HPC Training Series

Prerequisites for Course 10 "Introduction to Computational Fluid Dynamics and OpenFOAM, using High Performance Computing"

EURO Greece

Prerequisites

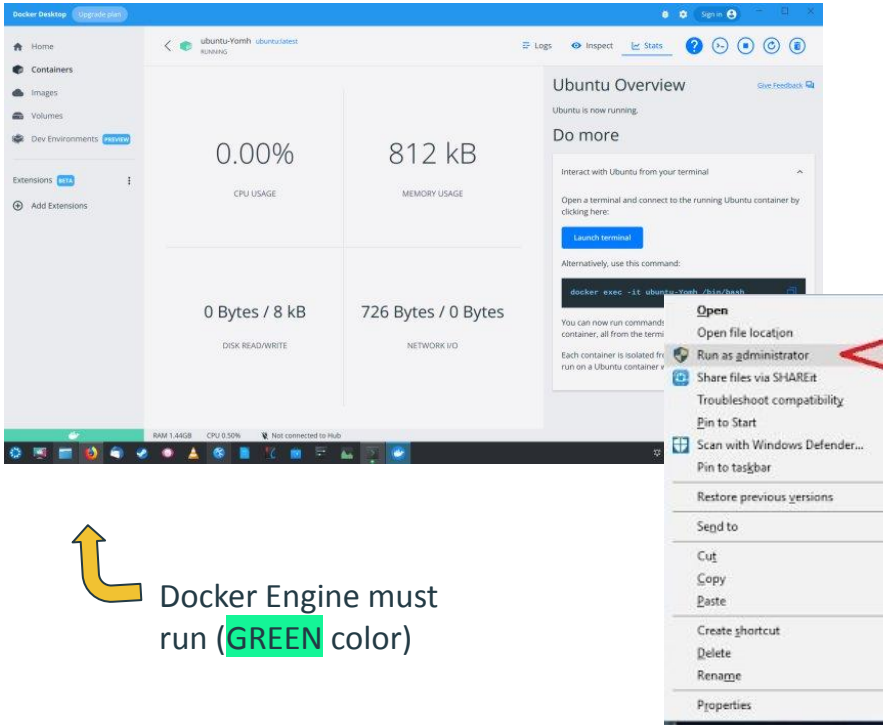
For Windows users

- Download **Docker Desktop** from: https://docs.docker.com/desktop/install/windows-install/
- Follow step-by-step instructions here: https://www.linkedin.com/pulse/step-guide-how-install-docker-windows-1011-shashank-abhishek/
- Download gnuplot: https://sourceforge.net/projects/gnuplot/files/gnuplot/6.0.1/
- Download paraview: https://www.paraview.org/download/

Prerequisites

For Windows users

- Use **default** options in installation
- Your PC must be **restarted**
- If docker engine does not start, you might need to close the Docker Desktop and run it in **administration** mode



Docker Engine must run (GREEN color)

Steps A-Z

For Windows users

1. Make sure that Docker Desktop is **initiated** (GREEN color)
2. **Download** the Docker recipe to setup the virtual infrastructure of SLURM under containers: https://github.com/nikosT/slurm-docker-cluster/archive/refs/heads/openfoam-pull.zip
3. **Extract** content at some folder e.g. C:\...\slurm-docker-cluster-openfoam-pull
4. Open Windows **PowerShell** (in search button type PowerShell)
5. In Windows PowerShell **terminal** type:

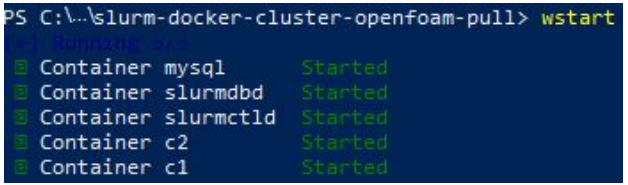
   `cd C:\...\slurm-docker-cluster-openfoam-pull`

   `powershell -ExecutionPolicy Bypass`

   `. .\alias.ps1` *# load environment*

   `wstart` *# start the virtual cluster (~2.5 GB images' size)*

   When `wstart` is **completed**, you should view this



6. Then, type:

   `ssh slurm@slurmctld` *# access the login node*

7. `cd mpi_hello` *# change dir to the MPI example*
8. `sbatch test.sh` *# submit your first MPI job*
9. `ls` *# view the outputs of your submission*
10. `exit` *# logout from login node*
11. `wstop` *# stop the virtual cluster*

Steps A-Z

For Linux users

- In terminal type:

```
sudo apt-get install git docker docker.io docker-compose docker-compose-v2 # install docker
sudo apt-get install gnuplot paraview # install visualization s/w
git clone -b openfoam-pull https://github.com/nikosT/slurm-docker-cluster # get docker recipe
cd slurm-docker-cluster # change dir to the appropriate one
chmod -R 777 slurm #set appropriate permissions to the folder
source alias # load environment
wstart # start the virtual cluster (~2.5 GB images' size)
ssh slurm@slurmctld # login control node
cd mpi_hello # change dir to the MPI example
sbatch test.sh # submit your first MPI job
ls # view the outputs of your submission
exit # logout from login node
wstop # stop the virtual cluster
```

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