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A Conditions Data Management System for HEP Experiments

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Conditions data infrastructure for both ATLAS and CMS have to deal with the management of several Terabytes of data. Distributed computing access to this data requires particular care and attention to manage request-rates of up to several tens of kHz. Thanks to the large overlap in use cases and requirements, ATLAS and CMS have worked towards a common solution for conditions data management with the aim of using this design for data-taking in Run 3. In the meantime other experiments, including NA62, have expressed an interest in this cross-experiment initiative. For experiments with a smaller payload volume and complexity, there is particular interest in simplifying the payload storage.

The conditions data management model is implemented in a small set of relational database tables. A prototype access toolkit consisting of an intermediate web server has been implemented, using standard technologies available in the Java community. Access is provided through a set of REST services for which the API has been described in a generic way using standard Open API specifications, implemented in Swagger. Such a solution allows the automatic generation of client code and server stubs and further allows changes in the backend technology transparently. An important advantage of using a REST API for conditions access is the possibility of caching identical URLs, addressing one of the biggest challenges that large distributed computing solutions impose on conditions data access, avoiding direct DB access by means of standard web proxy solutions.

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