Overview

## HPE ProLiant BL460c Gen10 Server Blade

Scale business performance and securely drive Traditional and Hybrid IT workloads across a converged infrastructure with the new HPE ProLiant BL460c Gen10 server blade for HPE BladeSystem. The HPE ProLiant BL460c Gen10 server blade helps drive new applications, turbo charge performance and transform into an agile, secure foundation, which with HPE OneView, places you on the path to Composable Infrastructure.



#### HPE ProLiant BL460c Gen10 Server Blade - Front View

- 1. Serial label pull tab (SUV Connector located behind) 6. Quick access panel
- 2. Unique identification (UID) LED
- 3. Health status bar LED
- 4. Power Button
- 5. iLO USB connection

- 7. Front hot-plug drive bays
- 8. NIC activity LED
- Server blade release lever

## What's New

- Larger memory capacity with 128GB DIMMs
- Additional Intel Xeon Scalable Family of processor 6144New options for HPE Smart Array controllers

Standard Features

#### **Platform Information**

This document covers the HPE ProLiant BL460c Gen10 server blade only.

For information on HPE BladeSystems c-Class Enclosures and HPE BladeSystem c-Class Interconnect and Mezzanine Components, please see the following HPE BladeSystem c-Class QuickSpecs:

- HPE BladeSystem c3000 Enclosure QuickSpecs at <a href="https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128340">https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128340</a>.
   NOTE: The c3000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server blades supported in the new enclosures and any future server blades will be supported in the existing enclosures.
- HPE BladeSystem c7000 Enclosure QuickSpecs at <a href="https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128339">https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128339</a>.
   NOTE: The c7000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server blades supported in the new enclosures and any future server blades will be supported in the existing enclosures.
- HPE BladeSystem c-Class Interconnect and Mezzanine Components at https://www.hpe.com/us/en/integrated-systems/bladesystem.html

**NOTE:** For optimal cooling and system performance the BL460c Gen10 Server Blade requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.

**NOTE:** For proper BladeSystem operation, the minimum required versions of HPE Onboard Administrator and HPE Virt Connect are required and available via the HPE Service Pack for ProLiant, please see

http://h17007.www1.hpe.com/us/en/enterprise/servers/products/service\_pack/spp/index.aspx

**Form Factor** 

HPE ProLiant BL460c Gen10 is a half-height server blade that plugs into the HPE BladeSystem c3 and c7000 enclosures.

### **Standard Features**

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

**NOTE:** For more information regarding Intel Xeon processors, please see the following <a href="http://www.intel.com/xeon">http://www.intel.com/xeon</a> **NOTE:** Intel Xeon Platinum 8160M, Gold 6142M, 6140M, and 6134M support extended memory capacities up to 1.5TB per socket versus 768GB per socket for standard processors. However, maximum memory capacity for the server will b limited by maximum capacity DIMMs available and number of DIMM slots. The BL460c Gen10 will support a maximum memory capacity of 512GB per socket with 64GB DIMMs regardless of processor chosen. This maximum will increase a larger capcity DIMMs are qualified for the server.

	CPU					
Intel Xeon Models	Frequency	Cores	L3 Cache	Power	QPI	DDR4 MT/
Platinum Processors						
					3 @ 10.4	
Platinum 8164 Processor	2.0 GHz	26	35.75 MB	150W	GT/s	2666 MT/
					3 @ 10.4	
Platinum 8160 Processor	2.1 GHz	24	33.00 MB	150W	GT/s	2666 MT/
					3 @ 10.4	
Platinum 8158 Processor	3.0 GHz	12	24.75 MB	150	GT/s	2666 MT/
					3 @ 10.4	
Platinum 8153 Processor	2.0 GHz	16	22 MB	125	GT/s	2666 MT/
<b>Gold Processors</b>						
					3 @ 10.4	
Gold 6152 Processor	2.1 GHz	22	30.25 MB	140W	GT/s	2666 MT/

Standard Features						
					3 @ 10.4	
Gold 6148 Processor	2.4 GHz	20	27.50 MB	150W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6144 Processor	3.5 GHz	8	24.75 MB	150W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6142 Processor	2.6 GHz	16	22.00 MB	150W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6140 Processor	2.3 GHz	18	24.75 MB	140W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6138 Processor	2.0 GHz	20	27.50 MB	125W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6136 Processor	3.0 GHz	12	24.75 MB	150W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6134 Processor	3.2 GHz	8	24.75 MB	130W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6132 Processor	2.6 GHz	14	19.25 MB	140W	GT/s	2666 MT/
					3 @ 10.4	
Gold 6130 Processor	2.1 GHz	16	22.00 MB	125W	GT/s	2666 MT/
O-14 0400 B	0.4.01.1-	0	40.05 MD	4.45\01	3 @ 10.4	OCCO NAT
Gold 6128 Processor	3.4 GHz	6	19.25 MB	115W	GT/s	2666 MT/
Cold 6126 Dropper	2.6.CH=	10	19.25 MB	105\\	3 @ 10.4	OGGG MT
Gold 6126 Processor	2.6 GHz	12	19.25 IVID	125W	GT/s 2 @ 10.4	2666 MT/
Gold 5122 Processor	3.6 GHz	4	16.50 MB	105W	2 @ 10.4 GT/s	2666 MT/
G0IG 3122 1 100e3301	3.0 0112	7	10.50 MB	103	2 @ 10.4	2000 W117
Gold 5120 Processor	2.2 GHz	14	19.25 MB	105W	GT/s	2400 MT/
20.0 0.20	2.2 02		.0.202	.0011	2 @ 10.4	2100 11117
Gold 5118 Processor	2.3 GHz	12	16.50 MB	105W	GT/s	2400 MT/
					2 @ 10.4	
Gold 5115 Processor	2.4 GHz	10	13.75 MB	85W	GT/s	2400 MT/
Silver Processors						
Silver 4116 Processor	2.1 GHz	12	16.50 MB	85W	2 @ 9.6 GT/s	2400 MT/
Silver 4114 Processor	2.2 GHz	10	13.75 MB	85W	2 @ 9.6 GT/s	2400 MT/
Silver 4112 Processor	2.6 GHz	4	8.25 MB	85W	2 @ 9.6 GT/s	2400 MT/
Silver 4110 Processor	2.1 GHz	8	11.00 MB	85W	2 @ 9.6 GT/s	2400 MT/
<b>Bronze Processors</b>						
Bronze 3104 Processor	1.7 GHz	6	11.00 MB	85W	2@ 9.6 GT/s	2133 MT/

NOTE: When using processors of 135W or greater, 10 fans are required in the c7000 for optimal performance.

NOTE: Memory per socket is based on the processor maximum supported memory, not the BL460c memory maximum.

NOTE: Platinum - 8100 Series - 2S - 2UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2666 MT/s, 768 GB memory capacity (1. TB on select skus), Intel Turbo Boost Technology, Intel Hyper-Threading Technology

Intel AVX-512 (2x 512-bit FMA), 48 lanes PCIe 3.0, advanced RAS.

**NOTE:**Gold - 5100, 6100 Series - 2S - 2UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2400 MHz (SKU 5122=supports 2666), 768 GB memory capacity (1.5 TB on select skus), 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.

NOTE: Silver - 4100 Series - 2S - 2UPI @ 9.6 GT/s, 6-Channel DDR4 @ 2400 MHz, 768 GB memory capacity, Intel Tu Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RA\$



Standard Features

#### Chipset

Intel C621 Chipset

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

http://www.intel.com/content/www/us/en/chipsets/chipsets-overview.html

#### **On System Management Chipset**

HPE iLO 5 ASIC

NOTE: Read and learn more in the iLO QuickSpecs

#### **Memory**

One of the following depending on Model

Type HPE SmartMemory

DDR4 Load Reduced (LRDIMM), or Registered (RDIMM)

Standard (Pre- 128GB (4 x 32GB) DDR4 2666MT/s LDIMMs at 1.2V configured Models) 64GB (4x 16GB) DDR4 2666MT/s RDIMMs at 1.2V

16GB (2 x 8GB) DDR4 2666MT/s RDIMMs at 1.2V

Maximum 2TB 16 x 128GB up to 2666MT/s at 1.2V (processor dependent)

(LRDIMM)

Maximum 512GB 16 x 32GB up to 2666MT/s at 1.2V

(RDIMM)

**NOTE:** HPE memory from previous generation servers is not supported with this server. HPE SmartMemory is required realize the memory performance improvements and enhanced functionality listed in this document for Gen10. For additional information, please see the HPE SmartMemory QuickSpecs at:

#### https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111535

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

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2666MT/s, 2400MT/s, 2133MT/s, or 1866MT/s. Please see the Online Memory Configuration Tool at:

https://memoryconfigurator.hpe.com/DDR4memoryconfig/Home/SelectServer

#### **Memory Protection**

Advanced ECC

**Memory Mirroring** 

Memory Online Spare Mode (Rank Spare Mode)

### **Network Controller**

One of the following depending on Model

• One (1) 20Gb 2-port FlexFabric FLB, 10Gb 2-port HPE FlexFabric FLB, or 10Gb 2-port Ethernet FLB

**NOTE:** Supports FCoE, TCP/IP offload engine, hardware-based accelerated iSCSI, iSCSI boot, and autosensing 10Gb/1Gb Ethernet.

**NOTE:** Each port is autosensing the speed, and can interoperate with 1Gb HPE BladeSystem c-Class interconnec components. Both ports will operate at the same speed.

**NOTE:** FlexFabric capabilities require the use of an HPE Virtual Connect FlexFabric or Flex10/10D module. Fibre Channel over Ethernet (FCoE) is supported with HPE interconnects. Learn more at:

## https://www.hpe.com/us/en/integrated-systems/virtual-connect.html

One (1) HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM

#### Standard Features

- One (1) HPE FlexFabric 10Gb 2-port 560FLB FlexibleLOM
- One (1) HPE FlexFabric 20Gb 2-port 630FLB FlexibleLOM
- One (1) HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM

NOTE: FlexibleLOMs are not compatible with c-Class server blades prior to Gen9.

