Overview

HPE Cray XD670

HPE Cray XD670 System is a top-performing GPU-accelerated server, delivering a complete AI Training and Deep Learning solution to rack-scale, in a rack and roll fashion.
HPE Cray XD670 is a 5U chassis system that contains a single 2x CPU node with 8x Nvidia H100 or H200 Tensor Core SXM5 GPUs. It offers a complete, scalable solution for AI & HPC customers everywhere, with flexibility of fabric, memory, storage and operating system. HPE Cray XD670 provides maximum performance for Large Model AI Training and Deep Learning. HPE Cray XD670 is available with Direct Liquid Cooling option for improved power efficiency.
Built with high-speed networking technologies, integrated storage, a robust software portfolio and management tools, HPE Cray XD670 systems can enable customers to innovate and prepare for tomorrow's challenges.

HPE Cray XD670 Server System Key Features

- 5U Single-Node Chassis for air-cooled or direct cooled infrastructure.
- GPUs: 8x NVIDIA® H100 or H200 Tensor Core SXM5 GPUs providing leadership performance for AI Training, Deep Learning and advanced HPC simulations. PCIe GPUs are not supported on HPE Cray XD670.
- CPUs:
  - Support for 4th Generation Intel® Xeon® Scalable Processors: "Sapphire Rapids" for H100.
  - Support for 5th Generation Intel® Xeon® Scalable Processors: "Emerald Rapids" for H200.
- DRAM: Support for up to 32x DDR5 5600MT/s DIMMs.

Notes:

- Setting the memory bus to 4800 is not supported under 2DPC configurations for DDR5-4800 MT/s memory.
- Setting the memory bus to 5600 is not supported under 2DPC configurations for DDR5-5600 MT/s memory.
- After selecting "Best Performance" the memory speed will need to be manually set to 4400 MT/s to allow operating with 2 DPC for both DDR5-4800 MT/s and DDR5-5600 MT/s DIMMs.

- High-Speed Fabric: 8x PCIe Gen 5.0 Half-Height, Half-Length slots supporting Slingshot 11, InfiniBand NDR and Ethernet, providing direct switchable connections between High-Speed Fabric, GPUs, NVMe drives and CPUs.
- Storage: Up to 8 SFF NVME U.2 | U.3 and 2 M.2 RAID SSDs (Read-Intensive and Mixed-Use).
- CRPS Power Supplies:
  - 6x 3,000-Watt capacity per server system for H100 configurations (Air & DLC).
  - 6x 3,600-Watt capacity per server system for H200 configurations (Air & DLC)
  - Providing N+2 redundancy
- PCIe Expansion: 4x PCIe Gen 5.0 x16 expansion slots with embedded 2-port 10G Base-T (RJ45), 1-port MLAN (1GbE), 1x VGA, 2x USB3.0, PWR Button/Reset/ID Button/Status LEDs.

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Overview

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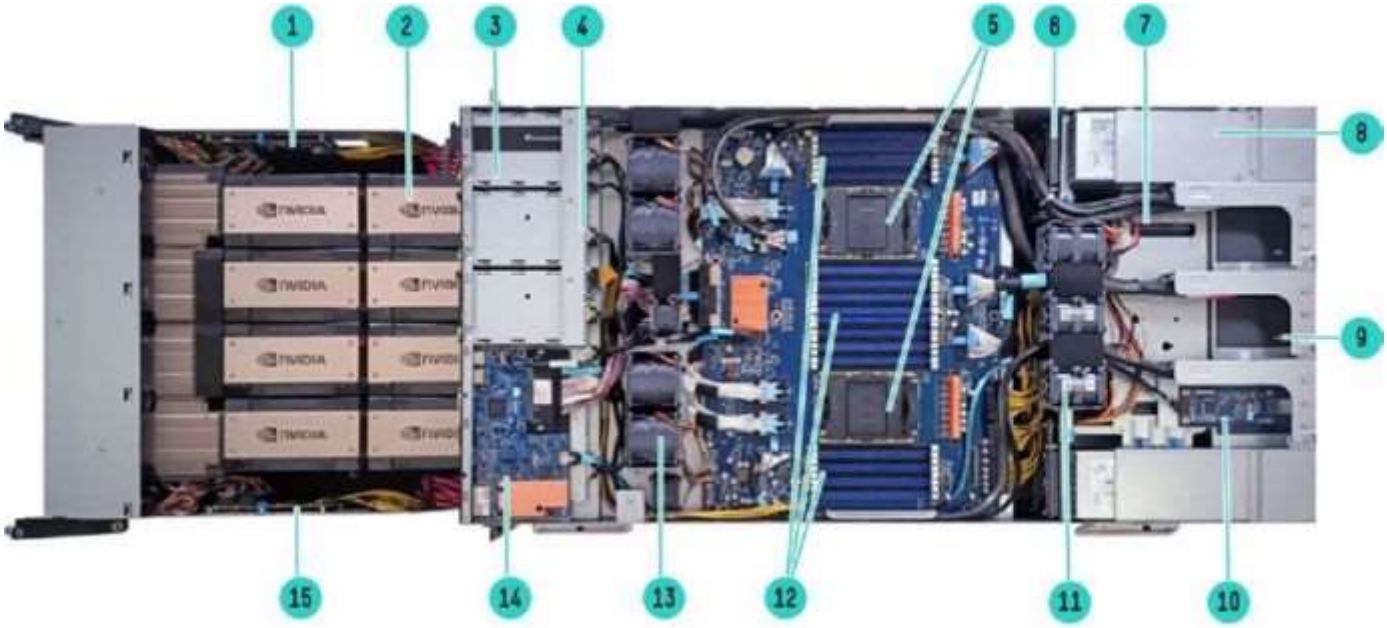
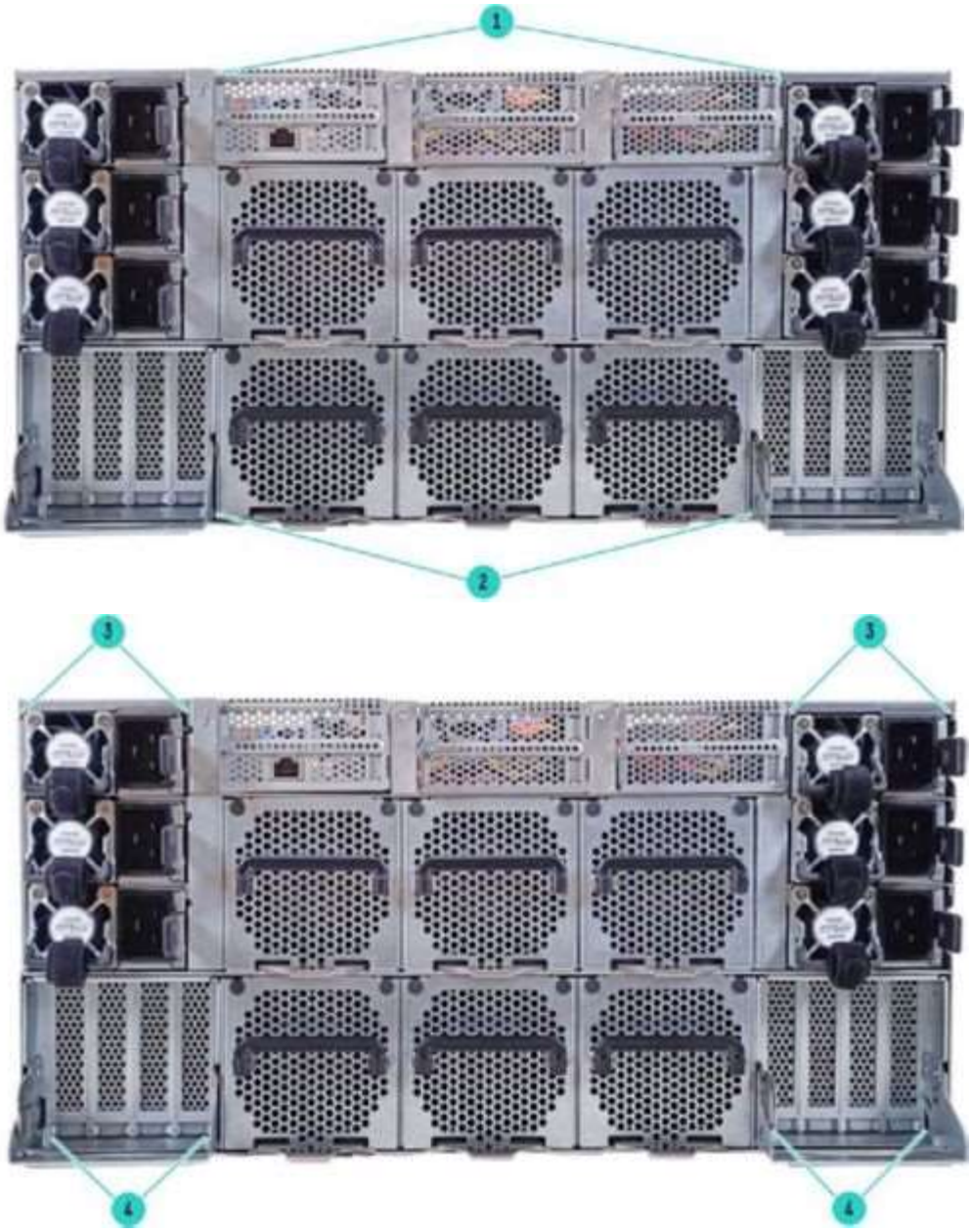


