



Contribution ID: 65

Type: Poster

Fair Execution Time Estimation (FETE), a new matchmaking algorithm for gLite

Tuesday, 23 September 2008 16:37 (0 minutes)

Describe the activity, tool or service using or enhancing the EGEE infrastructure or results. A high-level description is needed here (Neither a detailed specialist report nor a list of references is required).

We have implemented a new matchmaking algorithm, called Fair Execution Time Estimation (FETE), for gLite, the middleware used in the EGEE. This algorithm is used by the Workload Manager (WM), which is the core component of the WMS.

The Workload Manager uses a two-phase process in order to assign a job to a Computing Element (CE). At the first phase a set of candidate CEs are selected that meet task/user requirements. In the second phase these CEs are ranked based on a user defined criterion.

Report on the impact of the activity, tool or service. This should include a description of how grid technology enabled or enhanced the result, or how you have enabled or enhanced the infrastructure for other users.

The FETE matchmaking algorithm has been evaluated in a realistic small Grid testbed. Our results indicate that use of the FETE algorithm enhances Grid technology and leads to better exploitation of existing Grid infrastructure. Our algorithm leads to better distribution of jobs at the available CEs and furthermore avoids the meaningless cumulation of jobs at the most powerful CEs while the rest remain unused.

Describe the added value of the grid for your activity, or the value your tool or service adds for other grid users. This should include the scale of the activity and of the potential user community, and the relevance for other scientific or business applications.

A very important problem of the matchmaking process is the case where the most powerful CEs are assigned the largest percentage of jobs and as a result these CEs become a bottleneck for the Grid. In this case we have a significant degradation of Grid performance, as the queues of these CEs fill up with a very large number of jobs, while at the same time less powerful CEs remain almost unused.

Having these in mind we developed the FETE matchmaking algorithm. FETE achieves smaller task queuing delay and better resource usage, than the existing gLite matchmaking algorithms. This way significant reduction in the average task delay and overall improvement in Grid performance are achieved. Finally, we believe that many applications can benefit from using FETE and especially the applications that have best effort requirements.

Primary authors: Mr KRETSIS, Aristotelis (Department of Computer Engineering and Informatics); Prof. VARVARIGOS, Manos (Research Academic Computer Technology Institute); Mr KOKKINOS, Panagiotis (Department of Computer Engineering and Informatics)

Presenter: Prof. VARVARIGOS, Manos (Research Academic Computer Technology Institute)

Session Classification: Demos and Posters

Track Classification: Poster