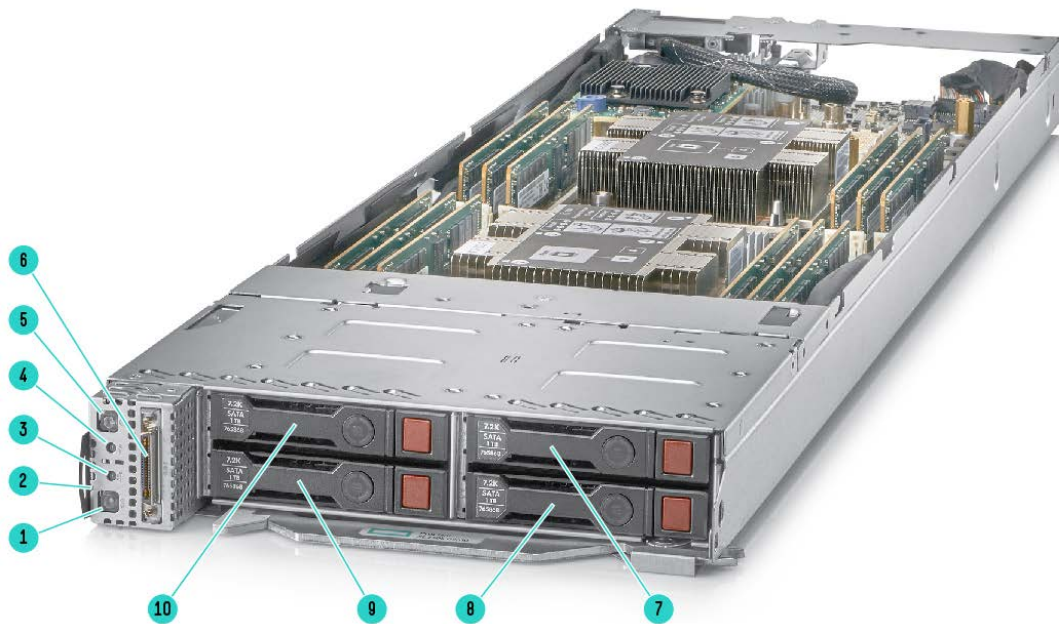


Overview

HPE ProLiant XL230k Gen10 Server

The HPE ProLiant XL230k Gen10 Server delivers extreme compute performance using leading edge technology needed to handle complex HPC workloads. This server leverages the latest select Intel's Xeon Gold and Platinum series processors with support for DDR4 2933 MT/s HPE SmartMemory.

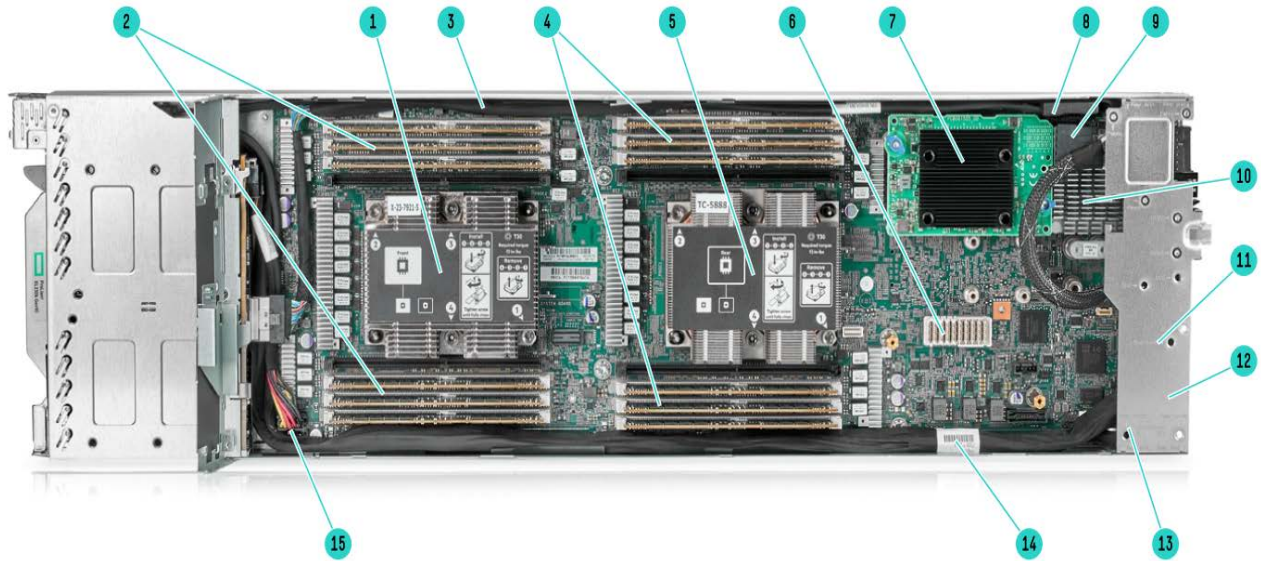
The new modular, fully integrated, and highly flexible HPE Apollo k6000 Chassis accommodates up to 24 XL230k server trays, ethernet and high speed fabric switches to address various HPC workload needs. The Apollo k6000 System is a performance optimized, air-cooled solution. This solution offers outstanding configuration flexibility, redundant power, simplified administration and rack-scale efficiency that lowers the total cost of ownership needed for mass scale HPC deployments.



Front View

Item	Description	Item	Description
1.	UID LED/Button	6.	SUV Connector
2.	Serial label pull tab	7.	Drive bay 3
3.	NIC LED	8.	Drive bay 4
4.	Health LED	9.	Drive bay 2
5.	Power On/Standby button and system power LED	10.	Drive bay 1

Overview



Top View

Item	Description	Item	Description
1.	Processor 2	9.	Mezz A egress cable
2.	Processor 2 DIMM slots	10.	Chipset
3.	NVMe riser connector	11.	Front panel SUV cable connector (under the bracket)
4.	Processor 1 DIMM slots	12.	Front panel LED cable connector (under the bracket)
5.	Processor 1	13.	System battery (under the bracket)
6.	Mezzanine B connector	14.	PCIe riser connector
7.	Mezzanine A connector	15.	Drive backplane power connector
8.	SATA cable connector		

NOTE: For proper cooling, do not operate the server without the access panel, air baffles, expansion slot covers, or blanks installed.