HPE Cray XD670 Server Top View

Item	Description	Item	Description
1.	Fan Board (Left)	9.	(2) PCIe Low-Profile
2.	Front I/O Board	10.	(1) PCIe Slot for M.2 Adapter
3.	(8) Bays 2.5" SSD	11.	(3) 40x40x56mm fans
4.	(6) Bays 2.5" SSD - BACKPLANE	12.	(32) DDR5 DIMM 2DPC
5.	(2) CPUs - Intel Sapphire Rapids or Emerald Rapids	13.	(4) 40x40x28mm fans
6.	Power Board	14.	(2) Bays 2.5" SSD - BACKPLANE
7.	(2) PCIe Low-Profile	15.	Fan Board (Right)
8.	(6) Power Supplies		

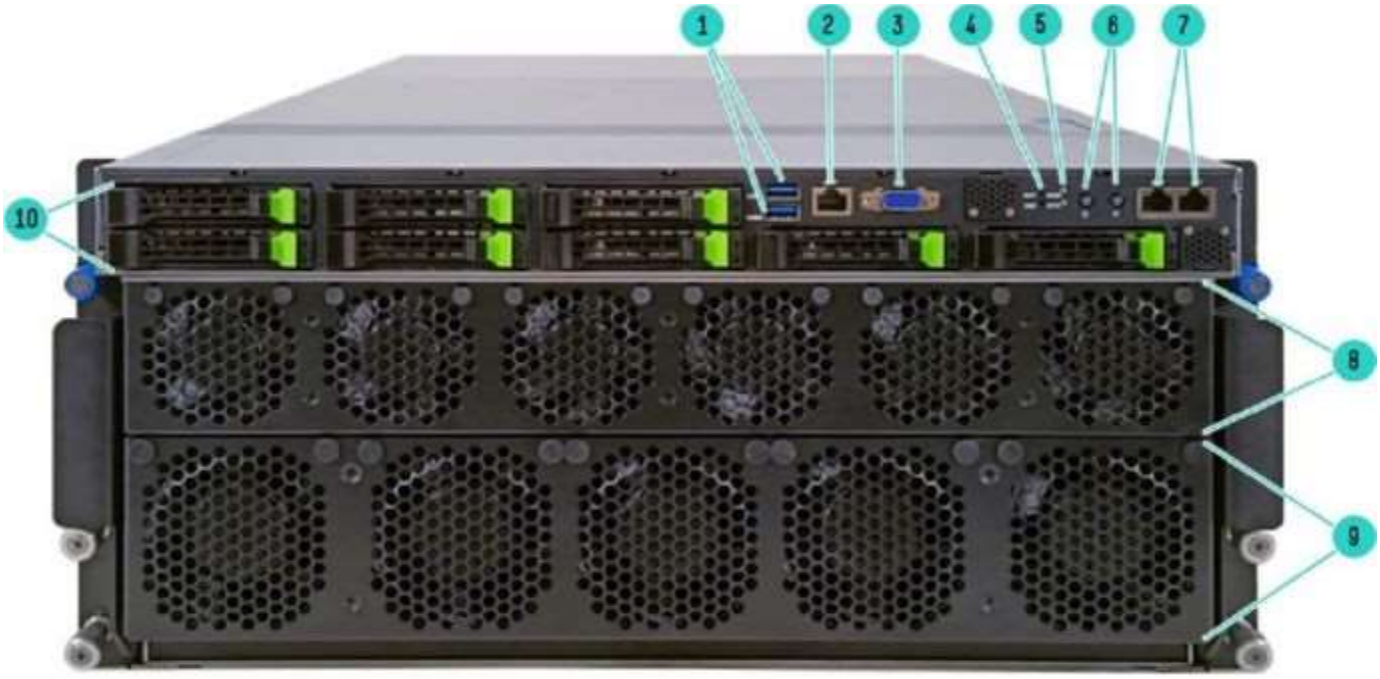
Overview



HPE Cray XD670 Server Rear View

Item	Description	Item	Description
1.	(2) HHHL PCIe Slot (Gen5 x 16) from CPU0 (2) HHHL PCIe Slot (Gen5 x 16) from CPU1 (1)HHHL PCIe Slot for M.2. Adapter	3.	(6) Titanium PSU N+2 3000W or 3600W
2.	(6) 80x80x80mm fans for GPU Tray (Only populated for XD670 DLC solution).	4.	(8) HHHL PCIe Slot (Gen5 x 16) for GPUDirect RDMA NICs

Overview



HPE Cray XD670 Server Front View

Item	Description	Item	Description
1.	2x USB3.0	6.	PWR Button/ID Button
2.	1-port (1GbE)	7.	2-port 10G Base-T (RJ45
3.	1x VGA	8.	(6) 60x60x76mm fans (Only populated for XD670 Air solution).
4.	Reset/NMI Button	9.	(5) 80x80x80mm fans (Only populated for XD670 Air solution).
5.	Status LEDs	10.	8-bays2.5" NVMe SSD

Rack Airflow Requirements

HPE Cray XD670 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 HPE Cray XD670 System User Guide: **https://support.hpe.com/connect/s/search?language=en_US#q=XD6500**

Notes:

- If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment.
- When selecting Direct Liquid Cooling (DLC), HPE racks are required for factory integration.
- When selecting Direct Liquid Cooling, select one of each per rack:
  - HPE Cray XD670 CDU Extension Bracket (P67797-B21)
  - HPE Cray XD670 42U/48U DLC Rack Manifold (P70519-B21)

Overview

- If using the 42U Rack: HPE Cray 42U 800mm Air Dam FIO Kit (P71226-B21)
- If using the 48U Rack: HPE Cray 48U 800mm Air Dam FIO Kit (P71228-B21)

– 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.

