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Aladdin®

SECURING THE GLOBAL VILLAGE



HASP SRM® - v.4.0
*Software Protection
and Licensing Guide*

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Familiarizing Yourself with HASP SRM Vendor Suite

This front matter consolidates various snippets of information related to HASP SRM Vendor Suite. It is recommended that you review this information to familiarize yourself with:

- The contents of your HASP SRM Starter or Developer kit
- The information provided in this Guide
- How to obtain additional technical support for these products

Contents of your HASP SRM Kit

Two HASP SRM kits are available as part of the HASP SRM Vendor Suite—the HASP SRM Developer Kit enables you to evaluate HASP SRM protection and licensing; the HASP SRM Starter Kit enables you to apply HASP SRM protection and licensing to your software.

HASP SRM Developer Kit

The HASP SRM Developer Kit contains the software and hardware you need to evaluate HASP SRM protection and licensing. The following items are included:

- HASP SRM Vendor Suite software on a single DVD
- HASP HL Demo keys to facilitate the evaluation process
- HASP SRM Software Protection and Licensing Quick Start card

- HASP SRM Software Protection and Licensing Guide (this book)
- HASP SRM Software Protection and Licensing Tutorial
- HASP SRM Business Studio Server Installation Guide

HASP SRM Starter Kit

The HASP SRM Starter Kit contains the software and hardware you need to apply HASP SRM protection and licensing. The following items are included:

- HASP SRM Vendor Suite software on a single DVD
- HASP SRM Vendor keys:
 - ◆ HASP SRM Developer key for applying protection
 - ◆ HASP SRM Master key for defining and applying license terms
- HASP SRM Software Protection and Licensing Quick Start card
- HASP SRM Software Protection and Licensing Guide (this book)
- HASP SRM Software Protection and Licensing Tutorial
- HASP SRM Business Studio Server Installation Guide
- HASP HL keys for distribution to your customers, according to your order

About this Guide

This guide is designed to help software publishers protect and license their software using HASP SRM. The guide provides background information and details about how HASP SRM can best serve your protection and licensing requirements.

The guide is divided into five parts.

- **Part 1—Getting Started**

Introduces HASP SRM, presents basic protection and licensing concepts, and leads you through the process of configuring the system. You should read this part after opening your HASP SRM Developer's or Starter's kit.

■ Part 2—Protection

Provides an in-depth presentation of HASP SRM protection methods. This part includes strategies for maximizing the protection of your software using HASP SRM. This part is specifically for software engineers who have the responsibility for using the HASP SRM protection applications to protect software.

■ Part 3—Licensing

Discusses the options that HASP SRM provides to enable you to apply flexible licensing terms to your software and provides case studies for you to examine. This part is particularly relevant to product and business managers who have to make decisions about how their software is licensed. This part should also be read by operations staff and others involved in production.

■ Part 4—Distributing HASP SRM Software

Details the HASP SRM software that can be delivered to end users to ensure optimal performance of protected software. This part also describes the various ways of effectively delivering the HASP SRM software components.

■ Part 5—Appendices

Provides the following supplementary information:

- ◆ A troubleshooting section that identifies various issues that you may encounter and provides solutions
- ◆ A comprehensive glossary with concise explanations of HASP SRM terms
- ◆ The HASP SRM Run-time API reference, which provides a list of functions and their parameters, and their return values

Obtaining Support

Aladdin Knowledge Systems has both international offices and many local distributors providing support for HASP SRM—virtually whenever and wherever required. To find the name of your nearest office or distributor, go to the following URL: and enter your locality in the appropriate field.

Training

For additional information and training about HASP SRM implementation issues, contact our team of international consultants at the URL provided above. The consultants can provide you with tailored training sessions on the following:

- Integration of HASP SRM into your product
- Analysis of the best protection strategy for your applications
- Assistance in implementation of your protection and licensing models

Technical Support

You can download updates, executables, and documentation using the following URL:

You can also contact our Technical Support team by clicking the link on the same Web page.

Part 1 Getting Started

In this section:

- [Chapter 1: Understanding HASP SRM Software Protection and Licensing](#)
Provides an overview of the concepts of software and intellectual property protection and licensing, discusses the primary protection solutions, and focuses on how HASP SRM provides a comprehensive solution to all your protection requirements.



Chapter 1

Understanding HASP SRM Software Protection and Licensing

This chapter provides an overview of the concepts of software and intellectual property protection and licensing, discusses the primary protection solutions, and focuses on how HASP SRM provides a comprehensive solution to all your protection needs.

We recommend that you familiarize yourself with the information in this chapter so that you can maximize the benefits of using HASP SRM.

In this chapter:

- Fundamentals of Protection
- Major Protection Solutions
- Fundamentals of Licensing
- Flexible and Secure Licensing Solutions
- Principles of HASP SRM
- Customizing Your Unique Solution

Fundamentals of Protection

This section examines the nature of protection, and identifies the two types of protection that you need to consider.

What is Protection?

Protection is the process of securing an application or intellectual property by incorporating automated and customized security strategies.

Protection is achieved by implementing specific security strategies, such as wrapping your application in a security envelope, and incorporating various security measures within the application's code during development. The greater the number of security measures incorporated, and the higher the level of their complexity, the more secure your application becomes.

It is not sufficient to protect only your software—you must also protect your intellectual property. Your professional expertise and the secrets that you use in developing your software, for example algorithms, must also be protected.

Copy Protection

Copy protection is the process of encrypting your software and incorporating various security measures throughout the code and binding it to a key so that it can only be accessed by authorized users who are in possession of the key. The more complex the copy protection applied to your software, the less likely it is to be compromised.

Intellectual Property Protection

Your intellectual property is the foundation on which your products are developed. Intellectual property theft is surprisingly easy. Every year, companies report the loss of proprietary information and intellectual property valued at many billions of dollars.

The algorithms and other secret information that you use to make your products unique and competitive must be protected against attempts to discover their secrets, or to apply reverse engineering to the software code.

Major Protection Solutions

With HASP SRM, the ability to protect and license your software is facilitated by the use of flexible protection and licensing tools, together with a HASP SRM protection key to which your software is subsequently bonded. These keys may be either hardware-based or software-based.

Hardware-based Solutions

In hardware-based solutions, you supply an external hardware device together with your software. The functioning of your software is dependent on the device being connected to the end user's computer. At run-time, your software communicates with the hardware device, and only functions correctly if it receives an authentic response from the device.

HASP SRM provides a variety of hardware devices in the form of HASP HL keys. You can select the type of HASP HL key that best suits your requirements. For more information about HASP HL keys, see *HASP HL Keys* on page 38.

Software-based Solutions

In software-based solutions, following the installation of your software on an end user's computer, the protection and licensing is bonded to that specific machine. Your software will only function after a Product Key has been entered by the user. At run-time, the HASP License Manager checks that the software is on the machine on which it is licensed to run and that it is being used in accordance with the user's license terms.

HASP SRM provides a robust software-based solution using HASP SL keys. A HASP SL key resides in the secure storage of a specific computer and is patterned on the functionality of a HASP HL key.

For more information about HASP SL keys, see *HASP SL Keys* on page 39.

Comparative Benefits of Hardware-based and Software-based Solutions

Strong protection and licensing security can be provided with either hardware- or software-based solutions. While many protection and licensing features are common to both options, each also offers specific strengths that might be comparatively limited in the other.

The following table highlights and compares some of the available benefits of hardware- and software-based solutions, and the relative strengths of each option.

Feature	Hardware-based	Software-based
Software and Intellectual Property protection	*****	***
Secure Licensing	*****	**
Trialware	**	****
Portability	****	*
Electronic Software Distribution	**	****
Multiple Feature/Module Licensing	***	****

Advantages of a Combined Solution

As shown in the *Comparative Benefits of Hardware-based and Software-based Solutions* section above, both solutions have their relative strengths in protecting and licensing your software.

It is probable that you utilize various strategies for marketing, selling, and distributing your software. For example, these strategies may include:

- Determining the level of protection according to the price of the software
- Determining the level of protection according to market segments, including vertical markets

It is likely that your strategies will also require the following:

- The ability to turn trialware into a fully functional version using hardware- or software-based activation
- The ability to sell software over the Internet, protected with a hardware- or software-based key

HASP SRM Combined Solution

HASP SRM provides the industry's first software DRM solution that combines hardware-based and software-based protection and licensing.

This innovative, self-contained, flexible system enables you to:

- Implement multiple protection solutions
- Define multiple license models according to the requirements of your market, and apply their usage terms independently of the protection process
- Select hardware-based (HASP HL) or software-based (HASP SL) protection keys independently of the protection process

Fundamentals of Licensing

In addition to protecting your software and intellectual property, you need to protect the revenue from sales of your product. You want to ensure that your software is only available to the appropriate users, according to the terms that you define. This process is controlled by *licensing*.

Licensing provides you with the flexibility to implement your business strategies for your software distribution. When you define the licensing terms on which your software is distributed or sold, you select the terms that are commercially beneficial to your company.

For example, you may decide that you initially want to distribute your software free of charge, so that users can try it before purchasing. You will want to ensure that users can use it for only a limited time before it must be purchased.

Alternatively, you may publish very complex, expensive software. You may decide to make specific components of that software available for a lower price, thus making parts of it accessible to users who cannot afford the fully-featured version. Such a decision creates an additional revenue source.

To obtain the maximum benefit from your company's licensing strategy, you need a software licensing system that provides you with the flexibility to tailor licensing terms to fit your business strategies, and to adapt quickly to changes in the market and in your business needs. Your licensing system must also be able to enforce your defined usage terms with secure licensing methods.

Flexible and Secure Licensing Solutions

HASP SRM gives you the flexibility to choose and apply licensing models and license terms for your protected software on-the-fly. This enables your company to offer attractive software packages and to adapt rapidly to changes in customer purchasing preferences.

Licensing Planning and Models

An important step in the development of a licensing strategy is the preparation of a licensing plan. Business decision-makers in an organization, such as product or marketing managers, define protection and business rules, and specify the licensing models required to meet the company's software distribution needs.

A licensing model is the logic behind a business transaction relating to licensing. For example, a rental license model enables you to charge for the use of software for a specific period of time.

HASP SRM enables you to choose from a variety of built-in licensing models, and to customize and build licensing models and software usage terms to meet your company's individual requirements.

HASP SRM supports numerous out-of-the-box license models, that can be used individually or in combination, including:

- Trialware (try-before-you-buy)
- Rental/Subscription
- Module-/Feature-based
- Floating Usage
- Time-based
- Execution-based

You can easily define custom licensing models and usage terms using the functionality provided by HASP SRM. For example, this functionality enables you to utilize secure read-only and read/write memory storage, flexible counters, and a real-time clock incorporated in the HASP SRM protection key.

The separation of the engineering and licensing processes embodied in HASP SRM makes it possible to modify the company's licensing strategy as necessary when circumstances change, and to implement these changes quickly and efficiently.

Updating and Enforcing Usage Terms

When implementing a licensing plan, it is essential to ensure that the software usage terms defined in the plan are securely applied and that licenses reach their legitimate owners. New licenses, and changes and extensions to licenses that have already been deployed, can be subject to tampering if not adequately protected.

HASP SRM applies optimal security to the enforcement of usage terms and license extensions. License extensions sent to end users are highly protected, and require the return of a secure receipt. In addition, state-of-the-art HASP technology prevents tampering with usage terms.

Principles of HASP SRM

The strength, uniqueness, and flexibility of HASP SRM are based on two primary principles:

- *Protect Once—Deliver Many*, which is the concept of separating the HASP SRM engineering and business processes.
- *Cross-Locking*, which is the technology that supports the *Protect Once—Deliver Many* concept, enabling a protected application to work with a HASP HL or a HASP SL key.

Protect Once—Deliver Many

At the heart of HASP SRM lies the *Protect Once—Deliver Many* concept. *Protect Once—Deliver Many* is the process of protecting your software completely independently of the process of defining sales and licensing models.

Separation of Protection and Business Functions

The engineering process—that is, the protection of your software—is performed by your software engineers using HASP SRM Envelope, HASP SRM ToolBox and the HASP SRM Run-time API protection tools.

The business processes—that is, software licensing and selection of the appropriate HASP SRM protection key—are performed by business management using HASP SRM Business Studio.

The protection processes and the licensing processes—including selection of the appropriate HASP SRM protection key type—are performed completely independently of each other.

Cross-locking

Cross-locking is the HASP SRM process that enables you to choose the device to which your protected application and license will be locked—either to a HASP HL key or, via a HASP SL key, to a specific computer.

The decision about the type of HASP SRM protection key to which your software is locked is determined after protection has been implemented—you choose the options that best suit your current business strategies.

Mixing and Matching Licenses and HASP SRM Protection Keys

HASP SRM gives you complete flexibility to choose the combination of license and HASP SRM protection key that best suits your business requirements. This means that you decide how to bundle your protection, licensing and distribution requirements.

You may choose to release protected software as a downloadable product with a Trialware license that, after purchase, is activated with a HASP SL key. Additionally, you may choose to ship the same protected software with a network license that is locked to a HASP HL key, and allow users unlimited access to all features.

HASP SRM offers you an unprecedented number of possible options to combine licenses and HASP SRM protection keys.

Customizing Your Unique Solution

HASP SRM provides you with a variety of applications and personalized devices that enable you to customize a protection and licensing solution that is appropriate to your business needs:

- *HASP SRM Envelope* enables you to wrap your software in a protective shield at the touch of a button—without having to adjust your source code. It establishes a link between your protected software and a HASP SRM protection key, even though the selection of key is determined at a later time.
- *HASP SRM ToolBox* and the *HASP SRM Run-time API* enable you to enhance the protection offered by HASP SRM Envelope, by incorporating complex protection mechanisms into your source code.
- *HASP SRM Business Studio* enables you to create licenses and lock them to HASP SRM protection keys, to write specific data to the memory of a HASP SRM protection key, and to update licenses already deployed in the field. These processes are performed independently of the protection process.
- Customized HASP SRM Vendor keys are used in-house by your staff, together with HASP SRM state-of-the-art security applications.

- A selection of *HASP SRM protection keys* enable you to meet the specific requirements of your business. Your unique HASP SRM protection keys ensure that your applications will only function when the correct key, supplied by you, is present.
- Additional applications and utilities provide advanced support for these key elements of HASP SRM Vendor Suite.

Personalized Vendor and Batch Codes

When you purchase a HASP SRM Starter kit from Aladdin Knowledge Systems, you are provided with HASP SRM Vendor keys that contain unique Vendor Codes that are specific to your company. The codes are used by HASP SRM to communicate with your HASP SRM protection keys, and to differentiate your keys from those of other software vendors.

Vendor Code

The Vendor Code is a unique confidential code assigned to you by Aladdin Knowledge Systems when you place your first order for HASP SRM protection keys. It is integrated into your HASP SRM Vendor keys. When you are protecting your software and licenses to HASP SRM protection keys for distribution, the Vendor Code is extracted from your HASP SRM Vendor keys.

Batch Code

A Batch Code consists of five characters that represent your company's unique Vendor Code. When you order HASP SRM protection keys from Aladdin, you specify your Batch Code, which is then written to the keys before dispatch. In order to easily identify the batch to which a HASP HL key belongs, the Batch Code is written on the outside of each key.

Selecting the Best Key for Your Requirements

HASP SRM protection and licensing are key-based. Your software is distributed with unique actual and/or virtual HASP SRM protection keys that you code according to your requirements.

There is a strong inherent link between a protected application and its corresponding HASP SRM protection key. Protection is based on making access to the protected application dependent on the presence of a correct HASP SRM protection key.

Similarly, when licensing is implemented using HASP SRM, the operation of your software is dependent on the presence of a valid license in a HASP SRM protection key.

A variety of HASP SRM protection keys are available to provide you with the flexibility to sell your software in the ways that are most beneficial to your business goals.

HASP SRM Vendor Keys

When you purchase HASP SRM, you are provided with two HASP SRM Vendor keys—the HASP SRM Master key and the HASP SRM Developer key. These keys enable you to apply protection to your programs, program the HASP SRM protection keys that you send to your end users, and to specify the license terms under which your software can be used.

HASP SRM Developer Key

The HASP SRM Developer key is used by your programmers in conjunction with the HASP SRM protection tools to protect your software and data files.

HASP SRM Master Key

The HASP SRM Master key is used by your production staff to create licenses and lock them to HASP SRM protection keys, to write specific data to the memory of a HASP SRM protection key, and to update licenses already deployed in the field. The HASP SRM Master key is used in conjunction with HASP SRM Business Studio.

End-User Keys

Two types of HASP SRM protection keys are available—HASP HL keys, which are physical USB keys that connect to a computer, and HASP SL keys, which are virtual keys that lock your software to a specific machine. Your software and the user license is locked to the HASP SRM protection key that you select.

All HASP HL keys—with the exception of HASP HL Basic keys—contain internal read/write memory. You can use the memory to do any of the following:

- Control access to specific software modules and/or packages
- Assign a unique code to each software user
- Store licenses from your own licensing schemes
- Save passwords, program code, program variables, and other data

HASP SL keys are patterned on the functionality of HASP HL keys. However, the data is located in the secure storage of the computer on which the HASP SL key resides.

HASP HL Keys

HASP HL keys are distributed with your software to end users. The keys connect to the end users' computers. A variety of HASP HL keys are available to suit your requirements.

HASP HL keys offer the highest level of security. In order for a user to access your software, and for it to function correctly, the key must be accessible by the application. Furthermore, HASP SRM uses *LicenseOnChip* technology to protect HASP HL keys against license tampering.

HASP HL keys also have the advantage of portability. This means that the key can be moved from one computer to another. Software may therefore be installed on multiple computers but will only run if the key is connected and authenticated by the software.

For information about the available HASP HL keys, see *Available HASP SRM Protection Keys*, on page 39.

HASP SL Keys

HASP SL keys are virtual, software-based keys that reside in the secure storage of a specific computer. HASP SL keys provide the same functionality as HASP HL keys, without requiring physical distribution.

After your software is installed on a computer, the end user typically enters a Product Key that is sent, via the Internet or by file transfer, to the HASP SRM Business Studio Server, together with the fingerprint of the machine. HASP SRM Business Studio validates that the Product Key has not been used to activate the software on more than the permitted number of machines—as determined by you—then sends back the HASP SL key, which is installed on the end user’s machine. This process is also used for updating license terms.

For information about the attributes of HASP SL keys, see *Available HASP SRM Protection Keys*, on page 39.

For information about how HASP SRM prevents tampering of time-based licenses locked to HASP SL keys, see *How HASP SRM Prevents Tampering of Time-based Licenses Locked to HASP SL Keys*, on page 273.

Available HASP SRM Protection Keys

The following table lists the available HASP SRM protection keys and their attributes.

Note:

For full technical specifications of the keys, refer to the relevant product data sheet.

HASP SRM Protection Key	Description	Supported Automatic Licensing and License Terms	Memory Available for Software Vendor
HASP HL Basic	Hardware-based AES encryption for copy and IP protection.	■ Perpetual	—
HASP HL Pro	Hardware-based AES encryption for copy and IP protection. Supports automatic licensing for multiple applications/Features.	■ Perpetual ■ Feature-based ■ Per-use ■ Demo ■ License terms determined by counters	■ Read/write 112 bytes ■ ROM 112 bytes
HASP HL Max	Hardware-based AES encryption for copy and IP protection. Supports automatic licensing for multiple applications/Features.	■ Perpetual ■ Feature-based ■ Per-use ■ Demo ■ License terms determined by counters	■ Read/write 4 KB ■ ROM 2 KB
HASP HL Drive	Hardware-based AES encryption for copy and IP protection. Supports automatic licensing for multiple applications/Features.	■ Perpetual ■ Feature-based ■ Per-use ■ Demo ■ License terms determined by counters	■ Flash memory 512 MB/2 GB ■ Read/write 4 KB ■ ROM 2 KB
HASP HL Time	Hardware-based AES encryption for copy and IP protection. Supports automatic licensing for multiple applications/Features. Contains internal real-time clock.	■ Perpetual ■ Feature-based ■ Rental ■ Subscription ■ Demo ■ License terms determined by time and date of internal real-time clock	■ Read/write 4 KB ■ ROM 2 KB

HASP SRM Protection Key	Description	Supported Automatic Licensing and License Terms	Memory Available for Software Vendor
HASP HL Net	<p>Hardware-based AES encryption for copy and IP protection.</p> <p>Supports automatic licensing for multiple applications/Features.</p>	<ul style="list-style-type: none"> ■ Perpetual ■ Feature-based ■ Floating ■ Per-use ■ Demo ■ License terms determined by number of users and counters 	<ul style="list-style-type: none"> ■ Read/write 4 KB ■ ROM 2 KB
HASP HL NetTime	<p>Hardware-based AES encryption for copy and IP protection.</p> <p>Supports automatic licensing for multiple applications/Features.</p> <p>Contains internal real-time clock.</p>	<ul style="list-style-type: none"> ■ Perpetual ■ Feature-based ■ Rental ■ Subscription ■ Floating ■ Per-use ■ Demo ■ License terms determined by number of users and time and date of internal real-time clock 	<ul style="list-style-type: none"> ■ Read/write 4 KB ■ ROM 2 KB
HASP SL	<p>Software-based AES encryption for copy and IP protection.</p> <p>Supports automatic licensing for multiple applications/Features.</p>	<ul style="list-style-type: none"> ■ Perpetual ■ Feature-based ■ Rental ■ Subscription ■ Floating ■ Per-use ■ Demo ■ Volume ■ License terms determined by number of users, counters, and time and date of system clock 	<ul style="list-style-type: none"> ■ Read/write 4 KB ■ ROM 2 KB

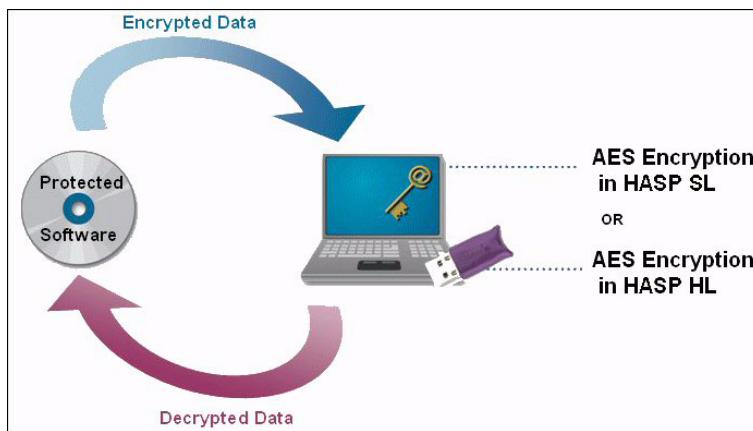
HASP SRM Protection Process

When you are developing your software, your engineers integrate a variety of calls to data stored in the memory of the HASP SRM protection key.

Encryption and Decryption

HASP SRM encryption and decryption are based on the Advanced Encryption Standard (AES) algorithm. The encryption secret of the algorithm is stored in the HASP SRM protection key. To enhance security, all communication between an application and a HASP SRM protection key is randomly encrypted. This inhibits emulation of a HASP SRM protection key.

The following diagram illustrates how encrypted data in your protected software is decrypted in the HASP SRM protection key and returned unencrypted to the software.



Obtaining Additional Information about HASP SRM

This chapter has provided an overview of the major concepts and principles of HASP SRM, and the comprehensive protection and licensing solution that HASP SRM provides.

The remainder of this guide explains in detail how you can best use the many elements of HASP SRM to meet your company's software protection, licensing, and distribution requirements.

Additional information is available in the Help documentation for the various HASP SRM tools, and in additional HASP SRM documentation that you can download using the following URL:
<http://www.aladdin.com/support/hasp-srm/vendor.aspx>.

Part 2 Protection

In this section:

- [Chapter 2: Protecting Software](#)
Provides an overview of HASP SRM software protection, including its fundamental elements, a summary of how it works, and an introduction to HASP SRM protection methods.
- [Chapter 3: HASP SRM Run-time API Protection](#)
Provides an overview of the HASP SRM Run-time API, details the prerequisites for using the API, introduces the HASP SRM ToolBox application and describes the functionality of the API.
- [Chapter 4: HASP SRM Envelope Protection](#)
Provides an overview of software protection using HASP SRM Envelope, details the prerequisites for using the application, and describes its functionality. In addition, it describes the HASP SRM Envelope protection parameters and how to encrypt data files.
- [Chapter 5: Protection Strategies](#)
Outlines strategies for maximizing HASP SRM protection, including best practices and optimizing the use of the HASP SRM Run-time API and HASP SRM Envelope.
- [Chapter 6: Working with the DataHASP Encryption Utility](#)
Describes data file protection using the DataHASP utility. It includes information about who should encrypt data files and when they should be encrypted.

Chapter 2

Protecting Software

This chapter provides an overview of HASP SRM software protection, including its fundamental elements, a summary of how it works, and an introduction to HASP SRM protection methods.

In this chapter:

- HASP SRM Protection

HASP SRM Protection

HASP SRM 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 HASP SRM-protected program requires access to a specific HASP SRM protection key in order to run. The protected program queries the HASP SRM protection key for pre-defined information. If the HASP SRM protection key is not present, or the information returned is incorrect, the program does not execute, or stops functioning.

After you have selected a HASP SRM protection method, implementation is straightforward. Regardless of the selected protection strategy, protected programs only work correctly if they can access the information stored in a specific HASP SRM protection key.

Elements of HASP SRM Protection

The HASP SRM protection system is based on the following:

- Protecting programs and data files
- Identifying the HASP SRM protection key
- AES encryption
- Confidential protection parameters
- Utilizing HASP memory
- Anti-debugging and reverse engineering measures

Protecting Programs and Data Files

HASP SRM provides two primary protection methods:

- HASP SRM Envelope
- HASP SRM Run-time API

When you protect your software using either of these methods, you are essentially forming an inherent link between the protected application and a specific HASP SRM protection key.

What can be Protected

HASP SRM enables you to protect a variety of applications and data files. You can apply protection directly to:

- Compiled executables, DLLs and .NET assemblies
- Specific functionalities or entire programs. HASP SRM protects all levels of software from function level to entire programs
- Sensitive data and intellectual property

All the above are protected against any attempt at reverse engineering.

For additional information about the available protection parameter options, see *HASP SRM Run-time API Protection*; *HASP SRM Envelope Protection*; and *Working with the DataHASP Encryption Utility*.

Identifying the HASP SRM Software Protection Key

The HASP SRM protection key, or to be more precise—the intelligence contained within the HASP SRM protection key—is the primary component of the HASP SRM protection system.

The main factor governing HASP SRM protection is whether a deployed program can identify and access the intelligence contained in a specific HASP SRM protection key at run-time. This factor is unambiguous—*the HASP SRM protection key is either available or not!*

Regardless of the protection method adopted, protected programs only function when they can access the required information contained in a specific HASP SRM protection key.

HASP SRM protection keys, and their ‘intelligence’ cannot be cloned to replicate the link between them and the protected program.

AES Encryption

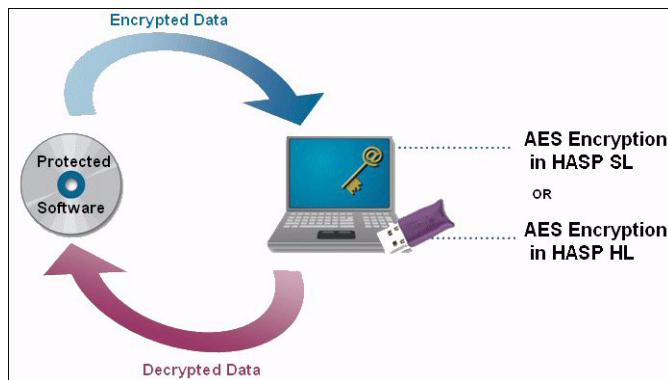
A protected program relies on the ‘intelligence’ in the memory of a specific HASP SRM protection key in order to function. In addition to the checks for the HASP SRM protection key, data can be encrypted and decrypted using the intelligence available in the HASP SRM protection key.

AES Encryption and Decryption

The encryption engine in the HASP SRM protection key is based on the AES algorithm. HASP SRM encryption uses a set of confidential 128-bit encryption keys that remain in the HASP SRM protection key.

Your protection schemes should always involve greater sophistication than merely confirming the presence of the required HASP SRM protection key. However, verifying the required HASP SRM protection key through data encryption and decryption requires forward planning. First, encrypted data must be available. This data must then be sent to the HASP SRM protection key, where it is decrypted.

If the data is correct, the HASP SRM protection key is considered to be “present.” This protection is graphically illustrated in the following figure. For additional information, see *Time Functions*.



Encryption/Decryption of Data

Confidential Protection Parameters

The essence of software protection is confidentiality. Without confidential elements, any software security system is vulnerable to attack.

Vendor Code

Each HASP SRM customer is assigned a unique *Vendor Code* that must be kept confidential. The Vendor Code forms an integral part of the protection parameters that constitute the inherent link between the protected programs and the HASP SRM protection key. However, the Vendor Code is only part of the link. The code on its own is insufficient to prevent illegal use of the software. It merely provides the protected software with access to the HASP SRM protection key and its resources.

All HASP SRM protection applications require the Vendor Code. For information on how to access the code, see *Extracting the Vendor Code from HASP SRM Vendor Keys*.

Utilizing HASP Memory

The HASP memory on HASP SRM protection keys can be utilized (read and write) as a component of the protection scheme for the software. Confidential data can be stored in the HASP memory, including snippets of program code, customer name, or any other data.

Use the memory editors included in HASP SRM ToolBox to read or write data in the HASP memory. For additional information, see *Memory Functions*.

Anti-Debugging and Reverse Engineering Measures

HASP SRM protects intellectual property and provides the functionality to combat anti-debugging and reverse engineering. Anti-debugging and reverse engineering usually try to unravel the protection scheme of protected software by tracing a compiled application to its source code. HASP SRM Envelope implements contingency measures to ward off such attacks and prevent hackers from uncovering algorithms used inside protected software.

Selecting a Protection Method

HASP SRM offers two software protection methods; *HASP SRM Run-time API* and *HASP SRM Envelope*. Both methods establish an inherent link between the protected software and the intelligence contained in a specific HASP SRM protection key.

When selecting a protection method, the following issues must be considered:

- What the HASP SRM protection key should protect
- How the HASP SRM protection parameters are best applied
- Whether the time required to implement the solution is a critical factor
- Whether flexibility in implementing the protection scheme is important

These issues are discussed in the following sections.

What to Protect

When protecting software with HASP SRM, there are various options for applying protection. HASP SRM Run-time API is used to protect the software before it is compiled. Protection can also be applied after the software is compiled using HASP SRM Envelope. You can choose whether to apply protection to an entire program, a subprogram, or simply to a Feature.

You may opt to use either the HASP SRM Run-time API or the HASP SRM Envelope protection method, or both, depending on your specific requirements. Use the following table to determine which method best meets your specific requirements.

HASP SRM Envelope	HASP SRM Run-time API
<ul style="list-style-type: none">■ Quick, automatic protection process that shields your software■ Define specific protection parameters for your programs■ No source code required■ Anti-debugging and reverse engineering measures provided	<ul style="list-style-type: none">■ Manual implementation of calls to HASP SRM Run-time API■ Controlled process ensuring maximum security. The strength of protection is proportional to the degree to which the HASP SRM Run-time API's functionality is invested in implementation.■ Source code must be available■ Maximum flexibility

Importance of Control over the Protection Scheme

When applying protection using HASP SRM Run-time API, you control the entire protection process. You determine when the protected program queries the HASP SRM protection key, and how it should behave in different scenarios. With HASP SRM Envelope, compiled programs are wrapped with random protection parameters. If you run HASP SRM Envelope twice to protect the same program, two different output files are produced with different protective modules and shields.

Significance of the Time Factor

When a high protection level is specified in HASP SRM Envelope, file size increases and the protected application takes longer to launch. Consider this factor when you are deciding on the protection level settings that you choose. Aim for the optimal balance between protection level and launch time.

How to Apply Protection

When using the HASP SRM Run-time API, protection is integrated at the source code level in a carefully considered manner. You determine where in the source code to place calls to the HASP SRM Run-time API.

HASP SRM Envelope offers an automated, speedier method of protecting software. You define settings for protection parameters that are applied to protected programs.

Note:

When enabling or disabling some features you might reduce the level of protection provided by the software.



Chapter 3

HASP SRM Run-time API Protection

This chapter describes the HASP SRM Run-time API protection method.

In this chapter:

- Overview
- HASP SRM Run-time API Prerequisites
- Learning the HASP SRM Run-time API
- Implementation
- HASP SRM Run-time API Functionality

Overview

The HASP SRM Run-time application programming interface (API) is a robust method of software protection, the strength of which is wholly dependent on its implementation.

The extent to which the functionality afforded by the HASP SRM Run-time API is utilized, determines the overall level of software security. To fully utilize the protection offered by the HASP SRM Run-time API, strive to maximize the complexity and sophistication of your implementation.

It is essential that, before protecting your application, you are familiar with the overall functionality of the HASP SRM Run-time API.

The *HASP SRM Run-time API Reference* on page 231 details the functions that comprise the HASP SRM Run-time API. See this reference for information on specific functions.

To protect your software using the HASP SRM Run-time API, you insert calls to a HASP SRM protection key throughout your application's source code. You can add calls to your application that check for the presence of a HASP SRM protection key at any point during run-time, and you can designate responses to these checks. For example, if the required HASP SRM protection key is not found, you might specify that the protected application suspend or terminate itself.

Your application can also check the memory of a HASP SRM protection key for specific data. In addition, you can use the HASP SRM Run-time API to encrypt or decrypt data.

To facilitate a speedy learning curve, we recommend that you familiarize yourself with and test specific HASP SRM Run-time API functions using HASP SRM ToolBox. HASP SRM ToolBox is a GUI-based application that interfaces with the HASP SRM Run-time API. For additional information, see *Learning the HASP SRM Run-time API* on page 60.

HASP SRM also includes HASP SRM Run-time API sample folders for specific compilers. Each HASP SRM interface includes a sample application demonstrating API usage and a specific header file. The sample applications are located in the Samples folder in the Windows directories on the HASP SRM installation DVD.

Universal HASP SRM Run-time API

The HASP SRM Run-time API is a universal API that works with all HASP SRM protection keys. HASP SRM Run-time API implementation and usage is independent of the HASP SRM protection key you use.

Utilization of the HASP SRM Run-time API is independent of the access mode used to search for a specific HASP SRM protection key. The same HASP SRM Run-time API functions are used to enable programs' access to remote HASP SRM protection keys, or HASP SRM protection keys that are present locally.

HASP SRM Run-time API Prerequisites

You must install the HASP SRM Run-time Environment to enable the Run-time API. For additional information, see the *HASP SRM Installation Guide*.

Vendor Code

It is necessary to provide the Vendor Code in order to access a HASP SRM protection key and its resources, including memory. Vendor Codes are usually stored in the VendorCodes folder. On most Windows installations, the directory is located at:

...\\Documents and Settings\\[logged_in_user_name]\\My Documents\\Aladdin\\HASP SRM [version]\\VendorCodes

In the HASP SRM Developer Kit, customers are provided with HASP HL Demo keys that work with the DEMOMA Vendor Code. This Vendor Code can be used to apply protection with the HASP SRM Run-time API.

Note:

Do not distribute software protected with a HASP HL Demo key. This HASP SRM protection key is only for evaluation purposes.

The first time you order HASP SRM protection keys, you also receive two HASP SRM Vendor keys—a HASP SRM Developer key and a HASP SRM Master key—that contain your company's unique confidential Vendor Code. The HASP SRM Developer key is used by engineers for adding protection to your software. The HASP SRM Master key is used for producing licenses and orders.

HASP SRM Vendor Suite applications (HASP SRM Envelope, HASP SRM ToolBox, and HASP SRM Business Studio) must recognize and have access to the unique Vendor Code that was assigned to you when your first order was supplied by Aladdin Knowledge Systems. The Vendor Code is stored inside your HASP SRM Vendor keys. HASP SRM Vendor keys are introduced using the MasterHASP Wizard, as described in the following section.

Note:

If you have already introduced your HASP SRM Developer key, it is not usually necessary to re-introduce it.

Extracting the Vendor Code from HASP SRM Vendor Keys

You need to extract the Vendor Code from your HASP SRM Vendor keys so that the HASP SRM system will recognize it when you are working with any of the Vendor Suite applications.

Depending on your HASP SRM configuration, if you launch a HASP SRM Vendor Suite application, and you have connected a new HASP SRM Vendor key to your computer, the MasterHASP Wizard will launch automatically. Alternatively, use the following procedure to extract the information.

To extract the Vendor Code:

1. Connect your HASP SRM Master key to your computer.
2. Run the MasterHASP Wizard (Start > Programs > Aladdin > HASP SRM > Tools > MasterHASP Wizard). The MasterHASP Wizard launches, detects, and lists all new HASP SRM Vendor keys (Master key and Developer key).

Note:

If you open either HASP SRM Envelope or HASP SRM ToolBox, and the application detects a new HASP SRM Vendor key, the MasterHASP Wizard will launch automatically.

3. Enter a name for the file in which the Vendor Code information will be saved. It is recommended that you store all the Vendor Codes in the VendorCodes folder. On most Windows installations, the directory is located in:
...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\VendorCodes

By default, the HASP SRM Vendor Suite applications search this directory for the Vendor Code.

4. In the Specify API Settings window of the wizard, select the libraries for which you want to generate APIs. If you want to merge APIs of multiple Batch Codes into a single library, click Advanced. You can merge up to four APIs to a single library. When you merge APIs, individual libraries are generated in addition to the merged ones.

The generated APIs are located in the following directories, as appropriate:

...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\API\\Runtime\\C

...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\API\\Runtime\\COM

...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\API\\Runtime\\DotNet

...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\API\\Runtime\\Java

...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\API\\Runtime\\Delphi

5. When prompted, update the vendor library. This library is required for HASP SL protection, including creating trialware.
6. By default, your Vendor Code information is saved in the following directory:

...\\Documents and Settings*logged_in_user_name*\\My Documents\\Aladdin\\HASP SRM [version]\\API\\Runtime\\VendorCodes

Vendor-specific File Naming Conventions

The format of a Batch Code file name is [Batch Code].hvc. For example, if your Batch Code is **W3FLY**, the file name will be **W3FLY.hvc**. (The Batch Code is a representation of your confidential Vendor Code.) Your HASP SRM Vendor keys and all your HASP HL keys are labeled with your Batch Code.

By default, HASP SRM Vendor Suite applications search the **VendorCodes** folder for your Vendor Code/Batch Code information.

The format of API library names (for Windows) is **hasp_windows_[language]_[vendorcode].[library extension]**. For example, **hasp_windows_demo.lib** is a C-language API library associated with a demo key.

Learning the HASP SRM Run-time API

The are two components of HASP SRM that enable you to study how the HASP SRM Run-time API works, and its range of capabilities.

- **HASP SRM ToolBox:** A utility with a graphic user interface that is part of HASP SRM Vendor Suite. For additional information, see *HASP SRM ToolBox*
- **HASP SRM Run-time API Samples:** A set of examples for implementing the HASP SRM Run-time API. For additional information, see *HASP SRM Run-time API Samples*.

HASP SRM ToolBox

HASP SRM ToolBox is an interactive interface to the HASP SRM Run-time API. You execute calls to the HASP SRM Run-time API via HASP SRM ToolBox that are then relayed to a HASP SRM protection key.

To use HASP SRM ToolBox you must have a HASP SRM Developer key and a valid Vendor Code so that you can access HASP SRM protection keys. The program is activated from HASP SRM Vendor Suite. For specific information on how to use HASP SRM ToolBox, see the application's Help documentation.

API-related Functionality

HASP SRM ToolBox acts like a tutorial for the HASP SRM Run-time API. Its functionality enables you to:

- **Display the source code generated for each function call**
This generated source code can be copied and pasted into your application source code.
- **Evaluate manual implementation of the HASP SRM Run-time API**
Every HASP SRM Run-time API function included in HASP SRM ToolBox is displayed on a separate screen. To execute a function call, you provide specific information related to the selected function.
- **Transfer memory buffers to the AES encryption engine in a HASP SRM protection key**
The program can also be used to decrypt data buffers.

- Create multiple programming language interfaces for the HASP SRM Run-time API

HASP SRM Run-time API Samples

Sample applications are provided to demonstrate how to implement HASP SRM Run-time API protection in your source code. The samples demonstrate how the API functions work.

Your HASP SRM installation contains folders for various interfaces and compilers. Each folder includes the requisite API libraries, a header file and a sample application. The HASP HL Demo key—marked DEMOMA—must be connected to your computer when using the sample applications.

Note:

See the Aladdin Website and the HASP SRM Installation DVD for information on available samples for specific programming languages.

Implementation

This section describes the pre-implementation issues you should consider, and the workflow for implementing the HASP SRM Run-time API. It also provides an overview of how to log in to and out of a session.

Planning your Requirements

Before implementing the HASP SRM Run-time API, the following preliminary issues should be considered.

- **What do you want to protect?** This may seem obvious but it is crucial in deciding where to place the calls to the HASP SRM protection key. Typically, you would want to verify the presence of the HASP SRM protection key at startup. However, you can also identify certain aspects of the software to protect, and apply your HASP SRM Run-time API calls accordingly.

Note:

Feature protection is handled through the Feature ID parameter. For additional information, see *hasp_login_scope()* on page 254.

- **Will encrypted data be included in my implementation scheme?** If you plan to use encrypted data at run-time, use HASP SRM ToolBox to encrypt the data. Insert the encrypted data when implementing the HASP SRM Run-time API. The data is decrypted at run-time by the HASP SRM protection key.
- **Is data going to be stored in the HASP SRM protection key memory?** If the software is protected by a HASP SRM protection key with memory functionality, sensitive data can be stored in the HASP SRM protection key. The HASP SRM Run-time API enables access to Read or Write to HASP SRM protection key memory. Use HASP SRM ToolBox to write data buffers to HASP SRM protection key memory.

HASP SRM Run-time API Workflow

After planning what data is going to be protected and how that protection will be applied, you are ready to protect your application with the HASP SRM Run-time API.

The recommended workflow for implementing the HASP SRM Run-time API is as follows:

1. Study the code of the sample application corresponding to your development environment.
2. In your application source code, insert a login call to the HASP SRM protection key. A successful login establishes a login session. The login session has its own unique handle identifier.

Note:

The session identifier is self-generated and applies to a single login session. For additional information, see *hasp_login_scope()* on page 254.

3. After a login session is established, you can use other HASP SRM Run-time API functions to communicate with the HASP SRM protection key. For example, you can use the `hasp_decrypt` function to decrypt important data used by your application. You can also read data stored in the HASP SRM protection key memory, set timestamps, and so on.
4. Using the output generated in Step 3, check for potential mismatches and notify the user accordingly.
5. Repeat steps 2–4 throughout the code.
6. Compile the source code.

Note:

After you have compiled the source code, use HASP SRM Envelope to add an extra layer of protection to your software. This process also prevents reverse engineering of protected code.

HASP SRM Run-time API Login Function

The login function is the gateway to HASP SRM Run-time API implementation. You must open a successful login session to search for and communicate with a HASP SRM protection key. To log into a HASP SRM protection key, you need to provide a Feature ID and a valid Vendor Code.

If the HASP SRM protection key is not accessible by the computer, an error message is displayed. An error message is also displayed if the declared Vendor Code is not valid for a detected HASP SRM protection key.



HASP SRM Login Operation Summary

Login Options

When using HASP SRM Run-time API implementation, login calls are not dependent on specific HASP SRM protection keys. However, when performing login calls you must specify what it is that you are actually logging into. When logging in you must declare:

- If you are logging into a default or a specific Feature
- How to search for the HASP SRM protection key
- How the login counter should be handled
- Whether to enable or disable connection to the HASP SRM protection key via a terminal server

Declaring Feature IDs

You can either log into a specific Feature, or to the default Feature stored in the HASP SRM protection key. The default Feature is assigned Feature ID 0.

When logging into a licensed Feature, the protected application not only checks for the presence of the HASP SRM protection key, it also checks the terms of the license contained in that key. If the license is valid, the Feature is enabled.

Controlling Login Calls

Additional aspects of a login call can be controlled when implementing the HASP SRM Run-time API, as follows:

- Search options
- Login counter
- Terminal server detection
- Enabling access to HASP HL v.1.x keys

Search Options

The default search setting enables a protected application to search both the local computer and the network for the required HASP SRM protection key. You can limit the HASP SRM protection key search option, as follows:

- Search only the local PC for a HASP SRM protection key
- Search only the network for a connected HASP SRM protection key

Login Counter

By default, when a HASP SRM license is accessed in a HASP HL Net key, license usage is determined per workstation. You can override this condition so that license usage is counted per process. This implies that the license counter is decremented per process.

Access to Legacy Memory on HASP HL Key

By default, the HASP SRM system does not enable access to the legacy memory on HASP HL keys. To override this restriction, select the Allow access to HASP HL v.1.x check box in the HASP SRM ToolBox Settings window.

Note:

Every HASP SRM protection key login session must be terminated with a corresponding logout call.

HASP SRM Run-time API Functionality

The extent of the protection afforded by the HASP SRM Run-time API is dependent on the way that it is implemented. Calls to a HASP SRM protection key that are inserted in the source code control access to the application at run-time.

This section describes the HASP SRM Run-time API options that are available after a successful login session is established. For a detailed discussion about how to optimize your HASP SRM Run-time API implementation, see Chapter 5, . For a demonstration of how the HASP SRM Run-time API works, use HASP SRM ToolBox. All functionality described in this section is detailed in the *HASP SRM Run-time API Reference* on page 231.

Function Groups

HASP SRM Run-time API functions are categorized into five groups, based on common functionality and linkage.

- Session functions
- Encryption/Decryption functions
- Memory functions
- Time functions
- Management functions

Session Functions

A session is created by executing a successful login call to a license residing in a specific HASP SRM protection key. For more information about logging in, see *Login Options*. At the end of a session, use the logout function to close the session.

Encryption Functions

You can encrypt or decrypt data buffers using the AES-based encryption engine in the HASP SRM protection key. The encryption engine uses symmetric encryption. This means that the same encryption key is used later to decrypt the data buffer.

Memory Functions

Use the memory to store data to be used by the application at run-time, and information that can be used later to verify and identify an end-user. Control of access to sensitive data forms an integral part of your protection scheme.

The HASP SRM Run-time API can be used to:

- Read data buffers stored in the HASP SRM protection key memory
- Write data buffers to the HASP SRM protection key memory

The size of the data buffers is restricted by the memory available in the specific HASP SRM protection key type. *Available HASP SRM Protection Keys* lists the memory capacity available for each HASP SRM protection key type.

Time Functions

If you are using a HASP HL Time key or HASP HL NetTime key, the HASP SRM Run-time API can be used to access the real-time clock in the key. This functionality enables you to read the time. Two date and time conversion functions are included in the HASP SRM Run-time API.

Management Functions

The HASP SRM Run-time API includes functions that enable you to retrieve information on the system components, the current login session, the status of a deployed HASP SRM protection key, and license updates.

The detach function enables you to detach Products and their licenses from a pool of network licenses when using HASP SL keys.

You can also use the update function to install updates. You do not need to be logged in to a session in order to perform this function. For additional information, see *hasp_update()* on page 259. This function is the main facilitator of HASP SRM Remote Update System.



Chapter 4

HASP SRM Envelope Protection

This chapter describes software protection using HASP SRM Envelope.

In this chapter:

- Functionality
- HASP SRM Envelope for Windows
- Accessing and Encrypting Data Files for Win32 Programs
- Protecting .NET Assemblies
- HASP SRM Envelope for Linux Applications
- HASP SRM Envelope for Mac Binaries
- HASP SRM Envelope for Java Executables

Functionality

HASP SRM Envelope is a wrapping application that protects your applications with a secure shield. This application offers advanced protection features to enhance the overall level of security of your software.

HASP SRM Envelope protects Win32, Windows x64, and .NET executables and DLLs, and Java executables—providing a means to counteract reverse engineering and other anti-debugging measures.

HASP SRM Envelope can also be used to protect Mac executables and dynamic shared libraries (Mach-O), and Linux executables and shared objects. For more information, see *HASP SRM Envelope for Mac Binaries*, and *HASP SRM Envelope for Linux Applications*.

Note:

The word *program* is used throughout this chapter as a generic reference to the various file types that can be protected using HASP SRM Envelope, regardless of whether they are executables, binaries, assemblies, libraries or shared objects.

By using HASP SRM Envelope to protect your software, you establish a link between the protected software and a HASP SRM protection key. This link is broken whenever the protected software cannot access the required HASP SRM protection key.

Implementing HASP SRM Envelope protection is the fastest way to secure your software without requiring access to your software source code.

HASP SRM Envelope provides both graphical user interface and command-line utility options. The user interface enables you to:

- Protect Win32, Windows x64, and .NET executables and DLL files, and Java executables
- Enhance the protection of .NET assemblies by defining Method-level protection
- Protect Mac Mach-o binaries
- Protect Linux executables and shared objects
- Define a variety of global protection parameters for your program
- Specify a Vendor Code to authenticate the presence of a specific HASP SRM protection key
- Customize the run-time messages that will be displayed to end users running protected programs

In addition to linking protected programs to a specific HASP SRM protection key, HASP SRM Envelope wraps the application file with numerous protection layers that are randomly assembled.

Note:

The random multi-layer wrapping of protected applications by HASP SRM Envelope ensures that implemented protection strategies differ from one protected program to another.

Command line utilities enable you to protect:

- Win32, Windows x64, and .NET executables and DLL files
- Java executables
- Linux executables and shared objects
- Mac binaries

Basic Protection Workflow

This section provides a workflow that describes the elements of protecting applications using HASP SRM Envelope. Additional information about specific procedures is provided in the HASP SRM Envelope Help documentation.

1. Launch HASP SRM Envelope or HASP SRM Envelope Command-line Utility from HASP SRM Vendor Suite.
2. Add the executable, library, or .NET assembly you want to protect to the project.
3. Define protection parameters for the protected program.
4. Protect the program.
5. Distribute the protected software together with your encrypted HASP SRM protection keys.

Note:

HASP SRM Envelope does not affect the files being protected. However, it is highly recommended that you designate a separate output folder for the protected application in order to distinguish between source (unprotected) and output (protected) files.

HASP SRM Envelope protection involves the application of protection parameters that are controlled by the engines running HASP SRM Envelope. You apply these parameters to an unprotected source.

HASP SRM Envelope does not affect the original files or the way a protected application actually works. The only modification is that user access is conditional on the presence of a required HASP SRM protection key. If the HASP SRM protection key is present, the protected file runs.

The logic of HASP SRM Envelope protection is illustrated in the following diagram. Note that the original file can be a Win32, or Windows x64 executable or DLL; a Windows .NET assembly executable or dynamic library; a Java executable; a Linux executable or shared object; or a Mac binary.



Note:

- To ensure the highest level of security for your software, HASP SRM Envelope for Win32 removes debugging data from the programs that it is protecting.
 - It is recommended that Linux software engineers strip extraneous symbols from the executable prior to protecting with HASP SRM Envelope.
-

Required and Optional Protection Parameters

This section outlines the mandatory and customizable parameters that can be specified for protecting software with HASP SRM Envelope.

Mandatory Parameters

The following information must be provided in order to protect software using HASP SRM Envelope:

- **Input file location:** You must specify the location of the program that you want to protect. By default, this is the directory from which you added the program to the project.
- **Output file location:** You must specify the directory where the protected output will be saved. By default, the directory is *[user's home directory]\Aladdin\HASP SRM [version]\VendorTools\VendorSuite\Protected*
- **Vendor Code:** You must provide a valid Vendor Code in order to access a HASP SRM protection key. On initial activation of HASP SRM Envelope, the default Vendor Code is specified as DEMOMA. Select your Vendor Code in the HASP SRM Profile screen.

This information is sufficient to protect a program.

General Customizable Parameters

The customizable parameters described in this section are identical for all supported applications, assemblies and dynamic libraries.

- **Feature ID:** You can select a unique Feature to protect your program. For additional information about Features, see *Using Features to Protect Programs*.
- **HASP search mode:** You can determine where a protected program searches for the HASP SRM protection key. For additional information, see *Searching for a HASP SRM Protection Key*.

WARNING!

When enabling or disabling some features you might reduce the level of protection provided by the software.

Searching for a HASP SRM Protection Key

HASP SRM Envelope enables you to determine where a protected application searches for a required HASP SRM protection key.

When using the HASP SRM Envelope GUI, the following options are available:

- **Local and remote:** The protected application first searches the local machine for a required HASP SRM protection key (default), and then the network.
- **Local only:** The protected application searches only the local computer for a required HASP SRM protection key.
- **Remote only:** The protected application searches only the network for a required HASP SRM protection key.

When using a HASP SRM Envelope command-line utility, use XML tags to specify the scope of how the search should be performed. For more information, refer to the *HASP SRM Envelope Configuration File Settings* PDF.

Using Features to Protect Programs

A *Feature* is an identifiable functionality of a software application. Features may be used to identify entire executables, software modules, .NET methods, or a specific functionality such as Print, Save or Draw. Each Feature is assigned a unique identifier called a Feature ID. The default Feature ID in HASP SRM Envelope is Feature ID 0.

For additional information on Features and licensing, see *Identifying Functional Components (Features)* and *Managing Features*.

When you protect a Win32, Windows x64, Java, Mac or Linux application with HASP SRM Envelope, you specify a single Feature ID for the entire executable. If you wish to apply unique Features to separate components or functionalities, you must use the HASP SRM Run-time API. For additional information, see *HASP SRM Run-time API Protection*.

Protecting .NET Assemblies

When you protect a .NET assembly with HASP SRM Envelope, you have the flexibility to specify Features at two levels:

- A global Feature that relates to the entire .NET assembly, with the exception of individually-protected methods. For additional information, see *Global Features in .NET Assemblies*.
- Method-specific Features. For additional information, see *Method-specific Features and Parameters in .NET Assemblies*.

At run-time, a protected .NET assembly searches for all Features in the HASP SRM protection key.

HASP SRM Envelope for Windows

This section describes how to use HASP SRM Envelope on Windows platforms.

Prerequisites for Windows

To use HASP SRM Envelope, all of the following components must be installed on your system:

- HASP SRM Run-time Environment
- HASP SRM Vendor Suite
- A valid Vendor Code stored in the `VendorCodes` folder.
For additional information, see *Extracting the Vendor Code from HASP SRM Vendor Keys*
- `dfcrypt.exe`, if you are planning to encrypt data files by means of a command line
- The Win32, Windows x64, or .NET executables or DLLs that you want to protect
- If you are protecting .NET assemblies, .NET Framework 2.0, or later

Running HASP SRM Envelope

In the Start menu, select Aladdin > HASP SRM > Vendor Suite. From the HASP SRM Vendor Suite program selection screen, launch HASP SRM Envelope.

HASP SRM Envelope Protection Parameters

After your program has been included in a HASP SRM project, protection can be performed effortlessly, based on the default HASP SRM Envelope settings. In addition, you can define and calibrate a range of protection parameters that affect the attributes and behavior of the protected program.

HASP SRM Envelope customizable parameters are displayed in the Protection Details screen and the Default Protection Settings screen. You can select a specific program in the Project pane and, from the Protection Details screen, view and edit the application's parameters using the following three tabs:

- General tab
- Advanced tab
- Protection Settings tab

All parameters are detailed in the HASP SRM Envelope Help documentation.

This section provides an overview of the HASP SRM Envelope protection settings that are common to all program types. Mandatory parameters that are required in order to protect a program are described in *Mandatory Parameters*. Other common parameters are described in *General Customizable Parameters*.

HASP SRM Envelope also provides settings that are specific to the type of program protected.

- For additional information about settings for Win32 or Windows x64 programs, see *Protecting Win32 or Windows x64 Programs*, and *Accessing and Encrypting Data Files for Win32 Programs*.
- For additional information about settings for .NET assemblies, see *Protecting .NET Assemblies*, and *Code and Symbol Obfuscation in .NET Assemblies*.
- For additional information about settings for Java executables, see *Protecting Java Executables*.

Protecting Win32 or Windows x64 Programs

When you protect a Win32 or Windows x64 program with HASP SRM Envelope, you can determine protection attributes and aspects of the behavior of the protected program.

Protected Program Behavior

HASP SRM Envelope enables you to define the following additional properties for Win32 and Windows x64 programs:

- The frequency at which random queries are sent to a HASP SRM protection key. These queries comprise random encryption and decryption procedures.
- The time interval between checks for the presence of a required HASP SRM protection key.
- Whether support for programs that require overlays to execute correctly should be enabled.
- The length of time that the protected application waits for the HASP SRM Run-time Environment to load.

Protection Attributes

You can define specific security attributes for protected Win32 and Windows x64 programs including parameters for:

- Detection of both system and user-level debugging measures. You can activate measures to be undertaken by the HASP SRM system to block potential attacks intended to undermine the protection scheme.
- Defining the number of protective module layers that are wrapped around a protected application. Possible values range from 1 to 50. The default setting is 12.

Note:

Increasing the number of protective modules increases the startup time for a protected application, and the resultant file size. There is also a trade-off between encryption level and protected file size and startup speed. A higher encryption level causes a slower startup, and increases the size of the protected application.

- Specifying the frequency of HASP SRM protection key access for encryption. The parameter controls the compactness of the HASP SRM protection key calls made by the protected application. An Encryption Level slider is provided to specify the frequency of HASP SRM protection key access for encryption.

Accessing and Encrypting Data Files for Win32 Programs

If your protected Win32 program accesses separate data files, you can use HASP SRM to protect these files, in addition to envelope protection of the program itself, as follows:

- You can control if and when the protected program accesses such data files. For additional information, see *Data File Handing*.
- You can apply HASP SRM encryption to the data files. For additional information, see *Encrypting Data Files*.

Data File Handling

Your protected Win32 program may require access to data files during run-time. HASP SRM Envelope enables you to control the access of data files by the protected software. HASP SRM Envelope offers the following control mechanisms:

- **Data filters:** You can determine what file types can be accessed at run-time by the protected software. You can also determine what files to exclude.
- **Data encryption keys:** Eight printable characters used to create an encryption key for encrypting and decrypting data files.

Note:

Use the same encryption key when multiple applications access the same document set.

HASP SRM Envelope includes the data filters and encryption key information as part of the protection scheme applied to the protected application. The encryption of data files is handled by the DataHASP utility. For additional information, see *Working with the DataHASP Encryption Utility*. Alternatively, you can use a command-line utility. For additional information, see *Using dfcrypt.exe*.

Setting Data File Filters

HASP SRM Envelope enables you to create file filters for protected Win32 programs. File filters determine which data files and data file types can work in conjunction with protected programs. For additional information, see the Help documentation.

Run-time User Support

You can customize run-time messages for end users who are using applications protected by HASP SRM Envelope. HASP SRM Envelope includes a set of message codes. Each code is mapped to a corresponding message that is displayed at run-time of the protected application.

In addition, you can choose to display a message for end users during startup of a protected application that explains there may be delays due to required data decryption.

Encrypting Data Files

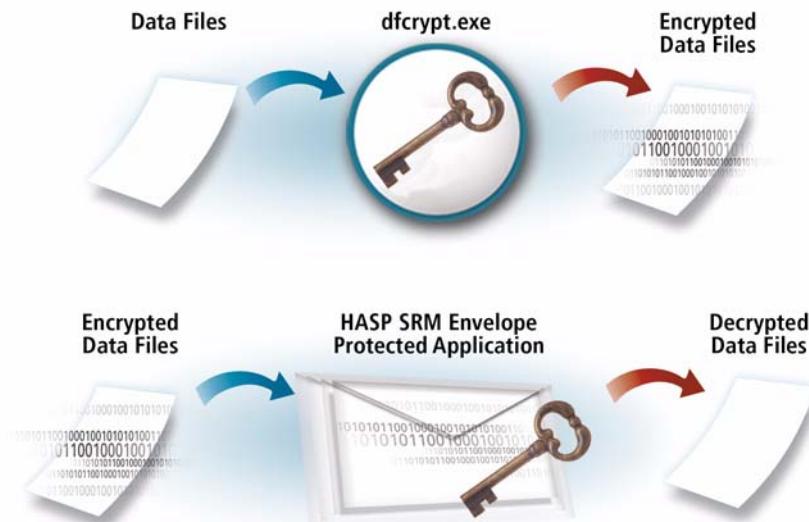
Win32 programs protected with HASP SRM Envelope can access encrypted data files that are defined by data filters and use a specific encryption key. HASP SRM Envelope itself does not encrypt data files. However, you can encrypt data files using the DataHASP interface, or you can use the `dfcrypt.exe` command-line utility. For additional information about using the DataHASP interface, see *Working with the DataHASP Encryption Utility*.

Using `dfcrypt.exe`

Instead of using the DataHASP utility, you can use a command-line to encrypt data files. The `dfcrypt.exe` utility generates data files that can be processed by executables protected by HASP SRM Envelope.

The command-line utility requires a specific set of input parameters to function. After these parameters have been applied to a defined set of data files, the encrypted files can be accessed by HASP SRM Envelope.

The following figure illustrates the workflow for data file handling using `dfcrypt.exe`. After data files are encrypted, applications protected with HASP SRM Envelope can decrypt and access the files. This is only possible if, at protection time, you specify the encryption key in HASP SRM Envelope.



Data File Handling with *dfcrypt.exe*

To use *dfcrypt.exe*, specify the following:

- A command switch
- A list of source files and directories
- A destination for the encrypted output

When specifying multiple source files or a directory, the destination input specified must be an existing directory.

The following format must be used to input parameters:
dfcrypt <option> source destination

For example:

```
dfcrypt -c:demoma.hvc -k:4873Asdb data.txt
data_crypt.txt
```

Available dfcrypt.exe Commands

The following table lists the available `dfcrypt.exe` commands.

Command	Action
<code>-e, --encrypt</code>	Encrypts data, available by default
<code>-d, --decrypt</code>	Decrypts data
<code>-c, --vcf:<file></code>	Specifies a Vendor Code file (mandatory)
<code>-k, --key:<key></code>	Specifies an encryption key to be used to encrypt data files. Must contain 8 printable characters. (mandatory)
<code>-o, --overwrite</code>	Overwrites destination files
<code>-r, --recursive</code>	Enables recursive handling of subdirectories
<code>-h, --help</code>	Displays the help screen, listing <code>dfcrypt.exe</code> commands
<code>-q, --quiet</code>	Suppresses output by excluding copyright information and the progress indicator. Only error messages are displayed. This is particularly useful in Makefile integration.

Running HASP SRM Envelope from a Windows Command-line

HASP SRM Envelope can be initiated using a command-line prompt. This is useful when running automated processes that do not require a graphical interface.

Note:

The command-line version of HASP SRM Envelope is primarily used for automated processes. Before running the command-line utility, create and save protection projects together with their configuration files using `envelope.exe`.

To access the command-line version of HASP SRM Envelope, go to ...\\Program Files\\Aladdin\\HASP SRM\\VendorTools\\VendorSuite\\envelope.com

To start the command-line version of HASP SRM Envelope, type ENVELOPE in the command line.

Command-line Options

The following parameters are available for use with the HASP SRM Envelope command-line version:

Command	Description
<code>-h /--help</code>	Displays the list of command-line parameters. Press Enter to return to the command-line console.
<code>-p /--protect <project></code>	The command-line utility uses the specified project as input data for the application-wrapping process—all the files included in the project are protected.
<code><project></code>	The command-line version starts the GUI version with the specified project running as the current project.
<code>-a / --accesscode <code><project></code>	Specifies the access code for the connected HASP Vendor key. This switch is only required if an access code has been specified using the MasterHASP wizard.

Protecting .NET Assemblies

HASP SRM Envelope provides significant flexibility when protecting .NET assemblies. In addition to global protection settings that you specify using the **Protection Details** and **Protection Template Settings** functionalities, you can also specify Method-level protection, by defining individual methods in the .NET assembly.

You can also define protection settings in your source code using custom attributes.

For details about the prerequisites for protecting a .NET assembly, and other considerations to take into account, see *.NET Considerations*.

When you protect a .NET assembly with HASP SRM Envelope, you specify a global Feature that protects the entire assembly. For additional information, see *Global Features in .NET Assemblies*.

In addition to the global Feature, you can define Features for individual methods. You can also define other method-specific parameters. For additional information, see *Method-specific Features and Parameters in .NET Assemblies*.

You can also apply different levels of obfuscation to your .NET assembly. For additional information, see *Code and Symbol Obfuscation in .NET Assemblies*.

.NET Considerations

When protecting .NET assemblies, consider the following issues:

- You must protect your assemblies in a development environment. HASP SRM Envelope requires libraries that are not part of the .NET framework, but are included in the development environment.
- HASP SRM Envelope for .NET requires access to all assemblies and their dependencies.
- HASP SRM Envelope breaks the strong name signature of signed assemblies. You can choose to re-sign the assembly in HASP SRM Envelope, as part of the protection process.
- When you protect a .NET Framework 1.x assembly, the HASP SRM Envelope output is in Framework 2.0, requiring Framework 2.0 to be installed on the end-user machine.
- After you have protected a .NET assembly, the assembly requires a HASP SRM DLL to function at run-time. Use `haspdnert.dll` for programs that run on 32-bit operating systems and `haspdnert_x64.dll` for programs that run on 64-bit operating systems.
- You cannot use HASP SRM Envelope for .NET to protect individual data files.

Global Features in .NET Assemblies

When you protect a .NET assembly with HASP SRM Envelope, you specify a global Feature that protects any methods that have not had individual protection parameters applied. The global Feature is also used when background checks are implemented.

Method-level Protection

When you select a .NET assembly for protection, HASP SRM Envelope automatically determines the Protection type that will provide the best protection for your program, depending on whether you are protecting an executable or a DLL. The Protection type determines the methods that are available for individual protection.

Note:

It is recommended that you do not change the automatic Protection type settings.

This section describes how you select individual methods and the behavior of different method types, in addition to the parameters you can select for the methods.

Selecting .NET Methods for Protection

The .NET assembly is displayed in the Protection Details screen, in the Methods selected for protection list. The list displays class constructors and methods, in a tree layout that mimics the structure of the .NET assembly.

