NERSC Overview

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NERSC New User Training
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The mission of the National Energy Research Scientific Computing Center (NERSC) is to accelerate scientific discovery at the DOE Office of Science through high performance computing and data analysis.
• NERSC is a national supercomputer center funded by the U.S. Department of Energy Office of Science (SC)
  – Supports SC research mission
  – Located at Berkeley Lab
• SC supports a broad spectrum of energy-related research
• If you have SC funding, you can apply to use NERSC
  – Other researchers can apply if research is in SC mission
• 4,500 users, 700 projects
• From 48 states; 65% from universities
• Hundreds of users each day
NERSC’s focus is on scientific productivity

- 1,500 refereed publications per year
- ~10 major journal covers per year
- Key contributor to 2 Nobel Prizes (2007 & 2011)
  - Accelerating Universe
  - Climate Change
- Data services contributed to 2 of Science Magazine’s Top 10 breakthroughs of 2012
  - Higgs Boson
  - Weak Mixing Angle

13 Journal Covers in 2012
# Current NERSC Systems

## World-Class Supercomputers

### Hopper: Cray XE6
- 6,384 compute nodes, 153,216 cores
- 144 Tflop/s on applications; 1.3 Pflop/s peak

### Edison: Cray XC30 (Cascade)
- 5,200 node, 124,000 processors
- Over 250 Tflop/s on applications, >2 Piflop/s peak

## Midrange

### Carver
- IBM iDataplex cluster
- 9884 cores; 106TF

### PDSF (HEP/NP)
- ~2K core cluster

### GenePool (JGI Genomics)
- ~5K core cluster
- 2.1 PB Isilon File System

## NERSC Global Filesystem (NGF)

- Uses IBM’s GPFS
  - 8.5 PB capacity
  - 15 GB/s of bandwidth

## HPSS Archival Storage

- 240 PB capacity
- 5 Tape libraries
- 200 TB disk cache

## Analytics & Testbeds

### Dirac
- 48 Fermi GPU nodes
Consulting Services

• NERSC’s services are designed to help you maximize your productivity

• “Help Desk”
  – Staffed by 10 HPC experts (6 with Ph.Ds)
  – 8-5 PT M-F
  – Direct phone and e-mail consulting

• Account Support
  – Allocations and account questions
  – Passwords

• 1-800-66-3772, consult@nersc.gov, accounts@nersc.gov

• https://help.nersc.gov/ online trouble ticket system
Plan for Today

• This is an introductory class for new NERSC users
• We plan to stay on time!
• Please hold lengthy questions for Q&A periods

• Schedule
  – Accounts and Allocations
  – Connecting to NERSC
  – User Computing Environment
  – Submitting and Running Jobs
  – Data Management
  – NERSC Web and Next Steps
Section Title