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(54) **METHOD AND APPARATUS FOR CONTROLLING ACCESS TO A COMPUTER NETWORK USING TANGIBLE MEDIA**

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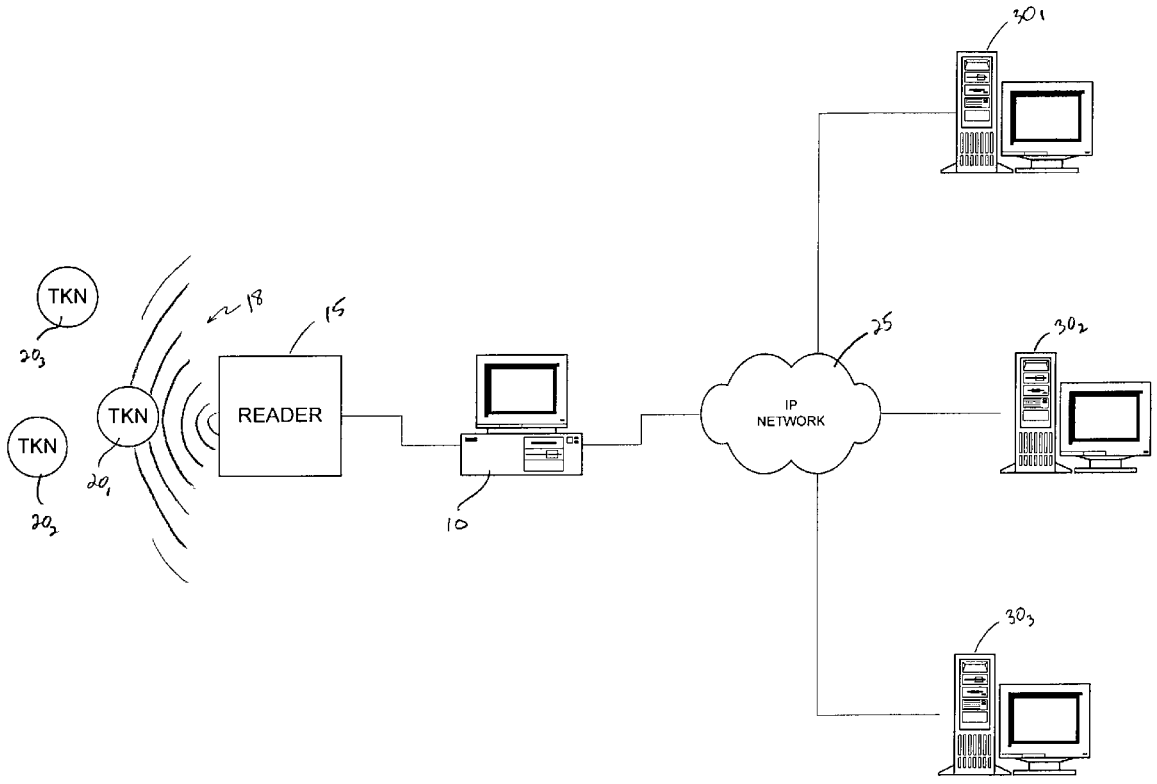
(57) **ABSTRACT**

Interaction with a computer network is facilitated or restricted based on a tangible token, such as a small card or disk, a small everyday article, a toy, or a product container. The token comprises a machine-readable indication, or "tag," that identifies the token and which may be wirelessly read by a tag reader. The tag reader communicates the identifier to a computer connected to the network as a node. The computer, in response, determines and implements a network-access criterion based on the token. Generally, the computer maintains a database relating token identifiers to associated network-access criteria, and consults the database when presented with an identifier. The access criterion specifies information governing interaction between the computer and the network, and can serve to initiate connections or restrict them.



