

ADAPTIVE READ-AHEAD

Adaptive read-ahead is a data caching technology enabled to analyze incoming workload and predict it, and then put it into cache for overall system acceleration.

The proprietary algorithm of request detection is a core element of implemented read-ahead mechanism. It gives significant value for multi-threads processing and eliminates impact of blender effect.



IMPLEMENTATION AREA

Adaptive read-ahead helps to improve total storage performance by reducing latency and increasing throughput for sequential read requests.

Read-ahead technology is particularly useful for video production tasks, where sequential read requests simultaneously come to storage server from several workstations. Parallel processing of multiple sequential threads meets streams mixing, called I/O blender effect, when storage receives random IOs instead original sequential patterns. Avoiding storage performance degradation in such circumstances demands specific tools for detection and recognition of incoming requests.

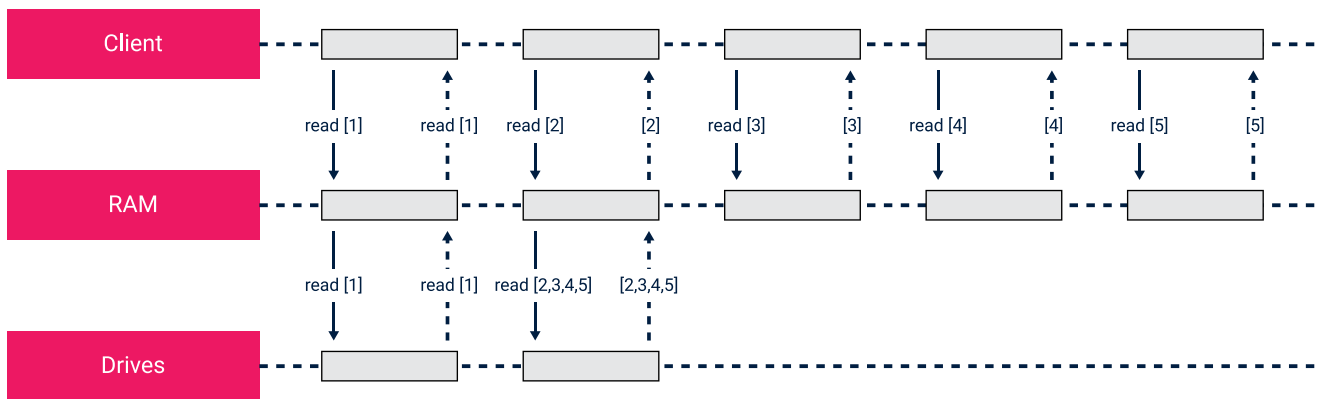


HOW IT WORKS

The idea of read-ahead technology is to define subsequent requests by analyzing current patterns and place them to RAM of SSD drives from HDD in advance.

This idea is embodied into two steps: (1) detecting sequential read requests in multiple data streams, and (2) making decisions about necessity of advance reading and data volume.

The key element of RAIDIX read-ahead technology is proprietary algorithm of request detection based on range concept describing linked intervals of address spaces. According to this concept, the nearest descriptive range is defined for each incoming request. Requests classified as sequential then are processed with read-ahead operation.



Depending on the speed and block size, system defines optimal quantity of predictable data to cache placing. By putting hot data to fast drive, system reduces access time to these blocks which therefore increases total performance of data storage.



FEATURES

Patented read-ahead mechanism implemented in RAIDIX has the following features:

- Proprietary algorithm of request detection monitors up to 100 sequential and up to 128 random streams at the same time with no performance degradation.
- Algorithm parameters auto setting calculates amount of data for placing in RAM (manual adjustment is also available).