

The Catania Science Gateway Framework as cloud application broker and infrastructure broker

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Abstract

Printable summary: This demonstration is presented on behalf of the CHAIN-REDS project (www.chain-project.eu) and aims at demonstrating interoperability and inter-operation among different distributed computing infrastructures, including Clouds, using OCCI and SAGA as standard interfaces and the CHAIN-REDS Science Gateway (<http://science-gateway.chain-project.eu>) as virtual research environment. The work starts from the experience made by the EGI Federated Cloud Task Force and wants to extend the vision to other regions of the world addressed by the CHAIN-REDS project. The demo is based on the standards currently available, such as OCCI and SAGA, and explores the opportunities offered by the Catania Science Gateway Framework (www.catania-science-gateways.it). Both cloud-tenant perspective's inter-operation and end-user perspective's interoperability will be shown on a multi-middleware production infrastructure that includes sites belonging to the European Grid Infrastructure, to the EGI Federated Cloud and to other Cloud infrastructures.

Description of content: 1) Definitions: The definitions of interoperability and inter-operation we adopt are the following: - According to ISO/IEC 2382-01 (Information Technology Vocabulary, Fundamental Terms), interoperability is "The capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units"; - In engineering, inter-operation is the setup of ad hoc components and methods to make two or more systems work together as a combined system. 2) Vision: The present demo aims to demonstrate the achievability of the following vision: - A scientist can seamlessly run applications on HPC machines, Grids and Clouds; - The cloud-tenant of a real or virtual organisation can seamlessly and easily manage Cloud resources pledged by providers owning/operating infrastructures based on different middleware stacks. The two items above will be addressed by the two use cases described below that will be separately shown during the demo. 3) First use case (end-user): The demo will show how a user can sign in on the CHAIN-REDS Science Gateway using his/her federated credentials, select an application from a menu and transparently execute it on HPC machines, Grids and Clouds. The fractions of executions on the three different platforms can be adjusted to simulate the need to "boost" the resources in case of temporary peaks of activity. 4) Second use case (cloud-tenant): The demo will show how the cloud-tenant of a real or virtual organisation can sign in on the CHAIN-REDS Science Gateway using his/her federated credentials, select virtual machine(s) from a geographically shared repository and deploy/move/copy it/them across the multi-Cloud he/she is entitled to use. The graphic user interface will be very intuitive including point & click and drag & drop functionalities. The virtual machine(s) will belong to the same domain name (chain-project.eu in the particular case)

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independently of the site where it/they will be instantiated and of the underlying Cloud middleware stack.

Relevant URL (if any):

- Chain-Reds Science Gateway: <http://science-gateway.chain-project.eu> <http://www.chain-project.eu>