**Community Cluster Quick Reference Card**

**Quick Start**

**How do I log in?**
Use `ssh -Y` to connect to `myclustername.rcac.purdue.edu`. When you log in, you connect to a shared front-end machine on the cluster.

**How do I run my applications?**
You must submit jobs to Slurm queues for running your applications, as described below. Applications run directly on the front-ends you log in to will be automatically terminated.

**What is a job?**
A job is essentially a request for compute resources. After logging in to a cluster, you typically submit a job to get an allocation on a compute node for a specific duration.

**How do I submit a job?**
You can submit a job by running appropriate Slurm commands. Jobs can either be: a) batch – you submit a script to Slurm, or b) interactive – you manually type the commands in a terminal.

**What is Slurm?**
Slurm is a software (also called the scheduler) that runs on the cluster and allocates resources to users in units of jobs.

**What information do I need to provide when submitting a job?**
You typically need to specify how many nodes and cores are needed by your application, for how long, and the queue to submit the job to.

**What is a queue?**
A queue is a resource pool for your research group which gives you priority (faster) access to the compute nodes.

**Which queues can I use?**
Use `squeue` to see the names, status, and limits of all your queues.

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**Using Slurm**

**Q. How do I submit a batch job?**
To submit the job submission file `myfile.sh` to the queue `myqueue` and request 1 node with 32 processor cores per node and 32 MB RAM per node for a maximum run time of 5 hours, run the command:

```
$ sbatch -N 1 -n 32 -t 5:00:00 myfile.sh
```

**Q. How do I submit an interactive job?**
To submit an interactive job to the queue `myqueue` and request one core (for the default duration of 10 minutes), run the command:

```
sinteractive -A myqueue
```

**Q. Can you provide an example job script?**
Example job submission scripts can be found in the community cluster user guides.

https://www.rcac.purdue.edu/knowledge

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**Other Slurm Commands**

- `slist` list all queues that I can use and their current status and limits.
- `sfeatures` list the hardware resources available on all node types.
- `squeue -A myqueue` list all current jobs in the queue `myqueue`.
- `squeue -u myusername` list all current jobs from the user `myusername`.
- `jinfo myjobid` view all information about the job ID `myjobid`.
- `geany slurm-myjobid.out` view output from the currently running or completed job ID `myjobid`.
- `scancel myjobid` stop and delete the job ID `myjobid`.
- `scontrol hold myjobid` hold the job ID `myjobid` in the queue so it will not run.
- `scontrol release myjobid` release the held job ID `myjobid`, and allow it to run.

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**Storage**

**What storage options are available?**

<table>
<thead>
<tr>
<th>Name</th>
<th>Capacity</th>
<th>Purpose</th>
<th>Location</th>
<th>Environment variable</th>
<th>Lost file recovery</th>
<th>File transfer tools</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>25 GB</td>
<td>Persistent data (nodes, software, important results)</td>
<td>/home/myusername</td>
<td>SHOME</td>
<td>Yes, Use &quot;lost+found&quot;</td>
<td>Globus, SCP, FTP</td>
<td>• Use &quot;symlink&quot; to check usage</td>
</tr>
<tr>
<td>Scratch</td>
<td>200 TB</td>
<td>Temporary data (datasets, temporary files, results from simulations)</td>
<td>/scratch/clustername</td>
<td>SCRAK/SCRATCH</td>
<td>No</td>
<td>Globus, SCP, FTP</td>
<td>• Unsaved files purged every 60 days</td>
</tr>
<tr>
<td>Data Depot</td>
<td>On-demand</td>
<td>Shared group storage for persistent data (software, datasets, results)</td>
<td>/depot/groupname</td>
<td></td>
<td>Yes, Use &quot;lost+found&quot;</td>
<td>Globus, SCP, FTP, Network Drive</td>
<td>• Purchase required</td>
</tr>
<tr>
<td>Fortress</td>
<td>Unlimited</td>
<td>Data archived (back up your files here)</td>
<td>/home/myusername/groupname</td>
<td></td>
<td>No</td>
<td>Global, http, vss</td>
<td>• It is recommended to combine email files into tar archives before transfer.</td>
</tr>
</tbody>
</table>

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**Graphical and Interactive Use**

**Q. How do I use a graphical application on the cluster?**
There are multiple ways to launch a graphical application on the clusters as shown in the table below. The easiest solution will depend on which application you are trying to use and on your workflow.

<table>
<thead>
<tr>
<th>Terminal/Desktop</th>
<th>Open/Dולדend</th>
<th>VS Code</th>
<th>Interactive Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigate to</td>
<td>Navigate to</td>
<td>Connect to</td>
<td>SSH to</td>
</tr>
<tr>
<td><code>hostname:clustername.rcac.purdue.edu</code></td>
<td><code>hostname:clustername.rcac.purdue.edu</code></td>
<td><code>hostname:clustername.rcac.purdue.edu</code></td>
<td><code>hostname:clustername.rcac.purdue.edu</code></td>
</tr>
<tr>
<td><code>jupyter Notebook, RStudio, Desktop, etc.</code></td>
<td><code>jupyter Notebook, RStudio, Desktop, etc.</code></td>
<td><code>jupyter Notebook, Python scripts</code></td>
<td>Any graphical application can be launched.</td>
</tr>
</tbody>
</table>

**Important notes**
- Use Thinnvic client software for better graphical experience.
- Remember to select the right queue and walltime for your job.
- Setup SSH keys for easier login.
- Connect to a specific front-end node.

**Need more support?**

Email Support: rcac-help@purdue.edu
Please include which cluster you are using, your username/ID, applications (or modules) you are using, and any error messages or output you have received.

Coffee hour consultation
www.rcac.purdue.edu/coffee

Online documentation
www.rcac.purdue.edu/knowledge

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