SafeNet Luna Network HSM 7.4

CUSTOMER RELEASE NOTES

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Contents

Product Description

The SafeNet Luna Network HSM secures your sensitive data and critical applications by storing, protecting and managing your cryptographic keys in a high-assurance, tamper-resistant, network-attached appliance that offers market-leading performance. The SafeNet Luna Network HSM meets compliance and audit needs for FIPS 140, HIPAA, PCI-DSS, eIDAS, GDPR, and others, in highly-regulated industries including Financial, Healthcare, and Government.

The SafeNet Luna Network HSM offers up to 100 HSM partitions, high-availability configuration options, remote management, PED, backup, and dual hot-swappable power supplies.

Release Description

SafeNet Luna Network HSM 7.4 is a field update release of Gemalto's 7.x SafeNet Luna Network HSM. It includes Client software with drivers and tools, appliance software update, and new firmware for the HSM.

New Features and Enhancements

SafeNet Luna Network HSM 7.4 introduces the following new features and enhancements:

HSM Firmware version 7.3.3 is FIPS 140-2 validated.

Firmware 7.3.3 update incorporates the features and fixes supported by firmware versions 7.1, 7.2 and 7.3, and is now the preferred FIPS-validated SafeNet Luna HSM firmware version.

CMVP Certificate #3205

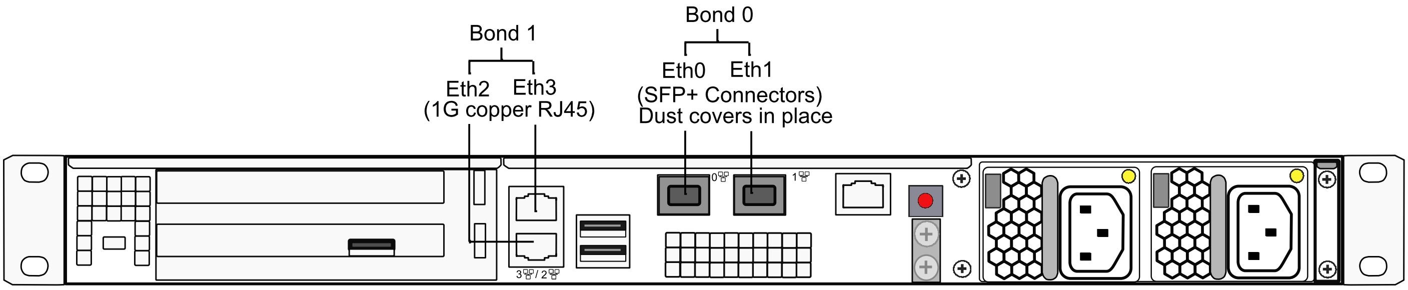
See the "HSM Firmware version 7.3.3 caveats " on page 4 in the Advisory Notes section, below.

10Gbps Optical NIC SafeNet Luna Network HSM

Gemalto is pleased to announce the availability of the 10 Gbps optical NIC SafeNet Luna Network HSM. This product variant provides two 10G optical network interfaces and two 1G copper network interfaces, as opposed to the standard 1G model which provides four 1G copper network interfaces.

The mapping of the network interfaces to their software equivalents (eth0, eth1, eth2, and eth3) is different on the 1G and 10G models. Otherwise, the 10G model is functionally equivalent to the standard 1G model.

The 10G SafeNet Luna Network HSM provides two 10G SFP optical Ethernet network interfaces (labeled 0 and 1), and two 1G copper RJ45 network interfaces (labeled 2 and 3), as illustrated below. You can optionally bond eth0 and eth1 to bond0, or eth2 and eth3 to bond1, to provide a redundant active/standby virtual interface.



Upgrade to Luna 7.4 appliance software

The 10G SafeNet Luna Network HSM model ships with Luna 7.2 appliance software and Luna 7.0.3 HSM firmware installed. You can use the 10G optical ethernet ports with the installed software, or update to Luna 7.4 or higher.

> **CAUTION! Do not update the 10G appliance to Luna 7.3.x.**
> The port mapping will revert to the 1G configuration and you will lose 10G support. The appliance might require RMA to fix the port mapping.

Functionality Modules

SafeNet Luna Network HSM 7.4 introduces Functionality Modules (FMs). FMs consist of your own custom-developed code, loaded and operating within the logical and physical security of a SafeNet Luna Network HSM as part of the HSM firmware. FMs allow you to customize your SafeNet Luna Network HSM's functionality to suit the needs of your organization. Custom functionality provided by your own FMs can include:

- new cryptographic algorithms, including Quantum algorithms
- security-sensitive code, isolated from the rest of the HSM environment
- keys and critical parameters managed by the FM, independent from standard PKCS#11 objects, held in tamper-protected persistent storage

To create FMs, you will need the Functionality Module Software Development Kit (SDK), which is included with the SafeNet Luna HSM Client software. Applications that use FM functions are supported on Windows and Linux.

> **CAUTION!** Enabling FMs (**HSM policy 50**) introduces changes to Luna HSM functionality, some of which are permanent; they cannot be removed by disabling the policy.

View Utilization Metrics by Partition

Release 7.4 allows you to view utilization metrics for an individual partition or a specified list of partitions.

Ed25519ph Curve

SafeNet Luna Network HSM firmware version 7.4.0 includes support for the ed25519ph curve variant.

Fixes

Issues addressed in this release are listed in "Resolved Issues" on page 20.

Advisory Notes

This section highlights important issues you should be aware of before deploying this release.

HSM Firmware version 7.3.3 caveats

Firmware 7.3.3 update incorporates the features and fixes supported by firmware versions 7.1, 7.2 and 7.3, and is now the preferred FIPS-validated SafeNet Luna HSM firmware version.

