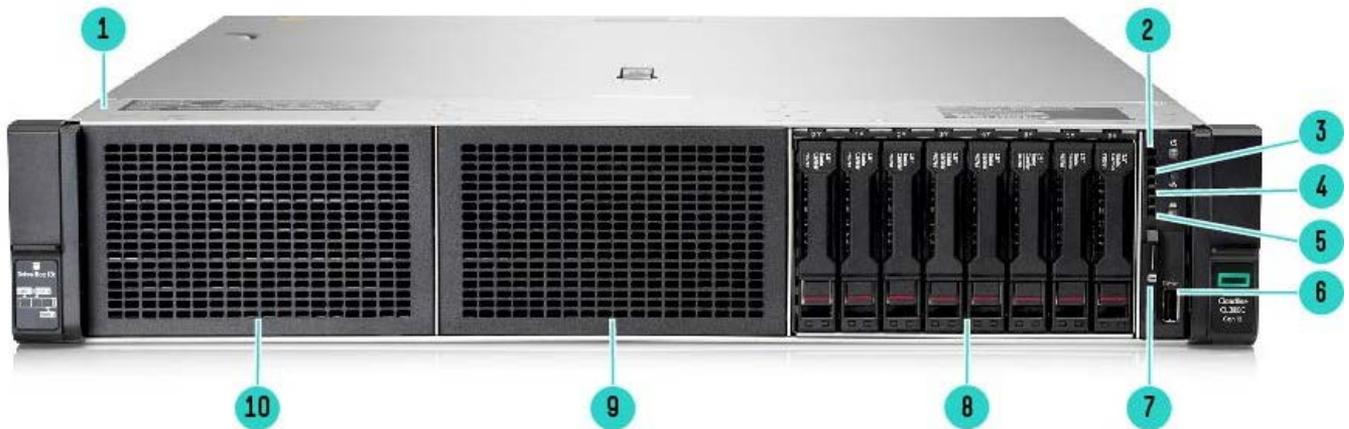


Overview

HPE Cloudline CL2800 Gen10 Server

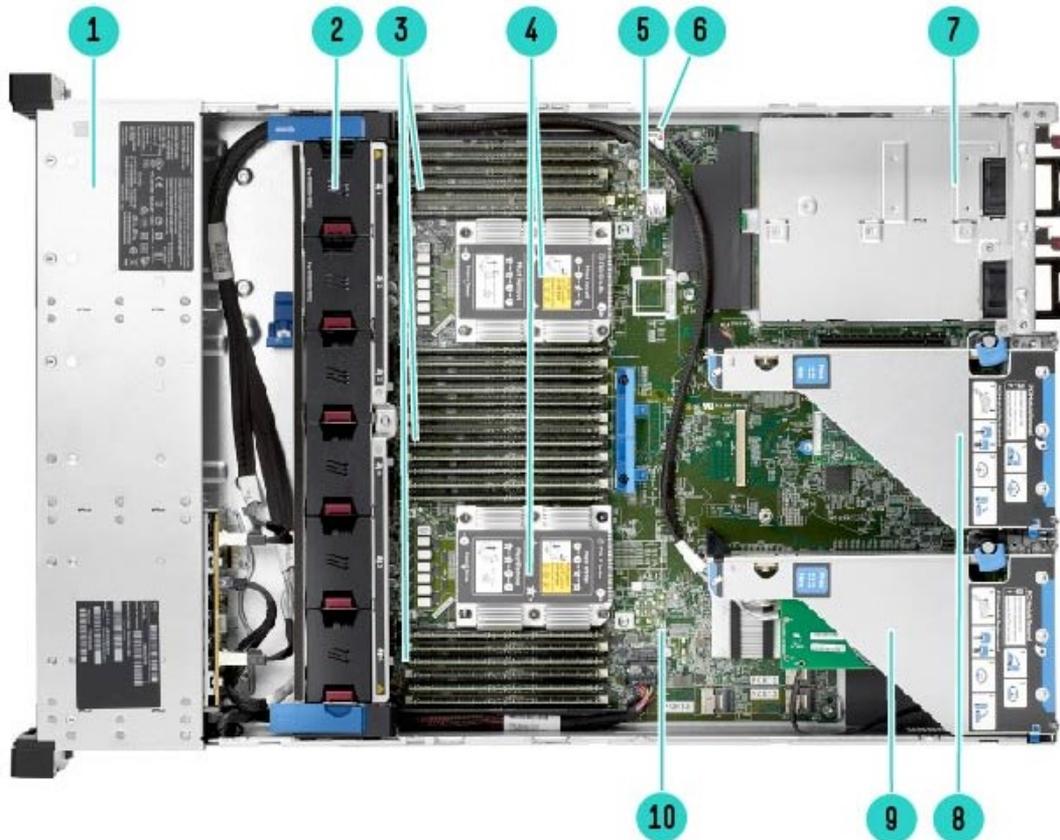
Adaptable for diverse workloads and environments, the secure 2P 2U HPE Cloudline 2800 Gen10 delivers world-class performance with the right balance of expandability and scalability. Designed for supreme versatility and resiliency while being backed by a comprehensive warranty make it ideal for multiple environments from Containers to Cloud to Big Data. Standardize on the industry's most trusted compute platform.



8 SFF chassis- Front View

Item	Description	Item	Description
1.	Quick removal access panel	6.	USB 3.0
2.	Power On/Standby button and system power LED button	7.	Serial label pull tag
3.	Health LED	8.	8 SFF Drive Cage Bay (Box 3)
4.	NIC status	9.	Box 2
5.	UID button	10.	Box 1

