In a Nutshell

- IOMMUs translate and validate device accesses to main memory
- IOMMUs provide protection from misbehaving or malicious devices
- IOMMUs are used extensively on bare metal and in virtualized systems
- IOMMU translation overhead—caused by both software and hardware—can have a large effect on overall system performance and efficiency

Our main contribution is a combined software and hardware approach to IOMMU translation based on IOTLB injection and page table avoidance.