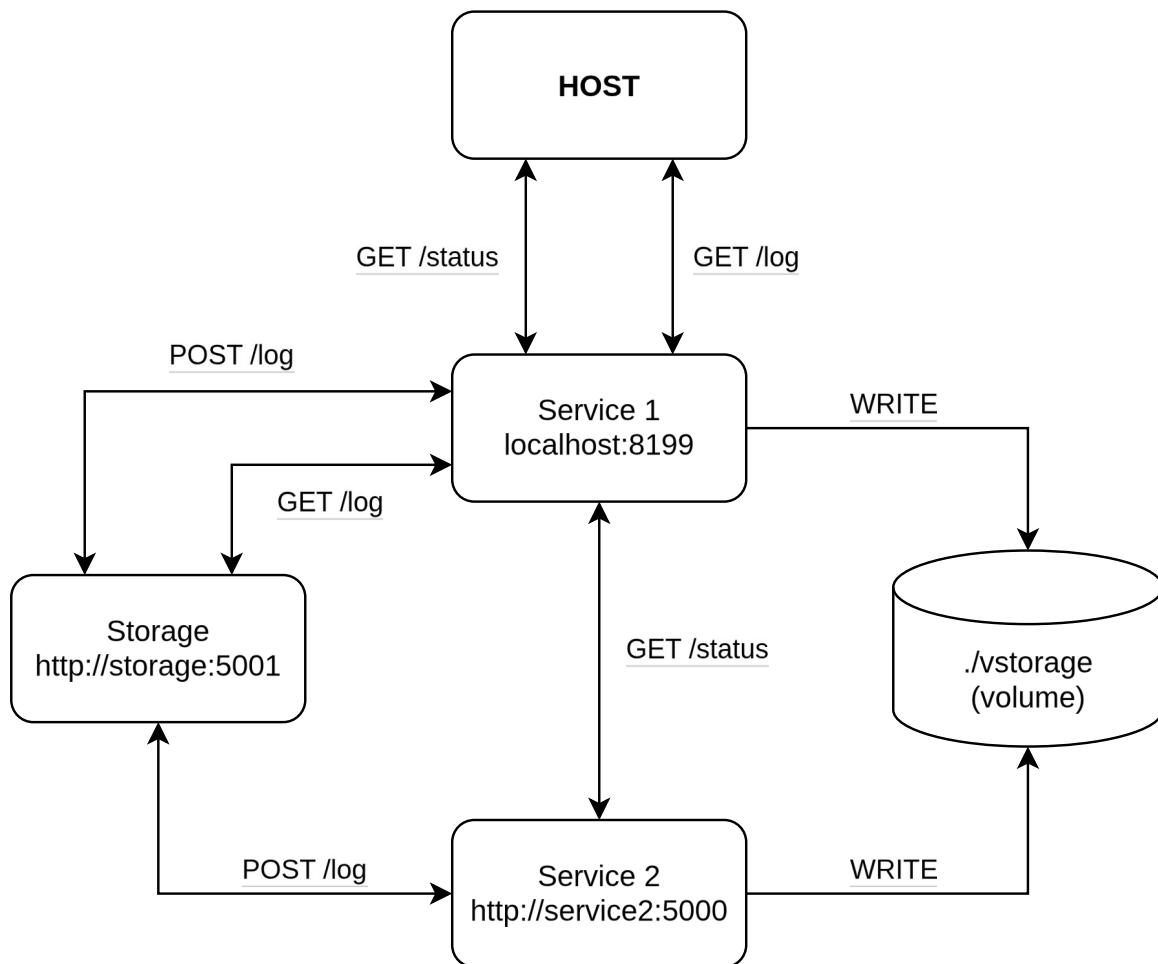# Assignment 1

Platform

- Operating system: Linux fedora 42
- Docker: 28.4.0
- Docker Compose: v2.39.4

A diagram showing the services, network and storage

Status records analysis

The status records had three items: timestamp, uptime and free disk space.

For **timestamp** ISO 8601 format and UTC as "2025-09-03T12:06:18Z" was used in Services 1 and 2. It is standardized and timezone safe and it is usually recommended for logs.

For **uptime**, it was a bit unclear in the instructions if system or service uptime was requested, so I decided to choose service uptime. It is measured as hours with two decimals. Both service 1 and 2 measure this by saving the time of creation to a variable and comparing it to the time of the request. This measurement could be improved by having both service/container uptime and host system uptime. Because the time measurement unit is so large compared to computing times, it is accurate. This might be a different case if we wanted very small units of the uptime, as some computed lines might not get measured with this and the uptime would be unaccurate.

Free disk space measures the free disk space on the root filesystem in the service's container. Because we were writing our data to storage-container, this measurement won't be that relevant to us. It might be a better idea to measure the storage container's free disk space. Also the measurements were done with different methods so I do not know how much difference there is between them in accuracy, but for this assignment it seemed to be accurate enough.

Analysis and comparison of the persistent storage solutions

Mounted directory on host

The bind-mounted directory (./vstorage) makes it easy to see what is inside the directory from the host, and could be good for for example debugging.

This solutions needs to have the mounted directory/file on the host to be able to use it. Also the principle of container isolation breaks with this, as the container is given access to the host.

Docker volume

The docker volume named vstorage is more in line with the principle of container isolation, because this way no access to host file system is given. Docker manages the volumes itself and the data persist even though the containers are stopped or rebuilt.

With bind-mounting it was easy to see what data is written, but with the volumes, we need other solutions for this.

Instruction for cleaning up the persistent storage

To clean the vstorage volume, run either **docker compose down -v** or if the containers are already down, run **docker volume rm compse140_vstorage**.

If the volume is not found, it might be due to the volume name being different. Run **docker volume ls** to lists the volume names.

What was difficult or caused most problems?

To me the most difficult part was getting the status items. Timestamp was pretty straightforward (almost missed the instructions for the format, could in the future be more visible) but for free disk space and runtime, I had to try quite a lot of different solutions. Also it was not mentioned if host runtime or the service runtime was requested so I had to just pick one and hope it is okay.

Also doing the same kind of service with different language caused some difficulty, because I had to find the same solutions for same problems for both languages. Also getting the record to be consistent for both services caused some problems.

And also the assignment instructions could have been more clear, as it took me some time at the beginning to understand what it was I needed to do in the assignment.