Updates on Scalability, MPI, DPDK and ROCm in Trace Compass

Arnaud Fiorini

Polytechnique Montréal
Laboratoire DORSAL

Introduction

- MPI:
  - Interface for communication in HPC
  - Instrumented by Score-P and Exa-Tracer through PMPI

- DPDK:
  - Collection of user-space libraries for fast packet processing
  - Supports many processor architectures

- ROCm:
  - Collection of libraries for AMD GPUs
  - Includes profiling and tracing tools

Agenda

1 Scalability improvements in Trace Compass

2 MPI Exa-Tracer integration

3 ROCm integration status

4 DPDK instrumentation status

Scalability improvements in Trace Compass

- Improving query speed and sht file size with Partial State System

- Fixing some performance and user experience issues with large traces

- Trace coordinator for analysis pre-processing

MPI Exa-Tracer integration

- Previous implementation based on OTF2 conversion

- Fast prototype thanks to the CallStack plugin

- Refactoring needed to extend the current implementation
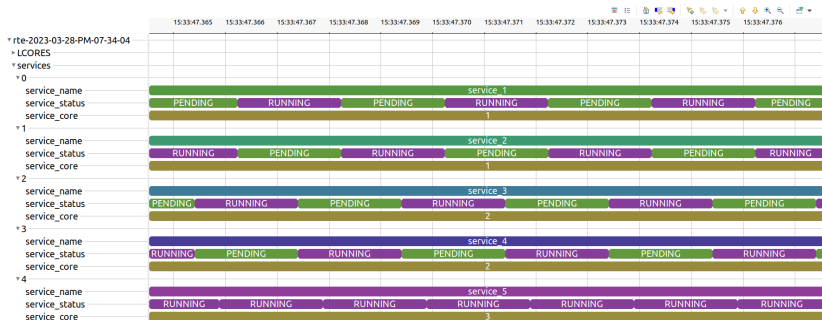
MPI Exa-Tracer integration

ROCm

- The event format will change soon

- Other sources which output GPU runtime traces can be added

- Will be used as a benchmark for the Partial State System

DPDK

- Work done by Adel is being merged

- Tracepoints are being contributed to DPDK

DPDK

- 46 out of the 98 tracepoints have been implemented

- The Trace Compass integration is not completed

- Feedback and/or use cases would be very appreciated

DPDK – Future Work

- Use cases to generate traces and improving the implementation quality in Trace Compass

- Continue the instrumentation of DPDK

References

- https://doc.dpdk.org/guides/prog_guide/trace_lib.html
- https://github.com/DPDK/dpdk
- https://github.com/ROCm-Developer-Tools/rocprofiler