Overview

HPE Cray XD2000

HPE introduces a density-optimized, scale-out system to meet the changing demands of your workloads in HPC and enterprise data centers.

HPE Cray XD2000 System is a dense, multi-server platform that packs incredible performance and workload flexibility into a small datacenter space, while delivering the efficiencies of a shared infrastructure.

It is a 2U chassis system that supports up to 4 half wide 1U 2P nodes or 2 half wide 2U 2P nodes. Each of the servers can be serviced without impacting operation of other servers in the same chassis, increasing server up-time. It delivers up to 4 times the density of a traditional rack mount 2U server in standard racks and provides rear-aisle serviceability access.

HPE Cray XD2000 delivers a complete HPC solution from chassis-scale to rack-scale, in a rack and roll fashion. It offers a complete, scalable solution for HPC customers everywhere, with flexibility of right-sized power and cooling options, including Direct Liquid Cooling and ensures maximum performance at the lowest possible total cost of ownership.

Built with Exascale-ready networking technologies, integrated storage, extensive software portfolio and management tools, HPE Cray XD2000 systems can enable customers to innovate and prepare for tomorrow's challenges.

Chassis

The HPE Cray v2240 / v2277 chassis occupies 2U space in the rack.

- HPE Cray v2240 Chassis—This model supports 240V power supplies
- HPE Cray v2277 Chassis—This model supports 277V power supplies for the specific request in NA.

Server node

- HPE Cray XD220v Server—1U, dual-processor INTEL server node
- HPE Cray XD225v Server—1U, dual-processor AMD server node
- HPE Cray XD295v Server—2U, dual-processor AMD server node

What's New

- Support for 5th Generation Intel® Xeon® Scalable Processors
  - Support for up to 16 DDR5 5600MT/s DIMMs per 1 server
- Support for 4th Generation AMD EPYC™ Processors
  - Support for up to 24 DDR5 4800MT/s DIMMs per 1 server
- PCIe 5.0 - doubling the data transfer speed of PCIe 4.0, giving faster data transfer speeds for SSDs, GPUs, and other peripheral cards
- New Cray XD295v server, which is a 2U variant of 1U XD225v server, supporting GPUs or extra PCIe slots for the first time on AMD based 2000 System
- Direct Liquid Cooling (DLC) option for HPE Cray XD2000 System comes ready to plug and play. Choose from either CPU only or CPU plus memory cooling options
- Up to four 2400W Common Redundant Power Supplies, providing 9,600W of power in a single chassis
- Slingshot 11, InfiniBand NDR, and standard Ethernet, providing a choice of HPC interconnect technologies
- New Cray XD BMC offering Hardware Root of Trust with recovery and chain of trust, ensuring customers having firmware that's never compromised

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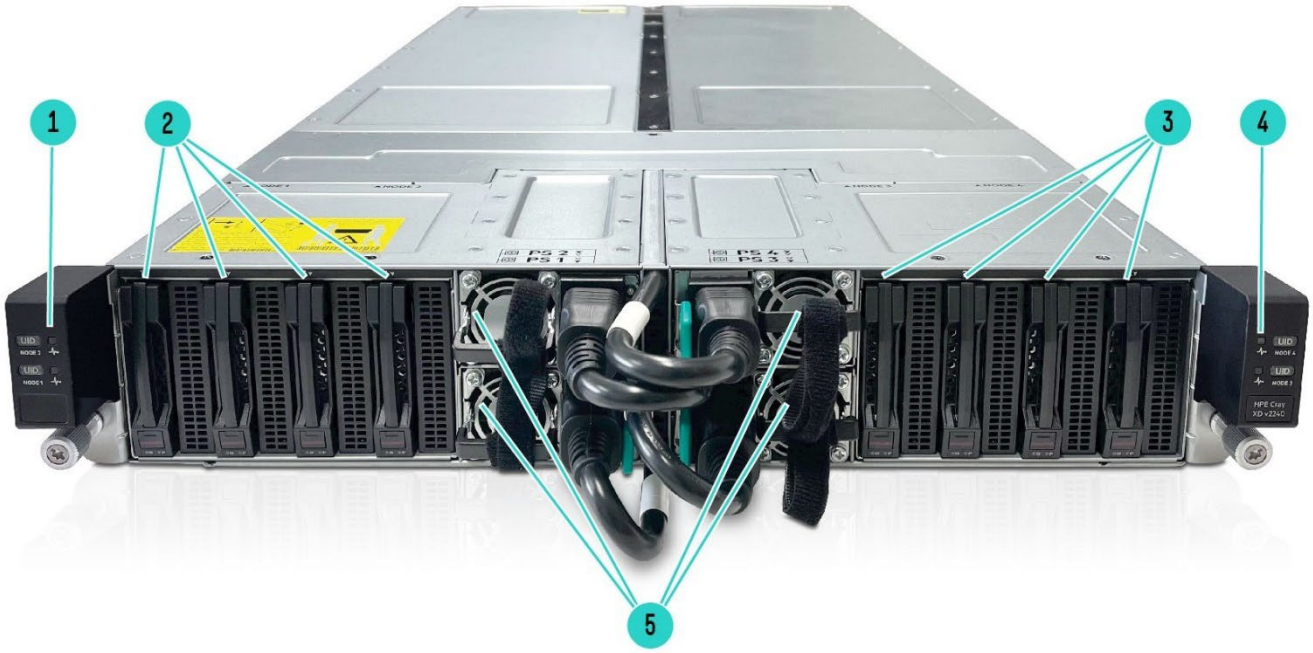
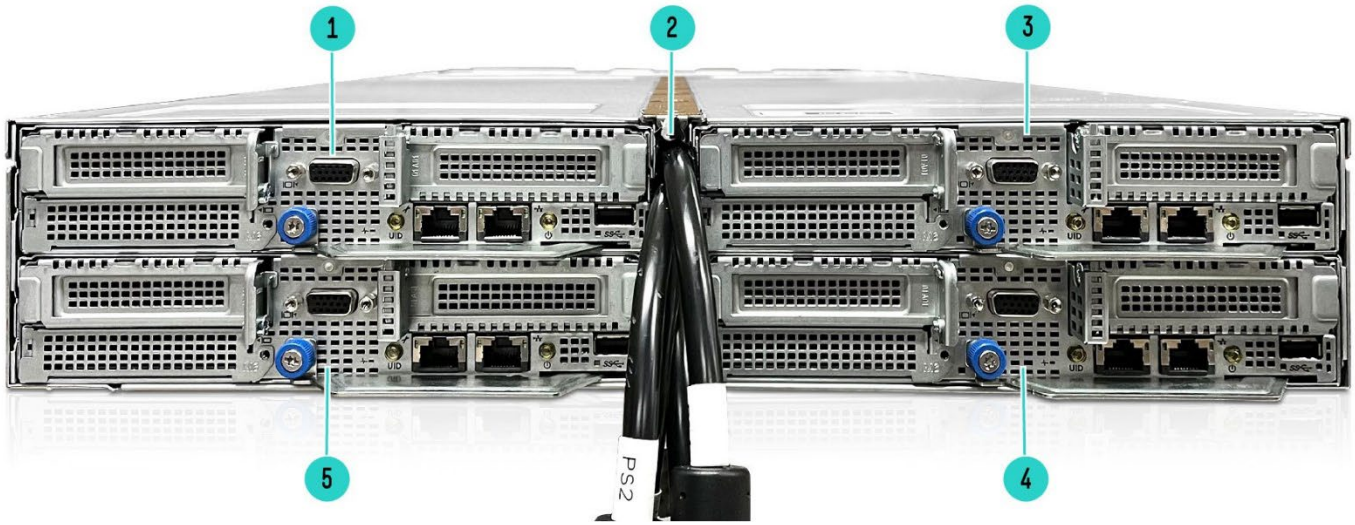
Overview



HPE Cray v2240 CTO Chassis supports 240V power supplies

HPE Cray v2277 CTO Chassis supports 277V power supplies (available upon request)

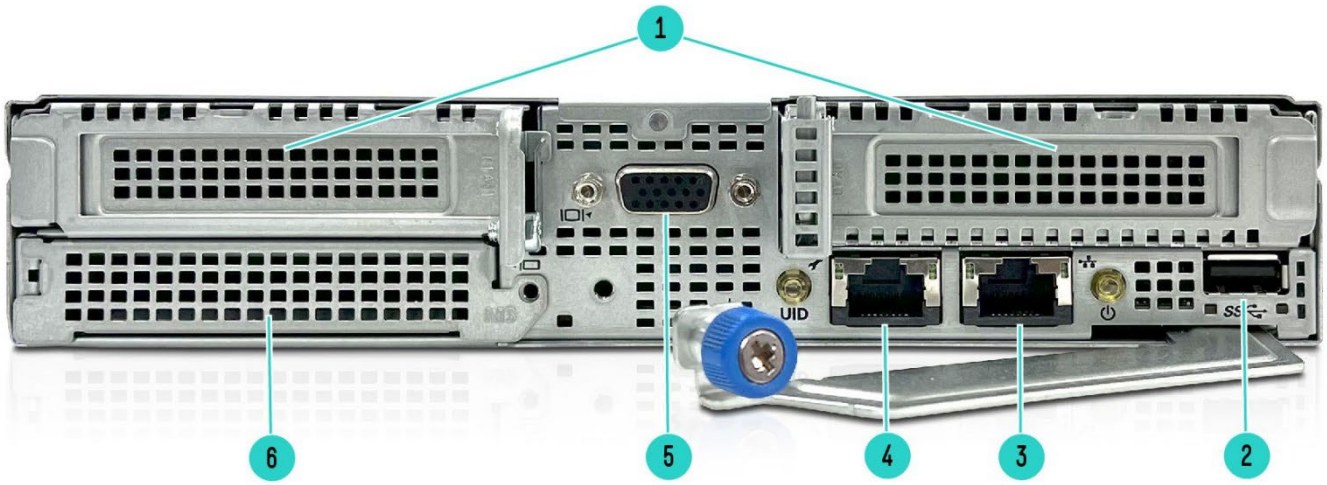
Item	Description	Item	Description
1.	UID button LED	4.	Health LED
2.	4x 2.5” SFF NVMe hot-plug drives (Node 1&2)	5.	4x CRPS Power Supplies (240 Voltage)
3.	4x 2.5” SFF NVMe hot-plug drives (Node 3&4)		



Chassis Rear Panel Components – 4 x 1U nodes

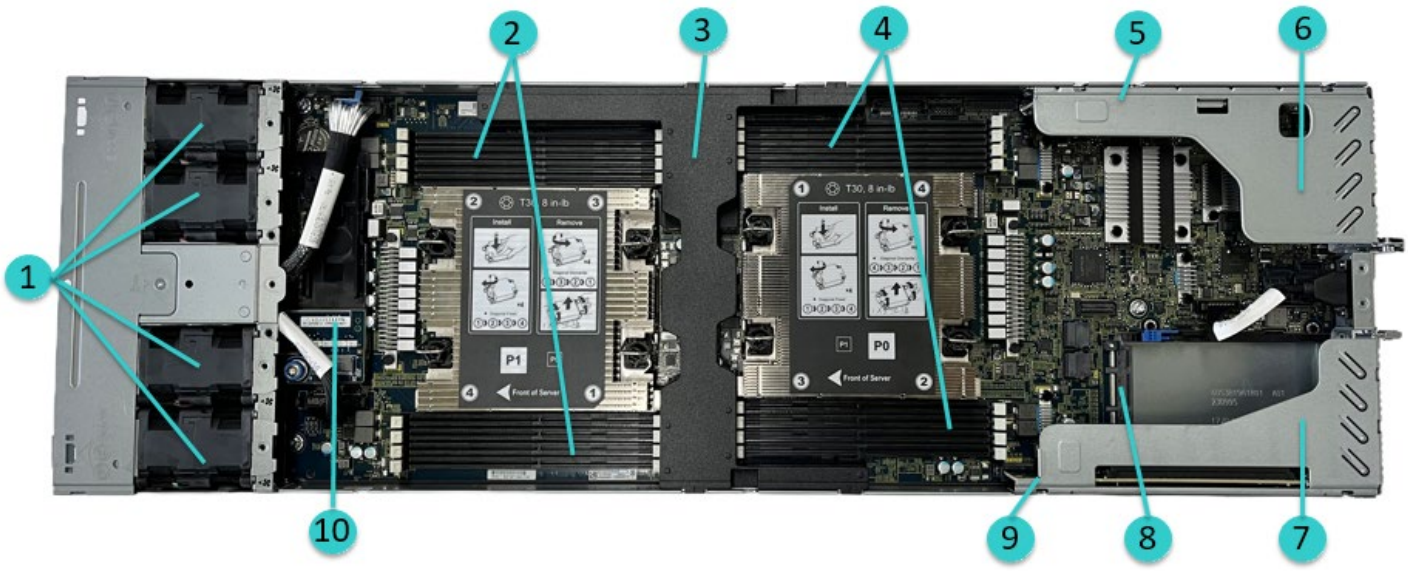
Item	Description	Item	Description
1.	1U Node #4	4.	1U Node #1
2.	4 internal power passthrough jumper cords (rear end)	5.	1U Node #3
3.	1U Node #2		

Overview



HPE Cray XD220v or XD225v 1U Server Rear Panel Components

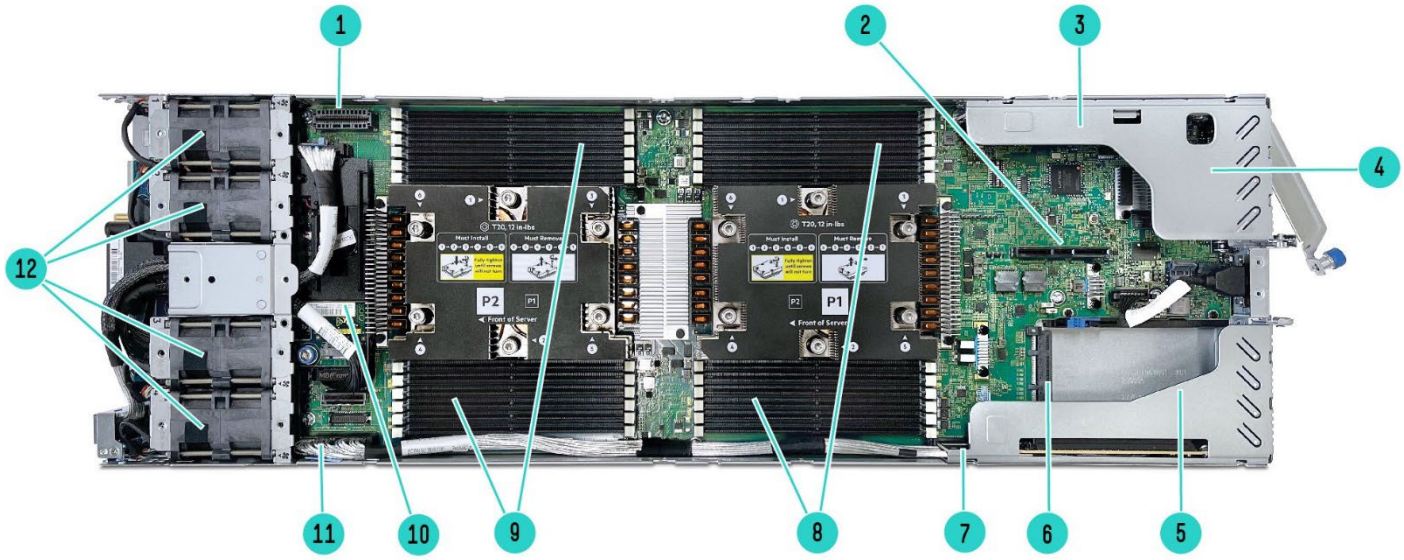
Item	Description	Item	Description
1	Slot 1 & 2 PCIe5 x16 (16,8,4,2,1)	4	Management RJ45 port
2	USB 3.0 connector	5	VGA port connector
3	Internet RJ45 port	6	OCP 3.0 Slot



