Agenda

Optimize Your Code for the Intel XEON PHI
April 5, 2013

PART I - Introduction (1.5 hours) - Lars Koesterke 8:30-10:00

- Xeon Phi Architecture
- Programming models
  - Native Execution (MPI / Threads / MPI+Threads )
  - MPI on host and Phi
  - MPI on host, offload to Phi
    - Targeted
    - Automatic (MKL)
  - Offload to host from the Phi

LAB

- Login and explore busybox

BREAK 10:00 -10:30

PART II - Native Execution (1.5 hours) – Luke Wilson 10:30 - noon

- Native Execution
  - Why run native?
  - How to build a native application?
  - How to run a native application?
  - Best practices for running native
    - KMP_AFFINITY
  - Optimization
    - Cache + ALU/SIMD details
    - Vectorization
    - Parallelization
    - Alignment
    - Compiler reports

LAB

- Interactive exercise using compiler reports
- Interactive exercise to show logical to physical proc mapping

LUNCH 12:00 - 1:00

PART III - Symmetric Execution (1.5 hours) – John Cazes 1:00 – 2:30
- MPI execution
  - Symmetric execution
    - Workload distribution
    - ibrun.sym
    - Correct pinning of MPI tasks on host and coprocessor
    - Interactive exercise showing symmetric at work
  - MPI + offload
  - Pinning tasks to host and MIC

LAB

- Exercise with symmetric execution and pinning

BREAK 2:30 - 3:00

PART IV - Offload Execution (2 hours hours) – Kent Milfeld - 3:00 - 5:00

- Offload to Phi
  - What is offloading?
  - Directives
  - Automatic offloading with MKL
  - Compiler assisted offloading
  - Offloading inside a parallel region

LAB

- Interactive exercise with simple offload and data transfer