Abstract:

Shared memory is a critical issue for large distributed systems. Despite several data coherency protocols have been proposed, the selection of the protocol that best suits to the application requirements and system constraints remains a challenge. The development of multi-coherency systems, where different protocols can be deployed during runtime, appears to be an interesting alternative. In order to explore the design space of the coherency protocols a fast and accurate method should be used. In this work we rely on a compilation toolchain that transparently handles data coherency decisions for a multi-protocol platform. We focus on the analytical evaluation of the coherency configuration that stands within the optimization loop. We propose to use a TLM NoC simulator to get feedback on expected network contentions. We evaluate the approach using five workloads, three data coherency protocols and two NoC topologies. As a result, we are able to obtain a fast and accurate evaluation of
the different coherency-protocol alternatives.

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