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**Coates et al.**

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(54) **METHODS AND APPARATUS FOR ACCESSING REMOTE STORAGE THROUGH USE OF A LOCAL DEVICE**

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**Related U.S. Application Data**

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(51) **Int. Cl.**  
**G06F 17/30** (2006.01)

(52) **U.S. Cl.** ..... **707/10; 707/4**

(58) **Field of Classification Search** ..... **707/1-10, 707/100-102, 200-206; 709/200-203**  
See application file for complete search history.

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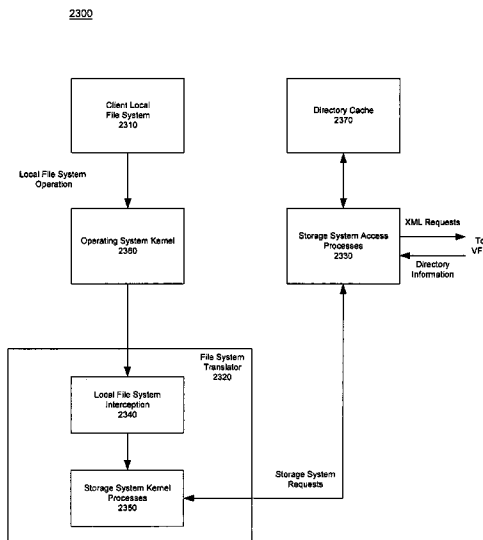
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(57) **ABSTRACT**

A network storage system includes a virtual file system (“VFS”), to manage the files of the network storage system, and a storage center that stores the files. The VFS and the storage center are separated, such that a client accesses the storage center to upload/download files. The client accesses the network storage system through one or more storage ports. The storage center includes a plurality of distributed object storage managers (DOSMs) and a storage cluster that includes a plurality of intelligent storage nodes. The network storage system includes additional storage centers at geographically disparate locations. The network storage system uses a multi-cast protocol to maintain file information at the DOSMs regarding files stored in the intelligent storage nodes, including files stored in disparate storage centers.

**23 Claims, 32 Drawing Sheets**



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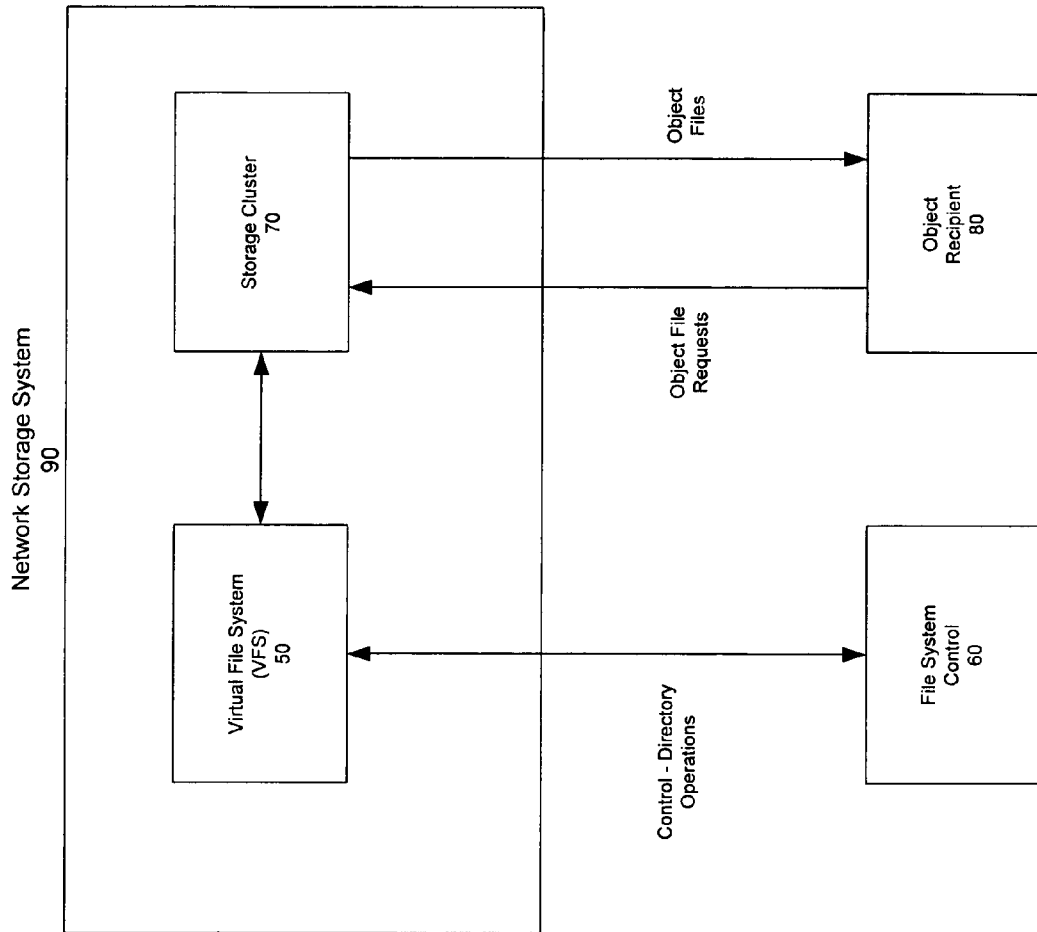


