# QuickSpecs

Overview

HPE Apollo kl20 Server

The HPE Apollo kl20 delivers a dense and flexible computing platform optimized for high performance computing applications. Powered by the Intel® Xeon Phi™ processor and with support for both Intel Omni-Path and Mellanox InfiniBand® interconnect fabric options, the Apollo kl20 provides the ultimate performance for compute-intensive, highly parallelized workloads that use large data sets. Apollo kl20 compute nodes are built for dense, high-performance computing environments providing up to 272 cores, >12 x86 Tflops performance, 1.5 TB of memory, and 96TB of storage capacity in a compact 2U form factor to create best solutions for accelerating data-intensive computations, like deep learning, life sciences or weather simulation.

Item	Front View
1.	HPE Apollo kl20 Chassis (2U)
2.	Power Button
3.	Unit Identification (UID) LED/button
4.	12 LFF Hot-swap SATA Drive Bays

Overview
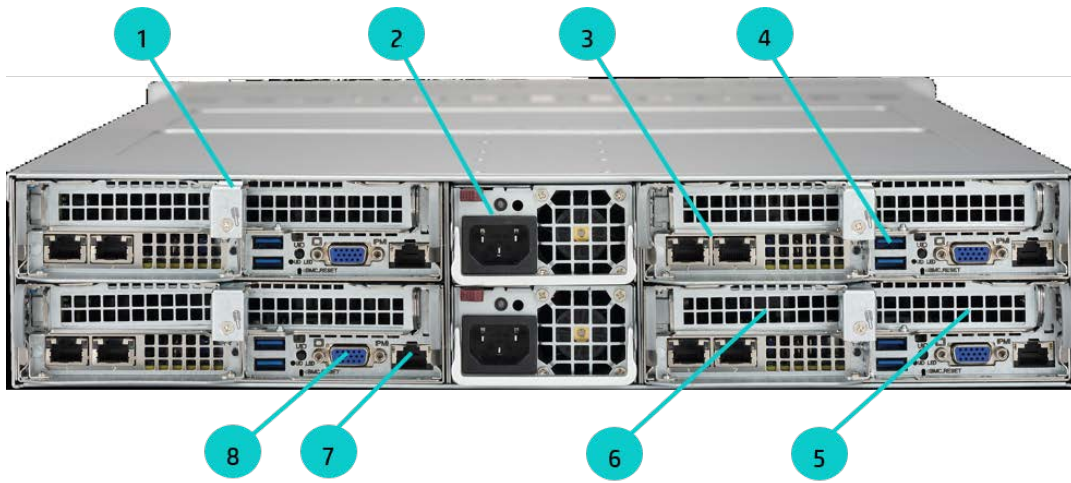
Item	Rear View
1.	Hot-swap Nodes (Four nodes per kl20 Server)
2.	Two 2000W titanium level power Supplies
3.	Embedded 1Gb NICs
4.	Two USB 3.0 Connectors
5.	Low profile PCIe Gen3 x16 slot
6.	Low profile PCIe Gen3 x16 slot
7.	Dedicated IPMI LAN port
8.	VGA connector

