



Thales Luna USB HSM 7

COMPLIANCE GUIDE



Document Information

Last Updated	2025-08-27 11:20:54 GMT-05:00
--------------	-------------------------------

Trademarks, Copyrights, and Third-Party Software

Copyright 2001-2025 Thales Group. All rights reserved. Thales and the Thales logo are trademarks and service marks of Thales and/or its subsidiaries and are registered in certain countries. All other trademarks and service marks, whether registered or not in specific countries, are the property of their respective owners.

Disclaimer

All information herein is either public information or is the property of and owned solely by Thales Group and/or its subsidiaries who shall have and keep the sole right to file patent applications or any other kind of intellectual property protection in connection with such information.

Nothing herein shall be construed as implying or granting to you any rights, by license, grant or otherwise, under any intellectual and/or industrial property rights of or concerning any of Thales Group's information.

This document can be used for informational, non-commercial, internal, and personal use only provided that:

- > The copyright notice, the confidentiality and proprietary legend and this full warning notice appear in all copies.
- > This document shall not be posted on any publicly accessible network computer or broadcast in any media, and no modification of any part of this document shall be made.

Use for any other purpose is expressly prohibited and may result in severe civil and criminal liabilities.

The information contained in this document is provided "AS IS" without any warranty of any kind. Unless otherwise expressly agreed in writing, Thales Group makes no warranty as to the value or accuracy of information contained herein.

The document could include technical inaccuracies or typographical errors. Changes are periodically added to the information herein. Furthermore, Thales Group reserves the right to make any change or improvement in the specifications data, information, and the like described herein, at any time.

Thales Group hereby disclaims all warranties and conditions with regard to the information contained herein, including all implied warranties of merchantability, fitness for a particular purpose, title and non-infringement. In no event shall Thales Group be liable, whether in contract, tort or otherwise, for any indirect, special or consequential damages or any damages whatsoever including but not limited to damages resulting from loss of use, data, profits, revenues, or customers, arising out of or in connection with the use or performance of information contained in this document.

Thales Group does not and shall not warrant that this product will be resistant to all possible attacks and shall not incur, and disclaims, any liability in this respect. Even if each product is compliant with current security standards in force on the date of their design, security mechanisms' resistance necessarily evolves according to the state of the art in security and notably under the emergence of new attacks. Under no circumstances, shall Thales Group be held liable for any third party actions and in particular in case of any successful attack against systems or equipment incorporating Thales products. Thales Group disclaims any liability with respect to security for direct, indirect, incidental or consequential damages that result from any use of its products. It is further stressed

that independent testing and verification by the person using the product is particularly encouraged, especially in any application in which defective, incorrect or insecure functioning could result in damage to persons or property, denial of service, or loss of privacy.

All intellectual property is protected by copyright. All trademarks and product names used or referred to are the copyright of their respective owners. No part of this document may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, chemical, photocopy, recording or otherwise without the prior written permission of Thales Group.

Regulatory Compliance

This product complies with the following regulatory regulations. To ensure compliancy, ensure that you install the products as specified in the installation instructions and use only Thales-supplied or approved accessories.

USA, FCC

This equipment has been tested and found to comply with the limits for a “Class B” digital device, pursuant to part 15 of the FCC rules.

Canada

This class B digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Europe

This product is in conformity with the protection requirements of EC Council Directive 2014/30/EU. This product satisfies the CLASS B limits of EN55032.

CONTENTS

Preface: About the Compliance Guide	5
Customer Release Notes	5
Audience	5
Document Conventions	5
Support Contacts	8
Electrical Standards Compliance	9
Chapter 1: FIPS Compliance	1
Install Only FIPS-Validated Firmware	1
FIPS 140-3 Level 3 Certified Luna USB HSM 7 Firmware Versions	1
FIPS 140-3 Level 3 Certified Luna Backup HSM 7 Firmware Versions	2
Configuring the HSM to Operate in FIPS 140 Approved Configuration	2
Setting FIPS 140 Approved Configuration on the HSM	2
Setting FIPS 140 approved configuration on individual application partitions	2
Setting FIPS 140 Approved Configuration on Luna Backup HSM 7	3
Other FIPS Considerations	4
Mixed FIPS/non-FIPS High-Availability Groups	4
RSA-186 Mechanism Remapping for FIPS Compliance	4
RNG Entropy	5
Changes to Mechanisms and Operations in FIPS 140 Approved Configuration by Firmware Version	5
FIPS Changes in Luna USB HSM 7 Firmware 7.7.3 and Newer	5
FIPS Changes in Luna USB HSM 7 Firmware 7.7.2 and Newer	7
Chapter 2: Common Criteria/eIDAS Compliance	10
Audit	12
Compliance	12
CC-EIDAS site certification	13
Chapter 3: Lithium Content of Luna Products for Transport and Other Compliance	14
Luna PED (PIN Entry Device)	14
Luna PCIe HSM 7 (K7 crypto module)	14
Luna Network HSM 7 appliance	14
Luna USB HSM 7	14
Luna Backup HSM 7	14

