

Agenda

Optimize Your Code for the Intel XEON PHI

April 25, 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) – Carlos Rosales 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