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Implementation of Web Coverage Service functionalities over the EGEE Platform

Friday 11 May 2007 10:00 (20 minutes)

Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

CYCLOPS Project is a FP6 SSA which aims to bring together two important Communities: GMES and GRID, focusing on the operative sector of European Civil Protection (CP). In this context, an evaluation of the adoption of Grid technology by the CP community is required. In particular, in this work we tested the porting on the EGEE platform of Open Geospatial Consortium WCS, one of the most demanding services for geospatial data sharing which is a critical issue in most CP applications.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

We are developing a Java WCS that, from a user request, computes a particular subset, resampling or interpolating a geospatial data that resides in the Grid.
Our software splits this request in an arbitrary number of sub-requests, generates a JDL file describing a Direct Acyclic Graph (DAG), and sends it to the WMProxy component of the gLite-WMS using its Java API.
The WMProxy submits the sub-jobs to the various Computing Elements close to the replicas of the requested initial data, and makes sure that all sub jobs are executed successfully.
After all requests have been computed, a node of the DAG acting as "collector"job takes care that all the results are correctly merged in a single file and sends it back to the WCS.

With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)

The WCS is presently implemented as a synchronous service,while EGEE runs batch jobs.This limits our implementation to be exploited within use-cases involving complex job workflows where other parts of the computation are batch-like.In some cases the WCS computations require to access to relational databases,while the EGEE Data Management system is file-based.A full java access to Grid,without the need for the application to run on top of a fully equipped gLite User Interface would be preferable

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

An Open Geospatial Consortium Web Coverage Service (OCG-WCS) provides the user with a particular view of a selected geospatial resource. This operation often requires executing an intense computing work on a big binary file, which is usually stored locally to the WCS.

The European Civil Protection data infrastructure is intrinsically distributed in various locations.

In our case we need to execute the same job on a large amount of big resource files, geographically spread among different sites.

The EGEE platform gives our WCS the chance to subset the initial request in an arbitrary number of sub-requests, which can be submitted to different Computing Elements located close (in the LAN sense) to the physical replicas of our initial resource.

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Session Classification: Users in the wider Grid community - from science to business

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