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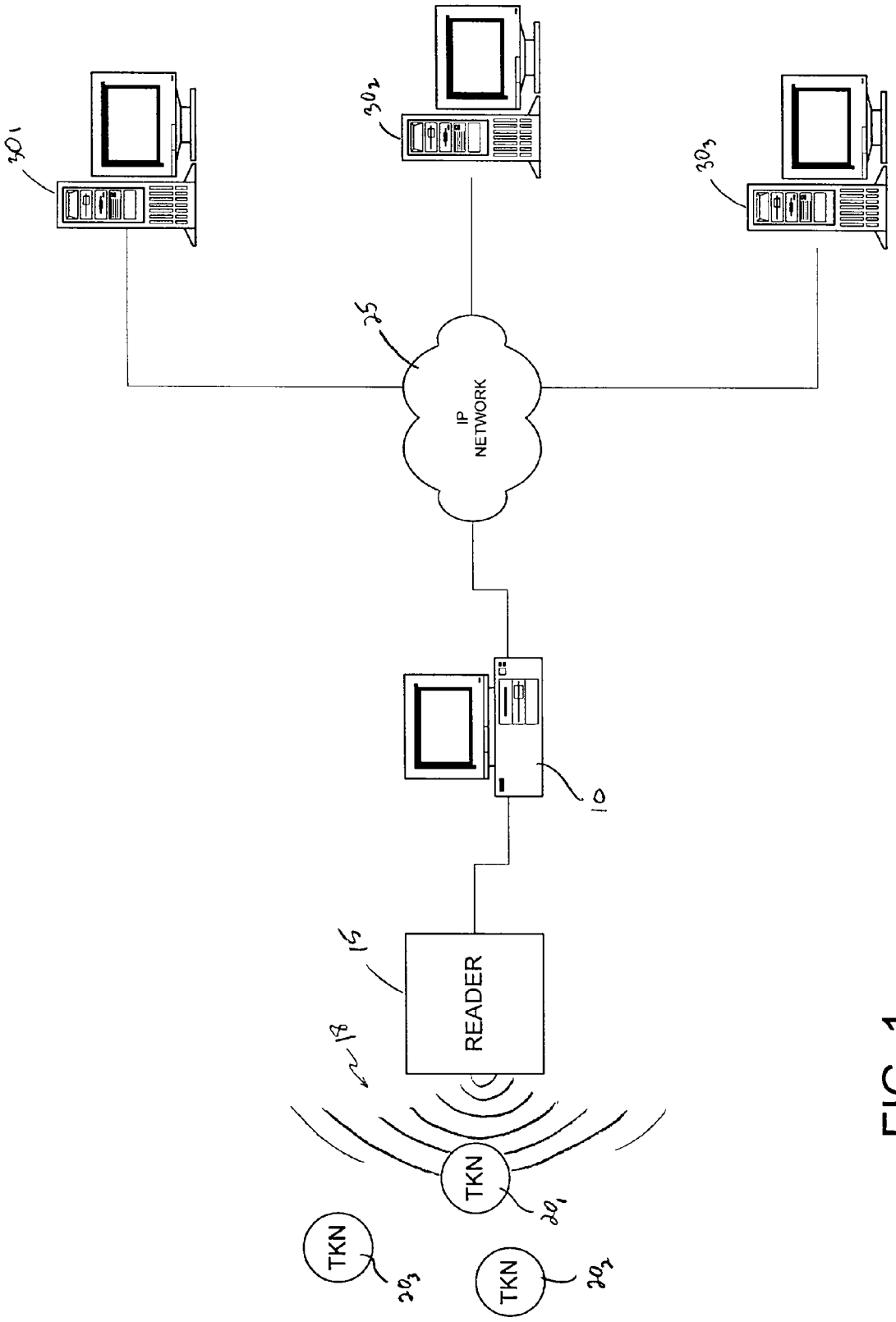

