

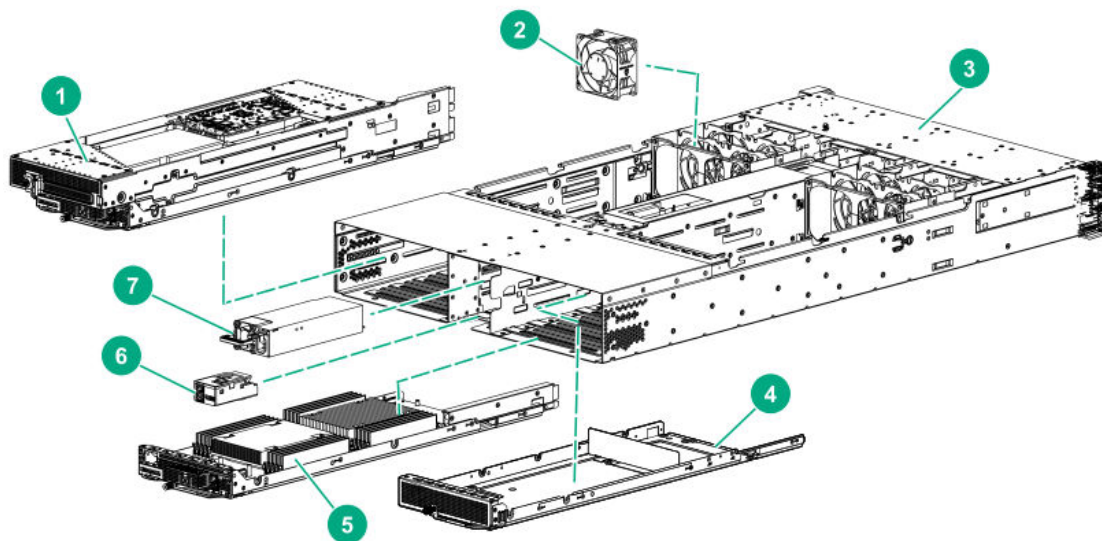
Overview

HPE Apollo 70 System

The HPE Apollo 70 System is an Arm-based platform that delivers density and scalability required for large HPC cluster deployments. The system is powered by Marvell Thunder X2 processor with maximum memory bandwidth, Mellanox interconnect fabric options and Apollo management tools in compact 2U form factor.

The Apollo 70 System can be deployed cost-effectively starting with a single 2U chassis to meet the configuration needs of a wide variety of scale-out HPC workloads. The Apollo 70 System is a density-optimized, 2U infrastructure that uses HPE Apollo z70 chassis which supports up to 4 HPE AR44z 1U Arm or up to 2 HPE AR64z 2U Arm independent, hot-plug servers with all the traditional data center attributes – standard racks and cabling and rear-aisle serviceability access. A 42U rack fits up to 20 HPE z70 series chassis accommodating up to 80 Arm-based servers per rack.

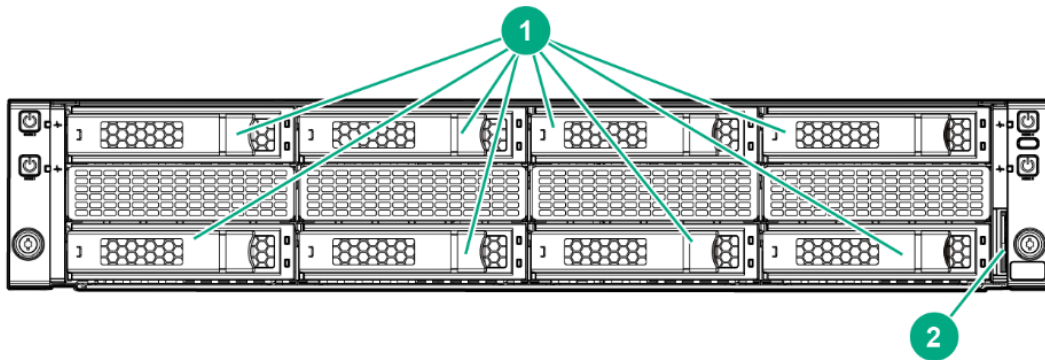
The Apollo z70 chassis comes with 8 LFF drive cage and 8 new generation single rotor redundant fans. It supports up to 2 HPE Flexible Slot Power Supplies which provide up to 96% power efficiency with 80 Plus Titanium-certified power supplies that lower server power requirements and reduce power waste in your data center.



