

Publishable executive summary

The main objective of the Mont-Blanc project has been to demonstrate the viability of using European embedded commodity technology for High-Performance Computing (HPC).

Within the 45 months of the project, the Mont-Blanc project has designed, developed, deployed and tested an HPC prototype based on mobile commodity chips. The prototype is the first large installation (1000+ compute nodes) based on ARM mobile chips dedicated to scientific computing and HPC.

For operating the prototype, a complete hardware support and software stack has been developed and deployed, giving to the final user a complete tool chain and the feeling of executing their jobs on a standard supercomputer. The Mont-Blanc prototype is also a development platform and test set for innovative programming models, development tool, and model for next generation architectures also promoted and improved by the project.

The prototype is installed in the facilities of the Barcelona Supercomputing Center and it is up and running since February 2015, executing applications of Mont-Blanc partners and members of the Mont-Blanc end-user group. Extensive tests of various workloads, HPC and data-center, including representative scientific and industrial applications running daily on PRACE Tier0 systems, have been performed with overall outstanding scalability and efficiency even considered the limited capabilities of some of hardware components (e.g. network).

The Mont-Blanc project represents a first successful step towards cost effective and energy efficient scientific computing based on mobile technology. Promoted by the project, a huge interest to the Mont-Blanc ideas from the scientific community, companies and press grew and will continue to evolve. With the support of the European Commission Mont-Blanc allowed pushing European hardware and software technologies as well as HPC skills towards a promising differentiator in terms of energy efficient pre exascale systems.