Document Information

<table>
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<th>Product Version</th>
<th>3.0</th>
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<tbody>
<tr>
<td>Document Part Number</td>
<td>007-012787-001 Rev. A</td>
</tr>
<tr>
<td>Release Date</td>
<td>October 2014</td>
</tr>
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Revision History (*optional)

Remove this section if it will not be used.

<table>
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<tr>
<th>Revision</th>
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SafeNet invites constructive comments on the contents of this document. These comments, together with your personal and/or company details, should be sent to the address or email below.

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<thead>
<tr>
<th>Contact Method</th>
<th>Contact Information</th>
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Introduction

Third-Party Software Acknowledgement

This document is intended to help users of SafeNet products when working with third-party software, such as Blue Coat SSL Visibility Appliance. Material from third-party software is being used solely for the purpose of making instructions clear. Screen images and content obtained from third-party software will be acknowledged as such.

Overview

SafeNet Luna SP hardware security modules (HSMs) integrate with Blue Coat’s SSL Visibility Appliance to enhance the security of SSL traffic in enterprise networks while maintaining the privacy needs of the organization. Luna SP stores CA certificates and private keys used by the SSL Visibility Appliance to carry out SSL inspection using certificate re-sign. The CA certificate and key are stored in the Luna SP’s secure, tamper-proof hardware appliance to make them inaccessible to unauthorized users, as well as easy to manage and scale as the capacity needs grow. The SSL Visibility Appliance identifies and manages all SSL-encrypted traffic to effectively enable protected communications based on acceptable use policies.

Audience

All products manufactured and distributed by SafeNet, Inc. 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.
Working with a Luna SP HSM

A Hardware Security Module (HSM) provides additional security for storing cryptographic keys and certificates. The SSL Visibility Appliance is able to use a network-attached HSM appliance to store resigning CA keys, and to perform digital signature operations.

The SSL Visibility Appliance interacts with an HSM on its management interface. It exchanges signing requests and responses with the attached HSM appliance, over HTTPS. When mutually authenticated during the SSL handshake, the SSL Visibility Appliance sends resigning CAs data to the HSM; the HSM signs the data and returns the signature to the SSL Visibility Appliance.

An SSL Visibility Appliance can work with multiple HSM appliances, and multiple SSLV appliances can work with the same HSM.

In the event that policy a rule using an HSM to sign cannot work due to lack of response from the HSM, the attempt is logged, and the applicable policy action configured for HSM failure (for example, cut through, drop, or reject) occurs.

Blue Coat provides a Blue Coat HSM Agent and CLI to install on the Luna SP, which will be used to interact with Blue Coat appliances.

An SSL Visibility Appliance/HSM configuration has these steps, assuming the HSM is properly configured:

1. Configure the client certificate(s) used to authenticate with the HSM (or HSMs).
2. Configure an External CA(s) list used to authenticate the HSM.
3. Configure the HSM, using the client certificate(s) and External CA List(s) configured above.
4. Configure HSM resigning CA(s) using the HSM appliance configured above.
5. (Optional) Add the HSM resigning CAs configured above to HSM resigning CA load balancing group(s).
6. Configure resign rule(s) in SSL Visibility Appliance policy using the HSM resigning CA load balancing group(s) configured previously, or the default All HSM Resigning Certificate Authorities group. If the default group is used, step 5 is not required.
Adding an HSM

Before You Begin: PKI Basics

HSM validation requires an external certificate authority list on the SSL Visibility Appliance. The SSL Visibility Appliance will validate non-self-signed HSM certificates using the external CA list selected for that HSM in the PKI > HSM Appliances window. The appliance will validate the server certificate chain.

**NOTE:** The CN or SAN in the HSM certificate must match the HSM appliance hostname or IP address for validation to succeed.

Adding a Trusted Certificate

The SSL Visibility requires a trusted certificate for the communication channel with the HSM. The SSL Visibility Appliance will only validate a self-signed HSM certificate if it is a Trusted Certificate.

The communication channel certificate is the HSM server certificate which the SSL Visibility Appliance will use to verify and trust the HSM.

Highlight the all-trusted-certificates item in the Trusted Certificates Lists panel, then click the Add (plus sign tool) icon in the Trusted Certificates panel. The Add Trusted Certificates window pops up.

Upload the .pem or DER certificate file, or paste its text into the appropriate tab, then click Add. The new certificate will appear in the Trusted Certificates panel.

**NOTE:** Make note of the identifying details such as the DN and the key alias.

<table>
<thead>
<tr>
<th>Monitor</th>
<th>Policies</th>
<th>PKI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trusted Certificates Lists</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>all-trusted-certificates</td>
<td></td>
</tr>
</tbody>
</table>

| Trusted Certificates | 1/1 |     |
| Summary | Blue Coat Root CA, Blue Coat, Blue Coat Root CA [2] |
| | Blue Coat Signing CA, Blue Coat, Blue Coat Signing CA |
| | HSMQA1.lab.crossbeam.sys.com |
| | HSMQA2.lab.crossbeam.sys.com |
| | SelfSigned, Bluecoat, SQA [3] |

(The screen image above is from Blue Coat. Trademarks are the property of their respective owners.)

