



OpenFOAM user meeting

September 13th 2017

<https://www.ugent.be/hpc/en/support/openfoamusermeeting>

<http://ugent.be/hpc>

hpc@ugent.be

<https://www.vscentrum.be/>

Motivation

- multiple research groups using OpenFOAM on HPC-UGent infrastructure
- significant increase of support requests for OpenFOAM during last months
 - mostly new users that are just getting started
- frequently returning questions
 - troubleshooting
 - using own solvers/libraries on top of centrally installed OpenFOAM
- lack of extensive/up-to-date documentation on use on HPC-UGent clusters

Agenda

[10am] **showcase presentations** by experienced OpenFOAM/VSC users

[12pm] sandwich lunch

[1pm] **Best Practices for OpenFOAM** by Kenneth Hoste (HPC-UGent)

[2pm] **Hands-on: Using VNC for Pre/Post-Processing** by Laurien Vandewalle, LCT

[3pm] **Hands-on: Building Own Solvers & Libraries** by Joris Degroote, FloHeaCom

[4pm] Q&A + open discussion

Agenda: showcase presentations

- [10.00am] **Virtual Manufacturing in Industry** by Peter De Jaeger (Bekaert)
- [10.30am] **Numerical simulation of an array of Floating Point Absorber Wave Energy Converters using OpenFOAM** by Brecht Devolder (Civil Eng.)
- [11.00am] **Full-scale simulation of an industrial steam cracking furnace using OpenFOAM on Tier-1** by Pieter Reyniers & Laurien Vandewalle (LCT)
- [11.30am] **Large Eddy Simulation of Annular Flows and Flows Through Slot Jets with OpenFOAM** by Joris Degroote (FloHeaCom)

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Practical guidelines for hands-on sessions (1/2)

- **HPC-UGent infrastructure unavailable due to ongoing maintenance**
 - new shared storage is being put into production
- a login node has been made accessible, (only) to attendees of OpenFOAM user meeting
 - just log in like you are used to, via VSC account & login.hpc.ugent.be hostname
- shared scratch filesystem (\$VSC_SCRATCH) is *not* available
- **only files created in \$VSC_DATA/openfoamusermeeting will be available later**
 - let us know *today* via hpc@ugent.be if you need this directory restored
 - ***all other changes on shared filesystems will be lost post-maintenance!***

Practical guidelines for hands-on sessions (2/2)

- (only) **raichu** cluster is available, **only for hands-on sessions**
- jobs *must* be submitted to a reservation, other jobs will not be started
- to submit jobs:

module swap cluster/raichu

job script: **qsub -W x=FLAGS:ADVRES:openfoam.18 script.sh**

interactive job: **qsub -I -W x=FLAGS:ADVRES:openfoam.18 ...**

also add **-X** to enable X forwarding in interactive job

use **-l nodes=1:ppn=N** for requesting N cores rather than 1 single core

Best Practices for OpenFOAM

- part of new "Best Practices" chapter in VSC user manual
- available via <http://www.ugent.be/hpc/en/support>
- section best practices for OpenFOAM is a work in progress, feedback is welcome!
 - http://users.ugent.be/~kehoste/VSC_user_manual_OpenFOAM_best_practices.pdf
see section 13.5, pages 116-124
 - **example job script: `/apps/gent/tutorials/OpenFOAM/OpenFOAM_damBreak.sh`**
- contributions welcome via https://github.com/hpcugent/vsc_user_docs

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