ABSTRACT

Development and implementation of efficient inter-process communication methods for distributed systems

Nowadays distributed systems are widely spreaded. They are usually designed to work in various environments as a set of cooperating processes. At the same time capabilities of modern hardware allow to deploy groups of that processes within a single machine in order to achieve better performance. In this case efficient inter-process communication (IPC) methods become a crucial element of high-performance distributed systems.

The present work is focused on developing efficient IPC methods. Based on the most efficient IPC in Linux, shared memory and futex, it introduces new methods of low-latency IPC. They are transparently provided via a generic interface. The interface automatically and transparently for programmer uses TCP to communicate over network with remote processes and low-latency shared memory-based method for local processes.

Proposed methods show significantly lower latency with local processes than TCP-based without any additional difficulties for programmer.