A Stack Model Based Replacement Policy for a Non-Volatile Write Cache

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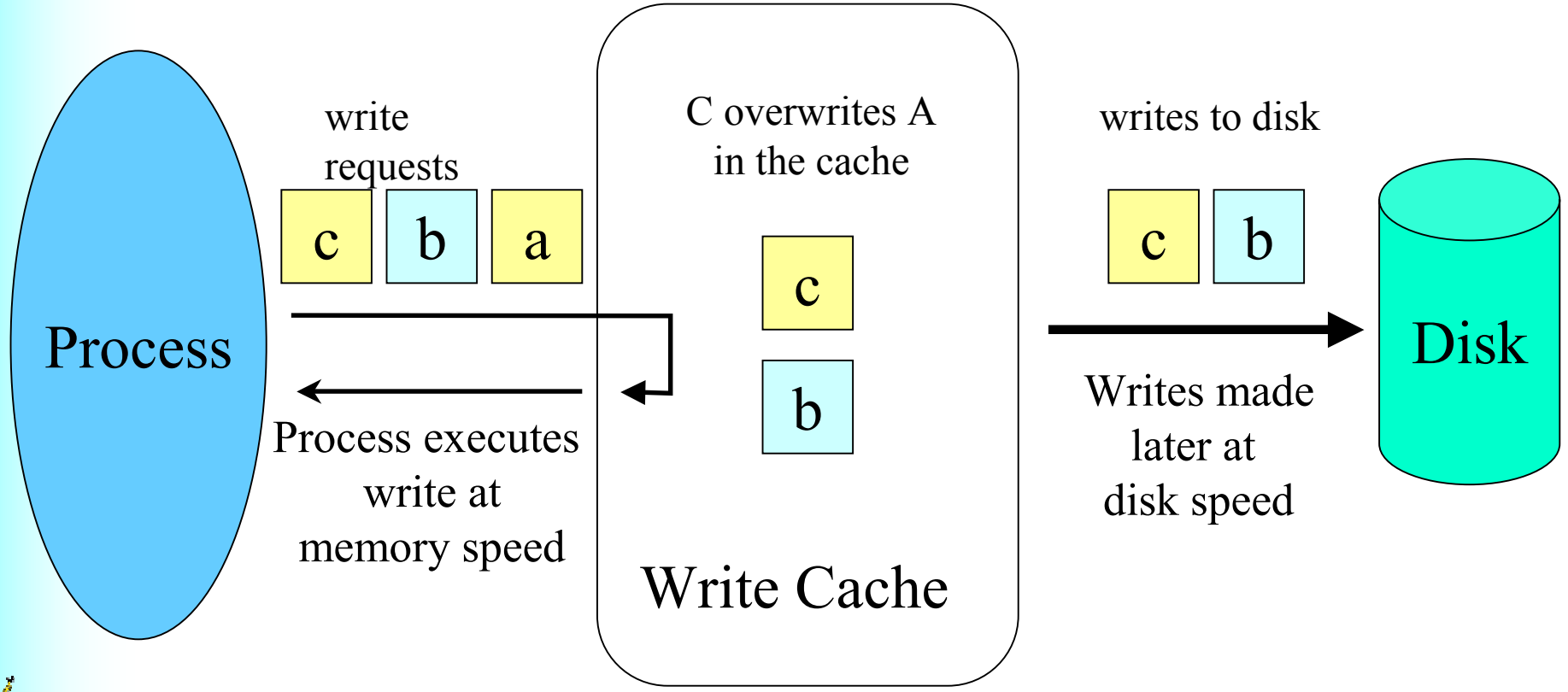
Write Caching

Use a write-back cache in memory to delay writes to disk.



Choosing A Management Strategy

Problem: How do you choose a strategy for managing a write cache?

- Least Recently Used (LRU), Shortest Seek Time First (STF), and Largest Segment per Track (LST) strategies have been tried.
- Each approach performs poorly in some way (amount of data written to disk, cache hit ratio, availability of free space in cache).

Results

- A small non-volatile write cache can reduce the number of write requests to disk by as much as 75 percent.
- Effective cache management prevents any writes from waiting for clean space.
- New hybrid block replacement policy gives improved performance over existing management techniques.