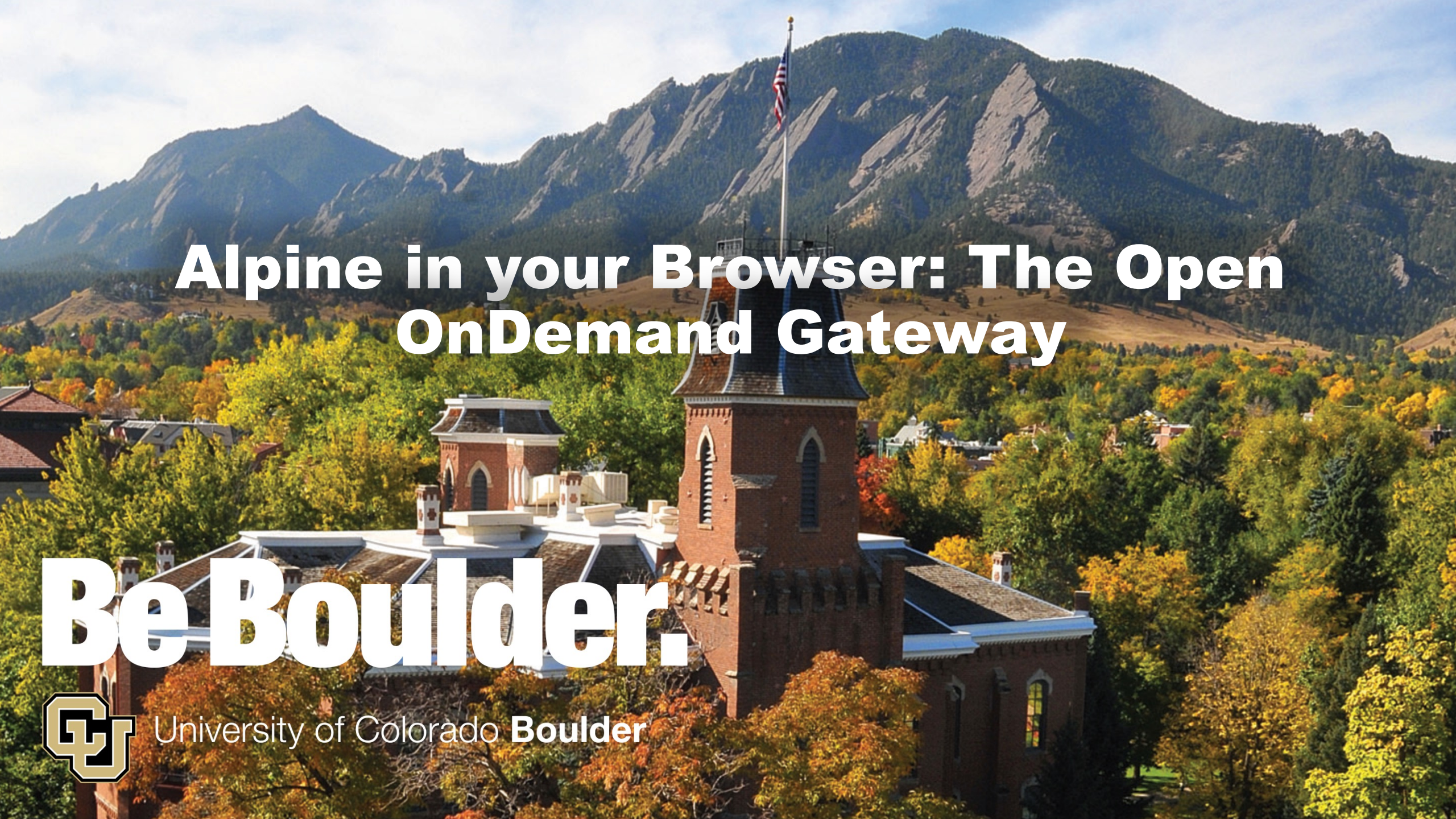

Alpine in your Browser: The Open OnDemand Gateway
Be Boulder.
University of Colorado Boulder

Alpine in your Browser! The Open OnDemand Gateway

Instructors: Trevor Hall, Brandon Reyes

- Website: www.rc.colorado.edu
- Helpdesk: rc-help@colorado.edu
- Slides: https://github.com/ResearchComputing/OpenOnDemand

- Survey: http://tinyurl.com/curc-survey18

RMACC Cyber Infrastructure

- https://ask.cyberinfrastructure.org/c/rmacc/65
- This forum provides an opportunity for RMACC members to converse amongst themselves and with the larger global research computing community.
- The “go to” general Q&A platform for the global research computing community - researchers, facilitators, research software engineers, CI engineers, sys admins and others.

Agenda

- About Open OnDemand
  - What is ACCESS-CI?
- How to log in to Open OnDemand
- Features of Open OnDemand
  - Using the Shell
  - File Transfer
  - Job Monitoring and Composer
- Interactive Applications
  - Demos!

Open OnDemand

- Open OnDemand is an NSF-funded open-source HPC portal based on the Ohio Supercomputing Center's original OnDemand portal
- Enables web access to HPC resources, including:
  - Easy file management
  - Command-line shell access
  - Job management and monitoring across different batch servers and resource managers
  - Graphical desktop environments and desktop applications

Open OnDemand (at CURC)

- Open OnDemand provides a browser-based interface to interact with Alpine and Blanca!
- All CURC users can access Open OnDemand
  - CU Users: https://ondemand.rc.colorado.edu/
  - CSU, AMC, RMACC users: https://ondemand-rmacc.rc.colorado.edu
- Notable Features:
  - SSH-free terminal access
  - Remote desktop
  - Jupyter Notebooks
  - RStudio
  - MATLAB

ACCESS-CI (RMACC Users Only)

- ACCESS-CI provides:
  - Allocations
  - Support
  - Operations
  - Metrics
- Supports CURC by managing RMACC users
- Get an ACCESS-CI Account: https://identity.access-ci.org/new-user.html

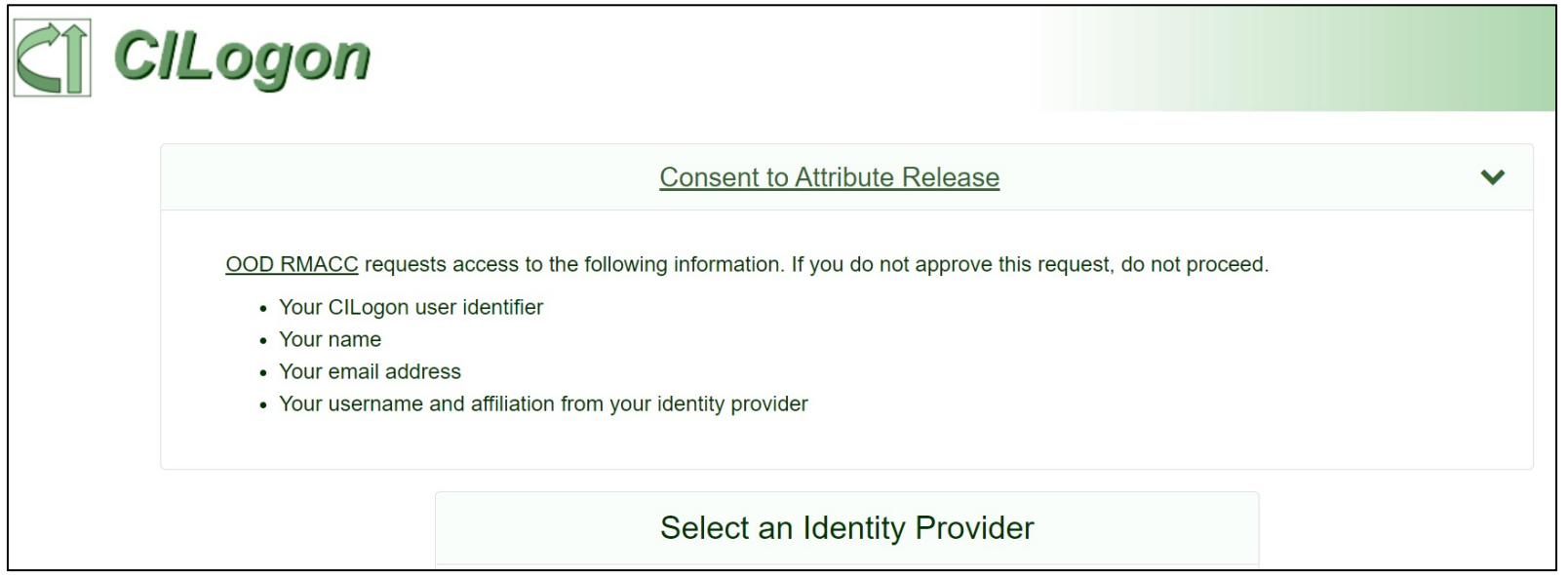
ACCESS-CI (RMACC Users Only)

