



**STORMSHIELD**



**STORMSHIELD NETWORK SECURITY**  
STORMSHIELD NETWORK VPN CLIENT EXCLUSIVE

# ADMINISTRATOR'S GUIDE

Version 7.5.006

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# Table of contents

1. Change log	3	10.1 Menus	37
2. Getting started	4	10.2 Status bar	37
3. Installing the software	5	10.3 Shortcuts	37
3.1 Introduction	5	10.4 VPN configuration tree	38
3.1.1 Minimum requirements	5	10.4.1 Usage	38
3.1.2 Digital signature and version	5	10.4.2 Contextual menus	39
3.2 Installation procedure	6	10.4.3 Shortcuts	41
3.3 Canceling installation	13	11. TrustedConnect Panel	42
3.4 Trial period	13	11.1 Introduction	42
3.5 Configuring Windows	15	11.2 Interface	42
3.5.1 Windows 11	16	11.3 Taskbar icon and color codes	43
3.5.2 Windows 10	16	11.4 Contextual menu	44
4. Activating the software	18	11.5 Usage	44
4.1 Step 1	18	11.5.1 Workstation connected to corporate network	45
4.2 Step 2	18	11.5.2 Workstation not connected to corporate network	45
4.3 Activation errors	19	11.6 Error cases	47
4.4 Manual activation	20	11.7 Generating logs and Console	48
4.5 License and activated software	22	11.8 Selecting the language	48
5. Updating the software	23	11.9 Choosing the connection	49
5.1 How to get an update	23	11.10 Current limitations	50
5.2 Update procedure	23	12. "About..." window	51
5.3 Updating the VPN configuration	24	13. Importing and exporting the VPN configuration	52
5.4 Automation	24	13.1 Importing a VPN configuration	52
6. Uninstalling the software	25	13.2 Exporting a VPN configuration	53
7. Getting started with the software	26	13.3 Merging VPN configurations	55
7.1 Introduction	26	13.4 Splitting a VPN configuration	55
7.2 Starting the software	26	14. Configuring a VPN tunnel	56
7.3 Configuring a VPN tunnel	28	14.1 SSL or IPsec IKEv2 VPN	56
7.4 Automating the opening of a VPN tunnel	29	14.2 Editing and saving a VPN configuration	56
7.5 Opening a VPN tunnel from the TrustedConnect Panel	29	14.3 Configuring an IPsec IKEv2 tunnel	57
8. Configuration Wizard	30	14.3.1 IKE Auth: Authentication	57
8.1 Step 1	30	14.3.2 IKE Auth: Protocol	59
8.2 Step 2	31	14.3.3 IKE Auth: Gateway	61
8.2.1 Configuring an IPsec/IKEv2 tunnel	31	14.3.4 IKE Auth: Certificate	62
8.2.2 For an SSL tunnel (OpenVPN)	32	14.3.5 Child SA: Overview	62
8.3 Step 3	32	14.3.6 Child SA: Child SA:	63
9. Connection Panel	34	14.3.7 Child SA: Advanced	66
10. Configuration Panel	36	14.3.8 Child SA: Automation	67
		14.3.9 Child SA: Remote sharing	67
		14.4 Configuring an SSL/OpenVPN tunnel	67
		14.4.1 Introduction	67
		14.4.2 SSL: Authentication	68
		14.4.3 SSL: Security	69
		14.4.4 SSL: Gateway	71



14.4.5 SSL: Establishment	73	22. Configuring the TrustedConnect Panel	101
14.4.6 SSL : Automation	75	22.1 Always-On	101
14.4.7 SSL : Certificate	75	22.1.1 Operating principle	101
14.4.8 SSL : Remote sharing	75	22.1.2 Configuring Always-On	101
15. Redundant gateway	76	22.2 Trusted Network Detection (TND)	103
16. Automation	77	22.2.1 Operating principle	103
16.1 Tunnel fallback	77	22.2.2 Configuring TND	104
16.2 Automatic Open mode	78	22.2.3 Disabling TND	110
16.3 GINA mode	78	22.3 Scripts	111
16.4 Scripts	78	22.4 Minimizing the panel	111
17. Fallback tunnel	80	22.5 Disabling the disconnect button	111
18. IPv4 and IPv6	81	22.6 Removing menu items	111
19. Managing certificates	82	22.7 Automatically restarting the TrustedConnect Panel	112
19.1 Introduction	82	22.8 Purging logs	112
19.2 User certificate	82	22.9 Behavior when smart card or token is removed	112
19.2.1 Overview	82	23. GINA mode	113
19.2.2 Dynamic parameters	83	23.1 Overview	113
19.2.3 Automatic selection	83	23.2 Configuring the GINA mode	114
19.3 Selecting a certificate (Certificate tab)	85	23.3 Using the GINA mode	114
19.4 Importing a certificate to the VPN configuration	88	24. Filtering mode	116
19.4.1 Importing a PEM/PFX certificate	88	25. Secure Connection Agent	117
19.4.2 Importing a PKCS#12 certificate	89	25.1 Overview	117
19.5 Using a certificate stored on a smart card or token	90	25.2 Endpoint compliance monitoring	117
19.6 Using a certificate stored in the Windows Certificate Store	90	25.2.1 Introduction	117
19.6.1 Required characteristics	90	25.2.2 Configuring the VPN Client	118
19.6.2 Importing a certificate depending on the store used	91	25.2.3 Selecting the tunnel to open according to the compliance level	119
19.7 PKI options: specifying the certificate and its storage device	91	25.3 Forwarding audit traces from the VPN Client to the CMC	122
19.8 VPN gateway certificate	91	25.3.1 Introduction	122
19.8.1 Preventing or limiting CRL download	92	25.3.2 Configuring the VPN Client	122
19.8.2 Constraints on the Key Usage extension	93	26. Options	124
19.8.3 Constraints on the Extended Key Usage extension	93	26.1 View	124
19.9 Managing certification authorities	94	26.1.1 Showing options in systray menu	124
19.9.1 Overview	94	26.1.2 Showing the systray fade-out pop-up	125
19.9.2 Importing a certificate authority	95	26.1.3 Restricting access to the Configuration Panel	125
19.9.3 IPsec DR mode	95	26.2 General	126
20. Remote Desktop Sharing	96	26.3 Managing logs	129
21. Configuring the Connection Panel	98	26.4 PKI Options	129
		26.4.1 Certificate Check	130
		26.4.2 Certificate Access	130
		26.4.3 Token/Smart Card Reader choice	130
		26.5 Managing languages	131



