

SafeNet Luna Network HSM 7.0

Installation Guide

Document Information

Product Version	7.0
Document Part Number	007-013576-002
Release Date	02 June 2017

Revision History

Revision	Date	Reason
Rev. A	02 June 2017	Initial release.

Trademarks, Copyrights, and Third-Party Software

Copyright 2001-2017 Gemalto. All rights reserved. Gemalto and the Gemalto logo are trademarks and service marks of Gemalto 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.

Table 1: Third-party software used in this product

Software	License and copyright
editline	This product incorporates editline licensed under Apache v2.0 Open Software. Copyright 1992, 1993 Simmule Turner and Rich Salz. All rights reserved. You can obtain the full text of the Apache v2.0 Open Software license at the following URL: https://www.apache.org/licenses/LICENSE-2.0
libFDT	Dual License Choice of BSD or GPL-2.0 Copyright (C) 2006 David Gibson, IBM Corporation.
libsodium	ISC License (ISCL) Copyright (C) 2013-2016
Linux Kernel	GPL-2.0
OpenSSH	This product uses a derived version of OpenSSH Copyright 1995 Tatu Ylonen , Espoo, Finland. All rights reserved . Copyright 1995, 1996 by David Mazieres . Copyright 1983, 1990, 1992, 1993, 1995 The Regents of the University of California. All rights reserved You can obtain the full text of the OpenSSH license at the following URL: https://www.openbsd.org/policy.html
OpenSSL	SSLeay License Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com) OpenSSL license

Software	License and copyright
	Copyright (C) 1998-2002 The OpenSSL Project
Software implementation of SHA2	Proprietary license Copyright (C) 2002, Dr Brian Gladman, Worcester, UK.
Software implementation of AES	Proprietary license Copyright (C) 2001, Dr Brian Gladman <brg@gladman.uk.net>, Worcester, UK.

Disclaimer

All information herein is either public information or is the property of and owned solely by Gemalto 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 Gemalto'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, Gemalto 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, Gemalto reserves the right to make any change or improvement in the specifications data, information, and the like described herein, at any time.

Gemalto 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 Gemalto 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.

Gemalto 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 Gemalto be held liable for any third party actions and in particular in case of any successful attack against systems or equipment incorporating Gemalto products. Gemalto 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 Gemalto.

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 Gemalto-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 Installation Guide	7
Customer Release Notes		7
Audience		7
Document Conventions		8
Notes		8
Cautions		8
Warnings		8
Command Syntax and Typeface Conventions		8
Support Contacts		9
1	SafeNet Luna Network HSM Hardware Installation	10
SafeNet Luna Network HSM Required Items		11
Basic SafeNet Luna Network HSM order items		11
PED-Authenticated SafeNet Luna Network HSM order items		13
Optional Items		15
Rack-Mounting the SafeNet Luna Network HSM		16
Using the Supplied Mounting Brackets		16
Using the Optional Sliding Rail System		19
Installing the SafeNet Luna Network HSM Hardware		23
Installation Notes		23
Installing the SafeNet Luna Network HSM Hardware		23
2	SafeNet Luna Remote PED Installation and Configuration	26
Required Items		26
Remote PED Setup		28
3	SafeNet Luna HSM Client Software Installation	32
Linux SafeNet Luna HSM Client Software Installation		33
Prerequisites		33
Installing the Client Software		34
Controlling User Access to Your Attached HSMs and Partitions		35
Uninstalling the Client Software or Removing Components		36
Java Configuration		36
Scripted or Unattended Installation		37
Interrupting the Installation		38
Windows SafeNet Luna HSM Client Installation		40
Required Client Software		40
Prerequisites		40
Installing the Luna HSM Client Software		40
Java		44
CSP and KSP		46
Uninstalling or Modifying the SafeNet Luna Client Software		46

After Installation	47
Troubleshooting	47
Scripted/Unattended Windows Installation/Uninstallation	49
Installing the Luna HSM Client for the SafeNet Luna Network HSM	49
Installing the Luna HSM Client for the SafeNet Luna PCIe HSM	50
Installing the Luna HSM Client for the SafeNet Luna USB HSM	50
Installing the Luna HSM Client for the SafeNet Luna Backup HSM	51
Installing the Luna HSM Client for Remote PED	52
Uninstalling the Luna HSM Client	52

PREFACE

About the Installation Guide

This document describes how to install the SafeNet Luna HSM hardware and the SafeNet Luna Client software. Refer to the following chapters to install the hardware and software components applicable to you:

SafeNet Luna HSM hardware installation

- ["SafeNet Luna Network HSM Hardware Installation" on page 10](#)

SafeNet Remote PED installation and configuration

- ["SafeNet Luna Remote PED Installation and Configuration" on page 26](#)

SafeNet Luna Client software installation

- ["SafeNet Luna HSM Client Software Installation" on page 32](#)

Document information

This preface also includes the following information about this document:

- ["Customer Release Notes" below](#)
- ["Audience" below](#)
- ["Document Conventions" on the next page](#)
- ["Support Contacts" on page 9](#)

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 this release that is not included in the customer documentation. Read the CRN to fully understand the capabilities, limitations, and known issues for this release. You can view or download the latest version of the CRN from the Technical Support Customer Portal at <https://supportportal.gemalto.com>.

Audience

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

All products manufactured and distributed by Gemalto 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	The bold attribute is used to indicate the following: <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.

Format	Convention
[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.
{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

Contact method	Contact	
Phone (Subject to change. An up-to-date list is maintained on the Technical Support Customer Portal)	Global	+1 410-931-7520
	Australia	1800.020.183
	India	000.800.100.4290
	Netherlands	0800.022.2996
	New Zealand	0800.440.359
	Portugal	800.863.499
	Singapore	800.1302.029
	Spain	900.938.717
	Sweden	020.791.028
	Switzerland	0800.564.849
	United Kingdom	0800.056.3158
	United States	(800) 545-6608
Web	https://safenet.gemalto.com	
Technical Support Customer Portal	https://supportportal.gemalto.com Existing customers with a Technical Support Customer Portal account can log in to manage incidents, get the latest software upgrades, and access the Knowledge Base. To create a new account, click the Register link at the top of the page. You will need your Customer Identifier number.	

SafeNet Luna Network HSM Hardware Installation

This chapter describes how to install and connect a SafeNet Luna Network HSM. To ensure a successful installation, perform the following tasks in the order indicated:



1. Ensure that you have all of the required components, as listed in "[SafeNet Luna Network HSM Required Items](#)" on [the next page](#)
2. If you plan to mount the hardware in an equipment rack, follow the instructions in "[Rack-Mounting the SafeNet Luna Network HSM](#)" on [page 16](#).
3. Install and connect the hardware, as described in "[Installing the SafeNet Luna Network HSM Hardware](#)" on [page 23](#)


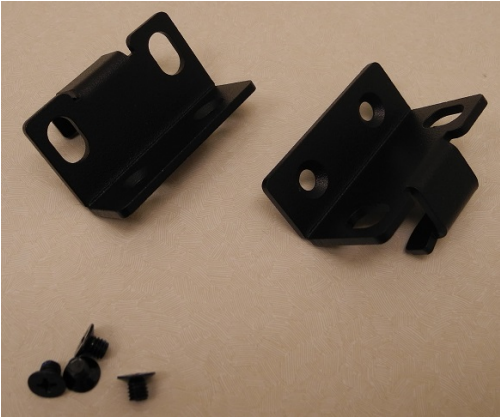
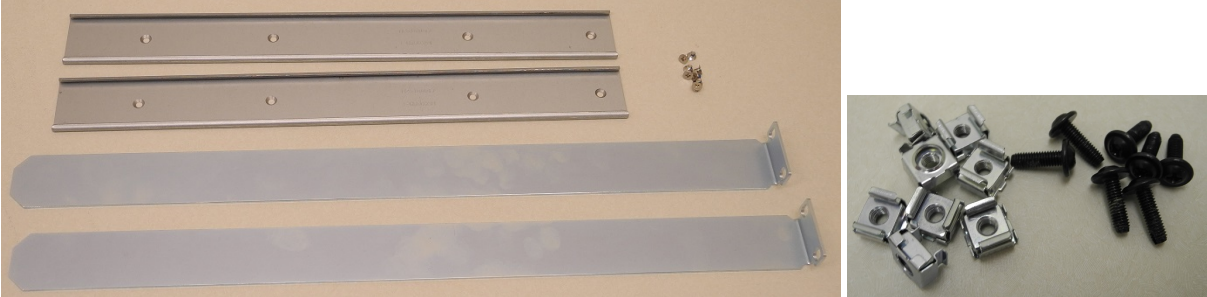
SafeNet Luna Network HSM Required Items


This section provides a list of the components you should have received with your SafeNet Luna Network HSM order. The specific items you received depend on whether you ordered a password-authenticated or a PED-authenticated SafeNet Luna Network HSM, and whether your order included a backup device or other options as described below.

