

# Electronic License Management

The Future of Software Licensing

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For software developers, the Internet has become a wealth of opportunity and a serious threat to profitability. The opportunity lies in Internet-based software distribution and the electronic control of software licensing. The threat comes from software pirates who illegally disseminate programs using the Internet's global distribution capabilities and from customers who may intentionally or innocently overlook paying for actual licenses in use. To maximize opportunity and minimize loss, a secure electronic distribution and licensing solution is of paramount importance for any commercially viable software company today.

Electronic license management (ELM) empowers software developers to distribute applications globally, yet control application use by digitally granting usage rights. With ELM, software can be converted into a consumable or a service that has discrete start and end times, after which the product must be renewed. Managing digital rights is important to the future of the software industry and plays a critical role in curtailing unauthorized use of software applications.

## **The History of Software Distribution and Licensing**

### **Custom Software Design Era: The 1960s and 1970s**

In the '60s and early '70s, the concept of software distribution was nearly nonexistent. At that time, it was extremely difficult to convince customers to purchase software that was not specifically designed for a specialized purpose. Software customers were businesses, and developers were predominately hired to build proprietary solutions. It wasn't until the mid-'70s that customers began to see the value of using software designed by someone outside their organization for general applications. It was at this point that software licensing and distribution became an issue for application developers.

### **Personal Computers Explode: The 1980s**

In the '80s, the success of the personal computer caused an explosion of software distribution and licensing. Shelf-top box sales in department stores and computer specialty stores became the primary method of software distribution. By the mid-'80s, the advent of CD-ROM software distribution heralded what would become an exceptionally popular medium for the next 15 years. The robustness of CDs made software bundled with books and magazines possible. The '80s also saw the development of a large-scale underground pirate network for illegal software distribution on bulletin board systems.

### **CD-ROMs Boom and the Internet Gains Popular Acceptance: The 1990s**

By the '90s, software was distributed through the same channels as books – carried at many different retail establishments and through mail-order outfits. The mass adoption of the Internet opened new channels of software delivery and marked a wide-scale acceptance of electronic software distribution. The Internet provided an easy-to-use, low-cost method of acquiring software, both legally and illegally.

### **Today: A Shared Link to the Past**

Today, high-bandwidth and always-on Internet connections enable customers to try, purchase and update software with the click of a mouse. At the same time, the number of Web sites and Usenet groups dedicated to freely distributing illegal copies of software are on the rise.

Licensing software has gone from a simple authorization number or locking code to smart software that can lock an application to a user's machine. In the past, licensed software could be freely copied and distributed with very few fail-safes protecting the software developer. Now, solutions exist that make malicious software piracy almost impossible.

Today, many software applications are so elaborate and detailed that the majority of users rarely use half the functionality of their applications. Now there is a movement back to using software that is customized to each client's specific needs. Similar to the '60s and '70s, customers do not want to pay for features they will never use. The licensing of components to users, as they need them, is an emerging solution to this need. In addition, the challenging economic climate has caused the software development community to seek ways to creatively sell existing products and to reach new markets. A secure, easy-to-use license management system enables tailored product offerings that meet the needs of individual clients as well as potential new market segments.

## Why Consider Electronic License Management?

### The Security Advantage: Removing the Piracy Problem

In 2001, more than one of every three software applications installed in the world was pirated, translating to a loss of 10.97 billion dollars for software developers (Seventh Annual Business Software Alliance Global Software Piracy Study). On a global scale, software piracy reached its peak in the mid-1990s when an estimated 49 percent of all software in use was pirated (Business Software Alliance, Piracy Stats '99). By 2001, the global piracy rate for business software was reduced to 40 percent, but for the first time in the study's history the global piracy rate increased for two consecutive years, 2000 and 2001. The BSA study (2001) suggests that the data highlights the varying degree of compliance for software licensing may be based on overall economic conditions. "Compliance with software licensing is at risk of being considered an economic luxury that can be abandoned in difficult times." (BSA 2001). Even more reason for software developers to ensure that software licensing is built into the application.

With the proper ELM solution, securely encrypting and electronically fingerprinting each installed application to every user's computer can significantly reduce piracy. In addition, an ELM solution can require the registration of every installed application, even demos. Registering removes the blanket of anonymity and serves as an additional deterrent to piracy. Moreover, in a corporate setting, license management is important to enforce compliance to license agreements.

Most users do not need to be convinced about the value of using software applications. Instead, they need to be persuaded to pay for it. Knowing that software is not functional without valid registration is a major benefit of registering and purchasing an authorized software application. Educating the users about the intellectual property inherent in an application, and about the corresponding benefits they receive from the application(s) is emerging as a trend for the application development community as new models for license management emerge in the marketplace.