Standard Features

Processors (Select two of the following):

4th or 5th Gen Intel® Xeon® Processor	Cores	Base Frequency	Max Frequency	Max Memory	Default TDP (W)	Cache	Memory
Xeon 8480+	56	2.0GHz	3.8GHz	2 TB	350	105 MB	4800MT/s
Xeon 8470Q	52	2.1GHz	3.8GHz	2 TB	350	105 MB	4800MT/s
Xeon 8470	52	2.0GHz	3.8GHz	2 TB	350	105 MB	4800MT/s
Xeon 8468	48	2.1GHz	3.8GHz	2 TB	350	105 MB	4800MT/s
Xeon 8468V	48	2.1GHz	3.8GHz	2 TB	350	105 MB	4800MT/s
Xeon 8462Y+	32	2.8GHz	3.7GHz	2 TB	300	105 MB	4800MT/s
Xeon 8452Y	36	2.0GHz	3.2GHz	2 TB	300	67.5 MB	4800MT/s
Xeon 6430	32	2.1GHz	3.5GHz	2 TB	270	60 MB	4800MT/s
Xeon 6530	32	2.1 GHz	4.0 GHz	4TB	270	160 MB	4800 MT/s
Xeon 8558	48	2.1 GHz	4.0 GHz	4TB	330	260 MB	5200 MT/s
Xeon 8568Y+	48	2.3 GHz	4.0 GHz	4TB	350	300 MB	5600 MT/s
Xeon 8570	56	2.1 GHz	4.0 GHz	4TB	350	300 MB	5600 MT/s
Xeon 8580	60	2.0 GHz	4.0 GHz	4TB	350	300 MB	5600 MT/s
Xeon 8593Q	64	2.2 GHz	3.9 GHz	4TB	385	320 MB	5600 MT/s
Xeon 8592+	64	1.9 GHz	3.9 GHz	4TB	350	320 MB	5600 MT/s
Xeon 8562Y+	32	2.8 GHz	4.1 GHz	4TB	300	60 MB	5600 MT/s

For H100 DLC Configurations:

HPE Cray Supercomputing XD670 Direct Liquid Cooling Configure-to-order Server	P67287-B21
NVIDIA HGX H100 80GB 8-GPU FIO Accelerator for HPE Cray Supercomputing XD670	P65657-B21

For H200 Configurations:

HPE Cray XD670 Direct Liquid Cooling 3600W Configure-to-order Server	P69518-B21
NVIDIA HGX H200 141GB 8-GPU FIO Accelerator for HPE Cray Supercomputing XD670	S3P62A

Notes:

- Select either NVIDIA HGX H100 80GB 8-GPU FIO Accelerator for HPE Cray (P65657-B21) or NVIDIA HGX H200 141GB 8-GPU FIO Accelerator for HPE Cray XD670 (S3P62A).
- 42U or 48U Rack is required.
- Add 1 per rack of the following SKUs:
- P67278-B21 HPE Cray XD670 Connection kit
- P67797-B21 HPE Cray XD670 CDU Extension Bracket

Standard Features

– P70519-B21 HPE Cray XD670 42U/48U DLC Rack Manifold

– If using the 42U Rack: HPE Cray 42U 800mm Air Dam FIO Kit (P71226-B21)

– If using the 48U Rack: HPE Cray 48U 800mm Air Dam FIO Kit (P71228-B21)

Memory (Select two of the following)

Type	DDR5 Registered (RDIMM)
DIMM slots available	32 slots per server for XD670 8 channels per processor, 2 DIMMs per channel
Minimum capacity	1.024 GB DDR @4800 MT/s
Maximum capacity	Up to 4TB DDR @4800 MT/s

Description	SKU
HPE Cray XD 32GB (1x32GB) Dual Rank x8 DDR5-4800 Registered Standard Memory Kit	P46968-H21
HPE Cray XD 64GB (1x64GB) Dual Rank x4 DDR5-4800 Registered Standard Memory Kit	P46970-H21
HPE Cray XD 128GB (1x128GB) Quad Rank x4 DDR5-4800 Registered 3DS Standard Memory Kit	P46972-H21
HPE Cray Supercomputing XD 64GB (1x64GB) Dual Rank x4 DDR5-5600 Registered Standard Memory Kit	P70079-H21
HPE Cray XD 96GB (1x96GB) Dual Rank x4 DDR5-5600 CAS-52-52-52 R Standard Memory Kit	S4L14A
HPE Cray XD 128GB (1x128GB) Dual Rank x4 DDR5-5600 CAS-52-52-52 Registered Standard Memory Kit	S4L15A

Notes:

– Minimum memory density per platform is 1,024 GB for NVIDIA HGX H100 80GB 8-GPU FIO Accelerator for HPE Cray (P65657-B21) or 1,500 GB for NVIDIA HGX H200 141GB 8-GPU FIO Accelerator for HPE Cray XD670 (S3P62A) for adequate performance

– Mixing of x4, x8, 3DS memory is not allowed

– Mixing of Memory DIMMs is not allowed

– Optimal performance requires 8 (1 DIMM / channel) or 16 (2 DIMMs / channel) DIMMs per processor

Storage

M.2 Controllers - All CTO Models (System: Std 0 // Max 1) (User Selection: Min 0 // Max 1)

Description	SKU
HPE Cray XD670 CRS4910 PCIe M.2 RAID Controller for HPC	P60992-B21
HPE Cray XD670 CMT4034 PCIe M.2 Pass-Through Adapter for HPC	P60995-B21
Gigabyte 4-port 22110mm with RAID Controller PCIe M.2 Adapter	P62966-B21

M.2 NVME Drives - All CTO Models (System: Std 0 // Max 4) (User Selection: Min 0 // Max 4)

Description	SKU
Samsung PM9A3 960GB PCIe Gen4 Mixed Use M.2 22110 Self-encrypting SSD for HPE Cray XD 2000	P48695-H21
Samsung PM9A3 1.92TB PCIe Gen4 Mixed Use M.2 22110 Self-encrypting SSD for HPE Cray XD 2000	P48701-H21

Standard Features

Samsung PM9A3 3.84TB PCIe Gen4 Mixed Use M.2 22110 Self-encrypting SSD for HPE Cray XD 2000	P55178-H21
Micron 7450 960GB NVMe Gen4 Read Intensive M.2 22110 SSD for HPE Cray XD	P60528-H21
Micron 7450 1.92TB NVMe Gen4 Read Intensive M.2 22110 SSD for HPE Cray XD	P60529-H21
Micron 7450 3.84TB NVMe Gen4 Read Intensive M.2 22110 SSD for HPE Cray XD	P60530-H21
Micron 7450 960GB NVMe Gen4 Read Intensive M.2 2280 SSD for HPE Cray XD	P69525-H21

Notes:

– M.2 SSDs requires the selection of one PCIe M.2 Adapter

– Both M.2 Adapters support up to 4x M.2 drives

– Mixing of 'M.2 Drives' is not allowed

SFF RAID Controllers

Description	SKU
Broadcom MR 9560-16i 32-port 12GB PCIe 4 Tri-Mode Dual Controller for HPE	P60998-B21
HPE Cray Supercomputing XD670 MR9560-16i TM Controller	P68164-B21
HPE Cray XD6500 MR 9560-16i Controller Cable Kit	P62663-B21

Notes:

– If RAID is not required for SFF SSDs, no controllers are required

– For RAID with over 4 SFF Drives, select P60998-B21 controller kit (these are two separately managed RAID controllers - RAID volumes cannot span controllers [i.e., a RAID volume cannot consist of more than 4 SSDs]).

