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United States Patent [19] Choquier et al.

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[54] **SYSTEM FOR ON-LINE SERVICE IN WHICH GATEWAY COMPUTER USES SERVICE MAP WHICH INCLUDES LOADING CONDITION OF SERVERS BROADCASTED BY APPLICATION SERVERS FOR LOAD BALANCING**

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[21] Appl. No.: **472,807**

[22] Filed: **Jun. 7, 1995**

[51] Int. Cl.⁶ **G06F 13/14**

[52] U.S. Cl. **395/200.53; 395/200.33; 395/200.37; 395/200.53; 395/200.57; 395/200.48; 395/200.79; 395/675; 364/238; 364/281; 370/480**

[58] Field of Search 395/187, 200, 395/650, 307, 200.53, 200.33, 200.37, 200.57, 200.48, 200.79, 675; 370/85, 480; 364/238, 281

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[57] **ABSTRACT**

An on-line services network includes application servers and Gateway microcomputers that are interconnected by a LAN. The Gateway microcomputers receive service requests which are transmitted over a WAN from client microcomputers operated by end users. Upon receiving a request to open a service, the Gateway microcomputers access a periodically-updated service map to locate the replicated application servers that are currently running the corresponding service application, and then apply a load balancing method (using server load data contained within the service map) to select an application server that has a relatively low processing load. A communications protocol between the client and Gateway microcomputers enables users to access multiple services simultaneously. A hot redirection technique allows a user service session to be transferred from one application server to another (replicated) application server without termination of the service session. Various mechanisms are provided for efficiently reallocating application servers to different on-line services, and for allowing additional servers to be efficiently added to the network.

