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Huang et al.

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(54) **METHOD AND APPARATUS OF A COLLABORATIVE PROXY SYSTEM FOR DISTRIBUTED DEPLOYMENT OF OBJECT RENDERING**

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(51) **Int. Cl.**⁷ **G06F 15/16**

(52) **U.S. Cl.** **709/202; 709/201; 707/10; 707/104**

(58) **Field of Search** **709/202, 201, 709/303; 707/10, 104**

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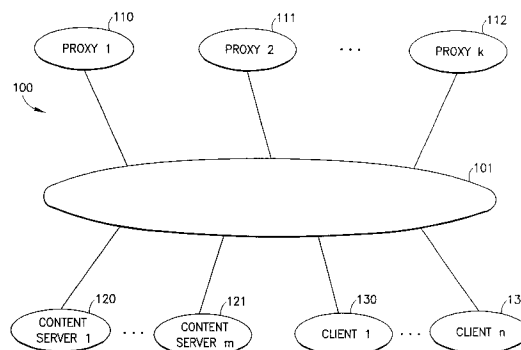
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(57) **ABSTRACT**

A distributed object rendering method and system for a collaborative data network is disclosed. The data network, which may include the Internet, has attached computing nodes, including object requestor nodes, object source nodes, and intermediate nodes which may be proxy servers. The method can allow each participating proxy server to adapt to the dynamic load conditions of itself as well as proxies, as well as to dynamic traffic conditions in the data network. The determination of which proxy or set of proxies is to perform object rendering and caching is based on a distributed, collaborative method that is adopted among the proxies. The criteria for such a method can include the bandwidth and current load of the network links among proxies, and/or the respective CPU usage of the proxies. If an object rendering can be staged, e.g., different resolution rendering, it can be performed by more than one of the proxies. The determination of which proxy performs which stage of the multistage rendering can also be adaptive to the dynamic load conditions, as well as network conditions.