Figure 1

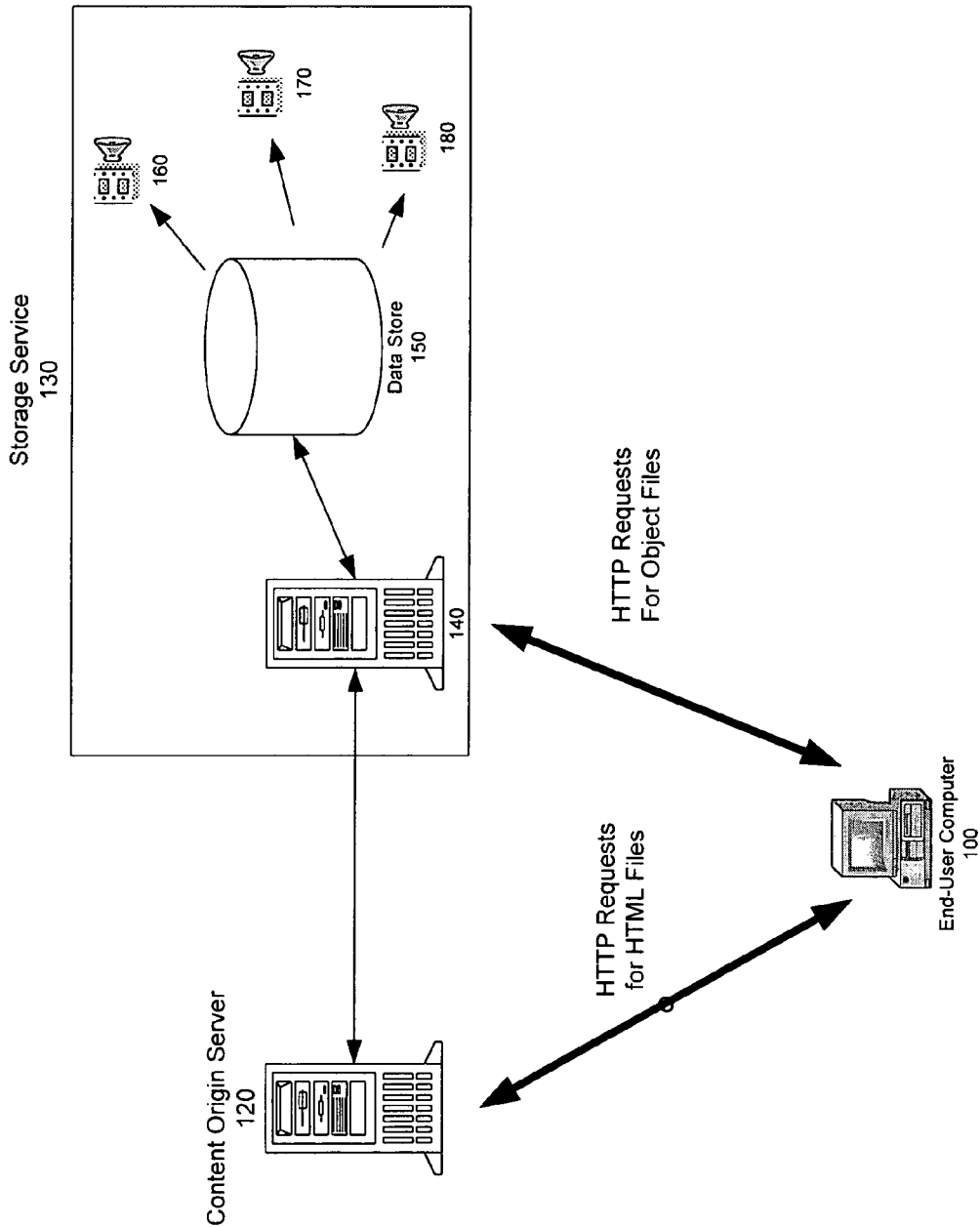


Figure 2

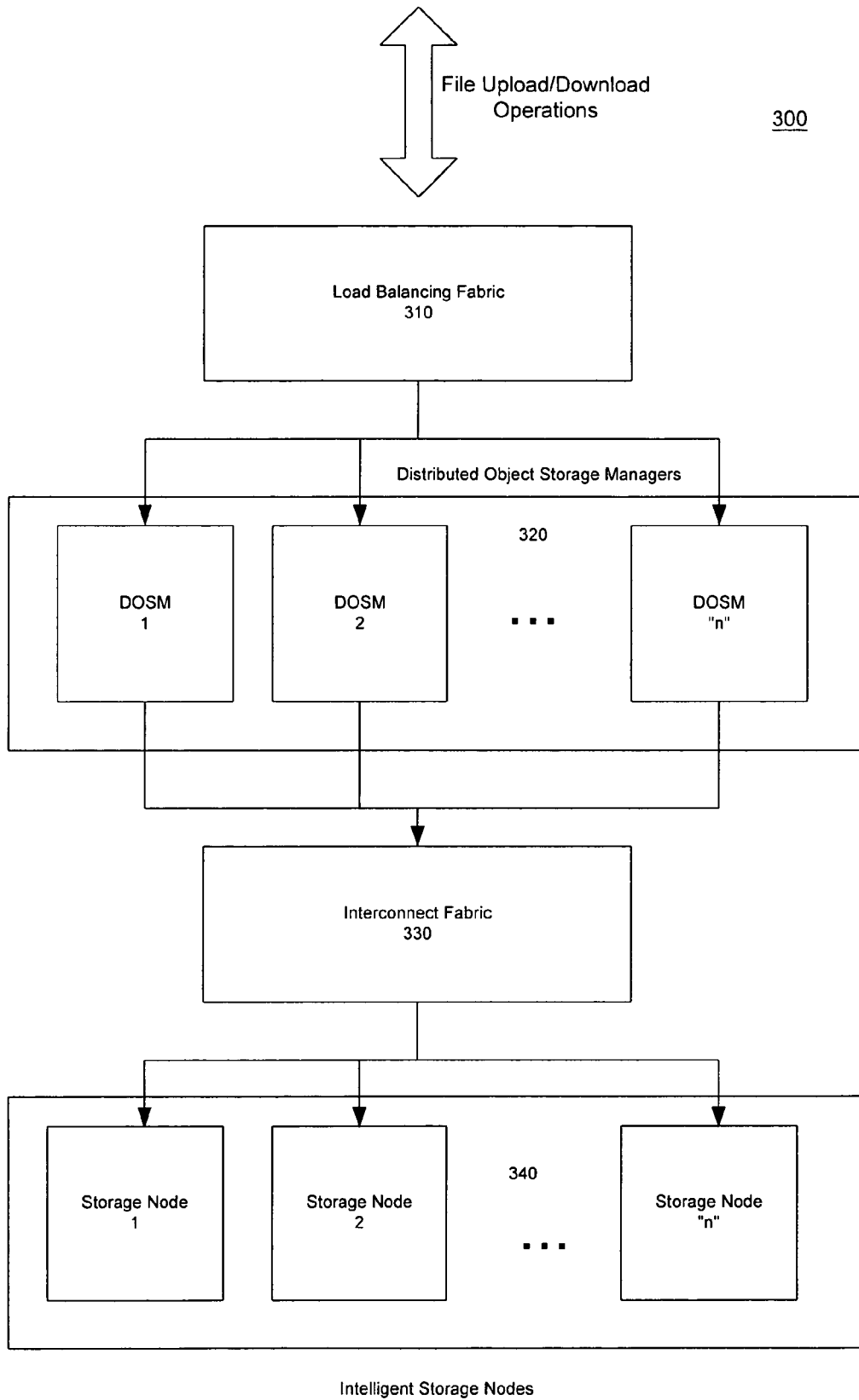


Figure 3

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