### The Distribution Advantage: Managing Customized Usage Rights

With an ELM solution, full-featured applications can be widely distributed without the concern of piracy, and with the options to meet the needs of different customer segments. Whether applications are distributed via CD or downloaded from the Internet, they can be securely encrypted and unlocked in unique "modes." For example, a word processing application could be designed to unlock a time-

sensitive or limited-feature version of the program after a user registers his or her identity with the developer. Commonly known as “try-before-you-buy,” ELM takes this proven marketing method and extends it by electronically enforcing the demo license agreement. In addition, ELM can “enable” full functionality of a program if users wish to purchase it. Alternatively, users could purchase the right to “rent” or “lease” the application for a fixed time at a reduced cost. Enabling a variety of licensing models lowers the barrier of entry for smaller customers to try an application and purchase enhanced functionality as their needs grow. It also allows the application developer to create new product offerings to reach new customer segments.

By distributing software electronically, software developers also benefit from decreased production, packaging, logistics, warehousing and license management costs. In addition, software can be distributed globally and more efficiently with ELM as the value proposition shifts from the “shrink-wrapped” model to the digital rights management model.

### **Other Advantages of ELM**

In addition to curtailing piracy, managing digital rights, and tailoring product offerings, ELM provides other functional benefits, including the following:

- Reduced administrative overhead
- Improved user registration experience
- Customized terms and conditions of use for clients
- Convenient, self-service user registration
- Integrated marketing options for Internet-based product evaluations
- Increased end-user tracking and accountability
- Better management of digital rights assets
- Flexible management of licenses
- New product packaging/bundling options

## **How Electronic License Management Works**

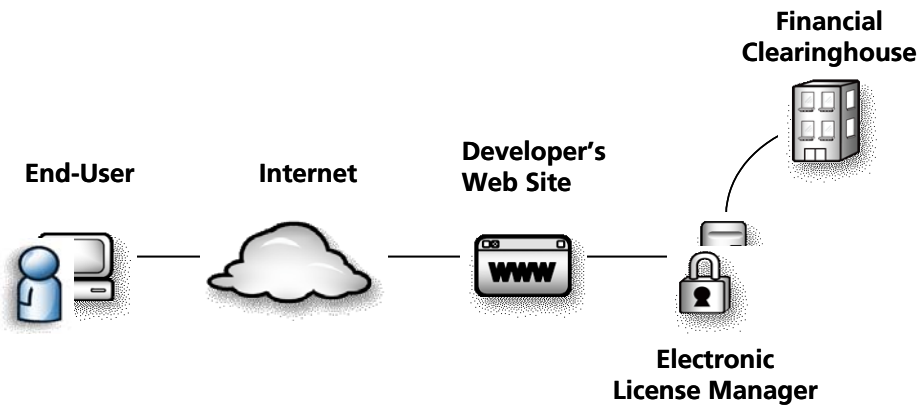
### **A High-Level Overview of ELM**

ELM transforms a software application from a one-time purchase to a consumable service. With ELM, application usage can be monitored, measured and controlled for all executed copies of an application, regardless of the delivery mechanism.

For an analogy, imagine that a popular poem is photocopied, scanned, faxed and distributed to people all over the world. Within an electronic rights management model, the poem could be designed to be completely illegible to users unless they first register a free demo copy of the poem. The demo poem might only reveal the first few paragraphs to give each reader a taste of the full poem. If a reader decides to purchase the rights to read the entire poem, that person simply pays a fee and the poem is fully unlocked for his or her eyes only. Each time the poem is viewed, the reader is verified to assure he or she has current rights to it. Any attempts to duplicate the poem would result in a scrambled copy that would require registration before viewing. Within this example, the owner of the poem would know where, when and how many people view his or her poem at any time. The applications are limitless and the implication is powerful – full control of the rights to the poem at all times. Within this model, the distribution of the poem is no longer a threat and in reality, mass distribution is favorable.

### Step-by-Step Overview of the ELM Process

The following illustration is an example of one of the many ways that electronic license management can be implemented.



1. An end-user downloads a program from the Web or copies it from a CD or other source.
2. The program checks to see if it is licensed to operate.
3. If no license is present, the user is given registration options designated by the software developer. Options may include a timed demo, limited-function demo, feature specific license, full license and many more. In addition, license activation options are granted to the user, including telephone, e-mail or Internet activation.
4. If the user wishes to license a timed demo via the Web, the developer's electronic license manager processes the license request. The license manager may require the user to provide a variety of information, including name, e-mail and so on. The license manager sends encoded license information back to the user.
5. The user license is placed on the end-user's computer. The license can be fingerprinted to the computer, deactivating the license if the software is copied to another machine. This is accomplished by tying the license to a physical parameter of the computer, such as the serial number of its hard drive. Licenses can also be located on a network for group licensing or stored only at the developer's site, requiring TCP/IP license verification.
6. Each time the application is run, the license is checked for validity. If a demo version was registered, the license manager will offer other purchase-related options.
7. When the user is ready to purchase the application, the license manager can interface with a financial clearinghouse and process the purchase. The license manager will return a new encoded license. The program will enable the features without reinstalling the application or adding any extra modules.

