

Sentinel LDK 10.0

SOFTWARE PROTECTION AND LICENSING TUTORIAL: SENTINEL SL (SOFTWARE-BASED) KEYS



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Build 2303-1 SL

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Which Tutorial is Right for Me?

A number of tutorials for learning about Sentinel LDK are available. We recommend that you review the information below to ensure that you choose the tutorial that is most appropriate for your requirements.

All the tutorials are included in the Sentinel LDK Demo kit and Starter kit.

Software Protection and Licensing Tutorial — Sentinel SL (Software-based) Keys

This tutorial demonstrates how to protect and license an application with Sentinel SL (software) protection keys.

Requirements: Download the free Sentinel LDK Demo Kit. *No hardware keys are required to perform this tutorial.*

NOTE The remaining tutorials described below demonstrate how to protect and license an application with either Sentinel SL (software) or Sentinel HL (hardware) protection keys.

Software Protection and Licensing Tutorial — “Demo Kit” or “Starter Kit”

Sentinel LDK-EMS (Entitlement Management System) is used as the back office system to manage definition of Features and Products and to generate and track customer entitlements.

- > The **Demo Kit** tutorial uses a provided demonstration hardware key.

Requirements: Obtain the free physical Sentinel LDK Demo Kit from your Thales sales representative or from the Thales web site.

- > The **Starter Kit** tutorial uses your own Sentinel Developer key and Sentinel HL key to protect and license an application.

Requirements: Purchase the Sentinel LDK Starter kit and Sentinel HL protection keys from your Thales sales representative.

Software Protection and Licensing API Tutorial — “Demo Kit” or “Starter Kit”

These tutorials demonstrate how you can use Sentinel LDK APIs to generate and update licenses. It is assumed that you would use your own back office systems to handle all ERP functionality.

A **Demo Kit** tutorial and a **Starter Kit** tutorial are available as described above.

Introduction

Thank you for choosing to evaluate Sentinel License Development Kit (*Sentinel LDK*) as the method to protect and license your software against unauthorized use. In this Tutorial, you use the Sentinel LDK system to protect, license, and distribute software.

The strength, uniqueness, and flexibility of Sentinel LDK are based on two primary principles:

- > *Protect Once—Deliver Many—Evolve Often™*: the concept of separating the software engineering and business processes
- > *Cross-Locking*: the technology that supports the Protect Once—Deliver Many—Evolve Often concept, enabling a protected application to work with a Sentinel HL (hardware) or a Sentinel SL (software) key

All commercial decisions, package creation, and license definitions are executed by product or marketing managers after the protection has been implemented.

This tutorial demonstrates how easy it is to protect a Windows program, create a trial license, and convert the trial license into a permanent license protected with a Sentinel SL protection key (software-based locking).

To evaluate protection using a Sentinel HL key (hardware-based locking), you must order a Sentinel LDK - Demo Kit. Demo kits can be ordered from

<https://www5.thalesgroup.com/sentinel-ldk-trial-en>

The procedures in this guide describe how you protect and license the Bouncing Ball sample program included with the Sentinel LDK software, as follows:

- > Defining a Sentinel LDK Feature that will be used as an identifier for the program that you want to protect and license
- > Protecting the Bouncing Ball program
- > Creating two Sentinel LDK Products that incorporate the Feature you defined, each with different license terms
- > Preparing the trial Product for distribution
- > Running the trial version of the protected program
- > Producing a Sentinel LDK Product Key for a user who purchased a permanent license
- > Activating the permanent license

Roles

The Sentinel LDK system is role-based, and the tasks you can perform depend on the user roles assigned to you by the Sentinel LDK Administrator.

In order to enable you to experience the broad functionality of the Sentinel LDK system in this tutorial, you will have access to all roles. The roles you assume in the various lessons include:

> **Product Manager** role

The person, usually a product manager, who determines the product components to be protected (called Features in Sentinel LDK), how these components are used to define Products, and the license structure for the Products.

> **Development** role

The person, usually a software engineer, who protects the software using Sentinel LDK Envelope or the Sentinel Licensing API, and performs other development-related tasks, such as generating the Sentinel Runtime Environment Installer.

