

SafeNet Luna Network HSM

Upgrade Guide

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Introduction

Welcome

The SafeNet Luna Network HSM is a feature-packed product that offers most customers all the out-of-the-box capabilities they need. Gemalto offers upgrades on some models for those customers that need additional capacity. This guide describes the upgrades, how to order them and the steps to apply them.

For all customers, an “upgrade” includes additional partitions. For our Korean customers, Gemalto also offers an upgrade to enable Korean-specific cryptographic algorithms.

Upgrade Models

SafeNet Luna Network HSM comes in three series and for each series in three models. Gemalto designates the last two digits of the product identifier as the model. In the example “Luna S750,” the model is “50.” The three models available are: “00,” “50” and “90.” Models “50” and “90” are capable of upgrades. With this release of SafeNet Luna Network HSM, model “00” does not accept upgrades.

At Time of HSM Order and Afterward

Gemalto customers can choose to have upgrades applied at the *factory* at time of HSM order. Customers also have the option to order an upgrade and apply it themselves as a *field* upgrade. Factory upgrades free customers from some of the steps necessary to enable capabilities on the HSM. On the other hand, field upgrades offer maximum flexibility in how to distribute upgrades amongst a fleet of HSMs. The choice is yours. This guide describes in detail the steps for both factory upgrades and field upgrades.

Today’s Process Gets Better

The process described in this guide represents the start of a new method for Gemalto to entitle customers with upgrades. Those customers familiar with partition upgrades for the Luna SA 5/6 product will instantly see the benefits of the new method. Gemalto is working on and has lots of plans to improve the process. In some places in this guide, the text notes coming changes to give you advance notice of a planned process improvement.

Systems in the Process

Before starting into a detailed description of how to order and apply upgrades, an introduction to the systems involved is useful for context. These systems are:

- *Gemalto order entry*. All products – upgrades included – have part numbers. The Gemalto order entry system uses part numbers to specify the product(s) purchased by a customer. The first step to obtain an upgrade is to obtain its associated part number. After entering and validating an order, the Gemalto order entry system sends you an email with instructions on how to apply a field upgrade or review an activated factory upgrade.
- *Gemalto Licensing Portal or GLP*. GLP is a self-service web portal where customers can activate and revoke¹ upgrades. From GLP, customers can also view details of purchased upgrades.
- *SafeNet Luna Network HSM*. The HSM appliance is ultimately the target for the upgrade.

Using this Document

This guide takes advantage of hyperlinks to enable you to navigate back-and-forth between high-level overview sections and detailed instructions. Purple text amongst black text is usually a hyperlink. Click on the colored text to go to the relevant reference. To return, simultaneously hold the *Alt* and *left arrow* keys.

¹ Revoke is a capability under development.

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Upgrade Options

Factory Upgrades

This option has you order SafeNet Luna Network HSM(s) and upgrade(s) at the same time. Gemalto installs the upgrade(s) on the HSM(s) at time of manufacture so that when you receive the product, the upgrade entitlement is activated on your behalf. After placing your order, you receive an email from Gemalto's order entry system with details of your upgrade entitlement. You have no action: when you receive your HSM(s), the upgrade is installed and ready for service.

Field Upgrades

This option enables you to order an upgrade for SafeNet Luna Network HSM(s) under your management. After placing your order for an upgrade, you receive an email from Gemalto's order entry system with instructions on how to obtain your entitlement. Attached to the email is an **entitlement certificate** with an entitlement identifier. At a high level, after you receive the email, the steps you perform are:

1. **Logon** to the Gemalto self-service GLP portal
2. **Register** if this visit is your first and/or you did not register previously
3. **Enter the quantity** of the entitlement you want to activate
4. **Select the HSM** that you want to upgrade
5. Identify **who is activating** the entitlement
6. **Complete** the activation
7. **Save** the license string to file
8. **Copy** the license string file to the HSM appliance
9. Login to the HSM appliance
10. **Login** to the HSM
11. **Apply** the upgrade

At the time of preparing this guide, Gemalto was working to eliminate two steps from the field upgrades process. If the email you received indicates that this change is still in progress, you need to do two additional steps that precede the ones in the list above:

1. **Login** to the HSM(s) that you want to upgrade
2. **Show** and record the HSM fingerprint.

Use the HSM fingerprint in place of the HSM serial number for step 4 above.

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Return Material Authorization

In the exceptional event that you must return an HSM to Gemalto, the unit you receive in exchange or receive back will represent “the configuration” before the failure. “The configuration” means the base part number plus any upgrades appearing in GLP as activated for the HSM appliance. Note, therefore, that if you previously had Gemalto’s customer care team revoke one or more upgrades, the HSM appliance sent to you will **not** have the upgrade(s).

Repair

Gemalto will apply *activated* upgrades to the repaired HSM appliance. For a repaired HSM appliance, the HSM serial number remains unchanged. You can use the same serial number of the repaired HSM appliance in the GLP portal.

Replacement

Gemalto will apply *activated* upgrades to the replacement HSM appliance. A replacement HSM appliance has a different serial number from the one returned. Be aware that you need to use the new serial number for the replacement HSM appliance in the GLP portal.

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Revoking a License

Gemalto offers you the freedom to purchase and apply upgrades to any HSM appliance you possess. If you have already applied an upgrade to an HSM appliance and want to remove the upgrade and apply it to a different HSM appliance, we refer to this process as *revoking a license*. Revoking a license permits you to transfer an upgrade from one HSM appliance to another. A simple use case is transfer of an upgrade from a development HSM appliance to a production HSM appliance.

