



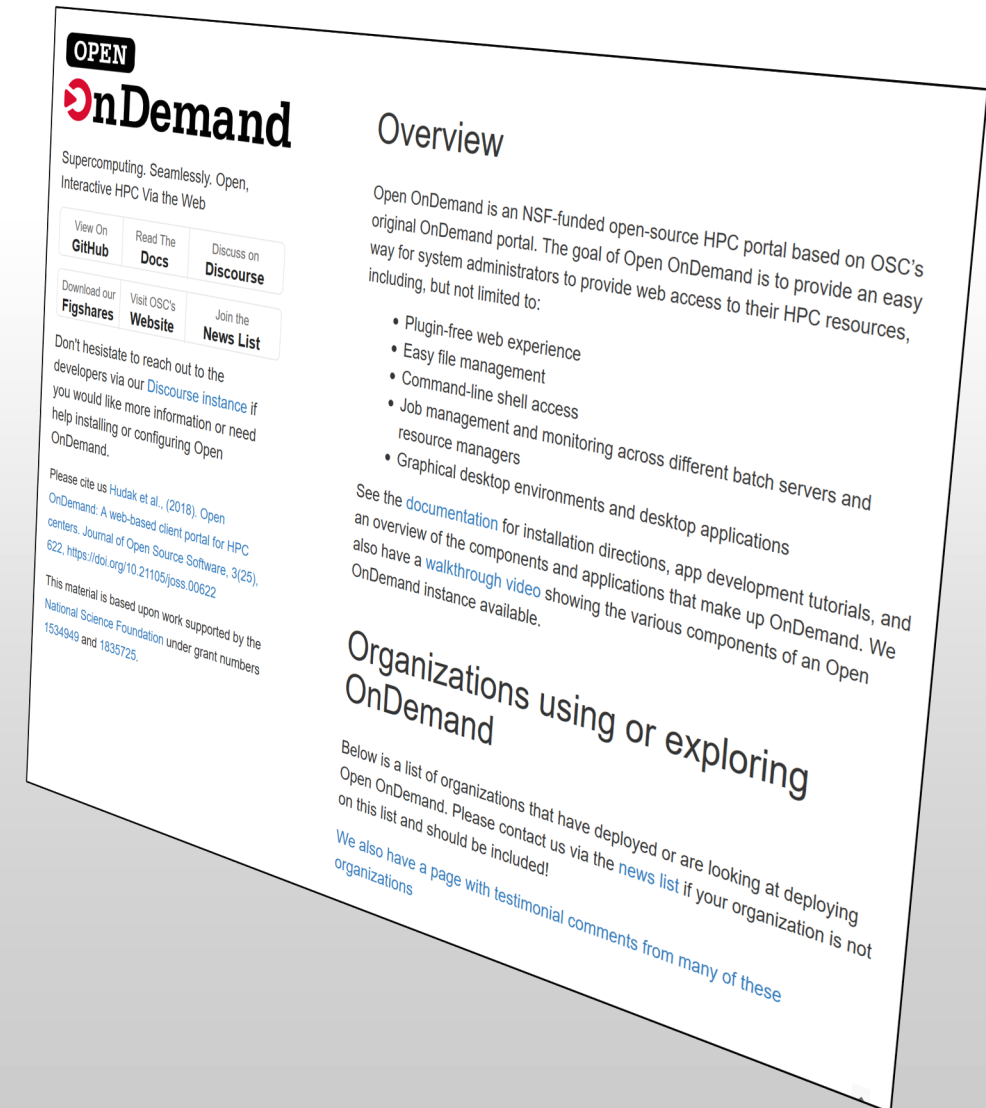
nDemand

This work is supported by the National Science Foundation of the United States under the awards NSF SI2-SSE-1534949 and CSSI-Software-Frameworks-1835725.

Find Out More!

openondemand.org

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



Supercomputing. Seamlessly.