- 26.5.1 Choosing a language ..... 131
- 26.5.2 Editing or creating a language 131
- 27. Administrator logs, console, and traces ..... 133
  - 27.1 Administrator logs ..... 133
  - 27.2 Console ..... 135
  - 27.3 Trace mode ..... 136
- 28. Security recommendations ..... 137
  - 28.1 Assumptions ..... 137
    - 28.1.1 Profile and responsibilities of administrators ..... 137
    - 28.1.2 Profile and responsibilities of users ..... 137
    - 28.1.3 Compliance with management rules for cryptographic elements ..... 137
  - 28.2 User workstation ..... 137
  - 28.3 VPN Client administration ..... 138
  - 28.4 VPN Configuration ..... 138
    - 28.4.1 Sensitive information in the VPN configuration ..... 138
    - 28.4.2 User authentication ..... 138
    - 28.4.3 VPN gateway authentication .. 139
    - 28.4.4 Protocol ..... 139
    - 28.4.5 "All through the tunnel" and "split tunneling" modes ..... 139
    - 28.4.6 GINA mode ..... 139
    - 28.4.7 ANSSI recommendations ..... 139
- 29. Appendixes ..... 140
  - 29.1 Shortcuts ..... 140
    - 29.1.1 Connection Panel ..... 140
    - 29.1.2 VPN configuration tree ..... 140
    - 29.1.3 Configuration Panel ..... 140
  - 29.2 Administrator logs ..... 141
  - 29.3 TrustedConnect Panel diagnostics ..... 142
  - 29.4 Basic cryptography concepts . 146
    - 29.4.1 SHA, RSA, ECDSA and ECSDSA algorithms ..... 146
    - 29.4.2 Accessing certificates ..... 147
    - 29.4.3 Determining a certificate's container type ..... 148
    - 29.4.4 Certificate format ..... 148
    - 29.4.5 Certificate authentication methods ..... 152
  - 29.5 SN VPN Client Exclusive technical data ..... 153
    - 29.5.1 General ..... 153
    - 29.5.2 Operating mode ..... 153
    - 29.5.3 Connection/Tunnel ..... 153
    - 29.5.4 Cryptography and authentication ... 153
    - 29.5.5 Miscellaneous ..... 154
    - 29.5.6 Administration ..... 155



# 1. Change log

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Date	Description
February 26, 2024	New document



## 2. Getting started

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Welcome to the SN VPN Client Exclusive v7.5.006 administration guide.

This guide is intended for SN VPN Client Exclusive administrators. It contains all the information required to implement and configure the software so that secure VPN tunnels can be opened.

A complementary document dedicated to the software's deployment, called "**Deployment Guide**", is also available.

In this document, Stormshield Network VPN Client Exclusive is referred to in its short form: SN VPN Client Exclusive. Some of the images used in this document are from the partner vendor's (TheGreenBow) software program. In your SN VPN Client Exclusive program, the graphics may vary but user experience is exactly the same.



## 3. Installing the software

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### 3.1 Introduction

SN VPN Client Exclusive is installed by executing the program that can be downloaded from [MyStormshield](#).

The default installation procedure, run by double-clicking the icon of the downloaded program, opens a window that allows you to customize the installation.

The installation of the software can be customized using a set of command-line options and VPN configuration files. These options and features are detailed in the “[Deployment Guide](#)”.

Refer to section [Installation procedure](#).

#### 3.1.1 Minimum requirements

SN VPN Client Exclusive is available for Windows 10 and 11 64 bit.