Standard iLO Network Controller:

One (1) 10/100 Mbps port for the HPE iLO 5 to Onboard Administrator link. The Onboard Administrator (with 10/100/1000 Mbps) to BladeSystem link is 1Gbps

#### **Expansion Slots**

Two (2) I/O expansion mezzanine slots:

• x16 PCIe 3.0 Type A (supports Type A mezzanine cards) (expansion slot 1).

**NOTE:** This expansion slot supports dual-port mezzanine cards: one port is routed to interconnect module bay 3 ar the other to bay 4.

• x16 PCIe 3.0 Type B (supports Type A and Type B mezzanine cards (expansion slot 2).

**NOTE:** This expansion slot supports dual-port and quad-port mezzanine cards. For dual-port cards, one port is rou to interconnect module bay 5 and the other to bay 6. For quad-port cards, one port is routed to interconnect module bay 5, one to bay 6, one to bay 7, and one to bay 8.

**NOTE:** A second processor must be installed (in processor slot 2) to have access to the second expansion slot (expansion slot 2).

#### Mezzanine card options include:

- Dual-port 20Gb FlexFabric, Dual-port 10Gb FlexFabric, and 10GbE options,.
- Dual-port 16Gb Fibre Channel HBA for SAN connectivity.
- QDR and FDR InfiniBand for low latency and high bandwidth server interconnectivity.
- I/O accelerator mezzanine options for high transaction rate local storage

#### **HPE Server ROM**

HPE ROM (read only memory) is now digitally signed using the HPE Corporate Signing Service. This signature is verificated before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system RC

HPE ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CROM) and removable media (USB), to continue operation to the operating system.

HPE ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

The HPE ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration using the HPE ROM-Based Setup Utility (RBSU).

#### **HPE Server UEFI /Legacy ROM**

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secure configuration while interacting with your server at boot time. HPE ProLiant Gen10 platform defaults to UEFI and can be factory or field configured for Legacy BIOS Boot Mode.

#### Standard Features

**NOTE:** The UEFI System Utilities function is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS. F more information, please visit https://www.hpe.com/us/en/product-catalog/detail/pip.6935826.html

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 HPE RESTful API
- PXE boot support for IPv6 networks
- 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: HPE Legacy FIO Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory.

#### **Storage Controller**

#### **All BTO Models**

One (1) HPE Smart Array P204i-b 12G SAS modular Controller with 1GB Flash-Backed Write Cache (FBWC), or HPE Smart Array S100i SR Gen10 SW RAID.

**NOTE:** The HPE Smart Array P204i-b and the HPE Smart Array S100i SR Gen10 SW RAID (chipset SATA) support up two (2) small form factor (SFF) or 4 ultra form factor (uFF) hot plug drive bays.

NOTE: For NVMe support, please select the NVMe FIO setting (873373-B21) available on CTO models only.

#### **Maximum Internal Storage**

Two drives bays for SFF HPE Smart Drives. Capacities dependent on drive size selected.

**NOTE:** The ProLiant BL460c Gen10 server blade includes the HPE hot plug small form factor (SFF) SmartDrive carrier enhanced management and reduced maintenance errors. HPE drives from previous generation servers (prior to Gen8) are not compatible with the ProLiant BL460c Gen10 drive bays.

#### Interfaces

Micro SDHC Slot One (1) internal Micro Secure Digital High Capacity (Micro SDHC) card slot

USB 3.0 Port One (1) internal USB 3.0 connector for USB flash media drive keys

**NOTE:** The above options are intended for integrated hypervisor virtualization environments.

#### **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

#### Operating Systems and Virtualization Software Support for ProLiant Servers

Standard Features

Microsoft Windows Server
VMware
Red Hat Enterprise Linux Server
SUSE Linux Enterprise Server

For specific OS support information please visit Server Operating Systems and Virtualization Software - links found at <a href="https://www.hpe.com/us/en/servers/server-operating-systems.html">https://www.hpe.com/us/en/servers/server-operating-systems.html</a> or

http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/redhat\_linux.aspx#.WuyQvk3rtaQ

**NOTE:** For more information on the HPE Certified and Supported ProLiant Servers for OS and Virtualization Software a latest listing of software drivers available for your server, please visit our Support Matrices at:

http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/windows.aspx

http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/oracle\_linux.aspx

http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/vmware.aspx and our driver download pa

http://h17007.www1.hpe.com/us/en/enterprise/servers/supportmatrix/vmware.aspx#.WuyRBE3rtaQ

#### **Security Features**

**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

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

#### **Enclosures**

Hewlett Packard Enterprise offers two different c-Class server blade enclosures to meet your individual needs:

- The HPE BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL460c Gen10 servers plugged vertically.
- The HPE BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HPE ProLiant BL460c Gen10 servers plugged horizontally.

Server blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c3000 and c7000 enclosures.

NOTE: For additional enclosure information, please see: <a href="https://www.hpe.com/us/en/product-catalog/storage/diskenclosures/pip.hpe-bladesystem-c7000-enclosures.1844065.html">https://www.hpe.com/us/en/product-catalog/storage/diskenclosures/pip.hpe-bladesystem-c7000-enclosures.1844065.html</a>

#### **Graphics**

Integrated Matrox G200eh video controller

- 1600 x 1200 (32 bpp)
- 1920 x 1200 (16 bpp)

HPE iLO Management On System Management Memory

- 16 MB Flash Video Memory
- 256 MB DDR 3 with ECC (112 MB after ECC and video)

#### **HPE Server UEFI / Legacy ROM**

#### Standard Features

Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secure configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant 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 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 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** 

Mass Configuration Deployment Tool using iLO RESTful API that is Redfish API Conformant.

PXE boot support for IPv6 networks

Workload Profiles for simple performance optimization

#### **UEFI** Boot Mode only:

TPM 2.0 Support

**NVMe Boot Support** 

Platform Trust Technology (PTT) can be enabled.

iSCSI Software Initiator Support.

HTTP/HTTPs Boot support as a PXE alternative.

Boot support for option cards that only support a UEFI option ROM

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

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

#### **Embedded Management**

HPE Integrated	Lights-Ou
(HPE iLO)	

Monitor your servers for ongoing management, service alerting, reporting and remote

management with HPE iLO. Learn more at <a href="http://www.hpe.com/info/ilo">http://www.hpe.com/info/ilo</a>

**UEFI**Configure and boot your servers securely with industry standard Unified Extensible Firmw

Interface (UEFI). Learn more at http://www.hpe.com/servers/uefi

Intelligent Provisioning Hassle free server and OS provisioning for one or more servers with Intelligent Provisioni

Learn more at http://www.hpe.com/servers/intelligentprovisioning

**iLO RESTful API** iLO RESTful API is Redfish API conformantce and offers simplified server management

automation such as configuration and maintenance tasks based on modern industry

standards. http://www.hpe.com/info/restfulapi

**Server Utilities** 

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.

http://www.hpe.com/servers/ahs

Standard Features

# Active Health System Viewer

Use the Active Health System Viewer, a web-based portal, to easily read AHS logs and speed problem resolution with HPE self-repair recommendations, to learn more visit:

http://www.hpe.com/servers/ahsv

#### **Smart Update**

Keep your servers up to date with the HPE's Smart Update solution by using Smart Upda Manager (SUM) to optimize the firmware and driver updates of the Service Pack for ProLi (SPP). Learn more at http://www.hpe.com/info/smartupdate

#### **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 server at unmatched speed and scale. Use with an iLO Advanced License to unlock full capabilities. Learn more at <a href="http://www.hpe.com/servers/iLOamplifierpack">http://www.hpe.com/servers/iLOamplifierpack</a>

# HPE iLO Mobile Application

Enables the ability to access, deploy, and manage your server anytime from anywhere frc select smartphones and mobile devices. For additional information please visit:

http://www.hpe.com/info/ilo/mobileapp

## **RESTful Interface Tool**

RESTful Interface tool (iLOREST) is a single scripting tool to provision using iLO RESTfu API to discover and deploy servers at scale. Learn more at

http://www.hpe.com/info/resttool

#### **Scripting Tools**

Provision one to many servers using your own scripts to discover and deploy with Scriptir Toolkit (STK) for Windows and Linux or Scripting Tools for Windows PowerShell. Learn more at <a href="http://www.hpe.com/servers/stk">http://www.hpe.com/servers/stk</a> or <a href="http://www.hpe.com/servers/powershe">http://www.hpe.com/servers/powershe</a>

#### **HPE OneView Standard**

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



**Optional Features** 

#### **Fibre Channel Support**

Up to two (2) optional 16Gb Fibre Channel mezzanine HBAs are supported on the HPE ProLiant BL460c Gen10.

## **Compatible SAN**

HPE ProLiant BL460c Gen10 server blades are optimized for HPE MSA, EVA, 3PAR and XP.

HPE ProLiant BL460c Gen10 server blades are compatible with select 3rd party SANs. Please see blade storage page for more details at https://www.hpe.com/us/en/integrated-systems/bladesystem.html.

#### **HPE Virtual Connect**

HPE Virtual Connect is an interconnect option for c-Class BladeSystem that simplifies server connectivity to data and storage networks, and reduces costs. Unique HPE Flex-10 technology makes maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements by allocating up to 4 network connections per server port. Virtual Connect FlexFabric modules extend those capabilities to allocate one function per port to storage connections (FCoE).

HPE OneView's software-defined approach to infrastructure management enables central console to administer network connections and workloads for thousands of servers, see

https://www.hpe.com/us/en/integrated-systems/management-software.html

For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options, see https://www.hpe.com/us/en/integrated-systems/virtual-connect.html

## **Server Management**

#### **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 Insight Control**

NOTE: Insight Control is not supported with Gen10 server blades.

