Body:

Motivation

The integration of the German national grid infrastructure, the D-Grid, into a pan-European context is a continuous effort that is being undertaken by numerous project partners in Germany and abroad. Sustainability has become more important, leading to discussion and development of business models and financing plans for an open, independent e-Infrastructure.

Challenges & Highlights

From the start of the national D-Grid initiative, L3S was engaged as a major player in the Gridwide accounting activities. In the final funding phase, the transition from a national infrastructure into an integrated, pan-European system of services had to be undertaken. This also includes the transition from an e-infrastructure for a small subset of the research community, into a universal commodity that every single scientist will be able to use. The L3S was involved in the embodiment of one of the central, indispensable infrastructure services: accounting. Accounting is the essential service, which is needed to fulfill the basic requirements of the sustainable operation of every infrastructure.

L3S was also in charge of security process management in the D-Grid initiative. In process management, L3S formed a bridge between security requirements expressed by all stakeholders in the Grid. These stakeholders include resource administrators, funding bodies and governmental requirements. One of these requirements was the implementation of grid-wide operational policies. These policies touch on a number of sensitive legal and technical issues, and had to be diligently formulated to avoid damage to the Grid as a whole. In addition, complex legal and technical issues had to be considered – both on the national and the EU-wide scale.

The third challenging task L3S has faced was to establish an incident response procedure. This procedure ensures that in case of security incidents in the Grid, swift and appropriate measures can be taken without putting sensitive data at risk. A process to handle software vulnerabilities was defined in close cooperation with several influential computer emergency response teams (CERTs). Additionally, operation security procedures were defined that unify how stakeholders have to act in case of a security incident or if software vulnerabilities are identified beforehand. A site operation policy has been developed as a basic recommendation for any Grid site operator. All policies have been created to conform to the standards and procedures implemented in the European Grid Initiative and help with the migration from a national into a pan-European Grid.

Complementary to policy work, fundamental technical research was also undertaken regarding various topics of Grid security. Research projects at L3S include: the non-proliferation of Grid resources; auditing of the security tokens used to authenticate in the Grid; and modifications to the TCP stack to enable more secure Grid firewalls.

Potential Applications & Future Issues

Forming a unified Grid infrastructure that allows scientists from across Europe to offload computing tasks still holds many challenges. Apart from technical questions pertaining to performance and parallelization, data provenance, security and abuse protection are some of the topics that will be further researched in the years to come.

Logo:

DGI-2

Project abstract:

The D-Grid Integration (DGI) project provides infrastructure services and ressourcen to the national research communities.

Project duration:
01.08.2010 - 31.12.2012

Bibsonomy show project publications:
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E-Science

Status of the Project: