

Open OnDemand

Scientific Community Advocate Group

Quarterly Meeting @ PEARC19

Moderators: Robert Settlage, Alan Chalker, Steve Gallo

31 July 2019



Today's Goals and Objectives

1. Introductions
2. Expectations of this Group: the Community Advocates
3. Visibility and XDMoD integration
4. Accessibility and Job Composer – preliminary thoughts
 - Enhancements
 - Pipeline support
 - git
5. Scalability and Cloud extensions – long running jobs
6. Authentication
7. Ease of installation – quick summary, more details in USER meeting

Introductions

Scientific Community Advocate Group

Please state home institution and one positive use for OOD locally.

- John-Paul Robinson
- Ray Leto
- Ping Luo
- Jens Mueller
- Martin Cuma
- Jay Jay Billings
- Mark Gardner
- Michael Knox
- Dominic Daninger
- Blake Joyce
- Richard O Anderson
- Lonnie Davis Crosby
- Kristina Plazonic
- Michael Zentner
- Nigel Hartell
- Shawn Doughty

Expectations of this Group

You are the Community Advocate.

Your local community but with an ear to the larger community.

Open OnDemand is a tool for the community. This group was formed to make sure we keep *a) relevant, b) current, and c) focused* on community needs. We need your local user

- input,
- comments, and
- ideas

to be successful.

Grant Objectives

Development Activities

- Visibility (e.g. OOD - XDMoD integration)
- Accessibility (e.g. interface improvements)
- Scalability (e.g. platform and application expansion)
- Engagement (e.g. expand the community)

Visibility

XDMoD Integration

Job accounting and performance summaries.

Detailed performance data for completed user jobs.

- Project Summary
- 2019 Progress and Plans
- Accounting Dashboard Examples and Demo
- Feedback and Discussion

Visibility

XDMoD Integration

5-Year Plan Summary.

- Year 1: Incorporate XDMoD job accounting and performance summary
- Year 2: Directly link to XDMoD Job Viewer from OnDemand Jobs App
- Year 3: Provide a User Report Card
- Year 4: Allow users to create custom utilization reports
- Year 5: Automated detection of application specific performance via machine learning

Visibility

XDMoD Integration - Progress and Plans

2019:

Progress

- Summary dashboard prototype
- User customization of dashboard

Plans

- Role-based, user customizable dashboards
- Report card: User, Project/PI, Center
- Authentication: SSO for OOD and XDMoD

Visibility

XDMoD Integration - SCAG Requested Features

XDMoD Integration

- Historical usage/utilization data
- Queue wait time (drill-down to job size)
- Workgroup usage summary

XDMoD Integration with Job Viewer (SUPReMM)

- Detailed post-job reports
- Memory, Network, GPU Metrics, CPU usage on a per node basis

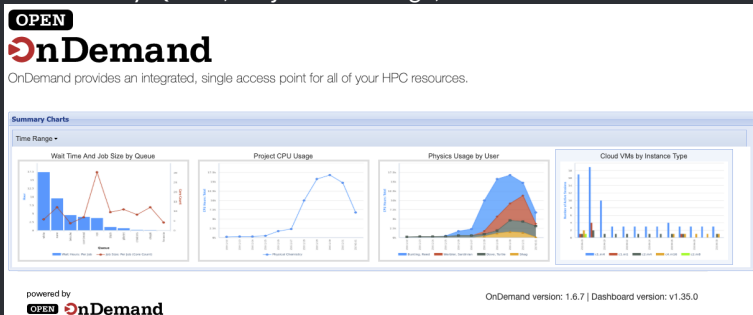
Planned

- Flag poorly performing jobs
- Allocation support

Visibility

XDMoD Integration - User Dashboard

Wait Time by Queue, Project CPU Usage, Cloud VMs



Visibility

XDMoD Integration - User Dashboard

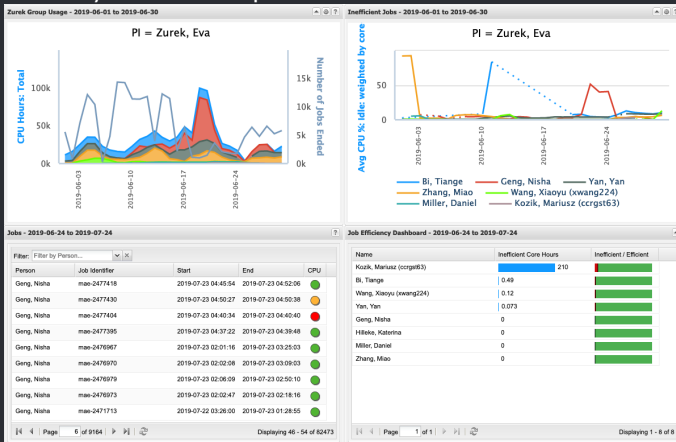
Click a chart to view detail or open directly in XDMoD