> **Customer Services** role

The person responsible for performing manual Product activations.

> **Entitlement Manager** role

The person responsible for defining and managing customer entitlements (orders).

> **Production** role

The person responsible for producing customer entitlements.

In addition, you will assume the role of an end user in order to run an Unlocked Trialware Product. After that, using Sentinel LDK, you will activate and use a fully licensed Product.

Conventions

Each of the lessons in this tutorial begins with a focused breakdown of the lesson, similar to the following:

Objective:	A short description of the lesson objective
Roles in this lesson:	The role or roles that you assume during the lesson
Applications used:	Sentinel LDK-EMS or other applications you use in the lesson

Lessons in this Tutorial

This tutorial includes the following lessons:

> ["Preliminary Preparation" on page 9](#)

In this lesson, you install the Sentinel LDK system and learn how to launch Sentinel Vendor Suite.

> ["Defining Features" on page 11](#)

In this lesson, you use Sentinel LDK-EMS to define a program as a Feature.

> ["Protect Once" on page 13](#)

In this lesson, you use Sentinel LDK Envelope to protect the Feature you defined.

> ["Defining Products" on page 16](#)

In this lesson, you use Sentinel LDK-EMS to define Products that incorporate the Feature you defined.

> ["Preparing the Trial Product for Distribution" on page 18](#)

In this lesson, you use Sentinel LDK-EMS to define an Unlocked Trialware Product based on one of the Products you defined and protected, and then prepare the Product for distribution.

> ["Running the Trial Version of the Program" on page 20](#)

In this lesson, you simulate a variety of typical end-user experiences.

> ["Defining and Producing an Order for the Licensed Product" on page 22](#)

In this lesson, you define an order for a software-based Product Key for your Product.

> ["The End-User Experience" on page 24](#)

In this lesson, you simulate the experience of an end user who has purchased the full Product and activates it using the Product Key you created using Sentinel LDK-EMS.

We recommend that you follow the lessons sequentially to familiarize yourself with the Sentinel LDK system and to gain a clear understanding of the strength of the *Protect Once—Deliver Many—Evolve Often* model, and the flexibility it provides.

Additional Resources

You can use the following resources to help you learn about the Sentinel LDK system:

> [Sentinel LDK Software Protection and Licensing Guide](#)

This book describes Sentinel LDK licensing concepts and provides a detailed overview of the system.

> Sentinel LDK Release Notes

The Release Notes provide information about the current release, including:

- latest enhancements
- supported platforms
- available documentation
- known issues

LESSON 1: Preliminary Preparation

Objective:	Prepare your computer and Sentinel LDK for the tutorial
Applications used:	<ul style="list-style-type: none">> Sentinel LDK installation package> Sentinel Vendor Suite

The procedures in this lesson are required in order for you to be able to implement the processes outlined in subsequent lessons of this tutorial. They include:

- > Instructions for installing the Sentinel LDK software, including Sentinel LDK-EMS Server
- > Instructions for launching Sentinel Vendor Suite

Installing the Sentinel LDK Software

Before proceeding with this tutorial, install the Sentinel LDK software on your computer.

CAUTION! Do not connect any of your Sentinel keys before installing the Sentinel LDK software!

For instructions on how to install Sentinel LDK-EMS and Sentinel LDK Vendor Tools, refer to the section “Installing Sentinel LDK With Sentinel LDK-EMS (On-Premises)” in the [Sentinel LDK Installation Guide](#).

During the installation procedure, you can accept most defaults.

When prompted for Installation Options, select:

- > **Vendor Suite**
- > **Entitlement Management System**
 - **Sentinel LDK-EMS - install on this machine**

When prompted to choose a setup type for Sentinel LDK-EMS, click the **Express** option.

Starting the Sentinel LDK Launcher

After completing the installation, launch Sentinel Vendor Suite as follows:

1. In the Windows Services window, ensure that the Sentinel LDK-EMS Service is active
2. From the **Start** menu, open **Sentinel LDK**. The Sentinel LDK Launcher is displayed. You can access the primary Vendor Suite applications from this screen.

