Cluster Resource Limit

Oct 1, 2022

partition	Debug	Project
`MaxNodes` (max number of **nodes** allocated to a job)	1	1
`MaxCPUsPerNode` (max number of **cpus on a node** allocated to a job)	8	40
Max number of **total cpu cores** allocated to a job	1*8=8	1*40=40
`MaxTime` (max **running time** of a job)	60min	10min
`MaxJobsPerUser` (max number of **running** jobs of a user at a given time)	2	1
`MaxSubmitJobsPerUser` (max number of jobs **submitted** of a user at a given time)	10	100
Total number of nodes in this partition (we will add more if not enough)	9	18

For time consuming jobs with a few cores, you can use `Debug` partition.

For jobs requiring many cores, you can use `Project` partition.

FAQs

- What is a **node**?

A node is a computer with some cpu cores on it. The cluster is composed of about 30 individual nodes. Your computation task is performed on each node actually.

- What is a **job**?

Each time you use `salloc -n***` or `sbatch xxx.sh`, you submit a new job to slurm queue. Each job has a maximum core limit, maximum running time limit.

The following properties are about limitation for a **job**.

partition	Debug	Project
`MaxNodes` (max number of **nodes** allocated to a job)	1	1
`MaxCPUsPerNode` (max number of **cpus on a node** allocated to a job)	8	40
Max number of **total cpu cores** allocated to a job	1*8=8	1*40=40
`MaxTime` (max **running time** of a job)	60min	10min

If your job requires resources above any limit above, otherwise `slurm` will let your job be `PD` (pending).

- May I submit infinite number of jobs?

No. You are allowed to submit 10 jobs to `Debug` partition and 100 to `Project` partition respectively.

partition	Debug	Project
`MaxSubmitJobsPerUser` (max number of jobs **submitted** of a user at a given time)	10	100

- If I submit 100 jobs, in which way will `slurm` schedule them?

Your 100 jobs will be added to queue. You have submitted 100 jobs, however, due to `MaxJobsPerUser`, `slurm` will only process `MaxJobsPerUser` jobs at a specific time.

partition	Debug	Project
`MaxJobsPerUser` (max number of **running** jobs of a user at a given time)	2	1

For `Project` partition, `slurm` will only process 1 job at the same time. It will first process job1, when `job1` terminates, `job2` will be processed, ... until all of your jobs are processed.