A self-service feature to revoke a license is in development and Gemalto hopes to release it soon. Until released, please contact Gemalto customer care to revoke a license on your behalf. After a customer care representative revokes a license, you can re-activate it in the GLP portal.

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Getting Information

Querying Entitlements

From within the GLP portal, you can view your upgrade entitlements. Follow these steps to do so.

1. Find an entitlement identifier provided in a previous email from Gemalto's order entry system and [logon to GLP with the EID](#). OR
2. If you previously registered, [use your login credentials to access GLP](#). Login credentials are a valid email address and password.
3. [_Viewing_Entitlements](#)Select “[My Orders](#)” to see a list of entitlements you have purchased.
4. Select “[My Activations](#)” to see a list of entitlements you have activated.
5. Select “[My Devices](#)” to see a list of HSM serial numbers that you have registered with GLP from previous activations activities.

Seeing What Upgrades Are On the HSM Appliance

To see what upgrades are applied on the HSM appliance, logon as an administrator to the appliance and use the `sysconf license list` command. [Here](#) is an example.

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Purchasing Upgrades

To place an order for an upgrade, you need the relevant Gemalto part number. Be aware that there are two part numbers: one for factory-installed upgrades and one for field upgrades (that is, customer installed). Gemalto offers partition upgrades in “five-packs” up to a total aggregate of 100 partitions. By way of an example, suppose you have a model S790 appliance. The base number of partitions for this model is 10. Suppose you want to upgrade your HSM to have 30 partitions. You would order quantity four upgrades: 20 partitions. After you apply this full entitlement to your HSM, you will have the desired 30 partitions.

Entitlement Email

After you have placed your order for an upgrade and a Gemalto customer care representative has entered the order, you receive an email with detailed instructions on how to obtain and apply your upgrade. Very likely, you followed a link to this user guide from the entitlement email you received.

Entitlement Certificate

Attached to the upgrade email is an entitlement certificate. On this certificate is an entitlement identifier that you need to activate your upgrade. Here is an example of an entitlement certificate and where to find the EID.

SafeNet License Certificate of Entitlement

Thank you for your recent SafeNet Hardware Security Module (HSM) purchase.

Below please find your Certificate of Entitlement. Please keep this for your records.

We thank you for your business.

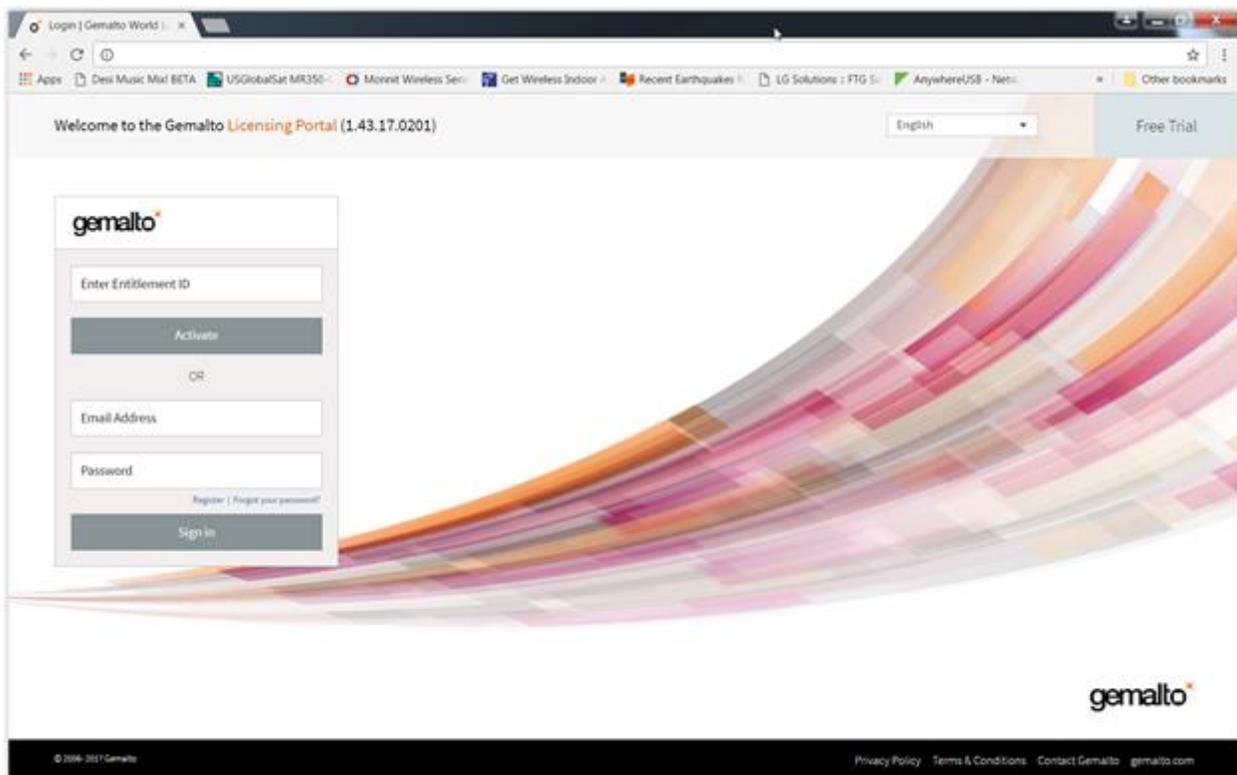
Entitlement ID:	d8bdce04-acc0-4786-bf4c-7fa2c5fabba5		
Sold To Customer:	Wayne Inc.		
End Customer:			
Customer Purchase Order:	Luna partition 1026	Gemalto/SafeNet Sales Order:	11067962
Item Number:	908-000395-001	Quantity:	1
Description:	LUNA PARTITION UPGRADE 5 PACK		
Order Book Date:	10/26/2016	Solution ID:	

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Managing Upgrade Entitlements with GLP

Login to GLP with Entitlement Identifier

On the GLP portal “Welcome” screen, enter the entitlement identifier provided to you in an email from Gemalto’s order entry system in the “Enter Entitlement ID” window box.



