

The opinion in support of the decision being entered today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DOUGLAS E. JEWETT, ADAM J. RADFORD,
BRADLEY D. STRAND, JEFFREY D. CHUNG,
JOEL D. JACOBSON, ROBERT B. HAIGLER,
ROD S. THOMPSON, and THOMAS L. COUCH

Appeal 2007-2449
Application 09/927,894
Technology Center 2100

Decided: October 26, 2007

Before KENNETH W. HAIRSTON, ANITA PELLMAN GROSS,
and MARC S. HOFF, *Administrative Patent Judges*.

GROSS, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's Rejection of claims 1 through 37 and 54 through 59, which are all of the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

Appellants' invention relates block-level access to storage resources over a computer network without a central file manager. (See generally Specification 2:6-9.) Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A block-level shared network storage system, comprising:

a storage server comprising an array of disk drives, and comprising a processor that runs a device driver to provide block-level access to data stored on the array of disk drives; and

a host computer coupled to the storage server by at least one computer network;

wherein the host computer and the storage server perform input/output (I/O) operations over the at least one network using multiple, concurrent logical connections, each logical connection being between the host computer and the storage server over the at least one computer network, such that a first I/O operation is executed over a first logical connection while a second I/O operation is executed over a second logical connection.

The prior art reference of record relied upon by the Examiner in rejecting the appealed claims is:

Wang US 6,834,326 B1 Dec. 21, 2004

Claims 1 through 37 and 54 through 59 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Wang.

We refer to the Examiner's Answer (mailed January 3, 2007) and to Appellants' Brief (filed October 5, 2006) and Reply Brief (filed January 12, 2007) for the respective arguments.

SUMMARY OF DECISION

As a consequence of our review, we will affirm the anticipation rejection of claims 1 through 4, 6, 8 through 17, 19 through 21, 23, 26, 27, and 54 through 56 and reverse the anticipation rejection of claims 5, 7, 18, 22, 24, 25, 28 through 37, and 57 through 59.

OPINION

The Examiner asserts (Answer 4) that Wang (col. 8, ll. 42-54, and Figs. 6 and 8a) discloses input/output operations between a host computer and a storage server using multiple concurrent logical connections, as recited in independent claim 1. In the Response to Argument section of the Answer, the Examiner further directs our attention to column 11, line 50-column 12 for the above-noted limitation. The Examiner also states (Answer 16) that in an interview with Appellants' representative, column 6, lines 22-32, had been pointed out as disclosing input/output operations in parallel over multiple logical connections. Appellants contend (Br. 6-7 and Reply Br. 2) that the text in columns 8 and 11-12 and Figures 6 and 8a of Wang fail to teach or suggest multiple concurrent logical connections between a host computer and a storage server. The issue is whether Wang discloses input/output operations between a host computer and a storage server using multiple concurrent logical connections.

In Figure 6 and the portion of column 8 relied upon by the Examiner, Wang merely discloses a RAID controller accessing plural RAID volumes. Further, Figure 8a and the corresponding description in columns 11-12 of Wang illustrate accessing data across a group of disks via multicasting. We

agree that none of the noted portions of Wang satisfy the claim language in controversy.

However, Wang states (col. 6, ll. 22-32) that using a SCSI, a host CPU sends multiple commands to a particular target disk, which "allows multiple block read/write operations to occur in parallel." Although Wang does not explicitly state that the read/write operations occur over multiple concurrent logical connections, it is unclear how multiple operations would occur in parallel between a host and a disk without using concurrent logical connections. When the Examiner directed Appellants' attention to this portion of Wang, the burden shifted to Appellants to explain how the claim limitation differs from Wang. *See In re Ludtke*, 441 F.2d 660, 169 USPQ 563 (CCPA 1971) and *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). Since the Examiner referenced column 6 of Wang in the Answer at page 16, and Appellants in the Reply Brief failed to distinguish claim 1 over the cited portion, we will sustain the anticipation rejection of claim 1 over Wang. In addition, since claims 2 through 4, 6, 8 through 14, 16, 17, and 54, all dependent upon claim 1, were not separately argued, we will sustain the anticipation rejection of them as well.

