

Sentinel[®] LDK

Migration Guide

Sentinel SuperPro to Sentinel LDK

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Introduction

About Sentinel LDK

Sentinel® LDK is a Software Digital Rights Management (DRM) solution that delivers strong copy protection, protection for Intellectual Property, and secure and flexible licensing. Sentinel LDK is an all-in-one solution that enables you to choose a hardware-based or software-based protection key, based on business considerations. Sentinel LDK software engineering and business processes are completely separate to ensure:

- Effective and efficient product development
- Quick time to market
- Immediate addressing of customer and market needs
- Comprehensive support throughout a software product's protection and licensing life cycle

The level of protection for your software is determined by the locking type you choose—hardware-based or software-based. Sentinel LDK hardware-based protection, which utilizes Sentinel HL keys, provides the safest and strongest level of protection. Sentinel LDK software-based protection, which utilizes Sentinel SL keys and software activation, provides electronic software and license distribution. Both keys are supported by the same set of tools and APIs, and the transition between them is transparent.

About This Guide

This migration guide is intended for users of Gemalto Sentinel SuperPro hardware keys (referred to in this guide as *SuperPro*). The guide's main focus is for users who wish to continue using a hardware-based protection solution, but want to migrate to the more comprehensive Sentinel HL key protection and advanced licensing provided by Sentinel LDK. The guide assumes that the reader has a good understanding of both the Sentinel SuperPro and the Sentinel LDK systems and provides the following:

- Migration paths from Sentinel SuperPro to Sentinel LDK, each with an overview, guidelines, and discussion of advantages and disadvantages.
- Procedures relating to the migration that are not documented in either the Sentinel SuperPro documentation or the *Sentinel LDK Software Protection and Licensing Guide* and Help documentation
- Tables comparing Sentinel LDK and Sentinel SuperPro specifications, tools, and API functions.

For detailed information and procedures relating to Sentinel LDK, refer to the *Sentinel LDK Software Protection and Licensing Guide* or to the relevant Sentinel LDK Help documentation.

For detailed information and procedures relating to Sentinel SuperPro, refer to the *Sentinel SuperPro Developer's Guide*.



The procedures and terminology employed in this guide are based on the assumption that you want to migrate from Sentinel SuperPro hardware key to Sentinel HL keys. However, since Sentinel HL keys and Sentinel SL keys are

supported by the same set of tools and APIs, the procedures for migrating to Sentinel SL keys are similar (migrating to Sentinel SL keys requires an activation process). If you want to migrate to Sentinel SL keys, refer to the *Sentinel LDK Software Protection and Licensing Guide* or contact Gemalto Technical Support.

About Sentinel HL Keys

The following types of Sentinel HL keys are available, replacing the HASP HL keys that were provided until now:

- Sentinel HL (Driverless configuration) keys

These keys make use of HID drivers (included in the Windows operating system) instead of Sentinel drivers. When used as standalone keys, these keys can be used without installing the Run-time Environment. (Network keys require the Run-time Environment.) However, these keys are not backward-compatible with applications protected with Sentinel LDK 6.1 or earlier, Sentinel HASP, HASP HL 1.x, or HASP4. To use these keys, your protected application must include the Licensing API libraries from Sentinel LDK v.7.1 or later, and you must be working with the backend from Sentinel LDK v.7.1 or later.

- Sentinel HL (HASP configuration) keys

These keys are fully compatible with existing HASP HL keys and with older generations of HASP keys (and with Hardlock/HASP4 keys). These keys can work with your existing API libraries and Run-time Environment, and you can work with your current backend environment. These keys can be upgraded at the customer site to Sentinel HL (Driverless configuration) keys and can thus provide all the benefits provided by the Driverless-configuration keys.



Occurrences of the term **Sentinel HL key** in this guide generally refer to the Sentinel HL (Driverless configuration) key.

Requirements for Run-time Environment

You are required to install the Sentinel LDK Run-time Environment on at least some of your machines for the following types of Sentinel protection keys:

- Sentinel SL-AdminMode keys (the type of Sentinel SL key recommended for one of the migration paths in this book).
- Sentinel HL (HASP configuration) standalone keys. The Run-time Environment is required on the computer where the protected application is executed and the key is attached.
- Sentinel HL network keys.

This includes the following keys:

- Sentinel HL Net and NetTime (HASP configuration) keys
- Sentinel HL Net and NetTime (Driverless configuration) keys
- Any Sentinel HL (Driverless configuration) key (other than Basic) with a concurrency license

The Sentinel HL network key is connected to any computer in the network.

The Run-time Environment is required on the computer where the network key is attached. The protected application can execute on different computers in the network.

The standalone Sentinel HL (Driverless configuration) keys do not require the Run-time Environment.

For more information, see “Protection Keys That Require Sentinel LDK Run-time Environment” in the *Sentinel LDK Software Protection and Licensing Guide*.

Available Migration Paths

Several migration paths are available to facilitate your move from Sentinel SuperPro to the protection and licensing functionalities of Sentinel LDK.

All the migration paths contain two or three stages. In Migration Paths 1 and 2, the stages are not interdependent; it is possible to begin at any stage. Similarly, the time that you wait before moving from one stage to the next is entirely at your discretion.

