Extended Ambient Temperature Guidelines for Gen10 Plus HPE ProLiant and HPE Apollo servers and HPE Synergy

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Extended Ambient Temperature Guidelines for Gen10 Plus HPE ProLiant and HPE Apollo servers and HPE Synergy

Abstract
This document provides information about the extended ambient operating temperature support for Gen10 Plus HPE ProLiant and HPE Apollo servers and HPE Synergy compute modules.

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Revision history

Part number	Publication date	Edition	Summary of changes
30-01B242DB-008	September 2022	8	• Added HPE ProLiant MicroServer Gen10 Plus v2.

Part number	Publication date	Edition	Summary of changes
			• Added QuickSpecs references (DL385 Gen10 Plus Server and DL385 Gen10 Plus v2 Server).
30-01B242DB-007	June 2022	7	Added ASHRAE Class A2 statement to Hewlett Packard Enterprise Extended Ambient Operating Support standards.
30-01B242DB-006	February 2022	6	Added HPE ProLiant DL20 and HPE ProLiant ML30 Gen10 Plus servers.

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Hewlett Packard Enterprise Extended Ambient Operating Support standards

The American Society of Heating Refrigeration and Air-Conditioning Engineers sets standards for building systems, energy efficiency, indoor air quality, refrigeration, and sustainability. The ASHRAE A3 and A4 classes are the latest classes that have been defined in an effort to support the Fresh Air Data cooling initiative. Hewlett Packard Enterprise Extended Ambient Operating Support is defined as comparable to an ASHRAE class.

The following table provides a summary of environmental ranges supported, with altitude de-ratings, by Hewlett Packard Enterprise ProLiant servers. Items in bold are ProLiant features that exceed the ASHRAE comparable class feature set.

Hewlett Packard Enterprise Standard Operating Support

Dry bulb temp range (°C)	Relative humidity range (% RH)	Maximum wet bulb temp (°C)	Maximum altitude	Altitude de-rating [1]	Available yearly operational time [2]
10°C to 35°C (50°F to 95°F)	8% to 90%	28°C non-condensing	3,050 meters	1.0°C/305 m above sea level	See specific product information for any temperature restrictions

[1] Altitude de-rating assumes no direct sustained sunlight.
[2] At Standard Operating Support conditions, there is no time limitation for operating the servers in ASHRAE Class A2 conditions.

Hewlett Packard Enterprise Extended Ambient 40°C Operating Support (ASHRAE Class A3 compliant)

Dry bulb temp range (°C)	Relative humidity range (% RH)	Maximum wet bulb temp (°C)	Maximum altitude	Altitude de-rating [1]	Available yearly operational time
5°C to 40°C (41°F to 104°F)	8% to 90%	28°C non-condensing	3,050 meters	1.0°C/175 m above 900m	See specific product information for any temperature restrictions [2]

[1] Altitude de-rating assumes no direct sustained sunlight.
[2] Only systems containing an earlier generation of the HPE Smart Storage Battery (727258-B21; 782958-B21; 727261-B21; or 782961-B21) are restricted to 10% (or less) of available yearly operational time.

Hewlett Packard Enterprise Extended Ambient 45°C Operating Support (ASHRAE Class A4 compliant)

Dry bulb temp range (°C)	Relative humidity range (% RH)	Maximum wet bulb temp (°C)	Maximum altitude	Altitude de-rating [1]	Available yearly operational time
5°C to 45°C (41°F to 113°F)	8% to 90%	28°C non-condensing	3,050 meters	1.0°C/125 m above 900m	Up to 1% of available yearly operational time

[1] Altitude de-rating assumes no direct sustained sunlight.

The maximum rate of change for Inlet Ambient temperature is 20°C/hr (36°F/hr). The upper limit and rate of change is limited by the type and number of options installed.

Hewlett Packard Enterprise Extended Ambient Operating Support summary

This section provides a summary of the Extended Ambient Operating support details. See the specific server information for configuration details that affect support.

HPE ProLiant Gen10 Plus Server	Hewlett Packard Enterprise Extended Ambient 40°C Operating Support (ASHRAE Class A3 compliant)	Hewlett Packard Enterprise Extended Ambient 45°C Operating Support (ASHRAE Class A4 compliant)
HPE ProLiant DL20 Gen10 Plus Server	Yes	Yes
HPE ProLiant DL110 Gen10 Plus Telco Server	Yes	Yes
HPE ProLiant DL325 Gen10 Plus Server	Yes	Yes
HPE ProLiant DL325 Gen10 Plus v2 Server	Yes	Yes
HPE ProLiant DL345 Gen10 Plus Server	Yes	Yes
HPE ProLiant DL360 Gen10 Plus Server	Yes	Yes
HPE ProLiant DL365 Gen10 Plus Server	Yes	No
HPE ProLiant DL380 Gen10 Plus Server	Yes	Yes
HPE ProLiant DL385 Gen10 Plus Server	Yes	Yes
HPE ProLiant DL385 Gen10 Plus v2 Server	Yes	Yes
HPE ProLiant MicroServer Gen10 Plus	Yes	Yes
HPE ProLiant MicroServer Gen10 Plus v2	Yes	Yes
HPE ProLiant ML30 Gen10 Plus Server	Yes	Yes
HPE ProLiant XL220n Gen10 Plus Server	Yes	No
HPE ProLiant XL225n Gen10 Plus Server	Yes	No
HPE ProLiant XL290n Gen10 Plus Server	Yes	No

