

BSC releases COMPSs version 1.4

- *The Barcelona Supercomputing Center offers to the HPC community a set of tools that helps developers to program and execute their applications efficiently on distributed computational infrastructures*
- *The new release includes new features that improves runtime performance, new tracing infrastructure and support for dockers and Chameleon infrastructure*



The [Workflows and Distributed Computing team](#) at the Barcelona Supercomputing Center is proud to announce a new release, version 1.4, of the programming environment [COMPSs](#).

This version of COMPSs, available from today, updates the result of the team's work in the last years on the provision of a set of tools that helps developers to program and execute their applications efficiently on distributed computational infrastructures such as clusters, grids and clouds. COMPSs is a task based programming model known for notably improving the performance of large scale applications by automatically parallelizing their execution.

COMPSs has been available for the last years to the MareNostrum supercomputer users and to the Spanish Supercomputing Network and has been adopted in several research projects such as OPTIMIS, VENUS-C, EUBrazilOpenBio, EUBrazil CloudConnect, transPLANT and EGI. In these projects COMPSs has been applied to implement use cases provided by different communities across diverse disciplines as biomedicine, engineering, biodiversity, chemistry, astrophysics and earth sciences. Currently it's also under extension and adoption in applications in the projects ASCETIC, EUROSERVER, the BSC Severo Ochoa program and the Human Brain Project flagship. COMPSs will also be further developed and used in the following recently started H2020 funded projects: EUBRA BIGSEA, NEXTGenIO, MUG, TANGO and the CoE BioExcel.

The new release comes with a better implementation of the workers cache which improves performance. Also, a new tracing mechanism based in native Java calls that enables instrumentation of the runtime internals and with support for communication events and HW performance counters have been implemented. This will enable better understanding of the performance bottlenecks of the applications. With regard the computing infrastructures, the new release comes with support for dockers managed with swarm, support for the Chameleon infrastructure, and support for MareNostrum supercomputer as an external resource (this enables to submit COMPSs tasks to MareNostrum from the users' laptop).

Chameleon (www.chameleoncloud.org) is a large scale deeply reconfigurable experimental testbed for Computer Science that supports research ranging from virtualization and operating systems to various types of resource management and novel applications.

COMPSs has had around than **750 downloads** last year and is used by around **20 groups** in real applications. COMPSs has recently attracted interest from areas such as image recognition,

genomics and biodiversity, where specific courses and dissemination actions have been performed.

During last years, the team efforts have been focusing on the nowadays-emerging virtualization technologies, adopted by cloud environments. In such systems, COMPSs provides scalability and elasticity features by dynamically adapting the number of resources to the actual workload.

COMPSs is interoperable with both public and private cloud providers like Amazon EC2, OpenNebula and with OCCI compliant offerings.

The packages and the complete list of features are available in the [Downloads](#) page. A virtual appliance is also available to test the functionalities of COMPSs through a step-by-step tutorial that guides the user to develop and execute a set of example applications.

Additionally, a user guide and papers published in relevant conferences and journals are available.

For more information on COMPSs please visit our webpage: <http://compss.bsc.es>

More Info about Barcelona Supercomputing Center

Barcelona Supercomputing Center (BSC) is the national supercomputing centre in Spain. BSC specialises in High Performance Computing (HPC) and its mission is two-fold: to provide infrastructure and supercomputing services to European scientists, and to generate knowledge and technology to transfer to business and society.

BSC is a Severo Ochoa Center of Excellence and a first level hosting member of the European research infrastructure PRACE (Partnership for Advanced Computing in Europe). BSC also manages the Spanish Supercomputing Network (RES).

The Workflow and Distributed Computing team at the Barcelona Supercomputing Center aims to offer tools and mechanisms that enable the sharing, selection, and aggregation of a wide variety of geographically distributed computational resources in a transparent way. The research done in this team is based in the former expertise of the group, and extending it towards the aspects of distributed computing that can benefit from this expertise. The team at BSC has a strong focus on programming models and resource management and scheduling in distributed computing environments.

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