US005991402A

United States Patent [19]

Jia et al.

[11] Patent Number: 5,991,402

[45] Date of Patent: Nov. 23, 1999

[54] **METHOD AND SYSTEM OF DYNAMIC TRANSFORMATION OF ENCRYPTED MATERIAL**

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[21] Appl. No.: **08/935,955**

[22] Filed: **Sep. 23, 1997**

[51] **Int. Cl.**[6] **H04K 1/02**

[52] **U.S. Cl.** **380/9**; 380/9; 380/3; 380/4; 380/23; 380/25; 705/59; 713/164; 713/165; 713/166; 713/190

[58] **Field of Search** 380/3, 4, 23, 25

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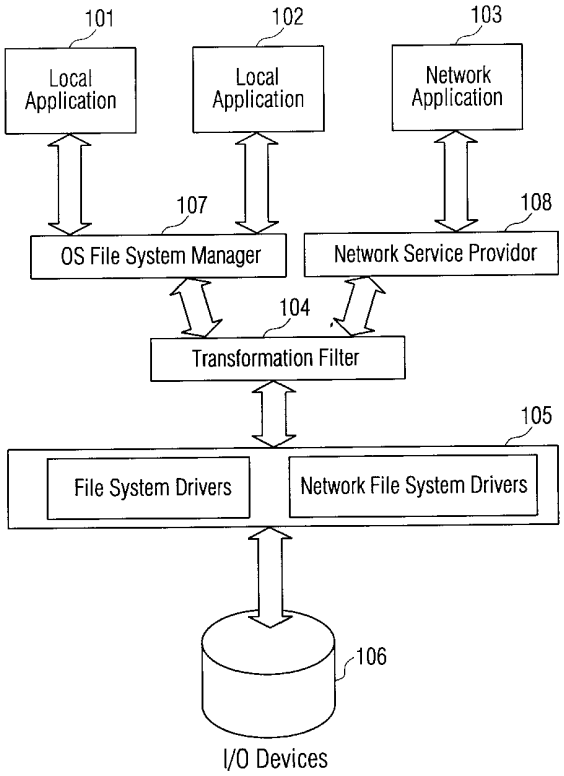
[57] **ABSTRACT**

The present invention provides a method and system that enables software-on-demand and software subscription services based on a dynamic transformation filter technology. The invention is also useful in the distribution of other electronic material. The apparatus utilized in this invention does not create any intermediate storage of decrypted material that is under the protection of this technology. Instead, the apparatus is implemented as a virtually integral part of the operating system that monitors and "filters" all read, write, and open/execute access to and from the I/O devices, such as a hard drive. As the protected material is being accessed for read, write or open/execute, the transformation filter positions itself in the critical path which is required for loading the material through the low level file system layer to the high level application layer. The material enters the transformation filter in its encrypted state. The transformation filter decrypts the material in real-time as it goes through, and hands over the material in its original state to the upper level operating system component to fulfill the access requests. Because the need for intermediate storage is eliminated, the decrypted material in its original state is only visible to integral parts of the operating system components and not to other system users. As a result, security is significantly improved over prior art systems.