HPE ProLiant Gen10 Plus Server	Hewlett Packard Enterprise Extended Ambient 40°C Operating Support (ASHRAE Class A3 compliant)	Hewlett Packard Enterprise Extended Ambient 45°C Operating Support (ASHRAE Class A4 compliant)
HPE Apollo 4200 Gen10 Plus Server	Yes	No
HPE ProLiant XL645d Gen10 Plus Server	Yes	No
HPE ProLiant XL675d Gen10 Plus Server	Yes	Yes
HPE Synergy 480 Gen10 Plus Compute Module	Yes	Yes

HPE ProLiant DL20 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL20 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl20gen10plus-docs**).

2LFF or 4SFF + 2SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Performance fan • Standard heatsink		Unsupported options: • 12W Smart Storage Battery	Additional unsupported options: • NVMe PCIe slot storage

HPE ProLiant DL110 Gen10 Plus Telco Server

For more information about configuration rules and requirements, see the HPE ProLiant DL110 Gen10 Plus Telco Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl110gen10plus-docs**).

Cooling component types	Standard operating support	40°C operating support	45°C operating support
			Unsupported options: • CPUs with TDP > 185W

HPE ProLiant DL325 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL325 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl325gen10plus-docs**).

12 LFF, 8 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• GPUs		

4 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs	Unsupported options: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • 12W Smart Storage Battery • 256GB LRDIMMs	Additional unsupported options: • CPUs with TDP > 200W

20 SFF, 24 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• GPUs • HDD/SSD > 10W		

10 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • HDD/SSD > 10W	Unsupported options: • CPUs with TDP > 200W • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • 12W Smart Storage Battery • 256GB LRDIMMs	Not supported

20 NVMe, 24 NVMe

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan	Options limited to maximum 25°C inlet temperature:	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Performance heatsink	• InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • NVMe SSD		

10 NVMe

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • CPUs with TDP = 280W	Unsupported options: • CPUs with TDP > 240W • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • 12W Smart Storage Battery • NVMe SSD > 20W • 256GB LRDIMMs	Additional unsupported options: • CPUs with TDP > 200W

HPE ProLiant DL325 Gen10 Plus v2 Server

For more information about configuration rules and requirements, see the HPE ProLiant DL325 Gen10 Plus v2 Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl325gen10plusv2-docs**).

4 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs	Unsupported options: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • 12W Smart Storage Battery • 256GB LRDIMMs	Additional unsupported options: • CPUs with TDP > 200W

10 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators	Unsupported options: • CPUs with TDP > 200W • InfiniBand/Networking cards ≥ 40Gb	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• GPUs • HDD/SSD > 10W	• PCIe workload accelerators • GPUs • 12W Smart Storage Battery • 256GB LRDIMMs	

10 NVMe

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥40Gb • PCIe workload accelerators • GPUs • CPUs with TDP = 280W	Unsupported options: • CPUs with TDP > 240W • InfiniBand/Networking cards ≥ 40Gb • PCIe workload accelerators • GPUs • 12W Smart Storage Battery • NVMe SSD > 20W • 256GB LRDIMMs	Additional unsupported options: • CPUs with TDP > 200W

HPE ProLiant DL345 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL345 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl345gen10plus-docs**).

12 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink (CPUs with TDP ≥ 180W) • Standard heatsink (CPUs with TDP < 180W)	Unsupported options: • 256GB LRDIMMs Options limited to maximum 20°C inlet temperature: • U50 GPU Options limited to maximum 25°C inlet temperature: • CPUs with TDP = 280W • Mellanox networking cards ≥ 100Gb Options limited to maximum 30°C inlet temperature: • Rear NVMe 7.68TB/15.35TB drives	Additional unsupported options: • 12W Smart Storage Battery • InfiniBand (Mellanox) PCIe/OCP NIC cards • NVMe PCIe slot storage • 7713P/7713/7663/7643/ 7543/7543P/7453/74F3/ 73F3/72F3/7343 CPUs	Additional unsupported options: • All NIC cards ≥ 100Gb • SATA M.2 • OCP NIC E810 (100 Gb) • Rear SAS HDD 15k • 7513/7443P/7443/7413 CPUs

8 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Standard fan	Unsupported options: • GPUs • Mellanox networking cards ≥ 100Gb • CPUs with TDP = 280W • Rear HDD/NVMe drives • Front NVMe drives • 256GB LRDIMMs • InfiniBand (Mellanox) PCIe/OCP NIC cards	Not supported	Not supported
Max performance fan	Options limited to maximum 25°C inlet temperature: • U50 GPU • CPUs with TDP = 280W Options limited to maximum 30°C inlet temperature: • Mellanox networking cards ≥ 100Gb • 256GB LRDIMMs	Unsupported options: • InfiniBand (Mellanox) PCIe/OCP NIC cards	Additional unsupported options: • 12W Smart Storage Battery • NVMe PCIe slot storage • Rear SAS HDD 15k • SATA M.2