Basic SafeNet Luna Network HSM order items

The standard items that you should have received as your basic order for a SafeNet Luna Network HSM are:

Qty	Item
1	<p>SafeNet Luna Network HSM Appliance</p>  <p>Your order should include one password-authenticated or PED-authenticated SafeNet Luna Network HSM. The different HSM models appear physically identical.</p>
2	<p>Power Supply Cord</p>  <p>One for each power supply, with connectors appropriate to your region of operation.</p>
1	<p>Adapter Cable: RJ45 to USB with a standard eight-pin, eight connector (8P8C) modular connector</p>


Qty	Item
	 <p data-bbox="248 737 1084 768">Used to open a terminal connection to the HSM during initial configuration.</p>
1	<p data-bbox="248 793 516 825">Front Ear Bracket Set</p>  <p data-bbox="248 1266 399 1297">Set includes:</p> <ul data-bbox="248 1308 529 1373" style="list-style-type: none"> • 2x front ear brackets • 4x bracket screws
1	<p data-bbox="248 1402 516 1434">Mounting Bracket Set</p>  <p data-bbox="248 1755 1354 1787">See "Using the Supplied Mounting Brackets" on page 16 for installation instructions. Set includes:</p> <ul data-bbox="248 1797 431 1829" style="list-style-type: none"> • 2x side rails



Qty	Item
	<ul style="list-style-type: none"> • 8x side rail screws • 2x sliding rear brackets (fit into the rails for rear support adjustable positioning) • 8x 10/32 cage nuts • 8x rack screws
1	<p data-bbox="245 436 516 468">Secure Locking Bezel</p>  <p data-bbox="245 800 1450 926">For maximum physical security, this faceplate bezel can restrict access to the SafeNet Luna Network HSM's front-facing inputs. Certain security standards require the use of these physical access measures. Includes set of three (3) keys for each lock (locks are keyed differently). The keys cannot be removed from the bezel while they are in the horizontal (unlocked) position.</p>

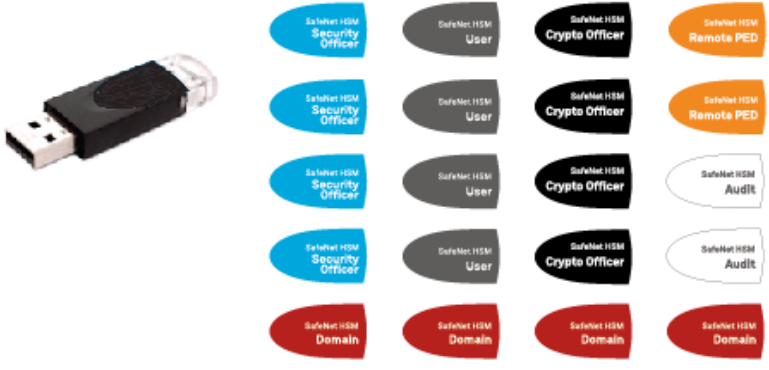
PED-Authenticated SafeNet Luna Network HSM order items

If you ordered a PED-authenticated SafeNet Luna Network HSM, you should have received some combination of the following items in addition to the items in the basic order.

Note that you can use PED keys that you already own and use with other HSMs – PED keys can be used with multiple HSMs if that is appropriate in your context. You should purchase the number of PEDs you need for your own convenient operation, and for backup/standby units as your security policies might require.


Qty	Item
1+	<p data-bbox="245 1316 737 1348">Standard or Remote-Capable Luna PED</p>  <p data-bbox="245 1839 821 1871">Your order should include at least one PED device.</p>


Qty	Item
	<p>If you intend to back up your SafeNet Luna Network HSM to a SafeNet Luna Backup HSM, then you require a Luna PED to connect to that Backup HSM.</p> <p>If you intend to combine remote operation and backup, you might prefer to have a second PED. It is possible to use a single Luna PED for both connections, and to simply change between local and remote mode as needed.</p> <p>Note that you can use PED keys that you already own and use with other HSMs if appropriate. You should purchase the number you need for your own convenient operation, and for backup/standby units as your security policies might require.</p>
1	<p>Luna PED cable</p>  <p>The PED device connects to your HSM using a Type A to Mini B USB cable .</p>
1	<p>Luna PED Power Supply Kit</p>  <p>If you ordered a Luna PED, your order should include a Luna PED power supply kit with the appropriate connection for your region. The power supply is auto-sensing and includes replaceable mains plug modules for international use.</p>
1	<p>Set of PED Keys and Labels</p>

Qty	Item
	 <p>Your order should include a set of iKey PED keys and peel-and-stick labels.</p>

Optional Items

You may have also ordered one or more of these optional items:

Qty	Item
1	<p>Sliding Rail Rack Mounting Set</p>  <p>The SafeNet Luna Network HSM will fit into any standard 19-inch server rack. The optional sliding rail mounts allow for easy removal and access to the rear face of the HSM. See "Using the Optional Sliding Rail System" on page 19 for installation instructions. The set includes:</p> <ul style="list-style-type: none"> • 2x sliding rail mounts with removable side rails • 2x transformer brackets • 4x round-headed mounting screws • 4x flat-headed mounting screws • 6x rail screws
1	<p>SafeNet Luna Backup HSM</p>

Qty	Item
	 <p>You can back up your selected SafeNet Luna Network HSM partition contents (root keys, certificates, other items) to a SafeNet Luna Backup HSM. The SafeNet Luna Backup HSM is suitable for off-site storage and for backing up multiple HSM partitions. It can back up contents of password-authenticated or of PED-authenticated HSMs. It must be initialized as one type or the other before the backup operation starts.</p> <p>The SafeNet Luna Backup HSM can be connected directly to an HSM, or it can be connected to a separate computer to back up remotely-located HSMs in conjunction with a Remote PED.</p> <p>The authentication method for a backup HSM must match the authentication method (password or PED) for any HSM with which it is used.</p>

Rack-Mounting the SafeNet Luna Network HSM

The SafeNet Luna Network HSM appliance comes with front ear brackets, side rails, rear slider brackets, and the necessary screws packed separately in the carton. You may also have ordered the optional sliding rail mounting system. See "[SafeNet Luna Network HSM Required Items](#)" on page 11 for details. Instructions for installing both systems are provided below:

- If you intend to use the supplied mounting brackets, see "[Using the Supplied Mounting Brackets](#)" below.
- If your order included the optional sliding rail mounting system, see "[Using the Optional Sliding Rail System](#)" on page 19. The sliding rails are recommended for ease of installation and maintenance.



CAUTION: Do not attempt to mount the appliance using only the front brackets – damage can occur.

Using the Supplied Mounting Brackets

Install and adjust the rails and brackets to suit your equipment rack. The standard mounting bracket set is designed for use in racks with a maximum depth of 27 inches (686 mm). For racks larger than 27 inches, a mounting tray or shelf is recommended.

Ensure you have all the necessary components before proceeding. In addition to the supplied components, you will need:

- #2 Philips screwdriver
- hydraulic equipment lift

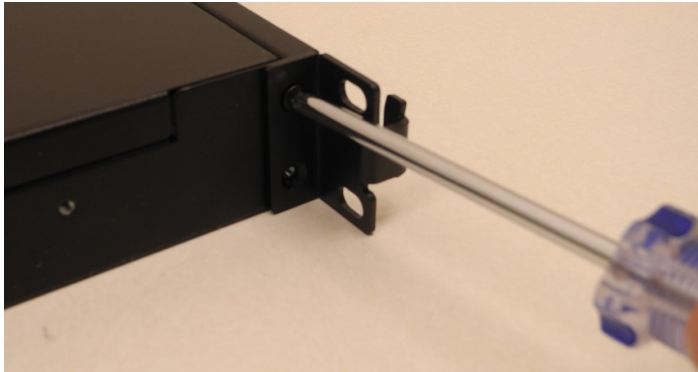


CAUTION: If you are installing the appliance in a rack without a mounting tray or shelf, ensure that the appliance is supported at all times or damage may occur. Use of a hydraulic equipment lift is strongly recommended. If you do not have access to a lift, you will need at least one assistant to mount the appliance.

To mount the SafeNet Luna Network HSM hardware:

1. Install the two front ear mounting brackets on the HSM chassis using the included screws and a #2 Phillips

screwdriver.



2. Install the eight included cage nuts into the rack space where you want to install the appliance. Ensure that they are spaced correctly.



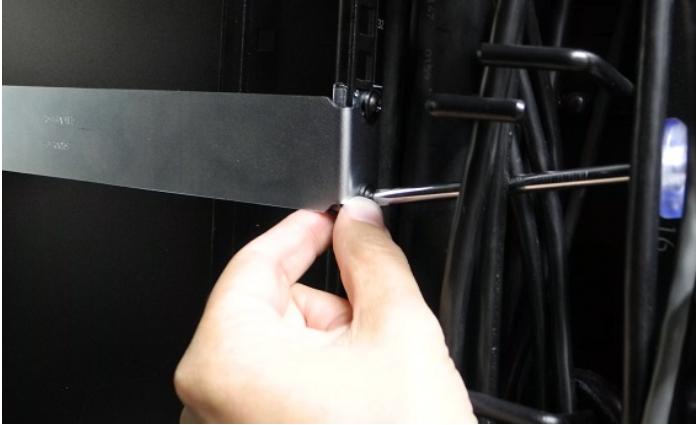
3. Install the two side rails on either side of the HSM chassis, using the included screws and a Phillips screwdriver. Note how the sliding rear brackets fit into the side rails.



4. Install the two sliding rear brackets in your equipment rack using four of the rack mounting screws (included).



Note: While any standard equipment rack screws should fit the brackets, certain large-headed screws may interfere with the operation of the secure locking bezel. To avoid this, use only the screws included with the mounting bracket set.

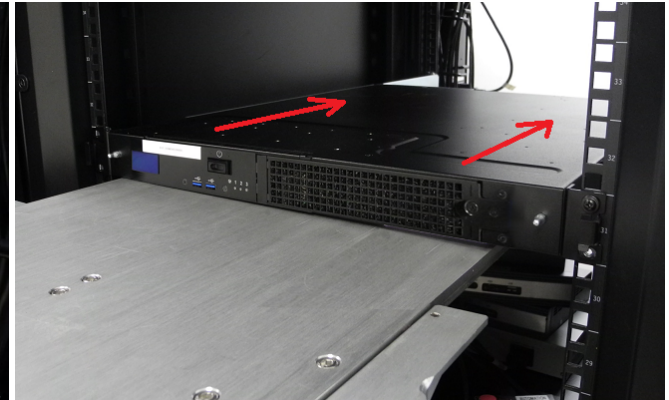


- Using a hydraulic lift, raise the HSM to the level of the brackets and extend the lift into the rack.



CAUTION: Perform the next step from the rear of the server rack. Do not push the HSM off the lift without supporting its rear end.

- From the rear of the server rack, pull the appliance back towards you until the sliding rear brackets fit into the side rails. Pull the appliance back onto the rear brackets until the front ear brackets meet the equipment rack.



CAUTION: Support the weight of the appliance with the hydraulic lift until all four brackets are secured.

- Secure the front ear brackets using the last four included rack mounting screws.



See "[SafeNet Luna Network HSM Hardware Installation](#)" on page 10 to continue the installation process.

