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Evaluation of the ATLAS model for remote access to database resident information for LHC Run 3

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The ATLAS model for remote access to database resident information relies upon a limited set of dedicated and distributed Oracle database repositories complemented with the deployment of Frontier system infrastructure on the WLCG. ATLAS clients with network access can get the database information they need dynamically by submitting requests to a squid server in the Frontier network which provides results from its cache or passes new requests along the network to launchpads co-located at one of the Oracle sites (the master Oracle database at CERN or one of the Tier 1 Oracle database replicas). Since the beginning of LHC Run 1, the system has evolved in terms of client, squid, and launchpad optimizations but the distribution model has remained fundamentally unchanged.

On the whole, the system has been broadly successful in providing data to clients with relatively few disruptions even while site databases were down due to redundancy overall. At the same time, its quantitative performance characteristics, such as the global throughput of the system, the load distribution between sites, and the constituent interactions that make up the whole, were largely unknown. But more recently, information has been collected from launchpad and squid logs into an Elastic Search repository which has enabled a wide variety of studies of various aspects of the system.

This presentation will describe dedicated studies of the data collected in Elastic Search over the previous year to evaluate the efficacy of the distribution model. Specifically, we will quantify any advantages that the redundancy of the system offers as well as related aspects such as the geographical dependence of wait times seen by clients in getting a response to its requests. These studies are essential so that during LS2 (the long shutdown between LHC Run 2 and Run 3), we can adapt the system in preparation for the expected increase in the system load in the ramp up to Run 3 operations.

Consider for promotion

No

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