24 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Max performance fan	Options limited to maximum 25°C inlet temperature: • U50 GPU • CPUs with TDP = 280W Options limited to maximum 30°C inlet temperature: • Mellanox networking cards ≥ 100Gb • 256GB DIMMs • Rear NVMe 7.68TB/ 15.35TB drives	Unsupported options: • InfiniBand (Mellanox) PCIe/OCP NIC cards • 12W Smart Storage Battery • NVMe PCIe slot storage • 7713P/7713/7663/7643/ 7543/7543P/7453/74F3/ 73F3/72F3/7343 CPUs	Additional unsupported options: • All NIC cards ≥ 100Gb • SATA M.2 • OCP NIC E810 (100 Gb) • Rear SAS HDD 15k • 7513/7443P/7443/7413 CPUs

8 SFF, 16 SFF (no NVMe drives)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Standard fan	Unsupported options: • GPUs • Mellanox Networking cards ≥ 100Gb • CPUs with TDP = 280W • Rear HDD/NVMe drives • Front NVMe drives • 256GB LRDIMMs	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand (Mellanox) PCIe/OCP NIC cards		
Max performance fan	Options limited to maximum 25°C inlet temperature: • CPUs with TDP = 280W Options limited to maximum 30°C inlet temperature: • U50 GPU • Rear NVMe 7.68TB/15.35TB drives • For 16 SFF: 256GB DIMMs	Unsupported options: • InfiniBand (Mellanox) PCIe/OCP NIC cards	Additional unsupported options: • NVMe PCIe slot storage • Rear SAS HDD 15k • SATA M.2 • 12W Smart Storage Battery

8 SFF, 16 SFF, 24 SFF with ≥ 1 NVMe drive in front storage

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Max performance fan	Unsupported options with > 16 NVMe drives: • U50 GPU Options limited to maximum 25°C inlet temperature: • CPUs with TDP = 280W Options limited to maximum 25°C inlet temperature with ≥ 1 NVMe drive:	Additional unsupported options with > 16 NVMe drives: • InfiniBand (Mellanox) PCIe/OCP NIC cards • NVMe PCIe slot storage • 12W Smart Storage Battery	Additional unsupported options with > 1 NVMe drive: • 12W Smart Storage Battery • NVMe PCIe slot storage 7513/7443P/7443/7413 CPUs

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• U50 GPU Options limited to maximum 25°C inlet temperature with > 16 NVMe drives: • 256GB LRDIMMs Options limited to maximum 30°C inlet temperature with > 8 NVMe drives: • Mellanox networking cards ≥ 100Gb • 256GB DIMMs Options limited to maximum 30°C inlet temperature with > 16 NVMe drives: • Rear NVMe 7.68TB/ 15.35TB drives	• 7713P/7713/7663/7643/ 7543/7543P/7453/74F3/ 73F3/72F3/7343 CPUs	

NOTE:

Empty 8 SFF and 16 SFF drive bays must have perforated bay blanks with flow restrictors.

HPE ProLiant DL360 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL360 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/DL360Gen10Plus-docs**).

4LFF or 8SFF + 2SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMM	Unsupported options: • CPUs with TDP > 205W and 6334, 5320, 6336Y, 6312U, 6342, 6326 • LRDIMMs • GPUs • NVMe SSD • PCIe accelerator cards • PCIe slot SATA/NVMe M.2 • NVMe M.2 riser module • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb	• All 40°C unsupported options also unsupported at 45°C • CPUs listed below are supported only with a maximum of 2 SFF SAS drives: CPUs with TDP < 165W; 5317, 4310, 4309Y, 5315Y, 5318Y, 5318S, 4316, 4314, 5318N
• Standard fan • Performance heatsink	Unsupported options: • GPUs • 256GB LRDIMM and NVDIMM • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • PCIe slot SATA/NVMe M.2	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• NVMe M.2 riser module • CPUs with TDP > 205W Options limited to maximum 25°C inlet temperature: • HDD/SSD > 10W • PCIe accelerator cards		

10 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMM	Unsupported options: • CPUs with TDP > 205W • LRDIMMs • GPUs • NVMe SSD • PCIe accelerator cards • PCIe slot SATA/NVMe M.2 • NVMe M.2 riser module • InfiniBand/Networking cards ≤ 40Gb	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		• Networking OCP cards ≤ 40Gb	

10 NVMe

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMMs	Not supported	Not supported

HPE ProLiant DL365 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL365 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl365gen10plus-docs**).

4 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	Not supported	Not supported	Not supported

10 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Performance heatsink	Unsupported options: • GPUs • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • SATA/NVMe M.2 PCIe slot storage • NVMe M.2 riser module • CPUs with TDP > 155W Options limited to maximum 25°C inlet temperature: • PCIe workload accelerators • 256GB LRDIMMs • HDD/SSD > 10W	Not supported	Not supported

10 NVMe

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • CPUs with TDP > 240W Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • GPUs (follow GPU support table in QuickSpecs) • 256GB LRDIMMs	Not supported	Not supported

8 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • CPUs with TDP > 240W Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 40Gb	Additional unsupported options: • CPUs with TDP > 155W • LRDIMMs • InfiniBand/Networking cards ≥ 40Gb	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• Networking OCP cards ≥ 40Gb • GPUs (follow GPU support table in QuickSpecs) • 256GB LRDIMMs	• PCIe workload accelerators • GPUs • Networking OCP cards ≥ 40Gb • NVMe SSD • SATA/NVMe PCIe slot storage • NVMe M.2 riser module	

HPE ProLiant DL380 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL380 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/DL380Gen10Plus-docs**).