The firmware version shipped from the factory remains 7.0.3. Version 7.3.3 is a field-installable update.

Update paths and considerations

From f/w version	To f/w version	Comment or caveat
PASSWORD-AUTHENTICATED		
7.0.3, 7.1.0, 7.2.0, 7.3.0	7.3.3	Normal firmware update procedure (see Updates and Upgrades section of main HSM documentation) - no issues
PED-AUTHENTICATED		
7.0.3	7.3.3	Normal firmware update procedure (see Updates and Upgrades section of main HSM documentation) - no issues
partition created in HSM at one of f/w versions 7.1, 7.2, or 7.3.0 with Partition Policy 15 set to ON	7.3.3	Normal firmware update procedure (see Updates and Upgrades section of main HSM documentation) - EXCEPT you must reset the challenge secret, after f/w update, so that partition objects become accessible again
Partition created in HSM at one of f/w versions 7.1, 7.2, or 7.3.0 with Partition Policy 15 set to OFF (*)	7.3.3	1. Before updating firmware, back up your partition contents. 2. Update your HSM to firmware version 7.3.3. 3. Your existing partition is no longer accessible -- re-initialize the existing partition. 4. Restore your partition objects from backup.
Network appliance with appliance software 7.4.0 and HSM at f/w 7.4.0	7.3.3	Must first rollback f/w to one of 7.0.3, 7.1.0, 7.2.0, 7.3.0 before updating to f/w 7.3.3

(* By default, Partition Policy 15 is off. Turning Policy 15 ON is destructive.)

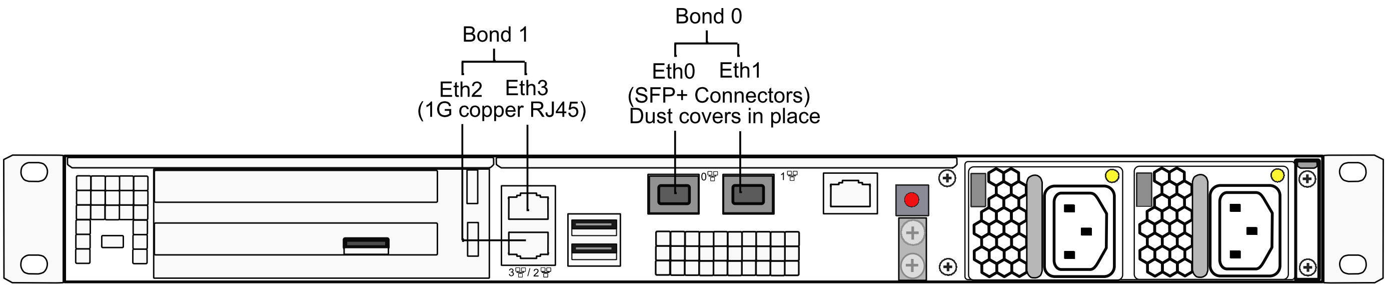
Important note about 10 Gbps Optical Ethernet modules

The Network HSM Appliance is shipped from the factory with FIPS-validated firmware installed, and can be purchased with one of two options for Ethernet ports:

- 1Gbps copper-only RJ-45 connectors for all four physical Ethernet ports, or
- 10Gbps Optical Ethernet on two of the ports and 1Gbps RJ-45 connections on the other two ports.

The first option was already the standard, factory-delivered appliance.

The second option behaves identically to the first, in all respects, except the following five points



- Two of the Ethernet ports (see the middle, upper portion of the diagram, just above the ventilation grid) have 10Gbps Optical Ethernet SFP+ connectors, while the two Ethernet ports (stacked vertically beside the HSM slot) retain 1Gbps copper RJ-45 sockets.
- The small form-factor pluggable (SFP) transceiver modules are packed in their own independent packaging to avoid possible damage and dust during shipping and handling, and those must be inserted into the SFP+ connectors on the appliance during appliance installation. (See the Installation Guide in the main product documentation)
- The logical Ethernet port assignments are different from the standard appliance, such that the 10Gbps optical ports are designated Eth0 and Eth1, while the 1Gbps copper ports are designated Eth2 and Eth3.
- The output of the Luna Shell (lunash:>) command **network show -verbose** displays "FIBRE" and the 10000baseT/Full option, when the appliance has optical Ethernet ports.
- Port bonding is allowed only between Ethernet ports of the same type and speed.

> **CAUTION!** To use 10 Gbps optical Ethernet, update SafeNet Luna Network HSM appliance software to version 7.4 or higher. Do not attempt to update a 10G-ready appliance to version 7.3.x.

Support for 32-bit OS Platforms is Ending

As of upcoming release 7.6, 32-bit libraries will no longer be provided. If you have a 32-bit application or integration, remain with a pre-7.6 release (such as 7.2, 7.3, 7.4, or 7.5), or migrate to 64-bit platform.

Resolved Issues LKX-2832/LUNA-956: CKA_EXTRACTABLE Default Setting

Formerly, the CKA_EXTRACTABLE attribute on new, unwrapped, and derived keys was incorrectly set to TRUE by default. This was resolved in Luna HSM firmware 7.0.2 and higher. In firmware 7.0.2 and higher, the CKA_EXTRACTABLE attribute on new, unwrapped, and derived keys is set to FALSE by default.

> **NOTE** If you have existing code or applications that expect keys to be extractable by default, you must modify them to explicitly set the CKA_EXTRACTABLE attribute value to TRUE.

Resolved Issue LUNA-7533: Java DERIVE and EXTRACT flag settings for keys injected into the HSM

Formerly, the DERIVE and EXTRACT flags were forced to "true" in the JNI, which overrode any values passed by applications via Java. This is resolved in Luna release 7.3 and higher.

