meeting requirements.

For information regarding European Union ErP Lot 9 Regulation visit Industry Standard Compliance section.

Optional Features

All pre-configured servers include a power cord. If a different power cord is required, please check the ProLiant Power Cables web page.
To review the power requirements for your selected system, please visit the HPE Power Advisor located at: HPE Power Advisor.
For information on power specifications and technical content visit HPE Flexible Slot Power Supplies.

Interfaces	
Serial	1 port - Optional
Video	1 Front - DisplayPort (optional) **Notes:** This support is on the optional Universal Media Bay. Compliant with VESA DisplayPort Standard Version 1, Revision 1a dated January 11, 2008. 1 Rear - VGA port (standard on all models) **Notes:** Both ports can be active simultaneously.
Network Ports	None, embedded/onboard LOM is not available. Choice of OCP or stand-up card, supporting a wide range of NIC adapters. DL360 Gen12 CTO Server in One Config Advanced will come with a pre-selected primary networking card, reselection is allowed.
HPE iLO Remote Mgmt. Port at rear	1 GbE dedicated
Front iLO Service Port	1 standard in USB Type C
USB	5 standard on all models: 1 front, 2 rear, 2 internal +1 optional at the front – Front: 1 USB 3.2 Gen1 + iLO service port in USB Type C – Rear: 2 USB 3.2 Gen1 – Internal: 2 USB 3.2 Gen1 (HPE share option kit is not available) – Optional: 1 Front USB 2.0 (in 8SFF and 4LFF CTO servers)
Systems Insight Display (SID)	Optional for 8 SFF CTO Server model

Operating Systems and Virtualization Software Support for HPE Servers

HPE servers are designed for seamless integration with partner Operating Systems and Virtualization Software. By collaborating closely with our partners, we ensure that their products are optimized, certified, and fully supported within your HPE server environment.
Access the certified and supported servers for each of the OS and Virtualization software: HPE Servers Support & Certification Matrices

Industry Standard Compliance

- ACPI 6.5 Compliant
- PCIe 5.0 Compliant
- WOL Support
- Microsoft® Logo certifications
- PXE Support
- VGA
- DisplayPort

Optional Features

Notes: Support from the optional Universal Media Bay. Compliant with VESA DisplayPort Standard Version 1, Revision 1a dated January 11, 2008

- USB 3.2 Gen1 Compliant
- USB 2.0 Compliant (only on optional Universal Media Bay and embedded internal USB)
- USB NIC Driver in UEFI for Factory
- UEFI (Unified Extensible Firmware Interface Forum) Class 3 Support
- UEFI (Unified Extensible Firmware Interface Forum) 2.7 support

Notes: UEFI is the default for the DL360 Gen12.

- OCP 3.0 SFF NIC Support
- OCP 3.0 SFF Storage Support
- Embedded TPM Support
- Energy Star 4.0
- SMBIOS 3.7
- UEFI 2.10 (Unified Extensible Firmware Interface Forum)
- UEFI Class 3
- Redfish API
- IPMI 2.0
- Secure Digital 4.0
- Advanced Encryption Standard (AES)
- SNMP v3
- TLS 1.2
- DMTF Systems Management Architecture for Server Hardware Command Line (SMASH CLP)
- Active Directory v1.0
- ASHRAE A3/A4

Notes:

For additional technical, thermal details regarding ambient temperature, humidity, and feature support, please visit http://www.hpe.com/servers/ashrae

Or Extended Ambient Temperature Guidelines for HPE Compute Gen12 Servers

Under Standard Operating Support conditions, there is no time limitation for operating the servers in ASHRAE Class A2 conditions, unless otherwise specified in the applicable product information.

- European Union ErP Lot 9 Regulation

European Union (EU) eco-design regulations for server and storage products, known as Lot 9, establishes power thresholds for idle state, as well as efficiency and performance in active state which vary among configurations. HPE ProLiant Compute Gen12 servers are compliant with Lot9 requirements.

Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, Ireland, Switzerland, or Turkey, must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers P03178-B21 and P44712-B21 are 96% efficient, thus meeting requirements.

Please visit: https://www.hpe.com/us/en/about/environment/msds-specs-more.html for more information regarding HPE Lot 9 conformance

HPE Server UEFI

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secure configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Compute Gen12 servers have a UEFI Class 2 implementation to support UEFI Mode.

Notes: The UEFI System Utilities tool is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. For more information, please visit http://www.hpe.com/servers/uefi.

UEFI enables numerous new capabilities specific to HPE ProLiant Compute servers such as

- Secure Boot and Secure Start enable enhanced security
- Embedded UEFI Shell
- Operating system specific functionality
- Mass Configuration Deployment Tool using iLO RESTful API that is Redfish API Conformant
- Support for > 2.2 TB (using GPT) boot drives
- PXE boot support for IPv6 networks
- USB 3.2 Gen1 Stack
- Workload Profiles for simple performance optimization

UEFI Boot Mode only

- TPM 2.0 Support
- iSCSI Software Initiator Support
- NVMe Boot Support
- HTTP/HTTPs Boot support as a PXE alternative
- Platform Trust Technology (PTT) can be enabled
- Boot support for option cards that only support a UEFI option ROM

Notes:

- For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
- Enabling TPM 2.0 no longer requires TPM module option kit for Gen12. It is an embedded feature for global shipments. Users can manually disable from BIOS setting.

HPE Compute Ops Management

Transform compute lifecycle management with a cloud experience that delivers greater simplicity, agility, and speed across your entire server environment, wherever it lives. This software-as-a-service tool provides a dashboard with global visibility and intuitive management of server health, security and compliance status to help you easily identify areas that need immediate attention. Users can update tens to thousands of servers faster through intelligent delta-based firmware downloads and on-demand HPE iLO firmware updates.

HPE Compute Ops Management is cloud-native software that is continually updated with new services, features, patches, and firmware packs. The management application resides in GreenLake cloud (access via https://common.cloud.hpe.com) and leverages the GreenLake architecture, security, and unified operations.

A 3-year subscription to HPE Compute Ops Management is added by default when ordering an HPE ProLiant Compute Gen12 rack or tower server.

For more information, visit the HPE Compute Ops Management QuickSpecs:
https://www.hpe.com/psnow/doc/a50004263enw

Embedded Management

HPE Integrated Lights-Out (HPE iLO)
Monitor your servers for ongoing management, service alerting, reporting and remote management with HPE iLO. Learn more at http://www.hpe.com/info/ilo.

UEFI
Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at http://www.hpe.com/servers/uefi.

OpenBMC Support
OpenBMC Capable through iLO7 Transfer of Ownership Process.
Learn more at OpenBMC Support

Intelligent Provisioning
Hassle-free server and OS provisioning for one or more servers with Intelligent Provisioning.
Learn more at http://www.hpe.com/servers/intelligentprovisioning.

iLO RESTful API
iLO RESTful API is DMTF Redfish API information and offers simplified server management automation such as configuration and maintenance tasks based on modern industry standards. Learn more at http://www.hpe.com/info/restfulapi.

Server Utilities

Active Health System
The HPE Active Health System (AHS) is an essential component of the iLO management portfolio that provides continuous, proactive health monitoring of HPE servers. Learn more at http://www.hpe.com/servers/ahs.

Active Health System Viewer
Use the Active Health System Viewer, a web-based portal, to easily read AHS logs and speed problem resolution with HPE self-repair recommendations, to learn more visit: http://www.hpe.com/servers/ahsv.

Smart Update
Keep your servers up to date with the HPE Smart Update solution by using Smart Update Manager (SUM) to optimize the firmware and driver updates of the Service Pack for ProLiant (SPP).
Learn more at https://www.hpe.com/us/en/servers/smart-update.html.

HPE iLO Mobile Application
Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: http://www.hpe.com/info/ilo/mobileapp.

RESTful Interface Tool
RESTful Interface tool (iLOREST) is a single scripting tool to provision using iLO RESTful API to discover and deploy servers at scale. Learn more at http://www.hpe.com/info/resttool.

Optional Features

HPE OneView Standard
HPE OneView Standard can be used for inventory, health monitoring, alerting, and reporting without additional fees. It can monitor multiple HPE server generations. The user interface is similar to the HPE OneView Advanced version, but the software-defined functionality is not available. Learn more at http://www.hpe.com/info/oneview.

Security

Experience unparalleled security benefits with HPE ProLiant Compute Gen12 servers, designed to enhance your infrastructure's security and performance. These servers come equipped with cutting-edge embedded security features, ensuring robust protection for your critical data and applications. Key features include:

- **HPE Integrated Lights-Out (HPE iLO7):** This product offers advanced embedded security features for monitoring, service alerting, reporting, and remote management.
- **Enhanced Server Data Security:** Encryption and key management, iLO Managed Encryption, UEFI-managed encryption, and self-encrypting drives (SED) for enhanced data-at-rest protection.
- **Sanitize Data with One-Button Secure Erase:** This method complies with NIST SP 800-88 guidelines for media sanitization, ensuring the secure decommissioning of servers.
- **Expanded Industry Security Compliance:** Adherence to standards such as FIPS 140-3, NIST SP 800-53, NIST SP 800-171, and NIST SP 800-88.
- **HPE Compute Ops Management:** Provides an intuitive cloud operating experience, ensuring streamlined and highly secure operations.
- **Physical Security Options:** System maintenance switch, USB security, rack and power security, bezel lock, and chassis intrusion detection switch.
- **HPE Trusted Supply Chain:** HPE Trusted Supply Chain offers enhanced security and compliance for organizations worldwide. Servers built with this option undergo rigorous inspections and checkpoints to detect and mitigate malicious microcode and counterfeit parts throughout the server build and lifecycle

Please refer to the HPE ProLiant Compute Gen12 Embedded Security QuickSpecs document for more detailed information at https://www.hpe.com/psnow/doc/a50009218enw.
HPE Security Claims https://www.hpe.com/us/en/about/digital-trust-center/security.html
ProLiant Compute https://support.hpe.com/hpesc/public/docDisplay?docId=a00018320en_us&docLocale=en_US
Product Security Response https://support.hpe.com/hpesc/public/docDisplay?docId=a00155644en_us

HPE Trusted Platform Module

Enabling HPE Trusted Platform Module (TPM) 2.0 no longer requires TPM module option kit for Gen12. It is an embedded feature for global shipments. User may manually disable TPM2.0 from the BIOS setting.
Notes: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates, and encryption keys.

Warranty

This product is covered by a global limited warranty and supported by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three-years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Services operational services or customized service agreements. Hard drives have either a one-year or three-year warranty; refer to the specific hard drive QuickSpecs for details.

Notes: Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be completed using Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
https://www.hpe.com/support/ProLiantServers-Warranties

Server Management

HPE iLO Advanced

HPE iLO Advanced licenses offer smart remote functionality without compromise, for all HPE ProLiant servers. The license includes the full integrated remote console, virtual keyboard, video, and mouse (KVM), multi-user collaboration, console record and replay, and GUI-based and scripted virtual media and virtual folders. You can also activate the enhanced security and power management functionality.

HPE OneView Advanced

HPE OneView Advanced offers a sophisticated level of automation to infrastructure management by taking a template-driven approach to provisioning, updating, and integrating compute, storage, and networking infrastructure. It provides full-featured licenses which can be purchased for managing multiple HPE server generations.
To learn more visit http://www.hpe.com/info/oneview.

Accelerator and GPU Information

Hewlett Packard Enterprise supports various accelerators on select HPE ProLiant servers to support different workloads. The accelerators enable seamless integration of GPU computing with HPE ProLiant servers for high-performance computing, large data center graphics, deep learning, and virtual desktop deployments. These accelerators deliver all the standard benefits of GPU computing while enabling maximum reliability and tight integration with system monitoring and management tools such as HPE Insight Cluster Management Utility.

Rack and Power Infrastructure

The story may end with servers, but it starts with the foundation that makes compute go – and business grow. We have reinvented our entire portfolio of rack and power products to make IT infrastructure more secure, more practical, and more efficient. In other words, we have created a stronger, smarter, and simpler infrastructure to help you get the most out of your IT equipment. As an industry leader, Hewlett Packard Enterprise is uniquely positioned to address the key concerns of power, cooling, cable management and system access.

HPE G2 Advanced and Enterprise Racks are perfect for the server room or today's modern data center with enhanced airflow and thermal management, flexible cable management, and a 10-year Warranty to support higher density computing.

HPE G2 PDUs offer reliable power in flexible form factors that operate at temperatures up to 60°, include color-coded outlets and load segments and a low-profile design for optimal access to the rack and support for dense rack environments.

HPE Uninterruptible Power Systems are cost-effective power protection for any type of workload. Some UPSs include options for remote management and extended runtime modules, so your critical dense data center is covered in power outages.

HPE KVM Solutions include a console and switches designed to work with your server and IT equipment reliably. We have got a cost-effective KVM switch for your first rack and multiple-connection IP switches with remote management and security capabilities to keep your data center rack up and running.

Learn more about HPE Racks, KVM, PDUs and UPSs at HPE Rack and Power Infrastructure

One Config Simple (SCE)

SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance
https://ocs.ext.hpe.com/SimplifiedConfig/Welcome

Service and Support

For the most up-to-date information on HPE Services, please refer to the HPE Services – Supplemental QuickSpecs, which provides a comprehensive and regularly updated overview of available services.

Pre-Configured Models

HPE Smart Choice Purchase Program

The HPE Smart Choice Purchase Program features popular fully configured products that can be quoted in minutes and shipped quickly through HPE Authorized Partners. Products are configured and tested in an HPE factory and stocked at HPE Authorized Distributors and Partners. The products arrive in a single box, making onsite integration easier and more efficient for partners and customers. Additionally, there are aggressively priced HPE Tech Care Services available only through the HPE Smart Choice program when you purchase an HPE Smart Choice product.

For HPE Smart Choice configuration and product details, please visit the HPE Smart Choice Supplemental QuickSpecs: https://www.hpe.com/psnow/doc/a50009219enw

Smart Templates from HPE

HPE is releasing new Smart Template technology in the One Config Advanced (OCA) configurator. These Templates represent the CTO equivalents of the top-selling BTO configurations. They are intended to provide simple starting points to assist you in easily creating and customizing your desired Server solutions. HPE Servers that have Platform Templates, developed by HPE Product Managers, will have a separate tab in the HPE OCA configurator.

Workload Solutions Templates from HPE

The Workload Solutions Templates are built on the Smart Templates technology to easily develop working configurations of the most compelling Workload Solutions. The templates complement the Reference Builds developed by HPE. Workload Solutions templates preconfigure some of the key architecture decisions and make it easier for Sellers to get started and complete a differentiated server solution for your customer's specific workload.

Mainstream SKUs

HPE launched the Mainstream SKU initiative as a market-driven approach to Demand Steering. It is a simplified portfolio of our top selling options that meets the current and future market trends. HPE is committed to providing a more predictable and faster experience for these options. Mainstream SKUs enjoy higher safety stock levels and have higher fulfilment service levels than non-Mainstream SKUs. Mainstream orders are fulfilled +30% faster than non-Mainstream orders, have fewer shortages and better recovery dates. This platform has Mainstream SKUs in the options portfolio and is eligible for the improved Mainstream experience. Mainstream SKUs are designated with a Mainstream symbol in our configurators.

Mainstream Configurations

HPE is using the new Smart Templates technology to present Mainstream configurations. All the options in a Mainstream configuration are pre-selected Mainstream SKUs to optimize the performance, predictability, and fulfilment experience. Check the Template section in our configurators for eligible Mainstream configurations.

This section lists some of the steps required to configure a Factory Integrated Model.
To ensure valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an HPE approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

- Factory Integrated Models must start with a CTO Server.
- FIO indicates that this option is only available as a factory installable option.
- Some options may not be integrated at the factory. Contact your local sales representative for additional information

Step 1: Base Configuration (choose one of the following configurable models)

CTO Server models do not include embedded LOM. To enable networking capability please select a validated alternative NIC -OCP or PCIe from the Core Options section.

Core Options

<table>
<tr><th>CTO Server</th><th>DL360 Gen12 10SFF/20EDSFF Hybrid NC CTO Server</th><th>HPE DL360 Gen12 8SFF NC CTO Server</th><th>HPE DL360 Gen12 4LFF NC CTO Server</th></tr>
<tr><td>SKU Number</td><td>P72176-B21</td><td>P72175-B21</td><td>P72174-B21</td></tr>
<tr><td>TAA SKU*</td><td>P72176-B21#GTA</td><td>P72175-B21#GTA</td><td>P72174-B21#GTA</td></tr>
<tr><td>HPE Trusted Supply Chain FIO Configuration</td><td colspan="3">P36394-B21
HPE Trusted Supply Chain for HPE ProLiant
Notes:
– HPE DL3XX Gen11 Intrusion Cable Kit (P48922-B21) must be selected
– HPE Trusted Supply Chain E-LTU Software is required per order (not per server)
– "HPE iLO Adv 1-svr Lic 3yr Support (BD505A)" or "HPE iLO Adv 1-svr Lic 1yr Support (512485-B21)" or "HPE OV for DL 3y 24x7 FIO Phys 1 Svr Lic (E5Y43A)" must be selected.</td></tr>
<tr><td>Processor vs Cooling solution (Heatsink & Fan kit)</td><td colspan="3">Not included.
– Optional: Quantity 1 or 2
– Thermal requirements.
<table>
<tr><th>CPU TDP (Wattage)</th><th>Heatsink (HS)</th><th>Fan Kit</th><th>Availability</th></tr>
<tr><td><=185 W</td><td>Standard HS</td><td>Standard Fan Kit (5/7ea)</td><td>Full Support</td></tr>
<tr><td>186 W- 250 W</td><td>Performance HS</td><td>Performance Fan Kit</td><td>Full Support</td></tr>
<tr><td>251 W – 270 W</td><td>Performance HS</td><td>Performance Fan Kit</td><td>Limited Configuration</td></tr>
<tr><td>271 W – 350 W</td><td>Performance HS</td><td>Performance Fan Kit</td><td>Limited Configuration</td></tr>
<tr><td><=270 W (1P only)</td><td>Closed-loop HS</td><td>Closed-loop Fan Kit</td><td>Full Support</td></tr>
<tr><td>271 W – 350 W</td><td>Closed-loop HS</td><td>Closed-loop Fan Kit</td><td>Full Support</td></tr>
<tr><td><=350 W</td><td>DLC CPM</td><td>DLC Fan kit (Perf. Fan Kit)</td><td>Full Support</td></tr>
</table>
Notes: Several specific share options or configurations will trigger High-performance Fan Kits from thermal requirements. Please refer to the later section “Fan support matrix”.

Thermal configuration using DAC/ACC cables
– FAN kit selection (Standard Fan Kit or Perf. Fan Kit) will be decided if any GPU, NS204, SAS4 SSD, high-performance DIMM or NIC. Please refer to the separate section “FAN support matrix”.
– Thermal support matrix for CPU TDP vs Cooling solutions
<table>
<tr><th>2x CPU w/DAC or ACC</th><th>Cooling Solution</th><th>Allowed System Inlet Temperature (Without backplane qty & downstream cards limitation)</th></tr>
<tr><td><=270 W</td><td>Air Cooling or CL LC</td><td>30 C</td></tr>
<tr><td>271 W – 350 W</td><td>CL LC</td><td>25 C</td></tr>
<tr><td>0W-350 W</td><td>DLC*</td><td>30-35 C</td></tr>
</table>
Notes: * With DLC installation, AOC or Transceiver is allowed for server operation at 30-35C system inlet temperature.

– When CPU equals or above 270W TDP with Performance HS
<table>
<tr><th rowspan="2">2x CPU w/ DAC or ACC, Perf. HS & FAN</th><th>10SFF/20EDSFF CTO Server, P72176-B21</th><th>8SFF CTO Server P72175-B21</th><th>4LFF CTO Server P72174-B21</th></tr>
<tr><th colspan="3">System inlet temperature vs max backplane Quantity</th></tr>
<tr><td>Qty 2 x 350 W</td><td>(30 C, 27 C Not Support)
25 C, Max 3
23 C, Max 4
20 C, Max 5</td><td>(30 C, 27 C Not Support)
25 C/23 C, Max 1
20 C, Max 2
+2 C if air baffle included</td><td>(30 C, 27 C Not Support)
25 C, Max 1
+2 C if air baffle included</td></tr>
</table></td></tr>
</table>

	+2 C if air baffle included		
Qty 2 x 330 W	(30 C, Not Support) 27 C, Max 2 25 C, Max 5 +2 C if air baffle included	(30 C, Not Support) 27 C, Max 1 25 C, Max 2 +2 C if air baffle included	(30 C, Not Support) 27 C, Max 1 +3 C if air baffle included
Qty 2 x 300 W	(30 C, Not Support) 27 C, Max 3 25 C, Max 5 +2 C if air baffle included	(30 C, Not Support) 27 C, Max 1 25 C, Max 2 +2 C if air baffle included	(30 C, Not Support) 27 C, Max 1 +3 C if air baffle included

Thermal configuration using AOC or Transceiver

- DLC supports 30-35C
- Air Cooling or CL LC installation:

  Refer to "**Cooling level for PCIe NIC with AOC/ Transceiver**" & "**Cooling level for OCP NIC with AOC/ Transceiver**" In the later "Core Option" section. The matrix presents the valid configuration overview while different AOC/Transceiver (active cable) connecting to NIC card at downstream /rear wall.

Fan support matrix

Fan Kit solution	Scenarios & Configuration
Standard Fan Kit (5ea) & Second CPU Standard Fan Kit (2ea)	CPU<=185W: x5 fans for 1x CPU and x7 fans for 2x CPUs
	Air cooling heatsink
	SAS/SATA drives
High-performance Fan Kit (7ea 4056 fans included)	CPU 186W-350W (1CPU/2CPUs)
	Air cooling heatsink
	DLC CPM Module
	SAS4/ NVMe/ EDSFF drives SKU
	Rear NS204i-u v2
	GPU
	>=100GB high speed NIC PCIe/ OCP adapter
	256 GB DIMM type
Closed-loop LC HS & Fan FIO Kit (7ea 4028 fans included)	CPU < 271W (1x CPU)
	CPU 271W-350W (1CPU/2CPUs)
	Closed-loop LC

DIMM Slots	32-DIMM slots in total, up to 8 TB total capacity with 2DPC 256 GB. – Few configuration exceptions are limited below 30 C or 27 C, please refer to the details in Memory section.
DIMM Blanks	Not included. – If memory selection is less than quantity 32, DIMM Blanks are required, per thermal and memory population requirements. – Configurator is defaulting P07818-B21 (HPE DDR-4 DIMM Blanks Kit) with only exception is when DIMM type is below 256 GB in liquid cooling configuration.

Core Options

<table>
<tr><td></td><td>
– DIMM blank quantity requirements:
P07818-B21 contains 31 pcs DIMM blanks, and HPE factory will load adequate DIMM blanks per below thermal rules and actual memory quantity selected.
<table>
<tr><th>Cooling solutions/DIMM types</th><th>< 256GB DIMM</th><th>=256GB DIMM</th></tr>
<tr><td>Air Cooling</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Liquid Cooling
(Closed-loop LC or DLC)</td><td>DIMM blanks cannot be installed</td><td>Yes</td></tr>
</table>
<table>
<tr><th>DIMM (Blank) population</th><th>1P</th><th>2P</th></tr>
<tr><td>DIMM quantity</td><td>Max 16 and min 1</td><td>Max 32 and min 2</td></tr>
<tr><td>DIMM Blank quantity</td><td>Fill out empty DIMM slots.
Min 0 and max 15.</td><td>Fill out empty DIMM slots.
Min 0 and max 30.</td></tr>
</table>
</td></tr>
<tr><td>Storage Controller</td><td>
Not included.
Choice of

Intel® Virtual RAID on CPU (VROC) for HPE ProLiant
HPE NS204i-u V2 480GB NVMe Hot Plug Boot Optimized Storage Device at Rear, internal or front cage (front cage is available in 10SFF/20EDSFF CTO Server only)
Please refer to later section regarding “PCIe Slotting” and “Rear OCP Slotting”.
HPE Storage Controllers

Storage controller support matrix in different CTO servers
<table>
<tr><th>DL360 G12</th><th>PCIe</th><th>OCP</th><th>Total max quantity</th></tr>
<tr><td>10SFF/20EDSFF CTO Server</td><td>Yes</td><td>Yes</td><td>Max 2 at launch; Max 3 Post-launch</td></tr>
<tr><td>(8+2) SFF CTO Server</td><td>Yes</td><td>Yes</td><td>Max 2 (incl. 1xOCP +1xPCIe)</td></tr>
<tr><td>4LFF CTO Server</td><td>Yes</td><td>Yes</td><td>Max 1</td></tr>
</table>
</td></tr>
<tr><td>Rear PCIe Slots</td><td>
Up to 3 Slots PCIe 5.0 (Slot 1, 2 & 3).
All PCIe Slots are in design with up to 9.5” length.

Default:

One standard primary/butterfly riser (embedded)
Slot 1 & Slot 2 (1 x16 FH / 1 x16 LP) with quantity 4 x8 front NVMe connectors
If the Slot3 is installed with a FH adapter in customer configuration, the Slot2 Low Profile bracket will be removed. A primary/ Butterfly riser field upgrade kit is available for after sales purchase (no factory installation).

Optional:

Secondary riser Slot 3 with 1 x16, in FH
Secondary riser Slot 3 with 1 x16, in LP

</td></tr>
</table>

Core Options

<table>
<tr><td>Rear OCP3.0 Slots</td><td colspan="3">Up to 2 Slots PCIe 5.0 (Slot 14 & 15).
All OCP Slots are up to x16 PCIe5.0
– Default: Embedded x8 lanes Slot 14 OCPA from CPU1
– Optional (with selection of cable kits):
• x16 lanes Slot 14 OCPA from CPU1
• x8 lanes Slot 15 OCPB from CPU1
• x8 lanes Slot 15 OCPB from CPU2
• x16 lanes Slot 16 OCPB from CPU2</td></tr>
<tr><td>Front Drive Cage</td><td>Box1 (must be selected).
Box2/3/4/5 (optional).