12 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • 256GB LRDIMMs • Processor: 8368Q Options limited to maximum 25°C inlet temperature:	Additional unsupported options: • Rear HDD • PCIe slot SATA/NVMe M.2 • PCIe accelerator cards	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb	• CPUs with TDP > 165W • InfiniBand/Networking cards ≥ 25Gb • Networking OCP cards ≥ 25Gb • 128GB LRDIMMs	

8 LFF with power switch module + 2 LFF slot blanks

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported options: • GPUs • CPUs with TDP > 205W • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMMs • Rear HDD • Processor: 8368Q	Not supported	Not supported
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs)	Unsupported options: • Rear HDD • InfiniBand/Networking cards ≥ 25Gb	Additional unsupported options: • CPUs with TDP > 120W

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMMs • Processor: 8368Q	• Networking OCP cards ≥ 25Gb • PCIe slot SATA/NVMe M.2 • PCIe accelerator cards • 128GB LRDIMMs • CPUs with TDP > 165W	

12+4+4 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs • Processor: 8368Q • Rear SFF drives • CPUs with TDP >165 W • InfiniBand/Networking cards ≥ 25Gb • Networking OCP cards ≥ 25Gb • 256GB LRDIMMs	Not supported	Not supported

24 SFF +8+6 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs • CPUs with TDP > 165W • Processor: 8368Q • InfiniBand/Networking cards ≥ 25Gb • Networking OCP cards ≥ 25Gb • 128GB/256GB LRDIMMs • NVMe/SAS4	Not supported	Not supported

8 SFF, 16 SFF, 24 SFF with ≥ 1 NVMe SFF in front storage

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMMs	Additional unsupported options: • Rear HDD • PCIe slot SATA/NVMe M.2 • PCIe accelerator cards • CPUs with TDP > 150W	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		• InfiniBand/Networking cards ≥ 25Gb • Networking OCP cards ≥ 25Gb • 128GB LRDIMMs	

NOTE:
Empty 8 SFF and 16 SFF drive bays must have perforated bay blanks with flow restrictors.

8 SFF, 16 SFF (no NVMe SFF drives)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported options: • GPUs • CPUs with TDP > 205W • InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMMs	Not supported	Not supported
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs)	Unsupported options: • Rear HDD • CPUs with TDP > 165W	Additional unsupported options: • CPUs with TDP > 120W

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand/Networking cards ≥ 40Gb • Networking OCP cards ≥ 40Gb • 256GB LRDIMMs	• PCIe slot SATA/NVMe M.2 • PCIe accelerator cards • InfiniBand/Networking cards ≥ 25Gb • Networking OCP cards ≥ 25Gb • 128 GB LRDIMMs	

HPE ProLiant DL385 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant DL385 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl385gen10plus-docs**).

12 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • 256GB LRDIMMs Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs)	Additional unsupported options: • Rear HDD • PCIe slot SATA/NVME M.2 • PCIe workload accelerators	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W	• CPUs with TDP > 155W • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb	

8 LFF with power switch module + 2 LFF slot blanks

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported options: • GPUs • CPUs with TDP > 155W • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • 256GB LRDIMMs • Rear HDD	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W • 256GB LRDIMMs	Unsupported options: • Rear HDD • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb • PCIe slot NVMe/SATA storage • PCIe workload accelerators • LRDIMMs • CPUs with TDP > 155W	Not supported

12+4+4 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs • Rear SFF HDD • CPUs with TDP > 240W • InfiniBand/Networking cards ≥ 40Gb (foll	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	ow networking card support table in Quick Specs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • 256GB LRDIMMs		

24 SFF +8+6 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs • CPUs with TDP > 240W • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in Quick Specs) • 128GB/256GB LRDIMMs • NVMe/SAS4	Not supported	Not supported

8 SFF, 16 SFF, 24 SFF with ≥ 1 NVMe SFF in front storage

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • 256GB LRDIMMs Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W	Additional unsupported options: • Rear HDD • PCIe slot SATA/NVMe Storage • PCIe workload accelerators • CPUs with TDP > 155W • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb • LRDIMMs	Not supported

NOTE:
Empty 8 SFF and 16 SFF drive bays must have perforated bay blanks with flow restrictors.

8 SFF, 16 SFF (no NVMe SFF drives)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported options: • GPUs • CPUs with TDP > 155W • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • 256GB LRDIMMs	Not supported	Not supported
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W • 256GB LRDIMMs	Unsupported options: • Rear HDD • PCIe slot SATA/NVMe storage • PCIe workload accelerators • CPUs with TDP > 155W • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb • LRDIMMs	Additional unsupported options: • CPUs with TDP > 120W

HPE ProLiant DL385 Gen10 Plus v2 Server

For more information about configuration rules and requirements, see the HPE ProLiant DL385 Gen10 Plus v2 Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/DL385v2Gen10plus-docs**).