HPE Cray XD220v 1U Server Top View

Item	Description	Item	Description
1.	FAN #1 - #4	6.	Right Riser Low Profile Card
2.	8 DIMM Slots for processor 2	7.	Left Riser Low Profile Card
3.	XD220v 1U Air Baffle	8.	OCP NIC 3.0
4.	8 DIMM Slots for processor 1	9.	PCIe x16 slot for Left Riser (R1)
5.	PCIe x16 slot for Right Riser (R2)	10.	M.2 2280/22110 NVMe SSD (P1)

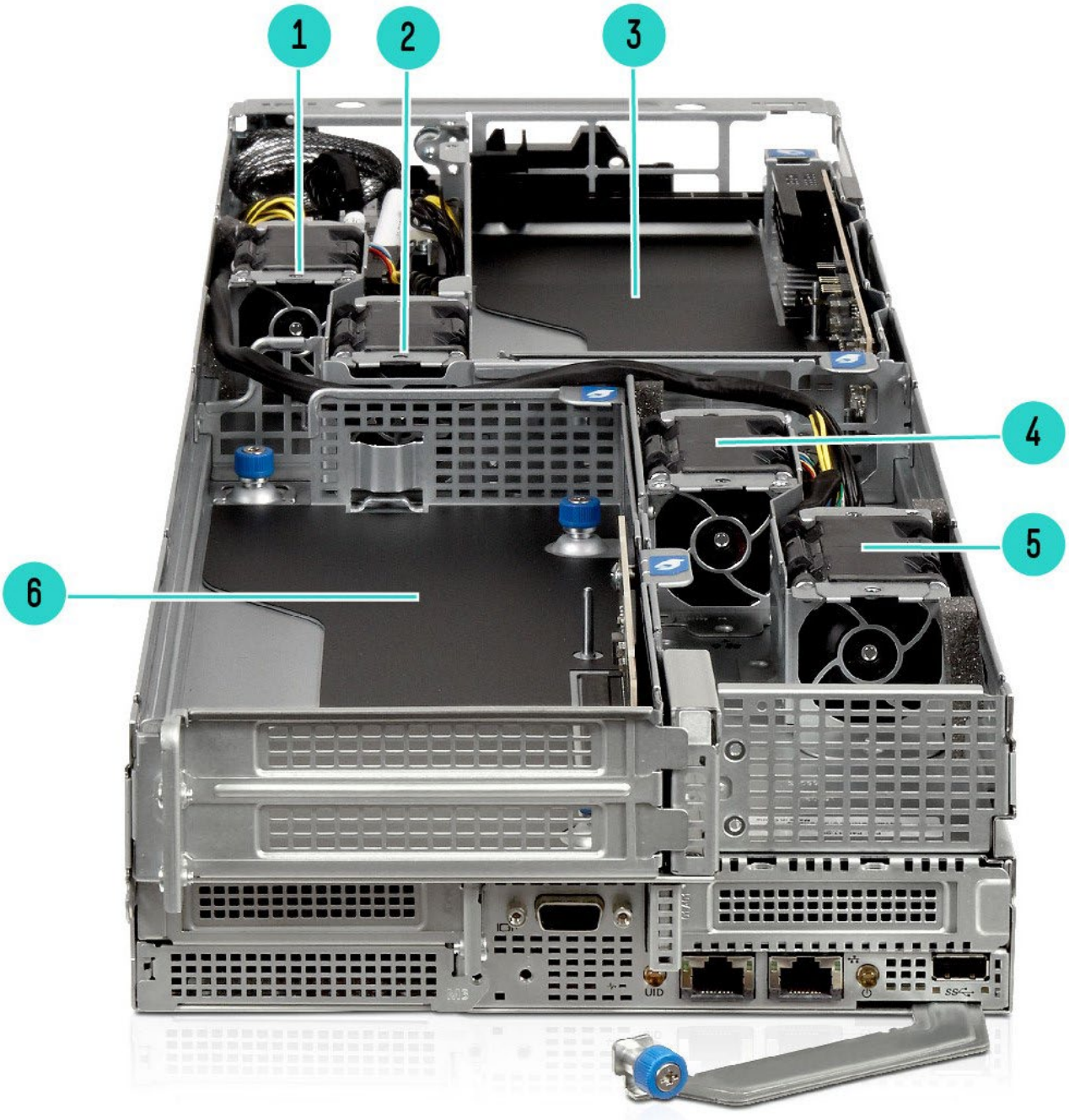
Overview



HPE Cray XD225v / XD295v bottom 1U Server Top View

Item	Description	Item	Description
1.	PCIe x16 slot for 2U Right Riser (R3)	7	PCIe x16 slot for Left Riser (R1)
2.	PCIe x16 slot for 2U Left Riser (R4)	8.	12 DIMM Slots for processor 1
3.	PCIe x16 slot for Right Riser (R2)	9.	12 DIMM Slots for processor 2
4.	Right Riser Low Profile Card	10.	M.2 2280/22110 NVMe SSD (P1)
5.	Left Riser Low Profile Card	11.	PCIe x16 slot for 1U Left Cable Riser (R5)
6.	OCP NIC 3.0	12.	FAN #1 - #4

Overview



HPE Cray XD295v 2U Server Top View

Item	Description	Item	Description
1.	FAN #8	4.	FAN #6
2.	FAN #7	5.	FAN #5
3.	Double Width FHFL GPU #2 or LP PCIe Card #2	6.	Double Width FHFL GPU #1 or LP PCIe Card #1

Overview

Chassis Information

Form Factor

- 2U

There are two chassis options with different voltages

- HPE Cray v2240 CTO chassis – supports 240V power supplies
  - 240 VAC, 2400W power supplies
- HPE Cray v2277 CTO chassis – supports 277V power supplies for 6pecific customer request in North America region
  - 277 VAC, 1600W power supplies

Each HPE Cray XD2000 Chassis is built with the following

- Four server slots for 1U node or Two server slots for 2U node
- Supports up to four (4) power supplies for the chassis
  - Minimum of two (2) power supplies required; PSU bezel blanks go into unused PSU slots
- Two backplanes each with 4SFF U.2 NVMe drives
- Two drives bezel blanks for no drives configured chassis

Server Tray Blank Kit

A chassis requires that four (4) server tray slots be populated with an HPE Cray XD220v/XD225v or an HPE Cray XD2000 Server Node Blank Kit.

