

# Conditions Database for the Belle II Experiment

*Monday 10 October 2016 14:30 (15 minutes)*

The Belle II experiment at KEK is preparing for first collisions in 2017. Processing the large amounts of data that will be produced will require conditions data to be readily available to systems worldwide in a fast and efficient manner that is straightforward for both the user and maintainer.

The Belle II conditions database was designed with a straightforward goal: make it as easily maintainable as possible. To this end, HEP-specific software tools were avoided as much as possible and industry standard tools used instead. HTTP REST services were selected as the application interface, which provide a high-level interface to users through the use of standard libraries such as curl. The application interface itself is written in Java and runs in an embedded Payara-Micro Java EE application server. Scalability at the application interface is provided by use of Hazelcast, an open source In-Memory Data Grid (IMDG) providing distributed in-memory computing and supporting the creation and clustering of new application interface instances as demand increases. The IMDG provides fast and efficient access to conditions data, and is persisted or backed by OpenStack's Trove. Trove manages MySQL databases in a multi-master configuration used to store and replicate data in support of the application cluster.

This talk will present the design of the conditions database environment at Belle II and its use as well as go into detail about the actual implementation of the conditions database, its capabilities, and its performance.

## Tertiary Keyword (Optional)

Distributed data handling

## Secondary Keyword (Optional)

Computing middleware

## Primary Keyword (Mandatory)

Databases

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