Login to GLP with Email Address and Password

On the GLP portal “Welcome” screen, enter the credentials you created when you registered with GLP.

Registering

On your first logon to the GLP portal, you have an opportunity to complete the optional user registration process. This registration makes subsequent logons to the GLP portal more convenient. After completing a few mandatory fields, you can subsequently access the GLP portal with an email address and password.

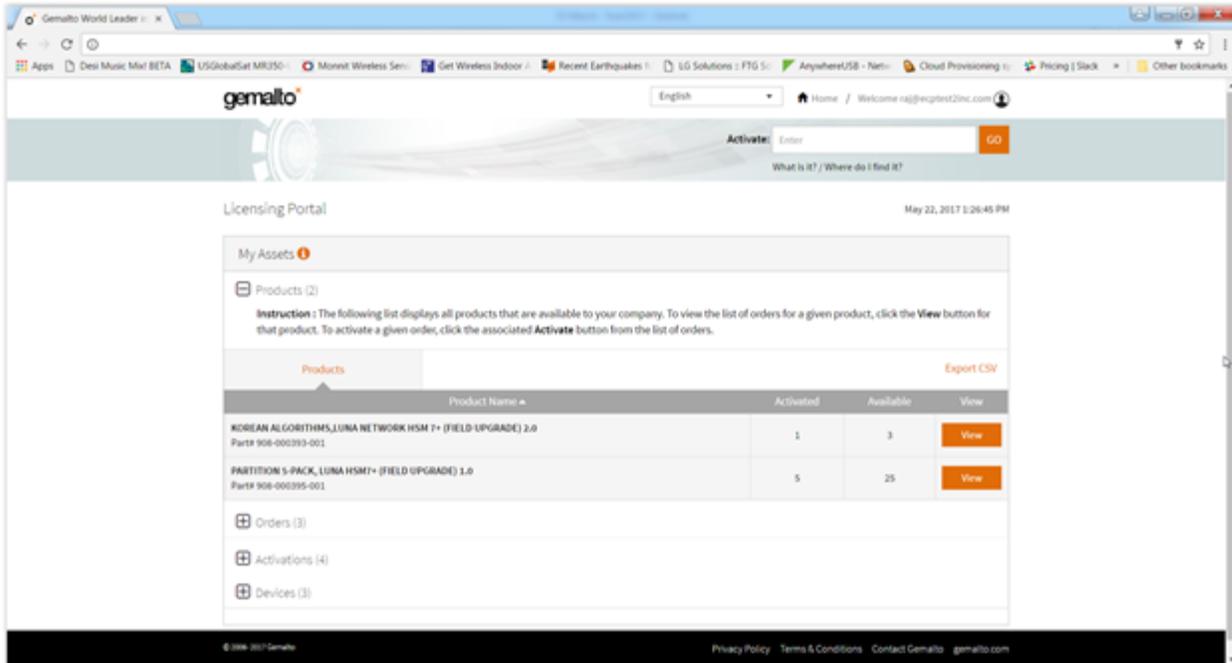
The screenshot shows a web browser window with the URL `127.0.0.1:8080/ecp/auth/create`. The page header includes the Gemalto logo and a language dropdown set to 'English'. The main content area is titled 'Licensing Portal' and includes a note: 'Asterisk (*) indicates a required field'. The timestamp 'Apr 25, 2017 8:24:04 AM' is displayed in the top right. The registration form is divided into three sections:

- Enter Your Account Information:** Contains four text input fields: 'Email Address*', 'Password*', 'Confirm Email Address*', and 'Confirm Password*'.
- Set Your Security Preferences:** Contains two dropdown menus for 'Security Question 1*' and 'Security Question 2*', and two corresponding text input fields for their answers.
- Enter Your Personal Information:** Contains three input fields: 'Name*', 'Company Name', and a dropdown menu for 'United States'.

At the bottom of the form are two buttons: 'Cancel' (grey) and 'Next' (orange). The footer of the page includes the copyright notice '© 2006–2017 Gemalto' and links for 'Privacy Policy', 'Terms & Conditions', 'Contact Gemalto', and 'gemalto.com'.