Migration Path 1 provides a gradual move towards improved security for your products in a very short time by merely adding Sentinel LDK as a complementary system to your current protection, and converting to the complete Sentinel LDK protection system at your convenience.

Using Migration Path 1, you introduce Sentinel LDK alongside your current protection, allowing a gradual adjustment at your own pace to the enhanced functionality offered by Sentinel LDK. When you are ready, you can phase Sentinel SuperPro out and fully implement the superior protection of the Sentinel LDK solution.

Migration Path 2 provides a way to phase out your installation base of SuperPro hardware keys over time—without necessitating the recall and replacement of SuperPro hardware keys, and without having to continue their distribution.

Using Migration Path 2, and creating a version of your software that recognizes both SuperPro keys and Sentinel HL keys (Driverless configuration), you can start distributing Sentinel HL keys to new customers while existing customers continue using their SuperPro keys. You can then gradually replace your install base of SuperPro keys with Sentinel HL keys.

Simultaneous migration of Migration Path 1 and Migration Path 2 is possible, to create a three-stage solution of full Sentinel LDK implementation.

- Implement Stage 2 of Migration Path 1 to add increased security to your current Sentinel SuperPro protection using Sentinel LDK Envelope. Implementing this stage can provide an immediate solution to Sentinel SuperPro emulators.
- Implement Stage 1 of Migration Path 2 for a gradual migration that does not require the distribution of both a Sentinel Protection key and a SuperPro key. This migration works well in markets that are less prone to piracy.

Implementation and distribution according to steps 1 and 2 may be performed simultaneously, depending on the requirements of your market.

- Implement Stage 2 of Migration Path 2 to completely remove SuperPro keys and to upgrade to a full implementation of Sentinel LDK protection, utilizing the strongest security and accomplishing the highest licensing flexibility.

Migration Path 3 enables a gradual transition from SuperPro keys to Sentinel LDK. A Sentinel SuperPro-protected version and a Sentinel LDK-protected version of your software are distributed, together with a launcher application. The launcher detects whether a Sentinel Protection key is connected to the computer and launches the appropriate version of the program. For more information, see “Migration Path 3—Gradual Migration from SuperPro to Sentinel LDK” on page 18.

Shortcut to Enhanced Protection

Sentinel SL “Unlocked Product” is a mechanism by which the protection applied to an application can be significantly enhanced without affecting the current protection and licensing process.

You use Sentinel LDK Envelope to apply a sophisticated protection wrapper over any existing SuperPro protection and licensing scheme. This wrapper protects your application against reverse engineering and theft of intellectual property.

You can apply this protection immediately as a short-term or long-term solution while you develop your process to migrate to Sentinel HL keys. For maximum security, Gemalto recommends that you obtain a batch code for this purpose that is different from the batch code that you will use for your Sentinel HL keys.

For more information regarding Unlocked Products, see the *Sentinel LDK Software Protection and Licensing Guide*. For pricing information for Unlocked Products, contact your Gemalto sales representative.

Obtaining Support

You can contact us using any of the following options:

Business Contacts - To find the nearest office or distributor, use the following URL:
<https://sentinel.gemalto.com/contact-us-sm/>

Technical Support

To obtain assistance in using Gemalto products, feel free to contact our Technical Support team:

- Customer Support Portal (preferred):
 - <https://supportportal.gemalto.com/csm?id=sentinel>
- Phone:
 - AMER: 800-545-6608 (US toll free), International: +1-410-931-7520
 - EMEA/APAC: <https://supportportal.gemalto.com/csm?id=sentinel>
⇒ Click “Contact us”
- E-mail (only if you cannot submit the technical issue via the portal)
 - technical.support@gemalto.com

Downloads – To download installers and other updated components using this URL:
<http://sentinel.gemalto.com/technical-support-sm/>

1

Migration Path 1—Sentinel LDK Complementing SuperPro Implementation

Overview

This three-stage migration path enables you to improve your security in a very short time by protecting your applications with Sentinel LDK Envelope, and locking the application to a software-based Sentinel SL key. Two alternative methods to accomplish this locking are described in this section.

Stage 2 presents an opportunity for you to enhance your existing Sentinel SuperPro protection. While maintaining your trusted current protection, you have only to add Sentinel LDK as a complementary system. With this gradual change from Sentinel SuperPro to Sentinel LDK, the entire installation base is not forced to change all at once. While your customers adjust to Sentinel LDK protection, you can easily transition to Stage 3, which offers a much higher level of security and provides more portability. Stage 3 is ideal for new customers or when distributing new versions of your software.

The time that you wait before moving from one stage to the next is entirely at your discretion. You can even skip Stage 2 and proceed directly to Stage 3.

The following table summarizes the stages for Migration Path 1.

