



# **Open OnDemand**

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**OSC has a job opening on the Open OnDemand team!**

Full details are available here:

<https://www.oh-tech.org/employment#ohio-supercomputer-center>

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# Supercomputing. Seamlessly.

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

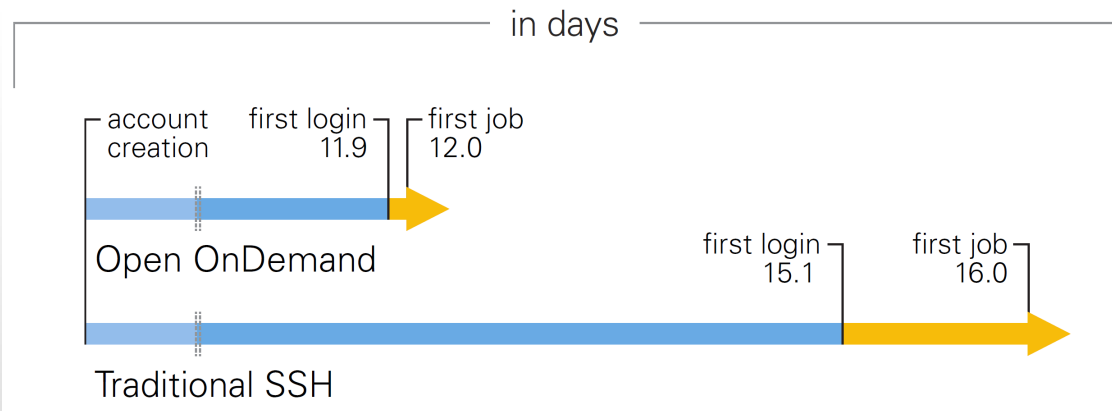
Open OnDemand helps computational researchers and students efficiently utilize remote computing resources by making them easy to access from any device. It helps computer center staff support a wide range of clients by simplifying the user interface and experience.

### Key Benefits & Impact

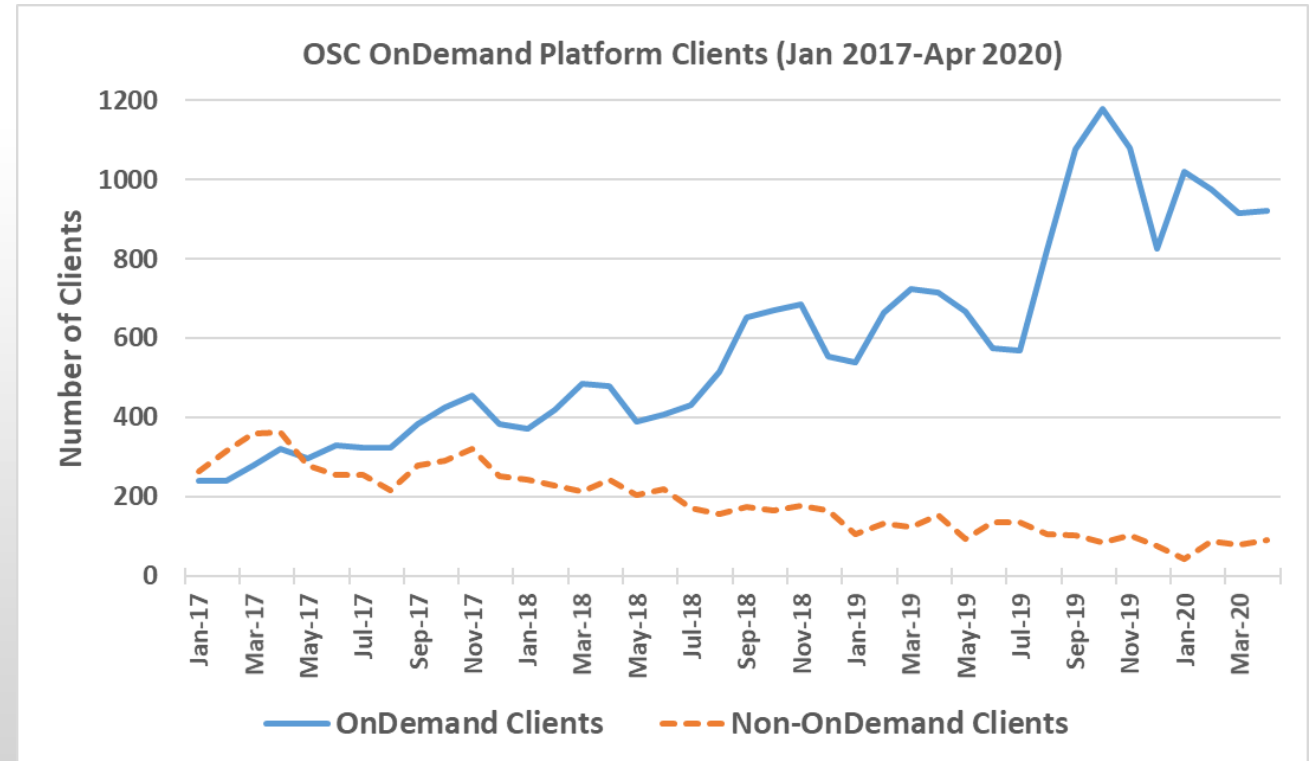
- Key benefit to you, the end user:  
You can use any web browser to access resources at a computing service provider.
- Key benefit to you, the computer center staff:  
A wide range of clients/needs can utilize your computing resources.
- Overall impact:  
Users are able to use remote computing resources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



