



# **nDemand**

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# Supercomputing. Seamlessly.

## Open OnDemand: Open, Interactive HPC Via the Web

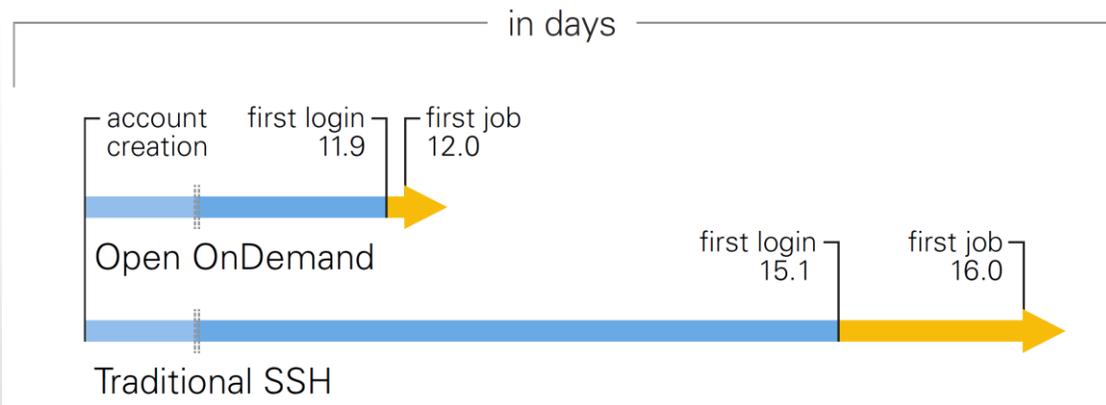
Provides an easy to install and use, web-based access to supercomputers, resulting in intuitive, innovative support for interactive supercomputing.

Features include:

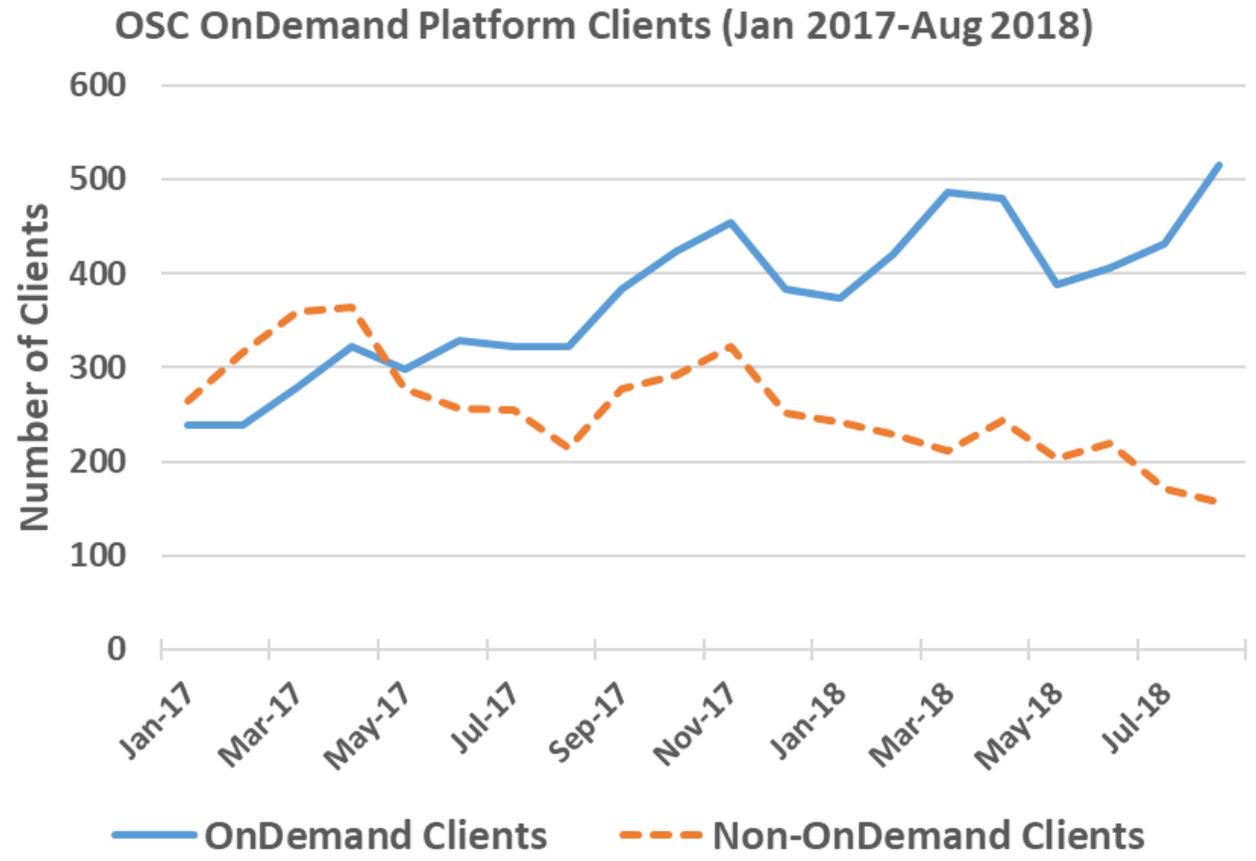
- Plugin-free web experience
- Easy file management
- Command-line shell access
- Job management and monitoring
- Graphical desktop environments and applications