	Stage 1	Stage 2	Stage 3
Implementation effort	Very low	Very low	Medium
Install base	Remains Sentinel SuperPro keys	Remains Sentinel SuperPro and Sentinel HL (SuperPro configuration) keys	<ul style="list-style-type: none"> • Replace Sentinel SuperPro keys with Sentinel HL keys • Upgrade deployed Sentinel HL (SuperPro configuration) keys to Sentinel HL (Driverless configuration) keys
Keys for new customers	Sentinel HL (SuperPro configuration) keys	HASP SL AdminMode and Sentinel HL (SuperPro configuration) keys	Sentinel HL (Driverless configuration) keys
Protection process	<ul style="list-style-type: none"> • No change to code. Software remains protected with SuperPro. 	<ul style="list-style-type: none"> • Keep SuperPro implementation • Protect using Sentinel LDK Envelope 	<ul style="list-style-type: none"> • Remove SuperPro implementation • Implement Sentinel Licensing API in your code and protect using Sentinel LDK Envelope
Security level	SuperPro security	Improved	Very high
Flexibility level (licensing, portability)	Low	Low	Very high
Additional benefits	Sentinel HL keys received by new customers will not have to be replaced at later stages.	Sentinel HL keys received by new customers will not have to be replaced at later stages.	Driverless deployment

Stage 1: Using Sentinel HL keys as SuperPro keys

Sentinel HL (SuperPro configuration) keys are fully compatible with Sentinel SuperPro keys, so that your software can work with either key. At this initial stage, it is not necessary to make any changes to your software or drivers. This enables you to start to ship Sentinel HL (SuperPro configuration) keys to your customers and gradually replace your install base of Sentinel SuperPro keys with Sentinel HL (SuperPro configuration) keys at your convenience.

When you decide to move to Stage 3 of the migration process and protect your software with Sentinel LDK, all the deployed Sentinel HL (SuperPro configuration) keys can easily be upgraded to Sentinel HL (Driverless configuration) keys.

Proceed as follows:

1. Leave your install base with the Sentinel SuperPro keys that they are currently using.
2. Start distributing Sentinel HL (SuperPro configuration) keys with new purchases. At this stage you do not need to make any changes to your software, which remains protected by SuperPro security.

Stage 2: Initial Implementation of Sentinel LDK Functionality

Stage 2 enables you to easily implement basic functionality of the Sentinel LDK system, while retaining SuperPro keys and Sentinel HL (SuperPro configuration) keys as your installation base. By supplying your customers with a Sentinel SL key with their Sentinel HL (SuperPro configuration) key, they gain increased security and licensing capabilities.

Sentinel SL Locking Alternatives

In this stage, you enhance the security of your application by protecting it with Sentinel LDK Envelope and licensing the application with a software-based Sentinel SL key.

Two methods are available to license the application, and each method provides different benefits:

- Locked Product

With this method, you lock the protected application to a Sentinel SL key that requires activation on each end user's computer. The activation process can be performed manually (using software utilities), or automatically via the Sentinel Licensing API and Sentinel EMS Web Services.

The manual approach deploys quickly since no additional code must be written. However, it may be less convenient when dealing with larger installation bases. In such cases, it may be preferable to choose automatic activation, which will require integration of the APIs.

The end result is that the protected application is a *Locked Product*; that is, the application is locked to a specific Sentinel SL key that, in turn, is locked to a specific machine.

This method is especially appropriate if your ultimate goal is to migrate to Sentinel SL protection.

- Unlocked Product

With this method, you lock the protected application to an unlocked Sentinel SL key that does not require activation.

The end result is that the protected application is an *Unlocked Product*; that is, the application is protected against disassembly by Sentinel LDK Envelope. However, licensing continues to be provided only by SuperPro.

This method is much simpler to implement than the Locked Product method; this method is especially appropriate if your ultimate goal is to migrate to Sentinel HL protection.

You may have already implemented this method for your application. For more information, see "Shortcut to Enhanced Protection" on page 8.

During this stage of the migration procedure, you choose which of the Sentinel SL locking alternatives you want to implement.

Implementing Stage 2

The following procedure details the steps required to implement Stage 2 of the SuperPro-to-Sentinel HL migration process. Where relevant, you are pointed to additional information in the *Sentinel LDK Software Protection and Licensing Guide*.

To implement Sentinel LDK functionality:

1. If you have not already done so, install Sentinel Vendor Suite and Sentinel EMS, and introduce your Sentinel Vendor keys.

(For more information, see the *Sentinel LDK Installation Guide*.)

2. Using Sentinel EMS, create the following:
 - A Feature that represents the protected application
 - A Base Product containing the Feature you created, with licensing terms stating that the license is perpetual.
 - A Sentinel LDK Run-time Environment (RTE) Installer
3. Integrate the Sentinel LDK RTE Installer into your application.
(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with Your Software.”)
4. Protect your program using the Sentinel SuperPro API, but do not implement Sentinel SuperPro Shell protection.
5. Use Sentinel LDK Envelope to protect your program.
6. Distribute a Sentinel HL (SuperPro configuration) key with each copy of your software.
7. Use one of the methods that follow to implement SL Locking. (For more information, see “Sentinel SL Locking Alternatives” on page 11.)

Locked Product method:

- a. In Sentinel EMS, create and execute a Product Key-based entitlement for each customer. Sentinel EMS generates an email notification to each customer.
- b. The customer clicks the link provided in the email notification to access the Customer Portal and activate their license for the protected application.

Note: Steps **a** and **b** can be performed using the Sentinel Activation API.

