Week 8

Paper Critique

An Analysis of Linux Scalability to Many Cores (OSDI '10)

This paper suggests the sloppy counters to remove scalability bottleneck or avoid by changing the application. It makes some shared counter to be relieved of scalability issue. Moreover it suggests Mosbench, which is a benchmarks to measure scalability of operating systems.

The advantage of suggested paper is that it addresses the problem of shared counter caused by locking, but it only updates the local counter so if the updated value is less than a certain threshold it incurs extra time overhead.

The improvement that can be done here is considering the time overhead so reduce the local counter and more efficient synchronization between local and global counter.

The Scalable Commutativity Rule: Designing Scalable Software for Multicore Processors (SOSP '13)

This paper proposes a tool to help developers apply the rule it mentions, "whenever interface operations commute, they can be implemented in a way that scales". This tool named Commuter is an automated scalability testing tool.

The contribution of this paper is that it suggests new perspective of looking at the scalability by applying the commutativity. It leads the reader to follow the rule intuitively by thinking that the operations commute, results independent of order, communication is unnecessary, without communication, no conflicts. It helps developers in building more scalable software starting from interface design and carrying on through implementation.

What I thought about the commutative rule is that it is the rule that can be applied globally in the scalability research area. Many researchers can spread the way of thinking the scalability from commutativity.