

A photograph of a server room with blue lighting. Two people, a man and a woman, are standing in the aisle, looking at a tablet held by the man. The man is wearing a white polo shirt with 'CCR' on it and khaki pants. The woman is wearing a dark blue polo shirt and light-colored pants. The server racks are on both sides of the aisle, and the floor is reflective. The text 'XD Net Metrics Service (XMS)' is overlaid in white, italicized font across the top of the image.

XD Net Metrics Service (XMS)

*Matt Jones, Steve Gallo, Robert DeLeon
XSEDE Quarterly Meeting – March 2017*

Outline

- XDMoD 6.5 Released Dec 2016
- Open XDMoD
- XDMoD Update
- XDMoD Users and Usage
- Associated Projects
- XMS Recommendations



XDMoD 6.5 Released

- **Jobs Performance Realm**
 - Added peak memory usage metric.
 - Improved application identification data.
 - Added support for machine learning-based classification of jobs.
 - Process improvements (Bluewaters EAGER)
 - Resource managers (Slurm, PBS, PBSpro, LSF)
- **Job Viewer Updates**
 - Ability to edit existing searches
 - Added export for time-series plots
 - Improvements to UI layout and organization.



XD METRICS SERVICE



XDMoD 6.5 Released

- XDMoD (XSEDE Version)
 - Resource allocation data automatically imported from XRAS
 - Updated RDR client to use new JSON API
 - OSG Jobs now reporting correctly
 - More flexible & scalable ETL process
 - Major code reorganization/cleanup
 - Many efforts underway to support community additions & scalability



Open XDMoD

- New project URL
 - <http://open.xdmod.org/>
- Now available on GitHub
 - <https://github.com/ubccr/xdmod>
- Community contributions welcome!
- Federated identity providers (beta)
 - oAuth, inCommon, Shibboleth, LDAP, Globus Auth
- **210+** downloads in 2017
- 74 confirmed installations/upgrades in 2017 (195 total)
 - Texas A&M, Georgia State, Yale
 - NCAR, NY Genome Center, NIH
 - Marvell Technology Group, Procter and Gamble (ASRC), Radix Trading LLC
 - England, Australia, Brazil, Germany, Spain



XDMoD 6.6 (April 2017)

- Prototype Scientific Impact Realm
- Prototype Federated XDMoD
 - View multiple resources/institutions through a single master
- Support for login via Globus Auth
- Optional XDMoD modules
 - Better support for community contributions
 - Compartmentalize development
 - Add metrics, realms, roles
- Continue to improve ETL process
 - Include Oracle query support
 - Ingestion speedups



XDMoD 6.6 (April 2017)

- Re-engineered data warehouse to support
 - Cloud jobs, Reservations, Intermediate reporting
 - Countable items (GPU/MIC, licenses, etc.)
- Eucalyptus log collection
- Define cloud data input format
 - Re-engaging with Jetstream team for cloud metrics
- Jobs Performance Realm
 - Incorporate additional process improvements from Blue Waters Workload Analysis EAGER
 - Support for indexing archive directory hierarchies
 - Support for per-node CPU and memory metrics
 - Support for load average metrics



XDMoD Plans

- July 2017 (XDMoD 7.0)
 - Migrate XDMoD to new DW structure
 - Automatic detection of bad jobs, user report card (SUPReMM)
 - Local site storage metrics prototype
 - XDMoD-VA beta (Grants, Financial data, ROI)
 - Cloud metrics prototype (Eucalyptus)
 - Define cloud metrics with Wrangler, Jetstream, Bridges teams
- November 2017 (XDMoD 7.5)
 - Cloud metrics prototype (XSEDE)
 - Federated XDMoD
 - Report Generator enhancements
 - Email delegates, additional report templates
 - XDMoD Value Analytics
 - Job Performance Data for Bridges?