Box/Cage Choices:
– 2 SFF 24G x4 TriMode U.3 BC backplane cage
– 4 E3.S 32G x4 NVMe backplane cage
– Front
– NS204i-u Front Enablement Kit (Box5)
– Front OCP NIC enablement kits (Box3)
– Optical drive cage (Box 4&5)

Notes:
– Min qty 1 backplane (BP) need to be installed at Box 1 to sustain the upper-level “Serial number/iLO information pull tag”.
– A hardware controller must be selected if SAS/ SATA drive.</td><td>8SFF cage (optional):
– 12G x1 TriMode U.3
Front cage (optional):
– 2SFF 24G x4 TriMode U.3
– Universal Media Bay with Optical Drive, DisplayPort and USB 2.0 port

Notes:
– Zero backplanes is allowed.
– A hardware controller must be selected if there is 8SFF BP.
– 8SFF BP must be selected if 2SFF is selected.
– A hardware controller must be selected for 2SFF if SAS/SATA drive (not required for NVMe drive Direct Attach)</td><td>4LFF cage (default):
– 12G x1 SAS with Low Profile (LP) carrier support

Notes:
– A 4LFF backplane is embedded, and a hardware controller must be selected if SAS/ SATA drive.
– To remove the backplane, for drive-less, controller less configuration, please select the P78963-B21 (HPE ProLiant Compute DL3XX Gen12 No Drive No RAID Controller FIO Trigger System Setting)</td></tr>
<tr><td>Network Controller</td><td colspan="3">– There is no embedded network controller included from system board.
– BCM 5719 1Gb 4p BASE-T OCP Adapter to be defaulted in the configurator
• Default at rear Slot 14 OCPA, if no H/W controller is selected.
• Or default at Slot15 OCPB, if a Hardware controller is pre-selected in Smart Chassis.
• Or a stand-up PCIe NIC adapter to be selected if there are two H/W controllers are pre-selected at both OCPA & OCPB, in Smart Chassis.
• 4port BASE-T cannot be installed at PCIe Slot2.
– Customers are allowed to remove the NIC card default setting and re-select other cards (OCP3.0 or stand-up cards) from Networking & InfiniBand.
– Please refer to later sections regarding “Cooling Level for PCIe Networking Adapter”, “Cooling Level for OCP Networking Adapter”, “PCIe Slotting” and “Rear OCP Slotting”.</td></tr>
</table>

Core Options

GPU Adapter	Up to three Low-profile, max 75 Watt, single-wide GPU
Management	HPE iLO7 with Intelligent Provisioning (standard) **Notes:** Please refer to Advisory: HPE ProLiant Compute Gen12 Servers - HPE Intelligent Provisioning 5.00 Is Available with Limited Feature Support. HPE Compute Ops Management (a 3-year subscription included) Optional: iLO Advanced and OneView
Video Output	Rear: 1 VGA Optional: – 1 Front DisplayPort (standalone in 8 SFF; USB2.0+ DisplayPort bundle kit in 4 LFF), – 1 Rear Serial Port
USB	Front: 1 USB 3.2 Gen1 + iLO service port in USB Type C Rear: 2 USB 3.2 Gen1 Internal: 2 USB 3.2 Gen1 (HPE Share option kit is not available) Optional: 1 Front USB 2.0 in 8SFF and 4LFF CTO Server
Security	Trusted Platform Module (TPM) 2.0. It is an embedded feature globally and can be disabled in the BIOS setting.
Rail Kit & CMA	Optional Easy Install rails and CMA. – HPE Easy Install Rail 3 Kit (P52341-B21) is available for 8SFF CTO Server if Rack is selected – HPE Easy Install Rail 5 Kit (P52343-B21) is available for 4LFF & 10SFF/20EDSFF Hybrid CTO Server if Rail kit is selected – HPE Cable Management Arm 4 for Friction Rail Kit (P70741-B21) **Notes:** – Server does not supported shelf mounted rail kits (“L” brackets). – If CMA is selected, then Rail Kit must be selected.
Form Factor	1U Rack
Warranty	3-year parts, 3-year labor, 3-year onsite support with next business day response.

Notes:

– All DL360 Gen12 CTO Server models require the selection of Processor, Memory, and Power Supply. Backplane to be further selected in 10SFF/20EDSFF Hybrid CTO Server, and 8 SFF CTO Server.

– *HPE offers multiple Trade Agreement Act (TAA) compliant configurations to meet the needs of US Federal Government customers. These products are either manufactured or substantially transformed into a designated country. TAA compliance is only provided when HPE options are included as part of factory integrated orders (CTO).

– All CTO servers are Energy Star 4.0 compliant, excluding configuration with GPU.

– Supported Rail kit to be defaulted for CTO Model in the configurator. But the customer can deselect the Rail kit if the CTO Model is selected without Rack (Standalone server).

Step 2: Choose Smart Chassis

Smart Chassis is a new automation feature in One Config Advanced (OCA) building with intelligence running compatible storage backplane cable kit without manual selection process from configurator user. Manual selection of controller Cable Kits is not required. When Smart Chassis ID# and description are identified successfully, the configurator system will load the essential Cable Kits in later BOM section.

- Recommend following the sequence for key component upfront selection.
- The selection sequence: (each -B21 SKUs are listed in later section)
  - **a. Datacenter operational Tracking SKU.**
    An extended thermal support capability will be provided based on the facts and preference selected from customers, include:
    i. Max System Inlet Temperature Tracking SKUs: Facts of customer server environment ambient temperature setting. Choose the maximum temperature setting from datacenter/operation environment. The higher System Inlet Temperature has higher thermal and cooling requirements.
    System Inlet Temperature will be detected and captured in iLO GUI during operation. By selecting correct temperature in OCA, the configurator will provide valid Share Option Kits and cooling solution recommendation.
    ii. Network Cable Tracking SKUs: Choose the networking card cable type going to be installed in the field.

  - **b. Front cage/storage configuration.**
    Choices of front cage enablement kit, SKUs variates from CTO server.
    i. Storage backplane(s)
    ii. Optical Drive Enablement Kit
    iii. RAID1 OS Boot Device & Enablement Kit
    iv. Management Hardware (Rear Serial Port)
    Front OCP(s) NIC Enablement Kit (only available in 10SFF/20EDSFF Hybrid CTO Server)
  - **c. Hardware/storage controller.**
    Choices of HPE Storage Controllers.
- One or multiple set(s) of Smart Chassis Result will be presented with completion of the above selections. Confirm the final Smart Chassis selection with select quantity 1.
- With the completion of the above steps, the user will be able to enter the Share Option menu selection.

Notes:

- If required, the pre-view of Share Option Menu will be available, with toggling “Default Setting Recommendation”.
- Toggle again to unlock Smart Chassis default setting, and user can return to the beginning and start the selection. It is not recommended to use Ad-Hoc function in Smart Chassis section/page.

Step 3: Choose Core Options

- Energy Star 4.0: No restriction from processors while server shipment starts, yet the Platinum Power Supply (94% power efficiency in 800W & 1600W are not compatible).
- Processor(s): Mixing of 2 different processor models is not supported.
- Processor(s): CTO server will populate necessary heatsink and fan kits per system thermal requirements and processor models
- Memory: DIMM Blanks are required to be selected as below thermal requirements as shown in previous CTO chassis (Base model) section.
- Storage Device: No selection is required for front storage controller/smart storage battery, storage backplane cage and controller/backplane cables. The front storage backplane cage and storage controller are pre-selected in the Smart Chassis section. The compatible controller/backplane cable kits will be automated from Smart Chassis tool and SKUs to be presented in later BOM section.
- Storage Device: Optical drive selection is required if the Optical Drive Enablement kit is pre-selected in Smart Chassis section.
- Storage Device: Choice of storages in E3.S, 2.5" SFF and 3.5" LFF are presented. Hot-pluggable in this server.
- Factory Configuration Settings.
- Riser cards: P Choice of riser card for PCIe5.0 slots enablement. Primary/standard riser cards are default in CTO Chassis (Base model). Selection for one of the secondary riser kits (FH or LP) is required if expecting a stand-up card in PCIe Slot.
- OS Boot Device: Max one OS Boot device can be selected in a server. Selection of the OS Boot Device along with Enablement Cable Kit is required. Only front Enablement Kit will be presented as default if already been chosen in previous Smart Chassis section.
- Networking: Choice of high-performance NIC, 1GbE NIC, or 10/25GbE NIC, available in stand-up and OCP3.0.
- Power and Cooling: Choices of FlexSlot Power supply with redundancy, system fans, DLC extension tubes and power cords.
- Choice of Security Options.
- Graphic Options: Choice of compatible Single-wide GPU
- Accessories: Choice of Management Hardware including Serial Port and SID Power module kit.
- Rack Options: Choice of Rail kit and Cable Management Arm.
- Software RAID
- Software as a Service Management: Choice of HPE Compute Ops Management and Choice of HPE OneView

Step 4: Choose Additional Options

- Choice of Manufacturing Service
- Choice of Support Service
- Choice of Rack options
- Choice of UPS
- Choice of Support Services

Smart Chassis Selection

- Recommend following the sequence for key component upfront selection.
- One or multiple set(s) of Smart Chassis Result will be presented with completion of the above selections.
- Confirm the final Smart Chassis selection with select quantity 1 to the ideal Smart Chassis.

Datacenter Operational Tracking SKU

Ambient Temperature

HPE ProLiant Compute 30C System Inlet Ambient Operating Temperature Configuration Tracking	P79552-B21
HPE ProLiant Compute 27C System Inlet Ambient Operating Temperature Configuration Tracking	P79555-B21
HPE ProLiant Compute 25C System Inlet Ambient Operating Temperature Configuration Tracking	P79558-B21
HPE ProLiant Compute 23C System Inlet Ambient Operating Temperature Configuration Tracking	P79561-B21
HPE ProLiant Compute 20C System Inlet Ambient Operating Temperature Configuration Tracking	P79564-B21
HPE ProLiant Compute 18C System Inlet Ambient Operating Temperature Configuration Tracking	P79567-B21

Notes:

- Quantity 1 to be selected for maximum ambient temperature in datacenter or user environment.
- Select the maximum temperature at datacenter or user environment (the lowest temperature SKU support vary from servers due to cooling design). This is an informational tracking SKU would not be a physical scalable SKU.
- The higher System Inlet Temperature has higher thermal and cooling requirements and will limit high-performance Share option kits (i.e. NIC Adapter, GPU, Rear OS Boot Device) in certain CTO Server/ Storage backplane configuration.
- For ambient temperature in the range of 30-35C for DL360 Gen12, please select P79552-B21

Networking Adapter Cabling Option

HPE ProLiant Compute AOC Networking Cable Operating Configuration Tracking	P79630-B21
HPE ProLiant Compute DAC ACC Networking Cable Operating Configuration Tracking	P79633-B21

Notes:

- Different types of network cable connection will trigger different thermal requirements. Please refer to the later section of “Thermal Tier for Networking adapter with AOC or Transceiver (active) connection”.
- Quantity 1
- It is necessary to select the Network adapter connection type at field installation correctly to ensure the valid cooling requirements are triggered in Configurator. This is an informational tracking SKU would not be a physical salable SKU.
- Active solution, including connection or selection of Transceiver: please select P79630-B21

Core Options

- Design with integrated chip to transfer data signal with light through fibre. Good for long range connection, high bandwidth data transmission without data loss.
- It also generates higher power and requires higher cooling requirements compare to passive solution.
- Active optical cable (AOC) and Transceiver are common active solutions with form factor compatible with speeds up to 400Gb/s. i.e. SFP28, QSFP28, QSFP56, etc.
- Active optical cable (AOC) – With electrical-to-optical circuit embedded on both ends transceivers to accelerate the data transfer performance. Fibres are bounded inside connectors on transceiver which offers distance from 5~30 meters or above depended on transceivers capability. Models with fixed length (5/10/15/20/25 meters) can be offered.
- Optical transceiver (XCVR) – Similar core component of active data transmission with AOC with higher flexibility and supports longer range transmission (up to 100m and above). Compatible with different transfer mode and connection, transceiver requires higher level lasers with high operation complexity, which leads to a higher cost than AOC.
- Base-T refers to an ethernet network that uses twisted pair as a transmission medium. Often connect through RJ45 interface, which is passive cable as DAC/ACC passive cable solutions.
- SFP/SFP+/QSFP/OSFP are optical transmission technology that may connect to AOC & Transceiver active cables

– Passive solution: please select P79633-B21

- Few power consumption (<0.5W) that do not produce extra heat and can be utilized within wider temperature range.
- Direct Attach Copper (DAC) - A fixed or maximum length is defined to ensure Signal Integrity. DAC is used for inside system racks linking compute servers to storage subsystems within 3–5-meter maximum length based on speed connectivity and wire gauge. And it is the least expensive option than active cable and ACC.
- Active Copper Cable (ACC) - Designed with low power, low latency, and low cost from cooper with the range of 3 to 5 meters length. ACC contains DAC cables with an additional IC in each connector end to enhance the signal integrity specially for 400/800Gb connectivity.
- For 1/2.5/10 Gb BASE-T NIC adapters that apply RJ45 CAT cable, please select P79633-B21.
- Transceivers (active cable solution with heat generation), cannot be configured if P79633-B21 is selected.

Core Options

Front Drive Cage (Incl. Optical Drive Cage)

Compatible with 10SFF/20EDSFF Hybrid NC CTO Server

HPE ProLiant Compute DL3XX Gen12 1U 2SFF x4 Tri-Mode U.3 Stacking Backplane Kit	P72223-B21
HPE ProLiant Compute DL3XX Gen12 1U 4EDSFF NVMe Stacking Backplane Kit	P72221-B21
HPE ProLiant Compute DL3XX Gen12 1U SFF/EDSFF Hybrid Display Port/USB/Optical Drive Enablement Kit	P72227-B21

Notes:

- Total quantity 1 – 5. Max one backplane for each Box. Box1 requires a backplane to sustain the upper pull tag.
- If P77198-B21 (HPE ProLiant Compute DL3XX Gen12 1U NS204i-u Front Enablement Kit) is selected, Selecting Box 5 will occupy that slot and reduce available options, the max front drive cage quantity can be only quantity four.
- If P72596-B21 or P72597-B21 (the front OCP NIC Enablement Kits) is selected, the Box 3 will be consumed, the max front drive cage quantity can be only quantity four.
- If P77198-B21 and P72596-B21/P72597-B21 are selected, the max front drive cage quantity can be only quantity three.
- Box 1 backplane must be selected; Box 2-five are optional.
- P72227-B21 locates at Box 4 and 5, P77198-B21 locates at Box 5 with airflow vent hole.
- Front OCP NIC(s) Enablement Kit is available at Box 3, max quantity 2
- General backplane population sequence as: Box 1> Box 2> Box 4> Box 5> Box 3.
- There will be special setup or PCIe lanes restriction at rear OCP when: Quantity four or five backplanes are selected and Direct attach to the CPU1 in Hybrid CTO Server. See scenarios below.

DL360 G12 Hybrid CTO Server	Single Socket			Dual Socket
	Box 5 w/ 2SFF DA	Shift the Box 5 2SFF DA to Box 3		Box 5 w/ 4EDSFF DA
Rear OCP A	Default (x8 lanes)	Up to x16 lanes	Default (x8 lanes)	Default (x8 lanes)
Rear OCP B	Not support	Not support	x8 lanes	Up to x16 lanes

HPE ProLiant Compute DL360 Gen12 Front Primary OCP NIC Box3 Bay3 Enablement Kit	P72596-B21
HPE ProLiant Compute DL360 Gen12 Front Secondary OCP NIC Box3 Bay1 Enablement Kit	P72597-B21

Notes:

- Currently not available. Shipment will resume CQ4 2025.
- Quantity 0, 1, or 2 can be selected for P72596-B21 and P72597-B21.
- P72597-B21 cannot be selected if the P72596-21 is not selected.
- If any of P72596-B21 and P72597-B21 is selected, the Box 3 will be consumed as OCP Networking slot(s).
- Maximum quantity 2 of OCP Networking & Storage Controller cards can be installed in all DL360 G12 servers (including. rear and front).
- P72596-B21 incl. an OCP Interposer card to be installed at rear Slot 14 OCPA as default slot. Then the rear Slot 14 OCP A "CPU1 to OCPA x16" enablement/cable kit cannot be selected.
- P72597-B21 cannot be selected without installation of second processor. The P72597-B21 incl. an OCP Interposer card to be installed at rear Slot 15 OCP B as default slot. And the listed rear Slot 15 OCP B enablement/cable kits cannot be selected: “CPU1 to OCPB x8”, “CPU2 to OCPB x8” or “CPU2 to OCPB x16”.

Core Options

- For high cooling level Networking OCP Cards, installing at front will reduce the downstream heat (installed at rear OCP slots) and can be operated at 30C system inlet temperature. Please refer to later section “Cooling Level for Networking OCP cards”.
- If P72596-B21 or P72597-B21 is selected, then Bezel kit cannot be selected.
- Only the Front Primary OCP Box 3 Bay 3 Slot provides Share NIC feature with Network Controller Sideband Interface (NC-SI).

Compatible with 8SFF NC CTO Server

HPE ProLiant Compute DL3XX Gen12 1U 8SFF x1 Tri-Mode U.3 L-Shaped Backplane Kit	P75084-B21
HPE ProLiant Compute DL3XX Gen12 1U 2SFF x4 Tri-Mode U.3 Side-by-Side Backplane Kit	P75086-B21
HPE ProLiant Compute DL3XX Gen12 1U 8SFF Front DisplayPort/USB/Optical Drive Enablement Kit	P72225-B21

Notes:

- Total quantity 0-2
- Zero drive and zero backplane configuration is allowed with quantity 0 backplane.
- P75086-B21 cannot be selected without the selection of P75084-B21 for power connection.
- If P75084-B21 is selected, quantity 1 hardware controller must be selected for SAS/SATA/NVMe drives.
- If SAS/SATA drive(s) is loaded at the cage P75086-B21, quantity 1 hardware controller needs to be connected for latest Intel® Xeon® 6 non-SATA design. Only NVMe drive can be selected without a hardware controller.
- P72225-B21 can be selected without P75084-B21.

Compatible with 4LFF NC CTO Server (Optical Drive Enablement kit)

HPE ProLiant Compute DL3XX Gen12 No Drive No RAID Controller FIO Trigger System Setting	P78963-B21

Notes:

- A 4LFF backplane is embedded, and a hardware controller must be selected if SAS/ SATA drive.
- To remove the backplane, building with drive-less, controller less configuration, please select the P78963-B21 (HPE ProLiant Compute DL3XX Gen12 No Drive No RAID Controller FIO Trigger System Setting

HPE ProLiant Compute Gen12 Optical Disk Drive USB to SATA Signal Cable Kit	P72199-B21

Notes: Total quantity 0-1

OS Boot Device

Pre-selection if OS Boot Device is required.

Compatible with 10SFF/20EDSFF Hybrid NC CTO Server

HPE ProLiant Compute DL3XX Gen12 1U NS204i-u Front Enablement Kit	P77198-B21

Core Options

Compatible with all NC CTO Server

HPE NS204i-u v2 960GB NVMe SED Hot Plug Boot Optimized Storage Device	P81162-B21
HPE NS204i-u v2 960GB NVMe Hot Plug Boot Optimized Storage Device	P81160-B21
HPE NS204i-u v2 480GB NVMe Hot Plug Boot Optimized Storage Device	P78279-B21
HPE ProLiant Compute DL360 Gen12 NS204i-u Internal Enablement Kit	P72595-B21
HPE ProLiant Compute DL360 Gen12 NS204i-u Rear Enablement Kit	P72197-B21

NS204i-u v2 Enablement Kit vs Slot location

Enablement Kit	Description	Field Inst.	NS204i-u v2 Location	Hot-plug
P77198-B21	HPE ProLiant Compute DL3XX Gen12 1U NS204i-u Front Enablement Kit	Yes	Front Cage Box5 in Hybrid CTO Server (P72176-B21) only	Yes
P72197-B21	HPE ProLiant Compute DL360 Gen12 NS204i-u Rear Enablement Kit	Yes	Rear PCIe Slot2[1]	Yes
P72595-B21	HPE ProLiant Compute DL360 Gen12 NS204i-u Internal Enablement Kit	Yes	Internal	Not Supported

Notes:

- All NS204i-u v2 devices (P81162-B21, P81160-B21 or P78279-B21) are in same thermal rules, regardless of storage capacity or encryption.
- NS204i-u V2 is a x4 PCIe Gen3.0 OS Boot device including 2x 480GB M.2 NVMe SSDs, with preconfigured hardware RAID1.
- [1]With removing the original PCIe Slot 2 cage and re-install the dedicated DL360 Gen11 NS204i-u cage, latch and cables in the P72197-B21. The NS204i-u v2 will take up PCIe Slot 2 space only.
- If a secondary FH riser is selected, then "NS204i-u Rear Cable Kit" cannot be selected.
- If NS204i-u v2 is selected, only one of the three enablement kits can be selected.
- Slotting priority: When both “PCIe RAID controller” and “Rear NS204i-u v2 Enablement Kit” is selected, PCIe controller will be defaulted at PCIe Slot1 and rear NS204i-u v2 at Slot2.
- Slotting priority: When the “4-port BASE-T PCIe NIC”, “PCIe RAID Controller”, & “PCIe NIC adapter with high cooling level beyond 5” are selected, the “4-port BASE-T PCIe NIC will be at Slot1, PCIe RAID controller will be at Slot2, and “PCIe NIC adapter with high cooling level at or beyond 5” will be at Slot3, from thermal consideration. The Rear NS204i-u” cannot be selected as PCIe Slot2 is consumed. Please revert to Smart Chassis section to select alternatives, incl. “Internal NS204i-u v2 enablement kit” or “Front NS204i-u v2 enablement kit” (available in Hybrid CTO Server).
- For more details, please refer to later section “Slotting Priority”.
- For additional information from Boot Device, please see the HPE OS Boot Device QuickSpecs

Core Options

Thermal Matrix – Rear NS204i-u v2 as Boot Device (usage as capacity storage is not allowed)

NS204i-u v2 in 4 LFF & 8+2 SFF CTO Server						
Location	**Qty**	**Cooling**	**4 LFF (SAS/SATA)**	**8+2 SFF (x1 TriMode)**	**10SFF (x1 TriMode)**	**4SFF (x1 TriMode)**
Rear PCIe2	1	High Perf. Fan	**Up to 2x 270W, 32x 256[1]GB DIMM**			
			30 C			
	1	Closed-loop LC	**Up to 2x 350W, 32x128 GB / 32x 256[1]GB DIMM**			
			30 C / 25 C	25C / 23 C	25 C / 23 C	27 C / 25 C

NS204i-u v2 in 10SFF/20EDSFF Hybrid CTO Server								
Location	**Qty**	**Cooling**	**10SFF NVMe**	**4 SFF NVMe**	**20 E3.S**	**16 E3.S**	**8 E3.S**	**4 E3.S**
Rear PCIe2	1	High Perf. Fan	**Up to 2x 270W CPU, 32x 256[1]GB DIMM**					
			30C	30C	25C	30C	30C	30C
	1	Closed-loop LC	**Up to 2x 350W CPU, 32x128 GB / 256[1]GB DIMM**					
			25C / 23C	27C / 25C	20C / NA	20C / NA	25C / 23C	27C / 23C

NS204i-u v2 in 10SFF/20EDSFF Hybrid CTO Server						
Location	**Qty**	**Cooling**	**20 E3.S**	**4 E3.S**	**4 E3.S**	**20 E3.S**
Rear PCIe2	1	High Perf. Fan	**Up to 2x 185W, 32x 256[1]GB DIMM**			
			30C			
	1	Liquid Cooling	**Up to 2x 300W, 32x128 GB, CL LC**		**Up to 2x 300W, 32x 256[1] GB DIMM, CL LC**	**Up to 2x 300W, 32x 256[1] GB DIMM, DLC**
			23C	30C	25C	30C
	1	Liquid Cooling	**Up to 2x 350W, 32x128 GB, CL LC**		**Up to 2x 350W, 32x 256[1] GB DIMM, CL LC**	**Up to 2x 350W, 32x 256[1] GB DIMM, DLC**
			20C	27C	23C	30C

Notes: [1]If 32 DIMMs (1DPC) for 256GB, cannot reach 6400 MT/s at 2DPC

Management Hardware

Maximum 1 of each can be selected.

Compatible with all NC CTO Servers

HPE ProLiant DL36X Gen11 Rear Serial Port Cable Kit P48921-B21

Compatible with 8SFF NC CTO Server

HPE ProLiant Compute DL360 Gen12 8SFF System Insight Display Power Module Kit P72231-B21

Compatible with 4LFF NC CTO Server

HPE ProLiant Compute DL3XX Gen12 1U 4LFF Front DisplayPort/USB Enablement Kit P72229-B21

Storage Controllers

HPE MR216i-o Gen11 x16 Lanes without Cache OCP SPDM Storage Controller P47789-B21
HPE MR216i-p Gen11 x16 Lanes without Cache PCI SPDM Plug-in Storage Controller P47785-B21
HPE MR408i-o Gen11 x8 Lanes 4GB Cache OCP SPDM Storage Controller P58335-B21

Core Options

HPE MR408i-p Gen11 x8 Lanes 4GB Cache PCI SPDM Plug-in Storage Controller	P74775-B21
HPE MR416i-o Gen11 x16 Lanes 8GB Cache OCP SPDM Storage Controller	P47781-B21
HPE MR416i-p Gen11 x16 Lanes 8GB Cache PCI SPDM Plug-in Storage Controller	P47777-B21
HPE MR932i-p x32 Lanes PCIe Gen5 SPDM Plug-in Storage Controller	P75697-B21
HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804398-B21

Notes:

- Quantity 0-2 in total for internal storage controllers, and OCP Controller is limited to quantity 1 as maximum
- MR408i-o supports up to 8 SAS/SATA/NVMe Drives. And requires Storage Battery P01366-B21, P65038-B21 or P02377-B21 to be selected, and P48918-B21 must be selected. Vice versa &
- MR932i-p is a new PCIe 5.0, x32 lanes, FH/FL RAID controller. Supports NVMe drives (SFF or EDSFF) and SAS SSD only. SATA SSD and SATA/SAS HDD are not supported.
- The HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller (804398-B21) is temporarily out of support in DL360 Gen12 server. For any customer/field deployment equals or under qty 3 x 804398-B21, please refer to the details addressed in Advisory: HPE ProLiant Compute DL360 Gen12 and HPE ProLiant Compute DL380 Gen12 - Systems with HPE Smart Array E208e-p Controllers May Experience a UMCE During Boot

For more information, please visit HPE Compute MR Gen11 Controllers QuickSpecs, HPE MR Gen11 Controller User Guide, HPE MR Storage Administrator User Guide or HPE StorCLI User Guide Feature Summary

HPE MR932i-p x32 Lanes PCIe Gen5 SPDM Plug-in Storage Controller	MR216i-o / MR216i-p / MR408i-o / MR408i-p / MR416i-o / MR416i-p
	X8 PCIe 4.0
Storage Interface	One x8 LP SlimSAS (MR408i-o / MR408i-p) Two x8 LP SlimSAS (MR216i-o / MR416i-o) Two x8 SlimSAS (MR216i-p / MR416i-p)
Drive Support	16G NVMe, 12G SAS, 6G SATA, Tape Drive **24G SAS drives are available and can be configured in system. Please expect a performance limitation at max 12Gb/s in above MR controllers with SAS4.
RAID Support	0/1/10 (MR216i); 0/1/5/6/10/50/60 (MR416i/ MR408i)

Drive Type	Interface	MR200 & MR400 Series	MR900 Series
HDD	SATA	Supported	Not Supported
	SAS	Supported	Not Supported
SSD	SATA	Supported	Not Supported
	SAS	Supported	Supported
	NVMe	Supported	Supported

Core Options

Processor

- Mixing of 2 different processor models is not supported.
- CTO server will populate necessary fan kits per system thermal requirements and processor models, minimum as 5 standard fans. Dual processor configurations require 7 fans, either standard or high-performance.
- All SKUs listed below ship with processors only. Adequate fans and heatsinks must be selected.

