SUMMARY

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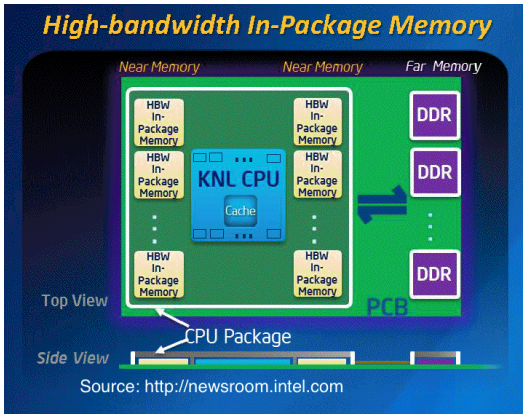
Xeon Phi

- High potential performance
  - Acheiveable performance lower but can still be x2 a compute node (i.e. 2 x multicore processor)
- GPU'd codes
  - Offloading can match GPU kernels
  - Good performance model
- Porting straightforward
  - Achieving good performance harder
  - Low memory per core also can limit what jobs can be run
- Tools available to help with optimisation
  - Intel vtune and vector advisor
  - Allinea map

KNL – Knights Landing



- Successor to Xeon Phi (Knights Corner)
  - Due to be released later this year
  - ~3 TFLOP/s double precision
  - 72 Airmont cores
  - 2 vector units per core
  - Two cores share 1MB L2 cache form a tile
  - A mesh fabric routes between the tiles
  - On package-DDR4 memory controller support for up to 384 GB main memory
  - Up to 16GB of on-package stacked RAM

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DiRAC

- Distributed Research utilising Advanced Computing
- Distributed High Performance Computing (HPC) services
  - Astronomy/Cosmology
  - Particle physics and nuclear theory
- Variety of computer architectures
  - **Cambridge HPC Service: Data Analytic Cluster**
    - 9600 cores (200Tflop/s), 0.75PB disk, 4GB RAM per core.
  - **Cambridge COSMOS SHARED MEMORY Service**
    - 1856 cores (42 Tflop/s), 14.8TB Globally shared memory, 146TB disk, 31 Xeon Phi's
  - **Durham ICC Service: Data Centric Cluster**
    - 6740 cores, 2PB disk, 8GB RAM per core
  - **Edinburgh 6144 node Blue Gene/Q**
    - 98304 cores (1.3 Pflop/s)
  - **Leicester IT Services: Complexity Cluster**
    - 4352 cores (95Tflop/s), 0.8PB disk, 8GB RAM Per core.

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DiRAC

- Access through call for proposals
  - Next call 3rd September
  - Long projects
    - 1-3 years
  - Short project
    - 6-12 months
  - Seedcorn
    - Up to 50k core hours
    - Can be submitted at any time
- https://www.dirac.ac.uk/access.html

Getting access to ARCHER

- Standard research grant
  - Request Technical Assessment using form on ARCHER website
  - Submit completed TA with notional cost in Je-S
  - Apply for time for maximum of 2 years
- ARCHER Resource Allocation Panel (RAP)
  - Request Technical Assessment using form on ARCHER website
  - Submit completed TA with RAP form
  - Every 4 months
- Application for computer time only
  - Instant Access – Pump-Priming Time
  - Request Technical Assessment using form on ARCHER website
  - Submit completed TA with 2 page description of work

Funding calls

- Embedded CSE support
  - Through a series of regular calls, Embedded CSE (eCSE) support provides funding to the ARCHER user community to develop software in a sustainable manner for running on ARCHER. Funding will enable the employment of a researcher or code developer to work specifically on the relevant software to enable new features or improve the performance of the code
  - Apply for funding for development effort
  - Regular calls are every 4 months
    - actively encouraging applications from New Scientific Communities

- See http://www.archer.ac.uk for details

Support

- Helpdesk
  - Email support@archer.ac.uk
  - via ARCHER SAFE http://www.archer.ac.uk/safe
  - phone: +44 (0)131 650 5000
  - By post, to:
  - ARCHER Helpdesk
    EPCC
    James Clerk Maxwell Building
    Peter Guthrie Tait Road
    EDINBURGH EH9 3FD
- http://www.archer.ac.uk/community/techforum/

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Training opportunities

- ARCHER Training (free to academics):
  - http://www.archer.ac.uk/training/

- EPCC MSc in HPC
  - http://www.epcc.ed.ac.uk/msc/

Virtual Tutorials

- Live online interactive sessions
  - a forum for users of ARCHER to ask any questions you may have about the ARCHER service.
- Q&A sessions, starting with short lecture on specific topic
  - An opportunity for attendees of ARCHER training courses to discuss any issues related to a course or questions about course material that may have arisen since attending the course.
- Broadcast using Blackboard Collaborate.
- Every second Wednesday of the month
  - http://www.archer.ac.uk/training/virtual/.

Feedback and follow-up

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

What now?

- You can attempt the ARCHER driving test
  - www.archer.ac.uk/training/course-material/online/driving_test.php
- On successful completion, eligible users can apply for
  - account on ARCHER
  - 1,200 kAUs of time (80,000 core-hours) over 12 months
- Further information
  - This online material: www.archer.ac.uk/training/course-material/online/.
  - Documentation: http://www.archer.ac.uk/documentation/.
  - Helpdesk: support@archer.ac.uk
  - Training: http://www.archer.ac.uk/training/.

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