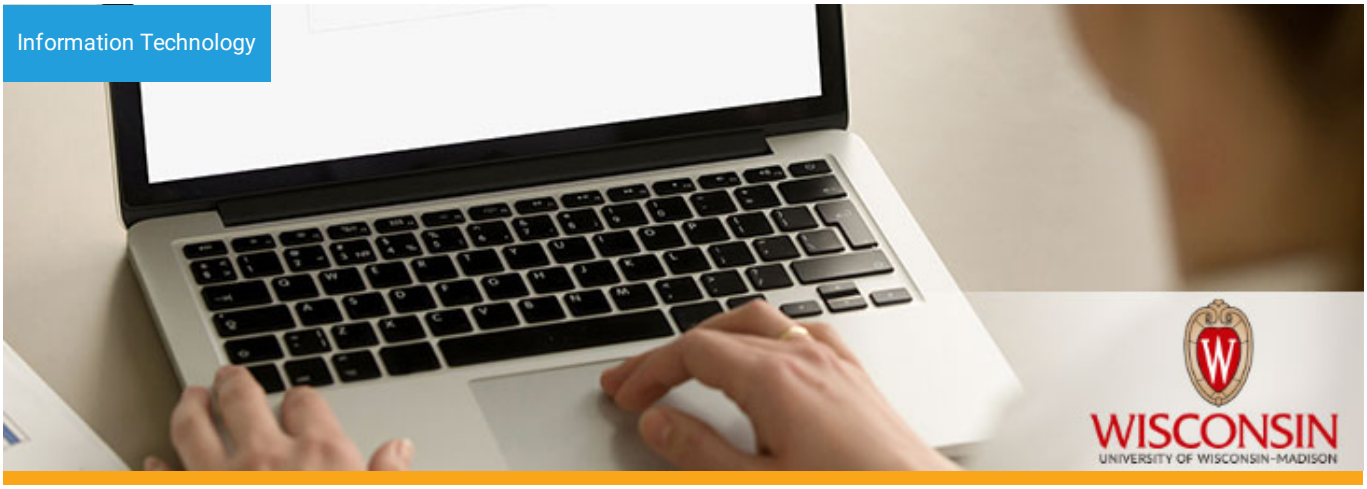
Information Technology



STORAGE I/O MANAGEMENT UNIT FOR SOLID-STATE DRIVES

WARF: P230116US01

Inventors: Michael Swift, Sujay Yadalam

The Invention

UW-Madison researchers have created a fast storage innovation that can achieve good performance while enabling secure sharing of devices amongst applications. The design repurposes the existing hardware mechanisms for translating memory addresses to also provide translation for internal storage addresses, namely the IOMMU. While other technologies exist to allow direct device access, this innovation does not allow access to files (only raw devices) and does not support shared access from multiple applications. First, a kernel maps a file into user space at a “File Virtual Address” (FVA) and creates augmented page table entries for this address. Then the user process accesses the device directly using instructions along with FVA and a process address space ID. The device employs IOMMU to translate FVA to Logical Block Addresses (LBA); translation fails if user doesn't have access permissions.

Additional Information

For More Information About the Inventors

- Michael Swift

Tech Fields

- Information Technology : Computing methods, software & machine learning
- Information Technology : Hardware

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842