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Seamless integration of commercial Clouds with ATLAS Distributed Computing

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The CERN ATLAS Experiment successfully uses a worldwide distributed computing Grid infrastructure to support its physics programme at the Large Hadron Collider (LHC). The Grid workflow system PanDA routinely manages up to 700'000 concurrently running production and analysis jobs to process simulation and detector data. In total more than 500 PB of data is distributed over more than 150 sites in the WLCG and handled by the ATLAS data management system Rucio. To prepare for the ever growing data rate in future LHC runs new developments are underway to embrace industry accepted protocols and technologies, and utilize opportunistic resources in a standard way. This paper reviews how the Google and Amazon Cloud computing services have been seamlessly integrated as a Grid site within PanDA and Rucio. Performance and brief cost evaluations will be discussed. Such setups could offer advanced Cloud tool-sets and provide added value for analysis facilities that are under discussions for LHC Run-4.

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