- Once you have an ACCESS-CI Account, reach out to us with the following information:
  - Your ACCESS-CI username
  - Your institutional affiliation
  - Your role
  - Your department
  - Your first and last name
  - Your preferred email address
- We will provision you an account!

Logging in to Open OnDemand

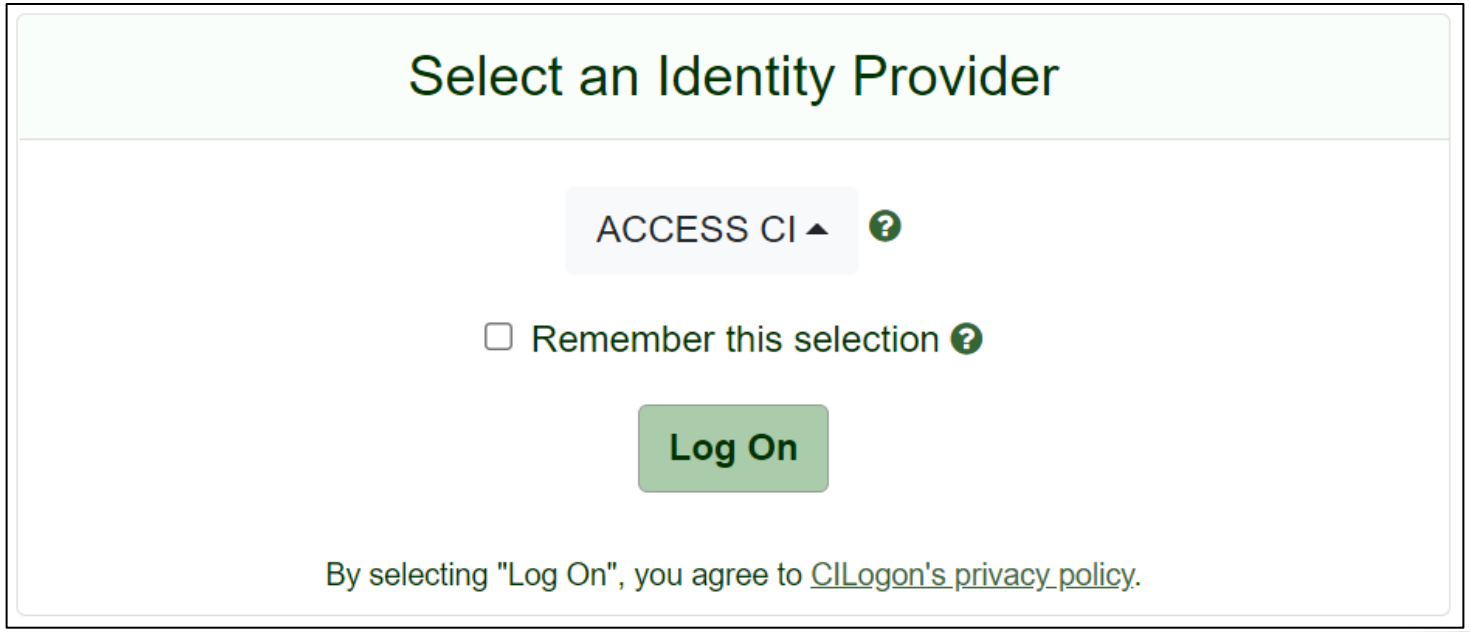
Logging In

- CU Boulder: https://ondemand.rc.colorado.edu/
- RMACC: https://ondemand-rmacc.rc.colorado.edu
  - You will be re-directed to the CILogon sign-in page:



Logging In (RMACC Users Only)

- Select your identity provider.
  - If you are a CSU user, select ‘Colorado State University’
  - If you are from **any** other institution, select ‘ACCESS CI (XSEDE)’

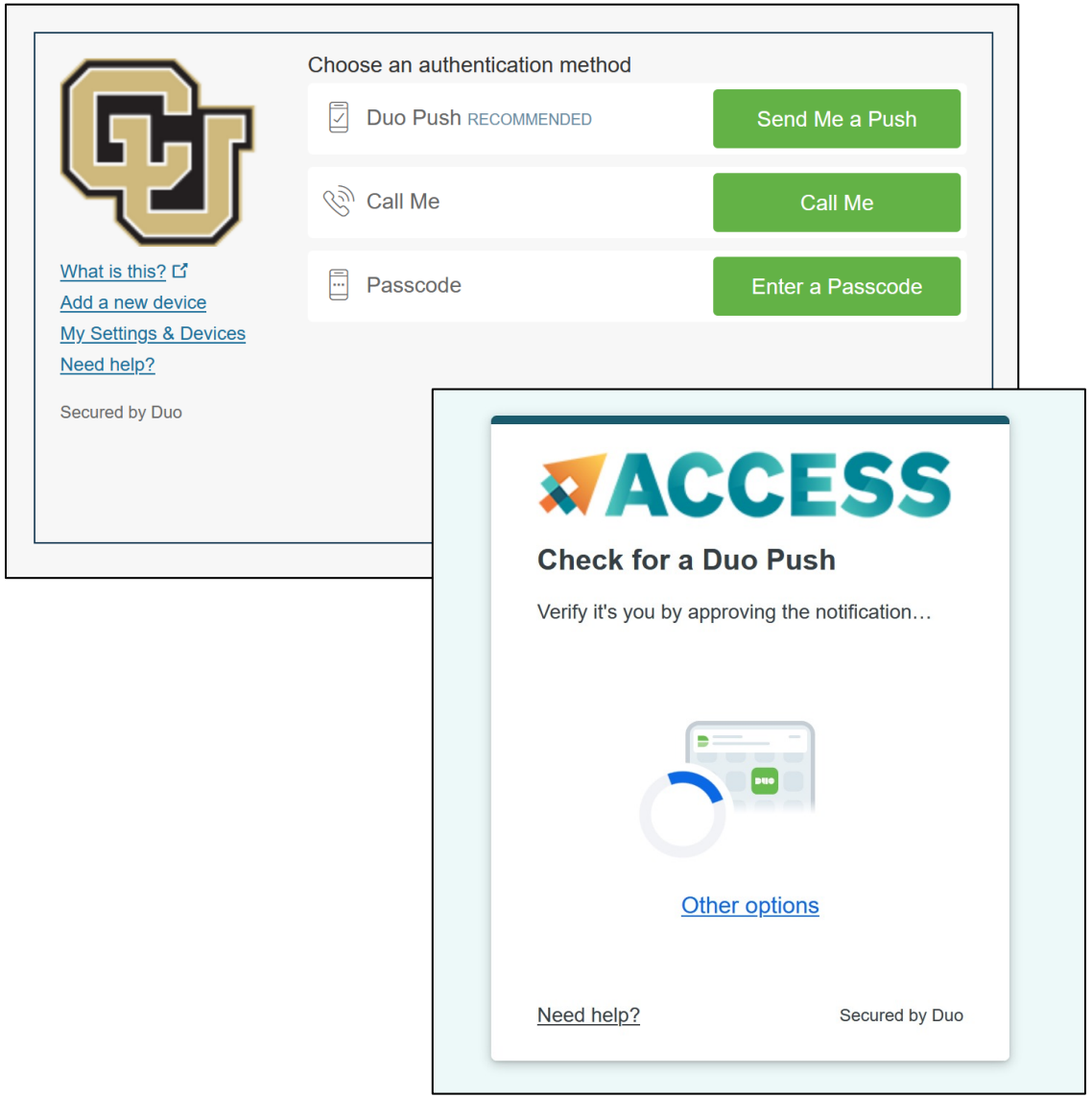


Logging In (cont.)