Server Tray

HPE Cray XD220v server

- 2P/1U half width server tray built on the 5th Generation Intel® Xeon® Scalable Processors. With choices from 32-64 cores, up to 2.8Ghz base and 4.1Ghz turbo CPU speed and power ratings up to 385W (Supports air cooling for 350W CPUs)
- XD220v has 16 memory channels per server and it supports 5600 MT/s memory, two PCIe Gen5 slots, and multiple networking options including high speed fabric.
- Optional M.2 Mezz Riser Kit
- 1 network port, 1 management port
- Up to 4 server trays are supported per chassis

HPE Cray XD225v server

- 2P/1U half width server tray built on the AMD EPYC™ 9004 Series Processors. With choices from 16-128 cores, up to 3.6Ghz base and 4.0+Ghz turbo CPU speed and power ratings up to 400W (Some CPUs might require DLC)
- XD225v has 24 memory channels per server and it supports 4800 MT/s memory, two PCIe Gen5 slots, and multiple networking options including high speed fabric.
- Optional M.2 Mezz Riser Kit
- 1 network port, 1 management port
- Up to 4 server trays are supported per chassis

HPE Cray XD295v server

- 2P/2U half width server tray built on the AMD EPYC™ 9004 Series Processors. With choices from 16-128 cores, up to 3.6Ghz base and 4.0+Ghz turbo CPU speed and power ratings up to 400W (Some CPUs might require DLC)
- XD295v has 24 memory channels per server and it supports 4800 MT/s memory, two PCIe Gen5 slots, and multiple networking options including high speed fabric.
- 2 Double Wide FHFL GPUs or 2 Low Profile PCIe 5.0 cards
- Optional M.2 Mezz Riser Kit
- 1 network port, 1 management port
- Up to two server trays per 2U chassis
- Support for PCIe GPUs

Overview

Supported storage options: 0 or up to 2 SFF NVMe drives per 1U node or up to 4 drives per 2U node.
XD225v and XD295v can be mixed in a chassis. No mixing of Intel and AMD nodes in a chassis.

Rack Airflow Requirements

HPE Cray XD2000 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 XD2000 System User Guide:
https://support.hpe.com/connect/s/search?language=en_US#q=XD2000

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.
- 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 (up to 2 of the following depending on the model)

Notes:

- All Intel® Xeon® processors can support up to 2TB of memory each on the HPE Cray XD2000 system
- All AMD EPYC™ processors can support up to 3TB of memory each on the HPE Cray XD2000 system
- Certain limitations may apply to select processors, please contact your HPE sales representative
- Please contact your HPE sales representatives for any questions on processor support needed
- Some processors may require selection of Direct Liquid cooling options

4th Gen AMD EPYC™ Processor	Cores	Base Frequency	Max Frequency	Max Memory	Default TDP (W)	Cache	Memory
EPYC 9754	128	2.25GHz	3.1GHz	3TB	360	256MB	4800MT/s
EPYC 9734	112	2.2GHz	3.0GHz	3TB	340	256MB	4800MT/s
EPYC 9654	96	2.4GHz	3.7GHz	3TB	360	384MB	4800MT/s
EPYC 9654P	96	2.4GHz	3.7GHz	3TB	360	384MB	4800MT/s
EPYC 9634	84	2.25GHz	3.7GHz	3TB	290	384MB	4800MT/s
EPYC 9554	64	3.1GHz	3.75GHz	3TB	360	256MB	4800MT/s
EPYC 9554P	64	3.1GHz	3.75GHz	3TB	320	256MB	4800MT/s
EPYC 9534	64	2.45GHz	3.7GHz	3TB	280	256MB	4800MT/s
EPYC 9454	48	2.75GHz	3.8GHz	3TB	290	256MB	4800MT/s
EPYC 9454P	48	2.75GHz	3.8GHz	3TB	290	256MB	4800MT/s
EPYC 9474F	48	3.6GHz	4.1GHz	3TB	360	256MB	4800MT/s
EPYC 9374F	32	3.85GHz	4.3GHz	3TB	320	256MB	4800MT/s
EPYC 9354	32	3.25GHz	3.8GHz	3TB	280	256MB	4800MT/s
EPYC 9354P	32	3.25GHz	3.8GHz	3TB	280	256MB	4800MT/s
EPYC 9334	32	2.7GHz	3.9GHz	3TB	210	128MB	4800MT/s
EPYC 9224	24	2.5GHz	3.7GHz	3TB	200	192MB	4800MT/s
EPYC 9254	24	2.9GHz	4.15GHz	3TB	200	128MB	4800MT/s
EPYC 9274F	24	4.05GHz	4.3GHz	3TB	320	128MB	4800MT/s
EPYC 9174F	16	4.1GHz	4.4GHz	3TB	320	256MB	4800MT/s
EPYC 9124	16	3.0GHz	3.7GHz	3TB	200	128MB	4800MT/s
EPYC 9684X	96	2.55GHz	3.7GHz	3TB	400	1150MB	4800MT/s
EPYC 9384X	32	3.1GHz	3.1GHz	3TB	320	768MB	4800MT/s
EPYC 9184X	16	3.55GHz	3.55GHz	3TB	320	768MB	4800MT/s

5th Gen Intel® Xeon® Processor	Cores	Base Frequency	Max Frequency	Max Memory	Default TDP (W)	Cache	Memory
Xeon 8593Q	64	2.2GHz	3.9GHz	2TB	385	320M	5600MT/s
Xeon 8592+	64	1.9GHz	3.9GHz	2TB	350	320M	5600MT/s
Xeon 8580	60	2GHz	4GHz	2TB	350	300MB	5600MT/s
Xeon 8570	56	2.1GHz	4GHz	2TB	350	300MB	5600MT/s
Xeon 8568Y+	48	2.3GHz	4GHz	2TB	350	300MB	5600MT/s
Xeon 8562Y+	32	2.8GHz	4.1GHz	2TB	300	60MB	5600MT/s
Xeon 8558	48	2.1GHz	4GHz	2TB	330	260MB	5200MT/s
Xeon 8558U	48	2GHz	4GHz	2TB	300	260MB	5200MT/s
Xeon 6530	32	2.1GHz	4GHz	2TB	270	160MB	4800MT/s

On System Management Chipset

ASPEED 2600

Standard Features

Memory

Applicable for XD225v and XD295v.

Type	DDR5 Registered (RDIMM)
DIMM slots available	16 slots per server for XD220v 8 channels per processor, 1 DIMM per channel 24 slots per server for XD225v/XD295v 12 channels per processor, 1 DIMM per channel
Maximum capacity (RDIMM)	2TB for XD220v 16 x 128 GB @5600 MT/s 3TB for XD225v/XD295v 24 x 128 GB @5600 MT/s

Notes: Memory DIMM availability with a server platform is dependent upon completion of certification testing

Expansion Slots & Riser Information for XD220v/XD225v Server

Low Profile Left Riser R1 (P49217-B21)					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**Slot Form Factor**	**Source**
1	PCIe 5.0	x16	x16	Low Profile	CPU1
Low Profile Right Riser R2 (P49219-B21)					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**Slot Form Factor**	**Source**
2	PCIe 5.0	x16	x16	Low Profile	CPU1

Notes:

- If choosing Direct Liquid Cooling for the Cray XD2000 system, slot 2 is not available for use with a PCIe card
- Bus Width indicates the number of physical electrical lanes running to the connector

Expansion slots & riser information for XD295v server

Low Profile P2 PCIe Riser R5 (P52200-B21)					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**Slot Form Factor**	**Source**
1	PCIe 5.0	x16	x16	Low Profile	CPU2
Low Profile Right Riser R2 (P49219-B21)					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**Slot Form Factor**	**Source**
2	PCIe 5.0	x16	x16	Low Profile	CPU1
2U Right Riser R3 (P51613-B21), always selected under 2U nodes					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**Slot Form Factor**	**Source**
3	PCIe 5.0	x16	x16	Low Profile Double Width, Full Height Full Length	CPU2