Overview



8SFF chassis – with optional 2nd CPU- Internal View

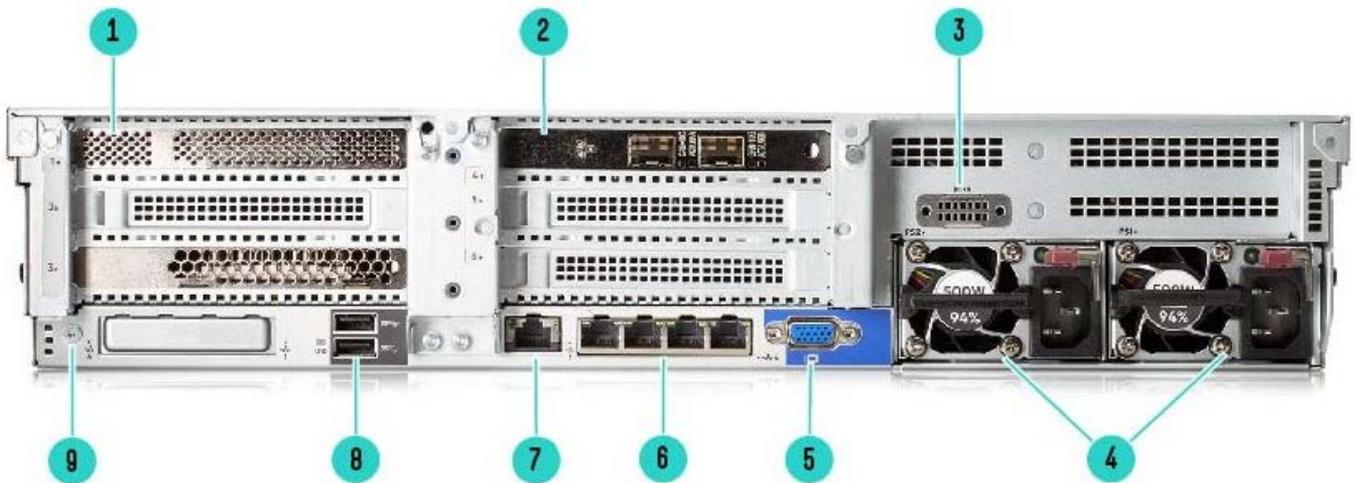
Item Description

1. Drive cage up to 24 SFF SAS/SATA, 16 SFF NVMe, or 12 LFF SATA
2. Hot-swappable fans
3. DDR4 DIMM slots. Shown fully populated in 24 slots (12 per processor)
4. Processors, heatsink showing
5. USB 3.0

Item Description

6. microSD card slot
7. Redundant HPE Flexible Slot Power supplies
8. Secondary PCIe 3.0 riser
9. Primary PCIe 3.0 riser
10. System board

Overview



Rear View

Item Description

1. Primary Riser. PCI Slots (Slots 1-3 top to bottom, riser shipped standard, not shown)
2. Secondary Riser. PCI Slots (Slots 4-6 top to bottom, not shown, requires second riser card, and second processor).
3. Optional serial port
4. Power supply
5. VGA connector

Item Description

- 6.. Embedded 4 x 1GbEE Network Adapter
7. BMC management port (1 GbEE)
8. USB connectors 3.0 (2)
9. Unit ID LED

What's New:

- Open standards system in a general-purpose 2U design.
- Supports Intel Xeon Processor Scalable Family.
- 24SFF SAS/SATA, up to 16 SFF NVMe, or 12 LFF SATA.
- Open systems management - Redfish® API, IPMI.
- BIOS configuration via Redfish® API.
- Keep data protected via Intel® Boot Guard.

Overview

Platform Information

Form Factor

2U rack

Chassis Types

8 SFF with optional Universal Media Bay, and optional SFF or NVMe drive bay options

12 LFF

NOTE: The 8 SFF can be upgraded with additional 8SFF drive box to total 16 or 24 SFF drives. For optimal upgrade Box 2 should be populated second, with Box 1 the last to be populated for a field upgrade to 24 SFF.

NOTE: The 8 LFF chassis cannot be upgraded to 12 LFF.

System Fans

Standard – fan types included

NOTE: 1P models typically ship with 4 standard fans.

NOTE: 2P models typically ship with 6 standard fans.

NOTE: The 12 LFF and 24 SFF chassis ship with 6 High performance fans as standard.

NOTE: High performance fan kit is available to meet ambient temperature environments.

NOTE: High performance fan kits are required for NVMe configurations.

Standard Features

Standard Features

Processors – Up to 2 of the following depending on model.

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

NOTE: This table covers the public Intel offering only.

Intel Xeon Models	CPU Frequency	Cores	L3 Cache	Power	UPI	DDR4	Memory per socket
Gold Processors							
Gold 6152 Processor	2.1 GHz	22	30.25 MB	140W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6148 Processor	2.4 GHz	20	27.50 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6144 Processor	3.5 GHz	8	24.75 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6142 Processor	2.6 GHz	16	22.00 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6140 Processor	2.3 GHz	18	24.75 MB	140W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6138 Processor	2.0 GHz	20	27.50 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6136 Processor	3.0 GHz	12	24.75 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6134 Processor	3.2 GHz	8	24.75 MB	130W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6130 Processor	2.1 GHz	16	22.00 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6128 Processor	3.4 GHz	6	19.25 MB	115W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 6126 Processor	2.6 GHz	12	19.25 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 5122 Processor	3.6 GHz	4	16.50 MB	105W	2 @ 10.4 GT/s	2666 MT/s	768GBE
Gold 5120 Processor	2.2 GHz	14	19.25 MB	105W	2 @ 10.4 GT/s	2400 MT/s	768GBE
Gold 5118 Processor	2.3 GHz	12	16.50 MB	105W	2 @ 10.4 GT/s	2400 MT/s	768GBE
Gold 5115 Processor	2.4 GHz	10	13.75 MB	85W	2 @ 10.4 GT/s	2400 MT/s	768GBE

NOTE: Gold Processors:

- 2 and 4 socket capable, 2S - 2UPI, 4S - 3UPI @ 10.4 GT/s.
- 6-Channel DDR4 @ 2400 MT/s (SKU 5122 - supports 2666 MT/s).
- 768 GB max memory capacity per socket
- Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512 (1x 512-bit FMA) (SKU 5122 - supports 2x 512-bit FMA).
- - 48 lanes PCIe 3.0, advanced RAS.

Silver Processors							
Silver 4116 Processor	2.1 GHz	12	16.50 MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GBE
Silver 4114 Processor	2.2 GHz	10	13.75 MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GBE
Silver 4112 Processor	2.6 GHz	4	8.25 MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GBE
Silver 4110 Processor	2.1 GHz	8	11.00 MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GBE
Silver 4108 Processor	1.8 GHz	8	11.00 MB	85W	2 @ 9.6 GT/s	2400 MT/s	768GBE
Bronze Processors							
Bronze 3106 Processor	1.7 GHz	8	11.00 MB	85W	2 @ 9.6 GT/s	2133 MT/s	768GBE
Bronze 3104 Processor	1.7 GHz	6	8.25 MB	85W	2 @ 9.6 GT/s	2133 MT/s	768GBE

NOTE: Silver – 4100 Series - 2 Socket supports 2UPI @ 9.6 GT/s, 6-Channel DDR4 @ 2400 MHz providing up to 768 GBE 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.

NOTE: Bronze – 3100 Series - 2 Socket supports 2UPI @ 9.6 GT/s, supports 6-Channel DDR4 @ 2133 MHz providing up to 768GBE memory capacity. Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RAS supported.

Standard Features

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

HPE BMC – remote server management processor embedded on the system board of the server

Memory

Type:		Industry Standard DDR4 Registered (RDIMM) and Load Reduced (LRDIMM)
DIMM Slots Available	24	12 DIMM slots per processor, 6 channels per processor, 2 DIMMs per channel
Maximum capacity (LRDIMM)	1.5 TB	24 x 128 GBE LRDIMM @ 2666 MHz
Maximum capacity (RDIMM)	768 GBE	24 x 32 GBE RDIMM @ 2666 MHz
Maximum Capacity (HPE Scalable Persistent Memory)	512 GBE	Leveraging either 24 x 16 GBE RDIMM or 12 x 32GBE RDIMM

NOTE: Maximum memory per socket is dependent on processor selection. Processors supporting 1.5 TB per CPU is indicated by the “M” in the processor model names (i.e. 6134M).

NOTE: Mixing of RDIMM and LRDIMM memory is not supported.

