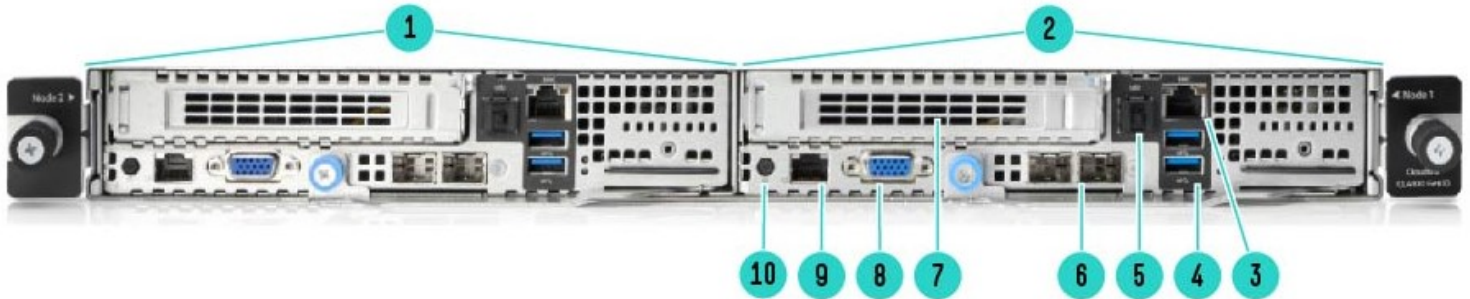


Overview

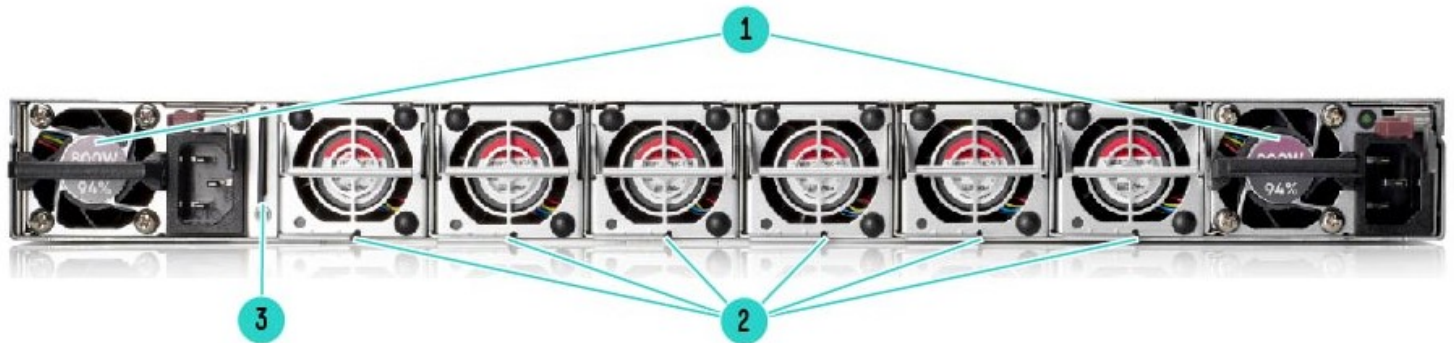
HPE Cloudline CL4100 Gen10 Server

The HPE Cloudline CL4100 Gen10 is a 1U dual-node server for Cloud Service Providers that features Up to 4 of the latest Intel Xeon Scalable processors, and a choice of up to 8 SFF SATA drives or 2 SFF NVMe drives. Without any extras, this server is ideal for Hadoop/Cassandra and HPC workloads to meet the dense compute needs of Service Providers and Enterprises.



CL4100 Gen10 Front View (node)

