

Optimizing Blaise Servers for High-Concurrency Survey Environments

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Maintaining efficient server environments is paramount, especially in an era of increasingly complex multimode surveys and rising demand for highly available applications. Drawing from real-world case studies and load-testing experiments, we will explore the optimal server configurations to address high concurrency loads in survey systems.

We will discuss the history and scope of the problem as we experience it. These include factors such as the lack of multi-threading in Blaise surveys, hardware resource constraints, and the complexity of survey instruments. Key considerations for solutions include cost (licensing, hardware, maintenance), processing power, and the nature of server activities.

Our goal is to gain insights into performance improvements, cost-effectiveness, and diminishing returns when scaling up server environments. We will present our findings from load testing across various multi-server configurations with one to five front-end web servers and one to three back-end servers with the data, session, and audit roles. We will also provide initial findings from deploying a multi-server setup in production on two studies to inform best practices for future configurations.

We will discuss some workarounds and complementary strategies we have employed to mitigate server stress, such as concurrency monitoring, session management, and SQL replication. Finally, our goal is to provide some actionable insights for organizations seeking to enhance server efficiency, balance costs, and meet the demands of high-concurrency survey environments.