Intel® Xeon 6® Processors

Supports "HPE DDR5 Smart Memory – Registered (RDIMM), 6400 MT/s".

Intel® Xeon 6® Processors with Efficient-Cores (E-Cores)

Intel® Xeon 6® Efficient – Performance per Watt

Intel® Xeon® 6710E 2.4GHz 64-core 205W Processor for HPE	P71117-B21
Intel® Xeon® 6731E 2.2GHz 96-core 250W Processor for HPE	P71118-B21
Intel® Xeon® 6740E 2.4GHz 96-core 250W Processor for HPE	P71119-B21
Intel® Xeon® 6746E 2.0GHz 112-core 250W Processor for HPE	P71120-B21
Intel® Xeon® 6756E 1.8GHz 128-core 225W Processor for HPE	P71121-B21
Intel® Xeon® 6766E 1.9GHz 144-core 250W Processor for HPE	P71122-B21

Intel® Xeon 6® Efficient – Performance

Intel® Xeon® 6780E 2.2GHz 144-core 330W Processor for HPE	P71124-B21

Intel® Xeon 6® Processors with Performance-Cores (P-Cores)

Intel® Xeon 6® Performance - General Purpose

Intel® Xeon® 6507P 3.5GHz 8-core 150W Processor for HPE	P74504-B21
Intel® Xeon® 6517P 3.2GHz 16-core 190W Processor for HPE	P74507-B21
Intel® Xeon® 6527P 3.0GHz 24-core 255W Processor for HPE	P74570-B21
Intel® Xeon® 6725P 3.7GHz 16-core 235W Processor for HPE	P87302-B21
Intel® Xeon® 6730P 2.5GHz 32-core 250W Processor for HPE	P74573-B21
Intel® Xeon® 6732P 3.8GHz 32-core 350W Processor for HPE	P74578-B21
Intel® Xeon® 6736P 2.0GHz 36-core 205W Processor for HPE	P74575-B21
Intel® Xeon® 6737P 2.9GHz 32-core 270W Processor for HPE	P74576-B21
Intel® Xeon® 6745P 3.1GHz 32-core 300W Processor for HPE	P81591-B21
Intel® Xeon® 6747P 2.7GHz 48-core 330W Processor for HPE	P73831-B21
Intel® Xeon® 6762P 2.9GHz 64-core 350W Processor for HPE	P90157-B21
Intel® Xeon® 6767P 2.4GHz 64-core 350W Processor for HPE	P73834-B21
Intel® Xeon® 6787P 2.0GHz 86-core 350W Processor for HPE	P73837-B21

Intel® Xeon 6® Mainline

Intel® Xeon® 6505P 2.2GHz 12-core 150W Processor for HPE	P74503-B21
Intel® Xeon® 6515P 2.3GHz 16-core 150W Processor for HPE	P74506-B21
Intel® Xeon® 6520P 2.4GHz 24-core 210W Processor for HPE	P74568-B21
Intel® Xeon® 6530P 2.3GHz 32-core 225W Processor for HPE	P74571-B21
Intel® Xeon® 6740P 2.1GHz 48-core 270W Processor for HPE	P73829-B21
Intel® Xeon® 6760P 2.2GHz 64-core 330W Processor for HPE	P73832-B21

Intel® Xeon 6® Socket Scalable

Intel® Xeon® 6714P 4.0GHz 8-core 165W Processor for HPE	P74508-B21

Core Options

Intel® Xeon® 6724P 3.6GHz 16-core 210W Processor for HPE	P74509-B21
Intel® Xeon® 6728P 2.7GHz 24-core 210W Processor for HPE	P74572-B21
Intel® Xeon® 6738P 2.9GHz 32-core 270W Processor for HPE	P74577-B21
Intel® Xeon® 6748P 2.5GHz 48-core 300W Processor for HPE	P74579-B21
Intel® Xeon® 6768P 2.4GHz 64-core 330W Processor for HPE	P73835-B21
Intel® Xeon® 6788P 2.0GHz 86-core 350W Processor for HPE	P73838-B21

Notes:

- The 6732P CPU Model is a Low T-case Processor which requires Closed Loop Liquid Cooling or DLC.
- Despite its 235W consumption, the 6725P CPU Model is a Low T-case Processor which requires Closed Loop Liquid Cooling or DLC.

Heatsinks (incl. Liquid Cooling module)

- Choices of air-cooling and liquid cooling solution(s) combing heatsink & fans to enable higher thermal capability under different CPU TDP. Default setting is available in configurator per general thermal requirements listed below.
- Please refer to the thermal requirements below from CPU TDP.

CPU TDP (Wattage)	Heatsink (HS)	Fan Kit	Availability
<=185W	Standard HS	Standard Fan Kit (5/7ea)	Full Support
186W- 250 W	Performance HS	Performance Fan Kit	Full Support
251W – 270 W	Performance HS	Performance Fan Kit	Limited Configuration
271W – 350 W	Performance HS	Performance Fan Kit	Limited Configuration
<=270 W (1P only)	Closed-loop HS	Closed-loop Fan Kit	Full Support
271W – 350 W	Closed-loop HS	Closed-loop Fan Kit	Full Support
<=350 W	DLC CPM	DLC Fan kit (Perf. Fan Kit)	Full Support

Notes: Several specific share options or configurations will trigger High-performance Fan Kits from thermal requirements. Please refer to the later section “Fan support matrix”.

Thermal configuration using DAC/ACC cables

- FAN kit selection (Standard Fan Kit or Perf. Fan Kit) will be decided if any GPU, NS204, SAS4 SSD, high-performance DIMM or NIC. Please refer to the separate section “FAN support matrix”.
- Thermal support matrix for CPU TDP vs Cooling solutions

2x CPU w/DAC or ACC	Cooling Solution	Allowed System Inlet Temperature (Without backplane qty & downstream cards limitation)
<=270W	Air Cooling or CL LC	30C
271 W – 350W	CL LC	25C
0W-350W	DLC*	30-35C

Notes: * With DLC installation, AOC or Transceiver is allowed for server operation at 30-35C system inlet temperature.

Core Options

– When CPU equals or above 270W TDP with Performance HS

2x CPU w/DAC or ACC, Perf. HS & FAN	10SFF/20EDSFF CTO Server P72176-B21	8SFF CTO Server P72175-B21	4LFF CTO Server P72174-B21
	System Inlet temperature vs max backplane quantity		
Qty 2 x 350 W	(30 C, 27 C, Not Support) 25 C, Max 3 23 C, Max 4 20 C, Max 5 +2 C if air baffle included	(30 C, 27 C, Not Support) 25 C/23 C, Max 1 20 C, Max 2 +2 C if air baffle included	(30 C, 27 C, Not Support) 25 C, Max 1 +2 C if air baffle included
Qty 2 x 330 W	(30 C, 27 C, Not Support) 27 C, Max 2 25 C, Max 5 +2 C if air baffle included	(30 C, 27 C, Not Support) 27 C, Max 1 25 C, Max 2 +2 C if air baffle included	(30 C, 27 C, Not Support) 27 C, Max 1 +3 C if air baffle included
Qty 2 x 300 W	(30 C, 27 C, Not Support) 27 C, Max 3 25 C, Max 5 +2 C if air baffle included	(30 C, 27 C, Not Support) 27C, Max 1 25C, Max 2 +2 C if air baffle included	(30 C, 27 C, Not Support) 27C, Max 1 +3 C if air baffle included

Notes:

– P72176-B21: Require minimum quantity one storage backplane to be installed at Box1 to hold the "Serial number/iLO information pull tab" as mechanical requirement.

– P72175-B21: The 2SFF side-by-side backplane cannot be installed without 8SFF L-shape backplane.

– P72175-B21: Optical drive installation through Universal Media Bay does not require the installation of 8SFF backplane. No special restrictions.

Thermal configuration using AOC or Transceiver:

– DLC supports 30-35C

– Air Cooling or CL LC installation:

Refer to "**Cooling level for PCIe NIC with AOC/ Transceiver**" & "**Cooling level for OCP NIC with AOC/ Transceiver**" In the later "Core Option" section. The matrix presents the valid configuration overview while AOC or Transceiver (active cable) is connecting to NIC card at downstream /rear wall.

Thermal requirements vs DIMM Blanks

Cooling solutions/DIMM types	< 256GB DIMM	=256GB DIMM
Air Cooling	Yes	Yes
Liquid Cooling (Closed-loop LC or DLC)	DIMM blanks cannot be installed	Yes

DIMM (Blank) population	1P	2P
DIMM quantity	Max 16 and min 1	Max 32 and min 2
DIMM Blank quantity	Fill out empty DIMM slots. Min 0 and max 15.	Fill out empty DIMM slots. Min 0 and max 30.

Core Options

HPE ProLiant DL3X0 Gen11 1U Standard Heat Sink Kit	P48904-B21
HPE ProLiant DL3XX Gen12 High Performance Heat Sink Kit	P74787-B21
HPE ProLiant Compute DL360 Gen12 Air Baffle Kit	P84549-B21
HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Heat Sink Fan FIO Bundle Kit	P74800-B21
HPE ProLiant Compute DL3XX Gen12 Cold Plate Module FIO Kit from PCIe	P74208-B21
HPE ProLiant Compute DL360 Gen12 Cold Plate Module FIO Kit from NS204 PCIe Slot2	P79273-B21
HPE ProLiant Direct Liquid Cooling 450mm Female-Male Connection Quick Disconnect Tube Set FIO Kit	P62046-B21
HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Field Upgrade Heat Sink Kit	P82009-B21
HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Field Upgrade Fan Kit	P82559-B21
HPE ProLiant Compute DL360 Gen12 Closed-loop Liquid Cooling Field Upgrade Handle Tool Kit	P82626-B21

Notes:

Configuration with thermal consideration

- If Performance Heatsink is selected, then Air Baffle Kit is highly recommended to be installed and will be defaulted in Configurator. User is allowed to remove the Air Baffle Kit if below 185W TDP CPU(s) is/are being selected, or if there is a need to retain previous setup without Air Baffle.
- With the below scenarios, the Performance Heatsink or Closed Loop Liquid Cooling (CL LC) Heatsink or DLC Module must be selected: NVMe/ SAS4 drives OR 100GbE or above Networking/ InfiniBand OR 256GB DIMM type OR Rear NS204i-u V2 OR Nvidia L4 GPU.
- There is only one solution available for CL LC as factory installation only, P74800-B21.
- 7x 4028 single-rotor Performance Fan are embedded in the P74800-B21 (CL LC module kit). Fan kit selection is not required by user.
- 7x 4056 dual-rotor Performance Fan must be selected and be defaulted, if Performance Heatsink or DLC Module is selected.
- In the CL LC bundle Kit, with full-speed the 4028 Fan Kit runs at 210W, which requires 42W additional power than DL360 Gen12 Performance 4056 Fan Kit.
- CL LC can be implemented for both qty 1 or 2 CPUs, <270W or >=270W. If CL LC (Factory installation only) was initially shipped with 1 Processor from HPE factory to customer site. When there is a field upgrade event planned for the server with adding the secondary processor or change to different processor(s), CL LC and its tool kit are available with the operatinon by HPE Service Contact or an external certified system integrator or technitian. Please read through the Closed-loop liquid cooling heatsink components | HPE ProLiant Compute DL360 Gen12 Server Maintenance and Service Guide before parts ordering and execution.
  Please refer to the animated video regarding the replacement procedure using the handle: DL360 Gen12 LC radiator remove - 3D model by Hewlett Packard Enterprise [d096d52] - Sketchfab
- Filed upgrade kit (not for factory installation) for CL LC, incl.
  - P82009-B21 as cold-plate module/ Heatsink kit
  - P82559-B21 as dual-rotor Fan kit
  - P82626-B21 as field upgrade handle/tool kit specailly for pulling up/ installation of P82009-B21 (can be one to multiple upgrades, not part of server components) or can be used in a customer self-repair event for the P82009-B21

Core Options

- There are two solutions available for DLC, as factory installation only. P74208-B21 installed at rear PCIe Slot3 & P79273-B21 installed at rear PCIe Slot2.
- Max 1 of Liquid cooling can be selected from the below: “Closed Loop Liquid Cooling”, or “DLC CPM module”.
- The P74208-B21 or P79273-B21 contains qty 2x Cold Plate Modules (Heat sinks)and qty 1x Quick Disconnect Module.
- If DLC Module is selected, then "HPE ProLiant Direct Liquid Cooling 450mm Female-male Connection Quick Disconnect Tube Set FIO Kit (P62046-B21)” must be selected. (See Power and Cooling solutions).

HPE Gen12 DLC Infrastructure

- Build-in a new feature with Leak Detection alert from iLO7 is available. iLO7 will trigger system shut down if a leak event is detected.
- HPE ProLiant DL3XX Gen12 Direct Liquid Cooling (DLC) solution requires at least one liquid cooling infrastructure item as follows: HPE Rack in 800mm x 1200mm (options listed below), Rack Manifold, CDU, Primary Hose Kit, and Secondary Hose Kit to function. Without above rack infrastructure to be selected, an unbuildable configuration will be triggered in this order.

DLC Rack options

- Rack 42U 800mm x 1200mm Ent G2 (applicable for DL3XX Gen12 DLC)
- Rack 48U 800mm x 1200mm Ent G2 (applicable for DL3XX Gen12 DLC)
- The DLC Rack Infrastructure setting is relatively complex and needs to be conducted by HPE Service with a complete enablement of DLC Rack solution. Major factors impacting the DLC Rack Infrastructure setting are listed below.
  - The connectivity of server to manifold
  - The DLC rack capability (liquid supply temperature, flow rate in each loop and CDU capability)
  - The CDU parameter setting (liquid type, server units in rack, and any mixing servers)
- If a customer has ordered from HPE previously and already has this basic infrastructure on site, please get unbuildable exception approval from ProLiant Product Management Team. A standalone unit can be shipped for field upgrade as an exception, without this infrastructure the server DLC solution will not function.

HPE ProLiant Compute Gen12 Closed-loop LC Module

- Build-in a new feature with Leak Detection alert from iLO7 is available. iLO7 will trigger system shut down if a leak event is detected and prevent the server from powering on until the leakage event is cleared, and REST API is performed for system recovery. Refer to HPE Maintenance and Service Guide at Closed-loop liquid cooling heatsink components | HPE ProLiant Compute DL360 Gen12 Server Maintenance and Service Guide
- The P74800-B21 contains paired (2) cold plates (1 per CPU) each with a pump, Tubes, (7) 4028 fans and a radiator. The entire module kit is designed to cool down the processor effectively using cooled inlet air. It would benefit the Processor temperature, yet the internal radiator may increase the flow resistance and reduce the airflow to downstream components inside the server.
- Field upgrade kits are available for the Closed-loop Liquid Cooling Handle Tool kit (as a fixture during upgrade or repair process, not part of server components), CPM modular (Heat sink) and Fan Kits. See above SKU listed

- To protect the system, HPE recommends replacing the module every five years. Refer to HPE Maintenance and Service Guide at Closed-loop liquid cooling heatsink components | HPE ProLiant Compute DL360 Gen12 Server Maintenance and Service Guide
- Offered with Standard (3/3/3) Warranty support along with the server. Refer to HPE Warranty statement at Document - HPE ProLiant and X86 Servers and Options | HPE Support
- Support contract on the server includes coverage for this module.

Memory

- For new Gen12 memory population rule whitepaper and optimal memory performance guidelines, please go to: http://www.hpe.com/docs/memory-population-rules
- For more information, please see the HPE DDR5 Smart Memory QuickSpecs
- Server memory population rules for HPE Gen11 servers with Intel® Xeon 6® Processors Fan selection impact from memory capacity at 256GB, please refer to the support matrix in Fan Kit section
- The -B21 memory SKUs shown in this document are to be used when ordering stand-alone memory only. For each -B21 SKU, there is a corresponding -F21 SKU which is to be used when configuring servers with integrated memory DIMMs.

DDR5-6400 (applies to the Intel® Xeon 6® Processors)

HPE 16GB (1x16GB) Single Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit	P69726-F21
HPE 16GB (1x16GB) Single Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	P69726-B21
HPE 32GB (1x32GB) Dual Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit	P69727-F21
HPE 32GB (1x32GB) Dual Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	P69727-B21
HPE 64GB (1x64GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit	P69728-F21
HPE 64GB (1x64GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	P69728-B21
HPE 96GB (1x96GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit	P69729-F21
HPE 96GB (1x96GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	P69729-B21
HPE 128GB (1x128GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart FIO Memory Kit	P69730-F21
HPE 128GB (1x128GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	P69730-B21
HPE 256GB (1x256GB) Quad Rank x4 DDR5-6400 CAS-60-52-52 EC8 Registered 3DS Smart FIO Memory Kit	P73447-F21
HPE 256GB (1x256GB) Quad Rank x4 DDR5-6400 CAS-60-52-52 EC8 Registered 3DS Smart Memory Kit	P73477-B21

Notes:

- In general, 256GB DIMM supports full quantity front storage backplanes installation at 30C, with max 32DIMM s (2DPC). Qty 16 or qty 32 256GB DIMMs in the system delivers similar thermal boundaries.
- P69726-B21 will be removed from configurator tool after April 2026 due to global supply constraint.

Core Options

Qty 32x 256GB DIMM with limited backplanes configurations

CPU TDP	Cooling Sol.	10SFF/20EDSFF Hybrid CTO Server		8SFF CTO Server	4LFF CTO Server
		Max qty 4E3.S BP, or Max qty 4EDSFF+2SFF BP	**Max qty 2SFF BP**	**Max qty BP**	**Max qty BP**
271W-350 W	Closed-loop LC & Fan Kit	(25C, Not Supported) 23C, max 2 18C, max 5	27C, max 4 25C, max 5	(30C, Not Supported) 27C, max 1 25C. max 2	(27C, Not Supported) 25C, max 1
186W-270W	Perf. HS & Fan Kit	30C, max4 & front OCP NIC, max 1; 25C, max 5	No limitation		

HPE ProLiant Compute DL360 Gen12 Memory Support Matrix							
		Registered DIMM (RDIMM)					3DS RDIMM
HPE SKU P/N		P69726-B21	P69727-B21	P69728-B21	P69729-B21	P69730-B21	P73447-B21
SKU Description		HPE 16GB (1x16GB) Single Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	HPE 32GB (1x32GB) Dual Rank x8 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	HPE 64GB (1x64GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	HPE 96GB (1x96GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	HPE 128GB (1x128GB) Dual Rank x4 DDR5-6400 CAS-52-52-52 EC8 Registered Smart Memory Kit	HPE 256GB (1x256GB) Quad Rank x4 DDR5-6400 CAS-60-52-52 EC8 Registered 3DS Smart Memory Kit
DIMM Rank		Single Rank (1R)	Dual Rank (2R)	Dual Rank (2R)	Dual Rank (2R)	Dual Rank (2R)	Quad Rank (4R)
DIMM Capacity		16GB	32GB	64GB	96GB	128GB	256GB
Voltage		1.1V	1.1V	1.1V	1.1V	1.1V	1.1V
DRAM depth [bit]		2G	2G	4G	6G	8G	8G
DRAM Width [bit]		x8	x8	x4	x4	x4	x4
DRAM Density		16Gb	16Gb	16Gb	24Gb	32Gb	32Gb
CAS Latency		46-45-45	46-45-45	46-45-45	46-45-45	46-45-45	60-52-52
DIMM Native Speed (MT/s)		6400	6400	6400	6400	6400	6400
HPE Memory Speed (MT/s) for Gen12 Servers with Intel® Xeon® 6700-series with E-Cores (SRF-SP) [1,2]							
1 Socket Design Servers	1DPC	Not supported	up to 6400	up to 6400	up to 6400	up to 6400	up to 6400
	2DPC		up to 52004	up to 5200	up to 5200	up to 5200	up to 5200
2 Socket Design Servers	1DPC	Not supported	up to 6400	up to 6400	up to 6400	up to 6400	up to 6400
	2DPC		up to 5200	up to 5200	up to 5200	up to 5200	up to 5200

Core Options

Memory Speed (MT/s) for HPE Gen12 Servers with Intel® Xeon® 6500 or 6700-series with P-Cores (GNR-SP) [1,3]							
1 Socket Design Servers	1DPC	up to 6400	up to 6400	up to 6400	up to 6400	up to 6400	up to 6400
	2DPC	Not supported	up to 5200	up to 5200	up to 5200	up to 5200	up to 5200
2 Socket Design Servers	1DPC	up to 6400	up to 6400	up to 6400	up to 6400	up to 6400	up to 6400
	2DPC	Not supported	up to 5200	up to 5200	up to 5200	up to 5200	up to 5200

Notes:

- [1] Maximum memory speed supported is determined and will vary by CPU selected. Please consult CPU specifications for exact maximum memory speed supported.
- [2] Supported Intel® Xeon® 6700E-Series (SRF-SP) configurations limited to 1, 2, 4, 8 or 16 DIMMs only.
- [3] Supported Intel® Xeon® 6500P-Series and 6700P-Series (GNR-SP) configurations limited to 1, 2, 4, 8, 12 or 16 DIMMs only.
- [4] Supported by HPE above and beyond Intel® specifications

- The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model.
- All DIMMs must be DDR5.
- All DDR5 DIMM must be running the same speed per CPU socket.
- x8 and x4 cannot be mixed.
- 3DS and non-3DS Memory cannot be mixed.
- Mixing different Rank Memory is not allowed if less than quantity 16 of Memory is selected for 1 CPU configuration.
- Mixing different Rank Memory is not allowed if less than quantity 32 Memory is selected for 2 CPUs configuration.
- If different Rank Memory are mixed, then quantity of each Memory part number must be same.
- 16GB & 256GB are allowed with 6xxxP CPU only.
- In quantity 1 Intel® Xeon® 6xxxP CPU configuration, then Maximum 8 quantity of 16GB Memory can be selected.
- In quantity 2 Intel® Xeon® 6xxxP CPU configuration, then Maximum 16 quantity of 16GB Memory can be selected.
- If 256GB DIMM is selected, then a maximum quantity 16 of Memory can be selected per CPU.
- 96GB Memory cannot be mixed with any other Memory.
- 128GB Memory cannot be mixed with any other Memory.
- 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 CPUs.
- The maximum memory speed is a function of the memory type, memory configuration, and CPU 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, and the number and model of installed CPUs qualified on the platform.
- Quantity of memory DIMMs selected per socket must be 1, 2, 4, 8, 12 or 16 for 6xxxP CPU
- Quantity of memory DIMMs selected per socket must be 1, 2, 4, 8 or 16 for 67xxE CPU
- With Intel® Xeon® 67xxE CPU, DIMMs below are supported.
    - HPE 32GB 2Rx8 PC5-6400B-R Smart Kit

Core Options

- HPE 64GB 2Rx4 PC5-6400B-R Smart Kit
- HPE 96GB 2Rx4 PC5-6400B-R Smart Kit
- HPE 128GB 2Rx4 PC5-6400B-R Smart Kit

– With Intel® Xeon® 67xxP and 65xxP CPU, DIMMs below are supported.

- HPE 16GB 1Rx8 PC5-6400B-R Smart Kit
- HPE 32GB 2Rx8 PC5-6400B-R Smart Kit
- HPE 64GB 2Rx4 PC5-6400B-R Smart Kit
- HPE 96GB 2Rx4 PC5-6400B-R Smart Kit
- HPE 128GB 2Rx4 PC5-6400B-R Smart Kit
- HPE 256GB 4Rx4 PC5-6400B-R 3DS Smart Kit

HPE DIMM blanks

Thermal requirements vs DIMM Blanks.

Cooling solutions/DIMM types	< 256GB DIMM	=256GB DIMM
Air Cooling	Yes	Yes
Liquid Cooling (Closed-loop LC or DLC)	DIMM blanks cannot be installed	Yes

DIMM (Blank) population	1P	2P
DIMM quantity	Max 16 and min 1	Max 32 and min 2
DIMM Blank quantity	Fill out empty DIMM slots. Min 0 and max 15.	Fill out empty DIMM slots. Min 0 and max 30.

HPE DDR4 DIMM Blank Kit P07818-B21

Notes: Optional, need to be selected according to the thermal requirements below to enhance thermal condition.

Storage Devices

Storage Controller

Please refer to the SKUs in the previous Smart Chassis section.

