



Enabling Grids for E-science

# Grid MPI exercises

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- Obtain a list of MPI implementations available on the [gridgate.cs.tcd.ie](http://gridgate.cs.tcd.ie) CE.
- Find out which CEs support mpi-start
- Obtain a list of CEs that support OPENMPI
- Find out which sites support MPI but not the new configuration

# 1: On the worker node

- Find out where the mpich2 library is installed at the GRIF site at LAL ([grid10.lal.in2p3.fr](http://grid10.lal.in2p3.fr))
- Find out whether the version of mpich installed at LAPP ([lapp-ce01.in2p3.fr](http://lapp-ce01.in2p3.fr)) matched what is advertised in the information system
- Find out whether OSC mpiexec is used at TCD ([gridgate.cs.tcd.ie](http://gridgate.cs.tcd.ie))
- See what else you can find out about the MPI installation at a site!

- **Run the simple MPI application mpi-test.c on the Grid using MPI-START.**
- **To do this create:**
  - A JDL file to submit the job to a site supporting both MPI-START and any MPI flavour
  - An MPI-START hooks file to compile the application
  - An MPI-START wrapper script to run the application

## 3. MPI with Grid storage

- **Submit a grid job that downloads the source code file for the application from grid storage as the initial stage of the application and then compiles and executes the application. (Take the MPI-START enabled MPI application developed in the previous exercise and upload the files to grid storage)**
- **Upload the tar file containing the application, mpi-job.tgz, to grid storage**
- **Create a script to download the application from grid storage and execute the application**
- **Create a JDL file to submit the application**
- **Modify the MPI application to output some data to a file, then upload the data to grid storage when the MPI application completes**
- **Verify the output of the data file by downloading it from grid storage**

## 4: Running an MPI job at a grid site without MPI-START installed

- You can use MPI-START at sites that don't have it installed by submitting it along with the job
- Get the mpi-start tarball from the course website
- Modify the wrapper script to unpack mpi-start and use it to execute your test application at a site that doesn't have mpi-start installed