Using Open OnDemand for Training and Education

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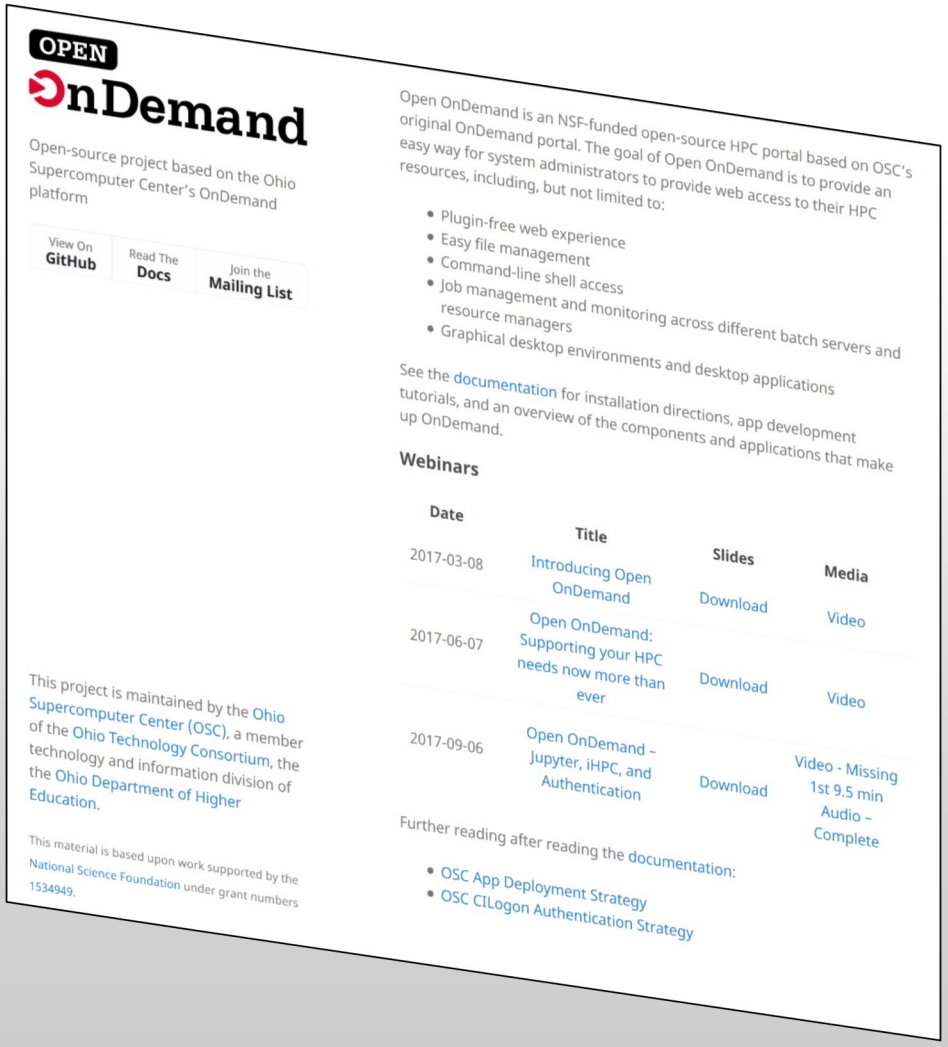
Webinar Agenda

1. **About Open OnDemand**
2. The 1.3 release & upcoming 1.4, 1.5, 1.6 release features
3. Future funding and collaboration
4. Using Open OnDemand for Education & Training

OPEN OnDemand

Staying in Touch

- Visit our website
  - http://openondemand.org
- Use our Discourse
  - https://discourse.osc.edu/c/open-ondemand
- Join our mailing list
  - https://lists.osu.edu/mailman/listinfo/ood-users
- Our webinars are planned roughly quarterly
  - Let us know what you'd like to learn about next



Supercomputing. Seamlessly.

Open OnDemand: Open, Interactive HPC Via the Web

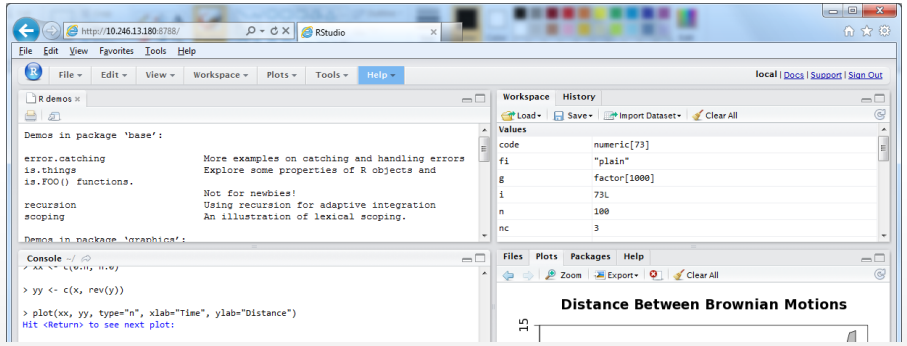
Provides an easy to install and use, web-based access to supercomputers, resulting in intuitive, innovative support for interactive supercomputing.

Features include:

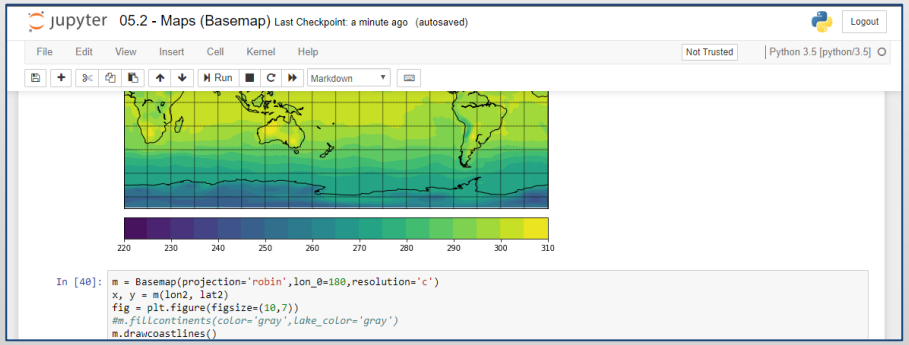
- Plugin-free web experience
- Easy file management
- Command-line shell access
- Job management and monitoring
- Graphical desktop environments and applications