Unlocked Product method:

- a. In the Sentinel EMS Catalog, create an Unlocked (Perpetual) Product for your protected application.
- b. In Sentinel EMS, create a bundle that contains the Unlocked Product, and then create an RTE Installer that contains the bundle.
- c. Include the RTE Installer in your application installation procedure. The Unlocked Product is installed together with the protected application.

Stage 3: Full Implementation of Advanced Sentinel LDK Functionality

Stage 3 enables you to fully implement the advanced functionalities of the Sentinel LDK system, thus gaining the benefit of its increased security and licensing capabilities. After you implement full Sentinel LDK protection, all customers using this version of your software must use Sentinel HL (Driverless configuration) keys.

Implementing Stage 3

The following procedure details the steps required to implement Stage 3 of the Sentinel SuperPro-to-Sentinel LDK migration process. Where relevant, you are pointed to additional information in the *Sentinel LDK Software Protection and Licensing Guide*.

To implement advanced Sentinel LDK functionality:

1. If you have not already implemented Stage 2, perform steps 1–3 of Stage 2 in order to complete the following:
 - a. Install Sentinel Vendor Suite and Sentinel EMS, and introduce your Sentinel Vendor keys. As part of the Sentinel Vendor key introduction process, Sentinel LDK generates customized Sentinel Licensing API libraries for your Vendor Code.

(For more information, see the *Sentinel LDK Installation Guide*.)
 - b. Link the Sentinel Licensing API library to the application that is to be protected.
2. For customers who will receive a Sentinel HL network key: Prepare a Sentinel LDK RTE Installer. Your customers must install the Run-time Environment on the computer where they connect the Sentinel HL network key.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with your Software”.)
3. Replace all calls to Sentinel SuperPro in the code with calls to Sentinel HL keys.
For a list of Sentinel SuperPro functions and their Sentinel LDK equivalents, see Table 3: *Comparison of SuperPro API Functions and Sentinel Licensing API Functions* on page 23.

(For information on Licensing API functions, see the online help for Sentinel Licensing API.)
4. Protect your software using Sentinel LDK Envelope.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Sentinel LDK Envelope Protection.”)
5. Generate a Sentinel LDK SuperPro-to-Driverless Upgrade Tool. This tool will upgrade Sentinel HL (SuperPro configuration) keys at the customer site to Sentinel HL (Driverless configuration) keys. For more information, see the readme file in your Sentinel LDK installation, in the directory:

**%ProgramFiles(x86)%\Gemalto Sentinel\Sentinel LDK\Vendor Tools\Utilities
\Sentinel HL SuperPro to Driverless Upgrade Tool**

(For Windows x86 machines: **%ProgramFiles%\...**)
6. Follow the instructions in the *Sentinel LDK Software Protection and Licensing Guide* to distribute your software.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with Your Software.”)
7. Ensure that all customers who receive the Sentinel LDK-protected software also receive Sentinel HL (Driverless configuration) keys.

2

Migration Path 2—Sentinel LDK and SuperPro Combined API Implementation

This two-stage migration path enables you to phase out your installation base of SuperPro keys over time, without necessitating immediate recall and replacement of the SuperPro keys and without having to continue their distribution. To achieve this status, you create a version of your software that is able to identify both SuperPro and Sentinel HL keys. This could be a new version of your software or the current version, with the ability to work with a Sentinel HL key. You can then start distributing Sentinel HL keys to all new customers, while existing users continue to use the SuperPro keys or Sentinel HL (SuperPro configuration) keys.

The time that you wait before moving from one stage to the next is entirely at your discretion. You can even skip Stage 1 and proceed directly to Stage 2.

The following table summarizes the two stages for Migration Path 2.

	Stage 1	Stage 2
Implementation effort	Medium	Medium
Install base	Remains Sentinel SuperPro	Replace with Sentinel HL key
Keys for new customers	Sentinel HL (Driverless configuration) key	Sentinel HL (Driverless configuration) key
Protection process	<ul style="list-style-type: none"> • Leave SuperPro API implementation • Implement Sentinel LDK Licensing API in your code • Switch between the above implementations depending on the connected key 	<ul style="list-style-type: none"> • Remove SuperPro implementation • Implement Sentinel LDK Licensing API in your code and protect using Sentinel LDK Envelope
Security level	Same as SuperPro API only (due to API-only implementation)	Very high
Flexibility level (licensing, portability)	Medium	Very high
Additional benefits	Driverless deployment	Driverless deployment