HPE Apollo z70 8 LFF Chassis – 8 LFF

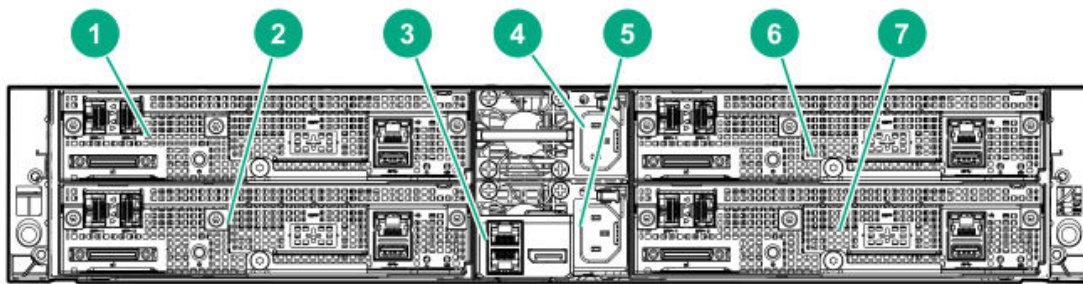
Item	Description	Item	Description
1	HPE AR64z Server (2U server node)	5	HPE AR44z (1U server node)
2	Fan	6	RCM module (optional)
3	Chassis	7	Power Supply
4	Server blank		

Overview



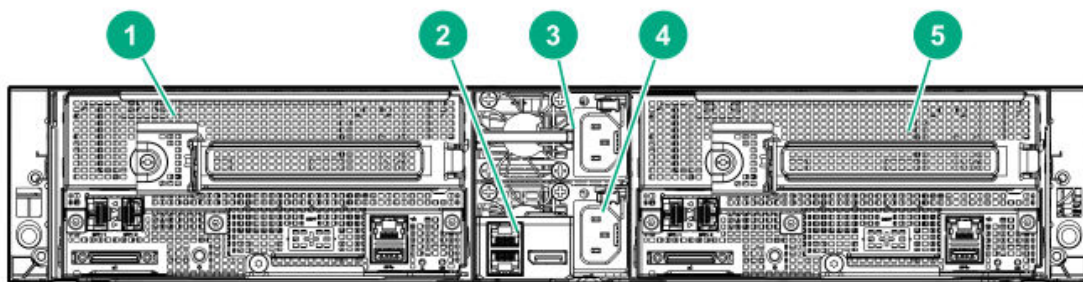
HPE Apollo z70 Chassis – 8LFF
(1U system front panel components)

Item	Description	Item	Description
1	Low-profile LFF hot-plug drives	2	Chassis serial label pull tab



Chassis Rear Panel Components / Four 1U Servers

Item	Description	Item	Description
1	Server 4	5	Power Supply 1
2	Server 3	6	Server 2
3	RCM Module (optional)	7	Server 1
4	Power supply 2		

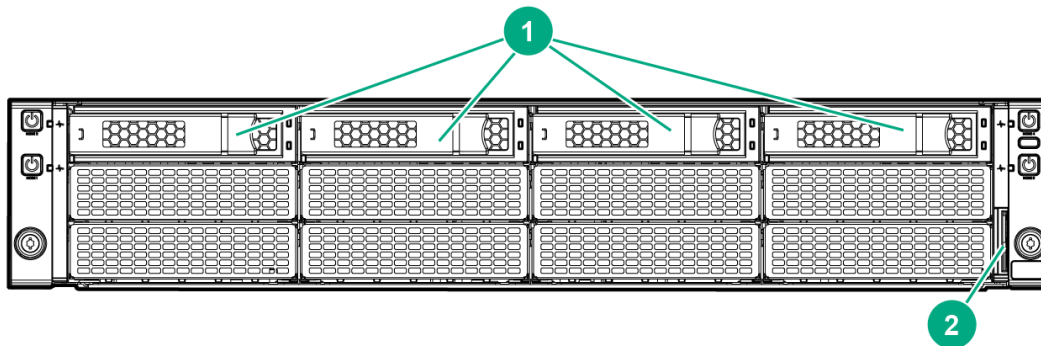


Chassis Rear panel Components / Two 2U Servers

Item	Description	Item	Description
1	Server 3	4	Power Supply 1
2	RCM module (optional)	5	Server 1
3	Power Supply 2		