Interactive Apps & Cluster Access

RStudio Server – R IDE

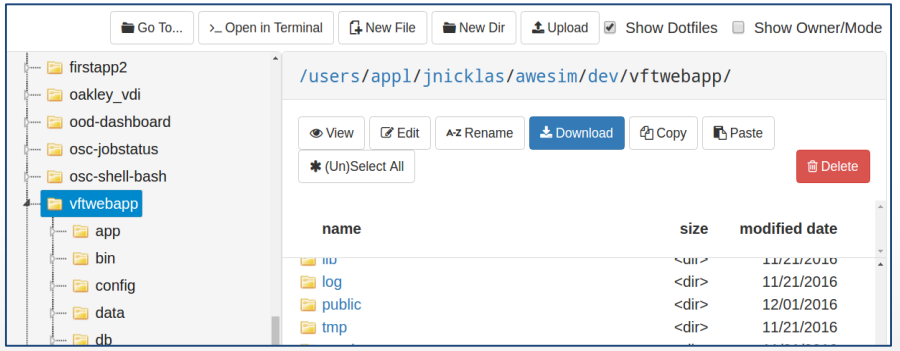


Jupyter Notebook – Python IDE

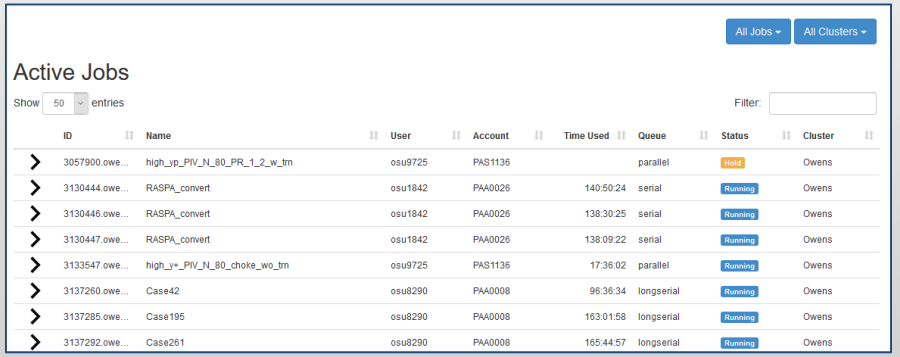


And many more, such as ANSYS Workbench, Abaqus/CAE, MATLAB, Paraview, COMSOL Multiphysics

File Access (browse, edit, etc)

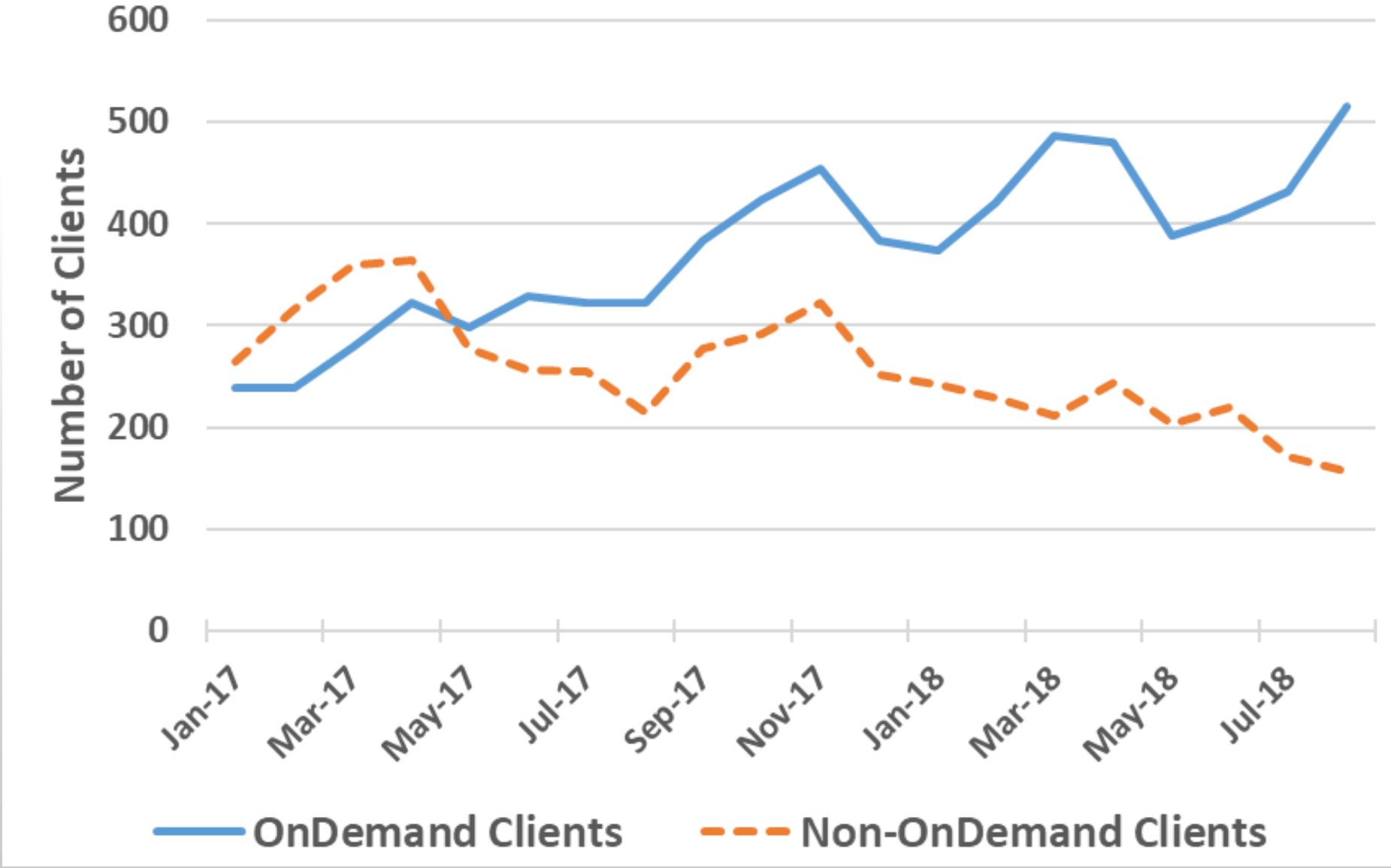


Manage Jobs (view, submit, etc)

