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AMD Drives Leadership Performance and Energy Efficiency in Supercomputing

— AMD EPYC processors and AMD Instinct accelerators powered 101 supercomputers in the latest Top500 list, a 38% increase year-over-year —

SANTA CLARA, Calif., Nov. 15, 2022 (GLOBE NEWSWIRE) -- At the Supercomputing Conference 2022 (SC22), AMD (NASDAQ: AMD) showcased its continued momentum and dominating presence within the high performance computing (HPC) industry. AMD EPYC™ CPUs and AMD Instinct™ accelerators continue to be the processors of choice for the most demanding HPC workloads powering the most complex simulations and modeling tools.

“Innovation in high performance computing has a dramatic impact on society, advancing groundbreaking research that has the potential to vastly improve quality of life for people everywhere,” said Forrest Norrod, senior vice president and general manager, Data Center Solutions Group, AMD. “AMD is constantly innovating and evolving our EPYC processors and Instinct accelerators to ensure scientists and researchers working on solving the world’s toughest challenges have the most cutting-edge tools for their research.”

Key Highlights in HPC
As seen in the latest Top500 list, AMD is driving innovation in both performance and efficiency. The latest list includes 101 supercomputers powered by AMD, compared to 73 on the November 2021 list, representing a 38 percent increase year over year. The Frontier supercomputer, powered by AMD processors and AMD accelerators, at Oak Ridge National Laboratory (ORNL), remains at the top of the Top500 list with 1.1 exaflops. Frontier is more than twice as powerful as the next system on the list and more powerful than the next four systems combined. Finally, Frontier’s mixed-precision computing performance clocked in at 7.94 exaflops, as measured by the HPL-MxP Mixed-Precision Benchmark. The Setonix system, powered by AMD EPYC CPUs and AMD Instinct accelerators, at the Pawsey Supercomputing Centre, made it onto the Top500 list in the number 15 slot with 27.2 petaflops.

Additionally, AMD powers 75 percent of the top 20 systems on the Green500 list including the number two spot with the Frontier test and development system (TDS) and the number six spot with the full system. The Adastra supercomputer, procured by GENCI, delivered 58.02 gigaflops/watt and placed third on the list. Adastra was the first supercomputing system to be powered by 4th Gen AMD EPYC CPUs and AMD Instinct MI250 accelerators.

“In early 2023, GENCI, the French HPC/AI agency, will deploy an additional scalar partition to its HPE Cray EX400 supercomputer called Adastra, hosted and operated at CINES (Montpellier),” said Philippe Lavocat, CEO, GENCI. “This new partition, providing 536 compute nodes, each with two 96-core 4th Gen AMD EPYC CPUs and 768 GB of DDR5 memory will benefit from the latest innovations by AMD in core density/performance and

energy efficiency. This new partition will serve the needs of French scientific and industrial user communities in climate, biology and medicine, new energies and materials."

A Year of Industry Advancements and Ecosystem Wins
AMD continues to build on its history of industry-firsts and delivering products with breakthrough performance. Additionally, the company's latest collaborations have significantly advanced the HPC industry and demonstrated the growing preference for AMD processors and accelerators.

- **AMD announced the 4th Gen AMD EPYC processors** with up to 96-cores, 12 channels and up to 384GB of DDR5 memory, the latest EPYC processors can deliver the leadership performance needed for critical workloads in HPC[1].
- **HPE announced** the HPE Cray EX2500 and HPE Cray XD2000 supercomputers will support 4th Gen AMD EPYC processors and AMD Instinct MI250X accelerators.
- **Lenovo announced** that Potsdam Institute for Climate Research (PIK) has selected Lenovo's HPC and Lenovo Neptune™ water cooling solutions to develop its next supercomputer, which will support 4th Gen AMD EPYC processors.
- **Microsoft announced** a Preview of new Virtual Machines (VMs) for HPC. HBv4-series VMs and the all new HX-series VMs are both powered by 4th Gen AMD EPYC processors. Each will feature AMD 3D V-Cache™ Technology when they reach General Availability in 2023. Microsoft also announced additional VMs and containers using 4th Gen AMD EPYC are forthcoming.
- **DeVito collaboration** with AMD to support HIP for AMD Instinct MI200 GPUs and AMD ROCm™ software, uplifting performance for DeVito customers.
- **AMD innovations were honored in five different award categories** during the annual HPCwire Readers' and Editors' Choice Awards, including Top Supercomputing Achievement and Best Sustainability Innovation in HPC.

AMD Powering Open-Source AI
AMD accelerators are supported by the ROCm open ecosystem which smooths the process for scientific discoveries by allowing integration with environments across multiple vendors and architectures. This year, AMD announced expansion of the AMD Instinct and ROCm ecosystem, offering exascale-class technology to a broad base of HPC and AI customers.

Additionally, AMD formally joined the PyTorch Foundation, originally created by Meta AI, as a founding member. The foundation, which will be part of the non-profit Linux Foundation, will drive adoption of AI tooling by fostering and sustaining an ecosystem of open-source projects. Finally, Meta AI developed and open-sourced AITemplate (AIT), a unified inference system that can be accelerated by AMD Instinct accelerators. AIT delivers close to hardware-native matrix core performance on a variety of widely used AI models.

Visit the AMD booth #2417 at SC22 to learn more about AMD solutions for HPC and speak with AMD experts.

Supporting Resources

- Find more AMD HPC & AI information and customer testimonials on the AMD HPC and AI Solutions Hub
- Learn more about AMD EPYC Processors and AMD Instinct Accelerators
- Read more about AMD Exascale Computing Technologies and AMD HPC Solutions
- Follow AMD on Twitter

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About AMD
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[1] SP5-009C: SPECrate®2017_fp_base based on published scores from www.spec.org as of 11/10/2022. Configurations: 2P AMD EPYC 9654 (1480 SPECrate®2017_fp_base, 192 total cores, www.spec.org/cpu2017/results/res2022q4/cpu2017-20221024-32605.html) is 2.52x the performance of published 2P Intel Xeon Platinum 8380 (587 SPECrate®2017_fp_base, 160 total cores, www.spec.org/cpu2017/results/res2022q4/cpu2017-20221010-32542.html). SPEC®, SPEC CPU®, and SPECrate® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.

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