Către MOLDOVAGAZ S.A.

Adresa: 2005, MOLDOVA, mun.Chişinău, mun.Chişinău, Alexandr Puskin nr.64

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Obiectul achiziției: Achiziționarea utilaj comutator pentru server

Declarație

Prin prezenta declarație, garantăm că echipamentele prezentate în oferta noastră sunt în deplină compatibilitate și conformitate conform specificațiilor tehnice din caietul de sarcini. Confirmarea acestor afirmații este susținută de fișele tehnice ale producătorilor HPE Aruba 5406R zl2 (J9850A) și HPE ProLiant DL560 Gen10, care atestă compatibilitatea echipamentelor date cu bunurile oferite de compania noastră.

La acest document se anexează fișele tehnice pentru HPE Aruba 5406R zl2 (J9850A) și HPE ProLiant DL560 Gen10.

Semnat:_____   Numele, Prenumele:Cioban Alexei

În calitate de: Director   Ofertantul: IT-LAB GRUP SRL

Adresa: mun. Chisinau, stradela Studentilor 2/4

HPE Aruba Networking 5400R zl2 Switch Series
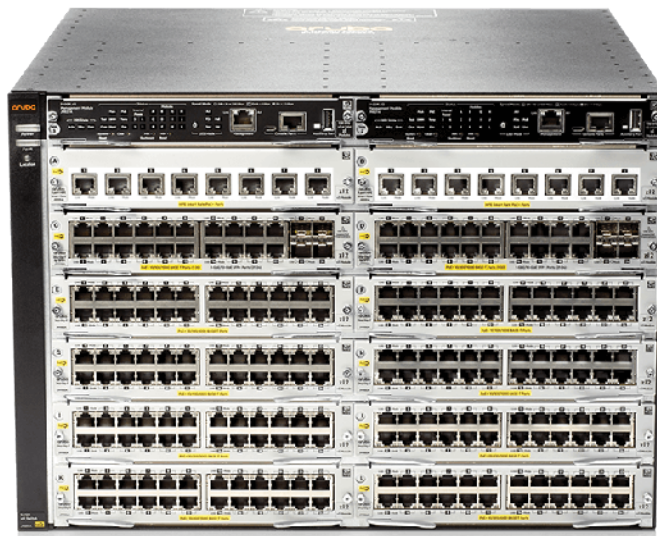
Key features

- Powerful HPE Aruba Networking Layer 3 modular switch series with VSF stacking, Dynamic Segmentation, low latency and resiliency

- HPE Smart Rate for high-speed multi-gigabit bandwidth (IEEE 802.3bz) and PoE+ power

- Resilient with redundant management and hot swappable power supplies

- Up to 288 ports of PoE+

- Scalable line rate 40 GbE for wireless traffic aggregation

- Software defined ready with REST APIs and OpenFlow support

- Advanced security and network management via HPE Aruba Networking NAC, HPE Aruba Networking [Legacy] Management Software and HPE Aruba Networking Central

Product overview

The HPE Aruba Networking 5400R zl2 Switch Series delivers enterprise-class resiliency with innovative flexibility and scalability for customers creating smart digital workplaces that are optimized for mobile users with an integrated wired and wireless approach. This modular series brings scalable aggregation with Virtual Switching Framework (VSF) stacking technology, hitless failover, and Fast Software Upgrade for 5400R VSF stacks. The advanced Layer 2 and 3 feature set includes OSPF, IPv6, IPv4 BGP, Dynamic Segmentation, robust QoS and policy-based routing with no software licensing required.

Based on a powerful ProVision ASIC, the 5400R zl2 Switch Series has a high-speed, high-capacity architecture with 2 Tbps crossbar switching fabric with low 2.1μ latency, robust feature support, and value with flexible programmability for the latest applications. This series offers flexible connectivity options with 6- or 12-slot compact chassis, line rate 40 GbE, up to 96 line rate Smart Rate multigigabit or 10 GbE ports and up to 288 ports of PoE+ for powering access points, cameras and IoT devices.

The 5400R is easy to deploy, use and manage using HPE Aruba Networking [Legacy] Management Software or HPE Aruba Networking Central. HPE Aruba Networking NAC offers centralized security and external captive portal support. The switches include a Limited Lifetime Warranty.

Enhanced capabilities

Software-defined networks

- Supports multiple programmatic interfaces, including REST APIs and OpenFlow 1.0 and 1.3, to enable automation of network operations, monitoring, and troubleshooting

Unified wired and wireless support

- Supports unified wired and wireless policies using HPE Aruba Networking NAC

- Switch auto-configuration automatically configures switch for different settings such as VLAN, CoS, PoE max power, and PoE priority when an HPE Aruba Networking access point is detected

- User Role defines a set of switch-based policies in areas such as security, authentication, and QoS. A user role can be assigned to a group of users or devices,

using switch-based local user role or download from HPE Aruba Networking NAC

- For improved network simplicity and security, HPE Aruba Networking Dynamic Segmentation automatically enforces user, device and application-aware policies on HPE Aruba Networking wired and wireless networks. Automated device profiling, role-based access control, and Layer 7 firewall features deliver enhanced visibility and performance for a better overall experience for both IT and end-users alike

- Dynamic Segmentation provides a secure tunnel that transports network traffic on a per-port or per-user role basis to an HPE Aruba Networking Controller. In a per-user role Tunnel Node, users are authenticated by the NAC which directs traffic to be tunneled to a controller or switch locally

- Static IP Visibility allows NAC to do accounting for clients with static IP addresses

Quality of Service (QoS)
- Advanced classifier-based QoS classifies traffic using multiple match criteria based on Layer 2, 3, and 4 information; applies QoS policies such as setting priority level and rate limit to selected traffic on a per-port or per-VLAN basis

- Traffic prioritization allows real-time traffic classification into eight priority levels mapped to eight queues

- Bandwidth shaping
  - Port-based rate limiting provides per-port ingress-/egress-enforced increased bandwidth
  - Classifier-based rate limiting uses an access control list (ACL) to enforce increased bandwidth for ingress traffic on each port
  - Supports per-port, per-queue egress-based reduced bandwidth

- Class of Service (CoS) sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ

- Unknown Unicast Rate Limiting throttles unicast packets with unknown destination addresses and limits flooding on the VLAN

Simplified configuration and management
- HPE Aruba Networking Central cloud-based management platform offers simple, secure, and cost-effective way to manage switches

- Zero Touch ProVisioning (ZTP) simplifies installation of the switch infrastructure using HPE Aruba Networking Activate or DHCP-based process with HPE Aruba Networking [Legacy] Management Software and Central Network Management

- Flexible management—Supports both cloud-based Central and on-premise HPE Aruba Networking [Legacy] Management Software without ripping and replacing switching infrastructure

- IP SLA for Voice monitors quality of voice traffic using the UDP Jitter and UDP Jitter for VoIP tests (requires v3 modules)

- Built-in programmable and easy to use REST API interface provides configuration automation for campus networks

- Remote intelligent mirroring mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote HPE 8200 zl, 6600, 6200 yl, 5400 zl, 5400R, 3500, or 3800 Switch located anywhere on the network

- RMON, XRMON, and sFlow provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events

- IEEE 802.1AB Link Layer Discovery Protocol (LLDP) advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications

- Unidirectional link detection (UDLD) monitors the link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices

- Management simplicity provides common software features and CLI implementation across all HPE ProVision-based switches (including the zl and yl switches)

- Command authorization leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents activity

- Friendly port names allow assignment of descriptive names to ports

- Dual flash images provide independent primary and secondary operating system files for backup while upgrading

- Multiple configuration files stores easily to the flash image

Connectivity
- IEEE 802.3az Energy Efficient Ethernet lowers power consumption in periods of low link usage (supported on v2 zl 10/100/1000 and 10/100 modules)

- IEEE 802.3at Power over Ethernet (PoE+) provides up to 30 W per port that allows support of the latest PoE+ capable devices such as IP phones, wireless access points, and security cameras, as well as any IEEE 802.3af- compliant end device; eliminates the cost of additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments

- Support for pre-standard PoE detects and provides power to pre-standard PoE devices

- High-density port connectivity provides up to 12 interface module slots and up to 288 wire-speed 10/100/1000 PoE-enabled ports, 96 10GbE ports or 96 Smart Rate multi-gigabit ports per system

- Jumbo frames on Gigabit Ethernet and 10-Gigabit Ethernet support high-performance remote backup and disaster-recovery services

- Auto-MDIX provides automatic adjustments for straight-through or crossover cables on all 10/100 and 10/100/1000 ports

- IPv6

  – IPv6 host enables switches to be managed in an IPv6 network

  – Dual stack (IPv4 and IPv6) transitions IPv4 to IPv6, supporting connectivity for both protocols

  – MLD snooping forwards IPv6 multicast traffic to the appropriate interface

  – IPv6 ACL/QoS supports ACL and QoS for IPv6 traffic

  – IPv6 routing supports static, RIPng, OSPFv3 routing protocols

  – 6in4 tunneling supports encapsulation of IPv6 traffic in IPv4 packets

  – Security provides RA guard, DHCPv6 protection, dynamic IPv6 lockdown, and ND snooping

Performance
- High-speed, high-capacity architecture 2 Tbps crossbar switching fabric provides intra-module and inter-module switching with 785.7 million pps throughput on the purpose-built ProVision ASICs

- Selectable queue configurations allow for increased performance by selecting the number of queues and associated memory buffering that best meet the requirements of the network applications

Resiliency and high availability
- Virtual Switching Framework (VSF) creates one virtual resilient switch from two switches; servers or switches can be attached using standard LACP for automatic load balancing and high availability; simplify network operation by reduce the need for complex protocols like Spanning Tree Protocol (STP), Equal-Cost Multipath (ECMP), and VRRP (requires v3 modules)

- Fast Software Upgrade reduces downtime of the VSF stack during an upgrade by sequentially upgrading the members in the stack shrinking the downtime to a few seconds (requires v3 modules)

- Virtual Router Redundancy Protocol (VRRP) allows groups of two routers to dynamically back each other up to create highly available routed environments for IPv4 and IPv6 networks

- Nonstop switching improves network availability to better support critical applications such as unified communication and mobility; interface and fabric modules continue switching traffic during failover from active to standby management module

- Nonstop routing enhances Layer 3 high availability; OSPFv2/v3 and VRRP will continue to operate and route network traffic during failover from an active to a standby management module

- Redundant management and power provide enhanced system availability and continuity of operations

- IEEE 802.1s Multiple Spanning Tree Protocol provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol

- IEEE 802.3ad Link Aggregation Control Protocol (LACP) and HPE port trunking support up to 144 trunks, each with up to eight links (ports) per trunk

- Distributed trunking enables loop-free and redundant network topology without using Spanning Tree Protocol; allows a server or switch to connect to two switches using one logical trunk for redundancy and load sharing

- Optional redundant power supply provides uninterrupted power and allows hot-swapping of the redundant power supplies when installed

- Hot-swappable modules allows dissimilar modules, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network

- Sparing simplicity with zl-common accessories (interface modules and power supplies)

- Uplink Failure Detection provides active-standby network path redundancy for servers that are configured for active-standby NIC teaming

- SmartLink provides easy-to-configure link redundancy of active and standby links

Layer 2 switching
- VXLAN support and tagging supports the IEEE 802.1Q standard and 4,094 VLANs simultaneously

- IEEE 802.1v protocol VLANs isolate select non-IPv4 protocols automatically into their own VLANs

- VLAN encapsulation (tunneling) protocol for overlay network that enables a more scalable virtual network deployment (requires v3 modules)

- GVRP and MVRP allows automatic learning and dynamic assignment of VLANs

- IEEE 802.1ad Q-in-Q increases the scalability of an Ethernet network by providing a hierarchical structure; connects multiple LANs on a high-speed campus or metro network

- MAC-based VLAN provides granular control and security; uses RADIUS to map a MAC address/user to specific VLANs (requires v2 or higher modules)

- Rapid Per-VLAN Spanning Tree (RPVST+) allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+

- HPE switch meshing dynamically load balances across multiple active redundant links to increase available aggregate bandwidth; allows concurrent Layer 3 routing with v2 or higher modules

Layer 3 services
- Bidirectional Forwarding Detection (BFD) enables link connectivity monitoring and reduces network convergence time for static route, OSPFv2 and VRRP (requires v3 modules)

- User Datagram Protocol (UDP) helper function allows UDP broadcasts to be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevents server spoofing for UDP services such as DHCP

- Loopback interface address defines an address in Routing Information Protocol (RIP) and Open Standard Path First (OSPF), improving diagnostic capability

- Route maps provide more control during route redistribution; allow filtering and altering of route metrics

- DHCP server centralizes and reduces the cost of IPv4 address management

Layer 3 routing
- Static IP routing provides manually configured routing for both IPv4 and IPv6 networks

- Routing Information Protocol (RIP) provides RIPv1, RIPv2, and RIPng routing

- OSPF provides OSPFv2 for IPv4 routing and OSPFv3 for IPv6 routing

- Policy-based routing uses a classifier to select traffic that can be forwarded based on policy set by the network administrator (requires v2 or higher modules)

- Border Gateway Protocol (BGP) provides IPv4 Border Gateway Protocol routing, which is scalable, robust, and flexible

Security
- Control Plane Policing sets rate limit on control protocols to protect CPU overload from DOS attacks

- Access control lists (ACLs) provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per- port basis

- Multiple user authentication methods

  – Uses an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server to authenticate in accordance with industry standards

  – Web-based authentication provides a browser-based environment, similar to IEEE 802.1X, to authenticate clients that do not support IEEE 802.1X

  – Supports MAC-based client authentication

  – Concurrent IEEE 802.1X, Web, and MAC authentication schemes per switch port accepts up to 32 sessions of IEEE 802.1X, Web, and MAC authentications

- Private VLAN provides network security by restricting peer-to-peer communication to prevent a variety of malicious attacks; typically, a switch port can only communicate with other ports in the same community and/or an uplink port, regardless of VLAN ID or destination MAC address

- DHCP protection blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks

- Secure management access delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3

- Switch CPU protection provides automatic protection against malicious network traffic trying to shut down the switch

- ICMP throttling defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic

- Identity-driven ACL enables implementation of a highly granular and flexible access security policy and VLAN assignment specific to each authenticated network user

- STP BPDU port protection blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks

- Dynamic IP lockdown works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing

- Dynamic ARP protection blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data

- STP root guard protects the root bridge from malicious attacks or configuration mistakes

- Detection of malicious attacks monitors 10 types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected

- Port security allows access only to specified MAC addresses, which can be learned or specified by the administrator

- MAC address lockout prevents particular configured MAC addresses from connecting to the network

- Source-port filtering allows only specified ports to communicate with each other

- RADIUS/TACACS+ eases switch management security administration by using a password authentication server

- Secure shell encrypts all transmitted data for secure remote CLI access over IP networks

- Secure Sockets Layer (SSL) encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- Radius over TLS (RadSec) allows users to use a more secure and reliable mode of communications between switch and radius servers over unsecure networks

- Secure FTP allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file

- Open Authentication Role simplifies first-time deployment of AAA in brownfield deployments by allowing full network access for failed clients and provides instant connectivity as soon as a client is plugged-in

- Critical Authentication Role ensures that important infrastructure devices such as IP phones are allowed network access even in the absence of a RADIUS server

- MAC Pinning allows non-chatty legacy devices to stay authenticated by pinning client MAC addresses to the port until the clients logoff or get disconnected

- Management Interface Wizard helps secure management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB at the desired level

- Switch management logon security helps secure switch CLI logon by optionally requiring either RADIUS or TACACS+ authentication

- Security banner displays a customized security policy when users log in to the switch

- IEEE 802.1AE MACsec provides security on a link between two switch ports (1Gbps or 10Gbps) using standard encryption and authentication (requires v3 modules)

- Enrollment over Secure Transport (EST) enhances the switch PKI infrastructure with a simpler, scalable and more secure method of certificate provisioning, re-enrollment and renewal

Convergence

- IP multicast routing includes PIM Sparse and Dense modes to route IP multicast traffic

- IP multicast snooping (data-driven IGMP) prevents flooding of IP multicast traffic

- Protocol Independent Multicast for IPv6 supports one-to-many and many-to-many media casting use cases such as IPTV over IPv6 networks

- LLDP-MED (Media Endpoint Discovery) defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones

- PoE allocations supports multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user-specified) to allocate PoE power for more efficient energy savings

- Auto VLAN configuration for voice
  - RADIUS VLAN uses a standard RADIUS attribute and LLDP- MED to automatically configure a VLAN for IP phones
  - CDPv2 uses CDPv2 to configure legacy IP phones

- Local MAC Authentication assigns attributes such as VLAN and QoS using locally configured profile that can be a list of MAC prefixes

Customer first, customer last support

When your network is important to your business, then your business needs the backing of HPE Aruba Networking Support Services. Partner with HPE Aruba Networking product experts to increase your team productivity, keep pace with technology advances, software releases, and obtain break-fix support.

Foundation Care for HPE Aruba Networking support services include priority access to HPE Aruba Networking Technical Assistance Center (TAC) engineers 24x7x365, flexible hardware and onsite support options, and total coverage for HPE Aruba Networking products. HPE Aruba Networking switches with assigned HPE Aruba Networking Central subscriptions benefit with option for additional hardware support only.

HPE Aruba Networking Pro Care adds fast access to senior TAC engineers, who are assigned as a single point of contact for case management, reducing the time spent addressing and resolving issues.

For complete details on Foundational Care and Pro Care, please visit: arubanetworks.com/support-services/

Warranty, services and support

- Limited Lifetime Warranty, see arubanetworks. com/support-services/product-warranties/ for warranty and support information included with your product purchase

- For Software Releases and Documentation, refer to asp.arubanetworks.com/downloads

- For support and services information, visit arubanetworks.com/support-services/

Specifications

	HPE Aruba Networking 5406R zl2 Switch (J9821A)	HPE Aruba Networking 5412R zl2 Switch (J9822A)
Included accessories		
	1 HPE Aruba Networking 5400R zl2 Management Module (J9827A) 1 HPE Aruba Networking 5406R zl2 Switch Fan Tray (J9831A)	1 HPE Aruba Networking 5400R zl2 Management Module (J9827A) 1 HPE Aruba Networking 5412R zl2 Switch Fan Tray (J9832A)
I/O ports and slots		
	6 open module slots Supports a maximum of 144 auto-sensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40 GbE ports, or a combination	12 open module slots Supports a maximum of 288 auto-sensing 10/100/1000 ports or 288 SFP ports or 96 SFP+ ports or 96 HPE Smart Rate Multi-Gigabit or 24 40 GbE ports, or a combination
Power supplies		
	2 power supply slots 1 minimum power supply required (ordered separately)	4 power supply slots 2 minimum power supplies required (ordered separately)
Fan tray		
	Includes: 1 x J9831A 1 fan tray slot	Includes: 1 x J9832A 1 fan tray slot
Physical characteristics		
Dimensions	17.5 (w) x 17.75 (d) x 6.9 (h) in (44.45 x 45.09 x 17.53 cm) (4U height)	17.5 (w) x 17.75 (d) x 12.1 (h) in (44.45 x 45.09 x 30.73 cm) (7U height)
Weight	24.5 lb (11.11 kg)	38.1 lb (17.28 kg)
Memory and processor		
v3 Gigabit module **v2 Gigabit module** **v3 10G module** **v2 10G module** **v3 40G module** **Management module**	Dual ARM® Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM11 @ 450 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM11 @ 550 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM	Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM11 @ 450 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM11 @ 550 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure		
	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only
Performance		
	IPv6 Ready Certified	IPv6 Ready Certified
1000 Mb latency	<2.8μs (FIFO 64-byte packets)	<2.8μs (FIFO 64-byte packets)
10 Gbps latency	<1.8μs (FIFO 64-byte packets)	<1.8μs (FIFO 64-byte packets)
40 Gbps latency	<1.5μs (FIFO 64-byte packets)	<1.5μs (FIFO 64-byte packets)
Throughput	up to 571.4 Mpps	up to 1142.8 Mpps
Routing/switching capacity	960 Gbps	1920 Gbps
Switch fabric speed	1015 Gbps	2030 Gbps

Specifications

	HPE Aruba Networking 5406R zl2 Switch (J9821A)	HPE Aruba Networking 5412R zl2 Switch (J9822A)
Performance		
Routing table size	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)
MAC address table size	64000 entries	64000 entries
Environment		
Operating temperature	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
Operating relative humidity	15% to 95% @ 113°F (45°C), non-condensing	15% to 95% @ 113°F (45°C), non-condensing
Non-operating/storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/storage relative humidity	15% to 95% @ 149°F (65°C), non-condensing	15% to 95% @ 149°F (65°C), non-condensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)
Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296	Power: 49 dB, Pressure: 35.7 dB ISO 7779, ISO 9296
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
80plus.org certification	Gold	Gold
Description	Does not come with power supply. Two power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	Does not come with power supply. Four power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
Maximum heat dissipation	2450 BTU/hr (2584 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7,807 kJ/hr) (max. using PoE)
Voltage	100–127/200–240 VAC, rated (depending on power supply chosen)	100–127/200–240 VAC, rated (depending on power supply chosen)
Idle power		
Notes	Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Heat dissipation does not include heat dissipated by the PoE-powered devices themselves. When more than four power cords are installed in a 5412R zl2 switch chassis, additional installation requirements are needed. Refer to the HPE 5400R zl2 Switches Quick Setup Guide and Safety/Regulatory Information manual for details.
Safety		
	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions		
	FCC part 15 Class A; EN 55022/CISPR 22 Class A	FCC part 15 Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC
Surge	IEC 61000-4-6; 3 Vrms	IEC 61000-4-6; 3 Vrms

Specifications

	HPE Aruba Networking 5406R zl2 Switch (J9821A)	HPE Aruba Networking 5412R zl2 Switch (J9822A)
Immunity		
Conducted	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Power frequency magnetic field	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management		
	HPE Aruba Networking Central; HPE Aruba Networking [Legacy] Management Software; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); In-line and out-of band; Out-of-band management (serial RS-232c or micro USB)	HPE Aruba Networking Central; HPE Aruba Networking [Legacy] Management Software; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); In-line and out-of band; Out-of-band management (serial RS-232c or micro USB)
Notes		
	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).