Visibility

XDMoD Integration - PI Dashboard

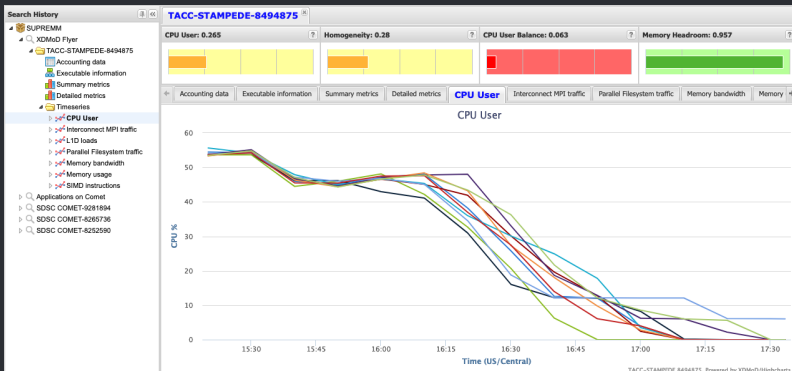
Currently under development



Visibility

XDMoD Integration - Job Viewer

- Detailed post-job reports
- Memory, Network, GPU Metrics, CPU usage on a per node basis



Visibility

XDMoD Integration - Demo and Discussion

- Live integration demo
- Discussion and feedback

Accessibility

Interface improvements

5-Year Plan Summary.

- Streamlined interactive app launching (Y1)
- IDEs accessible from within OOD (Y1)
- Simple Desktop home page (Y1/2)
- Domain specific workspaces (Y1/3)
- Job composer updates (Y2)
- Visual editor for job dependencies (Y3)
- Changes / applications as identified by the SCAG (Y3)
- Common API

Accessibility

SCAG and user feedback – summarized by Dave:

Need to further enable novice users.

Need to provide more functionality to enhance the power user.

1. Enhancements

- Unified job viewer - running, completed, interactive and batch
- Integrated app plugin - batch and interactive i.e. Job Composer templates + web forms
- Files + jobs - file type indicates app
- Software catalog - every installed module
- Open file in app
- remove restriction on where job folders live

2. Pipeline support

3. git

Accessibility

Unified job viewer

running completed, interactive and batch

A Web Page

Jobs (active & last 1000 completed jobs)

ID	Name	Account	Walltime	Queue	Status	Cluster	
> 7327531	LAMMPS	PZS0714	00:12	parallel	Running	Owens	
> 24252	rstudio_server	PZS0714	00:49	parallel	Running	Quick	
> 7326594	LAMMPS	PZS0714	00:42	parallel	Completed	Owens	
> 7323259	LAMMPS	PZS0714	00:31	parallel	Completed	Owens	
> 7326137	LAMMPS	PZS0714	00:33	parallel	Completed	Owens	
> 7326161	jupyter	PZS0714	00:60	serial	Completed	Owens	
> 7326194	desktop/vdi	PZS0714	00:60	serial	Completed	Owens	

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Accessibility

Integrated app plugin

batch and interactive i.e. Job Composer templates + web forms

The screenshot shows a web interface for launching a desktop environment. It features a main form with sections for 'Desktop', 'OpenFOAM', and 'MATLAB'. The 'Desktop' section includes an 'Execution Mode' dropdown with 'Lightweight Interactive' selected. The 'OpenFOAM' section has a 'Case Directory Path or Tar' field with a 'Browse...' button. The 'MATLAB' section has an 'Input File' field with a 'Browse...' button and a 'Choose system file' button. There are also 'Advanced Options' sections for 'Environment' and 'Platform'.

Desktop
Launch interactive Desktop environment.