Storage Battery

HPE 16W Smart Hybrid Capacitor with 145mm Cable P65038-B21

HPE 96W Smart Storage Lithium-ion Battery with 145mm Cable Kit P01366-B21

HPE Smart Storage Hybrid Capacitor with 145mm Cable Kit P02377-B21

HPE ProLiant DL360 Gen11 Storage Controller Enablement Cable Kit P48918-B21

Notes:

– If MR416/ MR408 internal controllers (embedded cache feature) are selected the selection of storage battery is required. Not for MR932i-p which comes with an in-built battery.

– If any Storage Battery P01366-B21, P65038-B21 or P02377-B21 is selected, then P48918-B21 must be selected. Vice versa.

– Max 1 of Storage Battery can be selected per server.

Core Options

Front storage backplane cage kit

Please refer to the SKUs in the previous Smart Chassis section.

Internal storage controller/backplane cable kit

Smart Chassis is a new automation feature in One Config Advanced building with intelligence running compatible storage backplane cable kit without manual selection process from configurator user.

Adequate storage/controller cable kits are automatically populated in the BOM Session in OCA. Manual selection of controller Cable Kits is not required.

Compatible with 10SFF/20EDSFF Hybrid NC CTO Server

HPE ProLiant Compute DL360 Gen12 10SFF/20EDSFF Hybrid Backplane Power Cable Kit	P72209-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 CPU2 Box1/CPU1 Box4 Signal Direct Attach Cable Kit	P72213-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 CPU2 Box2/CPU1 Box3/5 Signal DA Cable Kit	P72601-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 CPU2 Box1/CPU1 Box1/2 Signal DA Cable Kit	P72211-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 CPU1 Box 4/5 Signal Direct Attach Cable Kit	P72605-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x2 Box1 Box2 PCIe Slot1 Controller Cable Kit	P72604-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x2 Box4 Box5 PCIe Slot1 Controller Cable Kit	P77188-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 Box 1/2 PCIe 1/2 Box 3/4/5 PCIe1 Ctrl Cable Kit	P72602-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x2 Box1 Box2 Rear OCP SlotA Controller Cable Kit	P72600-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 Box 3/4/5 Rear OCP SlotA Controller Cable Kit	P72603-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x4 Box 3 Rear OCP SlotB Controller Cable Kit	P77200-B21
HPE ProLiant Compute DL360 Gen12 2SFF Stacking x2 Box4 Box5 Rear OCP SlotA Controller Cable Kit	P76500-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU1 Box 1 Signal Direct Attach Cable Kit	P76501-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU2 Box 1 Signal Direct Attach Cable Kit	P76502-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU1 Box 2 Signal Direct Attach Cable Kit	P77190-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU2 Box 2 Signal Direct Attach Cable Kit	P77191-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU1 Box 3 Signal Direct Attach Cable Kit	P77192-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU1 CPU2 Box 4 Signal Direct Attach Cable Kit	P76504-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 CPU1 Box 5 Signal Direct Attach Cable Kit	P76505-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 Box 1/2 PCIe Slot1/2 Controller Cable Kit	P76506-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 Box 5 PCIe Slot1 Controller Cable Kit	P76507-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 Box 4 PCIe Slot1 Controller Cable Kit	P80375-B21
HPE ProLiant Compute DL360 Gen12 4EDSFF x4 Box 5 Rear OCP SlotA Controller Cable Kit	P80377-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 4EDSFF x4 Box 1/2 PCIe Slot1/2 Controller Cable Kit	P76509-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 4EDSFF x4 Box 4 PCIe Slot1 Controller Cable Kit	P85640-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 4EDSFF x4 Box 5 PCIe Slot1 Controller Cable Kit	P76510-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 2SFF Stacking x4 Box 1/2 PCIe Slot1 Controller Cable Kit	P85637-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 2SFF Stacking x4 Box 4/5 PCIe Slot1 Controller Cable Kit	P85638-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 2SFF Stacking x4 Box 3 PCIe Slot1 Controller Cable Kit	P85807-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 2SFF Stacking x2 Box1 Box2 PCIe Slot1 Controller Cable Kit	P85805-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 2SFF Stacking x2 Box4 Box5 PCIe Slot1 Controller Cable Kit	P85806-B21

Notes:

– When SAS or SATA storage is selected, connection to a hardware controller is required.

Core Options

– P76509-B21, P76510-B21 & P85640-B21 contain qty 2 straight cables (each) connecting from EDSFF Backplane(s) to MR932 i-p at rear PCIe Slot(s)
– MR932i-p can support SAS SSD & NVMe SSD, not for SAS HDD and SAS/SATA HDD

Compatible with 8SFF NC CTO Server

HPE ProLiant Compute DL360 Gen12 8SFF x1 PCIe Slot1 Controller Power Cable Kit	P76514-B21
HPE ProLiant Compute DL360 Gen12 8SFF x1 Rear OCP SlotA Controller Power Cable Kit	P76513-B21
HPE ProLiant Compute DL360 Gen12 8SFF x1 Rear OCP SlotB Controller Power Cable Kit	P84506-B21
HPE ProLiant Compute DL360 Gen12 2SFF Side-by-Side x4 Direct Attach Power Cable Kit	P76512-B21
HPE ProLiant Compute DL360 Gen12 2SFF Side-by-Side x4 PCIe Slot1 Controller Power Cable Kit	P77203-B21
HPE ProLiant Compute DL360 Gen12 2SFF Side-by-Side x4 Rear OCP SlotA Controller Power Cable Kit	P77202-B21
HPE ProLiant Compute DL360 Gen12 2SFF Side-by-Side x4 Rear OCP SlotB Controller Power Cable Kit	P84505-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 8SFF x1 PCIe Slot1 Controller Power Cable Kit	P85803-B21
HPE ProLiant Compute DL360 Gen12 MR932i-p 2SFF Side-by-Side x4 PCIe Slot1 Controller Power Cable Kit	P85804-B21

Notes:
– Max 1 of 8 SFF cables can be selected per server.
– P85803-B21 and P85804-B21 contain qty 1 straight cable (each) for the 8SFF U.3 x1 backplane or 2FF side-by-side U.3 x4 backplane connection to MR932i-p at rear PCIe slot
– MR932i-p can support SAS SSD & NVMe SSD, not for SAS HDD and SAS/SATA HDD

Compatible with 4LFF NC CTO Server

HPE ProLiant Compute DL360 Gen12 4LFF x1 PCIe Slot1 Controller Cable Kit	P76508-B21
HPE ProLiant Compute DL360 Gen12 4LFF x1 Rear OCP SlotA Controller Cable Kit	P76511-B21

Notes:
– 4LFF 12G x1 SAS backplane cage is embedded in base model CTO server.
– Any SAS/SATA drive selection, the connection to hardware controller is required.
– For zero drive and zero hardware controller configuration in 4LFF CTO server, P78963-B21 (PE ProLiant Compute DL3XX Gen12 No Drive No RAID Controller FIO Trigger System Setting) will be picked automatically in OCA and the system would be shipped without backplane/storage cables.
– MR932i-p is not supported in the 4LFF CTO Server

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Front DisplayPort and USB2.0

For 10SFF/20EDSFF Hybrid and 8SFF CTO Server, please refer to the SKUs in the previous Smart Chassis section.

HPE ProLiant Compute DL3XX Gen12 1U 4LFF Front DisplayPort/USB Enablement Kit	P72229-B21

Notes: The front DP and USB port enablement kit in 4LFF CTO Model does not contain Optical Drive enablement kit. Separate SKU needs to be selected for Optical Drive enablement kit in Smart Chassis section.

Front Optical Drive Cable

Please refer to the SKUs in the previous Smart Chassis section.

Core Options

Optical Drive

HPE Mobile USB DVD-RW Optical Drive 701498-B21

Notes: This kit is supported on USB 3.0 ports, for external only.

HPE 9.5mm SATA DVD-ROM Optical Drive 726536-B21

Notes: Requires an Optical Drive enablement kit to be pre-selected in Smart Chassis section for all three CTO Servers.

HPE 9.5mm SATA DVD-RW Optical Drive 726537-B21

Notes: Requires an Optical Drive enablement kit to be pre-selected in Smart Chassis section for all three CTO Servers.

HDD Blank Kit

HPE Small Form Factor Hard Drive Blank Kit 666987-B21

HPE Gen9 LFF HDD Spade Blank Kit 807878-B21

Storage

- Maximum limit for SAS/ SATA/ NVMe will vary depending upon the selected drive cage, controller, and cable combination.
- User may select any combination of SAS or SATA Hard Drives. However, if RAID is selected and both SAS and SATA Hard Drives have been selected, then only the SAS Drives will be used in the RAID set.
- User may select any combination of SAS or SATA or NVMe Drives on U.3 cage with Tri-Mode controller. However, if RAID is selected with SAS, SATA and NVMe Drives, then only the NVMe Drives will be used in the RAID set.
- Direct Attach supports only NVMe drives (available in SFF and E3.S formfactor) in below three types of drive backplane and cages. If SAS or SATA drives is selected/installed, then minimum one Internal controller must be selected.
  - 8SFF NC CTO Server: 2SFF Side-by-side x4 TriMode U.3 backplane cage kit.
  - 10SFF/20EDSFF Server: 2SFF stacking x4 TriMode U.3 backplane cage kit; and 4EDSFF x4 NVMe backplane cage kit.
- If 8 SFFx1 drive cage is selected, an internal controller connection is required as default, for SAS/SATA/NVMe drives.
- The 4 LFFx1 12G SAS backplane is embedded as default in 4LFF CTO Server, and selecting one internal controller card is required as essential for SAS./SATA drives connection. To remove default backplane and configured as zero drive/backplane as OS Boot device only, please set the internal controller quantity as quantityy zero in Smart Chassis section and the P78963-B21 (HPE ProLiant Compute DL3XX Gen12 No Drive No RAID Controller FIO Trigger System Setting) will be triggered as none-backplane server,
- For SSD selection guidance, please visit: http://ssd.hpe.com/

NVMe Gen5 EDSFF (max 20)

Very Read Optimized – NVMe – EDSFF - Solid State Drives

HPE 61.44TB NVMe Gen5 Mainstream Performance Very Read Optimized EC1 EDSFF Self-encrypting 6550 SSD P79623-B21

HPE 30.72TB NVMe Gen5 Mainstream Performance Very Read Optimized EC1 EDSFF Self-encrypting 6550 SSD P79620-B21

HPE 61.44TB NVMe Gen5 Mainstream Performance Very Read Optimized E3.S EC1 EDSFF 6550 SSD P79618-B21

HPE 30.72TB NVMe Gen5 Mainstream Performance Very Read Optimized E3.S EC1 EDSFF 6550 SSD P79615-B21

Core Options

Read Intensive – NVMe – EDSFF - Solid State Drives

HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3.S EC1 PM1753 SSD	P78793-B21
HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3.S EC1 PM1753 SSD	P78791-B21
HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3.S EC1 PM1753 SSD	P78789-B21
HPE 30.72TB NVMe Gen5 High Performance Read Intensive E3.S EC1 EDSFF SPDM 9550 SSD	P79965-B21
HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD	P79122-B21
HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD	P70674-B21
HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM 9550 SSD	P77061-B21
HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM 9550 SSD	P77059-B21
HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM 9550 SSD	P77057-B21
HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM CM7 SSD	P61187-B21
HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM CM7 SSD	P61183-B21
HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM CM7 SSD	P61179-B21
HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM PM1743 SSD	P57807-B21
HPE 15.36TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD	P77275-B21
HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 EDSFF SPDM PM1743 SSD	P57799-B21
HPE 15.36TB NVMe Gen5 High Performance Read Intensive E3S EC1 PS1010 SSD	P70397-B21
HPE 7.68TB NVMe Gen5 High Performance Read Intensive E3S EC1 PS1010 SSD	P70395-B21
HPE 3.84TB NVMe Gen5 High Performance Read Intensive E3S EC1 PS1010 SSD	P70392-B21
HPE 30.72TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF Self-encrypting PM9D3a SSD	P79147-B21
HPE 30.72TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PM9D3a SSD	P78923-B21
HPE 15.36TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PM9D3a SSD	P78921-B21
HPE 7.68TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PM9D3a SSD	P78919-B21
HPE 3.84TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PM9D3a SSD	P78917-B21
HPE 1.92TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PM9D3a SSD	P78914-B21
HPE 15.36TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 CD8P SSD	P69546-B21
HPE 3.84TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD	P77271-B21
HPE 1.92TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 CD8P SSD	P69234-B21
HPE 1.92TB NVMe Gen5 Mainstream Performance Read Intensive E3S EC1 EDSFF SPDM PE1010 SSD	P77269-B21

Mixed Use – NVMe – EDSFF - Solid State Drives

HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM 9550 SSD	P77053-B21
HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3.S EC1 PM1755 SSD	P78787-B21
HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM 9550 SSD	P77050-B21
HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3.S EC1 PM1755 SSD	P78784-B21
HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 Self-encrypting FIPS 140-3 CM7 SSD	P70672-B21
HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM CM7 SSD	P61191-B21
HPE 12.8TB NVMe Gen5 High Performance Mixed Use E3S EC1 EDSFF SPDM 9550 SSD	P77055-B21
HPE 12.8TB NVMe Gen5 High Performance Mixed Use E3S EC1 PS1030 SSD	P70403-B21
HPE 6.4TB NVMe Gen5 High Performance Mixed Use E3S EC1 PS1030 SSD	P70401-B21
HPE 6.4TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 EDSFF SPDM PE1030 SSD	P77267-B21
HPE 3.2TB NVMe Gen5 High Performance Mixed Use E3S EC1 PS1030 SSD	P70399-B21

Core Options

HPE 3.2TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 EDSFF SPDM PE1030 SSD	P77265-B21
HPE 6.4TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 CD8P SSD	P69245-B21
HPE 3.2TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 CD8P SSD	P69243-B21
HPE 1.6TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 CD8P SSD	P69241-B21
HPE 1.6TB NVMe Gen5 Mainstream Performance Mixed Use E3S EC1 EDSFF SPDM PE1030 SSD	P77262-B21
NVMe Gen4 – EDSFF (max 20)	
Very Read Optimized – NVMe – EDSFF - Solid State Drives	
HPE 30.72TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD	P79065-B21
HPE 15.36TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD	P63938-B21
HPE 7.68TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD	P63934-B21
HPE 3.84TB NVMe Gen4 Mainstream Performance Very Read Optimized E3S EC1 EDSFF P5430 SSD	P63930-B21
NVMe Gen4 – SSD and AIC – Read Intensive & Mixed Used (max 10)	
Read Intensive - NVMe - SFF - Solid State Drives	
HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Static PM1753 SSD	P78810-B21
HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD	P63841-B21
HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50224-B21
HPE 15.36TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 SPDM 7500b SSD	P84239-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Static PM1753 SSD	P78808-B21
HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 SPDM 7500 SSD	P84242-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD	P61035-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD	P63837-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50222-B21
HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static V2 Multi Vendor SSD	P64848-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Static PM1753 SSD	P78806-B21
HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 SPDM 7500 SSD	P84244-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD	P61027-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 CM7 SSD	P63833-B21
HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF BC U.3 Static V2 Multi Vendor SSD	P64846-B21
HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD	P61019-B21
HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PM1733a SSD	P50216-B21
HPE 15.36TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PS1010 SSD	P70436-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF BC U.3 PS1010 SSD	P70434-B21
Mixed Use - NVMe - SFF - Solid State Drives	
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Static PM1755 SSD	P78804-B21
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD	P61059-B21
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM7 SSD	P63853-B21
HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF BC U.3 Static V2 Multi Vendor SSD	P65023-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Static PM1755 SSD	P78801-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD	P61051-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM7 SSD	P63849-B21
HPE 1.6TB SAS Mixed Use SFF BC Self-encrypting FIPS 140-2 PM7 SSD	P63871-B21

Core Options

HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 Self-encrypting FIPS 140-3 CM7 SSD	P61043-B21
HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 CM7 SSD	P63845-B21
HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PM1735a SSD	P50227-B21
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PS1030 SSD	P70428-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF BC U.3 PS1030 SSD	P70426-B21

SSD - Read Intensive (max 10)

- For non-SED SAS4 drives: 24G SAS speeds require U.3 backplane/cage. Configuration with MR216/408/416 hardware controller will downclock to 12G SAS speed.
- For SED SAS4 drives: SED capability requires choice of hardware controllers. SAS4 drives with MR216/408/416 will downclock to 12G SAS speed.

Read Intensive - 24G SAS - SFF – Self-encrypting Solid-State Drives	
HPE 7.68TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-3 PM7 SSD	P83350-B21
HPE 3.84TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-3 PM7 SSD	P83347-B21
HPE 7.68TB SAS Read Intensive SFF BC Self-encrypting FIPS 140-2 PM7 SSD	P63879-B21
Read Intensive - 12G/24G SAS - SFF - Solid State Drives	
HPE 15.36TB SAS 24G Read Intensive SFF BC Multi Vendor SSD	P49045-B21
HPE 7.68TB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD	P40509-B21
HPE 7.68TB SAS 24G Read Intensive SFF BC Multi Vendor SSD	P49041-B21
HPE 3.84TB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD	P40508-B21
HPE 3.84TB SAS 24G Read Intensive SFF BC Multi Vendor SSD	P49035-B21
HPE 1.92TB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD	P40507-B21
HPE 1.92TB SAS 24G Read Intensive SFF BC Multi Vendor SSD	P49031-B21
HPE 960GB SAS 12G Read Intensive SFF BC Value SAS Multi Vendor SSD	P40506-B21
HPE 960GB SAS 24G Read Intensive SFF BC Multi Vendor SSD	P49029-B21
Read Intensive – 6G SATA – SFF - Self-Encrypting Solid-State Drives	
HPE 480GB SATA 6G Read Intensive SFF BC Self-encrypting 5400P SSD	P58236-B21
Read Intensive - 6G SATA - SFF - Solid State Drives	
HPE 7.68TB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40501-B21
HPE 3.84TB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40500-B21
HPE 1.92TB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40499-B21
HPE 480GB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40497-B21
HPE 960GB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40498-B21
HPE 240GB SATA 6G Read Intensive SFF BC Multi Vendor SSD	P40496-B21
Read Intensive - 6G SATA - LFF - Solid State Drives	
HPE 960GB SATA 6G Read Intensive LFF LPC Multi Vendor SSD	P47808-B21
SSD – Mixed Use (max 10)	
Mixed Use - 24G SAS - SFF – Self-encrypting Solid-State Drives	
HPE 1.6TB SAS Mixed Use SFF BC Self-encrypting FIPS 140-3 PM7 SSD	P83344-B21
HPE 1.6TB SAS Mixed Use SFF BC Self-encrypting FIPS 140-2 PM7 SSD	P63871-B21

Core Options

Mixed Use - 12G/24G SAS - SFF - Solid State Drives	
HPE 6.4TB SAS 24G Mixed Use SFF BC Multi Vendor SSD	P49057-B21
HPE 3.84TB SAS 12G Mixed Use SFF BC Value SAS Multi Vendor SSD	P40512-B21
HPE 3.2TB SAS 24G Mixed Use SFF BC Multi Vendor SSD	P49053-B21
HPE 1.92TB SAS 12G Mixed Use SFF BC Value SAS Multi Vendor SSD	P40511-B21
HPE 1.6TB SAS 24G Mixed Use SFF BC Multi Vendor SSD	P49049-B21
HPE 960GB SAS 12G Mixed Use SFF BC Value SAS Multi Vendor SSD	P40510-B21
HPE 800GB SAS 24G Mixed Use SFF BC Multi Vendor SSD	P49047-B21
Mixed Use – 6G SATA – SFF - Self-Encrypting Solid-State Drives	
HPE 960GB SATA 6G Mixed Use SFF BC Self-encrypting 5400M SSD	P58244-B21
Mixed Use - 6G SATA - SFF - Solid State Drives	
HPE 3.84TB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40505-B21
HPE 1.92TB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40504-B21
HPE 960GB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40503-B21
HPE 480GB SATA 6G Mixed Use SFF BC Multi Vendor SSD	P40502-B21
Mixed Use - 12G SAS - LFF –Solid State Drives	
HPE 960GB SAS 12G Mixed Use LFF LPC Value SAS Multi Vendor SSD	P37009-B21
HDD- Enterprise 15K/10K -SFF (max 10)	
Mission Critical - 12G SAS – SFF SED Drives	
HPE 2.4TB SAS 12G Mission Critical 10K SFF BC 3yr Wty 512e FIPS 140-2 TAA-compliant HDD	P28618-B21
HPE 1.2TB SAS 12G Mission Critical 10K SFF BC 3yr Wty FIPS 140-2 TAA-compliant HDD	P28622-B21
Enterprise - 12G SAS - SFF Drives	
HPE 2.4TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty 512e Multi Vendor HDD	P28352-B21
HPE 1.8TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty 512e Multi Vendor HDD	P53562-B21
HPE 1.2TB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Multi Vendor HDD	P28586-B21
HPE 600GB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Multi Vendor HDD	P53561-B21
HPE 300GB SAS 12G Mission Critical 10K SFF BC 3-year Warranty Multi Vendor HDD	P40430-B21
HDD – Midline – 7.2K – LFF (max 4)	
Midline - 12G SAS - LFF Drives	
HPE 26TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P80577-B21
HPE 24TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P68583-B21
HPE 20TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P53553-B21
HPE 16TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P23608-B21
HPE 12TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD	881781-B21
HPE 8TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD	834031-B21
HPE 4TB SAS 12G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	833928-B21
Midline - 6G SATA - LFF Drives	
HPE 26TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P80578-B21
HPE 24TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P68585-B21
HPE 20TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P53554-B21
HPE 16TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e ISE Multi Vendor HDD	P23449-B21
HPE 12TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Helium 512e Multi Vendor HDD	881787-B21
HPE 8TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e Multi Vendor HDD	834028-B21
HPE 4TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	861683-B21

Core Options

HPE 2TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	861681-B21
HPE 1TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty Multi Vendor HDD	861686-B21

Rear PCIe

Riser Cards

Standard/ Primary/ Butterfly Riser is embedded in all CTO Server. Additional selection is NOT required.

- Slot 1 - 1x PCIe 5.0 x16 Full-height, up to 9.5" length (or Half-length card)
- Slot 2 - 1x PCIe 5.0 x16 Low-profile, up to 9.5" length (or Half-length card)

Notes:

- The Primary Riser Slot 1 & Slot 2 are rated for a maximum power draw of 75 W/ each.
- If rear hot-plug NS204i-u V2 is installed, the Slot 2 cage needs to be removed.

HPE ProLiant Compute DL360 Gen11/Gen12 x16 Primary Riser Kit P75407-B21

Notes: This is a SKU for field upgrades only, not for Factory Installation purposes. Order through Ad-hoc and will not be installed in the system but ship as a stand-alone item. Each DL360 Gen11 and DL360 Gen12 CTO server has the Primary riser embedded as default, a separate order for P75407-B21 is not required. This kit is also compatible with DL360 Gen11 as a Primary riser upgrade kit.

HPE ProLiant Compute DL360 Gen12 x16 Full Height Riser Kit P72598-B21

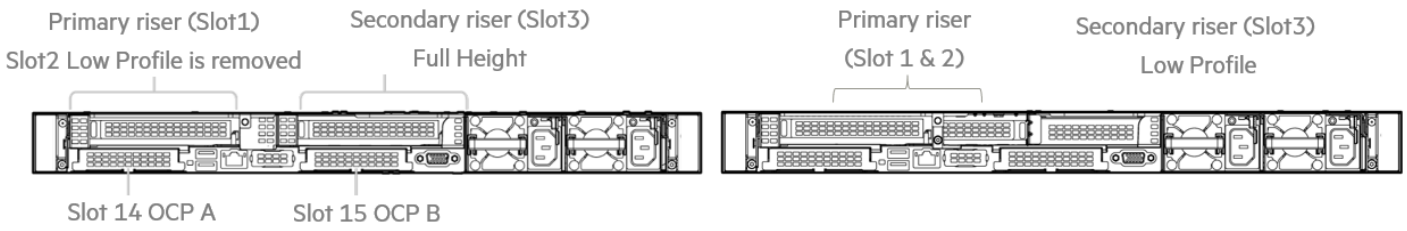
Notes:

- Referred as Secondary FH riser.
- 2nd Processor is required.
- When P72598-B21 is selected, the Slot2 Low Profile bracket on the primary/butterfly riser will be removed from factory installation and will not be shipped.
- Slot 3: 1x PCIe5.0 x 16 Full-length, up to 9.5' length (or Half-length card)
- The PCIe Slot filler (sheet metal with vent holes) are part of the chassis, not in the riser kit. Fillers would be removed from the Slot if any PCIe adapters were installed. No sellable SKU is available.

HPE ProLiant DL360 Gen11 x16 LP Riser Kit P48903-B21

Notes:

- Referred as Secondary Low Profile (LP) riser.
- 2nd Processor is required.
- Slot 3: 1xPCIe5.0 x 16 Low-profile, up to 9.5" length (or Half-length card)
- The PCIe Slot filler (sheet metal with vent holes) are part of the chassis, not in the riser kit. Fillers would be removed from the Slot if any PCIe adapters were installed. No sellable SKU is available.