- CU Boulder: Authenticate with your Identikey and Password
- CSU: Authenticate with your EID and Password
- RMACC: You will be redirected to the ACCESS-CI login page
  - Use your ACCESS username and password

Logging In

- Duo 2-Factor Authentication is a requirement for the security of our systems.
- CU Boulder and CSU users must have this configured prior to logging in
- RMACC users will be prompted to set up Duo 2FA upon logging in for the first time



Demo: Logging in to Open OnDemand

https://ondemand.rc.colorado.edu/

https://ondemand-rmacc.rc.colorado.edu

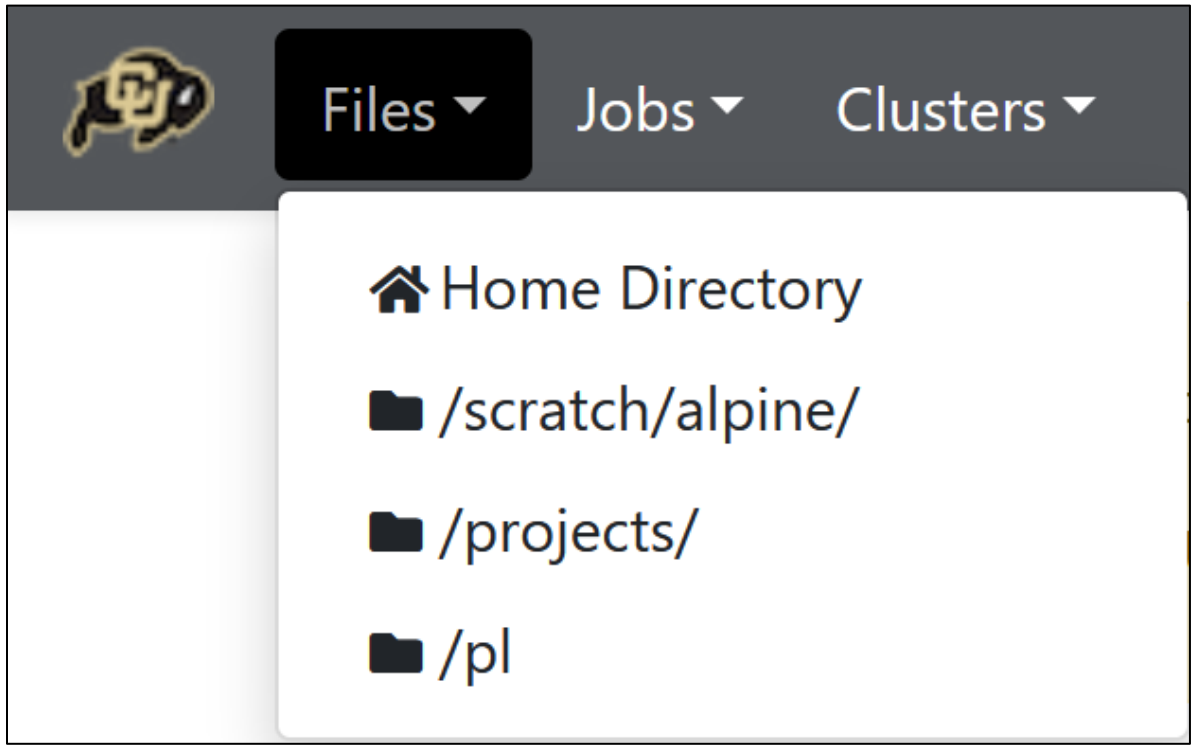
Features of Open OnDemand

OnDemand Home Page

- From the home page, you can access the following Open OnDemand Features:
  - Files
  - Jobs
  - Clusters
  - Interactive Apps
  - My Interactive Sessions

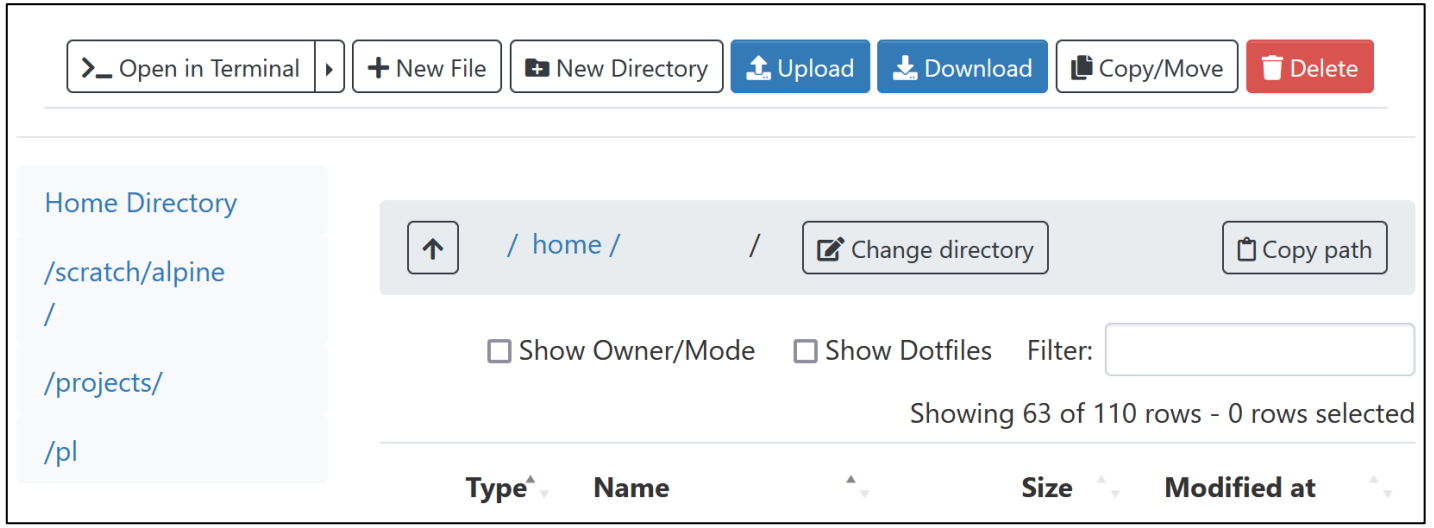
Files

- Open OnDemand allows you to navigate and manipulate your files
- You can access your entire CURC filesystem using this tool:
  - /home
  - /projects
  - /scratch/alpine
  - /pl (if applicable)