Using the Optional Sliding Rail System

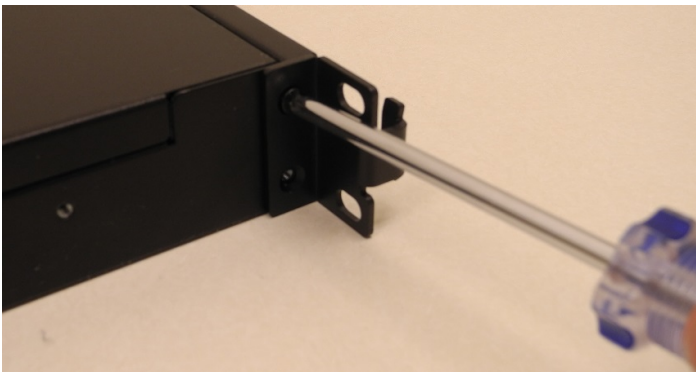
The optional sliding rail system allows for the appliance to be extended out in front of the equipment rack, possibly easing access to other racked appliances. This should rarely be necessary. After configuration, the SafeNet Luna Network HSM should remain secured in the rack with the locking bezel installed. Some security standards require the use of this bezel. Leaving the HSM uncovered for ease of access may compromise security.

The sliding rail mounts should fit into any standard 19" equipment rack.

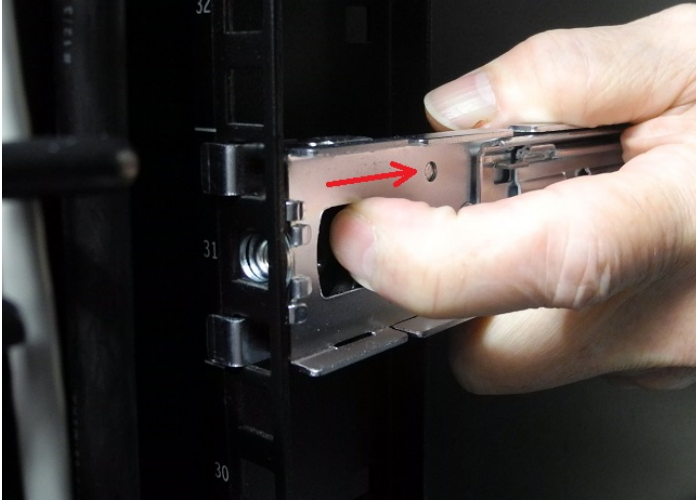
Ensure you have all the necessary components before proceeding. In addition to the supplied components, you will need a #2 Phillips screwdriver.

To mount the SafeNet Luna Network HSM hardware:

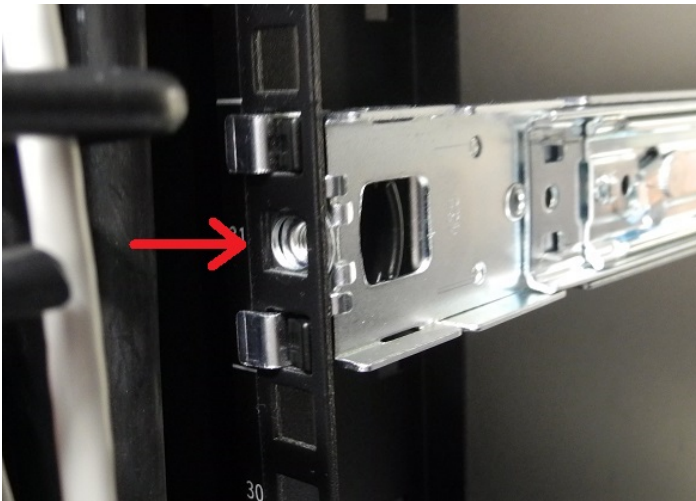
1. Install the two front ear mounting brackets on the HSM chassis using the included screws and a #2 Phillips screwdriver.



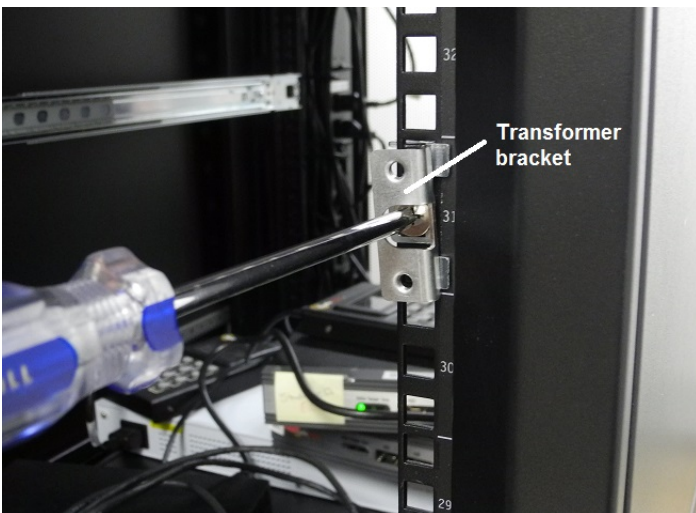
2. Fit the front end of each mount into either side of the rack and pull the spring-loaded latch at the rear to snap it in place.



3. Secure the rear end of each mount to the rack with one of the four wide flat-headed screws.



4. Fasten the transformer bracket to each sliding mount with the remaining two wide flat-headed screws.



5. Loosely thread two of the six smaller flat-headed screws into each side of the SafeNet Luna Network HSM. Fit

each sliding rail over the screw heads and slide it forward into place before tightening the screws. Fasten each sliding rail with a third screw where it lines up with the hole in the HSM chassis.



6. Fit the sliding rails onto the rack mounts until they lock into place.



7. The HSM should now move smoothly and securely on the rails. Push the HSM all the way back and secure it to the transformer bracket with the four rounded screws.



Note: Use only the screws included with the SafeNet Luna Network HSM. Screws that are too large can prevent the locking bezel from fitting to the faceplate.



See ["Installing the SafeNet Luna Network HSM Hardware"](#) on the next page to continue the installation process.

Installing the SafeNet Luna Network HSM Hardware

This section provides basic SafeNet Luna Network HSM hardware installation instructions (connecting cables, booting, etc.). If you intend to mount the appliance in a standard equipment rack, see ["Rack-Mounting the SafeNet Luna Network HSM" on page 16](#) before following these instructions.



Note: Certain security standards require the HSM to be locked in an equipment rack with restricted physical access. If your organization uses such standards, see ["Rack-Mounting the SafeNet Luna Network HSM" on page 16](#).

Installation Notes

- Any computer that is to act as a client to the SafeNet Luna Network HSM appliance must have the Client software installed. Windows users should log in to your computer as a user with Administrator privileges.
- A computer that is to be used only for administering the SafeNet Luna Network HSM does not need the Client software – only an SSH client such as the provided PuTTY program for Windows, or the SSH utilities that come standard with most Linux and UNIX platforms.
- A computer that is to be used for Remote PED workstation operation against a SafeNet Luna Network HSM must have the PEDServer software and PED USB driver installed. Applies to select Windows platforms only.
- All three tasks (Client, administration, and Remote PED) can be performed on a single computer, but in normal practice they are often separate tasks for separate computers.
- See ["SafeNet Luna Remote PED Installation and Configuration" on page 26](#) if you will be using Remote PED.

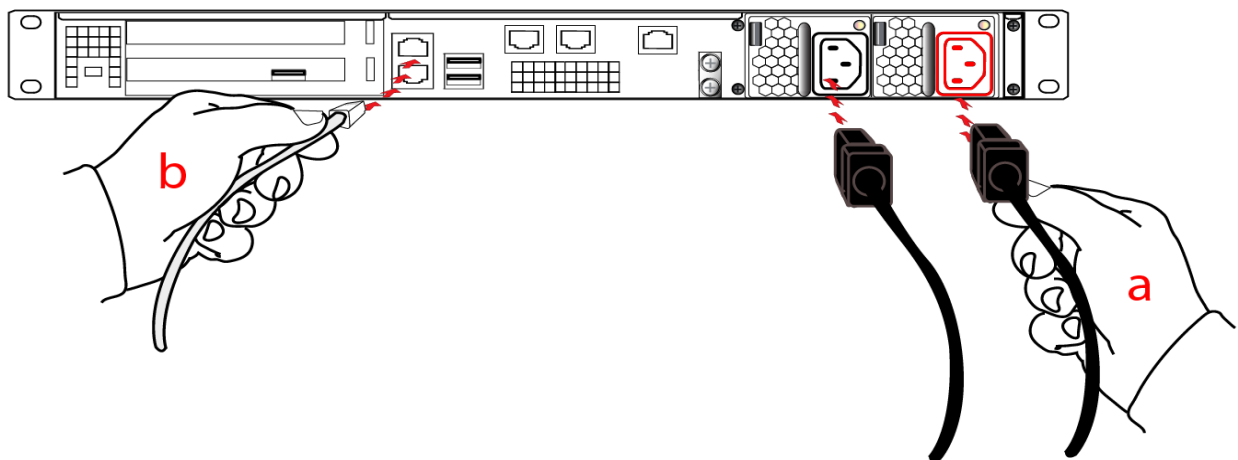
Installing the SafeNet Luna Network HSM Hardware

Follow these instructions to install and begin configuring the appliance.

To install the SafeNet Luna Network HSM hardware:

1. Insert the power (a) and network (b) cables at the rear panel.

For proper redundancy and best reliability, the power cables should connect to two completely independent power sources.

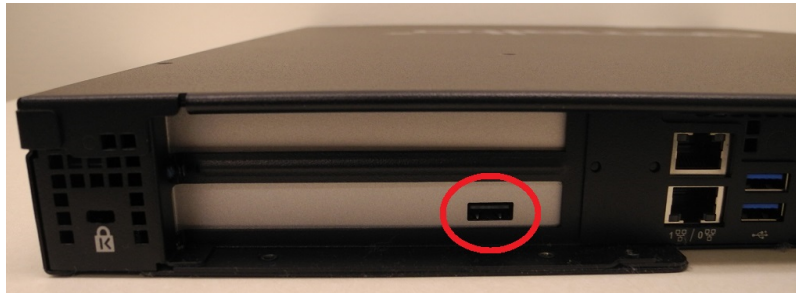


2. If you have a PED-authenticated SafeNet Luna Network HSM, connect the PED directly to the HSM card's USB

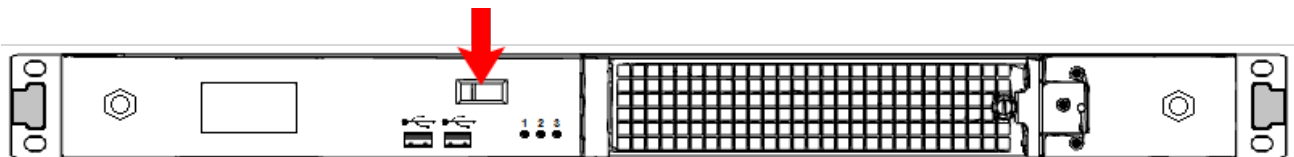
port (on the rear panel's left side), using the included USB-to-MiniUSB PED cable. See also "[SafeNet Luna Remote PED Installation and Configuration](#)" on page 26. If you have a password-authenticated HSM, skip to the next step.