41 Claims, 5 Drawing Sheets



Akamai Ex. 1005

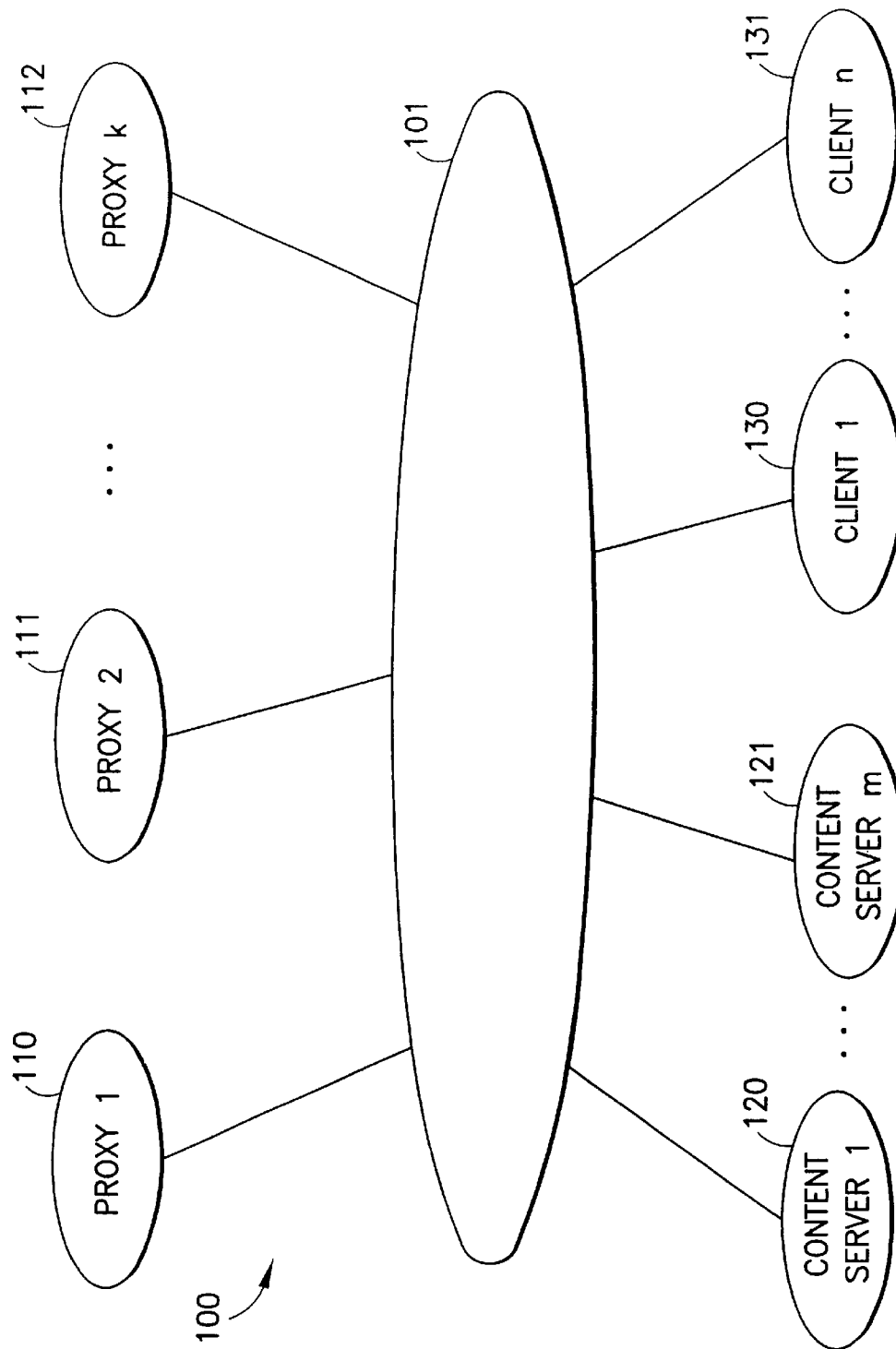
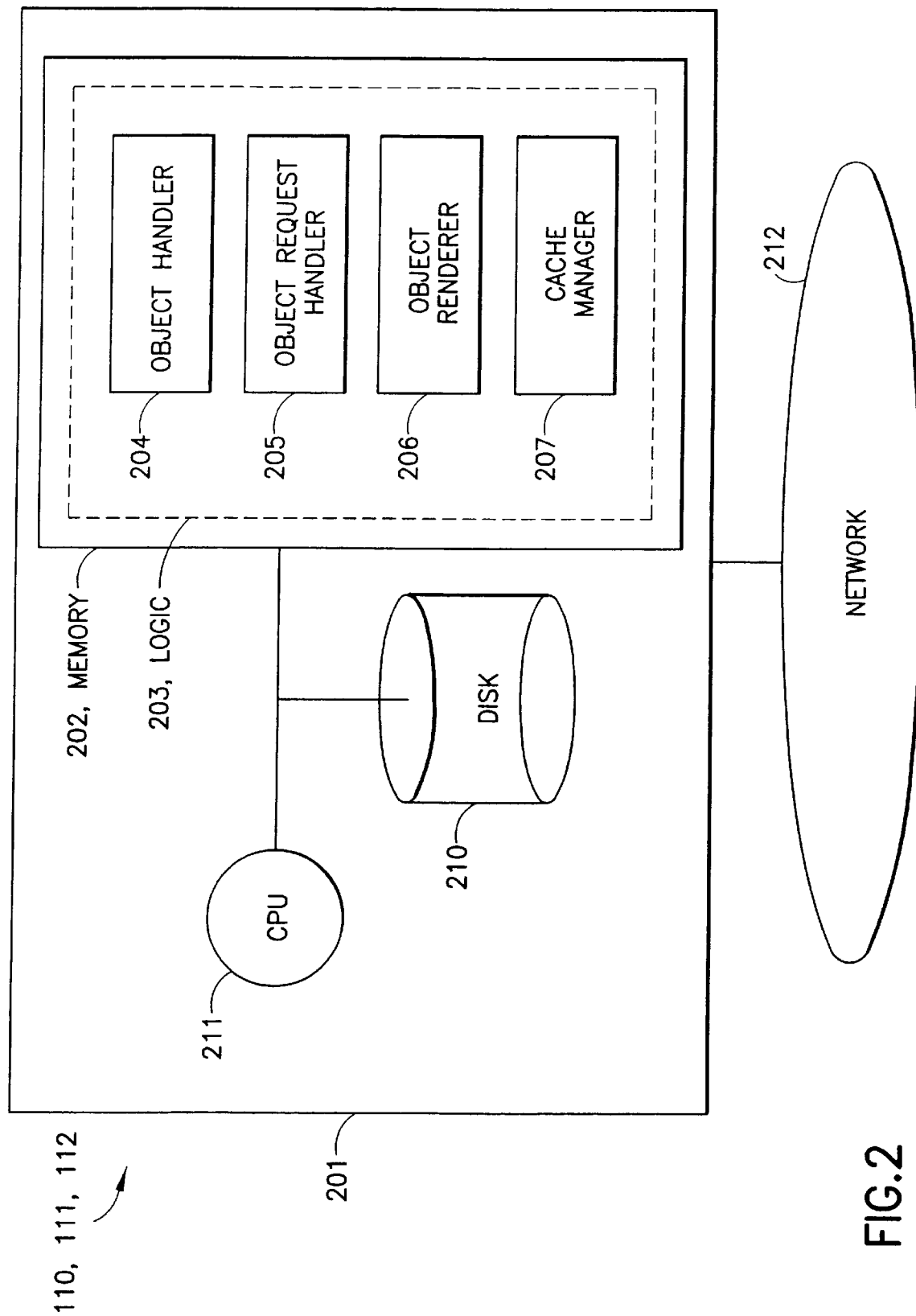


