Job Submission on HPC

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Resource Manager

- The batch scheduler or workload manager
- Find & map optimal resources for execution of job request
- When a job is scheduled to run
  - Scheduler instructs the resource manager to launch the application(s) across the job's allocated resources
  - Known as "running the job".

SLURM

What is SLURM?

- SLURM (Simple Linux Utility for Resource Management)
- Workload manager , provides framework for job queues, allocation of compute nodes, and initialize execution of jobs.
- Available compute nodes are visible in SLURM partitions.
- User submits jobs to requisition node resources in a partition.

Overview of SLURM Commands

- squeue - show status of jobs in queue
- scancel - delete a job
- sinfo - show status of compute nodes
- sbatch - submit a job script
- salloc - allocate compute nodes for interactive use

Option	Slurm Command (#SBATCH)
Job name	--job-name=<name>
Queue	--partition=<name>
Wall time limit	--time=<dd-hh:mm:ss>
Node count	--nodes=<count>
Process count per node	--ntasks-per-node=<count>
Memory limit	--mem=<limit> (Memory per node in MB)
Request GPUs	--gres=gpu:<count>
Standard output file	--output=<file path> (path must exist)
Standard error file	--error=<file path> (path must exist)

```
#!/bin/bash
# The interpreter used to execute the script
#“#SBATCH” directives that convey submission options:
#SBATCH --job-name=example_job
#SBATCH --nodes=1
#SBATCH --ntasks-per-node=1
#SBATCH --mem-per-cpu=1000m
#SBATCH --time=10:00
#SBATCH --account=test
#SBATCH --partition=standard
#SBATCH --output=/home/%u/%x-%j.log

# The application(s) to execute along with its input arguments and options:
/bin/hostname
sleep 60
```

PARAM Utkarsh - System Details

Parameter	CPU only(75)	GPU Nodes(10)	GPU Ready(32)	HM Nodes(39)
Processor	2 x Xeon platinum 8268	2 x Xeon G-6248	2 x Xeon platinum 8268	2 x Xeon platinum 8268
Cores	48	40	48	48
Speed	2.9 GHz	2.5 GHz	2.9 GHz	2.9 GHz
Memory	192 GB	192 GB	192 GB	**768 GB**
HDD	480GB SSD	480GB SSD	480GB SSD	480GB SSD
Total cores	**3600**	**400**	**1536**	**1872**
Total Memory	14400 GB	1920 GB	6144 GB	29952 GB
	-	2 x NVIDIA V100	-	-

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Thank you!