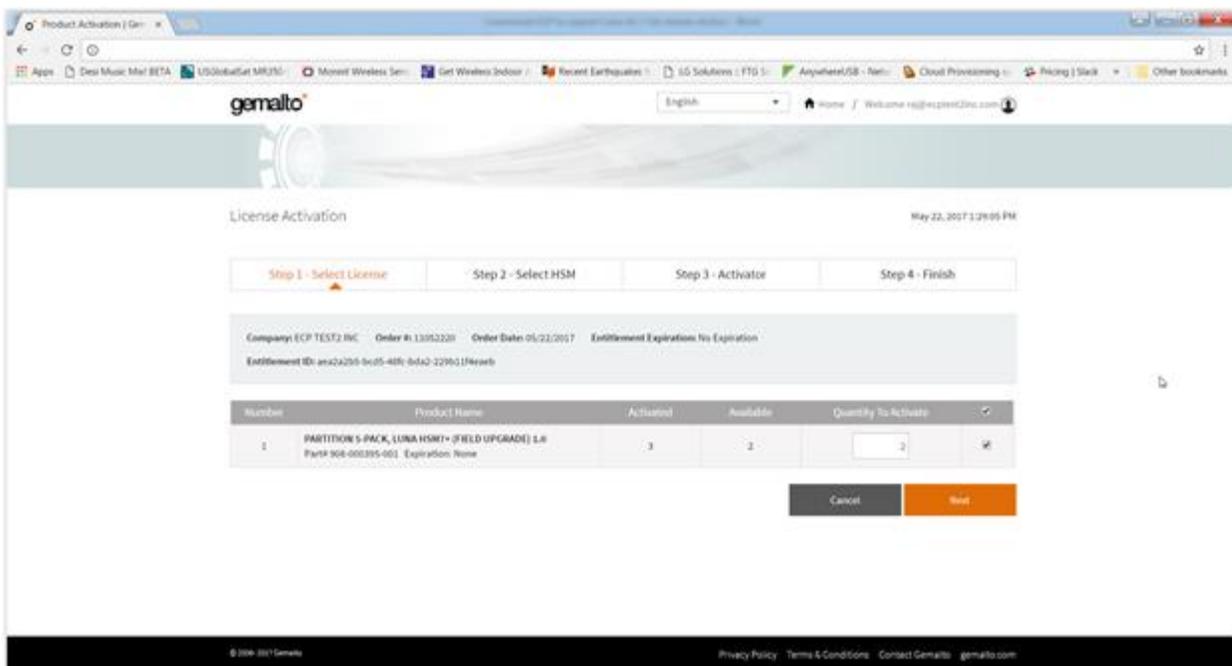
Viewing Entitlements

After you have logged into GLP, click on “My Assets” to see the list and status of your upgrades.



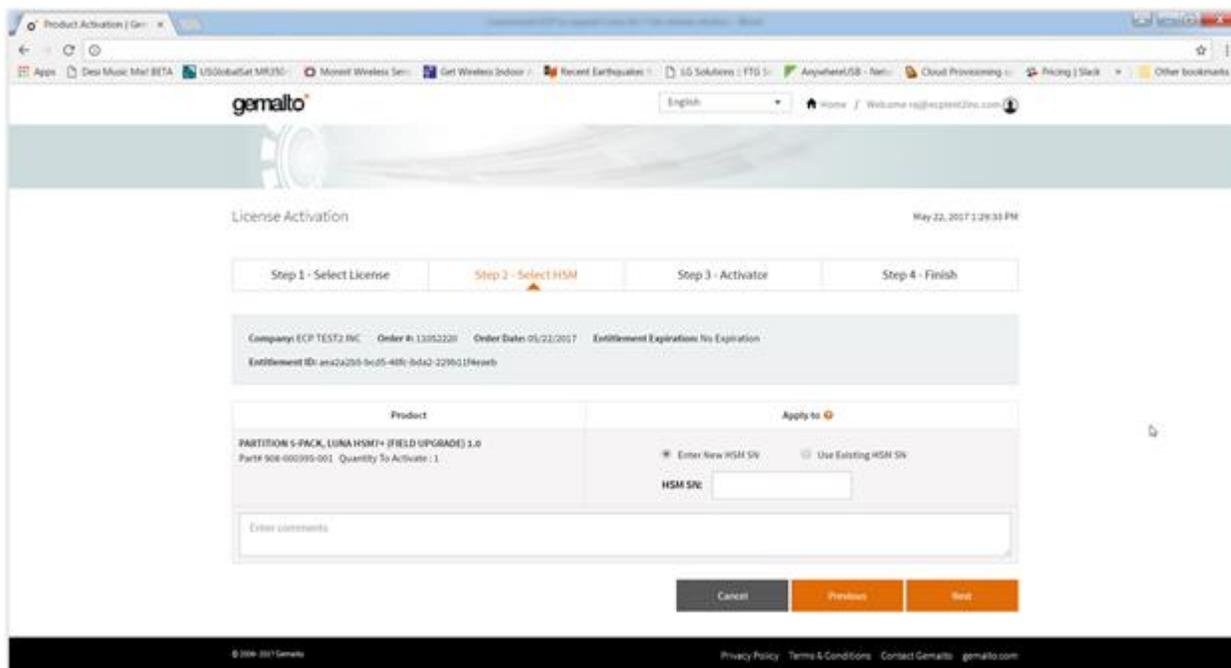
Enter Quantity

After you have selected an entitlement and clicked on the Activate button from the *My Assets* view, you see a screen similar to the next example. Enter the desired quantity to activate in the “Quantity to Activate” field. Click *Next* to complete the process.

