



nDemand

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Supercomputing. Seamlessly.

Open OnDemand: Open, Interactive HPC Via the Web

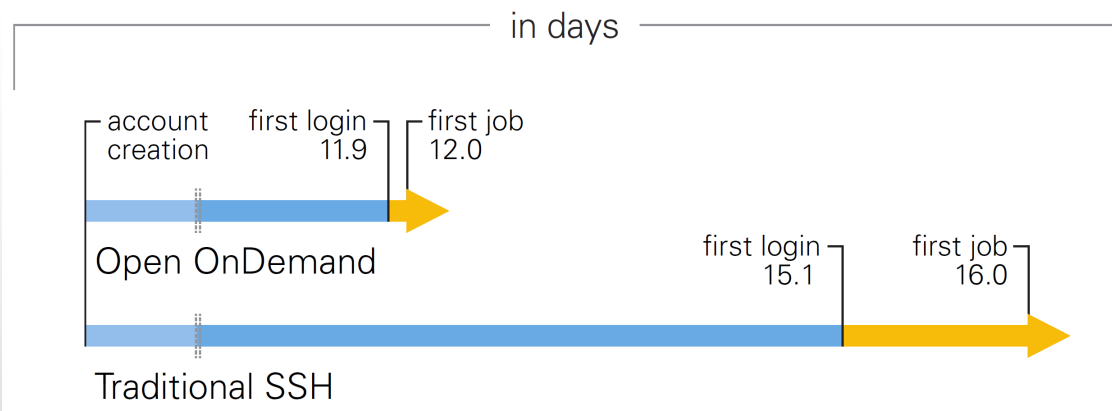
Provides an easy to install and use, web-based access to supercomputers, resulting in intuitive, innovative support for interactive supercomputing.

Features include:

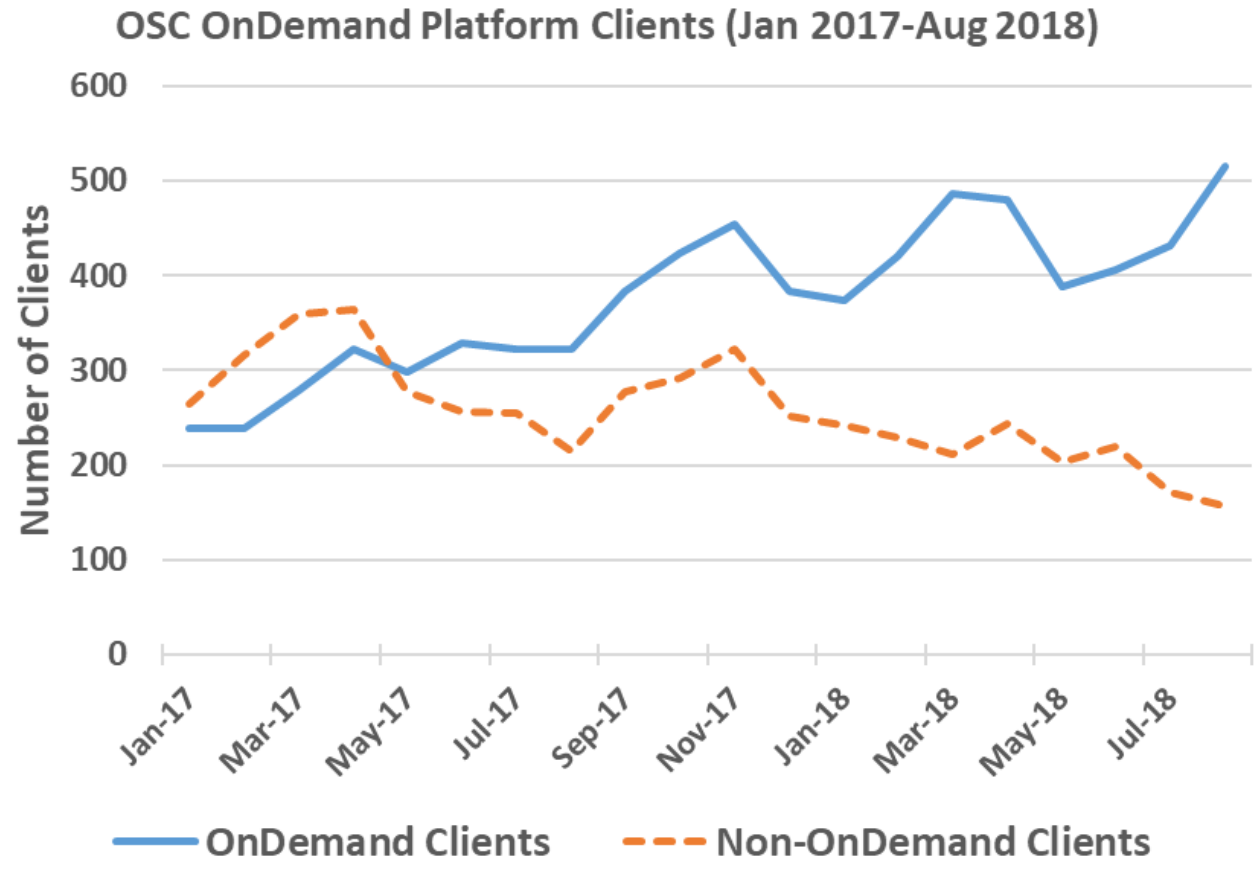
- Plugin-free web experience
- Easy file management
- Command-line shell access
- Job management and monitoring
- Graphical desktop environments and applications



