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ELFI - Linux Filesystem Interface to EGEE Grid Storage

Wednesday 9 May 2007 19:30 (20 minutes)

Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

ELFI was initially targeted at the EGRID community. EGRID is an
Italian National
pilot grid infrastructure for economic and financial computation.
EGRID software runs
on top of gLite middleware in the EGEE/INFN-GRID infrastructure.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

ELFI is a Linux filesystem, that acts as an interface to the LFC
catalog
and EGEE SE (both "classic" and SRM v2 flavor).

With ELFI, you can see the entries in the LFC catalog as files in
a locally-mounted
filesystem, and directly operate on the replica contents:
read/write operations on
the local filesystem are acted as read/write operations on a
remote SE via the
GSI-RFIO protocol. All operations on the catalog or the SE have
a local filesystem
equivalent.

ELFI features:

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* Transparent file access via LFN only

    * Posix ACL support

    * Posix IO operations (through gsi-rfio transport protocol)

    * Classic SE, SRM v2.1.1 and SRM v2.2 support
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The ELFI filesystem process runs entirely in user-space: it uses the
standard FUSE (http://fuse.sf.net) userland filesystem framework.

With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)

Two main issues have affected the development of ELFI:

1) there are two incompatible flavors of the RFIO protocol, but
they are both
advertised as "rfio" on the Information System - so there is no

way to filter out
incompatible servers.

2) the information system contains data that is often not easily
parsed by a program
- it looks like the information is put there mostly for *humans*
to read.

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

The finance research community uses medium-size programmes,
frequently
modified and developed by non-professional programmers. The
complexity of
the GRID data management is a significant barrier to the use of
the EGEE
infrastructure.

ELFI hides the complexity of grid data management behind the
familiar filesystem
paradigm.
End-users can therefore access data on the EGEE Grid just like
they access local
files: they can even run graphical file managers on remote Grid
data, with no need to
learn technical details about Grid data management protocols.

Simplicity and ease of access to the Grid is a key feature to
widespread usage of the
Grid, it should appeal to all VOs - thus we think that the entire
EGEE user community
can benefit from ELFI.

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