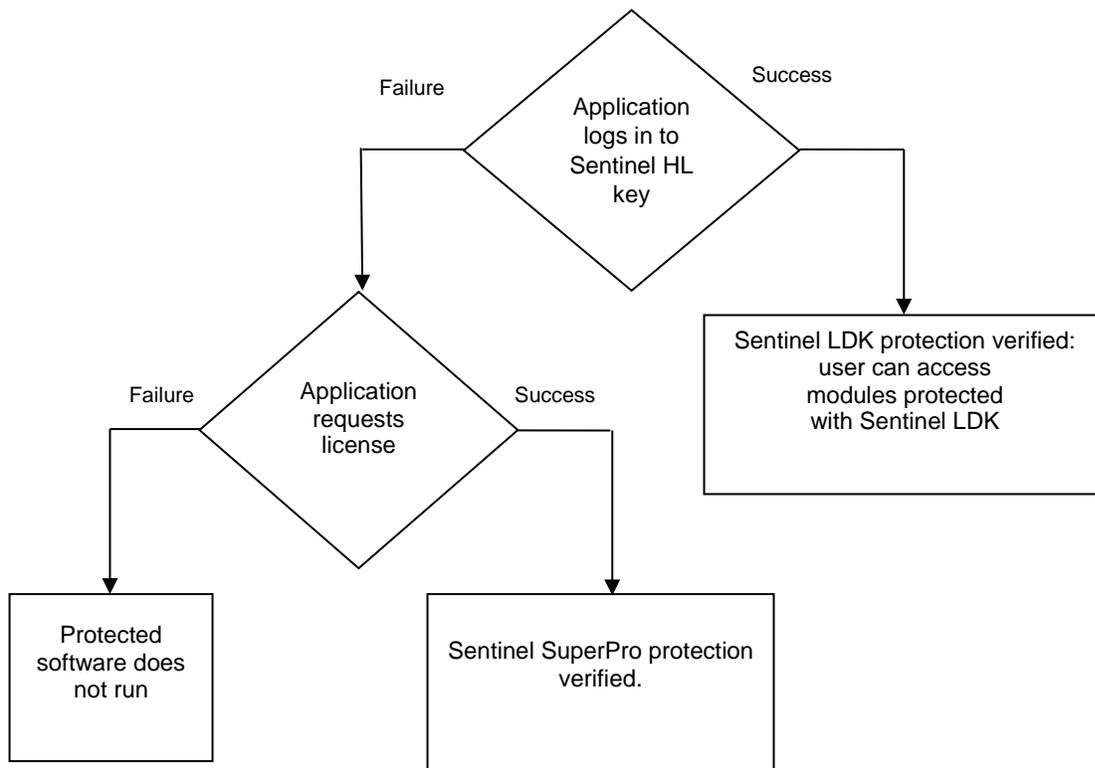
Stage 1: Combining Sentinel SuperPro with Sentinel LDK Protection

When your software runs, it attempts to log in to a Sentinel HL key. If a Sentinel HL key is detected, Sentinel LDK protection is used. If a Sentinel HL key is not detected, the software requests a license from a SuperPro key. If a SuperPro key is detected and the license granted, Sentinel SuperPro protection is used.

To maximize security and implement the higher level of protection provided by Sentinel LDK Envelope, concurrently with the Sentinel SuperPro protection of your software, you can protect Sentinel SuperPro-protected files or modules using the Sentinel Licensing API. Consider also using Sentinel LDK Envelope to protect any individual files that are not protected by Sentinel SuperPro. Applications that are protected solely by Sentinel LDK can only be executed using a Sentinel HL key.

Sentinel LDK-protected applications have greater security than those protected by Sentinel SuperPro alone. If a SuperPro key is used, modules protected with Sentinel SuperPro will continue to function, but modules protected with Sentinel LDK will not run.

The following flowchart shows the sequential flow when the protected software executes in Stage 1:



Implementing Stage 1

The following procedure details the steps required to implement Stage 1 of the SuperPro-to-Sentinel LDK migration process. Where relevant, you are pointed to additional information in the *Sentinel LDK Software Protection and Licensing Guide*.

To implement both Sentinel LDK and SuperPro functionality:

1. If you have not already done so, install Sentinel Vendor Suite and Sentinel EMS, and introduce your Sentinel Vendor keys. As part of the Vendor key introduction process, Sentinel LDK generates customized Sentinel Licensing API libraries for your Vendor Code.

(For more information, see the *Sentinel LDK Installation Guide*.)

2. For customers who will receive a Sentinel HL network key: Prepare a Sentinel LDK RTE Installer. Your customers must install the Run-time Environment on the computer where they connect the Sentinel HL network key.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with your Software”.)

3. Include your Sentinel Licensing API header files in your project. Do **not** remove included Sentinel SuperPro headers.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Sentinel Licensing API Protection.”)

4. To enable your software to work with SuperPro or Sentinel LDK protection, implement the decision tree on page 15 of this document, as follows:

- a. Use the Sentinel Licensing API to log in to a Sentinel Protection key. If the login is successful, Sentinel LDK protection is invoked.

(For information on Licensing API functions, see the online help for Sentinel Licensing API.)

- b. If the login to Sentinel LDK fails, request license using the Sentinel SuperPro API. If the license is granted, Sentinel SuperPro protection is invoked.

- c. If the Sentinel SuperPro license request fails, the behavior of the application when no key is detected is invoked.



You can optionally enhance the security of selected items in your application by protecting them using Sentinel LDK Envelope. For maximum security, any file you choose to protect using the Sentinel Licensing API, including a DLL, should also be protected using Sentinel LDK Envelope. You can also protect code snippets and other data using the API. These protected items will only be accessible when a Sentinel HL key is connected.