# Impact at OSC

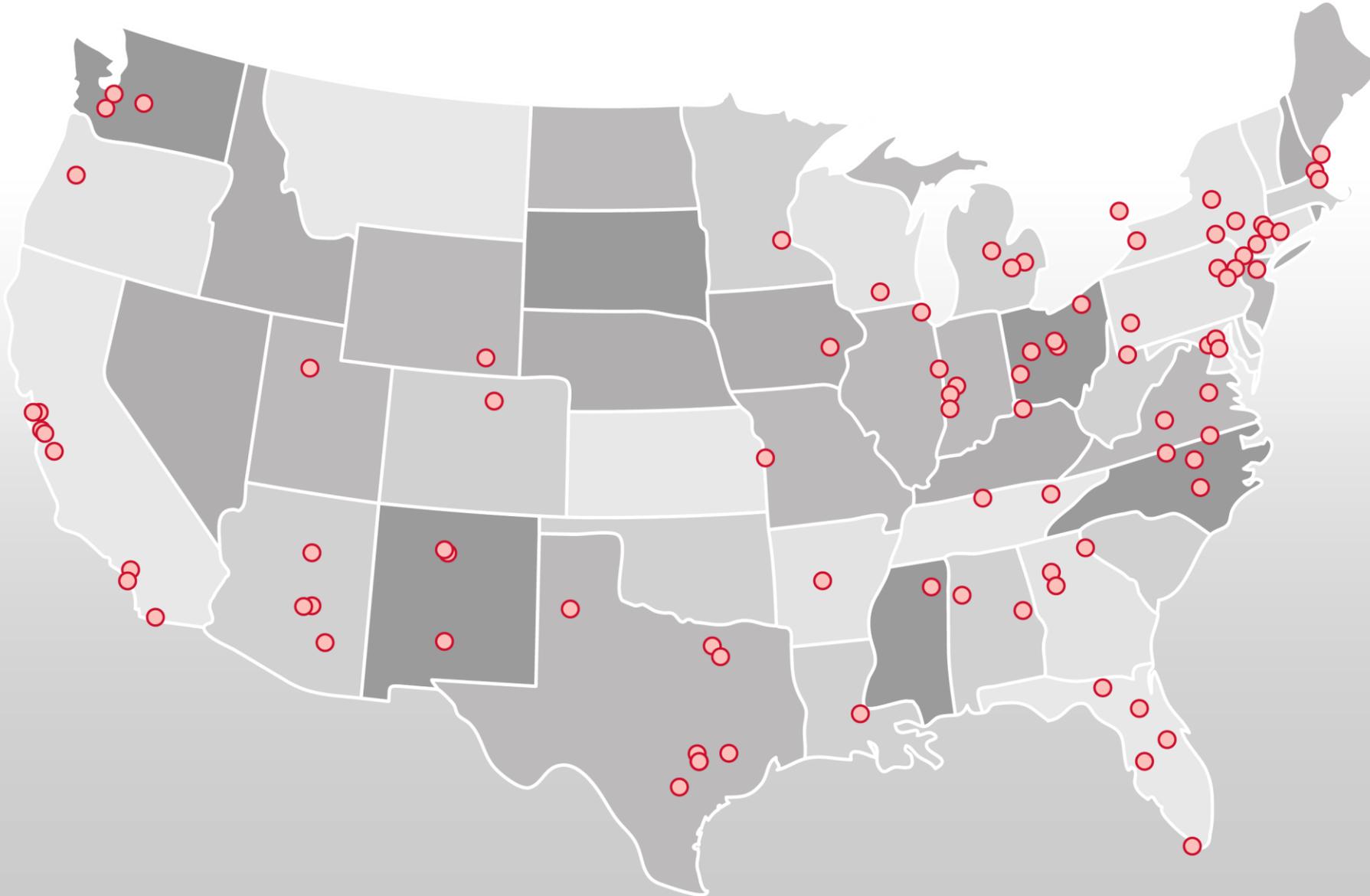


OnDemand users start work faster than traditional users, both in terms of first login and job submission