PREFACE: About the Compliance Guide

This guide provides information about Luna HSM's compliance with various international standards, and how you can ensure that the HSM is configured to comply with these standards. This document contains the following chapters:

- > ["FIPS Compliance" on page 1](#)
- > ["Common Criteria/eIDAS Compliance" on page 10](#)
- > ["Electrical Standards Compliance" on page 9](#)

The preface includes the following information about this document:

- > ["Customer Release Notes" below](#)
- > ["Audience" below](#)
- > ["Document Conventions" below](#)
- > ["Support Contacts" on page 8](#)

For information regarding the document status and revision history, see ["Document Information" on page 2](#).

Customer Release Notes

The Customer Release Notes (CRN) provide important information about specific releases. Read the CRN to fully understand the capabilities, limitations, and known issues for each release. You can view the latest version of the CRN at www.thalesdocs.com.

Audience

This document is intended for personnel responsible for maintaining your organization's security infrastructure. This includes Luna HSM users and security officers, key manager administrators, and network administrators.

All products manufactured and distributed by Thales are designed to be installed, operated, and maintained by personnel who have the knowledge, training, and qualifications required to safely perform the tasks assigned to them. The information, processes, and procedures contained in this document are intended for use by trained and qualified personnel only.

It is assumed that the users of this document are proficient with security concepts.

Document Conventions

This document uses standard conventions for describing the user interface and for alerting you to important information.

Notes

Notes are used to alert you to important or helpful information. They use the following format:

NOTE Take note. Contains important or helpful information.

Cautions

Cautions are used to alert you to important information that may help prevent unexpected results or data loss. They use the following format:

CAUTION! Exercise caution. Contains important information that may help prevent unexpected results or data loss.

Warnings

Warnings are used to alert you to the potential for catastrophic data loss or personal injury. They use the following format:

****WARNING**** Be extremely careful and obey all safety and security measures. In this situation you might do something that could result in catastrophic data loss or personal injury.

Command syntax and typeface conventions

Format	Convention
bold	<p>The bold attribute is used to indicate the following:</p> <ul style="list-style-type: none"> > Command-line commands and options (Type dir /p.) > Button names (Click Save As.) > Check box and radio button names (Select the Print Duplex check box.) > Dialog box titles (On the Protect Document dialog box, click Yes.) > Field names (User Name: Enter the name of the user.) > Menu names (On the File menu, click Save.) (Click Menu > Go To > Folders.) > User input (In the Date box, type April 1.)
<i>italics</i>	In type, the italic attribute is used for emphasis or to indicate a related document. (See the <i>Installation Guide</i> for more information.)
<variable>	In command descriptions, angle brackets represent variables. You must substitute a value for command line arguments that are enclosed in angle brackets.
[optional] [<optional>]	Represent optional keywords or <variables> in a command line description. Optionally enter the keyword or <variable> that is enclosed in square brackets, if it is necessary or desirable to complete the task.

Format	Convention
{a b c} {<a> <c>}	Represent required alternate keywords or <variables> in a command line description. You must choose one command line argument enclosed within the braces. Choices are separated by vertical (OR) bars.
[a b c] [<a> <c>]	Represent optional alternate keywords or variables in a command line description. Choose one command line argument enclosed within the braces, if desired. Choices are separated by vertical (OR) bars.

Support Contacts

If you encounter a problem while installing, registering, or operating this product, please refer to the documentation before contacting support. If you cannot resolve the issue, contact your supplier or [Thales Customer Support](#). Thales Customer Support operates 24 hours a day, 7 days a week. Your level of access is governed by the support plan negotiated between Thales and your organization. Please consult this plan for details regarding your entitlements, including the hours when telephone support is available to you.

Customer Support Portal

The Customer Support Portal, at <https://supportportal.thalesgroup.com>, is where you can find solutions for most common problems and create and manage support cases. It offers a comprehensive, fully searchable database of support resources, including software and firmware downloads, release notes listing known problems and workarounds, a knowledge base, FAQs, product documentation, technical notes, and more.

NOTE You require an account to access the Customer Support Portal. To create a new account, go to the portal and click on the **REGISTER** link.

Telephone

The support portal also lists telephone numbers for voice contact ([Contact Us](#)).

