Very short Guide
to install *Code_Saturne* and
to run a simulation

1 – Installation

Version 4.0.6 of *Code_Saturne* Is available from Code_Saturne-4.0.6_UEABS.tar.gz.

The archive contains a file Code_Saturne-4.0.6_UEABS, which contains the installer InstallHPC.sh (executable) and the folder code_saturne-4.0.6.

The last lines of the installer (meant for the GNU compiler in this example) read:

```
$KERSRC/configure --disable-shared --disable-openmp --enable-long-gnum \
--without-modules --without-gui \
--without-libxml2 --without-hdf5 \
--without-salome-kernel --without-salome-gui \
--prefix=$KEROPT \
CC="mpicc" CFLAGS="-O3 " FC="mpif90" FCFLAGS="-O3"
```

You might have to adapt CC, FC, CFLAGS, FCFLAGS, LDFLAGS and LIBS for your machine, compilers and MPI installation.

To install the code, type

```
cd Y_PATH/Code_Saturne-4.0.6_UEABS
./InstallHPC.sh
```

When the code is installed the command **code_saturne** should return, when typing:

```
Y_PATH/Code_Saturne-4.0.6_UEABS/code_saturne-4.0.6/arch/Linux/bin/code_saturne
```

```
Y_PATH/Code_Saturne-4.0.6_UEABS/code_saturne-4.0.6/arch/Linux/bin/code_saturne <topic>

Topics:
  help
  autovnv
  bdiff
  bdump
  compile
  config
  create
  gui
  info
  run
  salome
```

Options:
 -h, --help show this help message and exit

2 – Preparing the simulation

The archives Code_Saturne_TestCaseA.tar.gz and Code_Saturne_TestCaseB.tar.gz contain the information required to run both test cases, with the ***mesh_input*** file (for the mesh) and the usersubroutines in src.

From the working directory WORKDIR (pick another one than Code_Saturne-4.0.6_UEABS), you need to create a 'study' (TestA, for instance) and a 'case' (MACHINE, for instance) as:

Y_PATH/Code_Saturne-4.0.6_UEABS/code_saturne-4.0.6/arch/Linux/bin/code_saturne create --study TestA MACHINE

The TestA directory contains 3 directories, MACHINE, MESH and POST.

The directory MACHINE contains 4 directories, DATA, RESU, SCRIPTS and SRC.

The file ***mesh_input*** should be copied into the MESH directory.

The user subroutines (cs_user* files) contained in src should be copied into SRC.

The cs_user_scripts.py file is used to manage the simulation. It has to be copied to DATA from DATA/REFERENCE as:

cd DATA
cp REFERENCE/cs_user_scripts.py .

At Line 138 of this file, you need to change from None to the global path of the mesh, i.e. "WORKDIR/TestA/MESH/mesh_input"

To finalise the preparation go to the folder MACHINE and type:

Y_PATH/Code_Saturne-4.0.6_UEABS/code_saturne-4.0.6/arch/Linux/bin/code_saturne run --initialize

This should create a folder RESU/YYYYMMDD-HHMM, which should contain the following flles:

```
cs_user_scripts.py
src_saturne
cs_solver
compile.log
mesh_input -> TestA/MESH/mesh_input
summary
run_solver
```

3 – Running the simulation

The name of the executable is ./cs_solver, and you should run it with the option –mpi as

mpirun/mpiexec/poe/aprun/… ……. ./cs_solver --mpi

References:

http://www.code-saturne.org
http://www.fz-juelich.de/ias/jsc/EN/Expertise/High-Q-Club/_node.html