59 Claims, 14 Drawing Sheets

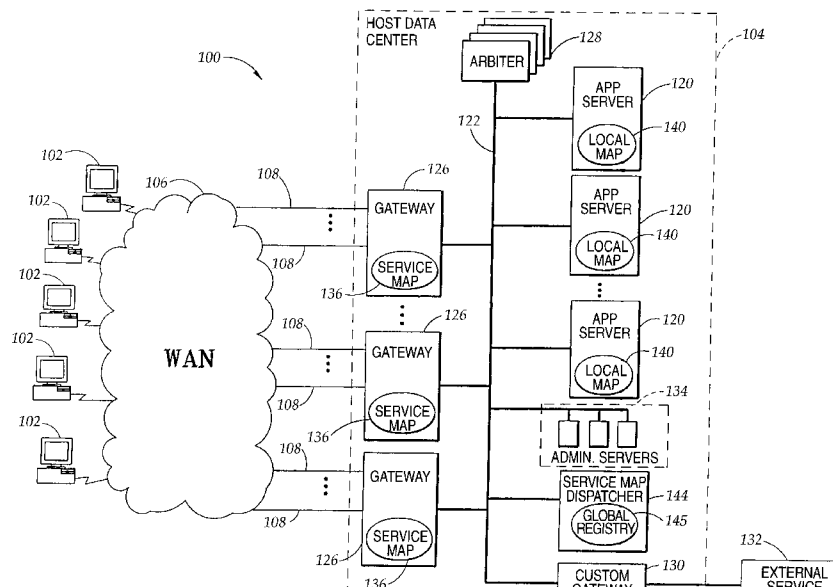
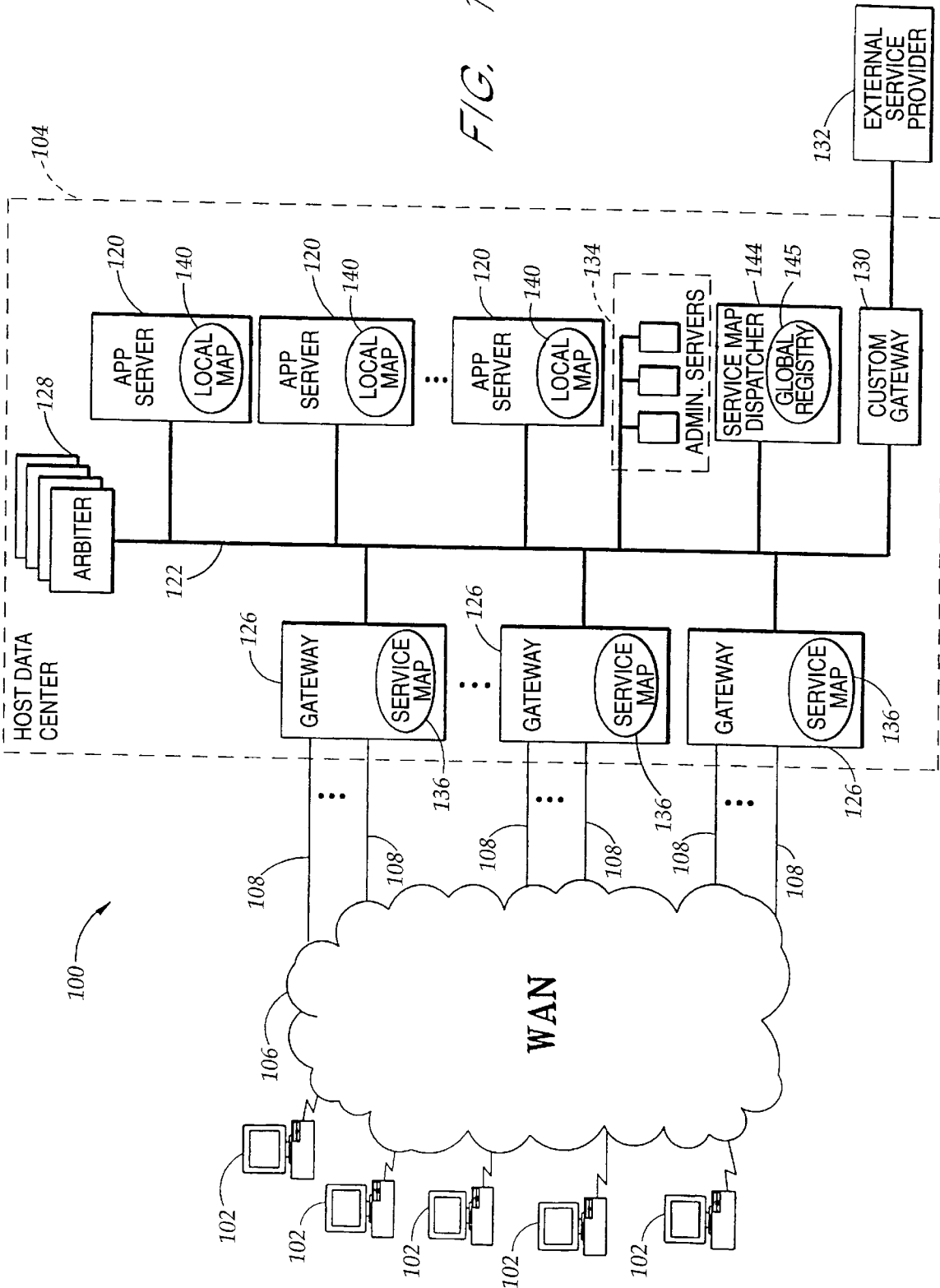