Electrical Standards Compliance

Standards-compliance documents for Luna Network HSM 7 and Luna PCIe HSM 7 are available on the Support Portal at :

[KB0029775](#) - Luna Network HSM UL/CSA Certificate of Compliance

[KB0029776](#) - Luna PCIe HSM UL/CSA Certificate of Compliance

CHAPTER 1: FIPS Compliance

Luna HSMs are compliant with the Federal Information Processing Standard (FIPS), defined by the [National Institute of Standards and Technology](#) (NIST), a division of the U.S. Department of Commerce. The full capabilities of Luna HSMs, however, extend far beyond the limitations prescribed by FIPS. If your organization requires FIPS compliance, you must configure the HSM to ensure compliance by restricting these extended capabilities. This section provides guidance on setting up and using the Luna HSM to comply with FIPS, and ensuring that compliance is maintained across firmware updates. ,Luna Network HSM 7 Luna PCIe HSM 7, Luna USB HSM 7 and Luna Backup HSM 7 are [FIPS 140-3 Level 3](#) certified.

Refer to the following sections for guidance on FIPS compliance:

- > ["Install Only FIPS-Validated Firmware" below](#)
- > ["Configuring the HSM to Operate in FIPS 140 Approved Configuration" on the next page](#)
- > ["Other FIPS Considerations" on page 4](#)
- > ["RNG Entropy" on page 5](#)
- > ["Changes to Mechanisms and Operations in FIPS 140 Approved Configuration by Firmware Version" on page 5](#)

Install Only FIPS-Validated Firmware

The Luna HSM firmware introduces new functionality with each new version, and to be compliant with FIPS, a new firmware version must be inspected and validated by NIST. Since this validation can take a long time, Thales does not submit every firmware version it releases to NIST as a FIPS candidate. In order to be compliant with the FIPS standard, you must have a FIPS-validated firmware version installed. If your organization requires FIPS validation, *update the HSM firmware only to versions listed below.*

NOTE Luna HSM Client software does not affect FIPS compliance; only the HSM firmware version. Thales recommends keeping your clients updated to the latest version whenever possible, to take advantage of the latest functionality and bug fixes.

While older firmware versions on the list below are still considered validated, each new version contains changes to the HSM functions that ensure continued compliance with the revised standard. Certain mechanisms or specific operations that have fallen below the security standard set by NIST since the last certified version are restricted. Likewise, newer mechanisms that have been validated by NIST may be allowed in FIPS 140 approved configuration (formerly FIPS mode), where they were restricted in older versions. Thales recommends that you keep your Luna HSMs requiring FIPS compliance updated to the latest FIPS-validated version, as specified in the list below.

FIPS 140-3 Level 3 Certified Luna USB HSM 7 Firmware Versions

The following Luna USB HSM 7 firmware versions are FIPS 140-3 Level 3 certified per NIST certificate #4962:

<https://csrc.nist.gov/projects/cryptographic-module-validation-program/certificate/4962>

- > [Luna USB HSM 7 Firmware 7.7.3](#) (recommended)

FIPS 140-3 Level 3 Certified Luna Backup HSM 7 Firmware Versions

The following Luna Backup HSM 7 firmware versions are FIPS 140-3 Level 3 certified per NIST certificate #4962:

<https://csrc.nist.gov/projects/cryptographic-module-validation-program/certificate/4962>

- > [Luna Backup HSM 7 Firmware 7.7.3](#) (recommended)

Configuring the HSM to Operate in FIPS 140 Approved Configuration

Luna HSMs have many capabilities that are not certified by NIST. To be FIPS-compliant, the HSM must be set to **FIPS 140 approved configuration**, where any mechanisms or cryptographic operations that are not FIPS-certified are blocked from use. FIPS 140 approved configuration (formerly FIPS mode) is set using HSM or partition policies as described below.

Setting FIPS 140 Approved Configuration on the HSM

You can set the HSM to FIPS 140 approved configuration using **HSM policy 12: [Allow non-FIPS algorithms](#)**. When this policy is set to **0**, algorithms that are not FIPS-validated are blocked from use on every partition on the HSM, and the HSM is operating in FIPS 140 approved configuration. There are two methods of setting this policy:

- > The HSM SO can use a policy template to set the policy at initialization (see [Setting HSM Policies Using a Template](#)). This method is recommended for auditing purposes -- it ensures that the HSM is in FIPS 140 approved configuration for its entire use cycle.
- > The HSM SO can set the policy manually after initializing the HSM (see [Setting HSM Policies Manually](#)).

