Contribution ID: **59**   Type: **not specified**

Web4Grid, web interface for grid jobs

Thursday, 29 March 2012 14:20 (20 minutes)

Description of the Work

To popularize grid in all scientific areas it is required to have user friendly interfaces where simple programs can be uploaded and executed in a easy way. Those interfaces should not compete with the sophisticated ones developed for specific applications rather they should cover the most basic aspects with suitable default options. The minimal capabilities would be submitting a job, recovering the results, monitoring the existing jobs and check the grid status. We are now developing a web portal to allow researchers to submit applications, recover the results and monitor the status without any prior grid knowledge.

The interface has been developed with one of most known open source web application frameworks, Django. This framework's goal is the creation of complex database-driven websites rapidly and Django modularity is essential for our purpose.

After authenticating and configuring the account, job
submission has been simplified: the user just uploads the application to be run and sets the parameters and the input files. All other information is the same for all
the users by default but can be overwritten by each user within her profile. When the job has been submitted, a background script manages all the job workflow from proxy creation to results recovery and data cleaning.

Nowadays Web4Grid is up and running and we are studying the creation of an authentication module based on browser stored certificate that would allow the use of the portal by researchers from anywhere. Besides, we are also considering to process the job using short scripts or just integrating these scripts within Django as well as adding parametric jobs submission.

Conclusions

With the support of Ibergrid we have developed a web application that would allow researchers to run generic grid jobs and monitor the grid status from any computer or mobile device provided it has a web browser. This will promote the use of grid in scientific environments well beyond the traditional ones. Users that need more advanced requirements can use more elaborated interfaces such as P-Grade or Genius.
To contribute to the use of these kind of portals all over the EGI, the application is available to be downloaded and installed in any EGI site.

Impact

Scientific grid has been proven to be a useful tool in some very computationally demanding fields as for example in analysis of particle physics or astrophysics data. While it has been extended to other fields such as plasma research it is still viewed as a tool associated to large projects. However the capability of grid computing of
processing a large number of jobs simultaneously is, by itself, not restricted to large projects. There are many research areas on which small teams or even individual researchers may need to run many jobs in order to

explore the dynamics of a system as function for different parameter values or for statistical purposes in cases of dynamics subject to noise or fluctuations. Complex systems would be a prototypical area where such calculations are performed. While this high throughput computational needs are very much suitable for what grid was intended for, very few users take advantage of it

because the access is cumbersome and requires a learning period that many researchers, mainly in small groups, can not afford.

Some of the most known web user environments have been developed by e-NMR (http://www.e-nmr.eu/), but each of those interfaces is specific for a single application. Other graphical environments such as P-Grade http://www.p-grade.hu/) are too complex to be used without any training. Our web user interface wants to be a

user-friendly environment where grid users can submit their jobs with no grid usage training and will promote the use of grid computing on research environments well

beyond the traditional areas where grid has been developed.

URL

http://ifisc.uib-csic.es/nuredduna/web4grid/

Overview (For the conference guide)

Grid has the potential to be a key instrument for a wide variety of scientific topics which require to perform many calculations. The reduced size of the research groups or the diversity of problems makes unsuitable to develop specific interfaces in most of the instances and the grid shell commands are a barrier that requires a significant amount of determination to cross.

To make grid usage as common as computational clusters user friendly interfaces are needed, and Web4Grid has been developed in the framework of Ibergrid to allow easy access to the grid infrastructure to all the Portuguese and Spanish grid users.

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Session Classification: Portals & Gateways