# Impact at OSC

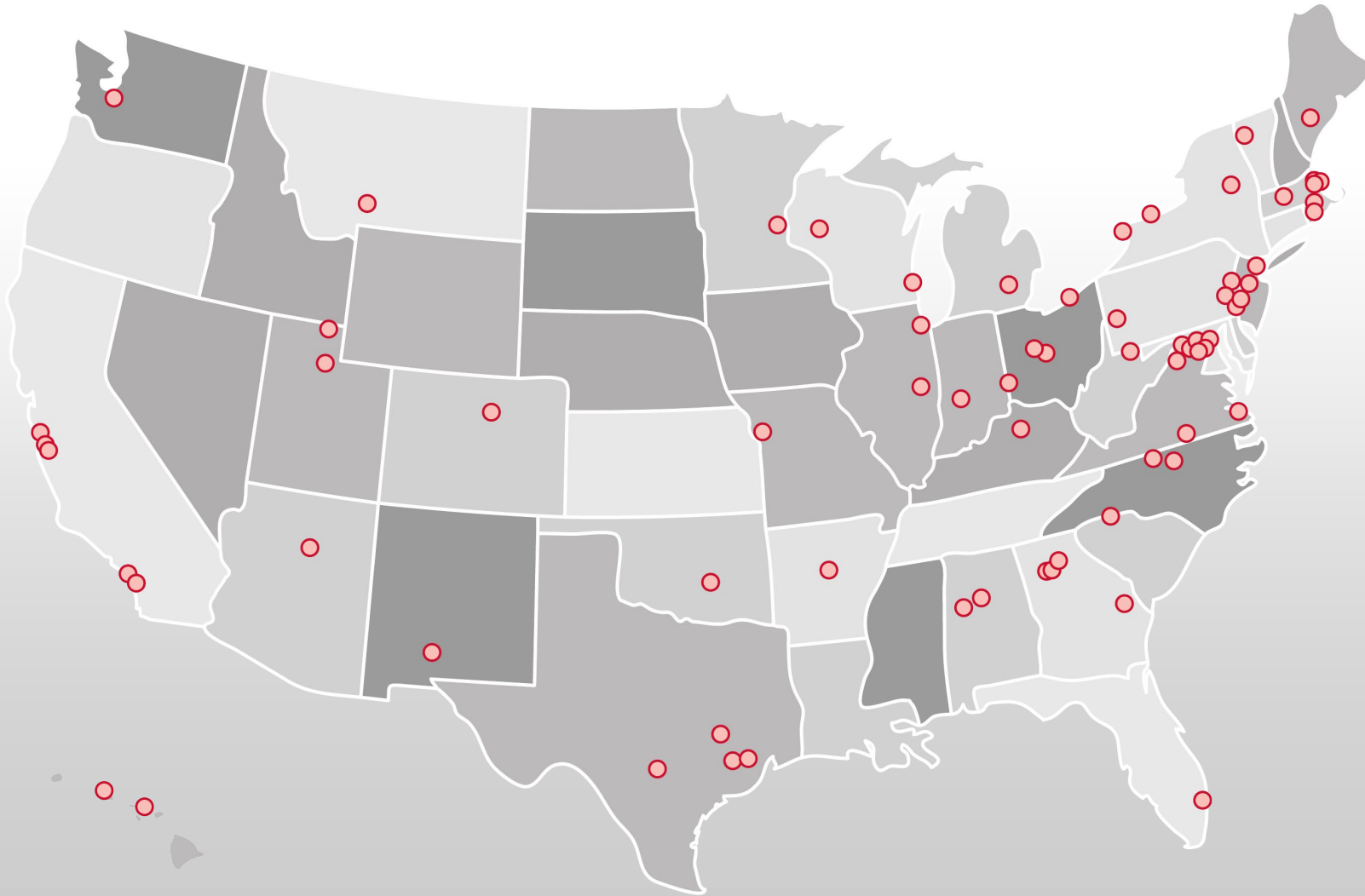


OnDemand users start work faster than traditional users, both in terms of first login and job submission



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



# Production Deployments

OPEN

 nDemand



Ohio Supercomputer Center  
An OH-TECH Consortium Member



THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES



THE OHIO STATE UNIVERSITY



University of Pittsburgh



Caltech



PURDUE UNIVERSITY



上海交通大学  
SHANGHAI JIAO TONG UNIVERSITY



Seattle Children's  
HOSPITAL · RESEARCH · FOUNDATION



FLORIDA STATE UNIVERSITY

UNIVERSITY OF FLORIDA



Stanford



SDSC  
SAN DIEGO SUPERCOMPUTER CENTER



university of groningen



GEORGIA SOUTHERN UNIVERSITY



RUTGERS  
THE STATE UNIVERSITY OF NEW JERSEY



USC University of Southern California

University of Houston Clear Lake

ILLINOIS  
NCSA | National Center for Supercomputing Applications



JOHNS HOPKINS UNIVERSITY

Tufts UNIVERSITY

TEXAS A&M UNIVERSITY

THE UNIVERSITY OF TENNESSEE KNOXVILLE



LSU

LEHIGH UNIVERSITY

TEXAS TECH UNIVERSITY

UTSA  
The University of Texas at San Antonio



LAFAYETTE COLLEGE

UNIVERSITY OF MICHIGAN



THE UNIVERSITY OF UTAH

UNIVERSITY OF VIRGINIA

MISSISSIPPI STATE UNIVERSITY  
MICHIGAN STATE UNIVERSITY

UNIVERSITY OF NEBRASKA LINCOLN

NDSU NORTH DAKOTA STATE UNIVERSITY



VANDERBILT UNIVERSITY

VT VIRGINIA TECH

The University of Vermont



NORTHERN ARIZONA UNIVERSITY



THE UNIVERSITY OF NORTH CAROLINA at CHAPEL HILL



WAGENINGEN UNIVERSITY & RESEARCH

WRIGHT STATE UNIVERSITY

Yale

