

ARCHER2/Cirrus Profiling and Optimisation Workshop

Day 1: Tuesday 14/04

Start	Duration	Item
9:00	10	Welcome, introduction to the course <i>Course organisation.</i>
9:10	50	ARCHER2/Cirrus Architecture, programming and execution environment <i>Recap of the architecture, programming, and execution environment.</i>
10:00	20	Exercises (session #1)
10:20	40	Compilers and libraries <i>Topics relevant to performance and optimisation.</i>
11:00	20	Break
11:20	40	Introduction to Perftools - Perftools-lite modules <i>Overview of the Cray Performance and Analysis toolkit for profiling applications.</i>
12:00	60	Lunch break
13:00	50	Advanced performance analysis <i>Automatic performance analysis and loop work estimated with perftools.</i> <i>Communication Imbalance, Hardware Counters, Perftools API, OpenMP.</i> <i>Compiler feedback.</i>
13:50	30	Exercises (session #2)
14:20	20	Break
14:40	140	Follow-along Single-core Optimisation
17:00		End of the course day

Day 2: Wednesday 15/04

Start	Duration	Item
9:00	50	Advanced Application Placement <i>More detailed treatment of Slurm binding technology and OpenMP controls.</i>
9:50	30	Exercises (session #3)
10:20	20	Break
10:40	30	AMD Profiling Tools <i>Profiling GPU code.</i> <i>Profiling considerations for Frameworks.</i>
11:10	30	Exercises (session #4)
11:40	20	Additional Profiling Tools
12:00	60	Lunch break
13:00	60	Understanding Cray MPI on Slingshot, GPU support and rank reordering <i>High level overview of Cray MPI on Slingshot, useful environment variable controls. GPU support.</i> <i>Rank reordering.</i>
14:00	30	Exercises (session #5)
14:30	20	Break
14:50	50	I/O Optimisation - Parallel I/O <i>Tips for optimising parallel bandwidth for a variety of parallel I/O schemes. Introduction to the Lustre filesystem, controls and being nice to Lustre.</i> Advanced Parallel I/O considerations <i>Further considerations of parallel I/O and other APIs.</i>
15:40	20	Exercises (session #6)
16:00	60	Open Session
17:00		End of the course day