You are now ready to start the tutorial.

LESSON 2: Defining Features

Objective:	Learn how to define Features
Roles in this lesson:	Product Manager
Applications used:	Sentinel LDK-EMS

A Feature is an identifiable functionality of a software application that can be independently protected or licensed. In Sentinel LDK, a Feature may be an entire application, a module, or a specific functionality such as Print, Save, or Draw.

Features are typically defined by the Product Manager based on business decisions, and are then implemented by the company's software engineers.

In this lesson, you assume the Product Management role, and use Sentinel LDK-EMS to define a Feature for use in subsequent lessons.

To launch Sentinel LDK-EMS

1. From the **Start** menu, open **Sentinel LDK**. The Sentinel LDK Launcher is displayed.
2. In the Sentinel LDK Launcher, click **Sentinel LDK-EMS**.
3. In the **User ID** and **Password** fields, type `admin`.

NOTE The first time you log in to Sentinel LDK-EMS, you must change the default password for the **admin** account. You can also change this password at any time from the top-right corner of Sentinel LDK-EMS.

4. Click **Login**. The Sentinel LDK-EMS Home screen is displayed. Click the **Catalog** tab to see a typical web screen.

Sentinel LDK-EMS web screens typically includes the following:

- > Function bars, in which you select the function to perform
- > Main pane, in which you view and select items
- > Details pane, in which you view details of the item selected in the Main pane
- > Task buttons, which you use to perform actions

Sentinel LDK-EMS
Entitlement Management System

Welcome admin | [Help](#)

Function bars

Home Catalog Entitlements Customers Reports Administration Developer

Filter tool

Product Name [] Batch Code: DEMOMA [New Product](#)

Main pane

Product	Product ID	Ref ID 1	Status	Type	Actions
> Product A	36		Complete	Base	
> MyProductHL	35		Complete	Base	
> MyProduct	34		Complete	Base	
> ProductcZNBHxIsr	33	33408	Complete	Base	
> ProductpldOumBKN	32	88453	Complete	Base	
> ProductNyequQeCWD	31	29347	Complete	Base	
> ProductUPGKUrPHlc	30	12819	Complete	Base	
> ProductBEirFKzBg	29	82253	Complete	Base	
> ProductLmVxKTPmwh	28	85451	Complete	Base	
> ProductkvfydDljwD	27	48540	Complete	Base	
> ProductYyfnIIGC	26	15229	Complete	Base	
> ProductVXJuswVePc	25	14158	Complete	Base	

Task buttons

Details pane

Product A

Product Type: Base
Product ID: 36
Status: Complete

Ref ID 1:
Ref ID 2:
Description:

Deployed: Yes
Locking Type: HL or SL (AdminMode or UserMode)
Upgrade to Driverless: No
Use Virtual Clock: No
Clone Protection: Yes
Physical: PlatformDefault
Virtual: PlatformDefault
Rehost: Enable

Feature	License Terms	Excludable?
Diamond 2.0	Perpetual	<input type="checkbox"/>
DMBTFeature	Perpetual	<input type="checkbox"/>

Showing 2 of 2 Features [More...](#)

Defining a Feature for the Sample Bouncing Ball Program

In this section, you define a Feature for an existing program, the Bouncing Ball sample program supplied with Sentinel LDK.

To define the Bounce Feature

1. From the function bar of the Sentinel LDK-EMS screen, **click Catalog > Features**. The Features screen is displayed. This screen shows the list of Features defined and displays details of the current Feature. The right side of the screen contains task buttons for the tasks that can be performed in this screen.
2. Click **New Feature**. The Create Feature screen is displayed.
3. In the **Feature Name** field, type `Bounce`.
4. In the **Feature ID** field, erase the default value and type `10`.
5. Click **Save**. The Create Feature screen closes and the “Bounce” Feature you defined is displayed in the main pane of the Features screen.

LESSON 3: Protect Once

Objective:	Learn how to apply Sentinel LDK automatic protection functionality
Roles in this lesson:	Development
Applications used:	Sentinel LDK Envelope

In this lesson, you use Sentinel LDK Envelope to wrap and protect the Bouncing Ball sample program with a secure shield. This protection process is independent of the licensing process and can be executed at any stage.