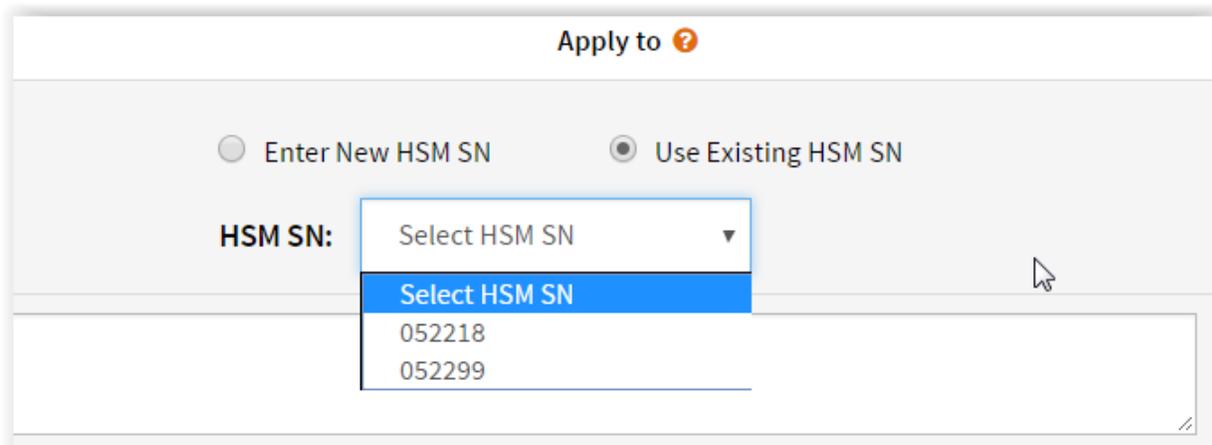


Select HSM

You have two options to select the HSM. If you are visiting GLP for the first time or you have a new HSM to activate, select the “Enter New HSM SN” check box and enter the HSM serial number in the window to the right of “HSM SN:” in the bottom, right of the *License Activation* screen.



If you want to activate an entitlement for an HSM previously identified to GLP, select the “Use Existing HSM SN” check box and choose the HSM from the drop-down menu.



Click *Next* to continue.

Who is Activating?

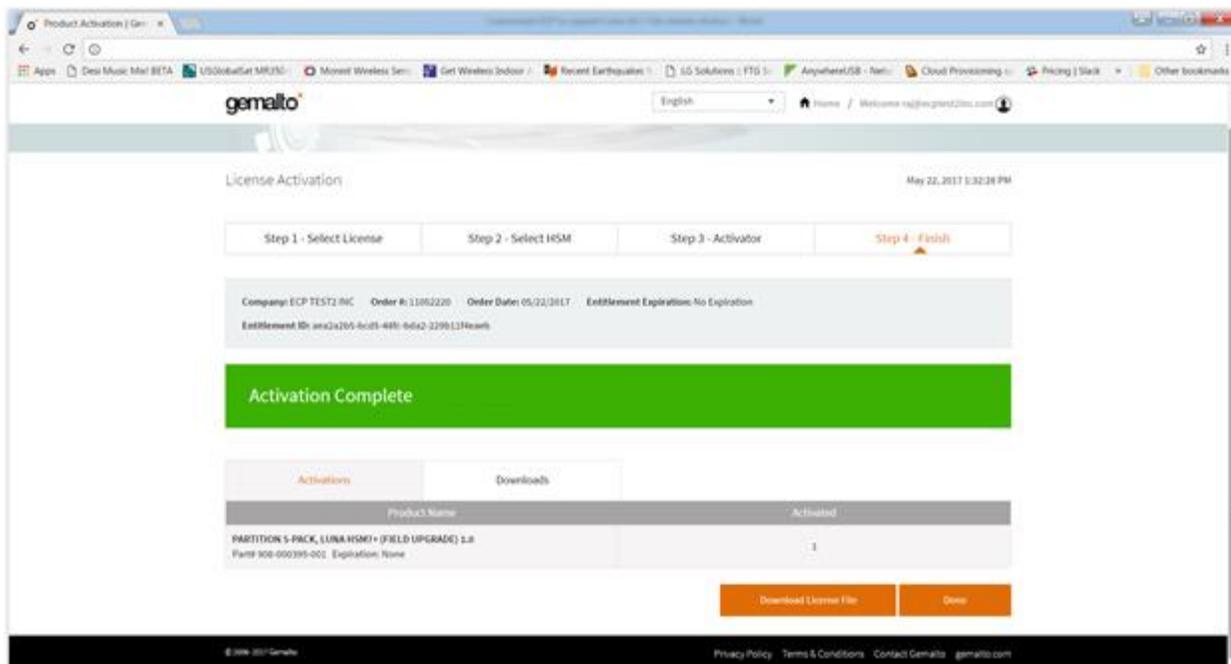
GLP is a common portal used by you, our customer, as well as by Gemalto personnel to activate entitlements on behalf of customers². In most cases, you select the “I am activating for myself” check box. Only if you are activating for someone else do you need to enter the email address in the field provided for this purpose.

After selecting the activator and entering the email address if activating for someone else, click *Next* to continue.