Open OnDemand: Open, Interactive HPC Via the Web

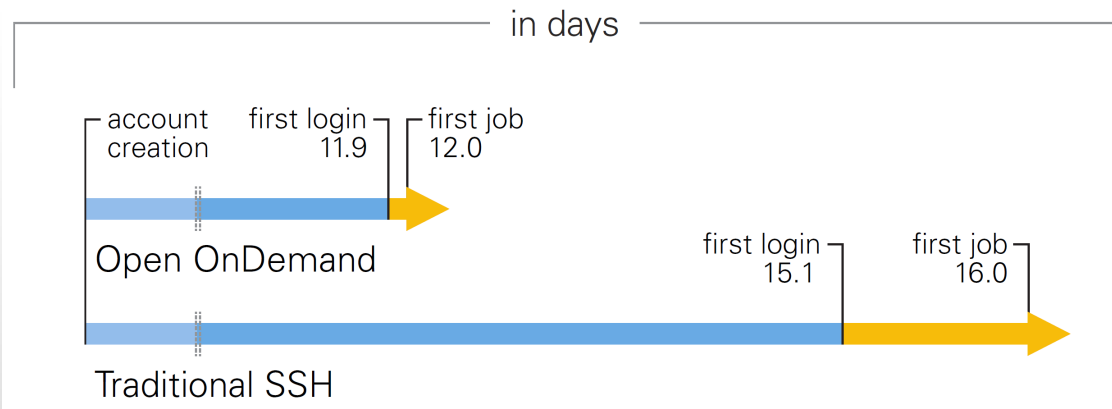
Provides an easy to install and use, web-based access to supercomputers, resulting in intuitive, innovative support for interactive supercomputing.

Features include:

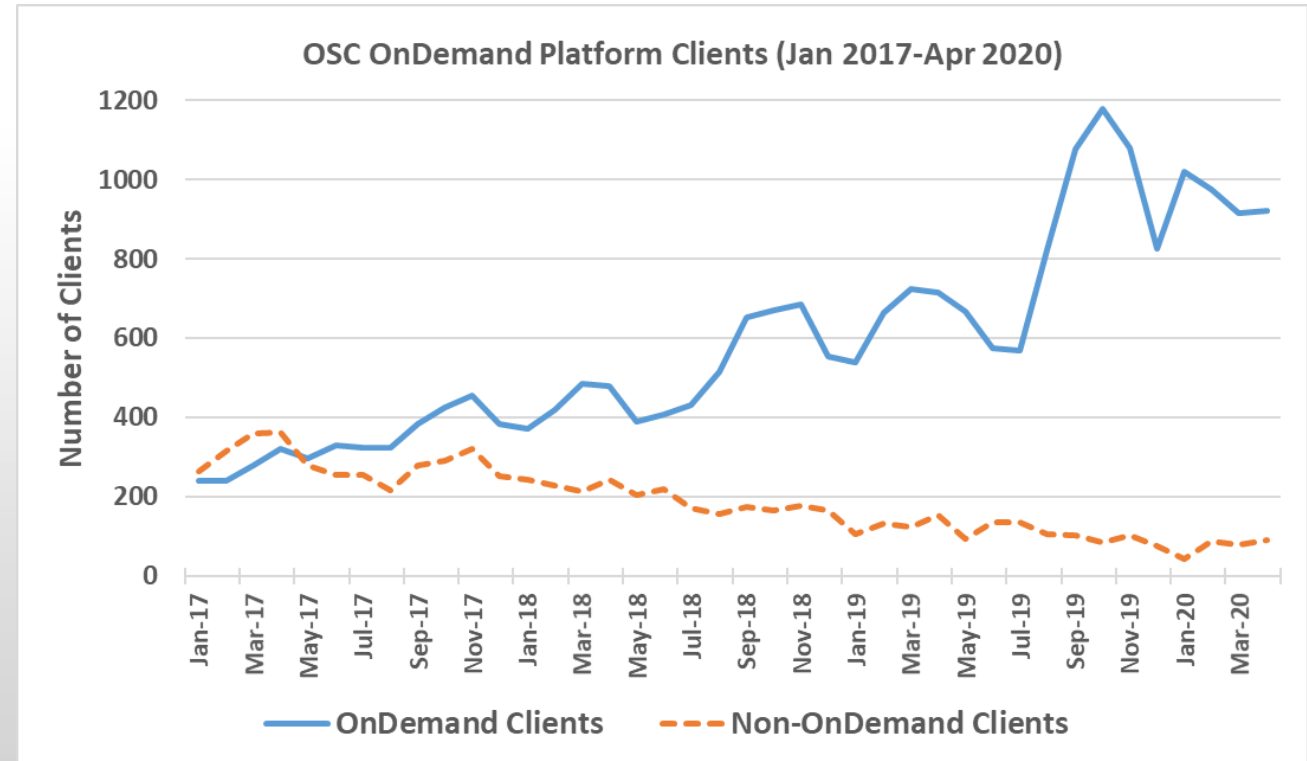
- Plugin-free web experience
- Easy file management
- Command-line shell access
- Job management and monitoring
- Graphical desktop environments and applications