NOTE: For General Server Memory Population Rules and Guidelines for Gen10 see details here:

<http://www.hpe.com/docs/memory-population-rules>

Memory Protection

Advanced ECC

Advanced ECC uses single device data correction to detect and correct single and all multibit error that occurs within a single DRAM chip.

Online Spare

Memory online spare mode detects a rank that is degrading and switches operation to the spare rank.

Expansion Slots

Slots #	Technology	Bus Width	Connector Width	Slot Form Factor	Notes
1	PCIe 3.0	X8	X8	Full-height, full-length slot	Proc 1
2	PCIe 3.0	X16	X16	Full-height, full-length slot	Proc 1
3	PCIe 3.0	X8	X8	Full-height, half-length slot	Proc 1

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

NOTE: This riser also supports dual m.2 cards.

Slots #	Technology	Bus Width	Connector Width	Slot Form Factor	Notes
1	PCIe 3.0	X8	X8	Full-height, full-length slot	Proc 2
2	PCIe 3.0	X16	X16	Full-height, full-length slot	Proc 2
3	PCIe 3.0	X8	X8	Full-height, half-length slot	Proc 2

Standard Features

Storage Controllers

- Embedded Software RAID
- Intel C621 AHCI SATA RAID with 14 SATA ports, 12 ports accessible (embedded)
- RAID Controllers
- Broadcom 9460-8i/16i RAID Controller
- LSI 9361-8i/16i RAID Controller
- HBA Controllers
- LSI 9300-8i SAS HBA Card
- LSI 9305-16i SAS HBA Card

Internal Storage Devices

Hard Drives None ship standard

Maximum Internal Storage

Storage	Capacity	Configuration
Hot Plug SFF SAS	57.6 TB	24 2.4TB
Hot Plug LFF SATA	168 TB	12 x 14 TB
Hot Plug SFF SAS SSD	184.32 TB	24 x 7.68 TB
Hot Plug SFF NVMe PCIe SSD	128 TB	16 x 8 TB NVMe

NOTE: 2x m.2 drives are supported on the Primary Riser.

Power Supply

HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

NOTE: Available in 94% efficiency.

HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

NOTE: Available in 94% and 96% efficiency.

NOTE: Also available in -48VDC and 227VAC/380VDC power inputs.

HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

NOTE: Available in 94% efficiency.

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, tool-less installation into HPE Cloudline Gen10 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.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (AOK02A). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the [HPE Power Cables](#) web page.

To review the power requirements for your selected system, please use the [HPE Power Advisor Tool](#).

For information on power specifications and technical content visit [HPE Server power supplies](#).

Standard Features

Interfaces

Serial	1 port with cable optional, rear
Video	1 Rear – VGA port (standard on all chassis types)
Network Ports	4x 1GbE embedded NIC (standard on all chassis types)
BMC Remote Management Network Port	1 GbE Dedicated
Micro SD Slot	1 Micro SD (internal)

NOTE: The Micro SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.

USB 3.0	Up to 5 total: 1 front, 2 rear, 2 internal (secure)
---------	---

Operating Systems and Virtualization Software Support for Cloudline Servers

- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Red Hat Enterprise Linux 6.9, 6.10
- Red Hat Enterprise Linux 7.4, 7.5
- SLES 12 SP3
- VMware vSphere 6.5 U1

NOTE: For more information visit <http://www.hpe.com/info/ossupport>

Industry Compliance

- AMI Aptio 5.12
 - UEFI 2.5 Support
 - UEFI Shell 2.1 Support
 - UEFI PI 1.4 Support
 - ACPI 6.1 Compliant
 - PCIe 3.0 Compliant
 - SMBIOS 3.0
 - PXE Support
 - WOL Support
 - USB 3.0 Compliant
 - USB 2.0 Compliant
 - Redfish® version 1.0
 - IPMI 2.0
 - DCMI (Data Center Management Interface), version 1.5
 - SPS 3.0
 - SMBUS 2.0
-

Graphics

Integrated Video Standard

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

Standard Features

AMI UEFI BIOS

Unified Extensible Firmware Interface (UEFI) is an industry standard for better manageability and secured configuration than the legacy ROM at boot time. HPE Cloudline Gen10 servers have a UEFI Class 2 implementation and support both UEFI Mode (default) and Legacy BIOS Mode. Please reference the CL2800 User & Maintenance Guide.

- UEFI enables numerous new capabilities specific to HPE servers such as:
- Secure Boot and Secure Start enable for enhanced security
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- PXE boot support for IPv6 networks
- UEFI Boot Mode only:
- TPM 2.0 Support
- NVMe Boot Support
- iSCSI Software Initiator Support.
- HTTP Boot support
- Boot support for option cards that only support a UEFI option ROM

NOTE: For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.

NOTE: Legacy FIO Setting (P11219-B22) can be selected to configure the system in Legacy mode in the factory for your HPE CloudlineGen10 Server.

Embedded Management

Open Systems BMC

Industry standard baseboard management controller (BMC®) for effective remote management with IPMI / Redfish®, and DCMI/PXE boot standard interfaces allowing simple/scripted integration into an application infrastructure. A user can access the BMC firmware (FW), via a web browser, or scripting for server status configurations, user(s) privilege setup, FW updates, power control, event logging, BMC Network, serial port management, and SOL configuration.

Redfish® API

Redfish® API conformance and offers simplified server management automation such as configuration and maintenance tasks based on modern industry standards.

Security

- UEFI Secure Boot and Secure Start Support
- SECURE FLASH
- SSL (HTTPS) for secured sessions
- TPM (Trusted Platform Module) 2.0 option

NOTE: TPM 2.0 only works when UEFI is set to default

- Bezel Locking Kit
-

Standard Features

Warranty

Hardware support 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 Years Parts with five (5) days response time, 0 Years Labor, and 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.

Optional Features

Rack and Power Infrastructure

The story may end with servers, but it starts with the foundation that makes compute go – and business grow. We've reinvented our entire portfolio of rack and power products to make IT infrastructure more secure, more practical, and more efficient. In other words, we've 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°C, 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 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've 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](#).

Service and Support

Protect your business beyond warranty with Foundation Care NBD and Cloudline Support Services

HPE Foundation Care Next Business Day and Cloudline Support Services provide remote diagnosis and support, scheduled onsite hardware repair/troubleshooting, and coverage for replacement components. Also available with defective media retention (DMR) or comprehensive defective media retention (CDMR) services.

Extended support duration for up to 5 years is available on Foundation Care NBD services.

- HPE Cloudline 3 Years Parts + Remote Technical Support + Defective Media Retention
- HPE Cloudline 3 Years Parts + Remote Technical Support + Comprehensive Defective Media Retention
- HPE Foundation Care Next Business Day (3, 4, and 5 years options)
- HPE Foundation Care Next Business Day + Defective Media Retention (3, 4, and 5 years options)
- HPE Foundation Care Next Business Day + Comprehensive Defective Media Retention (3, 4, and 5 years options)

More information on Foundation Care NBD available at: <https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa4-8876enw.pdf>

More information on Cloudline Support Services 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 Carepack 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 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 & Professional 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>.

