

## **A virtualized OpenAFS cell for debugging and experimentation**

G. Bracco, P. D'Angelo, S. Migliori.

One of the usual remarks about AFS/OpenAFS concerns its complexity as it can not be tried without having a full installation of all its components, dbservers, fileservers and clients and this may result in a steep learning curve. A full installation in a set of virtual machines provides a simple and flexible way to approach OpenAFS or, as in our case, to experiment with a test AFS cell in order to solve some administration issues of a real AFS cell.

AFS/OpenAFS is one of the main components of ENEA-GRID infrastructure which provides the scientific computation services in our institution since 1998. ENEA, the Italian National Agency for New Technologies, Energy and Environment, has several research centres all over Italy. Our AFS cell, enea.it, is distributed over a wide area network, with 6 dbservers and ~15 fileservers, and operates at present with a mixture of AFS Transarc and OpenAFS servers.

In order to test administrative procedure to be applied on our production cell a virtualized OpenAFS cell has been implemented as a kind of flexible AFS playground, easy to configure and replicate.

The emulator Qemu, an Open Source project [<http://freshmeat.net/project/qemu>], has been used as the virtual machine for the virtualized cell and the implementation has included 3 virtual servers, each of them playing the three roles of AFS dbserver, files server and client and running at this moment Linux Red Hat 8 and OpenAFS 1.2.11.

The presentation illustrates shortly the characteristics of our production cell, enea.it, the details of the implementation of the virtualized AFS cell and, as an example, the exploitation of the virtualized cell in solving a problem connect with the numeration of the volumes in our production cell.