Sentinel LDK Envelope is an innovative, advanced solution for protecting software against illegal or unauthorized use. The solution deters illegal access and execution of protected applications.

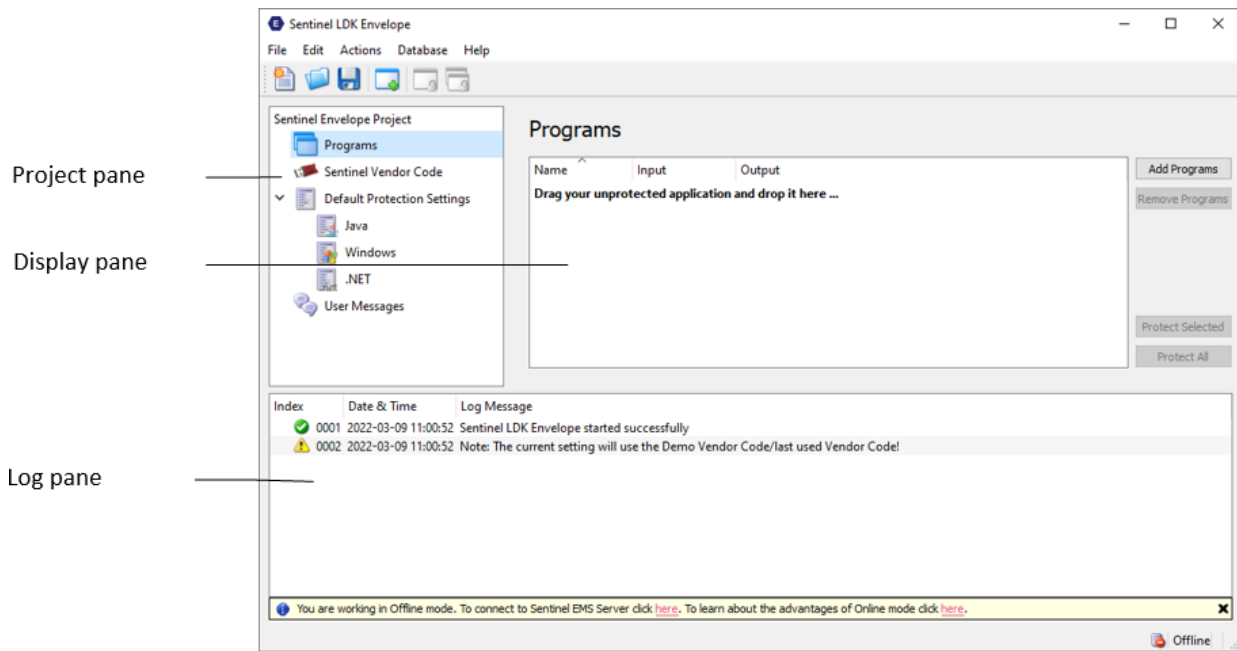
A deployed Sentinel LDK-protected program requires access to a Sentinel protection key in order to run. The protected program queries the Sentinel protection key for predefined information. If the Sentinel protection key is not present, or the information returned is incorrect, the program does not execute, or stops functioning.

Protecting the Sample Bouncing Ball Program

In this section, you launch Sentinel LDK Envelope and identify the Vendor Code with which you will protect the software. You then define an end-user error message. Finally, you protect the Bouncing Ball program.

The Sentinel LDK Envelope window includes the following:

- > Project pane, in which you select the function to perform
- > Display pane, in which you select items and perform actions. The name of the pane changes to reflect the function you selected in the Project pane—for example, in the screen below, the Display pane has the title **Programs**.
- > Log pane, in which Sentinel LDK Envelope messages are displayed



To prepare for protection

1. From the **Start** menu, open **Sentinel LDK**. The Sentinel LDK Launcher is displayed.
2. Click **Envelope** to launch Sentinel LDK Envelope. The Sentinel LDK Envelope main window is displayed.
3. Before protecting an application, Sentinel LDK Envelope must identify the correct Vendor Code. In the **Sentinel LDK Envelope Project** pane, select **Sentinel Vendor Code**.
4. In the right pane of the Sentinel Vendor Code window, click **Toggle connection with the Server**. The Log In to Sentinel LDK-EMS screen is displayed.
5. Enter the user name and password to log in to Sentinel LDK-EMS; then click **OK**. (The default user name and password are **admin – admin**.) The available Vendor Codes are displayed in the **Sentinel Vendor Codes** pane.
6. Select **Use Vendor Code from Database**, and then select the DEMOMA Vendor Code.