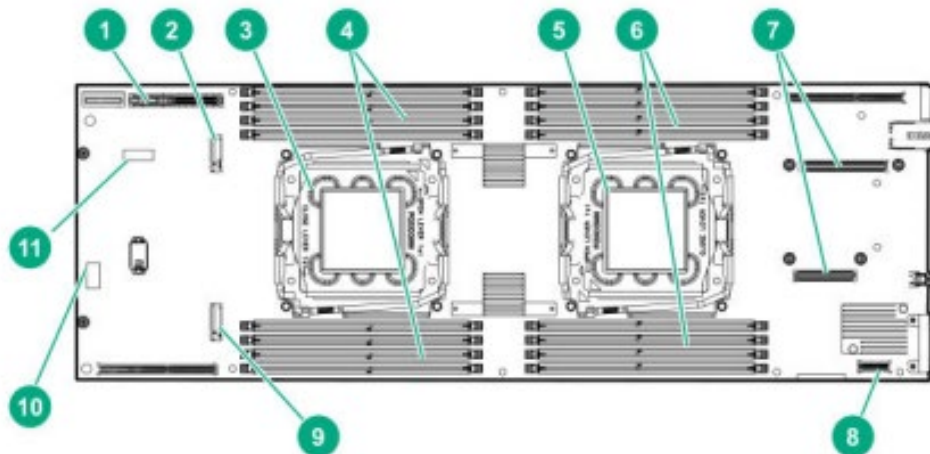


Overview



**HPE Apollo z70 Chassis - 4LFF
(2U system front panel components)**

Item	Description	Item	Description
1	Low-profile LFF hot-plug drives	2	Chassis serial label pull tab

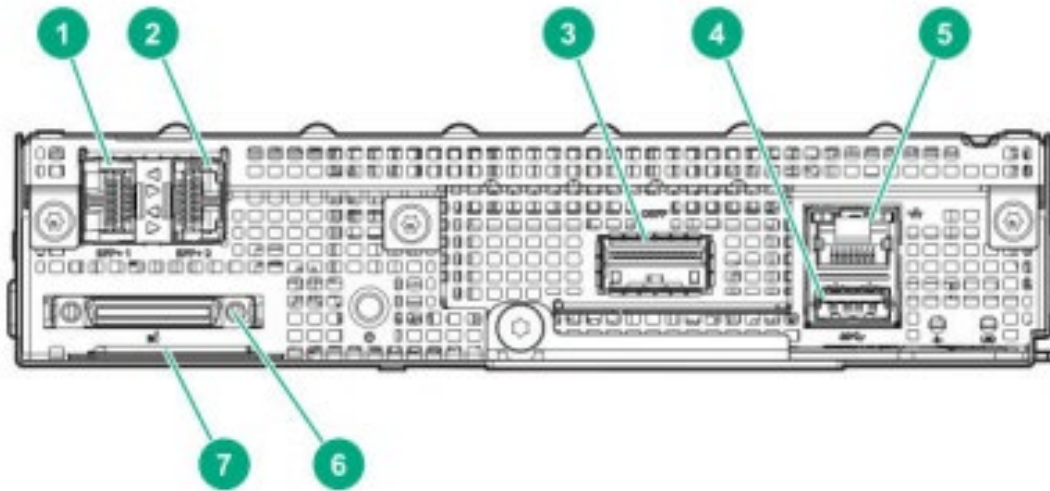


HPE AR44z (1U Server Node)Top View

Item	Description	Item	Description
1	Bayonet board connector	7	OCP mezzanine card connectors
2	M.2 slot for processor 2	8	SFP+ riser connector
3	Processor 2	9	M.2 slot for processor 1
4	DIMM slots for processor 2	10	System maintenance switch
5	Processor 1	11	System Battery
6	DIMM slots for processor 1		