12 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • 256GB LRDIMMs Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W	Additional unsupported options: • Rear HDD • PCIe slot SATA/NVME M.2 • PCIe workload accelerators • CPUs with TDP > 155W • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb	Not supported

8 LFF with power switch module + 2 LFF slot blanks

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported options: • GPUs • CPUs with TDP > 155W • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • 256GB LRDIMMs • Rear HDD	Not supported	Not supported
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs)	Unsupported options: • Rear HDD • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb • PCIe slot NVMe/SATA storage • PCIe workload accelerators • LRDIMMs • CPUs with TDP > 155W	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• CPUs with TDP > 240W • 256GB LRDIMMs		

12+4+4 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs • Rear SFF HDD • CPUs with TDP > 240W • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • 256GB LRDIMMs	Not supported	Not supported

24 SFF +8+6 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • GPUs • CPUs with TDP > 240W • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • 128GB/256GB LRDIMMs • NVMe/SAS4	Not supported	Not supported

8 SFF, 16 SFF, 24 SFF with ≥ 1 NVMe SFF in front storage

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Max performance fan • Performance heatsink	Unsupported options: • 256GB LRDIMMs Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs)	Additional unsupported options: • Rear HDD • PCIe slot SATA/NVMe Storage • PCIe workload accelerators • CPUs with TDP > 155W	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W	• InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb • LRDIMMs	

NOTE:

Empty 8 SFF and 16 SFF drive bays must have perforated bay blanks with flow restrictors.

8 SFF, 16 SFF (no NVMe SFF drives)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported options: • GPUs • CPUs with TDP > 155W • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow net	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	working card support table in QuickSpecs) • 256GB LRDIMMs		
• Max performance fan • Performance heatsink	Options limited to maximum 25°C inlet temperature: • GPUs (follow GPU support table in QuickSpecs) • InfiniBand/Networking cards ≥ 40Gb (follow networking card support table in QuickSpecs) • Networking OCP cards ≥ 40Gb (follow networking card support table in QuickSpecs) • CPUs with TDP > 240W • 256GB LRDIMMs	Unsupported options: • Rear HDD • PCIe slot SATA/NVMe storage • PCIe workload accelerators • CPUs with TDP > 155W • InfiniBand/Networking cards ≤ 40Gb • Networking OCP cards ≤ 40Gb • LRDIMMs	Additional unsupported options: • CPUs with TDP > 120W

HPE ProLiant MicroServer Gen10 Plus

For more information about configuration rules and requirements, see the HPE ProLiant MicroServer Gen10 Plus documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/microservergen10plus-docs**).

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink		Options limited to 1 LFF populated: • E-2224 processor	Unsupported options: • E-2224 processor

HPE ProLiant MicroServer Gen10 Plus v2

For more information about configuration rules and requirements, see the HPE ProLiant MicroServer Gen10 Plus v2 documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/microservergen10plusv2-docs**).

4 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink	Unsupported Options: None	Additional unsupported options: None	Additional unsupported options: None

HPE ProLiant ML30 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant ML30 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/ml30gen10plus-docs**).

Any LFF or SFF with redundant power supply

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		Unsupported options: • Intel 95W CPU: Intel E-2386G, Intel E-2388G • 2.5" 15/10K RPM SAS HDD • 2.5" SAS SSD • GPU	Additional unsupported options: • Intel 80W CPU: Intel E-2378G, Intel E-2374G, Intel E-2356G • 3.5" SAS HDD and SSD • SATA M.2

Any LFF or SFF with ATX power supply

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		Not supported	Not supported

HPE ProLiant XL220n Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant XL220n Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/apollo2000gen10plus-docs**).

24 SFF front storage (6 SFF drive backplane X4)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• 7 fans solution • Single processor	Unsupported options: • CPUs with TDP ≥ 270W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 120W • Active optical cable	Additional unsupported options: • CPUs with TDP > 205W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA • Active optical cable • SFP+, SFP28, QSFP, QSFP28, or QSFP56 PCIe standard adapter for CPUs with TDP > 165W • SFP+, SFP28, QSFP, or QSFP28 OCP NIC 3.0 adapter for CPUs with TDP > 165	Not supported
Direct liquid cooling (CPU only)	Unsupported options: • 256GB LRDIMMs	Additional unsupported options: • 256GB LRDIMMs	Not supported

8 SFF front storage (4 SFF drive backplane X2)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• 7 fans solution • Dual processors	Unsupported options: • CPUs with TDP > 205W • 256GB LRDIMMs	Additional unsupported options: • CPUs with TDP > 185W	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 120W • SFP+, SFP28, or QSFP PCIe standard adapter conditionally • QSFP28 or QSFP56 PCIe standard adapter conditionally • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver conditionally • OCP NIC 3.0 adapter with a QSFP 28 transceiver conditionally	• 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA • Active optical cable • SFP+, SFP28, or QSFP PCIe standard adapter for CPUs with TDP > 165W • QSFP28 or QSFP56 PCIe standard adapter for CPUs with TDP > 120W • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 165W • OCP NIC 3.0 adapter with a QSFP 28 transceiver for CPUs with TDP > 165W	
• 7 fans solution • Single processor	Unsupported options: • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver	Additional unsupported options: • CPUs with TDP > 240W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 205W • Active optical cable for QSFP28 or QSFP	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		56 PCIe standard adapter • QSFP28 or QSFP56 PCIe standard adapter for CPUs with TDP > 205W • Active optical cable for OCP NIC 3.0 adapter with a QSFP28 transceiver • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 165W	
Direct liquid cooling (CPU only)	Unsupported options: • 256GB LRDIMMs	Additional unsupported options: • 256GB LRDIMMs	Not supported

No front drive storage (no drive backplane)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• 7 fans solution • Dual processors	Unsupported options: • CPUs with TDP > 205W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC H	Additional unsupported options: • CPUs with TDP > 185W • 256GB LRDIMMs	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	BA for CPUs with TDP > 120W • SFP+, SFP28, or QSFP PCIe standard adapter conditionally • QSFP28 or QSFP56 PCIe standard adapter conditionally • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver conditionally • OCP NIC 3.0 adapter with a QSFP 28 transceiver conditionally	• HPE type-p storage controller, HPE FC HBA • Active optical cable • SFP+, SFP28, or QSFP PCIe standard adapter for CPUs with TDP > 165W • QSFP28 or QSFP56 PCIe standard adapter for CPUs with TDP > 120W • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 165W • OCP NIC 3.0 adapter with a QSFP 28 transceiver for CPUs with TDP > 165W	
• 7 fans solution • Single processor	Unsupported options: • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver	Additional unsupported options: • CPUs with TDP > 240W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 205W • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		• QSFP28 or QSFP56 PCIe standard adapter for CPUs with TDP > 205W • Active optical cable for OCP NIC 3.0 adapter with a QSFP28 transceiver • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 165W	
Direct liquid cooling (CPU only)	Unsupported options: • 256GB LRDIMMs	Additional unsupported options: • 256GB LRDIMMs	Not supported

HPE ProLiant XL225n Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant XL225n Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/xl225ngen10plus**).

24 SFF front storage (6 SFF drive backplane X4)

Cooling component types	Standard operating support [1]	40°C operating support	45°C operating support
• 7 fans solution • Single processor	Unsupported options: • CPUs with TDP = 280W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 200W • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for SFP+, SFP28, or QSFP PCIe standard adapter for CPUs with TDP > 200W • Active optical cable for OCP NIC 3.0 adapter with a QSFP28 transceiver • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 155W	Additional unsupported options: • CPUs with TDP > 200W • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 155W • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for SFP+, SFP28, or QSFP PCIe standard adapter for CPUs with TDP > 155W • OCP NIC 3.0 adapter with a QSFP28 transceiver • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver	Not supported

[1] For more information about standard support, see the following document: **https://www.hpe.com/support/xl225ngen10plus-thermal**.

8 SFF front storage (4 SFF drive backplane X2)

Cooling component types	Standard operating support [1]	40°C operating support	45°C operating support
• 7 fans solution • Dual processors	Unsupported options: • CPUs with TDP > 200W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 120W • SFP+, SFP28, or QSFP PCIe standard adapter conditionally • QSFP28 or QSFP56 PCIe standard adapter conditionally • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver conditionally • OCP NIC 3.0 adapter with a QSFP 28 transceiver conditionally	Additional unsupported options: • CPUs with TDP > 155W • HPE type-p storage controller, HPE FC HBA • Active optical cable for SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 120W • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 120W • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver	Not supported
• 7 fans solution • Single processors	Unsupported options: • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for OCP NIC 3.0 ada	Additional unsupported options: • CPUs with TDP > 240W • 256GB LRDIMMs	Not supported

Cooling component types	Standard operating support [1]	40°C operating support	45°C operating support
	pter with a QSFP 28 transceiver	• HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 200W • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 120W • Copper cable for QSFP28 or QSFP56 PCIe standard adapter for CPUs with TDP > 200W • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 155W	
• 5 fans solution • Dual processors • CPU only DLC	Unsupported options: • 256GB LRDIMMs	Additional unsupported options: • 256GB LRDIMMs	Additional unsupported options: • 256GB LRDIMMs

[1] For more information about standard support, see the following document: **https://www.hpe.com/support/xl225ngen10plus-thermal**.

No front drive storage (no drive backplane)

Cooling component types	Standard operating support [1]	40°C operating support	45°C operating support
• 7 fans solution • Dual processors	Unsupported options: • CPUs with TDP > 200W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 200W • SFP+, SFP28, or QSFP PCIe standard adapter for CPUs with TDP > 200W • QSFP28 or QSFP56 PCIe standard adapter conditionally • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver conditionally • OCP NIC 3.0 adapter with a QSFP 28 transceiver conditionally	Additional unsupported options: • CPUs with TDP > 155W • HPE type-p storage controller, HPE FC HBA • Active optical cable for SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 120W • Active optical cable for QSFP28 or QSFP56 PCIe standard adapter • Active optical cable for OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver for CPUs with TDP > 120W • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver	Not supported
• 7 fans solution	Unsupported options:	Additional unsupported options:	Not supported

Cooling component types	Standard operating support [1]	40°C operating support	45°C operating support
• Single processor	• Active optical cable for QSFP28 or QSFP 56 PCIe standard adapter for CPUs with TDP > 200W • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver	• CPUs with TDP > 240W • 256GB LRDIMMs • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 200W • Active optical cable for QSFP28 or QSFP 56 PCIe standard adapter • Copper cable for QSFP28 or QSFP56 PCIe standard adapter for CPUs with TDP > 200W • Active optical cable for OCP NIC 3.0 adapter with a QSFP 28 transceiver	
• 5 fans solution • Dual processors • CPU only DLC	Unsupported options: • 256GB LRDIMMs	Unsupported options: • 256GB LRDIMMs	Unsupported options: • 256GB LRDIMMs

[1] For more information about standard support, see the following document: **https://www.hpe.com/support/xl225ngen10plus-thermal**.

