

mClock: Handling Throughput Variability for Hypervisor IO Scheduling

To distribute the host's shared resource to VMs efficiently, hypervisor has provided a lot of methods. However, those methods focused on the CPU and memory, and it deals with IO resources management less than CPU or memory management. This causes the lack of QoS support for IO resources which means that large variations in the IOPS to VMs and it degrade application-level performance. mClock proposed by this paper provide well-defined IO scheduling for the multiple VMs running on same host. mClock uses two scheduling schemes which are a constraint-based scheduler and a weight-based scheduler, and they interleave in fine-grained manner. To utilize these two scheduling schemes, mClock applied two main idea, multiple real-time clock and dynamic clock selection. Because mClock is based on tag, it has three main components: Tag Assignment, Tag Adjustment and Request Scheduling. Authors also provided distributed scheduling scheme applied mClock.