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United States Patent [19]

Ohran et al.

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[45] **Date of Patent: Nov. 2, 1999**

[54] **METHOD FOR RAPID RECOVERY FROM A NETWORK FILE SERVER FAILURE INCLUDING METHOD FOR OPERATING CO-STANDBY SERVERS**

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[73] Assignee: **Vinca Corporation**, Orem, Utah

[21] Appl. No.: **08/848,139**

[22] Filed: **Apr. 28, 1997**

Related U.S. Application Data

[63] Continuation of application No. 08/441,157, May 15, 1995, abandoned, which is a continuation-in-part of application No. 08/094,755, Jul. 20, 1993, abandoned.

[51] **Int. Cl.**[6] **G06F 11/20**

[52] **U.S. Cl.** **395/182.11**; 395/182.04; 395/182.08

[58] **Field of Search** 395/181, 182.02, 395/182.04, 182.05, 182.08, 182.09, 182.11, 500

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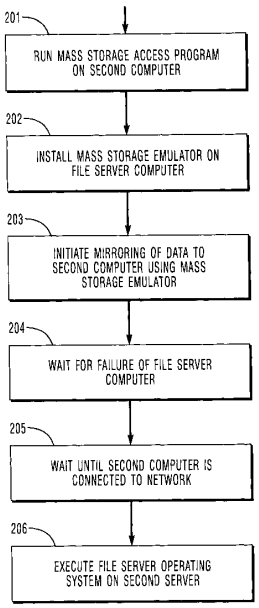
[57] **ABSTRACT**

A method for providing rapid recovery from a network file server failure through the use of a backup computer system. The backup computer system runs a special mass storage access program that communicates with a mass storage emulator program on the network file server, making the disks (or other mass storage devices) on the backup computer system appear like they were disks on the file server computer. By mirroring data by writing to both the mass storage of the file server and through the mass storage emulator and mass storage access program to the disks on the backup computer, a copy of the data on the file server computer is made. Optionally, selected portions of the data read through the mass storage emulator program can be altered before being returned as the result of the read operation on the file server. In the event of failure of the file server computer, the backup computer can replace the file server, using the copy of the file server's data stored on its disks. A single backup computer can support a plurality of file server computers. Unlike other redundant file server configurations, this method does not require the backup computer system to be running the file server operating system.