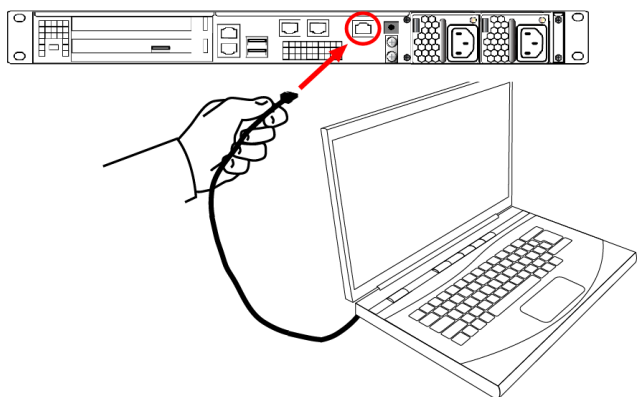
Note: The PED must be connected to a suitable power source. The USB 2.0 connection does not provide enough power to run the PED.



3. Press and release the Start/Stop switch on the front panel.



4. Connect the terminal port on the HSM appliance's rear panel to a dumb terminal, PC, or laptop, using the USB-to-RJ45 adapter cable (supplied). This terminal provides serial access to LunaSH for initial network configuration. See "[Open a Connection](#)" on page 1 for more information.



5. If you have already installed SafeNet Luna Client software, consult the *Configuration Guide* to configure your SafeNet Luna Network HSM and peripheral devices, if appropriate.
6. For maximum physical access security, when you are finished configuring the HSM, fit the locking bezel over the HSM's faceplate. Certain security standards require the use of these physical access measures. The locks fit over the posts highlighted below.



Turn the keys to the vertical position to lock the bezel. The keys cannot be removed if the bezel is unlocked. The two locks are keyed differently, so the keys can be issued to different security personnel and kept in secure, separate locations.



Note: Leaving the keys in the bezel may interfere with closing the rack door and compromise security.



SafeNet Luna Remote PED Installation and Configuration

This chapter describes how to install, connect, and configure a SafeNet Luna Remote PED.

The standard PED is intended to connect directly to the HSM, and receives its power, as well as instructions and data via that connection. The Remote PED can act as a local PED, when needed, and connects as described above. When used in Remote PED mode, the PED connects to a computer via USB, and therefore requires some additional hardware.

Remote PED can be distinguished from local PED by:


- An orange label **PED Remote** to the right of the SafeNet logo




PED remote


- Availability of menu item **7 Remote PED** from the PED's main menu

Required Items

The following items are included with your Remote PED. All are required for a successful installation.

Quantity	Item
1	<p>PED (Remote PED Capable and with firmware 2.7.1 or newer)</p> 
1	<p>PED Power Supply kit with replaceable mains plug modules for international use (required when the PED is operated in Remote PED mode)</p>

Quantity	Item
	
1	<p>Cable, USB 2.0, Type A to Mini B connectors (for Remote PED operation).</p> 
1	<p>Cable, Data, 9-pin, Micro-D to Micro-D connectors (for local PED operation prior to HSM firmware versions 7.x.).</p> 
1	<p>Ten-pack of iKey 1000 PED keys, and sheets of peel-and-stick labels</p>

Quantity	Item
	

Remote PED Setup

The Remote-Capable PED can be used either locally, connected directly to a SafeNet Luna HSM (exactly as for the standard PED), or remotely when connected to a suitable workstation. The Remote PED must be connected to the electrical main power supply.

The normal local use of a PED with Remote PED capability is to use it in Local mode to prepare an HSM. This is done by imprinting an RPV (remote PED vector) onto the HSM and also onto an RPK (the orange Remote PED Key) before shipping the HSM to its remote location. Then the PED can be switched to Remote PED mode, to serve any HSM that has an appropriate RPV.

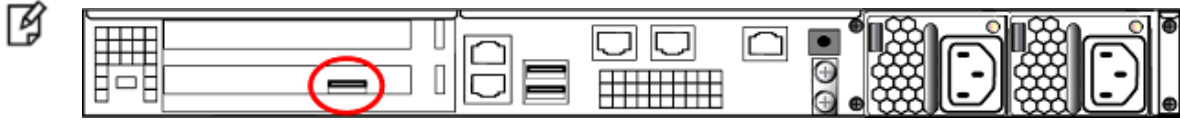
To configure the remote PED:

To use your HSM appliance and PED for local operation only, refer to the instructions in the *Configuration Guide* and the *HSM Administration Guide*.

To prepare an HSM for Remote PED operation, it needs a minimum of preparation as described in this section, below.

1. From the software media (DVD or downloaded, un-tarred archive file), install the SafeNet Luna HSM Client software onto the selected Windows computer that will act as the PED Server to your remotely located SafeNet Luna HSM, ensuring that the Remote PED option is selected. Let the Windows "Found New Hardware" dialog install it. The PedServer.exe and PedClient.exe applications are installed in SafeNet Luna HSM Client folder along with any other SafeNet tools.
2. For SafeNet Luna Network HSM, configure your HSM appliance for your network. Refer to the relevant *Configuration Guide* sections.
3. Imprint the HSM with a Remote PED key (orange). You must use a local connection for the first orange PED key imprint.
 - a. Connect the PED directly to the HSM that you will later be using remotely. Connect the PED to the power supply.

Note: To operate in Local PED-USB mode, the PED must be connected directly to the HSM card's USB port, and not one of the other USB connection ports on the appliance.



On power-up, the Luna PED automatically detects the active interface that it is plugged into, and defaults to the appropriate mode after the first command is sent to it. The Luna PED waits in either Remote PED-USB mode (if the PED is connected to a USB port) or in its Scanning state (if the PED is connected to an SCP port) until a command is received from the HSM.

- If the PED is directly connected to the HSM via USB port, it enters Local PED-USB mode.
 - If the PED is directly connected to the HSM via SCP port, it enters Local PED-SCP mode.
- b. For SafeNet Luna Network HSM only, log in as "admin" to the appliance (SSH session or local serial connection).
 - c. For SafeNet Luna Network HSM, issue the LunaSH command **hsm ped vector init**; or for SafeNet PCIe HSM or SafeNet USB HSM, issue the LunaCM command **ped vector init**.
 - d. When prompted, insert a blank (orange-labelled) PED key into the PED for imprinting; or re-use an already-imprinted orange PED key.
 - e. Bring the imprinted (orange) Remote PED key to your workstation, along with a Remote-capable PED.

The HSM can now be shipped to its remote locale.

You can perform other maintenance at this time, if convenient, but only the foregoing steps were required to be done locally - all future configuration and administration can be performed remotely.

To use the Remote PED:

Once an HSM has been imprinted with a Remote PED Key (RPK) vector, you can begin administering remotely, while also authenticating remotely from any workstation that has PED Server software and driver, a remote-capable PED, and an orange PED Key with the correct RPK (that you just imprinted in the previous steps).

1. On the PED power supply, slide the release catch as shown by the heavy arrow, and lift the pin protector (thinner arrow) from the power supply:



2. Choose a plug style that is appropriate for your country and place it in the power supply, top end first, then snap the

bottom end in the direction indicated by the arrow:



3. For remote PED operation:

- Connect the power supply to the AC mains
- Connect the DC power plug of the power supply to the DC power receptacle on the top of the PED:



- Connect the USB cable between the USB micro connector on the PED and a USB socket on your computer.

4. At the workstation-connected PED, press < on the PED keypad to navigate to the main menu, and then press 7 to enter Remote PED mode.

5. In a command-prompt window on the workstation, start the PED Server program in its listening mode:

```
c:\<yourRemotePed-directory>\pedserver -m start
```

6. Run the command **pedserver -m show** to verify that the PED is detected, and the system is ready for remote connection.

7. Start the PED Client - the Remote PED enabling process on the HSM host:

```
lunash:> hsm ped connect -ip <workstation_ip_address> -port 1503
```

or

```
lunacm:> ped connect -ip <workstation_ip_address> -port 1503
```

8. Perform an **hsm login** or **role login -name SO** (as appropriate). The PED prompts for the Remote PED key. Insert the imprinted Remote PED key associated with the connecting HSM appliance, and press **Enter**.

The PED then prompts for the HSM SO's blue PED key. Insert it and press **Enter**. A successful login confirms that the Remote PED connection is running properly.

Begin using and administering the remotely located SafeNet Luna HSM appliance via SSH session, and providing PED key authentication via the workstation-connected Remote PED whenever requested. Review the SafeNet Network HSM Help for information about timeouts with respect to Remote PED.



Note: Remote PED is served from a host computer running SafeNet Luna Client PED Server software. A Remote PED session is called by an instance of PED Client running on the computer hosting the SafeNet Luna HSM. In some cases, such as SafeNet Luna Network HSMs behind strict firewalls, the HSM host is not allowed to initiate the connection. In that case, you can initiate a Remote PED session from the PED Server side, providing that the computer hosting the PED has obtained and registered the SafeNet Luna Network HSM's **server.pem** certificate.

SafeNet Luna HSM Client Software Installation

This chapter describes how to install the SafeNet Luna HSM Client software. After installing the hardware, you need to install the SafeNet Luna Client software before you can begin configuring your SafeNet Luna HSM(s).

You can install the client for all SafeNet General Purpose HSMs, or for a specific type (Network or PCIe). Install the client as follows:

- For SafeNet Luna Network HSM, install the SafeNet Luna Client on any computer that must connect to the appliance as a client.
- For SafeNet Luna PCIe HSM, install the SafeNet Luna Client on the workstation into which the SafeNet Luna PCIe HSM is installed.
- For SafeNet Luna USB HSM, install the SafeNet Luna Client on the workstation to which the SafeNet Luna USB HSM is connected.
- Install the SafeNet Luna Client on any computer that is to have a SafeNet Remote PED connected.

