



Ilifu Online Training

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Inter-University Institute
for Data Intensive Astronomy



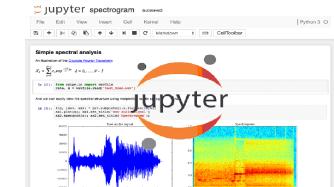
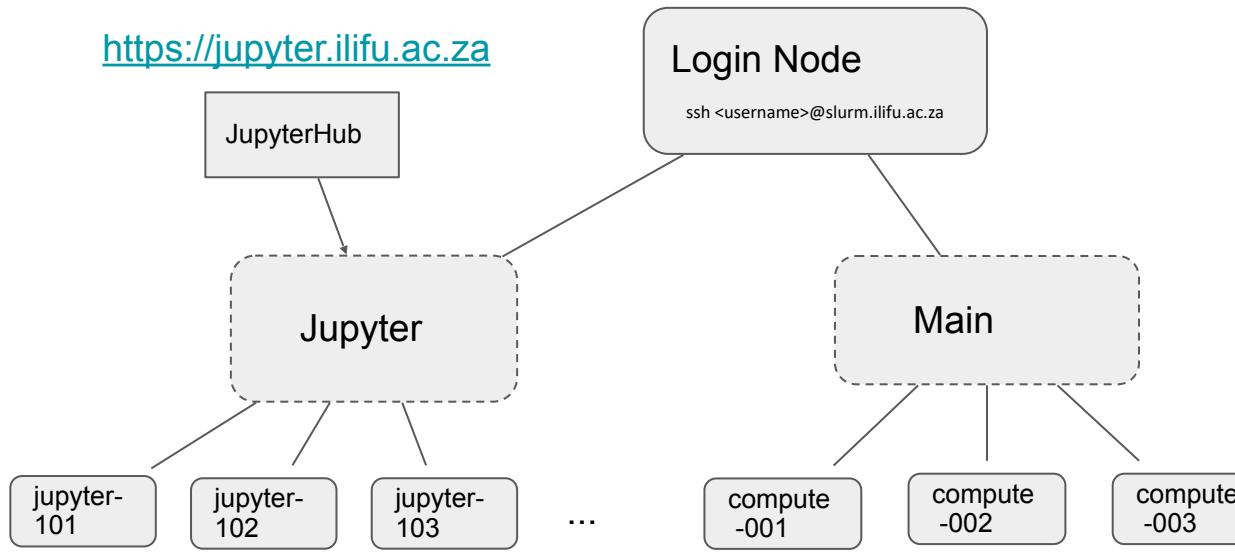


Job scheduling & cluster management tool

- Framework : Login node & Compute nodes
- **Login node**
 - Accessed via ssh (`$ ssh <username>@slurm.ilifu.ac.za`)
 - Submit jobs and manage work directories
- **Compute nodes**
 - Where processes/code runs
 - via Singularity Containers
- **Partitions** (1 node = 32 CPUs, 232 GB RAM)

| | |
|----------------|-----------------|
| Main partition | Jupyter Spawner |
| ~80 nodes | 12 nodes |





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\$ sinfo → shows partitions and resources

\$ squeue → shows all jobs in SLURM queue

\$ squeue -u \$USER → shows your jobs

\$ sbatch slurm_job_script.sh → submit job to SLURM

\$ sbatch --help → info. on job submission parameters

\$ scancel <jobid> → cancel running/pending job

\$ sacct → shows status of recent completed or running jobs

SLURM - running a job



```
$ cat slurm_job_script.sh

#!/bin/bash

#SBATCH --job-name=demo_job
#SBATCH --time=00:00:10
#SBATCH --mem=4GB
#SBATCH --reservation=training
#SBATCH --partition=Main
#SBATCH --output=demo-job-%j.out
#SBATCH --error=demo-job-%j.err
#SBATCH --mail-user=oarabile@idia.ac.za
#SBATCH --mail-type=BEGIN,END,FAIL,TIME_LIMIT_80
#SBATCH --account=b34-admins-ag

echo "Running demo job"
```

Describe job parameters / resources

```
echo "Running demo job"
```

container

```
singularity exec  
job script.py
```

~~/idia/software/containers/python-3.6.image~~

software script

python3

```
$ sbatch slurm job script.sh # submit job to SLURM queue
```



DEMO TIME!

SLURM - running a job



```
$ cat slurm_job_script.sh

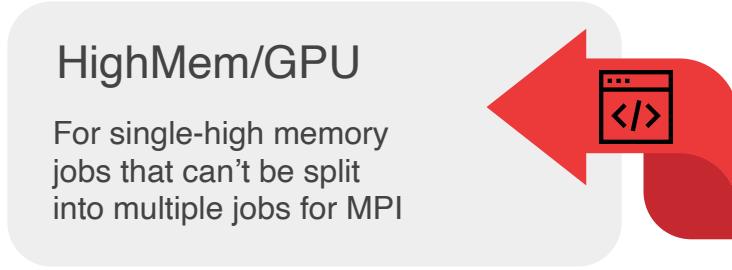
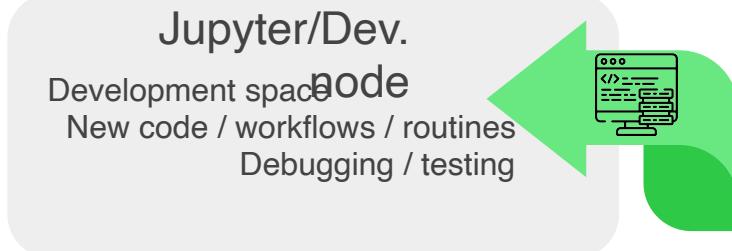
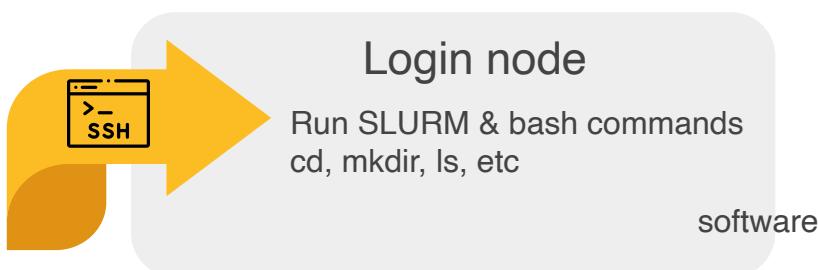
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#SBATCH --job-name=demo_job
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#SBATCH --mail-type=BEGIN,END,FAIL,TIME_LIMIT_80
#SBATCH --account=b34-admins-ag

echo "Running demo job"

module load python
python job_script.py

$ sbatch slurm_job_script.sh # submit job to SLURM queue
```



Do's :

- Run jobs using sbatch rather than interactive jobs
- Identify job resources requirements:
 - No. of nodes and CPUs, amount of RAM and wall-time.
- Remove files that aren't needed
 - /scratch3 folder after data processing is complete
 - Old raw data, temporary products , etc.
- Use Singularity (cannot install software on nodes)



Don't:

- Don't run software/heavy processes on login node
- Don't place large files in your home directory (/users)
- Don't transfer using scp/rsync on the login node



Thank you!