– For RAID with 4 or less SFF Drives, select P68164-B21 controller (this is a single RAID controller).

– Order only 1x Cable per server. The factory will automatically populate the server with the correct number of cables

– For P68164-B21, it is one Broadcom RAID card, one battery, and a bracket for the battery; it uses two PCIe slots (the bracket for the battery uses a PCIe slot)

– For P60998-B21, it is two Broadcom RAID cards, two batteries, a bracket for the batteries, and it uses three PCIe slots (the bracket for the batteries uses a PCIe slot)

SFF Drives - All CTO Models (System: Std 0 // Max 8) (User Selection: Min 0 // Max 8)

Description	SKU
Samsung PM9A3 7.68TB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P55175-H21
Samsung PM9A3 3.84TB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P48411-H21
Samsung PM9A3 1.92TB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P55285-H21
Samsung PM9A3 960GB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P48414-H21
Micron 7450 7.68TB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray XD	P60522-H21
Micron 7450 3.84TB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray XD	P60521-H21
Micron 7450 1.92TB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray XD	P60520-H21
Micron 7450 960GB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray XD	P60519-H21
HPE Cray XD670 7.68TB NVMe Read Intensive SFF U.3 7500 SED SSD	S4R17A
HPE Cray XD670 1.92TB NVMe Read Intensive SFF U.3 7500 SED SSD	S4U54A

Standard Features

HPE Cray XD670 3.2TB NVMe Mixed Use SFF U.3 7500 SED SSD	S4V26A
HPE Cray XD670 1.6TB NVMe Mixed Use SFF U.3 7500 SED SSD	S4V27A
HPE Cray XD670 15.36TB NVMe Read Intensive SFF U.3 7500 SED SSD	S4V28A
HPE Cray XD670 3.84TB NVMe Read Intensive SFF U.3 7500 SED SSD	S4V29A
HPE Cray Supercomputing 15.36TB NVMe Read Intensive SFF U.3 7450 SSD	P65872-H21
HPE Cray Supercomputing 15.36TB NVMe Read Intensive SFF 7450 SED SSD	P65874-H21
HPE Cray Supercomputing 800GB NVMe Mixed Use SFF U.3 7450 SSD	P67574-H21
HPE Cray Supercomputing 1.6TB NVMe Mixed Use SFF U.3 7450 SSD	P67579-H21
HPE Cray Supercomputing 3.2TB NVMe Mixed Use SFF U.3 7450 SSD	P67584-H21
HPE Cray XD670 6.4TB NVMe Mixed Use SFF U.3 7450 SSD	P67589-B21
HPE Cray Supercomputing 12.8TB NVMe Mixed Use SFF U.3 7450 SSD	P67594-H21
HPE Cray Supercomputing 15.36TB NVMe Read Intensive SFF U.2 PM9A3 SSD	P67897-H21

RAID Settings

Description	SKU
HPE RAID 0 Drive 1 FIO Setting	339777-B21
HPE RAID 1 Drive 1 FIO Setting	339778-B21
HPE RAID 5 Drive 1 FIO Setting	339779-B21
HPE Raid 5 w/SP Drive 1 FIO Setting	339780-B21
HPE RAID FIO Advanced Data Guarding Option	339781-B21
HPE Customer Defined RAID Setting Service	389692-B21

Notes:

– If SKU 389692-B21 is selected, then the following RAID rules do not apply:

  o All integrated hard drives must match.

  o Minimum drive quantity requirement for each RAID level.

  o RAID level must be selected if Factory Installed OS is present and MegaRAID controller (embedded or otherwise) is the primary controller.

– If SKU 389692-B21 is selected, then at least 1 hard drive must be on the order.

– If SKU 389692-B21 is selected, then preinstalled OS must be on the order."

  o A Customer Intent Document must be supplied if SKU 389692-B21 is ordered.

– This Customer Intent Document should include all details about the desired RAID custom configuration. (This includes drive part numbers and quantities, RAID levels desired, which drives should be applied to each RAID level, and if a preinstalled OS has been ordered - which RAID set it should be installed on).

– Warning Message - HPE Recommends using below standard RAID Settings.

  o 339777-B21 HPE RAID 0 Drive 1 FIO Setting

  o 339778-B21 HPE RAID 1 Drive 1 FIO Setting

  o 339779-B21 HPE RAID 5 Drive 1 FIO Setting

  o 339780-B21 HPE RAID 5 w/SP Drive 1 FIO Setting

  o 339781-B21 HPE Raid Adv Data Guarding FIO"

– General RAID rules:

Standard Features

- o Only a single set of RAID will be offered and will only be applied to all applicable drives installed in a server.
- o RAID requires selection of a Broadcom MR controller and a specific number of matching drives. (i.e., same part number)
- o RAID must be selected if both Factory Installed OS and Broadcom MR controller (embedded or otherwise) are present.
- o RAID 0 requires at least 1 drive.
- o RAID 1 requires at least 2 or even number of drives.
- o RAID 1 with Spare requires at least 3 drives
- o RAID 5 requires at least 3 drives.
- o RAID 5 with Spare requires at least 4 drives.
- o RAID 6 requires at least 4 drives.

– RAID levels are not allowed if ' Broadcom MR 9560-16i 'Controller is not in the order'

InfiniBand - All CTO Models (System: Std 0 // Max 12) (User Selection: Min 0 // Max 12)

Description	SKU
HPE InfiniBand HDR/Ethernet 200Gb 1-port QSFP56 PCIe4 x16 MCX653105A-HDAT Adapter	P23664-H21
HPE InfiniBand HDR100/Ethernet 100Gb 1-port QSFP56 PCIe4 x16 MCX653105A-ECAT Adapter	P23665-H21
HPE InfiniBand HDR100/Ethernet 100Gb 2-port QSFP56 PCIe4 x16 MCX653106A-ECAT Adapter	P23666-H21
HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 MCX653106A-HDAT Adapter	P31324-B21
HPE InfiniBand NDR 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Adapter	P45641-H21
HPE InfiniBand NDR200/Ethernet 200GbE 2-port QSFP112 PCIe5 x16 MCX755106AC-HEAT Adapter	P65333-H21
HPE InfiniBand NDR/Ethernet 400G QSFP112 MPO12 850nm Multi-mode 50m APC Transceiver	P65334-B21
HPE Data Processing Unit InfiniBand NDR200/Ethernet 200Gb 2-port QSFP112 FHHL B3220 Adapter	P66386-H21
HPE Data Processing Unit InfiniBand NDR/Ethernet 400Gb 1-port QSFP112 HHHL B3140H Adapter	P66387-H21

Notes:

– The MAX PCIe Card capacity limit is 12. It is "all inclusive" and must account for ALL PCIe cards from all categories and sub-categories (except Graphic Options category and sub-category).