Choose the instructions for your operating system:

- For Linux, see "[Linux SafeNet Luna HSM Client Software Installation](#)" on the next page
- For Windows, see "[Windows SafeNet Luna HSM Client Installation](#)" on page 40 The following supplemental topics also apply to Windows:
 - "[Scripted/Unattended Windows Installation/Uninstallation](#)" on page 49



Note: Not all operating systems are supported for each SafeNet Luna HSM type. Refer to the Customer Release Notes (see "[Customer Release Notes](#)" on page 7) for the most current information on supported platforms.

Linux SafeNet Luna HSM Client Software Installation

You must install the SafeNet Luna HSM client software on each client workstation you will use to access a SafeNet Luna HSM. This section describes how to install the client on a workstation running Linux, and contains the following topics:

- ["Prerequisites" below](#)
- ["Installing the Client Software" on the next page](#)
- ["Controlling User Access to Your Attached HSMs and Partitions" on page 35](#)
- ["Uninstalling the Client Software or Removing Components" on page 36](#)
- ["Java Configuration" on page 36](#)
- ["Scripted or Unattended Installation" on page 37](#)
- ["Interrupting the Installation" on page 38](#)

Refer to the Customer Release Notes for a complete list of the supported Linux operating systems. These instructions assume that you have already acquired the SafeNet Luna Client software, either on DVD or as a downloaded .tar archive.

Prerequisites

Before starting the installation, ensure that you have satisfied the following prerequisites:

Components Required to Build the PCIe Driver

On Linux, the PCIe driver module is built by the client as part of the installation if you choose to install the Luna PCIe HSM component. To build the driver, the client requires the following items:

- Kernel headers for build
- kernel-devel package
- rpmbuild package
- C and C++ compilers
- make command

If any one of these items is missing, the driver build will fail and the client software will not be installed.

Debian Requires alien

The SafeNet Luna Client software is provided as RPM packages. If you are installing on a Debian system, you must have **alien** installed to allow the SafeNet Luna Client installation script to convert the RPM packages to DEB packages. The installation script will stop with a message if you attempt to install on a Debian system without **alien** installed.

SUSE Linux on IBM PPC

JCE un-restriction files must be downloaded from IBM, not from SUN, for this platform. Attempting to use SUN JCE un-restriction files on IBM PowerPC systems with SUSE Linux causes signing errors.

32-bit Client on 64-bit RedHat 6

Before installing the 32-bit Client on 64-bit OS, you must enter the following commands:

```
yum install glibc.i686  
yum upgrade libstdc++
```

```
yum install libstdc++.i686
yum install libgcc.i686
yum install libcap.i686
```

Installing the Client Software

It is recommended that you refer to the SafeNet Luna HSM Customer Release Notes for any installation-related issues or instructions before installing the client software.



Note: You must install the client software using root-level privileges. For security reasons, we recommend that you do not log in as root (or use sudo root) to run the installation script, but instead use the sudo command to run the installation script, as detailed below.

By default, the Client programs are installed in the `/usr/safenet/lunaclient` directory.

To install the SafeNet Luna HSM client software on a Linux workstation:

1. Ensure that you have **sudo** privileges on the client workstation.
2. Access the installation software:

Copy or move the `.tar` archive to a suitable directory where you can untar the archive and extract the contents:

```
tar xvf <filename>.tar
```

3. Go to the directory for your architecture:

32-bit	<code>cd /<install_sw_root>/linux/32</code>
64-bit	<code>cd /<install_sw_root>/linux/64</code>

where `<install_sw_root>` is the location of installation DVD or untarred download. For example, `/cdrom` or `$HOME/safenet`.

4. To install the software, run the **install.sh** installation script. You can run the script in interactive mode, or you can script the installation, as described in "[Scripted or Unattended Installation](#)" on page 37.
 - To display the help, or a list of available installer options, type:


```
sudo sh install.sh -? or sudo sh install.sh help
```
 - To install all available products and optional components, type:


```
sudo sh install.sh all
```
 - To selectively install individual products and optional components, type the command without arguments:


```
sudo sh install.sh
```



Note: Do not interrupt the installation script in progress. An uninterruptible power supply (UPS) is recommended. See "[Interrupting the Installation](#)" on page 38 for more information.

5. Type **y** if you agree to be bound by the license agreement. You must accept the license agreement before you can install the software.
6. A list of installable SafeNet products is displayed. Select as many as you require, by typing the number of each (in any order) and pressing **Enter**. As each item is selected, the list updates, with a * in front of any item that has been

selected.

This example shows items 1 and 3 have been selected, and item 4 is about to be selected. The selections work as a toggle - if you wish to make a change, simply type a number again and press **Enter** to de-select it.

```
Products
Choose Luna Products to be installed
  *[1]: Luna Network HSM
    [2]: Luna PCIe HSM
  *[3]: Luna USB HSM
    [4]: Luna Backup HSM
  [N|n]: Next
  [Q|q]: Quit
Enter selection: 4
```

When selection is complete, type **N** or **n** for "Next", and press **Enter**. The "Advanced" menu is displayed.

7. Select or de-select any additional items you want to install. Selected items are indicated with a *. Some items might be pre-selected to provide the optimum experience for the majority of customers, but you can change any selection in the list. When the Components list is adjusted to your satisfaction, press **Enter**.



Note: The installer includes the Luna SNMP Subagent as an option. If you select this option, you will need to move the SafeNet MIB files to the appropriate directory for your SNMP application after installation is complete, and you will need to start the SafeNet subagent and configure it for use with your agent. See the *Administration Guide* for more information.

8. If the script detects an existing cryptoki library, it stops and suggests that you uninstall your previous SafeNet software before starting the SafeNet Luna Client installation again.
9. The system installs all packages related to the products and any optional components that you selected.

Controlling User Access to Your Attached HSMs and Partitions

By default, only the root user has access to your attached HSMs and partitions. You can specify a set of non-root users that are permitted to access your attached HSMs and partitions, by adding them to the **hsmusers** group.



Note: The client software installation automatically creates the hsmusers group if one does not already exist on your system. The hsmusers group is retained when you uninstall the client software, allowing you to upgrade your client software while retaining your hsmusers group configuration.

Adding users to hsmusers group

To allow non-root users or applications access your attached HSMs and partitions, assign the users to the **hsmusers** group. The users you assign to the hsmusers group must exist on the client workstation. Users you add to the hsmusers group are able to access your attached HSMs and partitions. Users who are not part of the hsmusers group are not able to access your attached HSMs and partitions.

To add a user to hsmusers group

1. Ensure that you have **sudo** privileges on the client workstation.
2. Add a user to the hsmusers group:

```
sudo gpasswd --add <username> hsmusers
```

where <username> is the name of the user you want to add to the hsmusers group.

Removing users from hsmusers group

Should you wish to rescind a user's access to your attached HSMs and partitions, you can remove them from the hsmusers group.



Note: The user you delete will continue to have access to the HSM until you reboot the client workstation.

To remove a user from hsmusers group

1. Ensure that you have **sudo** privileges on the client workstation.
2. Remove a user from the hsmusers group:

```
sudo gpasswd -d <username> hsmusers
```

where <username> is the name of the user you want to remove from the hsmusers group. You must log in again to see the change.

Uninstalling the Client Software or Removing Components

You may need to uninstall the client software before upgrading to a new version, or if it is no longer required.

To uninstall the client software

1. Ensure that you have **sudo** privileges on the client workstation.
2. Go to the client installation directory:

```
cd /usr/safenet/lunaclient/bin
```

3. Run the uninstall script:

```
sudo sh uninstall.sh
```



CAUTION: The hsmusers group is not removed when the client software is uninstalled. Should you install the client again on the same system, all users previously in the group will have access to your attached HSMs and partitions by default. You must remove users from the group if you want to restrict their access. See "[Removing users from hsmusers group](#)" above.

To remove individual components

To uninstall the JSP component or the SDK component, you must uninstall SafeNet Luna Client completely, then re-run the installation script without selecting the unwanted component(s).

Java Configuration

During the installation, the script provides the opportunity to install SafeNet Java components. If you select Java components, the SafeNet Java files are installed in the `/usr/safenet/lunaclient/jsp/` directory. In order to use Java, you must have separately installed Java (JDK or run-time environment from the vendor of your choice) onto your system. Refer to the Customer Release Notes for supported JDKs.

Copy the SafeNet Java library and .jar files from their default location under `/usr/safenet/lunaclient/jsp/lib` to the Java environment directory, for example `/usr/jre/lib/ext`.

The exact directory might differ depending on where you obtained your Java system, the version, and any choices that you made while installing and configuring it.

For additional Java-related information, see "[Java Interfaces](#)" on page 1 in the *SDK Reference Guide*.

JSP Static Registration

You would choose static registration of providers if you want all applications to default to the SafeNet provider.

Once your client has externally logged in using **salogin** or your own HSM-aware utility, any application would be able to use SafeNet product without being designed to log in to the HSM Partition.

Edit the `java.security` file located in the `\jre\lib\security` directory of your Java SDK/JRE installation to read as follows:

```
security.provider.1=sun.security.provider.Sun
security.provider.2=com.sun.net.ssl.internal.ssl.Provider
security.provider.3=com.safenetinc.luna.provider.LunaProvider
security.provider.4=com.sun.rsa.jca.Provider
security.provider.5=com.sun.crypto.provider.SunJCE
security.provider.6=sun.security.jgss.SunProvider
```

You can set our provider in first position for efficiency if SafeNet Luna HSM operations are your primary mode. However, if your application needs to perform operations not supported by the LunaProvider (secure random generation or random publickey verification, for example) then it would receive error messages from the HSM and would need to handle those gracefully before resorting to providers further down the list. We have found that having our provider in third position works well for most applications.

The modifications in the `java.security` file are global, and they might result in the breaking of another application that uses the default KeyPairGenerator without logging into the SafeNet Luna Network HSM first. This consideration might argue for using dynamic registration, instead.

JSP Dynamic Registration

For your situation, you may prefer to employ dynamic registration of Providers, in order to avoid possible negative impacts on other applications running on the same machine. As well, the use of dynamic registration allows you to keep installation as straightforward as possible for your customers.