Impact at OSC

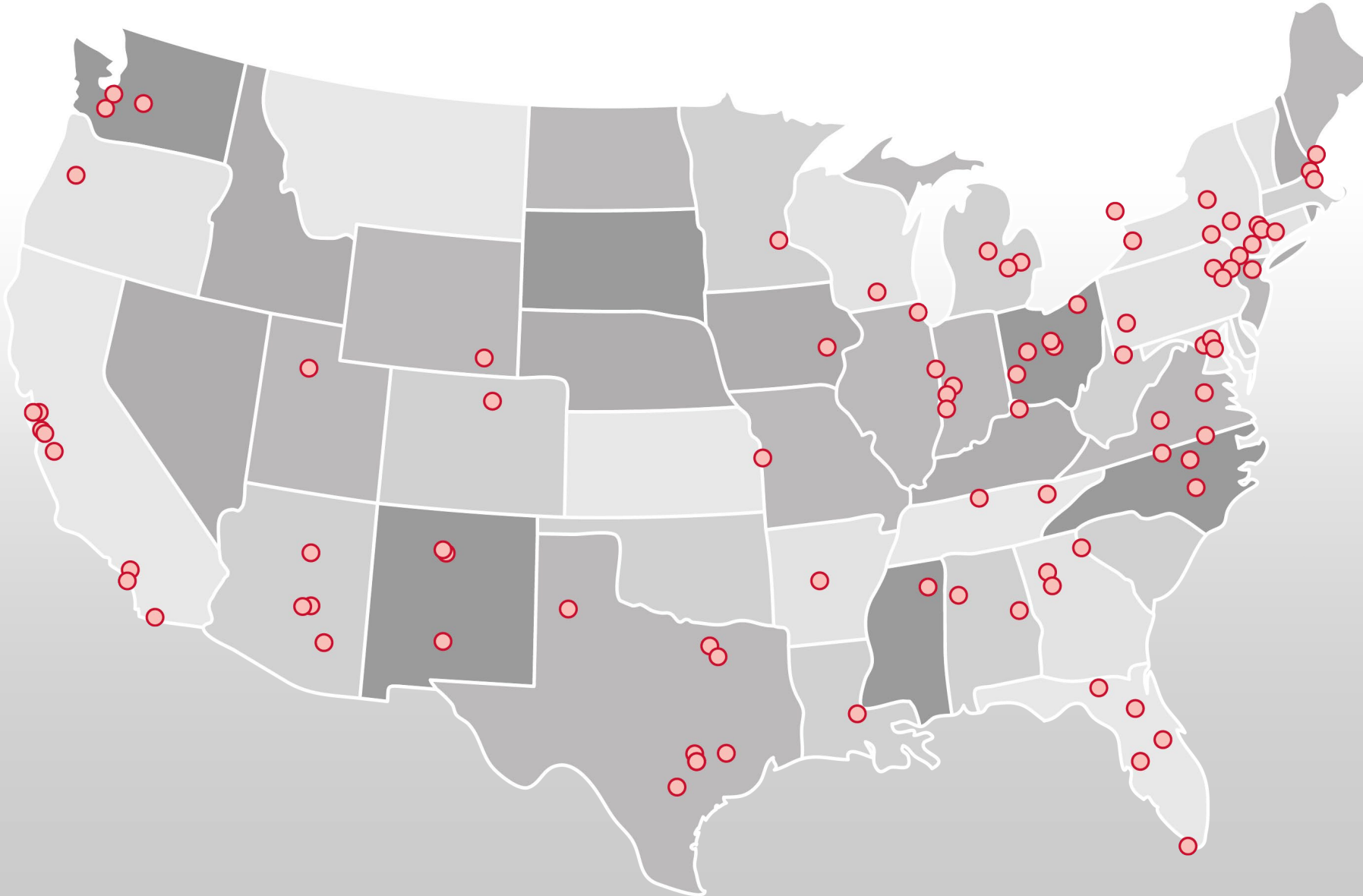


OnDemand users start work faster than traditional users, both in terms of first login and job submission