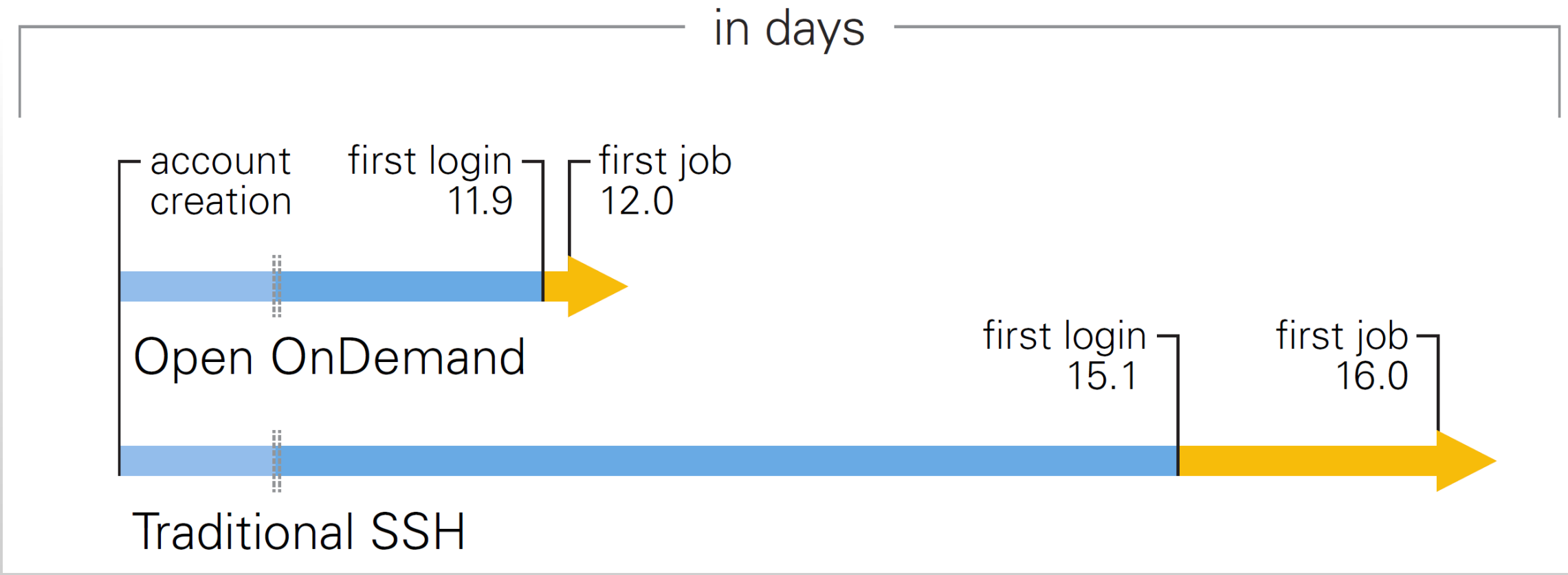


And many more, such as in-browser SSH terminal, job constructors, VNC desktops

OSC OnDemand Platform Clients



OSC OnDemand: Faster Time to Science



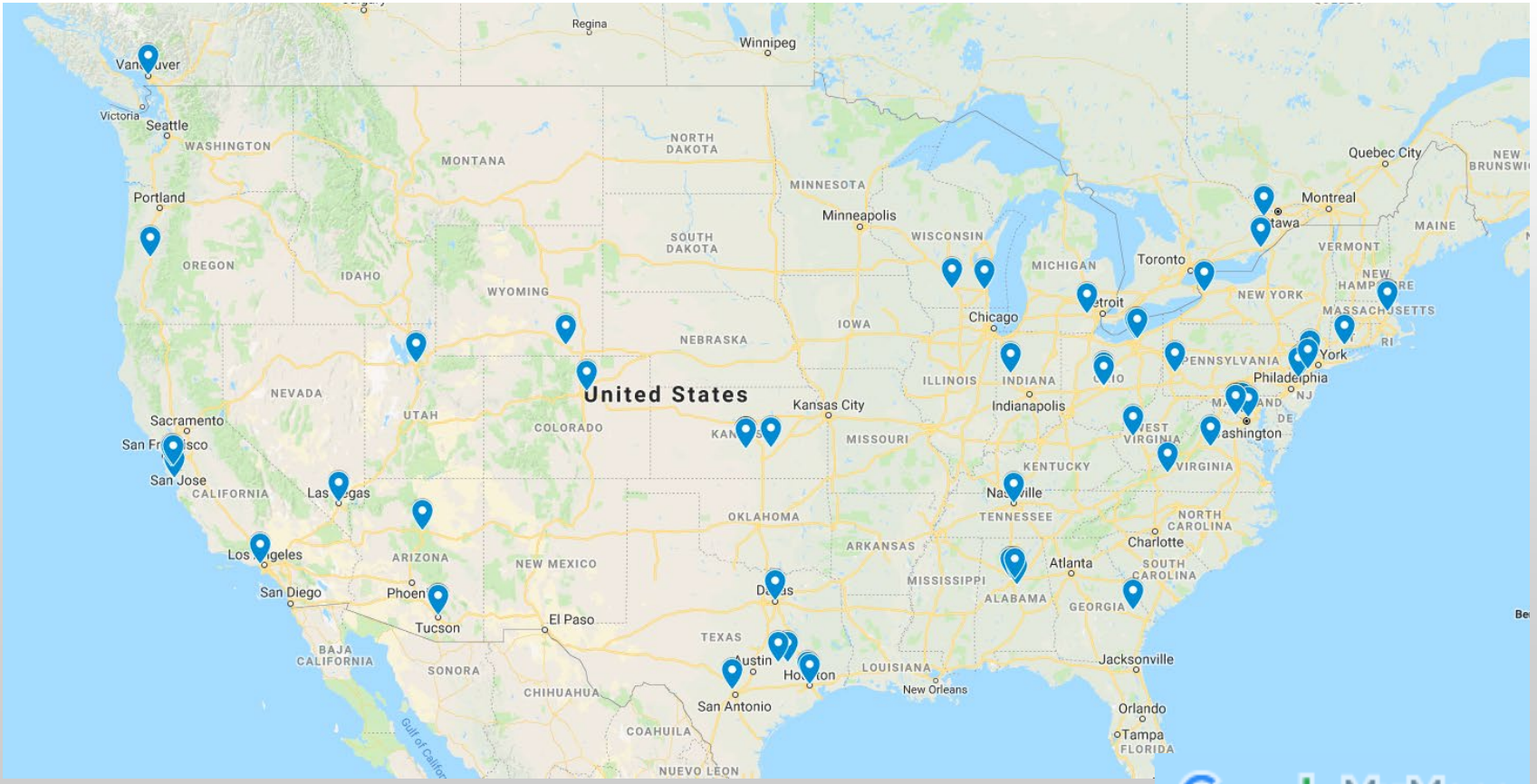
Production Deployments

In Process of Installing

Interested / Evaluating

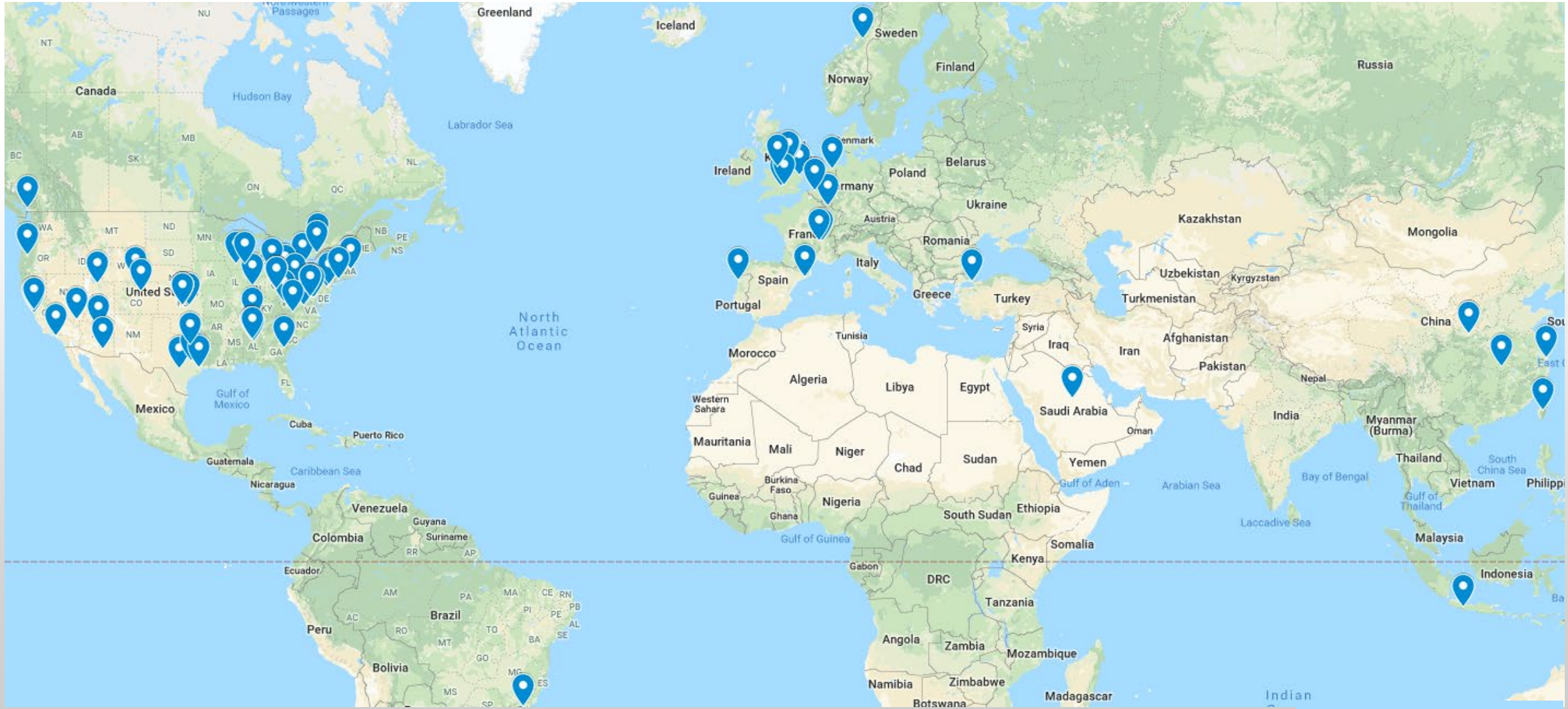
Approx Number of Institutions based on RPM logs

- 50 US Institutions
- 26 International Institutions



- Map data @2018 Google, INEGI, ORION-ME

Approx Number of Institutions based on RPM logs



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Google My Maps

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OPEN OnDemand

Open OnDemand Current Version (1.3 Release, May 8 2018)

- RPM-based installation
- Xfce support in Interactive Apps
- Configuration changes without rebuilding apps
- 9 other features called out in release notes

Features for upcoming version 1.4 (Sep) include

- Update SCL dependencies to latest supported on both CentOS/RHEL6 & 7 (Ruby, Node.js, Git, Passenger, NGINX)
- Security enhancements, including ability to whitelist directories that a user can navigate to in the files app
- Optional quota limit warnings on dashboard
- More configuration options for interactive app web forms

Proposed Features for 1.5 (Nov) and 1.6 (Jan) include

- Sun Grid Engine support
- Performance Improvements
- Support for Large File Transfers
- Peer to Peer App Sharing
- Job Array support
- Job Composer to manage jobs from arbitrary paths
- Configurable job options in Job Composer (such as queue)
- Better support for Jupyter and RStudio using Singularity

Looking for community feedback on features in the next release

Visit openondemand.org for instructions on how to provide feedback

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Future Funding and Collaboration

