ENEA GRID infrastructure

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The availability of powerful computing systems, distributed over wide area and connected by high speed networks, has lead to the development of the concept of computational GRID. The GRID is an attempt to provide a unified approach to heterogeneous computational resources located in distant sites and belonging, in the most general case, to institutions having very different types of activities.

The implementation of a computational GRID requires the definition of a set of tools for the uniform access to the available computing and storage resources. These tools must also assure the security of the grid operation and provide proper monitoring facilities.

The GRID approach has permitted to integrate in a unified system all the high performance computational resources available inside ENEA, the Italian Agency for New Technologies, Energy and Environment.

ENEA activity takes place in 12 different sites located in northern, central and southern Italy. Local computational facilities are managed in the computer centers in each of the main sites, including resources for serial and parallel computing and advanced graphical post processing.

ENEA-GRID infrastructure permits to access to all these resources as a single virtual system, with an integrated computational power of several hundreds Gflops, provided by several multiplatform systems (AIX/IBM SP, Linux Alpha/x86, IRIX/SGI).

ENEA-GRID main components are 1) a unified graphical user interface (java on a Citrix Metaframe portal); 2) a resource manager, LSF (Load Sharing Facility) Multicluster and 3) a distributed file system, AFS (Andrew File System), presently an open source project.

The choice of ENEA-GRID components has been based on mature components, both proprietary and open sources, in order to provide good performances and service reliability.

ENEA is now a funded partner in the EGEE GRID project and the integration of ENEA-GRID resources inside EGEE infrastructure is on the timetable for this year activity. ENEA in collaboration with ESA-ESRIN participated to DATAGRID project (ended 2004) and a gateway between ENEA-GRID and DATAGRID was developed.