

Two-weekly Report

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Project: **3**
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I have not made much progress in the last 2 weeks. Since last time I have been investigating how to work with Prometheus and Grafana, our next task should be to figure out how to save the output to a file so that we can evaluate the data with a statistics tool. The first idea was any readable file, for example JSON, TXT file.

The Prometheus metrics are retrieved by routing to localhost:[port] (port in my case is 9099 -> link to be routed: localhost:9090). And the result can be manually saved to a txt file. (see figure 1)

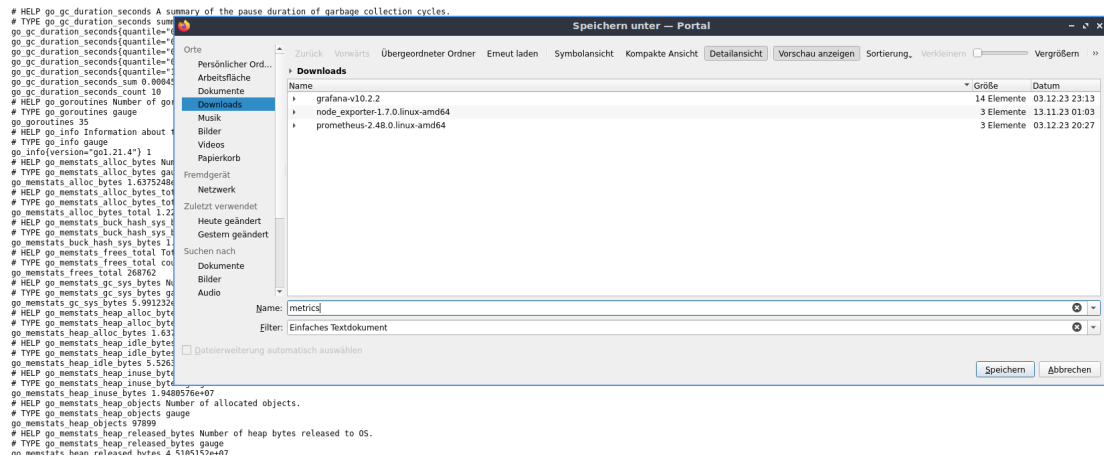


Figure 1: Save Prometheus Metrics

When we talk about service migration, we always look at the downtime and the total migration time, which we want to keep to a minimum. So I did some research to see if we had a formula for calculating the total migration time using the metrics we had collected. For the pre-copy migration strategy, the total migration time can be calculated as shown in figure 2.

$$T_{total} = T_{init} + T_{res} + \sum_{i=1}^{n-1} T_i + \frac{M_i}{BW_i} + T_{active}$$

Figure 2: Formula for calculation of total migration time for pre-copy migration strategy

The formula explanation is as follow:

- T_{total} : Total migration time
- T_{init} : Initialization time
- T_{res} : Resource reservation time
- T_{active} : Waking time
- T_i : Because this is a pre-copy migration strategy, there will be dirty pages involved and they will be transferred multiple times and T_i is the number of dirty pages sent per round.
- M_i : The number of dirty pages to be transmitted per round.
- BW_i : The bandwidth used to transfer the dirty pages.

I found the formula above, but to be honest I have problems using it with the metrics we have collected. There is more than the raw data we have collected and discussion with other members is needed to conclude whether using such a formula will help us evaluate the service migration.