Overview of HCC

Dr. David R. Swanson, Director
Holland Computing Center
Middle of Everything

David Swanson, Nebraska
“HCC operates as a core facility and provides services that are critical to the research productivity of faculty and students across the University of Nebraska campuses.”

—HCC 5-year Review, 2016
“HCC exists to reduce the time to science.”

–David Swanson
Kick-start (verb):
to start (a motorcycle) by pushing down on a lever with your foot
: to cause (something) to start quickly
to give new energy to (something)
HCC is good at ...

- **Big Data**: We manage over 10,000 TeraBytes (10PB)
- **Scaled Out Computing**: 30,000 cores, OSG, advanced networking, high bandwidth transfers
- **Scaled Up Computing**: Parallel processing, XSEDE, GPUs
HCC has great people

- Most are computational scientists
- 5 Full time research personnel, 5 Sys Admins
- 5 Application Specialists
- Favorite collaborative tools: table with a whiteboard
- Collaboration, not outsourcing outfit
HCC is free*

- *Shared usage of resources*: no charge
- *Best effort support*: no charge
- *Dedicated computing, storage or support*: up-front fees

  *to many users! Paid for by NRI, NSF, and NU researchers*
Enough about HCC …

• What is your area of study?

• What question do you wish you could answer?

• Do you currently use HCC resources?

• What type of computing (storage/networking/visualiza
tion) do you do now?

• Are you experiencing any bottlenecks?
Area of study

• Tried and true: Chemistry, Physics
• Other Science: Biology, Engineering, Agriculture
• Other Disciplines: Business, Humanities, Theatre
Current Computing

- Use HCC resources
  - Which machine(s)?
  - Storage?
  - What would you change?
  - Also use other resources?
  - Bottlenecks?

- Don’t use HCC resources
  - What do you utilize?
  - What about data?
  - Any reason to change?
  - Other (campus) resources?
  - Bottlenecks?
Questions?

- Is HCC a UNL entity?
- Is HCC part of ITS? of CSE?
- Who uses HCC?
Kickstart

• Crane and Tusker
• Globus and file transfers
• Lunch on your own
• Anvil
• OSG
• Panel Discussion
• Consultation/Tour
More to come...

- HCC is buying incrementally, annually
  - MRI or other grant funding could enhance this
  - What should we target?
- Establishing an annual process
  - Gather input in fall
  - purchase in spring
  - add to this in summer
More to come...

- Currently 3 types of storage
  - /home — backed up, per machine, 25 GB/user, free
  - /work — purged, per machine, 50 TB / group, free
  - Attic — near-line archive, not mounted, $25/TB/year
- Will add /project this fall semester
  - /project — not purged, all machines, hybrid
Thank you

- HCC wants to collect information about publications, grants, etc.

- We thus will give the following carrots

  - 2 core years (17,520 hrs) for acknowledgements in publications, funded grant awards
  - 1 core year (8,760 hrs) for acknowledgements in reviewed presentations
  - 0.5 core year (4,380) for acknowledgements in unreviewed presentations, unfunded grant proposals, news articles
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Thank you

- NSF
- NRI
- ITS, ARD, Campus researchers
- UNL, UNO
- HCC
- you!
HCC On Ramp

1. Nebraska Faculty Connection (HCC Group)
2. Log in (HCC account and Duo set up)
3. Moving and editing your data
4. Launch jobs! (module, SLURM)
Equipment Timeline
Local speed record to date
42 (+10!) Gbps

- Software Defined Networks
- PerfSONAR
- Performance Testing
Broad Collaborations

- U.S. CMS
- Open Science Grid
- GpENI
- CaRC
Statewide Collaborations

• HCC is HPC and HTC provider to NU system

• Accounts granted for any educational institution in state
  
  • Doane, Creighton, Wayne State College

• Henry Doorly Zoo

Collaboration Infrastructure

- Network Nebraska
- 100 Gbps between HCC and Internet2 via GPN
- DMZ to/from HCC
- OSG access to HCC resources
- DTNs, Globus Connect