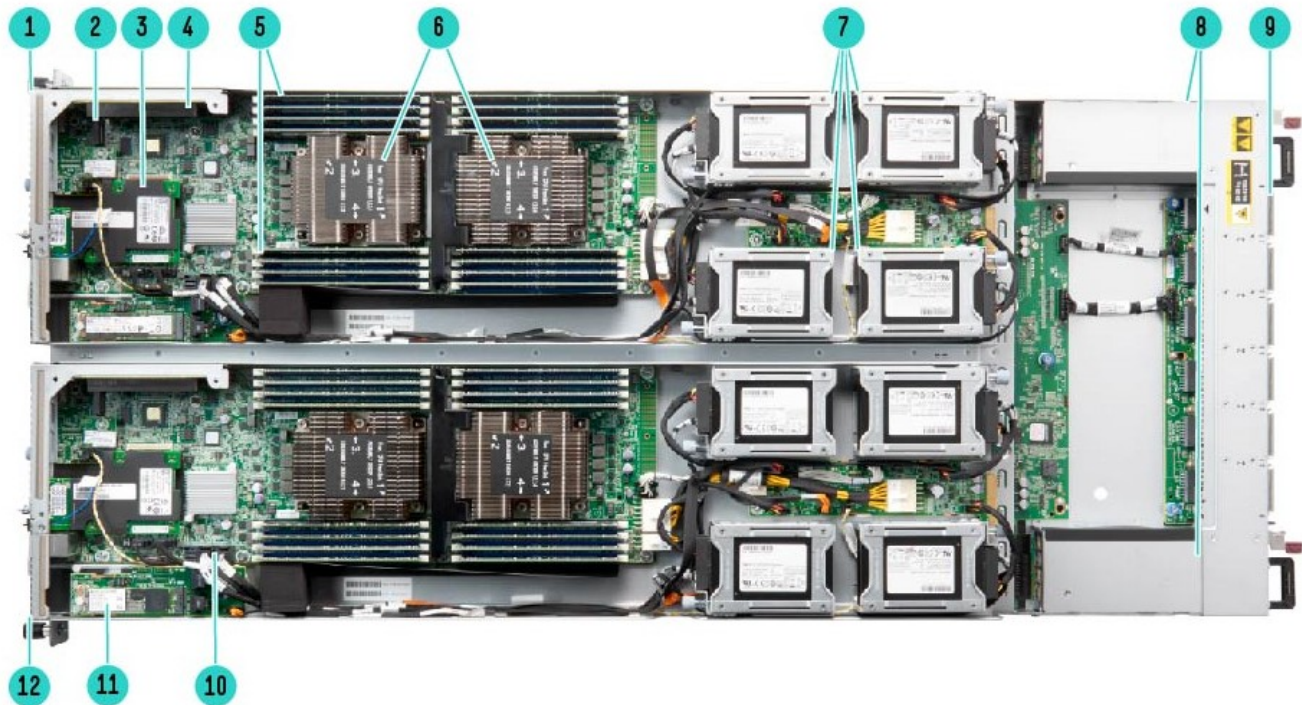
- | | | | |
|----|---------------------------------|-----|----------------------------|
| 1. | Node 2 | 6. | (2) OCP v2 mezzanine ports |
| 2. | Node 1 | 7. | PCIe x16 Gen3 slot |
| 3. | (1) RJ45 management port (IPMI) | 8. | VGA port |
| 4. | (2) USB ports | 9. | RJ45 serial connection |
| 5. | UID/BMC reset button | 10. | Power button |



CL4100 Gen10 Rear View (chassis)

- | | | | |
|----|-----------------------------------|----|-----------|
| 1. | (2) 1+1 800W power supplies | 3. | Asset tag |
| 2. | (6) fans, N+1 redundant, hot-swap | | |

Overview



CL4100 Gen10 Internal View per node (chassis)

- | | | | |
|----|------------------------------------|-----|--|
| 1. | Node 2 | 7. | (8) SFF SATA SSD drives OR (2) SFF NVMe SSD drives |
| 2. | (1) NVMe M.2 connector | 8. | (2) 800W OR 1600W power supplies |
| 3. | OCP v2 mezzanine location | 9. | (6) hot-swappable fans |
| 4. | PCIe x16 Gen3 slot | 10. | (3) mini-SAS x4 ports (SATA support) |
| 5. | (16) DDR4 Memory DIMMs | 11. | Optional M.2 Module riser |
| 6. | (2) Intel Xeon Scalable processors | 12. | Node 1 |

Platform Information

Form Factor

1U rack storage 1.69"(H) x 17.18" (W) x 40" (D) (43.00 mm x 436.50mm x 1017.16mm)

Chassis Type

Dual node; each node up to 8 SFF SATA SSD or 2 SFF NVMe SSD

System Fans

6 Hot-swappable Rear Fans Standard

Standard Features

Processor

Processors - Up to 2 (per node) of the following

NOTE: For more information regarding Intel Xeon processors, please see the following <http://www.intel.com/xeon>.

NOTE: Up to 2 processors per node supported. Mixing different processor models is not supported.

Intel® Xeon® Processor Scalable Family

Intel Xeon Models	CPU Frequency	Cores	L3 Cache	Power	UPI	DDR4	Memory per socket
Silver 4114 Processor	2.2 GHz	10	13.75MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GB
Silver 4110 Processor	2.1 GHz	8	11.00MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GB
Gold 5115 Processor	2.4 GHz	10	13.75 MB	105W	2 @ 10.4 GT/s	2400 MT/s	768GB
Gold 5118 Processor	2.3 GHz	12	16.5 MB	105W	2 @ 10.4 GT/s	2400 MT/s	768GB
Gold 5120 Processor	2.2 GHz	14	19.25 MB	105W	2 @ 10.4 GT/s	2400 MT/s	768GB
Gold 6126 Processor	2.6 GHz	12C	19.25 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6128 Processor	3.4 GHz	6	19.25 MB	115W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6130 Processor	2.1 GHz	16	22 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6134 Processor	3.2 GHz	8	24.75 MB	130W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6136 Processor	3.0 GHz	12	24.75 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6138 Processor	2.0 GHz	20	24.75 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6140 Processor	2.3 GHz	18	24.75 MB	140W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6148 Processor	2.4 GHz	20	27.5 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768GB

NOTE: Silver - 4100 Series & Gold - 5100 Series 2 Socket supports 2UPI @ 9.6 GT/s, 6-Channel DDR4 @ 2400 MHz providing up to 768 GB memory capacity. Gold - 6100 Series 2 Socket supports 3UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2666 MHz providing up to 768 GB memory capacity. Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RAS supported.

