Week 3

Paper Critique

The Linux Scheduler: a Decade of Wasted Cores (Eurosys 2016)

This paper discovers and analyze the existing bugs in the OS thread scheduler and proposes a scheme to fix it. The bugs described in the paper causes cores staying idle even when ready threads are waiting in runqueues. The author fix the bug by modifying the various parts in the kernel related to scheduling groups. Ex. algorithm that compares the load of scheduling groups or the construction of scheduling groups and etc.

The advantage of the suggested scheme is that the idle time of cores decrease boosting the performance. The disadvantage is that as new hardware feature comes out, scheduler needs to be optimized and fix on and on.

The improvement that can be done for the Linux scheduler is on-going project. It would be helpful to use scheduler according to the likely-used workload since schedulers perform differently depending on the characteristic of the workloads.

Arachne: Core-aware Thread Management (OSDI 2018)

This paper proposes Arachne that is a thread management at the user-level that solves the problem of vagueness of physical resources that the threads are using. Each application is aware of the which core it has been allocated.

The advantage of using Arachne is that the application is aware of the physical cores that it has been allocated so the user can efficiently schedule. The disadvantage is that Arachne cannot solve the addressed problem for NUMA machines.

The improvement that can be done for Arachne is that it can be extended to serve the same situation in virtualized environment or in the cloud clustering computing enviornment.