Files Management

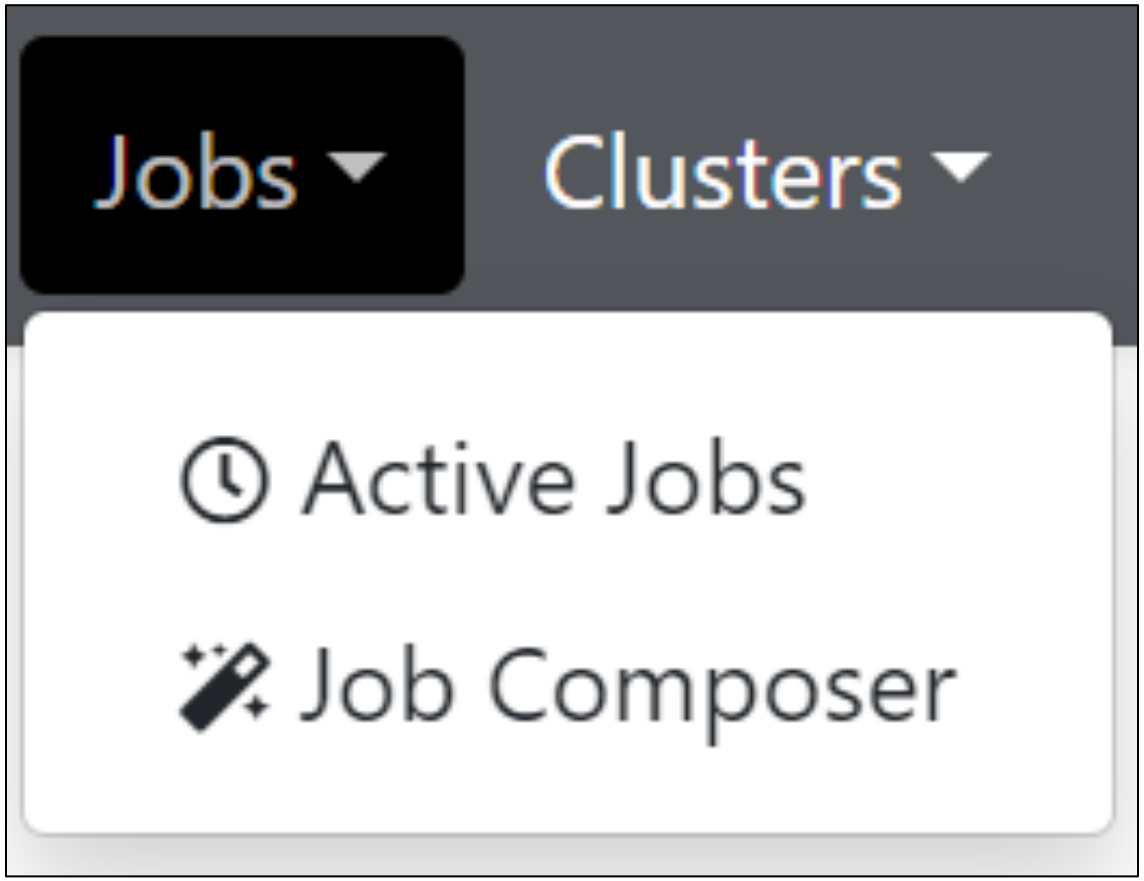
- On the files page you can:
  - Upload data
  - Download files
  - Create new files
  - Edit files
  - Copy/move data
  - Delete files
  - Create directories



Demo: File Transfer

Jobs

- Open OnDemand allows you to monitor jobs running on the system
  - You can monitor your own jobs, but you can also monitor **all** queued and running jobs
- You can also create and submit jobs using the **Job Composer** tool



Active Jobs

All Jobs ▾ All Clusters ▾

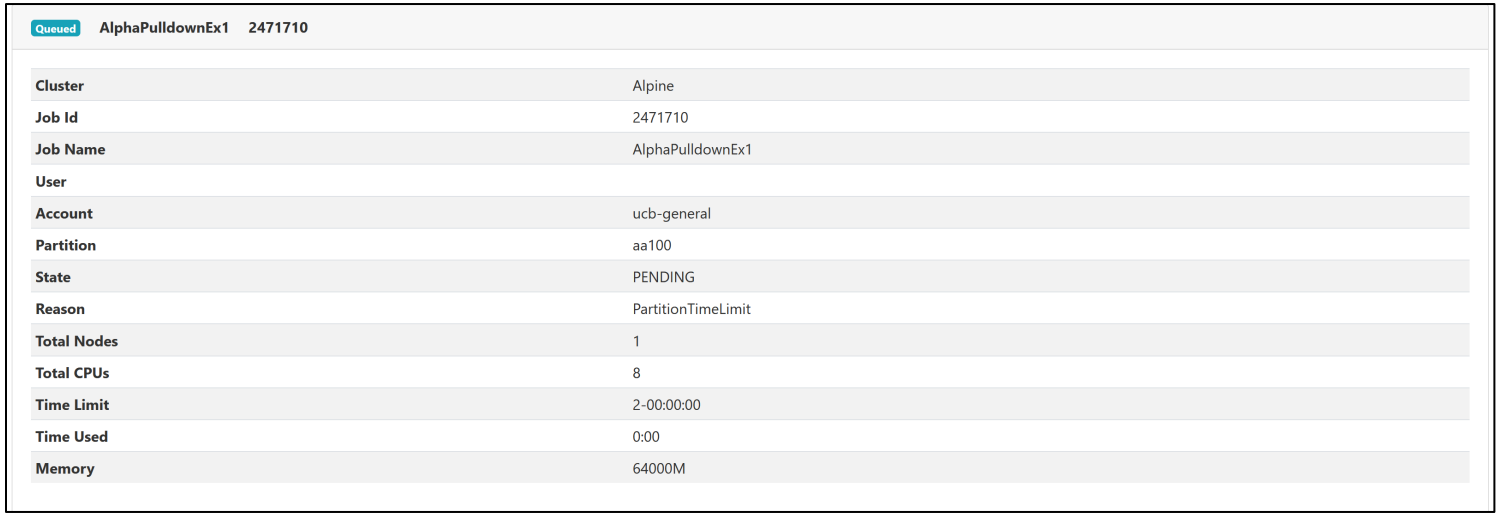
Active Jobs

Show 50 ▲▼ entries Filter:

	ID	Name	User	Account	Time Used	Queue	Status	Cluster	Actions
>	17096	sys/dashboard/sys/cu-desktop-presets		rmacc-general	00:33:24	core-gpu	Running	Core	
>	17102	sys/dashboard/sys/cu-desktop-presets		ucb-general	00:08:31	core-gpu	Running	Core	
>	17103	sys/dashboard/sys/bc_desktop/core		ucb-general	00:08:19	viz	Completed	Core	
>	17095	sys/dashboard/sys/bc_desktop/core		ucb-general	01:19:59	viz	Running	Core	
>	17100	sys/dashboard/sys/bc_desktop/core		ucb-general	00:10:58	viz	Running	Core	
>	17068	sys/dashboard/sys/bc_desktop/core		ucb-general	17:51:09	viz	Running	Core	

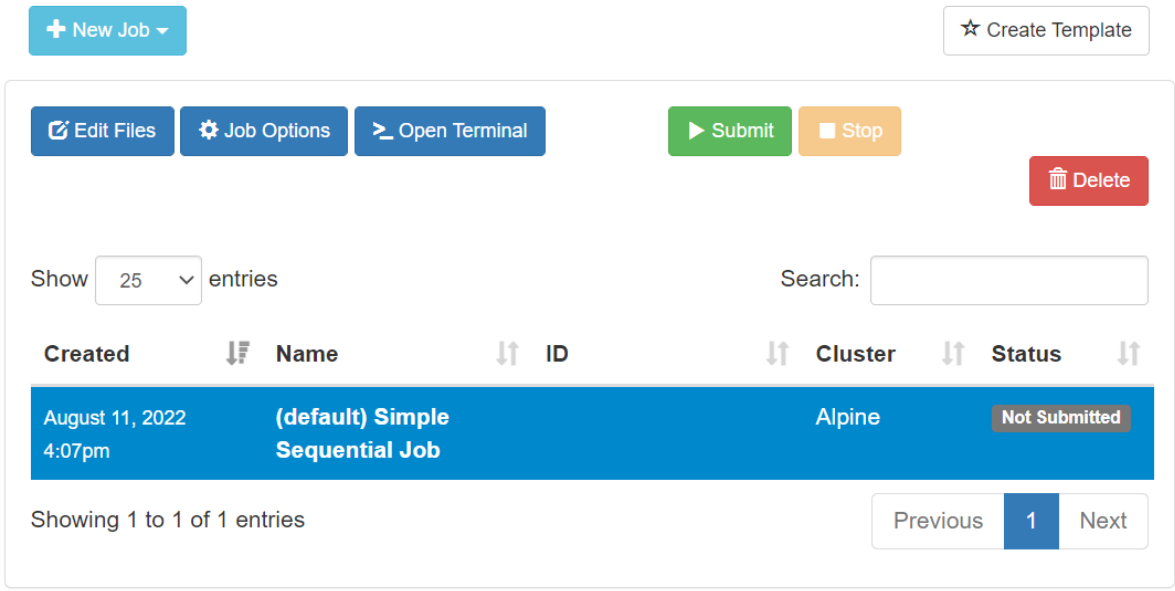
Active Jobs (cont.)