Core Options

Riser Information									
Riser Position	**Part number & Description**	**Choices**		**Slot Bus width PCIe5**			**GPU**	**NVMe Connect**	**M.2 Connect**
		Prim.	**Sec.**	**#1**	**#2**	**#3**			
Primary (chassis default)	DL360 G12 x16/x16 Primary Riser	D	N/A	x16	x16	N/A	Y	N/A	N/A
Secondary	**P72598-B21:** DL360 G12 x16 Full Height Riser Kit[1]	N/A	O	N/A	N/A[1]	x16	Y		
Secondary	**P48903-B21:** DL360 Gen11 x16 LP Riser Kit	N/A	O	N/A	N/A	x16	Y[2]		

Notes:

- Prim. = Primary; Sec = Secondary; D = Default on server; O = Optional; N/A = not supported or slot/connector not present.
- Quantity of Processor and Quantity of Heatsink must match.
- All DL360 Gen12 Riser cards are designed in x16 PCIe slot form factor (physical length) as well as in full x16 lanes of PCIe5.0 as electrical bandwidth.
- If Secondary riser is selected, then 2 Processors must be selected.
- [1]If secondary FH riser is selected, then maximum quantity 2 of PCIe FH cards can be selected, as primary PCIe Slot 2 cannot be used.
- [2]GPU max 75W
- 4 ports BASE-T Low Profile NIC adapters are not allowed to be installed at Slot 2 (P51178-B21)

NIC Adapter type	Max qty at rear	Rear PCIe Slot1	Rear PCIe Slot2	Rear PCIe Slot3
4p SFP	3	Support	Support	Support
4p Base-T	2	Support	Not support	Support

PCIe Slotting

Configuration 1: Primary Riser only (default in chassis), and Secondary Riser is not installed		
Riser	**(Primary riser as default)**	
Slot Number	**Slot 1**	**Slot 2**
Bus Width	x16	x16
Form Factor	FHHL	HHHL (LP)
PCIe adapter types	**Slot Priority**	
-PCIe x16	1	2
-PCIe x8	1	2
-PCIe x4	1	2

Configuration 2: Primary Riser (default in chassis) & Secondary FH Riser is installed, 2 CPUs			
Riser	**(Primary riser as default)**		**Secondary (P72598-B21)**
Slot Number	**Slot 1**	Not supported	**Slot 3**
Bus Width	x16		x16
Form Factor	FHHL		FHHL

PCIe adapter type	Slot Priority

Core Options

-PCIe x16	1	Not supported	2
-PCIe x8	1		2
-PCIe x4	1		2

Notes: For controller with x32 Lanes at Slot 3, will be consuming the location both Slot 2 & 3 (post-launch feature)

Configuration 3: Primary Riser (default in chassis) & Secondary HH/LP Riser is installed, 2 CPUs			
Riser	**(Primary riser as default)**		**Secondary (P48903-B21)**
Slot Number	**Slot 1**	**Slot 2**	**Slot 3**
Bus Width	x16	x16	x16
Form Factor	FHHL	HHHL (LP)	HHHL (LP)
PCIe adapter	**Slot Priority**		
-PCIe x16	1	3	2
-PCIe x8	1	3	2
-PCIe x4	1	3	2

Notes:

- If there is only one PCIe controller adapter (x8, x16, x32 lanes card), it will be defaulting at PCIe Slot 1.
- If there are two PCIe controllers (x8, x16, x32 lanes card), they will be defaulting at PCIe Slot 1 & 2.
- If both 4p Base T & one PCIe Controller are selected, the 4-port BASE-T will be installed at Slot1, and P-Controller will be installed at Slot2. And rear NS204i-u enablement kit cannot be selected.

PCIe Slot Priority from Card functions	
Priority	**Description & Rules**
1	Specific adapter dimension or formfactor in single-socket configuration
2	Rear NS204i-u v2 Boot Device
3	High cooling level (above level 5) NIC Adapter
4	Specific adapter dimension or formfactor in two-socket configuration
5	HHHL (Low -profile) Internal PCIe Storage Controllers
6	Single-wide Low-profile GPGPU Adapters

Notes: For Cooling Level Networking adapter, please refer to later section of “Cooling Level/ Tier” and “Thermal Tier for PCIe Networking adapter with AOC”.

Core Options

PCIe Adapters Slotting Rules	
Priority	**Description & Rules**
1	Any adapter in below dimension or form factor to be at Slot 1 only, and restricted from Low-profile Slot2, if single socket - FHHL or FH 9.5"L NIC/Controller - 4-port Base-T NIC adapter
2	Rear NS204i-u v2 Boot Device to be at Slot 2 only (Low Profile)
3	Higher Cooling level NIC adapter (above cooling level 5) - Slot3 > then Slot 2 > then Slot 1, if Air cooling/DLC - Slot1 > then Slot 2 > then Slot 3, if Closed-loop Liquid Cooling
4	Any adapter in below dimension or formfactor to be at Slot 1 or 3 only, and restricted from Low-profile Slot2, if two sockets - FHHL or FH 9.5"L NIC/Controller - 4-port Base-T NIC adapter
5	HHHL (Low-profile) Internal PCIe Storage Controllers
6	Single-wide GPGPU card should be slotted in PCIe Slot1, or then Slot2 (if Slot1 is occupied) or then Slot3 (if both Slots 1 & 2 are occupied).

Notes: For more details regarding the definition of higher cooling level Networking Adapter, please refer to later section of "Cooling Level/ Tier" and "Thermal Tier for PCIe Networking adapter with AOC".

Installation Rules	
Priority	**Description & Rules**
1	x16 electrical bandwidth card to x16 electric slot – All Slots in DL360 Gen12 provides x16 electric slots
2	x8 electrical card to x16 electric slot

Notes:

– All PCIe slots are featured with Wake-on-LAN (WoL)

– Prioritization list for Primary controller selection in HPE ProLiant Compute DL360 Gen12 as follows:

- x32 lanes Storage controller (post-launch)
- HPE MR416i-o Gen11 12G Controller Kit
- HPE MR416i-p Gen11 12G Controller Kit
- HPE MR408i-o Gen11 SPDM Storage Controller
- HPE MR216i-o Gen11 12G Controller Kit
- HPE MR216i-p Gen11 12G Controller Kit
- Intel® VROC
- Direct Attach

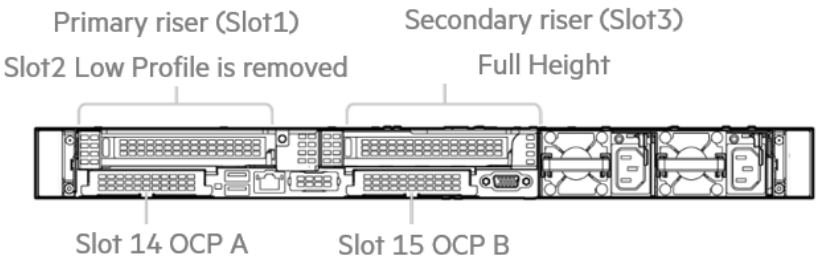
Rear OCP Slots

OCP3.0 Enablement/ Upgrade Kit

HPE ProLiant Compute DL3XX/ML350 Gen12 CPU1 to Rear OCP SlotA x16 Cable Kit	P72201-B21
HPE ProLiant Compute DL3XX/ML350 Gen12 CPU1 to Rear OCP SlotB x8 Cable Kit	P72203-B21
HPE ProLiant Compute DL3XX/ML350 Gen12 CPU2 to Rear OCP SlotB x8 Cable Kit	P72205-B21
HPE ProLiant Compute DL3XX/ML350 Gen12 CPU2 to Rear OCP SlotB x16 Cable Kit	P72207-B21

Notes:

- Configuration tool is defaulting x8 OCP cable.
- For the three x16 OCP3 adapters, P22767-B21 (Gen4), P26269-B21 (Gen4) & P73114-B21 (Gen5), the connection to either "x8 PCIe5 lanes onboard" or to a "x8 PCIe5 OCP3 cable" would be sufficient. As a x8 PCIe connection provides max throughput at 126 Gb/s (Gen4) or 252 Gb/s(Gen5) for Gen4 or Gen5. A x16 OCP3 Gen5 cable connection is also allowed for the physical PCIe x16 design of the adapters.
- Both OCP Slots provide Wake-on-Lane feature.
- There is x8 lanes PCIe5.0 embedded from system board for Slot 14 OCPA.
- In drive quantity 20=E3.S configuration in 10SFF/20EDSFF Hybrid NC CTO Server, Slot 14 OCPA cannot connect to any optional OCP enablement kit (P72201-B21). Only x8 lanes are available as embedded from system board. No limitation to Slot 15 OCPB with optional OCP x16 enablement kit.



Rear OCP3.0 Slot Enablement Kits				
	Enablement Cable Kits		PCIe5.0 lanes availability	
PCIe5.0	Orderable SKU	Description	Slot 14 OCPA	Slot 15 OCPB
CPU1	x8 PCIe5.0 embedded from MLB CPU1		(embedded x8)	Not supported
	P72203-B21	DL3XX/ML350 G12 CPU1 to Rear OCP SlotB x8 Cable Kit	(embedded x8)	x8
	P72201-B21[1]	DL3XX/ML350 G12 CPU1 to Rear OCP SlotA x16 Cable Kit	x16[1]	Not supported
CPU1 & CPU2	P72207-B21	DL3XX/ML350 G12 CPU2 to Rear OCP SlotB x16 Cable Kit	(embedded x8)	x16
	P72201-B21[1] &P72207-B21	DL3XX/ML350 G12 CPU1 to Rear OCP SlotA x16 Cable Kit & DL3XX/ML350 G12 CPU2 to Rear OCP SlotB x16 Cable Kit	x16[1]	x16
	P72205-B21	DL3XX/ML350 G12 CPU2 to Rear OCP SlotB x8 Cable Kit	(embedded x8)	x8
	P72203-B21	DL3XX/ML350 G12 CPU1 to Rear OCP SlotB x8 Cable Kit	(embedded x8)	x8
	P72201-B21[1] &P72205-B21	DL3XX/ML350 G12 CPU1 to Rear OCP SlotA x16 Cable Kit & DL3XX/ML350 G12 CPU2 to Rear OCPB x8 Cable Kit	x16[1]	x8

Notes:

[1]For backplane qty as 4 or 5 in Hybrid 10SFF/20EDSFF CTO Server: (Factory installation sequence Box 1 > Box 2> Box 4 > Box 5 > Box 3)

Core Options

DL360 G12 Hybrid CTO Server	Single Socket			Dual Socket
	Box 5 w/ 2SFF DA	Shift the Box 5 2SFF DA to Box 3		Box 5 w/ 4EDSFF DA
Rear OCP A	Default (x8 lanes)	Up to x16 lanes	Default (x8 lanes)	Default (x8 lanes)
Rear OCP B	Not support	Not support	x8 lanes	Up to x16 lanes

Rear OCP3.0 Slot Priority								
4 LFF, 8+2 SFF & 10SFF/20EDSFF CTO Server								
Rear wall		PCIe 5.0		Selected OCP cards (Qty & type)				
				2	1	2	1	2
OCP Slots #	Share NIC /Wake on LAN	Bus Width	Connector Width	1xOROC[1] + 1x NIC[2]	1xNIC	2xNICs	1xOROC	2x OROCs
14 OCPA	Available	x8 (default); x16 (optional)	x16	OROC	NIC (Primary)	NIC	OROC (Primary)	OROC[4]
15 OCPB	Available	x8 (optional); x16 (optional)	x16	NIC	Empty Slot	NIC	Empty Slot	OROC[4]

Notes:

- [1] OCP form factor internal controller.
- [2] OCP Networking card.
- [3] If only 1 OROC card is selected in P72175-B21 (8SFF NC CTO Server), by default connected from 8 SFF backplane to OCPA.
- [4] If 2 OROC cards are selected in P72175-B21 (8SFF NC CTO Server), by default the 8 SFF controller cable is connected to OCPA (the comparably higher-end OROC card to be selected by default) and the 2 SFF backplane is connected to OCPB with another OROC card selected (comparably less high-end one) with 2FF controller cable.
- In all three CTO Servers, each OCP slot is in design with up to x16 electrical PCIe5.0 lanes through OCP enablement kits.
- The only exception will be when in quantity 20 E3.S configuration, Slot 14 OCPA will be supported only with x8 lanes from MLB. No changes from Slot 15 OCPB with x16 lanes.

Rear OCP Slotting		
Configuration 1: No OCP enablement kit or only P72201-B21 is selected		
Slot Number	Slot 14 OCP A	Slot 15 OCP B
OCP Enablement	Default (onboard) or add P72201-B21	Not supported
Bus Width	x8 (default) or x16	
OCP adapter	Slot Priority	
-Controller	1	Not supported
-Networking	1	

Core Options

Configuration 2: Only P72203-B21 is selected		
Slot Number	**Slot 14 OCP A**	**Slot 15 OCP BB**
OCP Enablement	HPE ProLiant Compute DL3XX/ML350 Gen12 CPU1 to Rear OCP SlotB x8 Cable Kit	P72203-B21
Bus Width	x8 (default)	x8
OCP adapter	**Slot Priority**	
-Controller	1	2
-Networking	2	1

Configuration 3: Only P72205-B21 is selected, or both P72201-B21 & P72205-B21 are selected		
Slot Number	**Slot 14 OCP A**	**Slot 15 OCP B**
OCP Enablement	HPE ProLiant Compute DL3XX/ML350 Gen12 CPU2 to Rear OCP SlotB x8 Cable Kit	P72205-B21
Bus Width	x8 (default) or x16	x8
OCP adapter	**Slot Priority**	
-Controller	1	2
-Networking	2	1

Configuration 4: Only P72207-B21 is selected, or both P72201-B21 & P72207-B21 are selected		
Slot Number	**Slot 14 OCP A**	**Slot 15 OCP B**
OCP Enablement	HPE ProLiant Compute DL3XX/ML350 Gen12 CPU2 to Rear OCP SlotB x16 Cable Kit	P72207-B21
Bus Width	x8 (default) or x16	x16
OCP adapter	**Slot Priority**	
-Controller	1	2
-Networking	2	1

Rear OCP Cards Slotting Rules	
Priority	**Description & Rules**
1	– OCP Networking cards in CL LC: High Speed NIC (Cooling Level 4 or above) is in higher priority to be installed in OCP A. – OCP Networking cards in air cooling: High speed NIC (Cooling Level 4 or above) is in higher priority to be installed in OCP B. – If there are quantity2 OCP NICs above cooling level4, the higher cooling level card will be in OCPA (CL LC) or OCPB (air cooling).
2	OCP Controller(s) will be first priority in Slot 14 OCP A, and then Slot 15 OCP B (if Slot A is occupied). Only the 10SFF/20EDSFF Hybrid CTO Server allows up to Qty 2 controllers.

Notes: For more details regarding the definition of higher cooling level Networking OCP Adapter, please refer to the later section of “Cooling Level/ Tier” and “Thermal Tier for OCP Networking adapter with AOC”.

Front OCP Networking Slots

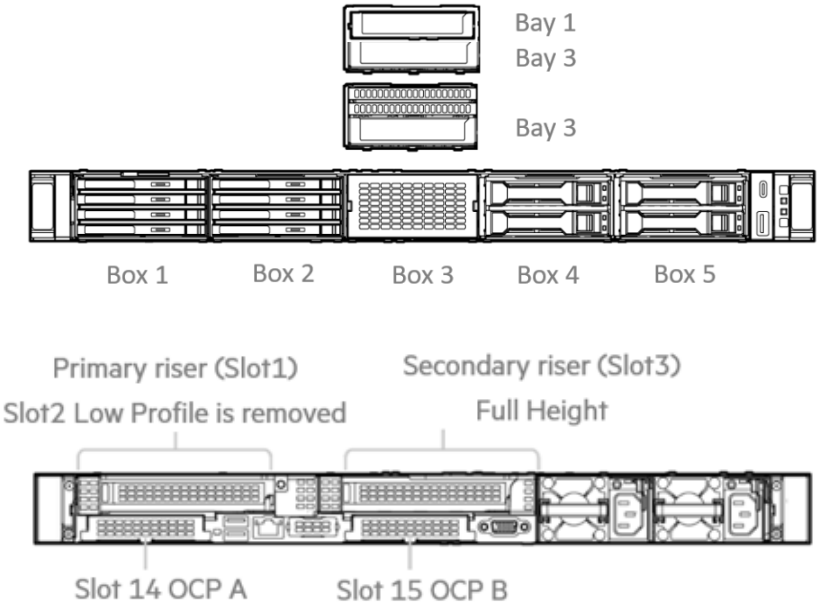
10SFF/20EDSFF Hybrid CTO Server only

Front OCP3.0 Enablement/ Upgrade Kit

HPE ProLiant Compute DL360 Gen12 Front Primary OCP NIC Box3 Bay3 Enablement Kit	P72596-B21
HPE ProLiant Compute DL360 Gen12 Front Secondary OCP NIC Box3 Bay1 Enablement Kit	P72597-B21

Phy board and Interposer card are included in the Enablement Kit

Please refer to previous Smart Chassis section for details of upfront configuration selection.



Front & Rear OCP Slot Priority

Core Options

10SFF/20EDSFF Hybrid CTO Server						
4 physical slots Only 2 functional slots				**Scenarios P72596-B21 is selected**		**Scenario P72596/P72597-B21 are selected**
Max qty 2 OCP Slots		**PCIe5.0**		**2**	**1**	**2**
Slot#	Share NIC/ Wake on LAN	Bus Width	Connector Width	Qty 1x OROC, Qty 1x NIC	Qty 1x NIC	Qty 2x NICs
Front Cage						
Box3/Bay3	ShareNIC/WOL	x16 enablement kit	x16	NIC	NIC	NIC1 (higher cooling level NIC)
Box3/Bay1	WoL only	x16 enablement kit	x16	N/A	Empty	NIC2
Rear Wall						
14 OCPA	ShareNIC/WoL	x8 (default) x16*(optional)	x16	(Interposer1)	(Interposer1)	(Interposer1)
15 OCPB	ShareNIC/WoL	x8*, or x16 * (both optional)	x16	OROC	Empty	(Interposer2)
Notes		* If additional OCP cable(s) is (are) selected		Qty 1x OCP NIC must be selected		Qty 2x OCP NIC must be selected

Front & rear OCP Cards Slotting Rules – 10SFF/20EDSFF Hybrid CTO Server (if quantity 1 or 2 front OCP NIC enablement kit is/are selected)	
Priority	**Description & Rules**
1	– OCP NIC with cooling level above 4 are high cooling level NICs. – OCP Networking cards in CL LC: High Speed NIC (with Cooling Level 4 or above) is in higher priority to be installed in front OCP NIC slot(s) Bay3, and then Bay 1 or OCPB. – OCP Networking cards in air cooling: High speed NIC is in higher priority to be installed in front OCP NIC slot(s) Bay3, and then Bay 1 or OCP B.
2	OCP Controller(s) will be first priority in Slot 14 OCP A, and then Slot 15 OCP B (if Slot A is occupied). Only the 10SFF/20EDSFF Hybrid CTO Server allows up to Qty 2 controllers.

Notes: For more details regarding the definition of higher cooling level Networking OCP Adapter, please refer to the later section of “Cooling Level/ Tier” and “Thermal Tier for OCP Networking adapter with AOC”.

Networking

The thermal conditions vary as a combination of types of Networking PCIe OR OCP adapter in different DL360 Gen12 CTO Servers. In general:

- Ambient limitation will vary in the combination of Networking Adapter OR OCP bandwidth, DIMM capacity and cable type, incl. CAT, Direct Attach Copper (DAC) cable and Active Optical Cable (AOC).
- Network Cable Tracking SKU type needs to be pre-selected in Smart Chassis session to enable an extended thermal capability in the Configurator.
- Standard Fan Kit cannot be selected when above 100GbE.
- 256 GB DIMM is not allowed when above 100GbE.

- A detailed ambient temperature recommendation upon high-speed networking adapters is described in a later session.

Default settings in all NC CTO Server

"BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter" is defaulted in the configurator at rear Slot 14 OCPA if no H/W controller is selected.

- Or default at Slot15 OCPB if a Hardware controller is pre-selected, in Smart Chassis.
- Or a stand-up PCIe NIC adapter to be selected if there are two H/W controllers are pre-selected at both OCPA & OCPB, in Smart Chassis.
- Customers are allowed to remove the NIC card default setting and re-select other cards (OCP3.0 or stand-up cards) from Networking & InfiniBand.
- 4-port BASE-T NIC is not allowed to be in PCIe Slot2, due to left port interference.

Notes: Exception- Only x8 PCIe5.0 lanes in the Slot14 OCPB in quantity 20 E3.S drives configuration.

Rear I/O Slots in CTO Servers with high-performance Networking Adapter

Given the System Inlet Temperature was pre-selected in the upfront Smart Chassis section in One Advance Config., background automation can bring up the compatible PCIe/OCP Networking cards for the specific CTO Server in Share option menu section. The CPU, cooling solution and front storage quantity adjustment may impact the compatibility result for SKU & quantity high-performance/bandwidth networking cards.

Please refer to the allowed configuration and thermal tier (cooling level) of each qualified Networking adapter/cards as the selection guidance.

Cooling Level/ Tier

- PCIe and OCP cards are the industry standard for high bandwidth communication between the computing motherboard and other essential hardware, for example Networking, GPU, DPU...etc.
- Operational excessive heat generated by the PCIe or OCP device in the server will lead to a down speed data transfer or increased error rates.
- Cooling Level/ Tier number is an index from a combined measurement of the theoretical thermal profile and actual thermal performance conducted by HPE ProLiant Compute.
- For PCIe or OCP card with a lower Cooling Level/ Tier number, the less criticality from thermal/system configuration. higher quantity of front storage backplanes/cages, or higher power CPU/GPU can be configured in the server system, and vice versa.
- The adapter formfactor and the attached cable type (active or passive, as described in earlier section "Datacenter Operational Tracking SKU") will impact the thermal profile and cooling level.

Thermal Requirement for Networking adapters with DAC/ACC/CAT (passive) cable connection

With the tracking SKU being selected in Smart Chassis section

- P79633-B21- HPE ProLiant Compute DAC ACC Networking Cable Operating Configuration Tracking
- In DLC configuration, all CPUs, NIC and InfiniBand cards for DL360 Gen12 CTO servers can be operated up to 30C-35C system inlet temperature without limitation.
- FAN kit selection (Standard Fan Kit or Perf. Fan Kit) will be decided if any GPU, NS204, SAS4 SSD, high-performance DIMM or NIC. Please refer to the separate section "FAN Support matrix". Thermal support matrix for CPU TDP vs Cooling solutions

Core Options

CPU equals or above 270W TDP with Performance HS

2x CPU w/DAC or ACC	Cooling Solution	Allowed System Inlet Temperature (Without backplane qty & downstream cards limitation)
<=270W	Air Cooling or CL LC	30 C
271 W – 350W	CL LC	25 C
0W-350W	DLC*	30-35 C

Notes: * With DLC installation, AOC or Transceiver is allowed for server operation at 30-35C system inlet temperature.

When CPU equals or above 270W TDP with Performance HS

2x CPU w/DAC or ACC, Perf. HS & Fan	10SFF/20EDSFF CTOServerP72176-B21	8SFF CTO Server P72175-B21	4LFF CTO Server P72174-B21
	System Ambient Temperature vs Max backplane Quantity		
Qty 2 x 350W	(30 C, 27 C, Not Support) 25 C, Max 3 23 C, Max 4 20 C, Max 5 + 2 C if air baffle included	(30 C, 27 C, Not Support) 25 C/23 C, Max 1 20 C, Max 2 + 2 C if air baffle included	(30 C, 27 C, Not Support) 25 C, Max 1 + 2 C if air baffle included
Qty 2 x 330W	(30 C, 27 C, Not Support) 27 C, Max 2 25 C, Max 5 + 2 C if air baffle included	(30 C, 27 C, Not Support) 27 C, Max 1 25 C, Max 2 + 2 C if air baffle included	(30 C, 27 C, Not Support) 27 C, Max 1 + 3 C if air baffle included
Qty 2 x 300W	(30 C, 27 C, Not Support) 27 C, Max 3 25 C, Max 5 + 2 C if air baffle included	(30 C, 27 C, Not Support) 27 C, Max 1 25 C, Max 2 + 2 C if air baffle included	(30 C, 27 C, Not Support) 27 C, Max 1 + 3 C if air baffle included

Thermal Tier for Networking adapter with AOC or Transceiver (active) connection

System level heat distribution versus slotting priority

- DLC Installation: Supports 30-35 C
- Air Cooling or CL LC installation:
  - Below section presents the valid configuration overview while different AOC/Transceiver (active cable) connecting to NIC card at downstream /rear wall.
  - With consideration of midrange or high-performance/ Cooling Level NIC at downstream may further impact the configuration in terms of Backplane qty. Please refer to the later section of “Thermal Tier for Networking adapter with AOC or Transceiver (active) connection”.

Different cooling solutions lead to different heat distribution (heat maps) in the server system after the pre-heat from CPU(s). Therefore, the downstream heat distribution varies from Slot locations & the CPU Heatsink/Fan solutions.

Core Options

Cooling Solution	Pre-heat location	Less pre-heated downstream slots	Factory slotting priority
Air Cooling	CPU1 & CPU2	PCIe 3, OCPB	Reserve for higher cooling level NIC
CL LC	In between CPU1 & CPU2 (no cold plate, with tubes)	PCIe 1, OCPA	
DLC	AOC in DLC Configuration can be supported at ASHRAE class A2: 10–35°C (50–95°F) ambient temperature		

Cooling level for PCIe NIC with AOC/ Transceiver

Type	SKU#	Description	Cooling Level
InfiniBand	P79115-H21	HPE InfiniBand XDR400/Ethernet 400GbE 2-port QSFP112 PCIe6 x16 HHHL CX8 Crypto Adapter	8
	P79114-H21	HPE InfiniBand XDR/Ethernet 2x400GbE 1-port OSFP PCIe6 x16 HHHL CX8 Crypto Adapter	7
	P45641-H24	HPE InfiniBand NDR/Ethernet 400Gb 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Generic Adapter	7
	P45642-H23	HPE InfiniBand NDR200/Ethernet 200Gb 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Adapter	6
	P65333-H21	HPE InfiniBand NDR200/Ethernet 200GbE 2-port QSFP112 PCIe5 x16 MCX755106AC-HEAT Adapter	7
100G & above	P73111-B21	Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 Adapter for HPE	7
	P25960-B21	Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE	7
	P21112-B21	Intel® E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE	7
	R8M41A	NVIDIA Ethernet 100Gb 2-port NVMe-oF Offload Adapter for HPE	7
	R4K46A	HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC	7
10/25G	P26264-B21	Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	6
	P26262-B21	Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	5
	S2A69A	NVIDIA Ethernet 10/25Gb 2-port SFP28 NVMe-oF Crypto Adapter for HPE	5
	P08443-B21	Intel® E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	5
	P08458-B21	Intel® E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	7
	P87940-B21	AMD Solarflare X4522-PLUS 10/25GbE 2-port SFP56 Adapter for HPE	6
	P21109-B21	Xilinx X2522-25G-PLUS Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	6

Core Options

	P42044-B21	Mellanox MCX631102AS-ADAT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	5
10G	P26253-B21	Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T Adapter for HPE	4
	P26259-B21	Broadcom BCM57412 Ethernet 10Gb 2-port SFP+ Adapter for HPE	3
1G	P51178-B21	Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T Adapter for HPE	1

Notes: In some CTO servers, the PCIe adapters with cooling level at or above 5, would generate higher thermal cooling requirements. Variety from different CTO servers and PCIe slots, see below section.

