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FroNtier: High Performance Database Access Using Standard Web Components in a Scalable Multi-tier Architecture

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A high performance system has been assembled using standard web components to deliver database information to a large number (thousands?) of broadly distributed clients. The CDF Experiment at Fermilab is building processing centers around the world imposing a high demand load on their database repository. For delivering read-only data, such as calibrations, trigger information and run conditions data, we have abstracted the interface that clients use to retrieve database objects. A middle tier is deployed that translates client requests into database specific queries and returns the data to the client as HTTP datagrams. The database connection management, request translation, and data encoding are accomplished in servlets running under Tomcat. Squid Proxy caching layers are deployed near the Tomcat servers as well as close to the clients to significantly reduce the load on the database and provide a scalable deployment model. This system is highly scalable, readily deployable, and has a very low administrative overhead for data delivery to a large, distributed audience. Details of how the system is built and used will be presented including its architecture, design, interfaces, administration, and performance measurements.

Primary authors: BLUMENFELD, B. (John Hopkins University); LITVINTSEV, D. (FNAL); KOWALKOWSKI, J. (Fermilab); LUEKING, L. (FERMILAB); MATHIS, M. (John Hopkins University); PATERNO, M. (Fermilab); MAKSIMOVIC, P. (John Hopkins University); KOSYAKOV, S. (Fermilab); WHITE, S.P. (Fermilab)

Presenter: LUEKING, L. (FERMILAB)

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