FIG. 1



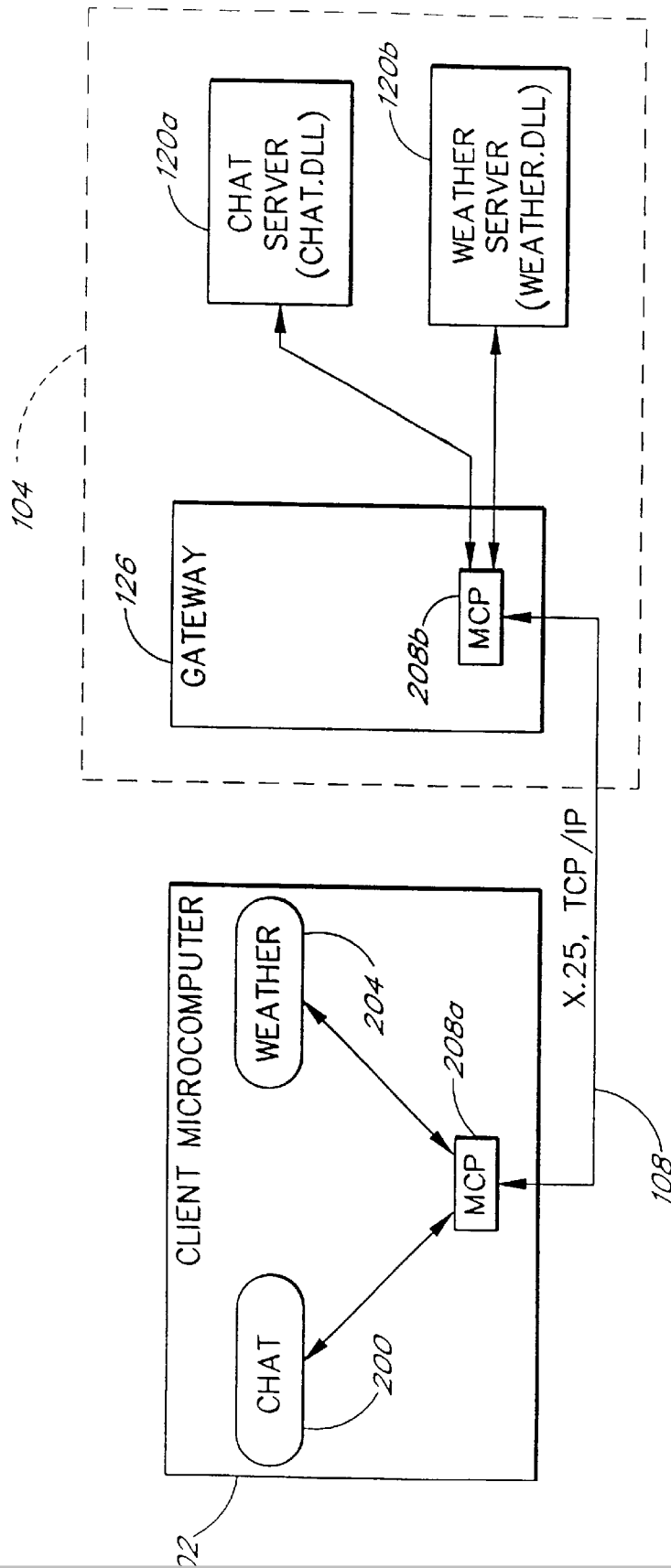


FIG. 2

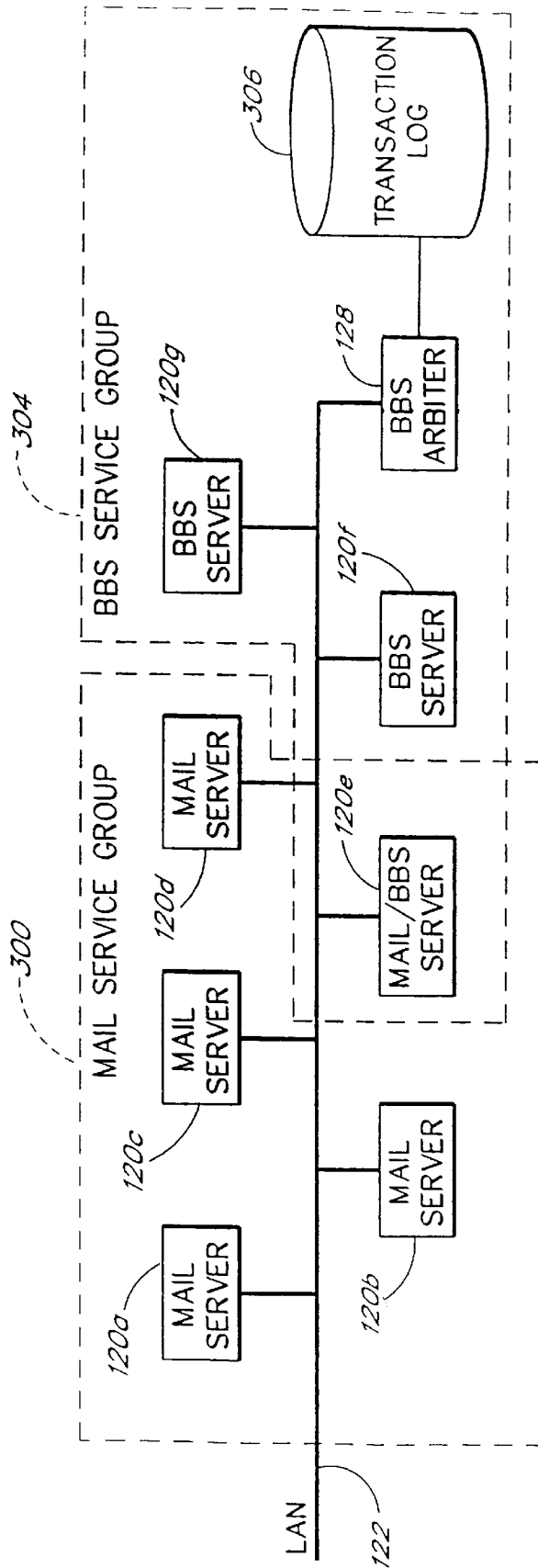


