FlashFQ: A Fair Queueing I/O Scheduler for Flash-Based SSDs

There are three operation in solid-state disk(SSD) : read, write and erase. Because SSD does not support in-place-update, to update the written pages, erase operation must be performed before write operation. However, write operation are more expensive compared to read operation and erase operation is very expensive rather than write and read operation. It can cause that heavy IO requests would block a light operations and this raises the unfairness problem when IO scheduling. FlashFQ is based on SFQ(D) to get advantages which are efficient virtual time computation and exploiting the parallelism of SSD. FlashFQ also employs prediction of a task generating IO to minimize unfairness scheduling occurring from deceptive idleness.