

# Job queues and parallel environments

## Job queues

Isabella cluster nodes are divided into multiple queues according to the architecture and purpose:

- a28.q
  - queue for all jobs with no limitations
  - servers Lenovo NeXtScale nx360 M5
- gpu.X.q
  - queue for jobs that use graphics processors (GPUs) with a maximum duration of 7 days
  - servers Dell EMC PowerEdge C4140
- p28.q
  - queue for parallel jobs with a maximum duration of 7 days
  - servers Lenovo NeXtScale nx360 M5
- p28-big.q
  - queue for parallel jobs
    - require number of cores that is a multiple of number 28 and
    - with a maximum duration of 7 days
  - servers Lenovo NeXtScale nx360 M5
- p28-long.q
  - queue for parallel jobs with a maximum duration of 30 days
  - servers Lenovo NeXtScale nx360 M5

The server's technical specifications are available on the official Isabella computer cluster webpage.

Default job queue is a28q. Selection of job queue is done by setting the appropriate parallel environment.

## Parallel environments

Parallel environment is an SGE mechanism that enables multi-core processing for the needs of parallel jobs. Since SGE does not have the option of detailed core division on nodes, Isabella cluster has three parallel environments defined:

- \*mpi
  - SGE will try to assign processes on the same node
  - when a node is at full capacity, processes will be assigned to the next node
- \*mpisingle
  - SGE will assign all processes on the same node
  - number of requested cores must not exceed the number of cores on a node
- \*mpifull
  - SGE will reserve the whole node
  - number of cores must be a multiple of the cores available on a node

Parallel environments available on Isabella are assigned to queues:

- a28.q
  - a28-mpi – general parallel jobs
  - a28-mpisingle – all assigned cores are on a single node
  - a28-mpifull - cores are assigned as a multiple of number 28 (whole nodes are reserved)
- gpu.X.q
  - gpu – general jobs that require graphics processors (GPUs)
  - gpusingle – all GPUs are assigned to a single node
  - gpufull - GPUs are assigned as a multiple of number 4 (whole nodes are reserved)
- p28.q
  - p28-mpi – general parallel jobs
  - p28-mpisingle – all assigned cores are on a single node
  - p28-mpifull - cores are assigned as a multiple of number 28 (whole nodes are reserved)
- p28-big.q
  - p28-mpifull - cores are assigned as a multiple of number 28 (whole nodes are reserved)
- p28-long.q
  - p28-mpi-long – general parallel jobs
  - p28-mpisingle-long – all assigned cores are on a single node
  - p28-mpifull-long - cores are assigned as a multiple of number 28 (whole nodes are reserved)

Jobs can be assigned to any queue by command :

```
-pe *mpi X
```

or for mpisingle job:

```
-pe *mpisingle X
```