What's New

- Support for Intel's Cascade Lake Processors (CLX-SP)
- PCIe options cards
- New memory size and speed support
- New SSD and drive options

Standard Features

Processors							
Intel Xeon Models	CPU Frequency	Cores	L3 Cache	Power	UPI	DDR4 MT/s	Memory per socket
Platinum Processors							
1st Generation Intel Xeon Scalable Processor Family							
Platinum 8180 Processor	2.5 GHz	28	38.50 MB	205W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Platinum 8170 Processor	2.1 GHz	26	35.75 MB	165W	3 @ 10.4 GT/s	2666 MT/s	768 GB
2nd Generation Intel Xeon Scalable Processor Family							
Platinum 8260 Processor	2.4 GHz	24	35.75 MB	165W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Platinum 8268 Processor	2.9 GHz	24	35.75 MB	205W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Platinum 8270 Processor	2.7 GHz	26	35.75 MB	205W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Platinum 8276 Processor	2.2 GHz	28	38.50 MB	165W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Platinum 8280 Processor	2.7 GHz	28	38.50 MB	205W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold Processors							
1st Generation Intel Xeon Scalable Processor Family							
Gold 6154 Processor	3.0 GHz	18	24.00 MB	200W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6152 Processor	2.1 GHz	22	30.25 MB	140W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6150 Processor	2.7 GHz	18	24.75 MB	165W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6148 Processor	2.4 GHz	20	27.50 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6146 Processor	3.2 GHz	12	24.00 MB	165W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6144 Processor	3.5 GHz	8	24.75 MB	145W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6142 Processor	2.6 GHz	16	22.00 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6140 Processor	2.3 GHz	18	24.75 MB	140W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6138 Processor	2.0 GHz	20	27.50 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6137 Processor	3.9 GHz	8	24.75 MB	205W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6136 Processor	3.0 GHz	12	24.75 MB	150W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6134 Processor	3.2 GHz	8	24.75 MB	130W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6132 Processor	2.6 GHz	14	19.25 MB	140W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6130 Processor	2.1 GHz	16	22.00 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6128 Processor	3.4 GHz	6	19.25 MB	115W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 6126 Processor	2.6 GHz	12	19.25 MB	125W	3 @ 10.4 GT/s	2666 MT/s	768 GB
Gold 5122 Processor	3.6 GHz	4	16.50 MB	105W	2 @ 10.4 GT/s	2400 MT/s	768 GB
2nd Generation Intel Xeon Scalable Processor Family							
Gold 6230 Processor	2.1 GHz	20	27.50 MB	125W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6242 Processor	2.8 GHz	16	22.00 MB	150W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6244 Processor	3.6 GHz	8	24.75 MB	150W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6246 Processor	3.3 GHz	12	24.75 MB	165W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6248 Processor	2.5 GHz	20	27.50 MB	150W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6240 Processor	2.6 GHz	18	24.75 MB	150W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6252 Processor	2.1 GHz	24	35.75 MB	150W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 6254 Processor	3.1 GHz	18	24.75 MB	200W	3 @ 10.4 GT/s	2933 MT/s	1 TB
Gold 5222 Processor	3.8 GHz	4	16.50 MB	105W	2 @ 10.4 GT/s	2666 MT/s	1 TB

Standard Features

NOTE: All processors within the server must be identical and paired using -B21 and -B22 SKUs for front and rear processor sockets

NOTE: Select processors may limit the system's inlet ambient support to 25°C. Please see the table in technical specifications below.

NOTE: Gold 5122 processors supports 2666 MT/s DDR4 memory up to 2400 MT/s.

NOTE: Gold 6137 requires the HPE Apollo FIO Airflow HDD removal Kit (882054-B21).

NOTE: The Gold 6137, 6144, 6146, 6154, 6244, 6254 and Platinum 8180, 8268, 8270, 8276, 8280 processors are limited to a maximum of 6 DIMMs per CPU.

Chipset

Intel® C622 Chipset (Intel EY82C622 PCH)

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

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

HPE iLO 5 ASIC

NOTE: Read and learn more in the [iLO QuickSpecs](#)

Memory	
Type	HPE SmartMemory DDR4 Load Reduced (LRDIMM), or Registered (RDIMM)
DIMM Slots Available	16 DIMM Slots available
Maximum DIMMs capacity (per server tray)	2.0 TB

NOTE: HPE memory from previous generation servers is not supported with the HPE ProLiant XL230k Gen10 Server.

NOTE: For additional information, please see the HPE SmartMemory QuickSpecs at:

<https://www.hpe.com/h20195/v2/GetPDF.aspx/c04355083.pdf>

NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.

NOTE: For DIMM population, please see Memory Population Table at: <http://www.hpe.com/docs/memory-population-rules> or the Online Memory Configuration Tool at: <http://h22195.www2.hpe.com/MemoryTool/Home/Legal>

Memory Protection

Advanced ECC

Detects and corrects multi-bit memory errors. Advanced ECC can detect and correct up to 4-bit memory errors if all failed bits are on the same 4-bit DRAM device on the DIMM, thus enabling continued memory operation.

Online Spare with Advanced ECC Support

Provides protection against persistent DRAM failure. A rank that is starting to degrade making it more likely to receive a fatal/uncorrectable memory error is automatically removed from operation, swapping operation to the spare, thus resulting in less system downtime.

Standard Features

Memory Mirroring with Advanced ECC Support:

Provides protection against uncorrectable memory errors that would otherwise result in system failure. In this mode, the system maintains two copies of all data. If an uncorrectable memory error occurs, the system automatically retrieves the good data from the mirrored (redundant) copy.

Use this option to select from the available Memory Mirroring modes.

- Full Mirror - reserves 50% of the total available memory for mirroring.
- Partial Mirror (20% above 4GB) - reserves 20% of the total available Memory above 4GB for Mirroring.
- Partial Mirror (10% above 4GB) - reserves 10% of the total available Memory above 4GB for Mirroring.
- Partial Mirror (Memory below 4GB) - depending on the memory configuration, sets up 2GB or 3GB of lower memory below 4GB for Mirroring.
- Partial Mirror (OS Configured) - sets up the system to configure Partial Mirroring at OS level.

HPE Fast Fault Tolerance

Fault Tolerant Advanced Double Device Data Correction (ADDDC) enables the system to correct memory errors and continue to operate in cases of multiple DRAM device failures on a DIMM. This provides protection against uncorrectable memory errors beyond what is available with Advanced ECC.

Expansion Slots			
Expansion Slot #	Technology	BusWidth*	Form Factor / Physical connector
Internal PCIe	PCIe 3.0	x8	Low profile x16
External PCIe	PCIe 3.0	x16	Low profile x16
Internal/External	PCIe 3.0	x8/x8	Low profile x16/x16

NOTE: External PCIe riser requires ordering the HPE Apollo Server Tray IO Mod Opt kit 868858-B21

NOTE: Internal Mezzanine B slot will be unavailable with above PCIe options.

NOTE:*Indicates the number of electrical lanes running to the connector.

Storage Controllers

NOTE: HPE S100i 6G SATA FIO cable SKU 866784-B21 is required for front SATA drive support

Essential RAID

- HPE Smart Array E208i-p SR Gen10 Controller

NOTE: The Smart Array E208i-p requires cable kit SKU 866786-B21

- HPE Smart Array E208e-p SR Gen10 Controller

NOTE: The Smart Array E208e-p controllers supports external JBODs and requires external PCIe riser kit

Performance RAID

HPE Smart Array P408i-p SR Gen10 Controller

NOTE: The Smart Array P408i-p above requires cable kit SKU 866786-B21

NOTE: The Smart Array P408i-p controller requires HPE XL230k 12W Smart Storage Battery

Storage Controller Cable Kits

- HPE Smart Array E208i-/P408i-p SAS Cable
- HPE Smart Array S100i 6G SATA FIO Cable

Other Storage Controller Options

HPE XL230k 12W Smart Storage Battery Kit

Standard Features

Maximum Internal Storage	Capacity	Configuration
Hot Plug SFF SAS HDD	8 TB	4 x 2 TB
Hot Plug SFF SATA HDD	8 TB	4 x 2 TB
Hot Plug SFF SSD	15.36 TB	4 x 3.84 TB
M.2 internal	1.92 TB	2 x 960 GB
uFF	1.92 TB	4 x (2 uFFx 480 GB)
NVMe SFF	25.6TB	4 x 6.4 TB
Interfaces		
KVM	Serial USB Video Port (SUV) P/N: 676277-B21 HPE 36pin SUV Dongle Cord Kit	
USB Ports	1 internal USB 3.0 and 2 external USB 2.0 via SUV	
HPE iLO Remote Management Network Port	Aggregated via HPE Apollo k6000 Chassis Controller or Apollo Platform Manager	
Health LED	1	
Power	1	
UID	1	

