Week 7

Paper Critique

Everything You Always Wanted to Know About Synchronization but Were Afraid to Ask (SOSP '13)

This paper suggests the exhaustive study of synchronization mainly focused on the scalability issue. It mentions that a scalability of synchronization is mainly a property of the hardware and lists some observations.

The advantage of suggested paper is that it has done very decent study on the synchronization considering the scalability issue, but nowadays due to the advance in the storage devices multi-queue block layer has come out. So there is a limit on this obsolete observation.

The improvement that can be done here is considering the multi-queue block layer and the NVMe SSD, new kind of approach on the study for synchronization could be done. Since lots of lock-free techniques are suggested as well.

Read-Log-Update (SOSP '15)

This paper proposes RLU which is a extension version of RCU synchronization mechanism that supports scalability concurrency by allowing unsynchronized sequences of reads to execute concurrently with update. RLU overcomes the limitation of RCU by allowing concurrent read with multiple writers and provide ease to the programmers.

The advantage of using RLU is that since it is enhanced version of RCU, it adds support for concurrent read-only requests with multiple updates since it was not possible in RCU. It mitigates the problem of running concurrent reader-writer due to the lock contention caused by synchronization.

What I thought about RLU is that since RCU is implemented in the Linux kernel as a one type of lock, the reason RLU has not been implemented in the vanilla would be the stability or covering wide kinds of scenario with the decent performance. It made me think of what would be some limitation for RLU not to be implemented in Linux kernel.