NOTE HSM policy 12: [Allow non-FIPS algorithms](#) is destructive; changing it results in the entire HSM being zeroized and all partitions destroyed. This is to prevent keys that were created and used in a non-FIPS approved environment from existing in a FIPS-approved environment, and vice-versa.

To check the current status of FIPS 140 approved configuration on the HSM, log in to LunaCM and use `lunacm:>hsm showinfo`. In FIPS 140 approved configuration, a variation of the following text is displayed:

```
*** The HSM is in FIPS 140-2 approved operation mode. ***
```

Setting FIPS 140 approved configuration on individual application partitions

You can also set FIPS 140 approved configuration on individual application partitions, independently of other partitions on the same HSM.

Prerequisite

HSM policy 12: [Allow non-FIPS algorithms](#) must be set to **1** on the HSM.

To set FIPS 140 approved configuration on an application partition

You can set the partition to FIPS 140 approved configuration (formerly FIPS mode) using **partition policy 43: Allow Non-FIPS algorithms**. When this policy is set to **0**, algorithms that are not FIPS-validated are blocked from use, and the partition is operating in FIPS 140 approved configuration. There are two methods of setting this policy:

- > The Partition SO can use a policy template to set the policy to **0** at initialization (see [Setting Partition Policies Using a Template](#)). This method is recommended for auditing purposes -- it ensures that the partition is in FIPS 140 approved configuration for its entire use cycle.
- > The Partition SO can set the policy to **0** manually after initializing the partition (see [Setting Partition Policies Manually](#)).

NOTE **Partition policy 43: Allow Non-FIPS algorithms** is destructive when changing from **0** to **1**; this change results in the partition being zeroized. This is to prevent keys that were created and used in a FIPS-approved environment from existing in a non-FIPS-approved environment.

Setting FIPS 140 Approved Configuration on Luna Backup HSM 7

[Luna Backup HSM Firmware 7.7.1](#) and newer uses the same updated cloning protocol as Luna HSM Firmware 7.7.0 and newer. For the Luna Backup HSM 7 to be FIPS-compliant, it must restrict restore operations to application partitions that use the new protocol. This restriction is applied by setting **HSM policy 55: Enable Restricted Restore** to **1** on the backup HSM. The Luna Backup HSM 7 must be initialized and connected to a Luna HSM Client computer to set this policy.

When this policy is enabled on the Luna Backup HSM 7, objects that have been backed up from partitions using firmware older than Luna HSM Firmware 7.7.0 can be restored to Luna HSM Firmware 7.7.0 or newer (V0 or V1) partitions only.

CAUTION! FIPS compliance requires that objects are never cloned or restored to an HSM using less secure firmware, and this includes restoring from Luna Backup HSM 7 firmware. If you have backups already stored on the Luna Backup HSM 7 that were taken from pre-7.7.0 partitions, turning this policy ON will prevent you from restoring them to the same source partition. You must update the HSM containing the source partition to Luna HSM Firmware 7.7.0 or newer before restoring from backup.

NOTE **HSM policy 12: Allow non-FIPS algorithms**, which is used to set FIPS-compliant mode on other Luna HSMs, does not apply to the Luna Backup HSM 7. Attempts to change this policy will fail with the error `CKR_CANCEL`.

To configure the Luna Backup HSM 7 for FIPS compliance

1. On the Luna HSM Client computer, run LunaCM.
2. Set the active slot to the Luna Backup HSM 7.
lunacm:> **slot set -slot** <slot_id>
3. Log in as Backup HSM SO.
lunacm:> **role login -name so**

4. Set HSM policy 55: [Enable Restricted Restore](#) to 1.

```
lunacm:> hsm changehsmpolicy -policy 55 -value 1
```

5. [Optional] Check that the Luna Backup HSM 7 is now in FIPS approved operation mode.

```
lunacm:> hsm showinfo
```

```
*** The HSM is in FIPS 140-2 approved operation mode. ***
```

Other FIPS Considerations

Certain Luna features can affect FIPS compliance, or the behavior of the HSM in FIPS 140 approved configuration (formerly FIPS mode). Those features and their effects on FIPS are described below.

NOTE By design (approved by NIST) **HSS keys cannot be copied/cloned** and therefore are not for use in an HA group, and cannot be backed-up or restored.

- Do not generate an HSS key pair on an HA virtual slot.
- Do not add a partition to an HA group if the partition has an HSS private key on it.

NOTE Luna USB HSM 7 does not support Functionality Modules (FMs).

