Supercomputer Clusters

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Cluster setup

Typical cluster:

- Login nodes, where you ssh into; usually shared with 100 (or so) other people. You don't run your parallel program there!
- Compute nodes: where your job is run. They are often exclusive to you: no other users getting in the way of your program.

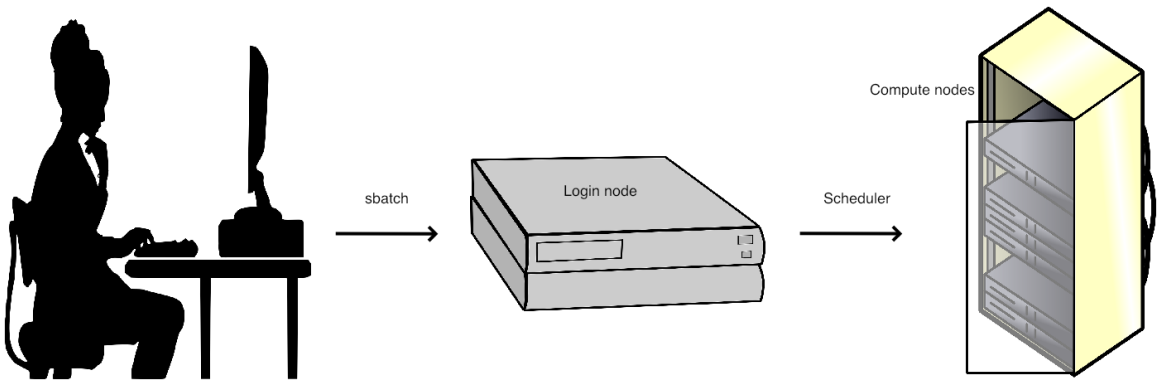
Exercise 1

Login nodes Shared between many users
(how many right now?)
You are allowed to do:

- Compilation
- Post-processing
- Run very short programs (but not MPI)
- Submit jobs for batch execution (`sbatch`)
- Connect for interactive job (`idev`)

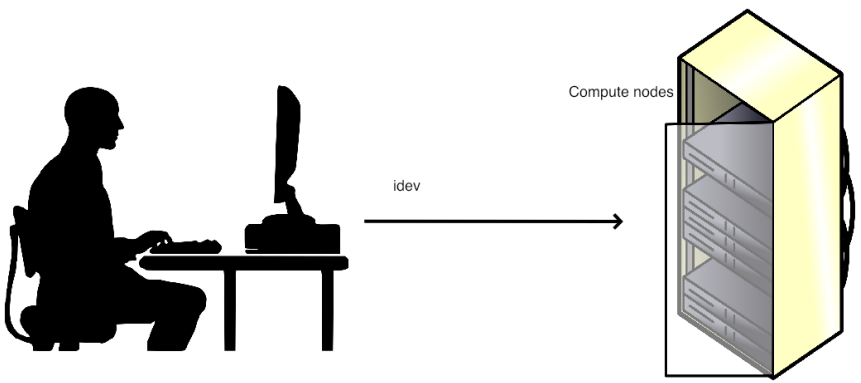
Batch run

- Submit batch job with *sbatch*
  (on other clusters: *qsub*)
- Your job will be executed . . . Real Soon Now.
- See userguide for details about queues, sizes, runtimes, . . .



Interactive run

- Do not run your programs on a login node.
- Acquire compute nodes with `idev`
- Caveat: only small short jobs; nodes may not be available.



`idev` command

```
1 idev -t hh:mm:ss -N nodes -n cores -p queue
```

- `-t`: time
- `-N`: number of nodes
- `-n`: total number of cores
- `-p`: partition / queue

Batch job

```
1 sbatch batchfile.slurm
```

- *sbatch*: submit
- *squeue*: job status

Exercise 2

- Connect to your favorite cluster
  what is the hostname? how many users are logged in?
- Start an interactive session with `idev`;
  what is the hostname? how many users are logged in?
- Run: `ibrun hostname`
  also `ibrun -n 3 hostname`
- Same, but `idev` on two nodes.
- Create a job script that will run on 10 nodes;
  again let it run the `hostname` command.
  Submit with *`sbatch`*