Chipset

Intel® C621 Chipset

NOTE: For more information regarding Intel chipsets, please see the following URL:

<http://www.intel.com/products/server/chipsets/>.

On System Management Chipset

iBMC ASPEED AST2500 with KVM Support IPMI 2.0

AMI MegaRAC, Virtual Media

Standard Features

Memory

Industry Standard DDR4 Registered (RDIMM)

DIMM Slots (per node) Available 16 (8 DIMM slots per processor, 6 channels per processor, 2 DIMMs per channel)

Maximum Capacity (RDIMM) per node 1024 GB 16 x 64 GB RDIMM @ 2666 MT/S

Memory Protection

Memory Static Virtual Lockstep

Memory Mirror: Set entire 1LM/2LM memory in system to be mirrored, consequently reducing the memory capacity by half.

Memory Rank Sparing

Memory Correctable Error Threshold: Use for sparing, tagging, and leaky bucket

Memory SDDC Plus One

Expansion Slots

Expansion Slots #	Technology	Bus Width	Connector Width	Form Factor	Notes
Slot1	PCIe 3.0	X16	OCP	OCP 2.0 Mezz Type 1	Processor 0
Slot2	PCIe 3.0	X16	X16	Low Profile	Processor 0

NOTE: Bus Width data indicates the number of physical electrical lanes running to the connector.

NOTE: All risers are included. Expansion slot will only be available if the processor is installed.

Internal Storage Devices

Optical Drive None

Hard Drives None ship standard, drive carriers available

Optional Drive SFF Chassis

(8) Internal SATA SFF drives or (2) Internal NVMe SFF drives

(1) NVMe M.2 drive

(2) SATA M.2 drives (requires M.2 Module Option FIO Kit)

Maximum Internal Storage

	Capacity	Configurations
SFF SATA SSD	7.5 TB	8X 960 GB
SFF NVMe SSD	4 TB	2x 1 TB
M.2 NVMe SSD	256 GB	1x 256 GB
M.2 SATA SSD	480 GB	2x 240 GB

Power Supply

(2) 800W OR (2) 1600W Flex Hot Plug Redundant Power Supplies

System Fans

6 hot-swappable fans

Interfaces (per node)

Video	1
Serial Port	1
OCP NIC ports	1 x OCP 2.0 Mezzanine Type 1 Card
IPMI management port	dedicated 1GbE LAN port
USB 3.0 Ports	2 front

Standard Features

Operating Systems

Ubuntu 16.04, 18.04
RedHat Enterprise 7.3, 7.5
CentOS 7.3
VMware vSphere 6.7

NOTE: Tested for successful installation only, No Operating Systems certification done unless indicated.

Industry Standard Compliance

ACPI 6.1
PCIe 3.0
PXE Support
WOL Support
USB 3.0 Support

Graphics

Integrated PCIe VGA/2D Controller via ASPEED 2500 BMC, 1920 x 1200 @ 60Hz (32 bpp)

Form Factor

1U Rack form factor 1.69" (4.3cm) Height x 17.18" (43.65 cm) Width x 40" (101.716 cm) Length

Security

Power-on password
Administrator's password
TPM 2.0
UEFI Secure Boot

Warranty

Hardware support and is available for 3 years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Hard drives have either a one year or three year warranty; refer to the HPE Cloudline Servers and Options Global Limited Warranty and Technical Support for details.

NOTE: Server Warranty includes 3 year five (5) day Parts response time, 0-Years Labor, 0-Years Onsite support. Additional information regarding worldwide limited warranty and technical support is available at http://www.hpe.com/support/cloudline_warranty_en

Response time:

Response times are based on local standard business days and working hours. Unless otherwise stated, all responses are measured from the time the customer calls until Hewlett Packard Enterprise has either established a mutually acceptable time for support to be performed, or Hewlett Packard Enterprise has begun to provide support or remote diagnostics. Response time is based on commercially reasonable effort. In some countries and under certain supplier constraints, response time may vary. If your location is outside the customary service zone, response time may be longer or there may be an additional charge. Contact your local Hewlett Packard Enterprise service organization for response time availability in your area.

Service and Support

Protect your business beyond warranty with HPE Pointnext operational services

HPE Cloudline Support Services provide remote diagnosis and support, scheduled onsite hardware repair/troubleshooting, and coverage for replacement components, including defective media retention (DMR). With HPE Cloudline Support Services, you can purchase the services that meet your specific needs.