Operational offerings to improve performance and securely handle retirement of customers' IT environments.

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.

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 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.

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. All Factory Integrated Models will be populated with sufficient hard drive blanks based on number of drives ordered with server.
4. 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	HPE CL2800 Gen10 8SFF CTO Server	HPE CL2800 Gen10 12LFF CTO Server
SKU Number	P04356-B21	P09682-B21
Processor	Not included as standard	Not included as standard
DIMM Slots	24-DIMM slots	24-DIMM slots
Storage Controller	Intel® C621 series chipset supporting 14 (12 accessible) Internal 6GbE AHCI/RAID SATA Optional SAS/SATA RAID or HBA via PCIe card	
PCIe	Three standard in primary riser (with dual M.2 support)	
Drive Cage - included	8 SFF	12 LFF
Network Controller	HPE 1GbE Ethernet 4-Port embedded or stand up card	
Fans	4 Standard (1P), 6 Standard (2P) or 6-High Performance (24SFF or NVMe)	6-High Performance
Management	Open Standards Based Management IPMI 2.0, Redfish® API, AMI MegaRAC BMC, AMI APTIO BIOS	
USB	(5) USB ports – 1 Front, 2 Rear, 2 Internal	(5) USB ports – 1 Front, 2 Rear, 2 Internal

NOTE: All CTO servers are Energy Star 2.1 compliant.

CTO Server	8 SFF CTO Chassis	12 LFF CTO Chassis
Included Drive Cage	8 SFF SAS/SATA	12 LFF Chassis
Additional drive cages	Up to 2 Optional	Not available
8 SFF Drive Cage	Up to 2 Optional	Not available
8 NVME/SAS Bay	Up to 3 Optional	Not available
8 NVME Cage	Up to 2 Optional	Not available

NOTE: This applies to CTO configurations, field upgrades may differ depending field configuration.

Step 2a: Choose Required Options - Processors

Please select a minimum of one or maximum of two –L21 processor required below.

NOTE: 8SFF CTO 1P models ship with 4 standard fans. The second processor option kit contains 2 additional fans. 12 LFF and 24 SFF CTO Servers ship with 6 High performance fans included; 12LFF CTO Servers ship with 6 Standard fans included. High performance fan kit is available to meet ambient temperature environments and are required for NVMe configurations.

NOTE: Maximum memory capacity per processor is dependent on processor models. All processors support up to 768 GBE max memory per processor except “M” model processors will support up to 1.5 TB max memory per processor.

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.

NOTE: Processors with 130W or higher will ship with the High Performance heat sink plus SKUs 6128, 5122 as noted below. All other will processors will ship with the Standard heat sink.

Configuration Information

Processor Option Kits

Required Processor

Intel Xeon-Gold

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 5122 (3.6GHz/4-core/105W) FIO Processor Kit	P01741-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) FIO Processor Kit	P01744-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) FIO Processor Kit	P01742-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6130 (2.1GHz/16-core/125W) FIO Processor Kit	P01902-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) FIO Processor Kit	P01906-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) FIO Processor Kit	P01745-L21
NOTE: Ships with Performance Heatsink.	
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
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6142 (2.6GHz/16-core/150W) FIO Processor Kit	P01746-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6144 (3.5GHz/8-core/150W) FIO Processor Kit	P01743-L21
NOTE: Ships with Performance Heatsink.	
HPE CL Intel Xeon-Gold 6152 (2.1GHz/22-core/140W) FIO Processor Kit	P01905-L21
NOTE: Ships with Performance Heatsink.	

Intel Xeon-Silver

HPE CL Intel Xeon-Silver 4108 (1.8GHz/8-core/85W) FIO Processor Kit	P01896-L21
HPE CL Intel Xeon-Silver 4110 (2.1GHz/8-core/85W) FIO Processor Kit	P01897-L21
HPE CL Intel Xeon-Silver 4112 (2.6GHz/4-core/85W) FIO Processor Kit	P01794-L21
HPE CL Intel Xeon-Silver 4114 (2.2GHz/10-core/85W) FIO Processor Kit	P01898-L21
HPE CL Intel Xeon-Silver 4116 (2.1GHz/12-core/85W) FIO Processor Kit	P01899-L21

Intel Xeon-Bronze

HPE CL Intel Xeon-Bronze 3104 (1.7GHz/6-core/85W) FIO Processor Kit	P01894-L21
HPE CL Intel Xeon-Bronze 3106 (1.7GHz/8-core/85W) FIO Processor Kit	P01895-L21

Step 2b: Choose Memory Options

Please select one or more memory from below.

Registered DIMMs (RDIMMs)

HPE CL 16GBE 1Rx4 DDR4-2666-R FIO Kit	881067-B21
HPE CL 16GBE 2Rx8 DDR4-2666-R 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

Configuration Information

Step 2c: Choose Power Supplies

Select one or two power supplies from below.

NOTE: Mixing of 2 different power supplies is NOT allowed.

HPE Flex Slot Power Supplies

HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	865408-B21
HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit	865438-B21
HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	865414-B21
HPE 800W Flex Slot -48VDC Hot Plug Low Halogen Power Supply Kit	865434-B21
HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	830272-B21
HPE 800W Flex Slot Universal Hot Plug Low Halogen Power Supply Kit	865428-B21

NOTE: 1600W Power supplies only support high line voltage (200 VAC to 240 VAC).

Step 3: Choose Additional Factory Integratable Options

One of the following from each list may be selected if desired at time of factory integration

HPE Security Options

HPE Trusted Platform Module 2.0 Gen10 Option	864279-B21
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NOTE: HPE Trusted Platform Module 2.0 option works with Gen10 servers with UEFI Mode not Legacy Mode.

NOTE: HPE server systems can have a TPM module (of any type) installed only once. It cannot be replaced with any other TPM module.

HPE Gen10 2U Bezel Kit	867809-B21
HPE Bezel Lock Kit	875519-B21

HPE Unique Options

HPE CL2800 Gen10 x16 16 Riser FIO Kit	P05479-B21
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NOTE: Slot 1 or 2 in Primary location.

NOTE: Supports Full Height and Full length cards.

NOTE: Bus width x16, x16, Connector Width x16, x16.

HPE CL2800 Gen10 4p Prim SlimSAS FIO Kit	P10539-B21
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NOTE: Riser supporting up to 8 NVMe drives in Primary location.

NOTE: This is a factory integrated only option.

NOTE: This can be connected to an 8SFF NVMe drive cage in box 3

HPE CL2800 Gen10 4p Sec SlimSAS FIO Kit	P10540-B21
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NOTE: Riser supporting up to 8 NVMe drives in Secondary location.

HPE CL2800 Gen10 2 x8 Tertiary FIO Ki	P10541-B21
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NOTE: This is a factory integrated only option.

NOTE: Supports 2x 8 slots in the Tertiary location.

HPE CL Legacy FIO Mode Setting	P11219-B22
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NOTE: UEFI is the default, this FIO part can be used for CTO to enable Legacy mode.