Impact at OSC



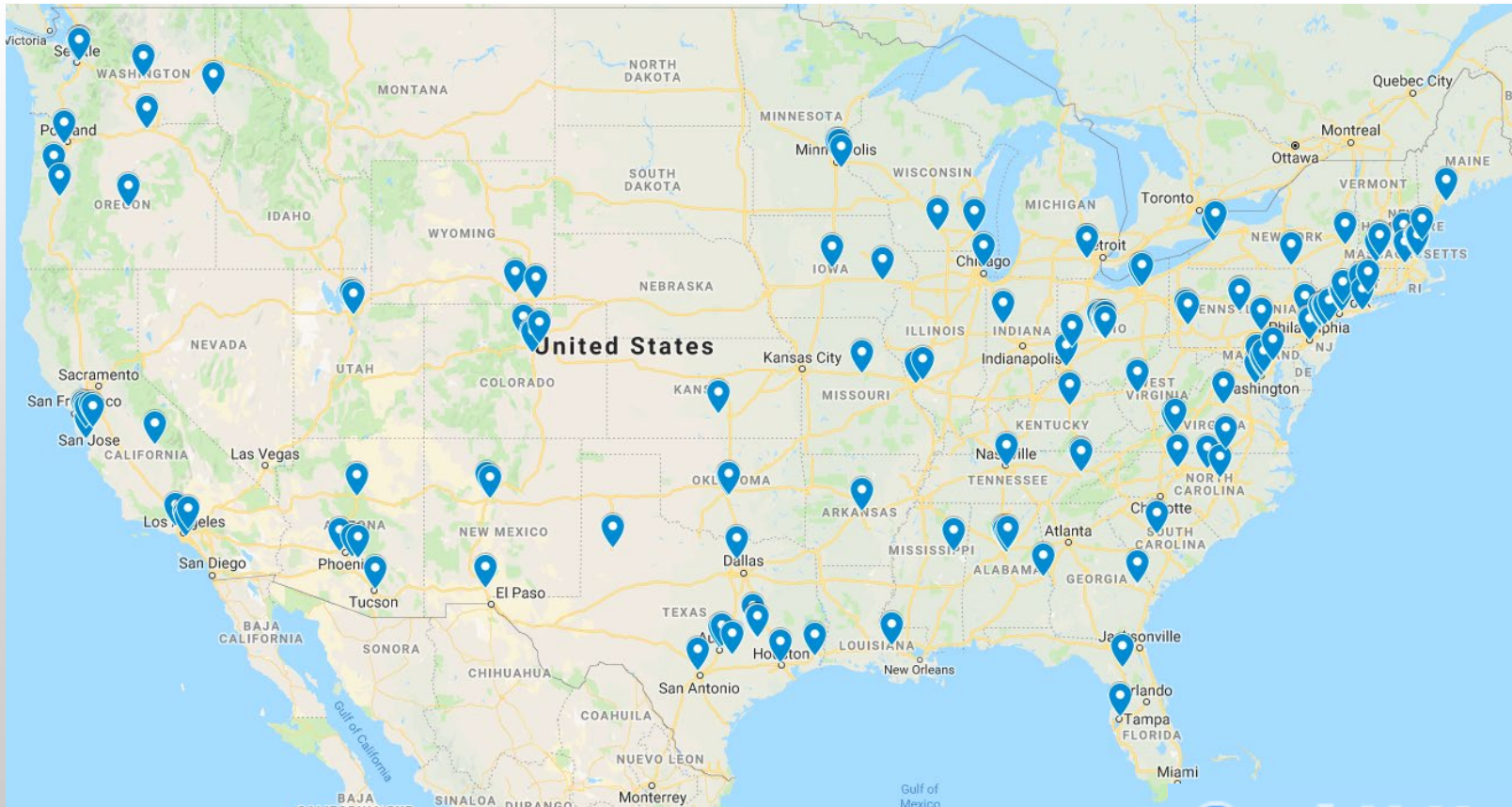
OnDemand users start work faster than traditional users, both in terms of first login and job submission