Mixed FIPS/non-FIPS High-Availability Groups

Thales does not recommend creating HA groups using a combination of FIPS and non-FIPS partitions, as such groups would not be FIPS compliant for auditing purposes. If you do wish to create such groups, however, you require a minimum client version or the operation will be blocked. Using [Luna HSM Client 10.4.0](#) or newer, you can set up an HA group with a mix of FIPS and non-FIPS partitions as members. However, some limitations must be considered. For more information, refer to [Key Replication](#).

RSA-186 Mechanism Remapping for FIPS Compliance

Under FIPS 186-3/4, the only RSA methods permitted for generating keys are 186-3 with primes and 186-3 with aux primes. RSA PKCS and X9.31 key generation is not approved in a FIPS-compliant HSM. While Luna 6.10.9 firmware allows these older mechanisms, later firmware does not (and keys created using these mechanisms cannot be replicated to Luna 7 HSMs or Luna Cloud HSM services).

If you have older applications that use RSA PKCS and X9.31 key generation, you can remap these calls to use the newer, secure mechanisms. Add a line to the **Chrystoki.conf/crystoki.ini** configuration file as follows:

```
[Misc]
RSAKeyGenMechRemap=1
```

NOTE This setting is intended for older applications that call outdated mechanisms, to redirect calls to FIPS-approved mechanisms. The ideal solution is to update your applications to call the approved mechanisms.

RNG Entropy

Luna USB HSM 7 Firmware includes a FIPS 140-2 Level 3-certified Random Bit Generator with an SP 800-90B certified entropy source. The entropy source is the bit that generates the raw entropy bits, conditions these to increase entropy per-bit and health-tests the samples. These bits are then fed to a Deterministic Random Bit Generator (DRBG) which independently is NIST CAVP approved.

The Random Bit Generator and entropy source are FIPS 140-2 Level 3 certified per certificate #E97:

<https://csrc.nist.gov/projects/cryptographic-module-validation-program/entropy-validations/certificate/97>

Changes to Mechanisms and Operations in FIPS 140 Approved Configuration by Firmware Version

This section provides details about changes to mechanisms and their functionality when in FIPS 140 approved configuration.

NOTE Thales is continuously updating FIPS criteria with each new firmware version; even if a particular firmware is not submitted for FIPS validation, it may include changes to the way mechanisms work in FIPS 140 approved configuration. It is possible to operate any Luna firmware version in FIPS 140 approved configuration, but only versions validated by NIST are considered compliant with the standard (see "[Install Only FIPS-Validated Firmware](#)" on [page 1](#)).

FIPS Changes in Luna USB HSM 7 Firmware 7.7.3 and Newer

New restrictions have been added to some mechanisms when the HSM or partition is in FIPS approved configuration (**HSM policy 12: [Allow non-FIPS algorithms](#)** or **partition policy 43: [Allow Non-FIPS algorithms](#)** set to 0), to comply with NIST SP800-131a Rev2 and SP800-56B Rev2, published in March 2019.

Migrate Keys From FIPS-Configured Luna USB HSM G5 Before Updating to This Version

Using [Luna USB HSM 7 Firmware 7.7.3](#) or newer in FIPS approved configuration (**HSM policy 12: [Allow non-FIPS algorithms](#)** or **partition policy 43: [Allow Non-FIPS algorithms](#)** set to 0), cloning from Luna USB HSM G5 with firmware 6.24.7 is disallowed. Therefore, you must migrate your keys to Luna USB HSM 7 with [Luna USB HSM 7 Firmware 7.7.2](#) installed, before you update the firmware.

Mechanisms no longer available in FIPS approved configuration

The following mechanisms are no longer available in FIPS approved configuration:

- > [CKM_DES3_CBC_ENCRYPT_DATA](#)
- > [CKM_DES3_ECB_ENCRYPT_DATA](#)
- > [CKM_EC_MONTGOMERY_KEY_PAIR_GEN](#)
- > [CKM_X9_42_DH_PARAMETER_GEN](#)

NOTE If you need to generate FIPS-compliant domain parameters for this mechanism, use `CKM_DSA_PARAMETER_GEN` with modulus length 2048 or 3072.

