BeyondTrust Password Safe

nShield® HSM Integration Guide

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Contents

1. Introduction

This document describes the integration of BeyondTrust Password Safe with an nShield Hardware Security Module (HSM).

Password Safe communicates with HSMs using a PKCS #11 API. nShield HSMs include a PKCS #11 driver with their client software installation. This allows applications to use the device without requiring specific knowledge of the make, model, or configuration of the HSM.

The Password Safe integration HSM treats the HSM as an external API that only requires credentials. Advanced configurations and features, such as high-availability implementations, are typically transparent in Password Safe. For example, the client software may allow a group of multiple HSMs to be presented as a single token in a single slot. In this case, Password Safe would access the group the same way it would access a single HSM. Configuring the group and synchronizing key data is outside the scope of the Password Safe software and must be performed according to the guidelines for the specific hardware.

1.1. Password Safe use of HSM credentials

- Password Safe only uses one set of HSM credentials to encrypt any stored credential at a given time.
- Password Safe always encrypts new or edited credentials using the latest stored set of HSM credentials.
- Password Safe supports legacy HSM credentials. Credentials that were encrypted using an older set of HSM credentials are still accessible if the HSM credential used to encrypt it has not been deleted manually.
- Archived HSM credentials remain in the Password Safe database until they are manually deleted.

1.2. Prerequisites

- The Password Safe server: A Windows Server that has Password Safe installed and the Password Safe database configured.
- A supported HSM: Configured and accessible to the Password Safe application server.

  Before configuring the nShield HSM with Password Safe, the HSM client software must be installed and configured. Follow the *Installation Guide* and *User Guide* for the HSM and use the tools in the HSM client software suite.

- The path to both the 32-bit and 64-bit PKCS #11 drivers.

  These are included in the client software and are listed in *Installation Guide* for your HSM. Both driver locations are required during HSM configuration.

- The name of the token to which Password Safe should connect.

  This is specified as part of the HSM configuration process.

- The PIN or password for an HSM user who can create and use keys.

  This is specified as part of the HSM configuration process.

- There must be no other credentials configured in the database when the HSM configuration procedure is executed.

1.3. Product configurations

Entrust has successfully tested nShield HSM integration with Password Safe in the following configurations:

Product	Version
Operating System	Windows Server 2019 Standard Desktop Version
Password Safe	Password Safe 21.3
SQL Server	Microsoft SQL Server 2019

1.3.1. Supported nShield features

Entrust has successfully tested nShield HSM integration with the following features:

Feature	Support
Softcards	Yes
Module Only Key	Yes

1.3.2. Supported nShield hardware and software versions

Entrust has successfully tested with the following nShield hardware and software versions:

HSM	Security World Software	Firmware	Image	Softcard	Module
Connect XC	12.70.4	12.50.11	12.60.2	✓	✓
Connect +	12.70.4	12.50.8	12.60.10	✓	✓

1.4. More information

For more information, see the *User Guide* and *Installation Guide* for your HSM or contact Entrust nShield Support, https://nshieldsupport.entrust.com.

2. Install

2.1. Install the HSM

Install the HSM by following the instructions in the *Installation Guide* for the HSM.

Entrust recommends that you install the HSM before configuring the Security World Software with your Password Safe Server.

2.2. Install the Security World Software and creating the Security World

To install the Security World Software and create the Security World:

1. On your Password Safe server, install the latest version of the Security World Software as described in the *Installation Guide* for the HSM.

   Entrust recommends that you uninstall any existing nShield software before installing the new nShield software.

2. Create the Security World as described in the *User Guide*. Create the ACS and Softcards that you require.
3. Configure the `cknfastrc` environment variables:
   a. Open the `C:\Program Files\nCipher\nfast\cknfastrc` file.
   b. Add the following environment variables to the file:

   ```
   CKNFAST_FAKE_ACCELERATOR_LOGIN=1
   CKNFAST_NO_ACCELERATOR_SLOTS=0
   CKNFAST_LOADSHARING=1
   ```

4. Update the `cardlist` file:
   a. Go to the `C:\ProgramData\nCipher\Key Management Data\config` folder.
   b. Open the `cardlist` file in a text editor and add an asterisk (*) to authorize all Java Cards for dynamic slots.
5. Create a Softcard that will be used with Password Safe.

   When you are configuring Password Safe, you will need to use Softcard protection or module protection. If you are using a Softcard, you need to create it first.

   Perform the following steps on the Password Safe server in a PowerShell terminal as `Administrator`:

a. Create the Softcard:

```
cd c:\Program Files\nCipher\nfast\bin
./ppmk -n beyondtrustsoftcard
```

b. Check for the Softcard:

```
./nfkminfo -s
```

2.3. Install Password Safe on the Password Safe server

To install Password Safe on the Password Safe server, you have two options:

- Install BeyondInsight.

  BeyondInsight includes Password Safe.

- Install a U-Series Appliance.

  U-Series virtual appliances include BeyondInsight and Password Safe.

For details and installation instructions, see https://www.beyondtrust.com/docs/beyondinsight-password-safe/index.htm.

