

Kerberos5, SLURM and OpenAFS integration on ENEAGRID infrastructure

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Abstract

ENEAGRID is a multisite integrated computational infrastructure which covers all the computational resources managed and developed by the ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development), the most important being HPC systems, namely the CRESCO clusters. ENEAGRID provides: Kerberos5 authentication supporting single-sign-on; OpenAFS as shared file system for unified user environment independently of cluster and location (3 main sites in Italy); GPFS and LUSTRE as parallel file systems for local HPC working areas; LSF and SLURM as job schedulers to efficiently manage resources.

In this environment a crucial aspect becomes the integration between user Kerberos credentials and job scheduler. While LSF offers a native plugin SLURM needs an external tool to interface with Kerberos. This talk presents an integration of OpenAFS, Kerberos and SLURM by using a source modified and recompiled version of the AUKS utility (<https://github.com/cea-hpc/auks>). The proposed solution is adopted on the latest CRESCO HPC clusters based on Almalinux 9.2, both for x86_64 and ppc64le architectures. It makes use of a wrapper to generate an AFS token based on the Kerberos ticket and propagate it among the compute nodes on a HPC job submission. This allows the job processes to access AFS volumes where, generally, ACL managed resources such as user home, licensed software and project data are located.

Keywords: ENEAGRID, CRESCO, Kerberos5, OpenAFS, SLURM, AUKS, Almalinux