

Grid Activities at GSI^{*†}

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Abstract

This article describes the work of the GSI Grid Group with the aim to set up an ALICE tier2 centre within the global environment of the LHC Computing Grid and to prototype a possible FAIR grid environment.

ALICE tier2 centre

The storage capacity has been increased by 30 TB disk space distributed over 5 file servers. A setup as extended xrootd cluster with a single point of entry is planned for GSI users. A part of this cluster will have additionally tape backend via gStore . From outside GSI this storage capacity is accessible as an AliEn storage element with Grid methods. First performance tests resulted in a transfer rate of 11 MB/s compared to 3-4 MB/s which was achieved using NFS.

The existing dCache installation has been upgraded with xrootd doors including the ALICE authorisation plugin as one of the first installations within ALICE. It is currently tested in production mode by using it as a backup storage for ALICE grid jobs running world wide.

During the second half of the year 2006 GSI participated continuously in ALICE Data Challenges. The Grid paradigm has been changed from using pure AliEn to making use of the existing LCG middleware infrastructure via an AliEn-LCG interface. To be able to run AliRoot jobs in the GSI batch farm a special high memory queue has been created. Similarly the ALICE installation at the tier1 centre at FZK/GridKa is taken care of. The contribution of GridKa to the global ALICE resources in 2006 has been 8% in average.

The EGEE project

The EGEE project came to a successful end and EGEE II started in April 2006. GSI continued participating, among others as primary partner in regional certification of new middleware releases as well as user training in the Swiss/German (DECH) Federation. The EGEE based middleware gLite came to version 1.5 and finally has been fused with the WLCG production software LCG 2.7 to gLite 3.0 at the beginning of 2006. To be able to participate in beta tests of new middleware releases GSI maintains also a pre-production testbed. All Grid systems are connected with the GSI batch farm (LSF). Next to ALICE also other

Virtual Organisations (VOs) like DECH and DGTest are being supported. Both VOs are intended also for testing and training purposes.

The GSI Grid team contributes to the sub projects COD and GGUS. The complete Grid infrastructure is overseen by a small group of experts (CODs) in shift turns. Notification (in form of trouble tickets) is sent to responsible site administrators in case of operational problems. Grid users have the possibility to send trouble tickets to a global grid user support (GGUS) Those tickets are processed by grid experts on duty.

Almost all GSI Grid services are running currently on virtual nodes. For the hosting XEN servers also monitoring tools have been developed as well as methods for automatic installation (FAI). The main infrastructure consists of 5 Xen servers with 20 virtual machines with a very high reliability.

D-Grid

At GSI distributed analysis tools under usage of grid resources are being developed within work package 3 of the HEP community Grid. During the year 2006 a ROOT plugin for the gLite middleware, TGLite, has been developed. Now using this plug-in ROOT users are able to submit jobs to a gLite flavoured Grid, query the job status and perform a range of File Catalogue operations. GSI maintains a gLite testbed for development and testing purposes.

Currently the next stage of the project is on the way, during which a prototype of a data analysis schema and tools will be created. The schema will offer users the possibility to process a distributed data analysis using TGLite and PROOF on a gLite Grid. Also deployment procedures for beta users will be implemented.

From D-Grid fundings 15 compute nodes have been bought with high memory and significant disk space attached to each node. These machines will be equipped with the D-Grid Core Middleware and then be included into the nationwide D-Grid testbed. At GSI they will be included in the LSF batch farm with proof daemons being installed in their system. This way they can be accessed via Grid/batch methods, but also they can be directly used as a PROOF analysis cluster.

Preparation for FAIR tier0

PANDA-Grid , based on the AliEn middleware and on experiences made within the ALICE experiment, has been set up and brought into operational mode. Currently 8 sites are configured and small productions consisting of Panda-Root simulation jobs have been running successfully.

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[†] references can be found at <http://wiki.gsi.de/Grid/Links>