

SBU Cluster: SARMAD

Present By:

SARMAD ADMIN

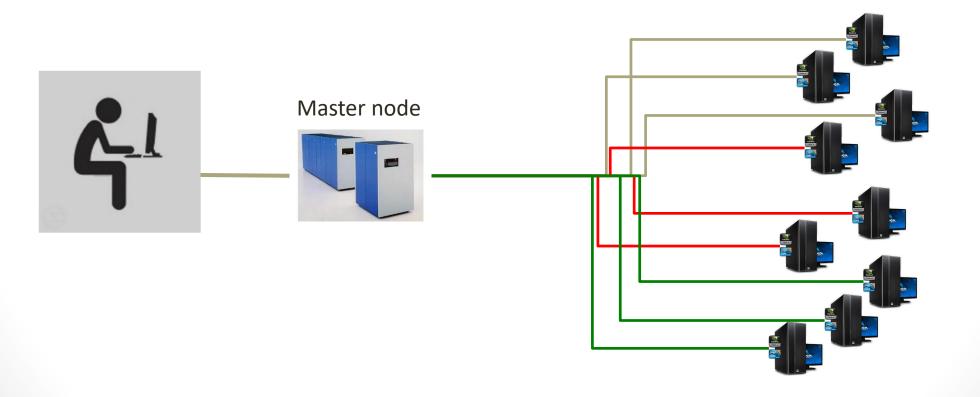
Research and technology support office, SBU

Outline

- Introduction to Cluster and its advantages
- Cluster resources
- How to login
- How to transfer data
- How to use Torque job scheduler
 - Submitting jobs
 - Monitoring jobs
 - Deleting jobs
- Running some samples

What is the Cluster?

- Like a large collection of high-cores and memory computers.
- Controlled by management software (Torque) which allocates tasks to each computer (node).



Cluster advantage ...

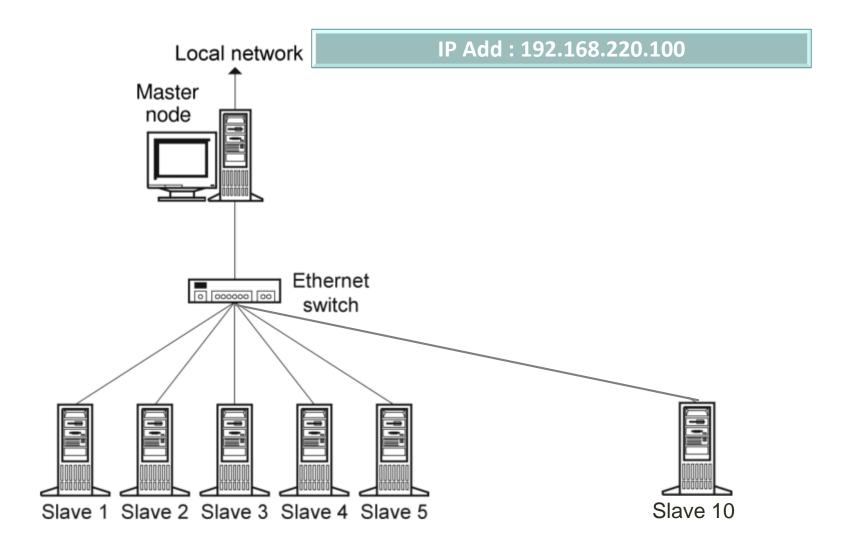
- Send computing tasks somewhere else
 - leave your PC free for other tasks.
- Carry out memory-intensive jobs
 - 4GB RAM on PC, up to 128GB RAM on cluster.
- Faster program execution using parallel coarse
 - Over 30Tflops
- Install programs once, use by everyone.



