

A METHOD OF INCREASING THE SIDING'S RESISTANCE TO EXTERNAL LOADS

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Existing microservice systems use a sidekick component that runs alongside the main microservice and takes on additional functions: monitoring, configuration management, security, disaster recovery, communication with other system components, etc. Deployment and operation of the sidekick component requires additional resources of both CPU and RAM. Without an efficient implementation, the sidekick can become a significant consumer of system resources, which will complicate the scalability and stability of the microservice architecture.

Thus, the development of a method to increase the siding's resistance to external loads is an urgent scientific task.

The report provides a detailed analysis of how to eliminate potential resource consumption problems and implement optimizations that reduce the load on the infrastructure while maintaining all the benefits of sidechain architecture.

We proposed to use a high-level WebClient that requires intermediate buffers and supports data serialization/deserialization, which significantly affects the resource consumption of the sidebar. To fix this problem, we replaced WebClient with a lower-level HttpClient for all outgoing requests that do not require additional data processing. This approach implements full-fledged data streaming between the server and the client without creating unnecessary copies in RAM, which significantly reduces the consumption of its resources and avoids the corresponding OutOfMemory errors.

The chosen technologies, in particular, the use of the Quarkus framework in native mode with the use of AOT compilation based on GraalVM, provided a quick start of the sidekick and minimized the use of CPU and RAM resources. A method is proposed that allows optimizing the management of RAM by data streams, eliminates blocking calls, uses lower-level tools for processing HTTP requests, and implements a streaming data transfer mechanism.

References:

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