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ATLAS Distributed Database Services Client Library

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In preparation for data taking, the ATLAS experiment has run a series of large-scale computational exercises to test and validate distributed data grid solutions under development. ATLAS experience in prototypes and production systems of Data Challenges and Combined Test Team provided various database connectivity requirements for applications: connection management, online-offline uniformity, server indirection, etc. For example, the dynamics of ATLAS distributed database services requires a single point-of-control over server indirection - the logical-to-physical database server mapping, which is similar to the logical-to-physical mapping of file names on the grids. To address these requirements we developed, tested and deployed ATLAS database Client Library.

In a heterogeneous distributed database services environment ATLAS database Client Library implements a consistent strategy for database server access and serves as a foundation layer for enforcing policies, following rules, establish best practices and encode logic to deliver efficient, secure and reliable database connectivity for applications. To provide scalable and robust applications access to databases the client library provides support for retries, failover, load balancing, etc. To hide the complexity of heterogeneous database technologies the library is separated in two layers. The outer layer provides management of database drivers, database connections and Connections/Servers lists. The extensible inner library layer is composed of a number of technology specific database drivers, currently supporting Oracle and MySQL.

We present architecture of the Client Library services integration in ATLAS software framework Athena and use of these services by ATLAS major database applications –the Geometry HVS DB and Conditions IOV DB. We report on ATLAS Client Library integration through the ConnectionService module in the CORAL layer of the common LCG persistency project POOL.

Summary

In a data grid environment ATLAS database Client Library improves database access from applications.

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