Week 3

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1. The Linux Scheduler: a Decade of Wasted Cores

This paper solves the problem that some bugs keep cores idle for a long time, even if the Linux kernel uses a work-conserving scheduler. These bugs seriously reduce performance, but they are very hard to find. Therefore, the scheme checks periodically whether there is a core whose idle. This scheme offer new tool to detect cores that are in idle state, thereby reducing performance degradation due to bugs. However, the root cause of the bug has not been identified and solved. So I suggest analyzing and solving the root cause of these bugs.

2. Arachne: Core-Aware Thread Management

Arachne is a new thread management scheme that allows applications to manage physical resources at the user level. Arachne allows the user to control how many cores are needed and how the thread can run at the same time at the user-level. This scheme reduces throughput by 37% and reduces tail latency by 10 times. However, Arachne seems difficult to manage because there is no kernel intervention and conventional interface. And measures of security are needed because it exposes h/w directly. So I suggest adding a security module by abstracting core.