Computer Systems Lab

Project Proposal in Concurrent and Distributed Systems 236371

Asynchronous Page Faults Enhancements

Description:

Memory is a limiting factor for server consolidation, which motivates memory overcommitment in cloud environments. The basic technique for hypervisors to overcommit memory is similar to on-demand paging employed by operating systems. One of the techniques used to improve this method is by using paravirtual channel to communicate to the guest OS when accessed page is unavailable. The guest OS can then perform a context switch and schedule another process.

In this project the student will evaluate the existing paravirtual page-faults mechanism, and enhance the VM OS to better cooperate with the hypervisor.

Prerequisites:

Operating systems course (or equivalent knowledge). C.

Platform:

The student will use the KVM hypervisor[2] the Linux Kernel based Virtual Machine, and a Linux VM. Multiple workloads will be evaluated.

Advisors: Assaf Schuster, Nadav Amit {assaf,namit} at cs.technon.ac.il

Number of students: 1 or 2 students.

References:

[1] ”Asynchronous Page Faults – Aix did it”, Gleb Natapov. http://www.linux-kvm.org/wiki/images/a/ac/2010-forum-Async-page-faults.pdf
[2] http://www.linux-kvm.org/page/Main_Page