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Using the Grid for Large Scale and Nightly Testing of the ATLAS Trigger & Data Acquisition System

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The ATLAS Trigger & Data Acquisition System has been designed to use more than 2000 CPUs. During the current development stage it is crucial to test the system on a number of CPUs of similar scale. A dedicated farm of this size is difficult to find, and can only be made available for short periods. On the other hand many large farms have become available recently as part of computing grids, leading to the idea of using them to test the TDAQ. However the task of adapting the TDAQ to run on the Grid is not trivial, as the TDAQ system requires full access to the computing resources it runs on and real-time interaction. Moreover the Grid virtualises the resources to present a common interface to the user. We will describe the implementation and first tests of a scheme that resolves these issues using a pilot job mechanism. The Tier2 cluster in Manchester was successfully used to run a full TDAQ system on 400 nodes using this implementation. Apart from the tests described above, this scheme also has great potential for other applications, like running Grid remote farms to perform detector calibration and monitoring in real-time, and automatic nightly testing of the TDAQ.

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