



# nDemand

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# Supercomputing. Seamlessly.

## **An intuitive, innovative, and interactive interface to remote computing resources**

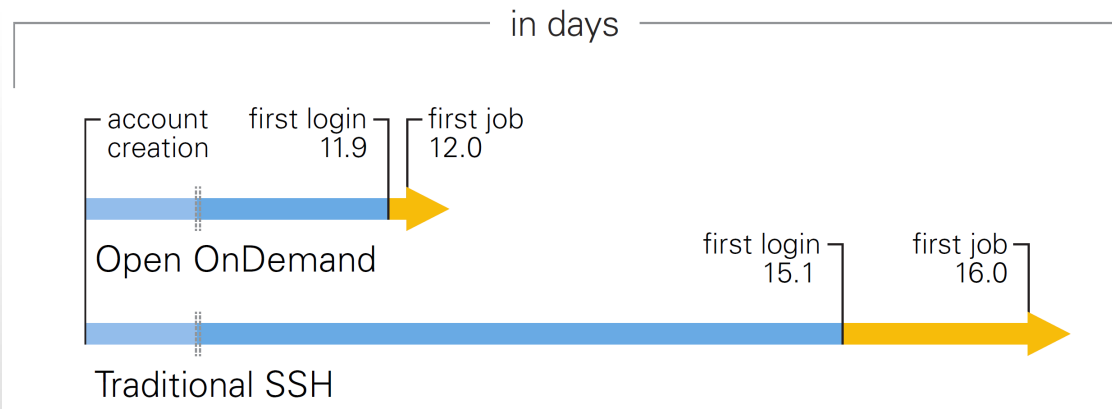
Open OnDemand helps computational researchers and students efficiently utilize remote computing resources by making them easy to access from any device. It helps computer center staff support a wide range of clients by simplifying the user interface and experience.

### Key Benefits & Impact

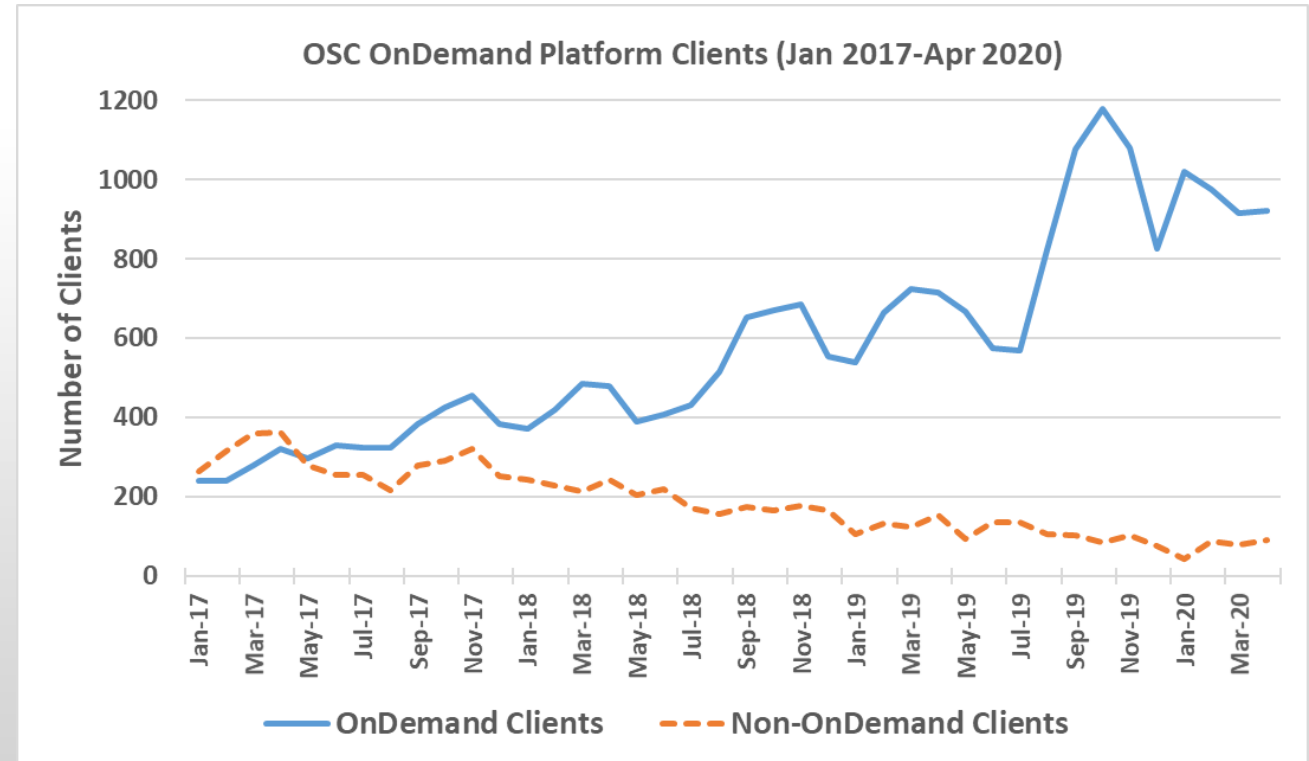
- Key benefit to you, the end user:  
You can use any web browser to access resources at a computing service provider.
- Key benefit to you, the computer center staff:  
A wide range of clients/needs can utilize your computing resources.
- Overall impact:  
Users are able to use remote computing resources faster and more efficiently.