3. Configure an HSM with the BeyondInsight configuration tool

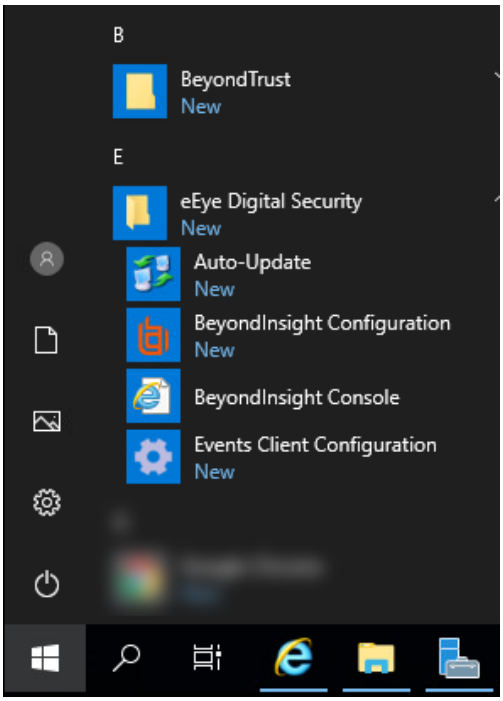
3.1. Ready for configuration

The following must be completed before configuring the HSM in BeyondInsight:

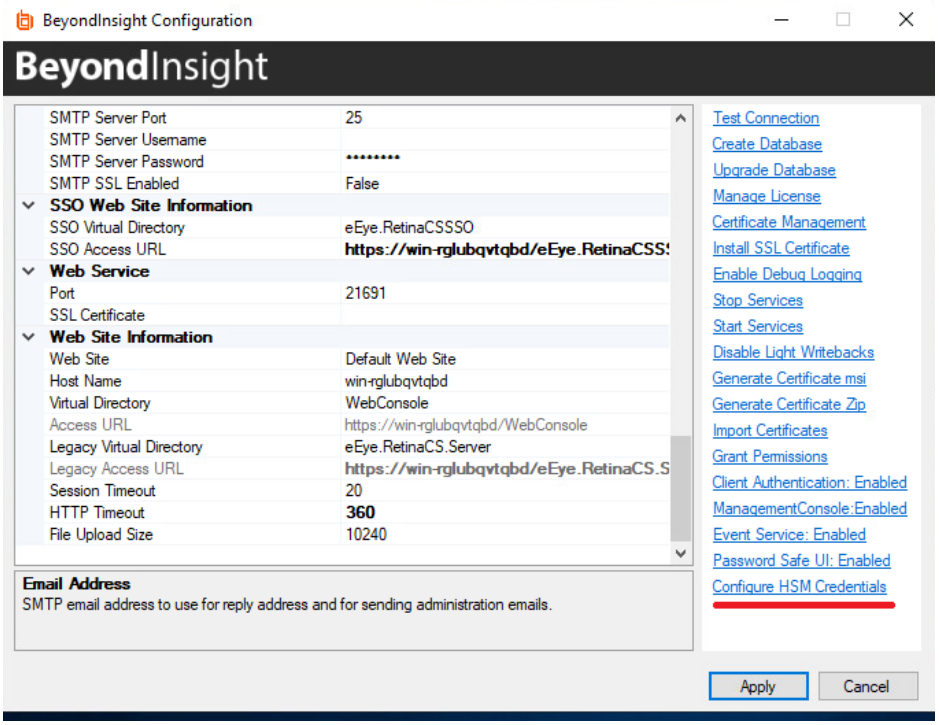
- The HSM has been installed and configured.
- The nShield client software has been installed and connected to the HSM.
- The Security World file has been created.
- A Softcard has been created using the nShield client software.
- BeyondInsight has been installed.

3.2. Add an HSM credential to BeyondInsight

1. Sign in to the BeyondInsight server that is configured to access the HSM.
2. Open the BeyondInsight Configuration tool: **Start > Apps > eEye Digital Security > BeyondInsight Configuration**.



3. Select **Configure HSM Credentials**.



The **Configure HSM credentials** dialog appears.

4. Select **Edit > Add New HSM Credential**.
5. Enter HSM details as defined below:

> The nShield HSM PKCS #11 drivers are in the `C:\Program Files\nCipher\nfast\toolkits\pkcs1` directory.

32-bit Driver Path

Select the 32-bit PKCS #11 driver.

64-bit Driver Path

Select the 64-bit PKCS #11 driver.

Label/Slot

After a valid 32-bit/64-bit drivers have been selected, this is the list of tokens presented by the driver in the format of **label (slot number)**.

The label is the name of the HSM token. Some HSMs have a default name. Otherwise, it is the name that was set when you configured your HSM.

The slot number is an index number starting at 0. It indicates the token's position within the list of tokens presented by the driver.

Key Name

HSM keys are identified labels. A unique name must be provided for each key. This is required to associate encrypted credentials with the key that is used to

encrypt and decrypt them. Any key name can be used as long as it is unique.

Description

Information about the key, for display purposes only.

PIN

The password for the HSM token that was set up for use by BeyondInsight.

6. Select **Save**.

   After the information has been saved, you can test the connection.

7. Select **Test Active Credential**.

   A dialog confirms that the connection was successful.

8. Close the **Configure HSM Credentials** window and **Apply** the changes in the **BeyondInsight Configuration** window.

4. Manage HSM credentials

4.1. Change HSM Credentials

Editing an existing HSM credential might prevent Password Safe from decrypting a credential. This occurs if the encryption key name configured in the HSM credential does not match the encryption key name that was used to encrypt a credential. For this reason, editing the key name is not permitted.

To edit HSM credentials:

1. Right-click an existing credential.
2. Select **Edit Credential**.
3. Select the required cells and modify the values of:
    - 32-bit Driver Path
    - 64-bit Driver Path
    - Slot
    - Description
    - PIN
4. Select **Save**.

4.2. Delete existing HSM credentials

Deleted credentials cannot be recovered. Password Safe will be unable to decrypt any credentials encrypted with this HSM credential.

1. Right-click a credential.
2. Select **Delete Credential**.

   A confirmation dialog appears.
3. Confirm the deletion.
4. Select **Save and Close**.