Launched Sep. 2016, % users has steadily increased since launch

# Approx Number of Institutions based on RPM logs



- 136 unique US locations
- 70 unique international locations

# Example Current Engagements and Deployments

## Production Deployments



## In Process of Installing



# Find Out More!

# openondemand.org

- Use our Discourse instance for help
- Join our mailing list for updates
- Our webinars are roughly quarterly

**OPEN OnDemand**

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Please cite us Hudak et al., (2016). Open OnDemand: A web-based client portal for HPC centers. *Journal of Open Source Software*, 3(25), 622. <https://doi.org/10.21105/joss.00622>

This material is based upon work supported by the National Science Foundation under grant numbers 1534349 and 1835725.

## Overview

Open OnDemand is an NSF-funded open-source HPC portal based on OSC's original OnDemand portal. The goal of Open OnDemand is to provide an easy way for system administrators to provide web access to their HPC resources, including, but not limited to:

- Plugin-free web experience
- Easy file management
- Command-line shell access
- Job management and monitoring across different batch servers and resource managers
- Graphical desktop environments and desktop applications

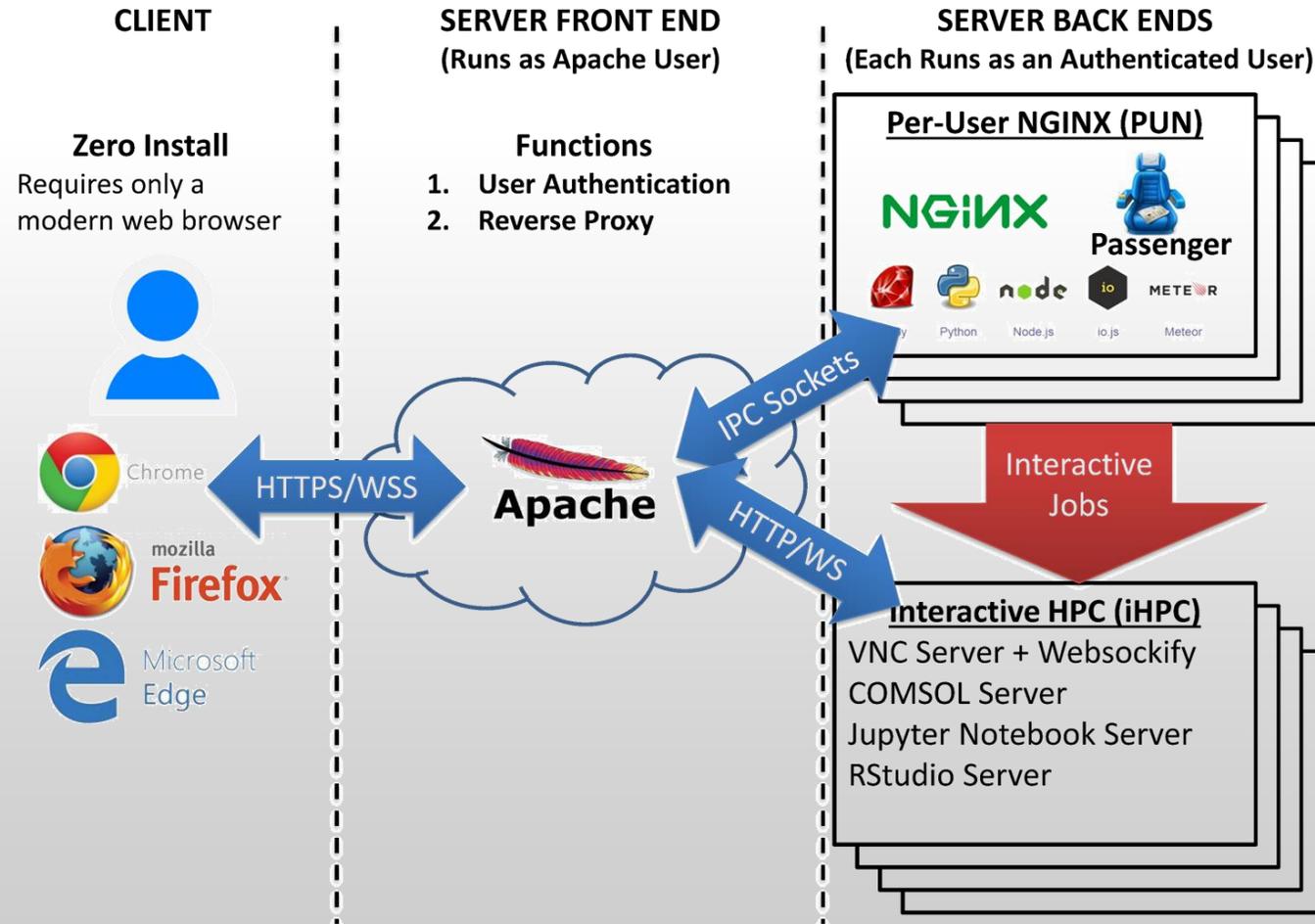
See the [documentation](#) for installation directions, app development tutorials, and an overview of the components and applications that make up OnDemand. We also have a [walkthrough video](#) showing the various components of an Open OnDemand instance available.