- Currently in year three of an NSF SI2 award (#1534949) to develop OnDemand
- Awarded a follow on NSF CSSI award (#1835725) to develop OnDemand 2.0
  - Project runs from Jan 2019 to Dec 2023
  - Collaborators include SUNY Buffalo and Virginia Tech
  - Project activities include:
    - enhancing OnDemand
    - integrating XDMoD
    - extending the portal to provide other methods of access for other science domains
    - improving the scaling of the system

Community Outreach

- PEARC'18 Conference
  - OOD User Group BOF
  - Jupyter / Rstudio in OOD Paper
- Gateways'18 Conference
  - OOD Overview Poster
  - Jupter – Spark in OOD Presentation
- SC'18 Conference
  - Daily demos of OOD in OSC's booth
  - Initial planning discussions for OOD 2.0 project
- PEARC'19 Conference (anticipated)
  - OOD BOF
  - Papers / Posters

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~~3. Future funding and collaboration~~

4. Using Open OnDemand for Education & Training

Using Open OnDemand for Education & Training

- Easy to get new users started, no need to learn commands
- Great resource for hands-on workshops, everyone's environment is the same (NB: use chrome or firefox)
- Templates can be used across classes
- Apps can used or built to access software directly

Main Uses in Training

- Hands On Tutorials – easy to get started
  - Intro to HPC at OSC
  - Big Data with Spark
- Use and create job templates to submit jobs – highlight ease of organization and file editing
- Run an app - visual desktop

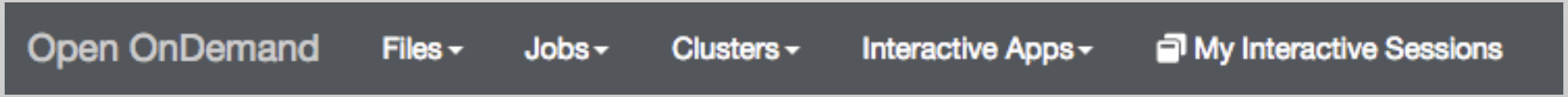
Main Uses in Classrooms

- Interactive Apps & VDI
- Shell Access
- Creating and Running Jobs

Walkthrough

Review Features:

- File Explorer – transfer, edit, copy & paste
- Cluster – shell access & system status
- Apps – GUIs, VDI, and interactive jobs (show the difference)
- Jobs – Composer: submit from template, create own template &
  Active Jobs: queues