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



- Map data @2019 Google, INEGI, ORION-ME

Example Current Engagements and Deployments

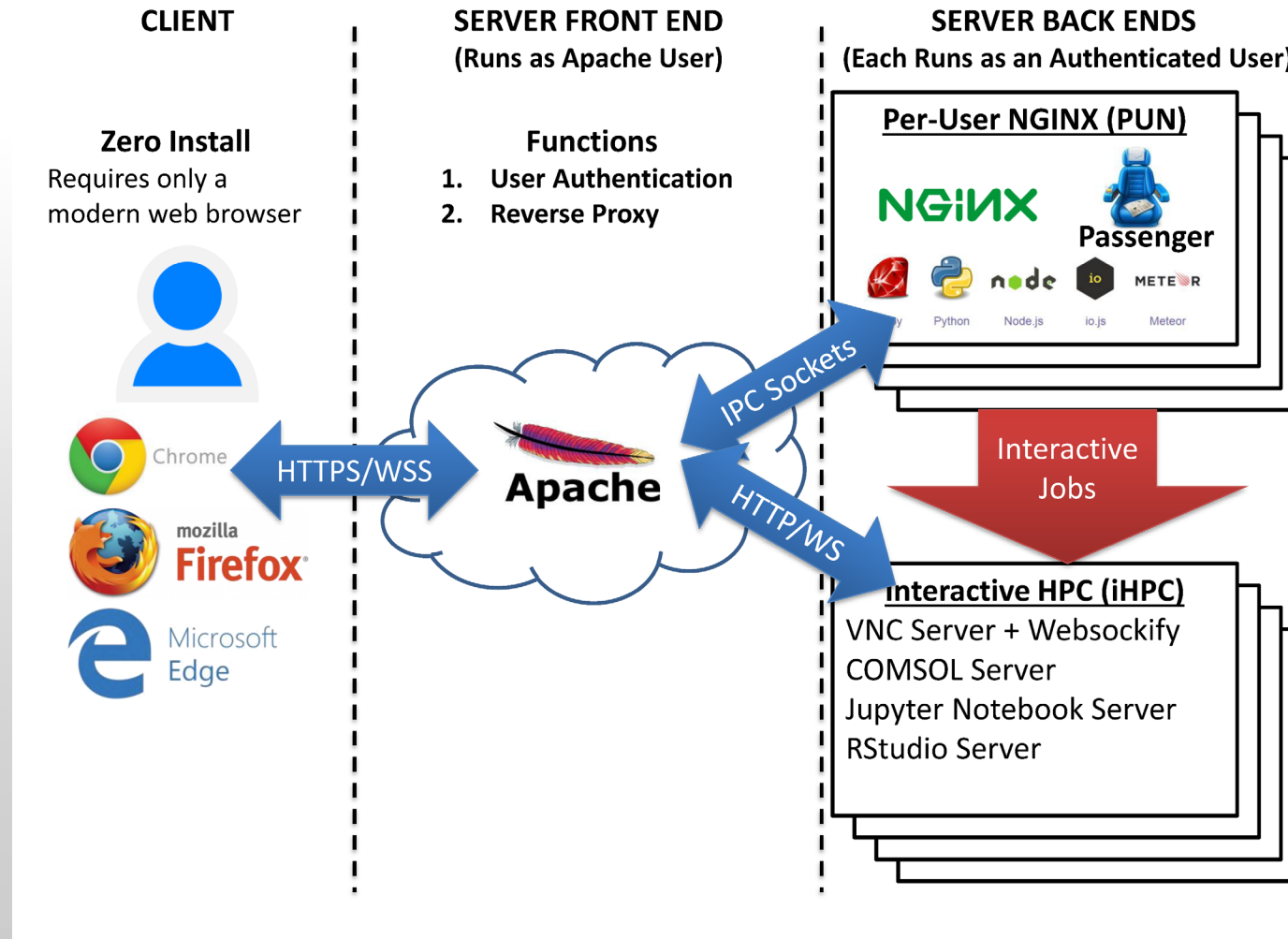
Production Deployments



In Process of Installing



Architecture



Customizing OnDemand: Branding

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

The screenshot displays the Open OnDemand web interface. At the top, a dark grey header bar contains the text "Open OnDemand" on the left and navigation links "</> Develop", "Help", "efranz", and "Log Out" on the right. Below this, the "OPEN OnDemand" logo is prominently displayed, followed by the text "OnDemand provides an integrated, single access point for all of your HPC resources." A secondary dark grey navbar lists "Bridges OnDemand", "Files", "Jobs", "Clusters", and "Interactive Apps", with the same navigation links on the right. The main content area features a banner for "A PITTSBURGH SUPERCOMPUTING CENTER RESOURCE" with a server rack image. Below the banner, a red navbar contains "OSC OnDemand", "Files", "Jobs", "Clusters", and "Interactive Apps", with navigation links on the right. The main content area is branded for the "Ohio Supercomputer Center", an "OH-TECH Consortium Member". It includes the OSC logo, the text "OnDemand provides an integrated, single access point for all of your HPC resources.", and a "Message of the Day" section. The message section contains two announcements: "2017-05-04 - NEW SCRATCH STORAGE POLICY IN EFFECT JUNE 1" and "2017-04-03 - GPUS NOW AVAILABLE ON OWENS".