The minimum system requirements to install the software are as follows:

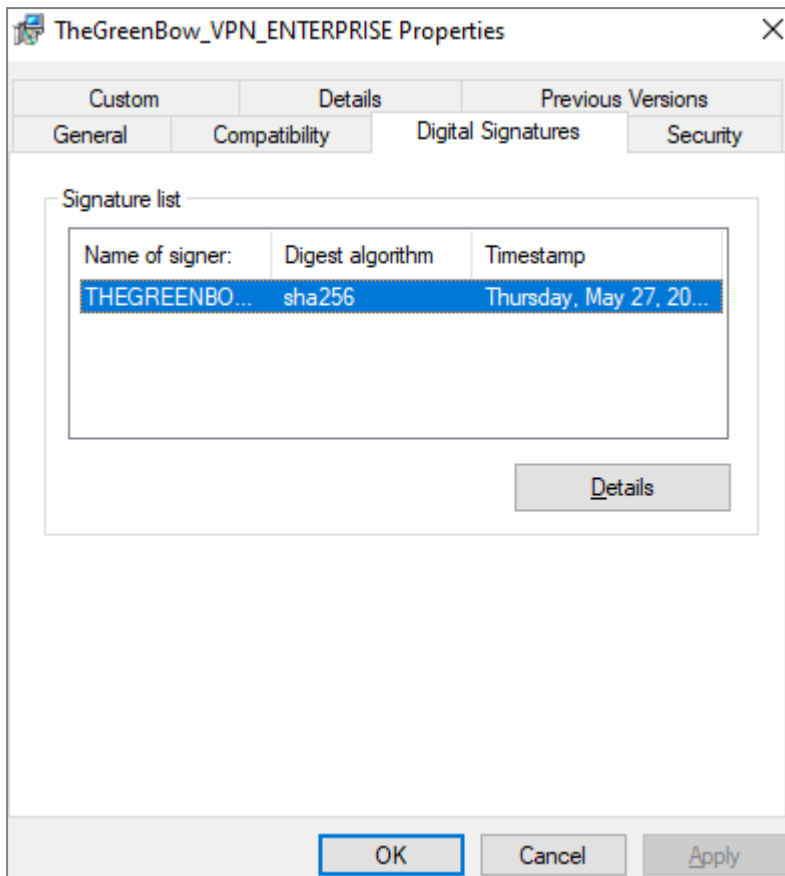
- Processor: 1 GHz or faster processor
- RAM: 2 GB
- Hard disk space available: 40 MB

When the software is not installed from an administrator account, a window opens, prompting you for the username and password of an administrator account on the machine.

#### 3.1.2 Digital signature and version

The installer software for SN VPN Client Exclusive is signed with a certificate issued for THEGREENBOW SA. This allows the person performing the installation or the user to verify the integrity of the installation program.

You can verify the authenticity of the software by displaying the program's properties (right-click MSI installer) and then selecting the **Digital signatures** tab.



Users can check the version number of SN VPN Client Exclusive in the **About...** window of the software.

## 3.2 Installation procedure

Once you have downloaded the SN VPN Client Exclusive installation program and verified its authenticity (see section [Digital signature and version](#) above), you can proceed with its installation by following the steps described below.

The installation procedure is the same whether it is an initial installation or an update (see chapter [Updating the software](#)). When performing an update, the software settings, the existing VPN configuration, and the license are preserved. In some cases, see section [Updating the VPN configuration](#).

### ! IMPORTANT

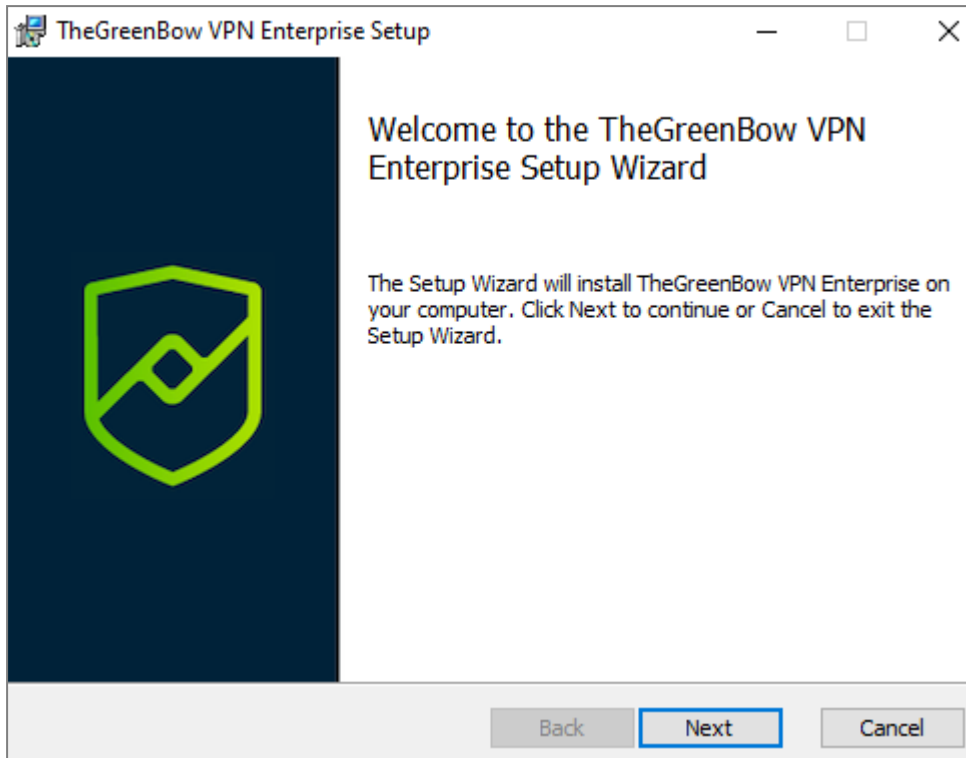
You can only update the software if your subscription is still valid (see section [How to get an update](#)).