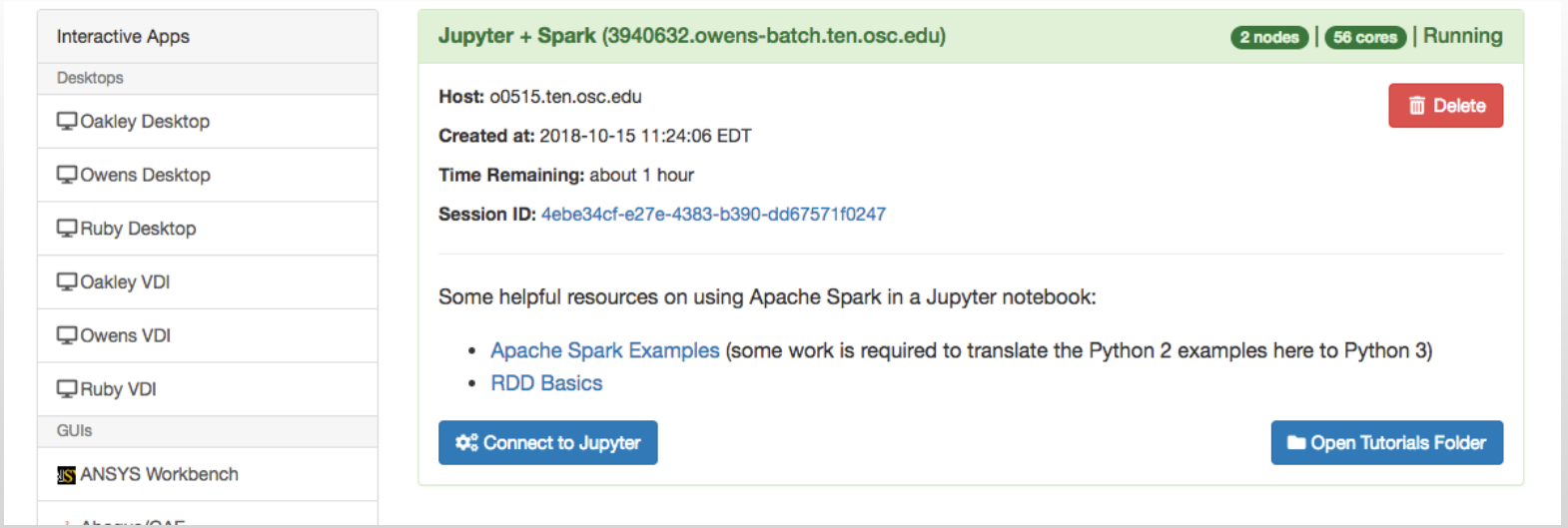
Connect walkthrough to HPC concepts

- Reliance on network
- Shared resource – login nodes vs. compute, how to use scheduler
- Resources available – how to request correctly

OPEN OnDemand

Other Education & Training Tools

- Embed tutorial documents in app
  - Example: Jupyter & Spark



- Quickly create custom apps for classroom needs

Thank you! Any questions?

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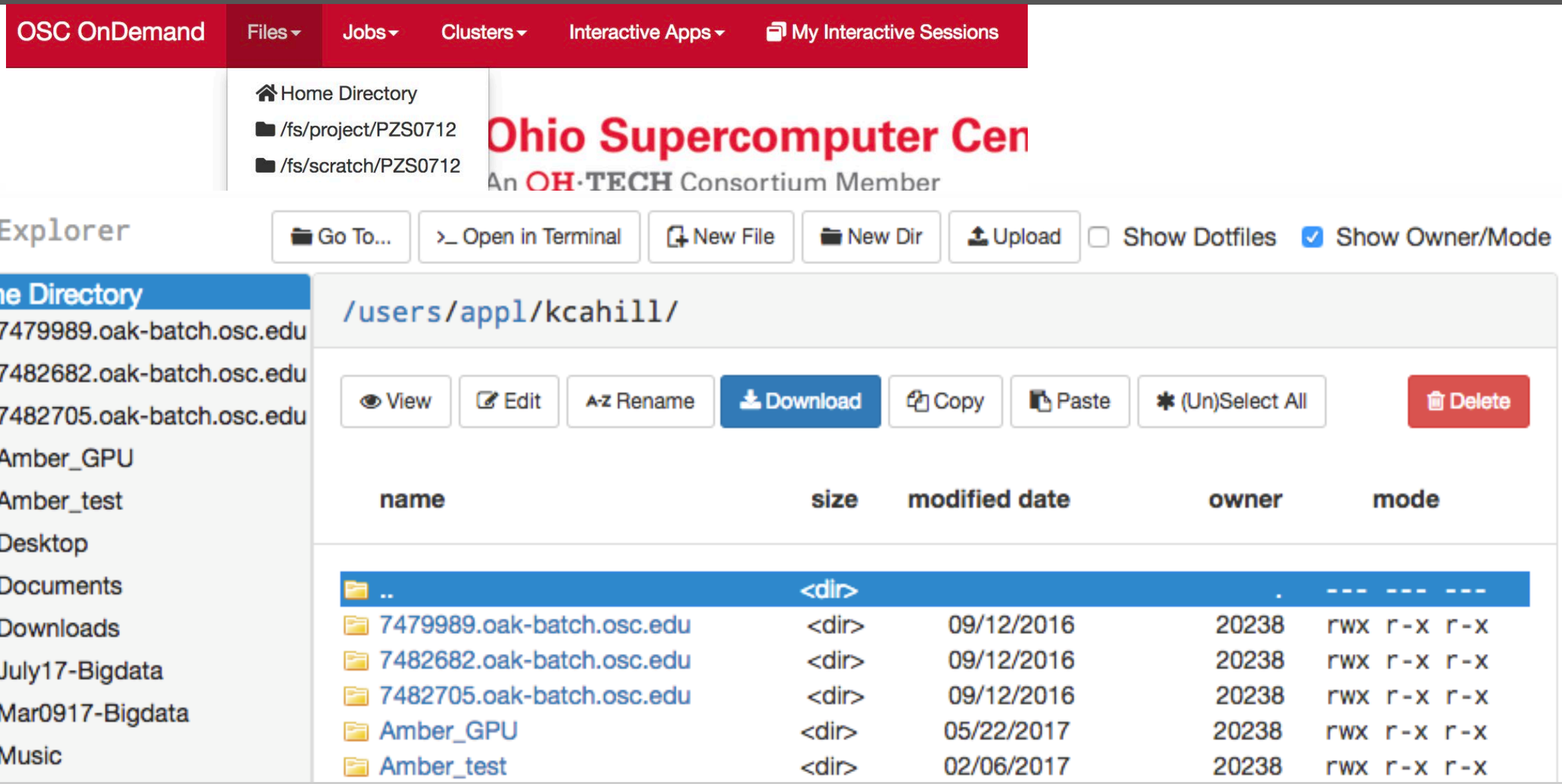
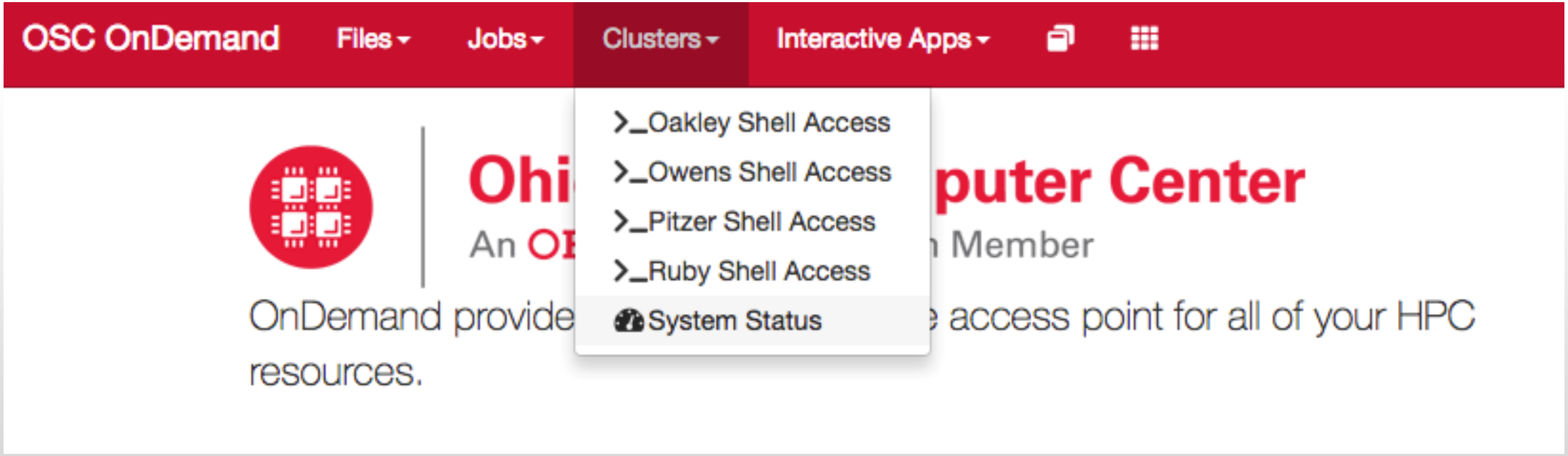
Appendix Slides