As of release 7.3:

- The default values for the DERIVE and EXTRACT flags are set to "false" (were set to “true” in previous releases.
- JNI accepts and preserves values set by applications via the following Java calls:

```
LunaSlotManager.getInstance().setSecretKeysDerivable( true );
LunaSlotManager.getInstance().setPrivateKeysDerivable( true );
LunaSlotManager.getInstance().setSecretKeysExtractable( true );
LunaSlotManager.getInstance().setPrivateKeysExtractable( true );
```

> **NOTE** If you have existing code that relies on the DERIVE and EXTRACT flags being automatically defined by the JNI for new keys, you will need to modify your application code to set the flag values correctly.

PED Upgrade Required for Currently-Owned PEDs

If you have older PEDs that you intend to use with SafeNet Luna HSM 7.0 or later, you must upgrade to firmware 2.7.1 (or newer). The upgrade and accompanying documentation (**007-012337-003_PED_upgrade_2-7-1-5.pdf**) are available from the Gemalto Support Portal.

New USB-powered PED

Gemalto is pleased to announce the availability of SafeNet Luna HSM PIN Entry Device (PED) v2.8. The v2.8 PED contains new hardware that enables the PED to be USB-powered; there is no longer a requirement for an external DC power Adapter. PED v2.8 is functionally equivalent to your existing (pre-generation) PEDs and is compatible with HSM versions, 5.x, 6.x, and 7.x.

PED v2.8 ships with firmware 2.8.0. Note that you cannot upgrade existing PEDs to the 2.8.0 version; existing PEDs continue to need a separate DC power adapter for remote PED and upgrade use. The model number on the manufacturer's label identifies the refreshed PED: PED-06-0001.

To use the new USB-powered PED

1. Ensure the SafeNet Luna HSM Client software is installed on the Windows computer that will provide PED authentication for your SafeNet Luna Network HSM. Installing the Remote PED component of the SafeNet Luna HSM client installs the required driver.
2. Connect the PED to the computer where you installed the Remote PED component of the SafeNet Luna HSM client using the USB micro connector on the PED and a USB socket on your computer.
3. After you connect the PED to the host computer, it will take 30 to 60 seconds for initial boot-up, during which time a series of messages are displayed, as listed below:

   BOOT V.1.1.0-1

```
CORE V.3.0.0-1
Loading PED...
Entering...
```

4. After the boot process is complete, the PED displays **Local PED mode** and the **Awaiting command...** prompt. Your new PED is now ready for use.

5. To enter Remote PED mode, if needed, exit Local PED mode with the "<" key, and from the **Select Mode** menu, select option **7 Remote PED**.

STC over IPv6 is Unavailable

STC client-partition links are not available over an IPv6 network.

Remote Backup Over IPv6 is Unavailable

Network connections from the SafeNet Luna HSM Client to a Remote Backup Server must use IPv4.

> **NOTE** Network connections from the client to the HSMs you want to backup using RBS can use IPv6. Only the connection from the client to the RBS server requires IPv4.

HSM Logs Sent to Messages Log

The **hsm.log** file has been removed from Luna 7. The HSM logs are now sent to the **messages** log.

> **NOTE** Although it is ignored, the **hsm** option appears in the syntax for some **syslog** commands (such as **syslog tail -logfiles**).

Supported Operating Systems

This section lists the supported software, hardware, and optional upgrades for the HSM.

SafeNet Luna HSM Client

You can install the SafeNet Luna HSM Client 7.4 on the following operating systems:

Operating System	Version	64-bit applications on 64-bit OS	32-bit applications on 64-bit OS	32-bit applications on 32-bit OS
Windows	10	Yes	Yes	No
Windows Server	2012 R2	Yes	Yes	No
	2016	Yes	Yes	No

Operating System	Version	64-bit applications on 64-bit OS	32-bit applications on 64-bit OS	32-bit applications on 32-bit OS
Redhat-based Linux (including variants like CentOS and Oracle Enterprise Linux)	6	Yes	Yes	Yes
	7	Yes	Yes	Yes
AIX *	7.1	Yes	No	No
Solaris (SPARC/x86) *	11	Yes	No	No
Ubuntu **	14.04	Yes	No	Yes

* Although the AIX and Solaris installers display the options, SafeNet Luna PCIe and USB HSMs are not supported in this release. Select only **SafeNet Luna Network HSM** during installation.

** The Linux installer for Luna HSM Client software is compiled as .rpm packages. To install on a Debian-based distribution, such as Ubuntu, **alien** is used to convert the packages. We used **build-essential**:

```
apt-get install build-essential alien
```

If you are using a Docker container or another such microservice to install the Luna Minimal Client on Ubuntu, and your initial client installation was on another supported Linux distribution as listed above, you do not require **alien**. Refer to the product documentation for instructions. You might need to account for your particular system and any pre-existing dependencies for your other applications.

Remote PEDserver

The PEDserver software is included with the SafeNet Luna HSM Client software. You must install the SafeNet Luna HSM Client, with the PEDserver option, on each workstation used to host a remote PED. The PEDserver software is supported on the following operating systems:

- Windows 10 (64-bit)
- Windows Server 2016
- Windows Server 2012 R2

Supported Cryptographic APIs

Applications can perform cryptographic operations using the following APIs:

- PKCS#11 2.20
- JCA within Oracle Java 7/8/9/10/11
- JCA within OpenJDK 7/8/9/10/11
- JCA within IBM Java 7/8
- OpenSSL
- Microsoft CAPI
- Microsoft CNG

Update Considerations

Detailed procedures for installing the SafeNet Luna Network HSM 7.4 software and firmware updates can be found in the product documentation. Before you install any of the updates, consider the following guidelines:

- Back up all important cryptographic material. Refer to the product documentation for backup procedures.
- Stop all client applications running cryptographic operations on the HSM.
- If you are using STC on the HSM Admin channel, disable it by running lunash:> **hsm stc disable** before you update the HSM firmware.
- Use an uninterruptible power supply (UPS) to power your HSM. There is a small chance that a power failure during an update could leave your HSM in an unrecoverable condition.