DES/DES3 encryption not permitted using ECIES mechanisms

The following mechanisms are not permitted to encrypt in FIPS approved configuration (decrypt operations are permitted):

- > `CKM_DES_CFB8`
- > `CKM_DES_CFB64`
- > `CKM_DES_OFB64`
- > `CKM_DES3_CBC`
- > `CKM_DES3_CBC_PAD`
- > `CKM_DES3_CTR`
- > `CKM_DES3_ECB`

HMAC mechanisms not permitted to sign using DES3 keys

The following mechanisms are not permitted to sign objects with a DES3 key in FIPS approved configuration (verify operations are permitted):

- > `CKM_SHA224_HMAC`
- > `CKM_SHA224_HMAC_GENERAL`
- > `CKM_SHA256_HMAC`
- > `CKM_SHA256_HMAC_GENERAL`
- > `CKM_SHA384_HMAC`
- > `CKM_SHA384_HMAC_GENERAL`
- > `CKM_SHA512_HMAC`
- > `CKM_SHA512_HMAC_GENERAL`
- > `CKM_SHA3_224_HMAC`
- > `CKM_SHA3_224_HMAC_GENERAL`
- > `CKM_SHA3_256_HMAC`
- > `CKM_SHA3_256_HMAC_GENERAL`
- > `CKM_SHA3_384_HMAC`
- > `CKM_SHA3_384_HMAC_GENERAL`
- > `CKM_SHA3_512_HMAC`
- > `CKM_SHA3_512_HMAC_GENERAL`

Mechanisms now check for approved EC curves in FIPS mode

The following mechanisms now verify that the specified EC curve is FIPS-approved, and reject operations that specify non-approved curves:

- > CKM_ECDH1_COFACTOR_DERIVE
- > CKM_ECDH1_DERIVE
- > CKM_ECDSA
- > CKM_ECDSA_SHA1
- > CKM_ECDSA_SHA224
- > CKM_ECDSA_SHA256
- > CKM_ECDSA_SHA384
- > CKM_ECDSA_SHA512
- > CKM_ECDSA_SHA3_224
- > CKM_ECDSA_SHA3_256
- > CKM_ECDSA_SHA3_384
- > CKM_ECDSA_SHA3_512
- > CKM_ECIES
- > CKM_EC_KEY_PAIR_GEN
- > CKM_EC_KEY_PAIR_GEN_W_EXTRA_BITS

CKM_RSA_PKCS not permitted to decrypt/unwrap objects

To comply with FIPS 140-3 requirements, RSA-based key transport schemes that use only PKCS#1-v1.5 padding are disallowed. Therefore, [CKM_RSA_PKCS](#) is now restricted from performing decrypt/unwrap operations.

NOTE When the HSM or partition is in FIPS approved configuration (**HSM policy 12: Allow non-FIPS algorithms** or **partition policy 43: Allow Non-FIPS algorithms** set to 0), [CKM_RSA_PKCS](#) is disabled even if **partition policy 33: Allow RSA PKCS mechanism** is set to 1.

3DES usage counter has been removed

The 3DES usage counter attribute (CKA_BYTES_REMAINING) has been removed in [Luna USB HSM 7 Firmware 7.7.3](#) and newer, to comply with FIPS 140-3 requirements. This attribute is now ignored on any keys where it is already set.

FIPS Changes in Luna USB HSM 7 Firmware 7.7.2 and Newer

New restrictions have been added to some mechanisms when the HSM or partition is in FIPS approved configuration (**HSM policy 12: Allow non-FIPS algorithms** or **partition policy 43: Allow Non-FIPS algorithms** set to 0), to comply with FIPS SP800-131a Rev2, published in March 2019. Consider these functional changes when migrating from Luna USB HSM G5.

Mechanisms not permitted to wrap objects in FIPS mode

The following mechanisms are not permitted to wrap objects in FIPS mode (unwrap operations are permitted):

- > [CKM_AES_CBC](#)

- > CKM_AES_CBC_PAD
- > CKM_AES_CTR
- > CKM_AES_ECB
- > CKM_DES3_CBC
- > CKM_DES3_CBC_PAD
- > CKM_DES3_CTR
- > CKM_DES3_ECB
- > CKM_RSA_PKCS

Mechanisms not permitted to sign data in FIPS mode

The following mechanisms are not permitted to sign data in FIPS mode (verify operations are permitted):

- > CKM_AES_MAC
- > CKM_AES_MAC_GENERAL
- > CKM_DES3_MAC
- > CKM_DES3_MAC_GENERAL
- > CKM_DSA_SHA1
- > CKM_ECDSA_SHA1
- > CKM_SHA1_RSA_PKCS
- > CKM_SHA1_RSA_PKCS_PSS
- > CKM_SHA1_RSA_X9_31

Mechanisms approved for use in FIPS mode

The following mechanisms are now approved for use in FIPS mode:

- > CKM_ECDSA_SHA3_224
- > CKM_ECDSA_SHA3_256
- > CKM_ECDSA_SHA3_384
- > CKM_ECDSA_SHA3_512
- > CKM_SHA3_224
- > CKM_SHA3_224_DSA
- > CKM_SHA3_224_RSA_PKCS
- > CKM_SHA3_224_RSA_PKCS_PSS
- > CKM_SHA3_256
- > CKM_SHA3_256_DSA
- > CKM_SHA3_256_RSA_PKCS
- > CKM_SHA3_256_RSA_PKCS_PSS
- > CKM_SHA3_384