– If configured for a HPE Cray or HPE Slingshot Solution, select the Slingshot networking card.

Networking - All CTO Models (System: Std 0 // Max 12) (User Selection: Min 0 // Max 12)

Description	SKU
Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE	P21112-B21
Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE	P25960-B21
Mellanox MCX512F-ACHT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P13188-B21

Standard Features

HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC R4K46A

Notes:

Can only be selected or configured for a HPE Cray or HPE Slingshot Solution.

Power Supplies - All H100 CTO Models contain an embedded kit consisting of 6x Delta Titanium 3,000-Watt
Power Supplies - All H200 CTO Models contain an embedded kit consisting of 6x Delta Titanium 3,600-Watt Power Supplies.
Power Supply Cords will still need to be ordered separately.

Interfaces

USB Ports	1 USB 3.2 Gen1 Type A Port (external)
HPE Cray XD Management Network Port	Dedicated 1Gbps network management port
Health LED	1
Power	1
UID	1
Do not remove LED	1

Accessories

HPE XD670 FHHL Bracket FIO Kit P66297-B21

Industry Standard Compliance

- ACPI 6.3 Compliant
- PCIe 5.0 Compliant
- WOL Support
- PXE Support
- USB 3.0 Compliant (internal); USB 2.0 compliant (external ports via SUV)
- SMBIOS 3.4
- UEFI 2.8
- Redfish API

HPE Cray XD6500 Server UEFI

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.
The UEFI System utilities is embedded in the system ROM. Its features enable you to perform a wide range of configuration activities, including:

- Configuring system devices and installed options.
- Enabling and disabling system features.
- Displaying system information.
- Selecting the primary boot controller including configuring drive arrays and partitions.
- Configuring memory options.
- Launching other pre-boot environments.

HPE Cray XD6500 servers with UEFI can provide:

- Secure Boot that enables the system firmware, option card firmware, operating systems, and software collaborate to enhance platform security.
- An Embedded UEFI Shell that provides a preboot environment for running scripts and tools.
- Boot support for option cards that only support a UEFI option ROM.

Standard Features

UEFI

UEFI provides a higher level of security by protecting against unauthorized operating systems and malware rootkit attacks, validating that only authenticated ROMs, pre-boot applications, and OS boot loaders that have been digitally signed are run. Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI). The Cray XD6500 is a UEFI Class 3 solution and does not support the less secure CSM (Combability Support Module) BIOS.

Software Portfolio for HPE Cray XD670

Operating Systems and Virtualization Software Support for Cray XD670 Servers

- Red Hat Enterprise Linux (RHEL) 9.0, 8.6
- SUSE Linux Enterprise Server (SLES) 15 SP4
- Ubuntu (22.04 LTS)
- HPE Cray Operating System (supported by not certified)
- VMware ESXi 8.0, 7.0 U3

Notes: For more information on Hewlett Packard Enterprise Certified and Supported Servers for OS and Virtualization Software and latest listing of software drivers available for your server. Open-Source software is not factory-installed nor is it supported by HPE.

https://www.hpe.com/us/en/servers/server-operating-systems.html

HPE Machine Learning Inference Software

HPE Machine Learning Inference Software is a streamlined solution designed to expedite the deployment and scaling of AI models and applications and is particularly tailored for generative AI. By simplifying the process of model deployment, management, and monitoring, HPE Machine Learning Inference Software bridges the gap between AI model development and productization, enabling ML teams to execute and achieve value faster.

The new HPE Machine Learning Inference Software offers a simplified, user-friendly approach for managing, and monitoring machine learning deployments, with a particular strength in handling Large Language Models (LLMs). Designed for both ML practitioners and IT infrastructure engineers, this software minimizes the complexity and specialized expertise needed to efficiently launch and update ML models. It also provides robust tools for monitoring the performance of these models, ensuring they operate at scale.

With this software, Machine Learning Engineers can deploy models for experimental purposes enabling rapid iteration, which is essential for understanding model behavior, visualization, and debugging. Due to the intuitive interface users do not need extensive Kubernetes experience, creating a simplified path to production model deployments for everyone. ITOps/MLOps can take the models developed by the MLE team and deploy them quickly at scale. HPE Machine learning Inference Software has a broad range of supported frameworks, automation to help you deploy swiftly, and is suitable for both development and production environments. Users can manage their model deployments with efficient load balancing for better scalability, consistent performance, and robust error handling with automated testing.

See the HPE MLIS QuickSpecs for a list of supported NVIDIA GPUs and required Performance licenses per accelerator.

HPE Machine Learning Inference Software

HPE Machine Learning Development Environment Software

Built upon the open-source Determined model development platform, HPE Machine Learning Development Environment Software allows model developers and researchers to focus on building better models faster, by reducing complexity, and removing the need to write boilerplate code associated with managing ML infrastructure.

It easily integrates with popular ML frameworks & tools, and supports cloud or on-prem infrastructure environments, with a consistent user experience (UX). The HPE MLDE platform makes it easy for IT and

Standard Features

MLOps teams to setup and share AI infrastructure to improve collaboration & productivity for ML teams, and reduce costs.
HPE Machine Learning Development Environment Software, you can easily:

- Train models faster
- Build better models
- Manage and share your AI infrastructure
- Track and reproduce your work
- Integrate into your enterprise
- Bring your own cloud
- Evaluate and customize large language models (LLMs)

Supported Hardware
HPE Machine Learning Development Environment Software can be deployed on hardware equipped with NVIDIA or AMD GPUs, on a variety of on-prem or cloud environments.
Hardware

- The master node should be configured with at least four Intel Broadwell or later CPU cores, 8 GB of RAM, and 200 GB of free disk space. The master node does not need GPUs.
- Each GPU-equipped compute node should be configured with at least two Intel Broadwell or later CPU cores, 4 GB of RAM, and 50 GB of free disk space.

NVIDIA GPUs from Hardware Generation Volta (Compute Capability version 7) or newer are supported - e.g., V100, A100, H100, H200, or newer. See Hardware Generation
https://docs.nvidia.com/deploy/cudacompatibility/index.html#frequently-asked-questions
AMD GPUs from Compute DNA ("CDNA") version 2 or higher are supported - e.g., MI210, MI250, MI250X, MI300X, MI300A, or newer. see **https://www.amd.com/en/technologies/cdna.html**

Fabric software

HPE SKU Description

- S1D73AAE Nvidia UFM Enterprise 1 year Subscription per HCA
- S1D74AAE Nvidia UFM Enterprise 3 year Subscription per HCA
- S1D75AAE Nvidia UFM Enterprise 5 year Subscription per HCA

Server Management

HPE Cray XD Baseboard Management Controller
Embedded, in-depth server-level monitoring and management technology offering system management, service alerting, reporting and remote management including remote console and virtual media mount.

Industry Standard Redfish

The HPE Cray XD670 supports industry standard DMTF Redfish that provides API conformance and offers simplified server management automation such as configuration and maintenance tasks based on modern industry standards. Learn more at: **https://dmtf.org/standards/redfish.**
Enabling HPE Services Remote Support

Auto-case creation for hardware failures requires HPCM version 1.9 or higher. This feature identifies failures and creates support cases automatically, reducing downtime by starting repairs and parts ordering proactively.