### i NOTE

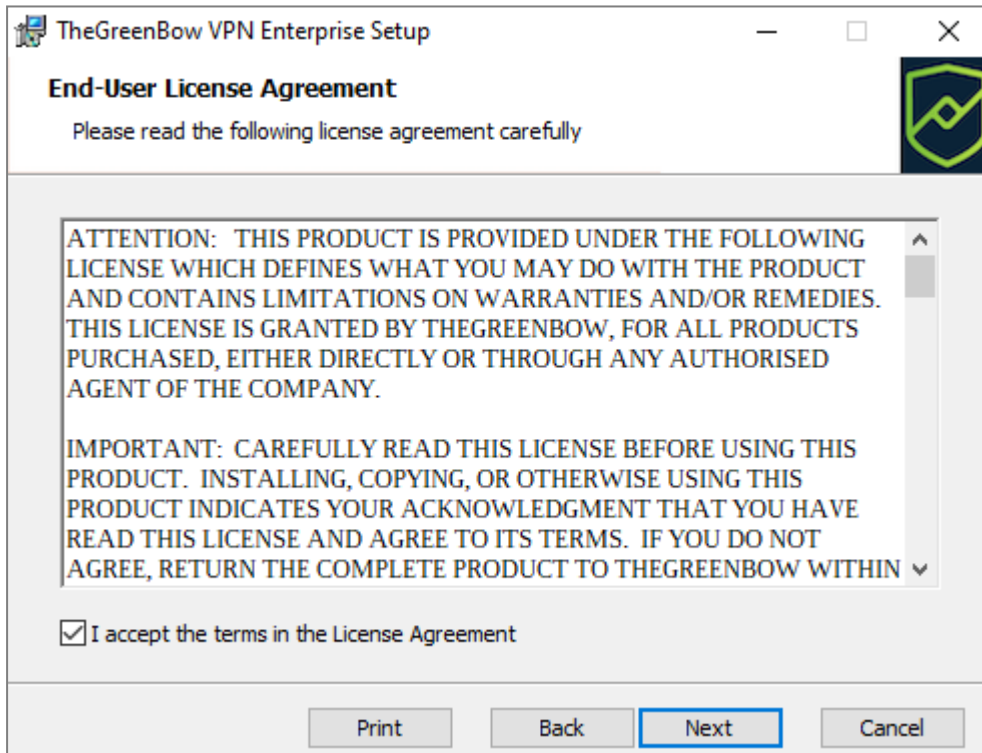
If you want to perform a silent installation, pass specific parameters during installation or perform a large-scale deployment, refer to the "[Deployment Guide](#)".