Valid Update Paths

The following table provides tested paths for updating to the current software/firmware versions.

Component	Directly from version	To version
SafeNet Luna HSM Client software	Any	7.4
SafeNet Luna Network HSM appliance software	7.0, 7.1	7.2
	7.2, 7.3	7.4
SafeNet Luna HSM firmware	7.0.1, 7.0.2	7.0.3, 7.1.0, 7.2.0
	7.0.3, 7.1.0, 7.2.0, 7.3.0	7.4.0, 7.3.3 (*)
SafeNet Luna Backup HSM firmware	6.10.9, 6.26.0	6.27.0 (**)
SafeNet Luna PED firmware	2.7.1	N/A
	2.8.0	N/A

(* Check the CRN "Advisory Notes" section, to see if any caveat applies to your HSM.)
(** Note that firmware 6.24.7 is the latest FIPs-validated version for the Backup HSM. FIPS validation might not be strictly necessary for a Backup HSM because it does not perform cryptographic operations with contained objects, but some audit checklists might not make that distinction.)

FIPS-Validated Firmware Versions

The following firmware versions are all FIPS-140-2 Level 3 certified per certificate #3205:

https://csrc.nist.gov/projects/cryptographic-module-validation-program/Certificate/3205

- Luna firmware v. 7.3.3 (recommended)
- Luna firmware v. 7.0.3 (factory-shipped version)
- Luna firmware v. 7.0.2 (see F5 note, below)

Recommended Minimum Versions

Generally, Gemalto recommends that you always keep your HSM firmware, appliance software, and client software up to date, to benefit from the latest features and bug fixes. If regular updates are not possible or convenient, the following table lists the recommended minimum firmware and software versions for use with SafeNet Luna 7 HSMs. If you are running an earlier version, Gemalto advises upgrading to the version(s) below (or later) to ensure that you have critical bug fixes and security updates.

	Luna HSM Client	Appliance Software	Luna HSM Firmware
SafeNet Luna Network HSM 7 Minimum Recommended Configuration	7.2	7.2	7.2.0
			7.0.3

> **NOTE** Customers who wish to use Luna 7 HSMs with F5 Network BIG-IP 13.1 appliances should follow F5 guidelines for Supported SafeNet client and HSM versions (https://support.f5.com/kb/en-us/products/big-ip_ltm/manuals/product/f5-safenet-hsm-version-interoperability-matrix.html). At the time of this release, F5's supported versions for Luna 7 are Luna HSM Client 7.1 with appliance software 7.1 and firmware 7.0.2.

Known Issues

This section lists the issues known to exist in the product at the time of release. Workarounds are provided where available. The following table defines the severity level assigned to each listed issue.

Table 1: Issue severity definitions

Severity	Classification	Definition
H	High	Reasonable workaround exists.
M	Medium	Medium severity problems.
L	Low	Low severity problems.

Table 2: List of known issues in release 7.4

Issue	Severity	Synopsis
LKX-5263	H	**Problem:** When audit logs fill up the HSM memory, HSM functions continue when they should be halted until audit logging is properly configured. Affects FM log entries only. **Workaround:** Configure audit logging on the HSM as described in documentation to prevent HSM memory from filling up.
LUNA-8881	H	**Problem:** Application cannot change CKA_EXTRACTABLE default value via JSP. **Workaround:** None.

Issue	Severity	Synopsis
LUNA-8620	H	**Problem:** NTLS failover on 10G optical ports (bond0) sometimes fails. **Workaround:** None. Troubleshooting: Luna Network HSM supports active-backup bonding mode only. This mode does not require any specific configuration of the switch. If this problem (Bond0 failover unsuccessful) is encountered, we recommend to: 1. Trace the packet in the network to ensure that the network interface in the Luna Network HSM is discovered properly. 2. Ensure that ARP entry is not incorrectly cached in the network. Such problem could be resolved through manual ping-out from the appliance (**network ping** command). To execute such command, the operator must directly connect to the Luna Network HSM through the serial port.
LUNA-8619	H	**Problem:** During HSM initialization, if the PED operation to create the red domain key fails or times out, subsequent attempts to re-initialize the HSM will not prompt you to create the red domain key. **Workaround:** Zeroize the HSM with lunash:>**hsm zeroize** before re-initializing.
LUNA-8548	H	**Problem:** When port bonding is configured on the appliance, SSH service is sometimes lost after an appliance reboot. This issue occurs more often if the appliance is directly connected to a managed switch. **Workaround:** Log in to LunaSH using a serial connection. Ping any IP using lunash:>**network ping** <IP> to restore SSH service.
LUNA-8348	H	**Problem:** When adding a DNS server using REST API, configured port bonds are broken. If there is no other ethernet interface configured, you must use a serial connection to reconfigure the port bond. **Workaround:** None. Use LunaSH to configure the DNS servers.
LKX-5545	M	**Problem:** When simultaneously running a combination of FM and non-FM applications with the HSM, an error: `Unable to communicate with HSM` can occasionally occur under very high operation loads. **Workaround:** Restart the HSM to clear the error (lunash:>**hsm restart**).
LKX-5351	M	**Problem:** When **partition policy 29: Perform RSA signing without confirmation** is set to **0** (OFF), all RSA sign operations fail with an error (CKR_DATE_LEN_RANGE) **Workaround:** If you use RSA signing, do not turn off partition policy 29.
LKX-5353	M	**Problem:** When a Remote PED connection times out, lunacm:>**role login** fails with a confusing error (CKR_FUNCTION_FAILED). **Workaround:** Run lunacm:>**ped disconnect** before **ped connect**.
LKX-5259	M	**Problem:** FM Capability license can be applied on non-FM-ready hardware. **Workaround:** Ensure your hardware is FM-ready before applying an FM license to the HSM.

Issue	Severity	Synopsis
LKX-4776	M	**Problem:** When running a combination of high-traffic FM and standard Luna applications, a rare SMFS failure can occur. Standard Luna processes are unaffected. **Workaround:** Erase the SMFS using lunash:>**hsm fm recover -erase smfs**, and restart the FM application if necessary.
LKX-4266	M	**Problem:** LunaCM incorrectly allows the user to add FM-enabled partitions to the same HA group as non-FM partitions. **Workaround:** HA groups with a combination of FM and non-FM members are not supported.
LUNA-8789	M	**Problem:** Restricting SSH traffic to an IPv6-configured ethernet port with lunash:>**sysconf ssh device** <eth#> still allows SSH connection via IPv4. **Workaround:** None.
LUNA-8780	M	**Problem:** One-step NTLS fails when the appliance's SSH host key changes or when connecting for the first time. **Workaround:** Run lunacm:>**clientconfig deploy** with the **-verbose** option, and manually enter "**y**" when PuTTY prompts you to update the cached SSH key.
LUNA-8760	M	**Problem:** Registering an IPv6 NTLS client with REST API by POSTing to **/api/lunasa/ntls/clients** fails with an `HTTP 400` error. **Workaround:** None. Register NTLS clients with LunaSH to avoid this issue.
LUNA-8758	M	**Problem:** Command output of **vtl examineCert** and **vtl fingerprint** are reversed. **Workaround:** None. Use each command to view the other's output.
LUNA-8756	M	**Problem:** An FM-ready SafeNet Luna Network HSM with appliance software version 7.4.0 and HSM firmware 7.0.3 incorrectly displays "**Non-FM**" in the output from lunash:>**hsm show**. LunaCM slot information for a partition on this HSM correctly displays "FM Ready". **Workaround:** Ignore the incorrect output. You must upgrade the HSM firmware to 7.4.0 to use FMs.
LUNA-8695	M	**Problem:** When a Remote PED connection times out, lunacm:>**ped connect** and lunacm:>**ped get** indicate that there is an active PED connection, but operations requiring PED authentication produce an error (CKR_CALLBACK_ERROR). **Workaround:** Run lunacm:>**ped disconnect** before **ped connect** or **ped get**.
LUNA-8566	M	**Problem:** If a tamper state exists on the HSM, the appliance re-image procedure fails without providing a reason. **Workaround:** Clear any tamper state before executing lunash:>**sysconf reimage start**.
LUNA-8512	M	**Problem:** When a client is connected to multiple FM-enabled HSMs, and one HSM goes down for maintenance, is rebooted, or is busy with a long FM process, new FM processes on other HSMs experience a performance slowdown. Existing processes are unaffected. **Workaround:** None. The slowdown only lasts as long as the HSM is down, rebooting, or busy.

Issue	Severity	Synopsis
LKX-5396	L	**Problem:** When creating an RSA key using CKDEMO, the user is mistakenly prompted for the Derive attribute (RSA key derivation is not allowed). **Workaround:** None. The value entered is dropped and can be safely ignored.
LKX-4817	L	**Problem:** FM sample applications built on a Windows platform do not automatically locate the Cryptoki library. **Workaround:** Move or copy the sample **.exe** to the main Lunaclient directory where the library is located.
LKX-4716	L	**Problem:** The **wrapcomptest** sample application hangs if it is used to query a non-FM slot or an invalid slot number. **Workaround:** Interrupt the hanging application with CTRL+C. Use the correct slot for the FM partition.
LUNA-8810	L	**Problem:** Minimal Luna HSM Client tar file has an additional character that could affect customer scripts. **Workaround:** Change filename from **LunaClient-Minimal-v7.4.0-226.x86_64.tar** to **LunaClient-Minimal-7.4.0-226.x86_64.tar** before running scripts.
LUNA-8782	L	**Problem:** Attempting to change a destructive HSM policy to an already-existing setting (**0** to **0** or **1** to **1**) results in partitions being renamed to "**unknown1**", "**unknown2**", etc. The partitions remain intact and are usable by clients. **Workaround:** Ensure that your policy change commands are correct. If you did not mean to change the destructive policy and want to keep your existing partitions, you can rename them with lunash:>**partition rename**.

Table 3: List of known issues from prior releases

Issue	Severity	Synopsis
LKX-4868	H	**Problem:** On a 64-bit client operating system, running **multitoken** with different BIP32 modes against an STC HA virtual slot causes **multitoken** to fail with an error (CKR_TOKEN_NOT_PRESENT). **Workaround:** Do not use BIP32 modes with STC HA groups; use NTLS instead.
LUNA-7438	H	**Problem:** When using **CKdemo** to perform a multipart sign/verify operation with a key that has exceeded its specified usage count, an expected error is returned (CKR_KEY_NOT_ACTIVE). The next sign/verify operation with an active key fails with an unexpected error (CKR_OPERATION_ACTIVE). **Workaround:** Restart **CKdemo** and attempt the operation again.
LUNA-7436	H	**Problem:** Encrypt operations using DES3_CBC_PAD and specifying a NULL buffer fail (CKR_BUFFER_TOO_SMALL). **Workaround:** Manually specify a buffer size for these operations.

