Motivation

Currently most sites operate their own infrastructure: Compute Clusters for performing scientific computing tasks, file servers for long-term persistent storage of data and on-site project management software such as WIKIs. Most of the time each site’s infrastructure is not working to capacity and could be shared with others. This is also true for the NTH universities. Hence, the FLINTH project will provide a cloud infrastructure for compute, storage and collaborative project management to more efficiently use existing infrastructure and encourage research projects across multiple sites. A BSCW-based collaboration platform will be provided by the TU Clausthal. The TU Braunschweig will provide a Storage Cloud based on the PowerFolder system. The Leibniz University Hannover runs an OpenStack based Compute Cloud. Employing mature technologies on the one hand allows for straightforward operation and most effective resource saturation. Jointly, these platforms will be available to all researchers of the NTH universities and ease effective collaboration and resource utilization across projects, sites and disciplines.

Challenges & Highlights

Based on existing technologies, the FLINTH project will create a cloud infrastructure that provides easy-to-use access to compute and storage resources as well as collaboration tools across all NTH universities. One central challenge in FLINTH is the compliance with the heterogeneous and complex requirements of research projects conducted at NTH universities. The owners of data need to retain full control over their data at all times no matter where the data is processed or stored. Hence, adhering to the respective privacy regulations and providing easy to access control to all involved NTH researchers is of central importance for the FLINTH project. Here, defining and implementing interfaces that on the one hand allow to utilize existing access control infrastructures operated at the NTH sites and on the other hand smoothly integrate with BSCW, PowerFolder and OpenStack is a major technical challenge. Overcoming this challenge allows the FLINTH infrastructure to easily integrate in the familiar set of tedious tools all participating researchers utilize one way or another.

Potential applications & future issues

FLINTH addresses three real world use cases: Access to a collaborative project management platform, to storage and computing infrastructure across multiple sites and projects. These three areas are important pillars in collaborative and interdisciplinary research projects as performed by the L3S research center. Experiences acquired in the FLINTH project for the NTH partners can be transferred to the L3S context to provide tools for future interdisciplinary research projects at L3S. Of special interest is the move towards handling Big Data and applying appropriate technologies across multiple sites and projects residing at L3S or affiliated institutions. Experience acquired in operating a multi-site/-project cloud infrastructure can directly be applied to and be the foundation of operating Big Data technologies such as Hadoop, Elasticsearch or Storm based on the FLINTH infrastructure. Hence, the FLINTH project is an important step towards expanding Big Data competences within the L3S research center.
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URL:
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Research Area:
E-Science
Status of the Project: