

Shared Memory Transport for ALFA

Tuesday, July 10, 2018 4:45 PM (15 minutes)

The high data rates expected for the next generation of particle physics experiments (e.g.: new experiments at FAIR/GSI and the upgrade of CERN experiments) call for dedicated attention with respect to design of the needed computing infrastructure. The common ALICE-FAIR framework ALFA is a modern software layer, that serves as a platform for simulation, reconstruction and analysis of particle physics experiments. Beside standard services needed for simulation and reconstruction of particle physics experiments, ALFA also provides tools for data transport, configuration and deployment. The FairMQ module in ALFA offers building blocks for creating distributed software components (processes) that communicate between each other via message passing.

The abstract “message passing” interface in FairMQ has at the moment three implementations: ZeroMQ, nanomsg and shared memory. The newly developed shared memory transport will be presented, that provides significant performance benefits for transferring large data chunks between components on the same node. The implementation in FairMQ allows users to switch between the different transports via a trivial configuration change. This presentation will highlight the design decisions, implementation details and performance numbers of the shared memory transport in FairMQ/ALFA.

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Session Classification: Posters

Track Classification: Track 5 –Software development