CTA Standard

Security Services for the Versatile Home Network

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(Formulated under the cognizance of the CTA **R7 Home Networks Committee**.)

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FOREWORD

This standard was originally developed under the auspices of the R-7.4 Joint CEA/VESA Subcommittee. It is being maintained by the R7 Home Network Committee.

The Video Electronics Standards Association (VESA) established the VESA Home Network (VHN) Committee in 1995 to develop architecture for a digital, broadband home network. The VHN standard was initially developed by the VESA Home Network Committee. However, it was never ratified as a VESA standard.

In June 1999, the Consumer Electronics Association (CEA) established the R7 Committee to help harmonize the several efforts being undertaken to develop home networking standards. In January 2000, the Board of Directors of VESA and the Board of Directors of the Consumer Electronics Association agreed to merge the VESA Home Network and the CEA R7 Committee, by establishing the CEA R7.4 Committee.

This standard, CEA-851.2-A, specifies the implementation of security services for the VHN. Another standard in this series, CEA-851.1-A “IP-Based Digital Telephony for the Versatile Home Network,” was issued earlier.

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1 INTRODUCTION

This standard defines security services for the Versatile Home Network. The threats to a home network are similar to those of an enterprise network. However, the various threats differ in significance for domestic, rather than commercial, network configurations and applications. For instance, while repudiation (denying that a transaction took place) is obviously a serious issue for a bank or brokerage firm, it is of less concern for the home, where the transaction is likely to be entirely private and non-commercial. Conversely, businesses have little to gain by concealing which hours of the day their networks are busiest, whereas residential users may very well wish to conceal traffic that indicates whether or not they are at home.

Given the threats that are common to enterprises networks, we have identified the most likely threats to the Versatile Home Network, and defined a set of security services to defend against those threats. We have recognized that, as those threats are not peculiar to home networks, there is no need to invent *new* security mechanisms for the home network and access device. In fact, the difficulty of designing such mechanisms correctly and standardizing the results of such designs argues strongly against inventing new security mechanisms.

However, for several reasons, security mechanisms appropriate for a business may not adapt well to home network security:

1. The first issue is cost. Some security mechanisms, such as industrial-strength firewalls, cost on the order of $10,000. Businesses write this off as an expense and recover cost by raising prices. Homeowners have no such option and probably do not perceive the threat to the home network as sufficiently important to merit that level of expense. Thus, a security mechanism must be inexpensive, or be able to be made inexpensive, if it is to be used in the home.
2. The second is complexity. Many security mechanisms are difficult to configure and require an expert to install and maintain. Once again, an enterprise may have an IT department that is responsible for network security. The typical homeowner is unlikely either to acquire the expertise or hire an outside consultant to do this job. Faced with such a choice, she may elect simply to do without security. Thus, simplicity of operation is essential to home network security.
3. The third is convenience. Employees of a business may be willing to endure a certain amount of inconvenience if management decides that’s the way the business operates. While passwords and smartcards are accepted as necessary to protect the company’s resources, it’s not clear how much inconvenience a homeowner may be willing to accept to protect the home’s resources. For example, most people will probably understand the necessity of having a password to access a networked digital VCR from a remote location, such as an