



# LearnIT Express is on its way!

- The demonstration will start at 12:30 pm.
- To use the Live Chat:
  - Maximize your browser window so you can see the postings.
  - If you refresh the browser page, you'll need to log in again.
  - After the demonstration, staff will remain available in the chat for a few minutes to answer additional questions.

*Today's topic:*  
**Mills HPC Cluster**

# LearnIT Express: Let Lustre Shine for You



# Objectives

- Use the Lustre file system for all your work: `/lustre/work` or `/lustre/scratch`
- Keep `/home` as clean as possible.

# Why use Lustre?

- Performance
  - Accessible from all the nodes via QDR Infiniband.
- Capacity
  - 172 TB of usable space.
- Parallel file system
  - Ability to distribute very large files across many nodes.
- High Availability via failover and recovery



# /lustre/work

- Informal quota limit = ~1.25TB for most research groups.
- IT will provide periodic disk usage reports to *stakeholders*.
- Files and directories you create are shared to members of your research group = readable & executable, but not writable.



# /lustre/scratch

- No quota.
- IT will clean up as needed to prevent a full file system.
- Files and directories created by you are shared to everyone = readable & executable, but not writable.



# /home

- Quota hard limit = 2GB.
- Keep it clean.
- Many applications use it.
- Not shared = readable, executable & writable to you only.
- Backed up by IT - self recovery.

# Using /lustre/work

1. Choose your workgroup and change to that workgroup's directory.
  - `workgroup -c -g <investing_entity>`
2. Make your personal or project directory
  - **Personal:** `mkdir $USER`
  - **Project:** `mkdir -m 1770 samples-aba`
3. Copy files into, submit jobs, copy files out.



# Organizing /lustre/work

One example from the Mills documentation:

```
/lustre/work/<investing_entity>/  
    | - projects/  
        | - fuelcell/  
        | - turbulence/  
    | - users/  
        | - boltzman  
        | - jjkim  
        | - ksridhar
```

*<investing\_entity>* = workgroup

# Principal *Stakeholder's* setup

1. Choose your workgroup and change to that workgroup's directory.
  - `workgroup -c -g <investing_entity>`
2. Create `users` and `projects` directories.
  - `mkdir -m 1770 users`
  - `mkdir -m 1770 projects`
3. Request group members to *make* or *move* directories into the `users` or `projects` directory.
  - Modify any aliases or scripts referring to your personal or project work directory.

# Group member's setup: make

1. Choose your workgroup and change to that workgroup's directory.
  - `workgroup -c -g <investing_entity>`
2. Change to the `users` or `projects` directory.
  - **Personal:** `cd users`
  - **Project:** `cd projects`
3. Make your personal or project directory.
  - **Personal:** `mkdir $USER`
  - **Project:** `mkdir -m 1770 sample-abc`

# Group member's setup: move

1. Choose your workgroup and change to that workgroup's directory.
  - `workgroup -c -g <investing_entity>`
2. Move your personal or project directory
  - **Personal:** `mv $USER users`
  - **Project:** `mv sample-abc projects`



# Using organized /lustre/work

1. Choose your workgroup and change to that workgroup's directory.
  - `workgroup -c -g <investing_entity>`
2. Change to your personal or project directory
  - Personal: `cd users/$USER`
  - Project: `cd projects/samples-aba`
3. Copy files into, submit jobs, copy files out.



# Using /lustre/scratch

1. Choose your workgroup
  - `workgroup -g <investing_entity>`
2. Change to /lustre/scratch directory
  - `cd /lustre/scratch`
3. Make a directory
  - **Project:** `mkdir samples-aba`
4. Change to your new directory
  - **Project:** `cd samples-aba`
5. Copy files into, submit jobs, copy files out, *remove directory*.

# Using qsub or qlogin

- Keep it simple!
- Change to your working directory on /lustre/work or /lustre/scratch
- Both qsub and qlogin retain the current working directory (cwd).
- All files used for execution, input and output are in the "cwd," so let it do the job for you!



# Summary

- Use the Lustre file system for all your work: `/lustre/work` and `/lustre/scratch`
- Lustre provides the greatest capacity and best performance, so let it polish your jobs.
- A bit cloudy on Lustre and need a little buffing? Just submit a help request.





# More information

- **IT Research Computing**

<http://www.it.udel.edu/research-computing>

- - Alerts
  - Announcements
  - Resources: Training

# Contact the IT Support Center

- **Email:** [consult@udel.edu](mailto:consult@udel.edu)

If you make the first line of the e-mail message

Type=Cluster-Mills

your question will be routed more quickly.

- **Phone:** (302) 831-6000
- **Text:** (302) 722-6820

