Swiss National Supercomputing Centre, Hewlett Packard Enterprise and NVIDIA Announce World's Most Powerful AI-Capable Supercomputer

'Alps' system to advance research across climate, physics, life sciences with 7x more powerful AI capabilities than current world-leading system for AI on MLPerf

The Swiss National Supercomputing Centre (CSCS), Hewlett Packard Enterprise (HPE) and NVIDIA today announced that they are creating what is expected to be the world's most powerful AI-capable supercomputer.

Planned to come online in 2023, the "Alps" system infrastructure will replace CSCS's existing Piz Daint supercomputer and serve as a general-purpose system open to the broad community of researchers in Switzerland and the rest of the world.

It will enable breakthrough research on a wide range of fields, including climate and weather, materials sciences, astrophysics, computational fluid dynamics, life sciences, molecular dynamics, quantum chemistry and particle physics, as well as domains like economics and social sciences.

Alps will be built by HPE based on the new HPE Cray EX supercomputer product line, which is a next-generation high performance computing (HPC) architecture designed from the ground up to efficiently harness insights from vast, ever-increasing amounts of complex data. It features the HPE Cray software stack for a software-defined supercomputing experience, as well as the NVIDIA HGX™ supercomputing platform, including NVIDIA GPUs, the NVIDIA HPC SDK and the new Arm-based NVIDIA Grace™ CPU, also announced today.

Taking advantage of the tight coupling between NVIDIA CPUs and GPUs, Alps will be able to train GPT-3, one of the world's largest natural language processing models, in only two days — 7x faster than NVIDIA's 2.8-AI exaflops Selene supercomputer, currently recognized as the world's leading supercomputer for AI by MLPerf.

CSCS users will be able to apply this incredible AI performance to a wide range of emerging scientific research that can benefit from natural language understanding. This includes, for example, analyzing and understanding massive amounts of knowledge available in scientific papers and generating new molecules for drug discovery.

"We are not simply procuring a new computer. For enabling scientific breakthroughs, we are retrofitting our computer center in several expansion phases to a service-oriented research infrastructure," said Thomas Schulthess, computational physicist at ETH Zurich and director of CSCS. "Alps will use the HPE Cray EX supercomputing infrastructure based on a cloud-native software architecture to implement a software-defined research infrastructure, as well as NVIDIA's novel Grace CPU to converge AI technologies and classic supercomputing in one single, powerful data center infrastructure."

"HPE has had a longstanding collaboration with the Swiss National Supercomputing Centre (CSCS) in advancing high performance computing (HPC) technologies to accelerate a range of scientific research," said Antonio Neri, president and CEO of Hewlett Packard Enterprise. "We are honored to continue this journey by designing a powerful new system that furthers CSCS's mission. Armed with this incredible tool, CSCS is equipped to harness new insights from its data that drive breakthroughs in advancing our world."

"Today's monumental scientific challenges demand a new kind of supercomputer to fuel discovery," said Jensen Huang, founder and CEO of NVIDIA. "Taking advantage of our new Grace CPU designed for giant-scale AI and HPC, CSCS and NVIDIA are joining together to blaze a new trail — building a world-class, Arm-based supercomputing infrastructure that will let leading scientists apply the power of AI to do world-changing research."

About CSCS
Founded in 1991, CSCS, the Swiss National Supercomputing Centre, develops and promotes technical and scientific services for the Swiss research community in the fields of high-performance computing. CSCS enables world-class scientific research by pioneering, operating and supporting leading-edge supercomputing technologies. The center collaborates with domestic and foreign researchers, and carries out its own research in scientific computing. Located at Lugano, in the southern, Italian-speaking part of Switzerland, CSCS is a unit of the Swiss Federal Institute of Technology in Zurich (ETH Zurich).

About Hewlett Packard Enterprise
Hewlett Packard Enterprise is the global edge-to-cloud platform as-a-service company that helps organizations accelerate outcomes by unlocking value from all of their data, everywhere. Built on decades of reimagining the future and innovating to advance the way people live and work, HPE delivers unique, open and intelligent technology solutions, with a consistent experience across all clouds and edges, to help customers develop new business models, engage in new ways, and

increase operational performance. For more information, visit: www.hpe.com.

About NVIDIA

NVIDIA's (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market and has redefined modern computer graphics, high performance computing and artificial intelligence. The company's pioneering work in accelerated computing and AI is reshaping trillion-dollar industries, such as transportation, healthcare and manufacturing, and fueling the growth of many others. More information at https://nvidianews.nvidia.com/.

Certain statements in this press release including, but not limited to, statements as to: the benefits, performance, features and impact of the Alps supercomputer; the creation of the world's most powerful AI-capable supercomputer; the timing for Alps to come online, what it will replace and the purpose it will serve; what Alps will enable and its applications and uses; how CSCS is enabling scientific breakthroughs; what Alps will use to build a data center infrastructure; supercomputers fueling discovery; CSCS and HPE's collaboration and them designing a new system; CSCS being equipped to harness new insights from data and advancing our world; and NVIDIA, HPE and CSCS blazing a trail and building a supercomputing infrastructure that will let scientists to apply the power of AI are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. Important factors that could cause actual results to differ materially include: global economic conditions; our reliance on third parties to manufacture, assemble, package and test our products; the impact of technological development and competition; development of new products and technologies or enhancements to our existing product and technologies; market acceptance of our products or our partners' products; design, manufacturing or software defects; changes in consumer preferences or demands; changes in industry standards and interfaces; unexpected loss of performance of our products or technologies when integrated into systems; as well as other factors detailed from time to time in the most recent reports NVIDIA files with the Securities and Exchange Commission, or SEC, including, but not limited to, its annual report on Form 10-K and quarterly reports on Form 10-Q. Copies of reports filed with the SEC are posted on the company's website and are available from NVIDIA without charge. These forward-looking statements are not guarantees of future performance and speak only as of the date hereof, and, except as required by law, NVIDIA disclaims any obligation to update these forward-looking statements to reflect future events or circumstances.

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