Open OnDemand

</> Develop Help efranz Log Out

OPEN
OnDemand

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

Bridges OnDemand Files Jobs Clusters Interactive Apps </> Develop Help efranz Log Out

A PITTSBURGH SUPERCOMPUTING CENTER RESOURCE

Welcome to Bridges

OSC OnDemand Files Jobs Clusters Interactive Apps </> Develop Help

Ohio Supercomputer Center
An OH-TECH Consortium Member

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

Message of the Day

2017-05-04 - NEW SCRATCH STORAGE POLICY IN EFFECT JUNE 1
The new scratch storage policy will take effect Thursday, June 1, 2017. We will shorten our file deletion period to 120 days. More information can be found at [https://osc.edu/scratch-storage-policy](#).

2017-04-03 - GPUS NOW AVAILABLE ON OWENS
160 GPU nodes on Owens are available and now include the Nvidia P100. For more information on how to use the GPUs, check out our documentation at [https://osc.edu/gpus](#). Please contact oschelp@osc.edu if you have any questions.

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

Open OnDemand

Files ▾

Jobs ▾

Clusters ▾

Interactive Apps ▾

 My Interactive Sessions

Walkthrough – File Explorer

[OSC OnDemand](#)[Files ▾](#)[Jobs ▾](#)[Clusters ▾](#)[Interactive Apps ▾](#)[📁 My Interactive Sessions](#)[🏠 Home Directory](#)[📁 /fs/project/PZS0712](#)[📁 /fs/scratch/PZS0712](#)

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File Explorer

[📁 Go To...](#)[>_ Open in Terminal](#)[📄 New File](#)[📁 New Dir](#)[📶 Upload](#)☐ Show Dotfiles☒ Show Owner/Mode