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server

- Windows 2012 R2 Standard, Datacenter, Essentials & Hyper-V
- Windows Server 2016 Standard Datacenter & Hyper-V Server
- Windows server 1709 (Server Core Only) Standard & Datacenter

Red Hat Enterprise Linux (RHEL) 7

- RHEL 7.6 (64 bit) (includes KVM)
- RHEL 6.9
- RHEL 7.3 w/errata kernel 3.10.0-514.6.1.el7

SUSE Linux Enterprise Server (SLES) 11.4 or beyond

- SLES 11 SP4 w/kISO
- SLES 12 SP2
- SLES 12 SP3 (64 bit) (includes KVM)
- SLES 15 (64 bit) (includes KVM)

VMware ESX

- ESXi 6.0 U3
- ESXi 6.5 & 6.5 U1 (with custom image) - 3.29
- vSphere 6.5 U2
- VSpere 6.7

Community OSes: Supported 90 days POST launch

- CentOS 6.9/7.3/7.4/7.6

NOTE: Only 64-bit versions of these operating systems are supported.

NOTE: Latest release of supported OS required for Cascade Lake (CLX-SP).

NOTE: For more information on the HPE Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from Hewlett Packard Enterprise, please visit our OS Support Site at: <http://www.hpe.com/info/ossupport> and our driver download page: <http://www.hpe.com/support>

Standard Features

Industry Standard Compliance

- ACPI 6.1 Compliant
 - PCIe 3.0 Compliant
 - WOL Support
 - Microsoft® Logo certifications
 - PXE Support
 - USB 3.0 Compliant (internal); USB 2.0 Compliant (external ports via SUV)
 - SMBIOS 3.1
 - UEFI 2.6
 - Redfish API
-

Power Specifications

To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at URL:

<http://www.hpe.com/info/poweradvisor/online> or <http://www.hpe.com/info/poweradvisor>.

NOTE: Power Specification and Technical Content for supported power supplies can be found at:

<https://www.hpe.com/info/qs>

Graphics

Integrated video standard

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

HPE Server UEFI /Legacy ROM

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen10 servers have a UEFI Class 2 implementation and support both UEFI Mode (default) and Legacy BIOS Mode.

NOTE: 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 servers such as:

- Secure Boot
- Operating system specific functionality
- Support for > 2.2 TB (using GPT) boot drives
- USB 3.0 Stack
- Embedded UEFI Shell
- Mass Configuration Deployment Tool using iLO RESTful API.
- PXE boot support for IPv6 networks
- Boot support for option cards that only support a UEFI option ROM
- Network Stack configurations
- Workload Profiles for simple performance optimization

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

NOTE: UEFI FIO Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory for your HPE ProLiant XL230k Gen10 Server.

Form Factor

The ProLiant XL230k Gen10 Server is a single-slot tray for the HPE Apollo k6000 Chassis

Standard Features

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>

iLO RESTful API

iLO RESTful API is Redfish API conformance 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>

Active Health System

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

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. Learn more at <http://www.hpe.com/servers/ahsv>

Smart Update Manager

Keep your servers up to date with HPE's Smart Update solution by using Smart Update Manager (SUM) to optimize the firmware and driver updates of the Service Pack for ProLiant (SPP).

Server Utilities

iLO Amplifier Pack

Designed for large enterprise and service provider environments with hundreds of HPE servers, the iLO Amplifier Pack is a free, downloadable open virtual application (OVA) that delivers the power to discover, inventory and update Gen8, Gen9 and Gen10 HPE servers at unmatched speed and scale. Use with an iLO Advanced License to unlock full capabilities.

<http://www.hpe.com/servers/iLOamplifierpack>

HPE iLO Mobile Application

Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. <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. <http://www.hpe.com/info/resttool>

Scripting tools

Provision 1 to many servers using your own scripts to discover and deploy with Scripting Toolkit (STK) for Windows and Linux or Scripting Tools for Windows PowerShell. <http://www.hpe.com/servers/powershell>

Standard 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 Servers generations. The user interface is similar to the HPE OneView Advanced version, but the software-defined functionality is not available. <http://www.hpe.com/info/oneview>

HPE Systems Insight Manager (HPE SIM)

Ideal for environments already using HPE SIM, it allows you to monitor the health of your HPE ProLiant Servers and HPE Integrity Servers. Also provides you with basic support for non-HPE servers. HPE SIM also integrates with Smart Update Manager to provide quick and seamless firmware updates. www.hpe.com/info/hpesim

Server Management Software Licenses

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 iLO Advanced Premium Security Edition

HPE iLO Advanced Premium Security Edition for iLO 5 includes iLO Advanced License plus high-end security modes, unique security capabilities, like Automatic FW recovery; Runtime FW verification, and Secure erase. <http://www.hpe.com/servers/ilopremium>

HPE iLO Scale-Out

HPE iLO Scale-Out is the preferred license built for web hosting, cloud service providers, and high performance computing data centers, managing massive scale out environments. This license offers sophisticated scripting tools that provides remote access through Text Console via SSH, Dynamic power capping, Email-based Alerting and proactive notifications.

<https://www.hpe.com/us/en/servers/integrated-lights-out-ilo.html>

HPE OneView Advanced

HPE OneView brings a new 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 Gen8 Gen9 and Gen10 servers. <http://www.hpe.com/info/oneview>

HPE Performance Cluster Manager

The HPE Performance Cluster Manager delivers a fully integrated system management solution for Linux®-based high-performance computing (HPC) clusters scaling up to 100,000 nodes. The software enables fast system setup from bare-metal, comprehensive hardware monitoring and management, image management and software updates as well as power management. The HPE Performance Cluster Manager reduces the time and resources spent administering HPC systems - lowering total cost of ownership, increasing productivity and providing a better return on hardware investments.

Performance Cluster Manager

QuickSpecs: <https://h20195.www2.hpe.com/v2/getdocument.aspx?docname=a00044858enw>

Standard Features

Security

- UEFI Secure Boot and Secure Start support
 - Immutable Silicon Root of Trust
 - Support for Commercial National Security Algorithms (CNSA)
 - iLO Security Modes including a New iLO Advance Premium Security License
 - Granular control over iLO interfaces
 - Common Access Card (CAC) 2-factor Authentication
 - Tamper-free updates – components digitally signed and verified
 - Secure Recovery – recover critical firmware to known good state on detection of compromised firmware
 - TPM (Trusted Platform Module) 1.2 option
 - TPM (Trusted Platform Module) 2.0 option Bezel Locking Kit
 - Intrusion Security Kit option
-

Ethernet Options

- HPE Ethernet 10Gb 2-port 568i Adapter (integrated)
- HPE Ethernet 10/25Gb 2p 631SFP28 Adapter
- HPE Ethernet 10Gb 2p 535T Adapter
- HPE Ethernet 10Gb 2p 562T Adapter
- HPE Ethernet 1Gb 4-port 366T Adapter
- HPE Ethernet 10/25Gb 2P 640SFP28 Adapter
- HPE Ethernet 1Gb 4-port 331T Adapter
- HPE Ethernet 4x25Gb 1p 620QSFP28 Adapter
- HPE Ethernet 1Gb 2P 361T Adapter
- HPE Ethernet 1Gb 2P 332T Adapter
- HPE Ethernet 10Gb 2-port 562SFP+ Adapter

High Speed Fabric Option

- HPE Apollo IB EDR 100GB 840z FIO Adapter
 - HPE Apollo IB EDR 100GB 841z FIO Adapter
 - HPE IB EDR/EN 100GB 1P 840QSFP28 Adapter
 - HPE IB EDR/EN 100GB 2P 840QSFP28 Adapter
 - HPE 100Gb 1p OPA 860z FIO Adapter
-

Service and Support

Warranty

This product is covered by a global limited warranty and supported by HPE Services and a worldwide network of HPE 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 Pointnext 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.