25 Claims, 4 Drawing Sheets



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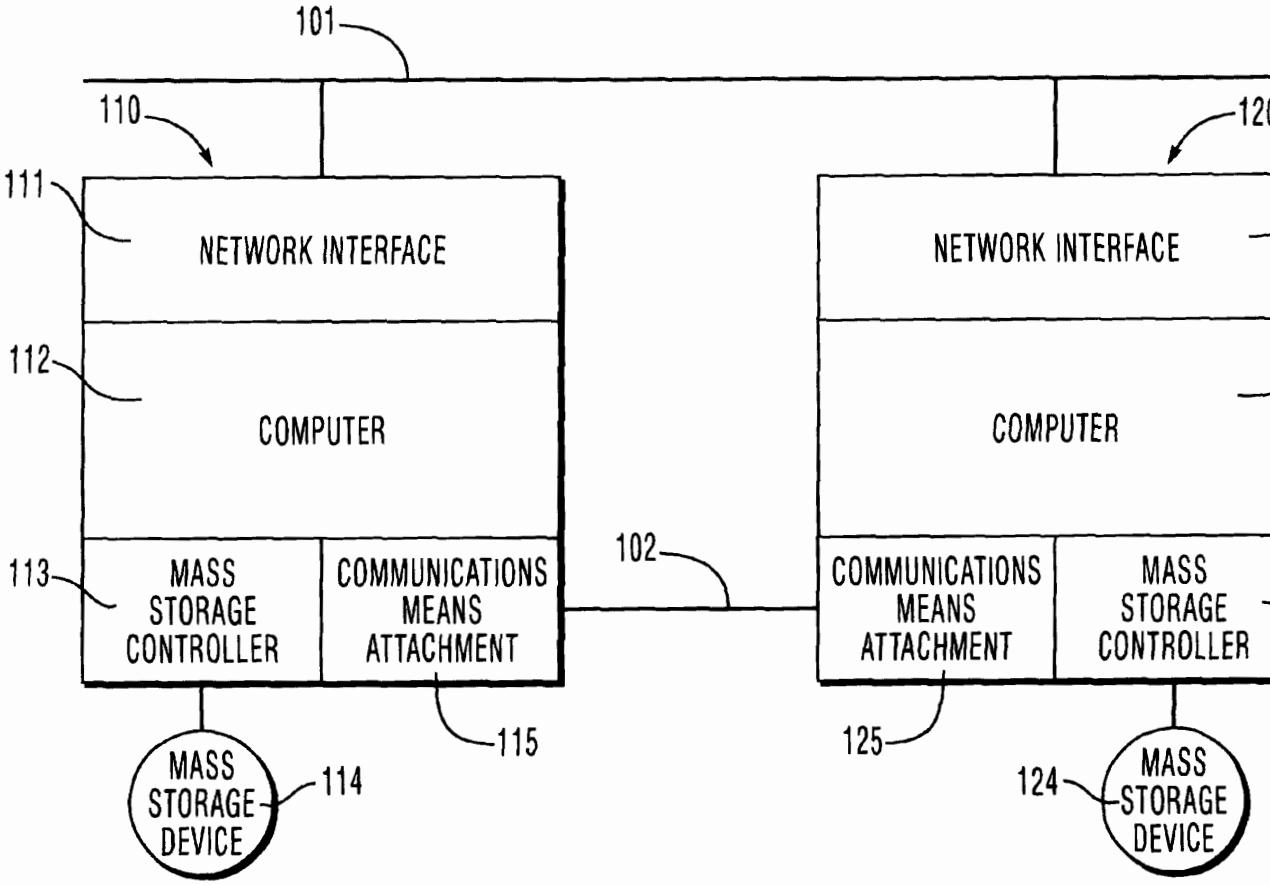

FIG. 1

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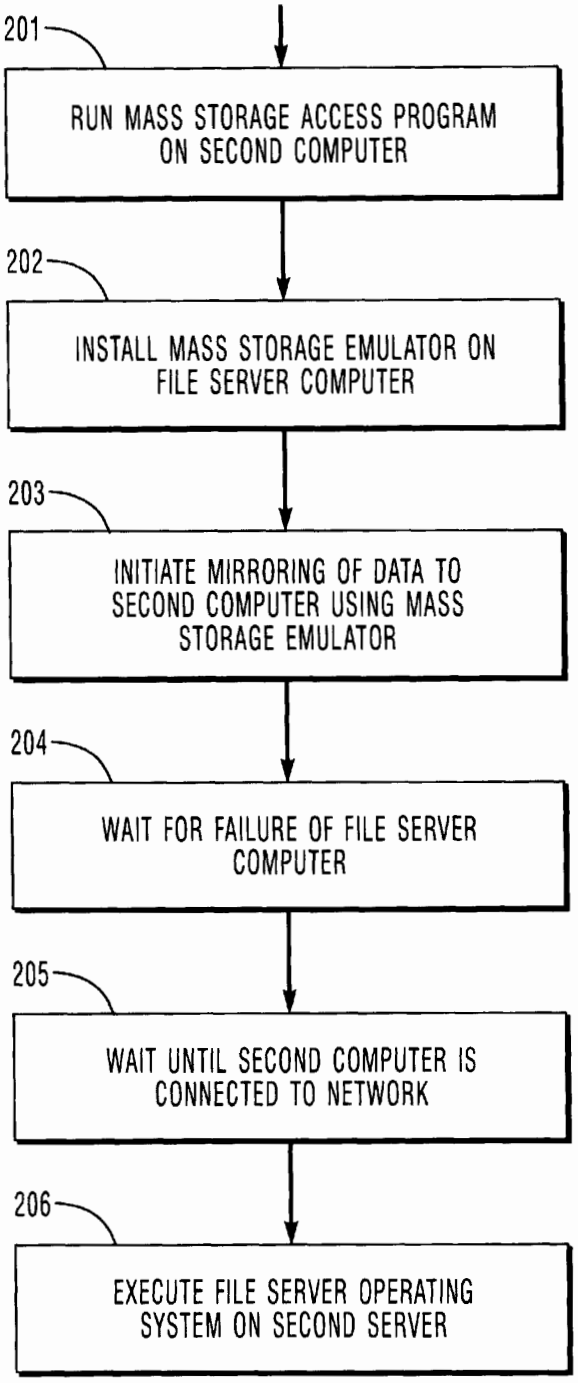