Items in the list are identified by icons that indicate the method type, and by the class or method name. Method signatures are displayed as a tool tips.

The icons for the method types are described in the following table:

Icon	Method type	Description
	Class constructor	<p>The class constructor icon represents all .ctor methods for this class. Instance, static and entry point methods included in the class are nested under the class constructor.</p> <p>Note:</p> <ul style="list-style-type: none"> ■ Underlying .ctor methods are not displayed in the list as separate methods ■ If a class does not include a .ctor method, the class constructor name is displayed, but the item cannot be selected. This does not affect nested methods, which can still be protected individually. ■ Protection or settings defined for a class constructor do not affect nested methods
	Instance method	A method that does not include a <code>static</code> modifier
	Entry point	The entry point for a .NET executable
	Static method	A method that includes a <code>static</code> modifier

When the check box to the left of a method is selected, that method is selected for HASP SRM Envelope protection. By default, all protectable items are selected.

Note:

- Selecting or clearing the check box of a higher-level item does not affect nested items. For example, if you clear the check box of a class constructor, methods nested under it remain selected.
- When a method name is grayed-out, it cannot be selected for protection
- If the Protection type is Win32 Shell only, you cannot protect individual methods in that .NET assembly
- An assembly cannot be protected when the check boxes for all items in the list have been cleared

Method-specific Features and Parameters in .NET Assemblies

You can use HASP SRM Envelope to define separate Feature IDs for individual methods in your .NET assembly. This enables you to:

- Make use of the separate encryption key inherent in each Feature to provide enhanced security for individual methods
- Determine how often the protected program logs into an individual method

At run-time, the protected program searches for all relevant Feature IDs in the HASP SRM protection key.

You can determine how often the protected program logs into each Feature ID in the HASP SRM protection key and performs decryption using that Feature ID by specifying the Frequency for specific methods.

Note:

- You can only specify the Feature ID and Frequency for methods that have been selected for protection
 - If the Protection type is Win32 Shell only, you cannot specify a Feature ID or Frequency for individual methods
 - You can select multiple methods and specify the same Feature ID and Frequency for all selected items
-

The available Frequency options are described in the following table:

Frequency Type	Description
Once per program (Default)	A check is performed the first time a method using the Feature ID indicated for that method is called, regardless of the number of methods that share the same Feature ID across the program.
Once per class instance	A check is performed when the method is run, once for each Feature ID within the same class. <ul style="list-style-type: none">■ If the same Feature ID is also assigned to the class constructor, the check is performed the first time the .ctor method is run.■ If the same Feature ID is used in other classes, the check is performed separately for each class. <p>Note: The Once per class instance frequency is available only for Instance methods.</p>
Every time	A check is performed every time the method is called

Recommendations:

- Use the Once per Application default setting. The Once per Instance and Every time settings may slow the performance of your program.
- If a counter-based license is being defined, use the Every time setting only for the method that determines licensing, as the counter is decremented every time the method is called.

If you choose to assign separate Feature IDs for individual methods, you must ensure that your application code can only call the Feature IDs for those methods for which a valid license has been installed in a HASP protection key.

If methods that do not have a valid license in a HASP protection key are called, it will cause HASP SRM Envelope to generate an error loop that can only be stopped by installing a valid license.

An API is provided as part of the HASP SRM installation that enables you to ensure that the error loop does not occur. The API is located in ...\\Program Files\\Aladdin\\HASP SRM\\Samples\\Envelope\\EnvelopeRuntime.NET.

To use the API

To prevent an error loop occurring if a method for which a license has expired or does not exist, register a **NotificationDelegate** handler, as follows:

1. Include the **Aladdin.HASP.EnvelopeRuntime** assembly in your source code.
2. Select one of the following handlers, depending on the behavior that you require when the handler is invoked.

EnvelopeRuntimeStatus.StatusThrowException	Discontinue execution path by throwing an exception
EnvelopeRuntimeStatus.StatusReturnNothing	Discontinue execution path by returning a null reference (Nothing)
EnvelopeRuntimeStatus.StatusAlertAndRetry	Default Display message box that asks the user for the license, then retry.
EnvelopeRuntimeStatus.StatusRetry	Transparently retry

The **NotificationDelegate** handler will be invoked whenever the HASP SRM Envelope run-time cannot decrypt a protected method. It will also receive the appropriate HASP SRM error status code. You can use this information in your own “license required” error message, instructing your user to abort or retry their action.

Code and Symbol Obfuscation in .NET Assemblies

Obfuscation is the process of turning meaningful strings into random strings of letters or numbers. Using HASP SRM, you can apply obfuscation as an anti-reverse engineering security measure.

By default, all symbol names in the protected .NET assembly are obfuscated as part of the protection process. In addition, you can choose to obfuscate the entire code of a selected method. Since code obfuscation may slow the performance of your program, it is not selected by default.

You can apply Code obfuscation to a method regardless of whether it is selected for protection in the Methods selected for protection list.

Defining HASP SRM Envelope Protection Settings in Source Code

Instead of specifying your protection settings using the HASP SRM Envelope GUI, you can use the .NET framework custom attributes for the `Aladdin.HASP.Envelope` assembly to add definitions directly to your source code.

The custom attributes can be applied to assemblies, classes, and methods. Protection settings in your source code are processed according to hierarchy, in descending order of method, class, and assembly.

Protection settings that are defined in your source code override settings already specified in the HASP SRM Envelope GUI, and you cannot use the GUI to edit the settings once they have been integrated in your code. However, you can use the GUI to view the protection settings that have been specified in your code.

To use the custom attributes, you must include the **Aladdin.HASP.Envelope** assembly in your project.

Note:

`Aladdin.HASP.Envelope.dll` is not required for protected assemblies and does not have to be distributed to your customers.

Using the custom attributes, you can define the following protection settings:

Name	Description	Type	Default Value
Protect	Protect this method	bool	true
FeatureId	Feature ID to be used for protection	int	-1 (global Feature)
Encrypt	Encrypt this method	bool	true
Code Obfuscation	Obfuscate complete code for this method	bool	false
Frequency	When license for method is to be checked	EnvelopeMethodProtectionFrequency	CheckOncePerApplication

Sample

The following sample shows how protection settings can be applied in source code. The source code comments are italicized.

```
using System;
using Aladdin.HASP.Envelope;

/// do not protect any methods in this assembly
[assembly: EnvelopeMethodProtectionAttributes(Protect=false)]
namespace MyProgram
{
    /// methods in this class do not get protected, because
    protection
    /// settings are inherited from assembly
    class MyExample
    {
        /// this method does not get protected
        static void Main(string[] args)
        {
            Console.WriteLine("{0} + {1} = {2}", 3, 4,
                MyClass.Add(3, 4));
            Console.WriteLine("{0} * {1} = {2}", 3, 4,
                MyClass.Multiply(3, 4));
        }
    }

/// protect all methods in this class with Feature ID 0
[EnvelopeMethodProtectionAttributes(Protect=true,
    FeatureId=0)]
class MyClass
{
    /// protect the Add method using Feature ID 1,
    obfuscate the code,
    /// check the license everytime this method is
    invoked
    [EnvelopeMethodProtectionAttributes(Protect=true,
        FeatureId=1, Encrypt=true,
        CodeObfuscation=true,
        Frequency=EnvelopeMethodProtectionFrequency.
        CheckEveryTime)]
    public int Add(int a, int b)
    {
        return a + b;
    }

    /// protection settings for this method are
    inherited from the settings of the class
    public int Multiply(int a, int b)
    {
        return a * b;
    }
}
```

Additional HASP SRM Envelope .NET API Information

- The protection definitions and defaults are based on those provided in the HASP SRM Envelope GUI
- By default, static methods and methods that have a very small footprint are not protected. To protect these methods, you must specify the protection settings at method level in your source code.

HASP SRM Envelope for Linux Applications

HASP SRM Envelope protection can be implemented for Linux executables and shared objects using a command-line utility.

HASP SRM Envelope Prerequisites for Linux

To use the HASP SRM Envelope utility, all of the following components must be installed on your system:

- HASP SRM Run-time Environment
- HASP SRM Vendor Suite, containing the HASP SRM Envelope command-line utility for Linux and the MasterHASP wizard
- A valid Vendor Code stored in the `VendorCodes` folder.
For additional information, see *Extracting the Vendor Code from HASP SRM Vendor Keys*
- The Linux executables and shared libraries that you want to protect. Only x86 32-bit ELF executables and shared libraries are supported.

Protecting Linux Applications

You protect Linux applications by:

1. Defining and storing protection parameters in a HASP SRM Envelope configuration file
 2. Accessing the Linux project file during the protection session
- HASP SRM Envelope configuration parameters are detailed in *Envelope Configuration Settings for Linux.pdf*, which is available in the **Docs** folder on the HASP SRM installation DVD.

Activating HASP SRM Envelope on Linux

After protection parameters are defined and stored in the HASP SRM Envelope configuration file, you activate HASP SRM Envelope using one of the following methods:

- Using the command-line utility, specify the mandatory HASP SRM Envelope parameters, then run HASP SRM Envelope using the default settings.
- Open the HASP SRM Envelope configuration file and edit the settings as required. Using the command-line utility, program the utility to parse the HASP SRM Envelope configuration file, then run HASP SRM Envelope. The configuration file is called envconfig.cfgx

Note:

When running the HASP SRM Envelope command-line utility, use either the command-line switches, or the configuration file.

Overwrite Parameters for Configuration File

Several parameters defined in the configuration file can be overwritten by the optional arguments listed in the following table.

Parameter	Description
-v --vcf:<filename>	Vendor Code file
-f --fid:<id>	Feature ID. If no Feature ID is specified, default Feature ID will be used.
-b --bgchk:<time>	Enables background checks. Time is in seconds. (0 = off, default = 300)
-e --enclevel:<level>	Encryption level. (1–5, default = 4)
-c --cfg:<file>	HASP SRM Envelope configuration file for Linux
-m --msg:<file>	Message file

Parameter	Description
<code>-m --msg-out:<val></code>	The message output mode at run-time. 0 = no message output 1 = GUI 4 = console 5 = GUI and console (default = 1)
<code>-m --wchar</code>	Writes run-time errors as wide character strings. Required when you specify that messages will be output to a console (values 4 or 5 in the previous switch).
<code>-h --help</code>	Displays help screen
<code>-q --quiet</code>	Specifies that only error and warning messages are displayed

HASP SRM Envelope for Mac Binaries

HASP SRM Envelope for Mac enables you to protect Mach-O executables and dynamic libraries (referred to as binaries). Both GUI and command-line versions of the application are available.

Before using HASP SRM Envelope for Mac, it is recommended that you familiarize yourself with the general HASP SRM Envelope information about HASP SRM Envelope protection that is provided at the beginning of this chapter.

HASP SRM Envelope Prerequisites for Mac

To use the HASP SRM Envelope utility, all of the following components must be installed on your system:

- HASP SRM Run-time Environment
- HASP SRM Vendor Suite, containing the HASP SRM Envelope and the MasterHASP wizard
- A valid Vendor Code stored in the `VendorCodes` folder.
For additional information, see *Extracting the Vendor Code from HASP SRM Vendor Keys*
- The Mac binaries that you want to protect

Running HASP SRM Envelope for Mac

Navigate to the location in which HASP SRM is stored. Select MacOS > VendorTools > VendorSuite >Envelope. HASP SRM Envelope is launched.

To access the command-line version of HASP SRM Envelope, go to:
...\\Aladdin\\HASP SRM\\VendorTools\\VendorSuite\\envelope_darwin

Type **envelope_darwin -h** in the command line to start the command-line version of HASP SRM Envelope.

HASP SRM Envelope for Mac Protection Parameters

After your Mac executable or dynamic library has been included in a HASP SRM project, protection can be performed effortlessly, based on the default HASP SRM Envelope settings. In addition, you can define and calibrate a range of protection parameters that affect the attributes and behavior of the protected binary.

HASP SRM Envelope customizable parameters are displayed in the Protection Details screen and the Default Protection Settings screen. You can select a specific binary in the Project pane and, from the Protection Details screen, view and edit the binary's parameters using the following three tabs:

- General tab
- Advanced tab
- Protection Settings tab

All parameters and procedures are detailed in the HASP SRM Envelope Help documentation.

HASP SRM Envelope for Java Executables

HASP SRM Envelope for Java enables you to protect JAR executables. Before using HASP SRM Envelope for Java, it is recommended that you familiarize yourself with the general HASP SRM Envelope information about HASP SRM Envelope protection that is provided at the beginning of this chapter.

Protection of your software is performed on a Windows machine, after which you distribute the protected software together with the appropriate Java run-time libraries for the end-user operating system—Windows, Mac, or Linux.

Note:

Java applications that have been obfuscated, or protected using third-party tools, are not supported by HASP SRM Envelope.

HASP SRM Envelope Prerequisites for Java

To use the HASP SRM Envelope for Java engine, all of the following components must be installed on your system:

- The Java JRE or JDK must be installed
- HASP SRM Run-time Environment
- HASP SRM Vendor Suite, containing the HASP SRM Envelope and the MasterHASP wizard
- A valid Vendor Code stored in the *VendorCodes* folder.
For additional information, see *Extracting the Vendor Code from HASP SRM Vendor Keys*
- The JAR executables that you want to protect

Note:

In order for your protected JAR executables to function at run-time, a HASP DLL is required. The following DLLs must be included with your protected program: *haspjert.dll* and *haspjert_x64.dll*.

Running HASP SRM Envelope for Java Engines

In the Start menu, select Aladdin > HASP SRM > Vendor Suite. From the HASP SRM Vendor Suite program selection screen, launch HASP SRM Envelope.

HASP SRM Envelope for Java Protection Parameters

After your Java executable (JAR file) has been included in a HASP SRM project, protection can be performed effortlessly, based on the default HASP SRM Envelope settings. In addition, you can define and calibrate a range of protection parameters that affect the attributes and behavior of the protected file.

HASP SRM Envelope customizable parameters are displayed in the Protection Details screen and the Default Protection Settings screen. You can select a specific JAR executable in the Project pane and, from the Protection Details screen, view and edit its parameters using the following three tabs:

- General tab
- Advanced tab
- Protection Settings tab

Protecting Java Executables

When you protect a Java executable with HASP SRM Envelope, you can determine protection attributes and aspects of the behavior of the protected program.

Protected Program Behavior

HASP SRM Envelope enables you to define the following additional properties for Java executables:

- The compression level of protected classes.
- The time interval between checks for the presence of a required HASP SRM protection key.

All parameters and procedures are detailed in the HASP SRM Envelope Help documentation.

Chapter 5

Protection Strategies

HASP SRM provides the best hardware and software tools available in the market today. The contribution that HASP SRM can make to protecting your software and intellectual property has already been well documented in the previous chapters. However, it is the strength and sophistication of the strategies that you employ in partnership with HASP SRM that will truly maximize your software protection.

In this chapter:

- Overview
- General Protection Guidelines
- Types of Attack and their HASP SRM Defense

Overview

Parallel with advances in software and software security development, software crackers are developing more sophisticated means of deconstructing software protection measures—in order to duplicate and distribute illegal copies of unlicensed software—and to reverse engineer code in order to steal intellectual property.

To maintain the rights to your revenue stream, it is essential that you remain vigilant about the strategies of your “enemies”, and that you continually and wisely implement the latest and strongest techniques for protecting your software.

The degree of investment that you make in limiting the ability of software crackers to illegally access your software will depend on a number of considerations, including:

- The value of your software
- The history of previous cracking attempts related to your software
- The geographical region in which your software will be distributed
- The target market for your software (for example, whether it is intended to be sold to individual consumers, small office/home office users, or enterprise users)

There is no software protection that is absolutely uncrackable. However, if you constantly implement up-to-date strategies using the strongest software protection methods, you significantly decrease your vulnerability to such attacks.

This chapter describes general protection strategies for software vendors. It then outlines some of the methods that software crackers employ in order to identify and negate software protection and security, and recommends HASP SRM measures that you can use to enhance your software security.

In addition to the information described in this manual, our team of Aladdin Consultants provides personalized assistance in strengthening software security and protection. They can provide help on a wide range of issues, including additional protection strategies and implementation techniques.

For information on consultation services offered by Aladdin Knowledge Systems, contact your local Aladdin representative.

General Protection Guidelines

The following guidelines should be followed, regardless of the software protection strategies being implemented.

Aladdin Knowledge Systems thoroughly and constantly investigates potential and actual threats to software security, and HASP SRM is continuously being updated to counter such threats—before they can compromise the security of your software.

Use the Most Up-to-date Protection Software

Protection software updates generally include enhancements to counter the most recent threats. Always check for and use the most recent version of HASP SRM protection software that is available. The latest software can be downloaded from the Aladdin Website, at <http://www.aladdin.com/support/hasp-srm/vendor.aspx>.

Constantly Re-evaluate Protection Strategies

Frequently consider what protection strategies you can upgrade or enhance to provide stronger security for your software.

Use Evolving Strategies to Prevent Predictability

Vary the strategies that you implement between your software releases. If a software cracker is able to detect a pattern to your protection strategies, the strategies can more easily be negated or evaded.

Vary Behavior when Cracking Attempt is Detected

When a cracking attempt is detected (for example, through using a checksum—described later in the chapter), delay the reactive behavior of your software, thus breaking the logical connection between “cause” and “effect”. Delayed reaction confuses a software cracker by obscuring the link between the cracking attempt and the negative reaction of the software to that attempt.

Behavior such as impairing program functionality when a cracking attempt is detected can be very effective. Additional behaviors could include causing the program to crash, overwriting data files, or deliberately causing the program to become inaccurate, causing the program to become undependable.

Types of Attack and their HASP SRM Defense

It is important to “know your enemy”. When you are well informed about the types of attacks that a software cracker may make, you will be best able to devise and implement strategies that limit or prevent their success.

This section describes the elements of some of the more common attacks that software crackers use, and refers you to specific HASP SRM strategies that you can implement to counter such attacks.

Patching Executables and DLLs

A software cracker disassembles and/or debugs EXE or DLL files to find protected code. The actual file is then patched in order to modify run-time flow, or to remove calls in the code.

Commonly, the software cracker sends a small, standalone patch executable that the end user runs in order to patch your software.

HASP SRM Solution

The more files that are protected, the longer it takes a software cracker to remove protection. You can protect multiple executable and DLL files using HASP SRM Envelope. You can also use the DataHASP feature of HASP SRM Envelope to encrypt and protect data files.

Modifying Key Memory

Licensing data is normally stored in the memory of a software protection key. A software cracker attempts to access the key memory in order to modify the licensing terms. For example, a depleted execution-based license might be changed to a perpetual license, or a feature that has not been paid for might be enabled.

HASP SRM Solution

In the context of HASP SRM, Read-only memory (ROM) is a segment of the memory that can contain data that the protection application can access, but cannot overwrite. HASP SRM keys contain two ROM segments, one of which contains HASP SRM Feature-based licenses. The second segment provides an area in which vendor-customized data can be stored. These segments can only be updated using remote updates.

HASP SRM automatic Feature-based licenses utilize read-only memory of HASP SRM protection keys. The variety of available licenses are sufficient for almost any licensing model.

You can customize your own licenses and still use a ROM segment in a HASP SRM protection key's memory. Note however that licenses that have been customized must remain static (for example, such licenses cannot include a decremented number of executions).

For additional information about licensing models, see the document *Gaining a Competitive Edge with HASP SRM Licensing*.

Emulating Protection Keys

To emulate the software of a protection key manufacturer, a software cracker creates an application that replays previously recorded calls, as if an actual protection key is returning the calls.

Limited functionality emulators only record and replay calls. Full-functionality emulators also emulate the key, including its encryption. A software cracker requires access to the encryption key to create a full-functionality emulator.

There are several places in which emulators can reside. Primarily, they attempt to replace the driver.

HASP SRM Solution

HASP SRM provides a secure channel between an application and the HASP HL key. Data that passes between the protected application and the key is encrypted. Taking advantage of the secure channel functionality between your application and a HASP HL key provides you with the strongest possible protection.

A different encryption key is used in every session. This means that someone recording data passing through the secure channel cannot replay the data, since the encryption key used to encrypt the data will differ from that used to decrypt the data.

Using Terminal Servers and Terminal Service Solutions

When using the terminal servers of some operating systems, it might be possible for an end user with a locally connected protection key to enable software on multiple concurrent terminals.

HASP SRM Solution

The HASP SRM protection includes mechanisms to determine if a protected application is running on a terminal server. If such a scenario is detected, and the license is on a local protection key, the program will not function, subject to vendor overrides. If the license is on a network key, one of the concurrent licenses will be consumed, subject to vendor overrides.

Cloning Hardware Keys

The software cracker reverse-engineers a hardware protection key, then creates duplicates. Such an attack is extremely costly to the cracker, both in terms of the reverse engineering tools and the expertise required. It is also costly in terms of ongoing production of hardware keys.

HASP SRM Solution

HASP HL keys are each unique and have their own ID. Keys that are in the same batch and behave identically are each uniquely encrypted, the key's customized controller and memory forming a unique locked pair. This means that if the memory of one HASP HL key is copied to another HASP HL key, the second key will not function.

Clock Tampering

Clock tampering relates to either the system clock of the machine on which the protected software is running, or to a real-time clock contained in keys. The software cracker resets the time to enable extended, unlicensed use of the software.

HASP SRM Solution

Use either the HASP HL Time or HASP HL NetTime keys when implementing time-based licenses for your software. Neither the clock itself, or the license which is stored in read-only memory, can be modified.

Additional HASP SRM-specific Strategies

This section describes additional general protection strategies that are available to users of HASP SRM.

Use Both the HASP SRM Run-time API and HASP SRM Envelope

Maximize security by using the HASP SRM Run-time API to implement calls to a HASP SRM protection key, and protect the application with HASP SRM Envelope. Using one protection method does not preclude the use of the other.

Insert Multiple Calls in your Code

Inserting many calls, throughout the code, to the HASP SRM protection key in order to check the presence of the key, and binding data from the key with the software functionality, frustrates those attempting to crack your software. Multiple calls increase the difficulty in tracing a protection scheme.

You can also add obstacles to a potential software cracker's progress by encrypting data that has no bearing on the application. Similarly, you can divert attention by generating "noise" through random number generators, time values, intermediate results of calculations, and other mechanisms that do not lead to meaningful results or actions.

Encrypt/Decrypt Data with a HASP SRM Protection Key

Encryption and decryption processes are performed inside a HASP SRM protection key, well beyond the reach of any debugging utility.

Encrypting data with the HASP SRM AES-based encryption engine considerably enhances software security. By encrypting data used by your application, the decryption process depends on both the presence of a HASP SRM protection key and its internal intelligence.

By implementing a HASP SRM Run-time API scheme in which data is decrypted by a HASP SRM protection key, the association between the protected application and the HASP SRM protection key cannot easily be removed. Cracking the software also necessitates the software cracker decrypting the data.

Use a Checksum to Verify Integrity of Executable Files

Compare the value in the executable file with a checksum stored in HASP SRM protection key memory. If the two values are not equal, you can assume that someone has attempted to modify the files.

Repeat this check in various places in the code, varying it in each place to make it more difficult for a software cracker to detect.



Chapter 6

Working with the DataHASP Encryption Utility

The chapter describes data file protection using the DataHASP utility.

In this chapter:

- [Introduction](#)
- [DataHASP Prerequisites](#)

Introduction

The HASP SRM Envelope DataHASP encryption utility enhances the default HASP SRM Envelope protection by injecting a protected program with the ability to encrypt and decrypt specified data files. Decryption and encryption can be applied to files that have been pre-encrypted, and to new files created by your protected application. Decryption occurs when a data file is opened and encryption occurs when a data file is saved.

The ability to implement DataHASP functionality is enabled when the executable file is being protected using HASP SRM Envelope. The types of files that are to be encrypted and decrypted are also specified at the same time.

Note:

It is important that you use DataHASP to pre-encrypt any data files that you intend to distribute with your protected program.

When to Encrypt Data Files

Protect your data files if:

- You want to maximize your software's security. When your software is being protected, consider adding another layer of security by protecting those data files that are accessed by your software.
- You want to protect your intellectual property. Your data files represent your investments, so it is worthwhile preventing your intellectual property from being exposed without protection.

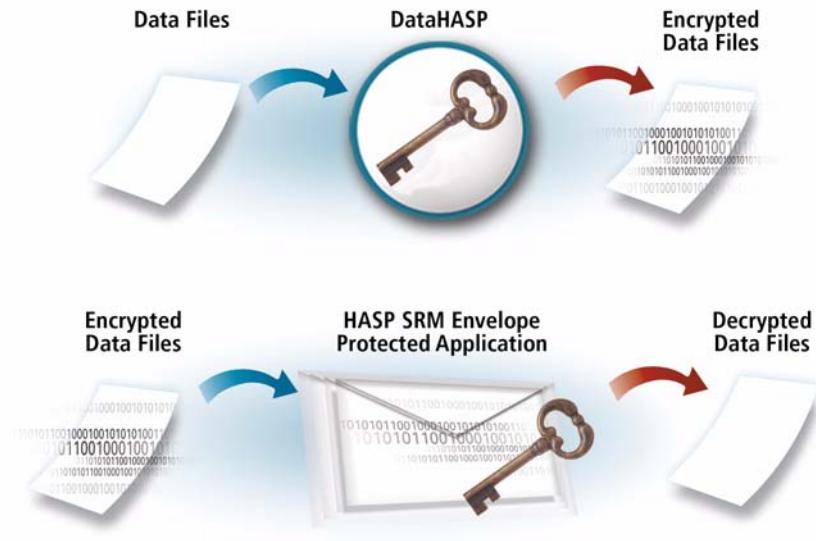
DataHASP Users

Anyone involved in the production or maintenance of data files for your protected software should use DataHASP. This could include people in roles such as graphic artists, information developers, or accountants.

HASP SRM Data File Handling

DataHASP generates data files that can be processed by programs protected by HASP SRM Envelope. After a specific set of data files has been encrypted, those files can be accessed by HASP SRM Envelope.

The following figure illustrates the actions related to encrypting data files that take place between HASP SRM Envelope and DataHASP. After data files are encrypted, those files can only be accessed and decrypted by applications protected with HASP SRM Envelope.



Operative Interaction between HASP SRM Envelope and DataHASP

DataHASP Prerequisites

In order to use DataHASP, you must have the following components installed. In addition, you need to know the location of the appropriate HASP SRM Envelope project, and the files that you want to encrypt.

- **HASP SRM protection keys:** Ensure that the HASP SRM protection key that is used to protect the program is accessible when protecting data.
While encryption and decryption of data is performed in the protected device driver, the HASP SRM protection key generates the encryption key. This method ensures maximum protection while maintaining the high performance that is required when large volumes of data are decrypted.

- **Run-time Environment:** Before using the DataHASP utility, ensure that the appropriate run-time environment is installed on your machine.
- **Input:** To use DataHASP correctly, the following must be readily available in known directories:
 - ◆ A saved HASP SRM Envelope project containing a program or programs with enabled data filters
 - ◆ Data files you want to encrypt. These files must satisfy the file filters specified for the program(s)

Launching DataHASP

You can launch DataHASP directly from HASP SRM Envelope after you have defined data filters. Alternatively, you can click the `datahasp.exe` file, located in the following directory on your system:

`...\\Program Files\\Aladdin\\HASP SRM\\VendorTools\\VendorSuite`

Supported Functionality

The DataHASP utility has a conveniently designed interface that manages all aspects of data encryption projects. The interface enables you to:

- Open HASP SRM Envelope projects and list the programs they contain
- Edit existing DataHASP projects
- Add files or directories for data encryption
- Encrypt data files and directories for specific programs protected by HASP SRM Envelope
- View and save encryption process logs
- Access all HASP SRM Vendor Suite applications and the Aladdin Website

Modifying Input

Data files are subject to regular modification. DataHASP's design anticipates the requirement to regularly update data file content. After you have encrypted modified data files, they can only be accessed if a specific HASP SRM protection key is detected.

Part 3 Licensing

In this section:

- [Chapter 7: Introduction to HASP SRM Business Studio](#)
Provides an overview of HASP SRM Business Studio and the major processes it facilitates, lists its prerequisites, and explains how to use the application.
- [Chapter 8: Preparing Your HASP SRM Licensing Plan](#)
Outlines the importance of licensing your software products, describes the licensing options provided by HASP SRM, and explains how to prepare a licensing plan for use with HASP SRM Business Studio.
- [Chapter 9: Implementing Your HASP SRM Licensing Plan](#)
Describes how to use HASP SRM Business Studio to define and manage the Features and Products included in your HASP SRM licensing plan, and how to maintain Products and licenses as circumstances change.
- [Chapter 10: HASP SRM Orders, Production, and Development Tasks](#)
Describes how to use HASP SRM Business Studio to manage and produce orders, and to perform additional development-related tasks.
- [Chapter 11: HASP SRM Administration and Customer Services](#)
Describes how to use HASP SRM Business Studio to define HASP SRM user details, maintain Batch Codes, configure system settings, perform manual Product activation and maintain customer data.
- [Chapter 12: HASP SRM Remote Update System](#)
Describes the HASP SRM Remote Update System (RUS) utility and explains how to use RUS to remotely update license data in deployed HASP SRM protection keys.

Chapter 7

Introduction to HASP SRM Business Studio

This chapter provides an overview of HASP SRM Business Studio and the major processes it facilitates. It also describes the user roles and their functions in HASP SRM Business Studio, lists its prerequisites, and explains how to start using the application.

In this chapter:

- [HASP SRM Business Studio Overview](#)
 - [HASP SRM Business Studio User Roles](#)
 - [Getting Started with HASP SRM Business Studio](#)
-

Note:

This chapter provides high-level information on HASP SRM Business Studio processes. For detailed practical instructions for using each function in HASP SRM Business Studio, see the HASP SRM Business Studio Help documentation.

HASP SRM Business Studio Overview

HASP SRM Business Studio is a powerful role-based application designed to manage the business activities required to implement and maintain HASP SRM in your organization.

HASP SRM Business Studio streamlines the major workflows in the licensing lifecycle of a protected software application, from the moment it is developed, through its packaging, marketing, selling, and order-taking, to its distribution and upgrading.

HASP SRM separates the software protection process (implemented with HASP SRM Run-time API or HASP SRM Envelope) from the licensing and production processes (implemented with HASP SRM Business Studio), enabling you to modify your company's licensing strategy as necessary when circumstances change, and to implement these changes quickly and efficiently.

HASP SRM Business Studio Major Workflows

HASP SRM Business Studio comprises two major components—the Business Studio client application and the Business Studio Server. Together they handle three major workflows: license planning, order processing and production, and software activation.

License Planning

Before starting to use HASP SRM Business Studio, it is recommended that business decision-makers in your organization, such as product or marketing managers, prepare a licensing plan based on the company's licensing strategy.

The licensing plan identifies each individual functional component in your software applications that can be independently controlled by a license. In HASP SRM, these components are referred to as *Features*. A Feature may be an entire application, a module, or a specific functionality such as Print, Save or Draw. Over 64,000 Features can be defined using HASP SRM Business Studio.

In addition, the licensing plan can include the *Products* that your company wants to sell and/or distribute for evaluation. In HASP SRM, a Product is a collection of one or more licensed Features that can be sold or distributed as an item.

After completing the licensing plan, the Features and Products can be defined in HASP SRM Business Studio. The output of this process is a repository of Products that are stored in the HASP SRM Business Studio Server database—ready for customer orders.

Note:

You can make subsequent changes to your licensing plan and license models at any time, adding Features and Products as required.

For additional information on preparing a licensing plan for use with HASP SRM, see Chapter 8, *Preparing Your HASP SRM Licensing Plan*.

For additional information on defining Features and Products in HASP SRM Business Studio, see Chapter 9, *Implementing Your HASP SRM Licensing Plan*.

Order Processing and Production

Staff in your organization's orders department receive and fulfil orders. An *order* is a request for HASP SRM items, and can be one of the following:

- A request for Products to be supplied with one or more HASP SRM protection keys
- A *HASP Update* that specifies changes to be made to the license terms and/or data stored in HASP SRM protection keys that have already been deployed

Order processing personnel process the order details using HASP SRM Business Studio. The license terms of each Feature in the ordered Products may be specified when the Product is defined, or when the order is processed.

When all the details of an order have been defined, the order can be produced. The Product details, including the license terms and memory data, are stored in the specified HASP SRM protection keys at the production stage or when the Product is activated, and can be updated after the keys have been deployed.

For additional information on processing and producing orders in HASP SRM Business Studio, see Chapter 10, *HASP SRM Orders, Production, and Development Tasks*.

Software Activation and Online Updates

Product activation and *online* updates are performed by means of the HASP SRM Business Studio Server when your software is at the end user's site.

Product Activation with HASP SL Keys

With HASP SL keys, the software is only activated and usable after the following steps are completed:

1. A Product Key is produced in HASP SRM Business Studio and supplied to the end user.
2. The end user sends the Product Key to the HASP SRM Business Studio Server for validation.
3. A HASP SL key with license terms is sent back and installed on the end user's computer.