FIG. 1



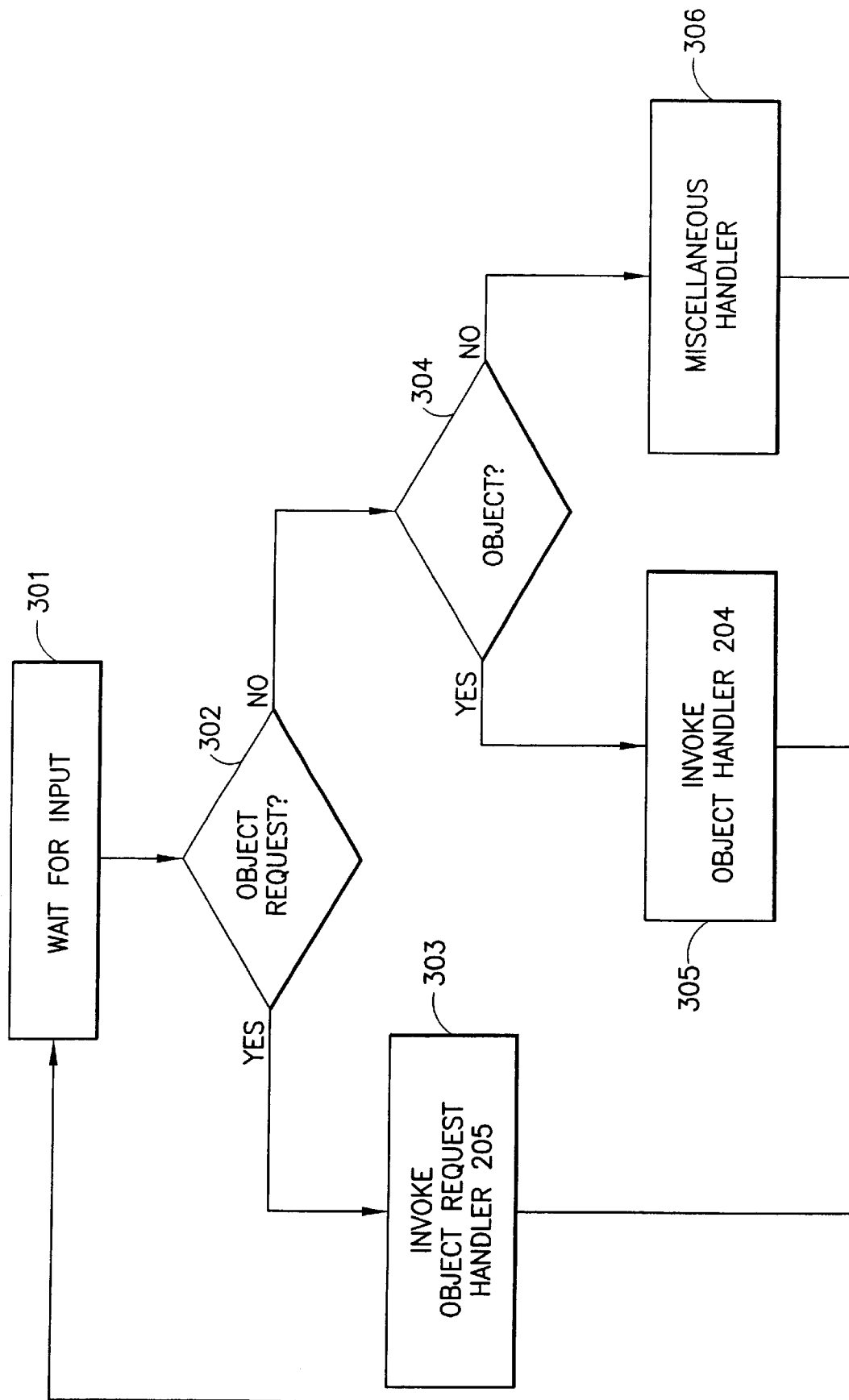


FIG. 3

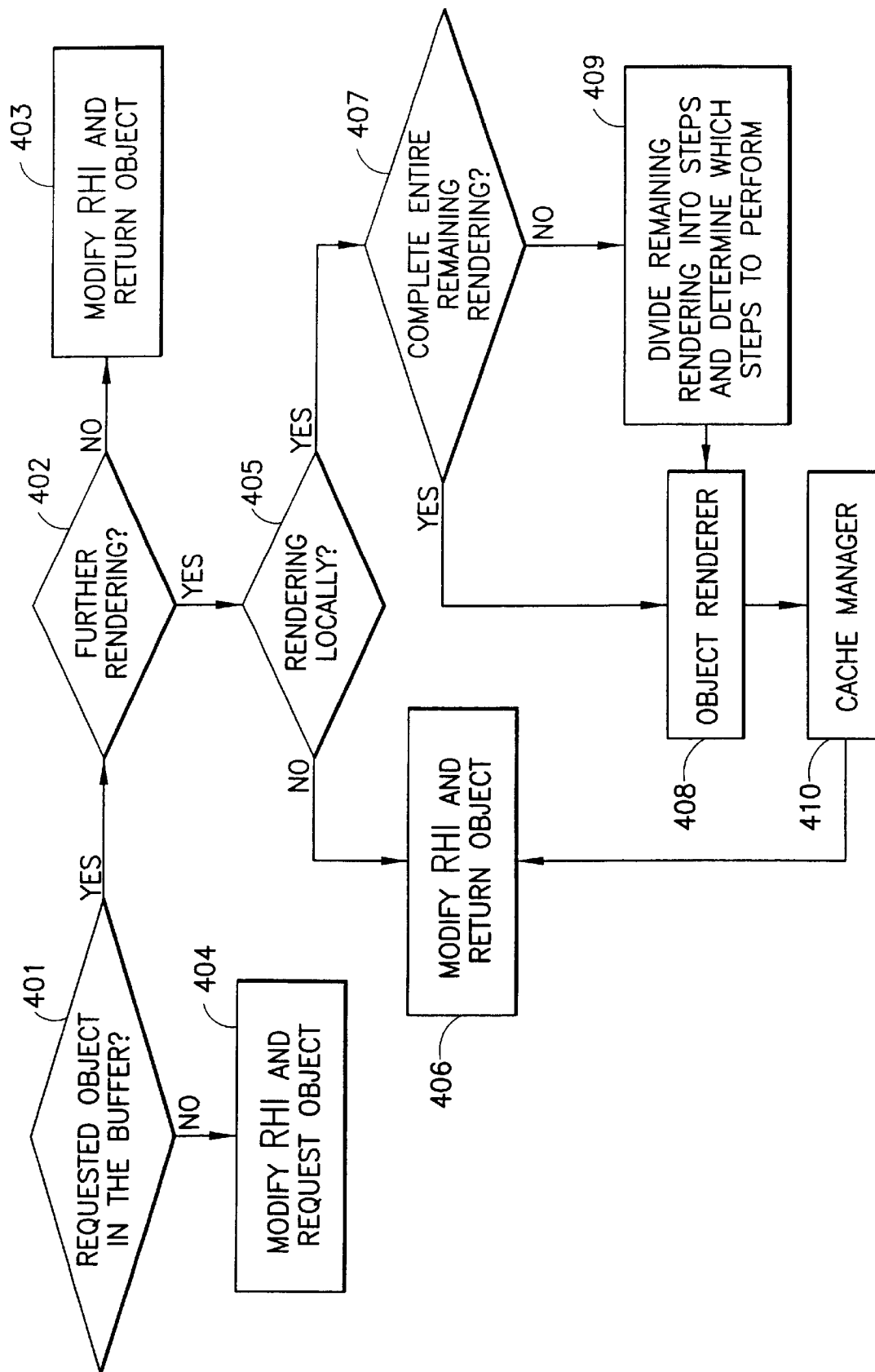


FIG. 4

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