Link to the configuration instructions: **HPE Performance Cluster Manager Administration Guide**

For clustered HPE Cray XD670 system deployments (for HPC or other emerging workloads such as AI), customers can use the following cluster management software solutions:

Standard Features

HPE Performance Cluster Manager
Fully integrated system management solution offering all the functionalities you need to manage your HPE Linux®-based high performance computing (HPC) clusters, all day every day.
HPE Performance Cluster Manager aggregates system metrics.
The software provides:

- System setup
- Hardware monitoring and management including GPU management
- Image management and software updates
- Power management
- Integration with ISV & open-source software solutions

Alternatively, to manage heterogeneous clusters or for customers with additional requirements, HPE also offers:

Software Development Tools (Programming languages, debuggers, libraries)

HPE Cray Programming Environment is a fully integrated software development suite offering programmers comprehensive set of tools for developing, porting, debugging, and tuning of their applications so they can shorten application development time and accelerate their performance. CPE cannot be supported on Ubuntu OS.
Notes: For more information on HPE Cray Programming Environment **visit this page**
Additional 3rd party software developmental tools:

- Intel® oneAPI
- GNU Compiler Collection
- Perforce® TotalView®
- Mellanox HPC-X

HPE Message Passing Interface (MPI) - an MPI development environment designed by HPE to enable optimization of high-performance computing (HPC) applications on HPE Cray XD670 systems. The HPE Performance Software-MPI leverages a scalable MPI library and boosts performance of existing applications without requiring recompilation.

Security

The HPE Cray XD670 Root-of-Trust security option enables additional security features.
Please note that for XD670 H200 configurations, TPM does not need to be selected and comes default with the chassis.

Standard Features

Security Features	P60537 B21 CTO Server SKU	P60537-B22 CTO Server SKU with Root-of-Trust
UEFI Secure Boot	X	X
UEFI TPM 2.0 (Trusted Platform Module 2.0) HPE Cray XD670 supports OpenSSL 3.0 provide for secure remote connectivity session to system. TPM Module is a selectable option.	X	X
Secure out-of-the-box high-entropy RMC administrator password is unique for each system.	X	X
Support for multiple Redfish role-based access control (RBAC) accounts ensuring that passwords need not be shared and can provide separation of duties	X	X
Secure Start - only boot Signed FW		X
NIST SP800-193 Protect, Detect, Recover for BIOS and BMC Tamper-free updates - digitally signed and verified with SHA256 hashing with RSA2048 key		X
Secure Recovery - recover critical firmware to known good state on detection of compromised firmware. Event recorded in the event log		X
SPI BUS monitoring to ensure BIOS and BMC FW are always signed and secure		X

Service and Support

HPE Services - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Services 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 Services **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 Services specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Recommended Services

HPE Tech Care Service.

HPE Tech Care Service 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 Tech Care Service has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. For HPE Cray XD670, HPE Tech Care Service is available in two response levels. 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 Complete Care Service

HPE Complete Care Service 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 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 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.

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 include the installation of one supported operating system type (Windows® or Linux).

HPE Service Credits

Offers flexible services and technical skills to meet your IT demands as your business evolves. With a menu of services, you can access additional resources and specialist skills to help you maintain peak performance in your IT. HPE Service Credits help you proactively respond to your dynamic IT and business needs.

Service and Support

HPE Education Services

Provides comprehensive training designed to expand the skills of your IT staff and keep them up to speed with the latest technologies.
Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and support options

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 Cray EX, HPE Cray XD, HPE Integrity, HPE ProLiant, HPE Apollo, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers, as well as the HPE MSAxxxx, HPE 3PAR suite, HPE XP, rackable tape libraries and configurable network switches.
HPE support high-security **system builds** at HPE manufacturing facility in Chippewa Falls, Wisconsin. From our Chippewa Falls facility, HPE has built and deployed systems to the most security-conscious government agencies in the world.
Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and support options

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 three years from date of purchase. Support for software and initial setup is available for 3 years from date of purchase. Enhancements to warranty services are available through HPE Services operational services or customized service agreements.
Notes: Server Warranty includes 3 years of Parts, Labor and on-site. Warranty repairs may be accomplished using Customer Self Repair (CSR) parts. Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part.

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

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.

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

A Mechanized Lift will be required to accompany the order due to the excessive size and weight of the HPE Cray XD670 servers. If the customer already confirms that they already have an appropriate Lift in-house, one will not need to be ordered.

Step 1: Choose a Chassis

HPE Cray XD670 RoT Configure-to-order Server	P60537-B22
HPE Cray Supercomputing XD670 H200 Configure-to-order Server	S3P61A
HPE Cray Supercomputing XD670 Direct Liquid Cooling Configure-to-order Server	P67287-B21
HPE Cray XD670 Direct Liquid Cooling 3600W Configure-to-order Server	P69518-B21

Notes: If DLC Option is selected, include the following:

- (1) HPE Cray XD670 HGX H100 SXM5 PC GPU P65657-B21 OR (1) NVIDIA HGX H200 141GB 8-GPU FIO Accelerator for HPE Cray XD670 (S3P62A)
- 42U or 48U HPE Rack is required
- Add 1 per rack of the following SKUs:
- P67278-B21 HPE Cray XD670 Connection kit
- P67797-B21 HPE Cray XD670 CDU Extension Bracket
- P70519-B21 HPE Cray XD670 42U/48U DLC Rack Manifold
- If using the 42U Rack: HPE Cray 42U 800mm Air Dam FIO Kit (P71226-B21)
- If using the 48U Rack: HPE Cray 48U 800mm Air Dam FIO Kit (P71228-B21)

Step 2: Select M.2 and SFF Storage Options (max 1)

HPE Cray XD670 CRS4910 PCIe M.2 Adapter for HPC	P60992-B21
HPE Cray XD670 CMT4034 PCIe M.2 Adapter for HPC	P60995-B21

Step 3: Select M.2 Storage Options (max 4)

Micron 7450 960GB NVMe Gen4 Read Intensive M.2 22110 SSD for HPE Cray XD	P60528-H21
Micron 7450 1.92TB NVMe Gen4 Read Intensive M.2 22110 SSD for HPE Cray XD	P60529-H21
Micron 7450 3.84TB NVMe Gen4 Read Intensive M.2 22110 SSD for HPE Cray XD	P60530-H21
HPE Cray Supercomputing 15.36TB NVMe Read Intensive SFF 7450 SED SSD	P65874-H21
Micron 7450 960GB NVMe Gen4 Read Intensive M.2 2280 SSD for HPE Cray XD	P69525-H21

Configuration Information

Notes:

– Maximum quantity of 4 M.2 SSD Drives

– All selected M.2 drive quantity are of the same SKU | capacity

Step 4: Select a Processor (Dual Processor Configuration Only)

