

1

METHOD AND APPARATUS FOR PROVIDING A BORDER GUARD BETWEEN SECURITY DOMAINS

BACKGROUND OF THE INVENTION

1. Field of the Invention

Embodiments of the present invention generally relate to digital rights management (DRM). More specifically, the present invention relates to a method and apparatus for defining and enforcing rules of transition between two security domains.

2. Description of the Related Art

Digital contents have gained wide acceptance in the public. Such contents include, but are not limited to: movies, videos, music and the like. As such, many consumers and businesses have digital media devices and/or systems that enable the reception of such digital multimedia contents via various communication channels, e.g., via a wireless link such as a satellite link or a wired link such as cable connections and/or

telephony based connections such as DSL and the like. Irrespective of the communication channels that are employed to receive the digital contents, owners of digital contents and the service providers (e.g., a cable service provider, a telecommunication service provider, a satellite-based service provider, merchants and the like) who provide such digital contents to subscribers or users are concerned with the protection of such digital contents. To illustrate, a service provider may receive a request from a user to download a movie for immediate viewing or to be stored on a storage device for later viewing. Certainly, the movie can be encrypted and forwarded electronically to the user. However, technologies related DRM usually only describes the control of the digital content once it is in the user's domain. The delivery of the content, and protecting it securely from the delivery (either broadcast or singlecast) to the end user and future management is often not addressed.

Thus, there is a need in the art for a method and apparatus for defining and enforcing rules of transition between two security domains.

SUMMARY OF THE INVENTION

In one embodiment, the present invention discloses an apparatus and method for defining and enforcing rules of transition between two security domains. For example, the present invention defines two distinct security domains, a transport security domain and a persistent security domain, where content is stored. In turn, a border guard, e.g., a security device, is provided between these two domains that enforce rules for transition between the two security domains. This novel approach of defining a transport security domain and a persistent security domain simplifies the classification of the digital content and its movement through the system. Namely, the border guard once established between the two systems can enforce DRM rules associated with how contents are moved between the two security domains.

In one embodiment, a portable renewable security card is optionally deployed to cooperatively operate with said border guard.

BRIEF DESCRIPTION OF THE DRAWINGS

So that the manner in which the above recited features of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may be had by reference to embodiments, some of

2

which are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

FIG. 1 illustrates a high level view of a content distribution system of the present invention;

FIG. 2 illustrates a PVR recording session method in accordance with the present invention;

FIG. 3 illustrates a method for providing a border guard in accordance with the present invention; and

FIG. 4 illustrates the present invention implemented using a general purpose computer.

To facilitate understanding, identical reference numerals have been used, wherever possible, to designate identical elements that are common to the figures.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In one embodiment of the present invention, Digital Rights Management (DRM) may specify one or more usage rules pertaining to digital contents (e.g., movies, videos, music, software applications and the like) that have been downloaded and stored locally by users, e.g., stored on a hard drive. The ability to allow a user to store and maintain persistent content in a personal video recorder (PVR) poses challenging security issues. The nature of security for persistent content is different from security for transport conditional access (CA). In other words, the rules that define whether a user is allowed to access the content will be different than the rules pertaining to the usage of the content once the user has gained access to the content. However, technologies related DRM usually only describes the control of the digital content once it is in the user's domain. In other words, rules in one domain are not carried to another security domain. Thus, the delivery of the content, and protecting it securely from the delivery (either broadcast or singlecast) to the end user and future management is often not addressed.

To address this criticality, the present invention provides two distinct security domains, a transport security domain and a persistent security domain. In turn, a border guard is provided between these two security domains that enforce rules for transition between the two security domains.

In one embodiment, the persistent security domain is referred to as a personal video recorder (PVR) security domain where video and movie are stored. This description of the persistent security domain is illustrative only. Namely, the present invention is not so limited, since many other contents such as audio data, software and the like can be protected in accordance with the present invention.

FIG. 1 illustrates a high level view of a content distribution system **100** of the present invention. The system comprises a receiver device, e.g., a set top box or an integrated receiver/decoder **110** and a plurality of digital content sources, e.g., a headend **102** from a cable company, an uplink **104** from a satellite service provider, and a content server **106**, e.g., via the Internet. In turn, the set top box or integrated receiver/decoder **110** comprises a tuner **112**, a security device **114**, a demultiplexer/decoder **116**, an optional renewable security card **117**, a hard drive **118**, and a cable modem interface, e.g., a Data Over Cable Service Interface Specification (DOCSIS) module **119**.

In one embodiment of the present invention, a transport security domain **120** and a persistent security domain **130** where content is stored, can be viewed as two separate security domains. For the delivery of a transport stream, e.g., an