



## **Eni boosts supercomputing infrastructure of the Green Data Center**

*The new HPC6 supercomputer will be one of the most powerful industrial computing systems in the world, marking a major step forward in high-performance computing to support Eni's transition from today's energy sources to those of the future.*

*San Donato Milanese (Milan), 23 January 2024* – Eni has started building a new high-performance computing (HPC) system, HPC6, aimed at significantly increasing the computational power of HPC4 and HPC5 from their current 70 PFlop/s to a peak of over 600 PFlop/s, or 600 quadrillion mathematical operations per second. Eni's new HPC system, characterized by extraordinary computing power, thus marks an order of magnitude increase in computing capacity compared to its predecessor.

The architecture of HPC6 is based on the same technology that powers the leading systems of its kind globally. The HPC6 system and its storage facility will be provided by Hewlett Packard Enterprise (HPE), which won the tender in a competitive international process, and will use HPE Cray EX4000 systems and HPE Cray ClusterStor E1000 technologies for the HPC6 system and storage, respectively. The computing system includes AMD EPYC™ CPUs and AMD Instinct™ GPUs, along with HPE Slingshot Interconnect, an open Ethernet-based high performance designed to support exascale-class workloads. Once completed, HPC6 will be one of the world's most powerful supercomputers dedicated to industrial applications.

In line with Eni's commitment to sustainability, HPC6 will be more energy efficient, minimizing carbon emissions. It will be located in a dedicated area within the Green Data Center, where a new liquid cooling system has been built to further enhance its efficiency and sustainability.

Eni's CEO Claudio Descalzi said: *"Through this initiative we continue to demonstrate our technological leadership, reaffirming Eni's role in supercomputing and relaunching our ambitions through dedicated*

*infrastructure. This project underlines our ongoing commitment to innovation and digitalisation, while also supporting our energy transition process. The new HPC system significantly enhances our computational capabilities and marks a pivotal shift in the way we address challenges related to energy security, competitiveness and sustainability."*

This investment reinforces Eni's leadership in industrial high-performance computing and consolidates its position as a high-tech company supporting the energy transition. In addition to supporting Eni's digitalisation and innovation process, HPC6 is a key asset in meeting the challenges of achieving net zero, providing a crucial technological lever to gain competitive advantages in the development of new energy sources.

### **TECHNICAL NOTE TO EDITORS:**

Eni current high performance computing systems HPC4 and HPC5 have a combined computing power of 70 quadrillion floating point operations per second (70 PFlop/s), with a hybrid architecture that optimises performance and limits energy consumption. The two supercomputers are housed in the Green Data Center in Ferrera Erbognone, one of the most energy-efficient and carbon footprint-friendly computing centres in Europe: besides being partly powered by a 1MW photovoltaic power plant, for at least 92% of the year the machines are cooled by air circulating at low speed, minimising the use of air conditioning.

The key features of HPC6 are detailed below:

- Computing power: the system can reach an impressive peak computing power of over 600 PFlop/s (Rpeak) and 400 PFlop/s "sustained" (Rmax), making it one of the most advanced supercomputing infrastructures in the world.
- Node Composition: each node consists of a 64-core AMD EPYC™ CPU and four high-performance AMD Instinct™ MI250X GPUs for high computational efficiency and unmatched versatility, which makes it suitable to a vast array of applications.
- Size: the system includes 3472 computing nodes housing a total of 13,888 GPUs, organised into 28 racks for optimal space utilisation and maximum performance.
- High-performance network: the HPE Slingshot Interconnect network with Dragonfly topology ensures a fast and reliable interconnection between nodes, facilitating high-speed data transfer and increasing the ability to handle complex workloads.
- Cooling system: the system uses a direct liquid cooling technology that dissipates 96% of generated heat, keeping components at optimal temperatures for consistent performance and contributing to environmental sustainability through a more efficient use of energy.

- Power consumption: the system has a maximum power consumption of 10.17 MVA, reflecting exceptional performance and energy efficiency.

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