To protect the Bouncing Ball program

1. In the Sentinel LDK Envelope **Project** pane, select **Programs**.
2. Click **Add Programs** in the top right of the **Programs** pane.

The Add Programs window is displayed, showing the contents of the \VendorSuite\samples folder.

If a different folder is displayed, browse to:

`%ProgramFiles(x86)%\Thales\Sentinel LDK\VendorTools\VendorSuite\samples\`

3. Select **Win32_Bounce.exe** and click **Open**. Win32_Bounce is now listed in the **Programs** pane.
4. In the **Project** pane, under **Programs**, select **Win32_Bounce**. The **Display** pane lists the Protection Details.

5. In the **Name** field (to the right of the **Feature ID** field), select **Bounce** from the list (the Feature that you defined for the Bounce program in).
6. In the **Output file** field, click the browse button. The Select Output File dialog box is displayed.
7. Create a new folder on your desktop and name it **BounceDemo**
The default file name, **Win32_Bounce.exe**, is displayed in the **File name** field.
8. Click **Save**. The new location and file name are displayed in the **Output file** field.
9. At the bottom of the **Display** pane, click **Protect**. A message informs you that the Sentinel LDK system is protecting the program.
10. Click **Close** when Sentinel LDK Envelope notifies you that the protection process has completed.
11. Close Sentinel LDK Envelope. You are prompted to save the changes to the current project.
12. Click **Save**. The Save As dialog box is displayed.
13. In the **File Name** field, type `Tutorial_SL` and click **Save**. The dialog box closes and the project is saved.

LESSON 4: Defining Products

Objective:	Learn how to define the Products you want to license
Roles in this lesson:	Product Management
Applications used:	Sentinel LDK-EMS

A *Product* is a licensing entity that represents one of the vendor's marketable software products. The Product is coded into the memory of a Sentinel key and contains one or more Features. License terms are defined for each Feature in a Product.

Like Features, Products are defined using Sentinel LDK-EMS. Typically, this function is performed by the Product Manager, and implemented by the software engineer. In a real-life environment, a number of Products might be defined and held in readiness for inclusion in customer orders. However, you can define new Products—mixing and matching Features—at any time.

You now use Sentinel LDK-EMS to create two Products, each containing the Feature ID you defined for the Bouncing Ball program in ["Defining Features" on page 11](#).

In this lesson, you define the following Products:

- > "BounceFull"—A "full-featured" Product, in which the license enables unrestricted access to all the Features in the program.
- > "BounceTrial"—A "rental" Product, in which the license expires after 30 days. This Product will be created by duplicating the "full-featured" Product and modifying the license terms.

Defining a Full-featured Product for the Bouncing Ball Program

In this lesson, you define a Product based on the Bounce Feature with a full-featured perpetual license that will allow the end user unlimited access to the program.

To define a licensed Product for the Bouncing Ball program

1. From the function bar in the Sentinel LDK-EMS screen, select **Catalog > Products**. The Products screen is displayed.
2. Click **New Product**. The Create Product screen is displayed.
3. In the **Name** field, type `BounceFull`.
4. In the **Protection Type** field, select **SL-AdminMode**.

5. On the **Product Features** tabbed page, click **Add Features**.
6. On the Add Features to Product screen, select the check box next to the **Bounce** Feature and click **Add Features to Product**.
7. On the **Product Features** tabbed page, note that the License Type for the Bounce Feature is **Perpetual** by default. Therefore, it is not necessary to perform any additional configuration for the Feature.
8. Click **Save as Complete**. The new BounceFull Product is listed in the Products screen. The status for the Product is listed as **Complete**. This indicates that the Product is available for distribution.

Defining an Unlocked Trialware Product for the Bouncing Ball Program

In this lesson, you define an Unlocked Trialware Product based on the Bounce Feature, with a license that enables the program to be launched for 30 days. After 30 days, the license must be updated to enable further use of the program.

To define an Unlocked Trialware Product for the Bouncing Ball program

1. From the function bar in the Sentinel LDK-EMS screen, select **Catalog > Products**. The Products screen is displayed.
2. In the list of Products, select the **BounceFull** Product.
3. From the task buttons, select **Actions > Trialware/Unlocked**. The Create Unlocked Product screen is displayed.
4. In the **Name** field, type `BounceTrial`. Note that:
 - The **Base Product** field displays **BounceFull**.
 - The **Bounce** Feature you defined in ["Defining Features" on page 11](#) is included in the Product with the **Unlocked (Time Period)** license type. For a trialware license, the user is granted a usage period of 30 days by default.
5. Click **Save as Complete**. The new BounceTrial Product is saved in Sentinel LDK-EMS and displayed in the list of Products in the Products screen.

LESSON 5: Preparing the Trial Product for Distribution

Objective:	Learn how to bundle an Unlocked Trialware Product that can be supplied as a trial product
Roles in this lesson:	<ul style="list-style-type: none">> Product Management> Development
Applications used:	Sentinel LDK-EMS

An Unlocked Trialware Product is typically used for evaluation purposes, to enable the provision of a grace period, or for super-distribution. An Unlocked Trialware Product can be used on any computer for a limited time period. After the allotted period expires, the software no longer runs unless it is activated with a Sentinel protection key.

In this lesson, still in the Production Management role, you define the “BounceTrial” Product as a trial version of the “BounceFull” Product that you defined in ["Defining Products" on page 16](#). You then assume the Development role to prepare the Product for distribution in a bundle, including a customized Sentinel LDK Run-time Environment Installer executable file.

Defining a Bundle of Unlocked Products

To prepare your trial Product for distribution, you bundle the “BounceTrial” Unlocked Trialware Product that you defined earlier. You then prepare a Sentinel LDK Run-time Environment Installer executable file. (In a true production environment, you would embed this file in your own application installer.)

To define a bundle of Unlocked Products

NOTE For the purposes of this tutorial, ensure that the *Download location* (described below), if it exists, does not contain any V2C files at this point.

1. From the function bar in the Sentinel LDK-EMS screen, select **Developer > Bundle Unlocked Products**. The Bundle Unlocked Products screen is displayed.
2. Select the task **Actions > Add**. The Products screen is displayed.

3. Select the **BounceTrial** entry and click **OK**. The Products screen closes and the BounceTrial Product is displayed in the Bundle Unlocked Products screen.

NOTE An Unlocked Products bundle can contain any number of Unlocked Products. For this exercise, you are only adding a single Unlocked Trialware Product—BounceTrial—to the bundle.

4. In the **Product Details** pane, select the check box for the **BounceTrial** Product.
5. Click **Produce V2C**. The V2C file is generated.
6. Choose the option to save the file. The file is saved to:

%HomePath%\Downloads

NOTE The location to which the file is saved may vary depending on your operating system and web browser. For the remainder of the lessons in this tutorial, this location is referred to as the *Download location*.

To prepare a Sentinel Run-time Environment Installer executable

1. A Run-time Environment Installer is available on the machine where you installed Sentinel LDK. Copy the file **haspdinst.exe** from the directory *%ProgramFiles(x86)%\Thales\Sentinel LDK\Redistribute\Runtime Environment\cmd Install* to the Download location described above.

Using the Run-time Environment Installer and the V2C file, you are now ready to ship your Product with its license locked to a Sentinel SL key.

LESSON 6: Running the Trial Version of the Program

Objective:	Simulate a variety of end-user interactions with programs protected by Sentinel protection keys
Roles in this lesson:	End user
Applications used:	Admin Control Center

In this lesson, you simulate a variety of typical end-user experiences:

- > Running a Sentinel LDK-protected program
- > Examining the license for a Sentinel LDK-protected program
- > Using Sentinel Admin Control Center

Running the Protected Trial Version of the Program

When you initially run the Bounce program as an end user, it is protected with Sentinel LDK and uses the limited trialware license you prepared for the BounceTrial Product.

Although in a real-life environment, your software engineer would typically embed the Run-time Environment installation into your software installation so that it executes as part of the installation process, in this tutorial you perform several installation and simulation steps.

To install the Sentinel Run-time Environment and trialware license on an end-user machine

1. From the **Start** menu, select **Run**.
2. Click **Browse** and navigate to the Download location (described on ["Preparing the Trial Product for Distribution" on page 18](#)) that contains the RTE Installer (haspdinst.exe) that you prepared earlier.
3. Select the **haspdinst.exe** file and click **Open**. The browse window closes and the file path is displayed in the **Open** field.
4. In the **Open** field, type a space followed by **-i** at the end of the file path.

For example:

```
"C:\Users\Thomas\Downloads\haspdinst.exe" -i
```

5. Click **OK**. The Sentinel Run-time Environment is installed and a success message is displayed. Any V2C file that is present in Download location together with Run-time Environment Installer is applied automatically.

To run the protected program

1. Open the BounceDemo folder you created on your desktop and double-click the protected `Bounce.exe` program. A message is displayed to warn you that the program is only protected with a demo Sentinel protection key.
2. Click **OK**. The program runs and you see the bouncing ball.
3. Examine the license for the Bounce program:
 - a. While the application is running, from the **Start** menu, open **Sentinel LDK**. In Sentinel LDK Launcher, click **Additional Tools > Admin Control Center**.
 - b. In the **Options** pane, select **Features**. The Features in the currently active Sentinel protection keys are displayed.
 - c. Note that a record is displayed for Feature ID 10—the Feature you used to protect and license the Bounce program. The following data is provided:
 - In the **Logins** column, the number 1 indicates that the program is currently active.
 - The **Restrictions** column indicates that the 30-day trial period has begun.
4. Close the Bounce program.

LESSON 7: Defining and Producing an Order for the Licensed Product

Objective:	Learn how to define and produce orders
Roles in this lesson:	<ul style="list-style-type: none">> Order Management> Production
Applications used:	Sentinel LDK-EMS

In this lesson, you assume the Order Management role to define an order for a software-based Product Key for the BounceFull Product that you defined in ["Defining Products" on page 16](#).

Defining a Customer

In this exercise, you will define the customer for whom an order will be entered.

NOTE This exercise is optional. The customer record is not required to complete the tutorial.

To define a customer

1. From the function bar in the Sentinel LDK-EMS screen, select **Customers**. The Customers screen is displayed.
2. Click **New Customer**. The Create Customer screen is displayed.
3. For **Type**, select **Individual**.
4. In the **First Name** and **Last Name** fields, enter your own name.
5. In the **E-mail** field, enter your own email address.
6. Click **Save**. Your customer information is displayed in the Customers screen.

Producing a Product Key

To produce a Product Key for the licensed Product

1. From the function bar in the Sentinel LDK-EMS screen, select **Entitlements**. The Entitlements screen is displayed.
2. Click **New Entitlement**. The Create New Entitlement screen is displayed.
3. (If you defined a customer above) In the **Customer** field, start to type your first name. Your full name will appear in a list box under the field. Click your name in the list. Your full name and email address appear in the appropriate fields.
4. In the **Product Details** pane, click **Add Product**.
5. In the Product Selection screen, select the check box for **BounceFull** and click **Add Product to Entitlement**. The BounceFull Product is added to the Product list.
6. Select the check box for **BounceFull**.
7. For **Entitlement Type**, ensure that **Product Key** is selected. Accept all other default values.
8. Click **Produce**. The Download Product Keys screen is displayed.
9. Click **Download**.
10. Choose the option to save the file. Save the `Product_Keys_[ID].txt` file to the BounceDemo folder you created on your desktop.

