

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAY M. KURIO

Appeal No. 95-5040
Application 07/781,422¹

ON BRIEF

Before THOMAS, BARRETT, and FLEMING, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed October 21, 1991, entitled "Method And Apparatus For Providing A Fault Tolerant Network Interface Controller."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-18, all of the claims pending in the application.

The invention is directed to a method and apparatus for providing a fault-tolerant network interface for a computer. The computer has first and second connecting devices that connect it to the network. Normally, the data flows between the computer and the network through the first connecting device. When a fault is detected, the first network connecting device is disabled and its address is reassigned to the second connecting device. Thereafter, data flow is provided between the computer and the network through the second connecting device.

Claim 1² is reproduced below.

1. An apparatus for providing a fault-tolerant interface for a computer, comprising:

first and second means for connecting said computer to said network, said first and second means for connecting being provided, respectively, with first and second identifiers for uniquely identifying said first and second means for connecting said computer to said network, said first means for connecting being initially enabled so as to allow data to flow between the network and said computer through said first means for connecting;

means for periodically detecting whether a fault has occurred in said first means for connecting, said means for detecting causing a first message to be sent through said first means for connecting to be received by said second means for connecting, and causing a second message to be sent through said second means for connecting to be received by said first means for connecting;

means for disabling said first means for connecting when said fault is detected;

² Note that the word "network" should be reinserted before the word "interface" in the preamble to provide proper antecedent basis. The word "network" was deleted in the amendment received March 7, 1994 (Paper No. 9).

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means for substituting, in said second means for connecting, said first identifier for said second identifier when said fault is detected; and

means for enabling, when said fault is detected, said second means for connecting so as to allow data to flow between said network and said computer through said second means for connecting.

The examiner relies upon the following prior art:

Massey, Jr. et al. (Massey³) 5,016,244 May 14, 1991

Bhide et al., A Highly Available Network File Server, USENIX, Winter 1991, Dallas, TX, pages 199-205 (Bhide).

Claims 1-3, 7, 9-11, 15, and 17-18 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Bhide.

Claims 4-6, 8, 12-14, and 16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Bhide and Massey.

OPINION

We reverse.

"Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention." RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

³ Massey was issued with an incorrect specification. The Patent and Trademark Office issued a certificate of correction on May 14, 1991, replacing the title page and columns 1-10 of the specification. Apparently, the examiner relies on the originally published specification which has nothing to do with the drawings. A copy of Massey with the corrected specification is attached to this decision.

Appellant argues that Bhide does not anticipate independent claims 1-3 and 11 because it fails to teach, at least, "first and second means for connecting a single computer to a network, where when the first means for connecting fails, the same computer communicates with the network through the second means for communicating" (Brief, pages 6-7). We agree that this basic architectural limitation is not taught by Bhide.

Bhide was cited by appellant in the specification, page 3, as an example of a system which provides control of the redundancy of a file system. Appellant accurately describes the teachings and deficiencies of Bhide at page 7 of the brief. Bhide is directed to a fault-tolerant file server, not a fault tolerant network interface. As shown in the Highly Available Network File Server (HA-NFS) of figure 1, Client computers are connected to a network LAN via a single primary adapter P. A Client computer cannot be the computer of the claims because it has only a single connection P to the network LAN.

Two Server computers are network file servers providing access to files located on disks in volume groups VG. "NFS clients perceive an HA-NFS node as two independent NFS servers, each serving a distinct set of file systems" (page 200, right col.). Each server has two network interfaces, primary adapter P and secondary adapter S. "The server uses its primary interface for normal operation, and its secondary interface when impersonating the other server after its failure" (page 200, right col.). "If a server fails, its disks will be taken over by the other server" (page 201, left col.). The live server impersonates the failed server by changing the IP address of its secondary network interface to the primary address of the failed server and changing the hardware address of its

secondary interface to that of the primary interface of the failed server (page 201, left col.). Bhide deals with failed file servers, not a failed network interface (P or S) to a computer. When a Server computer fails, its address and functions are taken over by the other Server, which is then connected to the network LAN by two connecting devices at once. A Server computer cannot be the computer of the claims because, although it has two connections P and S to the network LAN, as appellant correctly argues (Brief, page 7): "The secondary connecting device for one computer is not substituted for the primary connecting device of that same computer, as in the claimed invention." Because none of the computers in Bhide are connected to the network LAN by two connections, one of which may be substituted for the other, the examiner erred in finding anticipation of the independent claims.

The examiner finds that Bhide discloses "a computer (client), a first and second means for connection (Fig. 1, server)" (Examiner's Answer, page 4) and "[i]n figure 1, Bhide clearly has a computer (client) connected to a first and second network interface devices (server)" (Examiner's Answer, page 8). These findings do not fit the claim language. The independent claims all require "first and second means for connecting said computer to said network" wherein the first means is enabled "so as to allow data to flow between said network and said computer through first means for connecting" and the second means is enabled "so as to allow data to flow between said network and said computer through second means for connecting." This language manifestly requires that the first and second means be connected between the computer and the network. In Bhide, the Client computer is connected to the LAN network though only a single primary adapter connection P. The

Server computer for the files system is connected to the network LAN through two network interfaces, P and S, but as appellant argues (Reply Brief, page 4): "Nothing in Bhide et al. discloses or suggests that either of the servers connects either of the clients to the network." It is not clear whether the examiner considers one Server to be a first means for connecting and the other Server to be the second means for connecting, or whether the examiner considers adapters P and S on one Server to be the first and second means for connecting. Under either interpretation, the Client is not connected to the network LAN through the Server or adapters P and S on the Server.

We have spend some time trying understand the examiner's rejection. From the examiner's statements about "interfaces with a network (via VG)" (Examiner's Answer, page 7) and that "the Examiner asserts that the computer is connected to the network (i.e. VG) via redundant interfaces" (Examiner's Answer, page 9), it appears that the examiner is trying to interpret the volume group VG as the network, instead of the LAN in Bhide. A volume group is a collection of mass storage volumes, which are disks in Bhide (page 200, right col.). Bhide expressly identifies the network as the LAN. The examiner has not explained how VG constitutes a network. Assuming, arguendo, that VG was a network (i.e., a network of disks), such interpretation does not satisfy other limitations of the claims. For example, the claim recitation about "first and second identifiers for uniquely identifying said first and second means for connecting said computer to said network" requires the identifier to be an identifier from the perspective of the network to the connecting means; the network identifiers in Bhide are from the LAN to the Server, not from VG to the Server.

The examiner also states (Examiner's Answer, page 7): "Appellants claims are of such breadth that it [sic] encompasses all of the computers in a network (i.e. host, clients, and workstations etc.), which interfaces with any other segment/device in a network via redundant means." The independent claims all expressly require that a computer interface to a network through first and second connecting means, not to just any device in a network, such as the volume group VG. We agree with the examiner that Bhide is highly relevant because it teaches changing the address of a normally unused secondary interface to the primary address of a failed server, but Bhide does not anticipate because it does not teach connecting a computer to a network through two connecting means where one of the connecting means may substitute for the other.

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The examiner errs in finding that the independent claims are anticipated by Bhide and, accordingly, the rejection of claims 1-3 and 11 is reversed. Because the dependent claims incorporate by reference all the limitations of the independent claims, the rejections of the dependent claims are reversed. In summary, the rejections of claims 1-18 are reversed.

REVERSED

JAMES D. THOMAS)
Administrative Patent Judge)
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) BOARD OF PATENT
LEE E. BARRETT) APPEALS
Administrative Patent Judge) AND
) INTERFERENCES
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