#### **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

## http://www.hpe.com/servers/iloadvanced

## **HPE OneView**

Powerful converged management of servers, storage, and network for IT service automation and infrastructure simplicity.

#### **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



**Optional Features** 

#### **HPE Matrix Operating Environment**

The HPE Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business. The HPE Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HPE CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).

For more information, visit: <a href="http://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?">http://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?</a>
<a href="productNumber=HPID">productNumber=HPID</a>

#### **HPE Cluster Platforms**

HPE Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering.

https://www.hpe.com/us/en/solutions/hpc-high-performance-computing.html

#### **HPE HPC Interconnects**

High Performance Computing (HPC) interconnect technologies are available for this server as part of the HPE Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by Hewlett Packard Enterprise when integrated within an HPE cluster.

## **Get connected to HPE**

To get the most from your investment in Hewlett Packard Enterprise servers, get connected to Hewlett Packard Enterprise using our innovative remote support technology which provides system health monitoring, pre-failure alert notification and more.

#### **Expansion Blade Support**

Supports one (1) optional PCI Expansion Blade

NOTE: D2200sb and D2220sb storage blades are not compatible with BL460c Gen10 server blade.

NOTE: Gen9 and older HPE option cards will not function in PCI Expansion Blade when paired with a BL460c

Gen10 server blade

#### Factory Express Portfolio for Servers and Storage

HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise 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. Hewlett Packard Enterprise products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

**Optional Features** 

For more information on Factory Express services on your specific server model please contact your sales representative or go to: https://www.hpe.com/us/en/services/factory-express.html

## **One Config Simple (SCE)**

SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact Hewlett Packard Enterprise Customer Business Center or an Authorized Partner for assistance. https://h22174.www2.hpe.com/SimplifiedConfig/Welcome#

Service and Support

## **Recommended Support Services for BL460**

#### Protect your business beyond warranty with HPE Support Services

HPE Pointnext provides a comprehensive portfolio including Advisory and Transformational, Professional, and Operatic your transformation journey, Advisory and Transformational Services focus on designing the transformation and creating configurations with flawless and on-time implementation, and on-budget execution. Finally, operational services provid keep your business at peak performance. HPE is ready to bring together all the pieces of the puzzle for you, with an ey

#### **Connect your devices:**

Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Acl and a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, pre-failure alerts, a Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues are with your server storage and networking products, securely connected to HPE support.

1- IDC 2 - HP CSC reports 2014 - 2015

Learn more about getting connected at http://www.hpe.com/services/getconnected

#### **Proactive Care service levels**

### HPE Proactive Care\* with 24x7 coverage, three year Support Service

HPE Proactive Care gives customers an enhanced call experience. When your products are connected to HPE, Proacti personalized proactive reports with recommendations and advice This Service combines three years proactive reporting there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), https://www.hpe.com/h20195/v2/GetPDF.aspx/4AA3-8855ENW.pdf

#### HPE Proactive Care Advanced\* - 24x7 coverage, three year Support Service

This service helps achieve a higher return on your product investment with personalized support from a local assigned a personalized recommendations designed to help improve availability and performance to increase stability and reduce upre-failure alerts, automatic call logging and parts dispatch. For business critical incidents, this service offers critical event provides 24x7 coverage with four-hour response for hardware and collaborative support that offers two-hour callback for with independent software vendors unless you have your software support from HPE where we own all cases from star https://www.hpe.com/h20195/v2/getdocument.aspx2docname=4AA5-3259FNW

https://www.hpe.com/h20195/v2/getdocument.aspx?docname=4AA5-3259ENW

NOTE: HPE Proactive Care and HPE Proactive Care Advanced require that the customer connect their devices to mak

#### **Other related Services**

#### **HPE Installation and Startup Service**

Provides for the installation and startup of HPE technology including BladeSystem, C-Class enclosure, HPE ProLiant c-Virtual Connect modules (Ethernet and Fibre Channel), Ethernet network interconnects, and InfiniBand, as well as the interconnects and InfiniBand.

#### **HPE Server Hardware Installation**

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist y

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

Service and Support

#### **HPE Datacenter Care service**

HPE Datacenter Care helps improve IT stability and security, increase the value of IT, and enable agility and innovation services "building blocks."? You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. HPE via a single point of accountability for HPE and others' products. For more information, visit <a href="https://h20195.www">https://h20195.www</a>.

#### **HPE Flexibly Capacity**

With Flexible Capacity, you get the speed, scalability, and economics of the public cloud in the privacy of your data centrapid scalability without worrying about capacity constraints. Reduce the "heavy lifting"? needed to operate a data central security). Deliver the right user experience, choose the right technology for the business, manage privacy and complian cloud when needed.

#### **HPE Factory Express for Servers and Storage**

HPE Factory Express offers configuration, customization, integration and deployment services for HPE servers and stortested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and desig tagging, and custom packaging. HPE products supported through Factory Express include a wide array of servers and Blades, HPE BladeSystem, HPE 9000 servers as well as the MSAxxxx3PAR suite, XP, rackable tape libraries and confi

HPE Technology Services Support Credits offer flexible services and technical skills to meet your changing IT dema additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, y business.

#### **HPE Education Services**

Keep your IT staff trained making sure they have the right skills to deliver on your business outcomes. Book on a class <a href="http://www.hpe.com/ww/learn">http://www.hpe.com/ww/learn</a>

### **HPE Support Center**

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support experts, access support resources or collaborate with peers. Learn more <a href="http://www.hpe.com/support/hpesc">http://www.hpe.com/support/hpesc</a>

HPE's Support Center Mobile App\* allows you to resolve issues yourself or quickly connect to an agent for live support.

HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual

NOTE\*: HPE Support Center Mobile App is subject to local availability. For more information: <a href="http://www.hpe.com/se">http://www.hpe.com/se</a>

#### **Parts and Materials**

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the coverage of available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as se 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 Hewl

**Parts and Materials** 

Hewlett Packard Enterprise will provide HPE-supported replacement parts and



Service and Support

condition, including parts and materials for available and recommended engin

Parts and components that have reached their maximum supported lifetime ar operating manual, product quick-specs, or the technical product data sheet wi

The defective media retention service feature option applies only to Disk or el malfunction.

3-3-3

Models

Warranty

[SKU Number]	863446-B21	863447-B21
<b>Model Name</b>	HPE ProLiant BL460c Gen10 Intel Xeon-G	HPE ProLiant BL460c Gen10 Intel Xeon-G
	5120 2.2GHz 14-core 2P 64GB-R Server	6140 2.3GHz 18-core 2P 128GB-R Server
Processor	Intel Xeon Gold 5120	Intel Xeon Gold 6140
	(14C, 2.2G, 105W)	(18C, 2.3G, 140W)
Number of	2	2
Processors		
<b>Cache Memory</b>	19.25MB	24.75MB
Memory (max)	1.5TB	1.5TB
Network	536FLB	650FLB
Controller		
Storage	HPE Smart Array P204b-i	HPE Smart Array P204b-i
Controller	(12G SAS, 1GB FBWC)	(12G SAS, 1GB FBWC)
<b>Hard Drive</b>	Not included	Not included
Mezzanine Slots	2 x16 PCle 3.0	2 x16 PCle 3.0

3-3-3

**NOTE:** This section lists some of the steps required to configure a Factory Integrated Model (configure-to-order or CTO server). To ensure only valid configurations are ordered, Hewlett Packard Enterprise recommends the use of an Hewlett Packard Enterprise approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.

NOTE: Configure-to-order server blades must start with a CTO Blade Server.

NOTE: FIO indicates that this option is only available as a factory installable option.

**NOTE:** All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

## Step 1: Base Server Blade Configuration (Select a configurable Blade)

## Models HPE ProLiant BL460c Gen10 10Gb/20Gb FlexibleLOM Configure-to-order Blade 863442-B21

Server

HPE ProLiant BL460c Gen10 TAA-compliant Configure-to-order Blade Server 875938-B21

**NOTE:** Trade Agreement Act (TAA) and means that these SKUs are manufactured in countries that are part of the global trade act. This provides greater security assurance that these servers come from countries that signed the agreement act. This is particularly important to HPE customers in our federal sector and other verticals that have concerns about the country of origin for our solutions.

## **Configurable Models ship with:**

One (1) FlexibleLOM connector providing a choice for one (1) of the supported 10Gb/20Gb FlexibleLOMs (see Step 2)

Two (2) HPE small form factor hot-plug SAS/SATA/ HDD or SSD hard drive bays

Two (2) x16 PCIe I/O expansion slots (one Type A, one Type A/B)

One (1) integrated USB connector and one (1) MicroSDHC connector

One (1) TPM connector

HPE iLO Management (standard)

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

## **HPE Processors**

NOTE: All configure-to-order processor kits (i.e. xxxxxx-L21) contain one (1) processor.

HPF BL 460c Gen10 Intel® Xeon-Platinum 8160 (2.1GHz/24-core/150W) FIO Processor Kit

NOTE: If two processors are desired, select one xxxxxx-L21 here in Step 2 and one xxxxxx-B21 in Step 4.