# Impact at OSC

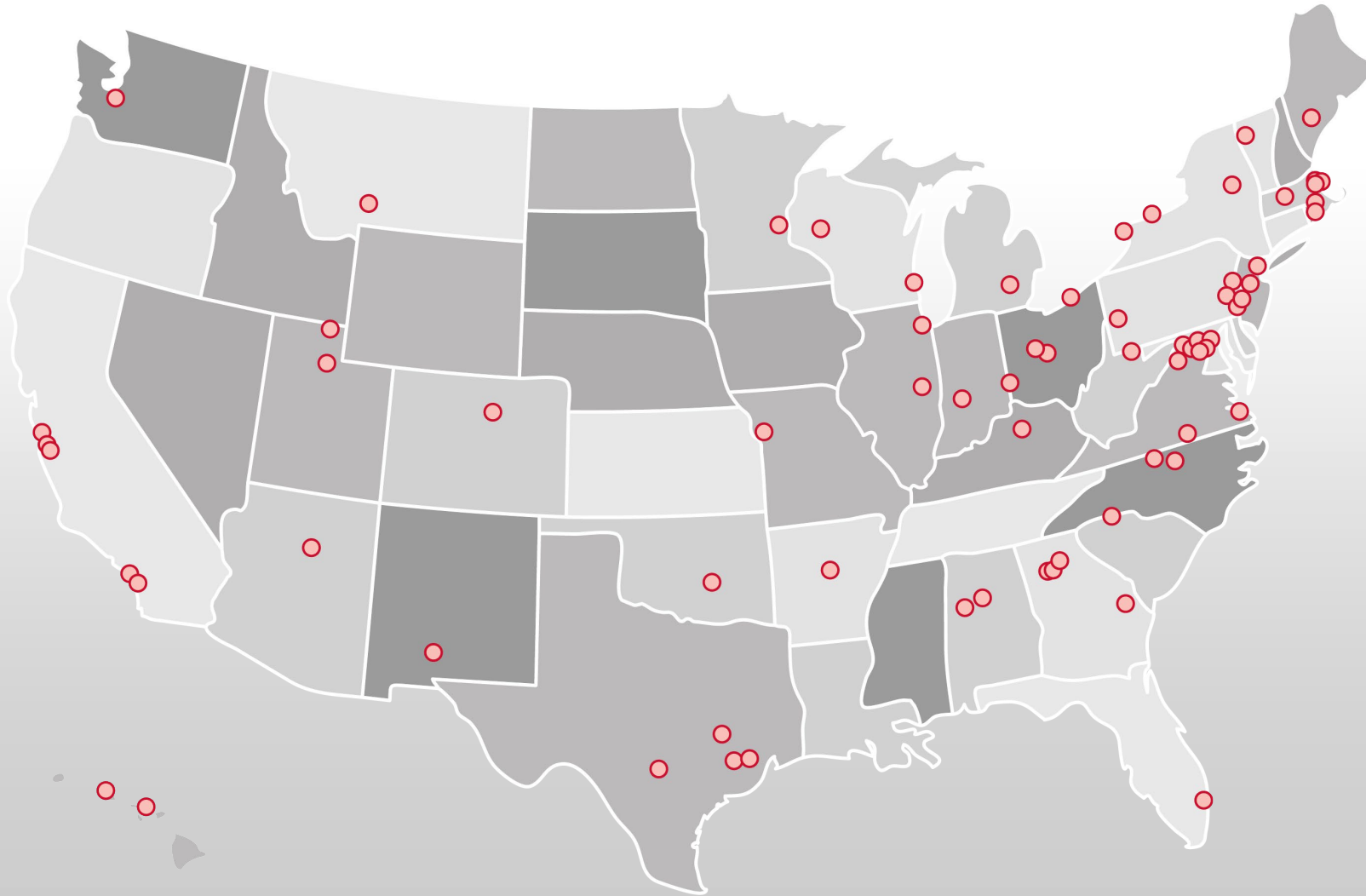


OnDemand users start work faster than traditional users, both in terms of first login and job submission



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**

Supercomputing. Seamlessly. Open,  
Interactive HPC Via the Web

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Don't hesitate to reach out to the developers via our [Discourse instance](#) if you would like more information or need help installing or configuring Open OnDemand.

Please cite us Hudak et al., (2018). 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!

We also have a [page with testimonial comments from many of these organizations](#)

# Customizing OnDemand: Branding

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

The screenshot displays the Open OnDemand portal interface. At the top, a dark grey header contains the text "Open OnDemand" on the left and navigation links for "Develop", "Help", "efranz", and "Log Out" on the right. Below this is the "OPEN OnDemand" logo, where "OPEN" is in a black box and "OnDemand" is in a large, bold font. A tagline reads: "OnDemand provides an integrated, single access point for all of your HPC resources." A secondary dark grey navbar below features "Bridges OnDemand" and dropdown menus for "Files", "Jobs", "Clusters", and "Interactive Apps".

