HOW CASSANDRA IMPROVES PERFORMANCES AND AVAILABILITY OF HDB++ TANGO ARCHIVING SYSTEM

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HDB++, the new TANGO event-driven archiving system is being developed as a collaboration between the ESRF and Elettra.

Specific libraries have been developed, giving the possibility to store HDB++ data into Apache Cassandra, the widely used and popular NoSQL database.

Using Cassandra adds high-availability with no single point of failure and scalability to the new TANGO archiving system.

HDB++ Design

HDB++ (see WED3004) was designed in a modular way, using TANGO device servers to handle the configuration and the events subscribing/archiving process. These device servers can be compiled with C++ libraries inheriting from the libhdb++ library and implementing access to the database of your choice. Up to now libraries for MySQL (developed by Elettra) and Apache Cassandra have been implemented.

HDB++ Tools for free

Implementing specific Cassandra HDB++ libraries inheriting from the HDB++ C++ abstract libraries or implementing the Java HDB++ interfaces was enough to be able to create and manage a Cassandra-based HDB++ system. All the already developed HDB++ tools (device servers, configurator GUI, diagnostics GUI, extractor GUIs) could be reused directly.

HDB++ Cassandra @ ESRF

At the ESRF, 3 Cassandra nodes with a replication factor of 3 are in operation since October 2014, in parallel with the old HDB system and the HDB++ MySQL version. It is planned to add a new datacentre composed of 3 Cassandra nodes soon. This datacentre will be dedicated to analytics and will be using Apache Spark to compute statistics and fill in decimation tables.