Valid CTO configuration for PCIe NIC with AOC (or Transceiver)

- Below are compatible configurations for the AOC (or Transceiver) connection to high-performance PCIe NIC adapters, with the SKU, P79630-B21- HPE ProLiant Compute AOC Networking Cable Operating Configuration Tracking, being selected in Smart Chassis section.
- The backplane and cage design are different from the three CTO servers and deliver different airflows. Below PCIe Cooling Level matrix presents the valid configuration of maximum System Inlet Temperature versus maximum quantity of storage backplanes, among different CTO servers. In general, the 10SFF/20EDSFF Hybrid NC CTO Server delivers superior thermal performance with high-performance Networking cards (higher cooling level) with the modular/flexible backplanes design. Reducing the PCIe NIC adapter quantity would also benefit the cooling performance. Per factory slotting priority, the higher cooling level NIC adapter will be installed at the less pre-heated downstream slots. As described in the earlier session, "Heat distribution versus slotting priority". For transceiver, cables and NIC compatibility please refer to the HPE Compute Transceiver and Cable Hardware Matrix PDF.

CTO Server	**E3.S in Hybrid NC CTO Server / P72176-B21**					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
PCIe Slot#	**1**	**2**	**3**	**1**	**2**	**3**
Cooling Level	**System inlet temperature & max 4EDSFF backplane quantity** (quantity one 4EDSFF stacking backplane supports up to quantity four E3.S drives)					
1	30C, Max 5	30C, Max 5	30C, Max 5	30C, Max 5 (LC/AC)	30C, Max 5 (LC/AC)	30C, Max 5 (LC/AC)
2						
3				27C, Max 2 25C, Max 5 (LC/AC)	30C, Max 5 (AC) 27C, Max 2 (LC) 25C, Max 5 (LC)	30C, Max 5 (AC) 27C, Max 2 (LC) 25C, Max 5 (LC)
4	27C, Max 2 25C, Max 5	27C, Max 2 25C, Max 5	27C, Max 2 25C, Max 5			
5					27C, Max 5 (AC) 23C, Max 5 (LC)	30C, Max 5 (AC) 23C, Max 5 (LC)
6	25C, Max 3 20C, Max 5	25C, Max 3 20C, Max 5	30C, Max 3 25C, Max 5		25C, Max 2 (AC) 20C, Max 4 (AC) 20C, Max 2 (LC)	30C, Max 2 (AC) 25C, Max 4 (AC) 20C, Max 2 (LC)
7	25C, Max 3 20C, Max 4 18C, Max 5	25C, Max 3 20C, Max 4 18C, Max 5	27C, Max 3 25C, Max 5	23C, Max 2 (LC/AC.)	23C, Max 1 (AC) 18C, Max 3 (AC) 18C, Max 1 (LC)	27C, Max 1 (AC) 23C ,Max 3 (AC) 18C, Max 1 (LC)

Core Options

8	23C, Max 1 20C, Max 2 18C, Max 3 Not supported 15C, Max 4 10C, Max 5	23C, Max 1 20C, Max 2 18C, Max 3 Not supported 15C, Max 4 10C, Max 5	27C, Max 1 25C, Max 2 23C, Max 3 20C, Max 4 Not supported 15C, Max 5	20C, Max 1 (LC/AC) 18C, Max 2 (AC) Not supported 15C, Max 3 (LC/AC) 10C, Max 4 (AC)	20C, Max 1 (AC) 18C, Max 2 (AC) 15C, Max 3 (AC) Not supported 15C, Max 3 (AC) 15C, Max 1 (LC) 10C, Max 4 (AC) 10C, Max 3 (LC)	25C, Max 1 (AC) 23C, Max 2 (AC) 20C, Max 3 (AC) 15C, Max 4 (AC) Not supported 15C, Max 4 (AC) 15C, Max 3 (LC) 10C, Max 3 (LC)

CTO Server	**SFF in Hybrid NC CTO Server / P72176-B21**					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
PCIe Slot#	**1**	**2**	**3**	**1**	**2**	**3**
Cooling Level	**System inlet temperature & max 2SFF backplane quantity** (quantity one 2SFF stacking backplane, supports up to quantity two SFF drive)					
1	30C, max 5	30C, max 5	30C, max 5	30C, max 5	30C, max 5 (LC/AC)	30C, max 5 (LC/AC)
2						
3						
4						
5				27C, max 2 25C, max 5 (LC/AC)	30C, max 5(AC) 27C, max 2 (AC) 27C, max 2 (LC) 25C, max 5 (LC)	30C, max 5 (AC) 27C, max 2 (LC) 25C, max 5 (LC)
6	27C, max 2 25C, max 5	27C, max 2 25C, max 5	30C, max 3 25C, max 5		27C, max 2 (AC) 20C, max 4 (AC) 23C, max 2 (LC)	30C, max 2 (AC) 25C, max 4 (AC) 23C, max 2 (LC)
7	27C, max 2 23C, max 5	27C, max 2 23C, max 5	30C, max 2 25C, max 5	23C, max 2 20C, max 5 (LC/AC)	25C, max 2 (AC) 20C, max 4 (AC) 20C, max 2 (LC)	30C, max 2 (AC) 25C, max 4 (AC) 20C, max 2 (LC)
8	23C, max 1 20C, max 2 18C, max 3 Not supported 15C, max 4 10C, max 5	23C, max 1 20C, max 2 18C, max 3 Not supported 15C, max 4 10C, max 5	27C, max 1 25C, max 2 23C, max 3 20C, max 4 Not supported 15C, max 5	20C, max 1 (LC/AC) 18C, max 2 (AC) Not supported 15C, max 3 (LC/AC) 10C, max 4 (AC)	20C, max 1 (AC) 18C, max 2 (AC) Not supported 15C, max 3 (AC) 10C, max 4 (AC) 15C, max 1 (LC) 10C, max 3 (LC)	25C, max 1 (AC) 23C, max 2 (AC) 20C, max 3 (AC) Not supported 15C, max 4 (AC) 15C, max 1 (LC) 10C, max 3 (LC)

Core Options

CTO Server	Mixing E3.S and SFF in Hybrid NC CTO Server / P72176-B21					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
PCIe Slot#	**1**	**2**	**3**	**1**	**2**	**3**
Cooling Level	**System inlet temperature & max backplane quantity** (4EDSFF stacking backplane + 2SFF stacking backplane)					
1	30C, max 5	30C, max 5	30C, max 5	30C, max 5 (LC/AC)	30C, max 5 (LC/AC)	30C, max 5 (LC/AC)
2						
3				27C, max 2 25C, max 5 (LC/AC)	30C, max 5 (AC) 27C, max 2 (LC) 25C, max 5 (LC)	30C, max 5 (AC) 27C, max 2 (LC) 25C, max 5 (LC)
4	30C, max 3* 27C, max 2 25C, max 5	30C, max 3* 27C, max 2 25C, max 5	30C, max 3* 27C, max 2 25C, max 5			
5					27C, max 5 (AC) 23C, max 5 (LC)	30C, max 5 (AC) 23C, max 5 (LC)
6	25C, max 3 20C, max 5	25C, max 3 20C, max 5	30C, max 3 25C, max 5		25C, max 2 (AC) 20C, max 4 (AC) 20C, max 2 (LC)	30C, max 2 (AC) 25C, max 4 (AC) 20C, max 2 (LC)
7	25C, max 3 20C, max 4 18C, max 5	25C, max 3 20C, max 4 18C, max 5	30C, max 2 25C, max 5	23C, max 2 (LC/AC)	23C, max 1 (AC) 18C, max 3 (AC) 18C, max 1 (LC)	27C, max 1 (AC) 23C, max 3 (AC) 18C, max 1 (LC)
8	23C, max 1 20C, max 2 18C, max 3 Not supported 15C, max 4 10C, max 5	23C, max 1 20C, max 2 18C, max 3 Not supported 15C, max 4 10C, max 5	27C, max 1 25C, max 2 23C, max 3 20C, max 4 Not supported 15C, max 5	20C, max 1 (LC/AC) 18C, max 2 (AC) Not supported 15C, max 3 (LC/AC) 10C, max 4 (AC)	20C, max 1 (AC) 18C, max 2 (AC) Not supported 15C, max 3 (AC) 10C, max 4 (AC) 15C, max 1 (LC) 10C, max 3 (LC)	25C, max 1 (AC) 23C, max 2 (AC) 20C, max 3 (AC) Not supported 15C, max 4 (AC) 15C, max 1 (LC) 10C, max 3 (LC)

Notes:* The max quantity 3 can be installed with the combination of "Quantity 1x 4EDSFF BP & quantity 2x 2SFF backplane".

Core Options

CTO Server	(8+2) SFF NC CTO Server / P72175-B21					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
PCIe Slot#	**1**	**2**	**3**	**1**	**2**	**3**
Cooling Level	**System inlet temperature & max backplane quantity** (Primary 8SFF L-shape backplane, and secondary 2SFF side-by-side backplane) *					
1	30C, max 2	30C, max 2	30C, max 2	30C, max 2 (LC/AC)	30C, max 2 (LC/AC)	30C, max 2 (LC/AC)
2						
3						
4						
5				27C, max 1 25C, max 2 (LC/AC)	30C, max 2 (AC) 27C, max 1 (LC) 25C, max 2 (LC)	30C, max 2 (AC) 27C, max 1 (LC) 25C, max 2 (LC)
6	27C, max 1 25C, max 2	27C, max 1 25C, max 2	27C, max 2		25C, max 1 (AC) 20C, max 1 (LC)	30C, max 1 (AC) 20C, max 1 (LC)
7	25C, max 1 23C, max 2	25C, max 1 23C, max 2	27C, max 1 25C, max 2		Not supported 15C, max 1 (AC)	20C, max 1 (AC)
8	Not supported 15C, max 1 10C, max 2	Not supported 15C, max 1 10C, max 2	20C, max 1 Not supported 15C, max 2	Not supported 10C, max 1 (AC)	Not supported 10C, max 1 (AC)	Not supported 15C, max 1 (AC)

Notes:

- * The 2SFF side-by-side backplane cannot be installed without 8SFF L-shape backplane.
- Optical drive installation through Universal Media Bay does not require the installation of 8SFF backplane. No special restrictions.
- If 8SFF backplane is selected, the installation of Optical drive through Universal Bay requires the same thermal configuration as the installation of 2FF side-by-side backplane.
- Only 8SFF L-shape backplane can be selected in the scenarios allowing “max 1 backplane” to get better airflow without 2SFF side-by-side backplane installed.

CTO Server	4 LFF NC CTO Server / P72174-B21					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
PCIe Slot#	**1**	**2**	**3**	**1**	**2**	**3**
Cooling Level	**System inlet temperature & max 4LFF backplane quantity**					
1	30C, max 1	30C, max 1	30C, max 1	30C, max 1 (LC/AC)	30C, max 1 (LC/AC)	30C, max 1 (LC/AC)
2						
3						
4						

Core Options

5				25C, max 1 (LC/AC)	30C, max 1 (AC) 25C, max 1 (LC)	30C, max 1 (AC) 25C, max 1 (LC)
6	25C, max 1	25C, max 1	27C, max 1		25C, max 1 (AC) 20C, max 1 (LC)	30C, max 1 (AC) 20C, max 1 (LC)
7	20C, max 1	20C, max 1	25C, max 1		20C, max 1 (AC) Not supported 15C, max 1 (AC)	20C, max 1 (AC)
8	Not supported 13C, max 1	Not supported 13C, max 1	18C, max 1	Not supported	Not supported	Not supported

Cooling level for OCP NIC with AOC/ Transceiver

Type	SKU#	Description	Cooling Level
100G	P73114-B21	Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 OCP3 Adapter for HPE	9
	P22767-B21	Intel® E810-CQDA2 Ethernet 100Gb 2-port QSFP28 OCP3 Adapter for HPE	9
10/25G	P26269-B21	Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE	9
	P10115-B21	Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	6
	P41614-B21	Intel® E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE	10
	P10106-B21	Intel® E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	7
	P42041-B21	Mellanox MCX631432AS-ADAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	7
10G	P10097-B21	Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T OCP3 Adapter for HPE	5
	P26256-B21	Broadcom BCM57412 Ethernet 10Gb 2-port SFP+ OCP3 Adapter for HPE	2
1G	P79833-B21	Intel® E610-IT4 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE	3
1G	P51181-B21	Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE	3

Notes:

– In some CTO servers, the OCP adapters with cooling level at or above 3, would generate higher thermal cooling requirements, Vary from different CTO servers and OCP slots.

Valid CTO configuration for OCP NIC with AOC (or Transceiver)

Below are compatible configurations for the AOC (or Transceiver) connection to high-performance NIC adapters., with the SKU, P79630-B21 HPE ProLiant Compute AOC Networking Cable Operating Configuration Tracking, being selected in Smart Chassis section.

The backplane and cage design are different from the three CTO servers and deliver different airflows. Below OCP NIC Cooling Level matrix presents the valid configuration of maximum System Inlet Temperature versus maximum quantity of storage backplanes among different CTO servers. In general, the 10SFF/20EDSFF Hybrid NC CTO Server delivers superior thermal performance in high-performance Networking cards (higher cooling level) with the modular/flexible backplanes. The front OCP NIC enablement kits are available in the Hybrid CTO Server. Reducing the OCP NIC quantity at rear wall would reduce the pre-heat at downstream. Per factory slotting priority, the higher cooling level NIC OCP adapter will be installed at the less pre-heated downstream slots. As described in the earlier session, "Heat distribution versus slotting priority".

For transceiver, cables and NIC compatibility please refer to the HPE Compute Transceiver and Cable Hardware Matrix PDF.

Core Options

CTO Server	E3.S in Hybrid NC CTO Server / P72176-B21					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
OCP Slot#	**Rear Slot14 OCPA**	**Rear Slot15 OCPB**	**Front OCP Bay 1 & 3**	**Rear Slot14 OCPA**	**Rear Slot15 OCPB**	**Front OCP Bay 1 & 3**
Cooling Level	**System inlet temperature & max 4EDSFF backplane quantity** (quantity one 4EDSFF stacking backplane supports up to quantity four E3.S drives)					
1	30C, max 5	30C, max 5	30C, max 4	30C, max 5 (LC/AC)	30C, max 5 (LC/AC)	30C, max 4 (LC/AC)
2				27C, max 2 25C, max 5 (LC/AC)	30C, max 5 (AC) 27C, max 2 (LC) 25C, max 5 (LC)	
3						
4	27C, max 2 25C, max 5				30C, max 4 (AC) 27C, max 1 (LC) 25C, max 5 (AC) 25C, max 4 (LC)	
5		27C, max 2 25C, max 5		27C, max 1 25C, max 4 (LC/AC)	30C, max 3 (AC) 25C, max 4 (AC) 25C, max 3 (LC)	
6	27C, max 1 25C, max 4			25C, max 3 (LC/AC)	30C, max 3 (AC) 25C, max 4 (AC) 25C, max 3 (LC)	
7	25C, max 3	25C, max 3		25C, max 2 (LC/AC)	30C, max 2 (AC) 25C, max 3 (AC) 25C, max 2 (LC)	
8	23C, max 2 18C, max 4	25C, max 2 18C, max 5		23C, max 2 (LC/AC)	27C, max 2 (AC) 23C, max 2 (LC)	
9	23C, max 2 18C, max 4	25C, max 2 18C, max 5		20C, max 2 (LC/AC)	25C, max 2 (AC) 20C, max 2 (LC)	
10	20C, max 2 Not supported 15C, max 5	20C, max 3 18C, max 5		18C, max 2 (LC/AC)	23C, max 1 (AC) 18C, max 1 (LC)	

CTO Server	SFF in Hybrid NC CTO Server / P72176-B21					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
OCP Slot#	**Rear Slot14 OCPA**	**Rear Slot15 OCPB**	**Front OCP Bay 1 & 3**	**Rear Slot14 OCPA**	**Rear Slot15 OCPB**	**Front OCP Bay 1 & 3**
Cooling Level	**System inlet temperature & max 2SFF backplane quantity** (quantity one 2SFF stacking backplane supports up to quantity two SFF drives)					
1	30C, max 5	30C, max 5	30C, max 4	30C, max 5 (LC/AC)	30C, max 5 (LC/AC)	30C, max 4 (LC/AC)

Core Options

2				27C, max 2 25C, max 5 (LC/AC)	30C, max 5 (AC) 27C, max 2 (LC) 25C, max 5 (LC)	
3						
4						
5					30C, max 4 (AC) 25C, max 5 (AC) 25C, max 4 (LC)	
6	27C, max 2 25C, max 5			25C, max 3 (LC/AC)	30C, max 3 (AC) 25C, max 4 (AC) 25C, max 3 (LC)	
7		30C, max 2 27C, max 5		25C, max 2 (LC/AC)	30C, max 2 (AC) 25C, max 3 (AC) 25C, max 2 (LC)	
8	25C, max 2 18C, max 4	27C, max 3 20C, max 4		23C, max 2 (LC/AC)	27C, max 2 (AC) 23C, max 2 (LC)	
9	25C, max 2 18C, max 4	27C, max 2 20C, max 4		20C, max 2 (LC/AC)	25C, max 2 (AC) 20C, max 2 (LC)	
10	20C, max 2	20C, max 2		18C, max 1 (LC/AC)	23C, max 1 (AC) 18C, max 1 (LC)	

CTO Server	**Mixing E3.s & SFF in Hybrid NC CTO Server / P72176-B21**					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
OCP Slot#	**Rear Slot14 OCPA**	**Rear Slot15 OCPB**	**Front OCP Bay 1 & 3**	**Rear Slot14 OCPA**	**Rear Slot15 OCPB**	**Front OCP Bay 1 & 3**
Cooling Level	**System inlet temperature & max backplane quantity** (4EDSFF stacking backplane + 2SFF stacking backplane)					
1	30C, max 5	30C, max 5	30C, max 4	30C, max 5 (AC/LC)	30C, max 5 (LC/AC)	30C, max 4 (LC/AC)
2				27C, max2 25C, max 5 (AC/LC)	30C, max 5 (AC) 27C, max 2 (LC) 25C, max 5 (LC)	
3	30C, max 5					
4	30C, max 3* 27C, max 2 25C, max 5				30C, max 4 (AC) 27C, max 1 (LC) 25C, max 5 (AC) 25C, max 4 (LC)	
5		27C, max 2 25C, max 5		27C, max 1 25C, max 4 (LC/AC)	30C, max 3 (AC) 25C, max 4 (AC) 25C, max 3 (LC)	
6	27C, max 1 25C, max 4			25C, max 3 (LC/AC)		
7	25C, max 3	25C, max 4		25C, max 2 (LC/AC)	30C, max 2 (AC) 25C, max 3 (AC) 25C, max 2 (LC)	
8	25C, max 2	27C, max 3		23C, max 2	27C, max 2 (AC)	

Core Options

	18C, max 4	20C, max 4		(LC/AC)	23C, max 2 (LC)	
9				20C, max 2 (LC/AC)	25C, max 2 (AC) 20C, max 2 (LC)	
10	20C, max 2 Not supported 15C, max 5	20C, max 3 18C, max 5		18C, max 2 (LC/AC)	23C, max 1 (AC) 18C, max 1 (LC)	

Notes:* The max quantity 3 can be installed with the combination of "Quantity 1x 4EDSFF BP & qty 2x 2SFF backplane".

CTO Server	**(8 +2) SFF NC CTO Server / P72175-B21**					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
OCP Slot#	**14 OCPA**	**15 OCPB**		**14 OCPA**	**15 OCPB**	
Cooling Level	**System inlet temperature & max backplane quantity** (Primary 8SFF L-shape backplane, and secondary 2SFF side-by-side backplane) *					
1	30C, max 2	30C, max 2		27C, max1 25C, max 2 (LC/AC)	30C, max 2 (AC) 27C, max 1 (LC) 25C, max 2 (LC)	
2						
3						
4						
5				25C, max 1 (LC/AC)	30C, max 1 (AC) 25C, max 1 (LC)	
6	27C, max 1 25C, max 2				27C, max 1 (AC) 23C, max 1 (LC)	
7	27C, max 1 25C, max 2	27C, max 1 25C, max 2		20C, max 1 (LC/AC)	25C, max 1 (AC) 20C, max 1 (LC)	
8	23C, max 1	25C, max 1 *(qty 4 drives)*		18C, max 1 (LC/AC)	23C, max 1 (AC) 18C, max 1 (LC) *(qty 2 drives)*	
9	18C, max 1	23C, max 1 *(qty 4 drives)*		Not supported	20C, max 1 (AC)	
10	18C, max 1 *(qty 2 drives)*	20C, max 1 *(qty 2 drives)*		Not supported	18C, max 1 (AC)	

Notes:

- * The 2SFF side-by-side backplane cannot be installed without 8SFF L-shape backplane.
- Optical drive installation through Universal Media Bay does not require the installation of 8SFF backplane. No special restrictions.
- If 8SFF backplane is selected, the installation of Optical drive through Universal Bay requires the same thermal configuration as the installation of 2FF side-by-side backplane.
- Only 8SFF L-shape backplane can be selected in the scenarios allowing "max 1 backplane" to get better airflow without 2SFF side-by-side backplane installed.

Core Options

CTO Server	4 LFF CTO NC Server / P72174-B21					
CPU TDP	**0 – 270W (Air Cooling) Add additional 2C if 0-185W**			**271 - 350W (CL LC or Air Cooling Perf. HS)**		
OCP Slot#	**14 OCPA**	**15 OCPB**		**14 OCPA**	**15 OCPB**	
Cooling Level	**System inlet temperature & max 4LFF backplane quantity**					
1	30C, max 1	30C, max 1		25C, max 1 (LC/AC)	30C, max 1 (AC) 25C, max 1 (LC)	
2						
3						
4						
5						
6	25C, max 1				27C, max 1 (AC) 23C, max 1 (LC)	
7		25C, max 1		20C, max 1 (LC/AC)	25C, max 1 (AC) 20C, max 1 (LC)	
8	23C, max 1	25C, max 1		18C, max 1 (LC/AC)	23C, max 1 (AC) 18C, max 1 (LC) *(qty 2 drives)*	
9	18C, max 1	23c, max 1		Not supported	20C, max 1 (AC)	
10	18C, max 1 *(qty 2 drives)*	20C, max 1 *(qty 2 drives)*		Not supported	18C, max 1 (AC)	

Networking PCIe

- If 256 GB Memory is selected, then high speed Networking/ InfiniBand card (PCIe and OCP) that is 100G or more cannot be selected.
- If above 100GbE Networking PCIe adapter or OCP adapter is selected, Standard Fan Kit cannot be configured.
- 4-port Base T PCIe adapter cannot be installed at PCIe Slot2
- Please refer to the details regarding PCIe Slotting and configuration in earlier section "Rear I/O Slots in CTO Servers with high-performance Networking Adapter".

If the P79633-B21 (HPE ProLiant Compute DAC ACC Networking Cable Operating Configuration Tracking) is pre-selected in Smart Chassis section, no Active Cables (Transceivers or AOC cables) can be configured. All these transceivers must be considered as part of AOC related thermal rules in previous Cooling level/Tier sections.

InfiniBand PCIe

HPE InfiniBand XDR400/Ethernet 400GbE 2-port QSFP112 PCIe6 x16 HHHL CX8 Crypto Adapter	P79115-H21
HPE InfiniBand XDR/Ethernet 2x400GbE 1-port OSFP PCIe6 x16 HHHL CX8 Crypto Adapter	P79114-H21
HPE InfiniBand XDR PCIe Gen6 x16 Multi Host/Socket Direct Auxiliary Card with 250mm MCIO Cable Kit	P81264-H21

Notes:

- PCIe 6.0 x16// HH/ HL
- No restrictions for rear PCIe Slots installation for P79115-H21 or P79114-H21, yet the thermal rules for Active Cable connection need to be applied.

Core Options

- P81264-H21, as an optional kit and will be defaulting at rear PCIe Slot2 w/ max qty 1. This the AUX card/Cable supporting both CX8 Adapters up to PCIe Gen5 800Gb/s throughput in servers. CX8 card will not reach 800Gb/s without AUX card installation. One P81264-H21 can connect to only one InfiniBand XDR Adapter.
- The P79115-H21 supports the transceivers as below.
  - P79829-B21 - HPE IB XDR/EN 400G QSFP112 SM 500m XCVR
  - P82314-B21 - HPE IB XDR/EN 800G OSFP SM 500m HCA XCVR
  - P86377-B21 - HPE IB/EN 2x400G OSFP MM 50m Flat XCVR

HPE InfiniBand NDR200/Ethernet 200Gb 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Generic Adapter	P45642-H23
HPE InfiniBand NDR/Ethernet 400Gb 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Generic Adapter	P45641-H24
HPE InfiniBand NDR200/Ethernet 200GbE 2-port QSFP112 PCIe5 x16 MCX755106AC-HEAT Adapter	P65333-H21

Notes:

- P45641-B23, P45641-H23, P45642-B22 & P65333-B21 are at the end of the lifecycle. Above H21/H23/H24 SKUs are equivalent SKUs for customer transition
- The P45641-B21/H23/H24 & P45642-B21/H23 support the transceivers: P49764-B21, HPE IB NDR/EN 400Gb OSFP MM 50m HCA XCVR
- The P65333-B21/H21 supports the transceiver: P65334-B21, HPE IB NDR/EN 400G QSFP112 MM 50m XCVR

Ethernet PCIe 100Gb

Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 Adapter for HPE	P73111-B21
Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE	P25960-B21

Notes:

- The P25960-B21 supports the transceivers as below.
  - 845966-B21, HPE 100Gb QSFP28 MPO SR4 100m Transceiver
  - 845972-B21, HPE 100Gb QSFP28 Bidirectional Transceiver

Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE	P21112-B21
NVIDIA Ethernet 100Gb 2-port NVMe-oF Offload Adapter for HPE	R8M41A

Notes:

- The R8M41A supports the transceivers as below.
  - Q2F19A - HPE 100GbE QSFP28 SR4 100m XCVR
  - Q8J73A - HPE 100GbE QSFP28 PSM4 500m XCVR
  - Q9S71A - HPE 100GbE QSFP28 to QSFP28 5m AOC

Ethernet PCIe 10/25Gb

AMD Solarflare X4522-PLUS 10/25GbE 2-port SFP56 Adapter for HPE	P87940-B21
Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P26264-B21

Notes:

- PCIe 4.0 x16// HH/ HL/ LP
- The P21109-B21 supports the transceivers below.
  - 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
  - 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver

Core Options

- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE P26262-B21

Notes:

– PCIe 3.0 x8// HH/ HL/ LP

– The P26262-B21 supports the transceivers as below.

