

Running Containers on Aznavour Supercomputer via SLURM with Apptainer

Downloading images

- Pull an image

```
bash
apptainer pull docker://ubuntu
```

- Build an image (with a specified name)

```
bash
apptainer build ubuntu.sif docker://ubuntu
```

Running commands in a container

- Spawn a new shell within your container

```
bash
apptainer shell ubuntu_latest.sif
```

- Execute a custom command within the container

```
bash
apptainer exec ubuntu_latest.sif /bin/hostname
```

Running a container

- Run a container (with optional arguments)

```
bash
apptainer run ubuntu_latest.sif
```

- Example with an argument:

```
bash
apptainer run ubuntu_latest.sif echo "hello"
```

Running an Apptainer Container on One Node of Aznavour via SLURM

Create a SLURM script (run_apptainer.sh) as follows:

```
#!/bin/bash
#
#SBATCH --job-name=single_node
```

```
#SBATCH --partition=compute
#SBATCH --time=00:10:00
#SBATCH --ntasks=1
#SBATCH --cpus-per-task=1
#SBATCH --output=output-%j.out
#SBATCH --error=output-%j.err

srun /home/soft/apptainer/bin/apptainer exec ./ubuntu.sif /bin/hostname
```

More Slurm tips: <https://anscc.sci.am/wp-content/uploads/2024/08/Slurm-Job-Management.pdf>

Useful apptainer commands

- **build** Build an Apptainer image
- **cache** Manage the local cache
- **capability** Manage Linux capabilities for users and groups
- **checkpoint** Manage container checkpoint state (experimental)
- **completion** Generate the autocompletion script for the specified shell
- **config** Manage various apptainer configuration (root user only)
- **delete** Deletes requested image from the library
- **exec** Run a command within a container
- **help** Help about any command
- **inspect** Show metadata for an image
- **instance** Manage containers running as services
- **key** Manage OpenPGP keys
- **keyserver** Manage apptainer keyserver
- **oci** Manage OCI containers
- **overlay** Manage an EXT3 writable overlay image
- **plugin** Manage Apptainer plugins
- **pull** Pull an image from a URI
- **push** Upload image to the provided URI
- **registry** Manage authentication to OCI/Docker registries
- **remote** Manage apptainer remote endpoints
- **run** Run the user-defined default command within a container
- **run-help** Show the user-defined help for an image
- **search** Search a Container Library for images
- **shell** Run a shell within a container
- **sif** Manipulate Singularity Image Format (SIF) images
- **sign** Add digital signature(s) to an image
- **test** Run the user-defined tests within a container
- **verify** Verify digital signature(s) within an image
- **version** Show the version for Apptainer