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Distributed database services in PHENIX - what it takes tosupport a Petabyte experiment.

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After seven years of running and collecting 2 Petabytes
of physics data, PHENIX experiment at the Relativistic Heavy Ion Collider
(RHIC) has gained a lot of experience with database management systems (DBMS).

Serving all of the experiment's operations - data taking, production and analysis -
databases provide 24/7 access to calibrations and book-keeping information
for hundreds of users at several computing centers worldwide and face the
following challenges:
- Simultaneous data taking, production and analysis result in
hundreds of concurrent database connections and heavy server
I/O load.
- Online data production at remote sites requires a high degree of
Master-Slave server synchronization.
- Database size (presently 100GB with half of data added in the last
few months) raises scalability concerns.
- Long life of modern HENP experiments and fast development of database
technologies make prediction of the best DBMS provider 5-10 years down the
road difficult and require investments in design and support of good APIs.

In this talk PHENIX solutions to the above problems will be presented
and the trade-offs discussed.

Submitted on behalf of Collaboration (ex, BaBar, ATLAS)

PHENIX

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