- Here you'll see a list of jobs on the selected cluster(s)
- If you select one of them, you can see details about the job



Job Composer

- With the Job Composer, you can create a script and submit to the scheduler
- Default templates are available, but you can use your own templates or edit using the built-in editor



Job Composer Options

Name

(default) Simple Sequential Job

Cluster

Alpine

Specify job script

main_job.sh

Files larger than 65KB are omitted for the job script field

Account

Account is an optional field. If not set, the account may be auto-set by the submit filter.

Job array specification

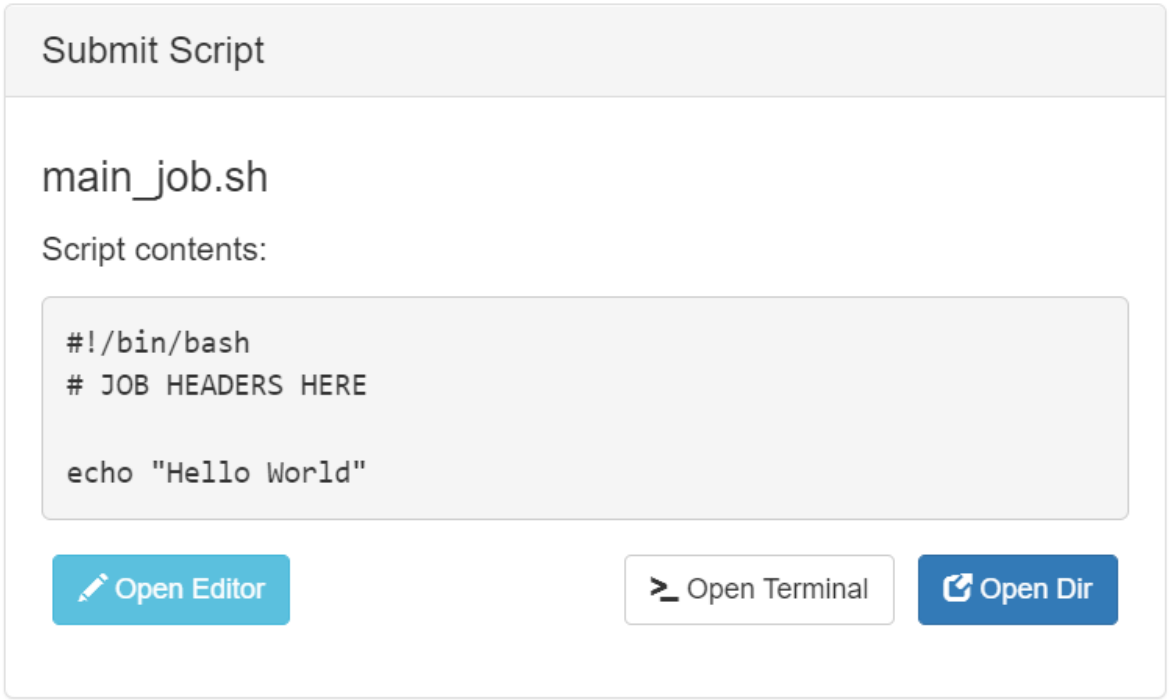
1-10

Job arrays are optional. e.g. 1-10

☐ Copy environment

Save Reset Back

Job Composer Script

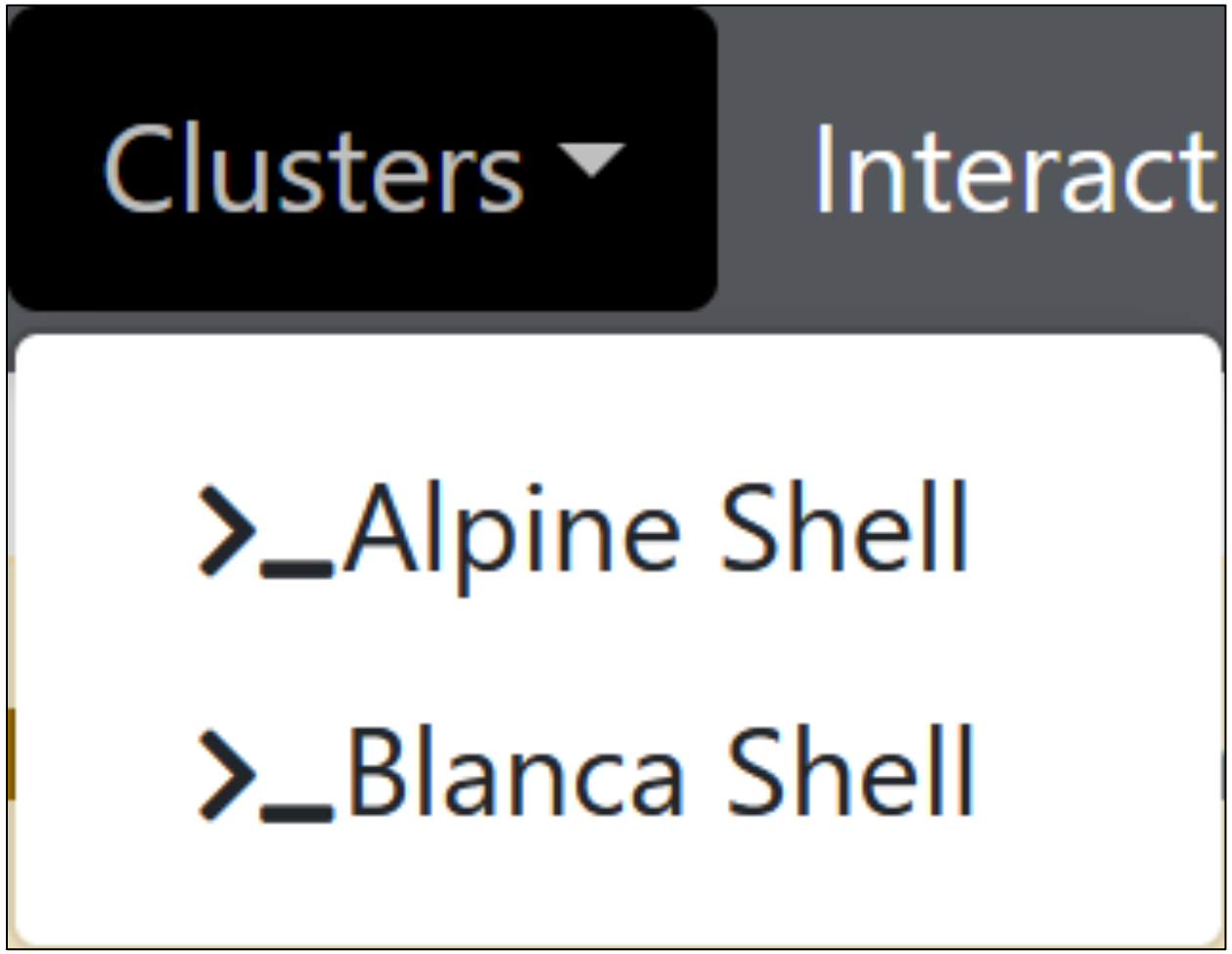


- Once you've added all of the options for your job, you can view the script template
- You can edit this file using OnDemand's built-in text editor

