Crib Sheet: NEXTGenIO MPI Exercises

1 Logging on

Mac / Linux Open a command-line terminal and use your username and password to access the EPCC gateway system using a secure shell: `ssh -XY username@hydra-vpn.epcc.ed.ac.uk` Then, log in to the main system: `ssh -XY nextgenio-login2`

Windows You should install MobaXterm from `https://mobaxterm.mobatek.net/`. After starting MobaXterm, click on "Sessions -> New Session" from the top bar and then select "SSH". You should enter the EPCC Gateway address `hydra-vpn.epcc.ed.ac.uk` as the "Remote host". Once on the gateway, type: `ssh -XY nextgenio-login2` at the command line.

2 Obtaining source code

The source code is stored on github alongside the slides and other documentation. See the "Course materials" link from the main MPI course page on the ARCHER2 website.

To copy a file directly to NEXTGenIO (rather than clicking a link and downloading to your laptop, or cloning the repository), issue "wget" on NEXTGenIO, e.g. for `MPP-templates.tar` from May 2020:

```
wget https://github.com/EPCCed/archer2-MPI-2020-05-14/raw/master/exercises/MPP-templates.tar
```

Note that, due to pecularities with github, this is **not** the link you get if you "copy link location" from your browser on github. To use `wget`, you must replace `blob` in the URL with `raw`.

Now unpack the tar file: `tar -xvf MPP-templates.tar` and change directory into it: `cd MPP-templates`

3 Compiling code

You can compile the C, C++ and Fortran codes directly:

```
mpicc  -o hello hello.c
mpicxx -o hello hello.cc
mpif90 -o hello hello.f90
```

or using the supplied Makefiles

```
make -f Makefile_c
make -f Makefile_cc
make -f Makefile_f90
```

This uses the GNU compilers and the Intel MPI library.

4 Running

You can run parallel jobs interactively from the command line, e.g.:

```
mpirun -n 4 ./hello
```