Step 4: Choose additional options for Factory Integration from Core and Additional Options sections below

Core 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 an HPE approved configurator. Contact your local sales representative for additional information. Note the <http://www.hpe.com/info/CablingMatrixGen10> can help to explain the cable routing for each option:

HPE Unique Options

HPE CL2800 Gen10 8NVMe FIO BP Kit	P09683-B21
NOTE: This option provides support for up to 8 NVMe drives, and can only be populated in Box 1, Box 2 and Box 3 of the SFF chassis. Maximum of 16 NVMe drives can be populated.	
NOTE: The HPE CL2800 Gen10 High Performance Fan Kit is required for NVMe support (P05480-B21).	
NOTE: The HPE CL2800 Gen10 4 port Primary SlimSAS Riser Kit (P10539-B21) and HPE CL2800 Gen10 4 port Secondary SlimSAS Riser Kit are required to support this.	
NOTE: There may be limitations on some PCIe adapters supported with the NVMe bay populated.	
HPE CL2800 Gen10 8SFF HDD Cage FIO Kit	P04353-B21
NOTE: This kit can be supported in Box 1, 2 or 3 and provides support for up to 8 SFF SAS/SATA or 6 SAS/SATA + 2 NVMe drives per Box.	
NOTE: When adding to Box 1 the addition of the High Performance Fan kit (867810-B21) is required.	
HPE CL2800 Gen10 High Perf Fan FIO Kit	P05480-B21
NOTE: This kit is required for specific Ambient temperature environments .	
NOTE: This is required for NVMe configurations.	
NOTE: This kit provides maximum cooling for your Server.	
NOTE: This kit is required when Box 1, 2 and 3 are populated.	
HPE CL2600/2800Gen10 Rear Serial Cbl FIO	P07013-B21

HPE Drives

Enterprise - 12G SAS - SFF Drives

HPE CL 300GB 12G SAS 15K rpm SFF (2.5in) Seagate Hard Drive	P01660-B21
HPE CL 600GB 12G SAS 10K rpm SFF (2.5in) Enterprise Hard Drive	848513-B21
HPE CL 1.2TB 12G SAS 10K rpm SFF (2.5in) Enterprise Hard Drive	848505-B21
HPE CL 2.4TB 12G SAS 10K rpm SFF (2.5in) Seagate Enterprise Hard Drive	880853-B21

Midline - 6G SATA - LFF Drives

HPE CL 6TB SATA 7.2K rpm LFF (3.5in) Seagate Midline Hard Drive	P01728-B21
HPE CL 6TB SATA 6G Enterprise 7.2K LFF (3.5in) Hitachi SE 512e FIO HDD	P08756-B21
HPE CL 8TB SATA 6G Enterprise 7.2K LFF (3.5in) Seagate 512e FIO HDD	848539-B21
HPE CL 10TB SATA 6G Enterprise 7.2K LFF (3.5in) Seagate 512e FIO HDD	P08762-B21
HPE CL 12TB SATA 6G Enterprise 7.2K LFF (3.5in) Seagate 512e FIO HDD	P08778-B21
HPE CL 14TB SATA 6G Enterprise 7.2K LFF (3.5in) Hitachi ISE 512e FIO HDD	P08759-B21
HPE CL 14TB SATA 6G Enterprise 7.2K LFF (3.5in) Seagate 512e FIO HDD	P08781-B21

SSD Selection

Mixed Use - 6G SATA - SFF - Solid State Drives

HPE CL 240GB SATA 6G Mixed Use SFF (2.5in) Micron 5200 FIO SSD	P08787-B21
HPE CL 960GB 6G SATA Mixed Use SFF (2.5in) Micron 5100 3yr Wty Solid State Drive Kit	P01686-B21
HPE CL 960GB SATA 6G Mixed Use SFF (2.5in) Intel S4610 FIO SSD	P08811-B21
HPE CL 1.92TB SATA 6G Mixed Use SFF (2.5in) Intel S4610 FIO SSD	P08814-B21
HPE CL 3.84TB SATA 6G Mixed Use SFF (2.5in) Intel S4610 FIO SSD	P04597-B21

Core Options

Read Intensive - 6G SATA - SFF - Solid State Drives

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 Read Intensive SFF (2.5in) Intel S4510 FIO SSD	P08802-B21
HPE CL 1.92TB SATA 6G Read Intensive SFF (2.5in) Intel S4510 FIO SSD	P08805-B21
HPE CL 1.92TB SATA 6G Read Intensive SFF (2.5in) Samsung PM883 FIO SSD	P01680-B21
HPE CL 3.84TB 6G SATA Read Intensive SFF (2.5in) x 15mm Micron 5100 3yr Wty Solid State Drive Kit	P01681-B21
HPE CL 3.84TB SATA 6G Read Intensive SFF (2.5in) Samsung PM883 FIO SSD	879720-B21
HPE CL 7.68TB SATA 6G Read Intensive SFF (2.5in) Samsung PM883 FIO SSD	P01684-B21
HPE CL 3.84TB 6G SATA Read Intensive SFF (2.5in) x 15mm Micron 5100 3yr Wty Solid State Drive Kit	P01681-B21
HPE CL 3.84TB SATA 6G Read Intensive SFF (2.5in) Intel S4510 FIO SSD	P08808-B21

Read Intensive - NVMe - SFF - Solid State Drives

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 2TB NVMe Read Intensive SFF (2.5in) x 7mm Intel P4511 Solid State Drive FIO Kit	P04602-B21
HPE CL 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) Samsung PM983 FIO SSD	P06713-B21
HPE CL 4TB NVMe x4 Lanes Read Intensive SFF (2.5in) Intel P4510 FIO SSD	P06663-B21
HPE CL 8TB NVMe x4 Lanes Read Intensive SFF (2.5in) Intel P4510 FIO SSD	P04599-B21

Mixed Use - 6G SATA - M.2 - Solid State Drives

HPE CL 240GB SATA 6G Mixed Use M.2 - UFF to SFF Micron 5100 FIO SSD	P08784-B21
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Mixed Use - NVMe - SFF - Solid State Drives

HPE CL 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) Intel P4610 FIO SSD	P06660-B21
HPE CL 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) Samsung PM1725b FIO SSD	P06726-B21

Hard Drive Blank Kits

NOTE: No hard drive blank kits are required.