NOTE: Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support with next business day response. Warranty repairs may be accomplished through the use of 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: <http://www.hpe.com/support/ProLiantServers-warranties>

Warranty and Services - Options

NOTE: HPE ProLiant XL230k Gen10 Servers are covered under the HPE Service Contract applied to the HPE ProLiant Server. No separate HPE support services need to be purchased.

Warranty and Support Services will extend to include HPE options configured with your server or storage device. The price of support service is not impacted by configuration details. HPE sourced options that are compatible with your product will be covered under your server support at the same level of coverage allowing you to upgrade freely. Installation for HPE options is available as needed. To keep support costs low for everyone, some high value options will require additional support. Additional support is only required on select high value workload accelerators, fibre switches, InfiniBand and UPS batteries over 12KVA. See the specific high value options that require additional support: <https://psnow.ext.hpe.com/#/tiles/search/search?t=4AA4-6535ENW>

HPE Pointnext Support

The support of HPE XL230k tray covers the tray and all included options. It is to have the same attached support level for the Server tray as the chassis

HPE Technology Services for Apollo Systems

Protect your business beyond warranty with HPE Pointnext Operational Services

HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operational Services to help accelerate your digital transformation. From the onset of your transformation journey, Advisory and Transformational Services focus on designing the transformation and creating a solution roadmap. Professional Services specializes in creative configurations with flawless and on-time implementation, and on-budget execution. Finally, operational services provide innovative new approaches like HPE GreenLake Flex Capacity and Datacenter Care, to keep your business at peak performance. HPE is ready to bring together all the pieces of the puzzle for you, with an eye on the future, and make the complex simple.

Get connected to Hewlett Packard Enterprise to improve your support experience

Connect your devices:

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time and improve diagnostic accuracy with a single consolidated view of your environment. By connecting, you will receive 24x7 monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to HPE support. Learn more about getting connected at <http://www.hpe.com/services/getconnected>

Service and Support

HPE Support Services for your XL230k: Supports maintaining servers at optimum performance availability:

HPE Proactive Care gives customers an enhanced call experience.

When your products are connected to HPE, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice. This Service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your HPE servers.

<https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

NOTE: HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to make the most of these services and receive all the deliverables.

Standard recommendation: HPE Foundation Care 24x7, three-year Support Service

HPE Foundation Care 24x7 gives you access to HPE 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. In addition, collaborative software support is included in this service that provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make HPE your first call to help resolve hardware or software problems.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Basic recommendation: HPE Foundation Care NBD, three-year Support Service

HPE Foundation Care Next Business Day connects you to HPE during business hours for assistance on resolving issues – This service features need based next business day hardware onsite response and software call back within two hours. In addition, Collaborative software support and provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make HPE your first call to help resolve hardware or software problems.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

Other Related Services

HPE Server Hardware Installation

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf>

HPE Installation and Startup Service

Provides for the installation of your HPE hardware according to product specifications including options as well as installation of the operating system. The HPE service delivery technician will connect the product to a LAN as appropriate and enable remote support to allow for automatic case creation for hardware failures.

<https://psnow.ext.hpe.com/doc/a00017555enw?from=app>

HPE Datacenter Care service

HPE Datacenter Care helps improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services “building blocks.” You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HPE Datacenter Care, you benefit from a personalized relationship with HPE via a single point of accountability for HPE and others’ products. For more information, visit

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

Service and Support

HPE GreenLake Flex Capacity

With HPE GreenLake Flex Capacity, you get the speed, scalability, and economics of the public cloud in the privacy of your data center. Gain the advantages of the public cloud—consumption-based payment, rapid scalability without worrying about capacity constraints. Reduce the “heavy lifting” needed to operate a data center. And retain the advantages that IT provides the business (i.e., control, security). Deliver the right user experience, choose the right technology for the business, manage privacy and compliance, and manage the cost of IT. And, you have the option to use the public cloud when needed.

<https://www.hpe.com/us/en/services/flexible-capacity.html>

DC for Hyperscale

Datacenter Care 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 can take advantage of this environment support tailored to their operating model. <https://h20195.www2.hpe.com/V2/GetDocument.aspx?docname=4AA4-4708ENW>

HPE Factory Express for Servers and storage

HPE Factory Express offers configuration, customization, integration and deployment services for HPE servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HPE products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE Apollo, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers, as well as the HPE MSAxxxx, HPE 3PAR suite, HPE XP, rackable tape libraries and configurable network switches.

HPE Technology Services Support Credits

Offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.

HPE Education Services

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book a class today and learn how to get the most from your technology investment. <http://www.hpe.com/ww/learn>

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with HPE experts, access support resources or collaborate with peers.

Learn more at <http://www.hpe.com/support/hpesc>

HPE's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime. HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.

NOTE:*HPE Support Center Mobile App is subject to local availability

For more information visit <http://www.hpe.com/services>

Service and Support

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.

Configuration Information

HPE Apollo k6000 Chassis

<https://www.hpe.com/h20195/v2/gethtml.aspx?docname=c04293373>

Step 1: Base Configuration (Choose one of the CTO Models below)

HPE CTO Model

HPE ProLiant XL230k Gen10 Single-wide 2P 1.2m Compute Tray 865404-B21

NOTE: Select one "B21" processor kit for 1P system and a matching "B22" processor for 2P system in step 2.

Step 2: Choose Required Options (only one from each category unless otherwise noted)

Intel-Platinum Processors

Skylake (1st Generation Intel Xeon Scalable Processor Family)

HPE XL230k Gen10 Intel Xeon-Platinum 8170 (2.1GHz/26-core/165W) Front Processor Kit	870254-B21
HPE XL230k Gen10 Intel Xeon-Platinum 8180 (2.5GHz/28-core/205W) Rear Processor Kit	870254-B22
HPE XL230k Gen10 Intel Xeon-Platinum 8180 (2.5GHz/28-core/205W) Front Processor Kit	870262-B21
	870262-B22

Cascade Lake (2nd Generation Intel Xeon Scalable Processor Family)