20 Claims, 4 Drawing Sheets



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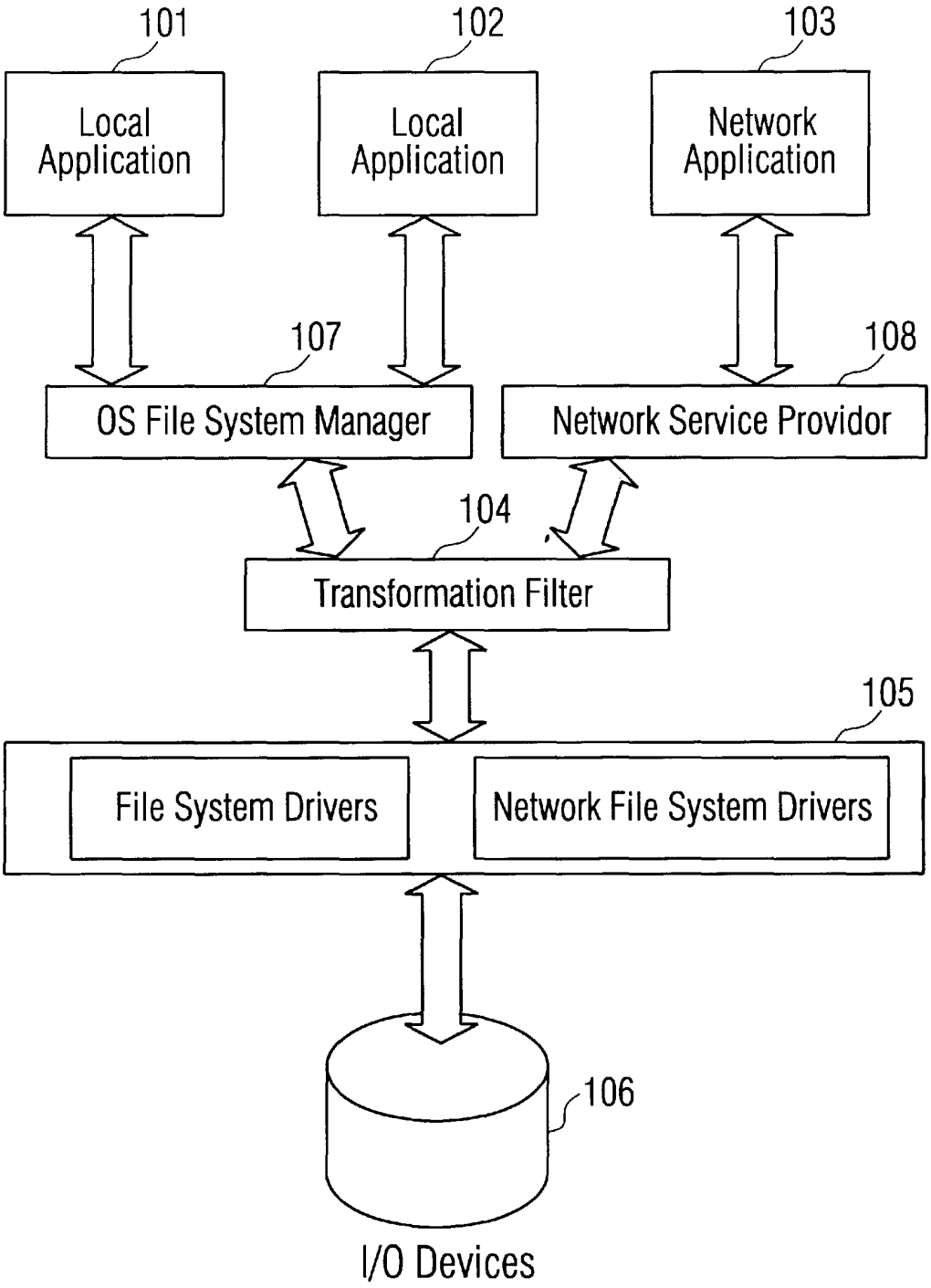

FIG. 1

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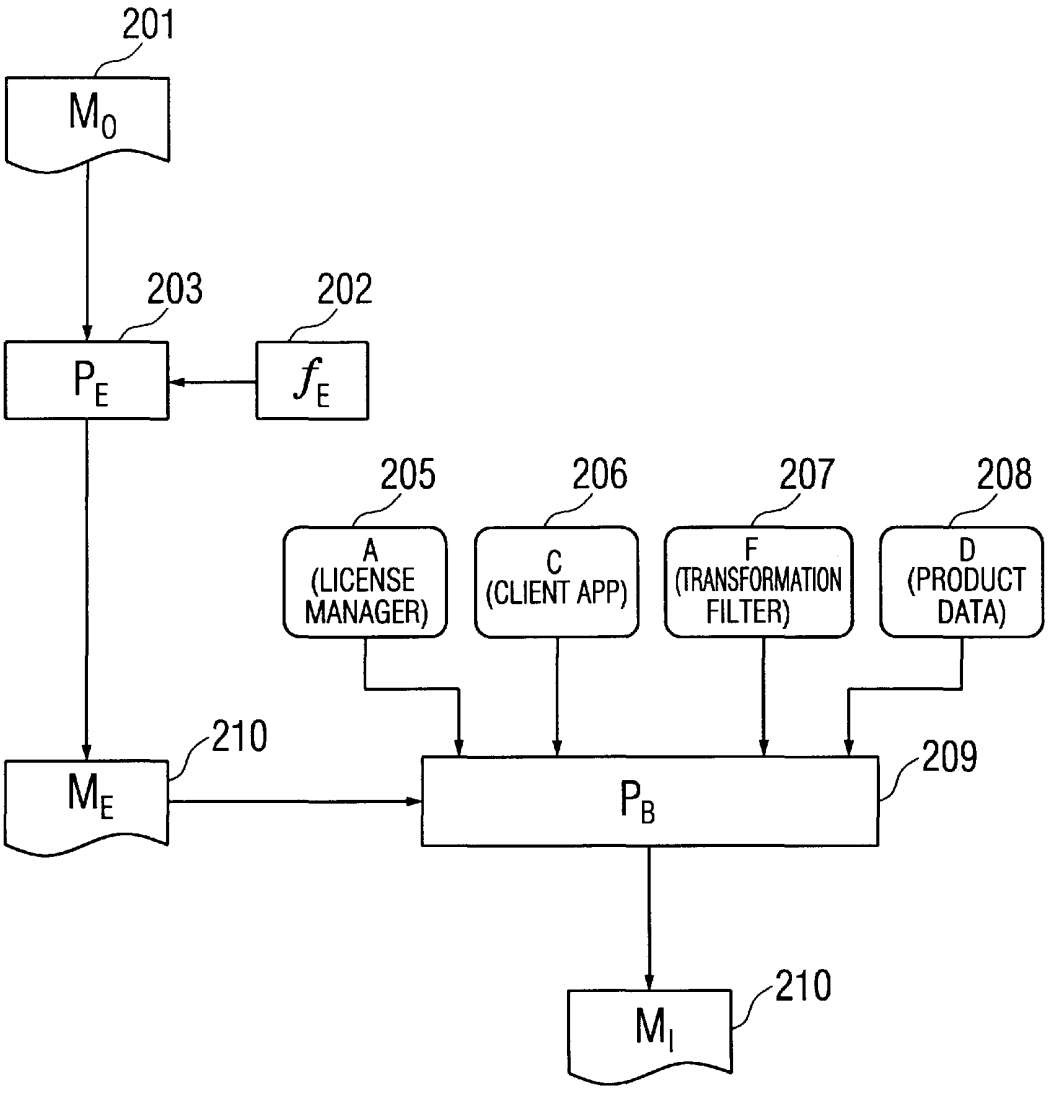