📁 Home Directory

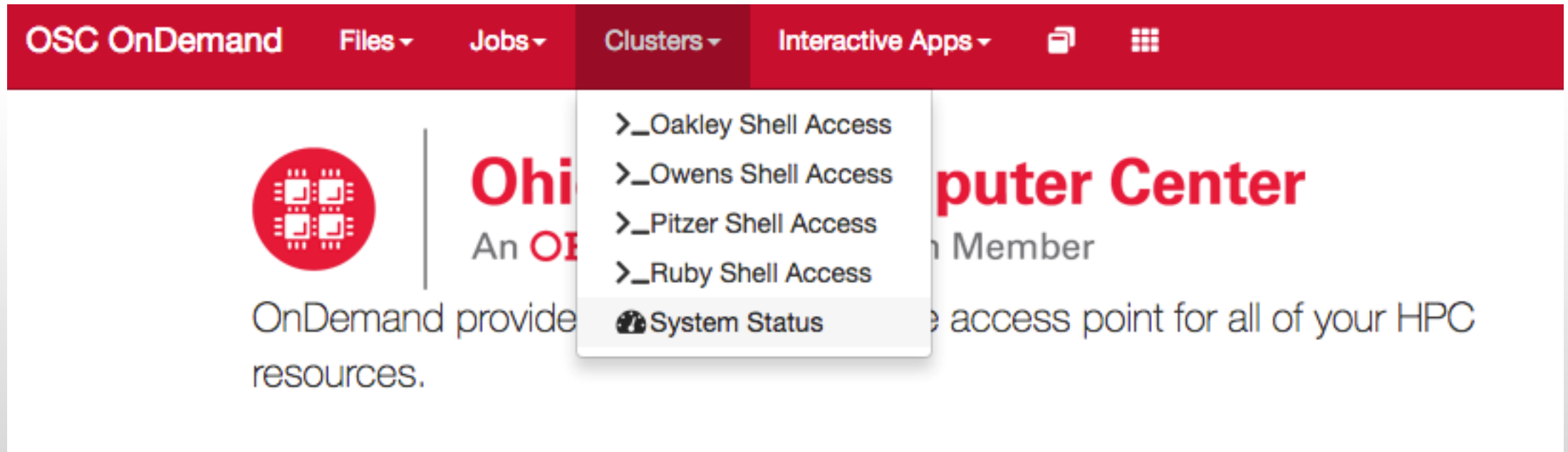
- 📁 7479989.oak-batch.osc.edu
- 📁 7482682.oak-batch.osc.edu
- 📁 7482705.oak-batch.osc.edu
- 📁 Amber_GPU
- 📁 Amber_test
- 📁 Desktop
- 📁 Documents
- 📁 Downloads
- 📁 July17-Bigdata
- 📁 Mar0917-Bigdata
- 📁 Music

/users/appl/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 with white text for 'OSC OnDemand', 'Files', 'Jobs', 'Clusters', and 'Interactive Apps'. The 'Clusters' menu is open, showing a list of shell access options and a system status link. The background features the Ohio State University logo and the text 'Computer Center' and 'Member'.

OSC OnDemand Files Jobs Clusters Interactive Apps

Ohio State University
Computer Center
Member

OnDemand provides a single access point for all of your HPC resources.

- >_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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[Reset Resolution](#)

[Launch](#)

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

Walkthrough – Jobs

OSC OnDemandFilesJobsClustersInteractive Apps



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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:

Owens

Account:

Not specified

Eight Key Lessons Learned

- Engage the community on features
 - Examples: Webinars, Discourse, GitHub issues
- Be responsive to the community
 - Example: Rapid Jupyter adoption in recent years
- Lower the barrier to testing the platform
 - Example: VM instances, SGCI hosting
- Think about installation and configuration
 - Example: RPM-based installation

Eight Key Lessons Learned (cont.)

- Streamline the user interface
 - Example: dynamic menu creation based upon permissions
- Centers want a unified interface
 - Example: integration with monitoring tools
- Think about security
 - Example: TrustedCI review
- Retain an escape hatch
 - Example: site-specific temporary hotfixes

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 ^{BETA}

Files ▾

Jobs ▾

Clusters ▾

Interactive Apps ▾

Help ▾

Logged In as smgallo

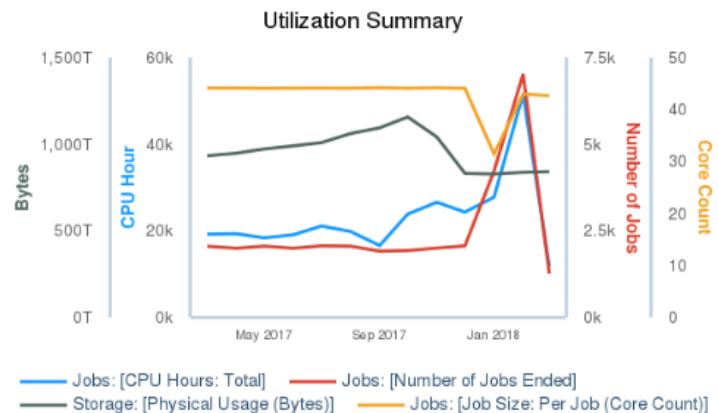
Log Out

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.