FIG. 1

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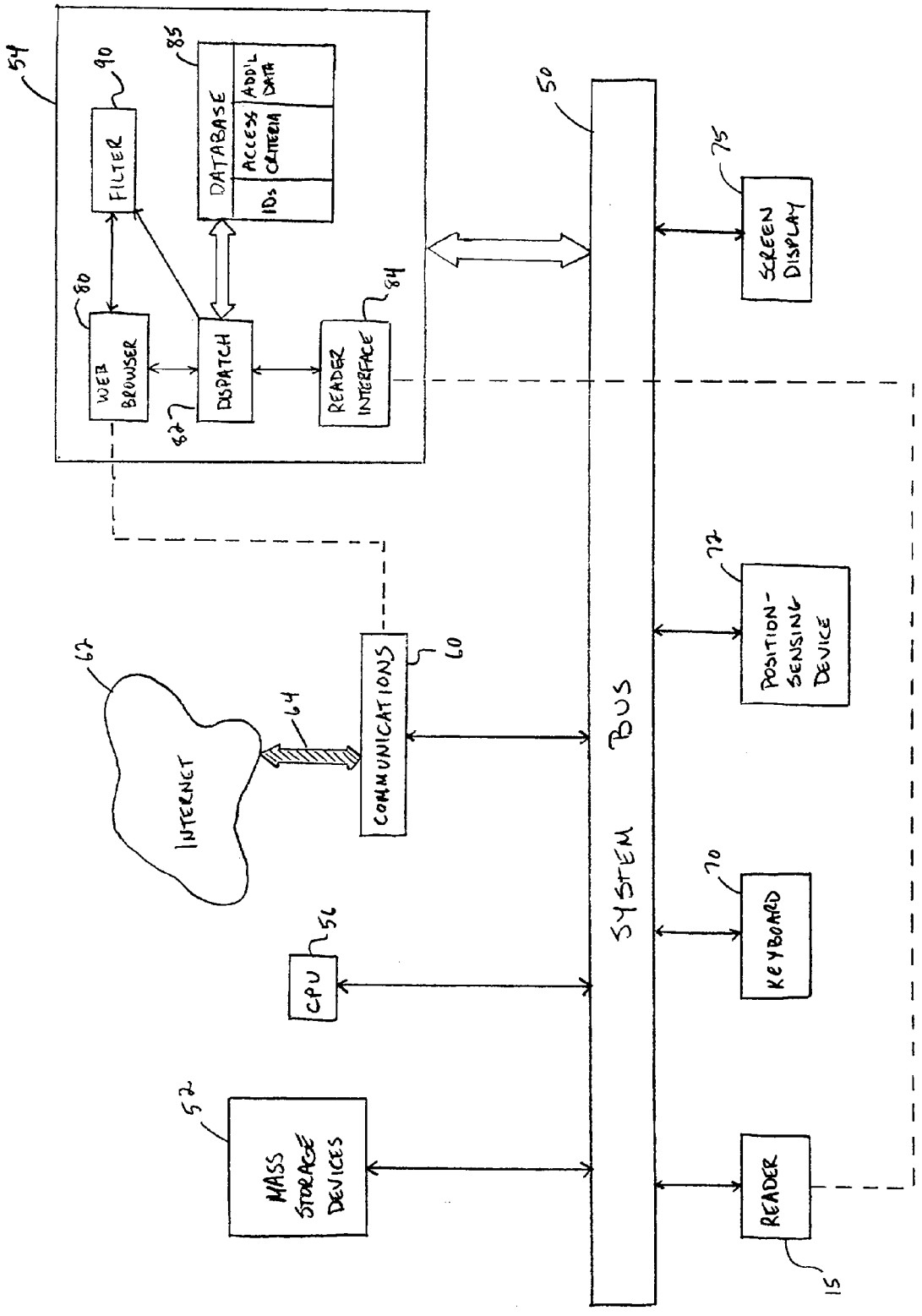