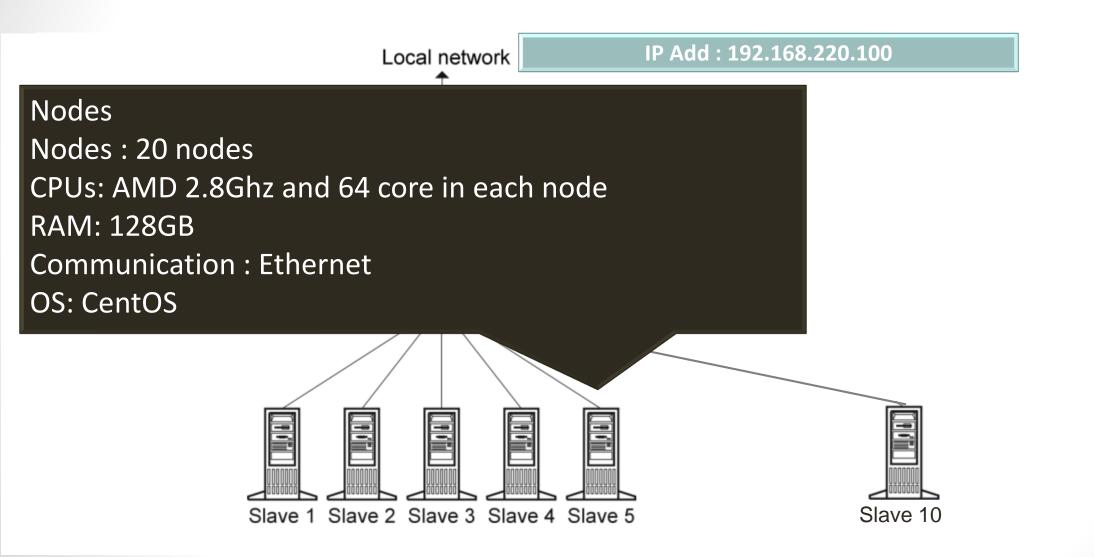


CLUSTER RESOURCES

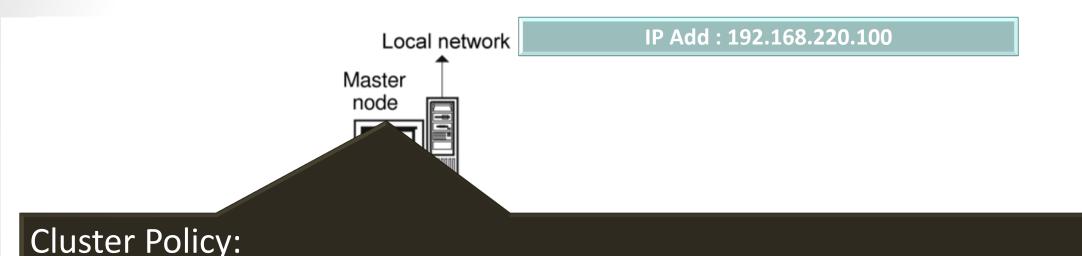
Cluster & Resources



Cluster & Resources



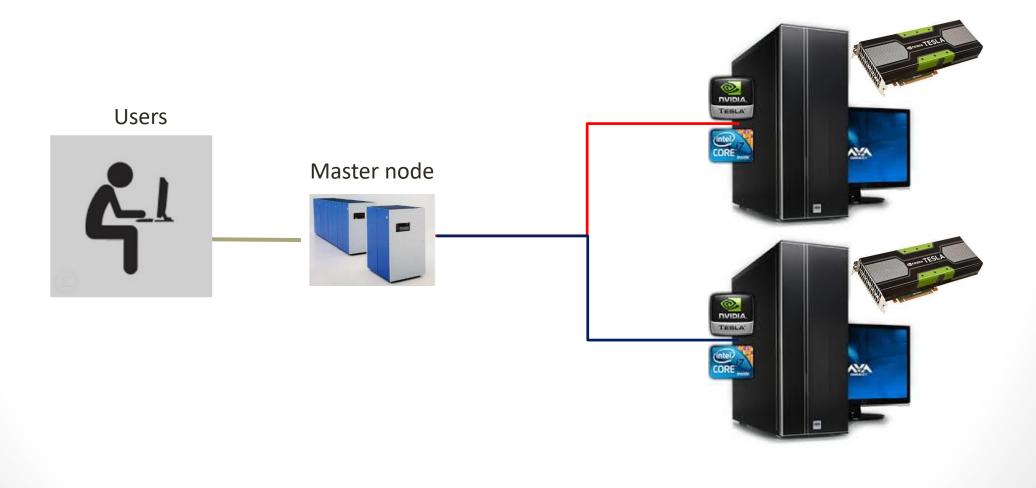
Cluster Config & Resources



- Hard disk usage is limited to 20 GB.
- Limited allocation of nodes and cores to 64 cores
- Server might be unstable for maintained and etc.

