

EXHIBIT D



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United States Patent [19]
Freund

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[45] **Date of Patent:** **Nov. 16, 1999**

[54] **SYSTEM AND METHODOLOGY FOR MANAGING INTERNET ACCESS ON A PER APPLICATION BASIS FOR CLIENT COMPUTERS CONNECTED TO THE INTERNET**

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(List continued on next page.)

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- [73] Assignee: **Zone Labs, Inc.**, San Francisco, Calif.
- [21] Appl. No.: **08/851,777**
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[57] **ABSTRACT**

A computing environment with methods for monitoring access to an open network, such as a WAN or the Internet, is described. The system includes one or more clients, each operating applications or processes (e.g., Netscape Navigator™ or Microsoft Internet Explorer™ browser software) requiring Internet (or other open network) access (e.g., an Internet connection to one or more Web servers). Client-based monitoring and filtering of access is provided in conjunction with a centralized enforcement supervisor. The supervisor maintains access rules for the client-based filtering and verifies the existence and proper operation of the client-based filter application. Access rules which can be defined can specify criteria such as total time a user can be connected to the Internet (e.g., per day, week, month, or the like), time a user can interactively use the Internet (e.g., per day, week, month, or the like), a list of applications or application versions that a user can or cannot use in order to access the Internet, a list of URLs (or WAN addresses) that a user application can (or cannot) access, a list of protocols or protocol components (such as Java Script™) that a user application can or cannot use, and rules to determine what events should be logged (including how long are logs to be kept). By intercepting process loading and unloading and keeping a list of currently-active processes, each client process can be checked for various characteristics, including checking executable names, version numbers, executable file checksums, version header details, configuration settings, and the like. With this information, the system can determine if a particular process in question should have access to the Internet and what kind of access (i.e., protocols, Internet addresses, time limitations, and the like) is permissible for the given specific user.

Related U.S. Application Data

- [60] Provisional application No. 60/033,975, Dec. 31, 1996.
- [51] **Int. Cl.⁶** **G06F 13/00**
- [52] **U.S. Cl.** **713/201**
- [58] **Field of Search** 395/187.01, 186; 364/222.5, 286.4, 286.5; 711/163; 707/9, 10, 203; 713/200, 201

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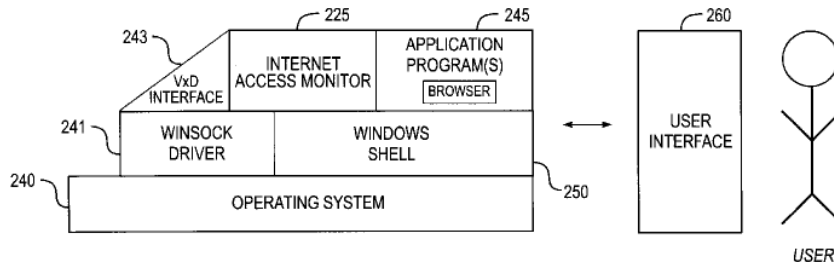
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30 Claims, 38 Drawing Sheets