Complete Activation

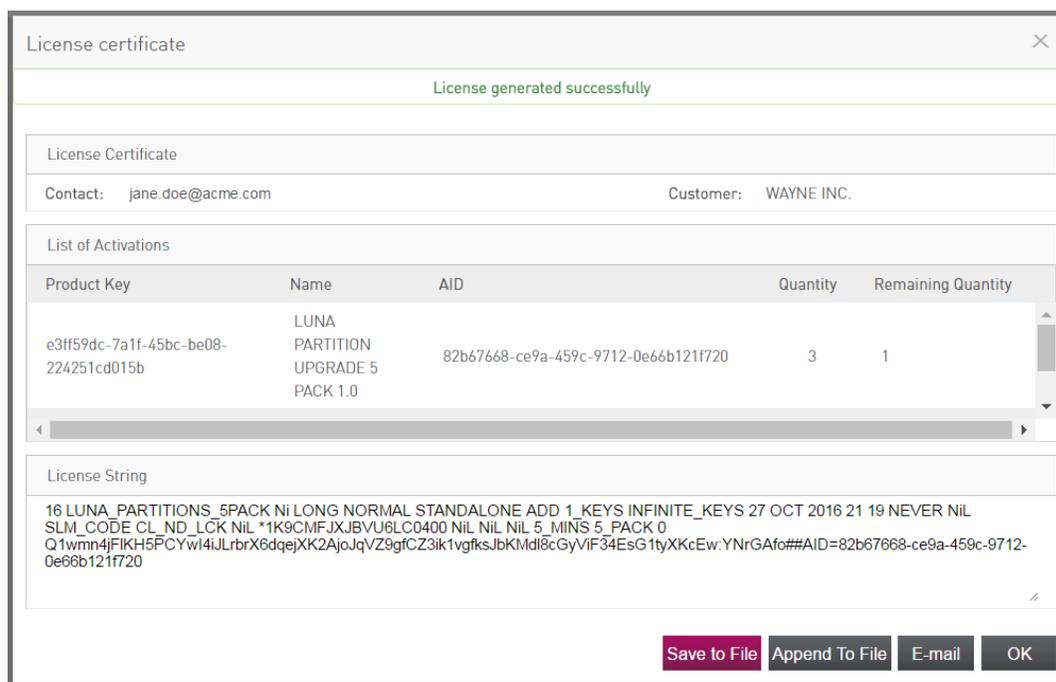
The final step to complete activation is to navigate to the *Step 4 – Finish* screen. Here, you get confirmation that the activation process succeeded. Additionally, you can click on the *Download License File* button to have GLP display the license string.

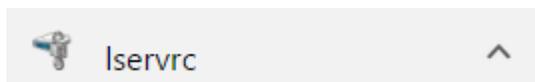
² For example, factory-activated entitlements involve Gemalto personnel.



Save License String

When you complete activation of an entitlement, GLP generates a license string. This license string is what the SafeNet network HSM uses to validate an upgrade and subsequently apply it. Thus, you save this license string to a file so that you can transfer it to the HSM in a subsequent step.





The default filename for the saved file is lserverc.

You should rename this file to something more meaningful, especially when you have multiple upgrades to manage. One suggestion is to name the file by the upgrade and quantity: N_partitions_S.lic, where N is the number of partitions the entitlement enables and S is a sequence number to create unique filenames. For example, 5_partitions_1.lic, 5_partitions_2.lic, 10_partitions_3.lic. If you have a fleet of HSMs, you might want to include the HSM serial number in the filename as a means to organize upgrades (e.g., 5_partitions_567250_1.lic where 567250 is the HSM serial number).

You use secure copy to transfer the saved license string file to the HSM.

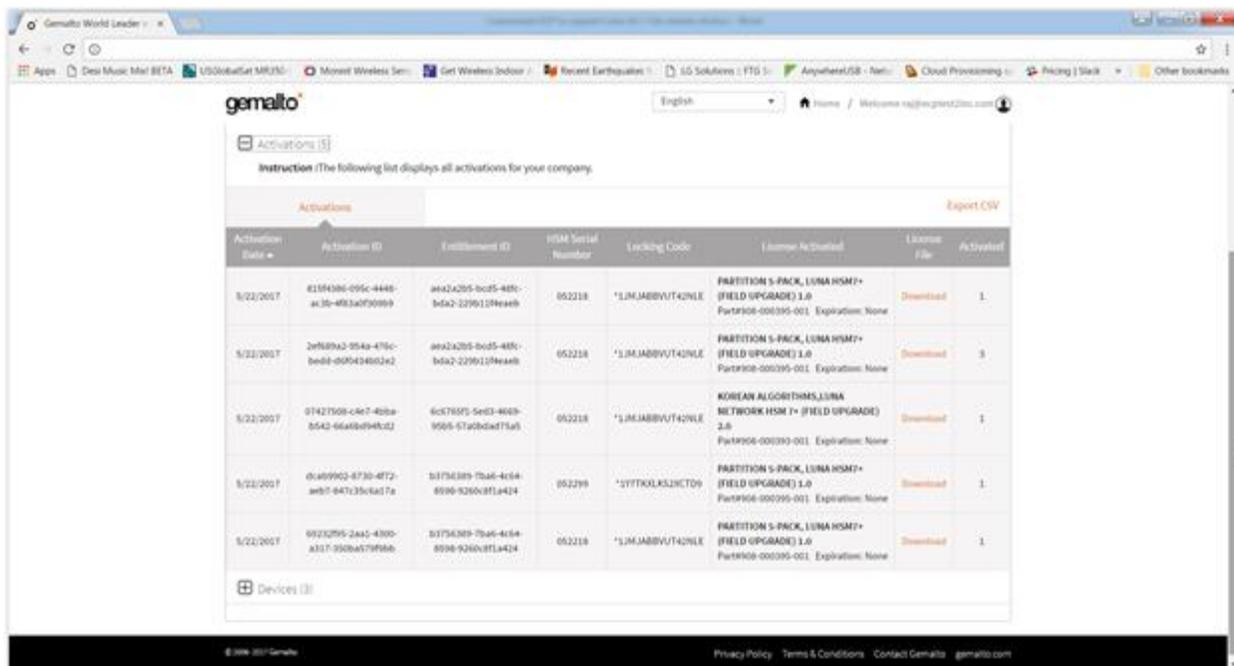
Listing Purchased Entitlements

The “My Orders” option from the main page of the GLP gives you a summary of the upgrades you have purchased, how many you have activated and how many are available to be activated.