#### **Intel Xeon-Platinum Processors**

TIFE BE4000 Gentro linered Acon-Fraumum 6100 (2.1GHz/24-core/130W) 110 F100essor Kit	073937-L21
HPE BL460c Gen10 Xeon-Platinum 8164 (2.0GHz/26-core/150) Processor FIO Kit	875958-L21
HPE BL460c Gen10 Xeon-Platinum 8158 (3.0GHz/12-core/150) Processor FIO Kit	875956-L21
HPE BL460c Gen10 Xeon-Platinum 8153 (2.0GHz/16-core/150) Processor FIO Kit	875954-L21
Intel Xeon-Gold Processors	
HPE BL460c Gen10 Intel® Xeon-Gold 5115 (2.4GHz/10-core/85W) FIO Processor Kit	872013-L21
HPE BL460c Gen10 Intel® Xeon-Gold 5118 (2.3GHz/12-core/105W) FIO Processor Kit	872014-L21
HPE BL460c Gen10 Intel® Xeon-Gold 5120 (2.2GHz/14-core/105W) FIO Processor Kit	872015-L21
HPE BL460c Gen10 Intel® Xeon-Gold 5122 (3.6GHz/4-core/105W) FIO Processor Kit	875939-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6126 (2.6GHz/12-core/120W) FIO Processor Kit	875940-L21

875957-I 21

HPE BL460c Gen10 Intel® Xeon-Gold 6128 (3.4GHz/6-core/115W) FIO Processor Kit	875941-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6130 (2.1GHz/16-core/120W) FIO Processor Kit	875942-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6132 (2.6GHz/14-core/140W) FIO Processor Kit	875943-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6134 (3.3GHz/8-core/130W) FIO Processor Kit	875944-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6136 (3.0GHz/12-core/150W) FIO Processor Kit	875945-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6138 (2.0GHz/20-core/120W) FIO Processor Kit	875946-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6140 (2.3GHz/18-core/135W) FIO Processor Kit	875947-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6142 (2.6GHz/16-core/145W) FIO Processor Kit	875948-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6144 (3.5GHz/8-core/150W) FIO Processor Kit	875949-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6148 (2.4GHz/20-core/145W) FIO Processor Kit	875950-L21
HPE BL460c Gen10 Intel® Xeon-Gold 6152 (2.1GHz/22-core/135W) FIO Processor Kit	875951-L21
Intel Xeon-Silver Processors	
HPE BL460c Gen10 Intel® Xeon-Silver 4110 (2.1GHz/8-core/85W) FIO Processor Kit	872012-L21
HPE BL460c Gen10 Intel® Xeon-Silver 4112 (2.6GHz/4-core/85W) FIO Processor Kit	872009-L21
HPE BL460c Gen10 Intel® Xeon-Silver 4114 (2.2GHz/10-core/85W) FIO Processor Kit	872010-L21
HPE BL460c Gen10 Intel® Xeon-Silver 4116 (2.1GHz/12-core/85W) FIO Processor Kit	872011-L21
Intel Xeon-Bronze Processor	
HPE BL460c Gen10 Intel® Xeon-Bronze 3104 (1.7GHz/6-core/85W) FIO Processor Kit	872006-L21

**NOTE:** When using processors of 135W or greater, 10 fans are required in the c7000 for optimal performance.

**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: Supports 1 or 2 processors. Mixing different processor models is not supported.

**NOTE:** For the Intel® C621 Chipset Scalable Family Processors come with model numbers to indicate SKU level, processor generation, SKU model, integrations-optimizations or memory capacity. (ie. HPE BL460c Gen10 Gen10 Intel Xeon-Gold 6134M; 6 is the SKU Level, 1 is the processor generation, 34 is the SKU model, m indicates memory sku)

**NOTE:** The letter "M" following the model number indicates higher maximum memory support up to 1.5TB per processor.

**NOTE:** Platinum - 8100 Series - 2S - 2UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2666 MT/s, 768 GB memory capacity (1.5 TB on select skus), Intel Turbo Boost Technology, Intel Hyper-Threading Technology

Intel AVX-512 (2x 512-bit FMA), 48 lanes PCIe 3.0, advanced RAS.

**NOTE:** Gold - 5100, 6100 Series - 2S - 2UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2400 MHz (SKU 5122=supports 2666), 768 GB memory capacity (1.5 TB on select skus), 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.

**NOTE:** Silver - 4100 Series - 2S - 2UPI @ 9.6 GT/s, 6-Channel DDR4 @ 2400 MHz, 768 GB memory capacity, Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RAS.

**NOTE:** The BL460c Gen10 includes two I/O mezzanine expansion slots. A processor must be installed in processor slot 1 for access to the first mezzanine expansion slot (expansion slot 1). A processor must be installed in processor slot 2 for access to the second mezzanine expansion slot (expansion slot 2).

#### **HPE Memory**

#### **HPE SmartMemory**

## **Registered DIMMs (RDIMMs)**

Load Poducod DIMMs (LPDIMMs)	
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	815100-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	835955-B21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	815098-B21
HPE 8GB (1x8GB) Single Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	815097-B21

#### Load Reduced DIMMs (LRDIMMs)

HPE 64GB (1x64GB) Quad Rank x4 DDR4-2666 CAS-19-19-19 Load Reduced Smart Memory Kit	815101-B21
HPE 128GB (1x128GB) Octal Rank x4 DDR4-2666 CAS-22-19-19 3DS Load Reduced Memory	815102-B21
Kit	

**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.

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

NOTE: 128GB DIMMs cannot be mixed with other DIMM capacities within the server

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 2666MT/s, 2400MT/s, or 2133MT/s. Please see the Online Memory Configuration Tool at:

https://h22195.www2.hpe.com/DDR4memoryconfig/Home/LEGAL

### **Non-Volatile Memory DIMMs (NVDIMMs)**

HPE 16GB NVDIMM Single Rank x4 DDR4-2666 Module Kit

845264-B21

**NOTE:** HPE memory from previous generation servers (DDR3) is not compatible with this compute module. 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 SmartMemory QuickSpecs.** 

**NOTE:** LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a compute module.

**NOTE:** For the latest information on **Memory Speed.** 

NOTE: If you want to know more about the memory, reference the RAS feature whitepaper.

#### **HPE Networking**

## FlexibleLOM Adapters

**NOTE:** The server requires one (1) FlexibleLOM that is installed in the FlexibleLOM connectors. All FlexibleLOMs are dual port: One port is routed to interconnect module bay 1 and the other to bay 2.

## 20Gb FlexibleLOM Adapters

HPE FlexFabric 20Gb 2-port 630M Adapter	700076-B21
HPE FlexFabric 20Gb 2-port 630FLB Adapter	700065-B21
HPE FlexFabric 20Gb 2-port 650M Adapter	700767-B21
HPE FlexFabric 20Gb 2-port 650FLB Adapter	700763-B21

#### 10Gb FlexibleLOM Adapters

Configuration Information - Factory Integrated Models	
HPE FlexFabric 10Gb 2-port 534M Adapter	700748-B21
HPE FlexFabric 10Gb 2-port 536FLB Adapter	766490-B21
HPE Ethernet 10Gb 2-port 560M Adapter	665246-B21
HPE Ethernet 10Gb 2-port 560FLB Adapter	655639-B21
HPE Storage Controllers	
HPE FIO Enable Smart Array B140i Setting	784308-B21
<b>NOTE:</b> The HPE Smart Array S100i SR Controller (chipset SATA) comes standard with the HPE BL460c Gen10 10Gb/20Gb FLB CTO Blade. If the HPE Smart Array P204i-b controllers is not chosen, a SATA cable will be provided to support SATA devices for the two internal drive bays. If RAID is required when using the S100i, please choose 'HPE FIO Enable Smart Array S100i SR Setting' (784308-B21).	
HPE Smart Array P204i-b SR Gen10 (4 Internal Lanes/1GB Cache) 12G SAS Modular Controller	804367-B21
HPE Smart Array P408e-m SR Gen10 (8 External Lanes/2GB Cache) 12G SAS Mezzanine Controller	804381-B21
HPE Unique Options  HPE BL460c Gen10 M.2 FIO Kit  HPE Gen10 NVMe FIO Setting	873870-B21 873373-B21
<b>NOTE:</b> The HPE Gen10 NVMe FIO Setting (873373-B21) is required to support SFF NVMe SSDs within the system. This option is not compatible with the HPE Smart Array P204i-b,. Hewlett Packard Enterprise recommends the use of a dual M.2 solid state drive enablement kit (873870-D21) to got be a with M.2 SSD media for beat when using this entire.	
B21) together with M.2 SSD media for boot when using this option.  HPE Legacy FIO Mode Setting	758959-B22
<b>NOTE:</b> Changes default UEFI BIOS setting into Legacy BIOS setting. (758959-B22) is not supported with HPE Dual 8GB microSD EM USB Kit (741279-B21) nor with HPE FIO Enable Smart Array S100i SR Setting (784308-B21). Must select HPE Gen10 TPM 1.2 FIO if this is selected.	70000 522
HPE Memory Fast Fault Tolerance FIO Kit	875293-B21
NOTE: Enables Double Device Data Correct (DDDC) with significantly higher performance.	
HPE Gen10 TPM 1.2 FIO	872108-B21
NOTE: Can only be selected with TPM 2.0 Gen10 Kit (864279-B21)	
Converged Infrastructure Management Software	
HPE OneView with iLO Advanced - Server hardware required on same purchase order	
HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU	E5Y35AAE
HPE OneView for Blade Server including 3yr 24x7 Support FIO Bundle Physical 1-server LTU	F6Q89A

## **Step 4: Choose Additional Options for Factory Integration**

**NOTE:** For additional options, please refer to the "Core Options" and "Additional Options" section below. For additional options, including server blade enclosures interconnect, mezzanine options and power subsystem options; please see the Core Options and Additional sections below; or the following:

• HPE BladeSystem c3000 Enclosure QuickSpecs:



#### https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128340.pdf

**NOTE:** The c3000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.

HPE BladeSystem c7000 Enclosure QuickSpecs:

#### https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128339.pdf

**NOTE:** The c7000 HPE c-Class enclosures have full backwards and forwards compatibility, existing server blades are supported in the new enclosures and any future server blades will be supported in the existing enclosures.

• HPE BladeSystem c-Class Interconnect and Mezzanine Components:

## https://www.hpe.com/us/en/integrated-systems/bladesystem.html#portfolio

**NOTE:** For optimal cooling and system performance the BL460c Gen10 Server Blade requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.



**Core Options** 

#### **HPE Networking**

**NOTE:** A 10 Gigabit Ethernet adapter supports linking at 1Gbps or 10Gbps when connected to an interconnect module with 10Gb Ethernet downlinks.