Overview
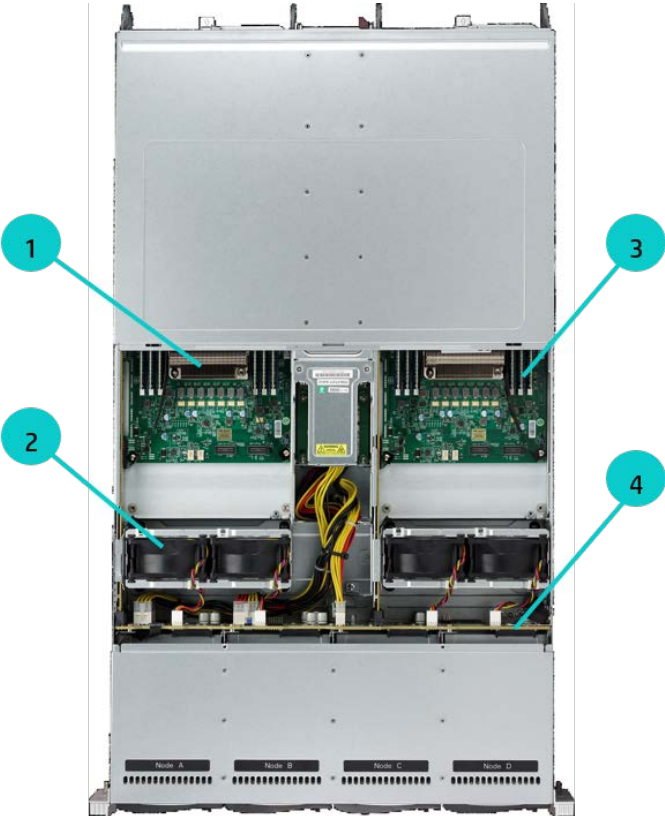
Item   Top View

1. Intel Phi Processor up to 230W
2. Four Internal Fans
3. DDR4 Memory DIMMs
4. Drive Backplane

Standard Features

Processor **NOTE:** Please follow product offering to fill out processor SKU.

Intel® Xeon® Phi Processors

Model	CPU frequency	Cores	L2 Cache	Power	DDR4 Maximum Speed
7210	1.30GHz	64	32	215W	2133 MHz
7230	1.30GHz	64	32	215W	2400 MHz
7250	1.40GHz	68	34	215W	2400 MHz
7210F	1.30GHz	64	32	230W	2133 MHz
7230F	1.30GHz	64	32	230W	2400 MHz
7250F	1.40GHz	68	34	230W	2400 MHz

Chipset Intel® C612 Series Chipset

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

Memory Industry Standard **DDR4** Load Reduced (LRDIMM), or Registered (RDIMM)

DIMM Slots Available 6 DIMM per node

Maximum Capacity (LRDIMM) 384GB(6 x 64GB) per node

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

Network Controller **Ethernet Options**

HPE SGI Eth 10G 2P I71-C-SFP+ Adptr
HPE SGI Eth 10G 2P I71-OR-SFP+ Adptr
HPE SGI Eth 10G 2P X540-T1 Adptr
HPE SGI Eth 10G 2P X540-T2 Adptr
HPE SGI Eth 40G 1P I71-C-QSFP Adptr
HPE SGI Eth 40G 1P I71-OR-QSFP Adptr
HPE SGI Eth 40G 2P I71-C-QSFP Adptr
HPE SGI Eth 40G 2P I71-OR-QSFP Adptr

InfiniBand Options

HPE SGI IB CONNX4-1P Adptr
HPE SGI IB CONNX4-2P Adptr
HPE SGI IB CONNX5-1P Adptr
HPE SGI IB CONNX5-2P Adptr
HPE 100Gb 1p OP101 QSFP28 x16 OPA Adptr

Standard Features

Maximum Internal Storage	HPE SGI 1TB SATA 6G 7.2k LFF 512N HDD 12 x 1TB
	HPE SGI 2TB SATA 6G 7.2k LFF 512N HDD 12 x 2TB
	HPE SGI 4TB SATA 6G 7.2k LFF 512N HDD 12 x 4TB
	HPE SGI 6TB SATA 6G 7.2k LFF 512E HDD 12 x 6TB
	HPE SGI 8TB SATA 6G 7.2k LFF 512E HDD 12 x 8TB
Interfaces	USB 3.0 Ports Up to 2
	Remote Management Port Dedicated IMPI port
	Power 1
	UID 1
Industry Standard Compliance	ACPI 2.0b Compliant
	PCIe 3.0 Compliant
	PXE Support
	USB 1.1,2.0 and 3.0 Compliant
Power Specifications	To review typical system power ratings use the HPE Power Advisor which is available via the online tool located at URL:
	http://www.hpe.com/info/poweradvisor/online or **http://www.hpe.com/info/poweradvisor.**
	NOTE: Power Specification and Technical Content for supported power supplies can be found at:
	https://www.hpe.com/info/qs
Operating Systems and Virtualization Software Support for HPE Apollo Servers	Red Hat Enterprise Linux (RHEL)
	SUSE Linux Enterprise Server (SLES)
	CentOS
Graphics	Integrated ASpeed 2400 BMC with an integrated
	VGA/2D graphics controller
Form Factor	The Apollo kl20 is a 2U server
Embedded Management	**UEFI**
	Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). Learn more at **http://www.hpe.com/servers/uefi.**
Security	Power-on password
	Keyboard password
	Serial interface control
	Administrator's password
Warranty	This product is covered by a global limited warranty and supported by Hewlett Packard Enterprise Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners (may vary by region). Hardware diagnostic support and repair is available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty.
	NOTE: Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have Hewlett Packard Enterprise replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
	http://h18004.www1.hpe.com/products/servers/platforms/warranty/index.html
	NOTE: In Asia Pacific, Japan and China, Server Warranty includes 3 years Parts, 3 year Labor, 3-year Onsite support with next business day response.