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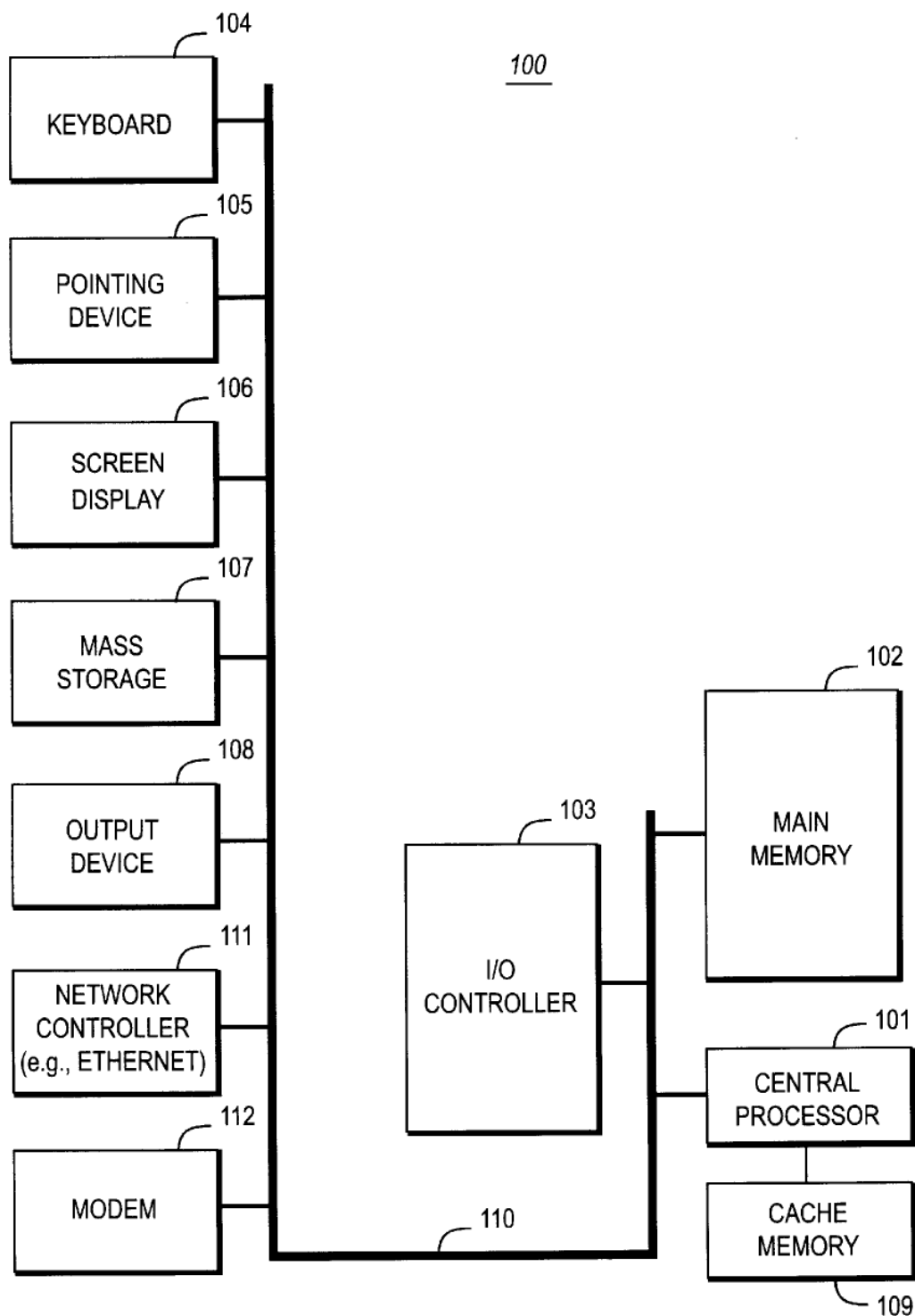


FIG. 1

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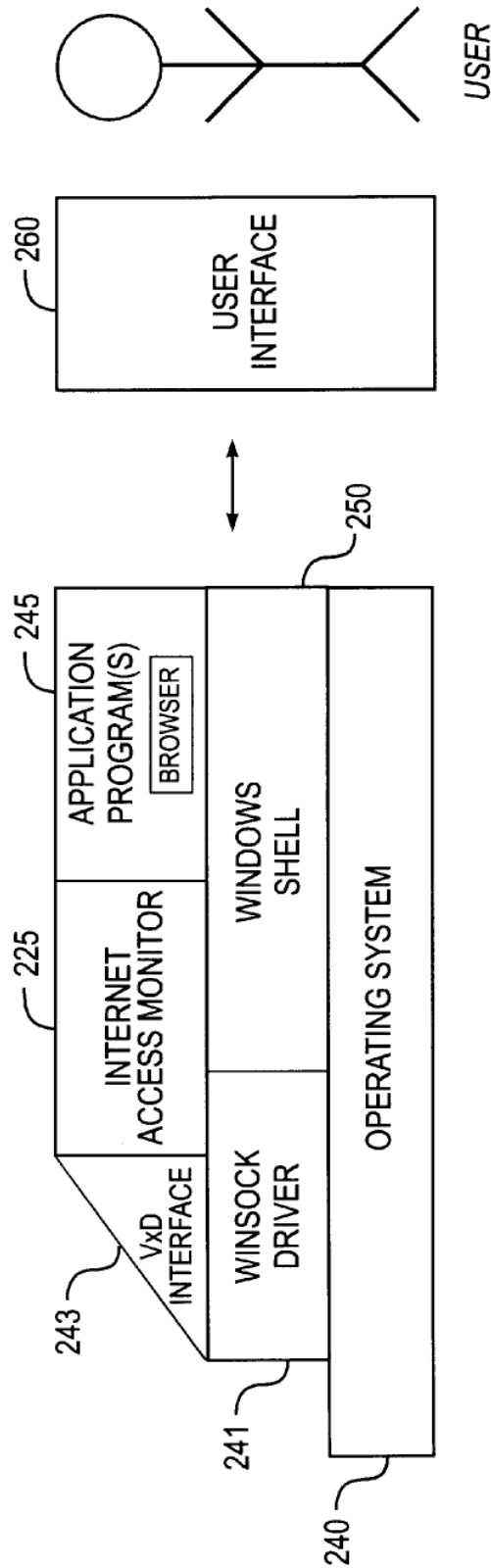


FIG. 2

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