Scripted or Unattended Installation

If you prefer to run the installation from a script, rather than interactively, run the command with the options `-p <list of SafeNet products>` and `-c <list of SafeNet components>`. To see the syntax, run the command with **help** like this:

```
[myhost]$ sudo sh install.sh help
[sudo] password for fred
```

At least one product should be specified.

usage:

```
install.sh      - Luna Client install through menu
install.sh help - Display scriptable install options
install.sh all  - Complete Luna Client install
```

```
install.sh -p [sa|pci|g5|rb] [-c sdk|jsp|jcprov|ldpc|snmp]
```

```
-p <list of Luna products>
```

```
-c <list of Luna components> - Optional. All components are installed if not provided
```

Luna products options

```
sa      - SafeNet Luna Network HSM
pci     - SafeNet Luna PCIe HSM
g5     - SafeNet Luna USB HSM
rb     - SafeNet Luna Backup HSM
```

Luna components options

```
sdk     - Luna SDK
jsp     - Luna JSP (Java)
jcprov - Luna JC PROV (Java)
snmp    - Luna SNMP subagent
```

```
[myhost]$
```

For scripted/automated installation, your script will need to capture and respond to the License Agreement prompt, and to the confirmation prompt. For example:

```
[myhost]$ sudo sh install.sh all
```

```
IMPORTANT: The terms and conditions of use outlined in the software
license agreement (Document #008-010005-001_053110) shipped with the product
("License") constitute a legal agreement between you and SafeNet Inc.
Please read the License contained in the packaging of this
product in its entirety before installing this product.
```

```
Do you agree to the License contained in the product packaging?
```

```
If you select 'yes' or 'y' you agree to be bound by all the terms
and conditions se out in the License.
```

```
If you select 'no' or 'n', this product will not be installed.
```

```
(y/n) y
```

```
Complete Luna Client will be installed. This includes SafeNet Luna Network HSM,
SafeNet Luna PCIe HSM, SafeNet Luna USB HSM AND SafeNet Luna Backup HSM.
```

```
Select 'yes' or 'y' to proceed with the install.
```

```
Select 'no' or 'n', to cancel this install.
```

```
Continue (y/n)? y
```

Interrupting the Installation

Do not interrupt the installation script in progress, and ensure that your host computer is served by an uninterruptible power supply (UPS). If you press [CTRL] [C], or otherwise interrupt the installation (OS problem, power outage, other), some components will not be installed. It is not possible to resume an interrupted install process. The result of an

interruption depends on where, in the process, the interruption occurred (what remained to install before the process was stopped).

As long as the cryptoki RPM package is installed, any subsequent installation attempt results in refusal with the message "A version of SafeNet Luna Client is already installed."

If components are missing or are not working properly after an interrupted installation, or if you wish to install any additional components at a later date (following an interrupted installation, as described), you would need to uninstall everything first. If **sh uninstall.sh** is unable to do it, then you must uninstall all packages manually.

Windows SafeNet Luna HSM Client Installation

This section describes how to install the SafeNet Luna HSM Client software on Windows. It contains the following topics:

- "Required Client Software" below
- "Prerequisites" below
- "Installing the Luna HSM Client Software" below
- "Java" on page 44
- "CSP and KSP" on page 46
- "Uninstalling or Modifying the SafeNet Luna Client Software" on page 46
- "After Installation" on page 47
- "Troubleshooting" on page 47

Applicability to specific versions of Windows is summarized in the Customer Release Notes for this release.



Note: Before installing a SafeNet Luna HSM system, confirm that the product you have received is in factory condition and has not been tampered with in transit. Refer to the Startup Guide included with your product shipment. If you have any questions about the condition of the product that you have received, contact Technical Support immediately.

Required Client Software

Each computer that connects to a SafeNet Luna Network HSM as a Client must have the cryptoki library, the vtl client shell and other utilities and supporting files installed.

Each computer that contains, or is connected to a SafeNet Luna PCIe HSM or a SafeNet Luna USB HSM must have the cryptoki library and other utilities and supporting files installed.

Prerequisites

The Luna HSM Client installer requires the Microsoft Universal C Runtime (Universal CRT) to run properly. Universal CRT requires your Windows machine to be up to date. Before running the installer, ensure that you have the Universal C Runtime in Windows (KB2999226) update and its prerequisites installed on your machine. The following updates must be installed in order:

1. March 2014 Windows servicing stack update (See <https://support.microsoft.com/en-us/help/2919442>)
2. April 2014 Windows update (See <https://support.microsoft.com/en-us/help/2919355>)
3. Universal C Runtime update (See <https://support.microsoft.com/en-us/kb/2999226>)

Installing the Luna HSM Client Software

The supported Windows servers are 64-bit. They allow running of 32-bit or 64-bit applications.

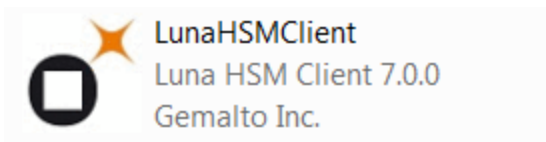
For compatibility of our HSMs with Windows in general, we provide both 32-bit and 64-bit libraries and tools for use with your applications as appropriate. Hardware drivers are 64-bit only.

For compatibility of our HSMs with Windows CAPI we have SafeNet CSP, and for the newer Windows CNG we have SafeNet KSP. See "CSP and KSP" on page 46 for more information.

Interactive (prompted) and non-interactive (no prompts) installation options are available.

To install the Luna HSM client software:

1. Log into Windows as "Administrator", or as a user with administrator privileges (see "Troubleshooting" on page 47).
2. Uninstall any previous versions of the Client software before you proceed (see "Uninstalling or Modifying the SafeNet Luna Client Software" on page 46).
3. Download the Luna HSM Client from the Gemalto Support Portal at <https://supportportal.gemalto.com> and extract the .zip to an appropriate folder.
4. In the extracted directory, locate the folder for your Windows architecture and double click **LunaHSMClient.exe**.

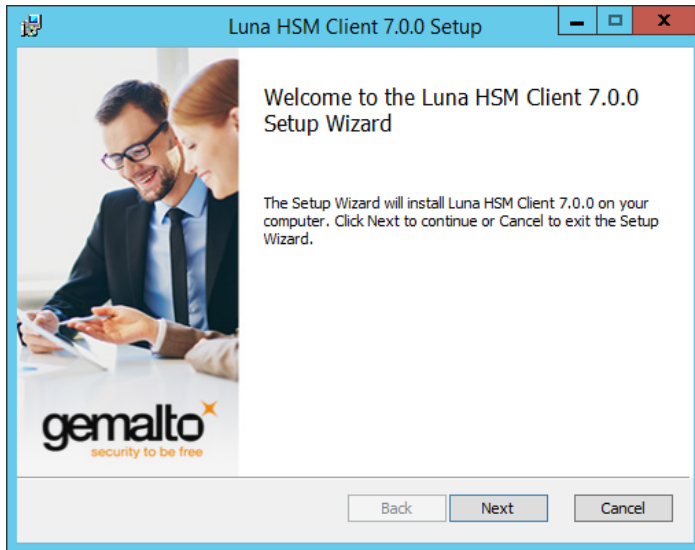


5. At the Welcome screen, click **Install**.



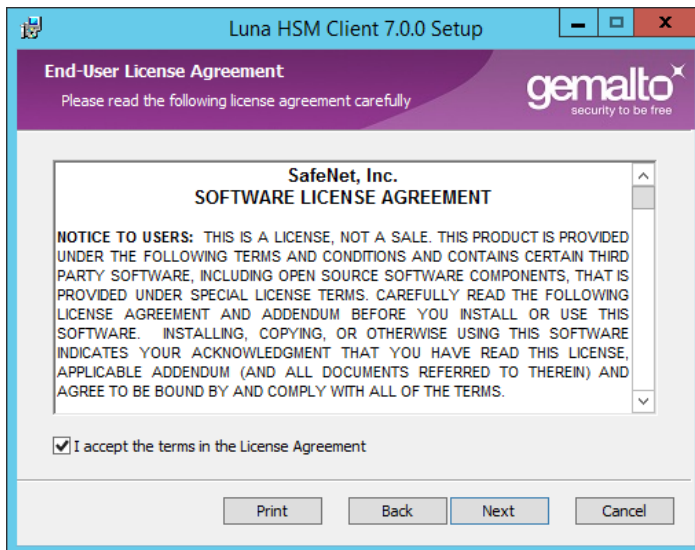
The Welcome screen is updated to show the Setup Progress, and the Luna HSM Client Setup Wizard is displayed in a new window.

6. Click **Next** on the Luna HSM Client Setup Wizard Welcome screen.






The End-User License Agreement dialog is displayed.

- Click the **I accept the terms in the License Agreement** checkbox and click **Next**. Click **Print** if you would like to print the End-User License Agreement.



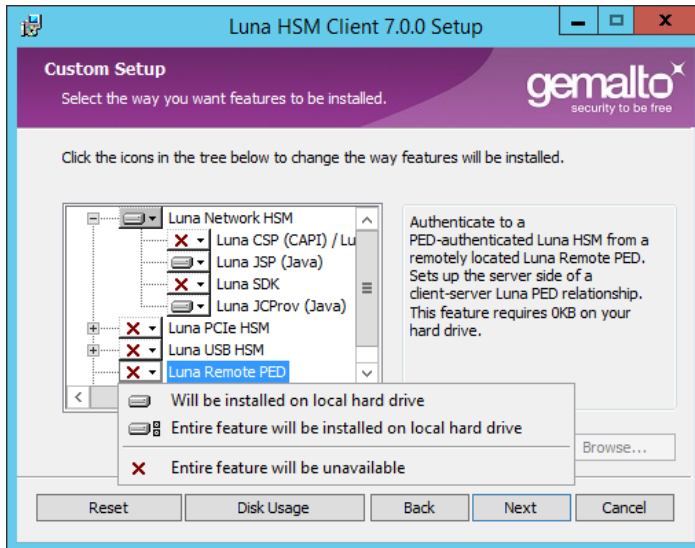
The Custom Setup dialog is displayed.

- The Custom Setup dialog allows you to choose which software components you wish to install. Click on a product to select the components to install, as follows. You can click on the + icon for a product to show each of the individual components.

 Will be installed on local hard drive	Install this component. If you select this option for a product, only the most commonly used components are installed. Use the + icon to show which components are included.
 Entire feature will be installed on local hard drive	Install all of the components for the product.
 Entire feature will be unavailable	Do not install this component.