HPE XL230k Gen10 Intel Xeon-Platinum 8260 (2.4GHz/24-core/165W) Rear Processor Kit	P05754-B21
HPE XL230k Gen10 Intel Xeon-Platinum 8260 (2.4GHz/24-core/165W) Front Processor Kit	P05754-B22
HPE XL230k Gen10 Intel Xeon-Platinum 8268 (2.9GHz/24-core/205W) Rear Processor Kit	P05758-B21
HPE XL230k Gen10 Intel Xeon-Platinum 8268 (2.9GHz/24-core/205W) Front Processor Kit	P05758-B22
HPE XL230k Gen10 Intel Xeon-Platinum 8270 (2.7GHz/26-core/205W) Rear Processor Kit	P05760-B21
HPE XL230k Gen10 Intel Xeon-Platinum 8270 (2.7GHz/26-core/205W) Front Processor Kit	P05760-B22
HPE XL230k Gen10 Intel Xeon-Platinum 8276 (2.2GHz/28-core/165W) Rear	P05762-B21
HPE XL230k Gen10 Intel Xeon-Platinum 8276 (2.2GHz/28-core/165W) Front	P05762-B22
HPE XL230k Gen10 Intel Xeon-Platinum 8280 (2.7GHz/28-core/205W) Rear	P05764-B21
HPE XL230k Gen10 Intel Xeon-Platinum 8280 (2.7GHz/28-core/205W) Front	P05764-B22

Intel-Gold Processors

Skylake (1st Generation Intel Xeon Scalable Processor Family)

HPE XL230k Gen10 Intel Xeon-Gold 6148 (2.4GHz/20-core/145W) Rear Processor Kit	870565-B21
HPE XL230k Gen10 Intel Xeon-Gold 6148 (2.4GHz/20-core/145W) Front Processor Kit	870565-B22
HPE XL230k Gen10 Intel Xeon-Gold 6140 (2.3GHz/18-core/140W) Rear Processor Kit	870272-B21
HPE XL230k Gen10 Intel Xeon-Gold 6140 (2.3GHz/18-core/140W) Front Processor Kit	870272-B22
HPE XL230k Gen10 Intel Xeon-Gold 6138 (2.0GHz/20-core/125W) Rear Processor Kit	870246-B21
HPE XL230k Gen10 Intel Xeon-Gold 6138 (2.0GHz/20-core/125W) Front Processor Kit	870246-B22
HPE XL230k Gen10 Intel Xeon-Gold 6137 (3.9GHz/8-core/205W) Rear Processor Kit	P08416-B21
HPE XL230k Gen10 Intel Xeon-Gold 6137 (3.9GHz/8-core/205W) Front Processor Kit	P08416-B22
HPE XL230k Gen10 Intel Xeon-Gold 6130 (2.1GHz/16-core/120W) Rear Processor Kit	870571-B21
HPE XL230k Gen10 Intel Xeon-Gold 6130 (2.1GHz/16-core/120W) Front Processor Kit	870571-B22
HPE XL230k Gen10 Intel Xeon-Gold 6144 (3.5GHz/8-core/150W) Rear Processor Kit	870266-B21
HPE XL230k Gen10 Intel Xeon-Gold 6144 (3.5GHz/8-core/150W) Front Processor Kit	870266-B22
HPE XL230k Gen10 Intel Xeon-Gold 6146 (3.2GHz/12-core/165W) Rear Processor Kit	870274-B21
HPE XL230k Gen10 Intel Xeon-Gold 6146 (3.2GHz/12-core/165W) Front Processor Kit	870274-B22
HPE XL230k Gen10 Intel Xeon-Gold 6154 (3.0GHz/18-core/200W) Rear Processor Kit	878700-B21
HPE XL230k Gen10 Intel Xeon-Gold 6154 (3.0GHz/18-core/200W) Front Processor Kit	878700-B22

Configuration Information

HPE XL230k Gen10 Intel Xeon-Gold 6152 (2.1GHz/22-core/140W) Rear Processor Kit	870268-B21
HPE XL230k Gen10 Intel Xeon-Gold 6152 (2.1GHz/22-core/140W) Front Processor Kit	870268-B22
HPE XL230k Gen10 Intel Xeon-Gold 6150 (2.7GHz/18-core/165W) Rear Processor Kit	870260-B21
HPE XL230k Gen10 Intel Xeon-Gold 6150 (2.7GHz/18-core/165W) Front Processor Kit	870260-B22
HPE XL230k Gen10 Intel Xeon-Gold 6142 (2.6GHz/16-core/150W) Rear Processor Kit	870567-B21
HPE XL230k Gen10 Intel Xeon-Gold 6142 (2.6GHz/16-core/150W) Front Processor Kit	870567-B22
HPE XL230k Gen10 Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) Rear Processor Kit	870252-B21
HPE XL230k Gen10 Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) Front Processor Kit	870252-B22
HPE XL230k Gen10 Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) Rear Processor Kit	870591-B21
HPE XL230k Gen10 Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) Front Processor Kit	870591-B22
HPE XL230k Gen10 Intel Xeon-Gold 6132 (2.6GHz/14-core/140W) Rear Processor Kit	870602-B21
HPE XL230k Gen10 Intel Xeon-Gold 6132 (2.6GHz/14-core/140W) Front Processor Kit	870602-B22
HPE XL230k Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) Rear Processor Kit	870596-B21
HPE XL230k Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) Front Processor Kit	870596-B22
HPE XL230k Gen10 Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) Rear Processor Kit	870575-B21
HPE XL230k Gen10 Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) Front Processor Kit	870575-B22
HPE XL230k Gen10 Intel Xeon-Gold 5122 (3.6GHz/4-core/105W) Rear Processor Kit	870569-B21
HPE XL230k Gen10 Intel Xeon-Gold 5122 (3.6GHz/4-core/105W) Front Processor Kit	870569-B22

Cascade Lake (2nd Generation Intel Xeon Scalable Processor Family)

HPE XL230k Gen10 Intel Xeon-Gold 5222 (3.8GHz/4-core/105W) Rear Processor Kit	P11646-B21
HPE XL230k Gen10 Intel Xeon-Gold 5222 (3.8GHz/4-core/105W) Front Processor Kit	P11646-B22
HPE XL230k Gen10 Intel Xeon-Gold 6230 (2.1GHz/20-core/125W) Rear Processor Kit	P05734-B21
HPE XL230k Gen10 Intel Xeon-Gold 6230 (2.1GHz/20-core/125W) Front Processor Kit	P05734-B22
HPE XL230k Gen10 Intel Xeon-Gold 6242 (2.8GHz/16-core/150W) Rear Processor Kit	P05746-B21
HPE XL230k Gen10 Intel Xeon-Gold 6242 (2.8GHz/16-core/150W) Front Processor Kit	P05746-B22
HPE XL230k Gen10 Intel Xeon-Gold 6244 (3.6GHz/8-core/150W) Rear Processor Kit	P06755-B21
HPE XL230k Gen10 Intel Xeon-Gold 6244 (3.6GHz/8-core/150W) Front Processor Kit	P06755-B22
HPE XL230k Gen10 Intel Xeon-Gold 6246 (3.3GHz/12-core/165W) Rear Processor Kit	P19578-B21
HPE XL230k Gen10 Intel Xeon-Gold 6246 (3.3GHz/12-core/165W) Front Processor Kit	P19578-B22
HPE XL230k Gen10 Intel Xeon-Gold 6248 (2.5GHz/20-core/150W) Rear Processor Kit	P05748-B21
HPE XL230k Gen10 Intel Xeon-Gold 6248 (2.5GHz/20-core/150W) Front Processor Kit	P05748-B22
HPE XL230k Gen10 Intel Xeon-Gold 6240 (2.6GHz/18-core/150W) Rear Processor Kit	P05744-B21
HPE XL230k Gen10 Intel Xeon-Gold 6240 (2.6GHz/18-core/150W) Front Processor Kit	P05744-B22
HPE XL230k Gen10 Intel Xeon-Gold 6252 (2.1GHz/24-core/150W) Rear Processor Kit	P05752-B21
HPE XL230k Gen10 Intel Xeon-Gold 6252 (2.1GHz/24-core/150W) Front Processor Kit	P05752-B22
HPE XL230k Gen10 Intel Xeon-Gold 6254 (3.1GHz/18-core/200W) Rear Processor Kit	P06757-B21
HPE XL230k Gen10 Intel Xeon-Gold 6254 (3.1GHz/18-core/200W) Front Processor Kit	P06757-B22

NOTE: Select processors may limit the system's inlet ambient support to 25°C.