FIG. 2

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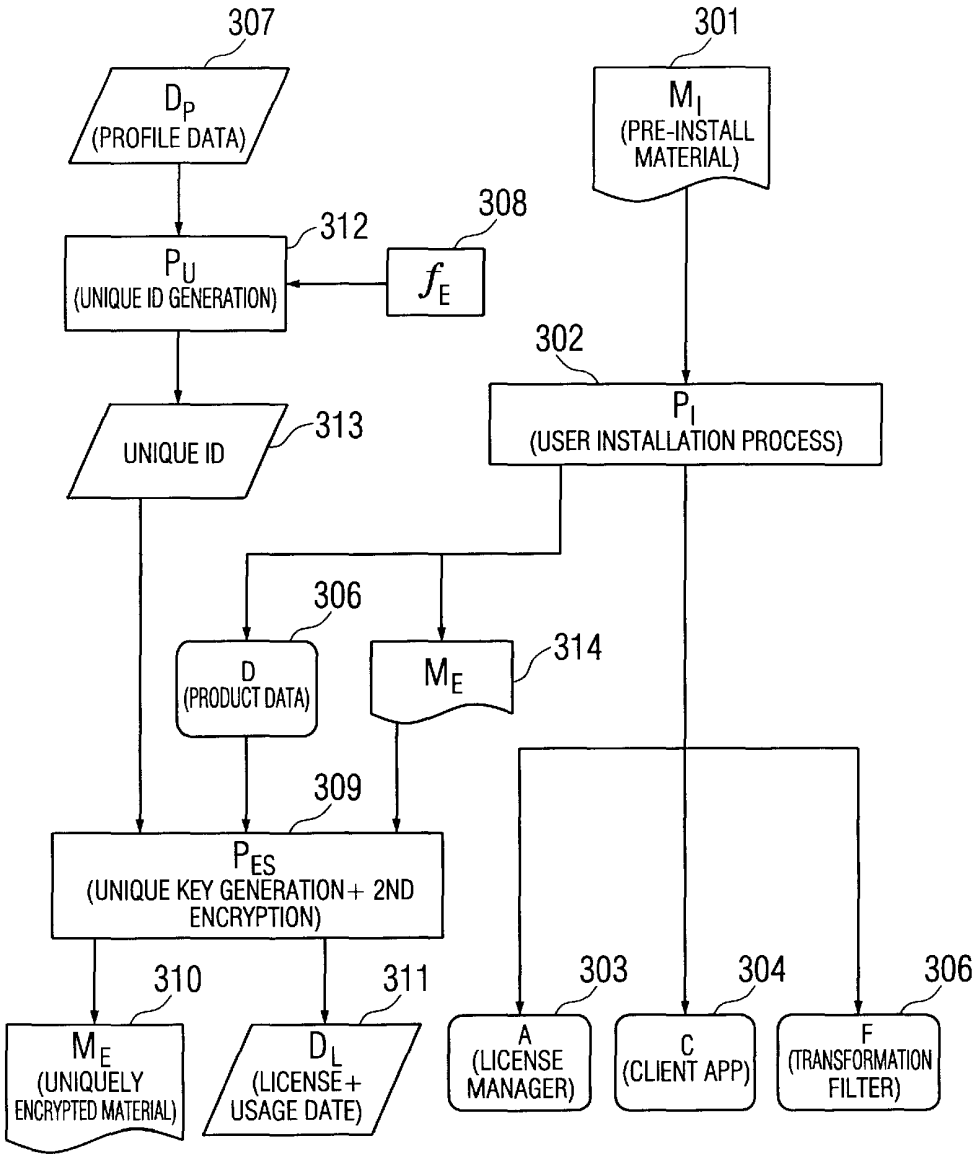