Order Date	Order Number	PO Number	Product Name	Entitlement ID	Activated	Available	Activate
5/22/2017	11052218	ECFFIELDUPGRADETEST2	PARTITION 5-PACK, LUNA HSM7+ (FIELD UPGRADE) L&O Part# 908-000395-001 Expiration:None	83756389-7b46-4c64-8596-3200c8f2a424	2	8	Activate
5/22/2017	11052219	ECFFIELDUPGRADETEST3	KOREAN ALGORITHMS, LUNA NETWORK HSM 7+ (FIELD UPGRADE) L&O Part# 908-000393-001 Expiration:None	6c676362-5ed3-4949-8585-57a0bdad75a5	1	1	Activate
5/22/2017	11052220	ECFFIELDUPGRADETEST4	PARTITION 5-PACK, LUNA HSM7+ (FIELD UPGRADE) L&O Part# 908-000395-001 Expiration:None	8942a295-bc05-48fb-b8a2-22961178a6a6	4	1	Activate

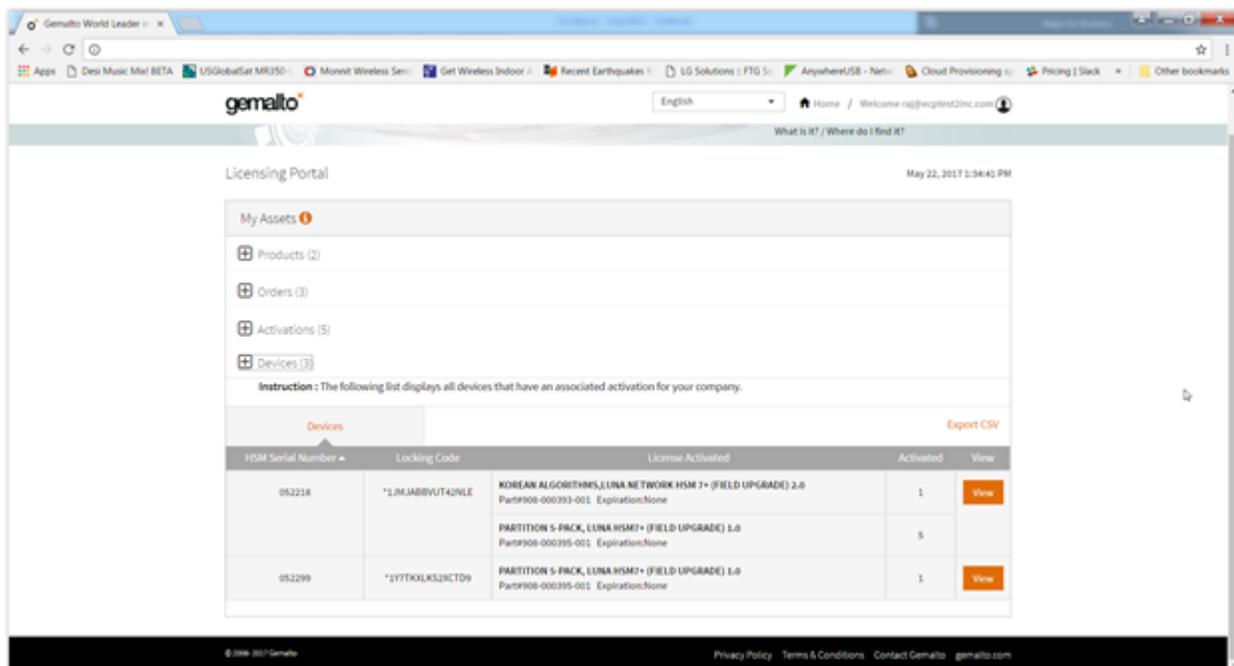
Listing Activations

The “My Activations” option lists the entitlements that you have activated. From this list, you can get a corresponding license string. In a future release of GLP, you can use this view to revoke an activated entitlement.

