Running Docker images using Shifter

- Running a Docker image with Shifter - Step by step
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When you want to run Docker containers on the Fidis/Gacrux cluster

⚠️ Warning
We are still in beta phase. The installation will soon be improved with:
- automatic account creation on the registry

The present documentation will be updated once the registry has been modified.

Running a Docker image with Shifter - Step by step

ℹ️ Prerequisite
You need to have Docker installed on your machine

1. Get a docker image from dockerhub for instance

$ docker pull alpine:latest
$ docker images

2. Account on the c4science registry
- Request an account
- Change your password on https://registry.c4science.ch

3. Set up your machine
- Login on the registry from your local Docker installation

$ docker login registry.c4science.ch
Username (username): username
Password:
Login Succeeded

4. Upload a Docker image to the registry
- On the web interface, create a Project on the registry (private or public)
- Tag the image you want to upload on your local machine and push it to the registry

$ docker tag alpine:latest registry.c4science.ch/yourproject/alpine:latest
$ docker push registry.c4science.ch/yourproject/alpine:lates

5. Pull an image on Shifter and specify a user or group ACL
- From a cluster frontend (i.e.: fidis.epfl.ch), login to the registry, pull the image and check it's was pulled OK

$ shifterimg login
  default username: <username>
  default password:
$ shifterimg pull yourproject/alpine:latest
$ shifterimg images
tcm       docker     READY    9797e5e798   2018-03-15T16:00:59 yourproject/alpine:latest

- You can specify one or multiple (separated by a comma) LDAP username and/or group so the image is only available to those people
To update the user/group ACL you can re-run the pull command
To view the full info about the images (warning: JSON):

```bash
$ shifterimg -v images
Message: {
  "list": [ {
    "ENTRY": null,
    "ENV": [ "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"
    ],
    "WORKDIR": "MISSING",
    "groupACL": [],
    "id": "9797e5e798a034d53525968de25bd25c913e7bb17c6d068ebc778cb33e3ff6e5",
    "itype": "docker",
    "last_pull": 1536842228.15727,
    "status": "READY",
    "status_message": "",
    "system": "fdata2-int.fidis",
    "tag": [ "scitas/alpine:latest"
    ],
    "userACL": []
  } ],
  ...
}
```

6. Run the image

You can submit the following Slurm script with the `sbatch` command

```bash
#!/bin/bash
#SBATCH --nodes 1
#SBATCH --ntasks 1
#SBATCH --cpus-per-task 1
#SBATCH --mem 1024

srun shifter --image yourproject/alpine ls /etc
```

**Interactive Shell (Bash)**

To have an interactive shell within your image, simply use this:

```bash
$ srun --pty shifter --image yourproject/alpine bash
```

**Using GPUs**

On Deneb shifter runtime is installed on the GPU nodes. You need prior access to the GPUs nodes, see FAQ
FEEDBACK is welcome as this feature is experimental.

Related articles

- Running Docker images using Shifter
- FAQ
- Using the clusters
- How to use Tensorflow on the GPU nodes
- Running R on SCITAS machines