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

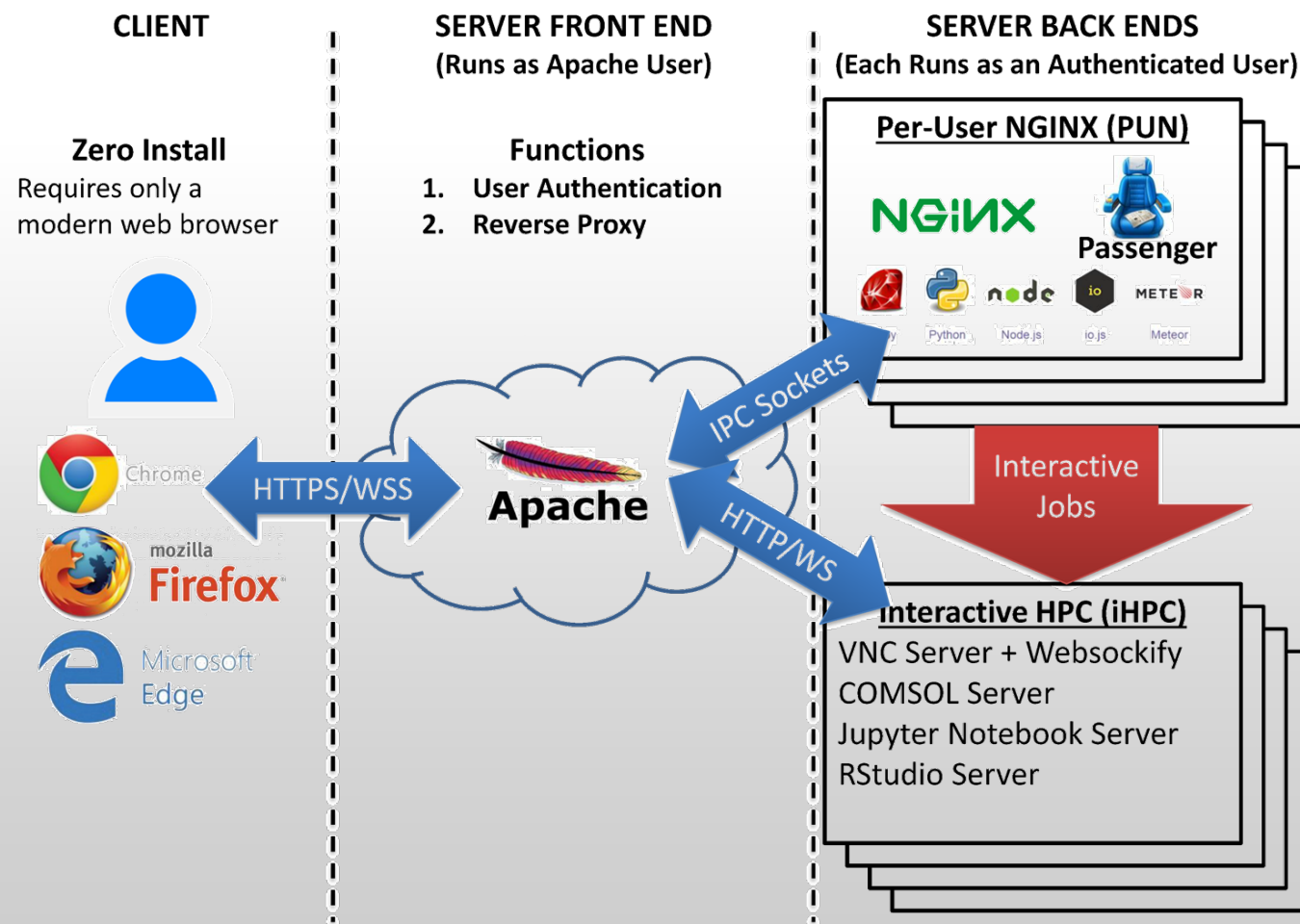
Production Deployments



In Process of Installing



Architecture



Open OnDemand 2.0 Project Overview



Ohio Supercomputer Center



- Previous three year NSF SI2 award (#1534949) to develop OnDemand 1.x
- Awarded follow on NSF CSSI award (#1835725) to develop OnDemand 2.x
 - Project runs from Jan 2019 to Dec 2023
 - Collaborators include SUNY Buffalo and Virginia Tech