NOTE: Intel Xeon-Gold 6143 processor requires iLO Advanced license to enable Intelligent System Tuning (core boosting capabilities).

NOTE: All processors require iLO Advanced license for Intelligent System Tuning Jitter Smoothing capabilities.

Configuration Information

HPE Legacy FIO Mode Setting	758959-B22
HPE Smart Memory Fast Fault Tolerance FIO Setting	875293-B21
HPE 200GB Logical Size FIO Setting	436007-B21

HPE Memory

Registered DIMMs (RDIMMs) – DDR4-2666

HPE 8GB (1x8GB) Single Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart	815097-H21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart	815098-H21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart	835955-H21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart	815100-H21

Registered DIMMs (RDIMMs) – DDR4-2933

HPE 8GB (1x8GB) Single Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart	P00918-H21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart	P00920-H21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart	P00922-H21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart	P00924-H21
HPE 64GB (1x64GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart	P00930-H21

Load Reduced DIMMs (LRDIMMs) – DDR4-2666

HPE 128GB (1x128GB) Quad Rank x4 DDR4-2933 CAS-24-21-21 Load Reduced	P11040-H21
HPE 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Smart	815101-H21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2666 CAS-22-19-19 3DS Load	815102-H21

Load Reduced DIMMs (LRDIMMs) – DDR4-2933

HPE 64GB (1x64GB) Quad Rank x4 DDR4-2933 CAS-21-21-21 Load Reduced Smart	P00926-H21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2933 CAS-24-21-21 Load Reduced	P00928-H21

NOTE: CLX-SP processors require 2933 MT/s DIMMS

NOTE: Minimum 1 DIMMs are required per processor; up to 8 DIMMs per processor.

NOTE: If Fabric is installed, minimum of 32GB is required.

NOTE: A maximum of 16 DIMMs are supported per XL230k server tray (or 8 DIMMs max per processor).

NOTE: LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.

NOTE: HPE 128GB LRDIMM cannot be mixed with 64GB LRDIMM.

NOTE: HPE memory from previous generation servers is not supported with this server. HPE SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen10. For additional information, please see the HPE Server Memory Options Population Rules:

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

Configuration Information

HPE Storage Controllers

Essential RAID Controller

HPE Smart Array E208i-p SR Gen10 (8 Internal Lanes/No Cache) 12G SAS PCIe Plug-in Controller 804394-B21

HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller 804398-B21

NOTE: The Essential RAID controllers are only supported with PCIe IO Riser card.

Performance RAID Controller

HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller 830824-B21

NOTE: This controller is only supported with PCIe IO Riser card.

NOTE: The Smart Array P408i-p requires the HPE 12W Smart Storage Battery SKU P01365-B21.

Other Storage Controller Options

HPE 12W Smart Storage Battery (up to 3 Devices) for Apollo XL230k Gen10 Server P01365-B21

NOTE: If Smart Array P408i-p with Smart Storage battery is selected, M.2 option kit is not supported.

HPE Rack Special Airflow Optimization Kit 882054-B21

NOTE: Required for 6137 Processors

Additional storage options

HPE XL230k M.2 Enablement Kit 866317-B21

HPE Special Enablement Kits 866723-B21

NOTE: When ordering for a 1P system, NVMe enablement kit is not supported.

NOTE: NVMe enablement kit is not supported with Gold 6137 processor

HPE PCIe riser kits

HPE XL230k x8 Low Profile PCIe Internal/External I/O Riser Kit 866721-B21

HPE XL230k x16 Low Profile PCIe External I/O Riser Kit 866720-B21

HPE XL230k x8 Low Profile PCIe Int I/O Riser Kit 866722-B21

NOTE: The above options require HPE Apollo Server Tray IO Module Option Kit P/N 868858-B21.

NOTE: There is only one riser slot available for storage, network or fabric controller. Use of riser slot will disable the 2nd mezzanine and vice versa.

NOTE: External PCIe I/O Riser kit is not supported with Gold 6137 processors.

NOTE: Microsoft Windows does not include native support for certain expansion cards that can be installed in the I/O module. For more information about enabling support, see the Hewlett Packard Enterprise website:

<http://www.hpe.com/support/XL230k-io>

Configuration Information

HPE Ethernet Options

HPE Ethernet 10/25Gb 2-port 631SFP28 Adapter	817718-B21
HPE Ethernet 10Gb 2-port 535T Adapter	813661-B21
HPE Ethernet 1Gb 4-port 366T Adapter	811546-B21
HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter	817753-B21
HPE Ethernet 10Gb 2-port 562SFP+ Adapter	727055-B21
HPE Ethernet 10Gb 2-port 562T Adapter	817738-B21
HPE Ethernet 1Gb 4-port 331T Adapter	647594-B21
HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter	867328-B21
HPE Ethernet 1Gb 2-port 332T Adapter	615732-B21
HPE Ethernet 1Gb 2-port 361T Adapter	652497-B21

NOTE: Ethernet Options will require External I/O Riser Kit

NOTE: HPE Ethernet 4x25Gb will require HPE XL230k x16 Low Profile PCIe External I/O Riser Kit to maximize the bandwidth
Converged Network Adapters

HPE StoreFabric

HPE StoreFabric CN1200E 10Gb Converged Network Adapter	E7Y06A
--	--------

HPE High Speed Fabric Options

HPE Apollo InfiniBand EDR 100Gb 2-port 840z Mezzanine FIO Adapter	843400-B21
HPE Apollo InfiniBand EDR 100Gb 2-port 841z Mezzanine Adapter	872723-B21
HPE InfiniBand EDR/Ethernet 100Gb 1-port 840QSFP28 Adapter	825110-H21
HPE InfiniBand EDR/Ethernet 100Gb 2-port 840QSFP28 Adapter	825111-H21
HPE 100Gb 1-port 860z Intel Omni-Path Architecture FIO Adapter	851226-B21

NOTE: Second mezzanine card is not supported with 1 processor configuration.

NOTE: When mixing EDR and OPA mezzanine cards in a server tray, EDR card must be in slot A and OPA card must be slot B. Corresponding switches are required for each type in the high speed fabric bay.