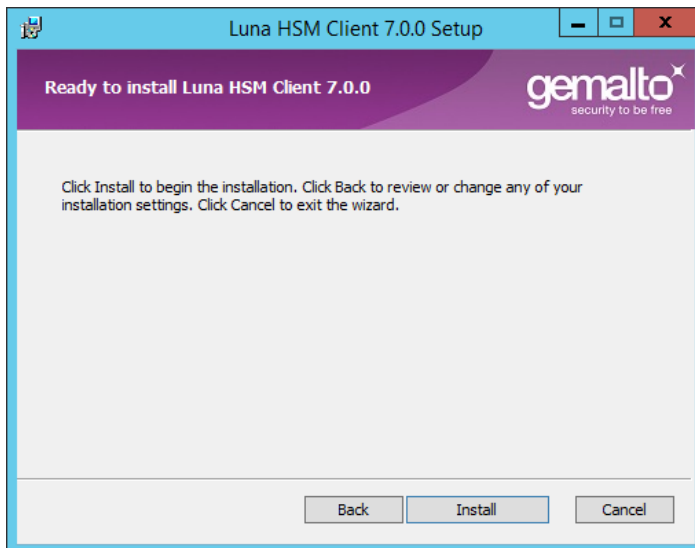
The installer includes the SafeNet SNMP Subagent as an option with any of the SafeNet Luna HSMs, except SafeNet Luna Network HSM, which has agent and subagent built in. After installation of the SafeNet SNMP Subagent is complete, you will need to move the SafeNet MIB files to the appropriate directory for your SNMP application, and you will need to start the SafeNet subagent and configure for use with your agent, as described in "SNMP Monitoring" on page 1 in the *Administration Guide*.

After you select the components you want to install, click **Next**.



The **Ready to Install** dialog is displayed.

- Click **Install** to install the selected components.

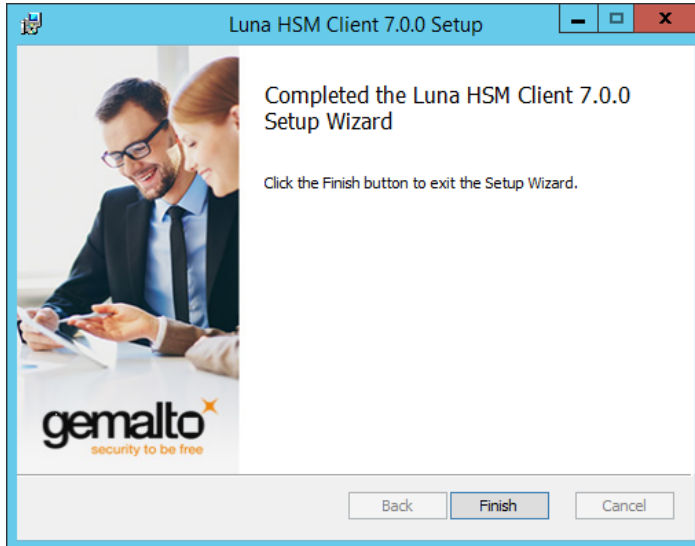


- If Windows presents a security notice asking if you wish to install the device driver from SafeNet, click **Install** to accept.



Note: If you choose not to install the driver, your Luna HSM Client cannot function with any locally-connected SafeNet hardware (which includes SafeNet Luna PCIe HSM, SafeNet Luna USB HSM, or SafeNet Luna Backup HSMs).

11. When the installation completes, click **Finish**.



Java

If you want the Luna Java Security Provider (JSP) to be installed, the SafeNet Java files are installed in the **C:\Program Files\LunaClient\JSP\lib** folder. You install the Java JDK or run-time environment from the vendor of your choice to use the Luna JSP. Refer to the Customer Release Notes for supported Java versions.

Copy the SafeNet Java files from their default location under **C:\Program Files\SafeNet\LunaClient\JSP\lib** to the Java environment directory, for example **C:\Program Files\Java\jdk1.8.0_92\bin**.



Note: The exact directory might differ depending on where you obtained your Java system, the version, and any choices that you made while installing and configuring it.

Using a 32-bit JDK on a 64-bit OS

If you install a 32-bit JDK on a 64-bit OS, you must copy the 32-bit **LunaAPI.dll** file to the 32-bit JDK bin folder, for example, **C:\Program Files (x86)\Java\jdk1.8.0_92\bin**.

Java 7 and Java 8 Library Path Issue

Gemalto has traditionally recommended that you put **LunaAPI.dll** in the **<java_install_dir>/lib/ext** folder.

However, Java 7 and Java 8 for Windows have removed that directory from the Java library path. As a result, when a Java 7 or Java 8 application on Windows uses the SafeNet provider, it cannot find the **LunaAPI.dll** library, causing the application to fail.

To address this problem, we suggest that you use one of the following methods to add **LunaAPI.dll** to the Java 7 or Java 8 search path:

- Put **LunaAPI.dll** in an arbitrary folder and add that folder to the system path. Java 7 or Java 8 will search the system path for **LunaAPI.dll**.
- Put **LunaAPI.dll** in the `<java_install_dir>/bin` folder.

Alternatively, at the command line, specify: `"%JAVA_HOME%/jre/bin/java" -Djava.library.path="C:\path\to\lunaapi.dll" -jar jMultitoken.jar`

For additional Java-related information, see "Java Interfaces" on page 1 in the *SDK Reference Guide*.

JSP Static Registration

You would choose static registration of providers if you want all applications to default to the SafeNet provider.

Once your client has externally logged in using **salogin** (see "[SALogin](#)" on page 1 in the *Utilities Reference Guide*) or your own HSM-aware utility, any application is able to use the SafeNet product without being designed to login to the HSM Partition.

Edit the `java.security` file located in the `\jre\lib\security` directory of your Java SDK/JRE 1.7.x or 1.8.x installation to read as follows:

```
security.provider.1=sun.security.provider.Sun
security.provider.2=com.sun.net.ssl.internal.ssl.Provider
security.provider.3=com.safenetinc.luna.provider.LunaProvider
security.provider.4=com.sun.rsa.jca.Provider
security.provider.5=com.sun.crypto.provider.SunJCE
security.provider.6=sun.security.jgss.SunProvider
```

You can set our provider in first position for efficiency if SafeNet Luna HSM operations are your primary mode. However, if your application needs to perform operations not supported by the `LunaProvider` (secure random generation or random publickey verification, for example) then it would receive error messages from the HSM and would need to handle those gracefully before resorting to providers further down the list. We have found that having our provider in third position works well for most applications.

The modifications in the "java.security" file are global, and they might result in the breaking of another application that uses the default `KeyPairGenerator` without logging into the SafeNet Luna Network HSM first. This consideration might argue for using dynamic registration, instead.

JSP Dynamic Registration

For your situation, you may prefer to employ dynamic registration of Providers, in order to avoid possible negative impacts on other applications running on the same machine. As well, the use of dynamic registration allows you to keep installation as straightforward as possible for your customers.

Compatibility

We formally test SafeNet Luna HSMs and our Java provider with Oracle JDK for all platforms except AIX, and with IBM JDK for the AIX platform. The SafeNet JCE provider is compliant with the JCE specification, and should work with any JVM that implements the Java language specification.

Occasional problems have been encountered with respect to IBM JSSE.

GNU JDK shipped with most Linux systems has historically been incomplete and not suitable.

CSP and KSP

SafeNet CSP allows you to use the SafeNet Luna HSM with Microsoft CAPI, which is supported on 32-bit and on 64-bit Windows.

SafeNet KSP allows you to use the SafeNet Luna HSM with Microsoft CNG, which is newer, has additional functions, and supersedes CAPI.

Both of these require modifications to the Windows Registry.

SafeNet CSP

For SafeNet CSP, the utility **register.exe** takes care of the registry.

Just remember to run the 64-bit version, the 32-bit version, or both, depending on the applications you are running.

- Register the csp dll:
register.exe /library
- Register the partition:
register <no arguments>

SafeNet KSP

For SafeNet KSP, the utility **KspConfig.exe** takes care of the registry. Follow instructions for the use of the graphical KspConfig.exe as described in "KSP for CNG" on page 1 in the *SDK Reference Guide*. Just remember to run the 64-bit version, the 32-bit version, or both, depending on the applications you are running.

If SafeNet CSP (CAPI) / SafeNet KSP(CNG) is selected at installation time then the **SafeNetKSP.dll** file is installed in these two locations:

- **C:\Windows\System32** (used for 64-bit KSP)
- **C:\Windows\SysWOW64** (used for 32-bit KSP)



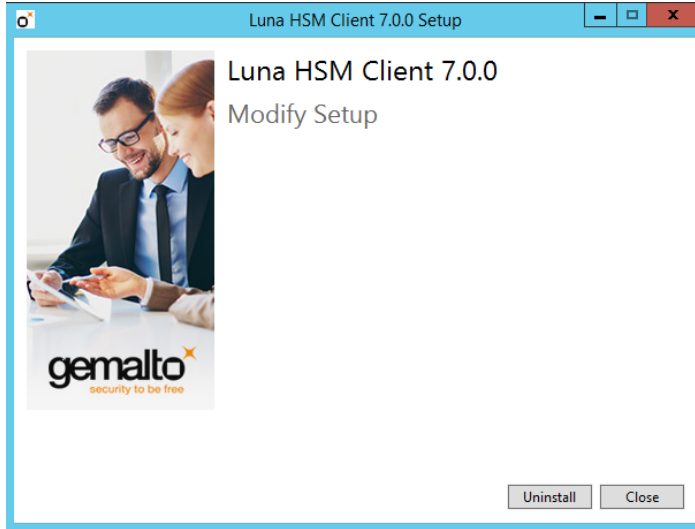
Note: The **cryptoki.ini** file, which specifies many configuration settings for your HSM and related software, includes a line that specifies the path to the appropriate libNT for use with your application(s). Verify that the path is correct

Uninstalling or Modifying the SafeNet Luna Client Software

You need to uninstall SafeNet Luna Client before installing a new version. If you wish modify the installation (perhaps to add a component or product that you did not previously install), you must uninstall the current installation and re-install with the desired options.

To uninstall the Luna HSM client software:

1. Run the **LunaHSMClient.exe** program again. Because the software is already installed on your computer, the following dialog is displayed:



2. Click the **Uninstall** button. The client software is uninstalled. Click **Close** when the uninstallation is complete.



