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AMD EPYC CPUs, AMD Radeon Instinct GPUs and ROCm Open Source Software to Power World's Fastest Supercomputer at Oak Ridge National Laboratory

Collaboration with Cray targets over 1.5 exaflops of next-generation AI and HPC processing performance in Frontier system by 2021

SANTA CLARA, Calif., May 07, 2019 (GLOBE NEWSWIRE) -- AMD (NASDAQ: AMD) today joined the U.S. Department of Energy (DOE), Oak Ridge National Laboratory (ORNL) and Cray Inc. in announcing what is expected to be the world's fastest exascale-class supercomputer, scheduled to be delivered to ORNL in 2021. To deliver what is expected to be more than 1.5 exaflops of expected processing performance, the Frontier system is designed to use future generation High Performance Computing (HPC) and Artificial Intelligence (AI) optimized, custom AMD EPYC™ CPU, and AMD Radeon™ Instinct GPU processors. Researchers at ORNL will use the Frontier system's unprecedented computing power and next generation AI techniques to simulate, model and advance understanding of the interactions underlying the science of weather, sub-atomic structures, genomics, physics, and other important scientific fields.

"AMD is proud to partner with Cray and ORNL to deliver what is expected to be the world's most powerful supercomputer," said Forrest Norrod, senior vice president and general manager, AMD Datacenter and Embedded Systems Group. "Frontier will feature custom CPU and GPU technology from AMD and represents the latest achievement on a long list of technology innovations AMD has contributed to the Department of Energy exascale programs."

AMD innovations to be used in the Frontier system include:

- Future-generation High Performance Computing (HPC) and Artificial Intelligence (AI) optimized, custom AMD EPYC CPU, and Radeon Instinct GPU processors supported by High Bandwidth Memory (HBM) and extensive mixed precision ops for optimum deep learning performance;
- A custom high-bandwidth, low-latency coherent Infinity Fabric, connecting four AMD Radeon Instinct GPUs to one AMD EPYC CPU per node;
- An enhanced version of the open source ROCm programming environment, developed with Cray to tap into the combined performance of AMD CPUs and GPUs.

"We are excited to work with the team at AMD to deliver the Frontier system to Oak Ridge National Laboratory," said Steve Scott, senior vice president and CTO at Cray. "Cray's Shasta supercomputers are designed to support leading edge processor technologies and high-performance storage, all tightly interconnected by Cray's new Slingshot network. The combination of Cray and AMD technology in the Frontier system will dramatically enhance

performance at scale for AI, analytics, and simulation, enabling DOE to further push the boundaries of scientific discovery.”

AMD has a proud supercomputing history and a long-standing engagement with DOE, starting with the Jaguar supercomputer in 2005 and Titan supercomputer in 2012. The Frontier system leverages years of exascale technology investments by DOE. The contract award includes technology development funding, a center of excellence, several early-delivery systems, the main Frontier system and multi-year systems support.

“Frontier represents the state-of-the art in high-performance computing. Designing and standing up a machine of its scope requires working closely with industry, partnerships which not only enable breakthrough science but also ensure American scientific and economic competitiveness on the global stage,” said Jeff Nichols, associate laboratory director for Computing and Computational Sciences, ORNL. “We are delighted to work with AMD to integrate the CPU and GPU technologies that enable this extremely capable accelerated node architecture.”

Additional Resources

- [AMD Exascale Computing Technologies](#)
- [Cray Shasta Architecture](#)
- Follow AMD datacenter developments on Twitter [@AMDServer](#)

About AMD

For 50 years AMD has driven innovation in high-performance computing, graphics and visualization technologies — the building blocks for gaming, immersive platforms and the datacenter. Hundreds of millions of consumers, leading Fortune 500 businesses and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ:AMD) [website](#), [blog](#), [Facebook](#) and [Twitter](#) pages.

Cautionary Statement

This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) including the features, functionality, availability, timing, deployment and expectations of an EPYC™ and Radeon™ based exascale system, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "intends," "believes," "expects," "may," "will," "should," "seeks," "intends," "plans," "pro forma," "estimates," "anticipates," or the negative of these words and phrases, other variations of these words and phrases or comparable terminology. Investors are cautioned that the forward-looking statements in this document are based on current beliefs, assumptions and expectations, speak only as of the date of this document and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD's control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Material factors that could cause actual results to differ materially from current expectations include,

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Contact:

Gary Silcott

AMD Communications

+1 (512) 602-0889

Gary.Silcott@amd.com

Laura Graves

AMD Investor Relations

laura.graves@amd.com

+1 (408) 749-5467



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