1. Double-click the installation program you downloaded. The following window is displayed:

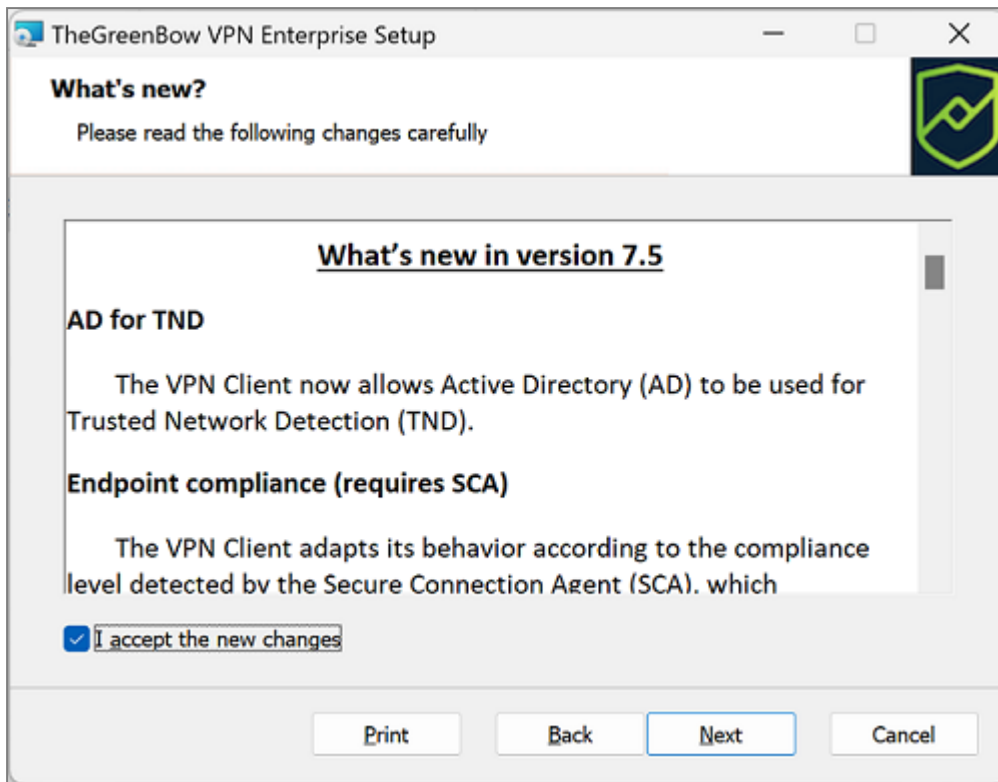




2. Click on **Next**. The following window is displayed:



3. Read the End User License Agreement (EULA) carefully. If you accept all the terms of the agreement, select the **I accept the terms of the license agreement** checkbox, and then click **Next**. Otherwise, you will not be able to continue installing SN VPN Client Exclusive. The following window is displayed:

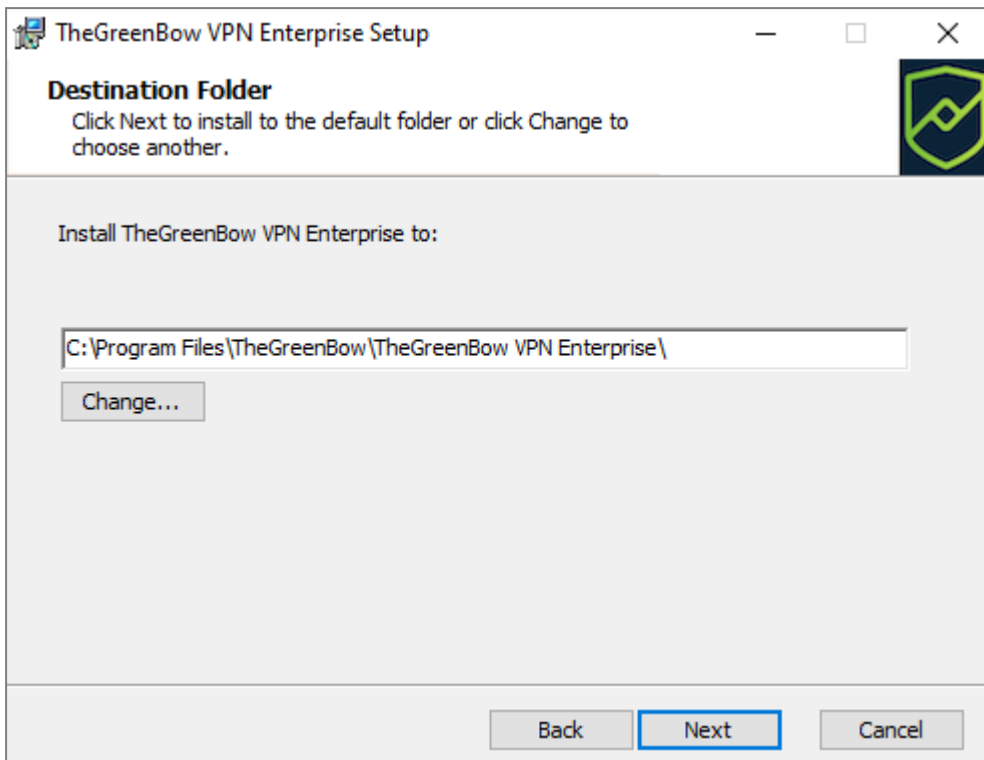


4. Carefully read the information about what's new and the note about how the existing VPN configuration will be converted during an update.