The main content area is titled "A PITTSBURGH SUPERCOMPUTING CENTER RESOURCE" and features a large image of server racks. To the right of the image, it says "Welcome to Bridges". Below the image is a red navigation bar with "OSC OnDemand" and dropdown menus for "Files", "Jobs", "Clusters", and "Interactive Apps".

The Ohio Supercomputer Center logo, a red circle with a white chip icon, is positioned to the left of the text "Ohio Supercomputer Center" and "An OH·TECH Consortium Member". Below this, the same tagline is repeated: "OnDemand provides an integrated, single access point for all of your HPC resources." A "Message of the Day" section follows, listing 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/>

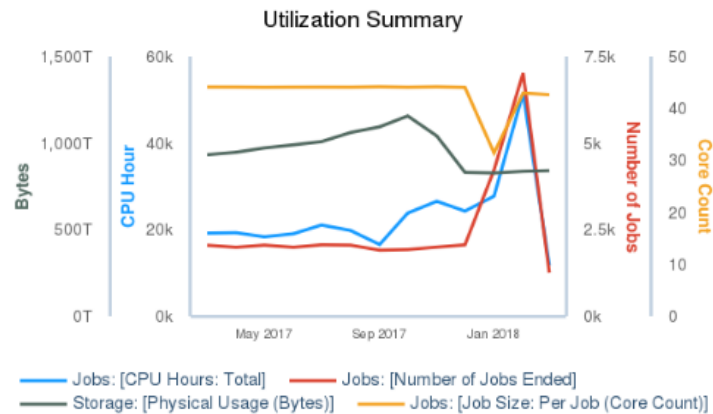
# Open XDMoD and OnDemand Integration

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

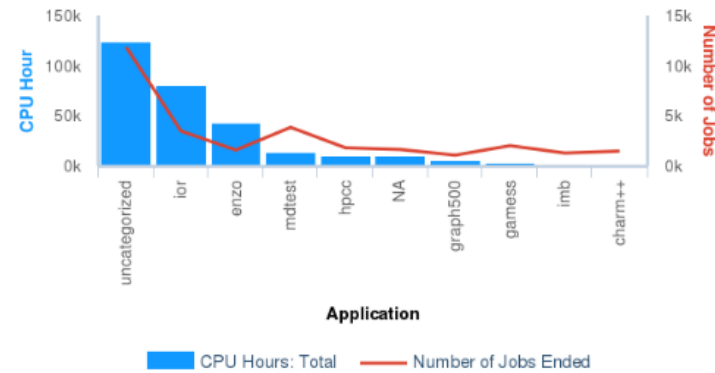
Users can transfer files, access a shell environment on the cluster front-end login server, launch interactive and remote visualization jobs, and monitor jobs all without installing any client software or web plug-ins. Access these features using the menus at the top of this page. Note that many of the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