GPU Nodes

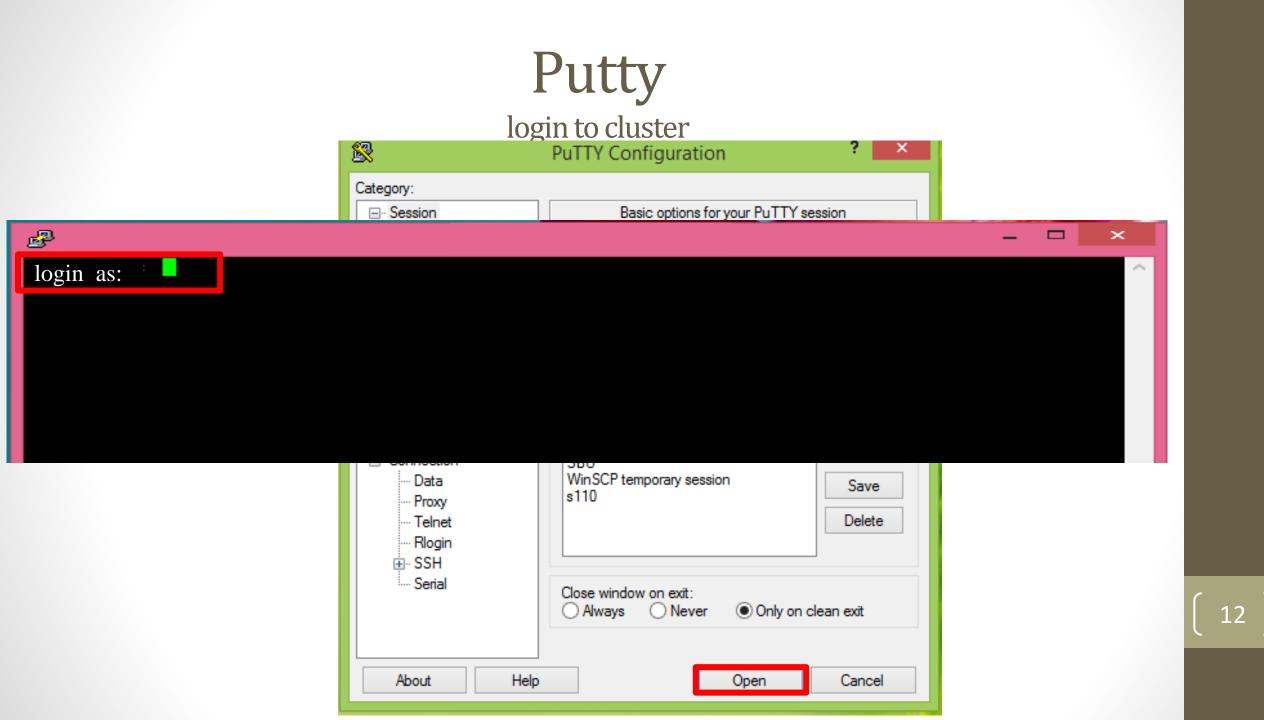
2 Nodes : Tesla K20X (2688 CUDA cores, 8GB GDDDR5)

