Efficient Synchronization of Linux Memory Regions over a Network: A Comparative Study and Implementation (Notes)

A user-friendly approach to application-agnostic state synchronization

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Unsorted Research Questions

Structure

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- Introduction
  - Memory management in Linux
  - Memory as the universal storage API
  - What would be possible if memory would be the universal way to access resources?
  - Why efficient memory synchronization is the missing key component
  - High-level use cases for memory synchronization in the industry today
- Pull-Based Memory Synchronization with userfaultfd
  - Plain language description of userfaultfd (what are page faults)
  - Exploring an alternative method by handling page faults using signals
  - Handlers and registration
  - History of userfaultfd
  - Allocating the shared region
  - Maximum shared region size is limited by available physical memory
  - Transferring handler sockets between processes
  - Implementing userfaultfd bindings in Go