## Organizations using or exploring OnDemand

Below is a list of organizations that have deployed or are looking at deploying Open OnDemand. Please contact us via the [news list](#) if your organization is not on this list and should be included!

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# Architecture



# Customizing OnDemand: Branding

- Institution logo
- Navbar color
- Portal name
- Display MOTD
- Display announcements

The screenshot displays the Open OnDemand portal interface, illustrating branding customization. The top navigation bar is dark grey with the text "Open OnDemand" on the left and user options on the right. Below this, the "OPEN OnDemand" logo is prominently displayed, followed by a descriptive sentence: "OnDemand provides an integrated, single access point for all of your HPC resources." The main content area features a red navigation bar with "Bridges OnDemand" and various menu items. A banner image of server racks is shown with the text "A PITTSBURGH SUPERCOMPUTING CENTER RESOURCE" and "Welcome to Bridges". Below the banner, the "OSC OnDemand" logo and "Ohio Supercomputer Center" branding are visible, including the text "An OH·TECH Consortium Member". The main content area also displays a "Message of the Day" section with two announcements: "2017-05-04 - NEW SCRATCH STORAGE POLICY IN EFFECT JUNE 1" and "2017-04-03 - GPUS NOW AVAILABLE ON OWENS".

# Open OnDemand 2.0 Project Overview

- Previous three year NSF SI2 award (#1534949) to develop OnDemand 1.x
- Awarded followon NSF CSSI award (#1835725) to develop OnDemand 2.x
  - Project runs from Jan 2019 to Dec 2023
  - Collaborators include SUNY Buffalo and Virginia Tech
- Four areas
  - **Visibility:** Enhancing resource utilization visibility by integrating the existing Open XDMoD platform
  - **Scalability:** support more types of computing resources and software
  - **Accessibility:** appeal to more scientists in more fields of science
  - **Engagement:** establish community of departmental, campus and national HPC users and administrators

# Open XDMod

- XDMod: XD Metrics on Demand
- On demand access to job accounting & performance data
- Optimize resource utilization & performance
  - Utilization metrics
  - Measure infrastructure QoS
  - Job and Cloud level performance data
- 200+ academic & industrial installations worldwide
- <http://open.xdmod.org/>