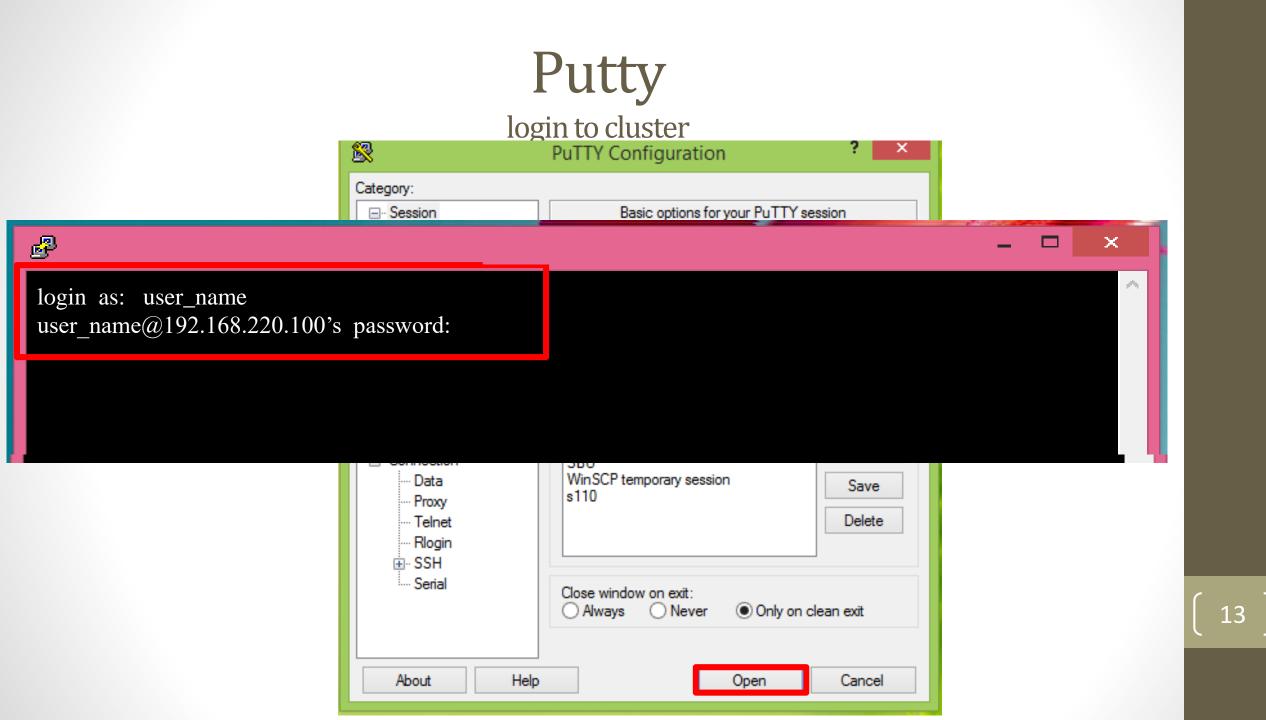


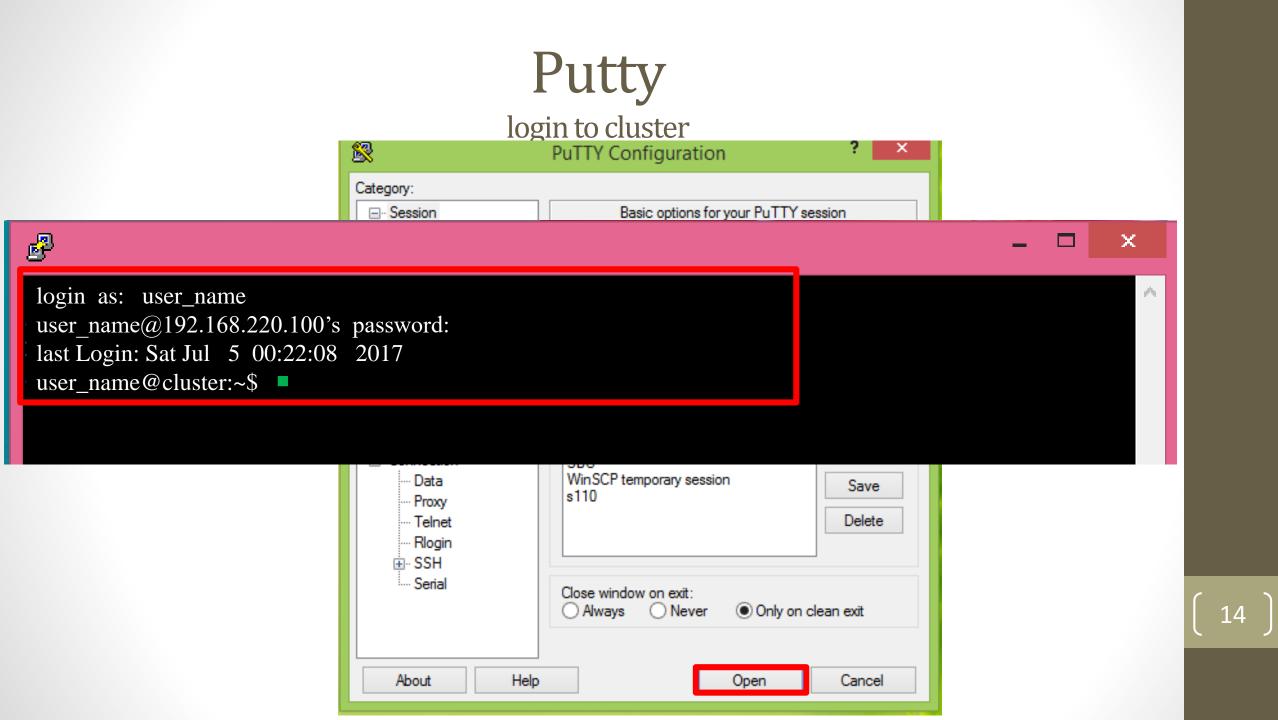
HOW TO USE...