The following slides show screens related to the OnDemand walkthrough Kate demo-ed during this webinar. Please watch the webinar video to see the entire walkthrough content.

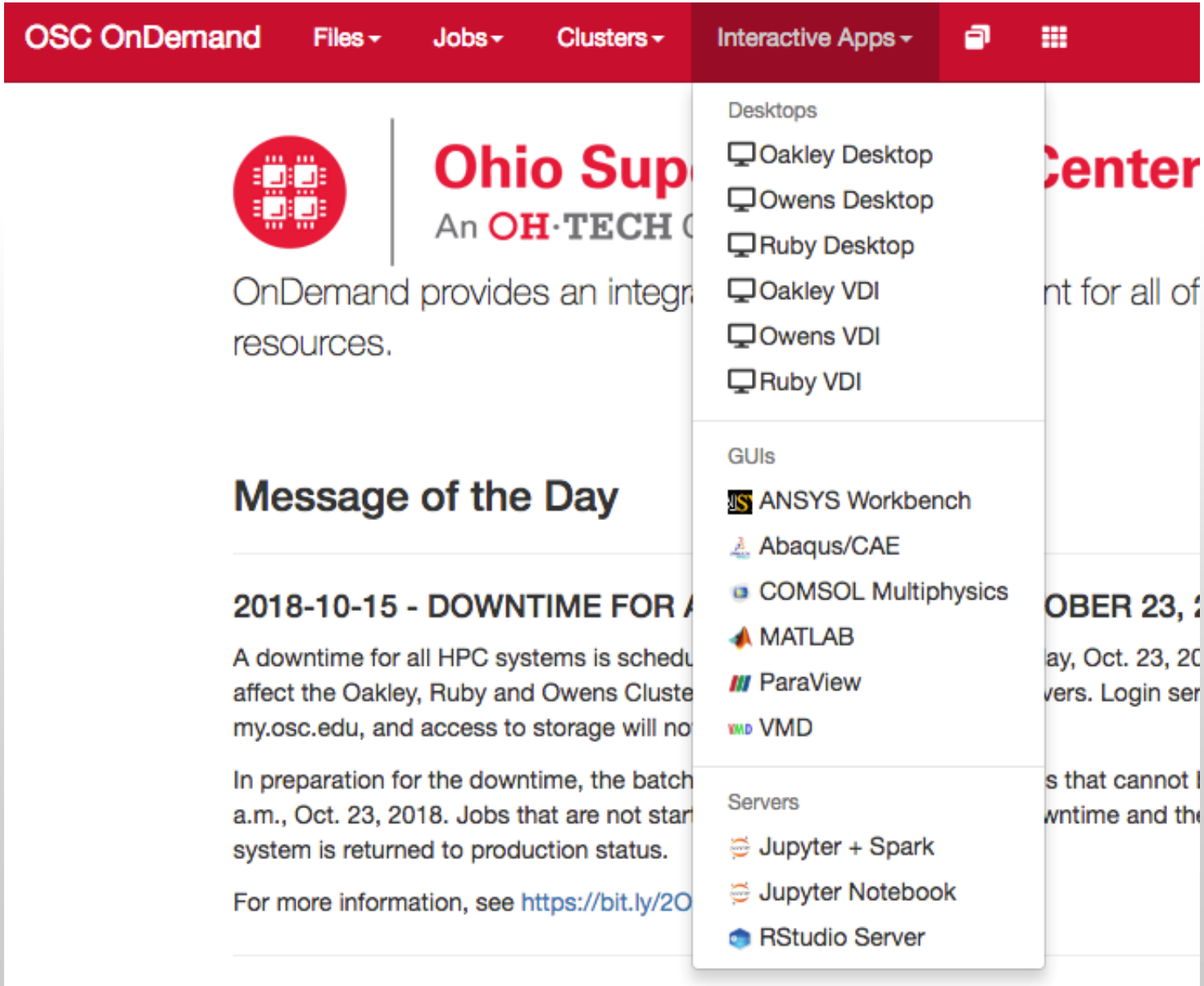
Walkthrough – File Explorer



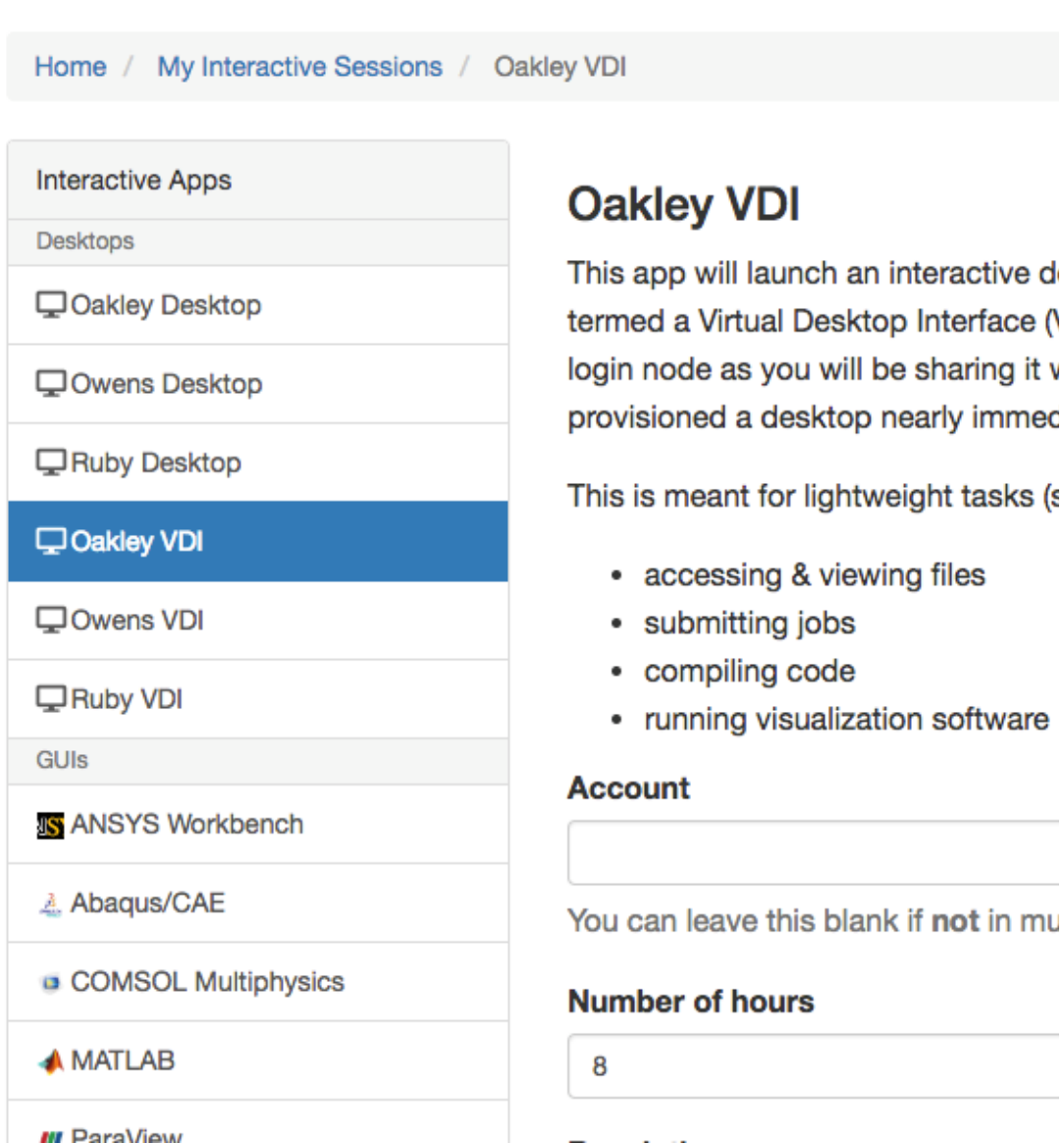
Walkthrough – Clusters

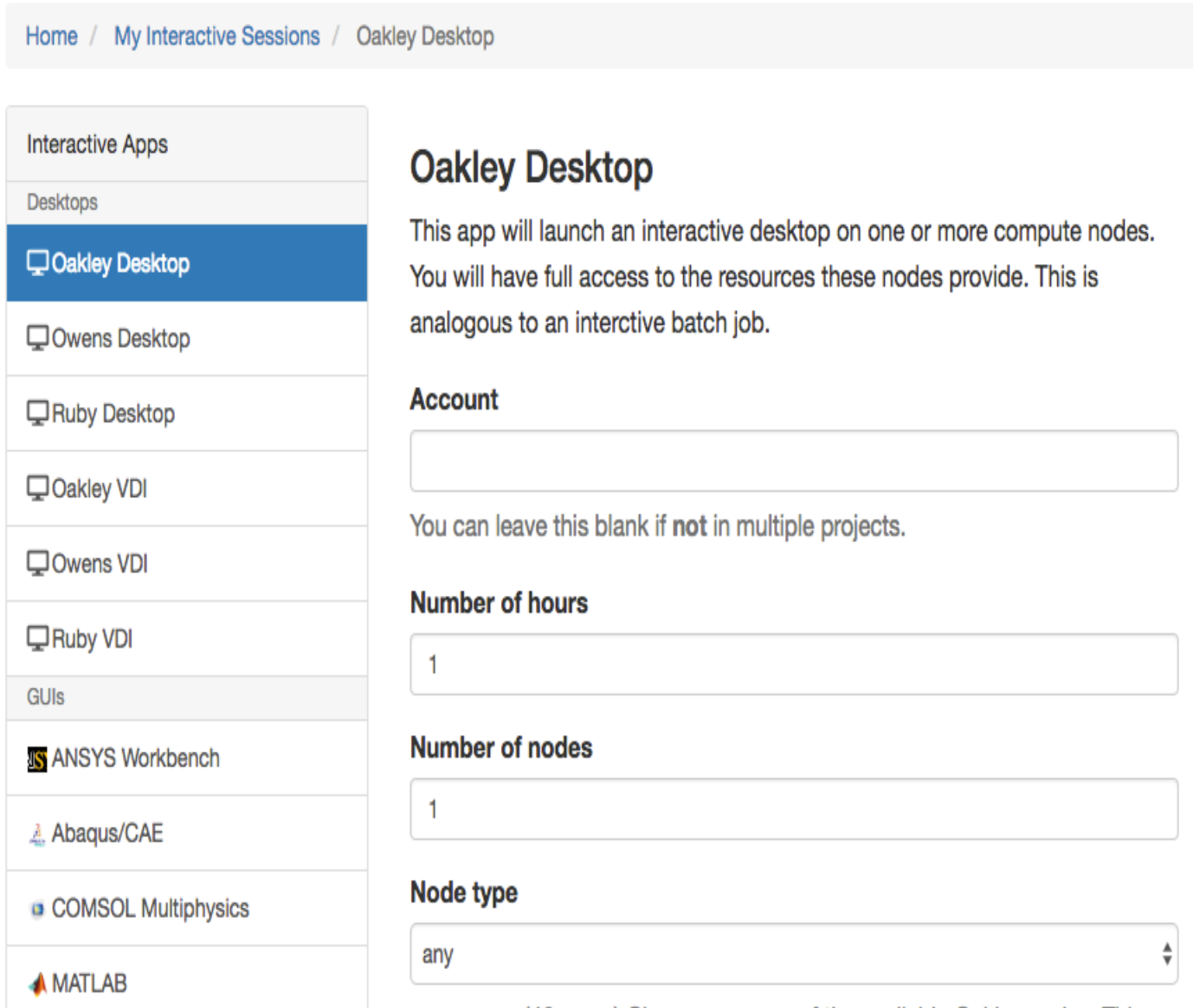


Walkthrough – Apps

