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Pros and Cons of cloud adoption in the Scientific Data Infrastructures - the D4S-II case

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The D4S project is going to provide as major product the gCube middleware. It is a grid-enabled service oriented middleware enabling the creation and operation of Virtual Research Environments, to serve the management and exploitation of scientific data. As part of the D4S-II project a study on the impact of cloud technology (mainly Virtualisation) and cloud capabilities (on-demand availability and scalability) on the gCube software will be performed. The study will also analyse the impact of cloud technology from a commercial point of view (market positioning, possible exploitation strategies).

Detailed analysis

During the session will be presented the results of the study eventually showing hands-on results that will be developed as experimentation during the study period.
The proposed study will be divided into three phases:
1) Market analysis and positioning - aiming at clarifying the position of gCube with respect to the market of cloud services. During this stage the team will identify competitors, commercial potentials, suppliers in the value chain costs and potential revenues.
2) gCube installation and performance analysis –the system will be installed at ENG premises (a virtualised infrastructure) in order to test its installability and measure its performance.
3) Analysis of gCube architecture with respect to cloud technology - aiming at identifying ways to exploit existing cloud technology to boost performance or processes, and/or analyse how on-demand availability and scalability are provided by gCube. In more detail two opportunities will be taken into consideration: the uses of an IaaS (e.g AWS or blade server) instead of EGEE resources and the use of a PaaS (e.g. Google Apps or MS Azure) to implement gCore functionalities.

Conclusions and Future Work

During this session the participants will be informed about the results of a study comparing the gCube solution, developed within the framework of DILIGENT and D4S projects, and the cloud technologies and models.
The results of the study will be exploited at the level of the D4S-II project in order to improve the present solution and provide an up to date interoperability solution for developing Virtual Research Ecosystems.
The study will also contribute to the discussion at the level of e-Infrastructures on the potential impact of cloud technology on e-Science.

Impact

The study will provide useful information to the different project activities, in particular to:
- potential customers to understand the type of service provided, to clarify SLA and any related cost for the potential customers in adopting the solution, and to structure and to infrom about the sustainability strategy.
- Site manager to know about the the installation and other operational procedures, how to reduce the need of dedicated servers and how to measures the cost of providing the D4S-II services

- gCube developers to understand on how to improve the gCube software and related services, identify any bottleneck, understanding performance of the entire system and how to intervene to improve them.
- All participants to learn about the cloud technologies, how to exploit them to further services offered to the communities.

Keywords

cloud, business models, technology impact, gcube, virtual research environment

URL for further information

http://grid.eng.it

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