2U Left Riser R4 (P51616-B21), always selected under 2U nodes					
Slots #	**Technology**	**Bus Width**	**Connector Width**	**Slot Form Factor**	**Source**
4	PCIe 5.0	x16	x16	Low Profile Double Width, Full Height Full Length	CPU1

Notes: Bus Width indicates the number of physical electrical lanes running to the connector

Standard Features

Maximum Internal Storage Per node		
Drive	**Capacity**	**Configuration**
Hot Plug NVMe SSD (AMD)	15TB	2x 7.68TB

Internal Storage Devices

Optional M.2 Mezz Riser Kit

Interfaces

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

Industry Standard Compliance

- ACPI 6.3 Compliant
- PCIe 5.0 Compliant
- WOL Support
- Microsoft® Logo certifications
- PXE Support
- USB 3.0 Compliant (internal);
- SMBIOS 3.4
- UEFI 2.8
- Redfish API
- European Union Erp Lot 9 Regulation European Union (EU) eco-design regulations for server and storage products, known as Lot 9, establishes power thresholds for idle state, as well as efficiency and performance in active state which vary among configurations. HPE ProLiant Gen11 servers are compliant with Lot9 requirements. Please visit: **https://www.hpe.com/us/en/about/environment/msds-specs-more.html** for more information regarding HPE Lot 9 conformance.

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

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

Power Specifications

To review typical system power ratings, please use the **HPE Power Advisor Tool**
For information on power specifications and technical content visit: **https://www.hpe.com/info/qs**

HPE Cray XD2000 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:

Standard Features

- Configuring system devices and installed options.
- Enabling and disabling system features.
- Displaying system information.
- Selecting the primary boot controller or partition.
- Configuring memory options.
- Launching other preboot environments.

Cray XD2000 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.

UEFI

Configure and boot your servers securely with industry standard Unified Extensible Firmware Interface (UEFI).
Learn more at: **http://www.hpe.com/servers/uefi**

Software Portfolio for HPE Cray XD2000s

Operating Systems and Virtualization Software Support for Cray XD2000 Servers

- Windows Server 2022
- Windows Server 2019
- VMware ESXi 8
- Red Hat Enterprise Linux (RHEL) 9.4, 8.9
- SUSE Linux Enterprise Server (SLES) 15 SP5
- Ubuntu (22.04,4 LTS)

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

Fabric software

- Mellanox UFM

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 Cray XD2000 supports industry standard DMTF Redfish that provide 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.

For clustered HPE Cray XD2000 system deployments (for HPC or other emerging workloads such as AI), customers can use the following cluster management software solutions:

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

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 + remote management from iLO.

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:

Bright Cluster Manager

Automates process of building cluster in the datacenter and in the cloud. Ideal for heterogeneous clusters or customers with additional requirements.

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 Windows or Ubuntu OS.

Notes: For more information on HPE Cray Programming Environment **visit this page**

HPE Message Passing Interface (MPI) - an MPI development environment designed by HPE to enable optimization of high-performance computing (HPC) applications on HPE Apollo 200 Gen10 Plus systems. The HPE Performance Software—MPI leverages a scalable MPI library and boosts performance of existing applications without requiring recompilation.

Additional 3rd party software developmental tools:

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

Security

- UEFI Secure Boot and Secure Start support
- HPE Cray XD Hardware Root of Trust
- Tamper-free updates – components digitally signed and verified
- Secure Recovery – recover critical firmware to known good state on detection of compromised firmware
- TPM (Trusted Platform Module) Gen10 Plus Module Kit option
- HPE Cray XD2000 supports OpenSSL 3.0
- Runtime Firmware Validation – Periodically scan essential firmware for compromised code during runtime

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Liquid Cooling Overview

Liquid cooling provides effective cooling for the most powerful chips while they operate at their highest possible performance. It also provides very energy efficient cooling and enables higher rack densities.

Standard Features

Selecting DLC Options

HPE Cray XD2000 servers can be equipped with Direct Liquid Cooling (DLC) by selecting from the following options, in addition to normal server configuration menu options:

Notes: *highlighted options are specific to ARCS configurations only

SKU Description	HPE SKU	Selection Criteria	Comments
HPE 42U 800 mm x 1200 mm Enterprise G2 Shock rack	P9K46A	One (1) per rack	DLC compatible 42U HPE racks
HPE 48U 800 mm x 1200 mm Enterprise G2 Shock rack	P9K58A		DLC compatible 48U HPE racks
HPE ARCS 48U 800 mm x1600 mm Rack*	R8N95A		DLC compatible 48U HPE ARCS racks
HPE Cray XD 75kW 208V FIO In-Rack Coolant Distribution Unit	P55832-B21	One (1) per rack	4U CDU mounted at the bottom of the rack
HPE Cray Fill and Drain FIO Hand Pump Kit	P59920-B21	One (1) for multiple racks	Filling kit for CDU. One can be used to service multiple CDUs
HPE Cray 4U CDU 2.5m FIO Leak Detection Kit	P55834-B21	One (1) per rack	Additional external leak detection cable (is default but can be removed if not needed). Connects to rear of CDU and can be routed to desired location (CDU already contains internal leak detection)
HPE Cray G2 Rack 25.4mm SAN to FD83 Secondary FIO Water Hose Kit	P56290-B21	One (1) per rack	1” inner diameter hose kit connects the CDU to the rack manifold in a standard HPE G2 rack
HPE Cray ARCS 25.4mm SAN to FD83 Secondary FIO Water Hose Kit*	P56291-B21		1” inner diameter hose kit connects the CDU to the rack manifold in a HPE ARCS rack
HPE Cray 25mm 1.83m Primary FIO Water Hose Kit with Insulation	P56286-B21	One (1) per rack	1” inner diameter insulated hose kit connects the CDU to the facility water piping below the rack
HPE Cray 25mm 3.66m Primary FIO Water Hose Kit with Insulation	P56287-B21		1” inner diameter Insulated hose kit connects the CDU to the facility water piping above the rack
HPE Cray 38mm 1.83m Primary FIO Water Hose Kit	P59224-B21		1.5” inner diameter Non-insulated hose kit connects the CDU to the facility water piping below the rack
HPE Cray 38mm 3.66m Primary FIO Water Hose Kit	P59225-B21		1.5” inner diameter Non-insulated hose kit connects the CDU to the facility water piping above the rack
HPE Cray 42U 72-node Direct Liquid Cooling FD83 SCG03 FIO Rack Manifold	P56288-B21	One (1) per rack	42U rack manifold with connections for 72 servers
HPE Cray 48U 84-node Direct Liquid Cooling FD83 SCG03 FIO Rack Manifold	P56289-B21		48U rack manifold with connections for 84 servers
HPE Cray XD2000 FIO Cooling Loop for AMD CPU	P56294-B21	One (1) per server	DLC coldplate loop for AMD CPU cooling
HPE Cray XD2000 DDR5 FIO Cooling Loop for AMD CPU	P56295-B21		DLC coldplate loop for AMD CPU & Memory cooling
HPE Cray XD2000 FIO Cooling Loop for INTEL CPU	P56292-B21		DLC coldplate loop for INTEL CPU cooling
HPE Cray XD2000 DDR5 FIO Cooling Loop for INTEL CPU	P56293-B21		DLC coldplate loop for INTEL CPU & Memory cooling

Standard Features

HPE Adaptive Rack Cooling System (ARCS)

HPE ARCS can provide advanced cooling for HPE Cray XD2000 servers using facility water.

HPE ARCS is a liquid to air heat exchanger cooling system that wraps around HPE racks to provide cool inlet air and manage warm exhaust air. This option can be used for air cooled HPE Cray XD2000 racks or in combination with DLC to cool high density racks.

For additional information, please visit HPE Adaptive Rack Cooling System QuickSpecs **here**.

