

## 0.1 XD Metrics Service

The XD Metrics Service (XMS) [1] is a renewed project of the Technology Audit Service (TAS), which aims at improving the operational efficiency and management of NSF's XD network of computational resources. XMS builds on and expands the successes of the TAS project, such as the development of the XDMoD tool. This tool provides stakeholders of XD and its largest project, XSEDE, with ready access to data about utilization, performance, and quality of service for XD resources and XSEDE-related services. While the initial project focus was the XD community, the ongoing effort realized that such a resource management tool would also be of great utility to high performance computing centers in general, as well as to other data centers managing complex IT infrastructure. To pursue this opportunity, Open XDMoD was being developed, which is an open source version of the tool. Open XDMoD is already in use by numerous academic and industrial HPC centers. The XMS project expands XDMoD beyond its original goals, so as to increase its utility to XD and move it into the realm of a comprehensive resource management tool for cyberinfrastructure. One example is the incorporation of job-level performance data through *TACC\_Stats* into XDMoD. This functionality provides XDMoD with the ability to identify poorly performing applications, improve throughput, characterize the system's workload, and provide metrics critical for the specification of future resource acquisitions. Given the scale of today's HPC systems, even modest increases in throughput can have a substantial impact on science and engineering research. For example, with respect to the XD network, every 1% increase in system performance translates into an additional 15 million CPU hours of computer time that can be allocated for research.

### 0.1.1 Notes

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## References

- [1] Robert L. DeLeon et al. “TAS View of XSEDE Users and Usage”. In: *Proceedings of the 2015 XSEDE Conference: Scientific Advancements Enabled by Enhanced Cyberinfrastructure*. XSEDE '15. St. Louis, Missouri: ACM, 2015, 21:1–21:8. ISBN: 978-1-4503-3720-5. DOI: [10.1145/2792745.2792766](https://doi.org/10.1145/2792745.2792766). URL: <http://doi.acm.org/10.1145/2792745.2792766> (cited on page 1).

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