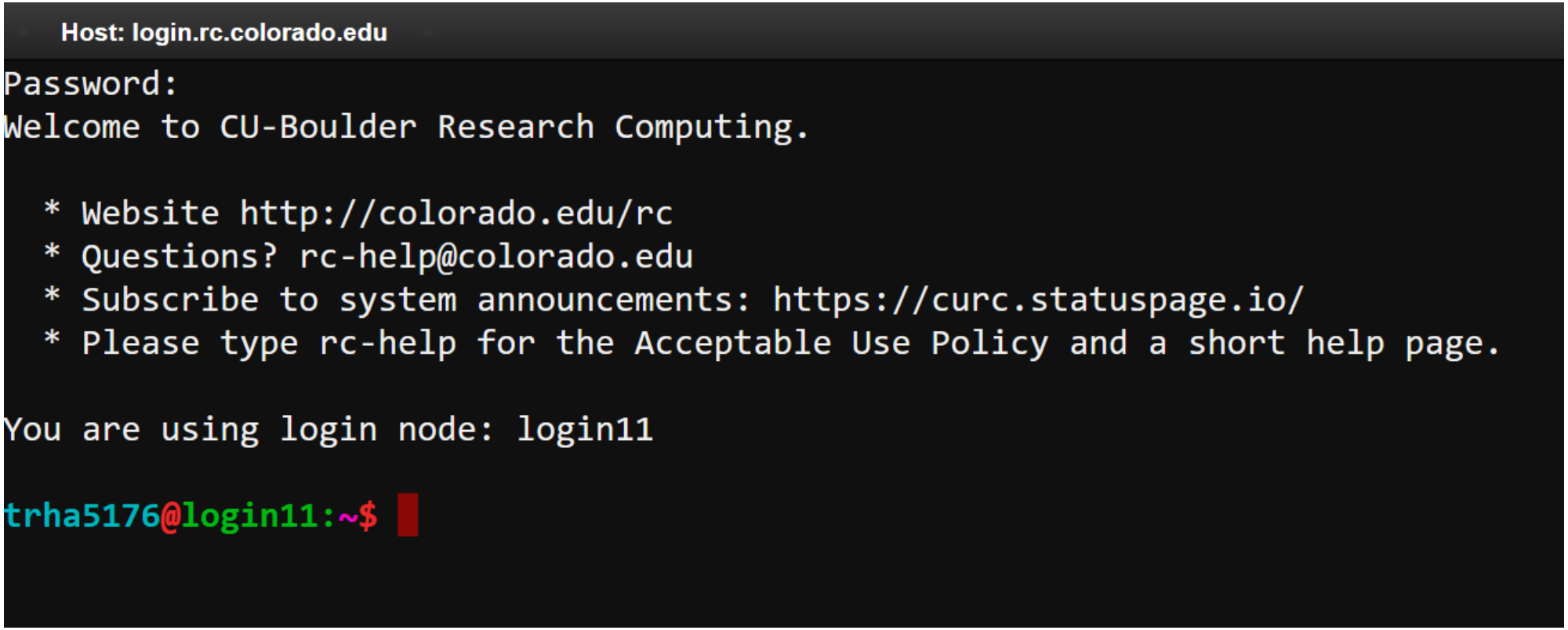
Demo: Using the Job Composer

Clusters

- Open OnDemand allows you to open a terminal in your browser, no SSH required



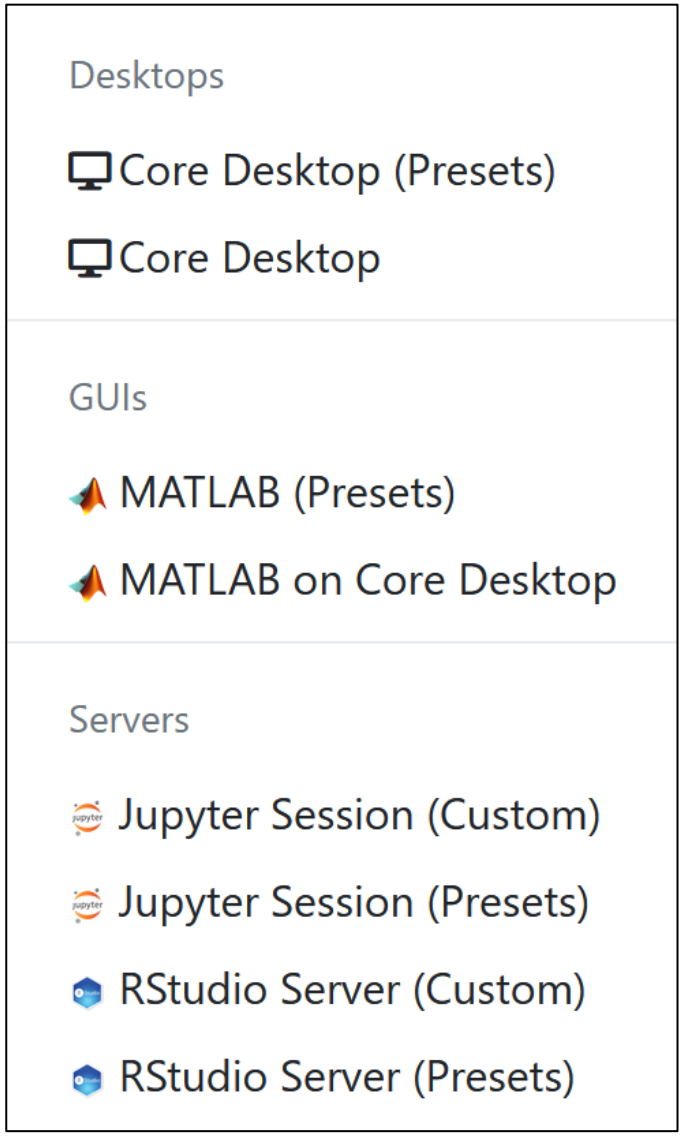
Terminal


Host: login.rc.colorado.edu
Password:
Welcome to CU-Boulder Research Computing.
* Website http://colorado.edu/rc
* Questions? rc-help@colorado.edu
* Subscribe to system announcements: https://curc.statuspage.io/
* Please type rc-help for the Acceptable Use Policy and a short help page.
You are using login node: login11
trha5176@login11:~$

Interactive Applications

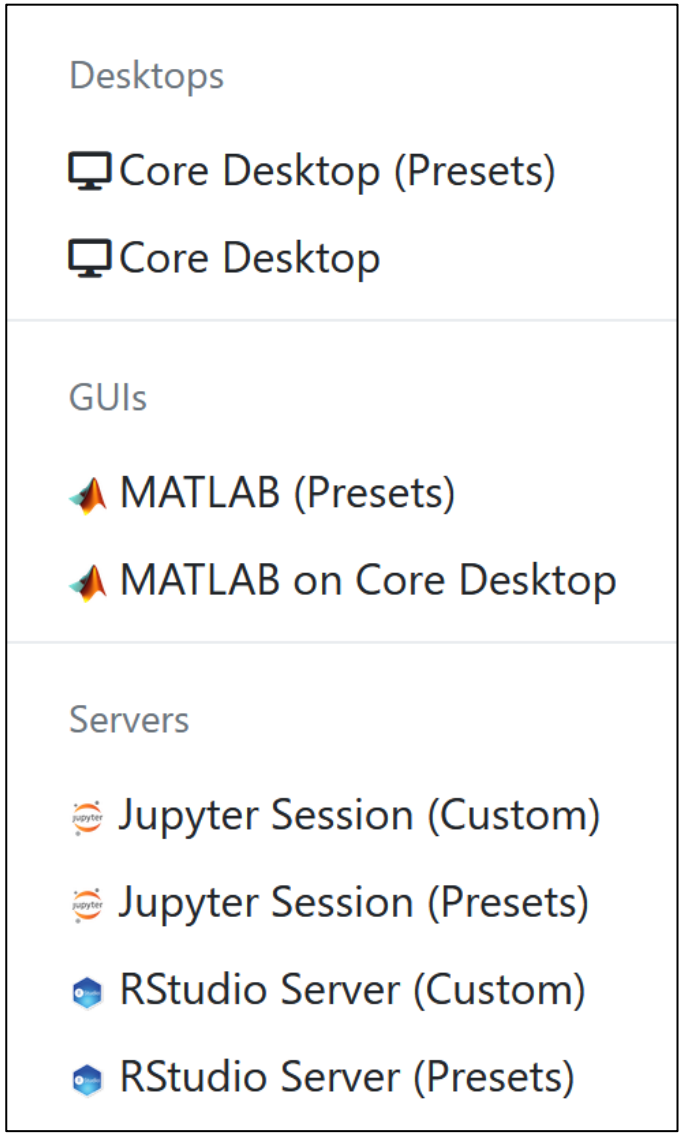
Interactive Apps

- Interactive apps are comprised of built-in Graphical User Interfaces (GUIs) for many of the most popular research applications
- Current Offerings Include:
  - Jupyter Notebooks
  - The Core Desktop
  - RStudio
  - MATLAB
  - …with more coming soon!



