Abstract: Implementing a Portal for de.NBI Cloud

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ABSTRACT

In life sciences today, the handling, analysis and storage of enormous amounts of data is a challenging issue. For example, new sequencing and imaging technologies result in the generation of large scale genomic and image data. Hence, an appropriate compute infrastructure is necessary to perform analyses with such large datasets and to ensure secure data access and storage. The fully academic de.NBI Cloud consists of compute centers in Bielefeld, Heidelberg, Giessen, Freiburg and Tübingen and provides more than 15.000 compute cores and 3,8 PB of storage capacity. Through a cloud federation concept, all five de.NBI sites are integrated into a single cloud platform.

The central access point to the de.NBI cloud platform is represented by the de.NBI Cloud Portal (https://cloud.denbi.de) which is technically based on multiple Docker Containers that contain, inter alia, Django, Angular, ELK Stack and Wordpress. It is a crucial part of the federated cloud concept and offers an easy entry point for now more than 400 de.NBI Cloud users. Further the portal is an important management tool for cloud administrators and the de.NBI Cloud governance. In collaboration with Elixir (https://www.elixir-europe.org/services/compute/aai)[1], the de.NBI Cloud Portal manages the authorisation of users and offers single sign-on to all cloud centers. Here users may deploy their individual virtual machine and access dedicated storage resources, enabling them to address their research questions in life sciences. In addition to the management functionality, the Portal offers its own project type, called SimpleVM. SimpleVM puts an emphasis on simplicity when managing virtual machines in the de.NBI Cloud. SimpleVM users can start and stop VMs with a few clicks and share them with colleagues by creating a snapshot of the VM and all installed tools.

Current and future services offered by the de.NBI Cloud will use OpenID Connect [2] and the Portal API to retrieve project information of the logged in user such as quota and project members. This leads to de.NBI Cloud services that are highly adapted to the users specific project setup.

Keywords — Single Sign-On, Cloud Computing, Bioinformatics, OpenID Connect, OpenStack, Docker, Django, Angular)

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