- 453151-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver
- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

NVIDIA Ethernet 10/25Gb 2-port SFP28 NVMe-oF Crypto Adapter for HPE S2A69A

Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE P08443-B21

Notes:

– PCIe 4.0 x8// HH or LP

– The P08443-B21 supports the transceivers as below

- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE P08458-B21

Notes:

– PCIe 4.0 x16// FH/ HL

– Max 1 of 4 port cards can be selected if secondary riser is not selected. Cannot be installed in Slot# 2.

– Max 2 of 4 port cards can be selected if secondary riser is selected. Cannot be installed in Slot# 2.

– If both 4P Networking (BASE-T and Full-Height) and Half-Height Internal PCIe controller are selected, then Secondary FH riser cannot be selected.

Xilinx X2522-25G-PLUS Ethernet 10/25Gb 2-port SFP28 Adapter for HPE P21109-B21

Notes:

– PCIe 3.0 x8// HH/ HL

– The P21109-B21 supports the transceivers below.

- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Mellanox MCX631102AS-ADAT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE P42044-B21

Notes:

– PCIe 4.0 x8// HH/ HL/ LP

– The P42044-B21 supports the transceivers below.

- 453151-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver
- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver

Core Options

- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Ethernet PCIe 10Gb

Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T Adapter for HPE P26253-B21

Notes: PCIe 3.0 x8// HH/ HL/ LP

Broadcom BCM57412 Ethernet 10Gb 2-port SFP+ Adapter for HPE P26259-B21

Notes:

– PCIe 3.0 x8// HH/ HL/ LP

– The P26259-B21 supports the transceivers as below.

- 453151-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver
- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver

Ethernet PCIe 1Gb

Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T Adapter for HPE P51178-B21

Notes:

– PCIe 2.0 x4// HH/ HL/ LP

– Max 1 of 4 port cards can be selected if secondary riser is not selected. Cannot be installed in Slot# 2.

– Max 2 of 4 port cards can be selected if secondary riser is selected. Cannot be installed in Slot# 2.

– If both 4P Networking (BASE-T and Full-Height) and Half-Height Internal PCIe controller are selected, then Secondary FH riser cannot be selected.

– Please refer to Advisory: HPE Network Adapters - On Rare Occasions, HPE ProLiant Gen12 Platforms Configured With Certain HPE Broadcom 5719-Based Network Adapters May Stop Responding at the Power-On Self-Test (POST) During Power On or Reboot

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Networking OCP

– Default x8 PCIe5.0 lanes from CPU1 to Slot 14 OCPA from system board design. For x16 lanes upgrade or Slot15 OCPB extension, please refer to later “OCP Enablement” section.

– For the three x16 OCP3 adapters, P22767-B21 (Gen4), P26269-B21 (Gen4) & P73114-B21 (Gen5), the connection to either “x8 PCIe5 lanes onboard” or to a “x8 PCIe5 OCP3 cable” would be sufficient. As a x8 PCIe connection provides max throughput at 126 Gb/s (Gen4) or 252 Gb/s(Gen5) for Gen4 or Gen5. A x16 OCP3 Gen5 cable connection is also allowed for the physical PCIe x16 design of the adapters.

SKU	Description	Design	Max Throughput	Max Bandwidth x8PCIe
P22767-B21	Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 OCP3 Adapter for HPE	Gen4x 16	100 Gb/s (ASIC)	Gen4 x8~ 126 Gb/s
P26269-B21	Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE	Gen4x 16	100Gb/s	Gen4 x8 ~126 Gb/s
P73114-B21	Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 OCP3 Adapter for HPE	Gen5 x16	200 Gb/s	Gen5 x8 ~256 Gb/s

Core Options

- If 256 GB Memory is selected, then high speed Networking/ InfiniBand card (PCIe and OCP) that is 100G or more cannot be selected.
- If above 100GbE Networking PCIe adapter or OCP adapter is selected, Standard Fan Kit cannot be configured.
- Please refer to the details regarding OCP Slotting and configuration in earlier section “Rear I/O Slots in CTO Servers with high-performance Networking Adapter”.
- If the P79633-B21 (HPE ProLiant Compute DAC ACC Networking Cable Operating Configuration Tracking) is pre-selected in Smart Chassis section, no transceivers (AOC cables) can be configured.

Ethernet OCP 100G

Broadcom BCM57608 Ethernet 100Gb 2-port QSFP112 OCP3 Adapter for HPE P73114-B21

Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 OCP3 Adapter for HPE P22767-B21

Notes: P22767-B21 provides x16 lanes and x16 lanes OCP enablement kit need to be selected.

Ethernet OCP 10/25G

Broadcom BCM57504 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE P26269-B21

Notes:

- P22769-B21 provides x16 lanes and x16 lanes OCP enablement kit needs to be selected.
- The P26269-B21 supports the transceivers as below.
  - 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
  - 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
  - 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Broadcom BCM57414 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE P10115-B21

Notes:

- The P10105-B21 supports the transceivers as below.
  - 453151-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver
  - 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
  - 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
  - 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
  - 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 OCP3 Adapter for HPE P41614-B21

Notes:

- a x16 OCP enablement kit can be selected if customer wants to have OCP x16 connectivity.
- The P41614-B21 supports the transceivers as below.
  - 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
  - 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
  - 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
  - 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE P10106-B21

Notes:

- The P10106-B21 supports the transceivers as below.

Core Options

- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

Mellanox MCX631432AS-ADAI Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE P42041-B21

Notes:

– The P42041-B21 supports the transceivers as below.

- 453151-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver
- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver
- 845398-B21 - HPE 25Gb SFP28 SR 100m Transceiver

HPE Slingshot

HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC R4K46A

Ethernet OCP 10G

Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T OCP3 Adapter for HPE P10097-B21

Broadcom BCM57412 Ethernet 10Gb 2-port SFP+ OCP3 Adapter for HPE P26256-B21

Notes:

– The P26256-B21 supports the transceivers as below.

- 453151-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP SX Transceiver
- 453154-B21 - HPE BladeSystem c-Class Virtual Connect 1G SFP RJ45 Transceiver
- 455883-B21 - HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver
- 455886-B21 - HPE BladeSystem c-Class 10Gb SFP+ LR Transceiver

Ethernet OCP 1G

Intel E610-IT4 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE P79833-B21

Broadcom BCM5719 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE P51181-B21

Notes:

– The P51181-B21 is defaulted in the configurator at rear Slot 14 OCPA if no H/W controller is selected. Use can de-select and re-select desired Networking cards with OCP enablement kit if required.

– Please refer to Advisory: HPE Network Adapters - On Rare Occasions, HPE ProLiant Gen12 Platforms Configured With Certain HPE Broadcom 5719-Based Network Adapters May Stop Responding at the Power-On Self-Test (POST) During Power On or Reboot

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Fibre Channel HBA

HPE SN1620E 32Gb 2p FC SecureHBA S4S01A

HPE SN1720E 64Gb 2p FC SecureHBA S4T09A

Notes: PCIe 4.0 x8// FH or LP for SN1620E/SN1720E

HPE SN1610Q 32Gb 1-port Fibre Channel Host Bus Adapter R2E08A

HPE SN1610Q 32Gb 2-port Fibre Channel Host Bus Adapter R2E09A

Notes: PCIe 3.0 x8// FH or LP for SN1610Q/1610E

Core Options

HPE SN1700Q 64Gb 1-port Fibre Channel Host Bus Adapter	R7N86A
HPE SN1700Q 64Gb 2-port Fibre Channel Host Bus Adapter	R7N87A

Notes: PCIe 4.0 x8// FH or LP for SN1700QE 1-port and 2-port

Power and Cooling

Power Supplies

European Union ErP Lot 9 Regulation

Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, Ireland, Switzerland, or Turkey, must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers P03178-B21 and P44712-B21 are 96% efficient, thus meeting requirements.

HPE is on target to fulfil compliant systems ahead of time and will begin enforcing these requirements in advance to satisfy requests with the current power supplies by the set deadline.

Please select one or two power supplies from below in the system configuration.

Notes:

- Mixing 2 different power supplies is Not supported.
- Please refer to “Factory Configuration Setting” section regarding “HPE CE Mark Removal FIO Enablement Kit (P35876-B21)” for non- EU ErP Lot 9 configuration.
- To select the right size power supply for your ProLiant Server it is highly recommended to use "HPE Power Advisor" located at https://poweradvisorext.it.hpe.com/?Page=Index

HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	P38995-B21
HPE 1000W Flex Slot Titanium Hot Plug Power Supply Kit	P03178-B21

Notes: Power efficiency at 96% single output. Energy Star 4.0 compliant.

HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	P38997-B21
HPE 1600W Flex Slot -48VDC Hot Plug Power Supply Kit	P17023-B21

Notes:

- When P17023-B21 HPE 1600W FS -48VDC Hot Plug PS Kit is selected, P36877-B21 HPE 1600W DC PSU Power Lug Option Kit will be defaulted. Customer is allowed to remove P36877-B21 and select P22173-B21 HPE 1600W DC PSU Power Cable Kit instead.
- Only supports high line voltage (200 VAC to 240 VAC)

HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit	P44712-B21

Notes:

- Power efficiency at 96% single output. Energy Star 4.0 compliant.
- Supports high line voltage (200VAC to 240VAC)
- The highest rating would vary from 1800-2200W depending on input voltage of datacenter
- According to The Bureau of Indian Standards Act, 2016, BIS certification is required by every manufacturer (Indian or foreign) of those who are manufacturing products under Compulsory Certification. DL360 Gen11 CTO Servers manufactured in US, EMEA and Singapore with below Power Supplies are certified with BIS: P38995-B21, P03178-B21, P38997-B21, P17023-B21 and P44712-B21.
- For information on BIS Certification requirements visit: BIS Certification - BIS Certificate for Import (indianchemicalregulation.com)

Core Options

Accessory

HPE 1600W -48VDC 600V 3.5m Power Cable Kit	P22173-B21
HPE 1600W -48VDC Power Cable Lug Kit	P36877-B21

Notes:

- When P17023-B21 HPE 1600W FS -48VDC Hot Plug PS Kit is selected, P36877-B21 HPE 1600W DC PSU Power Lug Option Kit will be defaulted. Customer is allowed to remove P36877-B21 and select P22173-B21 HPE 1600W DC PSU Power Cable Kit instead.
- Both "HPE 1600W DC PSU Power Lug Option Kit" and "HPE 1600W DC PSU Power Cable Kit" cannot be selected together.

Power Cords

For more Power Cords options, please refer to “HPE One Config Advance”.

If any optional Power Cords are ordered, then quantity must be equal to total number of Power Supplies on the order.
HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, tool-less installation into HPE ProLiant Gen12 Performance Servers. Flex Slot power supplies are certified for high-efficiency operation and offer multiple power output options, allowing users to "right-size" a power supply for specific server configurations. This flexibility helps to reduce power waste, lower overall energy costs, and avoid "trapped" power capacity in the data center. For information on power specifications and technical content visit HPE Flexible Slot Power Supplies.
All pre-configured servers include a power cord. If a different power cord is required, please check the ProLiant Power Cables web page.
Prior to making a power supply selection it is highly recommended that the HPE Power Advisor be run to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: HPE Power Advisor.

Power Cooling Options

Fan Kits

For the fan and heatsinks combination, please refer to the previous section: Heatsinksincludes Liquid Cooling module

Fan suport matrix

Fan Kit solution	Scenarios & Configuration
P48907-B21 / P54697-B21: Standard Fan Kit (5ea) & Second CPU Standard Fan Kit (2ea)	CPU<=185W x5 fans for 1x CPU and x7 fans for 2x CPUs
	Air cooling heatsink
	SAS/SATA drives
P48908-B21: High-performance Fan Kit (7ea 4056 fans included)	CPU 186W-350W (1CPU/2CPUs)
	Air cooling heatsink
	DLC CPM Module
	SAS4/ NVMe/ EDSFF drives SKU
	Rear NS204i-u v2
	GPU
	>=100GB high speed NIC PCIe/ OCP adapter
	256 GB DIMM type
P74800-B21:	CPU < 271W (1x CPU)

Core Options

Closed-loop LC HS & Fan FIO Kit (7ea 4028 fans included)	CPU 271W-350W (1CPU/2CPUs)

HPE ProLiant DL3X0 Gen11 1U High Performance Fan Kit P48908-B21

Notes: Dual rotor 4056 performance fans (quantity 7)

HPE ProLiant DL3X0 Gen11 1U Standard Fan Kit P48907-B21

Notes: Dual rotor 4056 standard fans (quantity 5)

HPE ProLiant DL3X0 Gen11 1U 2P Standard Fan Kit P54697-B21

Notes: Dual rotor 4056 standard fans (quantity 2)

Rack Options

HPE ProLiant DL3XX Gen11 Easy Install Rail 3 Kit P52341-B21

HPE Easy Install Rail 5 Kit P52343-B21

HPE Cable Management Arm 4 for Friction Rail Kit P70741-B21

Notes:

- HPE rail kits contain telescoping rails which allow for in-rack serviceability.
- Rail Kit does not include Cable Management Arm.
- Hewlett Packard Enterprise recommends that a minimum of two people is required for all Rack Server installations.
- Please refer to your installation instructions for proper tools and number of people to use for any installation.
- Maximum 1 of each can be selected.
- If CMA is selected, then Rail kit must be selected.
- P52341-B21 supports 8SFF CTO Model only.
- P52343-B21 supports 4LFF CTO & 10SFF/20EDSFF Hybrid CTO Models.
- HPE rail kits are designed to work with HPE racks in compliance with industry standard EIA-310-E. In the event a customer elects to purchase a third-party rack for use with an HPE rail kit, any such use is at the customer's own risk. HPE makes no express or implied warranties with respect to such third-party racks and specifically disclaims any implied warranties of merchantability and fitness for a particular purpose. Furthermore, HPE has no obligation and assumes no liability for the materials, design, specifications, installation, safety, and compatibility of any such third-party racks with any rail kits, including HPE rail kits.

Security Hardware

HPE Bezel Lock Kit 875519-B21

Notes:

- Maximum 1 of each can be selected.
- If Bezel lock is selected, then "HPE DL3XX Gen11 1U Bezel Kit" or "HPE OEM Gen11 1U Bezel KIT" must be selected.

HPE ProLiant DL3XX Gen11 Intrusion Cable Kit P48922-B21

Notes:

- Maximum 1 of each can be selected.
- If "HPE Trusted Supply Chain FIO Config" is selected then "Gen11 Intrusion Cable Kit" must be selected.
- If "HPE Trusted Supply Chain FIO Config" is selected, then Configurator should default "Gen11 Intrusion Cable Kit".

Core Options

HPE ProLiant Gen11 1U Common Bezel Kit P50450-B21

Notes:

- Maximum 1 of each can be selected.
- If Bezel lock is selected, then "HPE DL3XX Gen11 1U Bezel Kit" or "HPE OEM Gen11 1U Bezel KIT" must be selected.
- Both "HPE DL3XX Gen11 1U Bezel Kit" and "HPE OEM Gen11 1U Bezel KIT" cannot be selected together.

Graphic options (GPU)

NVIDIA L4 24GB PCIe Accelerator for HPE S0K89C

GPGPU Configuration									
		4LFF CTO Server	**(8+2) SFF NC CTO Server or 10SFF/20EDSFF Hybrid NC CTO Server**						
SKU	**FAN**	**4LFF**	**0 drive**	**10 SFF NVMe**	**8 SFF NVMe**	**8 SAS/SATA**	**10 SAS/SATA**	**20 E3.S**	**12 E3.S**
Nvidia L4 (S0K89C), Quantity 3	Perf. Fan	Up to 2x270W CPU, 32x 128 GB DIMMs						Up to 2x225W, 32x 128 GB	
		30C	30C	30C	30C	30C	28C	28C	30C
	CL	Up to 2x350W CPU, 32x 128 GB DIMM							
	LC	25C	25C	20C	25C	25C	20C	N/A	23C

Notes:

- Support the GPU adapter with length up to 9.5" (full length adapters are not supported) at PCIe Slot 1, 2 and 3 (with 2nd CPU).
- Mixing of different Graphics Option is not allowed.
- Not compatible with Energy Star 4.0 under Graphic cards.
- Requires “Increased Cooling” to be selected in BIOS settings (default setting is “Optimal Cooling”).
- If GPU is selected, it requires high-performance fans if air-cooling.
- If GPU is selected for best performance across common workloads, HPE recommends system main memory at least twice the memory of all GPU.
- Max 2x350W CPU, 32x128 GB DIMM, and max 10SFF, will need to be operated at 20C. Will not be a feasible configuration to support.
- GPU support with 256GB DIMM will be limited to 1DPC and require special review and approval.

Software RAID

Intel Virtual RAID on CPU Premium FIO Software for HPE R7J57A

Intel Virtual RAID on CPU RAID 1 FIO Software for HPE S3Q19A

Software as a Service Management

HPE Compute Ops Management

Base SKU

HPE Compute Ops Management Advanced 1-year Upfront ProLiant SaaS	S5E58AAE
HPE Compute Ops Management Standard 3-year Upfront ProLiant SaaS	R7A11AAE

Upgrade SKU

HPE Compute Ops Management Advanced 3-year Upfront ProLiant SaaS	S5E59AAE
HPE Compute Ops Management Advanced 5-year Upfront ProLiant SaaS	S5E60AAE
HPE Compute Ops Management Advanced 7-year Upfront ProLiant SaaS	S5E61AAE
HPE Compute Ops Management Standard 5-year Upfront ProLiant SaaS	R7A12AAE
HPE Compute Ops Management Standard 7-year Upfront ProLiant SaaS	S2E10AAE
HPE Compute Ops Management Advanced Flex with ProLiant Enablement	S6C28AAE

FIO Setting SKU

HPE Compute Cloud Management Server FIO Enablement	S1A05A
HPE Compute Ops Management Standard with ProLiant Enablement	S2R34AAE

Smart Choice SKU

HPE Compute Ops Management Standard 3-year SaaS for Smart Choice	S7P76AAE
HPE Compute Ops Management Standard 5-year SaaS for Smart Choice	S7P77AAE
HPE Compute Ops Management Standard 7-year SaaS for Smart Choice	S7P78AAE
HPE Compute Ops Management Advanced 3-year SaaS for Smart Choice	S7P79AAE
HPE Compute Ops Management Advanced 5-year SaaS for Smart Choice	S7P80AAE
HPE Compute Ops Management Advanced 7-year SaaS for Smart Choice	S7P81AAE

For more information, visit the HPE Compute Ops Management QuickSpecs:
https://www.hpe.com/psnow/doc/a50004263enw
Supported Servers – CTO only. No OEM. – Complete list can be found here: Latest Supported Server List: https://www.hpe.com/info/com-supported-servers

Choose Additional Options

HPE Racks

- Please see the HPE Advanced Series Racks QuickSpecs for information on additional racks options and rack specifications. HPE G2 Advanced Series Racks
- Please see the HPE Enterprise Series Racks QuickSpecs for information on additional racks options and rack specifications. HPE G2 Enterprise Series Racks

HPE Power Distribution Units (PDUs)

- Please see the HPE Basic Power Distribution Units (PDU) QuickSpecs for information on these products and their specifications.
- Please see the HPE Metered Power Distribution Units (PDU) QuickSpecs for information on these products and their specifications. Please see the HPE Intelligent Power Distribution Unit (PDU) QuickSpecs for information on these products and their specifications.
- Please see the HPE Metered and Switched Power Distribution Units (PDU) QuickSpecs for information on these products and their specifications.

Core Options

HPE Uninterruptible Power Systems (UPS)

- To learn more, please visit the HPE Uninterruptible Power Systems (UPS) web page.
- Please see the HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs for information on these products and their specifications.
- Please see the HPE Line Interactive Single Phase UPS QuickSpecs for information on these products and their specifications.

HPE Support Services

Installation & Start-up Services

HPE ProLiant DL/ML Install Service	U4554E
HPE ProLiant DL/ML Startup Service	U4555E

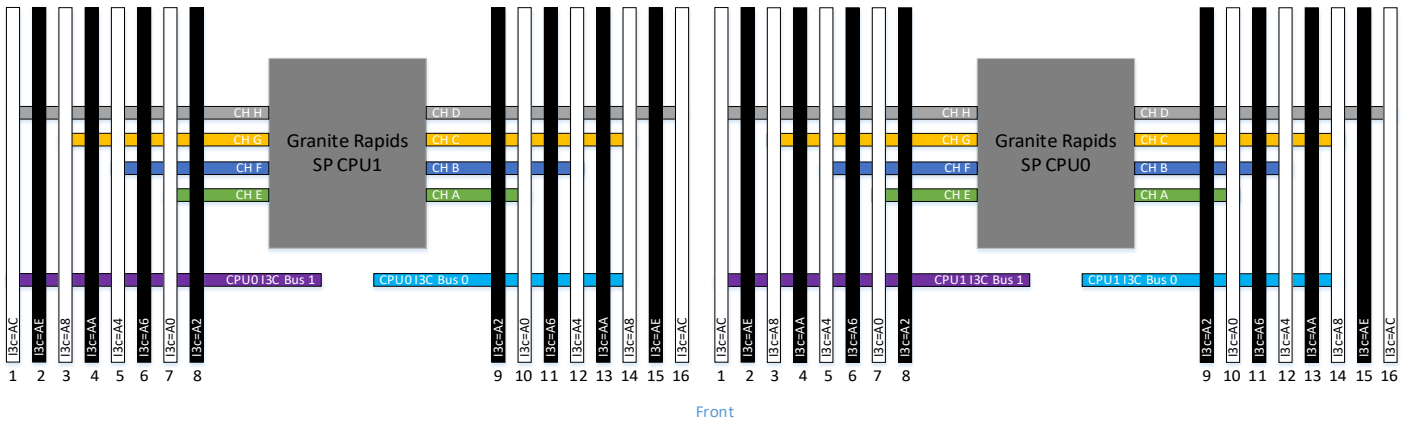
Tech Care Services

HPE 3 Year Tech Care Essential DL360 Gen12 HW Service	H49PGE
HPE 3 Year Tech Care Essential wDMR DL360 Gen12 HW Service	H49PHE
HPE 5 Year Tech Care Essential DL360 Gen12 HW Service	H49QLE
HPE 5 Year Tech Care Essential wDMR DL360 Gen12 HW Service	H49QME

Notes: For a full listing of support services available for this server, please visit http://www.hpe.com/services.

Some options may not be integrated at the factory. To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of a Hewlett Packard Enterprise approved configurator. Contact your local sales representative for additional information.

Memory Population guidelines



Front End - HPE ProLiant Compute DL360 Gen12

General Memory Population Rules and Guidelines

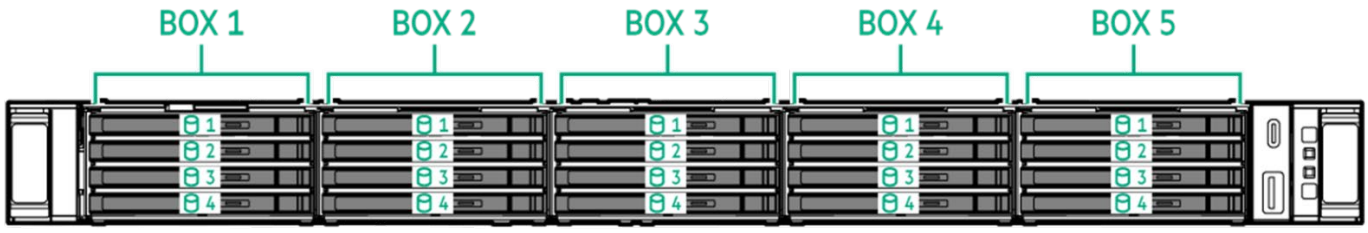
Listed below are general Memory Module Population Rules supported by the processor for reference.
For additional information, please visit the Server memory population rules for HPE Gen12 servers with 6th Gen Intel® Xeon® Scalable processors or HPE Memory QuickSpecs and Technical White Papers or HPE DDR5 Smart Memory QuickSpecs

- All DIMMs must be DDR5.
- All DDR5 DIMM must be running the same speed per CPU socket.
- x8 and x4 cannot be mixed.
- 3DS and non-3DS Memory cannot be mixed.
- Mixing different Rank Memory is not allowed if less than quantity 16 of Memory is selected for 1 CPU configuration.
- Mixing different Rank Memory is not allowed if less than quantity 32 Memory is selected for 2 CPUs configuration.
- If different Rank Memory are mixed, then quantity of each Memory part number must be same.
- 16GB & 256GB are allowed with 6xxxP CPU only.
- In quantity 1 Intel® Xeon® 6xxxP CPU configuration, then Maximum 8 quantity of 16GB Memory can be selected.
- In quantity 2 Intel® Xeon® 6xxxP CPU configuration, then Maximum 16 quantity of 16GB Memory can be selected.
- If 256GB DIMM is selected, then a maximum quantity of 16 Memory can be selected per CPU but cannot reach 6400 MT/s.
- 96GB Memory cannot be mixed with any other Memory.
- 128GB Memory cannot be mixed with any other Memory.
- 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 CPUs.
- The maximum memory speed is a function of the memory type, memory configuration, and CPU model.