Online Updates

Online updates can be implemented in the following ways:

- The HASP Update information is stored on the HASP SRM Business Studio Server for use in software that you provide to your end users. The update is then implemented as part of the end users' installation process.
- A file that contains the HASP Update information is generated and sent to the end user. This file can then be used with the HASP SRM Remote Update System (RUS) utility to ensure secure, remote updating of the deployed HASP SRM protection keys.
For additional information on RUS, see Chapter 12, *HASP SRM Remote Update System*.

A receipt can be generated when a HASP Update is processed, to verify that the update has been applied.

HASP SRM Business Studio User Roles

HASP SRM Business Studio is a role-based application. The functions and tasks that you can perform are determined by the user roles assigned to you by the HASP SRM Administrator, as detailed in the following table.

Role	Available Tasks	For more info, see...
Product Management	Define and manage Features and Products	Chapter 8— <i>Preparing Your HASP SRM Licensing Plan</i> Chapter 9— <i>Implementing Your HASP SRM Licensing Plan</i>
Order Management	Define, and manage customer orders; check in Customer-to-Vendor files and HASP SRM key data	Chapter 10— <i>HASP SRM Orders, Production, and Development Tasks</i>
Production	View and produce customer orders	Chapter 10— <i>HASP SRM Orders, Production, and Development Tasks</i>
Customer Services	View and edit customer details; perform manual Product activation	Chapter 11— <i>HASP SRM Administration and Customer Services</i>
Development	Perform development-related tasks, such as generating the HASP SRM Run-time Environment installer	Chapter 10— <i>HASP SRM Orders, Production, and Development Tasks</i>
Administration	HASP SRM administration functions, including defining users and their roles, configuring system settings, and managing Batch Codes	Chapter 11— <i>HASP SRM Administration and Customer Services</i>

Getting Started with HASP SRM Business Studio

Before you start to use HASP SRM Business Studio, ensure that:

- HASP SRM Vendor Suite is installed on your machine
- You have received a HASP SRM user name and password from your HASP SRM system administrator

After you have logged in to HASP SRM Business Studio, you can change the HASP SRM password that you received to a password of your own choice. For additional information on changing your password, see the HASP SRM Business Studio Help documentation.

Note:

HASP SRM passwords are case-sensitive, so ensure that you use upper-case and lower-case letters correctly when you type your password.

Prerequisites for the HASP SRM Administrator

If you are performing administration functions for HASP SRM in your organization, it is essential that you check the following requirements before you (or other users) start to use HASP SRM Business Studio:

- A valid connection to the HASP SRM Business Studio Server must exist. For additional information on installing the HASP SRM Business Studio Server, see the *HASP SRM Installation Guide*.
- You must have a HASP SRM Master key that contains your license for HASP SRM and your company's specific Vendor Code. If not previously introduced, the HASP SRM Master key is introduced during the HASP SRM Business Studio Server installation process.

- The HASP SRM Master key must remain connected to the HASP SRM Business Studio Server machine in order to enable you to perform HASP SRM Business Studio functions. If the HASP SRM Business Studio Server is installed on more than one server machine, each server must have a separate HASP SRM Master key locally connected.

Note:

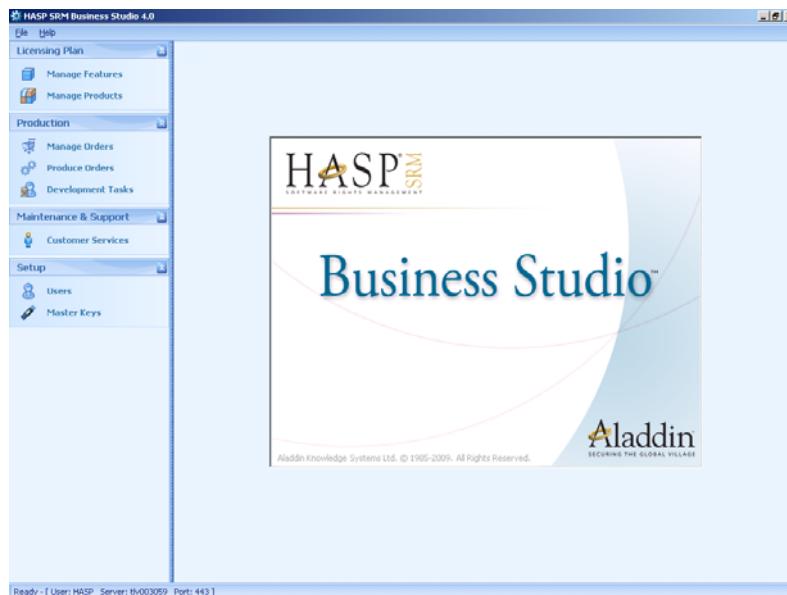
If you are evaluating HASP SRM Business Studio, you can use the DEMOMA Batch Code provided, which does not require a HASP SRM Master key.

- You must define user names, passwords, roles, and batch access for each HASP SRM Business Studio user, and also for yourself. For additional information, see *Maintaining User Details* on page 179.
A default user name and password is provided with HASP SRM to enable you to log in to HASP SRM Business Studio as the HASP SRM Administrator. The default user name and password is **HASP**.

For additional information on the HASP SRM administration tasks and options in HASP SRM Business Studio, see *Administration Tasks* on page 178.

HASP SRM Business Studio Window

When you log in, the HASP SRM Business Studio launch screen is displayed in the Main pane of the HASP SRM Business Studio window.



On the left is the HASP SRM Business Studio Function pane. This pane displays the function groups available for your use, depending on the user roles assigned to you.

When you click one of the functions in the Function pane, the window for that function is displayed in the Main pane. This window contains:

- Information relevant to the function you selected
- A Task pane on the right side of the window, containing tasks that you can perform within the selected function

For example, if you click Manage Features, the Manage Features window is displayed. Details of currently defined Features are displayed in the Main pane. The Task pane lists the tasks that can be performed, such as defining a new Feature, opening an existing Feature, deleting a Feature, and so on.

Many of the function windows provide filter and/or search fields to enable you to quickly locate required data.

Using the HASP SRM Business Studio Help

Detailed instructions for using each function and task in HASP SRM Business Studio are provided in the HASP SRM Business Studio Help documentation.

To open the HASP SRM Business Studio Help:

- From the Help menu in the HASP SRM Business Studio window, select HASP SRM Business Studio Help. The HASP SRM Business Studio Help documentation is displayed.
- To open context-sensitive Help for the current task or function, press the F1 key or click Help in any HASP SRM Business Studio window or dialog box. The Help topic associated with the current task or function is displayed.



Chapter 8

Preparing Your HASP SRM Licensing Plan

Before you start to use HASP SRM Business Studio in your organization, you may want to prepare a detailed licensing plan for use with HASP SRM. Although it is recommended that you prepare a licensing plan, it is not a prerequisite for using HASP SRM Business Studio. Licensing decisions can be implemented or varied on-the-fly.

This chapter outlines the importance of licensing your software products, describes the licensing options provided by HASP SRM, and suggests how you might prepare a detailed licensing plan for use with HASP SRM Business Studio.

In this chapter:

- Licensing Overview
- Preparing Your Licensing Plan
- Choosing the Protection Level for Your Products
- Designating Products for Trial or Grace Period Use
- Assigning License Terms to Features
- Utilizing HASP Memory
- Using Your Licensing Plan with HASP SRM Business Studio

Note:

This chapter provides high-level information about HASP SRM licensing options. For detailed practical instructions for implementing the licensing options in HASP SRM Business Studio, see the HASP SRM Business Studio Help documentation.

Licensing Overview

Part 2 of this Guide, *Protection*, explained in detail how to protect your software and intellectual property. In addition to protecting these valuable assets, it is essential that you protect your company's revenue by ensuring that your software is available only to the appropriate users, according to the terms that you define. This process is controlled by *licensing*.

Licensing provides you with the flexibility to implement your business strategies for the sale and distribution of your software products. You define the licensing terms with which your software is distributed or sold according to your decisions about what is commercially beneficial to your company.

For example, you may decide that you initially want to distribute your software free of charge, so that users can try it before purchasing. You will want to ensure that users can use it for only a limited time before it must be purchased.

Alternatively, you may publish very complex, expensive software. You may decide to make specific components of that software available for a lower price, thus making parts of it accessible to users who cannot afford the fully-featured version.

HASP SRM's versatility enables you to implement a wide variety of licensing models. Refer to the *Gaining a Competitive Edge with HASP SRM Licensing* guide for an overview of the many models you can apply to your software offerings.

Preparing Your Licensing Plan

A useful step in the development of a licensing strategy is the preparation of a *licensing plan*. Business decision-makers in your organization, such as product managers or marketing managers, define protection and business rules, and specify the licensing models required to meet your company's business needs.

A *licensing model* is the logic behind a business decision relating to the way a Product is licensed. For example, a rental license model enables you to charge for the use of software for a specific period of time.

HASP SRM enables you to choose from a variety of out-of-the-box licensing models, including:

- Trialware (try-before-you-buy)
- Rental/Subscription
- Module-based
- Feature-based
- Floating users
- Time-based
- Execution-based

You can define additional licensing models and software usage terms to meet your company's individual requirements.

It is recommended that you prepare a licensing plan before you start to use HASP SRM to streamline the implementation of your company's licensing strategy. Your HASP SRM licensing plan should be based on the detailed licensing requirements that you define for all the protected software applications to be sold by your company, and/or distributed for trial use.

The process of preparing a HASP SRM licensing plan can include the following steps:

1. Analyzing all the relevant software applications and identifying each functional component that can be licensed individually.
2. Combining these components into licensed entities that can be offered to customers.
3. Deciding which HASP SRM protection keys you want to supply with your software applications.
4. Specifying the detailed licensing terms to be applied, according to your licensing strategy.

The output of such a process is a comprehensive licensing plan that can be implemented using HASP SRM Business Studio.

Note:

You can make subsequent changes to your licensing plan and license models at any time.

Identifying Functional Components (Features)

The recommended first step in evaluating and planning your licensing requirements involves analyzing your software applications and identifying their functional components. Most applications can be segmented into a number of distinct functional components. In HASP SRM, these components are referred to as *Features*.

Each individual Feature is an identifiable functionality of a software application that can be independently controlled by a license.

In HASP SRM, a Feature may be an entire application, a module or a specific functionality such as Print, Save or Draw.

Example: Specifying Features

Scenario: The Product Manager of High Quality Software Ltd. (HQ Software), a company providing design software for the construction industry, identifies the specific functional components that the company wants to license, and assigns a Feature name to each component.

The following table lists the defined functional components and the Feature names assigned to each component:

Functional Component	Feature
Drawing design plans	DRAW
Viewing design plans	VIEW
Saving projects	SAVE
Printing designs	PRINT DESIGNS
Printing predefined reports	PRINT REPORTS
Generating tailored reports	REPORT GENERATOR

Combining Features into Products

After you have identified and listed all the individual Features to license, you can define the different combinations of licensed Features that your company wants to sell.

In HASP SRM, a collection of one or more licensed Features that can be sold as an item is referred to as a *Product*. Products can differ from each other, not just in the Features that they contain, but also in the license terms specified for each Feature.

Your licensing plan can contain the names of all the Products that your company wants to sell and/or distribute for evaluation, and the Features that each Product includes.

In HASP SRM, you have full control over the specific Products you define, the Features they include, and the license terms assigned to each Feature in each Product.

Example: Defining Products

Scenario: The HQ Software Product Manager decides to define a trial Product intended for distribution to customers who want to evaluate their software. This Product, HQ Design Demo, includes only the VIEW and PRINT DESIGNS Features.

In addition, the company defines:

- A Product intended for small-office customers, HQ Design Lite, offering the Features included in HQ Design Demo, with the addition of DRAW and SAVE
- A Product targeted towards larger customers, HQ Design Pro, that offers all available Features

Note:

The REPORT GENERATOR Feature has not yet been fully developed and is not currently included in the HQ Design Pro Product. This Feature is planned for a future release.

Choosing the Protection Level for Your Products

Your choice of the HASP SRM protection keys to be distributed together with your licensed software reflects the level of protection you wish to apply and the way you intend to control the use of or access to each Product.

Two types of HASP SRM protection keys are available:

- **HASP HL keys:** The hardware-based protection and licensing component of HASP SRM that provides the safest and strongest level of protection. For additional information, see *HASP HL Keys* on page 38.
- **HASP SL keys:** The software-based protection and licensing component of HASP SRM—virtual HASP HL keys. For additional information, see *HASP SL Keys* on page 39.

Your software and the user license are both *locked* to the HASP SRM protection key that you select.

When you define the Products for inclusion in your licensing plan, you also select which HASP SRM *locking type* to assign to each Product. The locking type determines the level of protection for each Product, as follows:

- **HASP HL locking only:** hardware-based level of protection
- **HASP SL locking only:** software-based level of protection
- **HASP HL or HASP SL locking:** software-based level of protection

HASP HL Key Protection and Activation

A Product that is protected with a HASP HL key can be activated only after the end user receives a HASP HL key containing the license terms for the Product and connects the key to the computer.

Benefits of HASP HL Key Protection

HASP HL key protection provides the strongest level of protection against piracy. The correct functionality of the software depends on the internal logic of the HASP HL key, which is virtually tamper-proof.

In addition, HASP HL key protection:

- Offers the strongest enforcement for license terms, which are stored and protected inside the HASP HL key
- Enables portability—the software can be used on any computer to which the HASP HL key is connected
- Does not require transaction with the software vendor to enable activation of the Product

HASP SL Key Protection and Activation

A Product that is protected with a HASP SL key can be activated only after the following steps have been completed:

1. A *Product Key*, consisting of a string of characters, is generated in HASP SRM Business Studio and supplied to the end user.
2. The end user returns the Product Key as proof of purchase.
3. The Product Key is sent to the HASP SRM Business Studio Server for verification.
4. A HASP SL key with license terms is sent back and installed on the end user's computer.

Benefits of HASP SL Key Protection

With HASP SL key protection:

- Product activation is instantaneous. End users can immediately start using the software with its fully licensed functionality.
- The activation process for end users is convenient and transparent.

- The online connection with end users can enable user registration data to be collected and used for marketing purposes.
- When using a network license that is locked to a HASP SL key, you can specify that a license can be detached from the network and attached to a remote recipient machine.

Specifying the Protection Level for Individual Orders

HASP SRM gives you the flexibility to choose the HASP SRM protection keys for a Product or according to the requirements of each individual order.

If you prefer not to specify the protection level in advance, you can assign the HASP HL or HASP SL locking type to a Product. With this locking type, the decision on which type of HASP SRM protection key is to be shipped with the Product is made when each order is processed.

A Product that is assigned the HASP HL or HASP SL locking type can be sent to the end user with either a HASP HL key or a HASP SL key.

WARNING!

A Product that can be distributed with both HASP HL keys and HASP SL keys is always supplied with the HASP SL key-level of protection, even when it is shipped with HASP HL keys.

Designating Products for Trial or Grace Period Use

HASP SRM enables you to create, protect, and distribute secure *trialware* versions of your software. You can invite users to download your trial software from networks, to share it with other users, and to give it away to their friends or colleagues. End users then have the option to purchase your software and to turn their trial copy of into a fully-functional version by activating it with a HASP SRM protection key.

You can also use HASP SRM to define *grace periods* for your software. During the grace period, and even after activation, end users can pass copies of their purchased software to as many friends as they wish. When a friend installs the software, it automatically reverts to a limited trial version for the entire grace period. After the grace period expires, the software can no longer run until it is activated with a HASP SRM protection key.

HASP SRM enables you to define trial and grace periods for software protected with any type of HASP SRM protection key.

For example, software protected with HASP HL keys can be purchased and delivered over the Internet while the HASP HL keys are shipped, and end users can start using the software while waiting for the arrival of their key.

Similarly, end users who purchase and install a software application can use it for a 30-day grace period without activating it. During this grace period, they can activate the software remotely and receive a HASP SL key, after which the software will run according to the purchased license terms stored in the keys. If the grace period expires and the software has not been activated, it will stop running until activated by the end user.

In HASP SRM, a Product that is intended for distribution as trialware or for use during a grace period is referred to as a *Provisional Product*.

HASP SRM locking types are not applicable to Provisional Products, since these Products are distributed without HASP SRM protection keys.

Your licensing plan can include all the Provisional Products to be offered by your organization.

Assigning License Terms to Features

HASP SRM enables you to assign individual *license terms* to each Feature in each Product that you define. You can also define Products that include the same Features, but with different license terms. Such decisions are based on the commercial requirements of your organization, and on the license models that you choose to implement.

You can control Feature usage through the license by specifying the *license type* to be applied. You can choose one of the following *license type*:

- **Perpetual:** Indicates that the license can be used an unlimited number of times for an unlimited period of time.
- **Expiration Date:** Specifies the date on which the license expires.
- **Executions:** Specifies the maximum number of times that the Feature can be used.
- **Time Period:** Specifies the number of days until the license expires, from the date of first use.

After you select the type of license to apply to each Feature in a Product, you can specify its value, for example, the number of times that a Feature can be used.

If the Feature is intended to be used on a network or remote desktop, you can also specify the number of concurrent instances allowed, and you can specify how concurrent instances are to be counted for the purpose of the license. In addition, if the Feature will be used in Products that are locked to HASP SL keys, you can specify that the Feature and its license may be temporarily detached from the network for attachment to a remote recipient machine.

Specifying License Values for Individual Orders

HASP SRM offers you maximum flexibility with regard to license terms, enabling you to supply the same Product to different customers with different license term values.

You do not have to specify in advance the exact values for the license type or the number of concurrent instances for each Feature in the Product. When each order for the Product is processed, the person processing the order defines the values required for that specific order.

Example: Specifying License Terms and Protection Levels

Scenario: The HQ Software Product Manager decides to specify the following license terms for its three Products:

- A trial period of 30 days for the PRINT and VIEW Features in its HQ Design Demo Product
- A low-cost annual rental license for the DRAW and SAVE Features in the HQ Design Lite Product, with unlimited usage for the PRINT and VIEW Features
- A more costly, fully-featured license for the HQ Design Pro Product that specifies unlimited usage for all Features

The following protection levels are defined for each of the Products:

- HQ Design Demo is defined as a Provisional Product, to enable it to be distributed freely for evaluation
- HQ Design Lite is supplied with HASP SL key protection, enabling electronic distribution
- HQ Design Pro is supplied with HASP HL key protection, for maximum security

The following table summarizes the three Products, their protection levels, and their licensed Features:

Product:	HQ Design Demo	HQ Design Lite	HQ Design Pro
Protection Level:	<i>Provisional</i>	<i>HASP SL keys</i>	<i>HASP HL keys</i>
License Model:	Trial	Rental	Unlimited
Feature			
DRAW	-	Expires after 1 year	Unlimited
VIEW	30 days	Unlimited	Unlimited
SAVE	-	Expires after 1 year	Unlimited
PRINT DESIGNS	30 days	Unlimited	Unlimited
PRINT REPORTS	-	-	Unlimited
REPORT GENERATOR	-	-	Not yet available

Utilizing HASP Memory

All HASP SRM protection keys—with the exception of HASP HL Basic keys—contain internal read-only and read/write memory, or secure storage. You can define specific segments for memory data and choose whether the data is added when you create a Product or when an order is being processed.

You can use the memory, for example, to:

- Store licenses from your own licensing schemes
- Save passwords, program code, program variables, and other data

Memory data can be defined for each Product. The contents of the memory are transferred to the secure storage of the selected HASP SRM protection keys together with the Features, license terms and other data defined for the Product.

You can add any specific data that is required to be stored in memory for each Product to your licensing plan.

Using Your Licensing Plan with HASP SRM Business Studio

Your licensing plan can be implemented using HASP SRM Business Studio. As your licensing requirements change, you can revise the licensing plan and ensure that the changes are implemented using HASP SRM Business Studio. Your licensed Products can be easily and securely updated as required, after they have been deployed to customers.

For additional information on implementing and maintaining your licensing plan, see Chapter 9, *Implementing Your HASP SRM Licensing Plan*.

HASP SRM offers you the flexibility to update your licensing strategy as necessary, and to adapt rapidly to changes in the market, in your company's business strategy, or in customer purchasing preferences.



Chapter 9

Implementing Your HASP SRM Licensing Plan

This chapter is intended for HASP SRM Business Studio users who are assigned the Product Management role. It describes how to use HASP SRM Business Studio to define and manage Features and Products in HASP SRM, and to maintain Products and licenses as circumstances change.

For information on preparing a licensing plan and on HASP SRM licensing options, see Chapter 8, *Preparing Your HASP SRM Licensing Plan*.

For an overview of HASP SRM Business Studio and for information on starting to use the application, see Chapter 7, *Introduction to HASP SRM Business Studio*.

In this chapter:

- License Planning in HASP SRM Business Studio
- Managing Features
- Managing Products
- Maintaining Products and Licenses

Note:

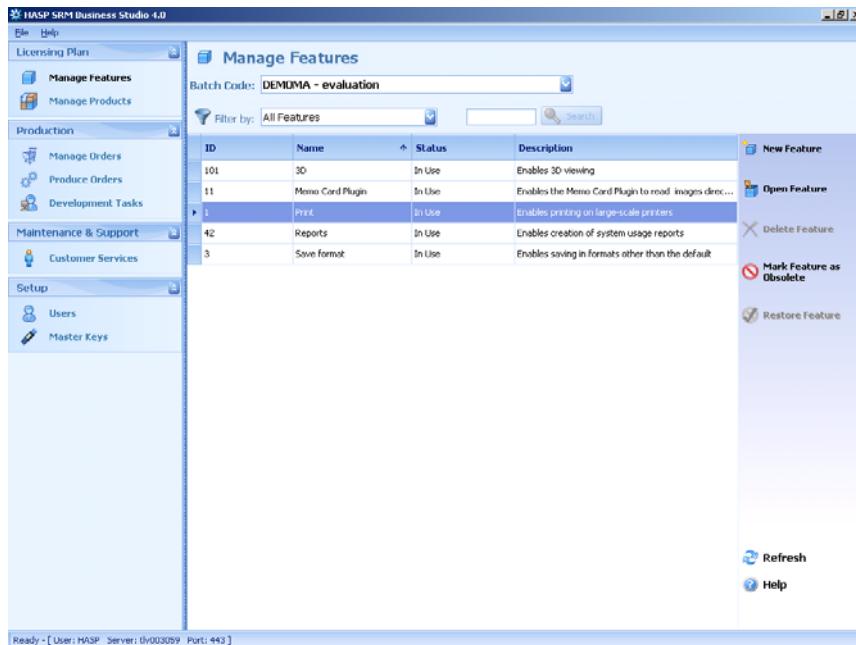
This chapter provides high-level information on license planning and definition processes. For detailed practical instructions for using each function in Business Studio, see the HASP SRM Business Studio Help documentation.

License Planning in HASP SRM Business Studio

Before you start to use HASP SRM Business Studio for license planning, it is suggested that you prepare a licensing plan. For additional information, see Chapter 8, *Preparing Your HASP SRM Licensing Plan*.

When you start HASP SRM Business Studio, you have access to the Licensing Plan group of functions, including:

- Managing Features
- Managing Products



Note:

All HASP SRM Features and Products are associated with a HASP SRM Batch Code. For additional information on Batch Code, see *Personalized Vendor and Batch Codes* on page 36.

Managing Features

When you select the Manage Features function in the HASP SRM Business Studio window, you can view the details of all defined Features associated with the selected Batch Code. You can perform the following tasks using the Manage Features function in HASP SRM Business Studio:

- Define Features
- Withdraw Features from use

Defining Features

If you have prepared a licensing plan, the first stage in its implementation is to use HASP SRM Business Studio to define all the Features that you listed in the plan.

Before you begin to define Features, ensure that you have the following information available for each new Feature:

- The Batch Code associated with the Feature
- A Feature Name that is unique in the selected batch (mandatory). The maximum length for a Feature Name is 50 characters.
- A free-text description that provides additional information about the Feature (optional)
- The ID number that you want to assign to the Feature (optional). The ID must be unique in the selected batch. The same Feature ID may be used in more than one batch.

After you have defined a Feature, and until the Feature is included in a Product, you can change these properties in HASP SRM Business Studio. After the Feature has been included in one or more Products, you can open the Feature to view its details, but you cannot change them.

Note:

License terms are Feature-specific in HASP SRM. However, they are not defined as part of the Feature properties. The license terms for a Feature are specified when the Feature is added to a Product, or when the Product is added to an order. This is because the same Feature may be included in a number of Products, and the license terms for the Feature may vary according to the requirements of the Product or of the order.

Feature Identification

By default, HASP SRM Business Studio generates a unique Feature ID for each new Feature. You can assign your own numeric identifier to the Feature, for example, to maintain consistency with existing Feature data. The Feature ID that you specify must be unique in the selected batch.

Transferring Feature Definitions For Development Use

After you have defined the Features for a selected batch, users authorized to perform Development tasks can transfer the Feature data to a file that can be used for development and protection purposes. For more information on transferring Feature definitions, see *Exporting Definition Data* on page 174.

Feature Status Values

When a Feature is first defined, its status is Ready. This status indicates that the Feature is available for use in Products. The Feature details can be changed until it is included in a Product, and if required, the Feature can be deleted.

After a Feature has been selected for use in a Product, its status changes to In use. This status indicates that the Feature is available for use in additional Products, but the Feature details cannot be changed and it cannot be deleted.

If a Feature has been used in at least one Product and is subsequently withdrawn from use, its status changes to Obsolete. You can restore a Feature that was previously made obsolete.

Withdrawing a Feature

At some stage, you may want to withdraw a selected Feature from use and specify that it can no longer be included in Products, for example, if the functional component associated with the Feature is being replaced by a more sophisticated component.

If the Feature has not been included in any Product, you can delete it. A Feature cannot be deleted once it has been included in at least one Product. You can, however, withdraw the Feature from use by marking it as Obsolete.

An Obsolete Feature cannot be added to Products, but its details are maintained in HASP SRM Business Studio for tracking purposes, and it continues to be functional in existing Products.

Restoring a Feature

An Obsolete Feature can be restored. A restored Feature can be added to Products and can be used in the same way as any other Feature.

Managing Products

When you select the Manage Products function in the HASP SRM Business Studio window, you can view the details of all defined Products associated with the selected Batch Code.

Type	Name	Reference	Status	Description	Locking Type
Memo Card Plugin			In Use	Enables the Memo Card Plugin for perp...	HASP HI or HASP SL
Memo Card Plugin [Concurrent]			Ready	Concurrent Product for Memo Card Plu...	HASP HI or HASP SL
Memo Card Plugin [Trial]			In Use	14 day trial of Memo Card Plugin	HASP SL Only
PosterWOW Enterprise			In Use	Enterprise version of PosterWOW. Volu...	HASP SL Only
PosterWOW Enterprise [Concurrent]			Ready	Concurrent Product for PosterWOW Ent...	HASP SL Only
PosterWOW Enterprise [Site]			Ready	Site license for PosterWOW Enterprise	HASP SL Only
PosterWOW Enterprise [Trial]			In Use	90 day trial of PosterWOW Enterprise	HASP SL Only
PosterWOW Home			In Use	Home edition of PosterWOW. Annual lic...	HASP HI or HASP SL
PosterWOW Home [Cancellation]			Ready	Cancellation Product for PosterWOW H...	HASP HI or HASP SL
PosterWOW Home [Reports]			In Use	Enables the Reports module on Poster...	HASP HI or HASP SL
PosterWOW Home [Trial]			Ready	30 day trial of PosterWOW Home Edition	HASP SL Only
PosterWOW Small Office			Ready	Small office edition of PosterWOW. Net...	HASP HI Only
PosterWOW Small Office [Cancellation]			Ready	Cancellation Product for PosterWOW S...	HASP HI Only
PosterWOW Small Office [Trial]			Ready	Small office edition of PosterWOW. Sm...	HASP HI Only
PosterWOW Small Office [Trial]			Ready	90 day trial of PosterWOW Small Office...	HASP SL Only

You can perform the following tasks using the Manage Products function in HASP SRM Business Studio:

- Define new Base Products
- Define new Provisional Products
- Duplicate existing Products
- Define new Modification Products
- Define Cancellation Products
- Open a Product
- Edit a Product
- Withdraw Products from use
- Restore Products that have been made obsolete
- Delete a Product

Note:

You cannot edit or delete a Product that has already been included in an order (with the In Use status).

Defining New Products

Before you start to define the new Products in your licensing plan, ensure that you have the following information available for each Product:

- The Batch Code associated with the Product
- A Product Name that identifies the Product and is unique in the selected batch (mandatory). The maximum length for a Product Name is 50 characters.
- A free-text description that provides additional information about the Product, for example, the functionality it includes (optional)
- Product reference information that can identify the Product in a different system, for example, a product code in your company's ERP system (optional)
- The level of protection (locking type) that you want to apply to the Product
- The Features to be included in the Product
- The license terms for each Feature to be included in the Product
- The data to be stored in the memory associated with the Product

After a Product has been defined, it can be included in orders. For additional information on processing orders, see *Defining Orders* on page 158.

Until the Product is included in an order, you can change the Product properties, Features, and memory contents in HASP SRM Business Studio. After the Product has been included in at least one order, you can open the Product to view its details. However, you cannot make any changes.

The only changes that can be made after a Product is included in an order are those related to licensing terms and memory data that have been previously specified as definable at order time, and these changes are made when the order is being processed.

Product Types

The basic unit on which all Products are built is the *Base Product*. A Base Product can contain all the Product attributes such as Features, licensing data and memory—and can be used as a Product that you offer for sale, and/or as a “shell” on which other Product types are built.

You can define *Provisional Products* for use during a grace period or as trialware. The properties for Provisional Products are not identical to those for standard Products. For additional information, see *Defining Provisional Products* on page 147.

You can create *Duplicate Products*, which in effect “copy and paste” existing Product details into a new Product. For additional information, see *Duplicating a Product* on page 148.

You can also define *Modification Products* and *Cancellation Products* to cater for changes in your Product range and in your customers’ requirements. For additional information, see *Maintaining Products and Licenses* on page 149.

Selecting the Locking Type for the Product

When you define a Product, you must select a locking type. The locking type determines:

- The level of protection for the Product
- The type of HASP SRM protection keys that can be shipped with the Product
- The way that the Product can be activated

The locking type options are:

- **HASP HL locking only:** The Product receives the highest level of protection and can be shipped and activated with HASP HL keys only. For additional information on HASP HL locking, see *HASP HL Key Protection and Activation* on page 128.
- **HASP SL locking only:** The Product can be shipped and activated with HASP SL keys only. For additional information on HASP SL locking, see *HASP SL Key Protection and Activation* on page 129.
- **HASP HL or HASP SL locking:** The decision on the type of HASP SRM protection key to be shipped with the Product is made when each order is processed.

WARNING!

A Product that can be distributed with both HASP HL keys and HASP SL keys is always supplied with the HASP SL key-level of protection, even when it is shipped with HASP HL keys.

The default locking type can be specified using the System Settings function.

Protection against Cloning

One of the methods sometimes employed to enable the use of unlicensed software is machine cloning. Machine cloning involves copying the entire image of one machine (including your software and its legitimate license) and copying it to one or more other machines. If there is no way that it is possible to detect that the new image is running on different hardware than that on which it was originally installed, multiple instances of the software are available even though only a single license was purchased.

With HASP SRM, you have the ability to detect probable machine cloning and to disable clone-protected software that is locked to HASP SL keys.

Note:

When software is locked to a HASP HL key, the physical key must be present in order for the software to run. Even if a machine image, including your software, is cloned, the software cannot run without the HASP HL key to which the software license is locked.

You specify that you want clone protection to be applied to a Product at the time that you are defining a Product's properties using Business Studio. This option is selected by default when you specify that a Product can be locked to a HASP SL key.

The clone protection functionality is tuned to minimize the occurrence of potential false positives (detection of a clone when no cloning exists), and reduce unnecessary calls to your technical support. As a result, it is possible that the clone protection functionality may not detect a cloned machine in every case. However, the possibility of this occurrence is very small.

When the HASP SRM Run-time detects cloning, it disables the licenses for which clone protection was specified. The end user is unable to log in to the software for which cloned licenses have been detected. The end user must activate the software before it can be used. Other licenses for which clone protection was not specified are not affected and the user may continue to log in and use the applications.

Detection of cloned licenses is recorded in the HASP License Manager and displayed in the HASP SRM Admin Control Center. For additional information, refer to the help documentation in the Admin Control Center.

The following workflow provides an overview of how to enable clone detection for licenses locked to HASP SL keys, and how to manage licenses that have been disabled due to the detection of machine cloning.

1. During protection of your software, use the Run-time API to define how your application should behave when machine cloning is detected. For example, the application might display a message telling the end user that the software is disabled due to clone detection and that they should contact your customer services team.

Note:

If you use only HASP SRM Envelope for applying protection, (that is, without incorporating any additional software engineering), software that is disabled due to detection of cloning will return the following message to the end user "Unknown error. H64".

2. When defining Products in Business Studio, ensure that Clone Protection is enabled.
3. Following contact by an end user, begin the software activation service in Business Studio. When Business Studio detects cloning via the C2V file, it displays a dialog box to enable you to generate a V2C file that will clear the disabled software license on the end-user machine. This process can only be implemented manually.

Note:

Clearing a HASP SL key does not reformat the key, it only removes license terms of Products that were locked to the key. It does not remove data from the key's memory, and it does not remove Provisional Products from the key. The HASP SL key is given a new key ID.

