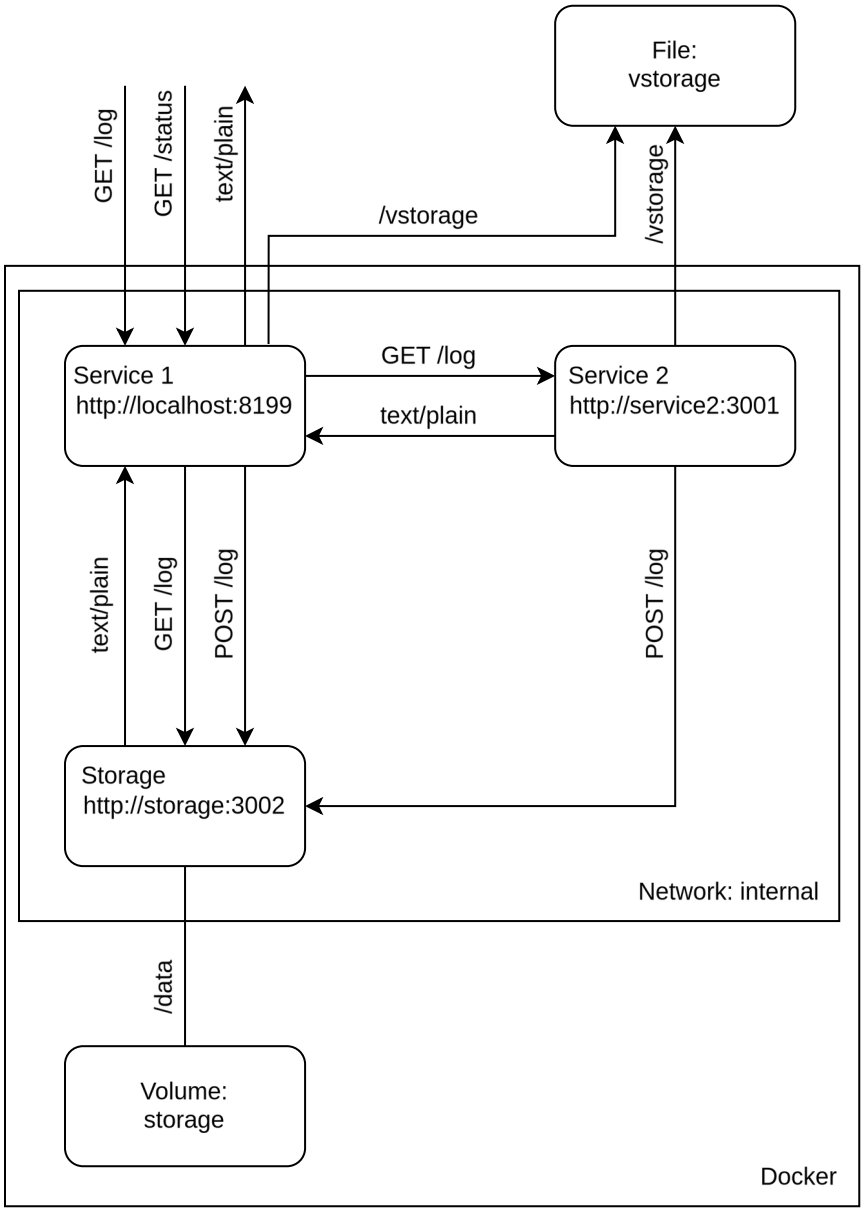
Basics of containers and micro-services exercise report

Basic information about the system

- HW only, no virtual machines used
- Operating System: Fedora Linux 42
- Docker versions:
  - Docker version 28.4.0, build d8eb465
  - Docker compose version v2.30.3-desktop.1

Diagram of the system



Analysis of status records

Disk space

In both containers, the free space is measured from the container root. This showed some arbitrary looking free space in both containers, which means that measurement is not very relevant. For better free space measurement, it would be better to measure it from the storage volume, where the actual data is also written to.

Up-time

In container 1 the up-time is measured using process.uptime() function, which should provide correct up-time of the program. In container 2 the up-time is measured using System::uptime() function which provides the up-time of the system instead of the application. In docker container it provides the up-time of the container, which should equal to the up-time of the program.

Storage

The system utilizes two different ways to store data. Primarily it uses storage volume attached to the storage container and secondarily a file “vstorage” attached directly to the container 1 and container 2.

Volume storage provides a way to handle storage in a very manageable and repeatable way. On the other hand direct file mount turned out to be somewhat difficult to implement, because if the file doesn’t exist, Docker interprets the mount as a folder and on top of that, if the file path contains spaces, the file is not recognized.

As stated in the documentation the file mount is bad design and should not be used, simply because that file is not part of the container or managed by docker in anyway, it becomes difficult or even impossible to deploy the container on a server.

Instruction to clean persistent storage

The compose file creates a docker volume called storage, possibly ”microservice-exc1_storage” by full name. Deleting the volume will clear the persistent storage and will be recreated when started the next time.

Note that the containers must be stopped and removed before the volume in use can be deleted.

What was difficult

Nothing in particular. Except getting the file mount to work due to having space in the file path.