

EU Builds Hybrid ARM-Based Supercomputer

The Mont Blanc Project's new low-power supercomputer in Barcelona will use Tegra and GPU chips

The Barcelona Supercomputing Centre (BSC) will use a combination of CPUs and graphics technology from Nvidia in a hybrid supercomputer that researchers expect will enable exascale computing while using 15 to 30 percent less power than traditional architectures.

The supercomputer, dubbed the EU Mont-Blanc Project, will use Nvidia's quad-core Tegra 3, which is based on a chip design from ARM Holdings, and Nvidia's CUDA graphics processing units (GPUs) to enable two to five times improvement in energy efficiency, according to Nvidia officials.

Energy efficiency

The massive system, announced on 14 November, will be on display during the SC11 Conference in Seattle, which runs from 14 to 17 November. It also will likely be part of the keynote address at the show by Jen-Hsun Huang, Nvidia's president and chief executive. Huang is scheduled to speak on 15 November.

Through the EU Mont-Blanc Project, researchers at the the Barcelona centre will develop high-performance computing (HPC) architectures and exascale applications that can leverage the type of highly energy-efficient embedded mobile chip technologies, according to the centre and Nvidia.



"In most current systems, CPUs alone consume the lion's share of the energy, often 40 percent or more," Alex Ramirez, leader of the Mont-Blanc Project for the BSC, said in a statement. "By comparison, the Mont-Blanc architecture will rely on energy-efficient compute accelerators and ARM processors used in embedded and mobile devices to achieve a four- to 10-times increase in energy-efficiency by 2014."

The Mont-Blanc Project – which also includes participation from supercomputing centres in Germany, France and Italy – will leverage systems from European OEM Bull as well as interconnect technology from Gnodal.

The project is the latest proof point in the efforts by ARM and its manufacturing partners – not only Nvidia, but others, such as Calxeda and Marvell Technologies – to leverage the highly efficient, low-power technology found in chips that power most mobile devices, such as smartphones and tablets, to move up the ladder and challenge Intel and Advanced Micro Devices in mainstream PCs and servers.

Most recently, Hewlett-Packard announced its own initiative, Project Moonshot, to develop low-power servers powered by Calxeda's ARM-based chips.

New development kit

To help fuel that push, Nvidia officials also are announcing plans to develop a new hardware and software development kit with hardware from SECO powered by Tegra 3 chips and accelerated by Nvidia GPUs.

The development kit is scheduled to be available in the first half of 2012 and will be supported by Nvidia's CUDA parallel programming toolkit. CUDA is Nvidia's parallel computing architecture designed to improve computing performance using the company's GPUs.

In addition, Nvidia also announced that the BSC was named as the latest CUDA Centre of Excellence. The centre joins 14 similar institutions that are working to advance the use of parallel computing.