Issue	Severity	Synopsis
LKX-4852	M	**Problem:** Reset timestamp displayed when reporting metrics via LunaSH or REST can vary, each time the commands are used, by approximately 6s. **Workaround:** Reset the timers. This causes the value to be written to a file, so that the reported reset time remains constant until the next reset.
LKX-4250	M	**Problem:** CA_DeriveKeyAndWrap does not handle AES_KW, AES_KWP, or AES_CTR mechanisms. **Workaround:** None.
LUNA-7418	M	**Problem:** When logged in to LunaSH as a custom user, resetting the appliance users to factory condition (lunash:>**sysconf config factoryreset -service users**) does not delete the currently logged-in user. **Workaround:** Log in to LunaSH as **admin** to reset the appliance user configuration.
LUNA-4134	M	**Problem:** When the SafeNet Luna Network HSM is configured for IPv6 connections, a missing file error is displayed in the output from lunash:>**network show** (`/usr/lunasa/lush/Lroot/Cnetwork/network_utility_common: line 63: /usr/lunasa/bin/getIPv6Prefix: No such file or directory`). **Workaround:** This error can be safely ignored.
LUNA-4133	M	**Problem:** NTLS connection fails when the appliance has the default hostname `local_host`. **Workaround:** Assign a unique hostname to the appliance (lunash:>**network hostname** <hostname>).
LKX-3184	M	**Applies to firmware 7.0.3 only. This issue has been fixed in firmware 7.2.0 and later.** **Problem:** If HSM policy 39: Enable Secure Trusted Channel has been set to **1** (ON) at any time, attempting a firmware rollback will cause the HSM to fail with an error (Unable to communicate with HSM). **Workaround:** None. If you are using STC, or have enabled HSM policy 39 in the past, do not roll back the HSM firmware.
LKX-2634	M	**Problem:** Cannot back up curve25519 key types to the SafeNet Luna Backup HSM. **Workaround:** Use cloning or HA to back up your curve25519 key types to another SafeNet Luna 7.x HSM.
LUNA-3554	M	**Problem:**The appliance remains disconnected from the network, even though the appliance itself is back online and fully functional. **Workaround:** Reboot the appliance.
LUNA-3423	M	**Problem:** A failed C_WrapKey call on an STC partition configured for Cloning returns the error CKR_BUFFER_TOO_SMALL, while the same failure on an NTLS Cloning partition returns the error CKR_KEY_NOT_WRAPPABLE. **Workaround:** If you are checking logs for one of these exact errors, ensure that you search for the error associated with your connection type.

Issue	Severity	Synopsis
LUNA-3422	M	**Problem:** A failed C_WrapKey call on an STC partition configured for Key Export returns the error CKR_BUFFER_TOO_SMALL, while the same failure on an NTLS Cloning partition returns the error CKR_MECHANISM_INVALID. **Workaround:** If you are checking logs for one of these exact errors, ensure that you search for the error associated with your connection type.
LUNA-3421	M	**Problem:** A C_CloseAllSessions call on an STC partition configured for Key Export returns CKR_UNKNOWN, while the same call on an NTLS Key Export partition returns CKR_OK. **Workaround:** None.
LUNA-3416	M	**Problem:** When performing AES encryption on an HA group using AIX and SPARC clients, failover occasionally fails with an error (CKR_TOKEN_NOT_PRESENT). **Workaround:** None.
LUNA-3414	M	**Problem:** One-step Network Trust Link (NTLS) setup fails on Windows with error code CKR_CANCEL when SO Login Enforcement is enabled. **Workaround:** Use the multi-step NTLS setup procedure to create a connection to the SafeNet Luna Network HSM appliance.
LUNA-3343	M	**Problem:** When using STC in a high traffic or high multi-threaded application scenario, the error CKR_STC_RESPONSE_REPLAYED is occasionally generated and causes subsequent commands to fail. **Workaround:** Restart the client application, and the error will clear.
LUNA-3307	M	**Problem:** In LunaCM, **clientconfig deploy** (one-step NTLS) fails if the partition name contains spaces. **Workaround:** Use the multi-step NTLS connection procedure to assign the partition to the client.
LUNA-3291	M	**Problem:** When you uninstall the Luna HSM Client software and reinstall it in a custom directory, existing IPv6 NTLS connections are broken. The existing client IPv6 certificates are not copied to the new client certificate directory. **Workaround:** Manually copy the IPv6 certificates to the new client certificate directory.
LUNA-3108	M	**Problem:** If you uninstall Luna HSM Client and reinstall it in a custom directory, HA logging stops working. **Workaround:** Open **crystoki.conf**/**crystoki.ini** and edit `haLogPath =` to match the new client path.
LUNA-3107	M	**Problem:** If you uninstall Luna HSM Client and reinstall it in a custom directory, RBS stops working. **Workaround:** Copy the two certificate files **serverkey.pem** and **server.pem** from the original **rbs** directory to the new **rbs** directory.