Regarding claim 5, Appellants contend (Br. 7-8) that Wang fails to disclose a host computer dividing an input/output operation into multiple operations and performing them in parallel over respective logical, concurrent connections. The Examiner (Answer 4-5) refers to Wang (col. 10, l. 66-col. 11, l. 29), asserting that Wang's disclosure of partitions satisfies the claim limitation of dividing an input/output operation into multiple operations. We find nothing in Wang that would suggest dividing an input/output operation into constituent operations, each over a different

logical connection. Therefore, we will not sustain the anticipation rejection of claim 5.

Appellants contend (Br. 8) that Wang fails to disclose multiple partitions, each allocated to a different host computer, as recited in claim 7. The Examiner (Answer 5 and 14) asserts that Wang discloses the noted limitation in column 5, lines 5-24, and column 10, line 66-column 11, line 29, respectively. However, although Wang does disclose partitioning the storage device, we find nothing that teaches allocating each partition to a different host computer. Accordingly, we will not sustain the anticipation rejection of claim 7.

Appellants (Br. 8) contend that in rejecting claim 15, the Examiner "merely points to Figure 6 of Wang, without making any attempt to explain how the drawing discloses the limitations at issue." However, the Examiner (Answer 14) responds by referring to Wang (col. 33, ll. 24-38), wherein Wang discloses increasing throughput by adding additional network interface controllers. The burden shifted to Appellants to explain how the above-noted portion differs from the limitation of claim 15. Appellants failed to distinguish this portion of Wang from claim 15 in the Reply Brief. Accordingly, we will sustain the anticipation rejection of claim 15.

The Examiner relies upon Wang, column 10, line 66-column 11, line 10 (Answer 7) and column 33, lines 24-38 (Answer 14) for a second network interface in rejecting claim 18. Appellants contend (Br. 8 and Reply Br. 4) that neither portion of Wang teaches a second network interface that provides "redundant network connections between the host computer and the storage server." We agree that Wang fails to teach that the additional network interfaces provide redundancy. Wang (col. 22, ll. 24-38)

discloses increasing throughput with additional network interfaces, but not redundancy. Therefore, we will not sustain the anticipation rejection of claim 18.

Appellants (Br. 8-9) set forth substantially the same contentions for claim 19 as for claim 1. As we explained *supra*, Wang (col. 6, ll. 22-32) discloses allowing multiple block read/write operations to occur in parallel. Although Wang does not explicitly state that the read/write operations occur over multiple concurrent sockets, it is unclear how multiple operations would occur in parallel between a host and a disk without using concurrent logical connections. When the Examiner directed Appellants' attention to this portion of Wang, the burden shifted to Appellants to explain how the claim limitation differs from Wang. Since the Examiner referenced column 6 of Wang in the Answer at page 16, and Appellants in the Reply Brief failed to distinguish claim 19 over the cited portion, we will sustain the anticipation rejection of claim 19 over Wang. In addition, since claims 20, 21, 23, 26, 27, and 56, all dependent upon claim 19, were not separately argued, we will sustain the anticipation rejection of them as well. Also, since the argument provided for claim 55 is substantially the same as for claim 19, which we found unpersuasive *supra*, we will sustain the anticipation rejection of claim 55.

Appellants (Br. 9-10) provide the same arguments for claims 22 and 24 as for claims 5 and 7, discussed *supra*. As we found Appellants' arguments persuasive, we will not sustain the anticipation rejection of claims 22 and 24, nor of claim 25 which depends from claim 24.

Appellants contend (Br. 10-11) that Wang fails to disclose "maintaining the first and second TCP/IP connections in a persistent state

. . . , " as recited in claim 28. We agree that Wang, in the portions relied upon by the Examiner and elsewhere, fails to disclose maintaining connections in a persistent state. Accordingly, we will not sustain the anticipation rejection of claim 28, nor of its dependents, claims 29 through 33 and 57.

Appellants (Br. 12-13) contend that for claim 34, Wang fails to disclose dividing an I/O request into multiple constituent operations. Appellants' argument is substantially the same as that provided for claim 5, which we found persuasive, *supra*. Consequently, we will not sustain the anticipation rejection of claim 34 and its dependents, claims 35 through 37, 58, and 59.

ORDER

The decision of the Examiner rejecting claims 1 through 37 and 54 through 59 under 35 U.S.C. § 102(e) is affirmed as to claims 1 through 4, 6, 8 through 17, 19 through 21, 23, 26, 27, and 54 through 56 and reversed as to claims 5, 7, 18, 22, 24, 25, 28 through 37, and 57 through 59.

Accordingly, the Examiner's decision is affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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