HPE PCIe Accelerators

HPE CL 1.6TB NVMe x4 Lanes Mixed Use HHHL Samsung PM1725b FIO SSD	P01676-B21
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HPE Networking

100 Gigabit Ethernet Adapters

HPE CL Ethernet 100Gb 1-port QSFP28 Mellanox ConnectX-5 EN PCIe3 FIO Card	880150-B21
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50 Gigabit Ethernet adapters

HPE CL Ethernet 50Gb 2-port SFP28 Mellanox ConnectX-5 Single Host PCIe 3.0 Card	P01671-B21
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25 Gigabit Ethernet adapters

HPE CL Ethernet 25Gb 2-port SFP+ Mellanox ConnectX-4 PCIe 3.0 Card	P01670-B21
HPE CL Ethernet 25Gb 2-port SFP28 Q41212 PCIe 3.0 Card	P01669-B21
HPE CL Ethernet 25Gb 1-port SFP28 Intel XXV710 PCIe 3.0 Card	P01667-B21

Core Options

10 Gigabit Ethernet adapters

HPE CL Ethernet 10Gb 4-port Intel X710-DA4 PCIe3 FIO Adapter	P10664-B21
HPE CL Ethernet 10Gb 4-port Intel X710-T4 PCIe3 FIO Adapter	P10662-B21
HPE CL Ethernet 10Gb 4-port Intel X710-DA4 PCIe3 FIO Adapter	P10664-B21
HPE CL Ethernet 10GBASE-T 2-port Q41112 PCIe FIO Adapter	P08550-B21
HPE CL Ethernet 10Gb 2-port SFP+ QLogic Q41132 PCIe 3.0 Card	P01668-B21
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

NOTE: The CL2800 Gen10 ships with 4x 1 GbE Embedded.

NOTE: A minimum of two Gigabytes (2 GBE) of server memory is required per each adapter.

Additional Options

HPE I/O Expansion Options

NOTE: The Primary Riser shipping default in the chassis is a x8 FH, FL, x16 FH, FL and x8 FH, HL with m.2 support.

NOTE: For a Secondary/Tertiary riser the second processor is required.

HPE CL2800 Gen10 x16/x16 FIO Kit

P05479-B21

NOTE: Slot 1 or 2 in Primary or Secondary location.

NOTE: Supports Full Height and Full length cards.

NOTE: Bus width x16, x16, Connector Width x16, x16.

HPE CL2800 Gen10 4p Prim SlimSAS FIO Kit

P10539-B21

NOTE: Riser supporting up to 8 NVMe drives in Primary location.

NOTE: This is a factory integrated only option.

NOTE: This can be connected to an 8SFF NVMe drive cage in box 3.

HPE CL2800 Gen10 4p Sec SlimSAS FIO Kit

P10540-B21

NOTE: Riser supporting up to 8 NVMe drives in Secondary location.

HPE CL2800 Gen10 2 x8 Tertiary FIO Kit

P10541-B21

NOTE: Supports 2x 8 slots in the Tertiary location.

Riser Information*									
Part number	Description	Riser position			Bus width (Gen3 lanes)			NVMe Direct Connect	
		Primary	Secondary	Tertiary	Top slot	Middle Slot	Bottom slot	Ports	Drive count
n/a	This is the default riser in the chassis	D	N	N	x8	x16	x8		
P05479-B21	HPE CL2800 Gen10 x16/x16 FIO Kit	O	O	N	x16	x16	0		
P10539-B21	HPE CL2800 Gen10 4p Prim SlimSAS FIO Kit	O	N	N	0	0	0	4	8
P10540-B21	HPE CL2800 Gen10 4p Sec SlimSAS FIO Kit	N	O	N	0	0	0	4	8
P10541-B21	HPE CL2800 Gen10 2 x8 Tertiary FIO Kit	N	N	O	X8	X8	0		

NOTE: D = Default on chassis; O = Optional; N = not supported or slot/connector not present.

HPE Power Supplies

HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

865408-B21

NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.

HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit

865438-B21

NOTE: Flex Slot Titanium power supplies support power efficiency of up to 96% and include a standard C-14 power inlet connector.

HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

865414-B21

NOTE: Flex Slot Platinum power supplies support power efficiency of up to 94% and include a standard C-14 power inlet connector.

HPE 800W Flex Slot -48VDC Hot Plug Low Halogen Power Supply Kit

865434-B21

NOTE: Flex Slot -48VDC power supplies support power efficiency of up to 94%.

HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

830272-B21

NOTE: Flex Slot Platinum Plus power supplies support power efficiency of up to 94% and include a C-14 power inlet connector that can support HPE Power Discovery Services (blue connector).

Additional Options

HPE 800W Flex Slot Universal Hot Plug Low Halogen Power Supply Kit 865428-B21

NOTE: Flex Slot universal power supplies support power efficiency of up to 94% and support both 277VAC/380VDC power inputs.

HPE Cooling Options

HPE CL2800 Gen10 High Perf Fan FIO Kit P05480-B21

NOTE: This kit is required for specific **Ambient temperature environments**.

NOTE: High Performance fan kit consists of 6 fans, these will need to replace all the standard fans in the unit, and fill all 6 fan cages.

NOTE: The 12 LFF and 24 SFF models (including field upgrades to 24 SFF) will already include 6 High Performance fan kits.

NOTE: For elevated ambient temperature support please see: <http://www.hpe.com/servers/ashrae>

HPE Security

HPE Gen10 2U Bezel Kit 867809-B21

HPE Bezel Lock Kit 875519-B21

HPE Trusted Platform Module 2.0 Gen10 Option 864279-B21

NOTE: HPE Trusted Platform Module 2.0 option works with Gen10 servers with UEFI Mode not Legacy Mode.

NOTE: HPE server systems can have a TPM module (of any type) installed only once. It cannot be replaced with any other TPM module.

RAID Array Controllers and Host Bus Adapters

RAID Array Controllers

HPE CL 9361-8i SAS3108 1GB 8-port SAS Broadcom FIO MegaRAID Adapter 859912-B21

HPE CL 9361-16i SAS3316 CacheVault CVPM02 Broadcom FIO MegaRAID Adapter 857143-B21

HPE CL Broadcom 9460-8i 2G with CVPM05 Tri-Mode RAID Controller P01726-B21

HPE CL Broadcom 9460-16i 4G with CVPM05 Tri-Mode RAID Controller P01727-B21

Host Bus Adapters

HPE CL 9300-8i SAS3008 8-port SAS Broadcom FIO Host Bus Adapter 859916-B21

HPE CL 9305-16i SAS3224 16-port SAS Broadcom FIO Host Bus Adapter 862627-B21

HPE Racks

NOTE: Please see the [HPE Advanced Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.

NOTE: Please see the [HPE Enterprise Series Racks QuickSpecs](#) for information on additional racks options and rack specifications.

HPE Power Distribution Units (PDUs)

NOTE: Please see the [HPE Basic Power Distribution Units \(PDU\) QuickSpecs](#) for information on these products and their specifications.

NOTE: Please see the [HPE Metered Power Distribution Units \(PDU\) QuickSpecs](#) for information on these products and their specifications.

NOTE: Please see the [HPE Intelligent Power Distribution Unit \(PDU\) QuickSpecs](#) for information on these products and their specifications.

NOTE: Please see the [HPE Metered and Switched Power Distribution Units \(PDU\) QuickSpecs](#) for information on these products and their specifications.

Additional Options

HPE Uninterruptible Power Systems (UPS)

NOTE: To learn more, please visit the [HPE Uninterruptible Power Systems \(UPS\) web page](#)

NOTE: Please see the [HPE DirectFlow Three Phase Uninterruptible Power System QuickSpecs](#) for information on these products and their specifications.

