Slurm

Prefer site-https://slurm.schedmd.com/documentation.html

What is SLURM:-

- **open-source workload manager/scheduler for the Discovery cluster**. Slurm is basically the intermediary between the Login nodes and compute nodes. Hence, the Slurm scheduler is the gateway for the users on the login nodes to submit work/jobs to the compute nodes for processing.

There are three main functions of slurm.

1] Job scheduler
2] workload
3] accounting

1] Resource Management:-

Job scheduler

- A scheduler is **software that implements a batch system on a HPC (cluster)**. Users do not run their calculations directly and interactively (as they do on their personal workstations or laptops), instead they submit non-interactive batch jobs to the scheduler.

Manager

- The Slurm Workload Manager, formerly known as Simple Linux Utility for Resource Management (SLURM), or simply Slurm, is **a free and open-source job scheduler for Linux and Unix-like kernels**, used by many of the world's supercomputers and computer clusters.
- Every jobs comes first have manager

Queue

Queues are **where your jobs will run**, and usually address some set of the available hardware in the cluster, as well as define policies on what kind of

jobs can run in the queue. Policies might be things like, How long your job can run for.

Back Filling

- Slurm's backfill scheduler **takes into consideration every running job**. It then considers pending jobs in priority order, determining when and where each will start, taking into consideration the possibility of job preemption, gang scheduling, generic resource (GRES) requirements, memory requirements, etc.

Time based scheduling

FIFO based scheduling

Fair share

Maintain the priority

When any node no of job is increased then their priority is decreased

Resource

Caltech HPC Resources

- The Caltech Supercomputing Lab offers a total of 16,840 CPU cores, 200 GPUs, and over 130 TB of memory across 347 compute nodes.
- Compute resources are supported by approximately 5.0 petabytes of storage.
- All nodes run CentOS Linux 7.
- Each GPU node hosts 4 Nvidia P100 GPU's each containing 16GB of memory. One node has 2 p100s and 2 v100s