

The new MareNostrum version is to multiply its calculation capacity by 10

- El Barcelona Supercomputing Center – Centro Nacional de Supercomputación is to replace MareNostrum with a new version that will multiply its calculation capacity by 10
- The new equipment will be fully installed in January. A first phase, covering 70%, ranks 36 worldwide and 12 in Europe in the Top500 ranking
- The new world ranking was made public last week during the SC12 International Supercomputing Trade Show
- The new supercomputer comes after investing 22.7 million Euros, funded mainly by State grants and FEDER Funds

The Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS) is working to replace the MareNostrum supercomputer with a new version that will multiply its calculation capacity by 10. The replacement works will continue until the beginning of 2013, but a part of this new computer (70% of its total) ranks 36 in the world and 12 in Europe based on the Top500 Supercomputer World Ranking (www.top500.org) which was updated on the 12th November coinciding with the SC12 International Supercomputing Trade Show held in Salt Lake City (Utah).

The funding for this project comes from State contributions in 2010 through the current Ministry of Economy and Competitiveness in applying the 3rd additional clause of the Catalan Statute of Autonomy and also includes European FEDER Funds in addition to funds from the actual consortium provided by both administrations.

Technical facts

MareNostrum is a supercomputer produced by IBM using IDataPlex technology making it possible to group the components of the new MareNostrum in a reduced space (120m²).

It will have more than 6,000 Intel SandyBridge chips with 2.6GHz each and with eight processors or cores, a total memory of almost 100TB and a high-speed communication network between processors which is 10 times more powerful than the current one.

The supercomputer will be linked to a high performance files system with a capacity of 2 Petabytes and an active filing system of 5 Petabytes. Its energy consumption will be 1MW per hour, only 28% higher than the current MareNostrum, whereas its calculation capacity will be 10.63 times higher. The IDPX (IDataPlex) systems are cooled on a rack so as to further improve the energy performance on the Torre Girona chapel, hosting the supercomputer.

A supercomputer to remain in the European elite

By replacing the MareNostrum, the BSC-CNS will be able to offer a better service to its users and thus stand up to its commitments with the PRACE (Partnership for Advanced Computing in Europe) research infrastructure, which brings together the top supercomputing centres in Europe and leads the development of this area on the continent. Spain is at the front of this European platform together with France, Germany and Italy, the three other countries which make available their supercomputers with a capacity equal to or above one Petaflop/s for European scientists.

The new MareNostrum

MareNostrum is the name given to the BSC-CNS flagship supercomputer. Its initial version, installed in 2004, had a calculation capacity of 42.35 Teraflops per second (42 billion operations per second). It was updated in 2006 and then MareNostrum II reached a capacity of 94.21 Teraflops/s. MareNostrum III will have a capacity above 1 Petaflop/s (one thousand Teraflops/s, meaning one milliard operations per second).

It is a Unique Scientific and Technical Facility (ICTS in Spanish) recognised as such by the Spanish Ministry of Economy and Competitiveness, serving the scientific and technological community and society granting open access for researchers in the public and private sectors.

Since 2004, MareNostrum has served in over two thousand scientific and technical research projects. Today, supercomputers are one of the basic pillars supporting science and engineering. Without them, many research and other projects requiring a high calculation and data processing capacity would simply not be possible. Supercomputers are used to create models and simulations and to process large amounts of information for studies relating to all fields in science.

BSC-CNS, at the SC12 Trade Show

The Barcelona Supercomputing Center – Centro Nacional de Supercomputación participated very actively at the SC12 International Supercomputing Trade Show that took place from the 10th to the 16th of November in Salt Lake City (Utah).

Researchers from the centre offered over a dozen activities –tutorials, workshops, BoFs- in the scientific conference (check [here](#)), with a special focus on OmpSs programming models created at the BSC-CNS and on research carried out on future exascale supercomputers.

The centre’s stand also displayed several applications developed by the BSC-CNS to serve industry.

About BSC-CNS

The BSC-CNS is the pioneering supercomputing centre in Spain and specialises in high performance computing, known as HPC. Its purpose is twofold: to conduct R+D, and to make supercomputing facilities available to the scientific community and to society as a whole.

The BSC-CNS was awarded the “Severo Ochoa Centre of Excellence” seal in 2011; it manages the Spanish Supercomputing Network (Red Española de Supercomputación, or RES) and is a first-level member of the PRACE infrastructure (Partnership for Advanced Computing in Europe).

The BSC-CNS consortium is made up of the Spanish Ministry of Economy and Competitive (51%), the Catalan Ministry of Economy and Knowledge (37%) and the Polytechnic University of Catalonia-Barcelona Tech (12%).