HPE Rear Door Heat Exchanger (RDHX)

HPE RDHX can neutralize warm exhaust air from HPE Cray XD2000 servers using facility water.

HPE RDHX is a liquid to air heat exchanger cooling system that is mounted directly to the rear panel of HPE racks. This option can be used for air cooled HPE Cray XD2000 racks or in combination with HPE Cray XD2000 DLC to cool high density racks.

For additional information, please visit HPE Motivair Liquid Cooled Doors QuickSpecs **here**.

Service and Support

HPE Services

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

https://www.hpe.com/services

Consulting Services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

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

HPE Managed Services

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

HPE Managed Services | HPE

Operational services

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

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

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

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

HPE Tech Care Service

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

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

Service and Support

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

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

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

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

Other Related Services from HPE Services:

HPE Education Services

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

Defective Media Retention

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

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

Parts and Materials

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

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

How to Purchase Services

Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at **https://ssc.hpe.com/portal/site/ssc/**

Service and Support

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience

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

Consume IT On Your Terms

HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

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

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

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.

Step 1: Choose a Chassis

HPE Cray v2240 Configure-to-order Chassis P49953-B21

Notes:

- HPE Cray v2240 is the default chassis for Cray XD2000
- P49954-B21 (v2277 CTO Chassis) is available if 277Volt power supplies are needed

Choose a Backplane for Chassis

HPE Cray XD2000 4SFF U.2 FIO Backplane Kit P51772-B21

Notes:

- One qty of P51773-B21 (power cable kit) and one qty of P51774-B21 (chassis cable kit) need to be selected.
- For driveless configuration with no backplanes, two qty of P51776-B21 (drive cage blank) need to be selected.

Power Supplies

HPE DPS-2400AB-10 2400W 240VAC Common Redundant Power Supply Kit P48778-B21

HPE 2400W 240V Titanium Common Redundant Power Supply Kit P53914-B21

Notes:

- P48778-B21 can be selected with v2240 chassis only
- For 1 node, Minimum 1 PSU; For 2 nodes, Min 2 PSUs; For 3 nodes, Min 2 PSUs, For 4 nodes, Min 3 PSUs.
- PSU blank (P48748-B21) will be added to PSU slots not populated
- For v2277 chassis, P48780-B21 1600W CRPS is available

Power Cords

HPE C19 - C20 WW 250V 16Amp 2.5m Jumper Cord 295633-B22

HPE C19-C20 IN 250V 16Amp 2.5m Black Jumper Cord R1C66A

Notes: Quantity must be equal to total number of power supplies on the order. For v2277 chassis, use P52178-B21 Jumper cord.

Step 2: Choose Air Cooling Options

HPE Air Cooling Options

HPE Cray Supercomputing XD2000 Server Node Blank Kit P48749-B21

Notes: Required for any non-populated slots in the chassis for designed thermal performance, including system operation and node servicing

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

HPE Rail Kits

HPE Cray XD2000 Rail Kit P49240-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

Configuration Information

Step 4: Choose Base configuration

Server Trays

HPE Cray XD200v 1U Node Configure-to-order Server	P49000-B21
HPE Cray XD225v 1U Node Configure-to-order Server	P52183-B21
HPE Cray XD295v 2U Node Configure-to-order Server	P52184-B21

Notes:

- Up to 4 single 1U half width server trays (XD225v) can be added to the HPE Cray v2240 Chassis
- Up to 2 single 2U half width server trays (XD295v) or 2 single 1U half width servers with a single 2U half width servers
- Mixing of AMD and Intel nodes is not allowed

Step 5: Choose Processor option

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

INTEL Processors – Factory Integrated Processor Kit for XD220v

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 8580 2.0GHz 60-core 350W Processor Kit for HPE Cray XD	P70088-B21
Intel Xeon-Platinum 8570 2.1GHz 56-core 350W Processor Kit for HPE Cray XD	P70087-B21
Intel Xeon-Platinum 8568Y+ 2.3GHz 48-core 350W Processor Kit for HPE Cray XD	P70086-B21
Intel Xeon-Platinum 8562Y+ 2.8GHz 32-core 300W Processor Kit for HPE Cray XD	P71376-B21
Intel Xeon-Platinum 8558 2.1GHz 48-core 330W Processor Kit for HPE Cray XD	P70085-B21
Intel Xeon-Platinum 8558U 2.0GHz 48-core 300W Processor Kit for HPE Cray XD	P70084-B21
Intel Xeon-Gold 6530 2.1GHz 32-core 270W Processor Kit for HPE Cray XD	P70083-B21

Notes:

- "HPE Cray XD220v CPU 1 Rear FIO Heat Sink Kit" (P49855-B21) must be ordered for 1st Processor.
- "HPE Cray XD220v CPU 2 Front Heat Sink Kit" (P49854-B21) must be ordered for 2nd Processor.

AMD Processors – Factory Integrated Processor Kit for XD225v and XD295v

AMD EPYC 9754 2.25GHz 128-core 360W Processor Kit for HPE Cray XD2X5v	P61723-B21
AMD EPYC 9734 2.2GHz 112-core 340W Processor Kit for HPE Cray XD2X5v	P61722-B21
AMD EPYC 9654 2.4GHz 96-core 360W Processor Kit for HPE Cray XD2X5v	P56456-B21
AMD EPYC 9654P 2.4GHz 96-core 360W Processor Kit for HPE Cray XD2X5v	P56457-B21
AMD EPYC 9174F 4.1GHz 16-core 320W Processor Kit for HPE Cray XD2X5v	P56458-B21
AMD EPYC 9534 2.45GHz 64-core 280W Processor Kit for HPE Cray XD2X5v	P56459-B21
AMD EPYC 9554 3.1GHz 64-core 360W Processor Kit for HPE Cray XD2X5v	P56460-B21
AMD EPYC 9354 3.25GHz 32-core 280W Processor Kit for HPE Cray XD2X5v	P56461-B21
AMD EPYC 9124 3GHz 16-core 200W Processor Kit for HPE Cray XD2X5v	P56462-B21
AMD EPYC 9554P 3.1GHz 64-core 360W Processor Kit for HPE Cray XD2X5v	P56463-B21
AMD EPYC 9354P 3.25GHz 32-core 280W Processor Kit for HPE Cray XD2X5v	P56464-B21
AMD EPYC 9634 2.25GHz 84-core 290W Processor Kit for HPE Cray XD2X5v	P56465-B21
AMD EPYC 9474F 3.6GHz 48-core 360W Processor Kit for HPE Cray XD2X5v	P56466-B21
AMD EPYC 9254 2.9GHz 24-core 200W Processor Kit for HPE Cray XD2X5v	P56467-B21
AMD EPYC 9454 2.75GHz 48-core 290W Processor Kit for HPE Cray XD2X5v	P56468-B21
AMD EPYC 9454P 2.75GHz 48-core 290W Processor Kit for HPE Cray XD2X5v	P56469-B21
AMD EPYC 9374F 3.85GHz 32-core 320W Processor Kit for HPE Cray XD2X5v	P56470-B21

Configuration Information

AMD EPYC 9274F 4.05GHz 24-core 320W Processor Kit for HPE Cray XD2X5v	P56471-B21
AMD EPYC 9334 2.7GHz 32-core 210W Processor Kit for HPE Cray XD2X5v	P56472-B21
AMD EPYC 9224 2.5GHz 24-core 200W Processor Kit for HPE Cray XD2X5v	P58782-B21
AMD EPYC 9684X 2.55GHz 96-core 400W Processor Kit for HPE Cray XD2X5v	P63468-B21
AMD EPYC 9384X 3.1GHz 32-core 320W Processor Kit for HPE Cray XD2X5v	P63467-B21
AMD EPYC 9184X 3.55GHz 16-core 320W Processor Kit for HPE Cray XD2X5v	P63466-B21

Notes:

- P type processors are 1P socket count ONLY. Cannot be mixed with any other processor.
- "HPE Cray XD2X5v CPU 1 Rear FIO Heat Sink Kit" (P52187-B21) must be ordered for 1st Processor.
- "HPE Cray XD2X5v CPU 2 Front Heat Sink Kit" (P52185-B21) must be ordered for 2nd Processor.

Step 6: Choose Additional Options from Core and Additional Options sections below

HPE Cray XD2000 Memory

Registered DIMMs for XD220v

HPE Cray Supercomputing XD 16GB (1x16GB) Single Rank x8 DDR5-5600 Registered Standard Memory Kit	P70075-H21
HPE Cray Supercomputing XD 32GB (1x32GB) Dual Rank x8 DDR5-5600 Registered Standard Memory Kit	P70077-H21
HPE Cray Supercomputing XD 64GB (1x64GB) Dual Rank x4 DDR5-5600 Registered Standard Memory Kit	P70079-H21
HPE Cray XD 128GB (1x128GB) Quad Rank x4 DDR5-5600 Registered 3DS Standard Memory Kit	P70081-H21

Notes:

- Minimum 1 DIMMs are required per server; up to 8 DIMMs per processor.
- A maximum of 16 DIMMs are supported per XD220v server tray (or 8 DIMMs max per processor).
- No mixing of x4 and x8 memory allowed
- To maximize performance in most potential applications, it is recommended to balance the total memory capacity across all installed processors. Load the channels similarly whenever possible to enable optimal interleaving.
- HPE memory from previous generation servers is not compatible with this server.

Registered DIMMs for XD225v/XD295v

HPE Cray XD 16GB (1x16GB) Single Rank x8 DDR5-4800 Registered Standard Memory Kit	P58354-H21
HPE Cray XD 32GB (1x32GB) Dual Rank x8 DDR5-4800 Registered Standard Memory Kit	P58356-H21
HPE Cray XD 64GB (1x64GB) Dual Rank x4 DDR5-4800 Registered Standard Memory Kit	P58358-H21
HPE Cray XD 128GB (1x128GB) Quad Rank x4 DDR5-4800 Registered 3DS Standard Memory Kit	P58360-H21

Notes:

- Minimum 1 DIMMs are required per server; up to 12 DIMMs per processor.
- A maximum of 24 DIMMs are supported per XD2X5v server tray (or 12 DIMMs max per processor).
- No mixing of x4 and x8 memory allowed
- To maximize performance in most potential applications, it is recommended to balance the total memory capacity across all installed processors. Load the channels similarly whenever possible to enable optimal interleaving.
- HPE memory from previous generation servers is not compatible with this server.

HPE PCIe riser kits

All 1U Server Node Compatible – HPE XD22xv

HPE Cray XD2X5v Low Profile Left Riser Kit	P49217-B21
HPE Cray XD2000 Low Profile Right Riser Kit	P49219-B21
HPE Cray XD2000 M.2 Mezzanine Kit	P49242-B21

Notes:

- If DLC option is chosen, Right Riser kit cannot be ordered

Configuration Information

- Riser does not take up a PCIe slot in the system
- Max qty is 1 per node for above riser kits and Mezzanine kit

HPE XD295v Exclusive

HPE Cray XD2000 P2 PCIe Riser Kit	P52200-B21
HPE Cray Supercomputing XD295v R3 Right Riser	P51613-B21
HPE Cray Supercomputing XD295v R4 Left Riser	P51616-B21

Notes:

- P51613-B21 and P51616-B21 Risers are automatically selected with XD295v server
- Max qty is 1 per node for above riser kits

Graphic Card Options

AMD Instinct MI210 PCIe Accelerator for HPE	R6V51A
NVIDIA A30 PCIe Non-CEC Accelerator for HPE	R9S38C
NVIDIA H100 80GB PCIe Accelerator for HPE	R9S41A
NVIDIA L40S 48GB PCIe Accelerator	S2L70A

Notes: GPU require enablement kits. See Graphic Card Accessories notes section for more details

Graphic Card Accessories

HPE Cray XD2000 GPU Option for AMD MI200	P52189-B21
HPE Cray XD2000 GPU Option for NVIDIA A30/A100	P52191-B21
HPE Cray XD2000 H100 GPU Enablement Kit	P67859-B21
HPE Cray XD2000 L40S/H100 Enablement Kit	P68889-B21

Step 7: Choose Additional Factory Integrated Options (only one from each category unless otherwise noted)

HPE Networking

Ethernet Options

Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 Adapter for HPE	P08443-B21
Intel E810-XXVDA4 Ethernet 10/25Gb 4-port SFP28 Adapter for HPE	P08458-B21
Intel I350-T4 Ethernet 1Gb 4-port BASE-T Adapter for HPE	P21106-B21
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
HPE Ethernet 100Gb 1-port QSFP28 PCIe3 x16 MCX515A-CCAT Adapter	P31246-H21
HPE Slingshot SA210S Ethernet 200Gb 1-port PCIe NIC	R4K46A
Intel I350-T4 Ethernet 1Gb 4-port BASE-T OCP3 Adapter for HPE	P08449-B21
Broadcom BCM57416 Ethernet 10Gb 2-port BASE-T OCP3 Adapter for HPE	P10097-B21
Intel E810-XXVDA2 Ethernet 10/25Gb 2-port SFP28 OCP3 Adapter for HPE	P10106-B21
Intel E810-CQDA2 Ethernet 100Gb 2-port QSFP28 OCP3 Adapter for HPE	P22767-B21

Notes:

- For 1U, total Slots available for PCIe is 2, total Slots available for OCP3.0 is 1. This is a total selection from anything in the following categories: InfiniBand, Networking, Controllers, PCI Accelerator
- Requires the selection of Left or Right Riser kit

Configuration Information

InfiniBand Options

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-H21
HPE InfiniBand HDR/Ethernet 200Gb 1-port QSFP56 PCIe4 x16 OCP3 MCX653435A-HDAI Adapter	P31323-H21
HPE InfiniBand HDR/Ethernet 200Gb 2-port QSFP56 PCIe4 x16 OCP3 MCX653436A-HDAI Adapter	P31348-H21
HPE InfiniBand NDR 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Adapter	P45641-H21
HPE InfiniBand NDR200 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Adapter	P45642-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 InfiniBand NDR/Ethernet 400Gb 1-port OSFP PCIe5 x16 MCX75310AAS-NEAT Adapter	P45641-H23
HPE InfiniBand NDR200/Ethernet 200Gb 1-port OSFP PCIe5 x16 MCX75310AAS-HEAT Adapter	P45642-H22

Notes:

- Requires the selection of Left or Right Riser kit. Maximum PCIe card limit is depending on the selection of Left and/ or Right riser kit
- Please see the QuickSpecs for Technical Specifications and additional information: **https://www.hpe.com/us/en/product-catalog/servers/server-adapters.hits-12.html**

HPE Cray XD2000 Drives

Samsung PM9A3 960GB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P48414-H21
Samsung PM9A3 1.92TB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P55285-H21
Samsung PM9A3 3.84TB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P48411-H21
Samsung PM9A3 7.68TB NVMe Read Intensive SFF U.2 Self-encrypting SSD for HPE Cray XD 2000	P55175-H21
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
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 SFF U.3 SSD for HPE Cray XD	P60519-H21
Micron 7450 1.92TB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray XD	P60520-H21
Micron 7450 3.84TB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray XD	P60521-H21
Micron 7450 7.68TB NVMe Gen4 Read Intensive SFF U.3 SSD for HPE Cray SC XD	P60522-H21
Micron 7450 15.36TB NVMe Gen 4 Read Intensive SFF U.3 SSD for HPE Cray SC XD	P71808-H21
Micron 7450 1.6TB NVMe Gen4 Mainstream Performance Mixed Use SFF U.3 SSD for HPE Cray XD 2000	P69536-H21
Micron 7450 3.2TB NVMe Gen4 Mainstream Performance Mixed Use SFF U.3 SSD for HPE Cray XD 2000	P69539-H21

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	Q9V60AAE

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

Configuration Information

HPE Performance Cluster Manager 1 Node 3yr 24x7 Support Perpetual LTU	Q9V60A

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	Q9V61A

Notes:
- This SKU does not include the license. Please order with Q9V60AAE.
- Order one per node

HPE Performance Cluster Manager Media Kit	Q9V62A

Notes: One media kit per solution.

HPE Power Distribution Units

Power Distribution Units (PDUs) are an integral piece to this data center solution and HPE offers several types. Basic PDUs provide reliable power with 0U or 1U installation options. Metered PDUs have added intelligence to precisely track power usage and switched PDUs provide both local and remote power management. There are additional metered PDUs that are recommended for this solution 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	R8P19A
HPE Metered 3Ph 66.5kVA/60309 100A 5-wire 480/277V Outlets (21) SDG23/Vertical NA PDU	879034-B21
HPE Metered 3Ph 39.9kVA/60309 60A 5-wire 480/277V Outlets (21) SDG23/Vertical NA PDU	880459-B21
HPE Metered 3Ph 57.6kVA/60309 100A 5-wire 80A/230V Outlets (3) C13 (18) C19/Vertical NA PDU	880460-B21
HPE Metered 3Ph 34.5kVA/60309 60A 5-wire 48A/230V Outlets (3) C13 (18) C19/Vertical NA FIO PDU	880461-B21
HPE Cray Supercomputer 60A 415V 3 Phase 24 CX PDU	R4N30A
HPE Mtrd 3P 69.1kVA 125A 96A230V FIO PDU	880462-B21
HPE Metered 3Ph 45.1kVA/60309 63A 5-wire 63A/230V Outlets (3) C13 (18) C19/Vertical INTL FIO PDU	880463-B21
HPE Cray Supercomputer 63A 400V 3 Phase 24 CX PDU	R4N29A
HPE G2 Metered/Switched 3Ph 17.3kVA/60309 4-wire 48A/208V Out (12) C13 (12) C19/Vertical NA/JP PDU	P9S22A
HPE G2 Metered 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (12) C13 (12) C19/Vertical NA/JP PDU	P9R86A
HPE G2 Metered Modular 3Ph 17.3kVA/60309 60A 4-wire 48A/208V Outlets (6) C19/1U Horizontal NA/JP PDU	P9R80A
HPE G2 Metered/Switched 3Ph 22kVA/60309 5-wire 32A/230V Out (12) C13 (12) C19/Vertical INTL PDU	P9S24A
HPE G2 Metered 3Ph 22kVA/60309 5-wire 32A/230V Outlets (12) C13 (12) C19/Vertical INTL PDU	P9R87A
HPE G2 Metered Modular 3Ph 22kVA/60309 5-wire 32A/230V Outlets (6) C19/1U Horizontal INTL PDU	P9R81A

Technical Specifications

HPE Cray v2240/v2277 Chassis		
Dimensions	**Height**	3.44 in (8.75 cm)
	Width	17.63 in (44.8 cm)
	Depth	38.43 in (91.6 cm)
Shipping Dimensions	**Height**	12.5 in (31.75 cm)
	Width	23.63 in (60 cm)
	Depth	39.37 in (100 cm)
Chassis Weight	**Empty (no drives, power supplies, RCM, server nodes and server blanks)**	27.47 lbs. (12.46 kg)
Max Enclosure Weight	**Approximate – 24 SFF drive configuration**	106.50 lbs. (48.3 kg)

HPE Cray XD220v/XD225v Server Node		
Server Dimensions (H x W x D)	1.62 x 8.33 x 27.2 in (4.125cm x 21.150cm x 69.09cm)	
Weight (approximate)	Minimum	13.12 lbs. (5.95 kg)
Weight (approximate)	Maximum	16.31 lbs. (7.40 kg)

HPE Cray XD295v Server Node		
Server Dimensions (H x W x D)	3.26 x 8.33 x 27.80 in (8.272cm x 21.150cm x 70.602cm)	
Weight (approximate)	Minimum	21.30 lbs. (9.66 kg)
Weight (approximate)	Maximum	29.37 lbs. (13.32 kg)

Technical Specifications

System Inlet Temperature Standard Operating Support	10° to 35°C (50° to 95°F)	At sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.
Extended Ambient Operating Support	10° to 5°C (50° to 41°F) and 35° to 40°C (95° to 104°F)	System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F). For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL:**http://www.hpe.com/servers/ashrae** For approved hardware configurations, the supported system inlet range is extended to be: 40° to 45°C (104° to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the URL:**http://www.hpe.com/servers/ashrae** System performance may be reduced if operating in the extended ambient operating range or with a fan fault.
	-30° o 60°C (-22° to 140°F).	Maximum rate of change is 20°C/hr (36°F/hr).
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. 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).

Thermal limitations

For a full list of thermal limitations please see the HPE Cray XD2xxv thermal guidelines.
https://www.hpe.com/support/xd220v-thermal
https://www.hpe.com/support/xd225v-thermal
https://www.hpe.com/support/xd295v-thermal

TCO Certified

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.

TCO Certified

TCO Certified The HPE ProLiant XL225n servers has been TCO Certified. All HPE TCO Certified products can be found on TCO Certified Product Finder. More information on TCO Certified can be downloaded here :
https://www.hpe.com/us/en/about/environment/eco-labels.html

Summary of Changes

Date	Version History	Action	Description of Change
15-Jul-2024	Version 18	Changed	Standard Features section was updated
03-Jun-2024	Version 17	Changed	Standard Features section was updated
06-May-2024	Version 16	Changed	Overview, Standard Features, Configuration Information, Technical Specifications sections were updated Series name wa updated
01-Apr-2024	Version 15	Changed	Configuration Information Section was updated
08-Jan-2024	Version 14	Changed	Configuration Information Section was updated
04-Dec-2023	Version 13	Changed	Overview and Configuration Information sections were updated.
06-Nov-2023	Version 12	Changed	Configuration Information Section was updated
02-Oct-2023	Version 11	Changed	Overview section was updated.
05-Sep-2023	Version 10	Changed	Configuration Information Section was updated
07-Aug-2023	Version 9	Changed	Standard Features section was updated.
05-Jun-2023	Version 8	Changed	Standard Features and configuration Information sections were updated
01-May-2023	Version 7	Changed	Standard Features and configuration Information sections were updated
03-Apr-2023	Version 6	Changed	Configuration Information Section was updated
06-Mar-2023	Version 5	Changed	Overview, Standard Features, Configuration Information, Technical Specifications sections were updated
06-Feb-2023	Version 4	Changed	Standard Features and Configuration information sections were Updated
10-Jan-2023	Version 3	Changed	Configuration Information Section was updated
05-Dec-2022	Version 2	Changed	Standard Features & Technical Specifications Sections were updated
10-Nov-2022	Version 1	New	New QuickSpecs

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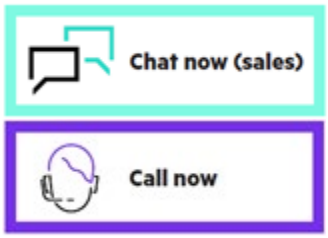

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