(Coming soon):

- HPE 4100 Parts + Remote Technical Support + Defective Media Retention
- HPE 4100 Parts + Remote Technical Support + Onsite Labor
- HPE 4100 Parts + Remote Technical Support + Onsite Labor + Defective Media Retention

Additional information regarding HPE packaged support services for Cloudline servers is available at:

<https://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA5-9207ENN.pdf>.

Standard Support recommendation

Connect to Hewlett Packard Enterprise for faster problem resolution. Cloudline Packaged Support Services provides hardware onsite response. Simplify your support experience and make Hewlett Packard Enterprise your first call for hardware or software questions.

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

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

Datacenter Care for Hyperscale

DC for Hyperscale is available for Service Providers and HPC customers who use a scale out approach to computing with a high volume homogenous infrastructure and resilient architecture. Customers can take advantage of this environment support tailored to their operating model. More information at <https://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA6-3460ENW.pdf>.

Spares Management Service

Provides customers with spare parts inventory for onsite stocking, and access to the HPE Spares Management Tool – an automated inventory management tool that helps enable real-time inventory management. More information at

<https://h20195.www2.hpe.com/v2/GetPDF.aspx/4AA1-3116ENW.pdf>.

Advisory & Transformational Services

Design, strategy, road map, and other services to help enable the digital transformation journey, tuned to IT and business needs. Advisory Services helps customers on their journey to Hybrid IT, Big Data, and the Intelligent Edge. More information at

<https://www.hpe.com/us/en/services/consulting.html>.

Lifecycle Event Services

Operational offerings to improve performance and securely handle retirement of customers' IT environments. More information at <https://h20195.www2.hpe.com/v2/GetPDF.aspx/5981-8521ENE.pdf>.

- Operate & Improve performance, minimize risk of downtime, and reduce security risks.
 - Retire & Sanitize to safely and securely dispose of retired IT, and ensuring customer data cannot be compromised.
-

Professional Services

Integrate the new solution with project management, installation and startup, relocation services, and more. We help mitigate risk to the business so there is no interruption when new technology is being integrated in the existing IT environment. More information at

<https://www.hpe.com/us/en/services/professional.html>.

Configuration Information

This section lists some of the steps required to configure a Factory Integrated Model. 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 information on configurable product offerings and requirements.

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

Step 1: Base Configuration (choose the following configurable model)

Chassis	HPE CL4100 Gen10 CTO server SATA 8 SFF SSD	HPE CL4100 Gen10 CTO server NVMe 2 SFF SSD
Chassis SKU	P03273-B21	
Node SKU	P04289-B21 (2 nodes per chassis)	
Processor	2 per node, each at 150W	
DIMM Slots	16 DIMM slots for RDIMM DDR4 Memory	
Storage Controller	N/A	PCIe Tri-Mode HBA
PCIe	Processor 0 supports	
	1 x16 PCIe3 lowprofile	
	Optional 1 x OCP Mezz 2.0 Type 1	
	Processor 1 supports	
	N/A	
Drive Cage	1 or 8 SFF SATA	2 SFF NVMe
Network Controller	dedicated 1GbE LAN port (management)	
Fans	6 hot swappable fans	
Management	ASPEED 2500, IPMI v2.0 compliant, on board "KVM over IP" support, Redfish API Conformant	
Power Supply	2x 800W Platinum Redundant PSU	
USB	2 USB 3.0 Ports front	

Configuration Information

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

HPE Processors

Please select one -L21 processor required below. For second processor, please select the same processor model again. For example: first processor, select P01898-L21 then for second processor, select P01898-L21.

NOTE: Select up to two (2) Processors per node

NOTE: If two processors are desired, select one xxxxxx-L21 and another xxxxxx-L21 of the same SKU.

NOTE: Mixing of 2 different processor models are NOT allowed.

NOTE: DDR4 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed

Silver Processors

HPE CL Intel Xeon-Silver 4114 (2.2GHz/10-core/85W) FIO Processor Kit	P01898-L21
HPE CL Intel Xeon-Silver 4110 (2.1GHz/8-core/85W) FIO Processor Kit	P01897-L21

Gold Processors

HPE CL Intel Xeon-Gold 5115 (2.4GHz/10-core/105W) FIO Processor Kit	P01795-L21
HPE CL Intel Xeon-Gold 5118 (2.3GHz/12-core/105W) FIO Processor Kit	P01900-L21
HPE CL Intel Xeon-Gold 5120 (2.2GHz/14-core/105W) FIO Processor Kit	P01901-L21
HPE CL Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) FIO Processor Kit	P01744-L21
HPE CL Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) FIO Processor Kit	P01742-L21
HPE CL Intel Xeon-Gold 6130 (2.1GHz/16-core/125W) FIO Processor Kit	P01902-L21
HPE CL Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) FIO Processor Kit	P01906-L21
HPE CL Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) FIO Processor Kit	P01745-L21
HPE CL Intel Xeon-Gold 6138 (2.0GHz/20-core/125W) FIO Processor Kit	P01903-L21
HPE CL Intel Xeon-Gold 6140 (2.3GHz/18-core/140W) FIO Processor Kit	P01904-L21
HPE CL Intel Xeon-Gold 6148 (2.4GHz/20-core/150W) FIO Processor Kit	P01747-L21

HPE Memory DDR4-2666

NOTE: Select one or more memory. A minimum of two memory kits are required if server is configured with two processors.

