

Application porting and code-optimization activities for European HPC systems

High Performance Computing (HPC) continues to maintain its essential role in almost every aspect of modern life: from automotive and aerospace industries over drug design and health care to national and international security. Currently, the HPC community is actively working towards the development of next-generation HPC systems capable of delivering ExaFLOP performance, i.e. 2.5-fold increase in computing capabilities beyond currently existing Multi-Petascale supercomputers¹. The underlying technologies and architectures of these high-end IT systems have and are being continuously evolved to support a larger spectrum of workloads. While these new architectures open exciting opportunities to the computational scientific community, they also pose numerous challenges associated with application porting and optimization. Thus, it is imperative to support HPC application developers in order to ensure that the capabilities of these large-scale machines are utilized in the most efficient manner.

Recently, PRACE (Partnership for Advanced Computing Europe) released its [“Best Practice Guide – Application porting and code-optimization activities for European HPC systems”](#), which provides an overview on current major large-scale application porting and code-optimization activities in Europe. More specifically, the document:

- provides an overview on **EuroHPC Joint Undertaking** (<https://eurohpc-ju.europa.eu>) initiative
- discusses the porting and optimization activities within the **PRACE-6IP project** (e.g. Preparatory access (<https://prace-ri.eu/hpc-access/preparatory-access/>), **SHAPE-SME HPC Adoption Programme in Europe** (<https://prace-ri.eu/hpc-access/shape-access/>), and **DECI** (<https://prace-ri.eu/hpc-access/dec-1-access/dec-1-access-information-for-applicants/>) by depicting examples of successful performance optimization measures including some technical details as well as numbers on the achieved speedup;
- outlines current generation of **Centres of Excellence on HPC**
- as well as provides some examples of national scale initiative projects available in Europe

For more information please refer to: <https://prace-ri.eu/training-support/best-practice-guides/application-porting-and-code-optimization-activities-for-european-hpc-systems/>

KEYWORDS: application porting; application optimization; HPC user support; support programs in Europe

¹ According to June 2020 TOP500 rankings (<https://www.top500.org/lists/top500/list/2020/06/>)