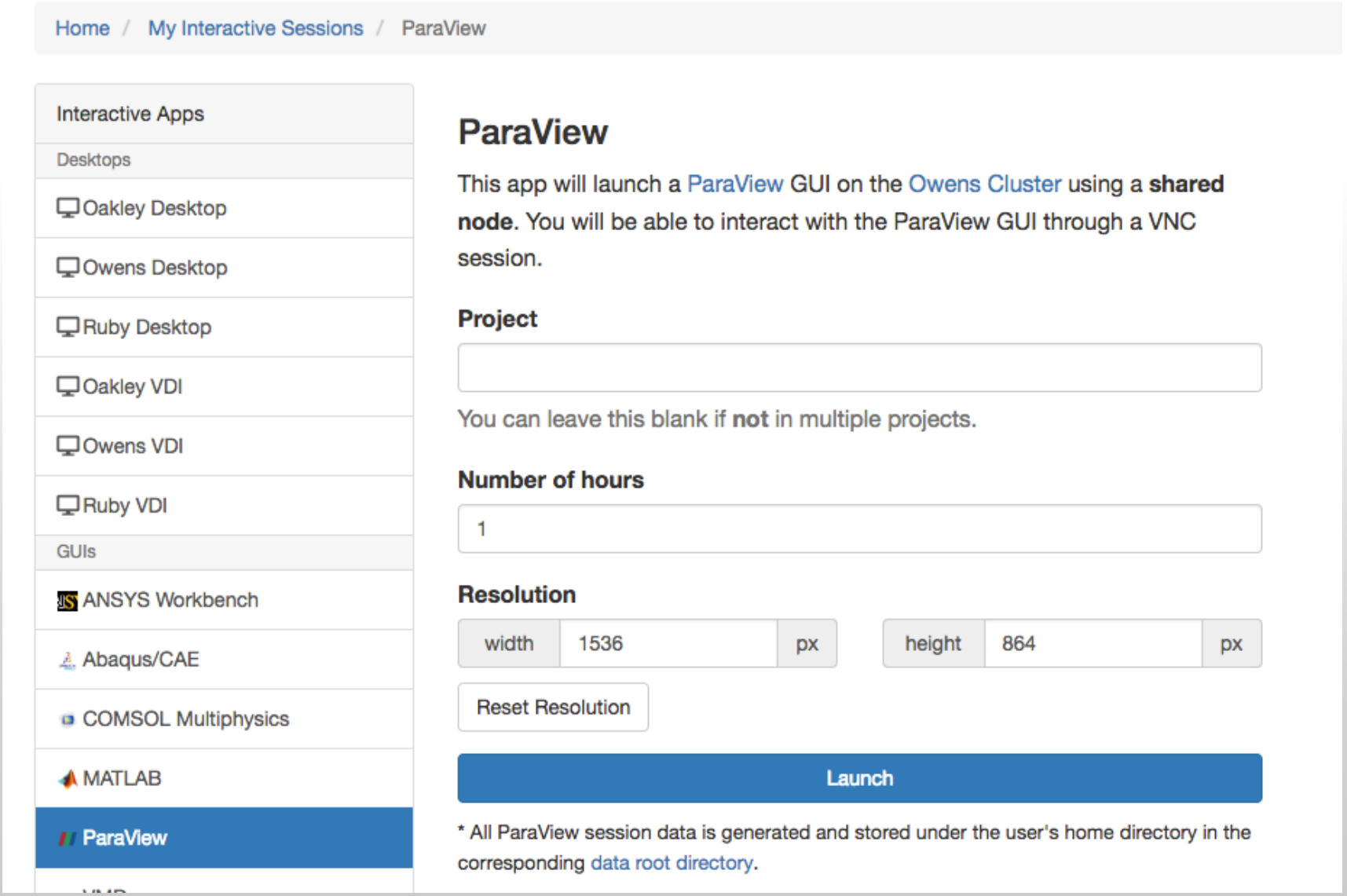
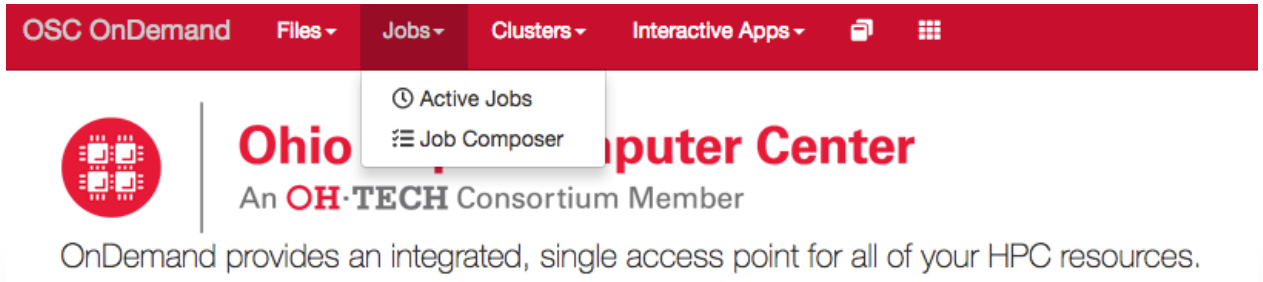
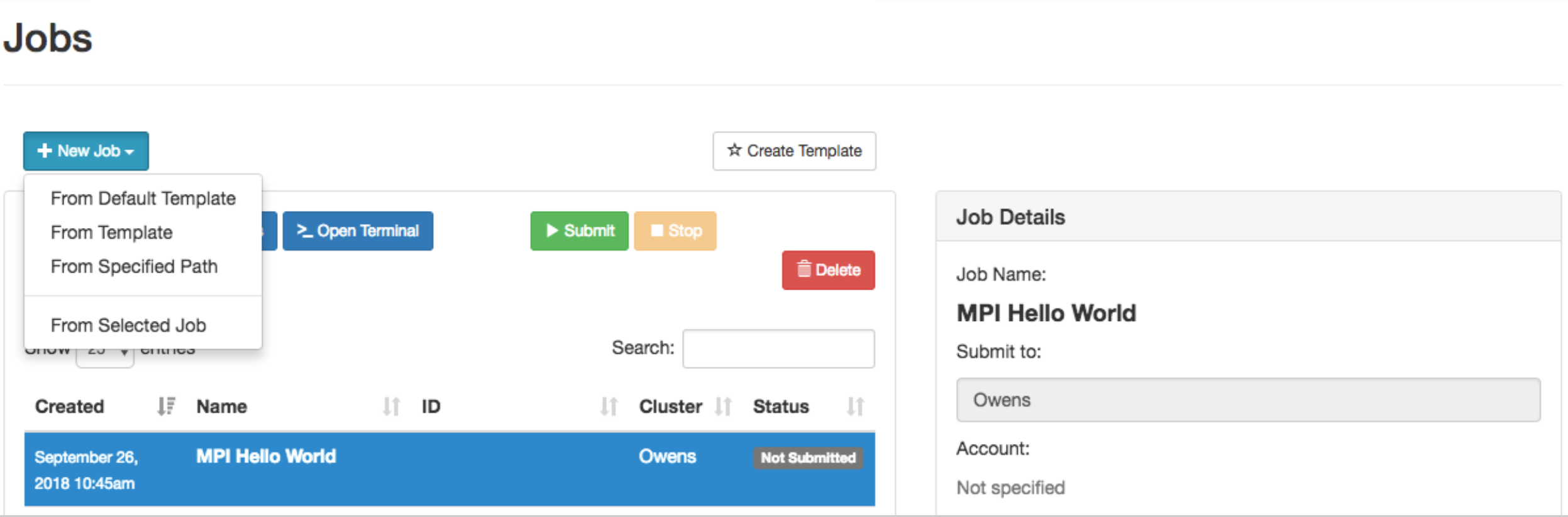


Walkthrough – Apps: VDI vs. Desktop





Walkthrough – Apps



Walkthrough – Jobs