Open OnDemand 2.0 Project Overview

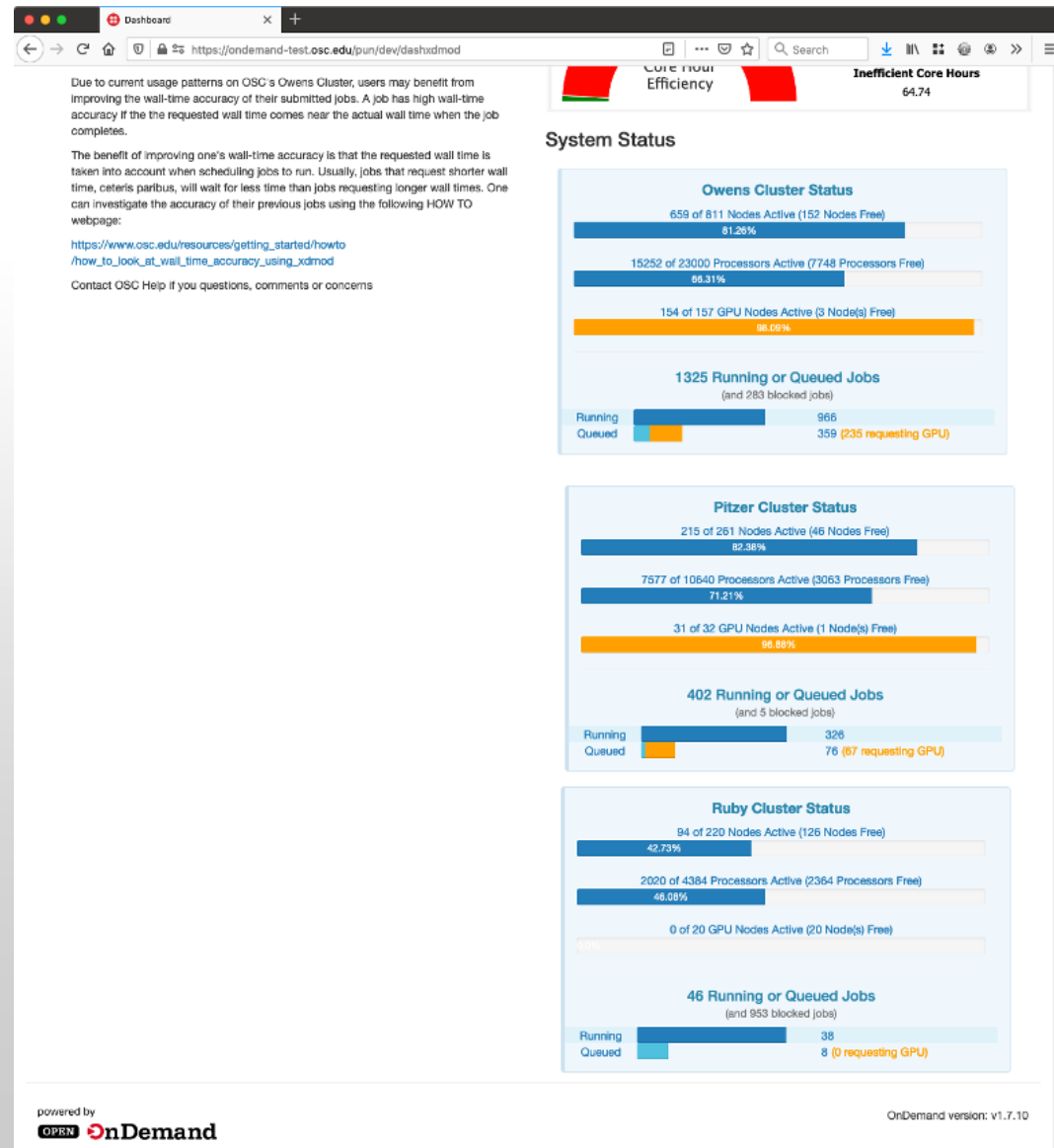
- Four areas
 - **Visibility:** Enhancing resource utilization visibility by integrating the existing Open XDMoD platform
 - **Scalability:** support more types of computing resources and software
 - **Accessibility:** appeal to more scientists in more fields of science
 - **Engagement:** establish community 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/>

Visibility -- improving resource utilization

- The first step in job submission is where to submit
- Provide some overviews of the system status
 - Give indication of specialty hardware availability



Visibility -- improving resource utilization

Job is running on nodes: ca030

Node utilization is:

node	cores	load	pct	mem	used	pct
ca030	32	0.0	0.0	125.6GB	27.9GB	22.2

Visibility -- improving resource utilization

Dashboard

[OSC OnDemand](#)
[Files](#)
[Jobs](#)
[Clusters](#)
[Interactive Apps](#)

[Develop](#)
[Help](#)
[Logged in as efranz](#)
[Log Out](#)

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

2020-04-02 - maintenance outage on the Cluster Export Services

There will be maintenance on cluster export services on Tuesday, April 14 from 8:00am to 10:00am. The following services will be affected by this:

Ruby: A reboot of login nodes. Jobs submitted from directories in /fs/project or /fs/scratch will not run during the outage, but jobs using only home directories and \$TMPDIR will continue to run. Access to /fs/project and /fs/scratch from the Ruby login nodes will also be unavailable.

OnDemand: The OnDemand services will be inaccessible.

