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The git based ATLAS data acquisition configuration service in LHC Run 3

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The ATLAS experiment at the LHC at CERN uses a large, distributed trigger and data acquisition system composed of many computing nodes, networks, and hardware modules. Its configuration service is used to provide descriptions of control, monitoring, diagnostic, recovery, dataflow and data quality configurations, connectivity, and parameters for modules, chips, and channels of various online systems, detectors, and the whole ATLAS experiment. Those descriptions have historically been stored in more than one thousand interconnected XML files, which are updated by various experts many times per day. Maintaining error-free and consistent sets of such files and providing reliable and fast access to current and historical configurations is a major challenge. This paper gives details of the configuration service upgrade on the modern git version control system backend for LHC Run 3 and its exploitation experience. It may be interesting for developers using human-readable file formats, where consistency of the files, performance, access control, traceability of modifications, and effective archiving are key requirements.

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