Specifications

	HPE Aruba Networking 5412R 92GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL001A)	HPE Aruba Networking 5406R 8-port 1/2.5/5/10GBASE-T PoE+/8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)
Included accessories		
	1 HPE Aruba Networking 5400R zl2 Management Module (J9827A) 1 HPE Aruba Networking 5412R zl2 Switch Fan Tray (J9832A) 3 HPE Aruba Networking 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module (J9986A) 1 HPE Aruba Networking 20-port 10/100/1000BASE-T PoE+/4-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9990A)	1 HPE Aruba Networking 5400R zl2 Management Module (J9827A) 1 HPE Aruba Networking 5406R zl2 Switch Fan Tray (J9831A) 1 HPE Aruba Networking 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9993A) 1 HPE Aruba Networking 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module (J9995A)
I/O ports and slots		
	92 RJ-45 auto-sensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open 10 GbE SFP+ transceiver slots 8 open module slots Supports a maximum of 288 auto-sensing 10/100/1000 ports or 288 SFP ports or 96 SFP+ ports or 96 HPE Smart Rate Multi-Gigabit or 24 40 GbE ports, or a combination	8 RJ-45 HPE Smart Rate Multi-Gigabit ports (100M, 1/2.5/5GBaseT and 10GBaseT) 8 open 10 GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 auto-sensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40 GbE ports, or a combination
Power supplies		
	4 power supply slots 2 minimum power supplies required (ordered separately)	2 power supply slots 1 minimum power supply required (ordered separately)

Specifications

	HPE Aruba Networking 5412R 92GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL001A)	HPE Aruba Networking 5406R 8-port 1/2.5/5/10GBASE-T PoE+/8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)
Fan tray		
	Includes: 1 x J9832A 1 fan tray slot	Includes: 1 x J9831A 1 fan tray slot
Physical characteristics		
Dimensions	17.5 (w) x 17.75 (d) x 12.1 (h) in (44.45 x 45.09 x 30.73 cm) (7U height)	17.5 (w) x 17.75 (d) x 6.9 (h) in (44.45 x 45.09 x 17.53 cm) (4U height)
Weight	45.19 lb (20.5 kg)	28.11 lb (12.75 kg)
Memory and processor		
v3 Gigabit module **v2 Gigabit module** **v3 10G module** **v2 10G module** **v3 40G module** **Management module**	Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 450 MHz; Packet buffer size: 18 Mb internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 550 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM	Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 450 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 550 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure		
	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only
Performance		
1000 Mb latency	<2.8µs (FIFO 64-byte packets)	<2.8µs (FIFO 64-byte packets)
10 Gbps latency	<1.8µs (FIFO 64-byte packets)	<1.8µs (FIFO 64-byte packets)
40 Gbps latency	<1.5µs (FIFO 64-byte packets)	<1.5µs (FIFO 64-byte packets)
Throughput	up to 1142.8 Mpps	up to 571.4 Mpps
Routing/switching capacity	1920 Gbps	960 Gbps
Switch fabric speed	2030 Gbps	1015 Gbps
Routing table size	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)
MAC address table size	64000 entries	64000 entries
Environment		
Operating temperature	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
Operating relative humidity	15% to 95% @ 113°F (45°C), non-condensing	15% to 95% @ 113°F (45°C), non-condensing
Non-operating/storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/storage relative humidity	15% to 95% @ 149°F (65°C), non-condensing	15% to 95% @ 149°F (65°C), non-condensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)
Acoustic	Power: 49 dB, Pressure: 35.7 dB ISO 7779, ISO 929	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Specifications

	HPE Aruba Networking 5412R 92GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL001A)	HPE Aruba Networking 5406R 8-port 1/2.5/5/10GBASE-T PoE+/8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
80plus.org certification	Gold	Gold
Description	Does not come with power supply. Four open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
Maximum heat dissipation	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7807 kJ/hr) (max. using PoE	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
Voltage	110–127/200–240 VAC, rated (depending on power supply chosen)	110–127/200–240 VAC, rated (depending on power supply chosen)
Idle power	312 W	215 W
Notes	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves. When more than four power cords are installed in a 5412R zl2 switch chassis, additional installation requirements are needed. Refer to the HPE 5400R zl2 Switches Quick Setup Guide and Safety/Regulatory Information manual for details.	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety		
	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions		
	FCC part 15 Class A; EN 55022/CISPR 22 Class A	FCC part 15 Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line) IEC 61000-4-5; 1 kV/2 kV AC, 1 kV signal, 0.5 kV DC
Surge	IEC 61000-4-6; 3 Vrms	IEC 61000-4-6; 3 Vrms
Conducted	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Power frequency magnetic field	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3

Specifications

	HPE Aruba Networking 5412R 92GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL001A)	HPE Aruba Networking 5406R 8-port 1/2.5/5/10GBASE-T PoE+/8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)
Management		
	HPE Aruba Networking Central; HPE Aruba Networking [Legacy] Management Software; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; REST interface; SNMP manager Telnet; RMON1; FTP; Out-of-band management (Serial RS-232C, Micro USB Serial)	HPE Aruba Networking Central; HPE Aruba Networking [Legacy] Management Software; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; REST interface; SNMP manager Telnet; RMON1; FTP; Out-of-band management (Serial RS-232C, Micro USB Serial)
Notes		
	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C). HPE Smart Rate Multi-Gigabit Cabling; 1000BASE-T, 2.5 Gigabit, and 5 Gigabit Ethernet: Category 5e or better UTP or STP; 10GBASE-T: Category 6 or better (CAT6A recommended) UTP or STP

	HPE Aruba Networking 5406R 44GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL003A)	HPE Aruba Networking 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)
Included accessories		
	1 HPE Aruba Networking 5400R zl2 Management Module (J9827A) 1 HPE Aruba Networking 5406R zl2 Switch Fan Tray (J9831A) 1 HPE Aruba Networking 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module (J9986A) 1 HPE Aruba Networking 20-port 10/100/1000BASE-T PoE+/4-port 1G/10 GbE SFP+ MACsec v3 zl2 Module (J9990A)	1 HPE Aruba Networking 5400R zl2 Management Module (J9827A) 1 HPE Aruba Networking 5406R zl2 Switch Fan Tray (J9831A) 2 HPE Aruba Networking 8-port 1G/10 GbE SFP+ MACsec v3 zl2 Module (J9993A)
I/O ports and slots		
	44 RJ-45 auto-sensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open 10 GbE SFP+ transce 4 open module slots Supports a maximum of 144 auto-sensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40 GbE ports, or a combination	16 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 auto-sensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40 GbE ports, or a combination
Power supplies		
	2 power supply slots 1 minimum power supply required (ordered separately)	2 power supply slots 1 minimum power supply required (ordered separately)

Specifications

	HPE Aruba Networking 5406R 44GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL003A)	HPE Aruba Networking 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)
Fan tray		
	Includes: 1 x J9831A 1 fan tray slot	Includes: 1 x J9831A 1 fan tray slot
Physical characteristics		
Dimensions	17.5 (w) x 17.75 (d) x 6.9 (h) in (44.45 x 45.09 x 17.53 cm) (4U height)	17.5 (w) x 17.75 (d) x 6.9 (h) in (44.45 x 45.09 x 17.53 cm) (4U height)
Weight	28.11 lb (12.75 kg)	28.11 lb (12.75 kg)
Memory and processor		
v3 Gigabit module **v2 Gigabit module** **v3 10G module** **v2 10G module** **v3 40G module** **Management module**	Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 450 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 550 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM	Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal ARM 11 @ 450 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1; Packet buffer size: 13.5 MB internal ARM 11 @ 550 MHz; Packet buffer size: 18 MB internal Dual ARM Cortex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure		
	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only
Performance		
1000 Mb latency	<2.8µs (FIFO 64-byte packets)	<2.8µs (FIFO 64-byte packets)
10 Gbps latency	<1.8µs (FIFO 64-byte packets)	<1.8µs (FIFO 64-byte packets)
40 Gbps latency	<1.5µs (FIFO 64-byte packets)	<1.5µs (FIFO 64-byte packets)
Throughput	up to 571.4 Mpps	up to 571.4 Mpps
Routing/switching capacity	960 Gbps	960 Gbps
Switch fabric speed	1015 Gbps	1015 Gbps
Routing table size	10000 entries (IPv4), 5000 entries (IPv6)	10000 entries (IPv4), 5000 entries (IPv6)
MAC address table size	64000 entries	64000 entries
Environment		
Operating temperature	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
Operating relative humidity	15% to 95% @ 113°F (45°C), non-condensing	15% to 95% @ 113°F (45°C), non-condensing
Non-operating/storage temperature	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Non-operating/storage relative humidity	15% to 95% @ 149°F (65°C), non-condensing	15% to 95% @ 149°F (65°C), non-condensing
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)
Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Specifications

	HPE Aruba Networking 5406R 44GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL003A)	HPE Aruba Networking 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)
Electrical characteristics		
Frequency	50/60 Hz	50/60 Hz
80plus.org certification	Gold	Gold
Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
Voltage	110–127/200–240 VAC, rated (depending on power supply chosen)	110–127/200–240 VAC, rated (depending on power supply chosen)
Idle power	215 W	215 W
Notes	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety		
	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950
Emissions		
	FCC part 15 Class A; EN 55022/CISPR 22 Class A	FCC part 15 Class A; EN 55022/CISPR 22 Class A
Immunity		
EN	EN 55024, CISPR 24	EN 55024, CISPR 24
ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
Radiated	IEC 61000-4-3; 3 V/m	IEC 61000-4-3; 3 V/m
EFT/burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
Conducted	IEC 61000-4-6; 3 Vrms	IEC 61000-4-6; 3 Vrms
Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Management		
	HPE Aruba Networking Central; HPE Aruba Networking [Legacy] Management Software; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; REST interface; SNMP manager Telnet; RMON1; FTP; Out-of-band management (Serial RS-232C, Micro USB Serial)	HPE Aruba Networking Central; HPE Aruba Networking [Legacy] Management Software; IMC—Intelligent Management Center; Command-line interface; Web browser; Configuration menu; REST interface; SNMP manager Telnet; RMON1; FTP; Out-of-band management (Serial RS-232C, Micro USB Serial)

Specifications

	HPE Aruba Networking 5406R 44GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL003A)	HPE Aruba Networking 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)
Notes		
	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).

Standards and protocols (applies to all products in series)

BGP
- RFC 1997 BGP Communities Attribute

- RFC 2918 Route Refresh Capability

- RFC 4271 A Border Gateway Protocol 4 (BGP-4)

- RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)

- RFC 5492 Capabilities Advertisement with BGP-4

Device management
- RFC 1591 DNS (client)

- HTML and telnet management

- RFC 2576 (Coexistence between SNMP V1, V2, V3)

- RFC 2579 (SMIv2 Text Conventions)

- RFC 2580 (SMIv2 Conformance)

- RFC 3416 (SNMP Protocol Operations v2)

General protocols
- IEEE 802.1ad Q-in-Q

- IEEE 802.1AX-2008 Link Aggregation

- IEEE 802.1D MAC Bridges

- IEEE 802.1p Priority

- IEEE 802.1Q VLANs

- IEEE 802.1s Multiple Spanning Trees

- IEEE 802.1v VLAN classification by Protocol and Port

- IEEE 802.1w Rapid Reconfiguration of Spanning Tree

- IEEE 802.3ad Link Aggregation Control Protocol (LACP)

- IEEE 802.3af Power over Ethernet

- IEEE 802.3az Energy Efficient Ethernet

- IEEE 802.3bz 2.5 Gbps and 5 Gbps interfaces

- IEEE 802.3x Flow Control

- RFC 768 UDP

- RFC 783 TFTP Protocol (revision 2)

- RFC 792 ICMP

- RFC 793 TCP

- RFC 826 ARP

- RFC 854 TELNET

- RFC 868 Time Protocol

- RFC 951 BOOTP

- RFC 1058 RIPv1

- RFC 1350 TFTP Protocol (revision 2)

- RFC 1519 CIDR

- RFC 1542 BOOTP Extensions

- RFC 1918 Address Allocation for Private Internet

- RFC 2030 Simple Network Time Protocol (SNTP) v4

- RFC 2131 DHCP

- RFC 2453 RIPv2

- RFC 2548 (MS-RAS-Vendor only)

- RFC 3046 DHCP Relay Agent Information Option

- RFC 3575 IANA Considerations for RADIUS

- RFC 3576 Ext to RADIUS (CoA only)

- RFC 3768 VRRP

- RFC 4675 RADIUS VLAN & Priority UDLD (Uni-directional Link Detection)

- RFC 5880 BFD

- RFC 5905 NTP Client

IP multicast
- RFC 3376 IGMPv3

- RFC 3973 PIM Dense Mode

- RFC 4601 PIM Sparse Mode

IPv6
- RFC 1981 IPv6 Path MTU Discovery
- RFC 2375 IPv6 Multicast Address
- RFC 2080 RIPng for IPv6
- RFC 2081 RIPng Protocol Applicability
- RFC 2082 RIP-2 MD5 Assignments
- RFC 2460 IPv6 Specification RFC 2464 Transmission of IPv6 over Ethernet Networks
- RFC 2710 Multicast Listener Discovery (MLD) for IPv6
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)
- RFC 3019 MLDv1 MIB
- RFC 3315 DHCPv6 (client and relay)
- RFC 3484 Default Address Selection for IPv6
- RFC 3587 IPv6 Global Unicast Address Format
- RFC 3596 DNS Extension for IPv6
- RFC 3810 MLDv2 for IPv6
- RFC 4022 MIB for TCP
- RFC 4087 IP Tunnel MIB
- RFC 4113 MIB for UDP
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4251 SSHv6 Architecture
- RFC 4252 SSHv6 Authentication
- RFC 4253 SSHv6 Transport Layer
- RFC 4254 SSHv6 Connection
- RFC 4291 IP Version 6 Addressing Architecture
- RFC 4293 MIB for IP
- RFC 4294 IPv6 Node Requirements
- RFC 4419 Key Exchange for SSH
- RFC 4443 ICMPv6
- RFC 4541 IGMP & MLD Snooping Switch
- RFC 4861 IPv6 Neighbor Discovery
- RFC 4862 IPv6 Stateless Address Auto-configuration
- RFC 5095 Deprecation of Type 0 Routing Headers in IPv6
- RFC 5340 OSPFv3 for IPv6
- RFC 5453 Reserved IPv6 Interface Identifiers
- RFC 5519 Multicast Group Membership Discovery MIB (MLDv2 only)
- RFC 5722 Handling of Overlapping IPv6 Fragments

- RFC 6620 FCFS SAVI
- draft-ietf-savi-mix

MIBs
- IEEE 802.1ap (MSTP and STP MIBs only)
- IEEE 8021-Bridge-MIB (2008)
- IEEE 8021-Q-Bridge-MIB (2008)
- RFC 1155 Structure & ID of Mgmt Info for TCP/IP Internets
- RFC 1213 MIB II
- RFC 1493 Bridge MIB
- RFC 1724 RIPv2 MIB
- RFC 1850 OSPFv2 MIB
- RFC 2021 RMONv2 MIB
- RFC 2096 IP Forwarding Table MIB
- RFC 2578 Structure of Management Information Version 2 (SMIv2)
- RFC 2613 SMON MIB
- RFC 2618 RADIUS Client MIB
- RFC 2620 RADIUS Accounting MIB
- RFC 2665 Ethernet-Like-MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
- RFC 2737 Entity MIB (Version 2)
- RFC 2787 VRRP MIB
- RFC 2863 The Interfaces Group MIB
- RFC 2925 Ping MIB
- RFC 2932 IP (Multicast Routing MIB)
- RFC 2933 IGMP MIB
- RFC 4292 IP Forwarding Table MIB
- RFC 4836 Managed Objects for 802.3 Medium Attachment Units (MAU
- RFC 7331 BFD MIB

Network management
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
- RFC 3176 sFlow
- RFC 3411 SNMP Management Frameworks
- RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
- RFC 3413 Simple Network Management Protocol (SNMP) Applications

- RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)

- RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)

- RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)

- RFC 5424 Syslog Protocol

- ANSI/TIA-1057 LLDP Media Endpoint

- Discovery (LLDP-MED)

- SNMPv1/v2c/v3 XRMON

- XRMON

OSPF
- RFC 2328 OSPFv2

- RFC 3101 OSPF NSSA

- RFC 5340 OSPFv3 for IPv6

QoS/CoS
- RFC 2474 DiffServ Precedence, including 8 queues/port

- RFC 2475 DiffServ Architecture

- RFC 2597 DiffServ Assured Forwarding (AF)

- RFC 2598 DiffServ Expedited Forwarding (EF)

Security
- IEEE 802.1AE MAC Security Standard (MACSec)

- IEEE 802.1X Port Based Network Access Control

- RFC 1492 TACACS+

- RFC 1321 The MD5 Message-Digest Algorithm

- RFC 2698 A Two Rate Three Color Marker

- RFC 2818 HTTP Over TLS

- RFC 2865 RADIUS (client only)

- RFC 2866 RADIUS Accounting

- RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)

- Secure Sockets Layer (SSL)

- SSHv2 Secure Shell

- RFC 7030 Enrollment over Secure Transport

- RFC 6614 Transport Layer Security (TLS) Encryption over Radius (RadSec)

HPE Aruba Networking 5400r zl2 switches and accessories
Switch models
- HPE Aruba Networking 5412R 92GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL001A)

- HPE Aruba Networking 5406R 8-port 1/2.5/5/10GBASE-T PoE+/8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)

- HPE Aruba Networking 5406R 44GT PoE+/4SFP+ (No PSU) v3 zl2 Switch (JL003A)

- HPE Aruba Networking 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)

v2 modules
- HPE 8-port 10GBASE-T v2 zl Module (J9546A)

- HPE 8-port 10GbE SFP+ v2 zl Module (J9538A)

- HPE 12-port Gig-T PoE+/12-port SFP v2 zl Module (J9637A)

- HPE 20-port Gig-T/4-port SFP v2 zl Module (J9549A)

- HPE 20-port Gig-T/2-port 10GbE SFP+ v2 zl Module (J9548A)

- HPE 20-port Gig-T PoE+/2-port 10GbE SFP+ v2 zl Module (J9536A)

- HPE 20-port Gig-T PoE+/4-port SFP v2 zl Module (J9535A)

- HPE 24-port 10/100 PoE+ v2 zl Module (J9547A)

- HPE 24-port Gig-T v2 zl Module (J9550A)

- HPE 24-port Gig-T PoE+ v2 zl Module (J9534A)

- HPE 24-port SFP v2 zl Module (J9537A)

- HPE Advanced Services v2 zl Module with HDD (J9857A)

- HPE Advanced Services v2 zl Module with SSD (J9858A)

v3 modules
- HPE Aruba Networking 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module (J9995A)

- HPE Aruba Networking 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9993A)

- HPE Aruba Networking 12-port 10/100/1000BASE-T PoE+/12-port 1GbE SFP MACsec v3 zl2 Module (J9989A)

- HPE Aruba Networking 20-port 10/100/1000BASE-T PoE+/4-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9990A)

- HPE Aruba Networking 20-port 10/100/1000BASE-T PoE+/4p 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module (J9991A)

- HPE Aruba Networking 20-port 10/100/1000BASE-T PoE+ MACsec/1-port 40GbE QSFP+ v3 zl2 Module (J9992A)

- HPE Aruba Networking 24-port 10/100/1000BASE-T MACsec v3 zl2 Module (J9987A)

- HPE Aruba Networking 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module (J9986A)

- HPE Aruba Networking 24-port 1GbE SFP MACsec v3 zl2 Module (J9988A)

- HPE Aruba Networking 2-port 40GbE QSFP+ v3 zl2 Module (J9996A)

- HPE Aruba Networking 5400R zl2 Management Module (J9827A)

Management module
- HPE Aruba Networking 5400R zl2 Management Module (J9827A)

TAA-compliant transceivers
- HPE Aruba Networking 1G SFP LC SX 500m MMF TAA XCVR (JL745A)

- HPE Aruba Networking 1G SFP LC LX 10km SMF TAA XCVR (JL746A)

- HPE Aruba Networking 1G SFP RJ45 T 100m Cat5e TAA XCVR (JL747A)

- HPE Aruba Networking 10G SFP+ LC SR 300m MMF TAA XCVR (JL748A)