HPE ProLiant XL290n Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant XL290n Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/apollo2000gen10plus-docs**).

8 SFF front storage (4 SFF drive backplane X2)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• 7 fans solution • Dual processors	Unsupported options: • CPUs with TDP > 165W • 256GB LRDIMMs • GPU: U50, A100 • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 120W • SFP+, SFP28, or QSFP PCIe standard adapter conditionally • QSFP28 or QSFP56 PCIe standard adapter conditionally • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver conditionally • OCP NIC 3.0 adapter with a QSFP 28 transceiver conditionally	Additional unsupported options: • CPUs with TDP > 165W • 256GB LRDIMMs • GPU: U50, A100, T4 • HPE type-p storage controller, HPE FC HBA • Active optical cable • SFP+, SFP28, QSFP, QSFP28, or QSFP56 PCIe standard adapter • OCP NIC 3.0 adapter with SFP+, SFP28, QSFP, or QSFP28 transceiver for CPUs with TDP > 120W	Not supported

No front drive storage (no drive backplane)

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• 7 fans solution • Dual processors	Unsupported options: • CPUs with TDP > 185W • 256GB LRDIMMs • GPU: U50, A100 • HPE type-p storage controller, HPE FC HBA for CPUs with TDP > 120W • SFP+, SFP28, or QSFP PCIe standard adapter conditionally • QSFP28 or QSFP56 PCIe standard adapter conditionally • OCP NIC 3.0 adapter with SFP+, SFP28, or QSFP transceiver conditionally • OCP NIC 3.0 adapter with a QSFP 28 transceiver conditionally	Additional unsupported options: • CPUs with TDP > 165W • 256GB LRDIMMs • GPU: U50, A100, T4 • HPE type-p storage controller, HPE FC HBA • Active optical cable • SFP+, SFP28, QSFP, QSFP28, or QSFP56 PCIe standard adapter • OCP NIC 3.0 adapter with SFP+, SFP28, QSFP, or QSFP28 transceiver for CPUs with TDP > 120W	Not supported

HPE Apollo 4200 Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE Apollo 4200 Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/Apollo4200Gen10Plus-docs**).

12 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Performance heatsink	Unsupported options: • GPUs Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking OCP cards ≥ 100Gb	Additional unsupported options: • CPUs with TDP > 165W • > 64 Gb DIMMs • Intel Optane Persistent Memory 200 NVDIMMs • Mid cage HDD • Rear cage HDD • PCIe workload accelerators • InfiniBand/Networking cards ≥ 50Gb • InfiniBand/Networking OCP cards ≥ 10Gb with Active Optical Cable	Not supported

24 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Performance heatsink	Unsupported options:	Additional unsupported options:	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• GPUs Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking OCP cards ≥ 100Gb	• CPUs with TDP > 185W • > 64 Gb DIMMs • Intel Optane Persistent Memory 200 NVDIMMs • Mid cage HDD • Rear cage HDD • PCIe workload accelerators • InfiniBand/Networking cards ≥ 50Gb • InfiniBand/Networking OCP cards ≥ 10Gb with Active Optical Cable	

12 LFF + 12 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Standard heatsink	CPUs with TDP ≤ 165W Unsupported options: • 256GB DIMMs • Intel Optane Persistent Memory 200 NVDIMMs • InfiniBand/Networking cards > 100Gb	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand/Networking OCP cards > 25Gb		
Performance heatsink	CPUs with TDP > 165W Unsupported options: • GPUs • InfiniBand/Networking cards > 100Gb • InfiniBand/Networking OCP cards > 25Gb Options limited to maximum 25°C inlet temperature: • 1 CPU and 256 GB DIMMs (maximum 4 pieces)		

24 LFF + 24 LFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Standard heatsink	CPUs with TDP ≤ 165W Unsupported options: • 256GB DIMMs • Intel Optane Persistent Memory 200 NVDIMMs Options limited to maximum 25°C inlet temperature:	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• InfiniBand/Networking cards > 100Gb (slot 6) • InfiniBand/Networking OCP cards > 100Gb		
Performance heatsink	CPUs with TDP > 165W Unsupported options: • GPUs Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards > 100Gb (slot 6) • InfiniBand/Networking OCP cards > 100Gb • 1 CPU and 256 GB DIMMs (maximum 4 pieces)		

12 LFF + 12 LFF + 4 LFF or 8 SFF + 4 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Standard heatsink	Unsupported options: • CPUs with TDP > 165W • > 128GB DIMMs	Not supported	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	• Intel Optane Persistent Memory 200 NVDIMMs • GPUs • InfiniBand/Networking OCP cards ≥ 10Gb with Active Optical Cable • InfiniBand/Networking cards ≥ 200Gb with 2 ports (slot 6) • InfiniBand/Networking cards > 25Gb (slot 3)		

