DIRAC Pilot 4 EGI

DIRAC - EGI.eu collaboration, by R. Graciani (December 20th, 2013)

DIRAC interware project has been invited by EGI.eu to set up a pilot service based on DIRAC interware to provide a single entry point to EGI distributed e-Infrastructure (grid, cloud, etc.) for any interested research community.

DIRAC project

The DIRAC Interware Project (http://diracgrid.org) is the result of a collaboration among several institutions and individuals that agree, on a best effort base and without any legally binding compromise, to maintain, further develop and promote the usage of the DIRAC open source software framework for distributed computing.

After more than 10 years in production, DIRAC software (https://github.com/DIRACGrid) has evolved considerably from its original form, complemented by extension modules providing Web and REST interfaces, connection to Clouds, Documentation, and others with specific functionalities for particular communities (LHCb, ILC, CTA, Belle II, BES III, etc.).

For many years now, DIRAC includes the necessary components to build a complete distributed computing system on its own (i.e. **DIRAC is a complete middleware**). At the same time, DIRAC provides the means to connect, among others, to most common grid services:

- VOMS: for user registration
- BDII: for resource discovery
- WMS/CREAM: for computing resource allocation
- SRM: for accessing storage resources
- LFC: for replica location

And also to most frequently used Cloud Managers:

- OpenStack native interface
- OpenNebula native interface
- CloudStack native interface
- Amazon EC2 interface
- OCCI interface

The key point for the success of the DIRAC project is its ability to seamlessly **interconnect** all these different resource types (Grids, Clouds and few more) **integrating** them into a single virtual system, providing a *de-facto* **interoperability** with a single entry point to all of them. At the same time, DIRAC provides a rich user **interface** that is available to the end user in several different ways: Web Portal, CLI and python API for users with different levels of programing proficiency as well as developers of extensions for particular communities, plus a RESTful API for third party software developers (Science Gateways or mobile Apps) requiring a language neutral interface to code their own specialized interfaces. For all these reasons **we call DIRAC**

an interware.

The DIRAC project contributes to the daily operations of several large single-community DIRAC installations, and, in a best effort base, to the deployment of new distributed computing systems based on the DIRAC framework for any interested community. Thus, accumulating years of experience handling all kinds of operational problems, from those related with misfunction of the hardware where the DIRAC services are running to the most obscure problems arising every time that a major change in the middleware versions or components occurs, not forgetting the help provided to tens of researchers trying to develop their own little DIRAC tools, scripts, etc. to customize or automate their daily research activity.

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Following an invitation by EGI.eu and in collaboration with several NGIs, R. Graciani (UB) and T. Szepieniec (CYFRONET) have assumed the responsibility to coordinate the deployment of a EGI wide DIRAC pilot service.

The aim of the pilot is to serve as prototype of a full scale DIRAC service for EGI. The experience with this prototype will be the base for a H2020 proposal (EINFRA-9-2015) for the deployment of an open Virtual Research Environment (VRE) service for any interested research community requiring access to distributed e-Infrastructure. The service will provide connection with existing Science Gateway solutions and other application/domain specific VREs, as well as DIRAC interactive portal with *ad-hoc* extensions when appropriated.

The pilot, starting to operate in January 2014, will initially invite a number of selected communities, at the moment:

- iMarine (contact: Pasquale Pagano, NGI-Italy)
- Auger (contact: Gines Rubio, CAFPE-GRANADA)
- WeNMR (contact: Alexandre Bonvin, Utrecht University, Not present)
- Grupos de Ingenieria (contact: Ignacio Blanquer: UPV)
- EISCAT (contact: TBD)
- GRNET VOs (contact: Kostas Koumantaros, GRNET)

Their use cases will be studied in order to evaluate the feasibility and start integrations in February 2014. Starting January 2014, working groups will be set with community, DIRAC, EGI, NGI experts to follow up each of the cases.