## Application Summary



# 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

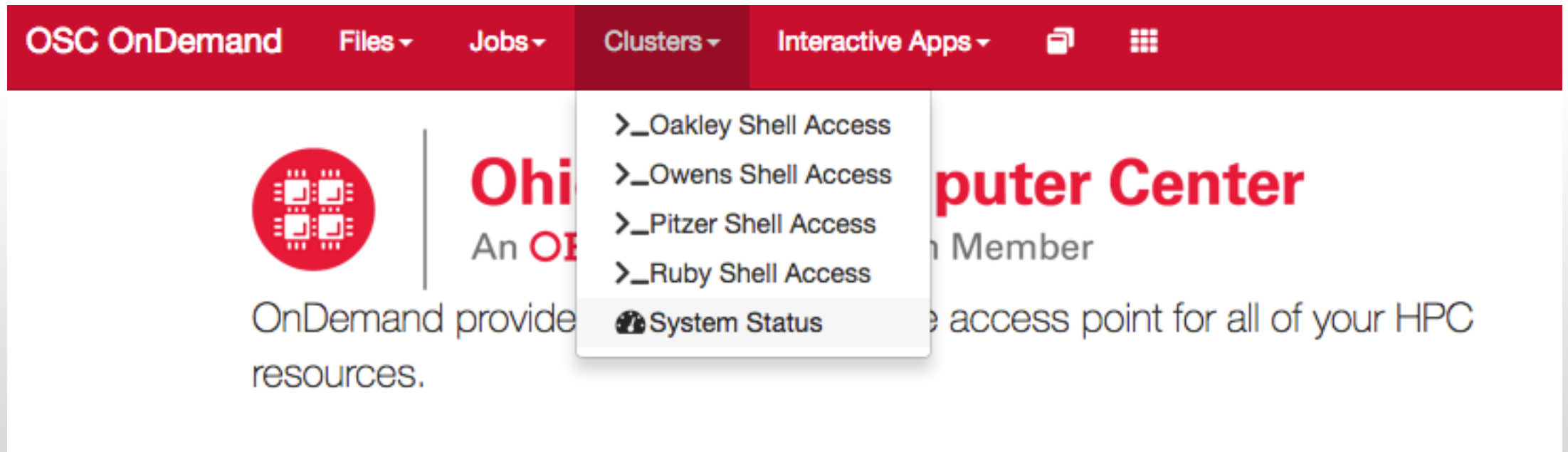
Paste

\*(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. At the top is a red navigation bar with the following items: "OSC OnDemand", "Files", "Jobs", "Clusters", and "Interactive Apps". The "Clusters" menu is open, displaying a list of options: ">\_Oakley Shell Access", ">\_Owens Shell Access", ">\_Pitzer Shell Access", ">\_Ruby Shell Access", and "System Status". The "System Status" option is highlighted with a light gray background. Below the navigation bar, the page content includes the Ohio State University logo (a red circle with a white grid pattern), the text "Ohio State University Computer Center", and "An Ohio State University Member". A partial sentence reads "OnDemand provide resources." and another partial sentence reads "e access point for all of your HPC".