2020-03-16 - OSC support during COVID-19 crisis

The Ohio Supercomputer Center serves as a critical resource for the public good and, as such, is striving to provide extraordinary support in light of the ongoing COVID-19 crisis. OSC staff are currently working from home but fully expect clients will see no disruption in our services to support this effort.

Examples of the types of special support OSC can provide include: - Priority, unbilled access to OSC computational and storage resources for COVID-19 research - Flexible billing terms and prices for clients anticipating negative economic impacts - Remote, virtual computing lab resources for classroom instructors and educators - Connections to domain experts in academia and industry

Please don't hesitate to contact OSC at oschelp@osc.edu or (800) 686-6472 for more information on this initiative. Please also distribute this message via any communication channel you to which you might have access so that it can be distributed as widely as possible.

CLASSROOM RESOURCES FOR DISTANCE LEARNING

If your class has lost or limited access to computer labs, the Ohio Supercomputer Center might be able to help by providing no-cost access to cloud computing resources. Classes and workloads of any size can gain access. OSC's web-browser interface to its substantial Linux computer systems provides novice users with virtual desktops preloaded with applications, such as MATLAB, RStudio, or Jupyter Notebook.

As an example, an OSU undergrad statistics class recently used iPads to remotely access RStudio on OSC systems. We can provide online demonstrations or evaluations and potentially add additional software packages.

Please contact OSCHelp@osc.edu to talk to OSC about distance-learning support options available to you.

2020-03-09 - Huge memory nodes partial scheduling

Beginning on Tuesday, March 10th users are able to run jobs using less than a full huge memory node on both the Owens and Pitzer clusters.

Please consider your request more carefully when you plan to use a huge memory node, and specify the resources based on what you will use. Please check our documentation for more detailed guidance: https://www.osc.edu/resources/technical_support/supercomputers/owens/batch_limit_rules https://www.osc.edu/resources/technical_support/supercomputers/pitzer/batch_limit_rules

Active Jobs

ID	Name	Time Used	Status	Cluster
9875373.o...	reverse_flow_straight_20g...	40:32:36	Running	Owens
9964293.o...	STDIN	00:00:00	Queued	Owens
9964297.o...	STDIN	00:00:00	Queued	Owens
9826744.o...	PIV_80kpm_37gpm	00:00:00	Hold	Owens
9875364.o...	4_2M_PR_1_869_High_J+...	00:00:00	Hold	Owens
9964289.o...	STDIN	00:00:00	Completed	Owens

Showing 1 to 6 of 6 entries

Previous 1 Next

Completed Jobs Efficiency Info

Jobs - 2020-03-14 to 2020-04-13

Job Identifier	Start	End	CPU
owens-9953286	2020-04-11 23:10:32	2020-04-11 23:14:54	
owens-9951541	2020-04-11 14:44:54	2020-04-11 15:01:21	
owens-9951487	2020-04-11 14:22:49	2020-04-11 14:39:20	
owens-9951392	2020-04-11 14:06:57	2020-04-11 14:21:35	
owens-9951207	2020-04-11 13:49:44	2020-04-11 14:06:11	
owens-9876329	2020-04-04 13:46:55	2020-04-04 13:59:33	
owens-9876074	2020-04-04 09:38:13	2020-04-04 10:14:40	
owens-9876070	2020-04-04 09:32:42	2020-04-04 09:35:35	
owens-9876055	2020-04-04 09:25:55	2020-04-04 09:25:58	N/A

Page 1 of 2

Displaying 1 - 9 of 15

Job Efficiency Report - 2020-03-14 to 2020-04-13

Job Efficiency

Total Job Count

15

Inefficient Job Count

Total Core Hours

65.87

The second step is do good things

- Provide some overviews of job performance
- Perhaps provide a comparison to other users
- Give users handles to more information

Visibility -- resource utilization Open XDMoD + OnDemand

CCR OnDemand ^{BETA}

Files ▾

Jobs ▾

Clusters ▾

Interactive Apps ▾

Help ▾

Logged In as smgallo

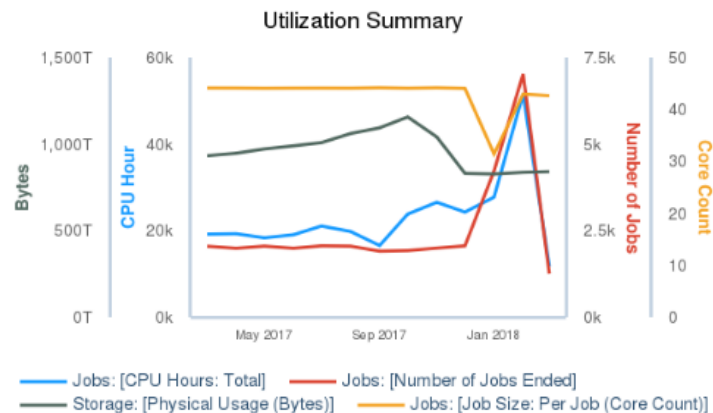
Log Out

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.

