Hewlett Packard Enterprise

Solution brief

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SUPERCOMPUTING FOR THE EXASCALE ERA

Today's science, technology, and Big Data questions are bigger, more complex, and more urgent than ever. Answering them demands an entirely new approach to computing. Meet the next era of supercomputing. HPE Cray supercomputers are one of our most significant technology advancement in decades. With it, we're introducing revolutionary capabilities for revolutionary questions. HPE Cray supercomputers are the next era of supercomputing for your next era of science, discovery, and achievement.

WHY SUPERCOMPUTING IS CHANGING

The kind of questions being asked today have created a sea change in supercomputing. Increasingly, high-performance computing (HPC) systems need to be able to handle massive converged modeling, simulation, artificial intelligence (AI), and analytics workloads.

With these needs driving science and technology, the next generation of supercomputing will be characterized by new designs to address exascale performance, data-centric workloads, and diversification of processor architectures.

SUPERCOMPUTING REDESIGNED

HPE Cray supercomputers are that entirely new design. Rethought and re-engineered, we've created an entirely new solution to address today's diversifying needs.

Built to be data centric, it runs diverse workloads at the same time. Hardware and software innovations tackle system bottlenecks, manageability, and job completion issues that emerge or grow when core counts increase, compute node architectures proliferate, and workflows expand to incorporate AI at scale.

It removes the distinction between clusters and supercomputers with a single new system architecture, enabling a choice of computational infrastructure without tradeoffs. And it is architected to support mixing and matching multiple processor and accelerator architectures interconnected with our new HPE Slingshot network.

EXASCALE-ERA NETWORKING

HPE Slingshot is our new high-speed, purpose-built supercomputing interconnect. It features Ethernet capability, advanced adaptive routing, unique congestion control,

and sophisticated quality-of-service capabilities. Support for both IP-routed and remote memory operations broaden the range of applications beyond traditional modeling and simulation.

Quality of service and novel congestion management features limit the impact to critical workloads from other applications, system services, I/O traffic, or co-tenant workloads.

HPE Slingshot's high-radix 64-port switch coupled with our Dragonfly topology scales to over 250,000 endpoints with a maximum of three switch-to-switch hops between any endpoints. In addition to latency improvements in larger installations, this low-diameter network reduces network equipment, cabling, and power and cooling costs. It also facilitates the use of innovative adaptive routing algorithms that improve application performance.

FLEXIBILITY AND TCO

As your workloads rapidly evolve, the ability to choose your architecture becomes critical. With HPE Cray supercomputing, you can incorporate multiple silicon processing choices—or a heterogeneous mix—with a single management and application development infrastructure. Flex from single to multisocket nodes, GPUs, FPGAs, and other processing options that may emerge, such as AI-specialized accelerators.

HPE Cray supercomputers are an entirely new approach to supercomputing with revolutionary capabilities.

Designed for a decade or more of work, HPE Cray supercomputers also reduce the need for frequent, expensive upgrades, giving you exceptionally low total cost of ownership. With its software architecture, you can deploy a workflow and management environment in a single system, regardless of packaging.

HPE Cray supercomputers come in two options: a 19" air- or liquid-cooled, standard data center rack, and a high-density, liquid-cooled rack designed to take 64 compute blades, with multiple processors per blade and can support processors well over 500 watts.

OVERVIEW

- Exascale performance capability
- Data-centric design
- Multiple, diverse workloads simultaneously
- Unparalleled flexibility in processing choice
- Single, breakthrough system architecture

HPE SLINGSHOT OVERVIEW

- Ethernet compatibility
- Advanced adaptive routing
- Effective congestion control
- Sophisticated quality-of-service capabilities
- High-radix 64-port switch

AVAILABILITY

HPE Cray supercomputing systems are available now. Contact your HPE sales representative.

LEARN MORE AT

hpe.com/us/en/compute/hpc/supercomputing/cray-exascale-supercomputer.html

Make the right purchase decision.
Contact our presales specialists.

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