XDMoD Usage

- 333 XDMoD Users (2017)
 - Unauthenticated
 - 924 charts loaded, 214 drilldowns
 - 2 Program Officers, 8 Center Directors/Staff, 2 Campus Champions, 9 Users/Pis
- 2360 XDMoD Users (2016)
 - Unauthenticated
 - 6900 charts loaded, 993 drilldowns
 - 10 Program Officers, 14 Center Directors/Staff, 9 Campus Champions, 36 Users/Pis



XDMoD Usage

- Popular Metrics
 - Total SU
 - Total CPU Hours
 - Job Count
 - Avg Processors
 - Wallduration
- Implementing detailed usage metrics late 2017
 - Metrics viewed/exported
 - Custom charts created/exported
 - Most popular metrics
 - Reports sent



Aristotle Cloud Federation

- Cornell (Lead), SUNY-Buffalo, UC Santa Barbara
- NSF ACI-1541215
- Goals
 - Federated cloud model
 - Share resources between institutions
 - Transparent instance movement between institutions
 - Cross-institution allocations
 - Burst to AWS during peak usage
- XDMoD
 - XDMoD will provide metrics collection and reporting
 - Developing log collectors for cloud data
 - **Develop cloud accounting and performance metrics**
 - **Test federated XDMoD capability**



XDMoD Roadmap

Request new features

Located below is the XDMoD Development roadmap, organized by XDMoD release and powered by Trello.com. To view the full roadmap as well as vote and comment on features click any one of the elements on the roadmap. This will take you to the full roadmap on the Trello.com site in a new browser window (or tab). All users will be able to view the roadmap, however if you wish to vote or comment on a feature you will need to create a (free) Trello account if you do not already have one.

XDMoD - Roadmap

Help	Release 7.0 (July 2017)	Release 7.5 (Nov 2017)	Release 8.0 (July 2018)	Feature Request
How to get back to XDMoD	Migrate Open XDMoD to git hub	Report Storage Metrics	Add Value Based Analytics ROI Realm	X-Y Plots
How to request a feature	Auto Detection and Notification of Poorly Performing Jobs	Histogram Plot Capability	Improve API client documentation for XDMoD	Add Comments to
How to vote for a roadmap feature	Report Storage Metrics Prototype	Scientific Impact Metrics Realm	XDMoD Data Warehouse API	Additional SSO Opt etc.)
	Federated Open XDMoD	Prototype XRAS realm	Include Cloud-based Metrics in XDMoD	
	Prototype of Cloud-based Metrics XDMoD Realm	Improve Open XDMoD administrative tools.	Report on HPC Center Help Desk Ticket Handling in XDMoD	
	Track accelerator usage			
	Track ROI/KPI metrics for XDMoD			
	Add Report Templates to XDMoD			
	Add Value Analytics realm to XDMoD			

User community can vote

Comments welcome

Include Cloud-based Metrics in XDMoD

in list Release 6.0 (July 2016)

Votes: 1 vote

Description: Metrics reporting for cloud based computing is substantially different than that for the typical cluster based computing and a variety of new types of metrics will need to be introduced. For example, VM's can run for many months and can go inactive for periods of time during a user "Job" requiring interim progress reporting. In addition, this work will necessitate re-engineering the back-end database for XDMoD.

Activity

EW Ed Walker: I vote for this as being an important feature to incorporate in Release 6.

BD Bob DeLeon: moved this card from Feature List to Release 6.0 (July 2016)

TF Tom Furlani: added this card to Feature List



XMS Recommendations

- Discuss inclusion of cloud data in XDCDB
 - What data should be stored?
 - Jetstream beta will help develop plan
- Implement Bridges Job Performance data
 - Have had initial discussions with Bridges team



Acknowledgement

- **XMS/SUPReMM**

- **UB:** Tom Furlani, Matt Jones, Steve Gallo, Bob DeLeon, Martins Innus, Jeff Palmer, Ben Plessenger, Ryan Rathsam, Nikolay Simakov, Jeanette Sperhac, Joe White, Tom Yearke, Cynthia Cornelius, Abani Patra
- **Indiana:** Gregor von Laszewski, Fugang Wang
- **University of Texas:** Jim Browne
- **TACC:** Bill Barth, Todd Evans, Weijia Xu
- **NCAR:** Shiquan Su

- **NSF**

- TAS: OCI 1025159, SUPReMM: OCI1203560
- XMS: ACI-1445806