FIG. 3

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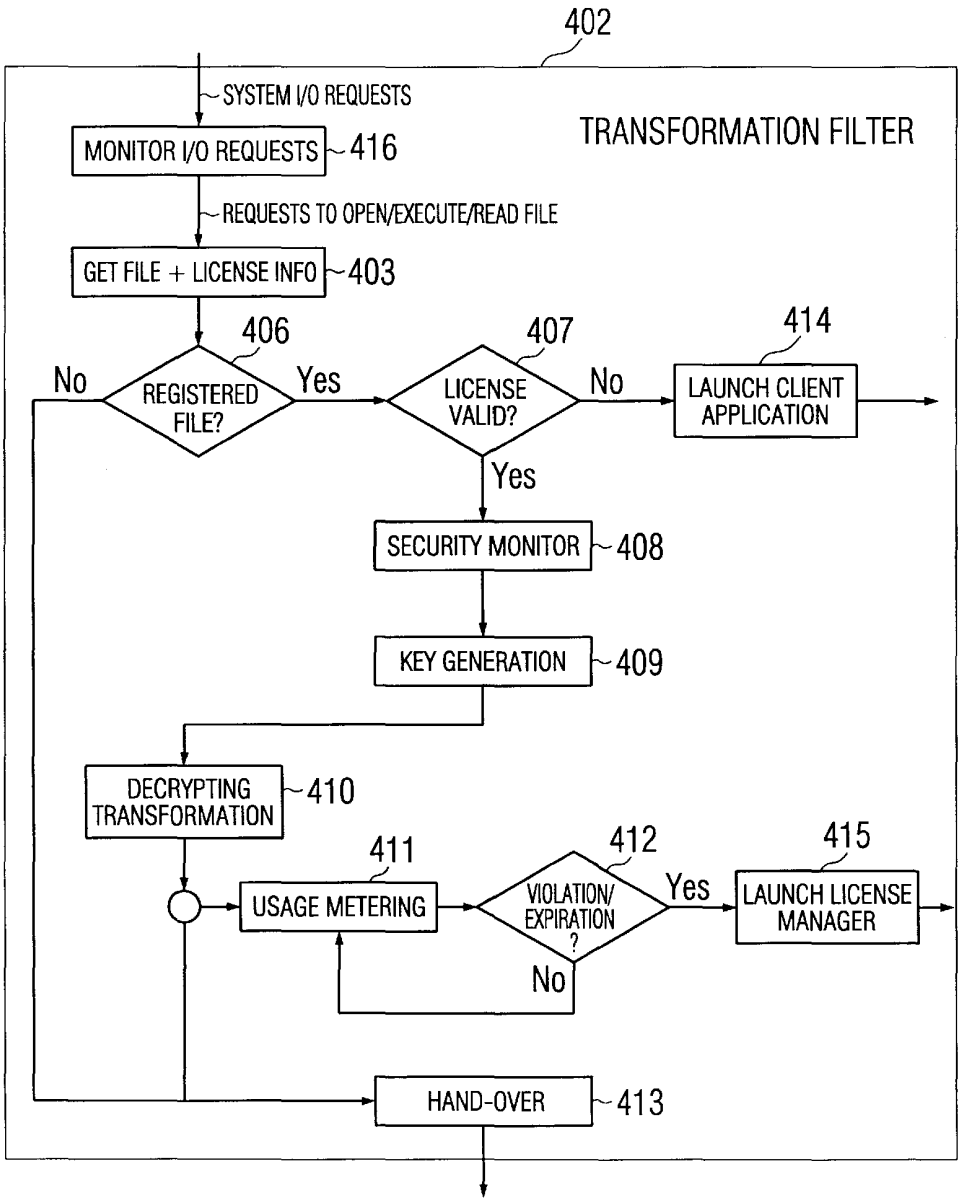

FIG. 4

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