A General Purpose Grid Portal Framework to simplify
Scientific Communities Integration Into Distributed Computing Infrastructures

The IGI Portal Group

One of the main barriers against Grid widespread adoption in scientific communities stems from the intrinsic complexity of handling X.509 certificates, which represent the foundation of the Grid security stack. To hide this complexity, in recent years, several Grid portals have been proposed which, however, do not completely solve the problem, either requiring that users manage their own certificates or proposing solutions that weaken the Grid middleware authorization and accounting mechanisms by obfuscating the user identity.

General purpose Grid portals aim at providing a powerful and easy to use gateway to distributed computing resources. They act as incubators where users can securely run their applications without facing the complexity of the authentication infrastructure (e.g., handling X.509 certificates and VO membership requests, accessing resources through dedicated shell-based UIs).

In this paper, we discuss a general purpose Grid portal framework, based on Liferay, which provides access to job submission, workflow definition, data management and accounting services. It is also interfaced with external Infrastructure as a Service (IaaS) frameworks for the dynamic provisioning of computing resources.

In our model, authentication is demanded to a Shibboleth 2.0 federation while the generation and management of Grid credentials is handled securely integrating an On-Line CA with the MyProxy server. Consequently, the portal gives users full access to Grid functionality without exposing the complexity of X.509 certificates and proxy management.

Unlike other existing solutions, our portal does not leverage robot certificates for the user credentials. This approach offers twofold benefits. On the one hand, user identity is not obfuscated across the middleware stack thus preserving the functionality and effectiveness of existing distributed accounting and authorization mechanisms. On the other hand, users are not constrained to a predefined set of applications but can freely take advantage of Grid resources power for any computational or data-intensive activity.