4. Send the V2C file to the end user to apply to the machine.
The end user applies the V2C file to the machine on which cloning was detected. The license for the software that was disabled is cleared and a Provisional Product is enabled. Any consumption of the original Provisional Product is retained. For example, if the Provisional Product provided 90 days of trial use and 30 days had already been used, only 60 days will be still available.
5. In order to fully activate the software, the end user must initiate the software activation process, in the normal way.

For additional information about enabling a HASP SL key that was disabled due to clone detection, see the *HASP SRM Business Studio* help.

Additional Information about Clone Protection

- If you attempt to check in a C2V file—or if you specify that a specific C2V file should be searched for, in order to create a license update—and Business Studio detects that the C2V is from a cloned machine, you cannot check the file into the HASP SRM database.
You can click C2V Details in the Check in C2V and Key Data dialog box, to view details of the C2V if required.
- You can enable and disable clone protection by creating a Modification Product. A Modification Product must include new or modified Features. If you change the clone protection setting, it also changes the Base Product from which the Modification Product was built, and all other Products created from that Base Product.

Specifying the License Terms for Features in a Product

When you include a Feature in a Product, the following default license terms are assigned:

- License type: Perpetual
- Number of concurrent instances: Unlimited

In order to specify the required license terms for the Feature, you can:

- Select a different license type:
 - ◆ Expiration Date
 - ◆ Executions
 - ◆ Time Period
- Assign a value for the selected license type:
 - ◆ The expiration date
 - ◆ The number of executions
 - ◆ The number of days until the license expires, from the date of first use

If the Feature is intended to be used on a network, virtual machine, or remote desktop, you can specify the number of concurrent instances allowed, and you can select how concurrent instances are counted:

- **Station:** Each login request for a single machine is counted as an instance (default)
- **Login:** Each login request is counted as an instance
- **Process:** Each login request for a single process is counted as an instance

If the Feature is in a Product that will be locked to a HASP SL key, and is defined to be used on a network, you can specify that the license is allowed to be temporarily detached from the network pool. This means that the license can later be attached to a remote recipient machine that is not connected to the network, to enable a user to work offline.

If required, you can specify that a user working in Remote Desktop (terminal machine) mode can access the license. Similarly, you can specify that the license for a Feature in a Product that will be locked to a HASP SL key can be enabled to run on a Virtual Machine.

WARNING!

A license that has been enabled to run on a virtual machine can be active on any virtual machine, without license control.

If you choose to make a Feature *excludable*, you enable the decision about whether the Feature is to be included in a specific order to be made at the time the order is being produced.

You can leave the value for the license type undefined at this stage, and specify that the exact value will be defined when each order for the Product is processed.

Similarly, you can specify that the number of concurrent instances will be defined when an order for the Product is processed.

Note:

The above license term options do not apply to Provisional Products. For additional information, see *Defining Provisional Products* on page 147.

Defining HASP SRM Memory Data

When you define a Product in HASP SRM Business Studio, you can define the layout and contents of the memory data associated with the Product.

You can define areas (segments) in memory and enter data into them as required. You can also specify that data is entered in one or more of the memory segments at order time. You can select different colors for each segment to make it easy to identify them, and you can redefine the data and the layout as required.

You can select the memory type for each segment that you define, according to the type and purpose of the data you want to store:

- **ReadWrite Memory:** Data that can be updated when the deployed, protected program is running, such as dynamic values for counters, or information retrieved during interaction with the user.
- **Read-Only Memory:** Data that can be read when the protected program is running but cannot be changed, such as the Product version number, text to be used in a "Welcome" message, fixed threshold values for counters, and so on.

Note:

You can use either or both types of memory to store and control licenses from your own licensing schemes.

The data defined in memory is written to the secure storage of the HASP SRM protection keys together with the Features, license terms and other data defined for the Product.

Defining Provisional Products

You can define Provisional Products that can be distributed for use during a grace period or as trialware.

The properties of a Provisional Product are similar to those for a standard Product, with the following exceptions:

- **Locking Type:** Provisional Products do not require a locking type, since they can be activated and used for a limited period without a HASP SRM protection key.
- **License Terms:** Each Feature in a Provisional Product is automatically assigned a Time Period value of 30 days. This value can be changed to a value with the range of 1–90 days.

For additional information on the purpose and use of Provisional Products, see *Designating Products for Trial or Grace Period Use* on page 131.

Provisional Products are not available for inclusion in customer orders. Users authorized to perform Development tasks can bundle Provisional Products for distribution. For additional information, see *Generating Bundles of Provisional Products* on page 171.

Product Status Values

When a Product is first defined, its status is Ready. This status indicates that the Product is available to be included in orders. The Product details can be changed until it is included in an order, and if required, the Product can be deleted.

After a Product has been included in an order, its status changes to In use. This status indicates that the Product is available for use in additional orders, but the Product details cannot be changed and it cannot be deleted.

If a Product has been included in an order and is subsequently withdrawn from use, its status changes to Obsolete. An Obsolete Product can be restored for use.

Duplicating a Product

After you have defined a Product, you can easily define additional Products with similar details, using the Duplicate Product option in HASP SRM Business Studio. This option creates a new Product using the defined properties, Features, and memory contents of the original Product, and enables you to make any changes you require, with the exception of changing the Base Product or the Product locking type.

Note:

If you duplicate a Base Product, you can give it a new name.

Withdrawing a Product

At some stage, you may want to withdraw a selected Product from use and specify that it can no longer be included in orders, for example, if it is being replaced by an updated version.

If the Product has not been included in any order, you can delete it. A Product cannot be deleted once it is included in at least one order. You can, however, withdraw the Product from use by marking it as Obsolete.

An Obsolete Product cannot be added to orders, but its details are maintained in HASP SRM Business Studio for tracking purposes, and it continues to be functional when already at the end user's site.

Restoring a Product

An Obsolete Product can be restored. A restored Product can be used in the same way as any other Product.

Maintaining Products and Licenses

After you have defined the initial Features and Products, you can use the Licensing Plan options in HASP SRM Business Studio to cater for changing circumstances, such as the release of new software versions and changes in customer requirements.

HASP SRM Business Studio enables you to maintain your licensing plan by defining new Features and Products as required. In addition, you can use HASP SRM Business Studio to:

- Manage Product versions
- Cancel Product licenses

Managing Product Versions

After you have implemented your initial licensing plan, you need to continue to review and update it to cater for changes in your company's software applications, in customer demand, in the market, and so on. For example:

- Your company develops an enhanced version of an existing Product and you want to offer the new versions for sale instead of (or in addition to) the original Products.
- You want to offer your existing customers the opportunity to replace their current version of a Product with an upgraded version that has additional Features.
- Feedback from your customers indicates that they want to purchase a specific Product with different license terms than you are currently offering.

In circumstances such as these, since you cannot change the properties of an existing Product after it has been ordered, you can define a Modification Product based on the Base Product.

A *Modification Product* is a modified version of an existing Product, containing changes such as:

- A software upgrade
- Extended license terms
- Added or removed Features

You can define several Modification Products for the same Base Product, with different Features, memory and/or license terms.

Note:

You can also define Modification Products based on an existing Modification Product.

Defining a Modification Product

Before you start to define a Modification Product, ensure that you have the following information available:

- The name of the Product that is being modified
- The Batch Code associated with the Product that is being modified
- A Product Name that identifies the Modification Product and is unique in the selected batch (mandatory). The maximum length for a Product Name is 50 characters.
- A description (free text) that provides additional information about the Modification Product, for example, the changes it includes (optional)
- The details of the required changes, including Features to be added or removed, and/or memory and license term updates

Specifying License Terms and Memory for a Modification Product

In order to change the license terms for each Feature in the Modification Product, you can:

- Change the value for the license type by adding or subtracting days or number of executions
- Change the settings for concurrent instances, if appropriate
- Overwrite the license terms including selecting a new license type
- Change memory segments or data
- Cancel the license

You can leave the license type value and the concurrent instances settings unchanged at this stage, and specify that they will be changed when each individual order for the Modification Product is processed.

Example: Defining a Modification Product

Scenario: When the Product Manager of HQ Software originally defined the HQ Design Pro Product (in the example on page 133), the REPORT GENERATOR Feature was not yet available.

This Feature has now been developed, tested, and protected, and has been included in an enhanced version of HQ Design Pro (v.2.0). This version of the Product is ready for sale to new customers, and can also be issued to customers who hold current licenses.

Accordingly, the Product Manager for HQ Software defines a Modification Product for the HQ Design Pro Product, named HQ Design Pro v.2.0.

When the Modification Product is defined, the REPORT GENERATOR Feature is added to the Product, with the same license terms as for the other Features.

Issuing Modification Products

Modification Products can be included in orders in the same way as the original Products.

For example, if the Modification Product is intended to replace the Product in HASP SRM protection keys that have already been deployed, it can be included in a *HASP Update* order. When the HASP Update is applied, the data for the Modification Product is added to the data for the original Product in the HASP SRM protection keys.

For additional information on defining and producing orders, see Chapter 10, *HASP SRM Orders, Production, and Development Tasks*.

Cancelling Product Licenses

In certain circumstances, it may be necessary to cancel the license terms for one or more Features in a Product that has been delivered to a customer, for example:

- To revoke a deployed license
- To cancel the license for a Product that has been returned before its license terms have expired

A *Cancellation Product* can be defined for the Product, with values that cancel previous license terms. This Cancellation Product can be used whenever the license terms of the original Product need to be cancelled.

The process of canceling the license terms of a specific instance of a Product can include the following stages:

1. When the original Product needs to be cancelled, a Customer-to-Vendor (C2V file) is requested from the customer, containing the required license information.
2. An order for the Cancellation Product is defined and produced.
3. If the Product license is being moved to another computer, a new order for the original Product is produced with the appropriate details.

4. The changed license information is sent to the customer.
5. An acknowledgement receipt is returned by the customer when the change has been implemented.

For additional information on C2V files and on defining and producing orders, see Chapter 10, *HASP SRM Orders, Production, and Development Tasks*.

Defining a Cancellation Product

Before you start to define a Cancellation Product, ensure that you have the following information available:

- The name of the Product to be cancelled
- The Batch Code associated with the Product to be cancelled
- A Product Name that identifies the Cancellation Product and is unique in the selected batch (mandatory). The maximum length for a Product Name is 50 characters.
- A description (free text) that provides additional information about the Cancellation Product, for example, the reason it is required (optional)
- The Features to be cancelled

Specifying License Terms or Memory for a Cancellation Product

The options for defining the license terms for a Cancellation Product are exactly the same as for a Modification Product. For additional information, see *Specifying License Terms and Memory for a Modification Product* on page 151.

Example: Canceling a License

Scenario: A new customer, TOP Construction, purchased a one-year rental license for the HQ Design Lite Product. After three months, the customer wants to cancel the license and receive a refund.

HQ Software defines a Cancellation Product for the HQ Design Lite Product, with the license terms cancelled for all the Features in the Product. This Cancellation Product is only defined once—it can subsequently be used whenever required in similar circumstances.

TOP Construction is asked to send a Customer-to-Vendor (C2V) file. The file is received and processed in HASP SRM Business Studio.

A HASP Update order is defined and produced for the HQ Design Lite Cancellation Product. The resulting Vendor-to-Customer (V2C) file containing the changed license details is sent to TOP Construction. TOP Construction applies the V2C file, then generates and returns a C2V file, confirming that the license cancellation has been applied. HQ Software then issues a refund.

For additional information on C2V and V2C files, and on defining and producing orders, see Chapter 10, *HASP SRM Orders, Production, and Development Tasks*.



Chapter 10

HASP SRM Orders, Production, and Development Tasks

The first part of this chapter is intended for users assigned the Order Management and Production roles in HASP SRM. It describes how to use HASP SRM Business Studio to manage and produce orders.

The final part of this chapter is intended for users assigned the Development role. It describes how to use HASP SRM Business Studio to perform development-related tasks, including generating bundles of Provisional Products and HASP SRM Run-time Environment installer files, and exporting definition files.

For an overview of HASP SRM Business Studio and for information on starting to use the application, see Chapter 7, *Introduction to HASP SRM Business Studio*.

In this chapter:

- HASP SRM Order Processing and Production
 - Managing Orders
 - Producing Orders
 - Performing Development-related Tasks
 - Enabling Trial Use and Grace Periods
-

Note:

This chapter provides high-level information on the order management, production, and development-related processes in HASP SRM Business Studio. For detailed practical instructions for using each function, see the HASP SRM Business Studio Help documentation.

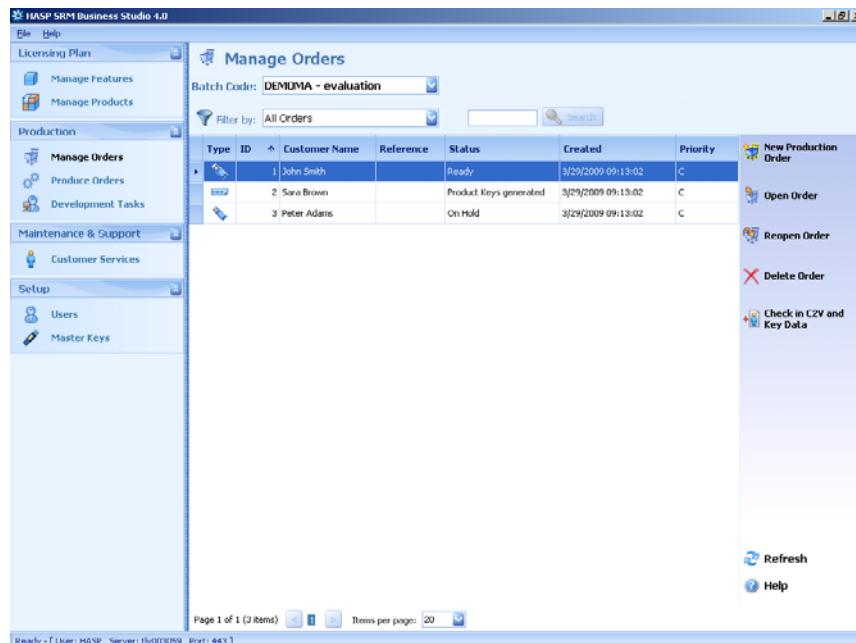
HASP SRM Order Processing and Production

An *order* is a request for HASP SRM items, and can be one of the following:

- A request for Products to be supplied with one or more HASP SRM protection keys
- A HASP Update that specifies changes to be made to the license terms and/or data stored in HASP SRM protection keys that have already been deployed

After Features and Products have been defined in HASP SRM Business Studio, orders can be processed and produced using the Production group of functions, including:

- Managing Orders
- Producing Orders
- Performing Development-related Tasks



The specific HASP SRM Business Studio functions you can access in the Production group of functions depend on the role assigned to you, as follows:

- If you have been assigned the Order Management role, you have access to both the Order Management and the Customer Services functions
- If you have been assigned the Production role, you have access only to the Order Production functions
- If you have been assigned the Development role, you have access only to the Development Tasks functions

Managing Orders

This section is intended for users assigned the Order Management role.

When you select the Manage Orders function in the HASP SRM Business Studio window, you can view the details of all customer orders associated with the selected Batch Code.

Note:

For additional information on Batch Codes, see *Personalized Vendor and Batch Codes* on page 36.

You can perform the following tasks using the Manage Orders function:

- Define new customers
- Define orders
- Delete orders
- Process Customer-to-Vendor (C2V) information

Defining Orders

Before you start to define an order for a customer in HASP SRM Business Studio, ensure that you have the following information available:

- Details of the customer who placed the order (optional)
- The Products to be included in the order
- The required values for any license terms that have not yet been specified for the Products in the order
- The production requirements, according to the order type:
 - ◆ Order for HASP HL keys
 - ◆ Order for Product Keys
 - ◆ Order for HASP Update
- Additional order information (optional)

Note:

HASP SRM Business Studio generates a unique Order ID for each new order.

Defining the Customer for the Order

When you define the order in HASP SRM Business Studio, you can specify the customer who placed the order. You can search for an existing customer, using the customer name or other identifying details, or you can define a new customer. You can also edit the details of an existing customer. HASP SRM generates a unique Customer ID for each new customer.

Note:

You can also define a new customer using the Customer Services function.

Including Products in the Order

An order can contain one or more Products. All HASP SRM Products are associated with a HASP SRM Batch Code. You must specify the Batch Code in order to be able to select the Products to be included in the order.

Note:

Provisional Products (Products defined for use during a grace period or as trialware) are not available for inclusion in orders. The process of generating files containing Provisional Products is a Development task. For additional information, see *Generating Bundles of Provisional Products* on page 171.

Each Product is assigned a *locking type when it is defined*. The locking type determines the level of HASP SRM protection and the type of HASP SRM protection key that can be supplied with the Product.

The locking type assigned to a Product may determine the type of order that can be produced:

- Products defined with the HASP HL only locking type can be included in orders for HASP HL keys, Product Keys, or for HASP Updates.
- Products defined with the HASP SL only locking type can be included only in orders for Product Keys or for HASP Updates.
- Products defined with the HASP HL and HASP SL locking type can be included in orders for HASP HL keys, Product Keys, or for HASP Updates

You cannot add a Product defined with the HASP HL only locking type and another Product defined with the HASP SL only locking type to the same order.

For additional information on locking types, see *Choosing the Protection Level for Your Products* on page 128.

You can specify that Products that will be locked to HASP SL keys is to have clone detection enabled. For additional information, see *Protection against Cloning* on page 142.

Specifying License Term Values

When a Product is initially defined in HASP SRM Business Studio, the exact license term values for each Feature can be left unspecified. This enables you to include the same Product in different orders with different license term values.

In this case, the license values must be specified when each order for the Product is processed.

You may be required to specify one or more of the following license term values for Features when processing an order:

- The date on which the license expires
- The maximum number of times that the Feature can be used
- The number of days until the license expires

You may also be required to specify the number of concurrent instances for one or more Features. This value specifies the number of instances of simultaneous usage that the license allows on the customer's network. Concurrent instances may relate to the network, processes, or machines.

An order can be produced only after the license term values have been specified for all the Features in every Product included in the order.

Specifying Memory Data

When a Product is initially defined in HASP SRM Business Studio, memory data can be left unspecified. This enables you to customize memory data for each Product at order time. For example, customer-specific memory data can be added to the Product when an order is being processed.

Specifying an Order for HASP HL Keys

When an order for HASP HL keys is produced, the ordered Products are programmed (burned) on one or more HASP HL keys to be shipped to the customer. For additional information on HASP HL keys, see *HASP HL Keys* on page 38.

When you define the order, you must specify the total number of HASP HL keys to be produced for the order.

Specifying an Order for Product Keys

A Product Key-based order enables you to produce activation strings for HASP SRM protection keys.

The ordered Products are associated with one or more HASP SRM Product Keys. A Product Key is a string of characters generated by HASP SRM Business Studio and stored in a file for delivery to the customer.

After the end user receives the Product Key and returns it as proof of purchase, the HASP SRM Business Studio Server verifies the Product Key and produces a HASP SRM protection key. The HASP SRM protection key is then sent back with the license terms and installed on the end user's computer, enabling the Product to be activated.

When you define a Product Key-based order, you must specify the following information:

- The number of Product Keys to be produced for the order
- The number of activations allowed for each Product Key. This is the number of machines on which each Product Key can be used.

While it is mandatory to use Product Keys for activation of software locked to HASP SL keys, Product Keys can also optionally be used for activating software that is locked to HASP HL keys.

Note:

Before a HASP SL key can be used on an end user's computer, a Provisional Product must have been installed on the computer.

When the Provisional Product is installed, it initializes the HASP SRM Run-time Environment, which is required for communication between the HASP SL key and the software.

The process of generating files containing Provisional Products is a Development task. For additional information, see *Generating Bundles of Provisional Products* on page 171.

Specifying a HASP Update Order

A HASP Update order specifies changes to be made to the license terms, Products, and/or data stored in HASP SRM protection keys that have already been deployed to end users. A HASP Update can be applied remotely to HASP HL keys or HASP SL keys, either using the HASP SRM Run-time API by calling the `hasp_update` function, or by using the HASP SRM Remote Update System utility.

When the HASP Update order is produced, a file containing the details of the changes is generated for each HASP SRM protection key to be updated. This file can be one of the following:

- An executable file (EXE) that can be delivered to end users for use as instructed by your company
- A Vendor-to-Customer (V2C) file that end users can process using the HASP SRM Remote Update System (RUS) utility

For additional information on RUS, see Chapter 12, *HASP SRM Remote Update System*.

When you define a HASP Update order, you must specify the total number of HASP SRM protection keys to be updated as a result of this order. You may also need to select the specific HASP SRM protection keys to be updated.

Locating the HASP SRM Protection Keys to Update

When you define a HASP Update order, you may need to select the specific HASP SRM protection keys to be updated. For example, the order may be for an organization with 100 HASP SRM protection keys, and this order is required to update the keys for only 10 specific users.

In HASP SRM Business Studio, you can:

- Display a list of the customer's HASP SRM protection keys
- View the contents of each key
- Select the keys to be updated

Note:

You cannot select more HASP SRM protection keys than the total number of keys specified in the Order Details area in the Production Order dialog box.

Optional Order Information

You can add the following optional information to the order:

- Order reference information that can identify the order in a different system, for example, an order number in your company's ERP system.
- A priority level, to indicate the urgency of the order for production purposes. The default is Priority C.
- A free-text comment that provides additional information about the order.

Adding the Order to the Production Queue

After you have specified all the necessary information for an order, you can produce it immediately or add it to the *production queue*. The *queue* is a list of all orders awaiting production.

Orders in the production queue can be selected for production according to the criteria determined by your organization.

HASP SRM Business Studio enables you to put on hold any orders that have not been completely defined, without losing the information that you may have already specified. You can open the order and continue to define the order details when convenient.

Order Status Values

When an order is first defined, its status is **On Hold**. This status indicates that the order is not yet in the production queue. The order details can be changed, and if required, the order can be deleted.

When an order is in the production queue, its status changes to **Ready**. This status indicates that the order is awaiting production. The details of a Ready order cannot be changed. However, it can be deleted.

In an order for multiple Product Keys, as soon as at least one key has been generated, the order status is **Produced**. It is not necessary for all the Product Keys in the order to be generated before this status is displayed.

After the production of an order has been completed, its status changes to **Complete**, or in the case of HASP SRM Product Keys, **Product Keys generated**.

When verification that an order has been applied to a machine in the field has been received, the status changes to **Acknowledged**.

Processing C2V Information

C2V files contain protected information about the license terms and data stored in deployed HASP SRM protection keys. They do not contain private customer information.

C2V files can be generated using the HASP SRM Remote Update System (RUS) utility. For additional information on RUS, see Chapter 12, *HASP SRM Remote Update System*.

C2V information stored in HASP HL keys and in C2V files can be retrieved for use in connection with HASP Update orders.

When a C2V file or HASP HL key is received from a customer, you must *check in* the information, in order to make the data in the file or key available to HASP SRM Business Studio. The process of checking in the C2V information stores the data securely on the HASP SRM Business Studio Server, and enables you to view some of the information.

When you check in a C2V file, you can view the identifying information for the HASP SRM protection key associated with the file, including the Batch Code, ID and key type. You can also view the Product details contained in the file. When you check in a HASP HL key, you can view similar information.

Note:

If you attempt to check in a C2V file for a HASP SL key, and the HASP SRM Business Studio Server detects that it has come from a cloned machine, you will not be able to check the C2V file into the database. For additional information about dealing with cloned HASP SL keys, see *Protection against Cloning* on page 142.

Formatting a HASP HL Key

You can format a HASP HL key to make it available for reuse. The process of formatting a HASP HL key deletes any orders that have been defined for the key but not yet produced. It also produces a V2C file that contains HASP Update information to be applied to the key using RUS. Applying the HASP Update erases all license and memory data stored in the key.

Order Processing and Production Examples

In the examples in this section, HQ Software defines the following orders for its customers:

1. Order for HASP HL keys
2. Order for Product Keys (HASP SL keys)
3. HASP Update order

Order Example 1: Order for HASP HL Keys

Scenario: A new customer, ABC Design, orders the HQ Design Pro Product from HQ Software with a license for 20 users.

Since the HQ Design Pro Product is defined with HASP HL key protection, the details for this order are defined as follows:

- **Customer:** ABC Design
- **Product:** HQ Design Pro
- **Order type:** HASP HL keys
- **Number of keys:** 20

When this order is produced, the HQ Design Pro Product license is programmed on 20 HASP HL keys, which are then shipped to the customer.

Order Example 2: Order for Product Keys (HASP SL Keys)

Scenario: On March 15, 2007, another customer, JL Optics, orders the HQ Design Lite Product, with a license for use on two computers.

The HQ Design Lite Product is defined with HASP SL key protection and an annual rental license. In order to ensure that the customer enjoys a full year's licensed use, the expiration date needs to be specified when the order is placed.

The details for this order are defined as follows:

- Customer: JL Optics
- Product: HQ Design Lite
- Expiration date for DRAW and SAVE: March 15, 2008
- Order type: Product Key-based
- Number of Product Keys: 1
- Number of Activations per Product Key: 2

Note:

This example assumes that JL Optics has installed and used the HQ Design Demo Provisional Product on the two computers before ordering the HQ Design Lite Product. As a result, the HASP SRM Run-time Environment for HASP SL has already been initialized on those computers.

When this order is produced, a file is generated containing a Product Key. HQ Software sends this file to JL Optics by e-mail.

Two end users at JL Optics open the file and enter the Product Key as required on the HQ Software Website. The HQ Software customer interface application sends the Product Key to the HASP SRM Business Studio Server, which verifies the Product Key and returns a HASP SL key to the customer.

The HASP SL key is installed on the two computers at JL Optics with the license information, and the HQ Design Lite Product can be activated under the terms of the license.

Order Example 3: Order for HASP Update

Scenario: HQ Software informs ABC Design that a new version of HQ Design Pro has been released, containing the REPORT GENERATOR Feature, and that an upgrade is available for purchase. ABC Design orders the enhanced Product for five of its 20 users.

HQ Software has defined a Modification Product for the new version, HQ Design Pro v.2.0, ready for inclusion in customer orders.

Before defining the HASP Update order, HQ Software needs to receive C2V files for the five HASP HL keys to be updated.

ABC Design uses RUS to generate the required C2V files and sends them to HQ Software.

After the C2V files have been received and checked in, HQ Software defines a HASP Update order for the Modification Product.

The details for this order are defined as follows:

- Customer: ABC Design
- Product: HQ Design Pro v2.0
- Order type: HASP Update
- Number of HASP SRM protection keys to be updated: 5.

During the order definition process, the five HASP HL keys to be updated are selected from all the keys issued to ABC Design, according to the C2V files received.

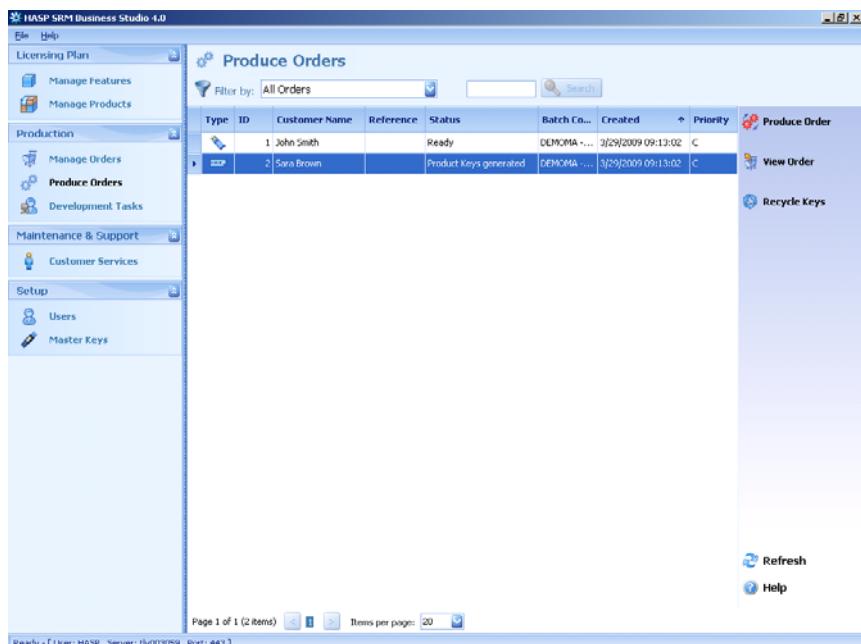
When this order is produced, a V2C file is generated for each selected HASP HL key and sent to the customer.

The selected five end users install the update on their HASP HL keys, using RUS. They are then able to activate the upgraded version of HQ Design Pro and to generate tailored reports.

Producing Orders

This section is intended for HASP SRM Business Studio users assigned the Order Management or Production role.

When you select the Produce Orders function in HASP SRM Business Studio, you can view the details of all orders awaiting production.



You can perform the following tasks using the Produce Orders function:

- Produce Orders
- View Orders

Note:

If you have been assigned both the Order Management and the Production roles, you can choose to produce an order immediately after you finish defining it.

The process of producing an order is determined by the type of order:

- Order for HASP HL keys
- Order for Product Keys
- Order for HASP Update

While producing any order, you can open the order and view its details.

Producing HASP HL Key Orders

Before you start to produce an order for HASP HL keys, HASP SRM Business Studio enables you to prepare the appropriate HASP HL keys to use for the order, by displaying:

- The HASP HL key types that are valid for the order
- The number of HASP HL keys to be produced, as specified in the order

HASP SRM Business Studio determines which HASP HL keys are valid for the order according to a number of factors, including:

- The license terms defined for the Features in the Products included in the order
- The data defined in memory for each Product
- The space required on the key to accommodate the order

For example, if the license terms for a Product in the order are based on a number of days or an expiry date, the order can be produced only on HASP HL keys with date and time monitoring capabilities, such as HASP HL Time.

Similarly, if the license terms for a Product in the order specify a number of concurrent instances in a network environment, the order can be produced only on HASP HL keys with network monitoring capabilities, such as HASP HL Net.

For additional information about HASP HL key types and their capabilities, see *Available HASP SRM Protection Keys* on page 39.

Producing Orders for Product Keys

When you produce an order for Product Keys, a TXT file is generated containing the Product Keys.

Before you generate the file, you must specify its required location, or accept the default location. The file is saved in the format `Product_Keys_[order ID].txt`.

After the file has been generated, the Product Keys are available for use. For example, they can be sent to customers by Email, printed on the cover of a CD, and so on.

Producing HASP Update Orders

The order production process generates a file containing the HASP Update information for each HASP SRM protection key to be updated. After the files have been generated, they can be sent to the customer.

Before you generate the file, you must select the required location and the type of files to be generated for delivery to end users:

- *Vendor-to-Customer (V2C)* files that can be processed using the HASP SRM Remote Update System (RUS) utility
- Executable files (EXE) that contain V2C data and can be used as instructed by your company

For additional information on RUS, see Chapter 12, *HASP SRM Remote Update System*.

Note:

A default file location for V2C files may have been specified by the HASP SRM Administrator.

Performing Development-related Tasks

This section is intended for users assigned the Development role.

When you select the Development Tasks function in the HASP SRM Business Studio window, you can view a list of all development-related activities that have been performed for the selected Batch Code.

The most recent activities are displayed at the top of the list.

You can perform the following development-related activities in HASP SRM Business Studio:

- Generate bundles of Provisional Products
- Export data definitions to a file
- Customize the HASP SRM Remote Update System (RUS) utility
- Generate a customized HASP SRM Run-time Environment (RTE) installer file

Generating Bundles of Provisional Products

When a Product is defined in HASP SRM Business Studio, it can be specified as a Provisional Product for distribution as trialware or for use during a grace period.

Bundles of one or more Provisional Products can be shipped for use for a restricted period of time, (currently maximum 90 days).

Note:

Software that has been supplied with a trial license or for a grace period can be activated after a valid license is purchased, with either a HASP HL key or a HASP SL key.

For additional information on the purpose and use of Provisional Products, see *Designating Products for Trial or Grace Period Use* on page 131.

The process of generating a bundle of Provisional Products involves:

- Selecting the Provisional Products to be included in the bundle
- Producing a file containing the Provisional Product license and Vendor DLL. This file can be:
 - ◆ An EXE file containing V2C data
 - ◆ A V2C file that can be used with the HASP SRM RUS utility.
For additional information on RUS, see Chapter 12,
HASP SRM Remote Update System.

The output file from this process must be installed on each end user's machine in order to:

- Create an initial HASP SRM Run-time Environment that enables your protected software to communicate with HASP SL keys
- Enable a trialware or grace period license

Note:

When a bundle of Provisional Products is installed on an end user's computer, a provisional HASP ID is generated. This is replaced by a HASP SRM protection key ID when a fully licensed Product is installed on that computer.

To simplify the installation process at end users' sites, it is recommended that you generate a HASP SRM Run-time Environment installer executable. You can embed the Run-time Environment installer in your software setup to create a ready-to-run HASP SRM protected and licensed application.

In order to generate a HASP SRM Run-time Environment installer executable, you need to specify the V2C file generated when a Provisional Product bundle is produced. An EXE file containing V2C data cannot be used to generate a HASP SRM Run-time Environment installer.