# 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., (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>

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## 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](#)

# Configuring software to be available in OnDemand

- New software is made available through OnDemand by adding new “apps”
- Users can develop and run apps in their home directory
- Admins can publish apps by copying them to the OnDemand web host’s local disk in `/var/www/ood/apps`

# Configuring software: Types of apps

- Interactive App Plugins
  - Consists of a job template and configuration files
  - Submits a batch job which launches VNC GUI app or web server on compute node and provides user link to connect
- Passenger web apps written in Python, Ruby, or Node.js
  - run as the user - they are acting behalf of the user
  - do not need to manage authentication or authorization
  - write any app specific data to user dirs (\$HOME, \$SCRATCH)



# Dashboard Example: Pinning Apps to the dashboard

Open OnDemand Apps Files Jobs Clusters Interactive Apps

**OPEN**  
**OnDemand**

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

Pinned Apps A featured subset of [all available apps](#)

- HPC Cluster Shell Access**  
System Installed App
- Active Jobs**  
System Installed App
- Home Directory**  
System Installed App
- Desktop**  
System Installed App
- Job Composer**  
System Installed App
- Jupyter Notebook**  
System Installed App

Open OnDemand Apps Files Jobs Clusters Interactive Apps

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Pinned Apps A featured subset of [all available apps](#)

