Undergrad HPC Education

Advanced Cyber Infrastructure Research and Education Facilitators

Discussion led by Jeremy Evert

Seven parts that help

- Regional Support (OneOCII)
- Institutional Support from Administration (Great Boss)
- Established Required Exposure (Software Eng. and Comp. Arch.)
- Commonalities in Hardware (Blue Waters and Pis)
- General Applicability (NASA and Devon Energy)
- Competitions (SCC and Tulsa HPC Competition)
- Persistent Collaboration Environment (LaTeX and Github)

Regional Support

- Area Flagship Schools in Leadership Roles

- Regional Sister Universities able to Participate

- Larger schools providing Masters and Doctoral work

- Sharing Opportunities:
  - Education and Training
  - Job Postings
  - Grants and Publications

Institutional Support from Administration

- President has faith in faculty

- Deans excited about outcomes

- Department Chairs excited about publications and grants

- Program Chairs excited about course materials

Established Required Exposure

- Students have to take, with me:
  - Computer Architecture
  - Software Engineering
- Students can take:
  - Capstone Design Project
  - Server Management
  - Operating Systems
- My students need lines on the resume, and I provide this as an option to get them
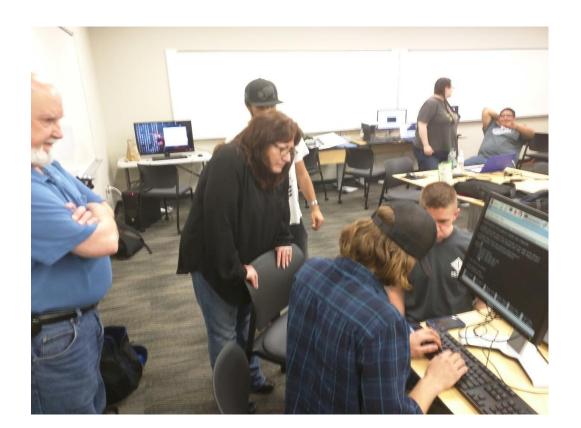
Commonalities in Hardware

- Blue Waters runs Linux, and so Can Pis
- Blue Waters uses MPI and openMP, and so Can Pis
- Blue Waters is a cluster, and we can build those on our desktops in virtual machines
- Blue Waters uses CUDA, and we have CUDA capable devices in the lab
- And the same is true about NASA's Discover, and OU's Schooner, and PSC, and …

General Applicability

- NASA has HPC jobs and research
- Devon Energy has jobs
- OU, UCO, and Tulsa have research and grad degrees
- National Labs have jobs
- Everyone has servers
- http://gcat-seek.weebly.com/workshops.html
- http://www.ok-lsamp.okstate.edu/

Competitions

- Open admission competition like the Oklahoma HPC Competition
- National competition like the Student Cluster Competition at SC 17

Persistent Collaboration Environment

- Git and Github

- LaTeX

- Markdown

- Shared Knowledge Management System

- Library Publications

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