**NOTE:** A 10 Gigabit Ethernet adapter supports linking at only 1Gbps when connected to an interconnect module with 1Gb Ethernet downlinks.

**NOTE:** The 10 Gigabit Ethernet adapters on each server blade connect to a 10Gb interconnect in bays 3-6 (HPE BladeSystem c7000 Enclosure) or bays 2-4 (HPE BladeSystem c3000 Enclosure).

#### 20 Gigabit Ethernet Mezzanine Cards

HPE FlexFabric 20Gb 2-port 630M Adapter 700076-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at

https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04312720

HPE FlexFabric 20Gb 2-port 650M Adapter 700767-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at

https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04347342

10 Gigabit Ethernet Mezzanine Cards

HPE FlexFabric 10Gb 2-port 534M Adapter 700748-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at:

https://www.hpe.com/us/en/product-catalog/servers/server-adapters.html

HPE Ethernet 10Gb 2-port 560M Adapter 665246-B21

**NOTE:** Please see QuickSpecs for technical specifications and additional information at:

## https://www.hpe.com/h20195/v2/GetPDF.aspx/c04111406.pdf

#### FlexibleLOM Adapters

**NOTE:** The server supports one (1) FlexibleLOM that is installed in the FlexibleLOM connectors and is already included in the pre-configured models. However, it must be added in Step 2 for Configure-to-Order Models. The FlexibleLOM options below are used to change these original FlexibleLOMs.

#### 20Gb FlexibleLOM Adapters

HPE FlexFabric 20Gb 2-port 630FLB Adapter 700065-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at

https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04312719

HPE FlexFabric 20Gb 2-port 650FLB Adapter 700763-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at

NOTE: Please see QuickSpecs for technical specifications and additional information at

https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04347246

https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04347341

HPE Ethernet 10Gb 2-port 560FLB Adapter 655639-B21

NOTE: Please see QuickSpecs for technical specifications and additional information at

#### https://www.hpe.com/h20195/v2/GetPDF.aspx/c04111516.pdf

#### **HPE Infiniband Mezzanine Adapters**

**NOTE:** When an InfiniBand adapter is installed in mezzanine slot 1, only one port is active (regardless of operating mode). When installed in mezzanine slot 2, both ports are active.

HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+M Adapter 764283-B21

**Core Options** 

**NOTE:** The FDR InfiniBand adapter must be installed in mezzanine slot 1 for FDR mode and may be installed in either mezzanine slot if operated in any other mode.

## 10Gb FlexibleLOM Adapters

HPE FlexFabric 10Gb 2-port 536FLB Adapter	766490-B21
HPE Fibre Channel	
HPE LPe1605 16Gb Fibre Channel HBA for BladeSystem c-Class	718203-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at	
https://www.hpe.com/h20195/v2/getpdf.aspx/c04315132.pdf?ver=2	
HPE QMH2672 16Gb Fibre Channel Host Bus Adapter	710608-B21
NOTE: Please see QuickSpecs for technical specifications and additional information at <a href="https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04126962">https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04126962</a>	
HPE Processors	
Intel Xeon-Platinum Processors	
HPE BL460c Gen10 Intel Xeon-Platinum 8160 (2.1GHz/24-core/145W) Processor Kit	875957-B21
HPE BL460c Gen10 Intel Xeon-Platinum 8164 (2.0GHz/26-core/150W) Processor Kit	875958-B21
HPE BL460c Gen10 Intel Xeon-Platinum 8158 (3.0GHz/12-core/105W) Processor Kit	875956-B21
Intel Xeon-Platinum Processors	
HPE BL460c Gen10 Intel Xeon-Platinum 8153 (2.0GHz/16-core/125W) Processor Kit	875954-B21
Intel Xeon-Gold Processors	
HPE BL460c Gen10 Intel Xeon-Gold 5115 (2.4GHz/10-core/85W) Processor Kit	872013-B21
HPE BL460c Gen10 Intel Xeon-Gold 5118 (2.3GHz/12-core/105W) Processor Kit	872014-B21
HPE BL460c Gen10 Intel Xeon-Gold 5120 (2.2GHz/14-core/105W) Processor Kit	872015-B21
HPE BL460c Gen10 Intel Xeon-Gold 5122 (3.6GHz/4-core/105W) Processor Kit	875939-B21
HPE BL460c Gen10 Intel Xeon-Gold 6126 (2.6GHz/12-core/120W) Processor Kit	875940-B21
HPE BL460c Gen10 Intel Xeon-Gold 6128 (3.4GHz/6-core/115W) Processor Kit	875941-B21
HPE BL460c Gen10 Intel Xeon-Gold 6130 (2.1GHz/16-core/120W) Processor Kit	875942-B21
HPE BL460c Gen10 Intel Xeon-Gold 6132 (2.6GHz/14-core/140W) Processor Kit	875943-B21
HPE BL460c Gen10 Intel Xeon-Gold 6134 (3.3GHz/8-core/130W) Processor Kit	875944-B21
HPE BL460c Gen10 Intel Xeon-Gold 6136 (3.0GHz/12-core/150W) Processor Kit	875945-B21
HPE BL460c Gen10 Intel Xeon-Gold 6138 (2.0GHz/20-core/120W) Processor Kit	875946-B21
HPE BL460c Gen10 Intel Xeon-Gold 6140 (2.3GHz/18-core/140W) Processor Kit	875947-B21
HPE BL460c Gen10 Intel Xeon-Gold 6142 (2.6GHz/16-core/145W) Processor Kit	875948-B21
HPE BL460c Gen10 Intel Xeon-Gold 6148 (2.4GHz/20-core/145W) Processor Kit	875950-B21
HPE BL460c Gen10 Intel Xeon-Gold 6152 (2.1GHz/22-core/135W) Processor Kit	875951-B21
Intel Xeon-Silver Processors	
HPE BL460c Gen10 Intel Xeon-Silver 4110 (2.1GHz/8-core/85W) Processor Kit	872012-B21
HPE BL460c Gen10 Intel Xeon-Silver 4112 (2.6GHz/4-core/85W) Processor Kit	872009-B21
HPE BL460c Gen10 Intel Xeon-Silver 4114 (2.2GHz/10-core/85W) Processor Kit	872010-B21
HPE BL460c Gen10 Intel Xeon-Silver 4116 (2.1GHz/12-core/85W) Processor Kit	872011-B21

**Core Options** 

#### **Intel Xeon-Bronze Processor**

HPE BL460c Gen10 Intel Xeon-Bronze 3104 (1.7GHz/6-core/85W) Processor Kit

872006-B21

**NOTE:** When using processors of 135W or greater, 10 fans are required in the c7000 for optimal performance.

**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: Supports 1 or 2 processors. Mixing different processor models is not supported.

**NOTE:** For the Intel® C621 Chipset Scalable Family Processors come with model numbers to indicate SKU level, processor generation, SKU model, integrations-optimizations or memory capacity. (ie. HPE BL460c Gen10 Gen10 Intel Xeon-Gold 6134M; 6 is the SKU Level, 1 is the processor generation, 34 is the SKU model, m indicates memory sku)

**NOTE:** The letter "M" following the model number indicates higher maximum memory support up to 1.5TB per processor.

**NOTE:** Platinum - 8100 Series - 2S - 2UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2666 MT/s, 768 GB memory capacity (1.5 TB on select skus), Intel Turbo Boost Technology, Intel Hyper-Threading Technology

Intel AVX-512 (2x 512-bit FMA), 48 lanes PCIe 3.0, advanced RAS.

**NOTE:** Gold - 5100, 6100 Series - 2S - 2UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2400 MHz (SKU 5122=supports 2666), 768 GB memory capacity (1.5 TB on select skus), 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.

**NOTE:** Silver - 4100 Series - 2S - 2UPI @ 9.6 GT/s, 6-Channel DDR4 @ 2400 MHz, 768 GB memory capacity, Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512(1x 512-bit FMA), 48 lanes PCIe 3.0, standard RAS.

**NOTE:** The BL460c Gen10 includes two I/O mezzanine expansion slots. A processor must be installed in processor slot 1 for access to the first mezzanine expansion slot (expansion slot 1). A processor must be installed in processor slot 2 for access to the second mezzanine expansion slot (expansion slot 2).

#### **HPE Drives**

**NOTE:** The ProLiant BL460c Gen10 server includes the HPE hot-plug small form factor (SFF) SmartDrive carrier for enhanced management and reduced maintenance errors. HPE drives from generation G7 servers and before are not compatible with the BL460c Gen10 drive bays.

**NOTE:** The mixing of standard SAS drives with SAS SSD is supported within the server, but limits the RAID configuration to two separate RAID 0 volumes. Mixing of other drives types is not supported.

**NOTE:** HPE hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

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

#### **HPE Solid State M.2 SATA Drives**

## HPE Solid State M.2 drives for installation internal to server blade

**NOTE:** The solid state M.2 drives require the selection of HPE BL460c Gen10 M.2 FIO Enablement Kit (873870-B21).

**NOTE:** M.2 drives cannot be mixed with other sizes and capacities within the system.

NOTE: RAID 1, 0, and 5 are provided through the S100i in UEFI BIOS mode only.