**Clusters**

- HPC Cluster Shell Access**  
System Installed App

**Files**

- Home Directory**  
System Installed App

# Dashboard Example: Changing the layout

## Before

The 'Before' screenshot shows a dashboard with a teal header containing navigation links: 'Open OnDemand', 'Apps', 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'My Interactive Sessions'. On the right side of the header are 'Develop', 'Help', 'Logged in as hpcadmin', and 'Log Out'. The main content area features the 'OPEN OnDemand' logo and a sub-header 'OnDemand provides an integrated, single access point for all of your HPC resources.' Below this is a 'Pinned Apps' section with a sub-header 'A featured subset of all available apps'. Two app cards are visible: 'Clusters' (with a right-pointing arrow icon) and 'Files' (with a house icon). To the right of the pinned apps is a 'Message of the Day' section, followed by 'Tutorial links' and 'Project links' sections, each containing a list of links. At the bottom, a 'Notes' section is partially visible.

## After

The 'After' screenshot shows a modified dashboard layout. The header and navigation remain the same. The 'Pinned Apps' section now features a sub-header 'A featured subset of all available apps' and two app cards: 'Clusters' (with a right-pointing arrow icon) and 'Files' (with a house icon). The 'Message of the Day' section is now positioned to the left of the 'Pinned Apps' section. Below it are 'Tutorial links' and 'Project links' sections, each containing a list of links. At the bottom, a 'Notes' section is partially visible.

# Dashboard Example: Adding a new widget

Open OnDemand Apps Files Jobs Clusters Interactive Apps My Interactive Sessions Develop Help Logged in as hpcadmin Log Out

**OPEN**  
**OnDemand**

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

Thank you for attending the PEARC 2021 Open OnDemand Tutorial!

Message of the Day

Tutorial links


- Coldfront: <https://localhost:2443>
- OnDemand: <https://localhost:3443>
- XDMoD: <https://localhost:4443>
- Login to frontend: `ssh -p 6222 hpcadmin@localhost`
- GitHub Repo: <https://github.com/ubccr/hpc-toolset-tutorial>
- Accounts: <https://github.com/ubccr/hpc-toolset-tutorial/blob/master/docs/applications.md>
- OnDemand Tutorial: <https://github.com/ubccr/hpc-toolset-tutorial/blob/master/ondemand/README.md>

Project links


- Coldfront: <https://github.com/ubccr/coldfront>

Pinned Apps A featured subset of [all available apps](#)

Clusters

  
HPC Cluster Shell Access  
System Installed App

Files



# Kubernetes

- Documentation for using Kubernetes as a resource for Open OnDemand is online.
- It's been in since 1.8, but 2.0 had lots of updates.
- Running in production at OSC.
- <https://osc.github.io/ood-documentation/latest/installation/resource-manager/kubernetes.html>

# In Progress – dynamic javascript

- Hide options depending on current selection
  - hide *hugemem* when cluster changes to *owens*.
- Set min & max
  - Set *hugemem*'s min and max to 42 when cluster changes to *owens*.
- Set a field based on another
  - Set account to *python27* when 2.7 option is chosen.
- Semantics use the existing `data-` attributes.
- More to come!

```
- [
  "gpu",
  # this bad option is kept here so that in testing, it doesn't throw errors
  data-option-for-not-real-choice: false,
  data-max-some-element-for-3rd-element-value: 10,
  data-max-bc-num-slots-for-cluster-owens: 28,
  data-min-bc-num-slots-for-cluster-owens: 2,
  data-max-bc-num-slots-for-cluster-oakley: 40,
  data-min-bc-num-slots-for-cluster-oakley: 3,
]
- [
  "hugemem",
  data-option-for-cluster-oakley: false,
  data-max-bc-num-slots-for-cluster-owens: 42,
  data-min-bc-num-slots-for-cluster-owens: 42
]
- [
  "advanced",
  data-option-for-cluster-oakley: false,
  data-max-bc-num-slots-for-cluster-oakley: 9001
]
```

```
- [
  "2.7",
  data-option-for-node-type-advanced: false,
  data-set-bc-account: 'python27'
]
```

# In Progress – Debian support

- Rake task `rake package:deb` merged earlier this week
  - Ubuntu 20.04 is the first target platform
- Nightly RPMs available
  - New RPM every day. Only deployed in the dev environment at OSC.
  - <https://yum.osc.edu/ondemand/nightly/>



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