

Open XDMoD Job Viewer: A Tool to Monitor Job Performance

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Abstract— Open XDMoD is a web-based tool intended to provide HPC stakeholders with a variety of usage and performance data. One new feature of Open XDMoD is the Job Viewer that allows users and user support personnel to view detailed job-level performance information. The user can inspect detailed time-dependent performance data (obtained from performance co-pilot or an analogous utility) and job analytics results to determine how efficiently their job ran and, if performance was poor, to gain insight into possible causes of the problem and how to fix it. This poster provides information regarding the job-level performance data that is available through the Open XDMoD Job Viewer and how to use it to assess job performance.

Keywords—Open XDMoD, job performance, SUPReMM, job viewer, XMS, PCP, TACC_Stats

I. POSTER SUMMARY

Open XDMoD [1] is an open-source web-based software tool that provides job level usage and performance data for high performance computer (HPC) clusters. In the past six months Open XDMoD has been downloaded over 1200 times and we know of at least 120 active instances running on data centers around the world. XDMoD itself is fully implemented on the XSEDE system, which is the largest cyber infrastructure project in the United States. Together all implementations of XDMoD and Open XDMoD constitute the most accessible general repository of HPC job usage and job performance data. Open XDMoD, like XDMoD, has recently been upgraded to include the capability to ingest job performance data from a variety of sources such as Performance Co-Pilot, TACC_Stats, Ganglia and Cray Resource Utilization Reporting and analyze and display it. This poster will describe a representative subset of the wide range of innovative job performance analyses that can be accomplished using the Open XDMoD Job Viewer.

The Open XDMoD Job Viewer includes a comprehensive job search facility and bespoke job information display interface. The job search allows selection of jobs based on a wide range of criteria, such as the results of various novel job analysis

algorithms. Examples include identifying underutilized resources using heuristic algorithms, using random-forest-based advanced machine learning algorithms [2] to categorize jobs and using statistical modelling to characterize a job's runtime evolution.

The poster itself will include details about how to use the search, an overview of some of the available analysis algorithms and information about how to interpret the displayed information.

Interactive multimedia content will be available to support the poster. A QR code embedded in the poster will provide a link to a live fully-functioning demonstration instance of XDMoD that is loaded with real job data representative of an HPC center. Users will be provided with credentials allowing them to explore the interface in real time and have access to the full powerful features of the software including the Job Viewer featured on the poster. A second QR code will provide a link to the Open XDMoD sourceforge site from which the Open XDMoD code can be downloaded. This site includes step by step instructions in how to establish an Open XDMoD instance to monitor an HPC cluster.

REFERENCES

- [1] Jeffrey T. Palmer, Steven M. Gallo, Thomas R. Furlani, Matthew D. Jones, Robert L. DeLeon, Joseph P. White, Nikolay Simakov, Abani K. Patra, Jeanette Sperhac, Thomas Yearke, Ryan Rathsam, Martins Innus, Cynthia D. Cornelius, James C. Browne, William L. Barth, Richard T. Evans, "Open XDMoD: A Tool for the Comprehensive Management of High-Performance Computing Resources", *Computing in Science & Engineering* 17.4 (2015):52-62, 2015 [doi:10.1109/MCSE.2015.68](https://doi.org/10.1109/MCSE.2015.68)
- [2] Gallo, S.M., White, J.P., DeLeon, R.L., Furlani, T.R., Ngo, H., Patra, A.K., Jones, M.D., Palmer, J.T., Simakov, N., Sperhac, J.M., Innus, M., Yearke, T. and Rathsam, R. 2015. Analysis of XDMoD/SUPReMM Data Using Machine Learning Techniques. *2015 IEEE International Conference on Cluster Computing* (2015), 642–649.