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?