RAIDIX Technology

SSD cache

Parallel SSD cache in RAIDIX storage has a bundle of unique features that not only boost performance, but also saves you flash drive durability

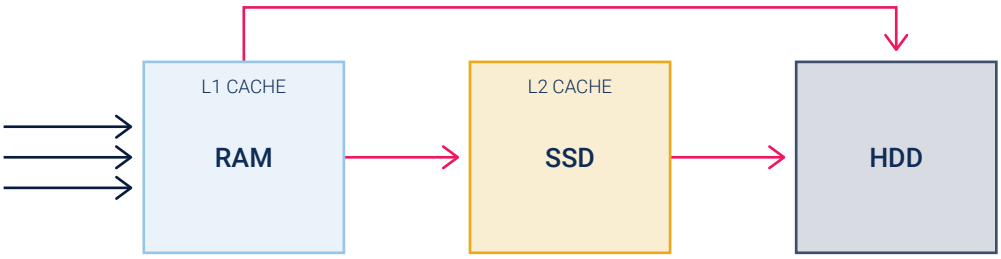
SSD cache allows you to increase storage performance with no significant hardware expenditures. Paired with HDD arrays, SSD cache optimizes processing of mixed workloads by directing random requests to the fast solid state drives.

How it Works

SSD caching is a data processing technology which uses solid state drives as a buffer space for frequently used data. Read and write operations are faster, since the system detects "warmth" of the data and, if it is "hot" enough, puts it to high speed drives.

For instance, SSD cache significantly increases productivity when the storage is processing streams in video surveillance environment. This workload pattern receives mostly sequential requests with seldom random write and read operations. Without SSD cache, the storage makes attempts to moderate these peaks by HDDs, which consequently cause total performance degradation.

Traditional way to implement SSD cache in hybrid storage is a second-level cache, when hot data fills RAM space first and then moves directly to the SSD buffer

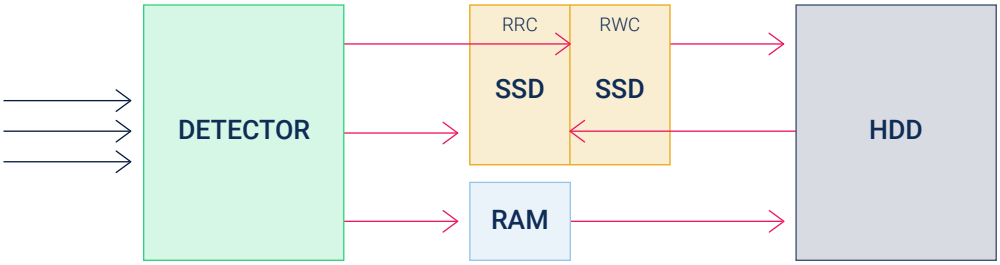


Parallel SSD Cache in RAIDIX

SSD cache in RAIDIX has parallel architecture with two unique features:

- All incoming requests are sorted into RRC (Random Read Cache) and RWC (Random Write Cache) categories.
- Log-structured writing improves proprietary replacement algorithms.

Special Detector qualifies all incoming requests and sorts them into the right category



Implemented parallel architecture moves it beyond the traditional approach: RAIDIX caching works as a smart distributor of the workload to a primary device storage. With request allocation and unique replacement algorithms, SSD cache effectively mitigates random I/O peak impact, reducing negative effect to the total storage performance.

Replacement algorithms use log-structured writing for more effective data allocation in the cache space. It reduces the total amount of requests to the flash drives and significantly decreases their wearing-out.

Business Benefits

SSD cache in RAIDIX is known for its high speed and effective optimization of random requests for mixed workloads. But the most distinctive feature of the technology is reducing SSD wearing-out.

Implemented detector and proprietary cache algorithms successfully reduce total write hits to the dedicated SSD array. Conventional 2L cache with LRU algorithms shows 10.8 write hits, while RAIDIX shows only 1.8.

It means that RAIDIX caching demands 6 times less flash memory write cycles than caching in traditional hybrid storage. Therefore, this approach can make your flash drives stay in the caching services up to 6 times longer.