Overview



HPE AR44z (1U Server Node)
Rear Panel Components

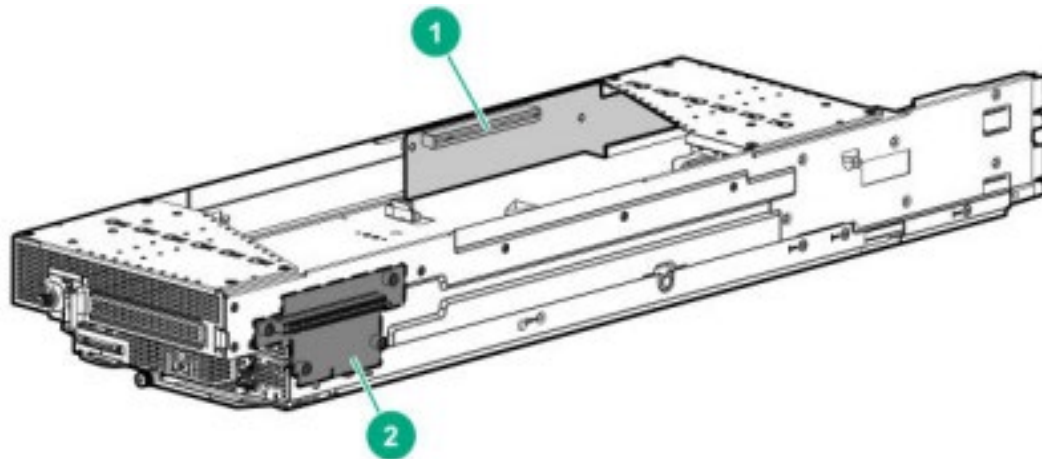
Item Description

- 1 SFP+ port 1*
- 2 SFP+ port 2*
- 3 QSFP port (optional)
- 4 USB 3.0

Item Description

- 5 Dedicated Management NIC port
- 6 SUV port
- 7 Server Serial number information pull tab

Notes: *These ports support both SFP & SFP+ DAC & AOC connections, as well as SFP and SFP+ transceiver module installation



HPE AR64z (2U Server Node)
Side and Top View

Item Description

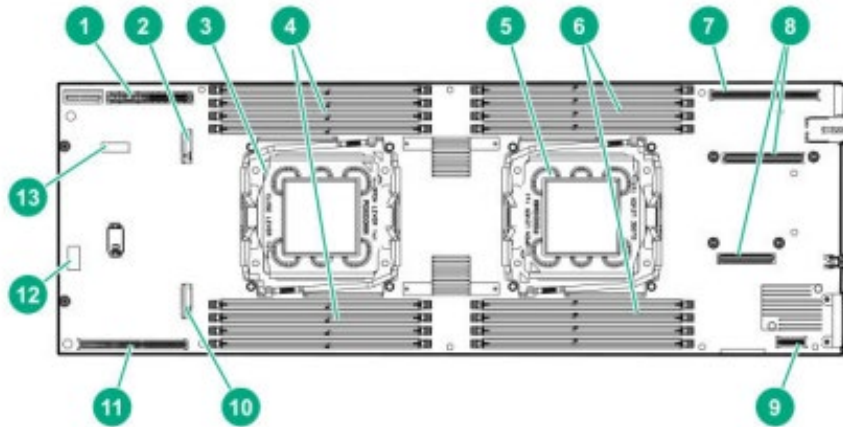
- 1 PCIe3 x16 (16,8,4,1) front expansion slot