HPE BL460c Gen10 M.2 FIO Enablement Kit

mware SSD

HPE 240GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD

873870-B21 875488-B21

Core Options	
HPE 480GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	875498-B21
HPE Solid State M.2 drives for installation internal to server blade	
HPE 480GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD	875490-B21
HPE 960GB SATA 6G Mixed Use M.2 2280 3yr Wty Digitally Signed Firmware SSD	875492-B21
HPE 960GB SATA 6G Read Intensive M.2 2280 3yr Wty Digitally Signed Firmware SSD	875500-B21
HPE 400GB NVMe x4 Lanes Mixed Use M.2 22110 3yr Wty Digitally Signed Firmware SSD	875583-B21
HPE 800GB NVMe x4 Lanes Mixed Use M.2 22110 3yr Wty Digitally Signed Firmware SSD	875585-B21
HPE 480GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	875579-B21
HPE 960GB NVMe x4 Lanes Read Intensive M.2 22110 3yr Wty Digitally Signed Firmware SSD	875581-B21
HPE NVMe PCle Read Intensive SFF (2.5-inch) Solid State Drives	
HPE 2TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877986-B21
HPE NVMe PCle Read Intensive SFF (2.5-inch) Solid State Drives	
HPE 480GB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875587-B21
HPE 960GB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875589-B21
HPE 1.92TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875591-B21
HPE 1TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877984-B21
HPE 4TB NVMe x4 Lanes Read Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877988-B21
HPE NVMe PCIe Mixed Use SFF (2.5-inch) Solid State Drives	
HPE 400GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875593-B21
HPE 800GB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875595-B21
HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877994-B21
HPE NVMe PCIe Mixed Use SFF (2.5-inch) Solid State Drives	
HPE 1.6TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	875597-B21
HPE 3.2TB NVMe x4 Lanes Mixed Use SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	877998-B21
HPE NVMe PCIe Write Intensive SFF (2.5-inch) Solid State Drives	
HPE 375GB NVMe x4 Lanes Write Intensive SFF (2.5in) SCN 3yr Wty Digitally Signed Firmware SSD	878014-B21
SATA Hot Plug SmartDrive SFF (2.5-inch) SSD Drives	
HPE 3.84TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P00896-B21
SATA Hot Plug SmartDrive SFF (2.5-inch) SSD Drives	
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877740-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877746-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04474-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877752-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04476-B21
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877758-B21

**Core Options** 

HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04478-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877764-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04480-B21
HPE 7.68TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04482-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877776-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P07922-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877782-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P07926-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	877788-B21
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P07930-B21
HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	880295-B21
SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives	
HPE 300GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870753-B21
HPE 600GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870757-B21
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	870759-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	765464-B21
HPE 1TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	832514-B21
HPE 2TB SAS 12G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e HDD	765466-B21
HPE 2.4TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware	881457-B21
HDD	
SAS Hot Plug with SmartDrive SFF (2.5-inch) Enterprise Drives	
HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware HDD	870765-B21
	870765-B21
HDD	870765-B21 655710-B21
HDD SATA (2.5-inch) Hard Drives	
HDD  SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD	655710-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD	655710-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD	655710-B21 765455-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21 P06586-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21 P06586-B21 872394-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21 P06586-B21 872394-B21 P06588-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21 P06586-B21 872394-B21 P06588-B21 P06590-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21 P06586-B21 872394-B21 P06588-B21 P06590-B21 P06592-B21
SATA (2.5-inch) Hard Drives  HPE 1TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty Digitally Signed Firmware HDD  HPE 2TB SATA 6G Midline 7.2K SFF (2.5in) SC 1yr Wty 512e Digitally Signed Firmware HDD  12G SAS Read Intensive SFF (2.5-inch) SC SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 480GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 960GB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 1.92TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD  HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	655710-B21 765455-B21 875326-B21 875313-B21 P06584-B21 875311-B21 872390-B21 872392-B21 P06586-B21 872394-B21 P06588-B21 P06590-B21 P06592-B21 P04556-B21

**Core Options** 

HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04566-B21
12G SAS Read Intensive SFF (2.5-inch) SC SSD	
HPE 3.84TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875330-B21
HPE 7.68TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	870144-B21
HPE 15.3TB SAS 12G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	870148-B21
HPE 3.84TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	P04570-B21
12G SAS Mixed Use SFF (2.5-inch) SC SSD	
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873359-B21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873363-B21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873365-B21
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873367-B21
HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872374-B21
HPE 800GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872376-B21
HPE 1.6TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872382-B21
12G SAS Mixed Use SFF (2.5-inch) SC SSD	
HPE 3.2TB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	872386-B21
12G SAS Write Intensive SFF (2.5-inch) SC SSD	
HPE 400GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873351-B21
HPE 800GB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873355-B21
12G SAS Write Intensive SFF (2.5-inch) SC SSD	
HPE 1.6TB SAS 12G Write Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	873357-B21
6G SAS Mixed Use SFF (2.5-inch) SC Solid State Drive	
HPE 1.92TB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875478-B21
HPE 960GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875474-B21
HPE 480GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875470-B21
HPE 240GB SATA 6G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875483-B21
12G SAS SFF (2.5-inch) SC 3yr Wty H2 Drive	
HPE 1.8TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty 512e Digitally Signed Firmware	872481-B21
HDD	070470 504
HPE 1.2TB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872479-B21
HPE 600GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872477-B21
HPE 300GB SAS 12G Enterprise 10K SFF (2.5in) SC 3yr Wty Digitally Signed Firmware HDD	872475-B21
12G SATA 2.5in RI-3 SFF SC SSD	
HPE 1.92TB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875513-B21
HPE 960GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875511-B21
HPE 480GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875509-B21
HPE 240GB SATA 6G Read Intensive SFF (2.5in) SC 3yr Wty Digitally Signed Firmware SSD	875503-B21
NOTE: The mixing of standard SAS drives with SAS SSD is supported within the server, but	

**NOTE:** The mixing of standard SAS drives with SAS SSD is supported within the server, but limits the RAID configuration to two separate RAID 0 volumes. Mixing of other drives types is not supported



**Additional Options** 

#### **HPE iLO Advanced License**

## HPE Integrated Lights-Out (iLO) Advanced for ProLiant BladeSystem Remote Management

HPE iLO Advanced for BladeSystem Electronic License with 3yr Support on iLO Licensed Features

E6U63ABE

HPE iLO Advanced for BladeSystem 1-server License with 3yr Support on iLO Licensed Features

BD502A

HPE iLO Advanced for BladeSystem Electronic License with 1yr Support on iLO Licensed

E6U60ABE

Features

HPE iLO Advanced for BladeSystem 1-server License with 1yr Support on iLO Licensed Features

512488-B21

**NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one or three years of 24 x 7 HPE Software Technical Support Service.

NOTE: For additional license kits, including electronic delivery options, please see the iLO

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

**NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one or three year of 24 x 7 HPE Software Technical Support Service.

#### **Converged Infrastructure Management Software**

#### **HPE OneView**

#### **HPE OneView with iLO Advanced**

HPE OneView including 3yr 24x7 Support Physical 1-server LTU	E5Y34A
HPE OneView including 3yr 24x7 Support Flexible Quantity E-LTU	E5Y35AAE
HPE OneView Physical Media Kit LTU	E5Y37A
HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU	P8B24A
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

NOTE: For additional license kits please see the QuickSpecs at

## https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154343

#### **HPE Security**

## HPE Trusted Platform Module 2.0 Gen10 Option

864279-B21

**NOTE:** The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008 R2 and 2012. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 R2 and 2012 has not been tampered with while the system was offline.

NOTE: For more information about TPM, including a white paper, go to

#### https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04939549.pdf

**NOTE:** ProLiant OS pre-installed units will come with the partition required for TPM deployment. **NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

## **HPE Storage Controllers**

#### Additional Options

HPE Smart Array P204i-b SR Gen10 (4 Internal Lanes/1GB Cache) 12G SAS Modular Controller	804367-B21
HPE FIO Enable Smart Array SW RAID	784308-B21
HPE Gen10 NVMe FIO Setting	873373-B21

#### **HPE Storage Controllers**

HPE Smart Array P408e-m SR Gen10 (8 External Lanes/2GB Cache) 12G SAS Mezzanine Controller

804381-B21

NOTE: The HPE Gen10 NVMe FIO Setting (873373-B21) is required to support SFF NVMe SSDs within the system. This option is not compatible with the HPE Smart Array P204i-b,. Hewlett Packard Enterprise recommends the use of a dual M.2 solid state drive kit for boot when using this option.

NOTE: The HPE Smart Array S100i SR Controller (chipset SATA) comes standard with the HPE BL460c Gen10 10Gb/20Gb FLB CTO Blade. If the HPE Smart Array P204i-b controllers is not chosen, a SATA cable will be provided to support SATA devices for the two internal drive bays. If RAID is required when using the S100i, please choose 'HPE FIO Enable Smart Array S100i SR Setting' (784308-B21).

## **HPE Secure Encryption**

HPE Smart Array SR Secure Encryption (Data at Rest Encryption/per Server Entitlement) E-LTU

Q2F26AAE

NOTE: HPE Secure Encryption is supported on the HPE Smart Array P204i-b and P408e-m as an option. HPE Secure Encryption licensing is based on the number of physical drives requiring encryption.

NOTE: For more information about HPE Secure Encryption, go to

https://www.hpe.com/us/en/product-catalog/detail/pip.6532260.html

#### **HPE InfiniBand Mezzanine Adapters**

NOTE: InfiniBand FDR is the only speed supported on the HPE BL460c Gen10. For additional information, please see the HPE BladeSystem c7000 Enclosure and InfiniBand QuickSpecs at:

#### https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128339.pdf

## https://www.hpe.com/h20195/v2/getpdf.aspx/c04126044.pdf?ver=26

HPE InfiniBand FDR/Ethernet 10Gb/40Gb 2-port 544+M Adapter

764283-B21

NOTE: The FDR InfiniBand adapter must be installed in mezzanine slot 1 for FDR mode and may be installed in any mezzanine slot if operated in any other mode.

NOTE: When an InfiniBand adapter is installed in mezzanine slot 1, only one port is active (regardless of operating mode). When installed in any other mezzanine slot, both ports are active.