For binaries that implement licensing APIs for SuperPro and Sentinel HL keys, do not use Envelope protection, as this type of protection loads first, and only works with Sentinel HL keys.

5. Supply all new customers with Sentinel HL keys. Only these customers can access modules protected with Sentinel LDK.
6. Gradually replace your install base of SuperPro keys with Sentinel HL (Driverless configuration) keys, at your convenience.

Stage 2: Full Implementation of Advanced Sentinel LDK Functionality

Stage 2 enables you to fully implement the advanced functionalities of the Sentinel LDK system, thus gaining the benefit of its increased security and licensing capabilities. After you implement full Sentinel LDK protection, all customers using this version of your software must use Sentinel HL keys.

Implementing Stage 2

The following procedure details the steps required to implement Stage 2 of the SuperPro-to-Sentinel LDK migration process. Where relevant, you are pointed to additional information in the *Sentinel LDK Software Protection and Licensing Guide*.

To implement advanced Sentinel LDK functionality:

1. If you have not already implemented Stage 1, perform steps 1-3 of Stage 1 in order to complete the following:
 - a. Install Sentinel Vendor Suite and Sentinel EMS, and introduce your Sentinel Vendor keys. As part of the Sentinel Vendor key introduction process, Sentinel LDK generates customized Sentinel Licensing API libraries for your Vendor Code.

(For more information, see the *Sentinel LDK Installation Guide*.)
 - b. Link the Sentinel Licensing API library to the application to be protected.
2. For customers who will receive a Sentinel HL network key: Prepare a Sentinel LDK RTE Installer. Your customers must install the Run-time Environment on the computer where they connect the Sentinel HL network key.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with your Software”.)
3. Replace all calls to Sentinel SuperPro in the code with calls to Sentinel HL keys.
For a list of Sentinel SuperPro functions and their Sentinel LDK equivalents, see Table 3: *Comparison of SuperPro API Functions and Sentinel Licensing API Functions* on page 23.

(For information on Licensing API functions, see the online help for Sentinel Licensing API.)
4. Protect your software using Sentinel LDK Envelope.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Sentinel LDK Envelope Protection.”)
5. Follow the instructions in the *Sentinel LDK Software Protection and Licensing Guide* to distribute your software.

(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with Your Software.”)
6. Ensure that all customers who receive the Sentinel LDK-protected software also receive Sentinel HL (Driverless configuration) keys.

3

Migration Path 3—Gradual Migration from SuperPro to Sentinel LDK Using a Launcher Application

This migration path enables you to phase out your installation base of Sentinel SuperPro hardware keys—without necessitating the recall and replacement of the keys, and without having to continue their distribution.

The migration is achieved by creating two versions of your software—one protected using SuperPro, and the other protected using Sentinel LDK Envelope. The two versions of the software are bundled with a launcher application. If the launcher detects that a Sentinel protection key is accessed, the Sentinel LDK Envelope-protected version of your software is launched. If a Sentinel protection key is not detected, the SuperPro-protected version of your software is launched.

This migration path enables you to support existing users who already have SuperPro, and to provide new users with the added protection available with Sentinel Protection keys.

When you are ready to fully switch to Sentinel LDK protection and licensing functionality, many of your users will already be using Sentinel Protection keys.

The following table summarizes the two stages for Migration Path 3.

	Stage 1	Stage 2
Implementation effort	Low	Medium
Install base	Remains Sentinel SuperPro	Replace with Sentinel HL key
Keys for new customers	Sentinel HL (Driverless configuration) key	Sentinel HL (Driverless configuration) key
Protection process	<ul style="list-style-type: none"> • Create two binaries – one protected using SuperPro, the other using Sentinel LDK Envelope • Create a launcher application using the Sentinel Licensing API to search for a Sentinel protection key • Switch between above binaries , depending on connected key 	<ul style="list-style-type: none"> • Remove Sentinel SSP implementation • Implement the Sentinel Licensing API in your code and protect using Sentinel LDK Envelope
Security level	Same as SuperPro only	Very high
Flexibility level (licensing, portability)	Medium	Very high
Additional benefits	Driverless deployment	Driverless deployment

Stage 1: Initial Implementation of Sentinel LDK Functionality

During Stage 1 of the migration process, you create two versions of your software—one protected using SuperPro, and the other protected using Sentinel LDK Envelope. The two versions of the software are bundled with a launcher application. The launcher application detects which version of your software to use.

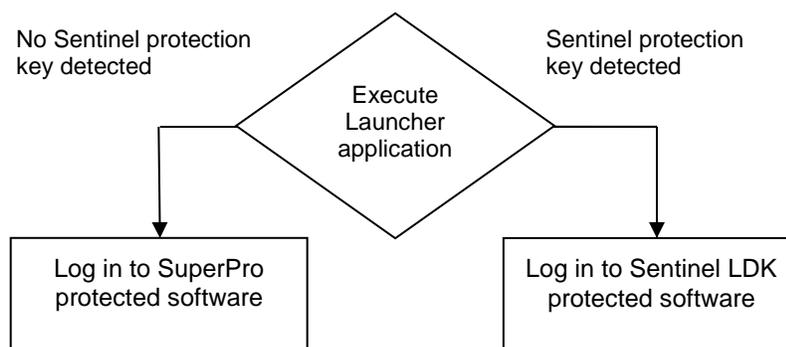
Implementing Stage 1

The following procedure details the steps required to implement the SuperPro-to-Sentinel LDK migration process. Where relevant, you are pointed to additional information in the Sentinel LDK documentation.