FIG. 3

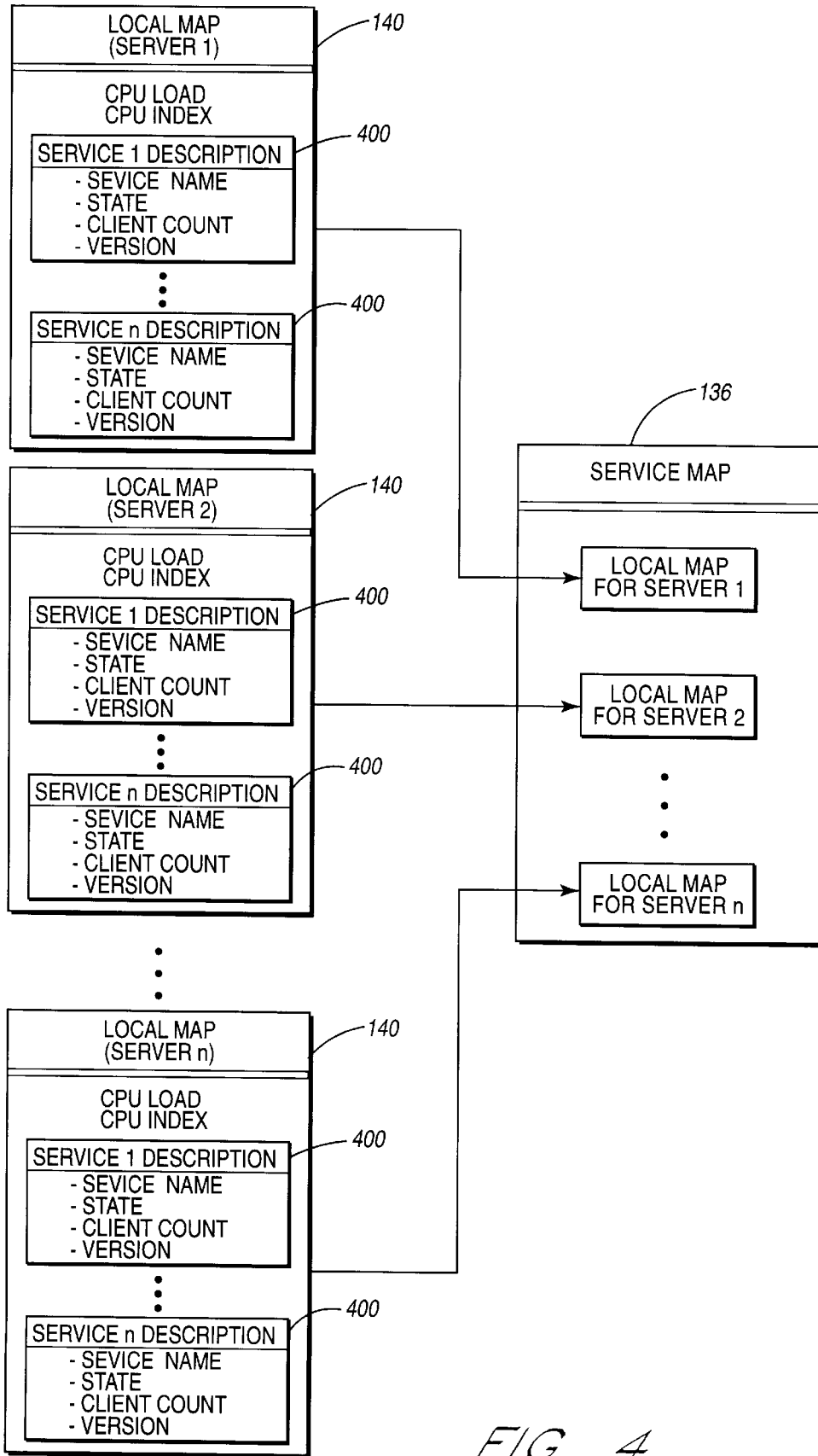


FIG. 4

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