High Speed Fabric Cable Options

HPE Apollo Internal Single Fabric 20GHz Low Halogen Cable	875346-B21
HPE Apollo Internal Dual Fabric 20GHz Low Halogen Cable	875348-B21

Step 3: Choose Additional Factory Integrated 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

Enterprise - 12G SAS - SFF Drives

HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed	870753-H21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed	872475-H21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed	870757-H21
HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed	872477-H21

Configuration Information

HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed	870759-H21
HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed	872479-H21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed	832514-H21
HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765466-H21
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally	872481-H21

Solid State Drives

Read Intensive - SATA - M.2 - Solid State Drives

HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed	875498-H21
HPE Dual 480GB SATA 6G Read Intensive M.2 - UFF to SFF SCM 3yr Wty	P06609-H21
HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed	875500-H21

Read Intensive SATA Solid State Drives

HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed	875503-H21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed	P05924-H21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed	P05928-H21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed	P05932-H21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally	P05938-H21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally	P05946-H21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18424-H21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18420-H21
HPE 7.68TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18430-H21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18422-H21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18426-H21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18428-H21

Read Intensive SAS Solid State Drives

HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10440-H21
HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10442-H21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10444-H21
HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10446-H21
HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty SSD	P19903-H21
HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty SSD	P19905-H21
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty SSD	P19907-H21
HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty SSD	P19909-H21
HPE 15.36TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty SSD	P19911-H21

Read Instensive NVMe Solid State Drives

HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	P10214-H21
HPE 3.84TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	P10216-H21
HPE 7.68TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	P10218-H21

Configuration Information

Mixed Use SATA Solid State Drives

HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P07922-H21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P07926-H21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P07930-H21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09712-H21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09716-H21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09722-H21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P05976-H21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P05980-H21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P05986-H21
HPE 3.84TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P05994-H21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18432-H21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18434-H21
HPE 3.84TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18438-H21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Multi Vendor SSD	P18436-H21

Mixed Use SAS Solid State Drives

HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P09088-H21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P09090-H21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed	P09092-H21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09094-H21
HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09096-H21
HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally	881457-H21
HPE 960GB SAS 12G Mixed Use SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10448-H21
HPE 1.92TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10454-H21
HPE 3.84TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Value SAS Digitally Signed Firmware SSD	P10460-H21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD	P19913-H21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD	P19915-H21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD	P19917-H21
HPE 6.4TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty SSD	P19919-H21

Mixed Use NVMe Solid State Drives

HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	P10222-H21
HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	P10224-H21
HPE 6.4TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	P10226-H21

Write Intensive SAS Solid State Drives

HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09098-H21
HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09100-H21
HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P09102-H21

Configuration Information

Mixed Use – SATA – M.2 – Solid State Drive

HPE 480GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware	875490-H21
HPE 240GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware	875488-H21
HPE 960GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware	875492-H21
HPE Dual 240GB SATA 6G Mixed Use M.2 - UFF to SFF SCM 3yr Wty Digitally	P06607-H21

NOTE: Hard drives have either a one year or three year warranty.

NOTE: The hard drive options are not required when configuring a drive-less Model.

NOTE: The E208i-p or P408i-p controller is required when ordering SAS drives.

NOTE: NVMe drives require HPE XL230k NVMe Enablement FIO Kit 866723-B21.

NOTE: No NVMe drives are supported with single processor system.

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

Security Hardware

HPE Trusted Platform Module 2.0 Gen10 Option	864279-B21
HPE Gen10 TPM 1.2 FIO Setting	872108-B21

HPE Rack Options

HPE USB US Keyboard/Mouse Kit	631341-B21
HPE USB UK Keyboard/Mouse Kit	631344-B21
HPE USB FR Keyboard/Mouse Kit	631346-B21
HPE USB ES Keyboard/Mouse Kit	631348-B21
HPE USB DE Keyboard/Mouse Kit	631358-B21
HPE USB JP Keyboard/Mouse Kit	631360-B21
HPE USB IT Keyboard/Mouse Kit	631362-B21
HPE USB CN Keyboard/Mouse Kit	631364-B21
HPE USB AE Keyboard/Mouse Kit	638212-B21
HPE USB RU Keyboard/Mouse Kit	638214-B21
HPE USB IN Keyboard/Mouse Kit	672097-D63
HPE USB AP/INTL Keyboard/Mouse Kit	672097-373
HPE USB INTL Keyboard/Mouse Kit	672097-B33
HPE USB PT Keyboard/Mouse Kit	672097-133
HPE USB TR Keyboard/Mouse Kit	672097-143
HPE USB CZ Keyboard/Mouse Kit	672097-223
HPE USB FI Keyboard/Mouse Kit	672097-353
HPE USB SE Keyboard/Mouse Kit	672097-103
HPE USB CH Keyboard/Mouse Kit	672097-113
HPE USB KR Keyboard/Mouse Kit	672097-KD3

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/QuickSpecs/13972_div/13972_div.html

Additional Options

Embedded Management

HPE iLO Advanced

HPE iLO Advanced Electronic License with 1yr Support on iLO Licensed Features	E6U59ABE
HPE iLO Advanced Electronic License with 3yr Support on iLO Licensed Features	E6U64ABE
HPE iLO Advanced 1-server License with 3yr Support on iLO Licensed Features	BD505A
HPE iLO Advanced Flexible Quantity License with 3yr Support on iLO Licensed Features	BD506A
HPE iLO Advanced AKA Tracking License with 3yr Support on iLO Licensed Features	BD507A
HPE iLO Advanced 1-server License with 1yr Support on iLO Licensed Features	512485-B21
HPE iLO Advanced Flexible Quantity License with 1yr Support on iLO Licensed Features	512486-B21
HPE iLO Advanced AKA Tracking License with 1yr Support on iLO Licensed Features	512487-B21
HPE iLO Common Password FIO Setting	P08040-B21

Converged Infrastructure Management

HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU	P8B24A
HPE OneView w/o iLO including 3yr 24x7 Support Track 1-server LTU	P8B25A
HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU	P8B26AAE
HPE OneView w/o iLO including 3yr 24x7 Support 1-server FIO LTU	P8B31A
HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU	E5Y35AAE
HPE OneView including 3yr 24x7 Support Physical 1-server LTU	E5Y34A
HPE OneView Physical Media Kit LTU	E5Y37A
HPE OneView for ProLiant DL Server including 3yr 24x7 Support FIO Bundle Physical 1-server LTU	E5Y43A

USB and SD Options

HPE 8GB Dual microSD Flash USB Drive	741279-B21
HPE 8GB microSD Flash USB Drive	737953-B21
HPE 36pin Serial/USB/VGA Dongle Cord Kit	676277-B21
HPE 32GB microSD RAID 1 USB Boot Drive	P21868-B21

HPE Support Services

HPE Installation Apollo 6000 Gen10 Chassis Service	H2GA8E
HPE Apollo 6000 Generation 10 Installation and Startup Service	H6SV1E

Support Services

HPE 3 Year Proactive Care 24x7 ProLiant XL230k Gen10 Service	H2FT3E
HPE 3 Year Proactive Care 24x7 with DMR ProLiant XL230k Gen10 Service	H2FT4E
HPE 3 Year Proactive Care 24x7 with CDMR ProLiant XL230k Gen10 Service	H2FT5E
HPE 3 Year Foundation Care 24x7 ProLiant XL230k Gen10 Service	H2FT0E
HPE 3 Year Foundation Care 24x7 with DMR ProLiant XL230k Gen10 Service	H2FT1E
HPE 3 Year Foundation Care 24x7 with CDMR ProLiant XL230k Gen10 Service	H2FT2E
HPE 3 Year Foundation Care Next Business Day ProLiant XL230k Gen10 Service	H2FS1E

