THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ASIT DAN,
DINKAR SITARAM,
and PHILIP SHI-LUNG YU

Appeal No. 96-3294
Application 08/055,422[1]

ON BRIEF

Before JERRY SMITH, BARRETT, and LALL, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed April 30, 1993, entitled "Fileserver Buffer Manager Based On File Access Operation Statistics."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-10.

We affirm-in-part.

BACKGROUND

The disclosed invention is directed to a fileserver buffer manager and method based on file access operation statistics, in particular, on read/write ratios.

Claim 9 is reproduced below.

> 9. In a client-server computer system in which a fileserver stores files and has memory buffers for caching portions of said files for more rapid access by clients, an improved method for managing said memory buffers, comprising the steps of:
>
> grouping related files into filesets;
>
> collecting fileserver access operation statistics for each of said filesets;
>
> classifying said filesets into a plurality of fileset categories having similar collected access operation statistics; and
>
> effectively applying a different fileserver buffer management policy to files in each of said fileset categories.

The examiner relies on the following prior art references:

Mattson et al. (Mattson) 4,463,424 July 31, 1984

Kitajima et al. (Kitajima) 2,184,267 June 17, 1987
(United Kingdom patent application)

Claims 1-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mattson and Kitajima.

We refer to the First Office Action (Paper No. 2), the Final Rejection (Paper No. 5), and the Examiner's Answer (Paper No. 11) (pages referred to as "EA__") for a statement of the Examiner's position and to the Brief (Paper No. 9) (pages referred to as "Br__") for a statement of Appellants' arguments thereagainst.

OPINION

Appellants identify the following grouping of claims (Br6): (1) claims 1-6 and 9; (2) claim 7; (3) claim 8; and (4) claim 10. Normally, claims in group (1) would be considered to stand or fall together with the broadest claim in the group. The broadest claim in group (1) is considered to be claim 9, since claim 9 recites classifying filesets based on "access operation statistics" rather than the more specific "read/write ratio" in claim 1. However, since appellants mostly confine their arguments to claim 1, claims 1 and 9 are considered separately.

Claims 1-8

Claim 1 recites using read/write ratios to determine a plurality of categories of buffer management policies based on possible ranges of the read/write ratios and to assign files to a particular buffer management policy corresponding to the determined read/write ratio for that file.

The Examiner's position with regard to the read/write ratio is (FR4): "While Mattson failed to describe use of read/write ratios, Mattson clearly indicated that it was concerned with 'performance measures, such as hit/miss ratios' (column 1, lines 21-25). Because Kitajima informed those of skill in the art that read/write ratios are a significant performance measure, those of skill in the art would have known and been motivated to use that performance measure in Mattson's system."

Appellants argue that "MATTSON does not divide or partition the files being stored in the partitioned cache in accordance with read/write ratio" (Br8-9). Appellants argue that while "KITAJIMA apparently does collect read/write statistics" (Br9) as part of assigning files to storage

devices, Kitajima fails to explain how read/write ratios are used and is not relevant to the claimed invention (Br10).

We agree with Appellants that the subject matter of claim 1 is not suggested by the combination of Mattson and Kitajima. Kitajima discloses a method for optimum allocation of files to storage devices in which the desired hit ratio, number of writes, and read/write ratio are kept within suitable ranges (abstract). Kitajima does not clearly explain how read/write ratios are used. Kitajima does not suggest the use of read/write ratios to implement different buffer management policies or assigning files based on their read/write ratio. Since Kitajima is directed to allocation of files to storage devices rather than improving the hit ratio in buffers in a client-server environment, it appears that the only way the Examiner could have come to use the read/write ratio teachings of Kitajima was by impermissible hindsight using Appellants' disclosure as a guide. Appellants indicate that they discovered that different read/write ratios in a client-server environment favor different buffer management policies (specification, page 5). There is no teaching of this concept in Mattson or Kitajima. The general teaching in

Mattson of using "performance measures, such as hit/miss ratios" would not have suggested the obviousness of using Kitajima's unrelated read/write ratio. The examiner has not established a prima facie case of obviousness. The rejection of claims 1-8 is reversed.