Adding a Client Certificate

The SSL Visibility Appliance is a client to an HSM server, so the HSM must have a client certificate to authenticate the SSL Visibility Appliance. The SSL Visibility Appliance must have a client certificate for each
HSM it interacts with. The client certificates must be available to create policy. The “Manage PKI” role is required.

**An authorized user can**

**Generate a client key and self signed certificate:**

1. Generate a client key and self signed certificate; press the Generate (rose) icon.
2. Fill out the Generate Certificate and Key form.
3. Click Generate self-signed.

![Generate Certificate and Key](image)

(The screen image above is from Blue Coat. Trademarks are the property of their respective owners.)

When the certificate has been created, you will see a confirmation message:

![Client Certificate and Key Generated](image)

(The screen image above is from Blue Coat. Trademarks are the property of their respective owners.)

**Generate a client key and a CSR, and get it signed by a third party resigning CA.**

1. Press the Generate (rose) icon,
2. Fill out the Generate Certificate and Key form.
3. Click **Generate CSR**.

4. Send the CSR to your third-party CA, and have it signed.

5. Upload or copy in the signed certificate using the Install Certificate icon (lightning bolt).

Import a client key and already signed certificate.

1. Press Add (the plus icon).

2. Upload or Paste in the already signed certificate.

### Add an HSM

Use the **PKI > HSM Appliances** window to manage attached HSM appliance connections. A user must have a Manage PKI role to add, remove, and edit HSM appliances. Users with Manage PKI and Manage Policy roles can view configured HSM appliances.

![Add HSM Appliance](image)

*(The screen image above is from Blue Coat. Trademarks are the property of their respective owners.)*

- **Hostname/IP Address**: Enter the hostname that appears in the HSM-created certificates.
- **Port**: Use the default 8443 port.
- **Client Certificate and Key (RSA Only)**: Select the client certificate created for the specific HSM.
- **External CA List**: Select the External CA List to used to authenticate this HSM appliance.

### Adding Resigning Certificates

The SSL Visibility has a **HSM Certificate Authorities Groups** list of load-balancing groups on the **PKI > Resigning Certificate Authorities** window. The **all-hsm-certificate-authorities** list must contain all resigning certificates used by connected HSMs. The keys are stored remotely on the HSMs.

Creating, editing, and deleting HSM resigning CAs, and running self-tests, requires the Manage PKI authorization role.

A resigning certificate can be generated on the HSM with Blue Coat CLI. You can also create a CSR with the CLI, then sign the certificate off of the HSM.

Add HSM resigning CAs to the **PKI** store; they are initially added to the **all-hsm-certificate-authorities** list.
Adding a new HSM resigning certificate authority

1. Highlight the HSM Resigning Certificate Authorities Groups you want to add an authority to, then click Add in the HSM Resigning Certificate Authorities panel. The Add HSM Resigning Certificate Authority window opens.

2. You may upload or paste in the certificate on the appropriate tab.
   - **HSM Appliance**: Select the HSM this resigning CA uses (created at PKI > AddHSM).
   - **HSM Key Alias**: Enter the key alias configured for that resigning CA on the HSM appliance.
   - **CRL URL**: Applies when a resigning CA CRL is published at a public URL.

3. Click Add.

4. Click Apply near the footer to save your changes.

---

**NOTE**: Immediately after adding a new HSM resigning CA to the PKI store, the new CA will appear in yellow in the list. Make sure to Apply the changes, and then use the Refresh tool in the header in order for the new CA to appear in green.

---

**NOTE: HSM Resigning CA Status Colors**
The color of the resigning CA in the list gives you the status of that CA.
- Green color = HSM CA is in OK/active state
- Yellow color = HSM CA status has not been checked
- Red color = HSM CA is in failed state

---

Load Balancing Groups

The SSL Visibility Appliance uses round robin load balancing, distributing connections evenly across the array of HSM resigning CAs in the group, when the configuration includes a HSM resigning CA group, and an inspected SSL flow matches a policy HSM group rule. If each resigning CA uses a separate HSM appliance, the load balancing occurs over the HSM appliances. You can create a new subset group, if required. The SSL Visibility Appliance will load balance between the HSM resigning CAs in the group.

If an HSM in a group, fails, the SSL Visibility Appliance automatically adjusts the load balancing in the group, excluding the failed HSM. The SSL Visibility Appliance periodically checks the failed appliance, and when a check succeeds, the HSM is restored and returned to the load balancing group.