# Open XDMoD and OnDemand Integration

CCR OnDemand <sup>BETA</sup>

Files ▾

Jobs ▾

Clusters ▾

Interactive Apps ▾

Help ▾

Logged In as smgallo

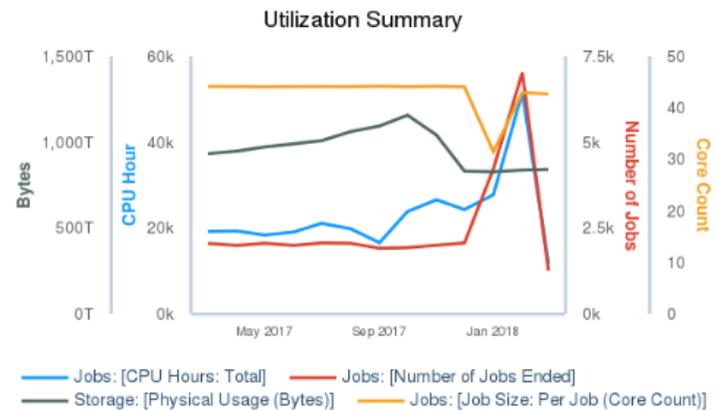
Log Out

OnDemand provides an integrated, single access point for CCR's HPC resources

Users can transfer files, access a shell environment on the cluster front-end login server, launch interactive and remote visualization jobs, and monitor jobs all without installing any client software or web plug-ins. Access these features using the menus at the top of this page. Note that many of the apps will launch in a new tab or new browser window but the dashboard will remain open in the original window.

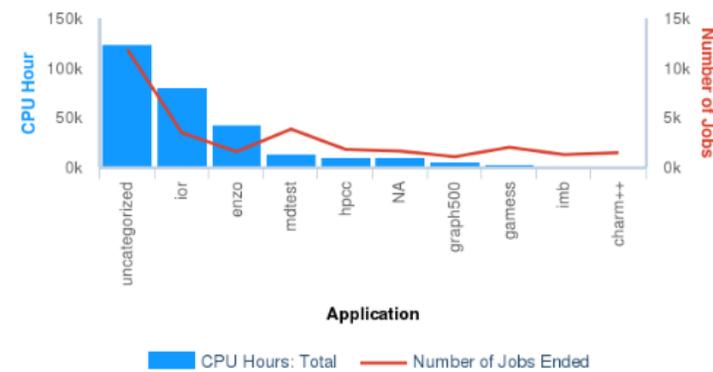
## Utilization Summary

	Previous Month	Previous Quarter	Year To Date
<b>Total CPU Hours</b>	51,541	74,617	298,725
<b>Number of Jobs</b>	7,017	5,973	32,551
<b>Average Job Size (Cores)</b>	42.1	43.9	44.1
<b>Storage (GB)</b>	834	1,008	964,150



2017-03-01 to 2018-03-23 Src: HPCoDB, File system storage logs. Powered by XDMoD/Highcharts

## Application Summary



2017-03-01 to 2018-03-23 Src: SUPREMM. Powered by XDMoD/Highcharts

# Walkthrough – File Explorer

OSC OnDemand

Files ▾

Jobs ▾

Clusters ▾

Interactive Apps ▾

My Interactive Sessions

- Home Directory
- /fs/project/PZS0712
- /fs/scratch/PZS0712

## Ohio Supercomputer Cen

An OH-TECH Consortium Member

File Explorer

Go To...

>\_ Open in Terminal

New File

New Dir

Upload

Show Dotfiles

Show Owner/Mode

Home Directory

- 7479989.oak-batch.osc.edu
- 7482682.oak-batch.osc.edu
- 7482705.oak-batch.osc.edu
- Amber\_GPU
- Amber\_test
- Desktop
- Documents
- Downloads
- July17-Bigdata
- Mar0917-Bigdata
- Music