Issue	Severity	Synopsis
LUNA-3070	M	**Problem:vtl cklog enable**/**disable** command not working if LibUNIX and LibUNIX64 are in different folders. **Workaround:** Enable **cklog** manually by editing Chrystoki.conf/crystoki.ini. Refer to the *SDK Reference Guide* for details.
LUNA-2646	M	**Problem:** One-step NTLS can fail after installing, uninstalling, and reinstalling the Luna HSM Client on Windows. **Workaround:** Use the multi-step NTLS setup procedure to create a connection to the SafeNet Luna Network HSM appliance.
LUNA-2445	M	**Problem:** The default maximum length for HA log files is incorrectly set to 40000 bytes, and misreported in LunaCM as 262144 bytes (the intended minimum). This can lead to many small HA log files being rotated frequently. **Workaround:** Manually set the HA log maximum file size using lunacm:>**hagroup halog -maxlength** <bytes> the first time you configure HA logging.
LUNA-2261	M	**Problem:** "CKR_DATA_INVALID" on wrap/unwrap with **multitoken** on AIX and Solaris clients. **Workaround:** None.
LUNA-2252	M	**Problem:** Invalid options are displayed on Solaris installer. **Workaround:** Only the SafeNet Luna Network HSM is supported for Solaris; drivers for the PCIe HSM and USB HSM options are not provided at this time. If multiple options appear when installing Luna HSM Client on Solaris, choose Network HSM only.
LUNA-2224	M	**Problem:** When you initialize an STC partition by applying a partition policy template, a confusing error (CKR_TOKEN_NOT_PRESENT) is returned. **Workaround:** None.
LUNA-2199	M	**Problem:** LunaCM occasionally freezes in Windows 2016 when a new slot is created or deleted. **Workaround:** End the LunaCM instance with Task Manager and restart LunaCM.
LUNA-2007	M	**Problem:** Unable to establish NTLS connection using the one-step NTLS procedure on Solaris x86 when there are more partitions(10~15). **Workaround:** Use the multi-step NTLS connection procedure on a Solaris client.
LUNA-1927	M	**Problem:** Unable to add new member to HA group after removing primary member. **Workaround:** Manually delete the serial number of the deleted Network HSM's partition from the `VirtualToken00Members` field in the **Chrystoki.conf** (Linux/UNIX) or **crystoki.ini** (Windows) file and then add the new partition to the existing HA group. It is added successfully, and the old entry from the lunacm HA list is also removed.

Issue	Severity	Synopsis
LUNA-1725	M	**Problem:** In LunaCM, **partition archive restore -replace** does not replace DUPLICATED objects in target partition. **Workaround:** Remove all duplicate objects from the target partition prior to running **partition archive restore -replace**.
LUNA-1592	M	**Problem:** When trying to run the **HALogin.java** script, a CKR_UNKNOWN error is returned. **Workaround:** None. Do not use the **HALogin.java** sample.
RAPI-1211	M	**Problem:** In REST API, **GET /api/lunasa/hsms** may return an empty list. **Workaround:** Another attempt may return a populated list if an HSM is available.
RAPI-383	M	**Problem:** REST API does not verify the NTLS client's IP against the certificate. **Workaround:** None.
CPP-3261	M	**Problem:** After performing **sysconf config factoryreset**, the appliance host name is not reset. **Workaround:** None.
CPP-3241	M	**Problem:** Untarred audit log files are not visible to the user. **Workaround:** Untarred audit log files will not appear in the list of log files generated by the LunaSH command **my file list**, but they can still be verified using **audit log verify -file** <filename> **-serialsource** <serialnum>.
CPP-3191	M	**Problem:** After rebooting the appliance, occasionally clients cannot see partitions on the first connection attempt. **Workaround:** Run the **vtl verify** command again. The second attempt should be successful.
CPP-2954 LUNA-3352	M	**Problem:** The hsmCriticalEvent and hsmNonCriticalEvent counters incorrectly track HSM events. **Workaround:** None. SNMP hsmCriticalEvent and hsmNonCriticalEvent counters are not implemented in this release and will always remain 0.
CPP-2505 LUNA-132	M	**Problem:** When configuring a network device for IPv6 using SLAAC or DHCPv6, the IPv6 address is retrieved, but the name server and search domain are not. **Workaround:** Configure the name server and search domain manually, using the LunaSH command **network dns add** {**-nameserver** <IP_address> **|** **-searchdomain** <net_domain>}.
CPP-2368	M	**Problem:** The **hagroup list** command returns an error. **Workaround:** Run the **hagroup list** command again. The second attempt should be successful.

Issue	Severity	Synopsis
CPP-1339	M	**Problem:** In LunaSH, **sysconf config restore** does not restore the SSH password for the admin user. If the password is not reset immediately, the admin user will be unable to log in to the appliance in subsequent SSH sessions. **Workaround:** Use **sysconf config clear** to reset the admin password to the default. You must do this in the same session that you used to run the **sysconf config restore** command.
CPP-632 LUNA-7429	M	**Problem:** When using CKdemo with HA groups, an **Attribute type invalid** error is returned. **Workaround:** If you plan to use HA groups, change your CKdemo settings to use legacy role logins. To do this, select **Role Support** from the **98) Options** in the **OTHERS** menu.
CPP-626 CPP-624	M	**Problem:** If you zeroize an HSM hosting an HA group member partition, all running cryptographic operations against the HA group fail. **Workaround:** Remove any member partition from the HA group before zeroizing the host HSM.
LUNA-3511	L	**Problem:** Audit logging: **hsm zeroize** is not logged after performing a factory reset of the HSM, since the audit configuration is erased during factory reset. **Workaround:** None.
LUNA-3276	L	**Problem:** When installing the Luna HSM Client software to a custom directory with spaces in the directory name, the installer creates a new named directory that ignores everything after the first space. **Workaround:** Do not use spaces when naming your custom install directory.
LUNA-3126	L	**Problem:** After running lunash:> **hsm ped connect** on an uninitialized SafeNet Luna Network HSM, **hsm ped show** may incorrectly display `Number of Connected PED Server : 0`. **Workaround:** None necessary; this behavior does not affect the functioning of Remote PED.
LUNA-2103	L	**Problem:** If you enter duplicate policies (policies with the same ID) in the partition policy template, the partition will take the last value. **Workaround:** Avoid duplicate policy IDs in partition policy template files.
LUNA-2022	L	**Problem:** Incorrect warning displayed when changing ssh restriction to bond slave device. Message displayed is "Warning: SSH is already restricted to the specified ip address / ethernet card. No changes made." **Workaround:** None. You cannot bind SSH to a bond slave.
LUNA-2015	L	**Problem:** Default ntlsOperStatus for SNMP is incorrectly set to **0** (correct value: **3**). This can lead to errors in applications that adhere to syntax strictly. **Workaround:** None.