Item Description

- 2 PCIe3 x16 (16,8,4,1) rear expansion slot

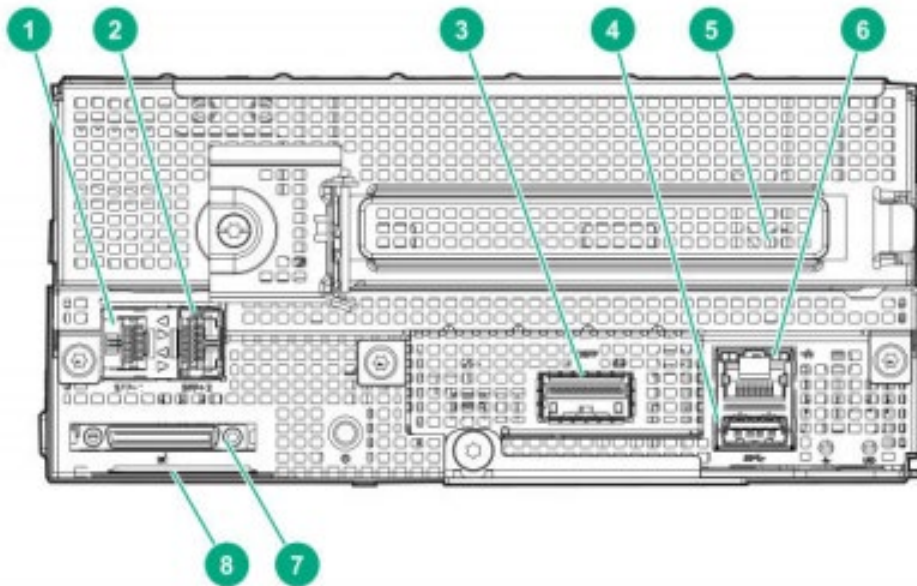


Overview



HPE AR64z (2U Server Node) Top View

Item	Description	Item	Description
1	Bayonet board connector	8	OCP mezzanine card connectors
2	M.2 slot for processor 2	9	SFP+ riser connector
3	Processor 2	10	M.2 slot for processor 1
4	DIMM slots for processor 2	11	Front riser board connector
5	Processor 1	12	System maintenance switch
6	DIMM slots for processor 1	13	System battery
7	Rear riser board connector		



HPE AR64z (2U Server Node) Rear Panel Components

Item	Description	Item	Description
1	SFP+ port 1*	5	PCIe3 x 16 (16,8,4,1) rear expansion slot for low-profile expansion board
2	SFP+ port 2*	6	Dedicated Management NIC port
3	QSFP port (optional)	7	SUV port
4	USB 3.0	8	Server Serial number information pull tab

Notes: *These ports support both SFP & SFP+ DAC & AOC connections, as well as SFP and SFP+ transceiver module installation



Standard Features

Chassis

The Apollo z70 chassis provides the following configuration:

- HPE Apollo z70 8LFF Chassis –
 - Up to 8 LFF hot-pluggable SATA HDD/SSD (Direct Attach)

Each HPE Apollo z70 Chassis is built with the following:

- Four 1U server slots
- Up to two (2) 1600W power supply for the chassis
- HPE Thermal Logic technology for lower power consumption and airflow.
- Eight (8) single rotor fans standard

Server

The HPE AR44z and AR64z servers provides the following:

- Dual-port SFP+ 10GbE Mellanox CX4 LOM
- Single Port RJ-45 1GbE NIC – dedicated management NIC port
- 1x USB3.0
- SUV port (2x USB2.0, 1x VGA, 1x UART)

System Fans

The Chassis ships standard with 8 single rotor fan modules.

Server Tray Blank Kit

A chassis requires that four (4) server tray slots be populated with either an HPE AR44z or HPE AR64z or Server Node Blank Kit to allow adequate air flow.

Rack Airflow Requirements

HPE Apollo 70 System

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. For maximum cooling, HPE racks are recommended to allow these racks to be fully loaded with servers using the latest processors. For detail information please see Apollo 70 System User Guide.

Notes: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment.

Notes: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels will result in improper cooling that can lead to thermal damage.

Software Portfolio for HPE Apollo 70

Hewlett Packard Enterprise offers customers complete software stack so they can choose the right mix of software to fit their needs – from system software to application and software development tools

Operating systems

SUSE Enterprise Linux Server 12 & 15

Red Hat Enterprise Linux (v 6.7 and up)

Fabric software

Mellanox UFM



Service and Support

System management

HPE Performance Cluster Manager – complete integrated cluster management software for all HPE HPC clusters offering: system setup, hardware monitoring and management and cluster health management, image management and software updates as well as power management. The software also integrates with leading HPC ISV and open source software solutions.

