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Lightweight distributed system with Grid authentication

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Description of Work

A light-weight user-facing system with support for the typical grid authentication mechanisms, based on virtual organizations and VOMS attributes have been developed. The system is usable for aggregating resources, possibly hidden behind firewalls or coming from outside cloud providers and offering access to them via Grid interface.

Our approach is generic, following the established best practices in development and securing distributed services. The benchmarking results show acceptable scalability. An example service that uses a Cassandra database as a back-end was also developed, although it should be considered rather as an example of usage.

Printable Summary

The typical model for deployment of Grid middleware enforces a number of limitations concerning the underlying OS, libraries and software packages to be used. In general the Cloud-based services have higher elasticity and flexibility of deployment. In our system we propose an entirely Java-based solution, designed with elasticity in mind, providing distributed processing of queries from a single endpoint. It is relatively lightweight and easy to deploy on Cloud resources, with software dependencies only on a small number of EMI packages.

In this work we describe the architecture of the system and its workflow. Benchmarking results which show the effectiveness of the solution during processing of queries are presented. It is shown how a distributed Cassandra database can be easily incorporated as a back-end.

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