UNIFIED HPC AND AI SUPERCOMPUTING FOR THE AI ERA

The HPE Cray Supercomputing GX5000 solution is HPE's next-generation unified HPC and AI supercomputing solution for the AI era. It will replace the currently shipping HPE Cray Supercomputing EX4000 solution that has achieved many historic **firsts** since it was announced in 2018.

Historic firsts achieved by the HPE Cray Supercomputing EX4000 solution

billion billion

Broke the exascale performance barrier (one quintillion or a **billion billion** calculations per second)[1]

#1, #2, and #3

Held the **#1**, **#2**, and **#3** positions in the ranking of the world's most powerful supercomputers[2]

7

Was the foundation for **7** out of the world's most powerful Top 10 supercomputers[3]

55%

Delivered **55%** of the aggregate compute power of the TOP 100 most powerful supercomputers in the world[4]

60%

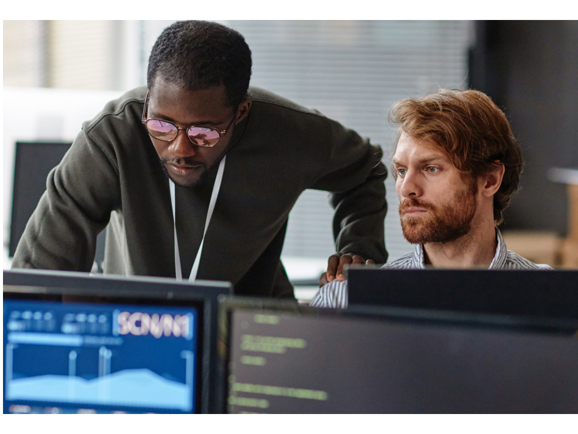
Delivered **60%** of all accelerator/GPU cores of the TOP 100 most powerful supercomputers in the world[5]

70%

Delivered **70%** of the aggregate compute power of the TOP 100 most energy-efficient supercomputers in the world[6]

By listening to the brightest minds of humankind—our customers who are using the HPE Cray supercomputers to tackle the grand challenges of humankind—we could make the next generation HPE Cray Supercomputing GX5000 even better.

A recent global study[7] that IDC conducted with 850 organizations that depend on high performance computing (HPC) infrastructure to achieve their mission or business objectives found that the most important capability that an HPC vendor must provide is demonstrating quantifiable throughput, latency, bandwidth, and scalability for HPC compute, storage, and networks. This is why this infographic focuses on the performance capabilities of HPE's next-generation supercomputing solution.

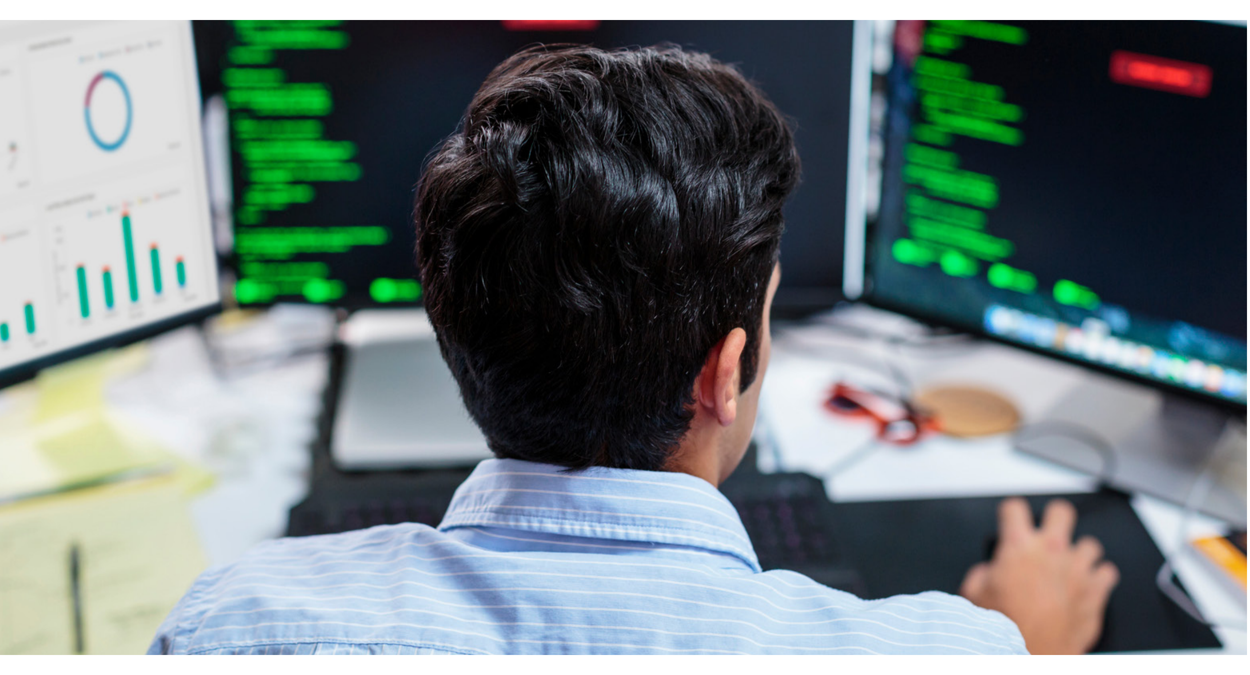


Compared to the currently shipping HPE Cray SC EX4000 solution, the HPE Cray SC GX5000 solution delivers:

- A **127%** increase in power limit per compute blade slot.[8]
- A **25%** reduction in row width footprint per compute rack[9]
- Support for **25%** warmer facility water for direct liquid cooling[10]
- A **39%** increase in input/output operations per second (IOPS) per storage rack[11]

The performance density of the HPE Cray SC GX5000 solution from a compute, network, and input/output (I/O) subsystem is impressive with

1. Up to 81,920 AMD Venice CPU cores per 900 mm-wide compute rack[12]
2. Up to 192 NVIDIA Rubin GPUs per 900 mm compute rack[13]
3. Up to 2,048 high-speed interconnect ports per 900 mm-wide compute rack[14]
4. Up to 3 terabytes per second (TB/sec) read performance and up to 2 TB/sec write performance per HPE Slingshot-attached storage rack[15]
5. Up to 75 million input/output operations per second (IOPS) per HPE Slingshot attached storage rack[16]



The HPE Cray SC GX5000 solution was announced 50 years after the announcement of the iconic HPE Cray-1 supercomputer that started a Cambrian explosion of supercomputing-driven scientific discovery around the world.

Recently the innovation of the Cray-1 supercomputer got honored by the Unites States Mint in the the 2026 American Innovation $1 Coin Program. The iconic "C-shaped" design was a direct result of Seymour Cray's mandate that no cable could be longer than four feet to achieve maximum, liquid cooled performance density

The following comparison demonstrates how much computational science has improved in the last 50 years:

One HPE Cray Supercomputing GX5000 compute rack delivers more compute power than enough Cray-1 supercomputers to circle the earth side-by-side—over four times![17]

A single HPE Cray SC Storage Systems K3000 rack transfers data faster than a stack of Cray-1 Disk Storage Units as tall as 800 Mount Everests piled on top of each other.[18]

The HPE Cray SC GX5000 solution is built for multiworkload supercomputing in the AI era. Enabling organizations that depend on physics-based modeling and simulation (MOD/SIM), data-driven artificial intelligence (AI), and high performance data analysis (HPDA) to achieve their mission or business objectives faster and in a more cost-effective manner with a unified HPC and AI supercomputing solution.

Many visionary leadership organizations like the High Performance Computing Center in Stuttgart ("Herder" supercomputer), the Leibniz Rechenzentrum in Munich ("Blue Lion"), Oak Ridge National Laboratory ("Discovery") and Los Alamos National Laboratory ("Mission" and "Vision") already have selected HPE Cray SC GX5000 for their next generation supercomputer.[19]

Your ambitions change the world. The HPE Cray SC GX5000 solution unlocks them!

[1] "June 2022," Top500.

[2,3] "November 2024," Top500.

[4,5,6] "June 2025," Top500.

[7] "HPC View 2025," IDC, August 2025.

[8] From 11 kW to more than 25 kW.

[9] From 1,200 mm per EX4000 compute cabinet to 900 mm per GX5000 compute rack.

[10] 8 from 32° Celsius to 40° Celsius.

[11] One rack of HPE Cray SC Storage Systems K3000 with 40 DAOS storage servers compared to one rack of HPE Cray SC Storage Systems E2000 with 18 Scalable Storage Units Flash (SSU-F). The current footnotes 12 to 17 need to be renumbered to 13 to 18.

[12] With 40 HPE Cray SC GX250 compute blades with 8 AMD EPYC next-generation Venice CPUs each with 256 cores per CPU.

[13] With 24 HPE Cray SC GX440n accelerated blades with 8 NVIDIA® next-generation Rubin GPUs each with 2 GPU dies per GPU.

[14] With 32 100% directly liquid cooled HPE Slingshot 400 64-port switches.

[15] With an HPE Cray Supercomputing Storage Systems E2000 expansion rack configured with 18 All-Flash Scalable Storage Units.

[16] With an HPE Enterprise Rack with Rear Door Heat Exchanger and 40 DAOS storage servers based on HPE ProLiant Compute DL360 Gen12.

[17] More than 69 million Cray-1 supercomputers are needed to match the compute power of one HPE Cray SC GX5000 compute rack with 36 HPE Cray SC GX250 compute blades.

[18] More than half a million Disk Storage Units of the Cray-1 are needed to match the data transfer rate of a K3000 storage rack. Stacked those Disk Storage Units of the Cray-1 would reach a height of 445 miles

[19] hlrs.de/news/detail/hpc-in-transition-hunter-and-herder-will-bring-new-opportunities-new-challenges

lrz.de/en/research/research-projects/detail/2024-12-13-bluelion-en

ornl.gov/news/ornl-amd-and-hpe-deliver-does-newest-ai-supercomputers-discovery-and-lux

hpe.com/us/en/newsroom/press-release/2025/10/hpe-to-build-mission-and-vision-supercomputers-for-los-alamos-national-laboratory-in-collaboration-with-nvidia-to-support-ai-research-and-national-security.html

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