



Friday 7 July 2017

10h30 – 12h00

UT3 Paul Sabatier, IRIT, Salle 175

Tomasz PIONTEK

Poznan Supercomputing and Networking Center (Pologne)

**Everyday Computing with QCG MiddleEveryday
Computing with QCG Middleware and Toolsleware
and Tools**

Keywords: grid-computing, application monitoring, reservation, co-allocation of resources

Abstract: In multi-sites, distributed and heterogeneous e-Infrastructures like PL-Grid (Polish National Grid Initiative Infrastructure), the traditional way of performing advanced computations, based on a direct access to a cluster and submission of jobs straight to a queuing system in the batch mode, becomes insufficient to address new science challenges and user expectations. When a scientist, instead of concentrating on a research subject, has to acquire superfluous knowledge and perform excessive tasks needed to work in a specific environment, it is often seen simply as a waste of time and his domain skills. On the other hand, a variety of scientific simulations carried out may discourage some researchers from the use of high-level problem-oriented solutions, which, although fully automatized, feature low flexibility. Taking into account all aforementioned problems and trying to provide a properly balanced solution, Poznan Supercomputing and Networking Center within the PL-Grid infrastructure, offers end-users both from academia and industry a set of QCG (previously known as QosCosGrid - <http://www.qoscosgrid.org/>) services and tools that enable easy and intuitive access to all applications and computing resources in Poland.

In principle, QCG is a system that combines many distributed computing resources together and provides a common interface to users for job submission, management and monitoring. QCG supports execution of various application scenarios starting from simple runs, through parameter sweep, workflows, multi-scale, MPI, and ending with hybrid MPI-OpenMP. It also provides a set of unique features, such as advance reservation, co-allocation of distributed computing resources and support for interactive tasks. Additionally, QCG offers advanced monitoring capabilities for tracking the progress of application run.

The access to QCG functionality is available for end-users through various client tools, including command-line interfaces, graphical interfaces and web applications. From this set, one can distinguish general-purpose tools for job submission and management in a broad sense, and more specific software that plays only a strictly defined role.

The sustainable development of QCG, based on a close collaboration and engagement of various domain specific scientists resulted in the creation of many intuitive tools tailored to users' expectations and habits. This seems to be confirmed by the greatest popularity of the QCG services within the PL-Grid infrastructure, taking into account both the number of users and consumed computing power. After a successful adoption of QCG on a

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05 61 55 65 10

info@irit.fr

www.irit.fr





national scale, the middleware became a part of the software distributed by European Grid Infrastructure (EGI) and made available for all interested customers across Europe as a part of Unified Middleware Distribution (UMD). In order to meet expectations of scientific environment and provide the highest-quality product for current and new users, the QCG solutions are constantly improved and extended by new functionalities and tools.

The talk will be devoted to the most important functionalities and capabilities of QCG focusing on client tools as well the major benefits to end-users behind the software.

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info@irit.fr

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