Contribution ID: **34**   Type: **Poster presentation**

Distributed storage and cloud computing: a test case

Monday, 14 October 2013 15:00 (45 minutes)

Since 2003 the computing farm hosted by the INFN T3 facility in Trieste supports the activities of many scientific communities. Hundreds of jobs from 45 different VOs, including those of the LHC experiments, are processed simultaneously. The currently available shared disk space amounts to about 300 TB, while the computing power is provided by 712 cores for a total of 7400 HEP-SPEC06. Given that normally the requirements of the different computational communities are not synchronized, the probability that at any given time the resources owned by one of the participants are not fully utilized is quite high. A balanced compensation should in principle allocate the free resources to other users, but there are limits to this mechanism. In fact, the Trieste site may not hold the amount of data needed to attract enough analysis jobs, and even in that case there could be a lack of bandwidth for their access. The Trieste ALICE and CMS computing groups, in collaboration with other Italian groups, aim to overcome the limitations of existing solutions using two approaches. Sharing the data among all the participants, avoiding data duplication and taking full advantage of GARR-X wide area networks (10 GB/s) allows to distribute more efficiently the jobs according to the CPU availability, irrespective of the storage system size. Integrating the resources dedicated to batch analysis with the ones reserved for dynamic interactive analysis, through modern solutions as cloud computing, can further improve the use of the available computing power. The first tests of the investigated solutions for both distributed storage on wide area network and cloud computing approaches will be presented.

Summary

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Session Classification: Poster presentations

Track Classification: Distributed Processing and Data Handling A: Infrastructure, Sites, and Virtualization