

NVIDIA GPUs Open the Door to ARM64 Entry into High Performance Computing



NVIDIA has announced that multiple server vendors are leveraging the performance of NVIDIA GPU accelerators to launch the world's first 64-bit ARM development systems for high performance computing (HPC).

ARM64 server processors were primarily designed for micro-servers and web servers because of their extreme energy efficiency. Now, they can tackle HPC-class workloads when paired with GPU accelerators using the NVIDIA CUDA 6.5 parallel programming platform, which supports 64-bit ARM processors.

GPUs provide ARM64 server vendors with the muscle to tackle HPC workloads, enabling them to build high-performance systems that maximize the ARM architecture's power efficiency and system configurability. A list of initial ARM64 systems is provided below.

Highly Efficient HPC Computing Options

Featuring Applied Micro X-Gene ARM64 CPUs and NVIDIA Tesla K20 GPU accelerators, the new ARM64 servers will provide customers with an expanded range of efficient, high-performance computing options to drive compute-intensive HPC and enterprise data center workloads. In addition, users will immediately be able to take advantage of hundreds of existing CUDA-accelerated scientific and engineering HPC applications by simply recompiling them to ARM64 systems.

Using ARM to Drive Scientific Discovery

"We aim to leverage the latest technology advances, both within and beyond the HPC market, to move science forward in entirely new ways," said Pat McCormick, senior scientist at Los Alamos National Laboratory. "We are working with NVIDIA to explore how we can unite GPU acceleration with novel technologies like ARM to drive new levels of scientific discovery and innovation."

"The availability of accelerated 64-bit ARM servers is one of the most significant developments to hit the HPC market this year," said Earl Joseph, IDC program vice president for HPC. "IDC believes there is substantial interest within the HPC community in evaluating GPU-accelerated 64-bit ARM systems for next-generation computing projects."

Availability

The first GPU-accelerated ARM64 development platforms will be available from Cirrascale Corp. and E4 Computer Engineering, with production systems expected to ship later this year. The Eurotech Group also plans to ship production systems later this year. System details include:

- Cirrascale RM1905D — High-density two-in-one 1U server with two Tesla K20 GPU accelerators; provides high-performance, low total cost of ownership for private cloud, public cloud, HPC, and enterprise applications.
- E4 EK003 — Production-ready, low-power 3U, dual-motherboard server appliance with two Tesla K20 GPU accelerators, designed for seismic, signal and image processing, video analytics, track analysis, web applications and MapReduce processing.
- Eurotech — Ultra-high density, energy efficient and modular Aurora HPC server configuration, based on proprietary Brick Technology and featuring direct hot liquid cooling.

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