- HPE Aruba Networking 10G SFP+ LC LR 10km SMF TAA XCVR (JL749A)

Transceivers
- HPE Aruba Networking 100M SFP LC FX 2km MMF XCVR (J9054D)

- HPE Aruba Networking 1G SFP RJ45 T 100m Cat5e XCVR (J8177D)

- HPE Aruba Networking 1G SFP LC SX 500m MMF XCVR (J4858D)

- HPE Aruba Networking 1G SFP LC LX 10km SMF XCVR (J4859D)

- HPE Aruba Networking 1G SFP LC LH 70km SMF XCVR (J4860D)

- HPE Aruba Networking 10G SFP+ LC SR 300m MMF XCVR (J9150D)

- HPE Aruba Networking 10G SFP+ LC LR 10km SMF XCVR (J9151E)

- HPE Aruba Networking 10G SR SFP+ LC 400m OM4 C-XCVR (S2P30A)

- HPE Aruba Networking 10G LR SFP+ LC 10km SMF C-XCVR (S2P31A)

- HPE Aruba Networking 10G ER SFP+ LC 40km SMF C-XCVR (S2P32A)

- HPE Aruba Networking 10G SFP+ LC LRM 220m MMF XCVR (J9152D)

- HPE Aruba Networking 10G SFP+ LC ER 40km SMF XCVR (J9153D)

- HPE Aruba Networking 10G SFP+ to SFP+ 1m DAC Cable (J9281D)

- HPE Aruba Networking 10G SFP+ to SFP+ 3m DAC Cable (J9283D)

- HPE Aruba Networking 10G SFP+ to SFP+ 7m DAC Cable (J9285D)

- HPE Aruba Networking 40G QSFP+ LC BiDi 150m MMF XCVR (JL308A)

- HPE X142 40G QSFP+ MPO SR4 Transceiver (JH231A)

- HPE X142 40G QSFP+ LC LR4 SM Transceiver (JH232A)

- HPE X142 40G QSFP+ MPO eSR4 300M XCVR (JH233A)

- HPE X242 40G QSFP+ to QSFP+ 1m DAC Cable (JH234A)

- HPE X242 40G QSFP+ to QSFP+ 3m DAC Cable (JH235A)

- HPE X242 40G QSFP+ to QSFP+ 5m DAC Cable (JH236A)

Cables
- HPE Aruba Networking X2C2 RJ45 to DB9 Console Cable (JL448A)

Power supply
- 5400R 700W PoE+ zl2 Power Supply (J9828A)

- 5400R 1100W PoE+ zl2 Power Supply (J9829A)

- 5400R 2750W PoE+ zl2 Power Supply (J9830B)

Mounting kit
- HPE X450 4U/7U Universal 4-Post Rack Mounting Kit (J9852A)

HPE Aruba Networking Central Foundational licenses
- HPE Aruba Networking Central 64xx or 54xx Switch Foundation 1-Year Subscription E-STU (R8L80AAE)

- HPE Aruba Networking Central 64xx or 54xx Switch Foundation 3-Year Subscription E-STU (R8L81AAE)

- HPE Aruba Networking Central 64xx or 54xx Switch Foundation 5-Year Subscription E-STU (R8L82AAE)

- HPE Aruba Networking Central 64xx or 54xx Switch Foundation 7-Year Subscription E-STU (R8L83AAE)

- HPE Aruba Networking Central 64xx or 54xx Switch Foundation 10-Year Subscription E-STU (R8L84AAE)

- HPE Aruba Networking Central On-Premises 64xx or 54xx Switch Foundation 1-Year Subscription E-STU (R8M10AAE)

- HPE Aruba Networking Central On-Premises 64xx or 54xx Switch Foundation 3-Year Subscription E-STU (R8M11AAE)

- HPE Aruba Networking Central On-Premises 64xx or 54xx Switch Foundation 5-Year Subscription E-STU (R8M12AAE)

- HPE Aruba Networking Central On-Premises 64xx or 54xx Switch Foundation 7-Year Subscription E-STU (R8M13AAE)

- HPE Aruba Networking Central On-Premises 64xx or 54xx Switch Foundation 10-Year Subscription E-STU (R8M14AAE)

For details and complete listing of HPE Aruba Networking Central licensing options, please refer to the HPE Aruba Networking Central Data Sheet.

Support
- JL001A: 4 Hour Onsite 3 Year (H1NC1E)

- JL002A: 4 Hour Onsite 3 Year (H1MT0E)

- JL003A: 4 Hour Onsite 3 Year (H1MT0E)

- JL095A: 4 Hour Onsite 3 Year (H1MT0E)

For HPE Aruba Networking Central hardware only support, 24x7 TAC support, and many other support options, go to Support Services Central SKU lookup tool.

Make the right purchase decision.
Contact our presales specialists.

Contact us

Visit **ArubaNetworks.com**

Hewlett Packard Enterprise

Overview

HPE ProLiant DL560 Gen10 Server

The HPE ProLiant DL560 Gen10 Server is a high-density, four-socket (4S) server with high performance, scalability and reliability, all in a 2U chassis. Supporting the latest 2nd generation Intel® Xeon® Scalable processors, the HPE ProLiant DL560 Gen10 Server offers greater processing power, up to 6 TB of faster memory, IO of up to eight PCIe 3.0 slots, up to 12 TB of HPE Persistent Memory plus the intelligence and simplicity of automated management with HPE OneView and HPE iLO 5.

The HPE ProLiant DL560 Gen10 Server is the ideal server for business critical workloads, virtualization, server consolidation, database, business processing, and general 4P data-intensive applications where data center space and the right performance are paramount.
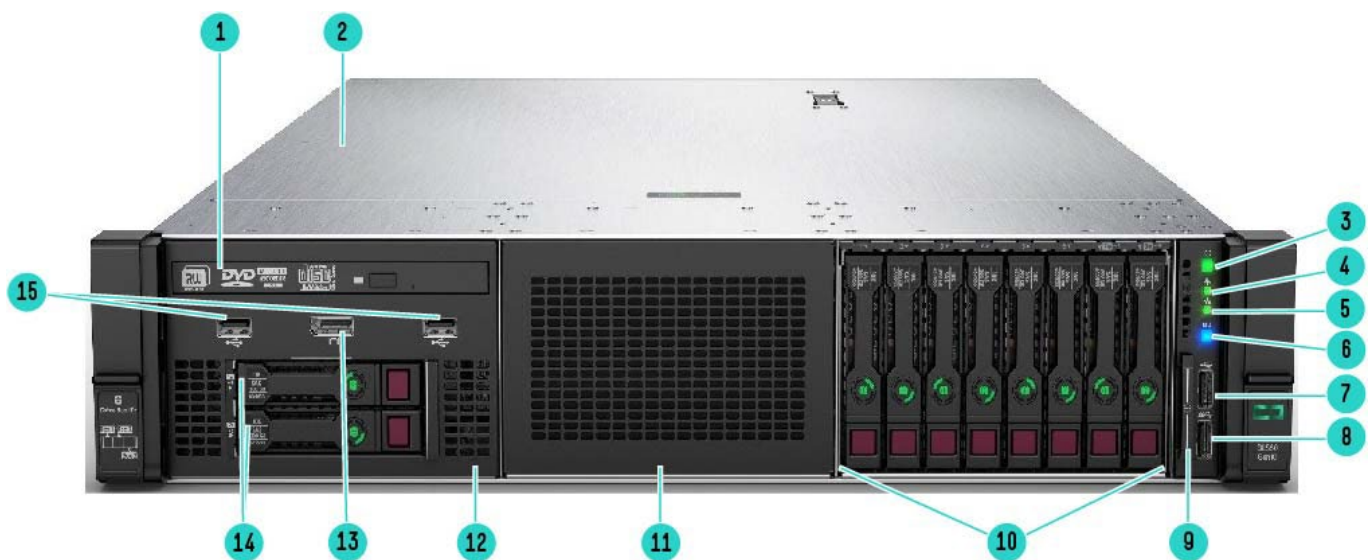
HPE ProLiant DL560 Gen10 Server - Front View

1. Optional Optical drive. Requires Universal Media bay
2. Quick removal access panel
3. Power On/Standby button and system power LED button
4. Health LED
5. NIC status
6. UID button
7. iLO Front Service Port
8. USB 3.0
9. Serial label pull tag
10. Drive Box 3. (8 SFF or 6SFF+2NVMe optional)
11. Drive Box 2. (8 SFF or 6SFF+2NVMe or 8 NVMe SSD optional)
12. Drive Box 1.(Optional Universal Media bay or 8 SFF bay or 6 SFF+2NVMe optional)
13. Optional front Display Port(via Universal Media Bay)
14. Optional 2 SFF HDD, requires optional Universal Media bay
15. Optional USB 2.0 (via Universal Media Bay)

Overview
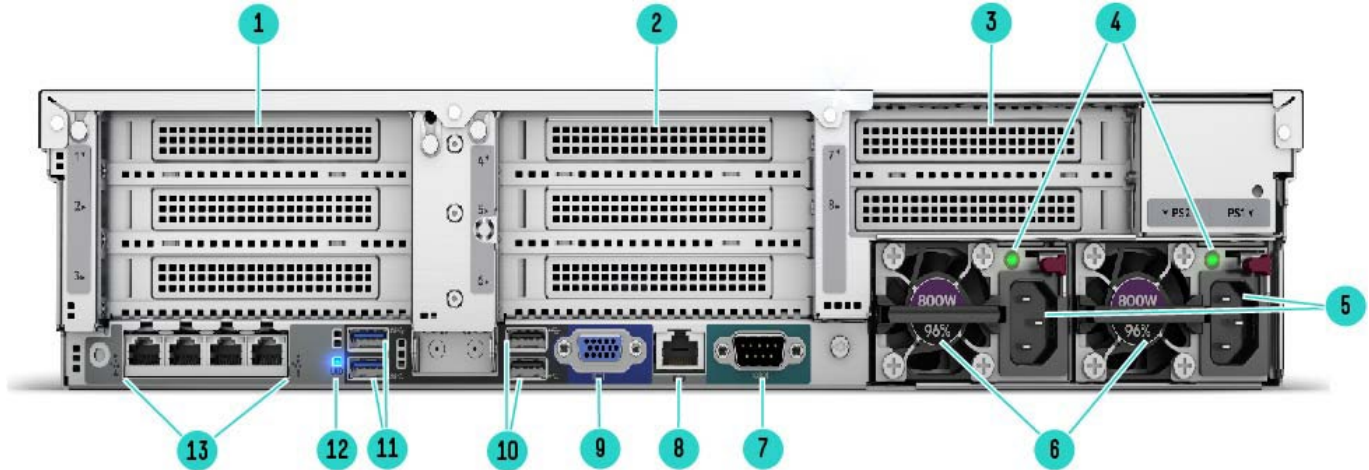
Rear View – DL560 Gen10

1. PCIe Slots (Slots 1-3 top to bottom, riser shipped standard)
2. PCIe Slots (Slots 4-6 top to bottom, requires second riser card and second processor)
3. PCIe Slots (Slots 7-8 top to bottom), requires tertiary riser card and second processor, Not available with 4x Flex Slot power supplies
4. Power supply power LEDs
5. Power supply power connections
6. HPE Flexible Slot Power Supply bay 1 and 2 (800W PS shown)
7. Serial connector
8. Dedicated iLO connector
9. VGA (video) connector
10. USB connectors 2.0 (2)
11. USB connectors 3.0 (2)
12. Unit ID LED
13. FlexibleLOM ports (Port 1 on right side)

Overview
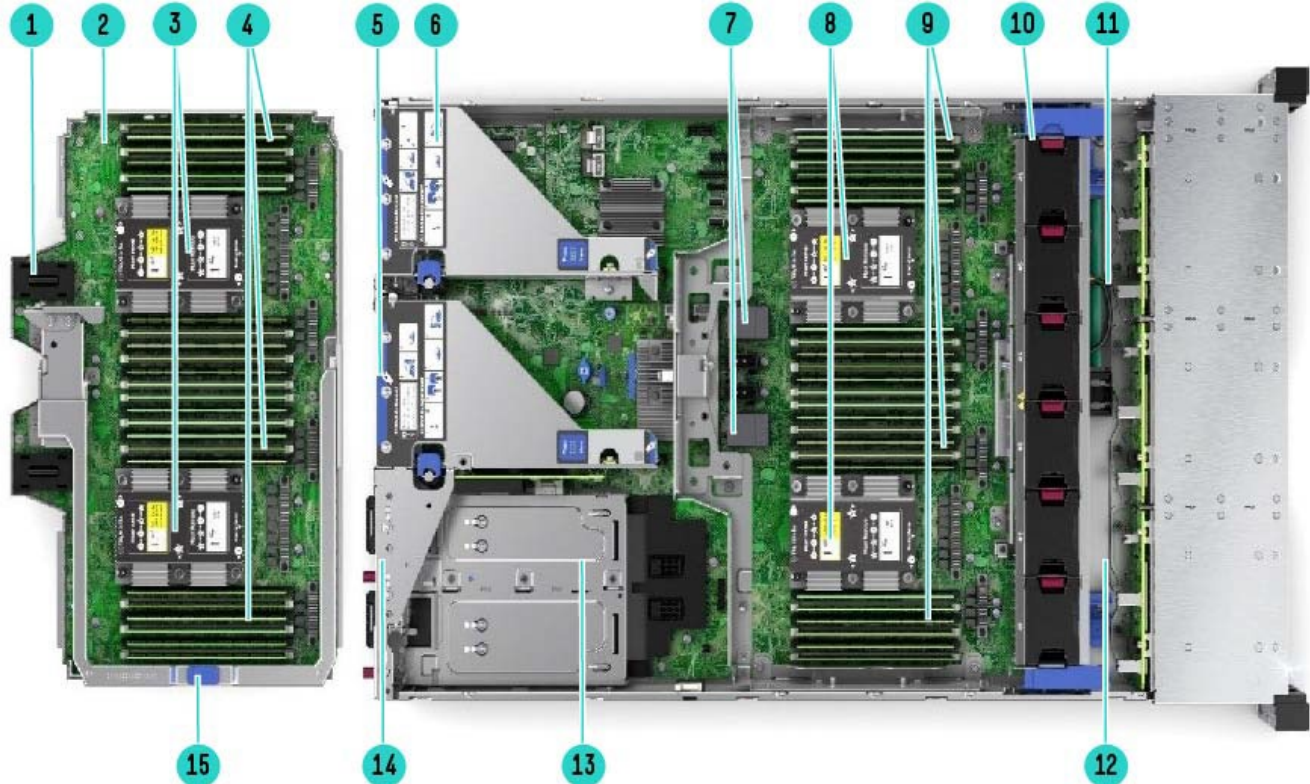
Internal View: DL560 Gen10 with upper CPU mezzanine tray

1. Left connector used for DL560 4-port NVMe Mezzanine card (Daughter card)
2. Upper CPU Mezzanine Board Kit
3. 2 Processors, heatsink showing on upper CPU mezzanine board kit
4. DDR4 DIMM slots on upper CPU mezzanine board kit. Shown fully populated in 24 slots (12 per processor)
5. Optional secondary PCIe riser
6. Default primary PCIe riser
7. UPI connectors for upper CPU mezzanine board kit
8. 2 Processors, heatsink showing

9. DDR4 DIMM slots. Shown fully populated in 24 slots (12 per processor)
10. Fan cage shown with 6 standard Hot-plug fans
11. HPE Smart Storage Battery 1 or HPE Smart Storage Hybrid Capacitor
12. HPE Smart Storage Battery 2
13. (Under) Hot Plug redundant HPE Flexible Slot Power supplies
14. Optional Tertiary riser
15. Handle for removing upper CPU Mezzanine Board Kit

What's New
- New HPE 32GB 1Rx4 PC4-2933Y-R Memory Kit
- New 960GB/1.92TB/3.84TB Mixed Use SSDs

Overview

Platform Information

Form Factor
- 2U Rack Form Factor

Notes: Entry, Base and Performance pre-configured models ship with Gen10 Easy Install Rail Kits and Cable Management Assembly

Chassis Types
- 24 SFF with optional Universal Media Bay

Notes:
- The Universal Media Bay (872267-B21) is not available with the 24 SFF front end, and can only be populated in Box 1.
- The 8 SFF can be upgraded with a drive cage to 16 or 24 SFF with field upgrades. For optimal upgrade Box 2 should be populated second, with Box 1 the last to be populated for a field upgrade to 24 SFF.
- All pre-configured models come with embedded software RAID support for 10 SATA drives. Optional HPE Smart Array Controllers can be added.

System Fans
- 6 Hot Plug Fans (with N+1 redundancy)

Notes: 6 hot plug fans are shipped as standard.

Standard Features

Processors

One, two or four of the following depending on model.

Notes:

- The 2nd digit of the processor model number "x1xx" and "x2xx" is used to denote the processor generation (i.e. 1=1stgeneration and 2=2nd generation)
- This table covers the public Intel offering only.
- For more information regarding Intel Xeon processors, please see the following **http://www.intel.com/xeon**.

Processor Suffix	Description	Offering
L	Large memory tier	Up to 4.5 TB addressable memory per socket
M	Medium memory tier	Up to 2.0 TB addressable memory per socket
N	NFV Optimized	Targeted at Network Function Virtualization (NFV) workloads. Intel® Speed Select Technology-Base Frequency improves performance by directing base frequency to high priority/bottleneck cores.
S	Search Optimized	Optimized base frequency to address 'search' workloads.
V	VM Density Optimized	Fosters enhanced VM density, allowing to support more/larger virtual machines per host.
Y	Speed Select	Intel® Speed Select Technology –Performance Profile increases base frequency when less cores are enabled. Allows greater flexibility, deployment options and platform longevity.

Platinum Processors - 2nd Generation Intel® Xeon® Scalable Processor Family							
Intel Xeon Models	**CPU Frequency**	**Cores**	**L3 Cache (MB)**	**Power**	**UPI**	**DDR4**	**Memory per socket**
Platinum 8280L Processor	2.7GHz	28	38.5	205W	3 @ 10.4 GT/s	2933 MT/s	4.5TB
Platinum 8280M Processor	2.7GHz	28	38.5	205W	3 @ 10.4 GT/s	2933 MT/s	2TB
Platinum 8280 Processor	2.7GHz	28	38.5	205W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8276M Processor	2.2GHz	28	38.5	165W	3 @ 10.4 GT/s	2933 MT/s	2TB
Platinum 8276L Processor	2.2GHz	28	38.5	165W	3 @ 10.4 GT/s	2933 MT/s	4.5TB
Platinum 8276 Processor	2.2GHz	28	38.5	165W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8270 Processor	2.7GHz	26	35.75	205W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8268 Processor	2.9GHz	24	35.75	205W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8260M Processor	2.4GHz	24	35.75	165W	3 @ 10.4 GT/s	2933 MT/s	2TB
Platinum 8260L Processor	2.4GHz	24	35.75	165W	3 @ 10.4 GT/s	2933 MT/s	4.5TB
Platinum 8260Y Processor	2.4GHz	24/20/16	35.75	165W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8260 Processor	2.4GHz	24	35.75	165W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8256 Processor	3.8GHz	4	16.5	105W	3 @ 10.4 GT/s	2933 MT/s	1TB
Platinum 8253 Processor	2.2GHz	16	22	125W	3 @ 10.4 GT/s	2933 MT/s	1TB

Standard Features

Gold Processors - 2nd Generation Intel® Xeon® Scalable Processor Family							
Intel Xeon Models	**CPU Frequency**	**Cores**	**L3 Cache (MB)**	**Power**	**UPI**	**DDR4**	**Memory per socket**
Gold 6256 Processor	3.6GHz	12	33	205W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6254 Processor	3.1GHz	18	24.75	200W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6252 Processor	2.1GHz	24	35.75	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6252N Processor	2.3GHz	24/20/16	35.75	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6248 Processor	2.5GHz	20	27.5	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6246 Processor	3.3GHz	12	24.75	165W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6244 Processor	3.6GHz	8	24.75	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6242 Processor	2.8GHz	16	22	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6240L Processor	2.6GHz	18	24.75	150W	3 @ 10.4 GT/s	2933MT/s	4.5TB
Gold 6240M Processor	2.6GHz	18	24.75	150W	3 @ 10.4 GT/s	2933MT/s	2TB
Gold 6240 Processor	2.6GHz	18	24.75	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6240Y Processor	2.6GHz	18/14/8	24.75	150W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6238L Processor	2.1GHz	22	30.25	140W	3 @ 10.4 GT/s	2933MT/s	4.5TB
Gold 6238M Processor	2.1GHz	22	30.25	140W	3 @ 10.4 GT/s	2933MT/s	2TB
Gold 6238 Processor	2.1GHz	22	30.25	140W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6234 Processor	3.3GHz	8	24.75	130W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6230 Processor	2.1GHz	20	27.5	125W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6230N Processor	2.3GHz	20	27.5	125W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6226 Processor	2.7GHz	12	19.25	125W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6262V Processor	1.9GHz	24	33	135W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 6222V Processor	1.8GHz	20	27.5	115W	3 @ 10.4 GT/s	2933MT/s	1TB
Gold 5222Processor	3.8GHz	4	16.5	105W	2 @ 10.4 GT/s	2933MT/s	1TB
Gold 5220 Processor	2.2GHz	18	24.75	125W	2 @ 10.4 GT/s	2666MT/s	1TB
Gold 5220S Processor	2.7GHz	18	24.75	125W	2 @ 10.4 GT/s	2666MT/s	1TB
Gold 5218B Processor	2.3GHz	16	22	125W	2 @ 10.4 GT/s	2666MT/s	1TB
Gold 5218N Processor	2.3GHz	16	22	110W	2 @ 10.4 GT/s	2666MT/s	1TB
Gold 5218 Processor	2.3GHz	16	22	125W	2 @ 10.4 GT/s	2666MT/s	1TB
Gold 5217 Processor	3.0GHz	8	11	115W	2 @ 10.4 GT/s	2666MT/s	1TB
Gold 5215L Processor	2.5GHz	10	13.75	85W	2 @ 10.4 GT/s	2666MT/s	4.5TB
Gold 5215M Processor	2.5GHz	10	13.75	85W	2 @ 10.4 GT/s	2666MT/s	2TB
Gold 5215 Processor	2.5GHz	10	13.75	85W	2 @ 10.4 GT/s	2666MT/s	1TB

Notes:

– Platinum – 82xx series - 2 and 4 socket capable, 3UPI @ 10.4 GT/s, 6-Channel DDR4 @ 2933 MT/s 1DPC, 1 TB memory capacity (up to 2 TB on 'M' SKUs and up to 4.5 TB on 'L' SKUs), Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512 (2x 512-bit FMA), 48 lanes PCIe 3.0, advanced RAS.

