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**Title of Invention**

Operating system module for automated remapping of access to network resources resulting from a change in network topology

**Description of the Invention**

A server with an added operating system module can be used to monitor network topology and automatically reconfigure network mapping in the event the topology has been changed. This module eliminates manual reconfiguration making the process more efficient.

*Problem/Opportunity*

On a network, various computing devices have access to network resources where files, applications, etc are stored. A distribution plan as such can be negatively impacted by a change in the network topology. On occasion, a server will need to be replaced, requiring the transfer of the contents of the old server to the new server. Or, for example, the contents of a folder can be reorganized such that files are saved in new locations. Subsequently, the user will need to manually reconfigure the computing device or conduct lengthy searches of the network resources to access the desired files, applications, etc. In a dynamic network environment in which the network topology is changing with some frequency, a method to efficiently reconfigure network mapping to minimize the loss of productivity as well as the frustration of users is needed.

*Detailed Description of the Invention*

Implementing a server with an OS module for automated remapping of access to network resources resulting from a change in network topology is an efficient solution to the problem. Currently, servers exist with operating systems that respond to security authentication requests such as verifying a username and password, granting permission to files and applications located on the network resources, and granting special rights to users. The module addition in question is composed of a Network Monitor and a database containing a Network Map Table.

The Network Monitor continuously monitors the topology of the network resources and stores recent data in the database. This type of data includes file locations, application locations, or server replacements and upgrades. If the Network Monitor records any changes in the network topology, the name of the file/app, its old location, and its new location are sent to the Network Map Table. When a user attempts to access such a file/app, the Network Map Table recognizes the file/app name and automatically redirects the request to the new location. When the user attempts to access this Network Resource again in the future, the new location information will have been updated on their local computing device. This process increases the efficiency of reconfiguring network mapping after changes in the network topography have been made.
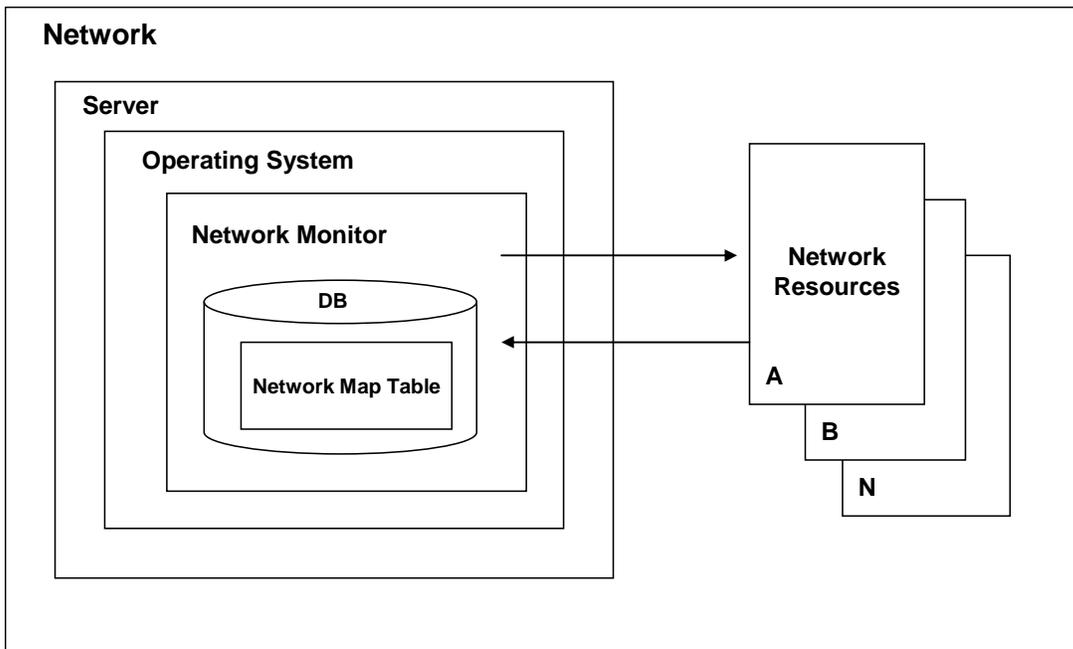


**Figure 1: System for Automated Remapping**

| File/App Name | Old Location | New Location |
|---|---|---|
|  |  |  |
|  |  |  |
|  |  |  |

**Figure 2: Network Map Table**

**Description of Figure Elements**

**Figure 1**
Server – A server with an OS that responds to security authentication requests such as verifying a username and password, granting permission to files and applications located on the network resources, and granting any special rights to the user.
Operating System – An operating system, such as Linux, that performs the functions requested by the server.
Network Monitor – OS module that continuously monitors the network resource topology and records topology data in the database. The Network Monitor recognizes when changes have been made to the network resource topology and stores this data in the Network Map Table.
Network Resource – Any resource, like a computing device, application, or file folder, that may be accessible or connected to a computer network.