Execution Mode

- Lightweight Interactive
- Dedicated Interactive

Advanced Options:

Advanced Options:

OpenFOAM
Submit OpenFOAM serial or parallel job.

Case Directory Path or Tar

No file selected

Advanced Option

Advanced Option

MATLAB
Launch MATLAB in interactive or batch mode.

Input File

No file selected. **or**

Interactive - access interactive MATLAB GUI through VNC Session

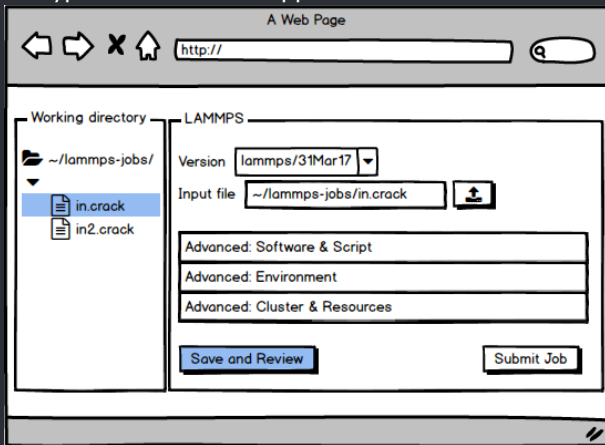
Advanced Options: Environment

Advanced Options: Platform

Accessibility

Files + jobs

file type determines the app



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Accessibility Software catalog

file type determines the app

OSG OnDemand My Interactive Sessions 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.

Filters: All Servers GUIs

- ANSYS Workbench
- Abaqus/CAE
- COMSOL Multiphysics
- Jupyter
- Jupyter (Pitzer)
- Jupyter + Spark

Jupyter + Spark

This app will launch a Jupyter Notebook server using Python as well as an Apache Spark cluster on the Owens cluster.

Message of the Day

2019-07-24 - BWA Software Vulnerability

Due to a recent software vulnerability discovered in bwa versions 0.7.17 and 0.7.13, it is highly recommended that you immediately stop using these versions and instead use bwa/0.7.17-r1198 which contains a patch to mitigate this vulnerability.

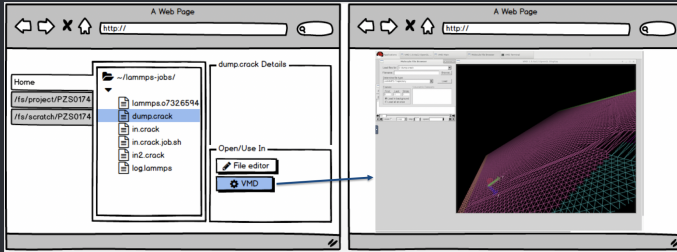
is on the vulnerability can be found following webpages:

- <https://nvd.nist.gov/vuln/detail/2019-10269>
- [https://github.com/coreymhudson/bwa_vulnerabilities/](https://github.com/coreymhudson/bwa_vulnerabilities)

Please contact OSG Help if you have any

Accessibility

Open file in app



Scalability

5-Year Plan Summary.

- API limitations (e.g. persistence mechanisms) (Y1/2)
- Backend server communication (e.g. containers and secure reverse proxies) (Y3)
- Process management (e.g. background job processing) (Y4)
- Server load balancing (e.g. PUNs across multiple nodes) (Y5)

Scalability

Cloud extensions; long running or interactive work without a scheduler.

- Kubernetes
- ssh + fork - launch on login node
- OpenStack, AWS, GoogleCloud
 1. Provision VMs, do interactive work without walltime restriction
 2. Utilize "cloud burst" features of Slurm, other schedulers
- Challenges include data transfer, ensuring VM processes are per user and protecting user started root processes abuse

Scalability

Ease of installation: The first barrier we impose is on ourselves.

Community feedback:

Installation is sometimes difficult.

- Interactive Apps are difficult - simplify plugin architecture and provide better debugging experience
- Authentication is hard. See above.
- Getting the Apache config right is hard; simplify infrastructure to avoid regenerating config using ood-portal-generator
- Cluster config is hard; provide auto validation/error reporting
- Configuration is spread across many files. Centralize into a few files.

Thank you

Next meeting – SC19, week of Nov 17-22

Homework.

Work with your local community to:

- discover under served users
- determine how we can extend the interface to better support new users/use cases
- other thoughts/comments/ideas ...