

Implementation of a Light-weight Software Layer for Inter-process Communication

Virtualization is gaining popularity for its flexibility and the isolation. Container-based virtualization is a recent virtualization type that promises to be very light-weight resulting in lower overhead compared to virtual machines. The Message Passing Interface MPI is rarely used in these virtualized environments as most implementations lack support for intra-host inter-domain communication. Therefore, this thesis presents an implementation of an interface that allows for MPI communication via shared memory between different containers running on the same host system. A proof-of-concept migration illustrates that containers can be migrated across the cluster by suspending and resuming the connections. The leveraged communication layer pscom always selects the best connection plugin after a migration. The results reveal that there is no performance degradation compared to traditional shared-memory communication on the native host.