ARCHER Service

Overview and Introduction

Who am I

- Adrian Jackson a.jackson@epcc.ed.ac.uk @adrianjhpc
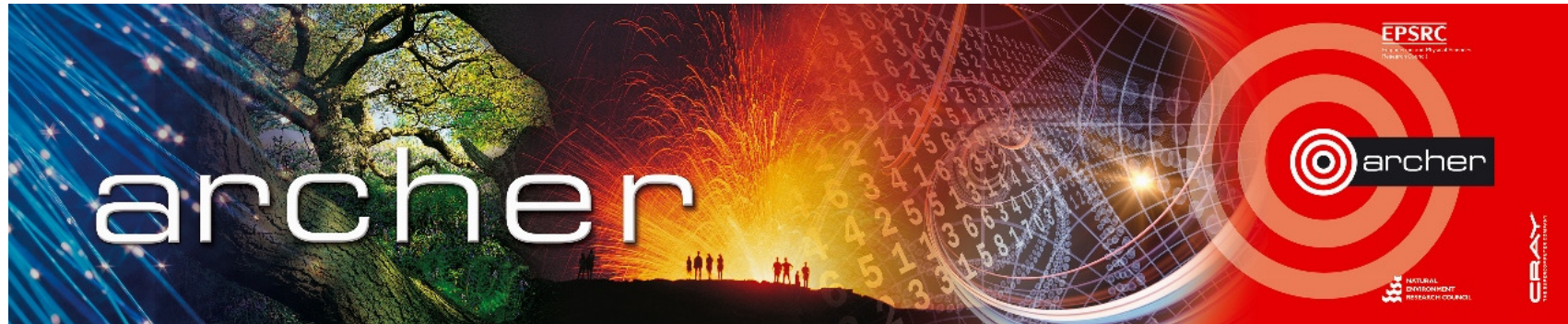- Research Architect at EPCC
  - Involved with ARCHER and PRACE training
  - Parallel computing, software, and hardware research
  - EPCC MSc in HPC teaching
  - Porting and optimisation of scientific applications
  - …..

- UK National Supercomputer Service, managed by EPSRC
  - housed, operated and supported by EPCC
  - hardware Supplied by Cray

- Training provided by the ARCHER Computational Science and Engineering (CSE) support team
  - 72 days per year at various locations round the UK
  - free to all academics

EPCC's Advanced Computing Facility

ARCHER in a nutshell

- UK National Supercomputing Service
- Cray XC30 Hardware
  - Nodes based on 2×Intel Ivy Bridge 12-core processors
  - 64GB (or 128GB) memory per node
  - 4920 nodes in total (118,080 cores)
  - Linked by Cray Aries interconnect (dragonfly topology)
- Cray Application Development Environment
  - Cray, Intel, GNU Compilers
  - Cray Parallel Libraries (MPI, SHMEM, PGAS)
  - DDT Debugger, Cray Performance Analysis Tools

Storage

- /home – NFS, not accessible on compute nodes
  - For source code and critical files
  - Backed up
  - > 200 TB total

- /work – Lustre, accessible on all nodes
  - High-performance parallel filesystem
  - Not backed-up
  - > 4PB total

- RDF – GPFS, not accessible on compute nodes
  - > 20 PB Long term data storage

Key ARCHER Resources

- Upcoming courses

  - http://www.archer.ac.uk/training/

- Material from past courses

  - http://www.archer.ac.uk/training/past_courses.php

- Virtual tutorials (online)

  - http://www.archer.ac.uk/training/virtual/

- Documentation

  - http://www.archer.ac.uk/documentation/

Other Resources

- Please fill in the feedback form!
  - http://www.archer.ac.uk/training/feedback/