Generating the HASP SRM Run-time Environment Installer

You can generate a HASP SRM Run-time Environment installer that simplifies the installation process at end users' sites, for Provisional Products.

The input to this process is a V2C file that contains your vendor-specific data. For Provisional Products, the V2C file also contains the Provisional Product bundle data.

The output can be one of the following:

- An executable file that creates a Run-time Environment command-line installer
- A DLL that can be used with the HASP SRM Run-time Environment installer API
- A Mac PKG HASP SRM Run-time Environment installer

You can embed the HASP SRM Run-time Environment installer in your software setup to create a ready-to-run HASP SRM protected and licensed application.

Generating a HASP SRM Run-time Environment installer for Running a Product with a Detachable License

In order for a recipient machine to run an application using a detached license, the HASP SRM Run-time Environment and vendor libraries must be installed. This condition is achieved by creating a Run-time Environment Installer that automatically installs these components. For additional information, refer to *Working with Detachable Licenses* in the *HASP SRM Business Studio Help* documentation.

Exporting Definition Data

You can export data about Features, Products, vendors, and other information in various file formats. This information can then be used for development, protection backup, and other purposes. You can also export metadata for use in Admin Control Center.

You can use the Export Definitions function to produce the following output file types:

- Metadata in Admin Control Center format
- Features and Products in a C-style header file
- Features and Products in a CPP-style header file
- Features and Products in XML format
- Features in CSV format

For examples of the output file contents, see the HASP SRM Business Studio Help documentation.

Before you export the Features, you must select the required Batch Code, specify the required file type, and define the name and location for the file.

As your software develops and additional Features are defined, you can use the Export Definitions function whenever you want to retrieve the data definitions from HASP SRM Business Studio.

Customizing and Branding RUS

RUS is a utility that can be distributed to end users to enable secure, remote updating of the license and memory data of HASP SRM protection keys after they have been deployed.

End users may open the RUS utility to generate a C2V file, or by launching a V2C or EXE file containing a license update.

Before you distribute RUS, you must customize it with the Batch Code associated with the HASP SRM protection keys that you have deployed to your end users, in order to enable them to generate C2V files, or to process files containing V2C information.

In addition, you can brand the text that is displayed to an end user when RUS is opened. For example, you may want to display your company name and information about your software.

The RUS Branding option in HASP SRM Business Studio enables you to associate the RUS utility with the selected Batch Code. You can also use the simple HTML editor provided to enter, format, and preview the text to be displayed in RUS.

It is recommended that you distribute your protected software with a customized and branded version of RUS.

For additional information on RUS, see Chapter 12, *HASP SRM Remote Update System*.

Enabling Trial Use and Grace Periods

This section provides examples that demonstrate the use of Provisional Products:

- To distribute a Product for use on a trial basis for a limited period
- To enable use of a licensed Product during a grace period

Example 1: Issuing a Provisional Product for Trial Use

Scenario: HQ Software decides to offer visitors to their Website the option of downloading and using their HQ Design Demo Product for 30 days.

When the original licensing plan definitions were implemented, the HQ Design Demo Product was defined as a Provisional Product. The license terms for the two Features were automatically set to Time Period with a value of 30 days.

The software developer at HQ Software defines a bundle of Provisional Products that contains the HQ Design Demo Product, and generates the bundle as a V2C file.

A HASP SRM Run-time Environment installer is then generated as an EXE file, using this V2C file as input.

The HQ Software Web master adds the EXE to the Website, with download instructions for potential trial users.

Example 2: Issuing a Product for a Grace Period

Scenario: A new customer, XYZ Construction, has purchased a 50-user license for the HQ Design Pro Product, which is available only with HASP HL key protection. The HASP HL keys are being prepared and shipped, but meanwhile the customer wants to start using the HQ Design Pro Product immediately.

HQ Software needs to enable XYZ Construction to activate and use the HQ Design Pro Product during a grace period, until the HASP HL keys arrive and are distributed to the end users.

For this purpose, a version of the HQ Design Pro Product is defined as a Provisional Product, with the Product name HQ Design Pro Grace. The PRINT REPORTS Feature is removed from this version. The license terms for the remaining four Features are automatically set to Time Period with a value of 30 days.

A bundle of Provisional Products is defined containing the HQ Design Pro Grace Product, and generated as a V2C file.

A HASP SRM Run-time Environment installer is then generated as an EXE file, using this V2C file as input.

The EXE file is sent to the customer, for distribution to the end users. End users can run the EXE, which installs the HASP SRM Run-time Environment and the HQ Design Pro Grace Product on their computers. They can then use the program for 30 days until they receive their HASP HL keys and can activate the full Product.



Chapter 11

HASP SRM Administration and Customer Services

The first part of this chapter is intended for users authorized to perform HASP SRM Administration tasks. It describes how to use HASP SRM Business Studio to define user details, manage HASP SRM licenses and HASP SRM Master keys, and configure system settings.

The second part of this chapter is intended for users authorized to perform HASP SRM Customer Services tasks. It describes how to use HASP SRM Business Studio to view and edit customer details, and to perform manual Product activation for customers.

For an overview of HASP SRM Business Studio and for information on starting to use the application, see Chapter 7, *Introduction to HASP SRM Business Studio*.

In this chapter:

- [Administration Tasks](#)
 - [Customer Services](#)
-

Note:

This chapter provides high-level information on the Administration and Customer Services processes in HASP SRM Business Studio. For detailed practical instructions for using each function in HASP SRM Business Studio, see the HASP SRM Business Studio Help documentation.

Administration Tasks

After you first install HASP SRM Business Studio in your organization, you can log in to HASP SRM using the default user name and password (**HASP**) provided for your use by Aladdin Knowledge Systems. By default, this user is authorized to perform all tasks in HASP SRM Business Studio, including Administration tasks.

Note:

The 'HASP' administrator details cannot be edited or deleted. Only the password can be changed.

After logging in to HASP SRM Business Studio the first time, it is recommended that you select the Users function and change your user password as soon as possible. If you want, you can change the roles assigned to you, but it is important that you retain the **Administration** role or assign this role to another user.

In order to be able to use HASP SRM with your company-specific Batch Codes and license, you must first introduce the HASP SRM Master keys provided for your use by Aladdin Knowledge Systems.

For additional information on HASP SRM Vendor keys, see *Personalized Vendor and Batch Codes* on page 36.

For additional information on introducing HASP SRM Master keys, see *Maintaining HASP SRM Master Keys* on page 180.

From time to time, you will need to renew your HASP SRM license, or to replenish your pool of activations and/or seats. You can schedule email notifications to be sent when it is time to renew or reorder, ensuring you uninterrupted use of HASP SRM.

For additional information about HASP SRM licenses, activations, and seats, see Appendix D, *Understanding the HASP SRM Licensing Model*.

For additional information about configuring and scheduling email notifications, refer to the HASP SRM Business Studio Help documentation.

Note:

If you are evaluating HASP SRM Business Studio, you can use the provided DEMOMA Batch Code, which does not require a HASP SRM Master key.

You can now define additional HASP SRM users in your company, including assigning the users the appropriate roles and authorizing access to batches. For additional information, see *Maintaining User Details* on page 179.

You can also view the system settings for HASP SRM Business Studio, and if required, change them to meet your company's requirements. For additional information, see *Configuring System Settings* on page 182.

Note:

Non-administrator users can change these settings for their own use.

Maintaining User Details

When you select the Users function in HASP SRM Business Studio, you can view the details of all currently defined HASP SRM users.

You can perform the following tasks using the Users function in HASP SRM Business Studio:

- Define HASP SRM users
- Change user details and passwords
- Prevent user access

Defining HASP SRM Users

Before you start to define HASP SRM users, ensure that you have the following information available for each new user:

- The user name to be assigned to the user for the purpose of logging in to HASP SRM
- The full name of the user (optional)
- The password to be assigned to the user

Note:

Users can change their own passwords after logging in to HASP SRM Business Studio.

- The batches that the user is authorized to access
- The roles to assign to the user. For additional information on the functions authorized for each role, see *HASP SRM Business Studio User Roles* on page 117.

Changing User Details and Passwords

After you have defined a user, you can change any of the user's details.

Users can change their own passwords. However, if necessary, you can change the password for a user without knowing the current password. This is useful in the event that the user has lost or forgotten his/her password.

Preventing User Access

In certain circumstances, you may want to prevent a user from logging in to HASP SRM. If the user has left the company, for example, or will no longer be using HASP SRM, you can delete the user details.

If you want to prevent a user from accessing HASP SRM temporarily, without deleting their details, you can edit the details and specify that the user's access is *blocked*. The user will be unable to log in to HASP SRM until you change the user's details to *active*.

Maintaining HASP SRM Master Keys

When you select the Master Keys function in HASP SRM Business Studio, you can view the details of all available HASP SRM Master keys for the selected Batch Code that are currently connected to the Business Studio Server.

You can perform the following tasks using the Batch Codes function in HASP SRM Business Studio:

- Introduce HASP SRM Vendor keys
- Generate a C2V file for a selected HASP SRM Master key
- Apply a V2C file to a selected HASP SRM Master key, in order to:
 - ◆ update your HASP SRM license
 - ◆ replenish your pool of activations
 - ◆ replenish your pool of seats
- Edit the descriptive properties of Batch Codes
- Specify Mail Notification properties

Introducing HASP SRM Vendor Keys

The HASP SRM Master key(s) for your organization are introduced as part of the HASP SRM Business Studio Server installation process.

You must have a separate HASP SRM Master key connected to each server on which HASP SRM Business Studio Server is installed.

You can introduce additional HASP SRM Vendor keys—HASP SRM Master keys or HASP SRM Developer keys—in order to enable Batch Codes for use with HASP SRM applications.

When you introduce a HASP SRM Vendor key, you can select the libraries for which you want to generate APIs. You may have the option to merge the APIs of multiple Batch Codes into a single library.

Generating a C2V File

When you submit an order for an update to your HASP SRM license, regardless of whether it is to renew the license or to replenish your pools of activations or seats, you need to generate a C2V file for the HASP SRM Master key that is to be updated. You then send the C2V to your HASP SRM supplier, together with your order. The C2V file contains encrypted information about the current status of your HASP SRM Master key, including its unique ID.

Editing Batch Code Properties

You can change the name and description of a selected batch as required. You cannot change the Batch Code itself.

Defining Mail Notification Properties

You can specify who is to receive notifications that your HASP SRM license and pools of activations or seats are about to expire. In addition, you can define the thresholds after which the notifications are sent.

Configuring System Settings

You can configure the following HASP SRM settings using the System Settings function in HASP SRM Business Studio. These settings affect all HASP SRM users:

- **Connection details:** By default, the details of the port and server used for the previous login to HASP SRM are retained and are reused for the next login. If other ports and/or servers were used to log in, they can be selected from a list. You can choose not to retain the connection details.
- **Connection history:** You can choose to delete all details of previous connections specified at login.
- **Default locking type:** You can select which Locking Type option will be displayed as the default when a Product is defined.
- **File locations:** You can specify the default location for files of the following types:
 - ◆ C2V files: These files contain customer-to-vendor information and are generated by the end user with the HASP SRM Remote Update System (RUS) utility. For additional information, see *Processing C2V Information* on page 164.
 - ◆ V2C files: These files contain vendor-to-customer information related to orders for HASP Updates. For additional information, see *Specifying a HASP Update Order* on page 162.
 - ◆ Vendor Code files: These files contain Vendor Code information. For additional information on HASP SRM Vendor keys and codes, see *Personalized Vendor and Batch Codes* on page 36.
 - ◆ Export files: These files contain definition details exported for various purposes. For additional information, see *Exporting Definition Data* on page 174.

Customer Services

If you have been assigned the Customer Services role, you can view a list of defined customers and you can edit the details for a selected customer.

If a customer is unable for any reason to activate a Product remotely, you can activate the Product manually for the customer, using the Product Key and a Customer-to-Vendor (C2V) file for the customer's HASP SRM protection key.

The output of the manual activation process is a Vendor-to-Customer (V2C) file that can be sent to the customer. You can request that the customer returns a C2V file to confirm that the Product has been activated.

For additional information on C2V files, see *Processing C2V Information* on page 164.

Chapter 12

HASP SRM Remote Update System

This chapter describes the HASP SRM Remote Update System (RUS) utility and explains how to use RUS to update license data remotely for deployed HASP SRM protection keys.

Note:

You can also apply updates to deployed HASP SRM protection keys using the HASP SRM Run-time API, by calling the `hasp_update` function. For additional information, see the HASP SRM Run-time API Help documentation.

In this chapter:

- [RUS Overview](#)
- [RUS Workflow](#)
- [Using RUS](#)

RUS Overview

RUS is an advanced utility that enables secure, remote updating of the license and memory data of HASP SRM protection keys after they have been deployed. As part of the basic concept underlying HASP SRM, RUS facilitates ongoing licensing well after protection has been implemented. For additional information on HASP SRM concepts, see *Protect Once—Deliver Many* on page 34.

RUS provides a simple and secure method of updating your licenses remotely, after you have delivered your protected software together with the HASP SRM protection keys. You simply need to update the license and deliver update files to your customers.

RUS enables you to receive information on the current status of HASP SRM licenses at your customers' sites, and to securely extend or reduce the functionality of these licenses, without recalling the HASP SRM protection keys.

Note:

All HASP SRM protection keys except the HASP HL Basic key can be updated using RUS.

RUS is an executable utility (`hasprus.exe`) that can be distributed to end users with your software.

It is important that you customize RUS with the Batch Code associated with the HASP SRM protection keys that you produce for your customers, before you distribute the executable to them. For additional information on Batch Codes, see *Personalized Vendor and Batch Codes* on page 36.

You can use HASP SRM Business Studio to customize RUS with the required Batch Code, and also to brand the GUI to display your vendor-specific information to end users. For additional information, see *Customizing and Branding RUS* on page 174.

RUS Workflow

When you deliver your Products to a customer, you can include a customized version of RUS with the installation package. You can also include the instructions for using RUS.

When a license update is required, you have the option of either retrieving customer licensing information from the Business Studio Server, or of requesting that a customer produces and sends you a Customer-to-Vendor (C2V) files for the HASP SRM protection keys to be updated. C2V files have a `.c2v` extension and contain information on the licensing and memory content of the HASP SRM protection keys.

When you receive C2V files from a customer, you check them in using HASP SRM Business Studio. For additional information, see *Processing C2V Information* on page 164.

Regardless of whether you obtain the data from the Business Studio Server, or in the form of a C2V file from your customer, the collected data enables you to produce an update most suited to the customer's needs. At no point in this workflow is it necessary to reconfigure security or protection at the customer's site.

You define the requested license updates in HASP SRM Business Studio as HASP Update orders for delivery to the customer. For more information on defining HASP Update orders, see *Specifying a HASP Update Order* on page 162.

The process of producing a HASP Update order generates a file for each HASP SRM protection key to be updated. This can be either a Vendor-to-Customer (V2C) file or an executable that contains the license update data. For more information on the HASP Update order production process, see *Producing HASP Update Orders* on page 170.

The output file is then delivered to the end user, who either runs the executable as instructed by you, or uses RUS to apply the license update data contained in the V2C file.

Example: Using RUS for License Updates

Scenario: One of HQ Software's customers, ABC Design, has ordered the upgraded version of HQ Design Pro that contains the new REPORT GENERATOR Feature, for five of its 20 HQ Design Pro users. The customer is asked to send C2V files containing details of the five deployed HASP HL keys to be updated.

ABC Design uses RUS to generate the C2V files and sends them to HQ Software. These files contain the current status of the license on the specific HASP HL keys.

HQ Software checks in the C2V files, defines a HASP Update order for the HQ Design Pro v.2.0 Modification Product, and produces a license update contained in five V2C files. For additional information on this example order, see *Order Example 3: Order for HASP Update* on page 167.

The V2C files are sent by email to ABC Design. Each of the five end users applies the update to their HASP HL key using RUS, and returns a C2V file containing a confirmation receipt.

Using RUS

The RUS window consists of the following tabs:

- **Collect Key Status Information:** The parameters in this tab are used to collect information on the current status of the licenses in the HASP SRM protection key. The end user specifies a name and location for the generated C2V file. If more than one HASP SRM protection key is installed, the user selects the required key. No private customer data is included in the C2V file.
- **Apply License Update:** The parameters in this tab are used to apply a V2C file and update licenses in a HASP SRM protection key.

Instructions for Customers Using HASP SRM RUS

The following sections contain information and instructions that you can customize and send to your customers.

Instructions for Using HASP SRM RUS

If you are using RUS with a HASP HL key, (hardware-based key) you must connect the key before performing either of the following procedures. RUS automatically locates any HASP SL keys (software-based keys) installed on your computer.

Collecting HASP SRM Protection Key License Data

You can use HASP SRM RUS to produce a Customer-to-Vendor (C2V) file containing information on the current status of the licenses in your HASP SRM protection keys. You can then send this file in order to receive a license update.

To retrieve the current license information from a HASP SRM protection key:

1. Launch HASP SRM RUS (`hasprus.exe`).
2. Click the Collect Key Status Information tab.
3. Click **Collect Information**. The Save key status as window is displayed.
4. Specify the directory where you want to store the C2V file. Enter a file name and click **Save**.

5. If more than one HASP SRM protection key is located, a list of the keys is displayed. Select the required key, or disconnect the keys that are not required, and click Refresh.
6. The C2V file for the HASP SRM protection key is generated and saved in the required location. The file can now be sent for processing to produce an update.

Applying an Update

You can also use HASP SRM RUS to apply an update to the licenses stored in your HASP SRM protection keys.

To update the licenses in HASP SRM protection keys:

1. Launch RUS (hasprus.exe) or double-click the Vendor-to-Customer (V2C) file that you have received containing the update data.

Note:

If you have received an update as an executable, double-click the file and it will automatically launch RUS.

2. Click the Apply License Update tab. (This might be the only tab displayed.)
3. If the Update file field is empty, browse to the directory where the update file (.v2c file) is located and select the file.
4. Click Apply Update to apply the new license data to the deployed HASP SRM protection key.

Part 4 Distributing HASP SRM Software

In this section:

- [Chapter 13: Distributing HASP SRM with Your Software](#)
Describes options for distributing required software to your end users.
- [Chapter 14: HASP SRM Admin Control Center](#)
Describes the configuration and management functionality of HASP SRM Admin Control Center, an end-user utility that enables centralized administration of HASP License Managers and HASP SRM protection keys.



Chapter 13

Distributing HASP SRM with Your Software

This chapter introduces options for distributing required software to your end users.

In this chapter:

- HASP SRM Software for End Users
- Distributing HASP SRM Run-time Environment

HASP SRM Software for End Users

Every HASP SRM installation includes software that you need to distribute to your end users. This software must be installed at your customer's site to ensure that your protected and licensed software functions correctly.

Note:

You do not need to distribute all the software covered in this chapter.

Protection-related Software

The most important software that must be installed at your customer's site is the HASP SRM Run-time Environment, and there are a number of ways in which this can be achieved. This application is required to enable HASP SRM protection keys to run and communicate with the protected application. For additional information, see *Distributing HASP SRM Run-time Environment* on page 195.

If you are distributing a protected .NET assembly, you must also distribute `haspdnert.dll` for programs that run on 32-bit operating systems and `haspdnert_x64.dll` for programs that run on a 64-bit operating systems. These native Windows DLLs enable a protected .NET assembly to communicate with the HASP SRM protection key.

Network Environment Management

Your end users can manage their network licenses online using HASP SRM Admin Control Center. Ensure that you send them the URL for accessing this application. For additional information, see Chapter 14, *HASP SRM Admin Control Center*.

Software for Updating Licenses

HASP SRM Remote Update System is distributed when remotely updating licenses in deployed HASP SRM protection keys. For additional information on this utility, see Chapter 12, *HASP SRM Remote Update System*.

Distributing HASP SRM Run-time Environment

HASP SRM Run-time Environment enables your protected software to run by communicating with HASP SRM protection keys. The following sections describe the various options available for distributing the HASP SRM Run-time Environment to your end users.

Note:

- For information about distributing the HASP SRM Run-time Environment for Mac operating systems, see *Distributing HASP SRM Run-time Environment for Mac* on page 199.
 - For information about distributing the HASP SRM Run-time Environment for Linux operating systems, see *Distributing HASP SRM Run-time Environment for Linux* on page 200.
-

Distributing HASP SRM Run-time Environment for Windows

HASP SRM Run-time Environment distribution options for Windows operating systems are listed below.

- Use Windows Update to download the HASP SRM Run-time Environment. Internet connection is required for either of these processes.
- Integrate installation of the HASP SRM Run-time Environment into your application's installer using the two options below:
 - ◆ Merge modules
 - ◆ HASP SRM Run-time Environment Installation API
- Deliver either of the following HASP SRM Run-time Environment installation utilities to your end users:
 - ◆ **HASPUserSetup.exe**: A GUI-based installer
 - ◆ **haspdinst.exe**: A command-line utility

Windows Update

If your end users are running the protected software on Windows XP or later platforms, and can access the Internet, they simply need to connect a HASP SRM protection key on their machines. The HASP SRM Run-time Environment is certified by Microsoft and is, therefore, automatically downloaded from the Microsoft Update site.

When your end users connect a HASP SRM protection key:

1. The system informs them that a new component has been detected.
2. The HASP SRM Run-time Environment is automatically installed.
3. The LED on the HASP SRM protection key lights up, indicating that the installation process is complete.

Merge Modules

The HASP SRM Run-time Environment installation is available as the `haspds.msm` merge module. You can use the merge module to seamlessly integrate the HASP SRM Run-time Environment installation in your MSI installation. Merge modules deliver shared Windows Installer components, code, files, resources, registry entries and setup logic in a single, composite file.

Note:

The `haspds.msm` merge module cannot be run as a standalone application.

A `haspds.msm` integrated with your MSI installer copies the `haspds_windows.dll` into the Win32 system directory of the end user's computer. The `haspds_windows.dll` is called by the MSI module to install or uninstall the HASP SRM Run-time Environment.

The benefits of using the HASP SRM installation merge modules in a single unified MSI installer include:

- Providing end users with a single, compound file for your application that includes the HASP SRM installation
- Installation self-repair provided by reusing the MSI installer

Following installation, the `haspds.msm` merge module is located in
...\\Program Files\\Aladdin\\HASP SRM API\\RuntimeInstall\\MSI

A sample merge module is provided in
...\\Program Files\\Aladdin\\HASP SRM\\Samples\\RuntimeInstall\\MSI

Implementation Checklist

Before implementing HASP SRM merge modules into your installer, review the following checklist:

- End users require “administrator” rights in order to successfully execute the Run-time Environment installation. Ensure that this is accounted for in your installation scripts.
- HASP SRM merge modules require Windows Installer version 2.0, or later.
- Open processes that require the HASP SRM run-time should not run in the background when installing the Run-time Environment.
- Refer to the `haspds.msm` sample for MSI for a demonstration of HASP SRM merge modules in action.

Implementation

Implementation of HASP SRM merge modules is a straightforward process that simply requires you to add the `.msm` file containing the Run-time Environment installation to your MSI-compliant installer setup. After you have created your MSI installer, the wrapped file will automatically include the HASP SRM installation merge module.

Note:

- When the Run-time Environment is already installed on a target machine:
 - ◆ If you install a version of `haspds_windows.dll` that is newer than the already-installed `haspds_windows.dll`, the installed DLL will be replaced with the new one.
 - ◆ If a new version of `haspds_windows.dll` is the same as the previous version, the file timestamp will be compared. If the version of the DLL that is being installed is equal to or older than the existing `haspds_windows.dll`, the DLL will not be replaced.

In any case the `haspds_windows.dll` will be executed.

Sample Merge Module

A sample installer containing the HASP SRM merge module is provided and should be reviewed before implementing the `haspds.msm` merge module into your own installer.

The sample installer is a full MSI-installer containing the HASP SRM Run-time Environment installation merge module and the required shared libraries for installing the Run-time Environment.

The sample installer does the following:

- Verifies that the user has the requisite administrator rights to install the HASP SRM Run-time Environment
- Stops a running HASP License Manager service before the Run-time Environment is installed, and re-starts the service after the installation is complete.
- Installs or removes HASP SRM Run-time Environment

Note:

You can incorporate a branded DLL into the sample by replacing the name of the demo DLL with the name of the branded DLL.

HASP SRM Run-time Environment Installer API

Use the HASP SRM Run-time Environment installer API to integrate the installation process into your custom setup application. For additional information, see the separate help file in the ...\\Program Files\\Aladdin\\HASP SRM API\\RuntimeInstall\\ directory.

haspdinst.exe

`haspdinst.exe` is a command-line utility that installs the HASP SRM Run-time Environment. Following installation, the file is located in ...\\Program Files\\Aladdin\\HASP SRM\\Redistribute\\Runtime Environment\\cmd\\Install. You can distribute this standalone application to your end users.

To install the HASP SRM Run-time Environment:

- At the command-line prompt, type `haspdinst -i`.

HASPUserSetup.exe

HASPUserSetup.exe is a GUI-based installation program to independently install the HASP SRM Run-time Environment.

Following installation, the file is located in

...\\Program Files\\Aladdin\\HASP SRM\\Redistribute\\Runtime Environment\\Setup.

This easy-to-use program has an intuitive GUI-based wizard. After your end users run the file, they should follow the on-screen instructions to complete the Run-time Environment installation.

Distributing HASP SRM Run-time Environment for Mac

Distribute the HASP SRM daemons—aksusbd and hasplmd—to end users running protected and licensed applications on Mac OS X platforms.

All the HASP SRM software for Mac that is required for distribution to end users is provided in the MacOS/Redistribute/ directory on your HASP SRM installation DVD.

Options for Distributing the HASP SRM Daemons

The software required to distribute the daemons is provided in the MacOS/Redistribute/ directory on the HASP SRM installation DVD.

Multiple options are available for distributing the Mac daemons to end users. The following two options are described:

- Installer Distribution Using a Multi-packager
- Installer Scripts

Installation Using a Multi-packager

The installation package can be integrated into any multi-package installer that includes the installation for your own application. Include the HASP SRM RTE Installer.pkg in the mpkg.

To locate the HASP SRM RTE Installer.pkg:

1. In the MacOS/Redistribute/ directory, double-click HASP SRM RTE Installer.dmg. The file opens.
2. Click the HASP SRM Runtime Environment icon and select Show Original. The .Packages window opens and HASP SRM RTE Installer.pkg is displayed.

For additional information, see the welcome.rtf file provided in the MacOS/Redistribute/ directory.

Installer Scripts

Installation scripts are provided in MacOS/Redistribute/ on the HASP SRM installation DVD. Open the directory and click HASP SRM RTE Installer Scripts.dmg. A new volume named HASP SRM RTE Installer Scripts is mounted on your desktop. The volume contains dinst and dunst files and the payload/ directory.

You can copy the files in the volume and integrate them in your customized installer. The scripts are not configurable.

For additional information on using the scripts, see the ReadMe.html file provided in the HASP SRM RTE Installer Scripts volume.

Distributing HASP SRM Run-time Environment for Linux

Distribute the HASP SRM daemons—aksusb and hasplmd—to end users running protected and licensed applications on Linux platforms. Without the daemons, the end user's system will not recognize the connected HASP keys, and the protected applications will not run.

All the HASP SRM software for Linux that is required for distribution to end users is provided in the Linux/Redistribute/ directory on your HASP SRM installation DVD.

Using the Installer Scripts to Distribute the HASP SRM Daemons

Open the Linux/Redistribute/Runtime/script directory. The directory contains dinst (install) and dunst (uninstall) scripts and the HASP SRM Run-time Environment.

You can integrate the scripts in your installer. The scripts are not configurable.

Using the RPM to Distribute the HASP SRM Daemons

This option is available for SuSE and RedHat.

Open the Linux/Redistribute/Runtime/RPM directory. The directory contains the following files, and the HASP SRM Run-time Environment:

- Use `aksusbd-redhat-1.14-3.i386.rpm` for RedHat
- Use `aksusbd-suse-1.14-3.i386.rpm` for SuSE



Chapter 14

HASP SRM Admin Control Center

HASP SRM Admin Control Center is a customizable, Web-based, end-user utility that enables centralized administration of HASP License Managers and HASP SRM protection keys. This chapter describes the configuration and management functionality.

This chapter includes the following topics:

- [Introduction to Admin Control Center](#)
- [Launching Admin Control Center](#)
- [Administrator's Workflow](#)
- [Customizing Admin Control Center Look and Feel](#)

Introduction to Admin Control Center

Admin Control Center is designed to provide your end-user's system administrator with the means of managing the use of your licensed software by members of the organization. It has been engineered in a way that provides both flexibility and customizability, making it a useful add-on to your HASP SRM-protected and licensed software.

Following are some of the benefits of Admin Control Center:

- Web-based, meaning that it can be easily accessed from any Web browser. The administrator does not have to be physically present at your end user's site in order to manage the software licenses.
- Cross-platform capable, enabling it to be used on any platform on which a browser is available.

- Fully customizable, enabling you to change the displayed information, appearance and behavior so that it will integrate seamlessly into other applications, corporate styles, and so on. In addition, Admin Control Center can be displayed in a variety of languages.
- Easy to use, meaning that it can be used with minimal configuration. In addition, the GUI is intuitive, enabling the administrator to manage licenses without the need for a steep learning curve.
- Enables configuration and control of licenses in a network.

Launching Admin Control Center

Admin Control Center is installed as part of the HASP SRM Run-time Environment driver installation process.

Admin Control Center is launched by typing

`http://<machine_name or ip_address>:1947` in the address field of the browser. If you are accessing the HASP License Manager residing on your own machine, type `http://localhost:1947`.

Admin Control Center Interface

When you launch HASP SRM Admin Control Center, the Web interface displays a number of Administration Options on the left of the page. The context-sensitive Help document, which forms part of HASP SRM Admin Control Center, provides information about the fields for each option. Note that the options relate to the License Manager on the machine whose name or IP address is in the title bar of Admin Control Center. The following options are available:

- *HASP Keys* enables you to identify which HASP SRM protection keys are currently present on the network, including locally connected keys.
- *Products* enables you to view a list of all the Base Products available on all HASP License Managers (local and network). In addition, when a Product contains Features with detachable licenses you can see the number of licenses for the Product that are currently available to be detached from the network and the maximum duration for which they may be detached. This option also enables you to access the Detach/Extend functions.
- *Features* enables you to view a list of the Features that are licensed in each of the HASP SRM protection keys that are currently present on the network, including locally connected keys. In addition, you can see the conditions of the license, and the current activity related to each Feature.
- *Sessions* lists all the sessions of clients on the local machine, and those remotely logged in to HASP License Manager on the local machine. You can view session data and terminate sessions.
- *Update/Attach* enables you to update existing licenses on a HASP SRM protection key in the field and, in the case of HASP SL keys, to attach a detachable license to a recipient machine. It also enables you to apply identification details of an offline recipient machine to a host machine in order to create a file for a detachable license.
- *Access Log* enables you to view a history of log entries for the server on which HASP License Manager is running.

- *Configuration* enables you to specify certain operating settings for HASP SRM Admin Control Center running on the connected machine. You can set parameters relating to user access, access to remote HASP License Managers, and access from remote clients. In addition, you can customize log template files in terms of the data they return.
- *Diagnostics* enables you to view operating information for the HASP License Manager to which you are currently logged in, to assist in diagnosing problems. You can generate reports in HTML format. This option also enables you to view miscellaneous data relating to the use of the server on which HASP License Manager is running.
- *Help* displays the Help documentation for HASP SRM Admin Control Center. Context-sensitive Help is available within each of the functions described above, by clicking the **Help** link at the bottom of the page.
- *About* provides information about the version of HASP License Manager, and a link to the Aladdin Knowledge Systems' Website.
- *Country Flags* enables you to change the language of the user interface by clicking on the flag of the country appropriate to the language you require. Languages other than English can be downloaded from the Aladdin Web site.

Administrator's Workflow

When you first launch Admin Control Center, the utility is pre-configured to run automatically. However, you may want to customize it to your requirements and to specify users and their access permissions, and access permissions between remote machines and local servers. Changes to the configuration of Admin Control Center are made in the Configuration tab of the application.

The basic configuration changes that you can make include:

- Specifying a name for the local machine
- Enabling access from remote machines to the Admin Control Center on this machine
- Setting the display refresh time
- Defining how many rows of data will be displayed on a page

- Specifying the logs that are to be created and their content, and customizing information that will be displayed in the log
- Setting an Admin password

Following the configuration set up, you can define:

- Users and their access privileges
- Access parameters to remote HASP License Managers
- Access privileges from remote client machines to a HASP License Manager on the current machine

Configuration Considerations

Before you make certain configuration changes to Admin Control Center, it is recommended that you consider their implications. This section provides a guide to assist you in this process.

Basic Settings

Should you choose to have Admin Control Center create an access log, consider the scope of the information that you want recorded in the log.

It is possible to customize the log template to define what information you want the log to record.

Customizing Log Parameters

You can specify the data that is displayed in a log file by editing the log parameters.

Access the Edit Log Parameters page by clicking **Edit Log Parameters** in the **Basic Settings** tab of the Configuration page.