FIG. 2

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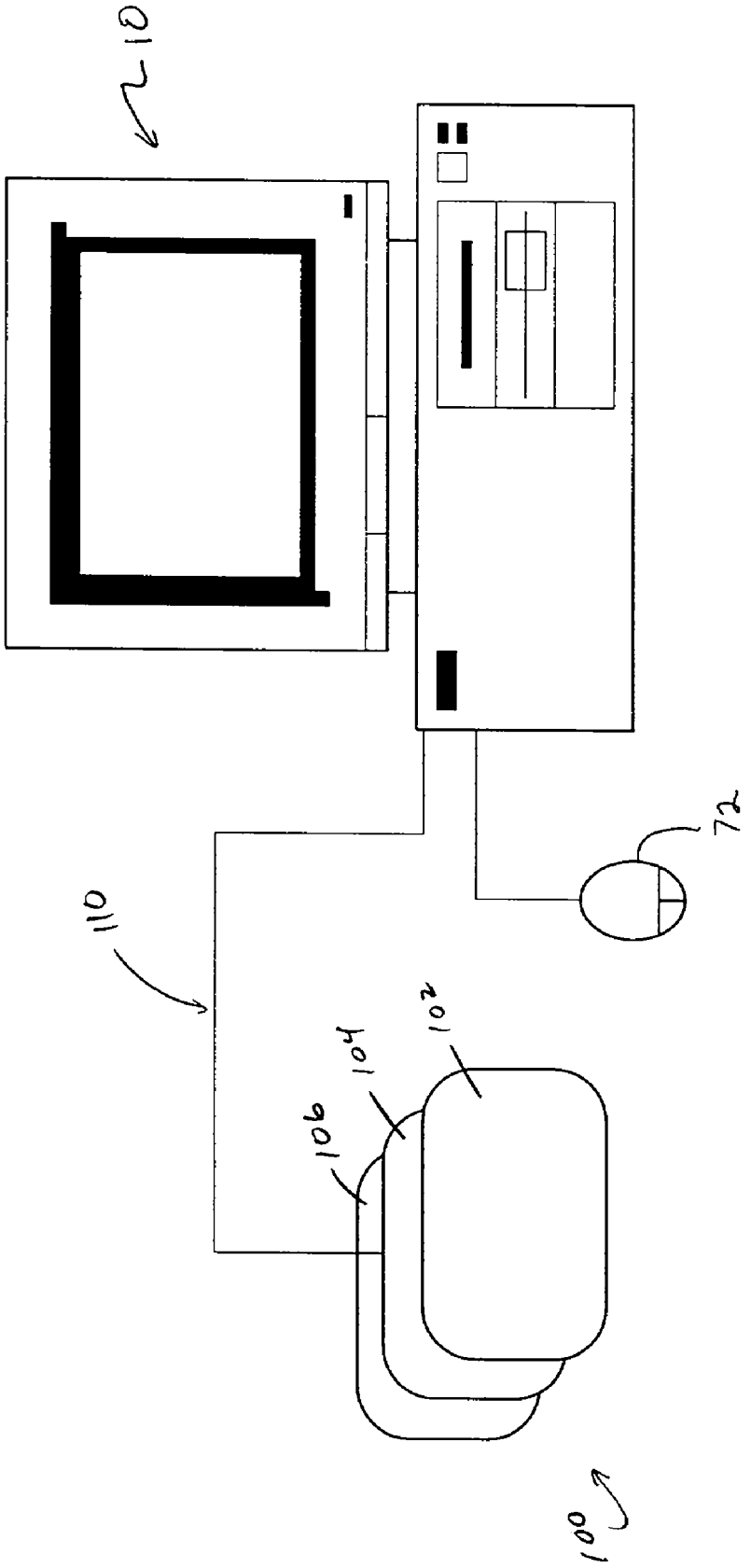

FIG. 3

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METHOD AND APPARATUS FOR CONTROLLING ACCESS TO A COMPUTER NETWORK USING TANGIBLE MEDIA

FIELD OF THE INVENTION

[0001] The present invention relates to computer networks, and in particular to the establishment and governing of connections between networked computers.

BACKGROUND OF THE INVENTION

[0002] A computer network is a geographically distributed collection of interconnected subnetworks for transporting data between stations, such as computers. A local area network (LAN) is an example of such a subnetwork consisting of a transmission medium, such as coaxial cable or twisted pair, that facilitates relatively short-distance communication among interconnected computer stations. The stations typically communicate by exchanging discrete packets or frames of data according to predefined protocols. In this context, a protocol denotes a set of rules defining how the stations interact with each other.