Claims 9 and 10

Appellants do not directly address claim 9. To the extent that comments made with respect to claim 1 are relevant to claim 9, these comments are addressed in the analysis which follows. Otherwise, arguments not made are considered waived. See 37 CFR § 1.192(c)(6)(iv) (1994) ("For each rejection under 35 U.S.C. 103, the argument shall specify the errors in the rejection and, if appropriate, the specific limitations in the rejected claims which are not described in the prior art relied on in the rejection, and shall explain how such limitations render the claimed subject matter unobvious over the prior art."). Cf. In re Baxter Travenol Labs., 952 F.2d 388, 391, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art."); In re Wiechert,

370 F.2d 927, 936, 152 USPQ 247, 254 (CCPA 1967) ("This court has uniformly followed the sound rule that an issue raised below which is not argued in this court, even if it has been properly brought here by a reason of appeal, is regarded as abandoned and will not be considered. It is our function as a court to decide disputed issues, not to create them.").

As to the preamble environment of "a client-server computer system," the Examiner concludes that it would have been obvious to one of ordinary skill in the art to use Mattson in a client-server environment (Paper No. 2, page 5). The Examiner further finds that Mattson may be used for DASD cache paging and "[i]nasmuch as a DASD cache is a fileserver cache, those of skill in the art would have appreciated the applicability of Mattson's invention in the claimed environment" (EA5). Appellants argue that "the MATTSON cache is not assisting a fileserver having clients as claimed" (Br9). While a direct access storage device (DASD) does not imply use of the storage device as a fileserver, we agree with the Examiner that one of ordinary skill in the art would have recognized that the DASD cache management technique in Mattson is applicable to a client-server network environment.

A person of ordinary skill in the art must be presumed to know something about the art apart from what the references expressly disclose. In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962).

As to the limitation of "grouping related files into filesets," the Examiner finds that Kitajima teaches "the classification of files into groups based at least in part on the files read/write ratios allowed for storage allocation" (Paper No. 2, page 7). While we do not find grouping in Kitajima, Appellants do not argue this limitation and, hence, the obviousness of the limitation is not challenged.

As to the limitation of "collecting fileserver access operation statistics for each of said filesets," Mattson discloses collecting counts of the number of hits to a group, which contain the information needed to determine the hit ratio to data caches of different capacities (col. 7, lines 26-30). Appellants do not argue this limitation.

As to the limitation of "classifying said filesets into a plurality of fileset categories having similar collected access operation statistics," Mattson discloses partitioning a Least Recently Used (LRU) stack into equivalence classes based

on cache capacities of interest (col. 6, lines 66-68). The equivalence classes have similar collected access operation statistics. Appellants do not argue this limitation.

As to the limitation of "effectively applying a different fileserver buffer management policy to files in each of said fileset categories," the Examiner concludes that using the same replacement algorithm (e.g., LRU) for different partitions in Mattson is applying a different buffer management policy as disclosed at pages 5-6 of the specification (FR3). Appellants admit that "the Examiner is correct that a partitioning of a cache into two or more partitions and the storing of separate file sets in each cache partition does apply a different buffer management policy to each of the file sets stored in the separate cache partitions" (Br8). Appellants argue (Br10): "In Claim 1, the different buffer management policies correspond with different ranges of read/write ratios and the buffer management policy assigned to each file is the buffer management policy that corresponds to the range of read/write ratios covering the read/write ratio of that file. An equivalent limitation may be found in Claim 9." Claim 9 is broader than claim 1 and does not

contain an equivalent limitation to using ranges of read/write ratios; therefore, the argument is not persuasive.

For the reasons stated above, the rejection of claim 9 is sustained.

Claim 10 recites that the fileserver buffer management policy "creates a relatively higher preference for retaining in said memory buffers portions of files having collected fileserver access operation statistics corresponding to a relatively higher read-to-write ratio." The Examiner states that "[t]his aspect of the invention was addressed with respect to claim 1" (EA6). We find no treatment of this limitation in the discussion of claim 1; indeed, claim 1 does not contain this limitation. Claim 7, however, contains an analogous limitation about the time files are resident in the buffer. The Examiner states with respect to claim 7 that "Mattson's cache size selection if chosen as a measure of read/write ration [sic] would necessarily affect the average time in which files remained resident." Mattson does not base cache size on read/write ratio, which is not measured, and so the Examiner's "if" condition is without support in the record. The Examiner states that "[a]dditionally, those of

skill in the art at the time of the invention would have known to have preferred a higher read-to-write ratio because a more frequently read file was a better candidate for more frequent access" (EA6). As discussed in connection with claim 1, the Examiner has not established the obviousness of implementing a plurality of buffer management policies based on the read/write ratio; therefore, modification of a policy based on read/write ratios is not persuasive. The Examiner has failed to establish a prima facie case of obviousness with respect to claim 10. The rejection of claim 10 is reversed.

CONCLUSION

The rejection of claims 1-8 and 10 is reversed.

The rejection of claim 9 is sustained.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JERRY SMITH Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
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