Create a new HSM authorities load balancing group

1. On the PKI > Resigning Certificate Authorities window, select Add in the HSM Resigning Certificate Authorities Groups panel header.

2. On the resultant Add Resigning Certificate Authority List window, provide a name for the list, then click OK.

3. Highlight the new group in the HSM Resigning Certificate Authorities Groups panel SV800 & SV1800 Administration & Deployment Guide

5. Use the Add to Custom List and Remove from Custom List buttons to create your list.

6. Click OK.

7. Click Apply near the footer to save your changes.

Running a Self-Test

Once you have the HSM connection configured, resigning certificates established, and a policy (ruleset) in place, you can manually run a self-test to verify resigning. Click the Play icon in the HSM Resigning Certificate Authorities header. In the self-test, the appliance sends a signing request to the HSM, and then validates the returned signature. To pass the test, the HSM must have been contacted, the HSM resign operation succeeded, and the returned signature verified as valid.

Writing HSM Configuration in Policy

The Ruleset Options panel (Policies > Rulesets) includes a HSM Failure Option, which defines what action the SSL Visibility Appliance will take when an HSM resign operation fails.

1. Create and name a ruleset: click Add in the Rulesets panel header and name the ruleset.

2. Click Edit (pencil tool) in the Ruleset Options panel header; the Edit Ruleset Options window displays, as shown in the figure. Here is the HSM selection to note:

   - **HSM Failure Action**: Typically, you will Cut Through an SSL flow where the HSM resign operation has failed; you may also Reject or Drop the flows.

3. Click OK.
4. In the **Rules** panel, click Add. The **Insert Rule** window opens.

![Insert Rule Window](image)

- **Action**: Select **Decrypt (Resign Certificate)**
- **EC Resigning CA**: Select the CA to resign flows signed with EC certificate authorities.
- **RSA Resigning CA**: Select the CA to resign flows signed with RSA certificate authorities.

*(The screen image above is from Blue Coat. Trademarks are the property of their respective owners.)*
HSM Resigning CA Group: Select the HSM Resigning CA Group, then the HSM CA group which will resign HSM SSL traffic. Resigning traffic is load balanced across the CAs.

5. Click OK. The window closes.

6. On the Rulesets window, click Apply at Policy Changes in the footer. When everything is setup, the SSL Visibility Appliance will inspect traffic which matches an inspection rule, resign it with the verified HSM resigning signature, and send the flow on to its destination.

### HSM Logs

HSM interaction information is available in the logs (under the Monitor menu item).

**System Log**: View HSM failures as follows:
- HSM appliance failure
- HSM appliance recovery

**SSL Session Log**: View HSM signature failures and other errors as follows:

<table>
<thead>
<tr>
<th>HSM network connectivity failure:</th>
<th>HSM or Agent can’t be reached</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSM secure connection failure:</td>
<td>SSL connection failure between the SSL Visibility Appliance and the HSM</td>
</tr>
<tr>
<td>Invalid HSM response:</td>
<td>HSM response is corrupt, or can’t be verified</td>
</tr>
<tr>
<td>Invalid HSM request:</td>
<td>HSM returned a HTTP 400 response</td>
</tr>
<tr>
<td>HSM operation internal error:</td>
<td>HSM returned an HTTP 404 or 500 response</td>
</tr>
</tbody>
</table>

### HSM Diagnostics

The Policy section of a diagnostics report will contain the resigning CA fields and HSM Failure options in the rulesets, as well as the user-defined HSM resigning CA groups. The PKI section will include the HSM configuration, HSM resigning CAs, and the client certificates.

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**NOTE:** No diagnostic CLI is available for HSM connections for the SSL Visibility Appliance.
Support Contacts

If you encounter a problem while installing, registering or operating this product, please make sure that you have read the documentation. If you cannot resolve the issue, contact your supplier or SafeNet Customer Support. SafeNet 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 SafeNet and your organization. Please consult this support plan for further information about your entitlements, including the hours when telephone support is available to you.

Table 1: Support Contacts

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<th>Contact Information</th>
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</thead>
<tbody>
<tr>
<td><strong>Address</strong></td>
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</tr>
<tr>
<td></td>
<td>4690 Millennium Drive</td>
</tr>
<tr>
<td></td>
<td>Belcamp, Maryland 21017, USA</td>
</tr>
<tr>
<td><strong>Phone</strong></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>1-800-545-6608</td>
</tr>
<tr>
<td>International</td>
<td>1-410-931-7520</td>
</tr>
<tr>
<td><strong>Technical Support</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Customer Portal</strong></td>
<td><a href="https://serviceportal.safenet-inc.com">https://serviceportal.safenet-inc.com</a></td>
</tr>
<tr>
<td></td>
<td>Existing customers with a Technical Support Customer Portal account can log in to manage incidents, get the latest software upgrades, and access the SafeNet Knowledge Base.</td>
</tr>
</tbody>
</table>