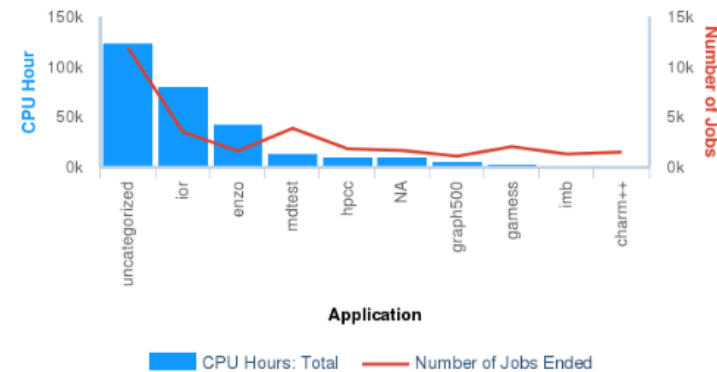
Utilization Summary

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

Open XDMoD and OnDemand Integration

- Active Jobs App links directly to Open XDMoD Job Viewer
- Detailed performance data
 - Per core CPU utilization
 - Network performance
 - Storage reads/writes

CCR OnDemand / Active Jobs

All Jobs ▾

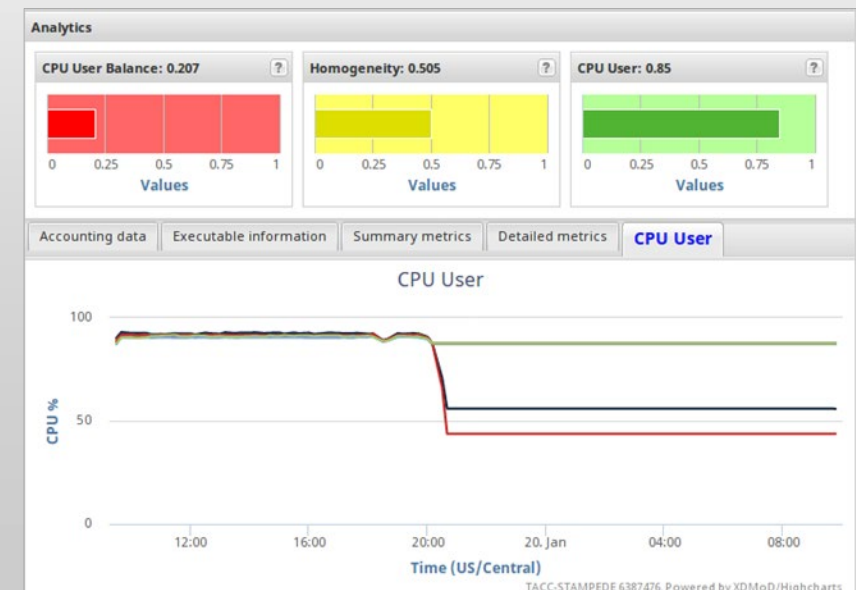
All Clusters ▾

Active Jobs

Show 50 entries

Filter:

ID	Name	User	Account	Time Used	Queue	Status	Cluster	Performance
8524227	GaVCF_ALL	jw24	big		general-com...	Queued	UB HPC	
8518896	JCG_chr1:6746293	jw24	big	44:12:05	general-com...	Running	UB HPC	
8518944	JCG_chr1:26849169	jw24	big	44:09:54	general-com...	Completed	UB HPC	XDMoD
8518965	JCG_chr1:37553840	jw24	big	44:09:54	general-com...	Completed	UB HPC	XDMoD
8518969	JCG_chr1:45553844	jw24	big	44:09:54	general-com...	Completed	UB HPC	XDMoD
8519044	JCG_chr1:69553856	jw24	big	44:07:31	general-com...	Completed	UB HPC	XDMoD



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

OPEN OnDemand

Open-source project based on the Ohio Supercomputer Center's OnDemand platform

[View On GitHub](#) [Read The Docs](#) [Join the Mailing List](#)

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.

Webinars

Date	Title	Slides	Media
2017-03-08	Introducing Open OnDemand	Download	Video
2017-06-07	Open OnDemand: Supporting your HPC needs now more than ever	Download	Video
2017-09-06	Open OnDemand - Jupyter, iHPC, and Authentication	Download	Video - Missing 1st 9.5 min Audio - Complete

Further reading after reading the [documentation](#):

- [OSC App Deployment Strategy](#)
- [OSC CILogon Authentication Strategy](#)

This project is maintained by the Ohio Supercomputer Center (OSC), a member of the Ohio Technology Consortium, the technology and information division of the Ohio Department of Higher Education.

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Thank you! Any questions?



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