- General enquiries about ARCHER go to the helpdesk
  - support@archer.ac.uk

- EPCC runs one-year taught postgraduate masters courses
  - *MSc in HPC* and *MSc in HPC with Data Science*
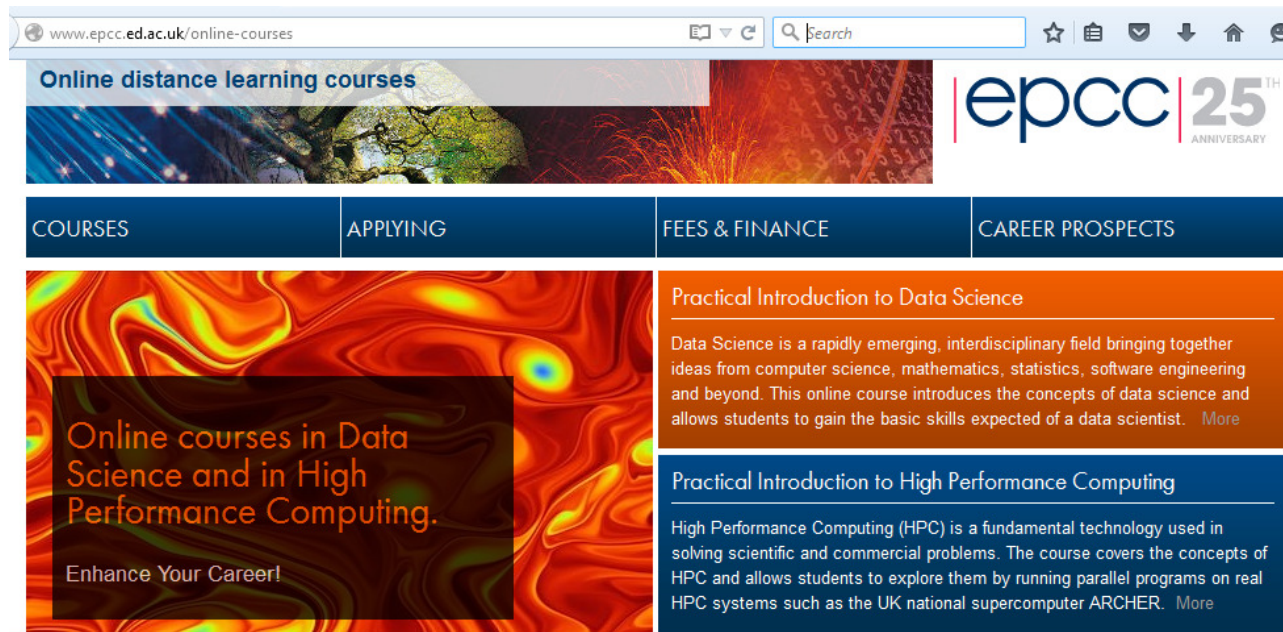 - awarded by the University of Edinburgh since 2001
  - scholarships available
  - http://www.epcc.ed.ac.uk/msc/

What is EPCC?

- UK national supercomputer centre
  - founded in 1990 (originally Edinburgh Parallel Computing Centre)
  - a self-funding Institute at The University of Edinburgh
  - running national parallel systems since Cray T3D in 1994
  - around 65 full-time staff
  - a range of academic research and commercial projects
  - one-year postgraduate masters in HPC www.epcc.ed.ac.uk/msc/
- Get in contact if you want to collaborate
  - many staff are named RAs on research grants
  - joint research proposals
  - European project consortia
  - ...

Online accredited courses

- Run from January to May
  - entirely online: www.epcc.ed.ac.uk/online-courses/.
  - each course is 20 credits (c.f. a 180-credit MSc)

Access to ARCHER (during course)

- Guest accounts for duration of course
  - should only be used in the classroom

- Accounts will be closed immediately after the course
  - all files etc will be deleted
- Take copies of all your work before course ends!

- Course materials (slides, exercises etc) available from course web page
  - archived on ARCHER web pages for future reference

- You must agree to the ARCHER terms and conditions:
  - http://www.archer.ac.uk/about-archer/policies/tandc.php

Access to ARCHER (longer term)

- Various ways to apply for time on ARCHER
  - see http://www.archer.ac.uk/access/
- All require justification of resources
  - Instant Access has the lowest barrier to entry
  - designed for exploratory work, e.g. in advance of a full application

- Or take the "ARCHER Driving Test"
  - www.archer.ac.uk/training/course-material/online/driving_test.php
  - successful completion allows you to apply for an account for 12 months with an allocation of around 80,000 core-hours
  - backed up by online training materials
  - www.archer.ac.uk/training/course-material/online/