Technical Specifications

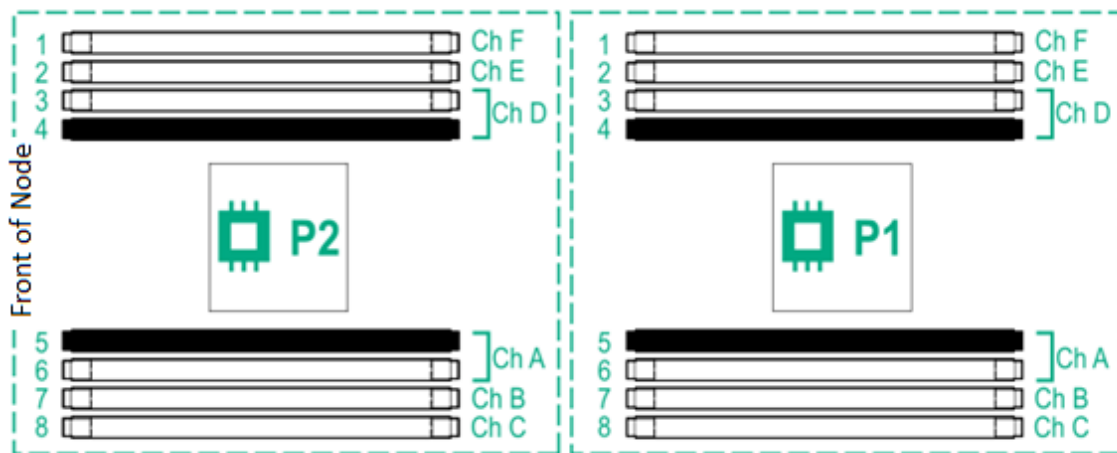
HPE Memory

For detailed memory configuration rules and guidelines, please use the Online DDR4 Memory Configuration Tool:

<http://h22195.www2.hpe.com/MemoryTool/Home/Legal>

Memory Subsystem Architecture

Each Intel® Xeon® Scalable family processor socket contains six memory channels per installed processor with Channels A and D are 2DPC DIMMs per channel for a total of eight (8) DIMMs or a grand total of sixteen (16) DIMMs for the server.



General Memory Population Rules and Guidelines:

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

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

For details on the HPE Server Memory Options RAS Features, visit:

<https://www.hpe.com/h20195/V2/Getdocument.aspx?docname=4AA4-3490ENW>

Supported Memory Bandwidth with Intel Xeon Gold and Platinum Series Processor Family

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

- 8GB = 8,192MB
- 16GB = 16,384MB
- 32GB = 32,768MB
- 64GB = 65,536MB
- 128GB = 131,072MB

Memory options part number decoder

NOTE: The Gold 6137, 6144, 6146, 6154, 6244, 6254 and Platinum 8180, 8268, 8270, 8276, 8280 processors are limited to a maximum of 12 DIMMs (Channel A and D cannot be used)

<https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=c04355083>

Technical Specifications

System Unit Specifications

Server Dimensions (L x W x D)	1.65 x 7.64 x 30.53 in (4.19 x 19.41 x 77.55 cm)
Shipping Dimensions (L x W x D)	8.78 x 14.72 x 39.33 in (22.30 x 37.39 x 99.90 cm)
Weight (approximate, maximum) (four hard drives and two processors installed)	15.0 lb (6.80 kg)

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	10° to 5°C (50° to 41°F) and 35° to 40°C (95° to 104°F)	For approved hardware configurations, the supported system inlet range is to be: 10° to 5°C (50° to 41°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
Non-operating	-30° to 60°C (-22° to 140°F).	For approved hardware configurations, the supported system inlet range is 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. Maximum rate of change is 20°C/hr (36°F/hr).

Relative Humidity (non-condensing)

Operating	10 to 90%	Relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. Processor Type Maximum Inlet Temp.
Non-operating	5 to 95%	Relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.

Temperature Requirement

Gold 6137	25°C (Max inlet ambient)
------------------	--------------------------

NOTE: Operating temperature has an altitude derating of 1.8° F (1° C) per 1,000 ft (305 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70KPa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Technical Specifications

Altitude

Non-operating 9144 m (30,000 ft). 9144m	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).
Maximum allowable altitude change rate	457 m/min (1500 ft/min).	

Acoustic Noise

Listed are the declared A-Weighted sound power levels (LWAd) and measured 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.

Configuration SKU	Entry	Base	Performance
Idle – LWAd	6.9 B	6.9 B	6.9 B
Idle – LpAm	53 dBA	53 dBA	53 dBA
Operating – LWAd	8.1 B	8.6 B	9.0 B
Operating – LpAm	64 dBA	69 dBA	73 dBA

NOTE: Acoustic levels presented here are generated by the test configurations only. Values are subject to change without notification and are for reference only.

NOTE: Performance of system, options, and ancillary equipment will vary depending on the system configuration.

NOTE: Levels presented do not account for non-Hewlett Packard Enterprise installed hardware.

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 (2012/19/EU) 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-Dec-2019	Version 20	Changed	Standard Features, Configuration Information and Technical specifications sections were updated. Obsolete SKUs were removed
07-Oct-2019	Version 19	Added	Standard Features and Configuration Information sections were updated
05-Aug-2019	Version 18	Added	Configuration Information section was updated
03-Jun-2019	Version 17	Changed	Standard Features and Configuration Information section was updated. Obsolete SKUs were removed
18-Apr-2019	Version 16	Changed	Obsolete SKUs were removed. SKUs were updated.
02-Apr-2019	Version 15	Changed	Overview, Standard Features and Configuration Information sections were updated, Added CLX, 2933 memory and misc. Obsolete SKUs were removed
04-Feb-2019	Version 14	Changed	Added Gold 6137 support and removed processor restrictions. Standard Features and Configuration Information, sections were updated
03-Dec-2018	Version 13	Changed	SKUs and descriptions were updated in Configuration Information section Obsolete SKUs were removed
01-Oct-2018	Version 12	Changed	SKUs and descriptions were updated in Configuration Information section, Additional Options and Standard Features sections were updated
06-Aug-2018	Version 11	Changed	Overview, Service and Support and SKUs and descriptions in Configuration Information and Additional Options were updated.
07-May-2018	Version 10	Changed	Removed support for Xeon Gold 6137 processor
02-Apr-2018	Version 9	Changed	Update QuickSpecs and the Configuration Information section
05-Feb-2018	Version 8	Updated	Update several sections for the document
04-Dec-2017	Version 7	Updated	Update SKUs descriptions and overall QuickSpecs
23-Oct-2017	Version 6	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
16-Oct-2017	Version 5	Updated	Update descriptions in the Configuration Information Section
25-Sep-2017	Version 4	Updated	Update QuickSpecs and the Configuration Information section
17-July-2017	Version 3	Changed	Update images with callouts and correct errors.
11-July-2017	Version 2	Updated	US version created
11-July-2017	Version 1	New	New QuickSpecs



© Copyright 2019 Hewlett Packard Enterprise Development LP. The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation. Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries. Linux is a registered trademark of Linus Torvalds. SUSE is a registered trademark of Suse. Ubuntu and Canonical are registered trademarks of Canonical Ltd. Red Hat is a trademark of Red Hat, Inc. in the U.S. and other countries. VMware is a registered trademark of VMware, Inc. in the United States and/or other jurisdictions.



a00016634enw - 15958 - WorldWide - V20 - 02-December-2019