To implement Sentinel LDK functionality:

1. If you have not already done so, install Sentinel Vendor Suite and Sentinel EMS, and introduce your Sentinel Vendor keys.
(For more information, see the *Sentinel LDK Installation Guide*.)
2. Create a version of your software (for example, `program_superpro.exe`) and implement SuperPro protection using the Sentinel SuperPro Shell, Sentinel SuperPro API, or both.
3. Create a version of your software (for example, `program_haspl.exe`) and implement Sentinel LDK protection, using Sentinel LDK Envelope, the Sentinel Licensing API, or both.
4. Create a launcher application using the Sentinel Licensing API that will detect whether a Sentinel Protection key is accessible. Program the following behavior:
 - a. If a Sentinel Protection key is detected, the launcher launches `program_haspl.exe`.
 - b. If a Sentinel Protection key is not detected, the launcher launches `program_superpro.exe`.
5. Package both versions of the software with the launcher application.
6. Follow the instructions in the *Sentinel LDK Software Protection and Licensing Guide* to distribute your software.
(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with Your Software.”)
7. Ensure that all customers who receive the Sentinel LDK-protected software also receive Sentinel HL (Driverless configuration) keys.

The following flowchart shows the flow when the application launcher executes:



Stage 2: Full Implementation of Sentinel LDK Functionality

Stage 2 enables you to fully implement the functionalities of the Sentinel LDK system, thus gaining the benefit of its increased security and licensing capabilities. After you implement full Sentinel LDK protection, all customers using this version of your software must use Sentinel Protection keys.

Implementing Stage 2

The following procedure details the steps required to implement Stage 2 of the SuperPro-to-Sentinel LDK migration process. Where relevant, you are pointed to additional information in the Sentinel LDK documentation.

To implement full Sentinel LDK functionality:

1. Replace all calls to Sentinel SuperPro in the code with calls to Sentinel HL keys.
For a list of Sentinel SuperPro functions and their Sentinel LDK equivalents, see Table 3: *Comparison of SuperPro API Functions and Sentinel Licensing API Functions* on page 23.
(For information on Licensing API functions, see the online help for Sentinel Licensing API.)
2. Protect your software using Sentinel LDK Envelope.
(See Sentinel LDK Software Protection and Licensing Guide, chapter “Sentinel LDK Envelope Protection.”)
3. Follow the instructions in the *Sentinel LDK Software Protection and Licensing Guide* to distribute your software.
(See *Sentinel LDK Software Protection and Licensing Guide*, chapter “Distributing Sentinel LDK with Your Software.”)
4. Ensure that all customers who receive the Sentinel LDK-protected software also receive Sentinel HL (Driverless configuration) keys.

APPENDIX A

Sentinel LDK and SuperPro Comparison Tables

Table 1: Comparison of Sentinel HL Keys and Sentinel SuperPro Keys

Model Type	Sentinel HL	Sentinel SuperPro
Basic <ul style="list-style-type: none"> ◆ No read/write memory functionality ◆ Perpetual license ◆ Locally connected key 	Sentinel HL (Driverless Configuration) Basic	None
Memory <ul style="list-style-type: none"> ◆ Read/write and read-only memory ◆ Locally connected key 	Sentinel HL (Driverless Configuration) Pro <ul style="list-style-type: none"> ◆ 112 bytes R/W + 112 bytes ROM Sentinel HL (Driverless Configuration) Max <ul style="list-style-type: none"> ◆ 4 KB R/W + 2 KB ROM 	SuperPro <ul style="list-style-type: none"> ◆ 112 bytes SuperPro XM <ul style="list-style-type: none"> ◆ 464 bytes
Time <ul style="list-style-type: none"> ◆ Real-time clock ◆ Read/write and read-only memory ◆ Locally connected key 	Sentinel HL (Driverless Configuration) Time <ul style="list-style-type: none"> ◆ RTC ◆ 4 KB R/W + 2 KB ROM 	None
Net <ul style="list-style-type: none"> ◆ Read/write and read-only memory ◆ Network-based licensing 	Sentinel HL (Driverless configuration) Net <ul style="list-style-type: none"> ◆ 4 KB R/W + 2 KB ROM ◆ Max no. of concurrent users: 10, 50, 250+ Sentinel HL (Driverless configuration) key with concurrency license – any key other than Basic.	SuperProNet <ul style="list-style-type: none"> ◆ 112 bytes SuperProNet XM <ul style="list-style-type: none"> ◆ 464 bytes Max no. of concurrent users: 1, 2, 3, 5, 10, 25, 50+
Net and Time <ul style="list-style-type: none"> ◆ Real-time clock ◆ Read/write and read-only memory ◆ Network-based licensing 	Sentinel HL (Driverless configuration) NetTime <ul style="list-style-type: none"> ◆ RTC ◆ 4 KB R/W + 2 KB ROM ◆ Max no. of concurrent users: 10, 50, 250 Sentinel HL (Driverless configuration) Time with concurrency license <ul style="list-style-type: none"> ◆ RTC ◆ 4 KB R/W + 2 KB ROM 	None

Model Type	Sentinel HL	Sentinel SuperPro
Drive <ul style="list-style-type: none"> ◆ Read/write and read-only memory ◆ Extended mass storage 	Sentinel HL (Driverless Configuration) Drive <ul style="list-style-type: none"> ◆ 4 KB R/W + 2 KB ROM ◆ 2 GB or 4 GB USB Mass Storage drive 	None

For more specification data regarding Sentinel HL keys, see the *Sentinel HL Data Sheet*.

