Contribution ID: **467**   Type: **Poster**

The Resource Manager of the ATLAS Trigger and Data Acquisition system

Thursday 13 October 2016 16:30 (15 minutes)

The Resource Manager is one of the core components of the Data Acquisition system of the ATLAS experiment at the LHC. The Resource Manager marshals the right for applications to access resources which may exist in multiple but limited copies, in order to avoid conflicts due to program faults or operator errors.

The access to resources is managed in a manner similar to what a lock manager would do in other software systems. All the available resources and their association to software processes are described in the Data Acquisition configuration database. The Resource Manager is queried about the availability of resources every time an application needs to be started.

The Resource Manager's design is based on a client-server model, hence it consists of two components: the Resource Manager "server" application and the "client" shared library. The Resource Manager server implements all the needed functionalities, while the Resource Manager client library provides remote access to the "server" (i.e., to allocate and free resources, to query about the status of resources).

During the LHC's Long Shutdown period, the Resource Manager's requirements have been reviewed at the light of the experience gained during the LHC's Run I. As a consequence, the Resource Manager has undergone a full re-design and re-implementation cycle with the result of a reduction of the code base by 40% with respect to the previous implementation.

This contribution will focus on the way the design and the implementation of the Resource Manager could leverage the new features available in the C++11 standard, and how the introduction of external libraries (like Boot multi-container) led to a more maintainable system. Additionally, particular attention will be given to the technical solutions adopted to ensure the Resource Manager could effort the typical requests rates of the Data Acquisition system which is about 30000 requests in a time window of few seconds coming from O(1000) clients.

Secondary Keyword (Optional)

Control systems

Primary Keyword (Mandatory)

DAQ

Tertiary Keyword (Optional)

Primary author: BERNIUS, Catrin (New York University (US))

Co-author: PANDURO VAZQUEZ, William (Royal Holloway, University of London)

Presenter: PANDURO VAZQUEZ, William (Royal Holloway, University of London)

Session Classification: Posters B / Break

Track Classification: Track 1: Online Computing