Contribution ID: **262** Type: **Poster**

Evolving ATLAS computing for today's networks

Tuesday 22 May 2012 13:30 (4h 45m)

The ATLAS computing infrastructure was designed many years ago based on the assumption of rather limited network connectivity between computing centers. ATLAS sites have been organized in a hierarchical model, where only a static subset of all possible network links can be exploited and a static subset of well connected sites (CERN and the T1s) can cover important functional roles such as hosting master copies of the data.

The pragmatic adoption of such simplified approach, in respect of a more relaxed scenario interconnecting all sites, was very beneficial during the commissioning of the ATLAS distributed computing system and essential in reducing the operational cost during the first two years of LHC data taking.

In the mean time, networks evolved far beyond this initial scenario: while a few countries are still poorly connected with the rest of the WLCG infrastructure, most of the ATLAS computing centers are now efficiently interlinked. Our operational experience in running the computing infrastructure in the last years demonstrated many limitations of the current model: statically defined network paths are sometimes abused, while most of the network links are underutilized together with computing and storage resources at many sites, under the wrong assumption of limited connectivity with the rest of the infrastructure.

In this contribution we describe the various steps which ATLAS Distributed Computing went through in order to benefit from the network evolution and move from the current static model to a more relaxed scenario. This will include the development of monitoring and testing tools and the commissioning effort. We will finally describe the gains of the new model in terms of resource utilization at grid sites after many months of experience.

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Session Classification: Poster Session

Track Classification: Distributed Processing and Analysis on Grids and Clouds (track 3)