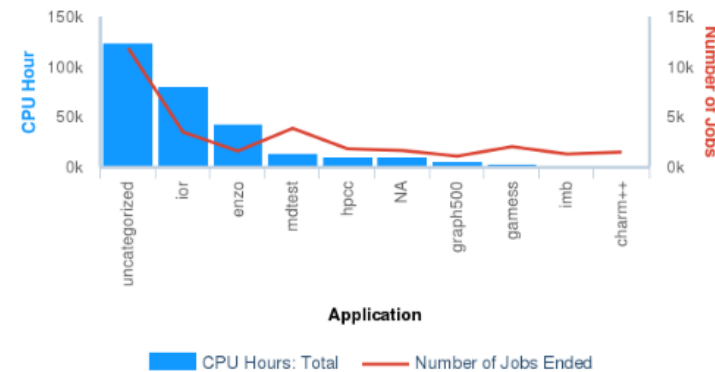
Utilization Summary

	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: HPCDB, File system storage logs. Powered by XDMoD/Highcharts

Application Summary



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

Visibility -- improving resource utilization

- 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

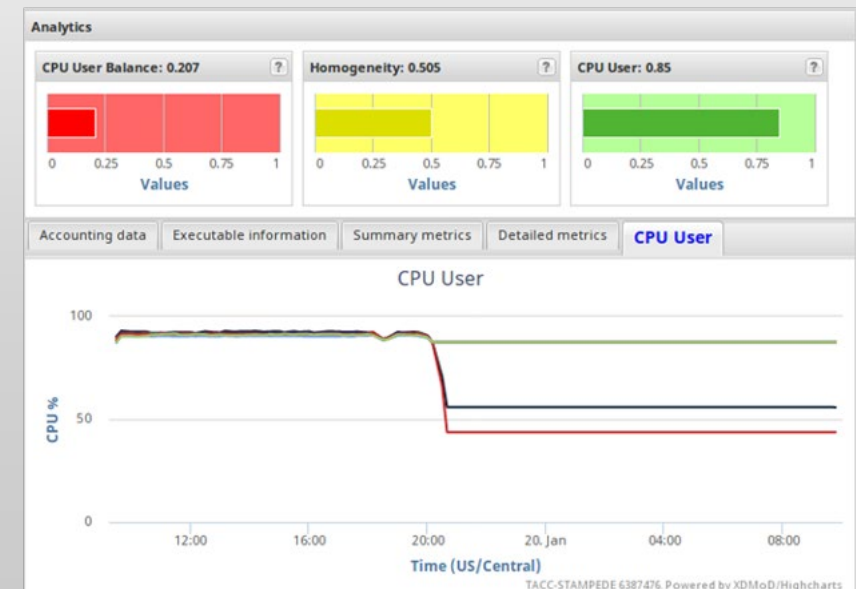
All Jobs ▾ All Clusters ▾

Active Jobs

Show 50 entries

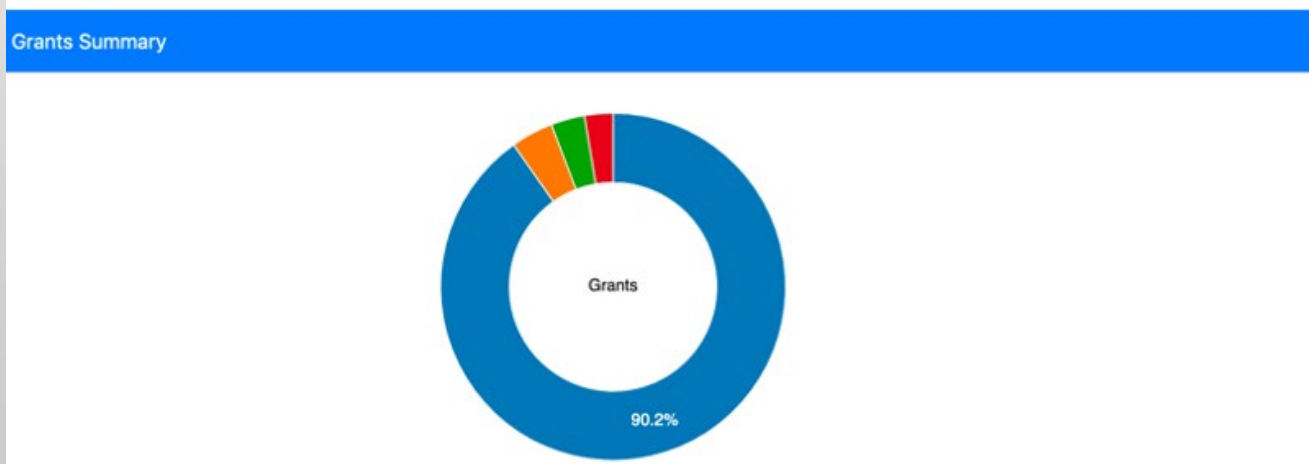
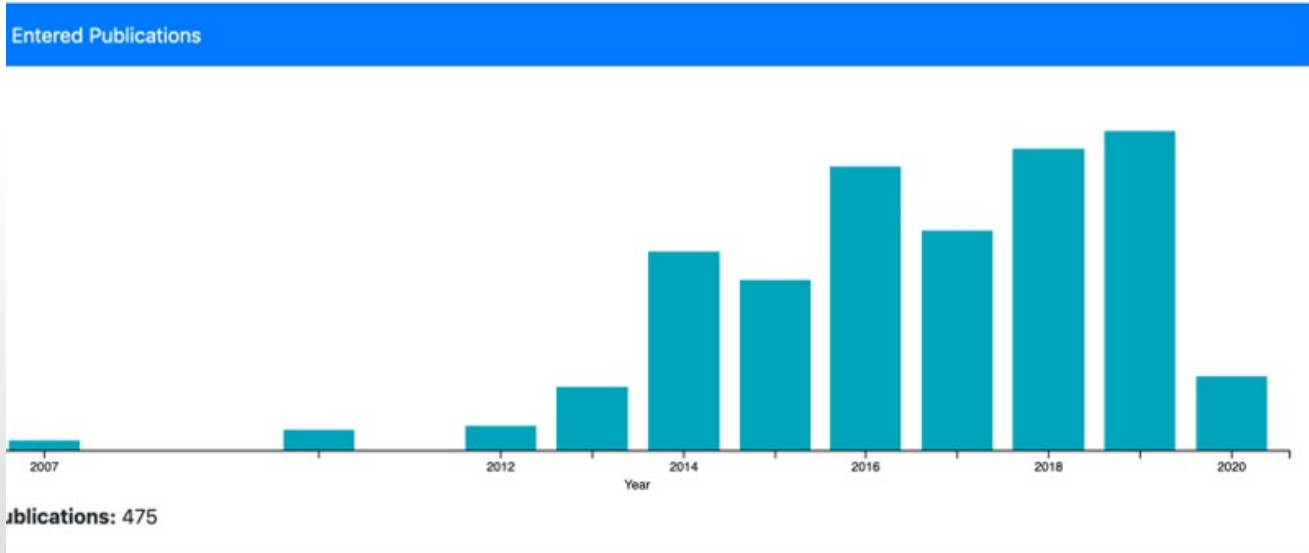
Filter:

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



Visibility -- improving resource usage reporting

Scientific Impact



Scalability – What resources can users hit?

- OpenHPC support
- Cloud
 - On Prem (OpenStack ...)
 - Public (Cloudify)
- Kubernetes connector
- Improve resource utilization from the systems side
 - Interactive work without a batch scheduler
 - Scaling of NGINX process improvements
- App build out

Accessibility – Improve administrative load and user experience

- **Reduce Administrative Load (installation, configuration, debugging)**
 - Streamline the install
 - Reduce config time
 - Improve app building process (debugging, 1 app – mult clusters)
- **Streamlining interface (reduce steps to accomplish a task)**
 - Improve job management
 - Reduce clicks
 - Iconify the experience
 - App launch from desktop icon
 - Integrate apps (file/job/etc)
- **Support workflows**

Engagement: Goals

- Targeting non traditional HPC disciplines
- Advocating for the beginner user
- Outreach
 - i.e. presented OnDemand to Mid-Atlantic Research Infrastructure Alliance (MARIA) HPC Users Group
- Ensure the project is community guided

Engagement: Leveraging OnDemand in Gateway Opportunities

- National-scale Science Gateway community emerging
 - Want to avoid duplication of effort
- NSF is interested in the “science of cyberinfrastructure”
 - OnDemand’s unique per-user web-server architecture is an opportunity for study
- LOGO: How should OnDemand integrate/extend existing Gateway solutions?
 - Sandstone HPC, Galaxy, Apache Airavata

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)

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