Issue	Severity	Synopsis
LUNA-339	L	**Problem:** Some appliance sensor information is missing or incorrectly reported via SNMP. **Workaround:** Use the LunaSH command **status sensors** to obtain this information.
LUNA-218	L	**Problem:** You cannot add a host or network route using the LunaSH **network route add** command without including the gateway value. **Workaround:** None.
RAPI-1096	L	**Problem:** After modifying the webserver settings the **apiversion** under **/api/lunasa** becomes 0. **Workaround:** Restart the webserver service.
CPP-3404	L	**Problem:** CMU may crash or report a memory allocation error when using a non-FIPS signing mechanism in FIPS mode. **Workaround:** Specify a FIPS-approved signing mechanism such as **sha256withRSA**.
CPP-3384 LUNA-1585	L	**Problem:** After zeroization or factory reset, the STC cipher option is set to NULL_ENC. Output from **hsm stc status** includes "Cipher Name: No Cipher". **Workaround:** Run the LunaSH command **hsm stc cipher enable -all** to enable all available STC ciphers.
CPP-3235	L	**Problem:** In LunaCM, the **partition clone** command fails the first time if the Partition SO is logged in to the target slot. **Workaround:** Run the **partition clone** command again. The second attempt should be successful.
CPP-2960	L	**Problem:** LunaCM hangs on exit on Windows 2016. **Workaround:** End the LunaCM instance using the Task Manager.
CPP-2925	L	**Problem:** When the **cklog** library is configured, an **error.txt** file containing extraneous messages may be created. **Workaround:** None.
CPP-2380	L	**Problem:** When running the **MiscCSRCertificateDemo.java** sample, a null pointer exception occurs. **Workaround:** None.
CPP-1249 LUNA-1681	L	**Problem:** Remote backup through TCP/IP via the LunaCM command **partition archive backup -slot remote -hostname** <hostname> **-port** <portnum> is not recognized. **Workaround:** Use RBS to backup partitions remotely.
CPP-932	L	**Problem**: If the configured audit logging directory is not found, the **PEDclient** service fails with error **LOGGER_init failed**. **Workaround**: Ensure that the directory you configure for audit logging exists.

Resolved Issues

This section lists issues that have been resolved for the current release.

Table 4: List of resolved issues

Issue	Severity	Synopsis
LKX-4543	H	**Problem:** After a firmware update, duplicate entries are produced in the audit logs. These duplicate entries cause log verification to fail with an error (CKR_LOG_BAD_RECORD_HMAC). **Resolved:** Fixed in Luna release 7.4.
LUNA-7499	M	**Problem:** Private BIP32 Key Injection (combination of private key encryption and unwrapping operations) was not implemented in Luna 7.3. **Workaround:** The call has been included in Luna release 7.4.
LUNA-7164	M	**Problem:** When a bad remote logging host is added, existing hosts that were functioning correctly stop receiving logs. **Resolved:** Fixed in Luna release 7.4.
LUNA-3691	M	**Problem:** When resetting the HSM to factory conditions with audit logging enabled and an existing audit log file, new events are not logged after the Auditor role is re-initialized. **Resolved:** Fixed in Luna release 7.4.
LUNA-3683	M	**Problem:** On Linux clients, when a non-root user attempts to uninstall the Luna HSM Client software, the process fails and the client software remains installed, but "`Uninstall of the Luna HSM Client 7.3.0-165 completed`" is displayed in the command output. **Resolved:** Fixed in Luna release 7.4.
LUNA-3429	M	**Problem:Error: pedClient is not currently running** error is displayed when trying to connect with PEDserver using lunash:>**hsm ped connect**, even though the **cbs** service is shown to be running. **Resolved:** Fixed in Luna release 7.4.
LUNA-7430	L	**Problem:** When running commands in some Luna utilities on Windows 10, password characters are duplicated. **Resolved:** Fixed in Luna release 7.4.
LUNA-7194 RAPI-1416	L	**Problem:** Webserver starts even if no SSL key/cert exists, but is not accessible. **Resolved:** Fixed in Luna release 7.4.

Revision History

Revision A: 30 January 2019

- Initial Release

Revision B: 20 June 2019

- Added notice "Important note about 10 Gbps Optical Ethernet modules" on page 5
- Added to **Advisory Notes**: "Support for 32-bit OS Platforms is Ending" on page 5

Revision C: 19 July 2019

- Added to **Advisory Notes**: "HSM Firmware version 7.3.3 is FIPS 140-2 validated. " on page 2
- Added to **Advisory Notes**: "HSM Firmware version 7.3.3 caveats " on page 4
- Updated table in "Valid Update Paths" on page 9

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 Gemalto Customer Support.

Gemalto Customer Support operates 24 hours a day, 7 days a week. Your level of access to this service is governed by the support plan arrangements made between Gemalto and your organization. Please consult this support plan for further information about your entitlements, including the hours when telephone support is available to you.

Customer Support Portal

The Customer Support Portal, at https://supportportal.gemalto.com, is where you can find solutions for most common problems. The Customer Support Portal is 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. You can also use the portal to create and manage support cases.

> **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. (KB0013367)

Email Support

You can also contact technical support by email at technical.support@gemalto.com.