/users/apl/kcahill/

View

Edit

A-Z Rename

Download

Copy

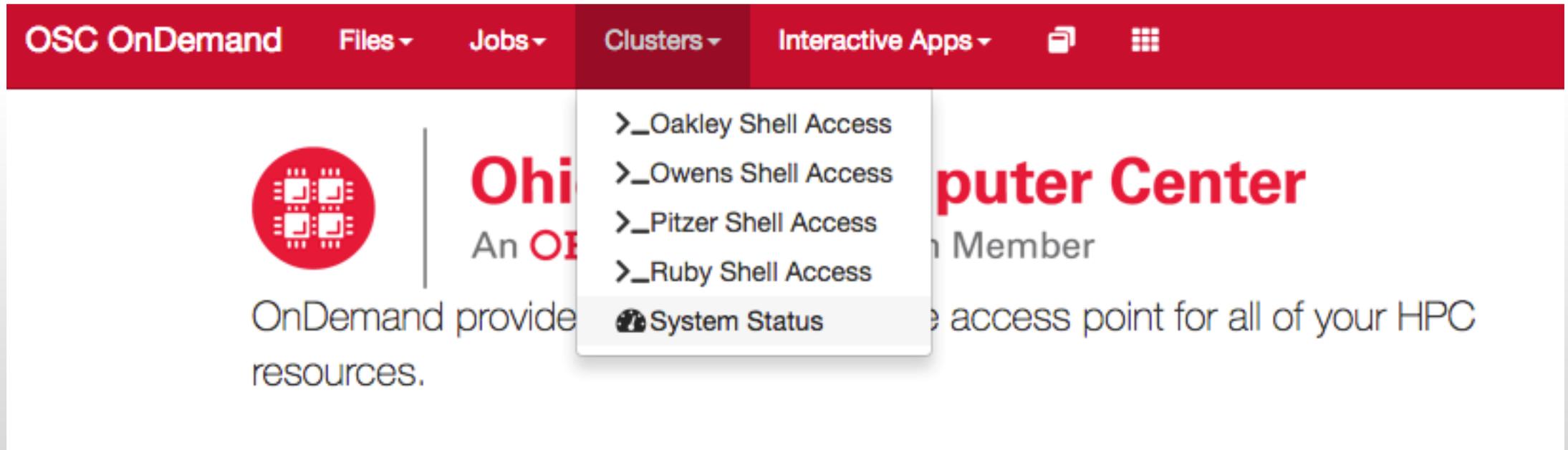
Paste

\*(Un)Select All

Delete

name	size	modified date	owner	mode
..	<dir>	.	---	---
7479989.oak-batch.osc.edu	<dir>	09/12/2016	20238	rwX r-X r-X
7482682.oak-batch.osc.edu	<dir>	09/12/2016	20238	rwX r-X r-X
7482705.oak-batch.osc.edu	<dir>	09/12/2016	20238	rwX r-X r-X
Amber_GPU	<dir>	05/22/2017	20238	rwX r-X r-X
Amber_test	<dir>	02/06/2017	20238	rwX r-X r-X

# Walkthrough – Clusters



The screenshot shows the OSC OnDemand web interface. The top navigation bar is red and contains the following items: "OSC OnDemand", "Files", "Jobs", "Clusters", and "Interactive Apps". The "Clusters" menu is open, showing a list of shell access options and a "System Status" option. The main content area features the Ohio State University logo, the text "Ohio State University Computer Center", and a description of OnDemand resources.

OSC OnDemand Files Jobs Clusters Interactive Apps

- >\_Oakley Shell Access
- >\_Owens Shell Access
- >\_Pitzer Shell Access
- >\_Ruby Shell Access
- System Status

Ohio State University Computer Center  
An Ohio State University Member  
OnDemand provides a central access point for all of your HPC resources.

# Walkthrough – Apps

Home / My Interactive Sessions / ParaView

Interactive Apps

Desktops

- Oakley Desktop
- Owens Desktop
- Ruby Desktop
- Oakley VDI
- Owens VDI
- Ruby VDI

GUIs

- ANSYS Workbench
- Abaqus/CAE
- COMSOL Multiphysics
- MATLAB
- ParaView**

## ParaView

This app will launch a [ParaView](#) GUI on the [Owens Cluster](#) using a **shared node**. You will be able to interact with the ParaView GUI through a VNC session.

**Project**

You can leave this blank if **not** in multiple projects.

**Number of hours**

**Resolution**

width	1536	px	height	864	px
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\* All ParaView session data is generated and stored under the user's home directory in the corresponding [data root directory](#).

# Walkthrough – Jobs



- Active Jobs
- Job Composer

OnDemand provides an integrated, single access point for all of your HPC resources.

## Jobs

+ New Job

☆ Create Template

- From Default Template
- From Template
- From Specified Path
- From Selected Job

> Open Terminal

▶ Submit

■ Stop

🗑 Delete

Search:

Created	Name	ID	Cluster	Status
September 26, 2018 10:45am	MPI Hello World		Owens	Not Submitted

### Job Details

Job Name:  
**MPI Hello World**

Submit to:

Account:  
Not specified

# Items 'Coming Soon'

## System Stuff

1. Linux host adapter
2. Dashboard with XDMoD
3. Keycloak identity brokering
4. Kubernetes adapter
5. Custom classroom deployment
6. System status with GPUs
7. Globus integration
8. OpenHPC integration
9. Ansible role
10. OpenStack

## Apps

11. Stata app
12. Tensorboard app
13. QGIS app
14. Job composer with XDMoD
15. Completed jobs app with XDMoD
16. Render app
17. Galaxy app
18. Shell reconnect
19. Visual Studio Code Server
20. New Files app

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