Simple Object Storage - Report 4

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Introduction

During this week, my main focus was to finalize the development and evaluate the performance of the system under different workloads to complete the project. The tasks that have been successfully accomplished are listed in detail below.

Completed tasks

Volume manager is implemented on primary node. It is a periodic and rule based process. Based on predefined rules it updates/creates the volumes on the data node.

Primary node endpoints are implemented. one for creating the object id and getting data node address to write the object. Another one to determine the location to read the object by the object id.

Additionally, to measure the systems performance, we developed two different scenarios to observe how the systems behaves under the load. First scenario was comparing the systems read/write performance against local file system. Initially, we generated 4096 files with size 1KB. And we increased the number of the files by 2 in each test iteration to see how the systems performance changes.

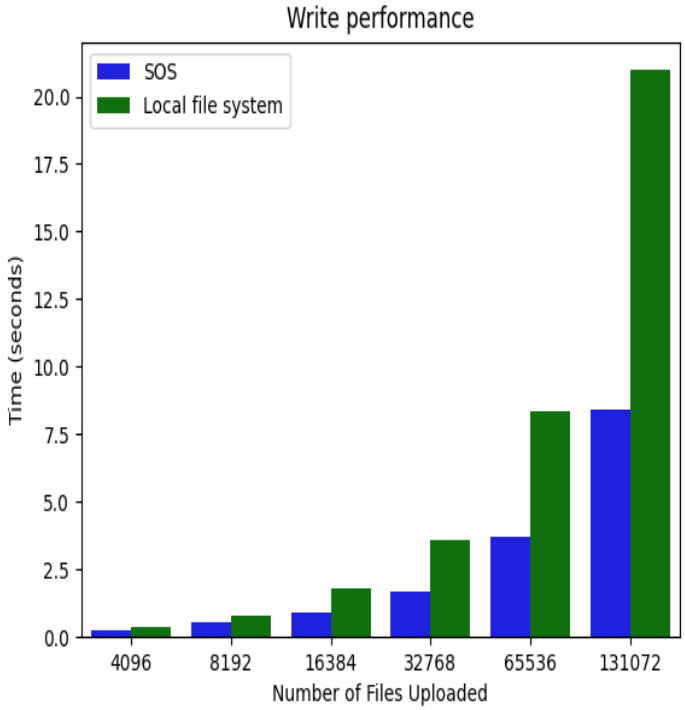

Figure 1: Write performance of SOS and Local FS

Figure 1 shows in all cases, the write performance of the system is better. In some cases, it is 60% better.

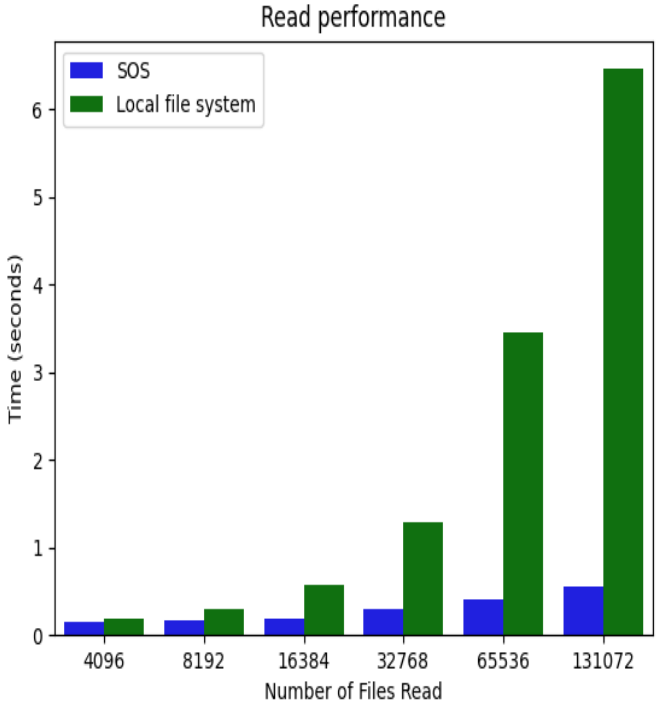

Figure 2: Read performance of SOS and Local FS

Figure 2 shows in all cases, the read performance of the system is better as well. Again this is thanks to minimization of the metadata operation on files.

