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Everything You Always Wanted to Know About Synchronization but Were Afraid to Ask Paper Critique

Summary

This paper introduces a comprehensive study of synchronization, spanning on many layers and different CPU architectures. Base on the results, many characteristics were inferred and some optimizations were suggested. The authors imply that hardware is the most important factor when it comes to synchronization. A framework to evaluate synchronization schemes named SSYNC is also proposed.

Strengths

Through the study, the authors identified the most impactful factor that affect scalability of synchronization: hardware. This points the researches for improving synchronization to a more accurate direction.

This is the most exhaustive study on synchronization up-to-date. Many important characteristics of synchronization is found along with some suggestions for improvements, which helps future architects design more efficient computing systems.

Weaknesses

Only lock algorithms were studied in the paper, while lock free algorithms could be useful in improving throughput.

Evaluations in this paper is performed using self-developed libraries. Those libraries may not be highly optimized and may not reflects real usage of computing systems.

Improvement suggestions

In evaluating lock algorithms, using a mix of high and low contention could reflect usage of real systems more closely.

Aside from scalability,