Intel Xeon-Platinum 8480+ 2.0GHz 56-core 350W Processor Kit for HPE Cray XD	P56401-B21
Intel Xeon-Platinum 8470Q 2.1GHz 52-core 350W Processor Kit for HPE Cray XD	P56410-B21
Intel Xeon-Platinum 8470 2.0GHz 52-core 350W Processor Kit for HPE Cray XD	P56400-B21
Intel Xeon-Platinum 8468 2.1GHz 48-core 350W Processor Kit for HPE Cray XD	P56399-B21
Intel Xeon-Platinum 8468V 2.4GHz 48-core 330W Processor for HPE	P49631-H21
Intel Xeon-Platinum 8462Y+ 2.8GHz 32-core 300W Processor Kit for HPE Cray XD	P56397-B21
Intel Xeon-Platinum 8452Y 2.0GHz 36-core 300W Processor Kit for HPE Cray XD	P56408-B21
Intel Xeon-Gold 6430 1.9GHz 32-core 270W Processor Kit for HPE Cray XD	P56406-B21
Intel Xeon-Gold 6530 2.1GHz 32-core 270W Processor Kit for HPE Cray XD	P70083-B21
Intel Xeon-Platinum 8558 2.1GHz 48-core 330W Processor Kit for HPE Cray XD	P70085-B21
Intel Xeon-Platinum 8568Y+ 2.3GHz 48-core 350W Processor Kit for HPE Cray XD	P70086-B21
Intel Xeon-Platinum 8570 2.1GHz 56-core 350W Processor Kit for HPE Cray XD	P70087-B21
Intel Xeon-Platinum 8580 2.0GHz 60-core 350W Processor Kit for HPE Cray XD	P70088-B21
Intel Xeon-Platinum 8593Q 2.2GHz 64-core 385W Processor Kit for HPE Cray XD	P70089-B21
Intel Xeon-Platinum 8592+ 1.9GHz 64-core 350W Processor Kit for HPE Cray XD	P70090-B21
Intel Xeon-Platinum 8562Y+ 2.8GHz 32-core 300W Processor Kit for HPE Cray XD	P71376-B21

Notes: Certain limitations may apply to select processors, please contact your HPE sales representative

Step 5: Select from the following Memory options (minimum 1,028 GB)

HPE Cray XD 32GB (1x32GB) Dual Rank x8 DDR5-4800 Registered Standard Memory Kit	P46968-H21
HPE Cray XD 64GB (1x64GB) Dual Rank x4 DDR5-4800 Registered Standard Memory Kit	P46970-H21
HPE Cray XD 128GB (1x128GB) Quad Rank x4 DDR5-4800 Registered 3DS Standard Memory Kit	P46972-H21
HPE Cray Supercomputing XD 64GB (1x64GB) Dual Rank x4 DDR5-5600 Registered Standard Memory Kit	P70079-H21
HPE Cray XD 96GB (1x96GB) Dual Rank x4 DDR5-5600 CAS-52-52-52 R Standard Memory Kit	S4L14A
HPE Cray XD 128GB (1x128GB) Dual Rank x4 DDR5-5600 CAS-52-52-52 Registered Standard Memory Kit	S4L15A

Notes: Minimum System Memory of 1,024 GB Required for H100. Minimum System Memory of 1,500 GB Required for H200.

Configuration Information

Step 6: Choose from the following SFF Storage and RAID options

Hot Plug SFF SSD

HPE Cray XD670 7.68TB NVMe Read Intensive SFF U.2 Self-encrypting SSD	P62560-H21
HPE Cray XD670 3.84TB NVMe Read Intensive SFF U.2 Self-encrypting SSD	P62563-H21
HPE Cray XD670 1.92TB NVMe Read Intensive SFF U.2 Self-encrypting SSD	P62566-H21
HPE Cray XD670 960GB NVMe Read Intensive SFF U.2 Self-encrypting SSD	P62569-H21
HPE Cray XD670 7.68TB NVMe Read Intensive SFF U.3 7450 SSD	P62572-H21
HPE Cray XD670 3.84TB NVMe Read Intensive SFF U.3 7450 SSD	P62575-H21
HPE Cray XD670 1.92TB NVMe Read Intensive SFF U.3 7450 SSD	P62578-H21
HPE Cray XD670 960GB NVMe Read Intensive SFF U.3 7450 SSD	P62581-H21
HPE Cray XD670 7.68TB NVMe Read Intensive SFF U.3 Self-encrypting 7500 SSD	S4R17A
HPE Cray XD670 1.92TB NVMe Read Intensive SFF U.3 Self-encrypting 7500 SSD	S4U54A
HPE Cray XD670 3.2TB NVMe Mixed Use SFF U.3 Self-encrypting 7500 SSD	S4V26A
HPE Cray XD670 1.6TB NVMe Mixed Use SFF U.3 Self-encrypting 7500 SSD	S4V27A
HPE Cray XD670 15.36TB NVMe Read Intensive SFF U.3 Self-encrypting 7500 SSD	S4V28A
HPE Cray XD670 3.84TB NVMe Read Intensive SFF U.3 Self-encrypting 7500 SSD	S4V29A

Broadcom MR Controller

Note - Order only 1x Cable Kit (P62663-B21) with either controller. The factory will automatically populate the server with the correct cable kit.

Broadcom MR 9560-16i 32-port 12GB PCIe 4 Tri-Mode Dual Controller for HPE

HPE Cray Supercomputing XD670 MR9560-16i 12GB Cache PCIe4 x8 Tri-Mode Dual Controller

HPE Cray XD6500 MR 9560-16i Controller Cable Kit

Step 7: Choose Factory Configuration Setting

HPE Cray Compute Node Identifier (no max)

HPE Cray Compute Node FIO Configuration

Step 8: Choose Networking Card Configuration (Max 8)

Ethernet PCIe

Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 Adapter for HPE

Mellanox MCX623106AS-CDAT Ethernet 100Gb 2-port QSFP56 Adapter for HPE

Mellanox MCX512F-ACHT Ethernet 10/25Gb 2-port SFP28 Adapter for HPE

HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC

InfiniBand PCIe

HPE InfiniBand HDR/Ethernet 200Gb 1-port QSFP56 PCIe4 x16 MCX653105A-HDAT Adapter

HPE InfiniBand HDR100/Ethernet 100Gb 1-port QSFP56 PCIe4 x16 MCX653105A-ECAT Adapter

HPE InfiniBand HDR100/Ethernet 100Gb 2-port QSFP56 PCIe4 x16 MCX653106A-ECAT Adapter

HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 MCX653106A-HDAT Adapter

HPE InfiniBand NDR 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Adapter

Step 9: Select Power Cables (Max 6)

A power supply kit consisting of 6x Delta Titanium 3,000-Watt Supplies is already embedded within the chassis for H100 configurations

Select Power Cords (required - max 6)

HPE C19 - C20 WW 250V 16Amp 2.5m Jumper Cord
HPE C19 - C20 WW 250V 16Amp Flint Gray 2.0m Jumper Cord
HPE C19 - C20 WW 250V 16Amp Flint Gray 1.20m Jumper Cord
HPE C19-C20 IN 250V 16Amp 2.5m Black Jumper Cord

Step 10: [H200 Configurations Only] Select Power Cords (required - max 6)

HPE Cray XD670 SDG-400 - C20 300V 1m IN Power Cord
HPE Cray XD670 SDG-400 - C20 300V 1.5m IN Power Cord
HPE Cray XD670 SDG-400 - C20 300V 2m IN Power Cord
HPE Cray XD670 SDG-400 - C20 300V 1m WW Power Cord
HPE Cray XD670 SDG-400 - C20 300V 1.5m WW Power Cord
HPE Cray XD670 SDG-400 - C20 300V 2m WW Power Cord
HPE Cray XD670 SDG-400 - SDG-300 300V 1m Power Cord