[0003] Such interaction is simple within a LAN, since these are typically "multicast" networks: when a source station transmits a frame over the LAN, it reaches all stations on that LAN. If the intended recipient of the frame is connected to another LAN, the frame is passed over a routing device to that other LAN. Collectively, these hardware and software components comprise a communications network and their interconnections are defined by an underlying architecture.

[0004] The Internet is a worldwide "network of networks" that links millions of computers through tens of thousands of separate (but intercommunicating) networks. Via the Internet, users can access tremendous amounts of stored information and establish communication linkages to other Internet-based computers. Much of the Internet is based on the "client-server" model of information exchange. This computer architecture, developed specifically to accommodate the distributed computing environment that characterizes the Internet and its component networks, contemplates a server (sometimes called the host)—typically a powerful computer or cluster of computers that behaves as a single computer—which services the requests of a large number of smaller computers, or clients, which connect to it. The clients may be simple personal computers and usually communicate with a single server at any one time (although they can communicate with one another via the server or can use a server to reach other servers). A server is typically a large mainframe or minicomputer cluster capable of simultaneous data exchange with multiple clients.

[0005] In order to ensure proper routing of messages between the server and the intended client, the messages are first broken up into data packets, each of which receives a destination address according to a protocol, and which are reassembled upon receipt by the target computer. A commonly accepted set of protocols for this purpose are the Internet Protocol, or IP, which dictates routing information; and the transmission control protocol, or TCP, according to which messages are actually broken up into IP packets for transmission for subsequent collection and reassembly. TCP/IP connections are quite commonly employed to move data across telephone lines.

[0006] The Internet supports a large variety of information-transfer protocols. One of these, the World Wide Web (hereafter, simply, the "web"), has recently skyrocketed in importance and popularity; indeed, to many, the Internet is synonymous with the web. Web-accessible information is identified by a uniform resource locator or "URL," which specifies the location of the file in terms of a specific computer and a location on that computer. Any Internet "node"—that is, a computer with an IP address (e.g., a server permanently and continuously connected to the Internet, or a client that has connected to a server and received a temporary IP address)—can access the file by invoking the proper communication protocol and specifying the URL. Typically, a URL has the format http://<host>/<path>, where "http" refers to the HyperText Transfer Protocol, "host" is the server's Internet identifier, and the "path" specifies the location of the file within the server. Each "web site" can make available one or more web "pages" or documents, which are formatted, tree-structured repositories of information, such as text, images, sounds and animations.

[0007] An important feature of the web is the ability to connect one file to many other files using "hypertext" links. A link appears unobtrusively as an underlined portion of text in a document; when the viewer of this document moves the cursor over the underlined text and clicks, the link-which is otherwise invisible to the user—is executed and the linked file retrieved. That file need not be located on the same server as the original file.

[0008] Hypertext and searching functionality on the web is typically implemented on the client machine, using a computer program called a "web browser." With the client connected as an Internet node, the browser utilizes URLs—provided either by the user or a link—to locate, fetch and display the specified files. "Display" in this sense can range from simple pictorial and textual rendering to real-time playing of audio and/or video segments. The browser passes the URL to a protocol handler on the associated server, which then retrieves the information and sends it to the browser for display; the browser causes the information to be cached (usually on a hard disk) on the client machine and displayed. The web page itself contains information specifying the specific Internet transfer routine necessary for its retrieval. Thus, clients at various locations can view web pages by downloading replicas of the web pages, via browsers, from servers on which these web pages are stored. Browsers also allow users to download and store the displayed data locally on the client machine.

[0009] The number of servers accessible just on the web is enormous and constantly growing. Locating pages of interest is frequently a haphazard process, requiring the user to recall complex URL designations, to have previously "bookmarked" the site, or to find the site using a publicly accessible "search engine" such as ALTA VISTA, EXCITE or YAHOO. At the same time, the proliferation of potentially objecitonable content on the web has engendered efforts toward allowing parents and network administrators to restrict access to inappropriate sites.

DESCRIPTION OF THE INVENTION

[0010] Brief Summary of the Invention

[0011] The present invention facilitates or limits interaction with a computer network based on a tangible token

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