Standard Features

High Performance Clusters **HPE Insight Cluster Management Utility**

HPE Insight Cluster Management Utility (CMU) is a Hewlett Packard Enterprise-licensed and Hewlett Packard Enterprise-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. **http://www.hpe.com/go/cmu**

Service and Support **Protect your business beyond warranty with HPE Support Services**

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

Optimized
Recommendation

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

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

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

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

Standard
Recommendation

HPE Foundation Care 24x7, three-year Support Service

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

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

Other Related
Services

HPE Server Hardware Installation

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. **https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf**

HPE Installation and Startup Service

Provides for the installation of your HPE hardware according to product specifications including options. The HPE service delivery technician will connect the product to a LAN as appropriate and enable remote support to allow for automatic case creation for hardware failures. Installation and start up services also includes the installation of one supported operating system type (Windows® or Linux).

HPE Factory Express for Servers and storage

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

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HPE products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE Apollo, HPE ProLiant Server Blades, HPE

Standard Features

BladeSystem, HPE 9000 servers as well as the MSAxxxx3PAR suite, XP, rackable tape libraries and configurable network switches.

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

HPE Datacenter Care service

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

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

DC for Hyperscale

Datacenter Care for Hyperscale is available for Service Providers and HPC customers who use a scale out approach to computing with a high volume homogenous infrastructure and resilient architecture can take advantage of this environment support tailored to their operating model.

HPE Education Services

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

HPE Support Center

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

Learn more **http://www.hpe.com/support/hpesc**

The HPE Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalize IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.

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

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.

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

Options

NOTE: Included options are covered under the HPE Service Contract applied to the HPE Server. No

Standard Features

separate HPE support services need to be purchased.

Warranty and Support Services will extend to include HPE options configured with your server or storage device. The price of support service is not impacted by configuration details. HPE sourced options that are compatible with your product will be covered under your server support at the same level of coverage allowing you to upgrade freely. Installation for HPE options is available as needed. To keep support costs low for everyone, some high value options will require additional support. Additional support is only required on select high value workload accelerators, fibre switches, InfiniBand and UPS batteries over 12KVA. See the specific high value options that require additional support **HERE**

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

Configuration Information - Factory Integrated Models

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

1. Factory Integrated Models must start with a CTO Server.

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

3. All Factory Integrated Models will be populated with sufficient hard drive blanks

4. Some options may not be integrated at the factory. Contact your local sales representative for additional information.

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

HPE CTO Model	HPE Apollo kl20 12LFF Configure-to-order Server	Q2D16A

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

HPE Processors	**Intel Xeon Phi**	
	HPE Apollo kl20 Intel Xeon Phi 7210F (1.3Ghz/64-core/230W) Processor Kit	Q5S75A
	HPE Apollo kl20 Intel Xeon Phi 7230F (1.3Ghz/64-core/230W) Processor Kit	Q5S76A
	HPE Apollo kl20 Intel Xeon Phi 7250F (1.4Ghz/68-core/230W) Processor Kit	Q5S77A
	HPE Apollo kl20 Intel Xeon Phi 7210 (1.3Ghz/64-core/215W) Processor Kit	Q5S78A
	HPE Apollo kl20 Intel Xeon Phi 7230 (1.3Ghz/64-core/215W) Processor Kit	Q5S79A
	HPE Apollo kl20 Intel Xeon Phi 7250 (1.4Ghz/68-core/215W) Processor Kit	Q5S80A
HPE Processor Kit	HPE Apollo kl20 Intel Xeon Phi 7200F Processor Installation Kit	Q5S74A
HPE Memory	HPE 8GB (1x8GB) Single Rank x4 DDR4-2400 CAS 17-17-17 Registered Memory Kit	Q1V94A
	HPE 16GB (1x16GB) Dual Rank x4 DDR4-2400 CAS 17-17-17 Registered Memory Kit	Q1V91A
	HPE 32GB (1x32GB) Dual Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit	Q1V92A
	HPE 64GB (1x64GB) Quad Rank x4 DDR4-2400 CAS-17-17-17 Load Reduced Memory Kit	Q1V93A
HPE Hard Disk Drives	**Hot Swap LFF drives**	
	HPE SGI 1TB SATA 6G 7.2K LFF (3.5in) HDD	Q1W93A
	HPE SGI 2TB SATA 6G 7.2K LFF (3.5in) HDD	Q1W94A
	HPE SGI 4TB SATA 6G 7.2K LFF (3.5in) HDD	Q1W95A
	HPE SGI 6TB SATA 6G 7.2K LFF (3.5in) HDD	Q1W96A
	HPE SGI 8TB SATA 6G 7.2K LFF (3.5in) HDD	Q1W97A
HPE Networking	**Ethernet Options**	
	HPE SGI Silicom 10GbE 2-port Adapter	Q1R17A
	HPE SGI Silicom 10GbE 2-port Optical Adapter	Q1R22A
	HPE SGI Intel X540 10GbE 1-port Adapter	Q1R25A