– Gold – 62xx and 52xx series - 2 and 4 socket capable, 3UPI @ 10.4 GT/s on 62xx processors, 2UPI @ 10.4 GT/s on 52xx processors, 6 Channel DDR4 @ 2933 MT/s 1DPC on 62xx and 5222 processors , 6-Channel DDR4 @ 2666 MT/s on 52xx processors, 1 TB memory capacity (up to 2 TB on 'M' SKUs and up to 4.5 TB on 'L' SKUs), Intel Turbo Boost Technology, Intel Hyper-Threading Technology, Intel AVX-512(1x 512-bit FMA) (SKU 5222 supports 2x 512 bit FMA), 48 lanes PCIe 3.0, advanced RAS.

– With the current HPE DDR4 Smart Memory maximum offering (128GB LRDIMMs), the 'L' SKUs and 'M' SKUs can support up to 1.5TB per socket.

– More than 1.5TB per socket requires the use of HPE Persistent Memory kits : available in 512GB, 256GB and 128GB

– Platinum 8260Y and Gold 6240Y processors support Intel® Speed Select Technology –Performance Profile

– Gold 5218B processor and Gold 5218 processor have the same specifications and cannot be mixed within a server

– Gold 6252N, 6230N and 5218N processors are optimized for NFV (Network Function Virtualization) workloads and support Intel® Speed Select Technology –Base Frequency

– Gold 6262V and 6222V are VM density optimized, Gold 5220S is search-optimized

– 82xx, 62xx and 52xx processors offer VNNI (vector neural network instruction) instruction set.

Standard Features

Platinum Processors – 1st Generation Intel® Xeon® Scalable Processor Family							
Intel Xeon Models	CPU Frequency	Cores	L3 Cache (MB)	Power	UPI	DDR4	Memory per socket
Platinum 8180M Processor	2.5 GHz	28	38.50	205W	3 @ 10.4 GT/s	2666 MT/s	1.5TB
Platinum 8180 Processor	2.5 GHz	28	38.50	205W	3 @ 10.4 GT/s	2666 MT/s	768GB
Platinum 8176 Processor	2.1 GHz	28	38.50	165W	3 @ 10.4 GT/s	2666 MT/s	768GB
Platinum 8170 Processor	2.1 GHz	26	35.75	165W	3 @ 10.4 GT/s	2666 MT/s	768GB
Platinum 8168 Processor	2.7 GHz	24	33.00	205W	3 @ 10.4 GT/s	2666 MT/s	768GB
Platinum 8164 Processor	2.0 GHz	26	35.75	150W	3 @ 10.4 GT/s	2666 MT/s	768GB
Platinum 8160 Processor	2.1 GHz	24	33.00	150W	3 @ 10.4 GT/s	2666 MT/s	768GB

Gold Processors - 1st Generation Intel® Xeon® Scalable Processor Family							
Gold 6154 Processor	3.0 GHz	18	24.75	200W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6152 Processor	2.1 GHz	22	30.25	140W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6150 Processor	2.7 GHz	18	24.75	165W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6148 Processor	2.4 GHz	20	27.50	150W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6142 Processor	2.6 GHz	16	22.00	150W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6140 Processor	2.3 GHz	18	24.75	140W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6137 Processor	3.9 GHz	8	24.75	205W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6136 Processor	3.0 GHz	12	24.75	150W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6134M Processor	3.2 GHz	8	24.75	130W	3 @ 10.4 GT/s	2666 MT/s	1.5TB
Gold 6134 Processor	3.2 GHz	8	24.75	130W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6132 Processor	2.6 GHz	14	19.25	140W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6130 Processor	2.1 GHz	16	22.00	125W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 6126 Processor	2.6 GHz	12	19.25	125W	3 @ 10.4 GT/s	2666 MT/s	768GB
Gold 5120 Processor	2.2 GHz	14	19.25	105W	2 @ 10.4 GT/s	2400 MT/s	768GB
Gold 5118 Processor	2.3 GHz	12	16.50	105W	2 @ 10.4 GT/s	2400 MT/s	768GB
Gold 5117 processor	2.0 GHz	14	19.25	105W	2 @ 10.4 GT/s	2400 MT/s	768GB
Gold 5115 Processor	2.4 GHz	10	13.75	85W	2 @ 10.4 GT/s	2400 MT/s	768GB

Notes:

– Platinum 81xx series - 2 and 4 socket capable, 3UPI @ 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 TechnologyIntel AVX-512 (2x 512-bit FMA), 48 lanes PCIe 3.0, advanced RAS.

– Gold 61xx and 51xx series - 2 and 4 socket capable, 3UPI @ 10.4 GT/s on 61xx processors, 2UPI @ 10.4 GT/s on 51xx processors, 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.

– All processors ship with a normal or a high performance heatsink.

– 82xx, 81xx, 62xx and 61xx processors support 3 UPI links and all processors are connected in a cross bar configuration with each processor connected to another directly in a four processor system. 52xx and 51xx processors support 2 UPI links only and all processors are connected in a ring configuration with processors 1, 3 and 2, 4 not connected directly in a four processor system.

Chipset

- Intel C621 Chipset
  Notes: For more information regarding Intel® chipsets, please see the following URL:
  http://www.intel.com/products/server/chipsets/

On System Management Chipset

- HPE iLO 5 ASIC
  Notes: Read and learn more in the **iLO QuickSpecs**.

Standard Features

Memory
One of the following depending on model

Type	Smart Memory Registered (RDIMM), Load Reduced (LRDIMM)	
DIMM Slots Available	48	12 DIMM slots per processor, 6 channels per processor, 2 DIMMs per channel
With 2nd generation processors		
Maximum capacity (LRDIMM)	6 TB	48 x 128 GB LRDIMM @2933 MT/s 2 DPC
Maximum capacity (RDIMM)	1.5 TB	24 x 64 GB RDIMM @ 2933 MT/s 1 DPC
	3 TB	48 x 64 GB RDIMM @ 2666 MT/s 2 DPC
Maximum capacity (HPE Persistent Memory)	12 TB	24 x 512 GB Persistent Memory Kit @2666 MT/s
With 1st generation processors		
Maximum capacity (LRDIMM)	6 TB	48 x 128 GB LRDIMM @ 2666 MT/s
Maximum capacity (RDIMM)	1.5 TB	48 x 32 GB RDIMM @ 2666 MT/s
Maximum capacity (NVDIMM)	384 GB	24 x 16 GB NVDIMM @ 2666 MT/s

Notes:
- The 2666 MT/s DIMMs are only supported with the 1st generation Intel® Xeon® Scalable processors (81xx,61xx and 51xx)
- HPE Persistent Memory is only supported on the 2nd generation processors
- HPE Persistent Memory operates in two modes – memory mode and app direct mode.
- In memory mode, DRAM acts as a cache while HPE Persistent Memory provides large memory capacity which is volatile. DRAM installed does not count towards total memory capacity.
- In app direct mode, data that needs to be made persistent can be routed to HPE Persistent Memory. Both DRAM and HPE Persistent Memory count towards total memory capacity.
- Mixing of RDIMM and LRDIMM memory is not supported.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- Intel memory processors (with suffix M) are needed for supporting 1.5 TB memory per socket on 1st generation processors.
- Intel memory processors (with suffix M or suffix L) are needed for supporting more than 1 TB memory per socket on 2nd generation processors
- Maximum of 6 NVDIMMs are supported per processor on the 1st generation processors
- NVDIMMs are not supported on the 2nd generation processors

Memory Protection
For details on the HPE Server Memory Options RAS feature, visit: **http://www.hpe.com/docs/memory-ras-feature.**

Primary Riser (Standard)-Default				
Expansion Slots #	**Technology**	**Bus/Connector Width**	**Form Factor/Connector**	**Notes**
1	PCIe 3.0	x8	¾ length/full height	Proc 1
2	PCIe 3.0	X16	¾ length/full height	Proc 1
3	PCIe 3.0	x8	¾ length/full height	Proc 1
None	2 x M.2	SATA lanes	M.2	Chipset

Secondary Riser (Optional) 826704-B21 HPE DL Gen10 x16/x16 GPU Riser Kit					
Expansion Slots (Primary/ Secondary) #	**Technology**	**Bus/Connector Width**	**Form Factor/**	**Form Factor/**	**Notes (Primary/ secondary)**

Standard Features

			Connector (Primary)	Connector (Secondary)	
2/5	PCIe 3.0	x16	¾ length/full height	Half length/full height	Proc 1/2
3/6	PCIe 3.0	x16	¾ length/full height	Half length/full height	Proc 1/2

Notes: Can also be installed as primary but the default (standard) primary cage will need to be removed.

Secondary Riser (Optional) 873418-B21 HPE DL560 Gen10 4-port 8 NVMe Slimline Riser Kit				
Expansion Slots (Primary/ Secondary) #	**Technology**	**Bus/Connector Width**	**Form Factor /Connector**	**Notes (Primary/ secondary)**
None	NVMe	x8	Slimline	Proc 1/2
None	NVMe	x8	Slimline	Proc 1/2
None	NVMe	x8	Slimline	Proc 1/2
None	NVMe	x8	Slimline	Proc 1/2

Notes: Can also be installed as primary but the default(standard) primary cage will need to be removed.

Secondary Riser (Optional) 873420-B21 HPE DL560 Gen10 x8/x8/x8 1-port 2 NVMe Slimline Riser Kit					
Expansion Slots (Primary/ Secondary)#	**Technology**	**Bus/Connector Width**	**Form Factor/ Connector (Primary)**	**Form Factor/ Connector (Secondary)**	**Notes (Primary/ Secomdary)**
1/4	PCIe 3.0	x8	¾ length/full height	Half length/full height	Proc 1/2
2/5	PCIe 3.0	x8	¾ length/full height	Half length/full height	Proc 1/2
3/6	PCIe 3.0	x8	¾ length/full height	Half length/full height	Proc 1/2
None	NVMe	x8	Slimline	Slimline	Proc 1/2

Notes: Can also be installed as primary but the default(standard) primary cage will need to be removed.

Secondary Riser (Optional) 870548-B21 HPE DL Gen10 x8/x16/x8 Riser Kit				
Expansion Slots #	**Technology**	**Bus Width**	**Form Factor**	**Notes**
4	PCIe 3.0	x8	Half length/full height	Proc 2
5	PCIe 3.0	x16	Half length/full height	Proc 2
6	PCIe 3.0	x8	Half length/full height	Proc 2

Tertiary bufferfly riser (Optional) 872253-B21 HPE DL560 Gen10 x8/x8 Tertiary Riser Kit				
Expansion Slots #	**Technology**	**Bus Width**	**Form Factor**	**Notes**
7	PCIe 3.0	x8	Half length/full height	Proc 2
8	PCIe 3.0	x8	Half length/full height	Proc 2

Notes: the Tertiary is a bufferfly riser kit supports both secondary and tertiary. The secondary kit needs to be removed if the tertiary kit is installed.

Tertiary riser (Optional) 872255-B21 HPE DL560 Gen10 x8 1-port 2 NVMe Slimline Riser Kit				
Expansion Slots #	**Technology**	**Bus Width**	**Form Factor/Connector**	**Notes**
7	PCIe 3.0	x8	Half length/full height	Proc 2
None	NVMe	x8	Slimline	Proc 2

Notes: the Tertiary is a bufferfly riser kit supports both secondary and tertiary. The secondary kit needs to be removed if the tertiary kit is installed.

Tertiary riser (Optional) 872257-B21 HPE DL560 Gen10 2-port 4 NVMe Slimline Tertiary Riser Kit				
Expansion Slots #	**Technology**	**Bus Width**	**Form Factor/Connector**	**Notes**
None	NVMe	x8	Slimline	Proc 2
None	NVMe	x8	Slimline	Proc 2

Notes: the Tertiary is a bufferfly riser kit supports both secondary and tertiary. The secondary kit needs to be removed if the tertiary kit is installed.

Standard Features

4-port NVMe Mezzanine card (Optional) 874633-B21				
Expansion Slots #	**Technology**	**Bus Width**	**Form Factor/Connector**	**Notes**
None	NVMe	x8	Slimline	Proc 3
None	NVMe	x8	Slimline	Proc 3
None	NVMe	x8	Slimline	Proc 3
None	NVMe	x8	Slimline	Proc 3

Notes:
- The secondary and tertiary risers need the 2nd processor to be installed.
- The expansion slots at the back are numbered in ascending order from top to bottom and from left to right.
- Some riser kits (826704-B21, 873418-B21, 873420-B21) have FIO options with separate numbers and they do not ship with riser cages. Please review the FIO section for details.
- For additional details on ProLiant DL Gen10 server risers please visit:
  https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=a00043229enw
- The optional 4-port NVMe Mezzanine card 874633-B21 supports a maximum of 8 NVMe drives and does not consume a PCIe slot. It goes on top of the HPE DL5x0 Gen10 CPU Mezzanine Board Kit (872222-B21) or HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit (P07991-B21) and requires a four processor configuration.
- The tertiary risers can only be installed when using two PSUs. There is no space for tertiary risers when the four PSU's are installed. If a secondary riser is required it needs to be ordered separately. Please refer section HPE I/O Expansion Options.
- A maximum of 1 primary, 1 secondary and 1 tertiary riser can be installed in one server.
- Slimline riser kit (873418-B21) does not contain any additional PCIe slots.

Network Controller

The HPE ProLiant DL560 Gen10 servers offer a flexible network technology - FlexibleLOMs, which offers customers a choice of 1 Gb, 10 Gb, 25 Gb or 10 Gb and 100 Gb base-T Ethernet or converged networking in their embedded adapter. A range of NIC cards are also available to enhance networking capabilities.
Notes: For additional details see the Networking Section of this document.

BTO Model	Adapter
Entry Model	HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter
Base Model	HPE FlexFabric 10Gb 2-port FLR-SFP+ 57810S Adapter10GbE or HPE Ethernet 10Gb 2-port FLR-T BCM57416 Adapter
Performance Model	HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter or HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter

Storage Controllers

The Gen10 controller naming framework has been updated to simplify identification as depicted below. For a more detailed breakout of the available Gen10 Smart Array controllers visit the **HPE Smart Array Gen10 Controllers Data Sheet**.

Standard Features

Software RAID
- HPE Smart Array S100i SR Gen10 SW RAID

Notes:
- HPE Smart Array S100i SR Gen10 SW RAID will operate in UEFI mode only. For legacy support an additional controller will be needed, and for CTO orders please also select the Legacy mode settings part, 758959-B22.
- HPE Smart Array S100i SR Gen10 SW RAID is off by default and must be enabled. For enabling, please select HPE FIO Enable Smart Array SW RAID (784308-B21).

Essential RAID
- HPE Smart Array E208i-a SR G10 LH Controller
- HPE Smart Array E208i-p SR Gen10 Controller
- HPE Smart Array E208e-p SR Gen10 Controller

Performance RAID
- HPE Smart Array P408i-a SR G10 LH Controller
- HPE Smart Array P408i-p SR Gen10 Controller
- HPE Smart Array P408e-p SR Gen10 Controller
- HPE Smart Array P816i-a SR G10 LH Controller
- HPE Smart Array P824i-p MR Gen10 Controller

Internal Storage Devices
One of the following depending on model

Optical Drive
- Optional: DVD-ROM, DVD-RW

Hard Drives
- None ship standard

Hard Drive Bays
- 8 hot plug SFF SAS/SATA HDD Bays in Entry and Base Models
- 16 hot plug SFF SAS/SATA HDD Bays in Performance Models

Notes:
- Box 3 is populated by 8 SFF SAS/SATA bay and shipped as default.
- The 8 NVMe drive option can only placed in Bay 2.
- The Universal Media Bay (872267-B21) not available with the 24 SFF front end, and can only be populated in Box 1.
- The 8 SFF can be upgraded with a drive cage to 16 or 24 SFF with field upgrades. For optimal upgrade Box 2 should be populated second, with Box 1 the last to be populated for a field upgrade to 24 SFF.
- A maximum of 12 NVMe drives can be supported with 2 NVMe drives in Bay 1, 8 NVMe drives in Bay 2 and 2 NVMe drives in Bay 3.
- All pre-configured models come with embedded software RAID support for 10 SATA drives. Optional HPE Smart Array Controllers can be added.

Maximum Internal Storage

Drive	Capacity	Configuration
Hot Plug SFF SATA HDD	48 TB	24 x 2 TB
Hot Plug SFF SAS HDD	58 TB	24 x 2.4 TB
Hot Plug SFF SATA SSD	184 TB	24 x 7.68 TB
Hot Plug SFF SAS SSD	367 TB	24 x 15.3 TB
SFF NVMe SSD	184 TB	12 x 15.36TB

Standard Features

Power Supply

One of the following depending on model

- HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit
  Notes: Output capped at 1600W maximum on Gen10 & Gen10 Plus servers, greater than 1600W only feasible on
  Gen11." Similar to the one currently stated on FlexSlot PSUs
- HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit
- HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
  Notes:
    - Available in 94% and 96% efficiency.
    - Also available in -48VDC and 227VAC/380VDC power inputs.
    - Must order 4x800W Flex Slot PSU.
- HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
  Notes:
    - Available in 94% efficiency.
    - 1600W Power supplies only support high line voltage (200VAC to 240VAC).

HPE Flexible Slot (Flex Slot) Power Supplies share a common electrical and physical design that allows for hot plug, tool-less installation into HPE ProLiant Gen10 Servers. Flex Slot power supplies are certified for high-efficiency operation and offer multiple power output options, allowing users to "right-size" a power supply for specific server configurations. This flexibility helps to reduce power waste, lower overall energy costs, and avoid "trapped" power capacity in the data center.

All pre-configured servers ship with a standard 6-foot IEC C-13/C-14 jumper cord (416151-B21). This jumper cord is also included with each standard AC power supply option kit. If a different power cord is required, please check the **ProLiant Power Cables** web page.

To review the power requirements for your selected system, please use the **HPE Power Advisor Tool**.

For information on power specifications and technical content visit **HPE Server power supplies**

European Union Erp Lot 9 Regulation

Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, or Switzerland must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers 865438-B21, P03178-B21, and P44712-B21 are 96% efficient, thus meeting requirements.

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

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers

With 1st generation processors Intel® Xeon® Scalable Processor Family

- **Windows Server 2012 R2**
- **Windows Server 2016**
- Windows Server 2019
- VMware ESXi
- **Red Hat Enterprise Linux (RHEL)**
- **SUSE Linux Enterprise Server (SLES)**
- CentOS
  Notes: Not directly supported / Community Supported (Based on RHEL so RHEL testing and enablement applicable to Cent OS) CentOS 6.9 / CentOS 7.3.

With 2nd generation processors Intel® Xeon® Scalable Processor Family

- **Windows Server 2012 R2**
- **Windows Server 2016**
- Windows Server 2019
- VMware ESXi
- Red Hat Enterprise Linux (RHEL)
- **SUSE Linux Enterprise Server (SLES)**
- CentOS

Notes:

- Not directly supported / Community Supported (Based on RHEL so RHEL testing and enablement applicable to Cent OS) CentOS 6.9 / CentOS 7.3.
- For more information on Hewlett Packard Enterprise Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server. **http://www.hpe.com/info/ossupport**.

Interfaces

Serial	1 rear
Video	1 front (optional with Universal Media Bay), 1 rear
HPE iLO Remote Management Network Port	1
HPE iLO Front Service Port	1
Micro SD Slot	1 (Internal), 2 (optional, internal)
Notes: Requires the optional HPE Dual Micro SD 8GB USB kit.	
USB 2.0 Ports	4 total: 2 front (optional); 2 rear
USB 3.0 Ports	5 total: 1 front; 2 rear, 2 internal
Notes: 2 front (optional) USB 2.0 ports need the HPE DL560 Gen10 Universal Media Bay Kit (872267-B21).	