NOTE: If only one processor is installed, only half of the total DIMM slots are available. When populating with two processors, all DIMM slots are available.

NOTE: Depending on the memory configuration and processor model, the memory speed may run at different speeds.

Registered DIMMs

HPE CL 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit	P07029-B21
HPE CL 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit	880841-B21
HPE CL 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Memory FIO Kit	880842-B21
HPE CL 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS 17-17-17 Registered Memory FIO Kit	882344-B21

HPE Power Supplies

HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	865414-B21
HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	830272-B21

Step 3: Choose Additional Options from the next section

Additional Options

NOTE: 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.

HPE Drives

SFF (2.5-inch) SATA SSD

HPE CL 240GB SATA 6G Read Intensive SFF (2.5in) Intel S4510 FIO SSD	P08796-B21
HPE CL 480GB SATA 6G Read Intensive SFF (2.5in) Intel S4510 FIO SSD	P08799-B21
HPE CL 960GB SATA 6G Mixed Use SFF (2.5in) Intel S4610 FIO SSD	P08811-B21
HPE CL 960GB SATA 6G Read Intensive SFF (2.5in) Intel S4510 FIO SSD	P08802-B21
HPE CL 1TB SATA 6G Enterprise 7.2K SFF (2.5in) Seagate ISE 512e FIO HDD	881039-B21
HPE CL 1.92TB SATA 6G Mixed Use SFF (2.5in) Intel S4610 FIO SSD	P08814-B21

SFF (7mm, 15mm) NVMe SSD

NOTE: NVMe drive and networking options may have thermal limitations based on processor selection; refer to Thermal Estimations table

HPE CL 1TB NVMe Read Intensive SFF (2.5in) x 15mm Intel P4500 Solid State Drive Kit	880844-B21
HPE CL 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) Samsung PM983 FIO SSD	P06710-B21
HPE CL 2TB NVMe x4 Lanes Read Intensive SFF (2.5in) Intel P4510 FIO SSD	P04600-B21
HPE CL 960GB NVMe x4 Lanes Read Intensive SFF (2.5in) Samsung PM983 FIO SSD	P10536-B21

NOTE: Maximum of (2) NVMe drives may be selected. NVMe drives require a Tri-Mode storage controller

HPE Drive Cages

FIO Kits

HPE CL4100 Gen10 1SFF SATA Cable and FIO Drive Cage Kit	P06238-B21
HPE CL4100 Gen10 8SFF SATA Cable and FIO Drive Cage Kit	P06239-B21
HPE CL4100 Gen10 2SFF NVMe FIO Drive Cage Kit	P09063-B21

NOTE: This FIO kit will be available for order starting early 2019

HPE M.2 Option

FIO Kit

HPE CL4100 Gen10 M.2 Module Option FIO Kit	872926-B21
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NOTE: This M.2 Option provides a PCA riser card and SATA cabling; it can support up to (2) SATA M.2 SSD drives

NOTE: This FIO kit will be available for order starting early 2019

HPE M.2 Drives

SATA M.2 SSD

HPE CL 240GB SATA 6G Mixed Use M.2 - UFF to SFF Micron 5100 FIO SSD	P08784-B21
HPE CL 240GB SATA 6G Read Intensive M.2 - UFF to SFF Intel S4510 FIO SSD	P08790-B21

NOTE: Requires M.2 Module Option FIO Kit – 872926-B21

NVMe M.2 SSD

HPE CL 256GB NVMe Read Intensive M.2 2280 Intel P3100 Solid State Drive Kit	P01661-B21
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HPE Networking

NOTE: a maximum of 1 OCP adapter and 1 PCIe adapter can be selected per node

NOTE: NVMe drive and networking options may have thermal limitations based on processor selection; refer to Thermal Estimations table

Additional Options

OCP Mezzanine Adapters

HPE CL Ethernet 10Gb 1-port X520-DA1 SFP+ OCP NC-SI FIO Adapter	881152-B21
HPE CL Ethernet 10Gb 2-port SFP+ Intel X520 OCP Mezzanine Adapter	851279-B21
HPE CL Ethernet 10Gb 2-port X710-DA2 SFP+ OCP FIO Adapter	P06629-B21
HPE CL Ethernet 25Gb 1-port SFP28 Intel XXV710-D1 OCP FIO Mezzanine Adapter	880148-B21
HPE CL Ethernet 25Gb 2-port Mellanox ConnectX-4 Lx EN SFP28 OCP NC-SI FIO Adapter	P10014-B21
HPE CL Ethernet 50Gb 1-port SFP28 Mellanox ConnectX-4 Lx OCP FIO Mezzanine Adapter	880843-B21