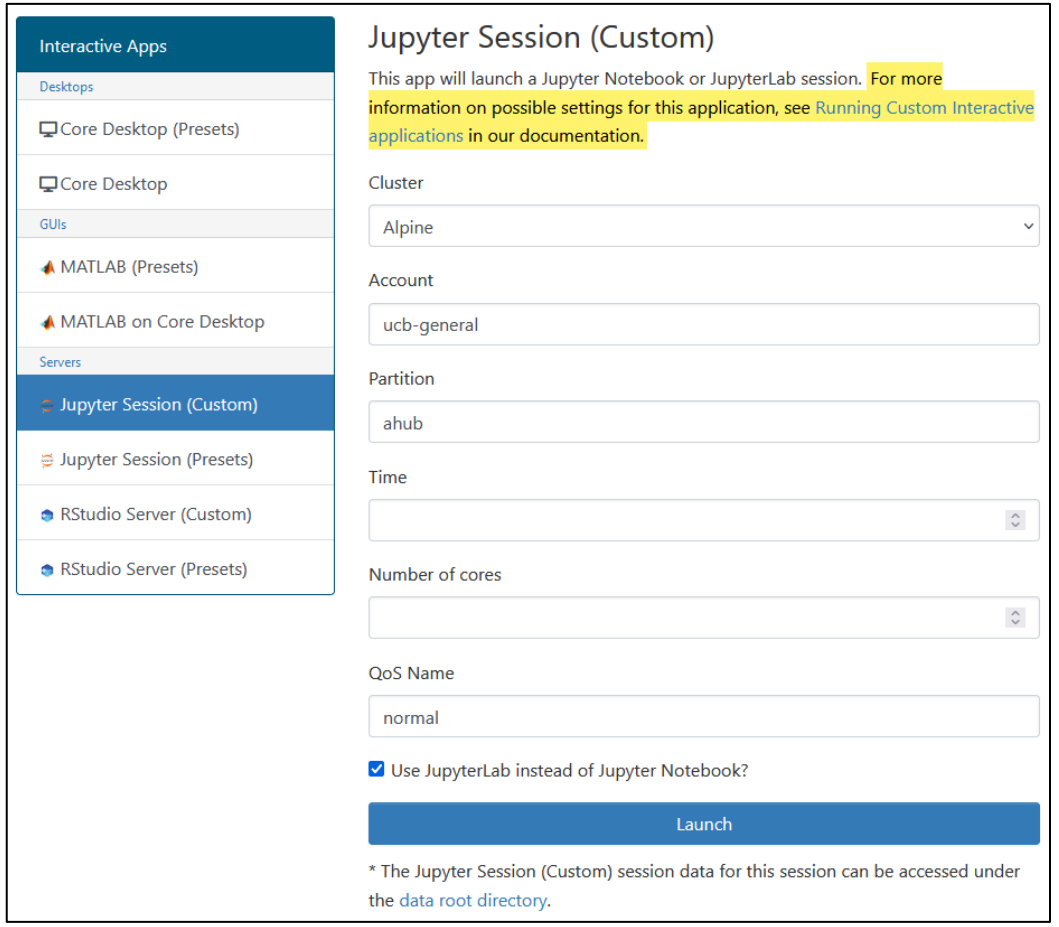
Interactive Apps (cont.)

- Each app comes with two spawning options: ‘Custom’ and ‘Presets’
  - ‘Custom’ allows you to spawn a session with customizable configurations
    - If your configurations are incompatible, your job will not run
  - ‘Presets’ allows you to spawn a session with common, functional configurations
    - Works ‘out of the box’



Jupyter Notebooks

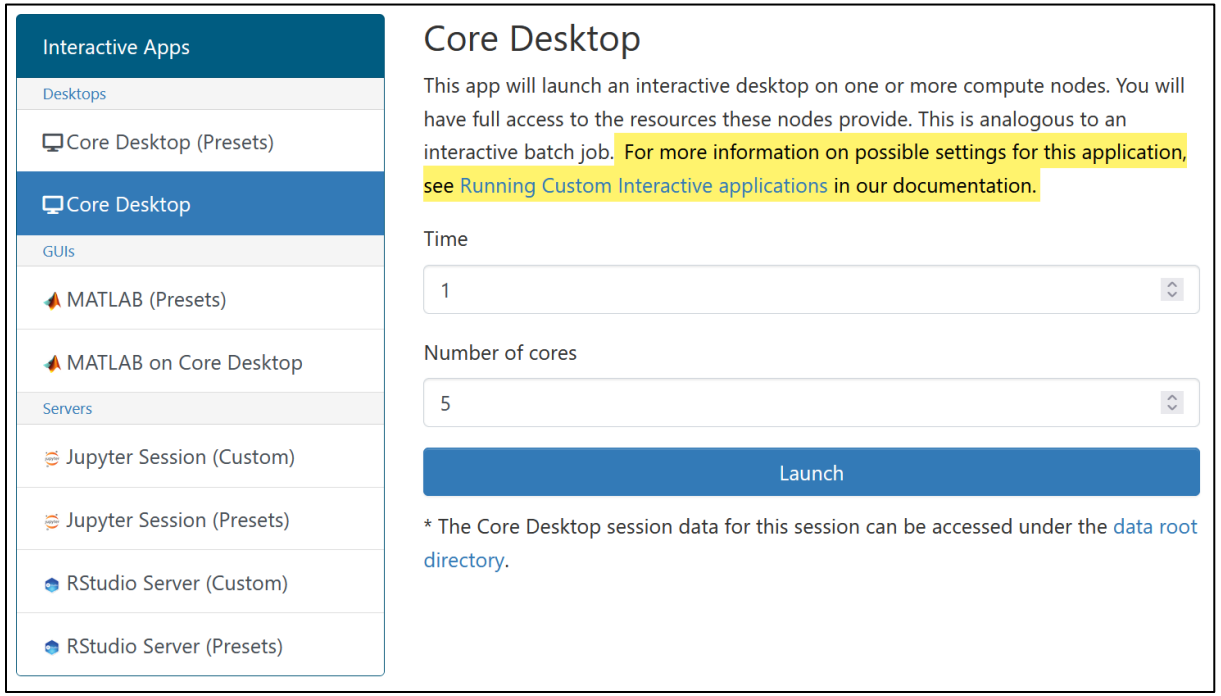
- We can spawn a Jupyter Notebook using Research Computing Resources
- Configuration options include:
  - Slurm Account
  - Partition
  - Requested time
  - Number of cores



