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## Directory Search Performance Optimization of AMGA for the Belle II Experiment

AMGA (ARDA Metadata Grid Application) is a grid metadata catalog system that has been developed as a component of the EU FP7 EMI consortium based on the requirements of the HEP (High-Energy Physics) and the Biomed user communities. Currently, AMGA is exploited to manage the metadata in the gBasf2 framework at the Belle II which is one of the largest particle physics experiments in the world.

In this paper, we present our efforts to optimize the metadata query performance of AMGA to better support the massive MC Campaign of the Belle II experiment. While AMGA has been proved to show very competitive performance for a relatively small amount of data, as the number of directories created and the size of overall metadata increase (e.g. hundreds of thousands of directories) during the MC Campaign, it suffers from severe query processing performance degradations. To address this problem, we modified the query search mechanism and the database scheme of AMGA which results in dramatic improvements of metadata search performance and query response time.

Throughout our comparative performance analysis of metadata search operations, we show that AMGA can be an optimal solution for a metadata catalog in a large-scale scientific experimental framework.

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