Critique of paper “Enforcing Performance Isolation Across Virtual Machines in Xen”
Name: Renwei Yu
ID: 1200859378

In the paper “Enforcing Performance Isolation Across Virtual Machines in Xen”[1], the author mentioned the issue of performance isolation across virtual machine in Xen. For example, Xen can allocate fixed share of CPU among competing VMs, it does not currently account for work done on behalf of individual VMs in device drivers. So, the behavior of one VM may impact resource available to other VMs and affect the performance of other VMs. In this paper, the author gives a set of implementations (XenMon, SEDF-DC and ShareGuard) in Xen to address this issue. The following are my comments of this paper:

Strengths:

- The key contribution of this paper is the design of a set of cooperating mechanisms to effectively control CPU consumptions across virtual machines in Xen.
- The author implemented an accurate monitoring and performance profiling infrastructure, called XenMon, to support resource allocation and management. One contribution here is to determine the right set of events to monitor.
- The author implemented SEDF-DC scheduler to restrict the aggregate CPU consumed by a domain (VM) and by driver domain acting on its behalf.
- The author implement ShareGuard which is a control mechanism to enforce a specified limit on CPU time consumed by and IDD for I/O processing on behalf of a particular guest domain (VM).

Weakness:

- In the paper, the author mentioned that the ShareGuard is more intrusive and more bursty than in SEDF-DC. The author should also consider that the ShareGuard may also hurt the overall performance because of the increasing number of burst, for the increasing overhead of relocating CPU for other VMs.
- The author mentioned that the SEDF-DC and ShareGuard can improve CPU and network resource isolations in Xen, But I think the author should also consider about other resources, for example, disk I/O and memory, and show the experiment result on these resources.

On the whole the paper considers and implements some novel mechanisms to address the issue of performance isolation of VMs in Xen.