OSC OnDemand Files Jobs Clusters Interactive Apps

Ohio State University Computer Center  
An Ohio State University Member

OnDemand provide resources. e access point for all of your HPC

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

# 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



Ohio Supercomputer Center

An OH-TECH Consortium Member

- 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' or Recently Added

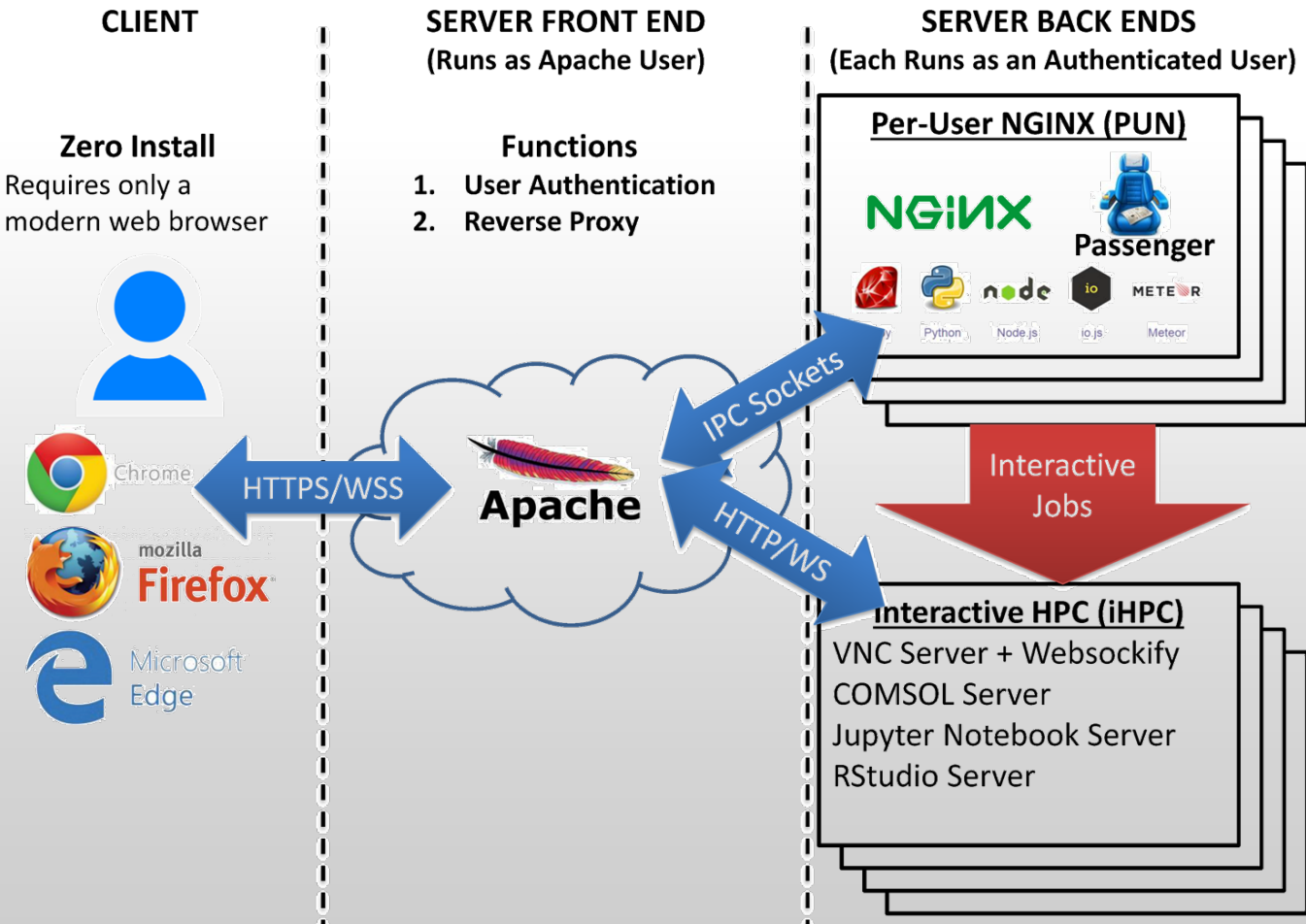
## System Stuff

1. Linux host adapter (1.7)
2. Keycloak identity brokering (1.7)
3. Ansible role (1.7)
4. OpenHPC integration (1.7)
5. Dashboard with XDMoD (1.8)
6. Kubernetes adapter (1.8)
7. Classroom deployment (2.0)
8. Globus integration (2.0)
9. System status with GPUs (OSC)
10. OpenStack (OSC)

## Apps

11. Job composer with XDMoD (1.8)
12. Shell reconnect (1.8)
13. Completed jobs app (2.0)
14. New Files app (2.0)
15. Stata app (OSC)
16. Tensorboard app (OSC)
17. QGIS app (OSC)
18. Render app (OSC)
19. Galaxy app (OSC)
20. Visual Studio Code Server (OSC)

# Architecture





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