Workload Management

- Altair® PBS Professional
 - PBS Professional® Open Source
 - Slurm Workload Manager
-

Software Development Tools (Programming languages, debuggers, libraries)

- HPE Message Passing Interface (MPI)
 - Open MPI
 - GNU Compiler Collection
 - Arm Allinea Studio
 - Arm Forge Professional
 - Rogue Wave Software® TotalView®
 - Mellanox HPC-X
 - OpenHPC
 - NVIDIA CUDA-X, PGI Compilers, OpenACC (from December 2019)
-

For more information on software portfolio for HPE Apollo 70 visit:

<https://www.hpe.com/global/h22150/04c06c89-4f6c-4565-8929-184e724f3679/index.html/>



Service and Support

HPE Pointnext - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services** focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms

HPE GreenLake 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 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

Managed services to run your IT operations

HPE GreenLake Management Services provides 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.

Recommended Services

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care 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 Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care 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>

HPE Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care 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/completecure>



Service and Support

HPE Installation and Startup Service

Provides for the installation of your HPE hardware according to product specifications including options. Installation and startup services also includes the installation of one supported operating system type (Linux)

Factory Express for servers and storage

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

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HPE products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE Apollo, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers as well as the MSAXxx3PAR suite, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative.

Data Privacy Services

Protect your data through better media management. HPE Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. [hpe.com/services/lifecycle](http://www.hpe.com/services/lifecycle) event Additional can be found at: <http://www.hpe.com/services>

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 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 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 Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more <http://www.hpe.com/support/hpescR1C>

HPE's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to 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.

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

For More Information

To learn more on services for Hewlett Packard Enterprise Apollo please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit: <http://www.hpe.com/services>



Service and Support

Warranty

This product is covered by a global limited warranty and supported by Hewlett Packard Enterprise Pointnext Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners (may vary by region). Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements. Hard drives have either a one year or three year warranty.

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

<http://www.hpe.com/support/ProLiantServers-warranties>

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and 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 QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

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



Configuration Information

Step 2: Choose cooling options

HPE Cooling Options

HPE Apollo 2000 Gen10 Server Node Blank Kit 874309-B21

Notes: Required for any non-populated slots in the chassis to prevent thermal related issues

Step 3: Choose the following rail kit and bracket per chassis

HPE Rail Kits

HPE 2U Shelf-Mount Adjustable Rail Kit 822731-B21

HPE Strap t2500 Shipping Bracket 740713-B21

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

HPE M.2 Solid State Drive

HPE 240GB SATA 6G Read Intensive M.2 2280 5300B SSD P19888-H21

HPE 480GB SATA 6G Read Intensive M.2 2280 5300P SSD P19890-H21

HPE 960GB SATA 6G Read Intensive M.2 2280 5300P SSD P19892-H21

HPE Drives

HPE Gen9 LFF HDD Spade Blank Kit 807878-B21

HPE 8TB SATA 6G Business Critical 7.2K LFF LP 1-year Warranty 512e HDD 834028-H21

HPE 960GB SATA 6G Read Intensive LFF LPC PM883 SSD P09691-H21

HPE 960GB SATA 6G Mixed Use LFF LPC 5300M SSD P19980-H21

HPE 1.92TB SATA 6G Mixed Use LFF LPC 5300M SSD P19984-H21

HPE Apollo 2000 LFF Bezel Kit 838518-B21

Notes: The 838518-B21 is always required

HPE 480GB SATA 6G Read Intensive LFF LPC 5300P SSD P19974-H21

HPE 1.92TB SATA 6G Read Intensive LFF LPC 5300P SSD P19976-H21

Notes: The SATA SSDs LPC stated above comes with converter kit installed.

HPE Networking-

HPE BladeSystem CClass Virtual Connect 1G SFP RJ45 Transceiver 453154-B21

HPE 36pin Serial/USB/VGA Dongle Cord Kit 676277-B21

Notes: Option HPE CL Eth 2x10Gb X710 PCIe3 Card (P01666-B21) is only available for use in the AR64z node

HPE InfiniBand EDR/Ethernet 100Gb 2-port 841QSFP28 Adapter 872726-H21

Notes: The HPE IB EDR/EN 100Gb 2P 841QSFP28 Adapter can only be used on top of AR64z node. Additional technical content for HPE 1p 841OCP QSFP28 adapter (P02012-B21) can be found at:

<https://h20195.www2.hpe.com/v2/getpdf.aspx/c04950955.pdf?ver=4>

Notes: The HPE 1p 841OCP QSFP28 adapter (P02012-B21) presents itself as two logical devices, each attached to a different processor. If the RHEL inbox OFED driver is used, the application will have to feed the two devices to leverage the full performance of the adapter. If the Mellanox OFED is used instead, the application will see only one device and full performance is obtained transparently. Additional technical content for HPE 1p 841OCP QSFP28 adapter (P02012-B21) can be found at:

