

Saving flash erase costs using write-once-memory codes (Technion)

code: COM-1666

Flash based solid state disks (SSD) are widely used due to their short read and write latencies and increasing throughput. However, once flash cells are written upon, they must be erased before they can be rewritten. These comparatively slow erasures, along with the additional overheads they incur, significantly slow down pending read and write operations. In addition, their reliability deteriorates over time below an acceptable level. The presented technique for reducing block erasures uses write-once memory (WOM) codes. WOM codes alter the logical data before it is physically written, thus allowing the reuse of cells for multiple writes. This can be applied to any Flash based product, including USB devices, SSDs, smart-phones, cameras etc., to reduce erase operations and extend the media's lifetime and improve its performance.

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