- > CKM_SHA3_384_DSA
- > CKM_SHA3_384_RSA_PKCS
- > CKM_SHA3_384_RSA_PKCS_PSS
- > CKM_SHA3_512
- > CKM_SHA3_512_DSA
- > CKM_SHA3_512_RSA_PKCS
- > CKM_SHA3_512_RSA_PKCS_PSS

3DES Usage Counter

3DES keys have a usage counter attribute (CKA_BYTES_REMAINING) that limits each key instance to encrypting a maximum of 2^{16} 8-byte blocks of data when the HSM is in FIPS approved configuration (**HSM policy 12: Allow non-FIPS algorithms** or **partition policy 43: Allow Non-FIPS algorithms** set to **0**). When the counter runs out, that key can *no longer* be used for encryption, wrapping, deriving, or signing, but can still be used for decrypting, unwrapping, and verifying pre-existing objects. The CKA_BYTES_REMAINING attribute cannot be viewed if the HSM/partition is not in FIPS approved configuration.

The attribute is preserved through backup/restore using a Luna Backup HSM 7; restoring the key restores the counter's setting at the time of backup.

The attribute is not preserved through backup/restore using a Luna Backup HSM G5; restoring the key resets the counter to the maximum.

CHAPTER 2: Common Criteria/eIDAS Compliance

Luna HSMs regularly qualify against relevant standards that are important in the information security, data protection, and transaction protection spaces, and for which a business case supports the resource expenditure. Validation is repeated/updated when product changes warrant doing so, according to the respective standards and the requirements of the qualified testing laboratories.. HSM validations are reacquired when major new versions of applicable standards are released, and are also kept up with minor submissions and adjustments when a standard is tweaked or when interpretations shift on the part of testing/validation laboratories.

Under Common Criteria, Thales has looked to qualify our Luna HSM products against eIDAS standards relevant to general purpose hardware security modules.

Luna HSMs are eIDAS certified as Qualified Signature Creation Devices and Qualified Seal Creation Devices (QSCD), and are used by Qualified Trust Service Providers (QTSP) in the role of their root of trust.

See <https://cpl.thalesgroup.com/compliance/eidas>

CC takes the view that a solution is validated for a purpose, which generally means that a number of moving parts are considered in concert. Thus an HSM is evaluated as an element of an overall solution that also includes software products, procedures, and systems all interacting. The following documents provide expanded detail on the relevant topics.

[DOW0006186 \(KB0023049\)](#) is "Thales Luna K7(+) Cryptographic Module COMMON CRITERIA USER GUIDANCE - PART 1: PREPARATIVE PROCEDURES"

[DOW0006187 \(KB0023050\)](#) is "Thales Luna K7(+) Cryptographic Module COMMON CRITERIA USER GUIDANCE - PART 2: OPERATIONAL GUIDANCE"

[DOW0006188 \(KB0023051\)](#) is "Thales Luna K7(+) Cryptographic Module COMMON CRITERIA USER GUIDANCE - PART 3: EIDAS GUIDANCE"

[DOW0006189 \(KB0023052\)](#) is "Thales Luna K7(+) Cryptographic Module COMMON CRITERIA USER GUIDANCE - PART 4 TOE INTEGRATION FOR USE IN COMPOSITE EVALUATION"

The K7 module referred to in those document titles,

- > is the heart of the Luna Network HSM 7 ([Luna Network HSM appliance](#)) and
- > is also available in a separate PCIe card format for insertion in a host system ([Luna PCIe HSM](#)).

