

## Barcelona Supercomputing Center to Deploy World's First ARM-Based CPU/GPU Hybrid Supercomputer

### Prototype System With Energy Efficient Tegra ARM CPUs and CUDA GPUs Advances Europe Toward Exascale Supercomputing

SEATTLE, WA -- SC11 -- NVIDIA today announced that the Barcelona Supercomputing Center (BSC) is developing a new hybrid supercomputer that, for the first time, uses energy-efficient, low-power NVIDIA® Tegra™ ARM CPUs, together with high-performance NVIDIA® CUDA® GPUs.

BSC is planning to develop the first large scale system based on this technology, with a near term goal of demonstrating two to five times improvement in energy efficiency compared with today's most efficient systems. BSC is showing the system design publicly for the first time at this week's [SC11 Conference](#), which runs Nov. 14-17 in Seattle, Wash., in exhibit booth #235.

BSC's ultimate research goal is to deliver exascale-level performance while using 15 to 30 times less power than current supercomputer architectures. This so-called EU Mont-Blanc Project will explore next-generation HPC architectures and develop a portfolio of exascale applications that run efficiently on these kinds of energy-efficient, embedded mobile technologies.

"In most current systems, CPUs alone consume the lion's share of the energy, often 40 percent or more," said Alex Ramirez, leader of the Mont-Blanc Project. "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."

To support growing demand for similar ARM-based initiatives around the world, NVIDIA also announced plans to develop a new hardware and software development kit. The kit, with hardware developed by [SECO](#), will feature a quad-core NVIDIA Tegra 3 ARM CPU accelerated by a discrete NVIDIA GPU. It is expected to be available in the first half of 2012, and will be supported by the NVIDIA CUDA parallel programming toolkit.

In recognition of its ground-breaking work leveraging NVIDIA GPUs and CUDA technology to drive education and research programs across a range of scientific disciplines, BSC was named a CUDA Center of Excellence by NVIDIA. The CUDA Center of Excellence program rewards and fosters collaboration with leading institutions that are at the forefront of parallel computing research.

BSC joins an elite network of 14 institutions around the world that are advancing awareness of parallel computing and empowering academics and scientists to conduct world-changing research. For more information about the CUDA Center of Excellence program visit:

<http://research.nvidia.com/content/cuda-centers-excellence>.

#### Tags / Keywords:

NVIDIA, CUDA, Tegra, ARM, GPU, GPU computing, supercomputing, parallel computing, GPGPU, high performance computing, HPC, developers, research, scientific computing, Barcelona Supercomputing Center

#### About the Mont-Blanc Project

The Mont-Blanc project brings together a purely European consortium which joins industrial technology providers and research supercomputing centers: Bull, as the major HPC system vendor, ARM, as the world leader in embedded high-performance processors, and Gnodal, as interconnect partner that focuses its new product on scalability and power efficiency. Besides the technology providers, Mont-Blanc unites the supercomputing centres from the four Tier-0 hosting partners in PRACE who have leading roles in system software and exascale application development: Germany (Forschungszentrum Jülich, BADW-LRZ), France (GENCI, CNRS), Italy (CINECA), and Spain (BSC).

#### About BSC

The Barcelona Supercomputing Center (BSC, [www.bsc.es](http://www.bsc.es)) houses MareNostrum, one of the unique supercomputers in a renovated old chapel-style building. Its mission is to research, develop and manage information technology in order to facilitate scientific progress. With this objective, the center counts with research areas in Computer Sciences, Life Sciences, Earth Sciences and Computational Applications in Science and Engineering. In the context of this multi-disciplinary approach, the BSC has a large number of researchers and experts in HPC (High Performing Computing), which facilitate scientific progress together with state-of-the-art supercomputing resources. More than 350 people work at BSC on research and 100 of those are from outside Spain.

This Spanish multi-disciplinary supercomputing center was established by a consortium made up by the current Ministry of Science and Innovation (MICINN), by the Ministry of Economy and Knowledge of the local Government of Catalonia and by the Universitat Politècnica de Catalunya/Barcelona Tech (UPC) and is headed by Professor Mateo Valero.

#### About NVIDIA

[NVIDIA](#) (NASDAQ: NVDA) awakened the world to computer graphics when it invented the [GPU](#) in 1999. Today, its [processors](#) power a broad range of products from [smart phones](#) to [supercomputers](#). NVIDIA's [mobile processors](#) are used in [cell phones](#), [tablets](#) and [auto infotainment systems](#). [PC gamers](#) rely on GPUs to enjoy spectacularly immersive worlds. Professionals use them to create visual effects in movies and design everything from golf clubs to jumbo jets. And researchers utilize GPUs to advance the frontiers of science with [high-performance computing](#). The company holds more than 2,100 patents worldwide, including ones covering ideas essential to modern computing. For more information, see [www.nvidia.com](http://www.nvidia.com).

Certain statements in this press release including, but not limited to statements as to: the impact and benefits of NVIDIA Tegra ARM CPUs and NVIDIA CUDA GPUs; and the effects of the company's patents on modern computing 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 reports NVIDIA files with the Securities and Exchange Commission, or SEC, including its Form 10-Q for the fiscal period ended July 31, 2011. 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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#### About NVIDIA

Since 1993, [NVIDIA](#) ( NASDAQ : NVDA ) has pioneered the art and science of [visual computing](#). The company's technologies are transforming a world of displays into a world of interactive discovery — for everyone from gamers to scientists, and consumers to enterprise customers. More information at <http://nvidianews.nvidia.com/> and <http://blogs.nvidia.com/>.

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