



Intel Brings Supercomputing Horsepower to Big Data Analytics

NEWS HIGHLIGHTS.

- Intel discloses form factors and memory configuration details of the CPU version of the next generation Intel® Xeon Phi™ processor (code named “Knights Landing”), to ease programmability for developers while improving performance.
- Intel® Xeon® processor-based systems power more than 82 percent of all supercomputers on the recently announced 42nd edition of the Top500 list.
- New Intel® HPC Distribution for Apache Hadoop* and Intel® Cloud Edition for Lustre* software tools bring the benefits of Big Data analytics and HPC together.
- Collaboration with HPC community designed to deliver customized products to meet the diverse needs of customers.

DENVER--(BUSINESS WIRE)-- SUPERCOMPUTING CONFERENCE – Intel Corporation unveiled innovations in HPC and announced new software tools that will help propel businesses and researchers to generate greater insights from their data and solve their most vital business and scientific challenges.

“In the last decade, the high-performance computing community has created a vision of a parallel universe where the most vexing problems of society, industry, government and research are solved through modernized applications,” said Raj Hazra, Intel vice president and general manager of the Technical Computing Group. “Intel technology has helped HPC evolve from a technology reserved for an elite few to an essential and broadly available tool for discovery. The solutions we enable for ecosystem partners for the second half of this decade will drive the next level of insight from HPC. Innovations will include scale through standards, performance through application modernization, efficiency through integration and innovation through customized solutions.”

Accelerating Adoption and Innovation

From Intel® Parallel Computing Centers to Intel® Xeon Phi™ coprocessor developer kits, Intel provides a range of technologies and expertise to foster innovation and adoption in the HPC ecosystem. The company is collaborating with partners to take full advantage of technologies available today, as well as create the next generation of highly integrated solutions that are easier to program for and are more energy-efficient. As a part of this collaboration Intel also plans to deliver customized HPC products to meet the diverse needs of customers. This initiative is aimed to extend Intel’s continued value of standards-based scalable platforms to include optimizations that will accelerate the next wave of scientific, industrial, and academic breakthroughs.

During the Supercomputing Conference (SC'13), Intel unveiled how the next generation Intel Xeon Phi product (codenamed "Knights Landing"), available as a host processor, will fit into standard rack architectures and run applications entirely natively instead of requiring data to be offloaded to the coprocessor. This will significantly reduce programming complexity and eliminate "offloading" of the data, thus improving performance and decreasing latencies caused by memory, PCIe and networking.

Knights Landing will also offer developers three memory options to optimize performance. Unlike other Exascale concepts requiring programmers to develop code specific to one machine, new Intel Xeon Phi processors will provide the simplicity and elegance of standard memory programming models.

In addition, Intel and Fujitsu recently [announced](#) an initiative that could potentially replace a computer's electrical wiring with fiber optic links to carry Ethernet or PCI Express traffic over an Intel® Silicon Photonics link. This enables Intel Xeon Phi coprocessors to be installed in an expansion box, separated from host Intel Xeon processors, but function as if they were still located on the motherboard. This allows for much higher density of installed coprocessors and scaling the computer capacity without affecting host server operations.

Several companies are already adopting Intel's technology. For example, Fovia Medical*, a world leader in volume rendering technology, created high-definition, 3D models to help medical professionals better visualize a patient's body without invasive surgery. A demonstration from the University of Oklahoma's Center for Analysis and Prediction of Storms (CAPS) showed a 2D simulation of an F4 tornado, and addressed how a forecaster will be able to experience an immersive 3D simulation and "walk around a storm" to better pinpoint its path. Both applications use Intel® Xeon® technology.

High Performance Computing for Data-Driven Discovery

Data intensive applications including weather forecasting and seismic analysis have been part of the HPC industry from its earliest days, and the performance of today's systems and parallel software tools have made it possible to create larger and more complex simulations. However, with unstructured data accounting for 80 percent of all data, and growing 15 times faster than other data¹, the industry is looking to tap into all of this information to uncover valuable insight.

Intel is addressing this need with the announcement of the Intel® HPC Distribution for Apache Hadoop* software (Intel® HPC Distribution) that combines the Intel® Distribution for Apache Hadoop software with Intel® Enterprise Edition of Lustre* software to deliver an enterprise-grade solution for storing and processing large data sets. This powerful combination allows users to run their MapReduce applications, without change, directly on shared, fast Lustre-powered storage, making it fast, scalable and easy to manage.

The Intel® Cloud Edition for Lustre* software is a scalable, parallel file system that is available through the Amazon Web Services Marketplace* and allows users to pay-as-you-go to maximize storage performance and cost effectiveness. The software is ideally suited for dynamic applications, including rapid simulation and prototyping. In the case of urgent or unplanned work that exceeds a user's on-premise compute or storage performance, the software can be used for cloud bursting HPC workloads to quickly provision the infrastructure

needed before moving the work into the cloud.

With numerous vendors announcing pre-configured and validated hardware and software solutions featuring the Intel Enterprise Edition for Lustre, at SC'13, Intel and its ecosystem partners are bringing turnkey solutions to market to make big data processing and storage more broadly available, cost effective and easier to deploy. Partners announcing these appliances include Advanced HPC*, Aeon Computing*, ATIPA*, Boston Ltd.*, Colfax International*, E4 Computer Engineering*, NOVATTE* and System Fabric Works*.

Intel Tops Supercomputing Top 500 List

Intel's HPC technologies are once again featured throughout the 42nd edition of the Top500 list, demonstrating how the company's parallel architecture continues to be the standard building block for the world's most powerful supercomputers. Intel-based systems account for more than 82 percent of all supercomputers on the list and 92 percent of all new additions. Within a year after the introduction of Intel's first Many Core Architecture product, Intel Xeon Phi coprocessor-based systems already make up 18 percent of the aggregated performance of all Top500 supercomputers. The complete Top500 list is available at www.top500.org.

About Intel

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Intel Corporation
Radoslaw Walczyk, 408-765-0012
radoslaw.walczyk@intel.com

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