Roles	Principal Duties
HSM Security Officer (HSM SO) [Admin Partition Role]	<p>The HSM SO is responsible for managing the HSM. As such, they are authorized to install and configure the HSM, set and maintain global HSM security policies. They are also able to request the load of new HSM firmware update files (FUF), new Configuration Update Files (CUF) and new Functional Modules (FM). The HSM SO is able to create and delete partitions, but is not authorized to generate, load or use keys stored on the user partitions that have been created. The HSM SO is able to create, manage and use keys created in the Admin Partition alongside is responsible for initializing the 'Administrator role'. The HSM SO can reset the Administrator password (configuration dependent). The HSM can have only one HSM SO.</p>
[Admin Partition Role]	<p>The Administrator is authorized to create, use, transfer and destroy key objects contained in the Admin partition. This role has privileges that are a subset of the HSM SO role.</p>
Partition Security Officer (Partition SO) [User Partition Role]	<p>The Partition SO creates the partition level Partition CO role, activates partition, sets and changes partition-level policies, with an option to reset the Partition CO password (configuration dependent).</p>
Partition Crypto Officer (Partition CO) [User Partition Role]	<p>The Partition CO role is authorized to create, use, destroy and transfer key objects for a given partition. The Partition CO can optionally create the Partition LCO and Partition CU, and perform initial assignment of key authorization data.</p>
Partition Limited Crypto Officer (Partition LCO) [User Partition Role]	<p>The Partition LCO is an optional partition role authorized to create and use key objects, and perform initial assignment of key authorization data. The role is only permitted to delete key objects where per-key authorization is used and the correct authorization data for a given key object can be presented to the cryptographic module.</p>
Partition Crypto User (Partition CU) [User Partition Role]	<p>The Partition CU is the partition role authorized to use the key objects within the partition (e.g. sign, encrypt/decrypt).</p>
Audit User [Admin Partition Role]	<p>The Audit User initializes the secret key used to generate Message Authentication Code (MAC) for secure audit messages alongside configuring logging levels for the HSM.</p>
Key Owner [Admin or User Partition Role]	<p>Implicit role used to authenticate the owner of a key through verification of the related key authorization data.</p>

Roles	Principal Duties
STC User [Admin or User Partition Role]	The STC user is optional role used with a remote Thales Luna client to initiate a secure tunnel with a target partition. Once successfully authenticated based on pre-registered authentication credentials, the STC user is able to submit commands to the target partition over a trusted channel.

Audit

The HSM logs events within the HSM. You must initialize the Audit role within the HSM, to configure the criteria (such as event severity, whether certain key usage is logged for first use only, or for every use, etc.), to ensure a balance between logging necessary for the regime under which you operate, and the effect on cryptographic performance as logging demands increase. The more events are logged, the faster the HSM memory fills, and the more urgent the need for you to configure *rotation of log entries off the HSM* and into log files in the host file-system. The secure audit function ensures that audit log integrity can be validated. It is then your responsibility to secure the further handling of such logs within your organization.

The appliance also logs system events, which is a separate function from HSM logging.

The HSM (cryptographic module) and the appliance that hosts it provide their logs (as configured), but what you do with them is determined by the security regime under which you operate.

Compliance

Common Criteria validation ensures that a given version of HSM is suitable and can be used in conformity with the stipulated behaviors within the larger framework of operational security for applications and services. Thales Group regularly submits HSM products for Common Criteria evaluation, and provides links and updates as appropriate. See the table below for current and estimated statuses.

Luna HSM Firmware	CC			Remote QSCD			QSCD		
	Start Date	Expiration Date	Reference	Start Date	Expiration Date	Reference	Start Date	Expiration Date	Reference
7.7.0 7.7.1 7.7.2	20/07/2022	20/07/2027	CC Portal NSCIB Certification Page CC Certificate NSCIB Certification Report NSCIB Maintenance Report	02/21/2024	Until revoked	A-SIT Published QSCD Certificates eIDAS Dashboard (List of Qualified Signature/Seal Creation Devices and Secure Signature Creation Devices) A-Sit Certification Report	20/07/2022	20/07/2027	TüV Article 31 List
7.8.4	Swapped with 7.8.5			Swapped with 7.8.5			Swapped with 7.8.5		
7.8.5	Expected July 2025			ETA Dec 2025			ETA July 2025		

CC-EIDAS site certification

Visit this link:

[Site certification](#)

After the table loads, use the search box to search for "Thales".

CHAPTER 3: Lithium Content of Luna Products for Transport and Other Compliance

The following statements concern Luna HSM products and the lithium content of any batteries they might contain.

Luna PED (PIN Entry Device)

This device does not contain a battery. This device is used only to present authentication data to multifactor quorum-authenticated versions of Luna HSM devices.

Luna PCIe HSM 7 (K7 crypto module)

This cryptographic module circuit board includes a single 2/3AA format (non -rechargeable) cell with a lithium content of approximately 0.5 gram.

Luna Network HSM 7 appliance

The appliance contains:

- > a motherboard with a BR2032 (non -rechargeable) coin cell having a lithium content of 0.06 gram
- > a cryptographic module circuit board that includes a single 2/3AA format (non -rechargeable) cell with a lithium content of approximately 0.5 gram.

Luna USB HSM 7

This USB-connected cryptographic module contains a BR2032 (non -rechargeable) coin cell having a lithium content of 0.06 gram.

Luna Backup HSM 7

This USB-connected backup device contains a BR2032 (non -rechargeable) coin cell having a lithium content of 0.06 gram.