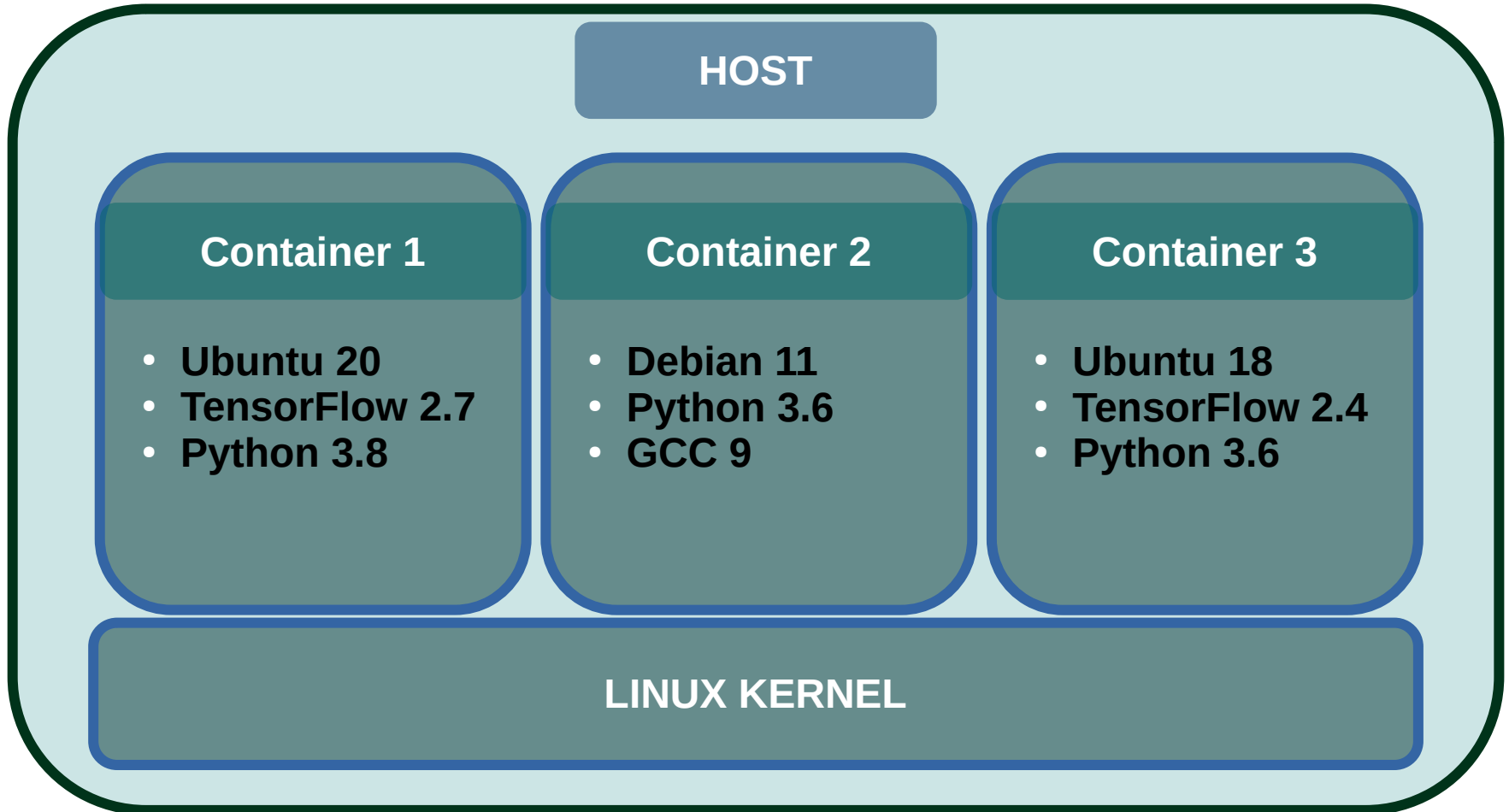


# Jobs@IP2I : using containers



What is a container  
Creating a container  
Using a container

A container is a set of softwares and libraries directly interacting with the host kernel



A container is created from an *image*. With Docker, we can either use an existing image (<https://hub.docker.com/>) or create our own.

We have different existing images on the computing group gitlab repository [https://gitlab.in2p3.fr/ip2i/calcul/docker\\_images](https://gitlab.in2p3.fr/ip2i/calcul/docker_images)

The images are available from the CC IN2P3 container registry :

- `gitlab-registry.in2p3.fr/ip2i/calcul/docker_images:cosmo`
- `gitlab-registry.in2p3.fr/ip2i/calcul/docker_images:tensorflow`
- `gitlab-registry.in2p3.fr/ip2i/calcul/docker_images:pytorch`
- `gitlab-registry.in2p3.fr/ip2i/calcul/docker_images:mxnet`

They are documented on

[https://ip2i.pages.in2p3.fr/calcul/documentation/ML/IP2I\\_GPU\\_Server/#using-singularity](https://ip2i.pages.in2p3.fr/calcul/documentation/ML/IP2I_GPU_Server/#using-singularity)

We have docker images ... but docker is not installed on the SLURM cluster!

We have *singularity*, which can use docker images and is less permissive in a shared environment

### Conversion of a docker image to an singularity image :

```
export SINGULARITY_TMPDIR=/scratch/  
export SINGULARITY_CACHEDIR=/scratch/  
singularity build <image name>.sif docker://<registry server>/<image name>:<tag>
```

(You can use the --docker-login option if you need authentication to the docker Repository)

It will download the docker image and create an singularity image stored in the output file.

Existing singularity images are stored in **/gridgroup/calcul/singularity/**

Creation of a container from an singularity image :

```
singularity run path/to/image.sif or  
singularity exec path/to/image.sif ./myscript.sh
```

If you need access to a GPU card :

```
export SINGULARITYENV_CUDA_VISIBLE_DEVICES=$CUDA_VISIBLE_DEVICES  
singularity run --nv /path/to/image/tensorflow.sif
```

**Reminder : Documentation for GPU server usage**