### **HPE Flash Media Kits for USB Drives**

#### **HPE Enterprise Mainstream Flash Media Kits for Memory Cards**

HPE 8GB microSD Flash USB Drive	737953-B21
HPE 8GB microSD Flash Memory Card	726116-B21
HPE 32GB microSD Flash Memory Card	700139-B21
HPE 8GB Dual microSD Flash USB Drive	741279-B21

## **HPE Pointnext operational services**

#### **Proactive Care Services**

## **Additional Options**

Installation Services	
HPE 3 Year Proactive Care Advanced 24x7 with DMR ProLiant BL460c Gen10 Service	H7LT8E
HPE 3 Year Proactive Care Advanced 24x7 ProLiant BL460c Gen10 Service	H7LT7E
HPE 3 Year Proactive Care 24x7 with DMR ProLiant BL460c Gen10 Service	H7LT5E
HPE 3 Year Proactive Care 24x7 ProLiant BL460c Gen10 Service	H7LT4E

HPE Install c-Class Server Blade Service **UE493E** 

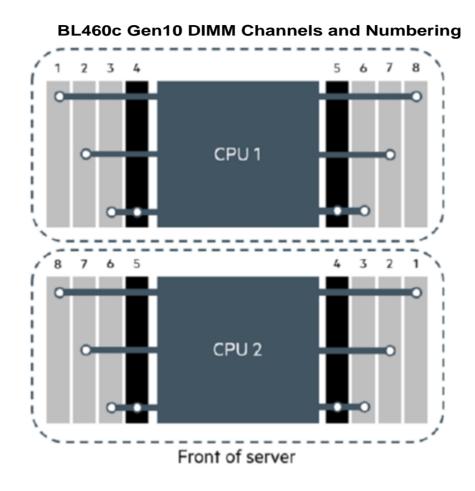
**NOTE:** Additional HPE Pointnext operational services can be found at:

https://www.hpe.com/us/en/services/operational.html

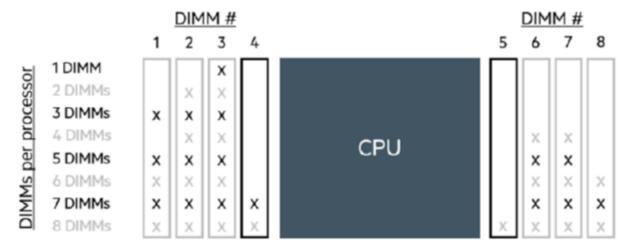
Memory

## **Memory Subsystem Architecture**

Each processor socket contains six memory channels that support one or two DIMMs each for a total of eight (8) DIMMs per installed processor or a grand total of sixteen (16) DIMMs for the server blade



#### 8 DIMM per CPU Population Guidelines



**NOTE:** Chart to be read from left to right. For example, when installing four (4) DIMMs on a processor, DIMMs 2, 3, 6, and 7 should be populated.

**NOTE:** For optimal performance, HPE does not recommend configurations with five (5) or seven (7) DIMMs in the BL460c Gen10 server blade.

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

https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111535

#### **Memory Population Rules and Guidelines**

• A minimum of one DIMM is required per processor.

#### Memory

- 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.
- DIMM sizes can be mixed in channel. To maximize performance, it is recommended to balance the total memory capacity between all installed processors and to load the channels similarly whenever possible.
- LRDIMM and RDIMMs are all distinct memory technologies and cannot be mixed within a compute module.
- DIMMs of different speeds may be mixed in any order; the compute module will select a common optimal speed.
- 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 memory type and number of installed processors.
- HPE memory from previous generation servers is not compatible with the HPE ProLiant BL460c Gen10 Server Blade.

To realize the performance memory capabilities listed in this document, HPE SmartMemory is required. For additional information, please see the HPE SmartMemory QuickSpecs at:

https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111535

## **BL460c Gen10 Server Blade**

Memory Speed Table

6DPC	BL460c Gen10 Server Blade			
DIMM Type	Register DIMM (RDIMM)			
HPE SKU P/N	815097-B21	815098-B21	835955-B21	815100-B21
SKU	HPE 8GB 1Rx8 PC4-	HPE 16GB 1Rx4	HPE 16GB 2Rx8	HPE 32GB 2Rx4
Description	2666V-R	PC4-2666V-R	PC4-2666V-R	PC4-2666V-R
DIMM Rank	Single Rank (1R)	Single Rank (1R)	Dual Rank (2R)	Dual Rank (2R)
DIMM Capacity	8GB	16GB	16GB	32GB
Voltage	1.2V	1.2V	1.2V	1.2V
DRAM depth [bit]	1G	2G	1G	2G
DRAM Width [bit]	x8	x4	x8	x4
DRAM Density	8Gb	8Gb	8Gb	8Gb
CAS Latency	19-19-19	19-19-19	19-19-19	19-19-19
DIMM Native Speed (MT/s)	2666	2666	2666	2666
HPE Server Memory Speed (MT/s) with Intel Xeon 8100 & 6100 Series Scalable Family Processors				
(Platinum)( also supported 5122)				
1 DIMM Per Channel	2666	2666	2666	2666
2 DIMM Per Channel	2666	2666	2666	2666
HPE Server Memory Speed (MT/s) with Intel Xeon 5100 & 4100 Series Scalable Family Processors				
(Silver/Gold)(except for 5122 processor above)				
1 DIMM Per Channel	2400	2400	2400	2400
2 DIMM Per Channel	2400	2400	2400	2400

HPE Server Memory Speed (MT/s) with Intel Xeon 3100 Series Scalable Family Processors (Bronze)

Memory				
1 DIMM Per Channel	2133	2133	2133	2133
2 DIMM Per Channel	2133	2133	2133	2133
DIMM Type		Load Redu	ıced (LRDIMM)	
HPE SKU P/N	815101	-B21	815102-B21	
SKU Description	HPE 64GB 4Rx4 PC4-2	400V-L	HPE 128GB 8Rx4 PC4	1-2666V-L
DIMM Rank	Quad Rai	nk (4R)	Octal Ra	ank (8R)
DIMM Capacity	64G	` ,	128	` ,
Voltage	1.2	<b>/</b>	1.2	2V
DRAM depth [bit]	2G		2G	
DRAM Width [bit]	x4			
DRAM Density	8Gb		8Gb	
CAS Latency	19-19-19		19-19-19	
DIMM Native Speed (MT/s)	2666		26	66
HPE Server N	PE Server Memory Speed (MT/s) with Intel Xeon 8100 & 6100 Series Scalable Family Processors			
		(Gold/Platinum	)	
1 DIMM Per Channel	266	6	26	66
2 DIMM Per Channel	2666		26	66
HPE Server Memory Speed (MT/s) with Intel Xeon 5100 & 4100 Series Scalable Family Processors (Silver/Gold)				
1 DIMM Per Channel	240	0	24	00
2 DIMM Per Channel	2400		24	00

**Technical Specifications** 

**System Unit** 

**Dimensions** 7.11 x 2.18 x 20.37 in (18.07 x 5.54 x 51.76 cm)

(H x W x D) (with bezel)

Weight Maximum: all processors, 16 14.00 lb (6.33 kg)

(approximate) DIMMs, hard drives, mezzanine

cards, and two flash cache batteries

installed)

Minimum: one processor and 2 10.50 lb (4.75 kg)

DIMMs installed

**Power Specifications** For power specifications including input requirements, BTU rating, and power supply

output, please see the:

• HPE BladeSystem c3000 Enclosure QuickSpecs at https://www.hpe.com/h20195/v2/GetDocument.aspx?docname=c04123379

• HPE BladeSystem c7000 Enclosure QuickSpecs at

https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04229580

To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at https://paonline56.itcs.hpe.com.

NOTE: For optimal cooling and system performance the BL460c Gen10 Server Blade requires the c7000 enclosure to be configured with 10 fans and the c3000 enclosure to be configured with 6 fans.

System Inlet TemperatureOperating 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 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct

sustained sunlight.

Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and

number of options installed.

System performance may be reduced if

operating with a fan fault or above 30°C (86°F).

Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of

change is 20°C/hr (36°F/hr).

**Extended Ambient Operating Support** 

For Approved hardware configurations, the supported system inlet range is extended to be:

5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to

a maximum of 3050 m (10,000 ft)

NOTE: Qualifications for extended ambient configurations are detailed at:

http://h17007.www1.hpe.com/us/en/enterprise/servers/solutions/infolibrary/index.aspx?cat=extended\_ambient\_operating\_support#.Wuyykk3rtaQ

**Relative Humidity** 

(non-condensing)

Operating 10 to 90% relative humidity (Rh), 28°C (82.4°F)

maximum wet bulb temperature, non-

condensing.

5 to 95% relative humidity (Rh), 38.7°C Non-operating

(101.7°F) maximum wet bulb temperature, non-

condensing.

**Technical Specifications** 

Altitude Operating 3,050 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 (1,500 ft/min).

Non-operating 9,144 m (30,000 ft). Maximum allowable

altitude change rate is 457 m/min (1,500

ft/min).

Acoustic Noise For acoustic noise specifications, please see the HPE BladeSystem c-Class

Enclosures QuickSpecs located at:

• HPE BladeSystem c3000 Enclosure QuickSpecs:

https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128340.pdf

• HPE BladeSystem c7000 Enclosure QuickSpecs:

https://www.hpe.com/h20195/v2/GetPDF.aspx/c04128339.pdf

### HPE FlexFabric 10Gb 2-port 536FLB FlexibleLOM

**Type** Integrated dual-port KR 10Gb FlexibleLOM with FlexFabric (Flex-10, FCoE,

hardware-based iSCSI, iSCSI boot, TCP/IP offload engine, and autosensing

1Gb/10Gb Ethernet capability)

Network Processor QLogic 57840S with integrated MAC/PHY

Data Transfer Method x8 PCI Express 3.0

Network Transfer Rate Two ports, each at 20Gbps full duplex; 40Gbps aggregate full duplex theoretical

bandwidth

**NOTE:** Each port is autosensing 1Gb/10Gb, and can interoperate with 1Gb or 10Gb HPE BladeSystem c-Class interconnect components. Both ports will operate at the

same speed.

