Reducing SSD Read Latency via NAND Flash Program and Erase Suspension
Guanying Wu and Xubin He
Department of Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, Virginia
{wug, xhe2}@vcu.edu

Introduction
In NAND flash memory, the program or erase (P/E) operations are non-suspendable. Therefore, the subsequent read requests have to wait until the time-consuming P/E operations to complete. This problem could increase the read latency by 2x. Inspired by the internal mechanism of NAND flash P/E algorithms, we propose a low-overhead P/E suspension scheme to reduce SSD read latency.

Motivation

Background

NAND Flash Erase
Immediate Suspension Range
Erase Pulse
Verify
Guarantee the duration

NAND Flash Program
Program pulse and verify is considered atomic
Suspend in the interval between program pulse and verify

References

Design

Motivation

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