Configuration Information - Factory Integrated Models

	HPE SGI Intel X540 10GbE 2-port Adapter	Q1R26A
	HPE SGI Silicom 40GbE 1-port Adapter	Q1R31A
	HPE SGI Silicom 40GbE 1-port Optical Adapter	Q1R35A
	HPE SGI Silicom 40GbE 2-port Adapter	Q1R32A
	HPE SGI Silicom 40GbE 2-port Optical Adapter	Q1R36A
	InfiniBand Options	
	HPE SGI Mellanox 100GbE 1-port ConnectX-4 Adapter	Q1R80A
	HPE SGI Mellanox 100GbE 2-port ConnectX-4 Adapter	Q1R81A
	HPE SGI Mellanox 100GbE 1-port ConnectX-5 VPI Adapter	Q1S93A
	HPE SGI Mellanox 100GbE 2-port ConnectX-5 VPI Adapter	Q1S94A
	HPE 100Gb 1-port OP101 QSFP28 x16 PCIe Gen3 with Intel Omni-Path Architecture Adapter	829335-B21
HPE RAID Settings	HP RAID 0 Drive 1 FIO Setting	339777-B21
	HP RAID 1 Drive 1 FIO Setting	339778-B21
	HP RAID 5 Drive 1 FIO Setting	339779-B21

Memory

Memory Parameters

Parameter	Value	
Memory Capacity	Up to 384 GB	
Number of Channels	0, 1, 2, 3, 4 or 6	

Type	Ranks Per DIMM x Data Width	DIMM Capacity (GB)	Speed (MT/s)	Voltage (V)	Slot Per Channel (SPC)	DIMM Per Channel (DPC)
RDIMM	SRx4	8	2400	1.2	1	1
RDIMM	DRx4	16	2400	1.2	1	1
RDIMM	DRx4	32	2400	1.2	1	1
LRDIMM	QRx4	64	2400	1.2	1	1

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

NOTE: Fully populate 6 memory channels per processor at 1 DIMM per channel

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

• 16GB = 16,384MB

• 32GB = 32,768MB

• 64GB = 65,536MB

Technical Specifications

System Unit	**Dimensions (H x W x D)**	3.47 x 17.25 x 30 in (8.8 x 43.8 x 76.2 cm)
	Weight (approximate)	Maximum: (all hard drives, power supplies, and processors installed — 90 lb (40.9 kg)
	System Inlet Temperature	Standard Operating Support — 0° to 30° C (32° to 86° F)
		Non-operating — -40° to 70° C (-40° to 158° F)
	Relative Humidity	Operating — 20% to 95% (non-condensing)
		Non-operating (non-condensing) — 5 to 95% (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).

Acustic Noise

Listed are the declared A-Weighted sound power levels (LWAd) and measured average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels

Configuration SKU	Entry	Base	Performance
Idle			
LWAd	6.9 B	6.9 B	6.9 B
LpAm	51 dBA	51 dBA	51 dBA
Operating			
LWAd	8.0 B	8.3 B	8.7 B
LpAm	62 dBA	66 dBA	72 dBA

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

Environmentfriendly Products and Approach - End-oflife Management and Recycling

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

The EU WEEE Directive (2012/19/EU) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the **Hewlett Packard Enterprise web site.** These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
23-Oct-2017	Version 3	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
2-Oct-2017	From version 1 to 2	Updated	Update several sections troughout the QuickSpecs
7-Aug-2017	Version 1	Created	Create QuickSpecs for HPE Apollokl20 Server

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