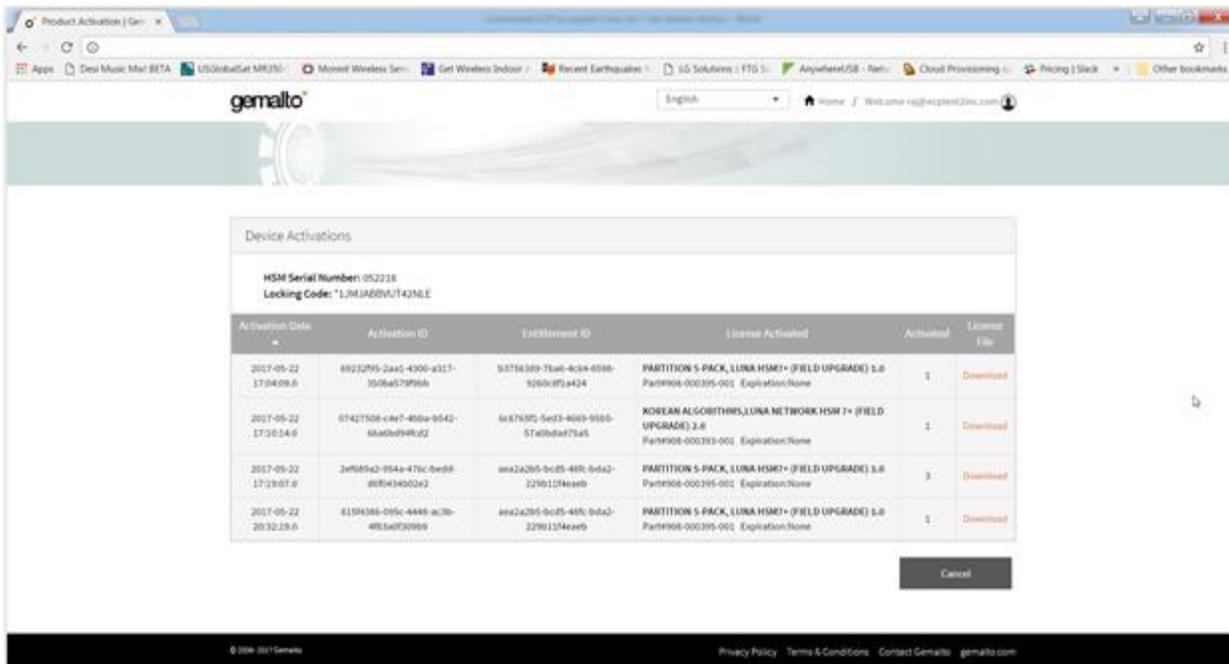


Listing Registered Devices

The “Devices” option lets you see what HSMs you have registered with GLP.



The *View* button enables you to get a more detailed summary for a specific device: what feature(s) you have activated, when and the corresponding license file.



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Managing Upgrades on HSM Appliance

This section provides further details and examples for the steps you perform to and as administrator of your SafeNet Luna Network HSM. For brevity, this section uses the term *HSM appliance* in place of the full product name.

Transfer License String to HSM Appliance

Use secure copy (scp) or any equivalent tool to copy license string files to the HSM appliance.

```
licenses]$ scp 5_partitions_1.lic admin@192.168.1.103:
```

Logging in to the HSM

The process to authenticate to the internal HSM in the HSM appliance depends upon the product model. Here is an example screenshot for the Luna A7xx model: password-based authentication.

```
[myluna] lunash:>hsm login

Please enter the HSM Administrator password:
> █
```

Getting the HSM Fingerprint

The `sysconf fingerprint license` command displays the fingerprint for the HSM serial number. You only need this fingerprint if Gemalto has not completed development the Gemalto licensing portal that uses the HSM serial number for entitlement activation.

```
[myluna] lunash:>sysconf fingerprint license

Fingerprint for Use With Entitlement Management System
-----
HSM serial #56725 : *1K9CMFJXJBVU6LC
```

Applying the Upgrade

The `sysconf license apply` command upgrades the appliance with an entitlement specified by a license string. The command takes two arguments: a mandatory filename that contains the license string; and an optional force to override the prompt to proceed. The following screenshot shows a forced upgrade for the Korean suite of algorithms.

```
[myluna] lunash:>sysconf license apply -filename kcdsa.lic -force
Force option used. Proceed prompt bypassed.

FwUpdate3 Application Version 2.5

SafeNet Firmware/Capability Update Utility

This is a destructive capability update
Proceed prompt bypassed
Update Result : 0 (Success)

Command Result : 0 (Success)
```

Listing Applied Upgrades

You can see what upgrades are applied on the appliance with the `sysconf license list` command. The output resembles the following example.

```
[run-in] lunash:>sysconf license list
```

#	FEATURE	VERSION	QUANTITY
1	LUNA_PARTITIONS	1.0	10
2	LUNA_PARTITIONS	1.0	20
3	LUNA_PARTITIONS	1.0	10

```
Command Result : 0 (Success)
```

Note that the *QUANTITY* column represents the total number of partitions associated with an upgrade. In the output above: 10 partitions is quantity two, five-pack upgrades; 20 partitions is quantity four, five-pack upgrades.

APPENDIX A

Troubleshooting

This appendix provides some guidance for situations you might encounter.

Applying Upgrade on HSM Appliance

The Lush command `sysconf license apply` installs an upgrade on your HSM appliance. The following list identifies potential messages you could see when you run this Lush command and the meaning for each message.

Cannot find <filename>	You provide as a parameter to the <code>sysconf license apply</code> the filename that contains the license string you obtained from the GLP portal. This message means that the filename you provided cannot be found on the HSM appliance. Use <code>my file list</code> to see what files are available.
Cannot find lserverc	You should not encounter this message. If you do, please contact Gemalto technical support for assistance.
Invalid licensed feature	The license string is corrupted in the feature attribute. Confirm that you saved the license string without modification after activating the upgrade in the GLP portal.
Invalid licensed feature version	The license string is corrupted in the feature version attribute. Confirm that you saved the license string without modification after activating the upgrade in the GLP portal.
Invalid licensed HSM serial number	The license string is for an HSM with a serial number that is different from the serial number on this HSM appliance.
<feature> not licensed for this appliance	The license string is for an HSM with a serial number that is different from the serial number on this HSM appliance.
License is already applied	The license string matches an entitlement already applied on this HSM appliance.
LUNA_RET_HSM_TAMPERED	The HSM is in a tampered state and must be cleared of the tampered state before the upgrade can be applied.
Update Result : 12 (Error detecting HSM)	The HSM administrator is not logged in.

License is unknown/not available (feature)	The HSM appliance software needs to be updated to support a newer feature.
Upgrades not available for this model of HSM	Only x50 and x90 models of HSM support upgrades.
Upgrade to <#> partitions not available for this model of HSM	Applying the upgrade would exceed the upper limit for the maximum number of partitions on the HSM.
Unable to determine model of HSM	You should not encounter this message. If you do, please contact Gemalto technical support for assistance.