Second scenario is to to see how the systems behaves when size of the object is increased. To do that, first we started with 32 byte random text file, then increased it by 2 in each iteration. The number of files was 100,000 in each iteration.

Figure 4 and Figure 3 shows that, time to read and write is increasing linearly when the size of the object is increased by two which is reasonable simply because there is more bytes to read and write.

Conclusion

To sum up, rule based volume manager is implemented and the performance of the system is evaluated. Evaluation shows that system performs well on small sized data compared to local file system.

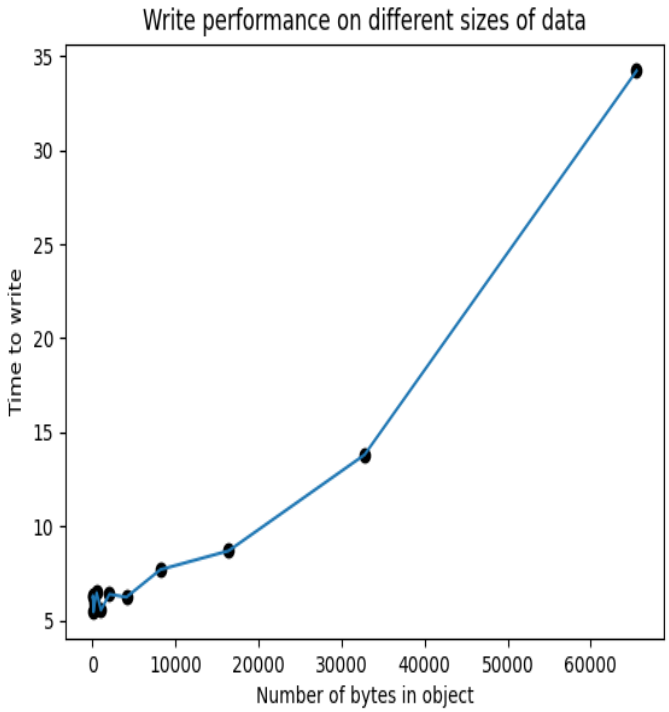

Figure 3: Write performance of SOS

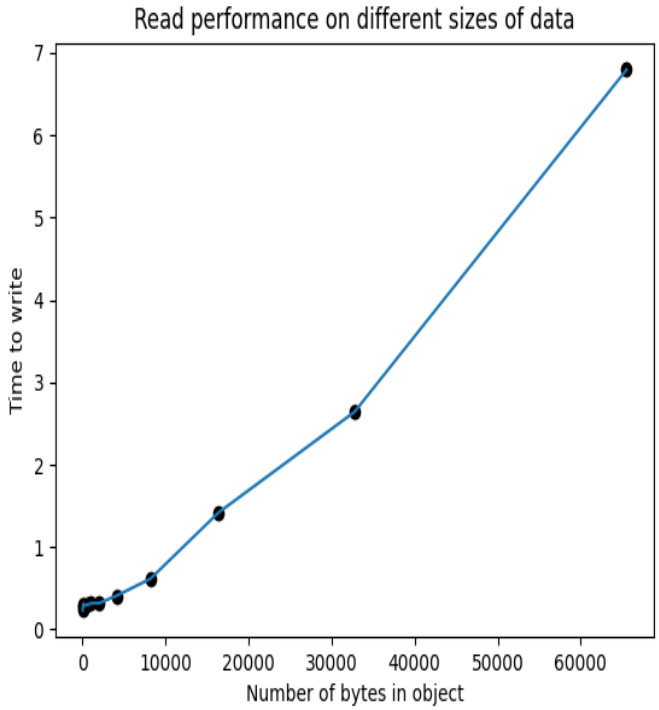

Figure 4: Read performance of SOS