PCIe Adapters

HPE CL Ethernet 10GBASE-T 2-port Intel X550 PCIe 3.0 Card	P01665-B21
HPE CL Ethernet 10Gb 2-port SFP+ Intel X710 PCIe 3.0 Card	P01666-B21
HPE CL Ethernet 50Gb 2-port SFP28 Mellanox ConnectX-5 Single Host PCIe 3.0 Card	P01671-B21
HPE CL InfiniBand EDR/Ethernet 100Gb 2-port Mellanox ConnectX-5 QSFP28 PCIe3 FIO Adapter	P09056-B21

NOTE: For Mellanox networking requiring factory setup for Legacy boot mode, also include: [HPE CL Legacy FIO Mode – P11219-B21](#)

HPE Controllers

Storage Controllers

HPE CL Broadcom 9400-16i Tri-Mode Host Bus Adapter	880861-B21
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HPE Security

TPM 2.0

HPE Trusted Platform Module 2.0 Kit	745823-B21
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NOTE: HPE Trusted Platform Module 2.0 option works with UEFI Mode not Legacy Mode.

Memory

Memory Subsystem Architecture

Intel® Xeon® Processor Scalable Family socket contains six memory channels per installed processor with two DIMM per channel for a total of eight (8) DIMMs or a grand total of sixteen (16) DIMMs for the server.

Memory Population guidelines

CPU1

Rear

8 slot per CPU DIMM Population Order								
1 DIMM			G1					
2 DIMMs		H1	G1					
3 DIMMs	J1	H1	G1					
4 DIMMs		H1	G1			K1	L1	
5 DIMMs *	J1	H1	G1			K1	L1	
6 DIMMs	J1	H1	G1			K1	L1	M1
7 DIMMs *	J1	H1	G1	G2		K1	L1	M1
8 DIMMs *	J1	H1	G1	G2	K2	K1	L1	M1

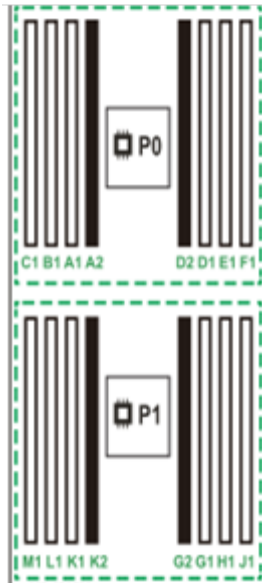
* Unbalanced

CPU 0

Front

8 slot per CPU DIMM Population Order								
1 DIMM						A1		
2 DIMMs						A1	B1	
3 DIMMs						A1	B1	C1
4 DIMMs		E1	D1			A1	B1	
5 DIMMs *		E1	D1			A1	B1	C1
6 DIMMs	F1	E1	D1			A1	B1	C1
7 DIMMs *	F1	E1	D1		A2	A1	B1	C1
8 DIMMs *	F1	E1	D1	D2	A2	A1	B1	C1

* Unbalanced



Memory

General Memory Population Rules and Guidelines

- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and load the channels similarly whenever possible.
- When two processors are installed, balance the DIMMs across the two processors.
- The maximum memory speed is a function of the memory type, memory configuration, and processor.
- The maximum memory capacity is a function of the number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, the number and model of installed processors qualified on the platform.
- When population DIMMs into a channel, slot #0 must be populated first. And then followed by the slot #1