24 SFF + 24 SFF + 8 SFF + 4 SFF

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Standard heatsink	Unsupported options: • CPUs with TDP > 165W • > 128GB DIMMs • Intel Optane Persistent Memory 200 NVDIMMs • GPUs • InfiniBand/Networking OCP cards ≥ 10Gb		

Cooling component types	Standard operating support	40°C operating support	45°C operating support
	with Active Optical Cable • InfiniBand/Networking cards > 100Gb (slot 3) Options limited to maximum 25°C inlet temperature: • InfiniBand/Networking cards ≥ 200Gb with 2 ports (slot 6)		

HPE ProLiant XL645d Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant XL645d Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/xl645dgen10plus-docs**).

8 SFF SAS/SATA Standard Backplane

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink		Unsupported options: • CPUs with TDP > 240W • NVIDIA A100 SXM4 GPU	Not supported

Cooling component types	Standard operating support	40°C operating support	45°C operating support
Direct liquid cooling option for CPUs and GPUs			Not supported

8 SFF NVMe U.3 Premium Backplane

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink		Unsupported options: • CPUs with TDP > 240W • NVIDIA A100 SXM4 GPU	Not supported
Direct liquid cooling option for CPUs and GPUs			Not supported

HPE ProLiant XL675d Gen10 Plus Server

For more information about configuration rules and requirements, see the HPE ProLiant XL675d Gen10 Plus Server documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/xl675dgen10plus-docs**).

Dual 8 SFF SAS/SATA standard backplane

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink		Unsupported options: • CPUs with TDP > 240W • NVIDIA A100 SXM4 GPU	Not supported
Direct liquid cooling option for CPUs and GPUs			Unsupported options: • PCIe GPUs • InfiniBand/Networking cards ≥ 100Gb

Dual 8 SFF NVMe U.3 premium backplane

Cooling component types	Standard operating support	40°C operating support	45°C operating support
• Standard fan • Standard heatsink		Unsupported options: • CPUs with TDP > 240W • NVIDIA A100 SXM4 GPU	Not supported
Direct liquid cooling option for CPUs and GPUs			Unsupported options: • PCIe GPUs • InfiniBand/Networking cards ≥ 100Gb

HPE Synergy 480 Gen10 Plus Compute Module

For more information about configuration rules and requirements, see the HPE Synergy 480 Gen10 Plus Compute Module documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/synergy480gen10plus-docs**).

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Cooling component types	Standard operating support	40°C operating support	45°C operating support
		Unsupported options: • 256 GB DIMMs • GPUs • Processors: 8380, 8368, 8632, 8360Y, 8358, 6354, 6348, 6346, 8351N, 8358P, 6334, 6342	Additional unsupported options: • LR DIMMs • Processors: 8352Y, 8352S, 8352M, 6338, 6330, 6338N 8352V, 5320, 6336Y, 6326

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Cooling component types	Standard operating support	40°C operating support	45°C operating support
	Unsupported options: • Intel Optane 200 NVDIMMs	Additional unsupported options: • 256 GB DIMMs • Performance NVMe drives • GPUs • Processors: 8380, 8368, 8632	Additional unsupported options: • LR DIMMs • Processors: 8352Y, 8352S, 8352M, 6338, 6330, 6338N 8352V, 5320, 6336Y, 6326

Cooling component types	Standard operating support	40°C operating support	45°C operating support
		, 8360Y, 8358, 6354, 6348, 6346, 8351N, 8358P, 6334, 6342	

Websites

QuickSpecs

https://www.hpe.com/info/qs

Hewlett Packard Enterprise Support Center

https://www.hpe.com/support/hpesc

For additional websites, see Support and other resources.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  https://www.hpe.com/info/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  https://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center

  https://www.hpe.com/support/hpesc

  Hewlett Packard Enterprise Support Center: Software downloads

  https://www.hpe.com/support/downloads

  My HPE Software Center

  https://www.hpe.com/software/hpesoftwarecenter

- To subscribe to eNewsletters and alerts:

  https://www.hpe.com/support/e-updates

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

https://www.hpe.com/support/AccessToSupportMaterials

> **IMPORTANT:**
> Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which initiates a fast and accurate resolution based on the service level of your product. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

HPE Get Connected

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

HPE Pointnext Tech Care

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

HPE Complete Care

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

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider.

Warranty information

To view the warranty information for your product, see the links provided below:

HPE ProLiant and IA-32 Servers and Options

https://www.hpe.com/support/ProLiantServers-Warranties

HPE Enterprise and Cloudline Servers

https://www.hpe.com/support/EnterpriseServers-Warranties

HPE Storage Products

https://www.hpe.com/support/Storage-Warranties

HPE Networking Products

https://www.hpe.com/support/Networking-Warranties

Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

https://www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

https://www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

https://www.hpe.com/info/environment

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, use the **Feedback** button and icons (located at the bottom of an opened document) on the Hewlett Packard Enterprise Support Center portal (**https://www.hpe.com/support/hpesc**) to send any errors, suggestions, or comments. All document information is captured by the process.