<https://h20195.www2.hpe.com/v2/getpdf.aspx/c04950955.pdf?ver=4>

Notes: Active Optical Cable are not supported with the HPE 1p 841OCP QSFP28 adapter (P02012-B21)



Additional Options

RCM Module

HPE Apollo 2000 Rack Consolidation Module Kit 798211-B21

Notes: This is an optional RCM (Rack Consolidation Management) module kit which allows IPMI aggregation at the chassis level. The RCM Module consists of 2 IPMI ports for redundancy. It can also be daisy chained to connect to a Top of the Rack (TOR) management switch.

Power Supply

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

HPE r2x00 Gen10 Power Supply Unit Enablement Kit 880186-B21

Security Hardware

HPE Gen10 2U Bezel Kit 867809-B21

HPE Bezel Lock Kit 875519-B21

Power Cords-

HPE C13 - C14 WW 250V 10Amp 2.0m Jumper Cord A0K02A

HPE C13 - C14 WW 250V 10Amp 1.4m Jumper Cord 142257-006

HPE C13-NEMA 6-15P 10A/250V 3.6m Black Power Cord A0N33A

HPE C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord AF568A

HPE C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord AF570A

HPE 1.83m C13-NEMA 6-15P Power Cord SK792A

HPE C13-C14 IN 250V 10Amp 2m Black Jumper Cord R1C65A

Power Specifications

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

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



Technical Specifications

HPE Apollo z70 Chassis 8 LFF

Dimensions	Height	3.44 in (8.73 cm)
	Width	17.64 in (44.81 cm)
	Depth	35.18 in (89.37 cm)
Shipping Dimensions	Height	12.5 in (31.75 cm)
	Width	23.63 in (60.02 cm)
	Depth	37.76 in (95.9 cm)
Chassis Weight	Empty	37.94 lb (17.21 kg)
Max Enclosure Weight	Approximate	49.93 lb (22.65 kg)
System Input requirements	AC input rating:	200 VAC to 240 VAC 240 VDC for China only
	Rated Input current:	8.7A at 200 VAC 7.2A at 240 VAC
	Rated Input frequency:	50 Hz to 60 Hz
	System Inlet Temperature	Standard Operating support
Relative Humidity	Operating	8% to 90% - Relative humidity (Rh), 28°C maximum wet bulb temperature, non-condensing.
	Non-operating	5%-95% relative humidity (RH), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Temperature Range	Operating	50° to 95° F (10° to 35° C)
	Non-Operating	-22° to 140° F (-30° to 60° C)
Relative Humidity	Operating	Minimum to be higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity
	Non-Operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.

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

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

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



Summary of Changes

Date	Version History	Action	Description of Change
15-Nov-2021	Version 12	Changed	Service and Support section was updated. Obsolete SKUs were removed
06-Apr-2020	Version 11	Changed	Configuration Information section was updated. Obsolete SKUs were removed
02-Dec-2019	Version 10	Changed	SKUs were updated in Configuration Information section
07-Oct-2019	Version 9	Changed	Service and Support section was updated.
06-May-2019	Version 8	Changed	Overview, Standard features, Configuration Information and Technical Specifications sections were updated Obsolete SKUs were removed
02-Apr-2019	Version 7	Changed	Overview and Configuration Information sections were updated. Obsolete SKUs were removed.
04-Feb-2019	Version 6	Changed	Configuration Information and Core Options sections were updated
03-Dec-2018	Version 5	Changed	Core Options and Configuration Information sections were updated.
15-Oct-2018	Version 4	Changed	SKUs descriptions were updated in Configuration Information section Obsolete SKUs were deleted in Configuration Information section
01-Oct-2018	Version 3	Changed	QuickSpecs updated with the current Recommended-Extended Options, SKUs descriptions were updated in Configuration Information section
13-Aug-2018	Version 2	Changed	Overview, Service and Support, Configuration Information and Core Options sections were updated.
04-Jun-2018	Version 1	New	New QuickSpecs



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