**NOTE:** Each port on the 536FLB adapter transmits from the server at 20Gbps

(theoretical) full duplex.

IEEE Compliance
Standard Features

802.1p, 802.1q, 802.1qau, 802.3ad, 802.3ae, 802.3ap (10GBase-KX4) and 802.3x

Full hardware offload of iSCSI and FCoE storage protocol processing for highest

performance

converged Ethernet data and storage networks.

Dual-port 10GbE Flex-10 FlexibleLOM network adapter that provides the flexibility to

choose the

type of LOM to meet growing infrastructure needs Industry-leading throughput and latency performance

Supports the HPE Flex-10 blade interconnect technology

User configurable bandwidth settings when combined with the 10Gb Flex-10 Virtual

Connect

module. From 100Mb/s to10Gb/s on up to four "Physical Function" NICs per port, in

increments of

100Mb/s for NIC. The combined bandwidth of NICs cannot exceed port bandwidth

i.e. 10 Gb.

Up to 40Gb/s bi-directional near line rate throughput

Hardware acceleration and offloads for stateless TCP/IP, TCP Offload Engine (TOE)

Improved small packet performance

Support for Preboot eXecution Environment (PXE)

Integrated PHY and MAC Supports for SR-IOV



**Technical Specifications** 

Support for Network Partitioning (NPAR)

## HPE FlexFabric 20Gb 2-port 650FLB FlexibleLOM

**Type** Integrated dual-port KR2 20Gb FlexibleLOM with FlexFabric (Flex-20, FCoE, RoCE,

Tunnel Offload with VXLAN/NVGRE, hardware-based iSCSI, iSCSI boot, TCP/IP

offload engine, and autosensing Ethernet speed capability)

Network Processor Emulex XE-104

Data Transfer Method x8 PCI Express 3.0

Network Transfer Rate Two ports, each at 40 Gbps bi-directional; 80 Gbps aggregate bi-directional

theoretical bandwidth

**IEEE Compliance** 802.3ae, 802.1Q, 802.3x, 802.1p, 802.3ad/LACP, 802.1AB(LLDP), 802.1Qbg,

802.1Qbb, 802.1Qaz, 802.3ap

Standard Features Dual 20Gb ports provide up to 80Gb bi-directional per adapter

Multi-speed adapter operates at either 20GbE or 10GbE

Converges FCoE or RoCE with LAN traffic on a single Ethernet wire

Tunnel Offload support for VXLAN and NVGRE

RDMA over Converged Ethernet (RoCE) for greater server efficiency and lower

latency (6125XLG only)

Advanced storage offload processing freeing up valuable CPU cycles

Supports UEFI and legacy boot options

Mixed Storage - supports NIC + FCoE on one port, and NIC + iSCSI on the other Concurrent Storage - concurrently supports NIC, FCoE, and iSCSI storage functions

on the same port (NIC + FCoE + iSCSI)

Industry-leading throughput and latency performance Supports the HPE Flex-20 blade interconnect technology

Over eight million small packets/s, ideal for web/mobile applications, mobile

messaging, and social media

User configurable bandwidth settings when combined with the 20Gb Flex-20 Virtual Connect module. From 100Mb/s to10Gb/s on up to four "Physical Function" NICs per port, in increments of 100Mb/s for NIC. The combined bandwidth of NICs cannot

exceed port bandwidth i.e. 20 Gb/s.

Greater bandwidth with PCIe 3.0

Jumbo Frames support

Supports Wake On LAN (WOL)

Support for Preboot eXecution Environment (PXE)

Support for Microsoft Windows SMB Direct

Optimized host virtualization density with SR-IOV support

#### **Environment-friendly Products and Approach**

**End-of-life Management** and Recycling

Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <a href="http://www.hpe.com/info/recycle">http://www.hpe.com/info/recycle</a>. To recycle your product, please go to: <a href="http://www.hpe.com/info/recycle">http://www.hpe.com/info/recycle</a> or contact your nearest Hewlett Packard Enterprise sales office. 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

**Technical Specifications** 

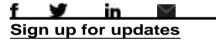
information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <a href="http://www.hpe.com/info/recycle">http://www.hpe.com/info/recycle</a> .These instructions may be used by recyclers and 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
01-Oct-2018	Version 10	Changed	Optional Features and Core Options sections were updated.
		Added	SKUs added: P04474-B21, P04476-B21, P04478-B21, P04480-B21, P04482-B21, P07922-B21, P07926-B21, P07930-B21, P06584-B21, P06586-B21, P06590-B21, P06592-B21.
06-Aug-2018	Version 9	Changed	Overview, Configuration Information - Factory Integrated Models, Core Options, and Additional Options sections were updated.
		Added	SKU added in Configuration Information - Factory Integrated Models section: 875949- L21
04-Jun-2018	Version 8	Changed	Standard Features, Configuration Information-Factory Integrated Models, Core Options, Additional Options, Memory, and Technical Specifications sections were updated.
		Added	SKUs added in QuickSpecs: 875956-L21, 875954-L21, 872009-L21, 872006-L21, 872012-B21, 875583-B21, 875585-B21, 875579-B21, 875581-B21, 878014-B21, P04556-B21, P04560-B21, P04564-B21, P04566-B21, P04570-B21, 873351-B21, 873355-B21, 873357-B21
		Removed	SKUs removed: 872008-L21, 872008-L21, 872012-B21, 875317-B21, 875319-B21, 880875-B21, 880877-B21.
02-Apr-2018	Version 7	Changed	Service and Support, Configuration Information - Factory Integrated Models, Core Options, and Additional Options sections were updated.
		Added	SKUs added in Core Options, and Additional Options sections: 845264-B21, 875587-B21, 875589-B21, 875591-B21, 877984-B21, 875595-B21, 875597-B21, 875593-B21, 877998-B21, 877740-B21, 877746-B21, 877758-B21, 877764-B21, 87776-B21, 877782-B21, 877788-B21, 870753-B21, 870759-B21, 870753-B21, 765464-B21, 832514-B21, 765466-B21, 881457-B21, 655710-B21, 765455-B21, 880875-B21, 880877-B21, 875330-B21, 875326-B21,

Summary of Change	<u> </u>		
			870144-B21, 875313-B21, 875311-B21,
			872390-B21, 872392-B21, 872394-B21,
			870148-B21, 873359-B21, 873363-B21,
			873365-B21, 873367-B21, 872374-B21,
			872376-B21, 872382-B21, 872386-B21,
			875478-B21, 875474-B21, 875470-B21,
			875483-B21, 872481-B21, 872479-B21,
			872477-B21, 872475-B21, 875513-B21,
			875511-B21, 875509-B21, 875503-B21.
12-Feb-2018	Version 6	Changed	Standard Features, Configuration Information
12 1 00 2010	V CI SIOTI O	Changea	- Factory Integrated Models, Core Options,
			Additional Options, and Memory sections
		A -1-11	were updated.
		Added	SKUs added in Configuration Information -
			Factory Integrated Models section: 700076-
			B21, 700767-B21, 700748-B21, 665246-B21,
			655639-B21, 700065-B21, 700763-B21,
			766490-B21, 873351-B21, 873355-B21,
			873357-B21, 877740-B21, 875503-B21,
			877746-B21, 875509-B21, 877752-B21, 875511-B21, 877758-B21, 875513-B21,
			877764-B21, 880875-B21, 880877-B21,
			875587-B21, 875589-B21, 875591-B21,
			875317-B21, 875319-B21, 875498-B21,
			875500-B21, 872390-B21, 872392-B21,
			872394-B21, 875311-B21, 875313-B21,
			875326-B21, 875330-B21, 870144-B21,
			870148-B21, 880295-B21, 875483-B21,
			877776-B21, 875470-B21, 877782-B21,
			875474-B21, 877788-B21, 875478-B21,
			877994-B21, 877998-B21, 875488-B21,
			875490-B21, 875492-B21, 872374-B21,
			873359-B21, 872376-B21, 873363-B21,
			872382-B21, 873365-B21, 872386-B21,
			873367-B21.
		Removed	SKUs deleted in Configuration Information -
			Factory Integrated Models, Core Options,
			and Additional Options sections: 875954-
			L21, 875955-L21, 875956-L21, 877851-L21,
			877807-L21, 875952-L21, 875953-L21,
			872009-L21, 872006-L21, 872007-L21,
			700066-B21, 700764-B21, 766491-B21,
			684214-B21, 759208-B21, 785067-B21,
			759210-B21, 759212-B21, 781516-B21,
			785069-B21, 781518-B21, 791034-B21,
			870763-B21, 875492-B21, 872359-B21,
			872363-B21, 869374-B21, 869376-B21,
			869378-B21, 869384-B21, 869386-B21.
06-Nov-2017	Version 5	Changed	QuickSpecs was updated.
		Removed	Obsolete SKUs were deleted:

Summary of Change	es		
			777262-B21, 777264-B21, 875494-B21,
			875496-B21, 736936-B21, 736939-B21,
			764892-B21, 764904-B21, 764906-B21,
			764908-B21, 815605-B21, 822594-B21,
			822593-B21, 815606-B21, 765034-B21,
			765036-B21, 765038-B21, 765044-B21.
25-Sep-2017	Version 4	Changed	Standard Features section was updated.
		Added	SKU added in Core Options section: 881457-B21.
07-Aug-2017	Version 3	Changed	Standard Features and Configuration
			Information - Factory Integrated Models
			sections were updated.
		Added	SKUs added:
			875943-L21, 875944-L21, 877807-L21,
			875945-L21, 875946-L21, 875947-L21,
			875488-B21, 875490-B21, 875492-B21,
			875494-B21, 875496-B21, 875498-B21,
			875500-B21.
17-Jul-2017	Version 2	Changed	Information in QuickSpecs was updated.
11-Jul-2017	Version 1	Created	New QuickSpecs.



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

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