Contribution ID: **119** Type: **oral presentation**

Modeling network for File Transfer Service : a network view from the application side.

Friday 11 May 2007 11:40 (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).

Our work aim is to provide a finer network model of channels in File Transfer Service (FTS). Moreover, our work could be helpful to any other data intensive application which might use simultaneous bulk data transfers from different sources and destinations. So, scientific communities who could be interested by our work are both File Transfer Service developers, as well as developers intending to optimize their bulk data transfers.

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.

Our ongoing research is focused on two main axis : first, design an accurate model that matches the need of File Transfer Service or any other data intensive application. So far, we have a proposal of such a model. In order to validate and/or refine such a model it is essential to have feedback from potential end users of it. The other axis is to develop both efficient measurement methods and reconstruction algorithms. We have now prototypes of such methods and algorithms that have been validated via simulation under both NS and SimGrid simulator. As those methods relies on some assumptions on both network state and acceptable performances of measurement procedure, we need to evaluate what are the expectations of end users in terms of delay induced by such methods and exchange knowledge about real experiment upon the network.

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)

By using EGEE infrastructure and meet its developers, we expect to have means to evaluate the validity of our approach and validate methods and tools we develop in a real world scenario.

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

We provide a finer model of channels by identifying and inferring performances of the network. In the past, tools have been developed and has been widely used in order to predict performances of client/server communications data transfers. However, nowadays grids connect up to thousands communicating resources that may interact in a partially or totally coordinated way. Consequently, applications running upon this

kind of platform often involve massively concurrent bulk data transfers. This implies that the client/server model is no longer valid. One must discover and evaluate impact of concurrent data transfers incoming from separate sources and outgoing to separate destinations. From an FTS point of view, this mean discover possible physical bottleneck common to logically separated channels. This is a significant shift between client/servers approaches and those dedicated to the Grid.

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Session Classification: Grid Monitoring and Accounting

Track Classification: Grid Monitoring and Accounting