

ISTeC Research Computing Open Forum: Using NSF or National Laboratory Resources for High Performance Computing

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Off-campus Federal HPC Resources Available

- federal (“free”) HPC resource providers
 - ▲ NSF
 - XSEDE program
 - Blue Waters program
 - ▲ government laboratories
 - ▲ domain specific resources
 - Pathogen Portal
 - DIAG (Data Intensive Academic Grid)
- gaining access to NSF machines
 - ▲ applying to grants that award HPC time
- gaining access to HPC resources of government labs
 - ▲ by having collaborative projects with them
 - ▲ applying to grants that award HPC time

NSF Resources – XSEDE Program

- *startup* allocations – usually for experimenting with XSEDE platforms, application development, etc.
 - ▲ quick turn-around time for application
 - ▲ awards are for a year
- *research* allocations – needs formal request documents and CVs of PIs/Co-PIs
 - ▲ justify the allocation requested with results (obtained from a *startup* allocation usually)
 - ▲ submission periods are available 4 times a year
 - ▲ approved allocations begin in 3 months
 - ▲ awards are for a year

NSF Resources – Blue Waters Program

- at least 80% of the Blue Waters system is available to researchers through an NSF application
- NSF applications open annually and award time for a year
- *“Proposers must show a compelling science or engineering challenge that **will require petascale** computing resources.”*
 - ▲ to put in perspective: equivalent to ~54x ISTeC Cray (ISTeC Cray has a peak performance of 19 teraflops)

Access to Titan at Oak Ridge National Laboratory

- three different programs in which one can apply
 - ▲ INCITE (once a year)
 - *“focus on projects that use a **large fractions** of the system or **require unique architectural infrastructure** that cannot be performed anywhere else”*
 - ▲ ASCR Leadership Computing Challenge (once a year)
 - *“high-risk, high-payoff simulations in areas **directly related** to the DOE mission”*
 - ▲ Director’s Discretion (anytime)
 - *“short-duration projects”* (usually INCITE and ALCC scaling experiments and testing)
- allocations are for a year and require quarterly reports and a close-out report

Concerns Using Federal Resources

- need to submit an application (usually) a few months in advance
- problem type and/or size must match compute center's interests
 - ▲ usually hard for small to medium sized applications
- getting compute time awarded is competitive
- very little technical support or help is provided
- different centers have different compute systems and so learning can be an issue
 - ▲ especially for researchers who run applications and store results in machines from different centers
- allocations are for a year at most and need to reapply
- moving data back and forth can be time-consuming

Thank You

Questions?

Feedback?

**Your experience with
federal HPC resources?**