

Getting started with containers

Apptainer

Why apptainer?

On a HPC:

- Users have different **levels** of **privileges**
- Users **submit jobs** with time/cpu/memory restrictions

These are two things **Docker doesn't facilitate**:

- Requires **superuser** privileges
- Docker commands are an API of a **daemon** (parentless)

Specific apptainer features

- UID + permissions are inside the container always the same as outside
- No daemon – container is a child process, which also means:
 - Images are files (.sif)
 - Different image format



Two singularities?

- Since 2021 singularity split:
 - Apptainer (Linux foundation)
 - SingularityCE (Sylabs)



APPTAINER

Docker + apptainer

- “Best of both worlds”
- Most bioinformaticians use docker for:
 - Development
 - testing - CI/CD
 - Sharing
- Most bioinformaticians use singularity for:
 - Deployment on a HPC

```
singularity pull docker://namespace/image:tag
```

Apptainer without docker



- The apptainer `Dockerfiles` : Apptainer recipes (i.e. definition file)
- **Note:** installing as root inside container requires root privileges outside container!
- Solutions: --fakeroot or build with external runner

Exercises

- Pull your own docker image with apptainer
- Container execution and mounting with apptainer
- Using a biocontainers image to do some bioinformatics

