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ABSTRACT

Method and Apparatus for Selecting Enqueued Data Access Operations for Execution in a Disk Drive Data Storage Device

In accordance with one aspect of the present invention, a seek profile table (227) used by a disk controller (201) contains multiple profiles for seek operations, and is accessed by a separate index table (226) containing, for each permutation of key parameters, an index to a corresponding profile. In operation, the estimated seek time for an enqueued data access operation is obtained by accessing the applicable index table entry, using the value of the index entry to determine the corresponding profile, and using the profile to estimate the access time. Preferably, a “time-based relocation expected access time” algorithm is used, in which a nominal seek time is established, and profile table entries express a probability that an operation with a given latency above the nominal seek time will complete within the latency period. The expected access time is the latency plus the product of this probability and the time cost of a miss, ie., the time of a single disk revolution.

Fig. 2.