Graphics

- Integrated Video Standard
- Video modes up to 1920 x 1200@60Hz (32 bpp)
- 16MB Video Memory
- HPE iLO 5 on system management memory
- 32 MB Flash
- 4 Gbit DDR 3 with ECC protection

Standard Features

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

European Union (EU) eco-design regulations for server and storage products, known as Lot 9, go into effect on March 1st, 2020. Among other requirements, for servers this directive establishes power thresholds for idle state, as well as efficiency and performance in active state which vary among configurations. HPE ProLiant Gen10 servers are compliant with Lot9 requirements.

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

Notes: For additional technical thermal details regarding ambient temperatures, humidity and features support please visit:
https://support.hpe.com/hpesc/public/docDisplay?docId=a00026969en_us&page=index.html.

HPE Server UEFI/Legacy ROM
Unified Extensible Firmware Interface (UEFI) is an industry standard that provides better manageability and more secured configuration than the legacy ROM while interacting with your server at boot time. HPE ProLiant Gen10 servers have a UEFI Class 2 implementation and support both UEFI Mode (default) and Legacy BIOS Mode.
Notes: The UEFI System Utilities tool is analogous to the HPE ROM-Based Setup Utility (RBSU) of legacy BIOS.

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

Notes:
– For UEFI Boot Mode, boot environment and OS image installations should be configured properly to support UEFI.
– UEFI FIO Setting (758959-B22) can be selected to configure the system in Legacy mode in the factory for your HPE ProLiant Gen10 Server.

Standard Features

Embedded Management

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

UEFI
Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI

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

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

Server Utilities

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

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

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

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

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

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

Scripting Tools
Provision one to many servers using your own scripts to discover and deploy with Scripting Tool (STK) for Windows and Linux or
Scripting Tools for Windows PowerShell. Learn more at **http://www.hpe.com/servers/powershell**.

Standard Features

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

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

About Trusted Platform Module
Trusted Platform Module (TPM) is a separate processor that monitors the system state. TPM is a passive component needing to be updated and not able to lock down any component in the system except access to its own memory. It also provides some cryptographic operations - among them: creating RSA key pairs, and working with them.
The first verification of signatures happens by code on the CPU, which can be intercepted and replaced. Emulating a "properly" booted system is possible by sending the right values to the TPM.

HPE supports two version of TPM, the 1.2 device and the 2.0 device. The TPM 2.0 device works with Gen10 servers that are using a Linux operating system or Microsoft Windows Server 2016. Both TPM 1.2 and 2.0 are compatible with HPE ProLiant Gen9 and Gen10 servers. These TPM modules are not compatible with server generations prior to Gen9. Once the TPM module is installed, it locks into place and cannot be removed, nor can it be replaced with a different TPM device.

Security
- UEFI Secure Boot and Secure Start support
- Immutable Silicon Root of Trust
- FIPS 140-2 validation (iLO 5 certification in progress)
- Common Criteria certification (iLO 5 certification in progress)
- Configurable for PCI DSS compliance
- Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser
- Support for Commercial National Security Algorithms (CNSA)
- Granular control over iLO interfaces
- Smart card (PIV/CAC) and Kerberos based 2-factor Authentication
- Tamper-free updates – components digitally signed and verified
- Secure Recovery – recover critical firmware to known good state on detection of compromised firmware
- Ability to rollback firmware. Secure erase of NAND/User data
- TPM (Trusted Platform Module) 1.2 option.TPM (Trusted Platform Module) 2.0 option Bezel Locking Kit
- Chassis Intrusion detection option

Notes:
– HPE Trusted Platform Module 2.0 Option (864279-B21) works with Gen10 servers with UEFI Mode and not Legacy Mode. The Trusted Platform Module 2.0 Option can be configured to the 1.2 version through the UEFI BIOS to support TPM 1.2 functionality.
– HPE server systems can have a TPM module (of any type) installed only once. It cannot be replaced with any other TPM module.

Standard Features

HPE Silicon Root of Trust

The HPE Silcon Root of Trust provides protection because as soon as the server is powered on and the iLO firmware comes alive, it looks into the silicon for the immutable fingerprint that verifies all the firmware code is valid and uncompromised. Over a million lines of firmware code run, before the operating system starts, making it essential to confirm that all server essential firmware is free from malware or compromised code.

Silicon Root of Trust is included with iLO5 Standard with all platforms that contain the iLO5 chip. That includes ML, DL, Apollo, C-Class Blades, and Synergy Compute Modules. HPE Cloudline and the HPE Microserver do not have silicon root of trust, since they do not contain an iLO5 silicon chip. This technology is NOT available on any previous version of HPE ProLiant like the Gen9, Gen8, or Gen 7 servers, nor can those previous generations be retrofitted to accommodate the silicon root of trust.

The silicon validates the iLO 5 firmware code before it is fetched and executed. If any malware or compromised code has been inserted in the iLO 5 firmware, the silicon will detect that, because any infected firmware code will not match-up with the hash burned into the silicon. From there, the iLO 5 firmware validates the rest of the server firmware, namely the UEFI, CPLD, IE, and ME. The UEFI then validates the connection to the operating system, thus completing a complete root, or chain, that is anchored into the silicon.

During operation of the server, HPE has a new technology that conducts run-time firmware validation that checks the firmware stored in the server. At any point, if compromised code or malware is inserted in any of the critical firmware, an iLO audit log alert is created to notify the customer that a compromised has occurred.

In the unlikely event of a breach into the HPE server firmware, after detection has been completed, the customer may then securely recover the firmware automatically to a previous known good state. HPE provides this function through HPE iLO Advanced license.

Warranty

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

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

Optional Features

Server Management

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

HPE GreenLake for Compute Ops Management
HPE is intelligently transforming compute management with an intuitive cloud operating experience through HPE GreenLake cloud platform to streamline and secure operations from edge-to-cloud. Automated key lifecycle tasks, for onboarding, updating, managing, and monitoring HPE servers, brings agility and greater efficiencies to wherever compute devices reside via a unified single browser-based interface. Manage single locations or multiple, distributed sites. Keep tens to thousands of servers secure with batch policy controls and automated updates.

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

For a complete list of software as-a-service subscription SKUs and more information, visit the HPE GreenLake for Compute Ops Management QuickSpecs: **https://www.hpe.com/psnow/doc/a50004263enw**

For information on supported HPE servers, the complete list can be found here:
https://www.hpe.com/info/com-supported-servers

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. To learn more visit **http://www.hpe.com/info/oneview**.

HPE InfoSight for Servers
HPE InfoSight for Servers combines the cloud-based machine learning of InfoSight with the health and performance monitoring of Active Health System (AHS) and iLO to optimize performance and predict and prevent problems. The end result is an intelligent environment that modernizes IT operations and enhances the support experience by predicting and preventing the infrastructure issues that lead to application disruptions, wasted IT staff time and missed business opportunities.
Learn more at **https://www.hpe.com/servers/infosight**

HPE Insight Cluster Management Utility (CMU)
HPE Insight Cluster Management Utility is a HyperScale management framework that includes software for the centralized provisioning, management and monitoring of nodes and infrastructure. Learn more at **http://www.hpe.com/info/cmu**.

GPGPU Information
- HPE NVIDIA Quadro P2200 Graphics Accelerator
- HPE NVIDIA Tesla T4 Graphics Accelerator

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#**

Optional Features

Rack and Power Infrastructure

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

HPE G2 Advanced and Enterprise Racks are perfect for the server room or today's modern data center with enhanced airflow and thermal management, flexible cable management, and a 10 year Warranty to support higher density computing.
HPE G2 PDUs offer reliable power in flexible form factors that operate at temperatures up to 60°, include color-coded outlets and load segments and a low-profile design for optimal access to the rack and support for dense rack environments.
HPE Uninterruptible Power Systems are cost-effective power protection for any type workload. Some UPSs include options for remote management and extended runtime modules so you're critical dense data center is covered in power outages.

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

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

Service and Support

HPE Services
No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.
https://www.hpe.com/services

Consulting Services
No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.
https://www.hpe.com/services/consulting

HPE Managed Services
HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.
HPE Managed Services | HPE

Operational services
Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.
https://www.hpe.com/services/operational

HPE Complete Care Service
HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:
- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

https://www.hpe.com/services/completecare

HPE Tech Care Service
HPE Tech Care Service is the operational support service experience for HPE products. The service goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.
https://www.hpe.com/services/techcare

Service and Support

HPE Lifecycle Services
HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:
- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:
https://www.hpe.com/services/lifecycle

For a list of the most frequently purchased services using service credits, see the **HPE Service Credits Menu**

Other Related Services from HPE Services:
HPE Education Services
Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.
https://www.hpe.com/services/training

Defective Media Retention
An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

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

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

How to Purchase Services
Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:
- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at **https://ssc.hpe.com/portal/site/ssc/**

Service and Support

AI Powered and Digitally Enabled Support Experience
Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.
https://support.hpe.com/hpesc/public/home/signin

Consume IT On Your Terms
HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.
- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html

For more information
http://www.hpe.com/services

Pre-configured Models

For Standard Features shipped in the "Factory Integrated Models", please see "Configuration Information - Factory Integrated Models" section.

- Pre-configured models ship with configurations below. Options can be selected from Core or Additional options section of this QuickSpecs.
- Hewlett Packard Enterprise does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
- If a custom configuration is desired, please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
- European Union (EU) eco-design regulations for server and storage products, known as Lot 9, go into effect on March 1st, 2020. Among other requirements, for servers this directive establishes power thresholds for idle state, as well as efficiency and performance in active state which vary among configurations. HPE ProLiant Gen10 servers are compliant with Lot9 requirements. For more information regarding HPE Lot 9 conformance, please visit: **https://www.hpe.com/us/en/about/environment/msds-specs-more.html**

Entry Models	
SKU Number	P21271-B21 (WW) P21271-291 (JPN) P21271-AA1 (PRC)
Model Name	HPE ProLiant DL560 Gen10 5220 2.2GHz 18-core 2P 64GB-R P408i-a 8SFF 1600W RPS Server
Processor	Intel® Xeon® 5220 (18-Core, 2.2GHz, 125W)
Number of Processors	2
Memory	64 GB (2x32GB Registered DIMMs, 2933 MT/s) **Notes:** 24 DIMM slots available with Entry Model; 2 more processor slots and 24 more DIMMs available via optional HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit (P07991-B21)
Network Controller	HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter
Storage Controller	HPE Smart Array P408i-a
Power Supply	2x 1600W
	Notes: 1600W Power supplies only support high line voltage (200VAC to 240VAC). **Notes:** Non Lot 9 compliant PSU
PCI-Express Slots	3 PCIe 3.0 slots available **Notes:** 8 PCIe 3.0 slots available with the secondary and tertiary riser installed.
Hard drive	None shipped as Standard
Internal Storage	8 SFF Drive Bays **Notes:** – Can be expanded up to a max of 24 SFF drives, with optional HPE DL560 Gen10 8SFF HDD Bay2 Kit (872235-B21) and HPE DL560 Gen10 8 SFF HDD Bay1 Kit (872231-B21). – Optionally NVMe SSD drives can be added with HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8 SFF Bay1 Kit (872227-B21) or HPE DL560 Gen10 Prem 6 SFF+2 NVMe Bay2 Kit(872229-B21) or HPE DL560 Gen10 Premium 6 SFF and 2 NVMe or 8 SFF Bay3 Kit (872231-B21) or HPE DL560 NVMe 8 SSD Express Bay Enablement Kit (872225-B21). – Alternatively, optional HPE DL560 Gen10 Universal Media Bay Kit.
Optical Drive Bay	Optional via Universal Media Bay
Optical Drive	Optional via Universal Media Bay
Fans	6 hot plug fans, redundant
Management	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)
Form Factor	RACK (2U), HPE Easy Install Rails with CMA
Warranty	3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

Pre-configured Models

Base Models		
SKU Number	P02873-B21 (WW) P02873-291 (JPN) P02873-AA1 (PRC)	P40455-B21 (WW) P40455-291 (JPN) P40455-AA1 (PRC)
Model Name	HPE ProLiant DL560 Gen10 6230 2.1GHz 20-core 2P 128GB-R P408i-a 8SFF 2x1600W RPS Server Server	
Processor	Intel® Xeon® 6230 (20-Core, 2.1GHz, 125W)	
Number of Processors	2	
Memory	128 GB (4x32GB Registered DIMMs, 2933 MT/s) **Notes:** 24 DIMM slots available with Entry Model; 2 more processor slots and 24 more DIMMs available via optional HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit (P07991-B21)	
Network Controller	HPE FlexFabric 10Gb 2-port FLR-SFP+ 57810S Adapter	HPE Ethernet 10Gb 2-port FLR-T BCM57416 Adapter
Storage Controller	HPE Smart Array P408i-a	
Power Supply	2x 1600W **Notes:** 1600W Power supplies only support high line voltage (200VAC to 240VAC). **Notes:** Non Lot 9 compliant PSU	
PCI-Express Slots	3 PCIe 3.0 slots available **Notes:** 8 PCIe 3.0 slots available with the secondary and tertiary riser installed.	
Hard drive	None shipped as Standard	
Internal Storage	8 SFF Drive Bays **Notes:** – Can be expanded up to a max of 24 SFF drives, with optional HPE DL560 Gen10 8SFF HDD Bay2 Kit (872235-B21) and HPE DL560 Gen10 8 SFF HDD Bay1 Kit (872231-B21). – Optionally NVMe SSD drives can be added with HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8 SFF Bay1 Kit (872227-B21) or HPE DL560 Gen10 Prem 6 SFF+2 NVMe Bay2 Kit(872229-B21) or HPE DL560 Gen10 Premium 6 SFF and 2 NVMe or 8 SFF Bay3 Kit (872231-B21) or HPE DL560 NVMe 8 SSD Express Bay Enablement Kit (872225-B21). – Alternatively, optional HPE DL560 Gen10 Universal Media Bay Kit.	
Optical Drive Bay	Optional via Universal Media Bay	
Optical Drive	Optional via Universal Media Bay	
Fans	6 hot plug fans, redundant	
Management	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)	
Form Factor	RACK (2U), HPE Easy Install Rails with CMA	
Warranty	3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response	

Base Models		
SKU Number	P02874-B21 (WW) P02874-291 (JPN) P20874-AA1 (PRC)	P40456-B21 (WW) P40456-291 (JPN) P40456-AA1 (PRC)
Model Name	HPE ProLiant DL560 Gen10 6254 3.1GHz 18-core 4P 256GB-R P408i-a 8SFF 2x1600W RPS Server	
Processor	Intel® Xeon® 6254 (18-Core, 3.1GHz, 200W)	
Number of Processors	4	
Memory	256 GB (8x32GB Registered DIMMs, 2933 MT/s)	
Network Controller	HPE FlexFabric 10Gb 2-port FLR-SFP+ 57810S Adapter	HPE Ethernet 10Gb 2-port FLR-T BCM57416 Adapther

Pre-configured Models

Storage Controller	HPE Smart Array P408i-a
Power Supply	2x 1600W **Notes:** 1600W Power supplies only support high line voltage (200VAC to 240VAC). **Notes:** Non Lot 9 compliant PSU
PCI-Express Slots	6 PCIe 3.0 slots available **Notes:** 8 PCIe 3.0 slots available with the tertiary riser installed.
Hard Drive	None ship standard
Internal Storage	8 SFF Drive Bays
Optical Drive Bay	Optional via Universal Media Bay
Optical Drive	Optional via Universal Media Bay
Fans	6 hot plug fans, redundant
Management	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced and HPE OneView Advanced (require licenses)
Form Factor	Rack (2U), HPE Easy Install Rails with CMA
Warranty	3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

Performance Models		
SKU Number	P02875-B21 (WW) P02875-291 (JPN) P20875-AA1 (PRC)	P40457-B21 (WW) P40457-291 (JPN) P40457-AA1 (PRC)
Model Name	HPE ProLiant DL560 Gen10 8268 2.9GHz 24-core 4P 512GB-R P816i-a 16SFF 2x1600W RPS Server	
Processor	Intel® Xeon® 8268 (24-Core, 2.9GHz, 205W)	
Number of Processors	4	
Memory	512 GB (16x32GB Registered DIMMs, 2933 MT/s)	
Network Controller	HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter Adapter	HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter
Storage Controller	Smart Array P816i-a	
PCI-Express Slots	8 PCIe 3.0 slots available	
Power Supply	2x 1600W **Notes:** 1600W Power supplies only support high line voltage (200VAC to 240VAC). **Notes:** Non Lot 9 compliant PSU	
Hard Drive	None ship standard	
Internal Storage	16 SFF Drive Bays	
Optical Drive Bay	None ship standard. optional via Universal Media Bay	
Optical Drive	None ship standard. optional via Universal Media Bay	
Fans	6 hot plug fans, redundant	
Management	HPE iLO Standard with Intelligent Provisioning (embedded), HPE OneView Standard (requires download); HPE iLO Advanced (included) and HPE OneView Advanced (included)	
Form Factor	Rack (2U), HPE Easy Install Rails with CMA	
Warranty	3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response	

Notes: UEFI is the standard default for all pre-defined models.

Country Code Key

xx1 = B21 Worldwide (exclude Japan and PRC)

xx1 = 291 Japan

xx1 = AA1 PRC

Notes: The -B21 WW SKU is to be ordered in all countries other than Japan or PRC.

Configuration Information

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

- Factory Integrated Models must start with a CTO Server.
- FIO indicates that this option is only available as a factory installable option.
- All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.
- Some options may not be integrated at the factory. Contact your local sales representative for additional information. For more information about riser configuration, please vist:
  https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=a00043229enw
- European Union (EU) eco-design regulations for server and storage products, known as LOT 9, go into effect on March 1st, 2020. Among other requirements, for servers this directive establishes power thresholds for idle state, as well as efficiency and performance in active state which vary among configurations.
- HPE ProLiant Gen10 servers are compliant with LOT9 requirements. For more information regarding HPE LOT 9 conformance, please visit: **https://www.hpe.com/us/en/about/environment/msds-specs-more.html**
- DL500 family is identified as Resilent Server category under LOT 9 regulation, system minimum configuration with 2 Memory DIMMs and 2 PSU for CE Market.

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

SKU Number	HPE ProLiant DL560 Gen10 8SFF Configure-to-order Server	841730-B21
TAA SKU	HPE ProLiant DL560 Gen10 TAA-compliant 8SFF Configure-to-order Server	875797-B21
Chipset	Intel® C621 Chipset	
Processor	2U Server Chassis with 2 processor slots available; 3 or 4 processors configuration would require HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit (P07991-B21)	
DIMM Slots	24 DIMM slots for RDIMM, LRDIMM DDR4 Memory; (6 DIMM slots per processor can be used for NVDIMMs or can be used for HPE Persistent Memory) 48 DIMM configuration would require optional HPE ProLiant HPE DL5x0 Gen10 CPU Mezzanine Board Kit (872222-B21) and 4 processors **Notes:** If 2nd generation Intel® Xeon® Scalable processors are being used (82xx, 62xx or 52xx series) the 48 DIMM configuration would require optional HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit (P07991-B21)	
Network Controller	None. FlexibleLOM slot (various options can be chosen for networking; NIC cards also available via expansion slots)	
Storage Controller	HPE Smart Array S100i **Notes:** HPE Smart Array S100i SR Gen10 SW RAID is off by default and must be enabled. For enabling, please select HPE FIO Enable Smart Array SW RAID (784308-B21).	
PCIe	3 PCIe 3.0 slots (8 PCIe 3.0 slots are available if second processor is chosen and a Secondary and Tertiary Riser Kits has been installed)	
Drive Cage - included	8 SFF, no drives	
Fans	6 hot plug fans, redundant	
Management	HPE iLO Standard with Intelligent Provisioning and (Standard); HPE OneView Standard (requires download) and HPE iLO Advanced, HPE OneView Advanced (require additional licenses)	
microSD Slots	1 microSD card slot (internal)	
TPM Connector	1 Trusted Platform Module (TPM) connector	
UEFI	BIOS Legacy mode (field configurable) or Unified Extensible Firmware Interface (UEFI) mode (default)	
USB	7 USB ports (2 USB 2.0 and 5 USB 3.0)	
Video Ports	2 video ports (1 front optional via the Universal Media Kit upgrade option, 1 rear)	
Rails	Easy install rails and cable management arm are optional	

Configuration Information

Step 2: Choose Required Options
Please select one –L21 processor required below.

Step 2a: Choose Processor Options
Processor Option Kits

Intel Xeon-Platinum

Intel Xeon-Platinum 8280L (2.7GHz/28-core/205W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P07154-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8280 (2.7GHz/28-core/205W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02984-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8276 (2.2GHz/28-core/165W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02958-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8270 (2.7GHz/26-core/205W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02979-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8268 (2.9GHz/24-core/205W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02985-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8260L (2.4GHz/24-core/165W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P07152-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8260 (2.4GHz/24-core/165W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02959-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold

Intel Xeon-Gold 6256 (3.6GHz/12-core/205W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P24434-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6254 (3.1GHz/18-core/200W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02986-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6252 (2.1GHz/24-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02962-L21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6252N (2.3GHz/24-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10   P02960-L21
Notes: Ships with Performance Heatsink.