NOTE: Please see the [HPE Line Interactive Single Phase UPS QuickSpecs](#) for information on these products and their specifications.

HPE Rack Options

NOTE: Please see the [HPE KVM Switches web page](#) for information on these products and their specifications.

Rail Kits

NOTE: Ball bearing and Easy Install rail kits contain telescoping rails which allow for in-rack serviceability.

NOTE: To assist in the installation of the server into the rack an optional installation tool is available by contacting your local services representative 695539-001.

NOTE: Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

HPE 2U Small Form Factor Easy Install Rail Kit	733660-B21
NOTE: Does not include CMA 733664-B21.	
HPE 2U Large Form Factor Easy Install Rail Kit	733662-B21
NOTE: Does not include CMA 733664-B21.	
HPE 2U Cable Management Arm for Easy Install Rail Kit	733664-B21
HPE 2U Small Form Factor Ball Bearing Rail Kit	720863-B21
NOTE: Does not include CMA 720865-B21	
HPE 2U Large Form Factor Ball Bearing Rail Kit	720864-B21
NOTE: Does not include CMA 720865-B21.	
HPE 2U Cable Management Arm for Ball Bearing Rail Kit	720865-B21

HPE Cloudline Support Services

HPE 3 year Cloudline Parts plus Remote Technical with DMR CL2800 Gen10 Supp	HF8P5E
HPE 3 year Cloudline Parts plus Remote Technical with CDMR CL2800 Gen10 Supp	HF8P6E

HPE Foundation Care 3 Years Next Business Day Services

HPE 3 Year Foundation Care Next Business Day Cloudline 2800 Gen10 Service	HF8P7E
HPE 3 Year Foundation Care Next Business Day with DMR Cloudline 2800 Gen10 Service	HF8P8E
HPE 3 Year Foundation Care Next Business Day with CDMR Cloudline 2800 Gen10 Service	HF8P9E

HPE Foundation Care 4 Years Next Business Day Services

HPE 4 Year Foundation Care Next Business Day Cloudline 2800 Gen10 Service	HF8Q0E
HPE 4 Year Foundation Care Next Business Day with DMR Cloudline 2800 Gen10 Service	HF8Q1E
HPE 4 Year Foundation Care Next Business Day with CDMR Cloudline 2800 Gen10 Service	HF8Q2E

HPE Foundation Care 5 Years Next Business Day Services

HPE 5 Year Foundation Care Next Business Day Cloudline 2800 Gen10 Service	HF8Q3E
HPE 5 Year Foundation Care Next Business Day with DMR Cloudline 2800 Gen10 Service	HF8Q4E
HPE 5 Year Foundation Care Next Business Day with CDMR Cloudline 2800 Gen10 Service	HF8Q5E

Memory

Memory Population guidelines

DIMM Population Order											
1 DIMM								8			
2 DIMMs							8		10		
3 DIMMs							8		10		12
4 DIMMs			3		5		8		10		
5 DIMMs *			3		5		8		10		12
6 DIMMs	1		3		5		8		10		12
7 DIMMs *	1		3		5		7	8		10	12
8 DIMMs			3	4	5	6	7	8	9	10	
9 DIMMs *	1		3		5		7	8	9	10	11
10 DIMMs *	1		3	4	5	6	7	8	9	10	12
11 DIMMs *	1		3	4	5	6	7	8	9	10	11
12 DIMMs	1	2	3	4	5	6	7	8	9	10	11

HPE Gen10 12 Slot per CPU

*Unbalanced Not Recommended

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 to balance the total memory capacity between all installed processors.
- When two processors are installed, balance the DIMMs across the two processors.
- White DIMM slots denote the first slot to be populated in a channel.
- Mixing of DIMM types (UDIMM, RDIMM, and LRDIMM) is not supported.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, the number and model of installed processors qualified on the platform.

DIMM Type	Register DIMM (RDIMM)		
HPE SKU P/N	881067-B21	P07029-B21	880841-B21
SKU Description	HPE CL 16GB (1x16GB) Single Rank x8 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 CL 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Memory FIO Kit
DIMM Rank	Single Rank (1R)	Dual Rank (2R)	Dual Rank (2R)
DIMM Capacity	16GB	16GB	32GB
Voltage	1.2V	1.2V	1.2V
DRAM depth [bit]	2G	1G	2G
DRAM Width [bit]	x4	x8	x4
DRAM Density	8Gb	8Gb	8Gb
CAS Latency	19-19-19	19-19-19	19-19-19
DIMM Native Speed (MT/s)	2666 MT/s	2666 MT/s	2666 MT/s
Intel Xeon®Platinum/Gold 81xx/61xx Processors Officially Supported Memory Speed (MT/s)			
1 DIMM Per Channel	2666 MT/s	2666 MT/s	2666 MT/s
2 DIMM Per Channel	2666 MT/s	2666 MT/s	2666 MT/s
Intel Xeon®Gold/Silver 51xx/41xx Processors Officially Supported Memory Speed (MT/s)			

Memory

1 DIMM Per Channel	2400 MT/s	2400 MT/s	2400 MT/s
2 DIMM Per Channel	2400 MT/s	2400 MT/s	2400 MT/s
Intel Xeon®Bronze 31xx Processors Officially Supported Memory Speed (MT/s)			
1 DIMM Per Channel	2133 MT/s	2133 MT/s	2133 MT/s
2 DIMM Per Channel	2133 MT/s	2133 MT/s	2133 MT/s
HPE Server Memory Speed (MT/s): Intel Xeon®Platinum/Gold 81xx/61xx Processors *			
1 DIMM Per Channel	2666 MT/s	2666 MT/s	2666 MT/s
2 DIMM Per Channel	2666 MT/s	2666 MT/s	2666 MT/s
HPE Server Memory Speed (MT/s): Intel Xeon®Gold/Silver 51xx/41xx Processors *			
1 DIMM Per Channel	2400 MT/s	2400 MT/s	2400 MT/s
2 DIMM Per Channel	2400 MT/s	2400 MT/s	2400 MT/s
HPE Server Memory Speed (MT/s): Intel Xeon®Bronze 31xx Processors *			
1 DIMM Per Channel	2133 MT/s	2133 MT/s	2133 MT/s
2 DIMM Per Channel	2133 MT/s	2133 MT/s	2133 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>