In the Entitlements screen, the new entitlement is displayed with the status **Product Keys Generated**.

To view the Product Key for the licensed Product

1. In Windows Explorer, browse to the BounceDemo folder on your desktop. Open the folder.
2. Double-click the `Product_Keys_[ID].txt` file in the folder. The Product Key number is displayed in Notepad.
3. Close the file.

LESSON 8: The End-User Experience

Objective:	Learn how to activate the full Product protected by a Sentinel protection key
Roles in this lesson:	End user
Applications used:	Sentinel Admin Control Center

The *Customer Portal* is a web portal in your installation of Sentinel LDK-EMS that your customers access to activate the licenses for their full-featured Products.

In this final lesson, you simulate the experience of an end user who has purchased the full-featured Product and activates it using Customer Portal and the Product Key you prepared in "[Defining and Producing an Order for the Licensed Product](#)" on page 22. At the end of this process, the Bounce program is a fully licensed product, protected with a Sentinel SL protection key that is locked to your computer.

Notifying the Customer

Sentinel LDK-EMS can be configured so that when you produce an entitlement, Sentinel LDK-EMS automatically sends an email notification to the customer. This email contains the Product Key and a link to the Sentinel LDK-EMS Customer Portal.

A typical email notification looks like this:

Dear John Smith,

Congratulations! An entitlement has been created for you with the following details:

Entitlement Details		
Start Date:	05/03/2012	End Date:
Customer:	John Smith (E-mail: johnsmith@safenet-inc.com)	
Channel Partner:		
Product key:	02572219-68f6-4ff7-9420-a8fd64bdf2aa	Quantity (per product key):
Products		
Name	Lock Type	
BounceFull	SL-AdminMode	

Now, follow the steps given below to activate and manage your entitlement(s):

1. Access the Entitlement Management System at <http://localhost:8080/ems/customerLogin.html>.
2. Log on using product key given above.

This notification provides all the information that the customer needs to activate the Product.

To simplify this tutorial, we did not configure Sentinel LDK-EMS to send email notifications, so we will simulate the end-user experience.

Activating the Protected Program

To activate and run the protected program

1. To access the Customer Portal, the customer would click a link provided in the email notification.

To simulate this action, click the link below or enter the URL in your Web browser address field:

<http://localhost:8080/ems/customerLogin.html>

The Sentinel LDK-EMS Product Key Login screen is displayed.

2. The customer would copy the Product Key from the email notification and paste it into the **Product Key** field in the login screen.

To simulate this action:

- a. Open the BounceDemo folder you created on your desktop and double-click **Product_Keys_[ID].txt**. The Product Key string is displayed as a text file.

- b. Copy the Product Key and paste it into the **Product Key** field in the login screen. Click **Login**.

The Sentinel LDK-EMS Activation screen is displayed. This screen contains information about the entitlement. If the entitlement allows multiple activation, this screen indicates how many activations remain.

The customer can choose to perform online activation or offline activation.

Offline activation can be used if the license will be installed on a machine from which it is not possible to access the Customer Portal. This includes downloading a utility from Sentinel LDK-EMS and transferring files manually to and from the target machine.

Most customers will prefer to use online activation.

3. Click **Online Activation**. A progress notice is displayed for a few seconds, followed by **Activation installed successfully**.
4. This marks the end of the activation process. Click **Close** to dismiss the notice.
5. Run the Bounce program again.
6. Examine the license for the Bounce program using Sentinel Admin Control Center.
 - a. In the **Options** pane, select **Features**. The Features in the currently active Sentinel protection keys are displayed.
 - b. Note that a new record is displayed for Feature ID 10. The following data is provided:

- In the **Feature** column, a padlock icon indicates that the license is locked to the computer.
 - In the **Logins** column, the number **1** indicates that the program is currently active.
 - The **Restrictions** column indicates that the Bounce Feature now has a Perpetual license.
- c. Close the Bounce program.

Tutorial Conclusion

Congratulations! You have now completed the Sentinel SL Keys Tutorial.

NOTE To repeat this tutorial on the same computer, you must use a different name for the full-featured Product. (Do not use **BounceFull**.)