The Edit Log Parameters page comprises two fields. The upper field displays the parameters of the current template. The **Available tags for log** field lists all the tags and their descriptions. By selecting a tag and clicking **Add**, the tag is appended to the text in the upper field.

The default log parameters are used the first time that Admin Control Center is launched and will also be used if an empty template is submitted. The default template is:

```
{timestamp} {clientaddr}:{clientport} {clientid} {method}  
{url} {function} ({functionparams} result  
({statuscode}){newline}
```

You can reset your log parameters to the factory default by clicking Set Defaults in the Edit Log Parameters page. The default log parameters will also be used if there is no data in the upper field of the Edit Log Template page.

Managing Access to HASP License Managers

Managing Access to HASP License Managers is performed in the Users and Access from Remote Clients tabs in the Configuration page. The following paragraphs discuss the issues that you need to consider when setting these parameters.

Users

The user restrictions that you define are evaluated in the order in which they are specified, and the evaluation process stops when the first match is found. You therefore need to take care that the restrictions are listed in an order that satisfies this logic.

The value `allow=all@all` is implicitly added to the end of the list. According to the logic just described, if this value was at the beginning of the list, all subsequent restriction values would be ignored.

Additional information about defining restriction values is provided in the relevant Help page in Admin Control Center.

Access from Remote Clients

When you define criteria relating to the remote machines that can access HASP License Manager on the current machine, you need to define access restrictions. The remote client access restrictions that you define are evaluated in the order in which they are specified, and the evaluation process stops when the first match is found. You therefore need to take care that the restrictions are listed in an order that satisfies this logic.

The value `allow=all` is implicitly added to the end of the list. According to the logic just described, if this value was at the beginning of the list, all subsequent restriction values would be ignored.

Additional information about defining remote client access restriction values is provided in the relevant Help page in Admin Control Center.

Searching for License Managers

Managing the locations to search for HASP License Managers is performed in the Access to Remote License Manager tab in the Configuration page. The following paragraph discusses the issues that you need to consider when setting these parameters.

Access to Remote License Managers

When you define criteria relating to the machines that may be searched for HASP License Manager, you can choose to:

- Enable a “broadcast” that searches all machines on the local network
- Search the default local group in an IPv6 subnet
- Restrict the search to specific machines. In this case, it is necessary to specify each machine that may be searched—by specifying either its name or its IP address.

Configuring Detachable License Definitions

In HASP SRM Business Studio, it is possible to flag network-based licenses for Features in Products that will be locked to HASP SL keys as being *detachable*. This means that the Product has the ability to be temporarily detached from a network license pool and to be attached to a remote recipient machine for a specific period of time. At the end of the detachment period, the license is automatically restored to the network pool. A user can extend a detached license prior to its expiry date.

In the Detachable License tab of the Configuration page, you can enable this functionality and specify criteria relating to the number of licenses that may be detached from the network pool, together with the maximum period for which the licenses may be detached. You can specify global settings for all Products, or click the Per-Product Settings button to customize settings for individual Products. Global settings will also affect any Products for which individual settings have not been specified.

Configuring Log File Output

You can specify the information that you want to be displayed in your log files from the Basic Settings tab in the Configuration page. When you click the Edit Log Parameters button, the Edit Log Parameters tab opens and all tags that can be used to configure the output logs are displayed, together with their descriptions.

The default log parameters are used the first time that Admin Control Center is launched and will also be used if an empty template is submitted. The default template is:

```
{timestamp} {clientaddr}:{clientport} {clientid} {method}  
{url} {function} ({functionparams}) result  
({statuscode}){newline}
```

Diagnostics

The Diagnostics page enables you to view and extract operating information for the HASP License Manager to which you are currently logged in, to assist in diagnosing problems. You can generate diagnostics reports in HTML format.

Occasionally, it is necessary to create a file containing the machine identity details of a remote recipient machine. This information is required in order for a host machine to identify which machine a detached license will be attached to. The Diagnostics page enables you to create this file for the local machine on which Admin Control Center is running by using the Create ID File button.

Additional information about the data provided in the Diagnostics page is available in the relevant Help page in Admin Control Center.

Applying Basic Configuration Changes Globally

You can make configuration changes to Admin Control Center, and deploy them to multiple machines on the network, as follows:

1. Make the required changes on one machine, using the configuration page of Admin Control Center. The changes are saved in the `hasplm.ini` file.
2. Locate the `hasplm.ini` file using one of the following methods:
 - ◆ Read the full path name of `hasplm.ini`, which is located at the bottom of the Configuration page. The HASP base directory is the directory in which the `hasplm.ini` file resides.
 - ◆ If you are using Windows in a language other than English, locate the directory in which the common files are stored. (In English Windows, the Common Files folder).
3. Copy `hasplm.ini` and use it to overwrite `hasplm.ini` on all the other machines on the network.

Customizing Admin Control Center Look and Feel

You can change the language, displayed information, appearance, and behavior of Admin Control Center so that it will integrate into other applications, your organization's corporate styles, and so on.

The Admin Control Center GUI is comprised of HTML, GIF, and other files, which are located inside the executable (EXE) file `hasplms.exe`. When you implement additional template sets, you must add them to a fixed directory structure under the HASP base directory.

To create a directory for a custom template:

1. Locate the `templates` directory inside the HASP base directory.
The HASP base directory is located in:
`...\\Program Files\\Common Files\\Aladdin Shared\\HASP (Windows)`
`/var/hasplm (Mac)`
`/etc/hasplm (Linux)`

To determine the precise location of this directory on your system:

- ◆ Open Admin Control Center on your local machine (<http://127.0.0.1:1947>). Under Administration Options, click Configuration. Read the full path name of `hasplm.ini`, which is located at the bottom of the page. The HASP base directory is the directory in which the `hasplm.ini` file resides.
 - ◆ If the folder is empty, click Submit. The base path of `hasplm.ini` is updated at the bottom of the Configuration page.
2. Add `\Aladdin Shared\HASP\templates\<your_template_folder_name>` to the directory. For example, using an English version of Windows XP, the full path is
`C:\Program Files\Common Files\Aladdin Shared\HASP\templates\<your_template_folder_name>`
-
- Note:**
- You can create multiple templates inside your templates directory.
 - Each time HASP License Manager is launched, the application reads the files in all the directories (except `.bak` files). To expedite the launch time, it is recommended that you keep the directories free of unrequired files.
3. Restart the HASP License Manager,
OR
Call http://127.0.0.1:1947/action.html?reload_templates to reload the new template.
4. To verify your customized template, from a browser on your local machine, open http://127.0.0.1:1947/<your_template_folder_name>.

Writing Templates

A template is an ASCII text file (may be HTML, but also XML, CSV, and so on) that contains place holders (*tags*) for variables that are inserted by the HASP License Manager when a request is made via HTTP.

In addition, the file may contain block tags that surround a block of text and tags, and generally iterate a list (of HASP SRM protection keys, Features, sessions, and so on). For example,

```
{tagname}repeatingblock{/tagname}
```

The place holders are written as {placeholdername}. For a complete list of available place holder names, their description and usage, see `tagxref.txt` in
...\\Program Files\\Aladdin\\HASP SRM\\Docs\\Manuals & Tutorials\\Admin Control Center Customization\\templates.

Not all tags work in every context, and some will have different values depending on how they are used. For example, when {logincount} is used in a global context, it returns the total login count for the server. When logincount is used inside {devicelist} {/devicelist}, it returns the login count for the currently selected HASP SRM protection key. If logincount is used inside {featurelist} {/featurelist}, it returns the login count for the currently selected Feature.

A special include tag is available—{#include "filename.ext"}—that will return the contents of a specific file instead of a value. Includes (included files) must not be nested, and must not include a path (meaning that included files must reside in the same directory as the template).

If a table displayed in a browser page returns *** illegal tag: xxx ***, the tag is either unrecognized, or is illegal in the current context.

In JavaScript, {placeholders} are replaced. To use an opening curly bracket {, without it being replaced or generating an *illegal tag* error, ensure that a white space (space, CR, LF, or tab) follows the curly bracket. In this case, it will be passed without modification.

To output something such as {this} without it being parsed, use the HTML notation for a curly bracket—{this}.

For additional assistance, refer to the sample templates in
...\\Program Files\\Aladdin\\HASP SRM\\Docs\\Manuals & Tutorials\\Admin Control Center Customization\\templates.

Default Templates and Samples

Three sets of template source code are provided:

- sample provides a very simple example of how to use templates and tags.
- csv provides an example for generating a comma-separated (.csv) file for importing to a spreadsheet or database, or for processing by your own program. It produces a CSV list of all available Features.
- en is the complete English-language version of Admin Control Center, as included in the HASP License Manager application (hasplms.exe). The template uses AJAX technologies to increase ease of use. For translations, or creating a specific corporate identity, use this template set as a starting point.

You can also incorporate some or all of the HASP SRM Admin Control Center functionality into your own Web application, possibly with the use of (i)frames, and so on.

Sample CSV Output

This section provides a sample CSV output. Such output is useful for importing the data into spreadsheets, databases, and so on.

Using a template such as:

```
c:\>type templates\csv\features.txt
{featurelist}{index}, {hhlid}, {featureid}, "{local}",
"{concurrtext}", {priority}, {fileid}, {filetag},
{logincount}, {loginlimit}, {sessioncount}
{/featurelist}
```

The following output is produced:

```
c:\>wget http://10.24.2.23:1947/csv/features.txt -O f.txt &
type f.txt
--17:23:44-- http://10.24.2.23:1947/csv/features.txt
`f.txt'
Connecting to 10.24.2.23:1947... connected!
HTTP request sent, awaiting response... 200 OK
Length: 1,411 [text/plain]
1, 0x335918F1, 0x00000000, "local", "L", 0, 0xFFCB, 0x0B, 0,
0, 0
2, 0x335918F1, 0x0000BEEF, "local", "LNS", 0, 0x1234, 0x0C, 0,
7, 0
```

```
3, 0x335918F1, 0x00001357, "local", "L", 0, 0xABCD, 0x0B, 0,
0, 0
4, 0x335918F1, 0x000CAFF1, "local", "L", 0, 0xCAF1, 0x0B, 0,
0, 0
5, 0x335918F1, 0x000CAFF2, "local", "L", 0, 0xCAF2, 0x0B, 0,
0, 0
6, 0x335918F1, 0x000000A1, "local", "LNS", 0, 0xCAF3, 0x0C, 1,
7, 4
7, 0x335918F1, 0x000000A2, "local", "LNS", 0, 0xCAF4, 0x0C, 0,
7, 0
8, 0x335918F1, 0x0000BEEF, "local", "LNS", 0, 0x1235, 0x0C, 0,
7, 0
9, 0x335918F1, 0x0000BEEF, "local", "LNS", 0, 0x1236, 0x0C, 0,
7, 0
10, 0x335918F1, 0x0000BEEF, "local", "LNS", 0, 0x1237, 0x0C,
0, 7, 0
11, 0x335918F1, 0x0000BEEF, "local", "LNS", 0, 0x1238, 0x0C,
0, 7, 0
12, 0x389C1FAB, 0x00000000, "local", "L", 0, 0xFFCB, 0x0B, 0,
0, 0
13, 0x389C1FAB, 0x00012345, "local", "LNS", 0, 0xAFFE, 0x0C,
0, 7, 0
14, 0x389C1FAB, 0x00055779, "local", "L", 0, 0xBEEF, 0x0B, 0,
0, 0
15, 0x33C90F7A, 0x00011223, "10.24.2.17", "LNS", 0, 0xAFFE,
0x0C, 0, 7, 0
16, 0x33C90F7A, 0x00097531, "10.24.2.17", "LNS", 0, 0x1234,
0x0C, 0, 7, 0
17, 0x33C90F7A, 0x00002FAC, "10.24.2.17", "LNS", 0, 0xCAF2,
0x0C, 0, 7, 0
18, 0x33C90F7A, 0x000AFFEE, "10.24.2.17", "LNS", 0, 0xCAF5,
0x0C, 0, 7, 0
19, 0x33C90F7A, 0x000DFFED, "10.24.2.17", "LNS", 0, 0xCAF9,
0x0C, 0, 7, 0
20, 0x33C90F7A, 0x000FFE01, "10.24.2.17", "LNS", 0, 0x00A1,
0x0C, 0, 7, 0
```

Configuring Admin Control Center to Use your Custom Template

After you have created your template, you want to be sure that Admin Control Center loads your customized settings whenever it launches.

By default, when you enter `http://[servername]:1947` in your browser, the internal factory default templates are used. The URL is redirected to `http://[servername]:1947/_int_/index.html`. `_int_` denotes the internal directory. If you replace `_int_` with `sample`, the templates from the sample directory are used.

To direct Admin Control Center to Use your Custom Template:

1. Open Admin Control Center in your browser. By default, the application opens at the this URL:
`http://[servername]:1947/_int_/index.html`
2. In the URL, replace `_int_` with the name of the custom template you wish to use.
3. Create a shortcut to the address of Admin Control Center with your template.

Using this process, multiple browser windows can use multiple templates simultaneously.

URL Redirections Using HTTP 302

Following is a list of sample URLs to which the browser is redirected when a specific URL is entered.

Note that you do not require this information for translation or simple layout changes in your template. However, it is required if you are changing the logic of Admin Control Center, for example by adding or removing pages, or merging Admin Control Center functions into another application.

URL Entered	URL Displayed
[server name]:1947	[server name]:1947/_int_/index.html
Provides a shortcut to the main Admin Control Center page	
[server name]:1947/corporate.html	[server name]:1947/_int_/corporate.html
Automatically switches to the internal template. (_ini_) is set when no template has been specified	
[server name]:1947/csv/devices.txt	[server name]:1947/csv/devices.txt
Doesn't change because the template (csv) and file name are specified	
[server name]:1947/sample	[server name]:1947/sample/index.html
Automatically redirects to the index.html file when no file name has been specified	

Note:

It is sufficient to type only the URL of HASP SRM Admin Control Center, it automatically redirects to the index page.

Part 5 Appendices

In this section:

- [Appendix A: Troubleshooting](#)
Provides a checklist to help you solve some of the most common problems that your customers might encounter when using the HASP HL keys. Also includes a list of specific problems you or your customers may experience, together with the solutions.
- [Appendix B: HASP SRM Glossary](#)
Provides a glossary of HASP SRM-related terminology.
- [Appendix C: HASP SRM Run-time API Reference](#)
Provides an overview of the functions that comprise the HASP SRM Run-time API. Also includes structural declarations and detailed information on individual HASP SRM Run-time API functions, and a summary and description of all API return codes.
- [Appendix E: How HASP SRM Prevents Tampering of Time-based Licenses Locked to HASP SL Keys](#)
Explains the technology used in HASP SRM to prevent a user from extending the duration of a software license that is locked to a HASP SL key.



Appendix A

Troubleshooting

The first part of this appendix provides a checklist to help you solve some of the most common problems that your customers might encounter when using the HASP HL keys. The second part lists specific problems you or your customers may experience, together with the solutions.

HASP HL keys conform to the highest standards of quality assurance. However, like any other PC peripheral device, a HASP HL key might not operate on certain PC configurations because of faulty equipment or improper installation. This appendix can help you in such a situation.

In addition to the information in this appendix, you can access the Aladdin Knowledge Base at:

<http://www.aladdin.com/kb2>

The Knowledge Base contains a comprehensive listing of solutions to general and specific problems.

To avoid potential difficulties, ensure you are using current HASP SRM software versions. Contact your local Aladdin representative for the latest updates, or visit Aladdin's international downloads page at: <http://www.aladdin.com/download>

Checklist

If a customer reports a problem, check the following:

- What the returned error code or message says. For additional information, see *API Status Codes*
- Whether a HASP HL key is connected correctly to the USB port
- Whether your customer's hardware or the operating system indicates technical malfunction, such as device manager collisions, system events, bootlog failures, and so on
- Whether HASP SRM Admin Control Center can access the HASP HL key.
- Whether the problem occurs when the protected application runs on another PC of the same model

Problems and Solutions

Problem	HASP HL key drivers do not install.
Solution	Are older HASP HL key drivers installed on the machine? Uninstall the older driver using the installer corresponding to the older driver version. For additional information, see the HASP HL key driver documentation. After the older drivers are removed, install the HASP HL drivers. For additional information, see the <i>HASP SRM Installation Guide</i> .

Problem	You receive an error message when using <code>haspdinst.exe</code> to install the HASP HL key driver under Windows 2000/XP/2003/Vista.
Solution	Review the <code>haspdinst.exe</code> installation instructions. For additional information, see the <i>HASP SRM Installation Guide</i> . Alternatively, try to install the drivers using the <code>HASPUUserSetup.exe</code> . For additional information, see the <i>HASP SRM Installation Guide</i>

Problem	The protected application cannot find a HASP HL key.
Solution	<ul style="list-style-type: none">■ Does the HASP HL key LED light up? If not, this could be for one of the following reasons:<ol style="list-style-type: none">1. The key is not connected properly to the USB port. Disconnect, then reconnect after a few seconds. If the LED lights, the application should be able to access the key.2. The required HASP HL key drivers are not installed. If you are running HASP SRM on a Windows platform, check for an entry for HASP SRM in the Device Manager utility. If there is no entry, you must install the drivers using one of the methods in the <i>HASP SRM Installation Guide</i>.3. Check if the USB port is functioning correctly. Disconnect all other USB devices from their respective ports. Connect the HASP HL key to a different USB port. Try using a different USB device in the port from which the HASP HL key was not accessible.■ Open the Windows Services window and check that HASP License Manager is running.■ Check that the Batch Code on the HASP HL key matches the Batch Code of the protected application.

Problem	The application takes a long time to find the HASP SRM protection key on a large network.
Solution	It is recommended that you customize the search mechanism. Use Admin Control Center configuration to specify a search criteria, and to define the server addresses to be searched. By doing so, the Admin Control Center searches for the HASP SRM protection key at a specific address, which is much faster.

Problem	You receive an error message indicating that HASP License Manager was not found.
Solution	<p>The error message might be for one of the following reasons:</p> <ul style="list-style-type: none">■ HASP License Manager was not loaded. Try restarting HASP License Manager in the Windows Services window.■ There is a communication error with the machine on which the HASP SRM protection key is located. If you repeatedly receive the error message, try using a different search mechanism.

Problem	You cannot add files when using the DataHASP utility.
Solution	<p>The problem may occur for one of the following reasons:</p> <ul style="list-style-type: none">■ You are attempting to add a list that includes problematic files. Remove all problematic files, that are marked in red in the File list.■ You are attempting to add a file that is outside the scope of the filters defined in HASP SRM Envelope. You must protect your software again using the new file filter settings. <p>For additional information about working with the DataHASP utility, see <i>Working with the DataHASP Encryption Utility</i>.</p>

Problem	When using DataHASP, you receive a message that no data filters were defined for a program in a HASP SRM Envelope project.
Solution	The problem cannot be solved using the DataHASP utility. You need to use HASP SRM Envelope to protect your software again, and to specify file filter settings.

Appendix B

HASP SRM Glossary

Activation counter	Licensing element indicating the number of times a Feature, licensed using HASP SRM, can be run
AES	Advanced Encryption Standard (AES) algorithm that is the basis for the HASP SRM encryption and decryption
Anti-debugging	Measures applied by the HASP SRM system to block potential attacks intended to undermine the protection scheme
API call history	Log of all calls to the HASP SRM Run-time API executed using HASP SRM ToolBox
API samples	Sample applications that utilize the HASP SRM Run-time API. A learning tool used for implementing the HASP SRM Run-time API.
Background checks	Random checks executed by protected applications for a required HASP SRM protection key
Backward compatibility	Ability to share data or commands with applications protected with earlier HASP versions. HASP SRM backward compatibility includes the ability to read and write data, set real-time clocks, and process other 'legacy' commands.
Base Product	An original Product that has been created from scratch from which other Products may be created. All Modification Products, Provisional Products and Cancellation Products are created from Base Products.
Batch Code	Unique character string that represents a Vendor Code. Used in defining Features, Products and orders. It is also used for ordering HASP SRM protection keys. With HASP HL keys, the code is printed on the HASP HL key label.
C2V file	Customer-to-Vendor file. A file sent by the customer to the vendor, containing data about deployed HASP SRM protection keys.

Cancellation Product	A Product that cancels the licensing details of another Product. Can be used to revoke a deployed license, or to remove a license from a specified computer so that it can be transferred to another computer.
Cross-locking	Indicates that protection can be applied to both HASP HL and HASP SL keys
DataHASP	Utility for protecting data files that are accessed by programs protected by HASP SRM Envelope
Decryption	Process of decrypting data that has been encrypted
Default Feature	Feature that is always available in a HASP SRM protection key. It requires no configuration.
DEMOMA	Batch Code used for evaluation purposes with any HASP SRM application. Its corresponding Vendor Code is available in the VendorCodes folder of your HASP SRM installation.
Demo Vendor Code	See <i>DEMOMA</i>
Detach	Temporarily remove a license from a network pool on a host machine for attachment to a remote recipient machine
Encryption	Translation of data into a confidential code. To read an encrypted file, you must have the correct encryption engine for decrypting the file.
Encryption engine	Encryption engine in a HASP SRM protection key—based on the AES algorithm
Encryption key	Key used for encrypting a data file used with HASP SRM Envelope
Encryption level	Number of iterations that the HASP SRM Envelope executes with the HASP SRM protection key for each interaction
Envelope	See <i>HASP SRM Envelope</i>
Envelope template	Defined default protection settings and other project-related data
Expiration date	Date after which a protected program or Feature stops running
Feature	An identifiable functionality of a software application that can be independently controlled by a license. In HASP SRM, a Feature may be an entire application, a module or a specific functionality such as Print, Save or Draw.
Feature ID	Unique identifier for a HASP SRM-protected Feature
File filter	Defines the files that are exposed to on-the-fly file encryption

Grace period	An initial period of time during which a Product can be used without a HASP SRM protection key. See also <i>Provisional Product</i> .
H2R file	Host-to-Recipient file that contains one or more detached Products and their licenses for temporary attachment to a recipient machine
Handle	Unique identifier for accessing the context of a HASP SRM login session
HASP HL Basic key	Standard HASP HL local key that is used to protect software, and has a perpetual license. It does not have any memory functionality.
HASP HL Demo key	Sample HASP HL key provided for evaluating HASP SRM protection and licensing software. Always has the Batch Code DEMOMA.
HASP HL Drive	A HASP HL key that combines the copy-protection and licensing capabilities of the HASP HL Max key with the convenience of a mass storage drive
HASP HL key	The hardware-based protection and licensing component of HASP SRM. One of the HASP SRM protection key types.
HASP HL Max key	HASP HL local key with large storage capacity
HASP HL Net key	HASP HL network key
HASP HL NetTime key	HASP HL network key with a real-time clock
HASP HL Pro key	HASP HL local key with moderate storage capacity
HASP HL Time key	HASP HL local key with a real-time clock
HASP ID Number	Unique identity number for a HASP SRM protection key
HASP License Manager	Acts as a server and monitors concurrent usage according to the licenses stored in a HASP HL Net key
HASP SL key	The software-based protection and licensing component of HASP SRM—a virtual HASP HL key
HASP SRM	Software protection and licensing system
HASP SRM Admin Control Center	Customizable, Web-based, end-user utility that enables centralized administration of HASP License Managers and HASP SRM protection keys

HASP SRM Business Studio	Role-based application used to generate licenses and lock them to HASP SRM protection keys, write specific data to the memory of a HASP SRM protection key, and update licenses already deployed in the field
HASP SRM Developer key	A vendor-specific HASP HL key containing the confidential codes assigned by Aladdin Knowledge Systems. The key is used by the software engineers when protecting programs using HASP SRM.
HASP SRM Developer Kit	Kit containing software, hardware and documentation for evaluating the HASP SRM system
HASP SRM Envelope	Application that wraps an application in a protective shield, ensuring that the protected application cannot run unless a specified HASP SRM protection key is accessible by the program
HASP SRM Master key	A vendor-specific HASP HL key containing the confidential codes assigned by Aladdin Knowledge Systems. The key is connected to the HASP SRM Business Studio Server.
HASP SRM protection keys	HASP HL keys and HASP SL keys
HASP SRM Remote Update System (RUS)	Enables licenses in deployed HASP SRM protection keys to be securely, remotely updated, or the contents of the keys to be modified. See also <i>C2V file</i> and <i>V2C file</i>
HASP SRM Run-time API	Interface for inserting calls to a HASP SRM protection key
HASP SRM Run-time Environment	System component that enables communication between a protected program and a HASP SRM protection key
HASP SRM ToolBox	HASP SRM GUI application designed to facilitate software engineers' use of the HASP SRM Run-time API and to generate source code
HASP Update	File containing update information for deployed HASP SRM protection keys. See also <i>V2C file</i>
HASP SRM Vendor keys	The HASP SRM Master key and HASP SRM Developer key that contain your confidential and unique Vendor Codes. These keys enable you to apply protection to your programs, program the HASP SRM protection keys that you send to your end users, and to specify the license terms under which your software can be used.
Key	See <i>HASP SRM protection key</i>

License	Digital permit stored in a HASP SRM protection key
License Manager	See <i>HASP License Manager</i>
License terms	Detailed conditions contained in a license
Locking type	Determines the level of protection for a Product, according to the type of HASP SRM protection key supplied with the Product
Memory data	Data, such as passwords, values used by the software, and so on, that is specified in memory and transferred to the secure storage of the HASP SRM protection key
Modification Product	A modified version of an existing Product
Order	A request for Products or HASP Updates to be shipped to a customer
Product	A sellable item that contains one or more Features, and/or data defined in memory for secure storage
Product Key	A string generated by HASP SRM Business Studio and supplied to the end user for use as proof of purchase for Product Activation or Update Activation
Provisional Product	A Product that can be used as trialware, or during a grace period. Provisional Products do not require a locking type, since they can be activated and used for a limited period without a HASP SRM protection key.
Production	The implementation of an order for Products or HASP Updates
Protect Once—Deliver Many™	The concept of separation between engineering and business processes, on which HASP SRM is designed
Real-time Clock (RTC)	Clock available in the HASP HL Time key and HASP HL NetTime key
Recipient machine	Remote machine to which a license that has been detached from a network pool on a host machine is temporarily attached
Reverse Engineering	Software attacks intended to unravel the algorithms and execution flow of a target program by tracing the compiled program to its source code. HASP SRM Envelope protection implements contingency measures to repel such attacks and prevent hackers from discovering algorithms used inside protected software.
RUS	See <i>HASP SRM Remote Update System</i>
Status code	Error or status message returned by the HASP SRM system

Trialware	Software that can be distributed without a HASP SRM protection key for end-user evaluation during a limited time period. See also <i>Provisional Product</i> .
UTC	Coordinated Universal Time—the standard time common to every place in the world
V2C file	Vendor-to-Customer file that contains HASP Update data for delivery to end users. This data can include detailed changes to the license terms and/or data to be stored in the end users' HASP SRM protection keys.
Vendor Code	A confidential, vendor-unique string containing vendor-specific secrets that enables access to the vendor-specific HASP SRM protection keys.



Appendix C

HASP SRM Run-time API Reference

This appendix is divided into three sections:

- Overview of the functions that comprise the HASP SRM Run-time API
- Structural declarations and detailed information on individual HASP SRM Run-time API functions
- Summary and description of all API return codes

HASP SRM ToolBox

Use HASP SRM ToolBox to assist you to fully understand the functionality of each API call, use HASP SRM ToolBox. This tool enables you to:

- Test function calls
- Understand the required parameters
- Anticipate return values.

HASP SRM ToolBox is part of the HASP SRM Vendor Suite.

API Samples

Each HASP SRM installation includes API samples for various programming languages. Use these samples to integrate HASP SRM protection into your own code.

Every sample folder includes a HASP SRM header file. Refer to the Aladdin Knowledge Systems Website and the HASP SRM installation DVD for information on available sample programs for specific programming languages.

API Function Overview

The HASP SRM Run-time API functions in this reference apply to the C programming language interface. The information for each function includes the following:

- **Name:** The function name, as specified in the C language interface.
- **Description:** A brief description of the main purpose of the function.
- **Syntax:** The specific function declaration in the C programming language.
- **Parameters:** The parameters for the function.
- **Returns:** All the possible returns associated with the execution of the function.
- **Usage Notes:** Detailed information on how to use the function.

Note:

The information in this Appendix is written for the HASP SRM Run-time API. If you are using an older version of the HASP API, refer to the appropriate API documentation for the version that you are using. You can download the relevant document from the Aladdin Knowledge Systems Website.

The following table lists the available HASP SRM Run-time API functions.

Function	Description
<code>hasp_datetime_to_hasptime()</code>	Converts a date and time value to hasptime
<code>hasp_decrypt()</code>	Decrypts a buffer using the AES encryption algorithm
<code>hasp_detach</code>	Detaches a Product and its license from a HASP SL key, according to customizable parameters
<code>hasp_encrypt()</code>	Encrypts a buffer using the AES encryption algorithm
<code>hasp_free()</code>	Releases allocated memory resources
<code>hasp_get_rtc()</code>	Reads the current time from a HASP HL Time or HASP HL NetTime key
<code>hasp_get_sessioninfo()</code>	Retrieves information regarding a session context

Function	Description
<code>hasp_get_info()</code>	Retrieves information according to customizable search parameters, and presents it according to customizable formats
<code>hasp_get_size()</code>	Retrieves the byte size of a memory file from a HASP SRM protection key
<code>hasp_hasptime_to_datetime()</code>	Converts a time value into a date and time
<code>hasp_login()</code>	Logs in to a Feature, establishing a session context
<code>hasp_login_scope()</code>	Retrieves login information according to customizable search parameters
<code>hasp_logout()</code>	Logs out from a context or session
<code>hasp_read()</code>	Reads the memory of a HASP SRM protection key
<code>hasp_update()</code>	Writes an update for a HASP license
<code>hasp_write()</code>	Writes to the memory of a HASP SRM protection key

hasp_datetime_to_hasptime()

Description

Converts a date and time value to hasptime (the number of elapsed seconds since 01/01/1970).

Syntax

```
hasp_status_t HASP_CALLCONV hasp_datetime_to_hasptime(  
    unsigned int day,  
    unsigned int month,  
    unsigned int year,  
    unsigned int hour,  
    unsigned int minute,  
    unsigned int second,  
    hasp_time_t * time  
)
```

Parameters

day	Input for day value (range 1-31)
month	Input for month value (range 1-12)
year	Input for year value (range 1970+)
hour	Input for hour value (range 0-23)
minute	Input for minute value (range 0-59)
second	Input for second value (range 0-59)
time	Pointer to the resulting time value

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_TIME	Passed time value is outside the supported value range

Usage Notes

The converted date and time value reflects the number of elapsed seconds since January 1, 1970. This conversion function is used in conjunction with the API functions that set or retrieve values for the real-time clock (RTC) in the HASP HL Time, HASP HL NetTime and HASP SL keys.

Related Topics

- [hasp_encrypt\(\)](#)
- [hasp_hasptime_to_datetime\(\)](#)

hasp_decrypt()

Description

Reverses the operation of the hasp_encrypt() function applied on a data buffer, returning the data to its unencrypted state.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_decrypt(  
    hasp_handle_t handle,  
    void * buffer,  
    hasp_size_t length  
)
```

Parameters

handle	Handle for the session
buffer	Pointer to the buffer to be decrypted
length	Size (in bytes) of the buffer to be decrypted—16 bytes minimum required

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_HND	Invalid input handle
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_TIME_ERR	System time has been tampered with
HASP_TOO_SHORT	Encryption data length is too short
HASP_SCHAN_ERR	Communications error in secure channel
HASP_ENC_NOT_SUPP	Hardware does not support encryption type

HASP_BROKEN_SESSION	Session was interrupted
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

Decrypts data using the encryption engine in the HASP SRM protection key. The specific session handle determines which HASP SRM protection key and which Feature ID encrypts the data buffer. The encryption key remains in the HASP SRM protection key. If the decryption fails, the data buffer is not modified.

Related Topics

[hasp_encrypt\(\)](#)

hasp_detach()

Description

Detaches a Product and its license from a HASP SL key, according to customizable parameters. All Features and memory files that belong to the Product are detached. You do not need to be logged in to a Feature in order to use this function.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_detach(
    const char *detach_action,
    const char *scope,
    hasp_vendor_code_t vc
    const char *recipient
    char **info
)
```

Parameters

detach_action	Operation parameters, in XML format
scope	Search parameters for the Product that is to be detached. For more information, refer to the Scope XML Tags in the <i>XML Tags</i> section of the <i>HASP SRM Run-time API Reference</i> in the Help documentation.
vc	Pointer to the Vendor Code
recipient	Definition in XML format of the recipient machine to which the detached Product and its license will be attached. Use either hasp_get_info() or hasp_get_sessioninfo(), together with the HASP_RECIPIENT specifier, to retrieve the recipient information. For more information, refer to the <i>XML Tags</i> section of the <i>HASP SRM Run-time API Reference</i> in the Help documentation.
info	Pointer to the information that is retrieved as XML text. This information is a V2C, which can then be installed on the recipient machine using the hasp_update function. Use the hasp_free function to release the pointer after use.