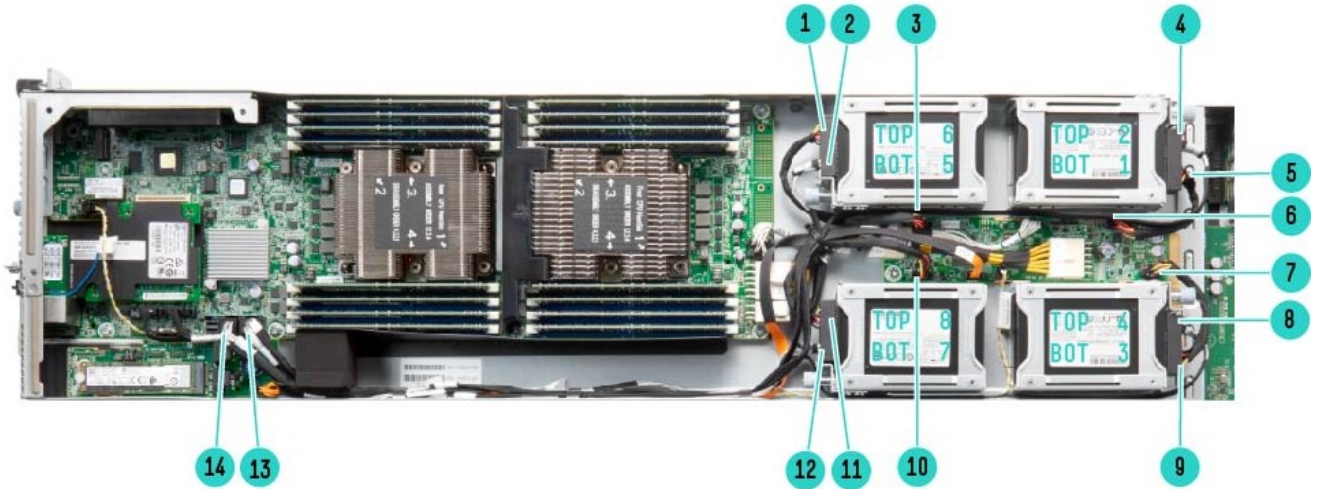
DIMM slot and configuration order

DIMM Slot #	F1	E1	D1	D2	A2	A1	B1	C1
1 DIMM						1		
2 DIMMs						1	2	
3 DIMMs						1	2	3
4 DIMMs		4	3			1	2	
5 DIMMs *		5	4			1	2	3
6 DIMMs	6	5	4			1	2	3
7 DIMMs *	6	5	4		7	1	2	3
8 DIMMs	6	5	4	8	7	1	2	3
* Unbalanced, not recommended								

Memory

Memory Bandwidth and Capacity						
DIMM Type	Registered DIMM(RDIMM)					
HPE SKU P/N	880841-B21	P07029-B21	875351-B21	882344-B21	851005-B21	880842-B21
SKU Description	HPE CL 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit	HPE CL 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit	HPE Cloudline Server Special Memory	HPE CL 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS 17-17-17 Registered Memory FIO Kit	HPE CL 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS-15-15-15 Registered Memory Kit	HPE CL 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Memory FIO Kit
DIMM Capacity	32GB	16GB	32GB	16GB	16GB	64GB
DIMM Rank	2R	2R	2R	2R	2R	4R
Voltage	1.2	1.2	1.2	1.2	1.2	1.2
DRAM Depth[bit]	4G	1G	2G	1G	1G	2G
DRAM width[bit]	x4	x8	x4	x4	x4	x4
DRAM Density	8G	8G	8G	4G	4G	8G
CAS Latency	19-19-19	19-19-19	17-17-17	17-17-17	15-15-15	19-19-19
DIMM Native Speed	2666 MT/s	2666 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2666 MT/s
Processors Officially Supported Memory Speed:						
Intel Xeon® Gold 61xx Processors Officially Supported Memory Speed (MT/s)						
1 DIMM Per Channel	2666 MT/s	2666 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2666 MT/s
2 DIMMs Per Channel	2666 MT/s	2666 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2666 MT/s
Intel Xeon® Gold/Silver 51xx/41xx Processors Officially Supported Memory Speed (MT/s)						
1 DIMM Per Channel	2400 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2400 MT/s
2 DIMMs Per Channel	2400 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2400 MT/s	2400 MT/s
NOTE: The maximum memory speed is a function of the memory type, memory configuration, and processor model. For details on the HPE Server Memory speed, visit: https://www.hpe.com/docs/memory-speed-table						

Storage

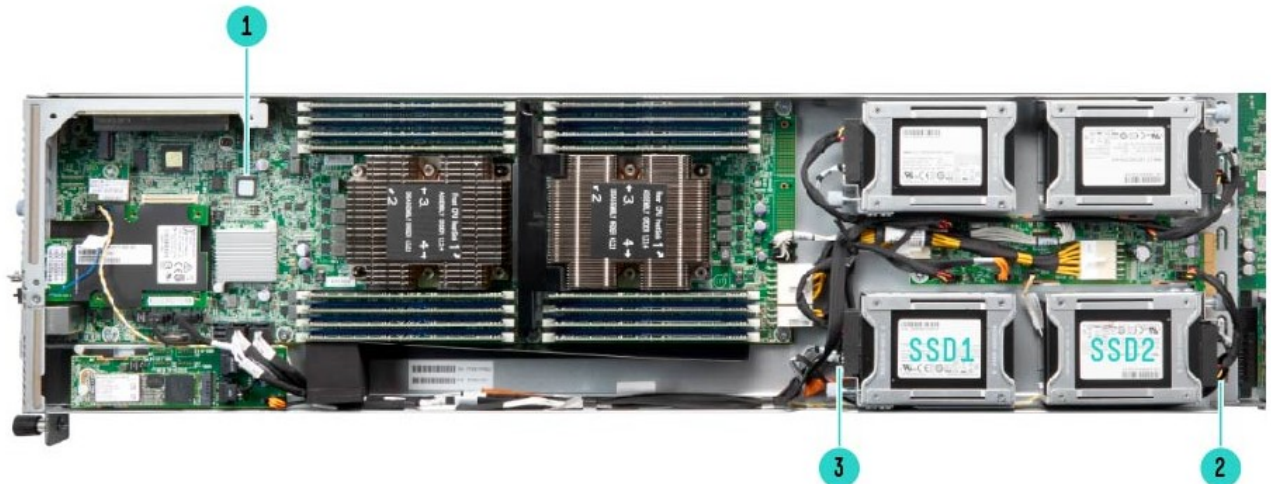


HPE Cloudline CL4100 Gen10 Server - Top View

4 x SFF drive cages SATA option:

- | | |
|--|---|
| 1. SATA SSDs 6 connects with J12 | 8. Top SATA Option 4 SSDs (connects with ITP:J3) |
| 2. SATA SDDs 5 connects with ITP:J11 | 9. Bottom SATA Option 3 SDDs (connects with J3) |
| 3. ITP: J11 | 10. ITP: J9 |
| 4. Top SATA Option 2 SSDs(connects with J3) | 11. Top SATA Option 8 SSDs (connects with ITP:J9) |
| 5. Bottom SATA Option 1 SDD (connects with ITP:J8) | 12. Bottom SATA Option 7 SDDs (connects with J12) |
| 6. ITP: J8 | 13. J12 |
| 7. ITP: J3 | 14. J3 |

NOTE: 2 SFF SATA SSDs per cage



2x SFF drive cages NVMe option:

- | | |
|--|--|
| 1. Port0&1 | 3. NVMe option 1 SSD (connects with Port0&1) |
| 2. NVMe option 2 SSD (connects with Port0&1) | |

NOTE: SFF NVMe SSD per cage

Technical Specifications

Thermal Estimations

CL4100 Thermal Capacity Estimation

Ambient	CPU - Max	SATA SFF SSD_8PCS_behind CPU (No limitation.)	SATA SFF SSD_8PCS_behind CPU (S4610, S4510SE series) (No limitation)	NVMe SFF SSD_2PCS_behind CPU (P4500 series & 3.2T NVMe 1725b SSD)	OCP-Max _ in the front of CPU
35C	140W	1T 7.2K	1.92GB(3.2W), 960GB(3W), 480GB(3W), 240GB(2.4W)		2x10Gb/2x25Gb
	120W				
	105W			1TB (11W)	2x10Gb/2x25Gb/2x50Gb/2x100Gb
	85W				
33C	140W	1T 7.2K	1.92GB(3.2W), 960GB(3W), 480GB(3W), 240GB(2.4W)		2x10Gb/2x25Gb
	120W				
	105W			1TB (11W)	2x10Gb/2x25Gb/2x50Gb/2x100Gb
	85W				
30C	150W	1T 7.2K	1.92GB(3.2W), 960GB(3W), 480GB(3W), 240GB(2.4W)		2x10Gb/2x25Gb
	140W				
	120W			1TB(11W)	2x10Gb/2x25Gb/2x50Gb
	105W				
	85W				
28C	150W	1T 7.2K	1.92GB(3.2W), 960GB(3W), 480GB(3W), 240GB(2.4W)		2x10Gb/2x25Gb
	140W				
	120W			1TB(11W)	2x10Gb/2x25Gb/2x50Gb
	105W				
	85W				
25C	150W	1T 7.2K	1.92GB(3.2W), 960GB(3W), 480GB(3W), 240GB(2.4W)	1TB(11W)	2x10Gb/2x25Gb/2x50Gb
	140W			2TB (14W), 1TB(11W), 1.92T(10.6W)	2x10Gb/2x25Gb/2x50Gb/2x100Gb
	120W				
	105W				
	85W			3.2TB(20.5W), 2TB(14W), 1TB(11W), 1.92T(10.6W)	
20C	150W	1T 7.2K	1.92GB(3.2W), 960GB(3W), 480GB(3W), 240GB(2.4W)	3.2TB(20.5W), 2TB(14W), 1TB(11W), 1.92T(10.6W)	2x10Gb/2x25Gb/2x50Gb/2x100Gb

Technical Specifications

System Unit

Dimensions (H x W x D) 1.69" (4.3cm) Height x 17.18" (43.65 cm) Width x 40" (101.716 cm) Length

Weight (approximate)
Maximum: (all hard drives, power supplies, and processors installed) 25.04 kg
Minimum: (one hard drive, power supply, and processor installed) 16.52 kg

Input Requirements
Rated Line Voltage 100 - 127Vac / 200 - 240Vac
Rated Input Frequency 50 - 60Hz
Rated Output Power 800W @ 100- 127Vac
 800W @ 200/240Vac

BTU Rating
Rated Input Power 100 – 120 VAC 200 – 240 VAC
Maximum 100 – 127V @ 4040.85 BTU/hour
 200 – 240V @ 4586.45 BTU/hour

System Inlet Temperature **Standard Operating 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

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). The approved hardware configurations for this system are listed at the URL: <http://www.hpe.com/servers/ashrae>

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). The approved hardware configurations for this system are listed at the URL: <http://www.hpe.com/servers/ashrae>

System performance may be reduced if operating in the extended ambient operating range or with a fan fault

Relative Humidity **Non-operating**

-30° to 60°C (-22° to 140°F).
 Maximum rate of change is 20°C/hr (36°F/hr).

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.

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).

Technical Specifications

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

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

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise **web site**. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
04-Feb-2019	Version 2	Changed	SKUs were added in Additional Options section
03-Dec-2018	Version1	New	New QuickSpecs



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