5 reasons to consider HPE Cray XD2000

Introduction

Hewlett Packard Enterprise brings accessible supercomputing to more organizations with a comprehensive portfolio of supercomputing technologies including next-generation AMD EPYC™ and Intel® Xeon® Scalable processors, tools, and support services for enterprises to secure competitive and operational advantage today and prepare for tomorrow's needs.

Here are five reasons to buy HPE Cray XD2000:

1 Revolutionary compute infrastructure

The HPE Cray XD2000 is purpose-built for high-performance computing (HPC) and artificial intelligence (AI) workloads with a winning combination of exascale era technologies that provide unprecedented performance and faster time to value. This supercomputing system is designed with the latest industry standards, fits in standard 19" racks, and is deployed at chassis scale (one 2U chassis) to rack scale. The system can scale from one server node to hundreds or thousands of server nodes. What's more, HPE Cray XD2000 supports industry-standard Open Compute Project 3.0 form factor cards.

Hewlett Packard Enterprise makes flexibility a central feature of this enterprise-level offering. Each component is carefully integrated and tuned to create an environment with the capacity to build out, add features, and upgrade infrastructure as needed. Compared to the larger HPE Cray EX supercomputers that deliver the utmost performance and scale, HPE Cray XD2000 Systems are designed to be more flexible and provide better choices to enable diverse workloads at a broader scale.

2 Breakneck processing and acceleration

Different HPE Cray XD2000 Systems models, powered by the latest generation processors from AMD or Intel®, are available for enterprises.

AMD uses a blend of CPUs and accelerators to process large data sets and ramp up the most compute-intensive workloads. AMD EPYC 9004 Series Server Processors are the next generation in server architecture and energy efficiency, providing faster time to results with better insights and business outcomes. This architecture leverages the latest DDR5 memory technology that offers a tremendous increase in memory speed (1.5x), memory channels (50% more), and memory bandwidth (2.25x) compared with DDR4. It offers 12 memory channels with up to 4800 MT/s DDR5 memory per processor to deliver the resources for memory-intensive applications, and up to 96 cores per processor.

AMD Instinct accelerators are built from the ground up for a new era of compute. These accelerators are engineered as a multichip GPU package with a state-of-the-art fabric designed with 3rd Gen AMD Infinity Fabric technology to enable massive data throughput intelligently at ultra-high speeds for HPC and AI.

HPE Cray XD2000 Systems powered by Intel Xeon Scalable processors help enterprises meet the rising demand for compute within a limited budget, delivering improved memory bandwidth with DDR5. In addition, the supercomputing system can take advantage of Intel Xeon CPU Max Series with high-bandwidth memory (HBM) on the package. HBM extracts greater performance from the CPUs for supercomputing and AI workloads with no code changes.

Whether it's innovating with AI and analytics or running global operations more economically, built-in accelerators offer several features to streamline critical workloads and prepare enterprises to scale with growth. Intel In-Memory Analytics Accelerator (Intel IAA) is a key offering to ramp up your database and analytics workloads with greater power efficiency potential. Intel IAA increases query throughput and decreases the memory footprint for in-memory database and Big Data analytics workloads. This feature is ideal for in-memory databases, open-source databases, and datastores such as RocksDB, Redis, Cassandra, and MySQL.

3 Flexible power and cooling

HPE has a long history of helping organizations optimize their IT budgets and advancing energy efficiency. Our density-optimized systems offer a complete, scalable solution with power and cooling options that deliver enhanced performance at a lower TCO. The HPE Cray XD2000 Systems gives you the choice of an air-cooled solution or plug-and-play direct liquid cooling (DLC). Air cooling capabilities fully utilize heat-to-air transfer. At the same time, DLC uses facility water to transfer a substantial amount of produced heat to the liquid. DLC provides a fully rack-contained and -integrated warm water-cooled IT system, which comes prefilled and is ready to run. Each rack is self-contained and integrated into our liquid-cooled factory. The racks can be filled as you go at a linear cost.

With extremely efficient cooling capabilities, liquid cooling supports the latest top-bin CPU and GPU technologies, enabling more servers per rack with fewer rack requirements and more effective heat capture for reduced cooling power requirements.

4 Comprehensive approach to security

The HPE Cray XD2000 Systems uses integrated hardware root of trust to secure operations of your compute system. The hardware root of trust with automated firmware recovery prevents systems from booting with compromised firmware and restores them to the most recent working state. Once it is determined that a system powers on in a known good state and has not been modified unauthorizedly, it can begin to load software, such as the baseboard management controller (BMC).

HPE follows guidelines from the National Institute of Standards and Technology (NIST) to implement the hardware root of trust.

According to NIST 800–193, a key security requirement is the ability to securely recover a system that has been compromised. For the HPE Cray XD2000 Systems, secure recovery may restore the BMC firmware, BIOS firmware, or optionally ROM firmware to known good versions that can be validated by the chain of trust that HPE offers.

BIOS is based on leading non-OEM specific standards-based BMC functionality and contains an industry-standard server management feature set. Backup copies of BMC and BIOS firmware can be automatically accessed if the primary copy fails digital signature validation. So long as the backup copy is not corrupted, the system can recover to a bootable state.

NIST 800-147B sets requirements for protection against tampering with the system BIOS. The standard requires all BIOS updates to be authenticated through code signing except when physical access is used to perform a secure local update.

Firmware updates are delivered as individual components, allowing you to install, manage, and update each system component individually. Enterprises can also choose to automate firmware installation programmatically. The firmware suite covers a range of use cases and provides access via a web browser or other server management platforms. OpenSSL 3.0 is a commonly used open-source library for implementing secure network traffic.

5 Standards-based server management

Managing supercomputing environments can be a major roadblock to innovation. The HPE Cray XD2000 Systems include DMTF's Redfish to deliver simple and secure management from edge to cloud — including hyperconverged, hybrid cloud, and software-defined data centers. Redfish is a DMTF protocol providing commonality and server management. It defines protocol, schema, and data models to manage servers. It became a standard in 2015 with HPE as a founding member.

Like any standard, Redfish provides a lot of latitude for implementation choices. It provides a model of extensions for OEMs to support for OEM-specific features. HPE prefers to implement features using Redfish standards and only adds OEM extensions to deliver HPE specific features, provide support for the HPE manageability ecosystem, or enable specific server features that are not yet standardized but require a short time-to-market solution.

Built on top of HTTPS, Redfish creates open manageability standards spanning diverse emerging and traditional IT infrastructures, allowing IT staff to focus on business initiatives and not mastering obscure binary protocols. Put simply, Redfish eases IT complexity by communicating with servers on when and how to update to ensure that the systems continue to run smoothly and securely. HPE Cray supercomputers aims to transition to a 100% standards-based Redfish approach to server management.

Unleash a new era of supercomputing technology with these features built into every HPE Cray XD2000 System, equipped with AMI BMC and BIOS for a seamless server management experience.

Learn more at

HPE.com/us/en/HPE-Cray-XD2000.html

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