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_DETACH_ACTION	Invalid XML <code>detach_action</code> parameter
HASP_INV_RECIPIENT	Invalid XML <code>recipient</code> parameter
HASP_TOO_MANY_PRODUCTS	<code>hasp_detach</code> scope does not specify a unique Product
HASP_INV_PRODUCT	Invalid Product information
HASP_INSUF_MEMORY	System out of memory
HASP_DEVICE_ERROR	Input/output error occurred in secure storage area of HASP SL key OR In the case of a HASP HL key, USB communication error occurred
HASP_LOCAL_COMM_ERROR	Communication error occurred between the application and the local HASP HASP License Manager
HASP_REMOTE_COMM_ERROR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

The requisite Vendor Codes are stored in a `VendorCodes` directory in the system. You cannot run the function without the correct Vendor Codes being available.

Related Topics

- `hasp_get_info()`
- `hasp_get_sessioninfo()`
- Additional information is also available in the *XML Tags* section of the *HASP SRM Run-time API Reference* in the Help documentation.

hasp_encrypt()

Description

Encrypts a buffer using the AES encryption algorithm.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_encrypt(
    hasp_handle_t handle,
    void * buffer,
    hasp_size_t length
)
```

Parameters

handle	Handle for the session
buffer	Pointer to the buffer to be encrypted
length	Size (in bytes) of the buffer to be encrypted—16 bytes minimum required

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_HND	Invalid input handle
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_TIME_ERR	System time has been tampered with
HASP_TOO_SHORT	Encryption data length is too short
HASP_SCHAN_ERR	Communications error in secure channel
HASP_ENC_NOT_SUPP	Hardware does not support encryption type
HASP_HASP_NOT_FOUND	Required HASP key not found
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

Encodes data using the encryption engine in the HASP SRM protection key. The specified session handle determines which HASP SRM protection key performs the encryption of the data buffer. The encryption key remains in the HASP SRM protection key. If the encoding operation fails, the data targeted for encryption is not affected. To decode the data buffer, use the `hasp_decrypt()` function.

Related Topics

`hasp_decrypt()`

hasp_free()

Description

Releases memory resources utilized by other API functions.

Syntax

```
void HASP_CALLCONV hasp_free(char * info)
```

Parameters

info	Pointer to the memory resources to be released
------	--

Usage Notes

Used only in C code to release memory resources allocated to storing retrieved data from API calls using the `hasp_get_sessioninfo()` and `hasp_update()` functions. The function has no return values.

Related Topics

- [hasp_get_sessioninfo\(\)](#)
- [hasp_update\(\)](#)

hasp_get_RTC()

Description

Reads the current time from a HASP HL Time or HASP HL NetTime key.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_get_RTC(
    hasp_handle_t handle,
    hasp_time_t * time
)
```

Parameters

handle	Handle for the session
time	Pointer to the current time

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_HND	Invalid input handle
HASP_HASP_NOT_FOUND	Required HASP SRM protection key not found
HASP_NO_BATTERY_POWER	Real-time clock has run out of power
HASP_NO_TIME	Real-time clock is not available
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

Primarily used to obtain reliable timestamps that are independent of the system clock. Time values are returned as the number of seconds that have elapsed since Jan.-01-1970 0:00 hours UTC. Use the `hasp_hasptime_to_datetime()` function to convert the output to UTC format. This function reads the HASP HL Net key and HASP HL NetTime key time, not the expiration date time.

hasp_get_sessioninfo()

Description

Retrieves information regarding a session context.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_get_sessioninfo(
    hasp_handle_t handle,
    char * format,
    char ** info
)
```

Parameters

handle	Handle for the session
format	<p>XML definition for the type of output data structure. There are three format options:</p> <ul style="list-style-type: none"> 1. HASP_KEYINFO: For retrieving information on the HASP SRM protection key. 2. HASP_SESSIONINFO: For retrieving information on the session. 3. HASP_UPDATEINFO: For retrieving information on a license update usually contained in a C2V file. The retrieved information includes information on update counters, licenses and memory images currently available in a deployed HASP SRM protection key. <p>For more information, refer to the <i>XML Tags</i> section of the <i>HASP SRM Run-time API Reference</i> in the Help documentation.</p>
info	Pointer to the information which is retrieved as XML text

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_HASP_NOT_FOUND	HASP SRM protection key is no longer available
HASP_INV_HND	Invalid input handle
HASP_INV_FORMAT	Unrecognized format

HASP_INSUF_MEM	Out of memory
HASP_BROKEN_SESSION	Session has been interrupted
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_TIME_ERR	System time has been tampered with

Usage Notes

When using the `HASP_UPDATEINFO` parameter, the HASP SRM protection key must be accessible by the local machine.

The retrieved session information applies to:

- A deployed HASP SRM protection key
- The current or a specific login session
- A license update

This function allocates memory for the information it retrieves.

To release allocated memory resources, use the `hasp_free()` function.

To convert a returned time value to the current date and time, use the `hasp_hasptime_to_datetime()` function.

Related Topics

- `hasp_free()`
- `hasp_get_info()`

hasp_get_info()

Description

Retrieves information about system components, according to customizable search parameters, and presents it according to customizable formats.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_get_info(  
    char * scope,  
    char * format,  
    hasp_vendor_code_t vendor code,  
    char ** info  
)
```

Parameters

scope	Definition of the data that is to be searched. For more information, refer to the Scope XML Tags in the <i>XML Tags</i> section of the <i>HASP SRM Run-time API Reference</i> in the Help documentation.
format	Definition of the format in which the data is to be displayed. For more information, refer to the Scope XML Tags in the <i>XML Tags</i> section of the <i>HASP SRM Run-time API Reference</i> in the Help documentation.
vendor code	Pointer to the Vendor Code
info	Pointer to the information that is retrieved

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_FORMAT	Unrecognized format
HASP_INV_SCOPE	Unrecognized scope
HASP_INSUF_MEM	Out of memory

HASP_BROKEN_SESSION	Session has been interrupted
HASP_LOCAL_COMM_ERR	Communication error has occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error has occurred between the local and remote HASP License Managers
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_INV_VCODE	Invalid Vendor Code
HASP_UNKNOWN_VCODE	Vendor Code not recognized by API
HASP_INVALID_PARAMETER	Scope string too long (maximum length 32 KB)

Usage Notes

You do not need to be logged in to HASP Vendor Suite in order to use this function.

This function is used to specify conditions about where to search for information. In addition, it enables you to specify conditions about the format in which the retrieved information is presented. If retrieved information is appropriately formatted, it can be used as a template in the `hasp_login_scope()` function.

The requisite Vendor Codes are stored in a `VendorCodes` folder in your system. Without the correct Vendor Code, the function call cannot succeed.

Related Topics

- [hasp_get_sessioninfo\(\)](#)
- [hasp_free\(\)](#)

hasp_get_size()

Description

Retrieves the byte size of a memory file from a HASP SRM protection key.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_get_size(  
    hasp_handle_t handle,  
    hasp_fileid_t fileid,  
    hasp_size_t * size  
)
```

Parameters

handle	Handle for the session
fileid	Identifier for the file that is to be queried. Possible values are FILEID_RO or FILEID_RW for read only or read/write.
size	Pointer to the resulting file size

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_HND	Invalid input handle
HASP_INV_FILEID	Unrecognized file identifier
HASP_TIME_ERR	System time has been tampered with
HASP_HASP_NOT_FOUND	HASP SRM protection key is no longer available
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

This function is used to determine the file size of the HASP SRM protection key memory. The file size enables you to determine the largest possible byte size offset. This information is useful when reading or writing to the memory of a HASP SRM protection key. The first byte in a file has the index 0.

Related Topics

- [hasp_read\(\)](#)
- [hasp_write\(\)](#)

hasp_hasptime_to_datetime()

Description

Converts a time value (elapsed seconds since January 1, 1970) into a date and time.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_hasptime_to_datetime(  
    hasp_time_t    time,  
    unsigned int * day,  
    unsigned int * month,  
    unsigned int * year,  
    unsigned int * hour,  
    unsigned int * minute,  
    unsigned int * second  
)
```

Parameters

time	Pointer for placing time value
day	Pointer for day value
month	Pointer for month value
year	Pointer for year value
hour	Pointer for hour value
minute	Pointer for minute value
second	Pointer for second value

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_TIME	Passed time value is outside the supported value range

Usage Notes

All values are based on Coordinated Universal Time (UTC). The converted date and time value reflects the number of elapsed seconds since Jan. 1, 1970. This conversion function is used in conjunction with the API functions that set or retrieve values for the real-time clock (RTC) in the HASP HL Time and HASP HL NetTime keys.

Related Topics

- [hasp_datetime_to_hasptime\(\)](#)

hasp_login()

Description

Logs into a Feature and thereby establishes a session context.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_login(
    hasp_feature_t  feature_id,
    hasp_vendor_code_t vendor_code,
    hasp_handle_t * handle
)
```

Parameters

<code>feature_id</code>	Unique identifier for a specific Feature stored in a HASP SRM protection key.
<code>vendor_code</code>	Pointer to the Vendor Code
<code>handle</code>	Pointer to the session handle

Return Values

<code>HASP_HASP_NOT_FOUND</code>	Required HASP SRM protection key not found
<code>HASP_STATUS_OK</code>	Request was successfully completed
<code>HASP_FEATURE_NOT_FOUND</code>	Cannot find requested Feature
<code>HASP_FEATURE_TYPE_NOT_IMPL</code>	Requested Feature type not available
<code>HASP_TMOF</code>	Too many open sessions
<code>HASP_INSUF_MEM</code>	Out of memory
<code>HASP_INV_VCODE</code>	Invalid Vendor Code
<code>HASP_NO_DRIVER</code>	Driver not installed
<code>HASP_NO_VLIB</code>	Vendor library cannot be found
<code>HASP_INV_VLIB</code>	Vendor library cannot be loaded
<code>HASP_OLD_DRIVER</code>	Old driver installed
<code>HASP_UNKNOWN_VCODE</code>	Vendor Code not recognized by the API

HASP_FEATURE_EXPIRED	Feature has expired
HASP_TOO_MANY_USERS	Too many HASP SRM protection keys currently connected
HASP_OLD_LM	HASP License Manager version out of date
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_TIME_ERR	System time has been tampered with
HASP_TS_DETECTED	Program is running remotely on a Terminal Server
HASP_HARDWARE_MODIFIED	HASP SL key incompatible with machine hardware. HASP SL key locked to different hardware. OR In the case of a V2C file, conflict between HASP SL key data and machine hardware data. HASP SL key locked to different hardware.
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers
HASP_OLD_VLIB	Vendor library too old

Usage Notes

This function establishes a context to a HASP SRM protection key containing a license for the requested Feature ID.

When the default Feature ID 0 is used, the API searches only for the HASP SRM protection key and ignores the licensing information specified in the key.

The requisite Vendor Codes are stored in a `VendorCodes` folder in your system. Without the correct Vendor Code, the function call cannot succeed. You can open up to 512 simultaneous login sessions.

Related Topics

- [hasp_logout\(\)](#)
- [hasp_login_scope\(\)](#)
- Additional information is also available in the *XML Tags* section of the *HASP SRM Run-time API Reference* in the Help documentation.

hasp_login_scope()

Description

Logs into a Function to establish a session, according to predefined search parameters.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_login_scope(
    hasp_feature_t  featureid,
    char * scope
    hasp_vendor_code_t vendor_code,
    hasp_handle_t * handle
)
```

Parameters

feature id	Unique identifier for a specific Feature stored in a HASP SRM software protection key.
scope	Definition of the data that is to be searched for the licenses. For more information, refer to the <i>XML Tags</i> section of the <i>HASP SRM Run-time API Reference</i> in the Help documentation.
vendor code	Pointer to the Vendor Code
handle	Pointer to the session handle

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_FEATURE_NOT_FOUND	Requested Feature no longer available
HASP_SCOPE_RESULTS_EMPTY	Unable to locate a Feature matching the scope
HASP_HASP_NOT_FOUND	HASP SRM protection key is no longer available
HASP_TMOF	Too many open sessions
HASP_INSUF_MEM	System out of memory
HASP_INV_VCODE	Invalid Vendor Code passed
HASP_NO_DRIVER	Required driver not installed

HASP_OLD_DRIVER	Installed driver too old to execute function
HASP_UNKNOWN_VCODE	Vendor Code not recognized by API
HASP_INVALID_PARAMETER	Scope string too long (max. length 32 KB)
HASP_LOCAL_COMM_ERR	Communication error between application and local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error between local and remote HASP License Managers
HASP_FEATURE_EXPIRED	Feature has expired
HASP_TOO_MANY_USERS	Too many users currently connected
HASP_OLD_LM	HASP License Manager too old
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_TIME_ERR	System time has been tampered with
HASP_FEATURE_TYPE_NOT_IMPL	Requested Feature type not implemented
HASP_INV_SCOPE	XML specification invalid
HASP_NO_VLIB	Vendor library cannot be found
HASP_INV_VLIB	Vendor library cannot be loaded
HASP_OLD_VLIB	Vendor library too old

Usage Notes

This function is used to specify conditions that specify where login information is to be searched for.

The requisite Vendor Codes are stored in a `VendorCodes` folder in your system. Without the correct Vendor Code, the function call cannot succeed. You can open up to 512 simultaneous login sessions.

Related Topics

- [hasp_get_info\(\)](#)
- [hasp_get_sessioninfo\(\)](#)
- [hasp_login\(\)](#)
- [hasp_logout\(\)](#)
- Additional information is also available in the *XML Tags* section of the *HASP SRM Run-time API Reference* in the Help documentation.

hasp_logout()

Description

Logs out from a context or session.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_logout(  
    hasp_handle_t handle  
)
```

Parameters

handle	Handle for the session being terminated
--------	---

Return Values

HASP_STATUS_OK	Request was successfully completed
HASP_INV_HND	Invalid input handle
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

Use this function to end a connection to an API object. Once logged out from a session, all memory allocated for the session is released. The connection to the HASP License Manager closes if the logged out connection was the last API session.

Related Topics

- [hasp_login\(\)](#)
- [hasp_login_scope\(\)](#)

hasp_read()

Description

Reads the memory of a HASP SRM protection key.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_read (
    hasp_handle_t handle,
    hasp_fileid_t fileid,
    hasp_size_t offset,
    hasp_size_t length,
    void * buffer
)
```

Parameters

<code>handle</code>	Handle for the session
<code>fileid</code>	Identifier for the file that is to be queried. Possible values are FILEID_RO or FILEID_RW for read only or read/write.
<code>offset</code>	Byte offset for the file
<code>length</code>	Number of bytes to be read from the file
<code>buffer</code>	Pointer to the retrieved data

Return Values

<code>HASP_STATUS_OK</code>	Request was successfully completed
<code>HASP_INV_HND</code>	Invalid input handle
<code>HASP_BROKEN_SESSION</code>	Session has been interrupted
<code>HASP_INV_FILEID</code>	Unrecognized file identifier
<code>HASP_SCHAN_ERR</code>	Communication error in secure channel
<code>HASP_MEM_RANGE</code>	Out of memory

HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_TIME_ERR	System time has been tampered with
HASP_HASP_NOT_FOUND	HASP SRM protection key not found
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_REMOTE_COMM_ERR	Communication error occurred between the local and remote HASP License Managers

Usage Notes

Use the `hasp_get_size()` function to determine the size of the file you want to read.

Related Topics

- [hasp_get_size\(\)](#)
- [hasp_write\(\)](#)

hasp_update()

Description

Writes an update for a HASP SRM license.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_update (
    char * update_data,
    char ** ack_data
)
```

Parameters

update_data	Pointer to the complete update data
ack_data	Pointer to a buffer to retrieve the acknowledge data

Return Values

HASP_INV_UPDATE_DATA	Required XML tags not found, OR contents in binary data missing or invalid
HASP_INV_UPDATE_OBJ	Binary data does not contain an update
HASP_NO_ACK_SPACE	Acknowledge data requested by the update, however the ack_data input parameter is NULL
HASP_KEYID_NOT_FOUND	HASP SRM license to be updated not found
HASP_INV_UPDATE_NOTSUPP	Update not supported by the HASP SRM protection key
HASP_UNKNOWN_ALG	Unknown algorithm used in V2C file
HASP_INV_UPDATE_CNTR	Update counter is set incorrectly
HASP_TOO_MANY_KEYS	Too many HASP SRM protection keys currently connected
HASP_INV_SIG	Signature verification failed
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager
HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error

HASP_TIME_ERR	System time has been tampered with
HASP_UPDATE_TOO_OLD	Trying to install a V2C file with an update counter that is out of sequence with the update counter in the HASP SRM protection key. The values of the update counter in the file are lower than those in the HASP SRM protection key.
HASP_UPDATE_TOO_NEW	Trying to install a V2C file with an update counter that is out of sequence with the update counter in the HASP SRM protection key. The first value in the file is more than 1 greater than the value in the HASP SRM protection key.
HASP_HARDWARE_MODIFIED	HASP SL key incompatible with machine hardware. HASP SL key locked to different hardware. OR In the case of a V2C file, conflict between HASP SL key data and machine hardware data. HASP SL key locked to different hardware.
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager

Usage Notes

This function writes update information. Note that the HASP SRM protection key must be accessible by the local machine.

The update code contains all necessary data to perform the update on the deployed HASP SRM protection key including:

1. Where the updated information is to be written
2. The necessary access data—Vendor Code
3. The actual update information

The function returns an acknowledgement code that is signed/encrypted by the update. The code is evidence that an update has been applied to a license. Memory for the acknowledge data is allocated by the API and must be released using `hasp_free()`.

This function is an extension of the main HASP SRM Run-time API and is utilized by the HASP SRM Remote Update System utility to update HASP SRM protection key licenses.

Related Topics

- [hasp_free\(\)](#)

hasp_write()

Description

Writes to the memory of a HASP SRM protection key.

Syntax

```
hasp_status_t HASP_CALLCONV hasp_write(
    hasp_handle_t handle,
    hasp_fileid_t fileid,
    hasp_size_t offset,
    hasp_size_t length,
    void * buffer
)
```

Parameters

<code>handle</code>	Handle for the session
<code>fileid</code>	Identifier for the file to write. Possible value is FILEID_RW for read/write.
<code>offset</code>	Byte offset for the file
<code>length</code>	Number of bytes to be written to the file
<code>buffer</code>	Pointer to the retrieved data

Return Values

<code>HASP_STATUS_OK</code>	Request was successfully completed
<code>HASP_INV_HND</code>	Invalid input handle
<code>HASP_BROKEN_SESSION</code>	Session has been interrupted
<code>HASP_INV_FILEID</code>	Unrecognized file identifier
<code>HASP_SCHAN_ERR</code>	Communications error in secure channel
<code>HASP_MEM_RANGE</code>	Out of memory
<code>HASP_TIME_ERR</code>	System time has been tampered with

HASP_DEVICE_ERR	Input/output error in HASP SL secure storage, OR, in the case of a HASP HL key, USB communication error
HASP_ACCESS_DENIED	Access to Feature is denied
HASP_HASP_NOT_FOUND	Required HASP SRM protection key not found
HASP_LOCAL_COMM_ERR	Communication error occurred between the application and the local HASP License Manager

Related Topics

- [hasp_get_size\(\)](#)
- [hasp_read\(\)](#)

API Status Codes

This section provides a list of possible return codes related to the operation of the HASP SRM Run-time API functions, and a description of their meanings.

No	Status Code	Description
0	HASP_STATUS_OK	Request successfully completed
1	HASP_MEM_RANGE	Request exceeds the HASP SRM protection key memory range
3	HASP_INSUF_MEM	System out of memory
4	HASP_TMOF	Too many open sessions
5	HASP_ACCESS_DENIED	Access to Feature denied
6	HASP_INCOMPAT_FEATURE	Legacy decryption function cannot work on the Feature
7	HASP_HASP_NOT_FOUND	HASP SRM protection key no longer available
8	HASP_TOO_SHORT	Encrypted/decrypted data length too short to execute function call
9	HASP_INV_HND	Invalid handle passed to function
10	HASP_INV_FILEID	Specified File ID not recognized by API
11	HASP_OLD_DRIVER	Installed driver too old to execute function
12	HASP_NO_TIME	Real-time clock (rtc) not available
13	HASP_SYS_ERROR	Generic error from host system call
14	HASP_NO_DRIVER	Required driver not installed
15	HASP_INV_FORMAT	Unrecognized file format for update
16	HASP_REQ_NOT_SUPP	Unable to execute function in this context
17	HASP_INV_UPDATE_OBJ	Binary data passed to function does not contain an update
18	HASP_KEYID_NOT_FOUND	HASP SRM license you requested to update not found
19	HASP_INV_UPDATE_DATA	Required XML tags not found. Contents in binary data are missing or invalid.
20	HASP_INV_UPDATE_NOTSUPP	Update request not supported by HASP SRM protection key
21	HASP_INV_UPDATE_CNTR	Update counter not set correctly

No	Status Code	Description
22	HASP_INV_VCODE	Invalid Vendor Code passed
23	HASP_ENC_NOT_SUPP	HASP SRM protection key does not support encryption type
24	HASP_INV_TIME	Passed time value outside supported value range
25	HASP_NO_BATTERY_POWER	Real-time clock battery out of power
26	HASP_NO_ACK_SPACE	Acknowledge data requested by the update ack_data parameter is NULL
27	HASP_TS_DETECTED	Program running remotely on a terminal server
28	HASP_FEATURE_TYPE_NOT_IMPL	Requested Feature type not implemented
29	HASP_UNKNOWN_ALG	Unknown algorithm used in V2C file
30	HASP_INV_SIG	Signature verification operation failed
31	HASP_FEATURE_NOT_FOUND	Requested Feature no longer available
32	HASP_NO_LOG	Access log not enabled
33	HASP_LOCAL_COMM_ERROR	Communication error between program and local HASP License Manager
34	HASP_UNKNOWN_VCODE	Vendor Code not recognized by API
35	HASP_INV_SPEC	Invalid XML specification
36	HASP_INV_SCOPE	Invalid XML scope
37	HASP_TOO_MANY_KEYS	Too many HASP SRM protection keys currently connected
38	HASP_TOO_MANY_USERS	Too many users currently connected
39	HASP_BROKEN_SESSION	Session has been interrupted
40	HASP_REMOTE_COMM_ERROR	Communication error between local and remote HASP License Managers
41	HASP_FEATURE_EXPIRED	Feature expired
42	HASP_OLD_LM	HASP License Manager version too old
43	HASP_DEVICE_ERR	Input/output error occurred in secure storage area of HASP SL key OR In the case of a HASP HL key, USB communication error occurred
44	HASP_UPDATE_BLOCKED	Update installation not permitted

No	Status Code	Description
45	HASP_TIME_ERR	System time has been tampered with
46	HASP_SCHAN_ERR	Communication error occurred in secure channel
47	HASP_STORAGE_CORRUPT	Corrupt data exists in secure storage area of HASP SRM protection key
48	HASP_NO_VLIB	Unable to find Vendor library
49	HASP_INV_LIB	Unable to load Vendor library
50	HASP_SCOPE_RESULTS_EMPTY	Unable to locate any Feature matching scope
52	HASP_HARDWARE_MODIFIED	HASP SL key incompatible with machine hardware. HASP SL key locked to different hardware. OR In the case of a V2C file, conflict between HASP SL key data and machine hardware data. HASP SL key locked to different hardware.
53	HASP_USER_DENIED	Login denied because of user restrictions
54	HASP_UPDATE_TOO_OLD	Trying to install a V2C file with an update counter that is out of sequence with update counter in the HASP SRM protection key. Values of update counter in file are lower than those in HASP SRM protection key.
55	HASP_UPDATE_TOO_NEW	Trying to install a V2C file with an update counter that is out of sequence with the update counter in the HASP SRM protection key. First value in file is more than 1 greater than value in HASP SRM protection key
56	HASP_OLD_VLIB	Vendor library too old
400	HASP_NO_API_DYLIB	Unable to locate dynamic library for API
401	HASP_INVALID_API_DYLIB	Dynamic library for API is invalid
500	HASP_INVALID_OBJECT	Object incorrectly initialized
501	HASP_INVALID_PARAMETER	Scope string too long (max. length 32 KB)
502	HASP_ALREADY_LOGGED_IN	Logging in twice to same object
503	HASP_ALREADY_LOGGED_OUT	Logging out twice from same object
525	HASP_OPERATION_FAILED	Incorrect use of system or platform
698	HASP_NOT_IMPL	Requested Feature type not implemented
699	HASP_INT_ERR	Internal error occurred in API



Appendix D

Understanding the HASP SRM Licensing Model

This appendix describes the Aladdin Knowledge Systems HASP SRM licensing model for software vendors. Its purpose is to assist you in understanding how your HASP SRM license from Aladdin is configured, and to make decisions about your license update requirements.

The HASP SRM licensing model comprises three components:

- The Activation Module license
- A pool of activations' license
- A pool of seats' license

The components that you purchase depend on your specific requirements and whether you have an onsite HASP SRM Business Studio Server installation, or you utilize HASP SRM Managed Services.

Licensing Concepts

In order to understand the HASP SRM Licensing Model, it is necessary to be familiar with the following terminology:

- **Activation:** The process in which a HASP SRM Provisional license is converted to a locked, computer-specific license. Following Activation, the protected software can be used on the end user's computer according to the licenses installed during the Activation process.

- **Floating License:** A license that can be used across multiple computers in a network environment, but only on a single computer at a time. Management of the license in the network is controlled using the HASP License Manager.
- **Concurrency:** A licensing attribute that must be specified to enable a license to be used in a network environment. When concurrency is enabled, a defined number of users can access the software simultaneously on the network. For more information about concurrency, see *Specifying the License Terms for Features in a Product* on page 145.
- **Seat:** The representation of a floating license, used by Aladdin Knowledge Systems for counting purposes. Each floating license is the equivalent of one seat. For example, if you purchase ten seats that equates to ten floating licenses, meaning that up to ten users in the network could be using the software concurrently.

Activation Module License

An Activation Module license is required to enable the software activation functionality of HASP SRM. The license, together with a pool of activations, provides you with the ability to create a software initialization file (V2C) that can be applied at the end user site to activate your software on their machine.

If you are running HASP SRM Business Studio Server inhouse, the license that you purchase is perpetual. If you are using HASP SRM Managed Services, the license is a renewable annual subscription.

Note:

If your subscription license for HASP SRM Managed Services expires, and you still have a pool of activations or seats, the pool remains. When you renew your subscription, you can access the pool.

You do not require a HASP SRM license if you do not intend to create activation files or enable concurrency for HASP SL keys.

Activations Pool

Each time a Product Key for your software is submitted by an end user—either online or by sending the end user an activation file for them to apply manually—their Provisional license for your software is converted to a locked, machine-specific license and one activation is consumed.

In order to use this activation functionality, you purchase a pool of activations. When the activation pool is low, you replenish it by purchasing additional activations.

You can configure HASP SRM Business Studio to send notifications when the pool reaches a predefined threshold, to ensure that you never run out of activations for your software. For additional information about configuring notifications, refer to the HASP SRM Business Studio help.

Additional Information

- The activations pool is not “replenished”. A 10% buffer is added to any activations purchase you make from Aladdin Knowledge Systems to compensate for situations in which an activation should have been returned to the pool. (For example, the case in which you provide a customer with an activation on a second machine after his original computer crashed. In this situation the activation that was consumed with the original machine is no longer useable. A second activation is consumed from the pool, even though your customer did not purchase a second license, only enabled his original license on a second computer.)
- If there are no activations remaining in your activations pool, you will not be able to perform an activation.

Seats Pool

Seats are required to enable users to run your software concurrently in a network environment. When you are processing an order for your customer, you specify that the license can be used with concurrency, and the number of seats that are included. For each seat that is available according to the specified concurrency value, one user on the network can use your software. For example, if your customer has 20 employees and the license for your software provides seven seats, seven of the customer's employees can use the software simultaneously. If a different employee needs to use the software, one of the original seven will first have to log off.

In order to provide seats for concurrency (network) licenses, you must purchase a pool of seats. Each time your customer activates your software, the number of concurrency seats that you included in the license is deducted from the pool total. If a Product contains a number of Features that have different network license attributes, and the number of seats that are provided for the Features differs, the total number of seats deducted from the seats pool is that of the Feature with the highest number of seats.

When the seats pool is low, you replenish it by purchasing additional seats.

You can configure HASP SRM Business Studio to send notifications when the pool reaches a predefined threshold, to ensure that you never run out of seats for your software.

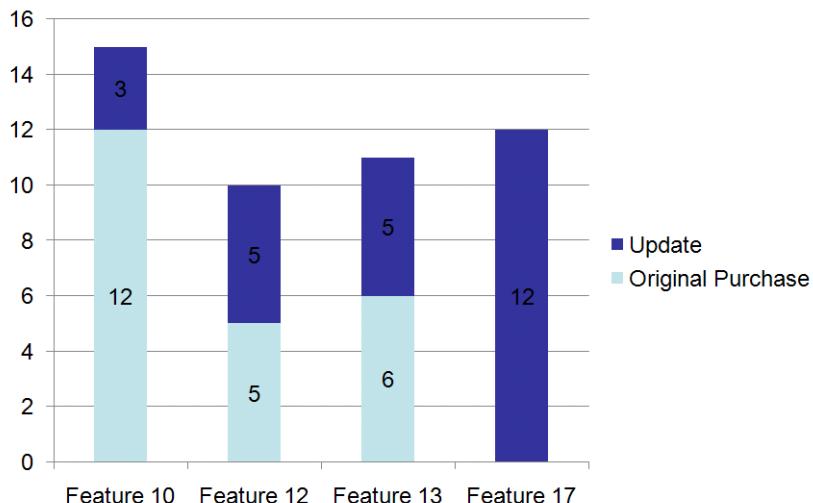
Note:

Although performing an activation locks the license to the computer in the network on which HASP License Manager is located, in the event that only 'network' licenses (that is, licenses that contain a concurrency value) are included in the order, only the seats pool will be decremented. The activations pool will not be decremented.

How Customer Update Purchases of Your Software Affect the Pool

After your software is deployed at your customer site, the customer may decide to buy additional network licenses (in HASP SRM terms, *seats*) or software functionality. When you fulfil the order, the calculation about the number of seats that HASP SRM deducts from your seats pool is made in the following way:

1. The number of additional seats required for each Feature for the update order is added to the original number of seats that the customer purchased. The chart below indicates the total number of seats that the customer will have.



2. The HASP SRM system calculates which Feature has the highest number of seats—in this case, Feature 10.
3. The number of seats for Feature 10 that the customer had already purchased is deducted from the new total number of seats for the Feature ($15 \text{ total seats} - 12 \text{ already-purchased seats} = 3$).
4. The remainder (3) is the number of seats that is deducted from the seats pool.

Even though 12 Feature 17 seats were purchased in the update, only the Feature with the highest accumulated number of seats (Feature 10) is considered in terms of deducting seats from the pool.

Additional Information

- A 10% buffer is added to any seats purchase you make from Aladdin Knowledge Systems to compensate for situations in which you reduce the number of seats at a customer site, or cancel a license on a computer on which HASP License Manager is located in order to activate on a different computer.
- If you specify the concurrency value for a license as “unlimited”—for example, to create a “site” license—100 seats will be deducted from your seats pool.
- If the terms of a license include both an activation and concurrency, both the activations pool and the seats pool are decremented.
- If there are insufficient seats in your seats pool, your customer will not be able to perform an activation.



Appendix E

How HASP SRM Prevents Tampering of Time-based Licenses Locked to HASP SL Keys

This appendix explains the technology used in HASP SRM to prevent a user from extending the duration of a software license that is locked to a HASP SL key by adjusting the computer's system clock.

Software that is used in conjunction with HASP SL keys is locked to the machine on which it is activated. The expiration period or date is initially calculated according to the system clock of the machine.

HASP License Manager reads the system time at HASP License Manager startup (by default, part of the machine startup). It subsequently uses its internal running time to calculate the time. When new software that is protected with a HASP SL key is executed for the first time, HASP License Manager queries its internal clock to determine the start time of the software's license duration.

- If the license duration is a fixed period (for example, 30 days or 1 year), HASP License Manager calculates the actual date on which the license must stop working and the information is stored in the secure storage area of the HASP SL key.
- If the license is to expire on a specific date, HASP License Manager records that date.

Expiration time is calculated in seconds in the format current HASP License Manager time + number of seconds to expiration, and the information is stored in the secure storage area of the HASP SL key.

Tampering with the System Clock

If a user resets the system clock of the machine to which the software license is locked:

- As long as the HASP License Manager remains running the changed time will not affect the expiration time of the license, since the calculations are all made within the License Manager, which uses the time of its last startup.
- If the HASP License Manager is stopped and restarted, for example if the machine is rebooted, it will compare its last recorded internal time with the time of the system clock. When the HASP License Manager detects that the time on the system clock is earlier than that of its internal clock, the HASP SL key is deactivated until such time as the system clock is equal to or later than the time in the License Manager. This means that all applications for which there are licenses on the HASP SL key are blocked until the key is re-enabled.

Re-enabling a Blocked HASP SL Key

In order to re-enable a blocked HASP SL key, the software vendor sends a new V2C file.

Applying the V2C file to the HASP SL key on the end-user machine resets the flag that indicated time tampering had occurred, making the license available again. In addition, it sets the current time as the reference for future comparison.

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