FIG. 2

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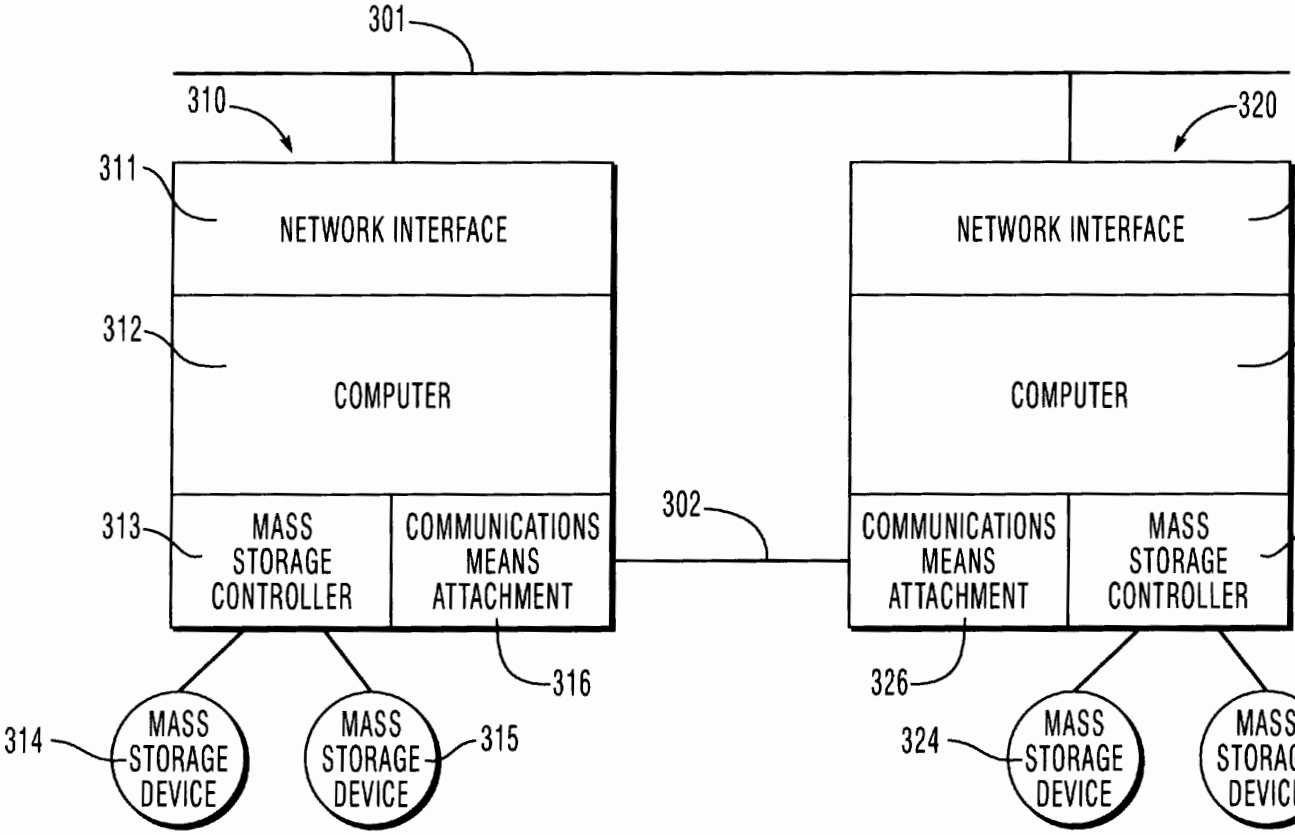

