

Advancing Research Computing on Campus and Beyond

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Inspiration

“Never doubt that a small group of thoughtful people could change the world. Indeed, it’s the only thing that ever has.”

Margaret Mead

“Far and away the best prize that life offers is the chance to work hard at work worth doing.”

Theodore Roosevelt



A Brief History of OSU's High Performance Computing Center



What is OSU HPCCC?

- Multidisciplinary Center to provide free cyberinfrastructure resources, expertise and education, not only at OSU but across OK.
- Our mission is to help our users be successful in computational research, education and outreach.
- We provide proposal support and collaboration – letters, facilities, data management, outreach, optimization etc.



In the beginning...

2004-2005: VPR, IT and small group of faculty write a rationale for Central HPC Center.

- (Briefly) part of University's strategic plan!
 - Enhance competitiveness
 - Encourage collaboration
 - Improve research computing resources
- Two graduate students would be trained to sustain and support it.



Twilight

2006-2007

- Bullet : 64 nodes, 820 GFLOPs
- Administered by one overburdened person in IT



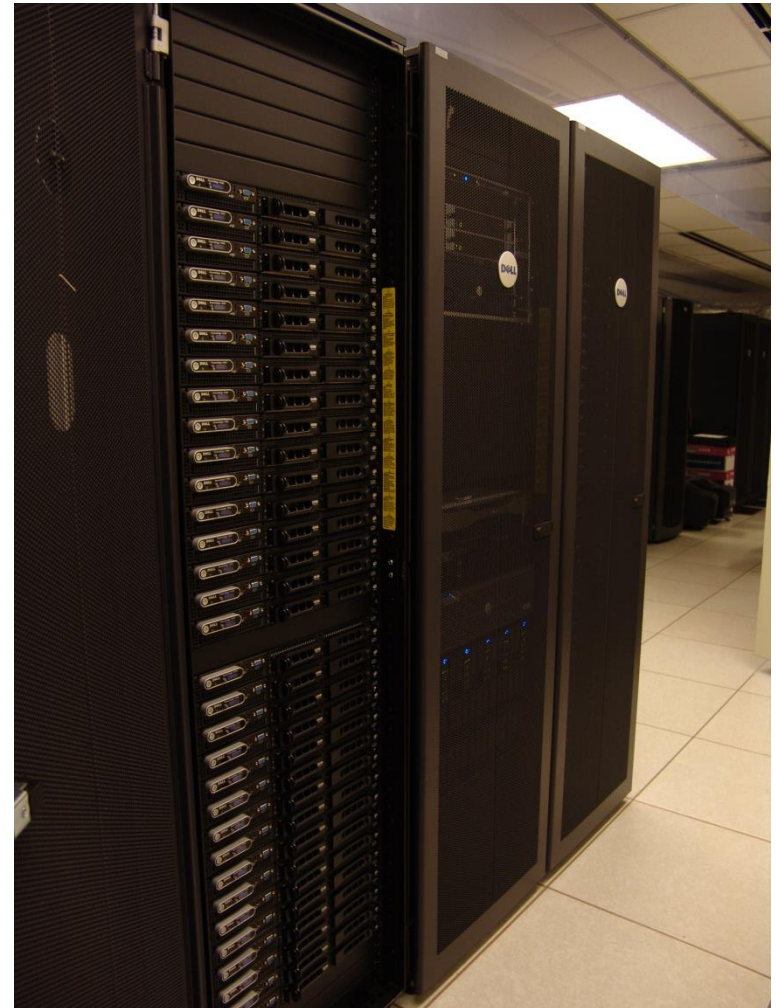
Dawn

- November, 2007
 - 19 users
 - Hired yours truly.
 - Met Henry Neeman, formed OCII
- In 2008 added
 - 50 new users
 - Spur: 128 GB RAM
 - Cimarron: 14 nodes, 892 GFLOPs
 - Student helper



Warming up

- In 2009 added
 - 20 new users
 - Pistol Pete: 64 nodes, 5.4 TFLOPs
- In 2010, added 70 users and needed:
 - More resources
 - More staff



The Challenges

- One FTE + one part-time student
 - Supporting over 150 users across over 20 departments.
 - Administering all systems.
 - Providing education, outreach and training.
 - Looking for funding.
- Despair... but misery loves company.



Opportunities

- Community ideas to the rescue?
 - Campus researchers
 - Oklahoma Cyberinfrastructure Initiative
 - Great Plains Network
 - XSEDE Campus Champions
- NSF MRI solicitation

To be sustainable, we must be able to articulate clearly the benefits we provide to stakeholders.



Tipping Point

- Cowboy is funded by NSF grant for \$908,812.
- Cost share funded new full-time position.
- Cowboy is the largest externally funded supercomputer in state history!
- 9x the capacity of the previous cluster



Cowboy UP!



Thanks to Advanced Clustering Technologies



High Performance
Computing Center

Outside the Comfort Zone

- Press release
- STATE magazine article
- Brand OSU ads for OKC and Tulsa paper →
- OSU homepage!
- Brag, brag, brag...



Two Steps Forward

- OSUHPCC is now the “go-to” team for research computing needs.
- Served over 500 faculty, staff, students and collaborators.
- Multiple successful proposals supported.
- Dozens of scholarly publications facilitated.



One Step Back

- Researchers need MORE than just HPC and expect us to provide it quickly and freely.
- Condo model is harder than it sounds.
- Staff still overburdened.
- There is no magic.



Giant Leaps

- Confluence of needs for private cloud!
- Core facilities proposal funded for new FTE – quickly followed by continuous funding.
- Another new FTE for Program Coordination!
- Training sessions, new website, SC14 booth
- Lots of new users
- Spring 2015 “Applications of Parallel Computing” via XSEDE



What **still** keeps me up at night?

- Funding the next cluster!
- Funding MORE than the next cluster (CC*IIE)
- How to deal with the inevitable demand for cloud resources for free.
- Living up to expectations.
- Squirrels



What do I dream about?

- Integrated, easily available, easy to use research computing for all!
- An easy way to document ROI.
- Being agile.
- What will it look like in 2020?
- Keeping the team happy.
- Squirrels



Thanks!

Questions?

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References

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 - 2010 workshop on Sustainable Academic CI
- <https://www.cac.cornell.edu/srcclii/default.asp>
 - 2013 workshop/CASC on Sustainable Academic CI
- <http://www.ncsa.illinois.edu/Conferences/ARCC/> 2014 workshop on Advancing Research computing on Campuses – reprise scheduled for Feb. 2015.