**Figure 2**
Network Map Table – A database table that stores information regarding changes to network topology within the Network Monitor Database. Data in the Network Map Table is collected by the Network Monitor. The Network Map Table includes a field called "New Location" where the updated path to the affected files, applications, etc. is located.

The method begins when a network consisting of a plurality of network resources is in operation (**Figure 3**).

In step 1, the Network Monitor is continuously monitoring the topology of the Network Resources.

In step 2, the Network Monitor stores topology data in a database. This includes data such as which users accessed which network resources, the location of network resources, etc.

In step 3, the Network Monitor recognizes that a change in the network topology has been made.

In step 4, the Network Monitor searches the database for affected files and applications.

In step 5, the Network Monitor sends the Network Map Table the names, old locations, and new locations of the files and applications that have been affected by the change in network topology.

In step 6, the Network Map Table organizes this data into a table.

In step 7, when a user attempts to access an affected file or application, the Network Map Table recognizes the file/app name and remaps the request to the new location.

In step 8, the user's mapping is updated with the new information. When the user attempts to access this Network Resource again in the future, the New Location information will have been updated on their local computing device.
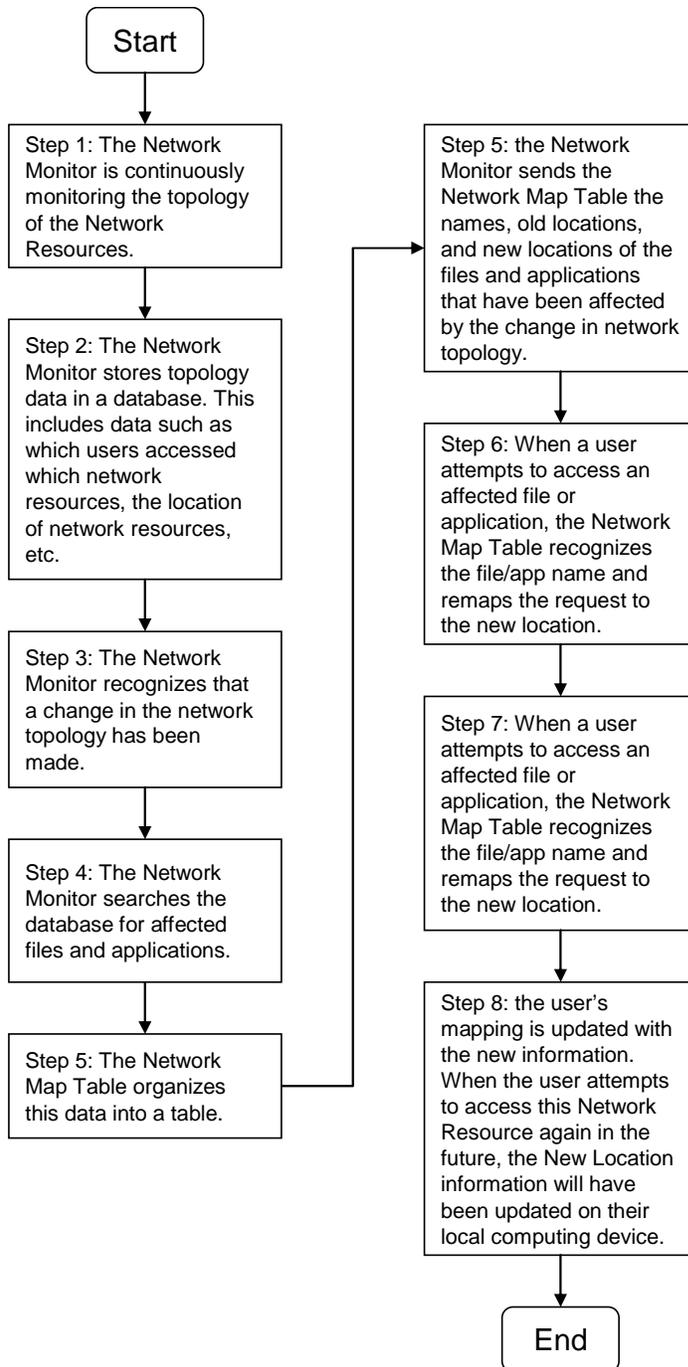
The method ends

**Figure 3: A flow diagram for automated remapping of access to network resources resulting from a change in network topology**