FIG. 3

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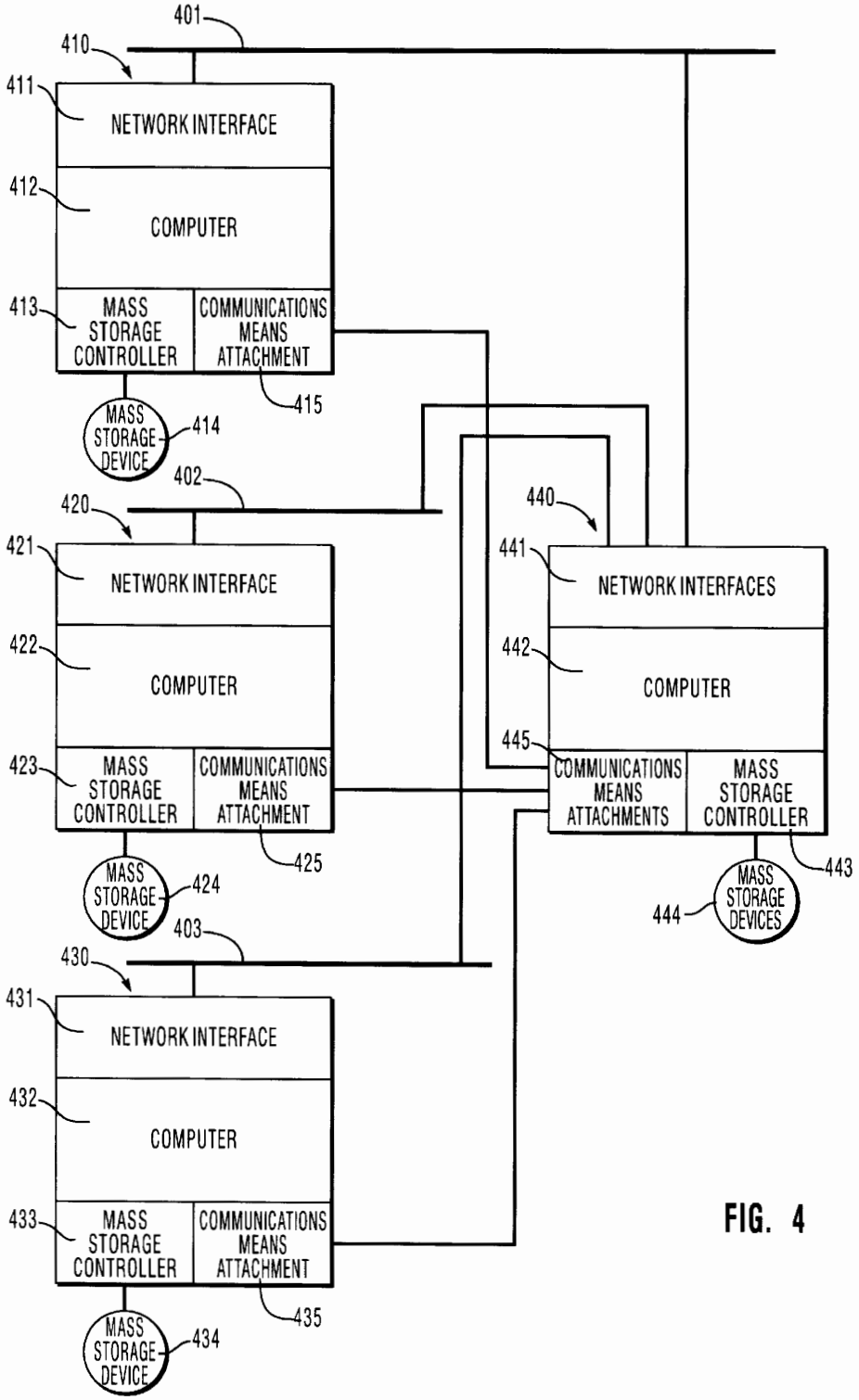

FIG. 4

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