Configuration Information

Intel Xeon-Gold 6248 (2.5GHz/20-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02961-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6246 (3.3GHz/12-core/165W) Processor Kit for HPE ProLiant DL560 Gen10	P15170-B21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6244 (3.6GHz/8-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02988-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6242 (2.8GHz/16-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02989-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6240L (2.6GHz/18-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P11949-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6240 (2.6GHz/18-core/150W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02963-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6238 (2.1GHz/22-core/140W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P03005-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6234 (3.3GHz/8-core/130W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P03006-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6230 (2.1GHz/20-core/125W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02965-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6230N (2.3GHz/20-core/125W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02987-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 6226 (2.7GHz/12-core/125W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02981-L21
Intel Xeon-Gold 5222 (3.8GHz/4-core/105W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02982-L21
Notes: Ships with Performance Heatsink.	
Intel Xeon-Gold 5220 (2.2GHz/18-core/125W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02983-L21
Intel Xeon-Gold 5218 (2.3GHz/16-core/125W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02978-L21
Intel Xeon-Gold 5218N (2.3GHz/16-core/110W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P02964-L21
Intel Xeon-Gold 5217 (3.0GHz/8-core/115W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P07147-L21
Intel Xeon-Gold 5215 (2.5GHz/10-core/85W) FIO Processor Kit for HPE ProLiant DL560 Gen10	P03024-L21

Notes:

– If more than one processor is desired select one xxxxxx-L21 and one or three corresponding xxxxxx-B21 processors. Mixing different processor models is not supported.
– Mixing of 1st and 2nd generation Intel® Xeon® Scalable processors – (8/6/5)1xx and (8/6/5)2xx models - is not supported

Step 2b: Choose Memory Options
Only one of the following from each list unless otherwise noted

Registered DIMMs (RDIMMs)

HPE 8GB (1x8GB) Single Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00918-B21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00920-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00922-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	835955-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00924-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	815100-B21
HPE 64GB (1x64GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00930-B21

Configuration Information

Load Reduced DIMMs (LRDIMMs)

HPE 128GB (1x128GB) Quad Rank x4 DDR4-2933 CAS-21-21-21 Load Reduced Smart Memory Kit	P11040-B21

HPE Persistent Memory

Intel Optane 128GB persistent memory 100 Series for HPE	835804-B21
Intel Optane 512GB persistent memory 100 Series for HPE	835810-B21

Notes:
- LRDIMM and RDIMM are distinct memory technologies and cannot be mixed within a server.
- The 2933 MT/s DIMMs are only supported with the 2nd generation Intel® Xeon® Scalable processors (82xx,62xx and 52xx)
- The 2666 MT/s DIMMs are only supported with the 1st generation Intel® Xeon® Scalable processors (81xx,61xx and 51xx)
- The HPE Persistent Memory Kits are only supported with the 2nd generation Intel® Xeon® Scalable processors
- The HPE Persistent Memory Kits are required to support up to 2 TB on 'M' processors and up to 4.5TB on 'L' processors
- The HPE Persistent Memory Kits cannot be selected with NVDIMMs or with any single rank x8 DDR4 2933 memory kit
- The HPE Persistent Memory Kits cannot be selected with HPE 800W Flex Slot -48VDC Hot Plug Low Halogen Power Supply Kit (865434-B21)
- Persistent Memory kits of different capacities cannot be mixed within a server
- For General Server Memory , HPE Persistent Memory and NVDIMM Population Rules and Guidelines for Gen10 see details here: **http://www.hpe.com/docs/memory-population-rules**

Step 2c: Choose Power Supplies
Only one or more of the following from each list unless otherwise noted

HPE Flex Slot Power Supplies

HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit	865438-B21
HPE 800W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	865414-B21
HPE 800W Flex Slot -48VDC Hot Plug Low Halogen Power Supply Kit	865434-B21
HPE 800W Flex Slot Universal Hot Plug Low Halogen Power Supply Kit	865428-B21
HPE 1600W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	830272-B21
HPE 1800W-2200W Flex Slot Titanium Hot Plug Power Supply Kit	P44712-B21

Notes: Output capped at 1600W maximum on Gen10 & Gen10 Plus servers, greater than 1600W only feasible on Gen11." Similar to the one currently stated on FlexSlot PSUs

Notes:
- Select one or more power supplies. For 800W, 4 power supplies need to be selected.
- 1600W Power supplies only support high line voltage (200VAC to 240VAC).
- 800W Titanium power supplies support high line voltage (200VAC to 240VAC)
- Prior to making a power supply selection it is highly recommended that the HPE Power Advisor is run to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: **http://www.hpe.com/info/hppoweradvisor**.
- All power supplies in a server should match. Mixing Power Supplies is not supported.
- HPE ProLiant servers ship with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs). Visit **HPE power cords** for a full list of optional power cords.
- DL500 family is identified as Resilent Server category under LOT 9 regulation, system minimum configuration with 2 Memory DIMMs and 2 PSU for CE Market.
- Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, or Switzerland must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers 865438-B21, P03178-B21, and P44712-B21 are 96% efficient, thus meeting requirements. HPE is on target to fulfil compliant systems ahead of time and will begin enforcing these requirements in advance to satisfy requests with the current power supplies by the set deadline.

Configuration Information

Step 2d: Choose network adapters
Only one of the following from each list unless otherwise noted

Network Adapters

HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	629135-B22
HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter	665240-B21
HPE Ethernet 10Gb 2-port FLR-T BCM57416 Adapter	817721-B21
HPE Ethernet 10Gb 2-port FLR-SFP+ X710-DA2 Adapter	727054-B21
HPE Ethernet 10Gb 2-port FLR-T X550-AT2 Adapter	817745-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter	867334-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter	817749-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter	817709-B21

Step 3: Choose Additional Factory Integratable Options
Only one of the following from each list unless otherwise noted

Risers

HPE DL560 Gen10 4-port 8 NVMe Slimline FIO Riser Kit	876242-B21
HPE DL560 Gen10 x8/x8/x8 1-port 2 NVMe Slimline FIO Riser Kit	876245-B21
HPE DL38X Gen10 x16/x16 GPU Slot2/3 FIO Riser Kit	871676-B21

Notes: For additional details on ProLiant DL Gen10 server risers please visit:
https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=a00043229enw

HPE OneView

HPE OneView w/o iLO including 3yr 24x7 Support 1-server FIO LTU	P8B31A
HPE OneView for ProLiant DL Server including 3yr 24x7 Support FIO Bundle Physical 1-server LTU	E5Y43A

BIOS Mode

HPE Legacy FIO Mode Setting	758959-B22

Notes: Selecting this option will change the UEFI BIOS setting into Legacy BIOS Setting.

Controller State

HPE FIO Enable Smart Array SW RAID	784308-B21

Notes: If not selecting an HPE Storage Controller, this option may be selected to support RAID and Hot-plug capabilities for SATA hard drives. The S100i does not support SAS hard drives.

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

Core Options

Some options may not be integrated at the factory. 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 additional information.

HPE Unique Options

HPE DL5x0 Gen10 12Gb SAS Expander Card Kit with Cables	873444-B21
HPE DL560 Gen10 2SFF Premium HDD Front NVMe/SAS/SATA Kit	872223-B21

Notes: Needs to be ordered with the HPE DL560 Gen10 Uni Media Bay Kit (872267-B21).

HPE DL560 NVMe 8 SSD Express Bay Enablement Kit	872225-B21
HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8SFF Bay1 Kit	872227-B21
HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8SFF Bay2 Kit	872229-B21
HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8SFF Bay3 Kit	872231-B21
HPE DL560 Gen10 4-port NVMe Mezzanine Card	874633-B21
HPE DL560 Gen10 8SFF HDD Bay1 Kit	872233-B21
HPE DL560 Gen10 8SFF HDD Bay2 Kit	872235-B21
HPE DL560 Gen10 8SFF HDD Bay3 Kit	872237-B21
HPE DL560 Gen10 Universal Media Bay Kit	872267-B21

Notes: An optional Optical Disk Drive can be added, either DVD-ROM (726536-B21) or DVD-RW (726537-B21).

HPE DL5x0 Gen10 System Insight Display Kit	872261-B21
HPE DL560 Gen10 4x Power Supply Enablement Kit	875675-B21

Notes: Must be ordered when selecting 4 power supplies.

HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit	P07991-B21
HPE DL5x0 Gen10 CPU Mezzanine UPI Performance Kit	875608-B21

Notes:

— The HPE DL5x0 Gen10 CPU Version 2 Mezzanine Board Kit (P07991-B21) is needed for three or four processor configurations using 1st and 2nd generation Intel® Xeon® Scalable processors (all listed in this Quick spec. document)

— The HPE DL560 Gen10 8 SFF Bay 3 Cage/Backplane Kit (872237-B21) is shipped default with the server. The priority order of drive box population is Box 3, followed by Box 2 and then Box 1.

HPE Processors

Intel Xeon-Platinum

Intel Xeon-Platinum 8280L (2.7GHz/28-core/205W) Processor Kit for HPE ProLiant DL560 Gen10	P07154-B21

Notes: Ships with Performance Heatsink

Intel Xeon-Platinum 8280 (2.7GHz/28-core/205W) Processor Kit for HPE ProLiant DL560 Gen10	P02984-B21

Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8276 (2.2GHz/28-core/165W) Processor Kit for HPE ProLiant DL560 Gen10	P02958-B21

Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8270 (2.7GHz/26-core/205W) Processor Kit for HPE ProLiant DL560 Gen10	P02979-B21

Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8268 (2.9GHz/24-core/205W) Processor Kit for HPE ProLiant DL560 Gen10	P02985-B21

Notes: Ships with Performance Heatsink.

Intel Xeon-Platinum 8260 (2.4GHz/24-core/165W) Processor Kit for HPE ProLiant DL560 Gen10	P02959-B21

Notes: Ships with Performance Heatsink.

Core Options

Intel Xeon-Gold

Intel Xeon-Gold 6256 (3.6GHz/12-core/205W) Processor Kit for HPE ProLiant DL560 Gen10   P24434-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6254 (3.1GHz/18-core/200W) Processor Kit for HPE ProLiant DL560 Gen10   P02986-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6252 (2.1GHz/24-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P02962-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6252N (2.3GHz/24-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P02960-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6248 (2.5GHz/20-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P02961-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6246 (3.3GHz/12-core/165W) Processor Kit for HPE ProLiant DL560 Gen10   P15170-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6244 (3.6GHz/8-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P02988-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6242 (2.8GHz/16-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P02989-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6240L (2.6GHz/18-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P11949-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6240 (2.6GHz/18-core/150W) Processor Kit for HPE ProLiant DL560 Gen10   P02963-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6238 (2.1GHz/22-core/140W) Processor Kit for HPE ProLiant DL560 Gen10   P03005-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6234 (3.3GHz/8-core/130W) Processor Kit for HPE ProLiant DL560 Gen10   P03006-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6230 (2.1GHz/20-core/125W) Processor Kit for HPE ProLiant DL560 Gen10   P02965-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6230N (2.3GHz/20-core/125W) Processor Kit for HPE ProLiant DL560 Gen10   P02987-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 6226 (2.7GHz/12-core/125W) Processor Kit for HPE ProLiant DL560 Gen10   P02981-B21
Intel Xeon-Gold 5222 (3.8GHz/4-core/105W) Processor Kit for HPE ProLiant DL560 Gen10   P02982-B21
Notes: Ships with Performance Heatsink.

Intel Xeon-Gold 5220 (2.2GHz/18-core/125W) Processor Kit for HPE ProLiant DL560 Gen10   P02983-B21
Intel Xeon-Gold 5218 (2.3GHz/16-core/125W) Processor Kit for HPE ProLiant DL560 Gen10   P02978-B21
Intel Xeon-Gold 5218N (2.3GHz/16-core/110W) Processor Kit for HPE ProLiant DL560 Gen10   P02964-B21
Intel Xeon-Gold 5217 (3.0GHz/8-core/115W) Processor Kit for HPE ProLiant DL560 Gen10   P07147-B21
Intel Xeon-Gold 5215 (2.5GHz/10-core/85W) Processor Kit for HPE ProLiant DL560 Gen10   P03024-B21

Notes:

– If more than one processor is desired select one xxxxxx-L21 and one or three corresponding xxxxxx-B21 processors. Mixing different processor models is not supported.
– Mixing of 1st and 2nd generation Intel® Xeon® Scalable processors – (8/6/5)1xx and (8/6/5)2xx models -is not supported

Core Options

Memory Selection

To streamline the configuration process for HPE ProLiant Gen10 servers and to provide the best product availability, HPE recommends memory from the list located here: **http://www.hpe.com/products/recommend**.
Best product availability is limited to US, Canada, and Latin America at this time.

HPE Memory

Hewlett Packard Enterprise memory from previous generation servers is not qualified or warranted with this HPE ProLiant Server. HPE Smart Memory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen10. For additional information, please see the **HPE Smart Memory QuickSpecs.**
LRDIMM and RDIMM are all distinct memory technologies and cannot be mixed within a server.

Registered DIMMs (RDIMMs)

HPE 8GB (1x8GB) Single Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00918-B21
HPE 16GB (1x16GB) Single Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00920-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00922-B21
HPE 16GB (1x16GB) Dual Rank x8 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	835955-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00924-B21
HPE 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit	815100-B21
HPE 64GB (1x64GB) Dual Rank x4 DDR4-2933 CAS-21-21-21 Registered Smart Memory Kit	P00930-B21

Load Reduced DIMMs (LRDIMMs)

HPE 128GB (1x128GB) Quad Rank x4 DDR4-2933 CAS-21-21-21 Load Reduced Smart Memory Kit	P11040-B21

HPE Persistent Memory

Intel Optane 128GB persistent memory 100 Series for HPE	835804-B21
Intel Optane 256GB persistent memory 100 Series for HPE	835807-B21
Intel Optane 512GB persistent memory 100 Series for HPE	835810-B21

Notes:
- A maximum of 6 HPE Persistent Memory Kits per processor and a maximum of 24 kits are supported on the DL560
- The HPE Persistent Memory Kits are only supported with the 2nd generation Intel® Xeon® Scalable processors
- The HPE Persistent Memory Kits are required to support up to 2 TB on 'M' processors and up to 4.5TB on 'L' processors
- The HPE Persistent Memory Kits cannot be selected with NVDIMMs or with any single rank x8 DDR4 2933 memory kit
- The HPE Persistent Memory Kits cannot be selected with HPE 800W Flex Slot -48VDC Hot Plug Low Halogen Power Supply Kit (865434-B21)
- Persistent memory kits of different capacities cannot be mixed within a server

Configuration	HPE Persistent Memory kits	Number of RDIMMs or LRDIMMs required
1P	1	6
	2	4,6 or 8
	4	6
	6	6
2P	2	12
	4	8.12 or 16
	8	12
	12	12
4P	4	24
	8	16,24 or 32
	16	24
	24	24

Core Options

Notes: Please refer to **http://www.hpe.com/info/persistentmemory** for HPE Persistent Memory population rules and guidelines.

HPE Optical Drives

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

Notes: The optional Universal Media Bay Kits are required for this option. (HPE ProLiant DL560 Gen10 Universal Media Bay kit (872267-B21).

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

Notes: The optional Universal Media Bay Kits are required for this option. (HPE ProLiant DL560 Gen10 Universal Media Bay kit - 872267-B21).

HPE Mobile USB DVD-RW Optical Drive	701498-B21

Notes: External

HPE Drives

Notes:

– The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
– Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

Enterprise - 12G SAS - SFF Drives

HPE 300GB SAS 12G Mission Critical 15K SFF SC 3-year Warranty Multi Vendor HDD	870753-B21
HPE 300GB SAS 12G Mission Critical 10K SFF SC 3-year Warranty Multi Vendor HDD	872475-B21
HPE 600GB SAS 12G Mission Critical 15K SFF SC 3-year Warranty Multi Vendor HDD	870757-B21
HPE 600GB SAS 12G Mission Critical 10K SFF SC 3-year Warranty Multi Vendor HDD	872477-B21
HPE 900GB SAS 12G Mission Critical 15K SFF SC 3-year Warranty Multi Vendor HDD	870759-B21
HPE 1.2TB SAS 12G Mission Critical 10K SFF SC 3-year Warranty Multi Vendor HDD	872479-B21
HPE 1.8TB SAS 12G Mission Critical 10K SFF SC 3-year Warranty 512e Multi Vendor HDD	872481-B21
HPE 2.4TB SAS 12G Mission Critical 10K SFF SC 3-year Warranty 512e Multi Vendor HDD	881457-B21

Midline - 12G SAS - SFF Drives

HPE 1TB SAS 12G Business Critical 7.2K SFF SC 1-year Warranty HDD	832514-B21
HPE 2TB SAS 12G Business Critical 7.2K SFF SC 1-year Warranty 512e HDD	765466-B21

Midline - 6G SATA - SFF Drives

HPE 1TB SATA 6G Business Critical 7.2K SFF SC 1-year Warranty HDD	655710-B21
HPE 2TB SATA 6G Business Critical 7.2K SFF SC 1-year Warranty 512e HDD	765455-B21

SSD Selection

To streamline the configuration process for HPE ProLiant Gen10 servers and to provide the best product availability, HPE recommends SSDs from the list located here: **http://www.hpe.com/products/recommend**.

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

HPE 240GB SATA 6G Read Intensive SFF SC Multi Vendor SSD	P18420-B21
HPE 480GB SATA 6G Read Intensive SFF SC Multi Vendor SSD	P18422-B21

Core Options

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

HPE 960GB SATA 6G Read Intensive SFF SC Multi Vendor SSD	P18424-B21
HPE 1.92TB SATA 6G Read Intensive SFF SC Multi Vendor SSD	P18426-B21
HPE 3.84TB SATA 6G Read Intensive SFF SC Multi Vendor SSD	P18428-B21
HPE 7.68TB SATA 6G Read Intensive SFF SC Multi Vendor SSD	P18430-B21

Notes: Multi-vendor SKUs are composed of numerous supplier manufactured SSDs within a given SATA capacity SKU. When ordering a particular SKU-B21 number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has meet or exceeded the HPE qualification standards published above.

Read Intensive - 6G SATA - M.2 - Solid State Drives

HPE Dual 480GB SATA 6G Read Intensive M.2 to SFF SCM Multi Vendor SSD	P47819-B21
HPE 480GB SATA 6G Read Intensive M.2 Multi Vendor SSD	P47818-B21

Read Intensive - 12G SAS - SFF - Solid State Drives

HPE 480GB SATA 6G Read Intensive SFF SC PM893 SSD	P47810-B21
HPE 960GB SATA 6G Read Intensive SFF SC PM893 SSD	P47811-B21
HPE 1.9TB SATA 6G Read Intensive SFF SC PM893 SSD	P47812-B21
HPE 3.84TB SATA 6G Read Intensive SFF SC PM893 SSD	P47813-B21

Read Intensive - 12G SAS - SFF - Solid State Drives

HPE 960GB SAS 12G Read Intensive SFF SC Multi Vendor SSD	P49028-B21
HPE 960GB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	P36997-B21
HPE 1.92TB SAS 12G Read Intensive SFF SC Multi Vendor SSD	P49030-B21
HPE 1.92TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	P36999-B21
HPE 3.84TB SAS 12G Read Intensive SFF SC Multi Vendor SSD	P49034-B21
HPE 3.84TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	P37001-B21
HPE 7.68TB SAS 12G Read Intensive SFF SC Multi Vendor SSD	P49039-B21
HPE 7.68TB SAS 12G Read Intensive SFF SC Value SAS Multi Vendor SSD	P37003-B21
HPE 15.36TB SAS 12G Read Intensive SFF SC Multi Vendor SSD	P49044-B21

Read Intensive- NVMe -SFF- U.3 - Solid State Drives

HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733a SSD	P50214-B21
HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN Self-encrypting FIPS U.3 CM6 SSD	P44572-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733a SSD	P50217-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN Self-encrypting FIPS U.3 CM6 SSD	P44580-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SCN U.3 PM1733a SSD	P50220-B21

Notes:
− **Warning:** In order to have SED feature on NVMe SED drives connected via direct attach,
− Local Key Management requires TPM2.0
− Remote Key Management requires iLO Adv
− Requirements for Direct Attach SED support:
  o TPM2.0 is required for Local Key Management. Keys will be encrypted locally by TPM and stored locally.
  o iLO Adv is required for Remote Key Management. Key is stored in remote key manager(Ex.ESKM)
− Requirements for MR controller(BRCM) SED support
  o TPM is not required for Local Key Management as Key is stored in controller
  o iLO Adv is required for Remote Key Management. Key is stored in remote key manager(Ex.ESKM)

Core Options

Read/Write Intensive - NVMe - SFF – U.2 - Solid State Drives

HPE 750GB NVMe Gen3 High Performance Low Latency Write Intensive SFF SCN U.2 P4800X SSD	P06952-B21
HPE 1.92TB NVMe Gen4 High Performance Read Intensive SFF SCN U.2 P5520 SSD	P51452-B21
HPE 1.92TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.2 V2 Multi Vendor SSD	P64874-B21
HPE 3.84TB NVMe Gen4 High Performance Read Intensive SFF SCN U.2 P5520 SSD	P51454-B21
HPE 3.84TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.2 V2 Multi Vendor SSD	P64882-B21
HPE 7.68TB NVMe Gen4 High Performance Read Intensive SFF SCN U.2 P5520 SSD	P51456-B21
HPE 7.68TB NVMe Gen4 Mainstream Performance Read Intensive SFF SCN U.2 V2 Multi Vendor SSD	P64890-B21

Notes:

– A NVMe (872225-B21 or 872227-B21 or 872229-B21, 872231-B21) or Premium (872223-B21) drive cage are required to support these drives in conjunction with a NVMe riser kit or 4-port NVMe Mezzanine card.
– Not supported by HPE Smart Array controllers.