## Why ELM Is Better than Other Web-Based Licensing Options

Traditional Web-based licensing offers some of the features common to ELM, including a "try and buy" model and the ability to register and purchase the product over the Internet. What these options lack is the ability to:

- Require demo licenses
- Prevent the same registration code from being used on multiple copies of an application
- Track the number of demos currently in use worldwide
- Provide license flexibility including reduced-feature purchasing, renting, network licensing and TCP/IP license confirmation

## **ELM Example: A Fictitious Graphics Application Developer**

Imagine a software developer of a custom graphic design application decides to license its high-end design program using an ELM solution. The developer's client base consists of high-level designers and movie special effects designers in small design shops that cannot afford to license the full application. The developer decides to offer a limited-feature, 90-day trial of the application to anyone who agrees to register a demo copy. The registration information is used to offer books and how-to videos to the product users as an additional source of revenue.

Because of the high cost of licensing the complete application, the developer decides to offer a number of electronic licensing options, including a full-feature daily rental rate, module licenses for 15 different modules and a full feature license plan. The developer finds that many users like paying a daily rental rate for the full rights to the application as they complete special projects. In addition, the design studios tend to pass such costs directly to their clients, making the investment in the license less of a concern. Furthermore, the developer is able to track which modules are in the highest demand and use that data to develop more features to meet the demands of users. Overall, users are able to take advantage of an application that they normally would never be able to afford and the vendor is able to receive revenue from new sources.

## **Summary**

Software application developers today enjoy the benefits and the challenges of a connected marketplace. Today, electronic license management is an essential component for developers to protect valuable intellectual property from software piracy and to offer tailor applications for customers and market segments.

# The SafeNet Solution: Sentinel LM and Sentinel Express

To take advantage of the unique distribution opportunities of the Internet while maintaining secure control of software licenses, Rainbow Technologies has developed the Sentinel product family. Together, Sentinel LM and Sentinel Express enable electronic license management, electronic software distribution and e-commerce for ISV's and software developers.

## Sentinel LM

Sentinel LM, the license management component of the Sentinel family, automatically limits an application's simultaneous number of users to what was set in the sales contract. Using advanced system fingerprinting technology, Sentinel LM virtually eliminates piracy resulting from unauthorized users sharing someone else's registered copy of an application. In addition, Sentinel LM is a secure and easy-to-use solution that can manage, control and administer software distribution, updates, new releases and patches. Sentinel LM also offers a wide range of licensing options, including concurrent, stand-alone, multiple locking, time-limited, trial, commuter and site-license agreements.

Other Sentinel LM benefits include:

- API for integrating control and access into executable code
- Sentinel LM-Shell utility for automatically protecting compiled programs and supporting data
- Fully customizable to meet the unique needs of diverse customers

## Sentinel Express

Sentinel Express provides complete electronic software distribution by facilitating license key management, automated customer key distribution and electronic software purchasing through a Web-based interface. A Sentinel Express powered Web site allows customers to intuitively select, purchase, register and activate products. Sentinel Express provides everything needed to securely offer Sentinel LM protected applications via the Internet. Sentinel Express supports a wide range of license management implementations including redundancy, commuter licensing, multi-feature license codes and log file encryption. Using a standard Web browser, customers can quickly and easily activate Sentinel LM protected applications.



[www.safenet-inc.com](http://www.safenet-inc.com)

**Corporate:** 4690 Millennium Drive, Belcamp, Maryland 21017 USA  
Tel: **+1 410.931.7500** or **800.533.3958** eMail: **info@safenet-inc.com**

**Australia** +61 3 9882 8322  
**Brazil** +55 11 6121 6455  
**China** +86 10 8266 3936  
**Finland** +358 20 500 7800  
**France** +33 1 41 43 29 00  
**Germany** +49 18 03 72 46 26 9  
**Hong Kong** +852 3157 7111

**India** +91 11 26917538  
**Japan** +81 3 5719 2731  
**Japan(Tokyo)**+81 3 5719 2731  
**Korea** +82 31 705 8212  
**Mexico** +52 55 5575 1441  
**Netherlands** +31 73 658 1900  
**Singapore (1)** +65 6274 2794

**Singapore (2)** +65 6297 6196  
**Taiwan** +886 2 6630 9388  
**UK** +44 1932 579200  
**UK (Basingstoke)** +44 1256 345900  
**U.S. (Massachusetts)** +1 978.539.4800  
**U.S. (New Jersey)** +1 201.333.3400  
**U.S. (Virginia)** +1 703.279.4500

**U.S. (Irvine, California)**  
+1 949.450.7300  
**U.S. (Santa Clara, California)**  
+1 408.855.6000  
**U.S. (Torrance, California)**  
+1 310.533.8100

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