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Integration of Key-Value Database in the Parameter Management System of the ALFA Framework ^[1]

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In this project, several key-value databases are compared for their performance to implement them into the ALFA framework. As the research shows that a RAMCloud key-value database is not suited for this project, a deep research is done into Riak instead. The case-study compares read vs write latency, optimal simulation sample size, different storage backends, object size influence, cluster size influence, different consistency settings and there performance impact, the impact of adding security, the overhead of using a Java tool and the availability and fault tolerance of Riak. All these measurements are discussed taking into account certain difficulties of simulating a key value database. This gives us a document showing the impact of certain design decisions in implementing a key-value store and will allow developers for future projects to easily ascertain how changes in the database will impact performance and how to easily use a tool developed during this project to make exact measurements.

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