Mixed Use - 12G SAS - SFF - Solid State Drives

HPE 800GB SAS 12G Mixed Use SFF SC Multi Vendor SSD	P49046-B21
HPE 960GB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	P37005-B21
HPE 1.6TB SAS 12G Mixed Use SFF SC Multi Vendor SSD	P49048-B21
HPE 1.92TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	P37011-B21
HPE 3.2TB SAS 12G Mixed Use SFF SC Multi Vendor SSD	P49052-B21
HPE 3.84TB SAS 12G Mixed Use SFF SC Value SAS Multi Vendor SSD	P37017-B21
HPE 6.4TB SAS 12G Mixed Use SFF SC Multi Vendor SSD	P49056-B21

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

HPE 480GB SATA 6G Mixed Use SFF SC PM897 SSD	P47814-B21
HPE 480GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	P18432-B21
HPE 960GB SATA 6G Mixed Use SFF SC PM897 SSD	P47815-B21
HPE 960GB SATA 6G Mixed Use SFF SC Multi Vendor SSD	P18434-B21
HPE 1.92TB SATA 6G Mixed Use SFF SC PM897 SSD	P47816-B21
HPE 1.92TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	P18436-B21
HPE 3.84TB SATA 6G Mixed Use SFF SC Multi Vendor SSD	P18438-B21

Notes: Multi-vendor SKUs are composed of numerous supplier manufactured SSDs within a given SATA capacity SKU. When ordering a particular SKU-B21 number the customer will receive a homogenous set of vendor manufactured SSDs in that capacity that has meet or exceeded the HPE qualification standards published above.

Core Options

Mixed Use - NVMe – U.3 - Solid State Drives

HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735a SSD	P50225-B21
HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN Self-encrypting FIPS U.3 CM6 SSD	P44588-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735a SSD	P50228-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN Self-encrypting FIPS U.3 CM6 SSD	P44596-B21
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.3 PM1735a SSD	P50231-B21

Notes:
- **Warning:** In order to have SED feature on NVMe SED drives connected via direct attach,
- Local Key Management requires TPM2.0
- Remote Key Management requires iLO Adv
- Requirements for Direct Attach SED support:
  - TPM2.0 is required for Local Key Management. Keys will be encrypted locally by TPM and stored locally.
  - iLO Adv is required for Remote Key Management. Key is stored in remote key manager(Ex.ESKM)
- Requirements for MR controller(BRCM) SED support
  - TPM is not required for Local Key Management as Key is stored in controller
  - iLO Adv is required for Remote Key Management. Key is stored in remote key manager(Ex.ESKM)

Mixed Use - NVMe - SFF – U.2 - Solid State Drives

HPE 1.6TB NVMe Gen4 High Performance Mixed Use SFF SCN U.2 P5620 SSD	P51458-B21
HPE 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.2 V2 Multi Vendor SSD	P64870-B21
HPE 3.2TB NVMe Gen4 High Performance Mixed Use SFF SCN U.2 P5620 SSD	P51460-B21
HPE 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.2 V2 Multi Vendor SSD	P64878-B21
HPE 6.4TB NVMe Gen4 High Performance Mixed Use SFF SCN U.2 P5620 SSD	P51462-B21
HPE 6.4TB NVMe Gen4 Mainstream Performance Mixed Use SFF SCN U.2 V2 Multi Vendor SSD	P64886-B21

Notes:
- A NVMe (872225-B21 or 872227-B21 or 872229-B21, 872231-B21) or Premium (872223-B21) drive cage are required to support these drives in conjunction with a NVMe riser kit.
- Not supported by HPE Smart Array controllers.

Hard Drive Blank Kits

HPE Small Form Factor Hard Drive Blank Kit	666987-B21

Hard Drive Kits

HPE Universal SATA 6G AIC HHHL M.2 SSD Enablement Kit	878783-B21

Notes: This is a M.2 enablement standup card.

HPE DL560 Gen10 8SFF HDD Bay1 Kit	872233-B21
HPE DL560 Gen10 8SFF HDD Bay2 Kit	872235-B21
HPE DL560 Gen10 8SFF HDD Bay3 Kit	872237-B21

NVMe Kit

HPE NS204i-p x2 Lanes NVMe PCIe3 x8 OS Boot Device	P12965-B21
HPE DL560 NVMe 8 SSD Express Bay Enablement Kit	872225-B21
HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8SFF Bay1 Kit	872227-B21
HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8SFF Bay2 Kit	872229-B21
HPE DL560 Gen10 Premium 6SFF and 2 NVMe or 8SFF Bay3 Kit	872231-B21

Core Options

Media Bay Kits

HPE DL560 Gen10 Universal Media Bay Kit	872267-B21
HPE DL560 Gen10 2SFF Premium HDD Front NVMe/SAS/SATA Kit	872223-B21

Notes: This kit can only be used with the HPE DL560 Gen10 Universal Media kit.

HPE Networking

25 Gigabit Ethernet adapters

HPE Ethernet 10/25Gb 2-port SFP28 MCX4121A-ACUT Adapter	817753-B21
Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P08458-B21
Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P08443-B21

10 Gigabit Ethernet adapters

HPE Ethernet 10Gb 2-port BASE-T BCM57416 Adapter	813661-B21
HPE Ethernet 10Gb 2-port SFP+ X710-DA2 Adapter	727055-B21
HPE Ethernet 10Gb 2-port BASE-T X550-AT2 Adapter	817738-B21

Notes:

- A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.
- Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately. Please see the related NIC QuickSpecs for Technical Specifications and additional information:
  https://www.hpe.com/us/en/product-catalog/servers/server-adapters.hits-12.html

1 Gigabit Ethernet adapters

HPE Ethernet 1Gb 4-port BASE-T BCM5719 Adapter	647594-B21
HPE Ethernet 1Gb 4-port BASE-T I350-T4V2 Adapter	811546-B21
HPE Ethernet 1Gb 2-port BASE-T BCM5720 Adapter	615732-B21

100 Gigabit Ethernet adapters

HPE Ethernet 100Gb 1-port QSFP28 MCX515A-CCAT Adapter	874253-B21

FlexibleLOM Adapters

HPE Ethernet 1Gb 4-port FLR-T BCM5719 Adapter	629135-B22
HPE Ethernet 1Gb 4-port FLR-T I350-T4V2 Adapter	665240-B21
HPE Ethernet 10Gb 2-port FLR-T BCM57416 Adapter	817721-B21
HPE Ethernet 10Gb 2-port FLR-SFP+ X710-DA2 Adapter	727054-B21
HPE Ethernet 10Gb 2-port FLR-T X550-AT2 Adapter	817745-B21

Core Options

HPE Ethernet 10/25Gb 2-port FLR-SFP28 QL41401-A2G Converged Network Adapter	867334-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 BCM57414 Adapter	817709-B21
HPE Ethernet 10/25Gb 2-port FLR-SFP28 MCX4121A-ACFT Adapter	817749-B21

Notes: Please see the NIC QuickSpecs for Technical Specifications and additional information:
https://www.hpe.com/us/en/product-catalog/servers/server-adapters.hits-12.html

HPE InfiniBand

HPE InfiniBand FDR/Ethernet 40/50Gb 2-port 547FLR-QSFP Adapter	879482-B21
HPE InfiniBand EDR/Ethernet 100Gb 2-port 841QSFP28 Adapter	872726-B21

Notes: Not supported on DL560 Gen10 24SFF chassis when System Inlet Temperature higher than 25°C.

HPE 100Gb 1-port OP101 QSFP28 x16 PCIe Gen3 with Intel Omni-Path Architecture Adapter	829335-B21
HPE InfiniBand HDR100/Ethernet 100Gb 1-port QSFP56 PCIe3 x16 MCX653105A-ECAT Adapter	P06250-B21
HPE InfiniBand HDR100/Ethernet 100Gb 2-port QSFP56 PCIe3 x16 MCX653106A-ECAT Adapter	P06251-B21

Notes: Not supported on DL560 Gen10 24SFF chassis when System Inlet Temperature higher than 25°C.

HPE InfiniBand HDR/Ethernet 200Gb 1-port QSFP56 PCIe3 x16 MCX653105A-HDAT Adapter	P06154-B21

Notes: Not supported on DL560 Gen10 24SFF chassis when System Inlet Temperature higher than 25°C.

HPE InfiniBand HDR PCIe3 Auxiliary Card with 350mm Cable Kit	P06154-B23

Notes: For additional InfiniBand information:
https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154440

HPE I/O Expansion Options

HPE DL560 Gen10 x8/x8/x8 1-port 2 NVMe Slimline Riser Kit	873420-B21
HPE DL560 Gen10 4-port 8 NVMe Slimline Riser Kit	873418-B21
HPE DL560 Gen10 x8/x8 Tertiary Riser Kit	872253-B21
HPE DL Gen10 x16/x16 GPU Riser Kit	826704-B21
HPE DL Gen10 x8/x16/x8 Riser Kit	870548-B21
HPE DL560 Gen10 x8 1-port 2 NVMe Slimline Riser Kit	872255-B21
HPE DL560 Gen10 2-port 4 NVMe Slimline Tertiary Riser Kit	872257-B21

Notes:

– Secondary and Tertiary risers are optional kits which can be utilized when system is populated with at least two (2) processors. Refer to "Expansion Slots" section for additional details on risers.

– For additional details on ProLiant DL Gen10 server risers please visit:**https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=a00043229enw**

HPE Smart I/O Options

Pensando Distributed Services Platform DSC-25 Enterprise 10/25Gb 2-port SFP28 Card	P26966-B21
Pensando Distributed Services Platform for HPE iLO Sideband Management Adaptive LOM Module	P26969-B21
Pensando Distributed Services Platform Enterprise 1-year Renewal Subscription 24x7 Support E-RTU	R6A06AAE
Pensando Distributed Services Platform Enterprise 3-year Subscription 24x7 Support E-RTU	R6A07AAE
Pensando Distributed Services Platform Enterprise 4-year Subscription 24x7 Support E-RTU	R6F68AAE
Pensando Distributed Services Platform Enterprise 5-year Subscription 24x7 Support E-RTU	R6A08AAE
Pensando Distributed Services Platform Enterprise Pro 1-year Renewal Subscription 24x7 Support E-RTU	R6A09AAE
Pensando Distributed Services Platform Enterprise Pro 3-year Subscription 24x7 Support E-RTU	R6A10AAE
Pensando Distributed Services Platform Enterprise Pro 4-year Subscription 24x7 Support E-RTU	R6F69AAE
Pensando Distributed Services Platform Enterprise Pro 5-year Subscription 24x7 Support E-RTU	R6A11AAE

Core Options

HPE Power Supplies

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

Notes: Output capped at 1600W maximum on Gen10 & Gen10 Plus servers, greater than 1600W only feasible on Gen11." Similar to the one currently stated on FlexSlot PSUs

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

Notes:
— Flex Slot Platinum Plus power supplies support power efficiency of up to 94% and include a C-14 power inlet connector that can support HPE Power Discovery Services (blue connector).
— 1600W Power supplies only support high line voltage (200VAC to 240VAC).

HPE 800W Flex Slot -48VDC Hot Plug Low Halogen Power Supply Kit   865434-B21

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

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

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

HPE 800W Flex Slot Titanium Hot Plug Low Halogen Power Supply Kit   865438-B21

Notes:
— 800W Titanium power supplies support high line voltage (200VAC to 240VAC).
— Flex Slot Titanium power supplies support power efficiency of up to 96% and include a standard C-14 power inlet connector

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

Notes:
— Flex Slot universal power supplies support power efficiency of up to 94% and support both 277VAC/380VDC power inputs.
— Prior to making a power supply selection it is highly recommended that the HPE Power Advisor is run to determine the right size power supply for your server configuration. The HPE Power Advisor is located at: **http://www.hpe.com/info/hppoweradvisor**.
— All power supplies in a server should match. Mixing Power Supplies is not supported.
— Option kits contain the specified power supply and a PDU IEC cable.
— 1600W power supplies only support high line voltage.
— HPE ProLiant servers ship with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs). Visit **HPE power cords** for a full list of optional HPE power cords.
— DL500 family is identified as Resilent Server category under LOT 9 regulation, system minimum configuration with 2 Memory DIMMs and 2 PSU for CE Market.
— Beginning on January 1st, 2024, units sold into the European Union (EU), European Economic Area (EEA), the United Kingdom, or Switzerland must include more efficient AC power supplies: 94% for multi-output and 96% for single-output. HPE Flexible Slot power supplies are single-output, and part numbers 865438-B21, P03178-B21, and P44712-B21 are 96% efficient, thus meeting requirements. HPE is on target to fulfil compliant systems ahead of time and will begin enforcing these requirements in advance to satisfy requests with the current power supplies by the set deadline.

Core Options

GPGPU information							
Part number	**Card**	**Qty support**	**Processor support**	**PCIe speed**	**8/16/24 SFF**	**Max. 8 NVMe**	**Greater than 8 NVMe**
Q0V77A	NVIDIA Quadro P2000 GPU Module	2	All	Gen3	35C	35C	30C
R2U55C	NVIDIA Quadro P2200 GPU Module	2	All	Gen3	35C	35C	35C
R0W29C	NVIDIA Tesla T4 16GB Module	2	All	Gen3	35C*	35C**	No Support

Notes:

– Check the power usage via the HPE Power Advisor Tool located at **http://www.hpe.com/info/hppoweradvisor**.
– A maximum of 2 GPU cards can be supported, 1 in primary riser expansion slot 2 and another in secondary riser expansion slot 5. Refer Expansion Slots sections for additional details on risers.
– *24 SFF not supported
– **only support 8 SFF+8 NVMe configuration

Additional Options

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

iLO Advanced

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

Notes:
– Replaces iLO default randomized password by an HPE defined common password. HPE highly recommends changing this password immediately after the initial onboarding process.
– Customers who want to choose their own custom iLO default password should use the HPE Factory Express Integration Services

HPE OneView Advanced (with HPE 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 for ProLiant DL Server including 3yr 24x7 Support FIO Bundle Physical 1-server LTU	E5Y43A

HPE OneView Advanced (without HPE iLO Advanced)

HPE OneView w/o iLO including 3yr 24x7 Support 1-server LTU	P8B24A
HPE OneView w/o iLO including 3yr 24x7 Support Track 1-server LTU	P8B25A
HPE OneView w/o iLO including 3yr 24x7 Support Flexible Quantity E-LTU	P8B26AAE
HPE OneView w/o iLO including 3yr 24x7 Support 1-server FIO LTU	P8B31A

Notes:
– Licenses ship without media. The HPE OneView Media Kit can be ordered separately, or can be downloaded at: **https://www.hpe.com/us/en/integrated-systems/software.html**.
– Electronic and flexible-quantity licenses can be used to purchase multiple licenses with a single activation key.
– Please see the **HPE OneView QuickSpecs** for technical specifications and additional information.

Software as a Service Management

HPE GreenLake for Compute Ops Management

HPE GreenLake for Compute Ops Management Enhanced 3-year Upfront ProLiant SaaS	R7A11AAE

Additional Options

HPE GreenLake for Compute Ops Management Enhanced 1-year Upfront ProLiant SaaS	R7A10AAE
HPE GreenLake for Compute Ops Management Enhanced 5-year Upfront ProLiant SaaS	R7A12AAE

Notes: For customers purchasing HPE GreenLake for Compute Ops Management, without a hardware purchase or a BTO purchase, use this base SKU within ASQ order:

HPE GreenLake for Compute Ops Management Base SaaS	R6Z73AAE

Additional Options

HPE PCIe Workload Accelerator Options
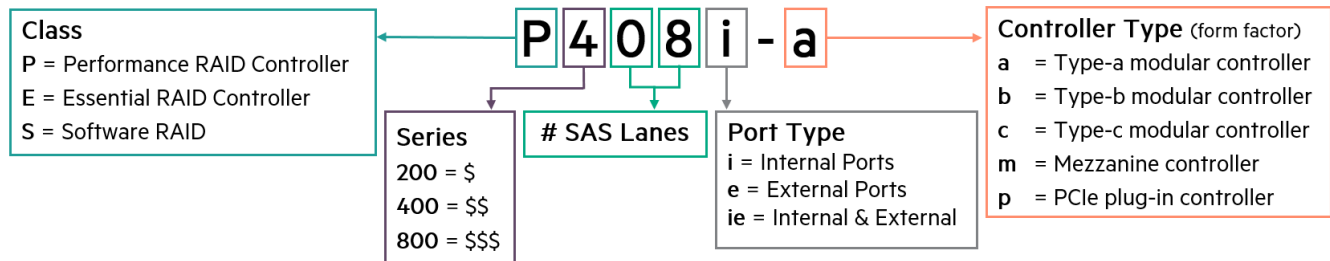
HPE Security

HPE Trusted Platform Module 2.0 Gen10 Option	864279-B21
HPE OEM 2U Non-Brand Gen10 Bezel FIO Kit	872212-B21
HPE OEM 2U Non-Brand Gen10 Bezel Kit	872214-B21
HPE Gen10 Chassis Intrusion Detection Kit	867824-B21

Notes:

— This provides a physical connection from the chassis board and hood and detects any physical intrusion into the chassis, providing security during the entire supply chain process of shipping, receiving, distribution, and operation.

— HPE Trusted Platform Module 2.0 Option (864279-B21) works with Gen10 servers with UEFI Mode not Legacy Mode. It is not compatible with HPE ProLiant Gen9 servers or earlier generation variants.HPE server systems can have a TPM module (of any type) installed only once. It cannot be replaced with any other TPM module.

HPE Smart Array Controllers

The Gen10 controller naming framework has been updated to simplify identification as depicted below. For a more detailed breakout of the available Gen10 Smart Array controllers visit the **HPE Smart Array Gen10 Controllers Data Sheet**.

Class
P = Performance RAID Controller
E = Essential RAID Controller
S = Software RAID

Series
200 = $
400 = $$
800 = $$$

 # SAS Lanes

Port Type
i = Internal Ports
e = External Ports
ie = Internal & External

Controller Type (form factor)
a = Type-a modular controller
b = Type-b modular controller
c = Type-c modular controller
m = Mezzanine controller
p = PCIe plug-in controller

Performance RAID Controllers

Notes: All performance RAID controllers are supported by either the HPE Smart Storage Battery (P01366-B21) or the HPE Smart Storage Hybrid Capacitor (P02377-B21), which support multiple devices and are sold separately.

HPE Smart Array P816i-a SR Gen10 (16 Int Lanes/4GB Cache/SmartCache) 12G SAS Modular LH Controller	869083-B21

Notes: Does not occupy a PCIe expansion slot.

HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS Modular LH Controller	869081-B21

Notes: Does not occupy a PCIe expansion slot.

HPE Smart Array P408i-p SR Gen10 (8 Internal Lanes/2GB Cache) 12G SAS PCIe Plug-in Controller	830824-B21
HPE Smart Array P408e-p SR Gen10 (8 External Lanes/4GB Cache) 12G SAS PCIe Plug-in Controller	804405-B21

Essential RAID Controllers

HPE Smart Array E208i-a SR Gen10 (8 Internal Lanes/No Cache) 12G SAS Modular LH Controller	869079-B21

Notes: Does not occupy a PCIe expansion slot.

HPE Smart Array E208i-p SR Gen10 (8 Internal Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804394-B21
HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller	804398-B21

Additional Options

Optional Upgrades

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

Notes: Provides backup power for multiple HPE Smart Array controllers or other devices. Is required with performance RAID controllers and NVDIMMs.

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

Notes:
- Supports up to 3 performance RAID controllers. If 4 or more performance RAID controllers are selected, HPE 96W Smart Storage Battery (P01366-B21) is required
- Only one of either HPE Smart Storage Hybrid Capacitor (P02377-B21) or the HPE 96W Smart Storage Battery (P01366-B21) can be configured in a server
- HPE Smart Storage Hybrid Capacitor cannot be used with NVDIMMs

HPE DL38X/560/580/ML350 Gen10 P824i-p Cable Kit	P00614-B21

Notes: Needs to be ordered with the HPE SmartArray P824i-p MR Gen10 controller.

