

## 1. Quick start

### 1.1 Connection to the machine

In order to access Frioul, use the ssh command: `ssh frioul.cines.fr`

### 1.2 Compilation environment

You should use the intel compiler as well as the intelmpi library:

```
user@login0:~$ module load intel intelmpi
load module mkl/compilers_and_libraries_2017.0.098/linux
load module idb/compilers_and_libraries_2017.0.098/linux
load module intel/17.0
load module impi/2017.0.098
```

Compiler option for using Intel KNL's AVX512 is: `-xMIC-AVX512`

Note that the login node is a Broadwell node, you will have to cross-compile using this option.

You can also use all the modules available using the module command.

### 1.3 Job submission

Here is an example of job you can submit on the machine:

#### Job.sh

```
#!/bin/bash
#SBATCH -t 01:00:00
#SBATCH -N 2
#SBATCH -n 136
#SBATCH --mem=200GB

##IF I WANT A QUAD,CACHE NODE:
#SBATCH -C quad,cache
TYPE=cache

##IF I WANT A QUAD,FLAT NODE (remove the extras # on the next lines):
##SBATCH -C quad,flat
#TYPE=flat

module load intel intelmpi
export I_MPI_DOMAIN=auto
export I_MPI_PIN_RESPECT_CPUSSET=0

if [ "$TYPE" == "flat" ] ; then
MPIRUN="mpirun -print-rank-map -prepend-rank numactl --membind=1 "
else
MPIRUN="mpirun -print-rank-map -prepend-rank "
fi

$MPIRUN myprogram myarg1 myarg2
```



You can submit this job using the command: **sbatch Job.sh**

#SBATCH lines represent attributes for the job.

Here are the main options you should use:

Option	Argument	Purpose
<b>-t</b>	hh:mm:ss	Time you book your resources
<b>-N</b>	integer	Number of nodes you need
<b>-n</b>	integer	Total number of tasks you use
<b>--ntasks-per-node</b>	integer	Number of tasks per node you use
<b>--mem</b>	xxxGB	Amount of memory per node that you need
<b>-C</b>	string	Constraint: determine the KNL mode (quad,cache or quad,flat)

Way more options are available in the SLURM documentation available here:

<https://slurm.schedmd.com/sbatch.html>

Examples of script are also available on the machine at this location:

/opt/software/frioul/job\_examples/

For any other question, please contact [svp@cines.fr](mailto:svp@cines.fr)