PROJECT REPORT

THE COMPARISON BETWEEN gRPC AND REST API PERFORMANCE IN COMMUNICATION SERVICES USING GO LANGUAGE

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ABSTRACT

In today's technological developments, many applications are found using protocol that are used to run them. The use of communication technology used by developers varies, from simple to complex buildings it. The efficiency of this protocol performance greatly affects the application used by the user later. if the resulting performance is slow and takes up a lot of memory, the application that is built will be slow and inefficient. So the developer must determine the use of protocol to work efficiently, whether to use REST API technology or gRPC. Both protocol have their respective advantages. The new gRPC is very popular for use in protocol used in the development of applications built by developers, because of its fast performance and less memory consumption. However, the REST API is also often used by developers because it has stable performance.

To find *out better protocol performance, testing for both protocols were carried out. This test is done by hitting each protocol several times with multiple threads. in the use of each protocol will have an impact on CPU and memory usage. with the performance of each protocol will show which one is more in line with system needs. in this study, the authors want to compare the memory, and CPU resources used as well as the speed in transferring data that will be generated by the gRPC protocol and REST API in service transaction applications. The method that will be applied is the load test and stress test for each protocol. Data will be sent in varying amounts and for a certain period.*

The final result of this research is the comparison of latency, CPU, and memory usage on REST API and gRPC. From the data obtained, it turns out that the gRPC protocol has an efficient performance than the REST API protocol. However, gRPC has a level of complexity in its creation compared to REST APIs. If developers want to make applications that are fast and have a short timeframe, then the REST API can be used for communication protocols between services. However, if you have a long time and want the application to run stable then gRPC can be used in making applications.

Keyword: gRPC, REST API, latency, performance

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