HPE Tape Backup

For the complete range of tape drives, autoloaders, libraries and media see:
https://www.hpe.com/us/en/storage/storeever-tape-storage.html. For hardware and software compatibility of Hewlett Packard Enterprise tape backup products **http://www.hpe.com/storage/BURAcompatibility.**

HPE Storage Options

Emulex Fibre Channel HBAs

HPE SN1200E 16Gb Single Port Fibre Channel Host Bus Adapter	Q0L13A
HPE SN1200E 16Gb Dual Port Fibre Channel Host Bus Adapter	Q0L14A
HPE SN1600E 32Gb Single Port Fibre Channel Host Bus Adapter	Q0L11A
HPE SN1600E 32Gb Dual Port Fibre Channel Host Bus Adapter	Q0L12A

QLogic Fibre Channel HBAs

HPE SN1610E 32Gb 1-port Fibre Channel Host Bus Adapter	R2J62A
HPE SN1610E 32Gb 2-port Fibre Channel Host Bus Adapter	R2J63A
HPE SN1610Q 32Gb 1-port Fibre Channel Host Bus Adapter	R2E08A
HPE SN1610Q 32Gb 2-port Fibre Channel Host Bus Adapter	R2E09A
HPE SN1100Q 16Gb Single Port Fibre Channel Host Bus Adapter	P9D93A
HPE SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter	P9D94A
HPE SN1600Q 32Gb Single Port Fibre Channel Host Bus Adapter	P9M75A
HPE SN1600Q 32Gb Dual Port Fibre Channel Host Bus Adapter	P9M76A

Converged Network Adapter

HPE CN1200R 10GBASE-T Converged Network Adapter	Q0F26A
HPE CN1300R 10/25Gb Dual Port Converged Network Adapter	Q0F09A

Additional Options

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

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

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

HPE Rack Options
- Please see the **HPE KVM Switches web page** for information on these products and their specifications.

Rail Kits

HPE 2U Large Form Factor Easy Install Rail Kit	733662-B21

Notes: Does not include CMA (733664-B21).

HPE 2U Cable Management Arm for Easy Install Rail Kit	733664-B21
HPE 2U Large Form Factor Ball Bearing Rail Kit	720864-B21

Notes: Does not include CMA (720865-B21).

HPE 2U Cable Management Arm for Ball Bearing Rail Kit	720865-B21

Notes:
- Rail kits are optional for DL560 Gen10 and are no longer included standard with the server. Customers have the option to purchase their server without a rail kit.
- Ball bearing and Easy Install rail kits contain telescoping rails which allow for in-rack serviceability.
- Hewlett Packard Enterprise recommends that a minimum of two people are required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.
- HPE rail kits are designed to work with HPE racks in compliance with industry standard EIA-310-E. In the event a customer elects to purchase a third-party rack for use with an HPE rail kit, any such use is at customer's own risk. HPE makes no express or implied warranties with respect to such third-party racks and specifically disclaims any implied warranties of merchantability and fitness for a particular purpose. Furthermore, HPE has no obligation and assumes no liability for the materials, design, specifications, installation, safety, and compatibility of any such third-party racks with any rail kits, including HPE rail kits.

Additional Options

HPE USB and SD Options

HPE Enterprise Mainstream Flash Media Kits for Memory Cards

HPE 32GB microSD RAID 1 USB Boot Drive	P21868-B21
HPE 32GB microSD Flash Memory Card	700139-B21

Notes: Please see the **HPE Flash Media Kits QuickSpecs** for additional information.
Notes: In vSphere 7.0, VMware made changes that impact the use of an SD Card/USB media as a standalone boot device and will be removing support for them after version 7.x.
SD Card/USB media can still be used as a standalone boot option through all 7.x releases via published Customer Advisory **Usage of SD Card/USB Devices As Standalone Boot Devices Has Changed Due to System Storage Changes For VMware ESXi 7.0 (Or Later).**
For any major release beyond VMware ESXi 7.x, VMware will require M.2 or another local persistent device as the standalone boot option.

HPE Support Services

Tech Care

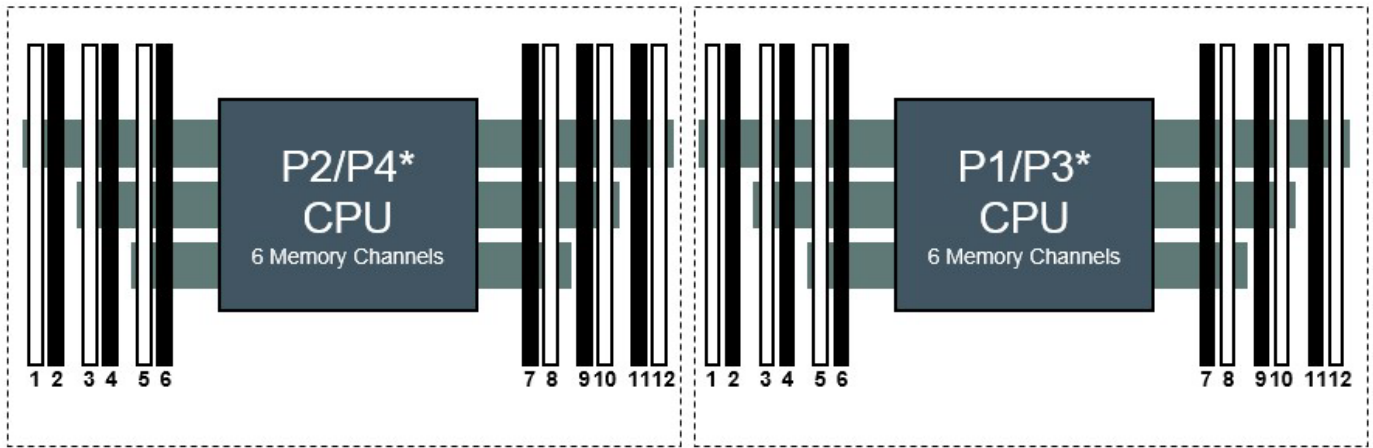|	
HPE 5 Year Tech Care Essential DL560 Gen10 Service	HS8J8E
HPE 5 Year Tech Care Essential wDMR DL560 Gen10 Service	HS8K3E
HPE 3 Year Tech Care Essential DL560 Gen10 Service	HS8J6E
HPE 3 Year Tech Care Essential wDMR DL560 Gen10 Service	HS8K1E

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

Memory

HPE Proliant Gen10 DL360/ DL380/ DL560* Servers
2 Slots per Channel
Notes:*HPE Proliant DL560 is a 4 socket server (uses P3, P4)

	1	2	3	4	5	6	7	8	9	10	11	12
1 DIMM								8				
2 DIMM s								8		10		
3 DIMM s								8		10		12
4 DIMM s			3		5			8		10		
5 DIMM s*			3		5			8		10		12
6 DIMM s	1		3		5			8		10		12
7 DIMM s*	1		3		5		7	8		10		12
8 DIMM s			3	4	5	6	7	8	9	10		
9 DIMM s*	1		3		5		7	8	9	10	11	12
10 DIMM s*	1		3	4	5	6	7	8	9	10		12
11 DIMM s*	1		3	4	5	6	7	8	9	10	11	12
12 DIMM s	1	2	3	4	5	6	7	8	9	10	11	12

HPE ProLiant Gen10 12 slot per CPU
DIMM population order
Memory Population guidelines
Notes: *Unbalanced, not recommended

General Memory Population Rules and Guidelines:
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two-processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors.
- When two processors are installed, balance the DIMMs across the two processors.
- White DIMM slots denote the first slot to be populated in a channel.
- Mixing of DIMM types (UDIMM, RDIMM, and LRDIMM) is not supported.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the number of DIMM slots on the platform, the largest DIMM capacity qualified on the platform, the number and model of installed processors qualified on the platform.

For details on the HPE Server Memory Options Population Rules, visit: **http://www.hpe.com/docs/memory-population-rules**

To realize the performance memory capabilities listed in this document, HPE DDR4 Smart Memory is required.

For additional information, please see the **HPE DDR4 Smart Memory QuickSpecs**.

Memory

Memory Speed Table for HPE ProLiant DL560 Gen 10
For the HPE Server Memory speed table, please visit: **https://www.hpe.com/docs/memory-speed-table**

Standard and Maximum Memory Capacity (Pre-configured Models)

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
5120	32 GB (2 x 16 GB)	384 GB (24 x 16 GB)	6144GB (48 x 128 GB)
6130	64 GB (4 x 16 GB)	384 GB (24 x 16 GB)	6144GB (48 x 128 GB)
6148	128 GB (8 x 16 GB)	768 GB (48 x 16 GB)	6144GB (48 x 128 GB)
8170	256 GB (16 x 16 GB)	768 GB (48 x 16 GB)	6144GB (48 x 128 GB)
5220	64 GB (2 x 32 GB)	768 GB (24 x 32 GB)	6144GB (48 x 128 GB)
6230	128 GB (4 x 32 GB)	768 GB (24 x 32 GB)	6144GB (48 x 128 GB)
6254	256 GB (8 x 32 GB)	1536 GB (48 x 32 GB)	6144GB (48 x 128 GB)
8268	512 GB (16 x 32 GB)	1536 GB (48 x 32 GB)	6144GB (48 x 128 GB)

DDR4 memory options part number decoder

Capacity references are rounded to the common gigabyte (GB) values.
- 4 GB = 4,096 MB
- 8 GB = 8,192 MB
- 16 GB = 16,384 MB
- 32 GB = 32,768 MB
- 64 GB = 65,536 MB
- 128 GB = 131,072 MB

For more information on memory, please see the Memory Quickspecs: **HPE DDR4 Smart Memory**

Storage

8 SFF (+2 SFF) hot-plug drive model with Universal Media Bay

24 SFF (incl 12 NVMe SSDs) hot-plug drive model

Technical Specifications

System Unit

- **Dimensions**
  (H x W x D) (with bezel)
  - 8.75cm x 44.54cm x 75.47cm
  - 3.44 x 17.54 x 29.71 in
- **Weight** (approximate)
  - 34.12 kg
    75.23 lb
    - **Maximum**: (all hard drives, power supplies, DIMMs and processors installed)
      18.45 kg
      40.67 lb
    - **Minimum:** (one processor, one standard heatsink, one air baffle, one hard drive, one power supply, one DIMM, one rail kit with CMA and one primary riser installed)

Input Requirements (per power supply)

- **Rated Input Voltage**
  - 100 - 127 VAC, 200 – 240 VAC, 240VDC for China Only (800W Platinum PS only)
  - 200 – 240 VAC, 240VDC for China Only (800W Titanium PS only)
  - 200 V to 277 VAC, 380 VDC (800W Universal PS only)
  - -40 VDC to -72 VDC, -48 VDC nominal input (800W -48VDC PS only)
  - 200 - 240 VAC, 240 VDC for China only (1600W PS Only)
- **Rated Input Current**
  - 9.4 A (100 VAC), 4.5 A (200 VAC), 3.8 A at 240VDC for China Only (800W Platinum PS only)
  - A at 200 VAC 3.62 A at
  - 240 VAC, 3.62 A at 240 VDC for China
  - Only (800W Titanium PS only)
  - 4.5 A at 200 V AC, 3.2 A at 277 V AC, 2.3 A at 380 VDC - (800W Universal PS only)
  - 26 A at -40 VDC input, 19 A at -48 VDC input, nominal input, 12.4 A at -72 VDC input - (800W -48VDC PS only)
  - 8.7 A at 200 VAC, 7.2 A at 240 VAC - (1600W PS Only)
- **Rated Input Frequency**
  - 50 to 60 Hz (Not applicable for VDC ranges)
- **Maximum Rated Input Power**
  - 940 W (100 VAC), 900 W (200VAC), 912 W at 240 VDC for China Only - (800W Platinum PS only)
  - 870 W at 200 VAC, 870 W at 240 VAC, 870 W at 240 VDC for China only - (800W Titanium PS only)
  - 900 W at 200 VAC, 887 W at 277 VAC, 874 W at 380 VDC - (800W Universal PS only)
  - 936 W at -40 VDC input 912 W at -48 VDC input, nominal input 900 W at -72 VDC input - (800W -48VDC PS only)
  - 1734 W at 200 VAC 1720 W at 240 VAC - (1600W PS Only)

BTU Rating

Maximum

- 3207 BTU/hr at 100 VAC, 3071 BTU/hr at 200 VAC, 3112 BTU/hr at 240 for China only - (800W Platinum PS only)
- 2969 BTU/hr at 200 VAC, 2969 BTU/hr at 240 VAC, 2969 BTU/hr at 240 VDC for China only - (800W Titanium PS only
- 3071 BTU/hr at 200 VAC, 3026 BTU/hr at 277 VAC, 2982 BTU/hr at 380 VDC - (800W Universal PS only)
- 3194 BTU/hr at -40 VDC input, 3112 BTU/hr at -48 VDC input (nominal input), 3071 BTU/hr at -72 VDC input - (800W -48VDC PS only)
- 5918 BTU/hr at 200 VAC, 5884 BTU/hr at 240 VAC - (1600W PS Only)

Technical Specifications

Power Supply Output(per power supply)

- **Rated Steady-State Power**
  - 800 W at 100 VAC to 127 VAC input, 800 W at 200 VAC to 240 VAC input, 800 W at 240 VDC input for China only - (800W Platinum PS only)
  - 800 W at 200 VAC to 240 VAC input, 800 W at 240 VDC input for China only - (800W Titanium PS only)
  - 800 W at 200 VAC to 277 VAC input, 800 W at 380 VDC input - (800W Universal PS only)
  - 800 W at -40 VDC to -72 VDC - (800W -48VDC PS only)
  - 1600 W at 200 VAC to 240 VAC input, 1600 W at 240 VDC input - (1600W PS Only)
- **Maximum Peak Power**
  - 800 W at 100 VAC to 127 VAC input, 800 W at 200 VAC to 240 VAC input, 800 W at 240 VDC input for China only - (800W Platinum PS only)
  - 800 W at 200 VAC to 240 VAC input, 800 W at 240 VDC input for China only - (800W Titanium PS only)
  - 800 W at 200 VAC to 277 VAC input, 800 W at 380 VDC input- (800W Universal PS only)
  - 800 W at -40 VDC to -72 VDC - (800W -48VDC PS only)
  - 2200 W for 1ms (turbo mode) at 200 VAC to 240 VAC input - (1600W PS Only)

Notes: To review typical system power ratings use the HPE Power Advisor which is available online located at url: **http://www.hpe.com/info/hppoweradvisor**.

System Inlet Temperature

- **Standard Operating Support**
  10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed. System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).
- **Extended Ambient Operating Support**
  For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL:**https://support.hpe.com/hpesc/public/docDisplay?docId=a00026969en_us&page=index.html**

  For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL:**https://support.hpe.com/hpesc/public/docDisplay?docId=a00026969en_us&page=index.html**

  System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
- **Non-operating**
  -30° to 60°C (-22° to 140°F).   Maximum rate of change is 20°C/hr (36°F/hr).

Relative Humidity

- **Operating**
  8% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
- **Non-operating** (non-condensing)
  5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.

Altitude

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

Technical Specifications

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

Acoustic Noise

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

Product Configuration	Entry	Base	Performance
Idle - LWAd	5.0 B	5.1 B	5.1 B
Idle - LpAm	47 dBA	48 dBA	48 dBA
Operating - LWAd	5.3 B	5.7 B	5.6 B
Operating - LpAm	50 dBA	54 dBA	53 dBA

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

Regulatory Information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:
http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

HPE Smart Array

For latest information on **HPE Smart Array Gen10 Controllers for HPE ProLiant DL, ML and Apollo Servers** please refer to their QuickSpecs. (E208i-a,E208i-p,E208e-p,P408i-a,P408i-p,P408e-p,P816i-a)

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

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

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

Summary of Changes

Date	Version History	Action	Description of Change
18-Mar-2024	Version 46	Changed	Standard Features and Additional Options sections were updated.
04-Dec-2023	Version 45	Changed	Service and Support section was updated.
02-Oct-2023	Version 44	Changed	Standard Features, Configuration Information and Core Options sections were updated. Obsolote SKUs were removed.
05-Sep-2023	Version 43	Changed	Standard Features, Configuration Information and Core Options sections were updated. Obsolote SKUs were removed.
01-May-2023	Version 42	Changed	Optional Features and Additional Options sections were updated. Obsolete SKUs were removed.
12-Dec-2022	Version 41	Changed	Optional features and Additional options sections were updated.
01-Aug-2022	Version 40	Changed	Core Options section was updated. Obsolote SKUs were removed.
05-Jul-2022	Version 39	Changed	Core Options section was updated. Obsolote SKUs were removed.
07-Mar-2022	Version 38	Changed	Core Options section was updated.
07-Feb-2022	Version 37	Changed	Core Options section was updated. Obsolote SKUs were removed.
06-Dec-2021	Version 36	Changed	Additional Options and Core Options sections were updated. Obsolote SKUs were removed.
01-Nov-2021	Version 35	Changed	Core Options and Service and Support sections were updated. Obsolote SKUs were removed.
07-Sep-2021	Version 34	Changed	Core Options section was updated. Obsolote SKUs were removed.
02-Aug-2021	Version 33	Changed	Core Options section was updated. Obsolote SKUs were removed.
06-Apr-2021	Version 32	Changed	Service and Support and Additional Options sections were updated.
01-Feb-2021	Version 31	Changed	Core Options section was updated. Obsolote SKUs were removed.
07-Dec-2020	Version 30	Changed	Overview, Standard Features and Core Options sections were updated. Obsolete SKUs were removed.
02-Nov-2020	Version 29	Changed	Standard Features and Pre-configured Models sections were updated. Obsolete SKUs were removed.
05-Oct-2020	Version 28	Changed	Core Options section was updated. Obsolote SKUs were removed.
03-Aug-2020	Version 27	Changed	Standard Features, Core Options and Additional Options sections were updated.
15-Jun-2020	Version 26	Changed	Overview, Pre-configured Models Core Options and Memory sections were updated.
01-Jun-2020	Version 25	Changed	Configuration Information and Core Options sections were updated.
06-Apr-2020	Version 24	Changed	Pre-configured Models, Configuration Information, Additional Options and Core Options sections were updated.
24-Feb-2020	Version 23	Changed	Overview, Standard Features, Pre-configured Models, Configuration Information and Core Options sections were updated. Obsolete SKUs were removed
02-Dec-2019	Version 22	Changed	Core Options and Additional Options sections were updated Obsolete SKUs were removed
07-Oct-2019	Version 21	Changed	Overview, Standard Features, Configuration Information, Core Options and Additional Options sections were updated. Obsolete SKU was removed.

Summary of Changes

Date	Version History	Action	Description of Change
05-Aug-2019	Version 20	Changed	Overview,Standard Features,Configuration Information - Factory Integrated Models,Core Options,Additional Options and SMB Models section sections were updated. Obsolete SKU was removed.
01-Jul-2019	Version 19	Changed	The 5218N wattage has changed from 105 to 110W The U.S. version of QuickSpecs is no longer being updated, please reference the Worldwide QuickSpecs for latest information.
03-Jun-2019	Version 18	Changed	Overview, Standard Features, Configuration Information and Core Options sections were updated.
18-Apr-2019	Version 17	Changed	Standard Features, Core Options and Configuration Information sections were updated.
02-Apr-2019	Version 16	Changed	Overview, Standard Features,Optional Features, Configuration Information, Pre-configured Models,Core Options and Memory sections were updated.
04-Feb-2019	Version 15	Changed	Optional Features, Pre-Configured Models, Core Options and Additional Options sections were updated. SKU descriptions were updated and obsolete SKUs were removed.
03-Dec-2018	Version 14	Changed	SKUs were Added and deleted in Core Options
15-Oct-2018	Version 13	Changed	Overview, Standard Features, Configuration Information, Core Options and Additional Options sections were updated. SKU descriptions were updated. and obsolete SKUs were removed.
01-Oct-2018	Version 12	Changed	Overview, Standard Features, Configuration Information, Core Options, Additional Options and Memory sections were updated. SKU descriptions were updated and obsolete SKUs were removed.
06-Aug-2018	Version 11	Changed	New Solid State Drivers offering was added. Configuration Information - Factory Integrated Models and Core Options, Core Options, and Additional Options were revised. Obsolete SKUs were removed from the QuickSpecs.
04-Jun-2018	Version 10	Changed	Added new PCIe workload accelerator and aditional options on drives and NICs. Service and Support section was updated. Core Options, Additional Options, and Memory were revised. Obsolete SKUs were removed from the QuickSpecs.
02-Apr-2018	Version 9	Changed	Configuration Information - Factory Integrated Models and Core Options were revised. Obsolete SKUs were removed from the QuickSpecs.
05-Mar-2018	Version 8	Removed	Obsolete SKUs were removed from the QuickSpecs.
05-Feb-2018	Version 7	Changed	Added New SSD offering. Maximum Internal Storage was revised. Core Options and Additional Options were revised. Obsolete SKUs were removed from the QuickSpecs.
18-Dec-2017	Version 6	Changed	Configuration Information - Factory Integrated Models and Core Options were revised.
04-Dec-2017	Version 5	Changed	Added support for new core boosting Intel® Xeon® Processors 6143 and 8165 and support for up to 24 16GB NVDIMM. Processors and Memory were revised.
16-Oct-2017	Version 4	Changed	Added note – 1600W Power supplies only support high line voltage (200VAC to 240VAC) – to power supplies. Memory section was revised.

Summary of Changes

Date	Version History	Action	Description of Change
25-Sep-2017	Version 3	Changed	Added support for new Intel® Xeon® Processors 6144 and 6146. Added new 128 GB LRDIMM to support higher memory configurations to support 6 TB. New SSD offering and NICs options were added. Added HPE Support Services options. Standard Features, Core Options, Additional Options, and Memory section were revised.
07-Aug-2017	Version 2	Changed	Added new Solid State Drives offering to the HPE Drives. Standard Features, Pre-configured Models, Configuration Information - Factory Integrated Models, Core Options, Additional Options, and Memory section were revised. Updated notes. Removed references to Insight Control.
11-Jul-2017	Version 1	New	New QuickSpecs.

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