Note: You can also use **Programs and Features** in the Windows Control Panel to uninstall the client software.

After Installation

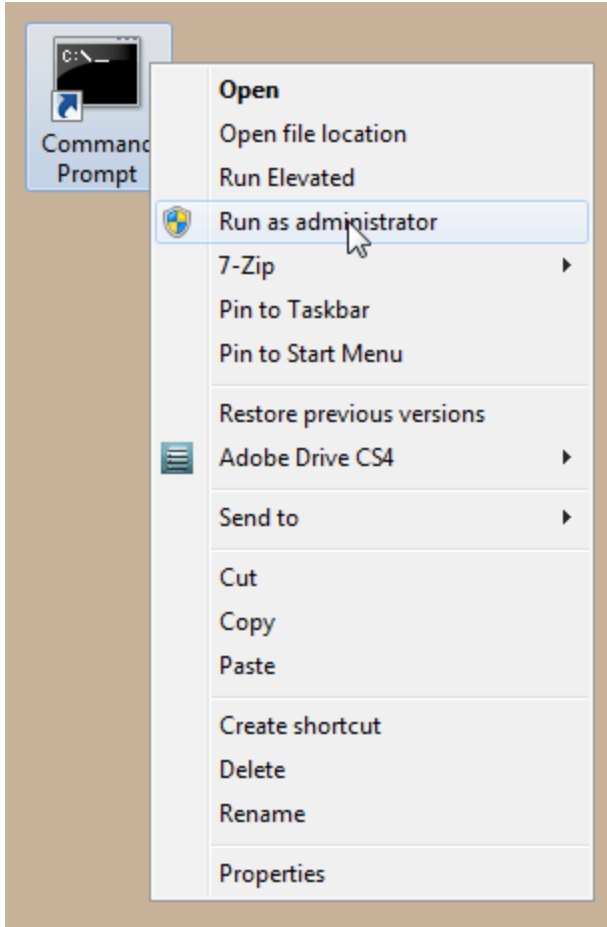
When you have installed the software, the next task is to configure the SafeNet Luna HSM, as described in the *Configuration Guide*.

Open a new command-line/console window to allow the library path to be found before you run LunaCM or other utilities that require the library.

Troubleshooting

If you are not the Administrator of the computer on which Luna HSM Client is being installed, or if the bundle of permissions in your user profile does not allow you to launch the installer with "Run as Administrator", then some services might not install properly. One option is to have the Administrator perform the installation for you.

Another approach might be possible. If you have sufficient elevated permissions, you might be able to right-click and open a Command Prompt window as Administrator.



If that option is available, then you can use the command line to move to the location of the **LunaHSMClient.exe** file and launch it there, which permits the needed services to load for PedClient. See "[Scripted/Unattended Windows Installation/Uninstallation](#)" on the next page for instructions on how to install the client software from the command line.

Scripted/Unattended Windows Installation/Uninstallation

This section describes how to perform unattended or scripted installations on Windows platforms. The following procedures are described:

- ["Installing the Luna HSM Client for the SafeNet Luna Network HSM" below](#)
- ["Installing the Luna HSM Client for the SafeNet Luna PCIe HSM" on the next page](#)
- ["Installing the Luna HSM Client for the SafeNet Luna USB HSM" on the next page](#)
- ["Installing the Luna HSM Client for the SafeNet Luna Backup HSM" on page 51](#)
- ["Installing the Luna HSM Client for Remote PED" on page 52](#)
- ["Uninstalling the Luna HSM Client" on page 52](#)

If you want to perform an interactive installation, using the graphical, interactive installer, see ["Windows SafeNet Luna HSM Client Installation" on page 40](#)



Note: Unattended installation stores the root certificate in the certificate store and marks the publisher (in this case, SafeNet, Inc.) as trusted for future installations. You are not prompted to trust SafeNet Inc. as a driver publisher during unattended installation.

Installing the Luna HSM Client for the SafeNet Luna Network HSM

Use the **ADDLOCAL=SA** flag to install the base client software for the SafeNet Luna Network HSM. Include the flags listed below to install any optional software components you desire. The base software must be installed first.



Note: The setting **/I install.log** is optional and will save the installation logs to the file **install.log**. The **install.log** file is required only if troubleshooting an issue with Technical Support.

To install the Luna HSM Client for the SafeNet Luna Network HSM

From the location of **LunaHSMClient.exe** run one of the following commands:

- Install the base Luna HSM Client software for SafeNet Luna Network HSM
LunaHSMClient.exe /install /I install.log /quiet /norestart ADDLOCAL="SA"
- Install the base Luna HSM Client software and any of the following optional components for the SafeNet Luna Network HSM that you desire:

Product or component	Description
SA_CSP_KSP	CSP and KSP components for the SafeNet Luna Network HSM
SA_JSP	JSP component for the SafeNet Luna Network HSM
SA_SDK	SDK component for the SafeNet Luna Network HSM
SA_JCProv	JCPROV component for the SafeNet Luna Network HSM

For example, the following command installs the base software and all of the optional components:

```
LunaHSMClient.exe /install // install.log /quiet /norestart ADDLOCAL="SA,SA_CSP_KSP,SA_JSP,SA_SDK,SA_JCProv"
```

If you wish to install only some of the components, just specify the ones you want after the product name (SA in this example).

Installing the Luna HSM Client for the SafeNet Luna PCIe HSM

Use the **ADDLOCAL=PCI** flag to install the base client software for the SafeNet Luna PCIe HSM. Include the flags listed below to install any optional software components you desire. The base software must be installed first.



Note: The setting // **install.log** is optional and will save the installation logs to the file **install.log**. The **install.log** file is required only if troubleshooting an issue with Technical Support.

To install the Luna HSM Client for the SafeNet Luna PCIe HSM

From the location of **LunaHSMClient.exe** run one of the following commands:

- Install the base Luna HSM Client software for SafeNet Luna PCIe HSM
LunaHSMClient.exe /install // install.log /quiet /norestart ADDLOCAL="PCI"
- Install the base Luna HSM Client software and any of the following optional components for the SafeNet Luna PCIe HSM that you desire:

Product or component	Description
PCI_CSP_KSP	CSP and KSP components for the SafeNet Luna PCIe HSM
PCI_JSP	JSP component for the SafeNet Luna PCIe HSM
PCI_SDK	SDK component for the SafeNet Luna PCIe HSM
PCI_JCProv	JC PROV component for the SafeNet Luna PCIe HSM
PCI_SNMP	SNMP subagent component for the SafeNet Luna PCIe HSM

For example, the following command installs the base software and all of the optional components:

```
LunaHSMClient.exe /install // install.log /quiet /norestart ADDLOCAL="PCI,PCI_CSP_KSP,PCI_JSP,PCI_SDK,PCI_JCProv,PCI_SNMP"
```

If you wish to install only some of the components, just specify the ones you want after the product name (PCI in this example).

Installing the Luna HSM Client for the SafeNet Luna USB HSM

Use the **ADDLOCAL=USB** flag to install the base client software for the SafeNet Luna USB HSM. Include the flags listed below to install any optional software components you desire. The base software must be installed first.



Note: The setting `/I install.log` is optional and will save the installation logs to the file `install.log`. The `install.log` file is required only if troubleshooting an issue with Technical Support.

To install the Luna HSM Client for the SafeNet Luna USB HSM

From the location of `LunaHSMClient.exe` run one of the following commands:

- Install for SafeNet Luna USB HSM

LunaHSMClient.exe /install /I install.log /quiet /norestart ADDLOCAL="G5"

- Install the base Luna HSM Client software and any of the following optional components for the SafeNet Luna USB HSM that you desire:

Product or component	Description
G5_CSP_KSP	CSP and KSP components for the SafeNet Luna USB HSM
G5_JSP	JSP component for the SafeNet Luna USB HSM
G5_SDK	SDK component for the SafeNet Luna USB HSM
G5_JCProv	JC PROV component for the SafeNet Luna USB HSM
G5_SNMP	SNMP subagent component for the SafeNet Luna USB HSM

For example, the following command installs the base software and all of the optional components:

LunaHSMClient.exe /install /I install.log /quiet /norestart ADDLOCAL="G5,G5_CSP_KSP,G5_JSP,G5_SDK,G5_JCProv,G5_SNMP"

If you wish to install only some of the components, just specify the ones you want after the product name (G5 in this example).

Installing the Luna HSM Client for the SafeNet Luna Backup HSM

Use the **ADDLOCAL=RB** flag to install the base client software for the SafeNet Luna Backup HSM. Include the flags listed below to install any optional software components you desire. The base software must be installed first.



Note: The setting `/I install.log` is optional and will save the installation logs to the file `install.log`. The `install.log` file is required only if troubleshooting an issue with Technical Support.

To install the Luna HSM Client for the SafeNet Luna Backup HSM

From the location of `LunaHSMClient.exe` run one of the following commands:

- Install the base Luna HSM Client software for SafeNet Luna Backup HSM

LunaHSMClient.exe /install /I install.log /quiet /norestart ADDLOCAL="RB"

- Install the base Luna HSM Client software and the following optional component for the SafeNet Luna USB HSM:

Product or component	Description
RB_SNMP	SNMP subagent component for the SafeNet Luna Backup HSM

For example, the following command installs the base software and the optional component:

```
LunaHSMClient.exe /install // install.log /quiet /norestart ADDLOCAL="RB,RB_SNMP"
```

Installing the Luna HSM Client for Remote PED

Use the **ADDLOCAL=RP** flag to install the client software for the SafeNet Luna Backup HSM.



Note: The setting **// install.log** is optional and will save the installation logs to the file **install.log**. The **install.log** file is required only if troubleshooting an issue with Technical Support.

To install the Luna HSM Client for the SafeNet Luna Backup HSM

From the location of **LunaHSMClient.exe** run the following command:

```
LunaHSMClient.exe /install // install.log /quiet /norestart ADDLOCAL="RP"
```

Uninstalling the Luna HSM Client

You can also perform scripted/unattended uninstallation.



Note: The setting **// uninstall.log** is optional and will save the installation logs to the file **uninstall.log**. The **uninstall.log** file is required only if troubleshooting an issue with Technical Support.

To uninstall the Luna HSM Client

From the location of **LunaHSMClient.exe** run the following command:

```
LunaHSMClient.exe /uninstall /quiet // uninstall.log
```