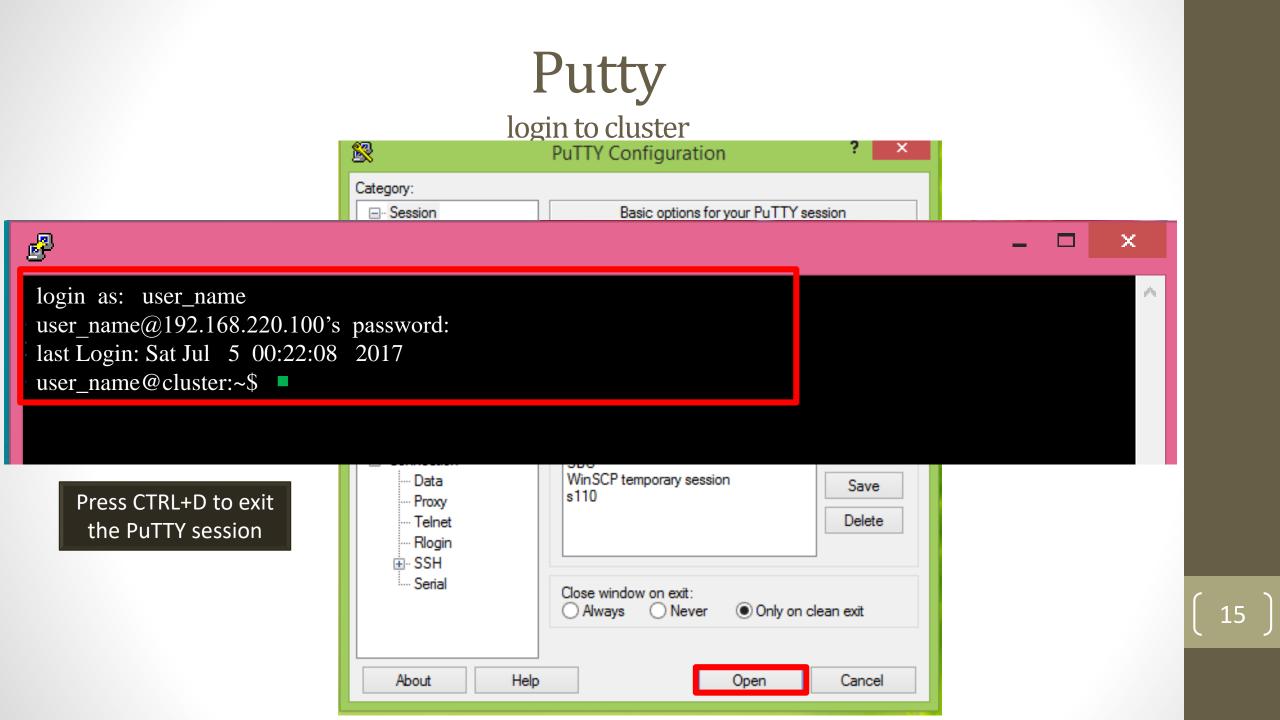
Putty login to cluster

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| About Help | Open | Cancel |