Memory

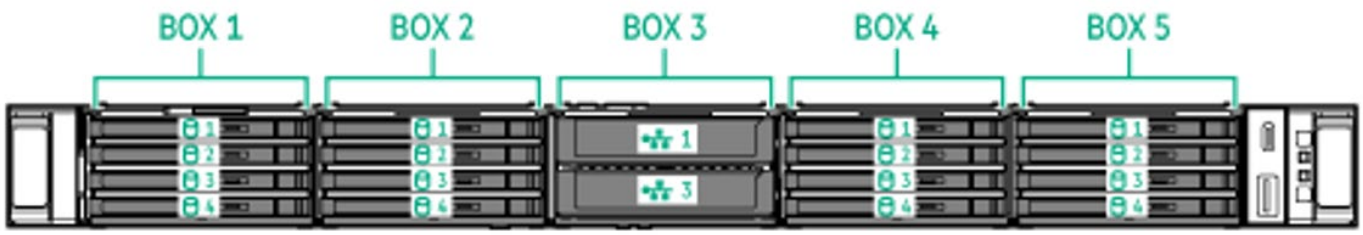
- The maximum memory capacity is a function of the number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, and the number and model of installed CPUs qualified on the platform.
- Quantity of memory DIMMs selected per socket must be 1, 2, 4, 8, 12 or 16 for 6xxxP CPU
- Quantity of memory DIMMs selected per socket must be 1, 2, 4, 8 or 16 for 67xxE CPU
- With Intel® Xeon® 67xxE CPU, DIMMs below are supported.
  - HPE 32GB 2Rx8 PC5-6400B-R Smart Kit
  - HPE 64GB 2Rx4 PC5-6400B-R Smart Kit
  - HPE 96GB 2Rx4 PC5-6400B-R Smart Kit
  - HPE 128GB 2Rx4 PC5-6400B-R Smart Kit
- With Intel® Xeon® 6xxxP CPU, DIMMs below are supported.
  - HPE 16GB 1Rx8 PC5-6400B-R Smart Kit
  - HPE 32GB 2Rx8 PC5-6400B-R Smart Kit
  - HPE 64GB 2Rx4 PC5-6400B-R Smart Kit
  - HPE 96GB 2Rx4 PC5-6400B-R Smart Kit
  - HPE 128GB 2Rx4 PC5-6400B-R Smart Kit
  - HPE 256GB 4Rx4 PC5-6400B-R 3DS Smart Kit
- Capacity references are rounded to the common gigabyte (GB) values.
  - 8 GB = 8,192 MB
  - 16 GB = 16,384 MB
  - 32 GB = 32,768 MB
  - 64 GB = 65,536 MB
  - 128 GB = 131,072 MB
  - 256 GB = 262,144 MB
  - 512 GB = 524,288 MB

Front Storage Cage Numbering



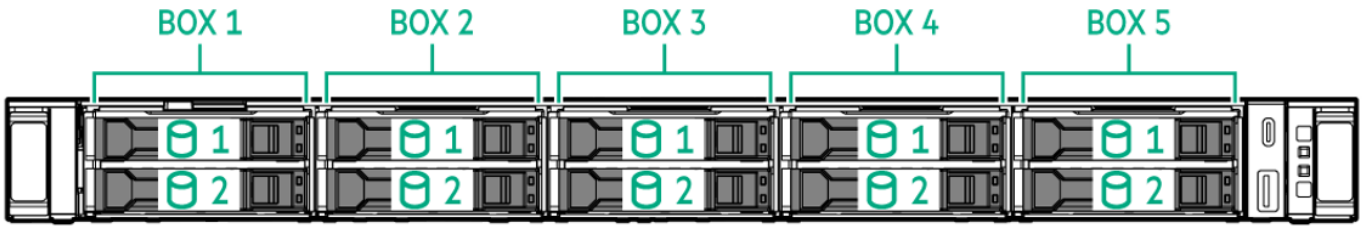
20 E3.S device box & bay numbering (P72176-B21)

Box	Description
1 - 5	Bays 1-4



16 E3.S device + 2 Front OCP Enablement Kit device box & bay numbering (P72176-B21)

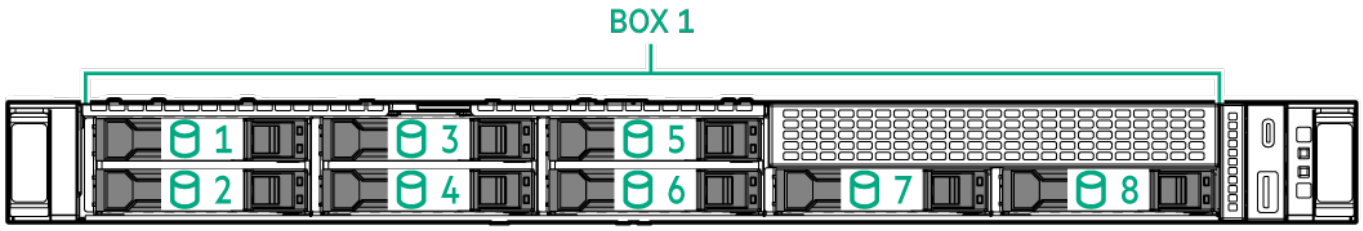
Box	Description
3	Bay 3 (Primary), Bay 1 (Secondary)
1, 2, 4, 5	Bays 1-4



10 SFF device bay numbering (P72176-B21)

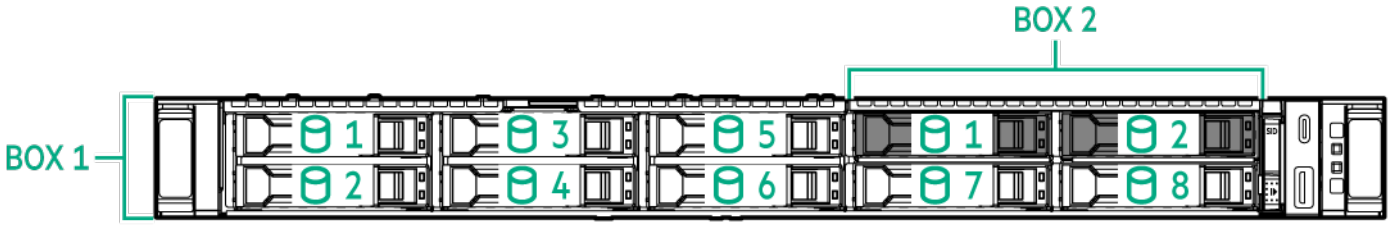
Box	Description
1 - 5	Bays 1 and 2

Storage



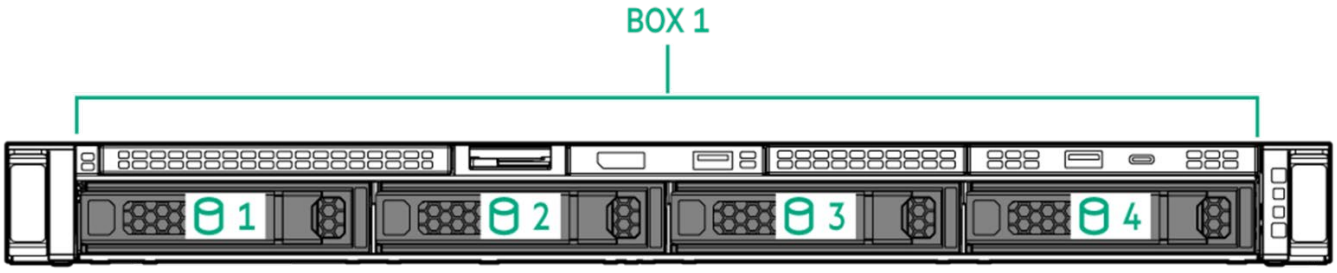
8 SFF device box & bay numbering (P72175-B21)

Box	Description
1	Bays 1 - 8



8 SFF device box & bay numbering + 2 SFF device box & bay numbering optional (P72175-B21)

Box	Description
1	Bays 1 - 8
2	Bays 1 - 2



4 LFF device box & bay numbering (P72174-B21)

Box	Description
1	Bays 1 - 4

System Unit

Dimensions (Height x Width x Depth)

The chassis depth excludes front ear depth and rear power supply handle.

(8+2) SFF Drives

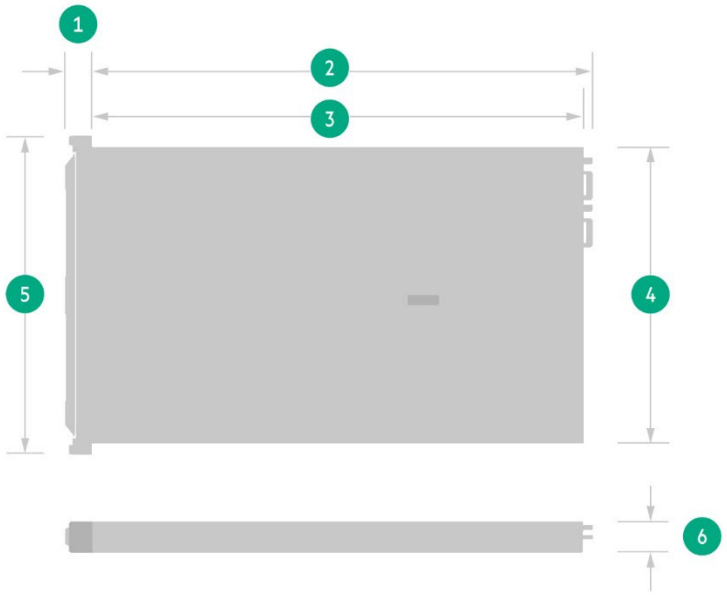
- 4.29 x 43.46 x 75.31 cm
- 1.69 x 17.11 x 29.65 in

4LFF Drives

- 4.29 x 43.46 x 77.31 cm
- 1.69 x 17.11 x 30.43 in

10SFF/20EDSFF Hybrid Drives

- 4.29 x 43.46 x 77.31 cm
- 1.69 x 17.11 x 30.43 in



Item	Description & CTO Server Dimension	(8+2) SFF	10SFF/20EDSFF Hybrid or 4LFF
1	Front bezel to rearmost edge of chassis ear	3.93 cm (1.55 in)	3.93 cm (1.55 in)
2	Rearmost edge of chassis ear to PSU	78.28 cm (30.82 in)	80.27 cm (31.61 in)
3	Rearmost edge of chassis ear to server rear I/O	75.31 cm (29.65 in)	77.30 cm (30.43 in)
4	Rear width	43.46 cm (17.11 in)	
5	Front width: Ear to ear	48.26 cm (18.99 in)	
6	Height	4.29 cm (1.69 in)	

Weight (approximate)

- **14.87 kg (32.71 lb.)**
  - **SFF minimum**: One drive, one processor, one power supply, two heatsinks, one Smart Array controller, and five fans.
- **19.94 kg (43.96 lb.)**
  - **SFF maximum:** Ten drives, two processors, two power supplies, two heatsinks, one Smart Array controller and seven fans.
- **15.25 kg (33.55 lb.)**
  - **LFF minimum:** One drive, one processor, one power supply, two heatsinks, one Smart Array controller and five fans.
- **20.92 kg (46.02 lb.)**
  - **LFF maximum:** Four drives, two processors, two power supplies, two heatsinks, one Smart Array controller and seven fans.
- **14.92kg (32.82b)**
  - **EDSFF minimum:** One drive, two processors, one power supply, two heatsinks, one Smart Array controller, and seven fans.
- **21.38kg (47.041lb)**
  - **EDSFF maximum**: Twenty drives, two processors, two power supplies, two heatsinks, one Smart Array controller and seven fans.

Input Requirements (per power supply)

Rated Line Voltage

- For 1800-2200W (Titanium): 200 to 240 VAC
- For 1600W (Platinum): 200 to 240 VAC
- For 1000W (Titanium): 100 to240 VAC
- For 800W (Platinum): 100 to 240 VAC
- For 1600W (-48 VDC): -40 to -72 VdC

British Thermal Unit (BTU) Rating

Maximum

- For 1800-2400W (Titanium) Power Supply: 6497BTU/hr (at 200 VAC), 7230 BTU/hr (at 220 VAC), 7962 BTU/hr (at 240 VAC)
- For 1600W (Platinum) Power Supply: 5918 BTU/hr (at 200 VAC), 5888 BTU/hr (at 220 VAC), 5884 BTU/hr (at 240 VAC)
- For 1000W (Titanium) Power Supply: 3741 BTU/hr (at 100 VAC), 3596 BTU/hr (at 200 VAC), 3582 BTU/hr (at 240 VAC)
- For 800W (Platinum) Power Supply: 3067 BTU/hr (at 100 VAC), 2958 BTU/hr (at 200 VAC), 2949 BTU/hr (at 240 VAC)
- For 1600W (48VDC) Power Supply: 6026 BTU/hr (at -40 VDC), 6000 BTU/hr (at -48 VDC), 5989 BTU/hr (at -72 VDC)

Power Supply Output (per power supply)

Rated Steady-State Power

- For 1800W-2200W (Titanium) Power Supply: 1799W (at 200 VAC), 2000W (at 220 VAC), 2200W (at 240 VAC), 2200W (at 240 VDC) input for China only
- For 1600W (Platinum) Power Supply: 1600W (at 240 VAC), 1600W (at 240 VDC) input for China only
- For 1000W (Titanium) Power Supply: 1000W (at 100 VAC), 1000W (at 240 VAC), 1000W (at 240 VDC) input for China only
- For 800W (Platinum) Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VDC) input for China only
- For 1600W (-48VDC) Power Supply: 1600W (at -40 Vdc), 1600W (at -72Vdc)

Maximum Peak Power

- For 1800W-2200W (Titanium) Power Supply: 2200W (at 240 VAC). 2200W (at 240 VDC) input for China only
- For 1600W (Platinum) Power Supply: 1600W (at 240 VAC), 1600W (at 240 VDC) input for China only
- For 1000W (Titanium) Power Supply: 1000W (at 100 VAC), 1000W (at 240 VAC), 1000W (at 240 VDC) input for China only
- For 800W (Platinum) Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VDC) input for China only
- For 1600W (-48VDC) Power Supply: 1600W (at -40 Vdc), 1600W (at -72Vdc)

Notes: For more information, please visit HPE Flexible Slot Power Supplies

System Inlet Temperature

- **Standard Operating Support (Level 2 support)**

  10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).

- **Extended Ambient Operating Support (Level 3 & Level 4 support)**

  For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft.) above 900 m (2953 ft.) to a maximum of 3050 m (10,000 ft.).
  For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft).

  With Extended Ambient Operating Support, Processor performance drop would be expected. The approved hardware configurations for this system require the High-performance Fan Kit and are listed at the URL: HPE ProLiant Compute DL360 Gen12 Server | Extended Ambient Temperature Guidelines for HPE Gen12 Servers.
  System performance may be reduced if operating in the extended ambient operating range or with a fan fault.

- **Non-operating**

  -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr) for air cooling thermal solutions.
  -10° to 60°C (14° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr) for Closed-loop Liquid Cooling or Direct Liquid Cooling thermal solutions.

Relative Humidity (non-condensing)

- **Operating**
  8% to 90% - Relative humidity (Rh), 28°C maximum wet bulb temperature, non-condensing.
- **Non-operating**
  5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
- **Operating**
  -12°C DP and 8% Rh to 21°C DP 80% - Relative humidity (Rh), 21°C maximum wet bulb temperature, non-condensing.
- **Non-Operating**
  -12°C DP and 8% Rh to 21°C DP 80% - Relative humidity (Rh), 21°C maximum wet bulb temperature, non-condensing.

Altitude

- **Operating**
  3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
- **Non-operating**
  9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Emissions Classification (EMC)

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

HPE Storage Controller

For the latest information please refer to the HPE Compute MR Gen11 Controllers QuickSpecs

Acoustic Noise

Listed are the declared mean A-Weighted sound power levels (LWA,m), declared average bystander position A-Weighted sound pressure levels (LpAm) and the statistical adder for verification, Kv, is a quantity to be added to the declared mean A-weighted sound power level, LWA,m when the product is operating in a 23± 2°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels. Please have your HPE representative provide information from the HPE EMESC website for further technical details regarding the configurations listed below.

Idle	
LWA,m	4.7 B Entry – SFF 5.0 B Base – SFF 3.8 B Entry- LFF 5.0 B Performance 1 – SFF 5.4 B Performance 2 – SFF 5.4 B 8 EDSFF basic (E3.S)
LpAm	35 dBA Entry – SFF 37 dBA Base – SFF 36 dBA Entry- LFF 38 dBA Performance 1 – SFF 41 dBA Performance 2 – SFF 42 dBA 8 EDSFF Basic (E3.S)
Kv	0.4 B Entry – SFF 0.4 B Base – SFF 0.4 B Entry- LFF 0.4 B Performance 1 – SFF 0.4 B Performance 2 – SFF 0.4 B 8 EDSFF Basic (E3.S)

Technical Specifications

Operating	
LWA,m	5.7 B Entry – SFF 5.9 B Base – SFF 5.6 B Entry- LFF 5.9 B Performance 1 – SFF 6.5 B Performance 2 – SFF 6.1 B 8 EDSFF Basic (E3.S)
LpAm	44 dBA Entry – SFF 48 dBA Base – SFF 42 dBA Entry- LFF 47 dBA Performance 1 – SFF 52 dBA Performance 2 – SFF 49 dBA 8 EDSFF Basic (E3.S)
Kv	0.4 B Entry – SFF 0.4 B Base – SFF 0.4 B Entry- LFF 0.4 B Performance 1 – SFF 0.4 B Performance 2 – SFF 0.4 B 8 EDSFF Basic (E3.S)

Notes:

- All measurements made to conform to ISO 7779 / ECMA-74 and declared to conform to ISO 9296 / ECMA-109. Operating mode is represented by 50% of CPU TDP.
- The results in this declaration apply only to the specific configuration listed below when operating and tested according to the indicated modes and standards. A system with additional configuration components or increased operating functionality may increase the noise emission values.
  - Entry – SFF Configuration: 1x Intel® Xeon®-6 6505P CPU, 2x SAS 10K SFF BC HDD, 1x 32GB DIMM, 1x 800W PSU, 5xSTD Fan, 1x MR416i-p.
  - Base – SFF Configuration: 1x Intel® Xeon®-6 6520P CPU, 4x SAS 10K SFF BC HDD, 1x 32GB DIMM, 1x 800W PSU, 5x PERF fan, 1x 10GbE 2p BASE-T Adapter, 1x MR416i-p.
  - Entry – LFF Configuration: 1x Intel® Xeon®-6 6505P CPU, 1x SAS 7.2K LFF HDD, 1x 32GB DIMM, 1x 800W PSU, 5x STD fan, 1x MR416i-p.
  - Performance 1- SFF Configuration: 1x Intel® Xeon® 6710E CPU, 8x SAS 10K SFF BC HDD, 8x 32GB DIMM, 1x 800W PSU, 7x PERF Fan, 1x MR408i-o, 1x 1Gb 2p BASE-T Adapter.
  - Performance 2 – SFF Configuration: 2x Intel® Xeon®-6 6530P CPU, 8x SAS 10K SFF BC HDD, 8x 32GB DIMM, 1x 800W PSU, 7x PERF fan, 1x MR408i-o, 1x 10/25GbE 2p SFP28 OCP3 Adapter.
  - 8 EDSFF Basic (E3.S) Configuration: 2x Intel® Xeon®-6 6710E CPU, 8x NVMe RI E3S SSD, 16x 32GB DIMM, 2x 1000W PSU, 7x PERF fan, 1x 10/25GbE 2p SFP28 OCP3 Adapter, 1x 10/25GbE 4p SFP28 OCP3 Adapter, 1x Gen12 Special Boot Dev
- The declared mean A-weighted sound power level, LWA,m, is computed as the arithmetic average of the measured.
- A-weighted sound power levels for a randomly selected sample, rounded to the nearest 0,1 B.

- The declared mean A-weighted emission sound pressure level, LpA,m, is computed as the arithmetic average of the measured A-weighted emission sound pressure levels at the bystander positions for a randomly selected sample, rounded to the nearest 1 dB.
- The statistical adder for verification, Kv, is a quantity to be added to the declared mean A-weighted sound power level, LWA,m, such that there will be a 95% probability of acceptance, when using the verification procedures of ISO 9296, if no more than 6,5 % of the batch of new equipment, has A-weighted sound power levels greater than (LWA,m + Kv).
- The quantity, LWA,c (formerly called LWAd), can be computed from the sum of LWA,m and Kv.
- B, dB, abbreviations for bels and decibels, respectively, where 1 B = 10 dB.
- System under abnormal conditions may increase the noise level, persons in the vicinity of the product [cabinet] for extended periods of time should consider wearing hearing protection or using other means to reduce noise exposure.

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 European Union Waste Electrical and Electronic Equipment Directive [EU WEEE] (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
04-May-2026	Version 15	Changed	Overview and Core Options sections were updated.
		Added	Read Intensive – NVMe – EDSFF - Solid State Drives, Mixed Use – NVMe – EDSFF - Solid State Drives, Read Intensive – NVMe – EDSFF - Solid State Drives SKUs. Ethernet PCIe 10/25Gb SKUs: AMD Solarflare X4522-PLUS 10/25GbE 2-port SFP56 Adapter for HPE and HPE InfiniBand NDR/Ethernet 400Gb 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Generic Adapter.
		Removed	Read Intensive - 24G SAS - SFF – Self-encrypting Solid-State Drives obsolete SKUs.
06-Apr-2026	Version 14	Changed	Overview, Optional Features, Service and Support and Core Options sections were updated.
		Added	Maximum Storage matrix, SAP HANA specifics, Very Read Optimized – NVMe – EDSFF - Solid State Drives, Read Intensive - 24G SAS - SFF – Self-encrypting Solid-State Drives, and HPE Compute Ops Management Smart Choice SKUs.
02-Mar-2026	Version 13	Changed	Service and Support and Core Options sections were updated.
		Added	Updated GreenLake statement. Intel® Xeon 6® Processors with Performance-Cores (P-Cores) SKU.
02-Feb-2026	Version 12	Changed	Overview, Standard Features and Core Options sections were updated.
		Added	HPE MR932i-p Storage Controller, Cable Kit, HPE InfiniBand and Midline - 12G SAS - LFF Drives, Midline - 6G SATA - LFF Drives SKUs.
		Removed	Midline - 12G SAS - LFF Drives, Midline - 6G SATA - LFF Drives obsolete SKUs.
05-Jan-2026	Version 11	Changed	Overview, Core Options section was updated
		Added	Intel® Xeon 6® Performance - General Purpose and HPE DL360 Gen12 Air Baffle Kit.
		Removed	Read Intensive – NVMe – EDSFF - Solid State Drives and HPE InfiniBand obsolete SKUs-
01-Dec-2025	Version 10	Changed	Overview, Core Options, and Technical Specifications sections were updated.
		Added	Mixed Use - 24G SAS - SFF – Self-encrypting Solid-State Drives, Read Intensive - 24G SAS - SFF – Self-encrypting Solid-State Drives SKUs, DL360 G12 Hybrid CTO Server 5Box matrix, System Unit diagram
		Removed	Read Intensive - NVMe - SFF - Solid State Drives obsolete SKU.

Summary of Changes

Date	Version History	Action	Description of Change
03-Nov-2025	Version 9	Changed	Overview, Optional Features, Configuration Information and Core Options sections were updated.
		Added	Installation rules, InfiniBand PCIe SKUs, Thermal Configuration matrix, Maximum Storage matrices, 8SFF NC CTO Cable Kit SKUs, Read Intensive - NVMe - SFF - Solid State Drives SKUs and PCIe Adapters Slotting rules.
		Removed	Compatible with 10SFF/20EDSFF Hybrid NC CTO Server OBS SKU.
02-Sep-2025	Version 8	Changed	Optional Features for DisplayPort version; Core Options section, incl. Thermal configuration: 251W – 350W CPUs with performance HS & Fan kit installation rules and Networking Adapters with different CTO & Cabling Option rules.
		Added	Core Options were added: Intel® E610, 1GbE-4p OCP, NVMe RI U.3 7500 SSDs
04-Aug-2025	Version 7	Changed	Overview, Configuration Information and Core Options sections were updated.
		Added	Closed-loop Liquid Cooling Field Upgrade SKUs, Thermal configuration: 251W – 350W CPUs with performance HS & Fan kit installation rules and Networking Adapters with different CTO & Cabling Option rules.
		Removed	HPE Insight Cluster Management Utility sub-section
07-Jul-2025	Version 6	Changed	Overview, Optional Features, Configuration Information, Core Options, Memory and Storage sections were updated. Added: Intel® Xeon 6® Processors with Performance-Cores (P-Cores) PCIe Expansion Slots rules, HPE Trusted Supply Chain FIO Configuration rules, OS Boot device SKUs and Cooling level for PCIe NIC with AOC/ Transceiver matrix
02-Jun-2025	Version 5	Changed	Overview, Configuration Information and Core Options sections were updated. Added: Socket Scalable Processors SKUs.
05-May-2025	Version 4	Changed	Overview, Standard Features, Configuration Information, Core Options and Technical Specifications sections were updated. Revised: System Fans, PCIe Lanes, Heatsinks, Memory, MR408i-p, Power Supply, Embedded LOM, European Union ErP Lot 9 Regulation section to include Turkey and Ireland., Performance HS, Front OCP NIC enablement kit, Boot Device Enablement kit, EDSFF Backplane to controller cable kits, OCP3.0 Slot Priority Support Matrix, Networking, Cooling Level/Tier, Networking PCIe, Networking OCP, COM, System Inlet Temperature, Acoustic Noise, EMC Certification. Removed: HPE Converged Infrastructure Management Software SKUs.

Summary of Changes

Date	Version History	Action	Description of Change
07-Apr-2025	Version 3	Changed	Overview, Standard Features, Configuration Information, Core Options and Technical Specifications sections were updated. Added: Equipment photo descriptions, Processor notes, Smart Chassis specs, CTO Server Management specs, Datacenter Operational Tracking Sub-Sections, Thermal Mix matrix, Riser information, PCIe Slot Priority from Card functions matrix, PCIe Adapters Slotting Rules and QuickSpecs Survey. Removed: Front Enablement Kit SKU.
10-Mar-2025	Version 2	Changed	Overview, Standard Features and Core Option sections were updated.
24-Feb-2025	Version 1	New	New QuickSpecs.

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