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Disk Cache: Macintosh compared to IBM PS/2

A caching device driver is included with the new IBM PS/2, models 50-80. This cache uses a technique that fetches either 2, 4, or 8 sectors (user selectable) when an I/O is issued for a single sector. This method appears to achieve significant performance improvements with relatively small cache sizes. Some have asked whether Apple (or other vendor) is looking at improving the Macintosh's disk performance this way.

Apple's disk caching is not done like IBM's, for two reasons. The first has to do with hardware: the IBM can access a multiple number of blocks in just about the same time it can access just one. We can't do that with our drives; we have to monitor the reading of each block.

Second, Apple has a very complicated file format and directory structure that can't compare to the IBM disk format. The Macintosh is constantly loading in small resource segments (often much smaller than one block) and maintaining a complex B-tree catalog structure. Our disk cache is optimized for this type of structure.

Basically, the way the cache works is to remember recently-written blocks of data. It can be thought of as a "post-written" system, rather than a "read-ahead" system. If we need that information again soon, we can retrieve it from the cache rather than from disk. However, we can do some read-ahead, as some hard disk controllers maintain a track buffer, reading in an entire track at once and doling it out to the Macintosh one block at a time.

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