How to Transfer Data

"WinSCP is an open source SFTP client for Windows. Its main function is the secure file transfer between a local and a remote computer

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WinSCP



WinSCP

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WinSCP

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Job Scheduler

Torque Job scheduler: provides a method for handling jobs on a firstcome first-served basis. In this manner, all jobs will run more efficiently and finish faster since each is allowed to have all system resources for the duration of its run.

Torque Job Scheduler

• Commonly used TORQUE commands include:

| qsub | Submit a job. |
|-------|--|
| qstat | Monitor the status of a job. |
| qdel | Terminate a job prior to its completion. |

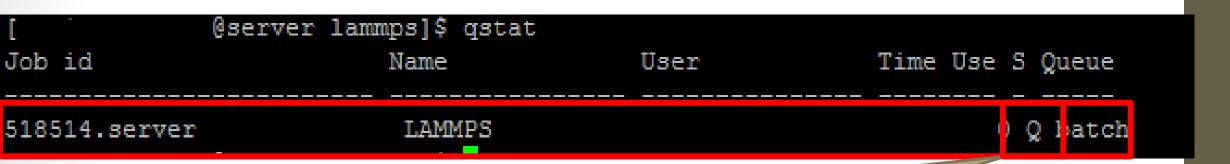
Submitting jobs

• \$ qsub <job script>

[user_name@cluster lammps]\$ qsub lammps.sh 518514.cluster.sbu.ac.ir [user_name@cluster lammps]\$

Monitoring jobs

• qstat



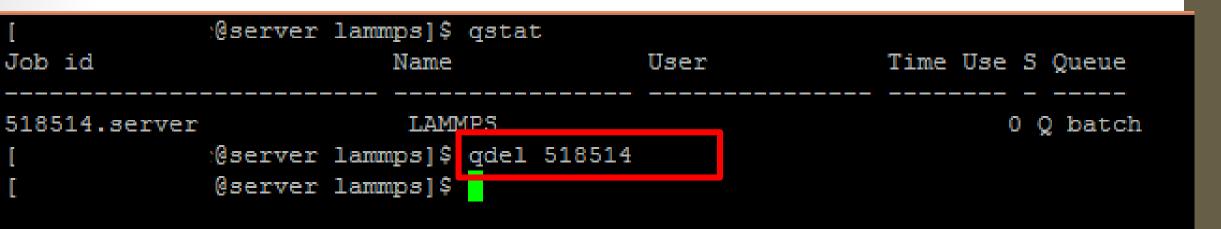
R: Running. E: Error. C: Completed. Q: Queued

Monitoring jobs

| • qstat [armintestuser@se Job id 518514.server | qstat option | Description | | |
|---|--------------|--|-------------|---|
| | -а | Displays all jobs | | |
| | e -r | Displays running jobs | | |
| | f | Displays the full listing of jobs (returns excessive detail) | S Queue | |
| | -n | Displays nodes allocated to jobs | Q batch | |
| | | | | |
| | | R: Running. E: Error. | | ſ |
| | C: (| | J | |
| | | | | |

Deleting jobs

• qdel <jobID>



Torque Script

A TORQUE job script for a job might look like this:

```
#PBS -N <Job Name>
#PBS -I nodes= <# of Node : default= 1> :ppn=<# of processor per node e.g.=1>
#PBS -q batch
#PBS -o $HOME/<job folder>/<job output file name>
#PBS -e $HOME/<job folder>/<job Error file name>
#PBS -l walltime=12:00:00
```

./<running file name and inputs e.g.="a.out">

Test

- Simple test
- OpenMp Test
- Lammps (Molecular Dynamics Simulator)

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Thanks for your attention