Resource sharing policy

The resource sharing policy in place on hpc64 tries to optimize the utilization and availability of resources to all the users while guaranteeing to the cluster share holders immediate and prioritized access to the hardware they own.

This is implemented by the scheduler using the concept of execution queues. When a user submit a job, the job will be executed in a specific execution queue depending on the requested resources.

The resources (== compute nodes) are associated to execution queues reflecting their ownership, and occasionally also according on the specific type of resources.

So for example all the compute nodes purchased by a specific lab are associated to a special execution queue that only users belonging to that lab can access in their job submission.

The same compute nodes (as all the hardware in the system) is also part of a general queue (called all.q) which can be accessed by all users, regardless to their lab association. The jobs running in this general all.q queue have however lower priority than the ones in the special lab-associated queues. If a specific node has idle slots, then the system will allocate those slots also to users requesting jobs in the all.q; but as soon as a member of the lab that owns that node submits a job requesting his/her high priority queue, the scheduler will suspend the all.q job that was running on that node in order to free some resource for the higher priority job.

In addition, sometimes labs like to have their own hardware associated to different queues, either to distinguish different types of specialized hardware (e.g. a queue for gpu and a queue for cpu nodes), or to have queues with different priorities within their own lab (e.g. a queue for regular jobs and a queue for jobs that need to be done extremely urgently).

Note that the general policy in place does not impose any walltime limit on the duration of the jobs.

For this reason a job submitted in a high priority queue will never be interrupted by the system and will always run until completion. A job submitted in the low priority queues will run until completion or until the system suspends it to make room for a high priority job.

Fair share usage within a lab queue is left to internal organization among lab members. If a specific lab wants to change their internal policy and include restrictions or wall time limits, please contact us and we will implement your requests in the scheduler.