Memory

DIMM Type	Load Reduced (LRDIMM)	
HPE CL 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Memory FIO Kit	880842-B21	
SKU Description	HPE CL 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Memory FIO Kit	
DIMM Rank	Quad Rank (4R)	
DIMM Capacity	64GB	
Voltage	1.2V	
DRAM depth [bit]	2G	
DRAM Width [bit]	x4	
DRAM Density	8Gb	
CAS Latency	19-19-19	
DIMM Native Speed (MT/s)	2666 MT/s	2666 MT/s
Intel Xeon® Platinum/Gold 81xx/61xx Processors Officially Supported Memory Speed (MT/s)		
1 DIMM Per Channel	2666 MT/s	2666 MT/s
2 DIMM Per Channel	2666 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
2 DIMM Per Channel	2400 MT/s	2400 MT/s
Intel Xeon® Bronze 31xx Processors Officially Supported Memory Speed (MT/s)		
1 DIMM Per Channel	2133 MT/s	2133 MT/s
2 DIMM Per Channel	2133 MT/s	2133 MT/s
HPE Server Memory Speed (MT/s): Intel Xeon® Platinum/Gold 81xx/61xx Processors *		
1 DIMM Per Channel	2666 MT/s	2666 MT/s
2 DIMM Per Channel	2666 MT/s	2666 MT/s
HPE Server Memory Speed (MT/s): Intel Xeon® Gold/Silver 51xx/41xx Processors *		
1 DIMM Per Channel	2400 MT/s	2400 MT/s
2 DIMM Per Channel	2400 MT/s	2400 MT/s
HPE Server Memory Speed (MT/s): Intel Xeon® Bronze 31xx Processors *		
1 DIMM Per Channel	2133 MT/s	2133 MT/s
2 DIMM Per Channel	2133 MT/s	2133 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>

DDR4 memory options part number decoder

NOTE: Capacity references are rounded to the common gigabyte (GBE) values.

16GBE = 16,384 MB

32GBE = 32,768 MB

64GBE = 65,536 MB

Storage



8SFF chassis



12 LFF chassis

Technical Specifications

System Unit

Dimensions	8.73 x 44.54 x 67.94 cm 3.44 x SFF Drives: 17.54 x 26.75 in 8.73 x 44.54 x 73.02 cm 3.44 x LFF Drives: 17.54 x 28.75 in												
Weight (approximate)	<table border="0"> <tr> <td style="vertical-align: top;">Maximum:</td> <td>19.5 kg 43.00 lbs</td> <td>Minimum: 8 SFF chassis with 1x SFF HDD and 7 HDD blanks, 2x Drive Bay blanks, 1x processor including standard heatsink, 1x power supply (plus blank), 1x Riser installed, cables for the above)</td> </tr> <tr> <td style="vertical-align: top;">Minimum:</td> <td>14.9 kg 32.75 lbs</td> <td></td> </tr> <tr> <td style="vertical-align: top;">Maximum:</td> <td>24.5 kg 54 lbs</td> <td>Maximum: 12 LFF hard drives (no rear drives), 2x processors, 2x power supplies, , 2x Risers installed)</td> </tr> <tr> <td style="vertical-align: top;">Minimum:</td> <td>17.1 kg 37.75 lbs</td> <td></td> </tr> </table>	Maximum:	19.5 kg 43.00 lbs	Minimum: 8 SFF chassis with 1x SFF HDD and 7 HDD blanks, 2x Drive Bay blanks, 1x processor including standard heatsink, 1x power supply (plus blank), 1x Riser installed, cables for the above)	Minimum:	14.9 kg 32.75 lbs		Maximum:	24.5 kg 54 lbs	Maximum: 12 LFF hard drives (no rear drives), 2x processors, 2x power supplies, , 2x Risers installed)	Minimum:	17.1 kg 37.75 lbs	
Maximum:	19.5 kg 43.00 lbs	Minimum: 8 SFF chassis with 1x SFF HDD and 7 HDD blanks, 2x Drive Bay blanks, 1x processor including standard heatsink, 1x power supply (plus blank), 1x Riser installed, cables for the above)											
Minimum:	14.9 kg 32.75 lbs												
Maximum:	24.5 kg 54 lbs	Maximum: 12 LFF hard drives (no rear drives), 2x processors, 2x power supplies, , 2x Risers installed)											
Minimum:	17.1 kg 37.75 lbs												
Input Requirements (per power supply)	<table border="0"> <tr> <td style="vertical-align: top;">Rated Line Voltage</td> <td>100 to 120 VAC 200 to 240 VAC</td> </tr> </table>	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC										
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Power Supply Output (per power supply)	<table border="0"> <tr> <td style="vertical-align: top;">Rated Steady-State Power</td> <td>For 1400W Power Supply: 1400W (at 240 VAC), 1400W (at 240 VAC) For 800W Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VAC) input for China only For 500W Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VAC) input for China only</td> </tr> <tr> <td style="vertical-align: top;">Maximum Peak Power</td> <td>For 1400W Power Supply: 1400W (at 200 to 240 1VAC), 1400W (at 240 VAC) input for China only For 800W Power Supply: 800W (at 100 to 127 VAC), 800W (at 200 to 240 1VAC), 800W (at 240 VAC) input for China only For 500W Power Supply: 500W (at 100 to 127 VAC), 500W (at 200 to 240 VAC), 500W (at 240 VAC) input for China only</td> </tr> </table>	Rated Steady-State Power	For 1400W Power Supply: 1400W (at 240 VAC), 1400W (at 240 VAC) For 800W Power Supply: 800W (at 100 VAC), 800W (at 240 VAC), 800W (at 240 VAC) input for China only For 500W Power Supply: 500W (at 100 VAC), 500W (at 240 VAC), 500W (at 240 VAC) input for China only	Maximum Peak Power	For 1400W Power Supply: 1400W (at 200 to 240 1VAC), 1400W (at 240 VAC) input for China only For 800W Power Supply: 800W (at 100 to 127 VAC), 800W (at 200 to 240 1VAC), 800W (at 240 VAC) input for China only For 500W Power Supply: 500W (at 100 to 127 VAC), 500W (at 200 to 240 VAC), 500W (at 240 VAC) input for China only								
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System Inlet Temperature	<table border="0"> <tr> <td style="vertical-align: top;">Standard Operating Temperature</td> <td>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).</td> </tr> <tr> <td style="vertical-align: top;">Extended Ambient Operating Temperature</td> <td>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.</td> </tr> <tr> <td style="vertical-align: top;">Non-operating</td> <td>-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).</td> </tr> </table>	Standard Operating Temperature	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 Temperature	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.	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).						
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Technical Specifications

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..
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).

Acoustic Noise Listed are the declared A-Weighted sound power levels (L_{WAd}) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°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

LWAd	4.8 B Entry
	4.4 B Base
	4.6 B Perf
LpAm	37 dBA Entry
	31 dBA Base
	31 dBA Perf

Operating

LWAd	4.8 B Entry
	4.4 B Base
	4.6 B Perf
LpAm	37 dBA Entry
	31 dBA Base
	31 dBA Perf

NOTE: Acoustics levels presented here are generated by the test configuration only. Acoustics levels will vary depending on system configuration. Values are subject to change without notification and are for reference only.

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Emissions Classification (EMC) – Regulatory Information

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:

[Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products](#)

Technical Specifications

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

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

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

Summary of Changes

Date	Version History	Action	Description of Change
02-Apr-2019	Version 3	Changed	Overview and Configuration sections were updated. Ethernet SKU was added in Core Options section
04-Feb-2019	Version 2	Changed	Overview, Standard Features, Configuration Information, Core Options and Additional Options sections were updated
03-Dec-2018	Version 1	New	New QuickSpecs.



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For hard drives, 1GBE = 1 billion bytes. Actual formatted capacity is less

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