Step 11: Select Operating Systems

Red Hat HPC Operating Systems (max 99)

HPE Performance Cluster Manager FIO Software
Red Hat Enterprise Linux for HPC Head Node 1yr Subscription 24x7 Support E-LTU
Red Hat Enterprise Linux for HPC Head Node 3yr Subscription 24x7 Support E-LTU
Red Hat Enterprise Linux for HPC Head Node 5yr Subscription 24x7 Support E-LTU
Red Hat Enterprise Linux for HPC Head Node 1yr Subscription 9x5 Support E-LTU
Red Hat Enterprise Linux for HPC Head Node 3yr Subscription 9x5 Support E-LTU
Red Hat Enterprise Linux for HPC Head Node 5yr Subscription 9x5 Support E-LTU
Red Hat Enterprise Linux for HPC Compute Node 1yr Subscription E-LTU
Red Hat Enterprise Linux for HPC Compute Node 3yr Subscription E-LTU
Red Hat Enterprise Linux for HPC Compute Node 5yr Subscription E-LTU

Red Hat Operating Systems (max 99)

Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 1 Year Subscription 24x7 Support E-LTU
Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 1 Year Subscription 9x5 Support E-LTU
Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subscription 24x7 Support E-LTU
Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subscription 9x5 Support E-LTU
Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 5 Year Subscription 24x7 Support E-LTU
Red Hat Enterprise Linux Server 2 Sockets or Guests 5 Year Subscription 9x5 Support E-LTU

Configuration Information

Red Hat Enterprise Linux 8 FIO Software

HPE Performance Cluster Manager

For additional information, please visit HPE Performance Cluster Manager QuickSpecs **here**

HPE Performance Cluster Manager 1 Node 3yr 24x7 Support Perpetual E-LTU

Notes:

– One license per node

– Includes three years of support

– This is an electronic license

– This is a perpetual license. The Software will continue working even when the support term ends

HPE Performance Cluster Manager 1 Node 3yr 24x7 Support Perpetual LTU

Notes:

– One license per node.

– Includes three years of support.

– This is a perpetual license. The software will continue working even when the support term ends.

HPE Performance Cluster Manager FIO Software

Notes:

– This SKU does not include the license. Please order Q9V60AAE.

– Order one per node

HPE Performance Cluster Manager Media Kit

Notes: One media kit per solution.

Configuration Information

HPE Power Distribution Units

Power Distribution Units (PDUs) are an integral piece to this data center solution and HPE offers several types. Basic I reliable power with 0U or 1U installation options. Metered PDUs have added intelligence to precisely track power usag PDUs provide both local and remote power management. There are additional metered PDUs that are recommended that are not part of the mainstream PDU product offering. They are as follows:

HPE Switched 3-phase 66.5kVA/60309 5-wire 100A/277V 21-breaker Vertical NA PDU
HPE Metered 3Ph 66.5kVA/60309 100A 5-wire 480/277V Outlets (21) SDG23/Vertical NA PDU
HPE Metered 3Ph 39.9kVA/60309 60A 5-wire 480/277V Outlets (21) SDG23/Vertical NA PDU
HPE Metered 3Ph 57.6kVA/60309 100A 5-wire 80A/230V Outlets (3) C13 (18) C19/Vertical NA PDU
HPE Metered 3Ph 34.5kVA/60309 60A 5-wire 48A/230V Outlets (3) C13 (18) C19/Vertical NA FIO PDU
HPE Cray Supercomputer 60A 415V 3 Phase 24 CX PDU
HPE Mtrd 3P 69.1kVA 125A 96A230V FIO PDU
HPE Metered 3Ph 45.1kVA/60309 63A 5-wire 63A/230V Outlets (3) C13 (18) C19/Vertical INTL FIO PDU
HPE Cray Supercomputer 63A 400V 3 Phase 24 CX PDU
HPE G2 Metered/Switched 3Ph 17.3kVA/60309 4-wire 48A/208V Out (12) C13 (12) C19/Vertical NA/JP PDU
HPE G2 Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU
HPE G2 Metered Modular 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (6) C19/1U Horizontal NA/JP PDU
HPE G2 Metered/Switched 3Ph 22kVA/60309 5-wire 32A/230V Out (12) C13 (12) C19/Vertical INTL PDU
HPE G2 Metered 3Ph 22kVA/60309 5-wire 32A/230V Outlets (12) C13 (12) C19/Vertical INTL PDU
HPE G2 Metered Modular 3Ph 22kVA/60309 5-wire 32A/230V Outlets (6) C19/1U Horizontal INTL PDU

Technical Specifications

HPE Cray XD670 Chassis / Server		
Dimensions	**Height**	8.75 in (22.23 cm)
	Width	17.63 in (44.8 cm)
	Depth	37.2 in (945 mm)
Shipping Dimensions	**Height**	12.5 in (31.75 cm)
	Width	23.63 in (60 cm)
	Depth	39.37 in (100 cm)
Weight (approximate)	**Minimum**	155 lbs. (100.0 kg)
Weight (approximate)	**Maximum**	240 lbs. (108.9 kg)
System Inlet Temperature Standard Operating Support	10° to 30°C (50° to 86°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. The 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.
Relative Humidity (non-condensing) Operating	8% to 90%	Relative humidity (Rh), 28°C maximum wet bulb temperature, non-condensing.
Non-operating	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. The maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Non-operating	9144 m (30,000 ft).	The maximum allowable altitude change rate is 457 m/min (1500 ft/min).

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

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

The EU WEEE Directive (2012/19/EU) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the **Hewlett Packard Enterprise web site**

These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.

Summary of Changes

Date	Version History	Action	Description of Change
02-Dec-2024	Version 19	Changed	Standard Features section was updated
18-Nov-2024	Version 18	Changed	Standard Features section was updated
04-Nov-2024	Version 17	Changed	Standard Features and Configuration Information sections were updated.
07-Oct-2024	Version 16	Changed	Overview, Standard Features Configuration Information sections were updated. Obsolete SKU was removed.
03-Sep-2024	Version 15	Changed	Standard Features and Configuration Information sections were updated Obsolete SKU was removed.
05-Aug-2024	Version 14	Changed	Overview, Standard Features Configuration Information sections were updated
17-Jun-2024	Version 13	Changed	Standard Features section was updated
03-Jun-2024	Version 12	Changed	Overview, Standard Features Configuration Information and Technical Specifications sections were updated
06-May-2024	Version 11	Changed	Overview and Standard Features sections were updated
01-Apr-2024	Version 10	Changed	Standard Features section was updated
04-Mar-2024	Version 9	Changed	Overview and Standard Features sections were updated
05-Feb-2024	Version 8	Changed	Overview, Standard Features Configuration Information sections were updated
08-Jan-2024	Version 7	Changed	Standard Features section was updated
04-Dec-2023	Version 6	Changed	Overview, Standard Features Configuration Information and Technical Specifications sections were updated
24-Oct-2023	Version 5	Changed	Standard Features section was updated
05-Sep-2023	Version 4	Changed	Standard Features and Technical Specifications sections were updated.
15-May-2023	Version 3	Changed	Overview, Standard Features and Configuration Information sections were updated
03-Apr-2023	Version 2	Changed	Overview and Standard Features sections were updated
13-Mar-2023	Version 1	New	New QuickSpecs

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