Demo: Jupyter Notebooks

The Core Desktop

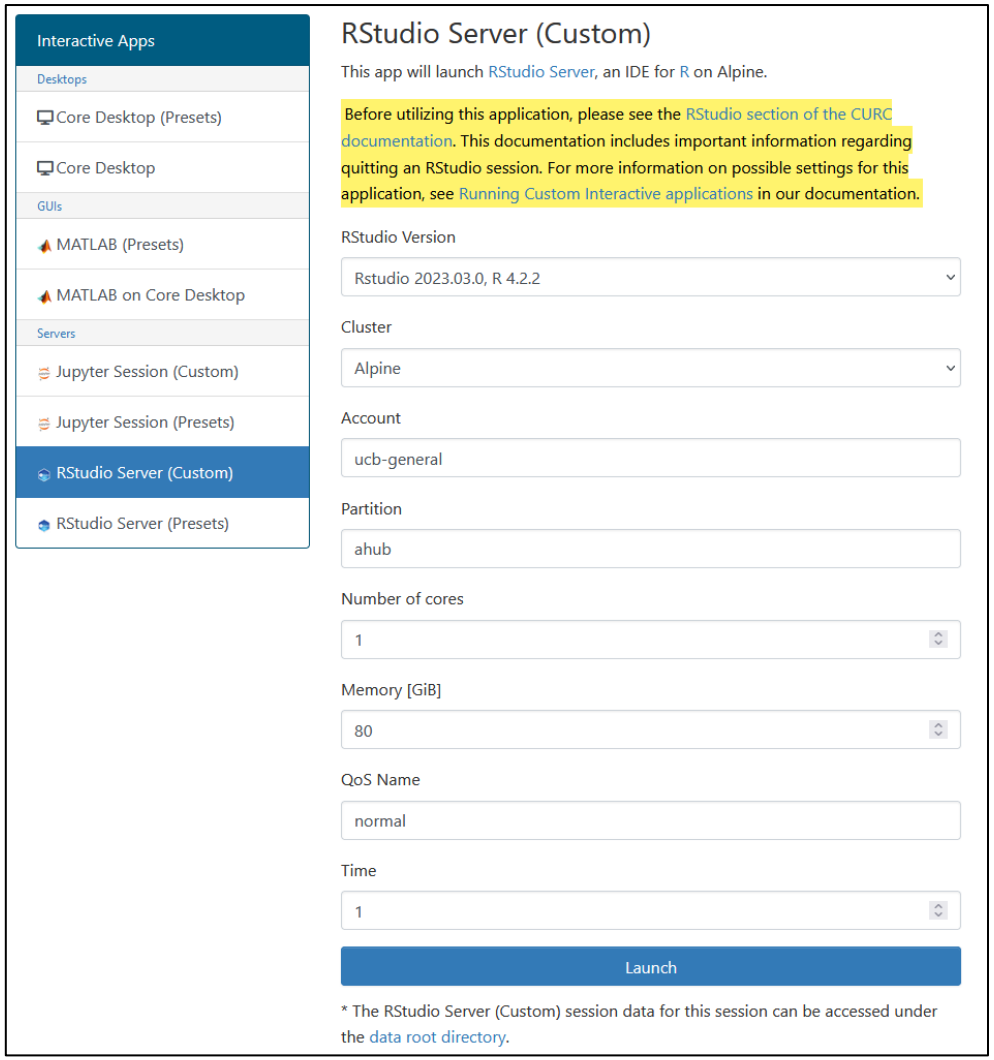
- To interact with a compute node in a graphical desktop environment, use the Core Desktop
- Configuration options include:
  - Requested Time
  - Number of Cores
- **If you are wanting to use a separate graphical application, you can run it on a Core Desktop**



Demo: The Core Desktop

RStudio

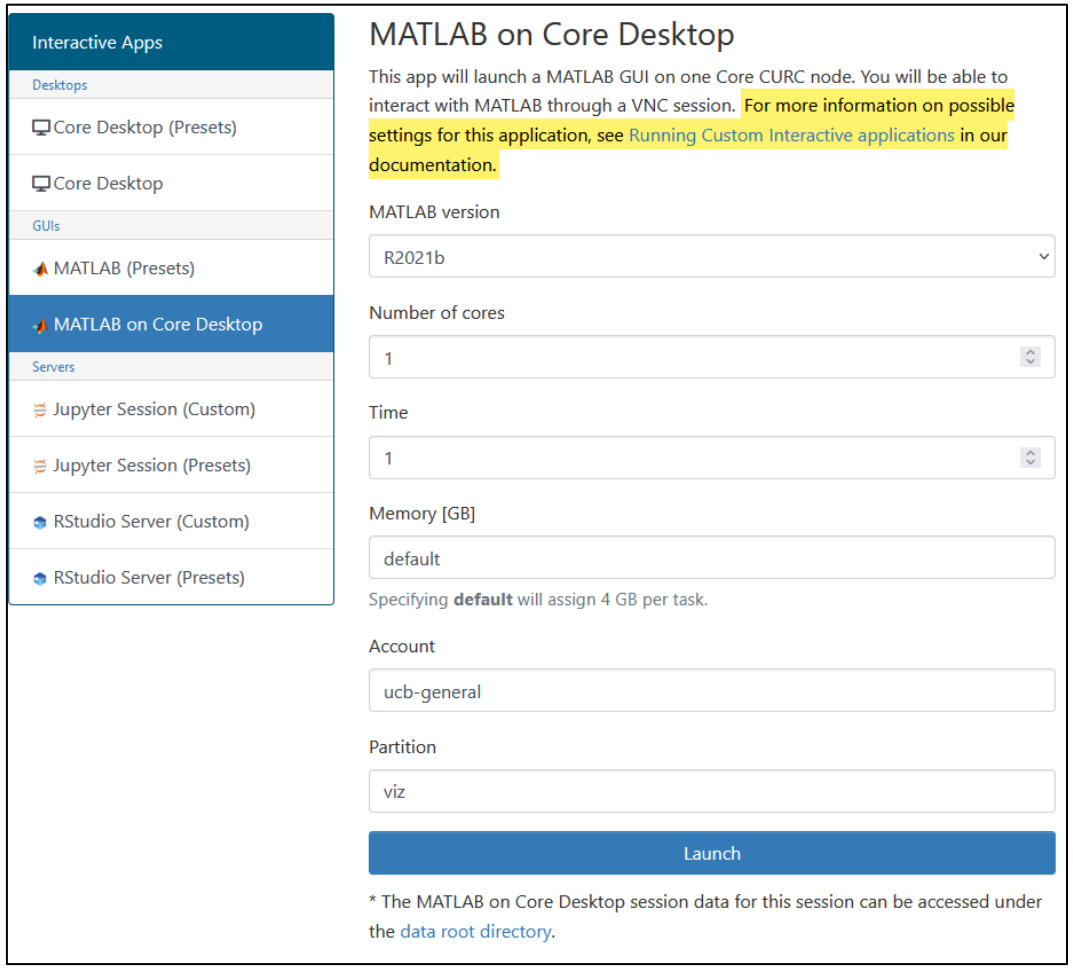
- We can test and run R programs in RStudio!
- Configuration options include:
  - Preferred R Version (4.2.2 exclusive, currently)
  - Cluster
  - Slurm Account
  - Partition
  - Number of Cores
  - RAM
  - QoS
  - Requested Time



Demo: RStudio

MATLAB

- We can run a MATLAB GUI on the Core Desktop!
- Configuration options include:
  - Preferred MATLAB version (R2016b – R2021b)
  - Number of Cores
  - Time requested
  - RAM
  - Slurm Account
  - Partition



Demo: MATLAB

Review: Learning Goals

- ~~About Open OnDemand~~
  - ~~What is ACCESS-CI?~~
- ~~How to log in to CURC resources~~
- ~~Features of Open OnDemand~~
  - ~~Using the Shell~~
  - ~~File Transfer~~
  - ~~Job Monitoring and Composer~~
- ~~Interactive Applications~~
  - ~~Demos!~~

Questions?

CURC User Policies: https://curc.readthedocs.io/en/latest/additional-resources/policies.html?highlight=policies#curc-user-policies

Survey and feedback

http://tinyurl.com/curc-survey18