Table 2: Sentinel SuperPro and Sentinel LDK Tool Equivalentents

Sentinel SuperPro Tools	Sentinel LDK Tools
Encoding Sentinel keys (binding of keys to a specific ISV)	Keys are pre-encoded at Gemalto production site. Use your unique Vendor Code (stored in the Sentinel Vendor keys)
Sentinel SuperPro Developer's Toolkit	Sentinel Vendor Suite
Shell	Sentinel LDK Envelope (part of Sentinel Vendor Suite)
License Manager	Sentinel EMS
API Explorer	Sentinel LDK ToolBox (part of Sentinel Vendor Suite)
Sentinel Protection installer	Sentinel LDK Run-time Environment installer
Sentinel System Driver (legacy)	Sentinel LDK Run-time Environment installer
Sentinel Protection Server	Sentinel LDK Run-time Environment installer
Sentinel License Monitor	Sentinel Admin Control Center (part of the Sentinel LDK Run-time Environment)
Sentinel SuperPro Medic	Sentinel Admin Control Center (part of the Sentinel LDK Run-time Environment)
Field Exchange utility	Sentinel Remote Update System (RUS)
Serial number	HASP ID

Table 3: Comparison of SuperPro API Functions and Sentinel Licensing API Functions

Sentinel SuperPro API Function*	Sentinel Licensing API Function
RNBOsproActivate()	AES algorithm is always active. To use a different encryption key, log in using <code>hasp_login()</code> to a different Feature ID.
RNBOsproCleanUp()	Not required in Sentinel LDK—performed automatically by <code>hasp_logout()</code> Note: <code>hasp_free()</code> is required in C code after calling <code>hasp_get_sessioninfo()</code> and <code>hasp_update()</code> functions.
RNBOsproDecrement()	Not required in Sentinel LDK—performed automatically by <code>hasp_login()</code> when logging in to Features with execution counters
RNBOsproEnumServer()	Not required in Sentinel LDK—performed automatically by <code>hasp_login()</code> Logging in to a specific server is possible using <code>hasp_login_scope()</code> .
RNBOsproExtendedRead()	<code>hasp_get_info()</code>
RNBOsproFindFirstUnit()	<code>hasp_login()</code> to Feature ID 0
RNBOsproFindNextUnit()	Not required in Sentinel LDK—performed automatically by <code>hasp_login()</code> Logging in to a specific connected key is possible using <code>hasp_login_scope()</code> .
RNBOsproFormatPacket()	Not required in Sentinel LDK—performed automatically by <code>hasp_login()</code>
RNBOsproGetContactServer()	<code>hasp_get_sessioninfo()</code>
RNBOsproGetFullStatus()	<code>hasp_get_sessioninfo()</code>
RNBOsproGetHardLimit()	<code>hasp_get_sessioninfo()</code>
RNBOsproGetKeyInfo()	<code>hasp_get_info()</code> or <code>hasp_get_sessioninfo()</code>
RNBOsproGetKeyType()	<code>hasp_get_info()</code> or <code>hasp_get_sessioninfo()</code>
RNBOsproGetSubLicense	<code>hasp_login()</code> or <code>hasp_login_scope()</code>
RNBOsproGetVersion()	<code>hasp_get_info()</code> or <code>hasp_get_sessioninfo()</code>
RNBOsproInitialize()	Not required in Sentinel LDK—performed automatically by <code>hasp_login()</code>
RNBOsproOverwrite()	Not required in Sentinel LDK
RNBOsproQuery()	<code>hasp_encrypt()</code> <code>hasp_decrypt()</code>
RNBOsproRead()	<code>hasp_read()</code>
RNBOsproReleaseLicense()	<code>hasp_logout()</code>
RNBOsproSetConfigFile()	Run-time Environment configuration can be performed using the Admin Control Center user interface. The location of the configuration file is not modifiable. The file path is typically \\Program Files\\Common Files\\Aladdin Shared\\HASP\\hasplm.ini .

Sentinel SuperPro API Function*	Sentinel Licensing API Function
RNBOsproSetContactServer()	Not required in Sentinel LDK—performed automatically by <code>hasp_login()</code>
RNBOsproSetHeartBeat()	Not required in Sentinel LDK
RNBOsproSetProtocol()	Not required in Sentinel LDK
RNBOsproSetSharedLicense()	Not required in Sentinel LDK
RNBOsproWrite()	<code>hasp_write()</code>

* Sentinel SuperPro functions that are not listed are obsolete.