Dardel and Arrhenius Intensive Course: Advanced Workshop on CPU partition

Day 1: Tuesday 27/01 (times in CET)

Start	Duration	Item
09:00	10	**Welcome, introduction to the course.** *Course organization.*
09:10	60	**Dardel and Arrhenius Architecture (CPU part) programming and execution environment** *Recap of the Dardel and Arrhenius architecture, programming, and execution environment.*
10:10	60	**Overview of compilers and Parallel Programming Models** *An introduction to the compiler suites available. Special attention is given the Cray Compilation Environment (CCE) noting options relevant to porting and performance.* *Description of the Parallel Programming models.*
11:10	20	***Break***
11:30	60	**Compilers, libraries, runtime, Performance Optimization: Improving single-core efficiency** *Compiler feedback* *Presentation of the Cray Scientific Libraries for CPU*
12:30	60	***Lunch break***
13:30	60	**MPI Topics on the HPE Cray EX supercomputer**
14:30	60	**Advanced mapping of parallel application to the CPU partition.**
15:30	20	***Break***
15:50	70	**Exercises (session #1)**
17:00	30	**Open Questions & Answers** Participants are encouraged to continue with exercises in case there should be no questions.
17:30		***End of the course day***

Day 2: Wednesday 28/01 (times in CET)

Start	Duration	Item
9:00	30	**Python on HPE Cray EX Supercomputer**
9:30	50	**Introduction to Perftools - Perftools-lite modules** *Overview of the Cray Performance and Analysis toolkit for profiling applications.*
10:20	20	***Break***
10:40	50	**Advanced performance analysis** *Sampling, tracing, loop work estimates with Perftools. APA, Communication Imbalance, Hardware Counters, Perftools API, OpenMP. Reveal*
11:30	60	**Exercises (session #2)**
12:30	60	***Lunch break***
13:30	50	**Debugging at Scale** *gd4hpc, valgrind4hpc, sanitizer4hpc, ATP, STAT.*
14:20	40	**Optimizing Large Scale I/O** *Tips for optimising parallel bandwidth for a variety of parallel I/O schemes. Introduction to the Lustre filesystem, controls and being nice to Lustre.*
15:00	20	***Break***
15:20	80	**Exercises (session #3)**
16:40	50	**Final Open Questions & Answers** Participants are encouraged to continue with exercises in case there should be no questions.
17:30		***End of the course day***