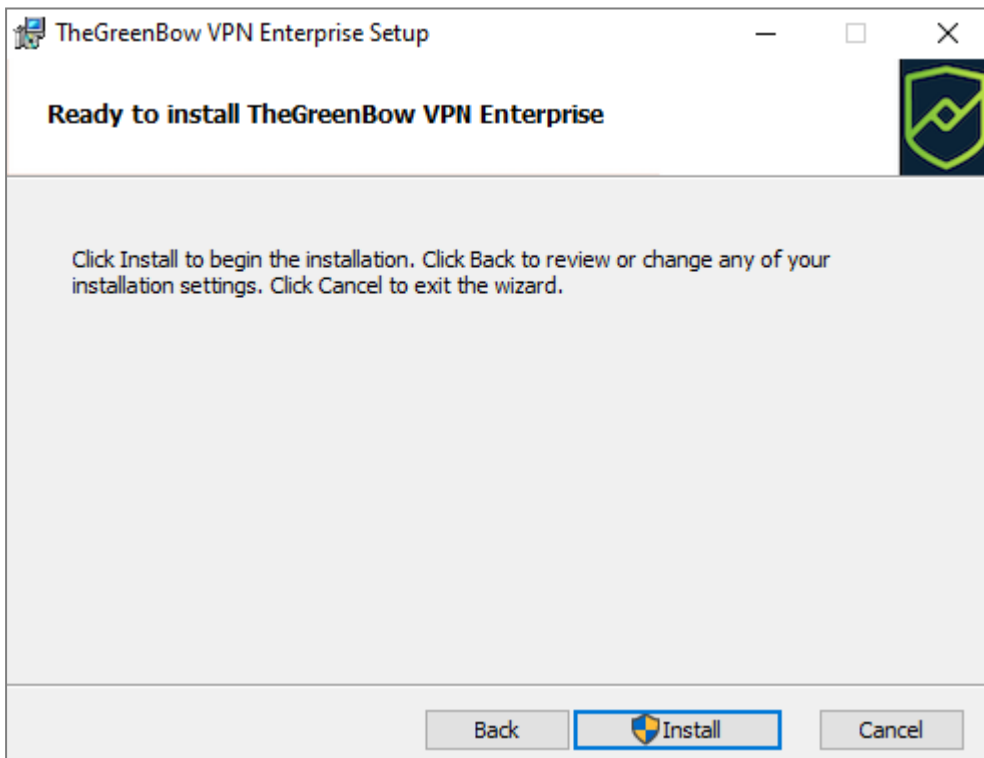
**! IMPORTANT**

Once the installation is complete, you will not be able to revert to an earlier version of the software without manual intervention. If in doubt, back up your VPN configuration to a separate folder or to a removable storage medium.

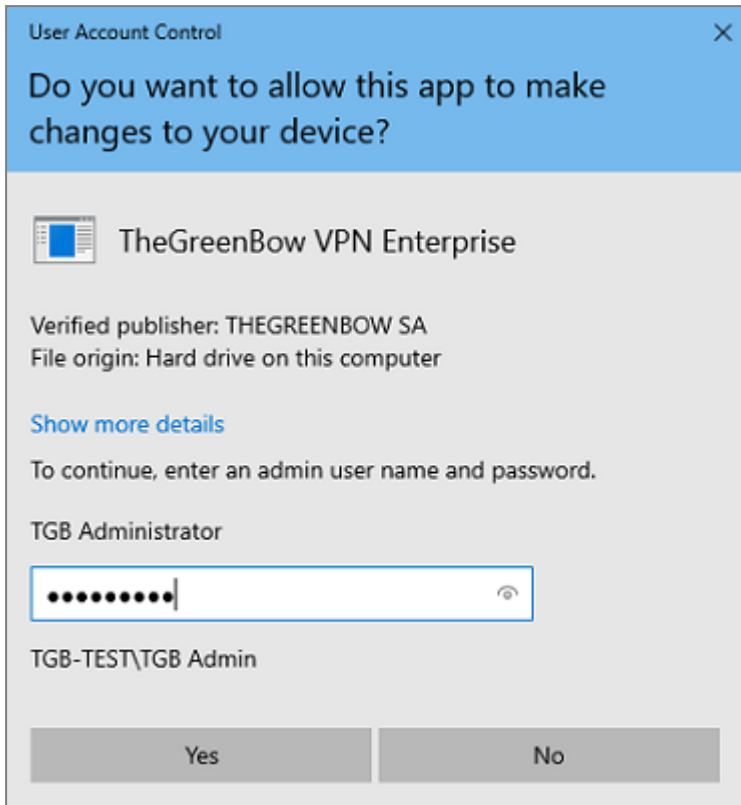
If you accept all the terms of the agreement, select the **I accept the new changes** checkbox, and then click **Next**. The following window is displayed:



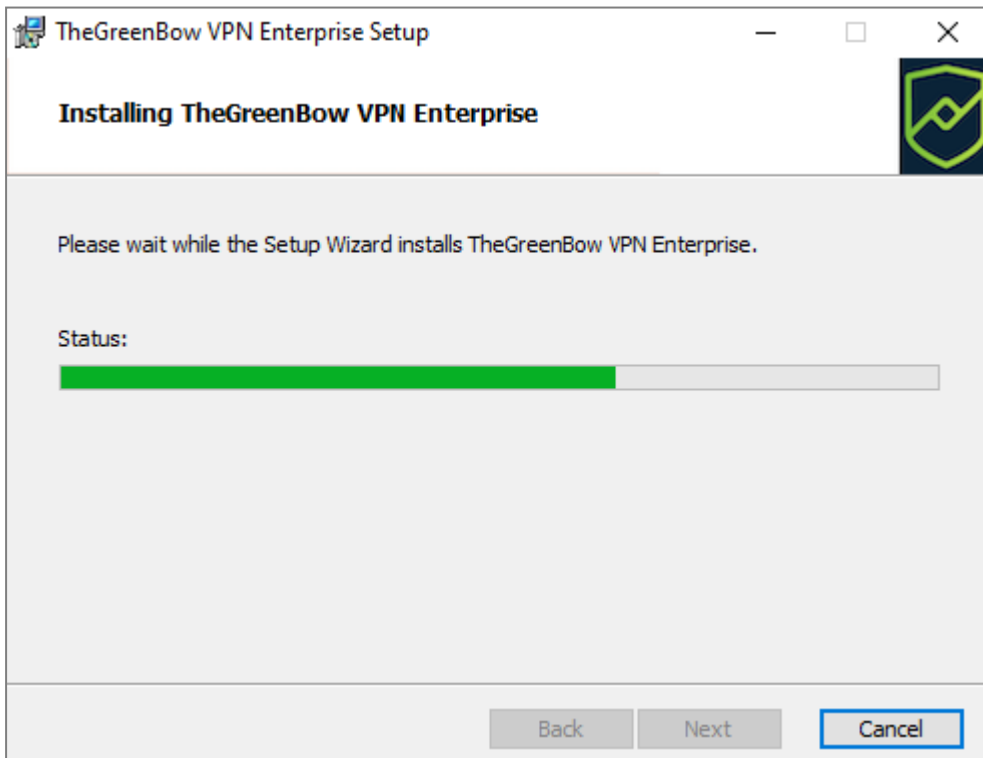
5. If you want to install SN VPN Client Exclusive in a specific directory, click **Change...** and select the desired directory. Otherwise, you can keep the default directory. Then, click on **Next**. The following window is displayed:



6. The program is ready to install. If you want to go back to check or change your installation settings, click **Back**. Otherwise, click **Install**. If you are installing from an account that does not have administrator rights, the following window is displayed:

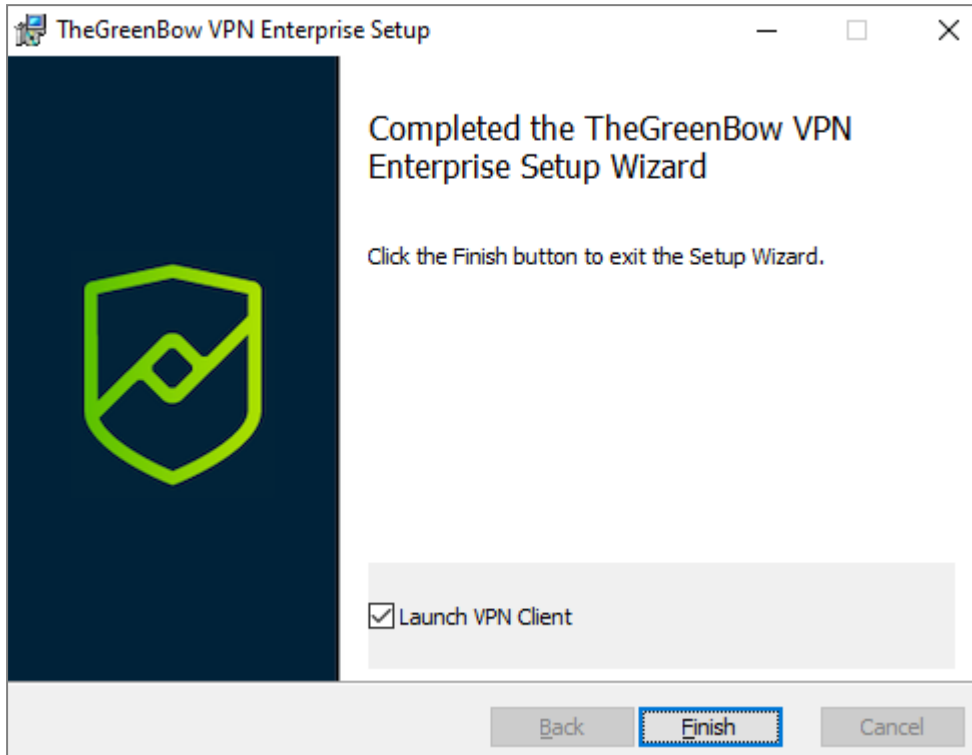


- 7. To proceed with the installation, you must enter an administrator name and password to allow the installation program to make changes to your computer. Otherwise, the software will not be installed.  
If you are installing from an administrator account, you do not need to enter a password. Simply confirm that you allow the app to make changes to your device.
- 8. Installation begins and the following window is displayed:

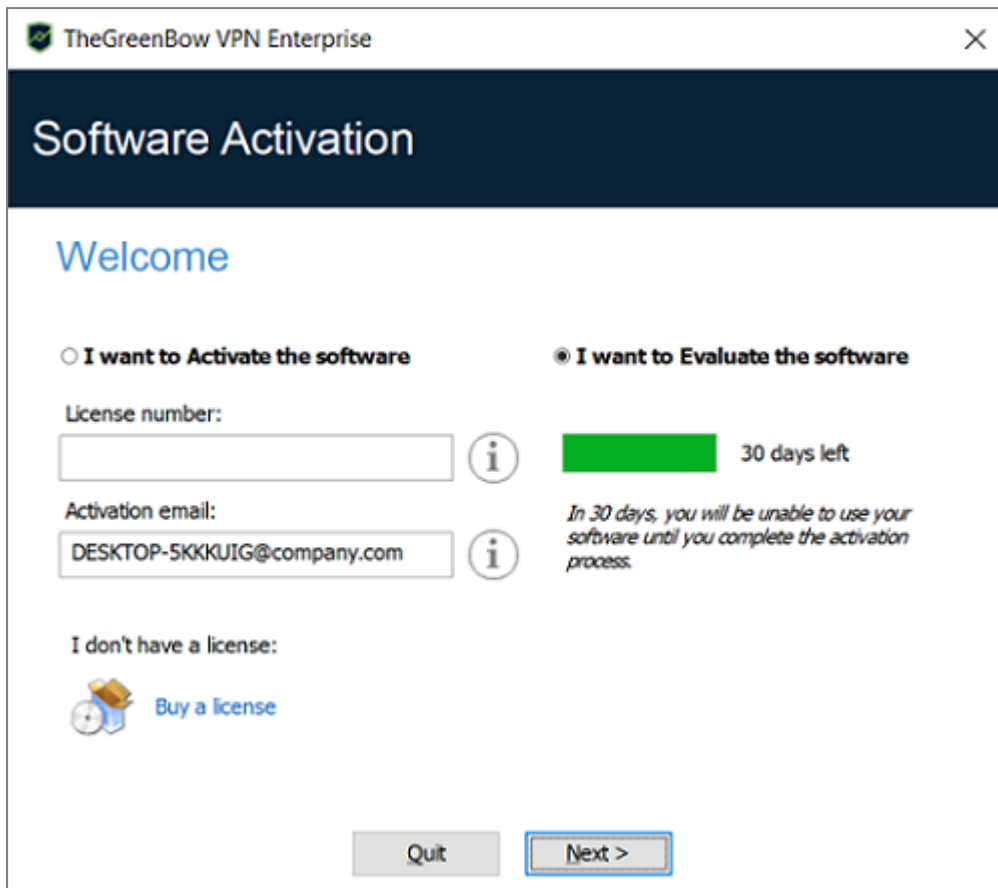




9. Wait for the installation of the SN VPN Client Exclusive including all its components to complete. If installation has succeeded, the following window is displayed:



10. If you do not want to launch SN VPN Client Exclusive immediately, uncheck the corresponding box. To exit the setup wizard, click **Finish**. Otherwise, the activation screen is displayed:



11. SN VPN Client Exclusive is now installed on your workstation.

If you already own a license for SN VPN Client Exclusive:

- Select **I want to Activate the software**,
- Enter the license number and activation e-mail,
- Then, click **Next >**

For further details on the activation procedure, refer to chapter [Activating the software](#).

If you want to try SN VPN Client Exclusive:

- Select **I want to Evaluate the software**
- Then, click **Next >**

You will then be able to use the software for a 30-day trial period. For further details on the trial period, refer to section [Trial period](#).

You are now ready to use the software. You can continue with the following steps:

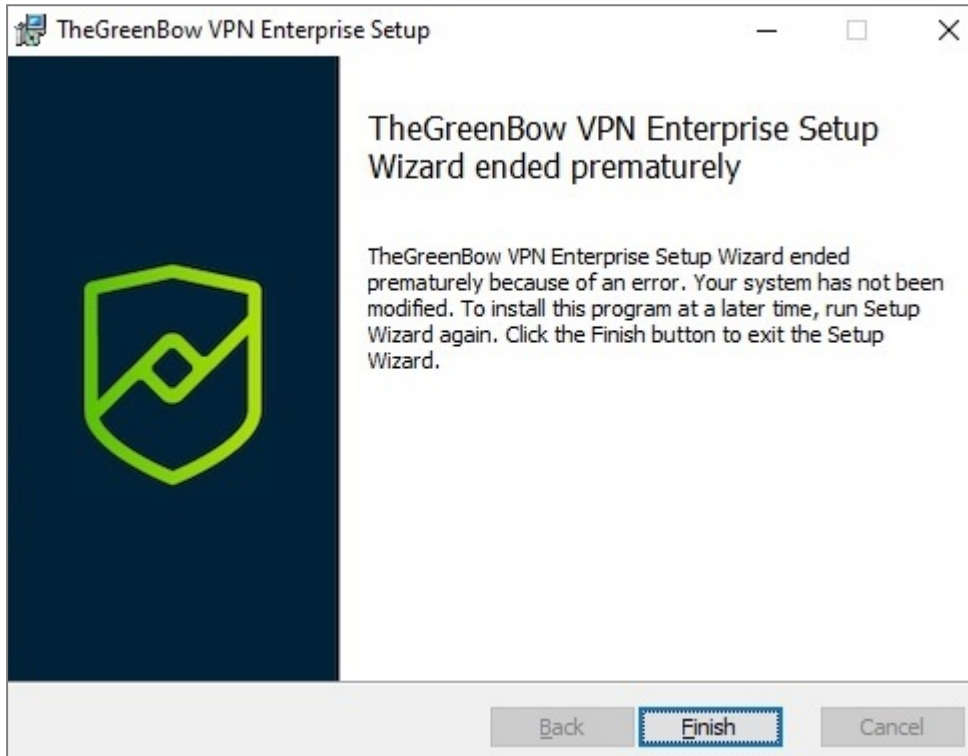
- To start using SN VPN Client Exclusive immediately, refer to chapter [Getting started with the software](#).
- To use the **Configuration Wizard** to quickly create a VPN connection, refer to chapter [Configuration Wizard](#).
- To import a VPN configuration compatible with this version of the software, refer to section [Importing a VPN configuration](#).
- For a detailed presentation of the available interfaces, refer to chapters [Connection Panel](#), [Configuration Panel](#) and [TrustedConnect Panel](#).



- For a comprehensive explanation of all VPN tunnel configuration options, refer to chapter [Configuring a VPN tunnel](#).
- To uninstall SN VPN Client Exclusive, refer to chapter [Uninstalling the software](#).

### 3.3 Canceling installation

If you cancel the setup wizard before clicking the “Install” button, the following window is displayed:

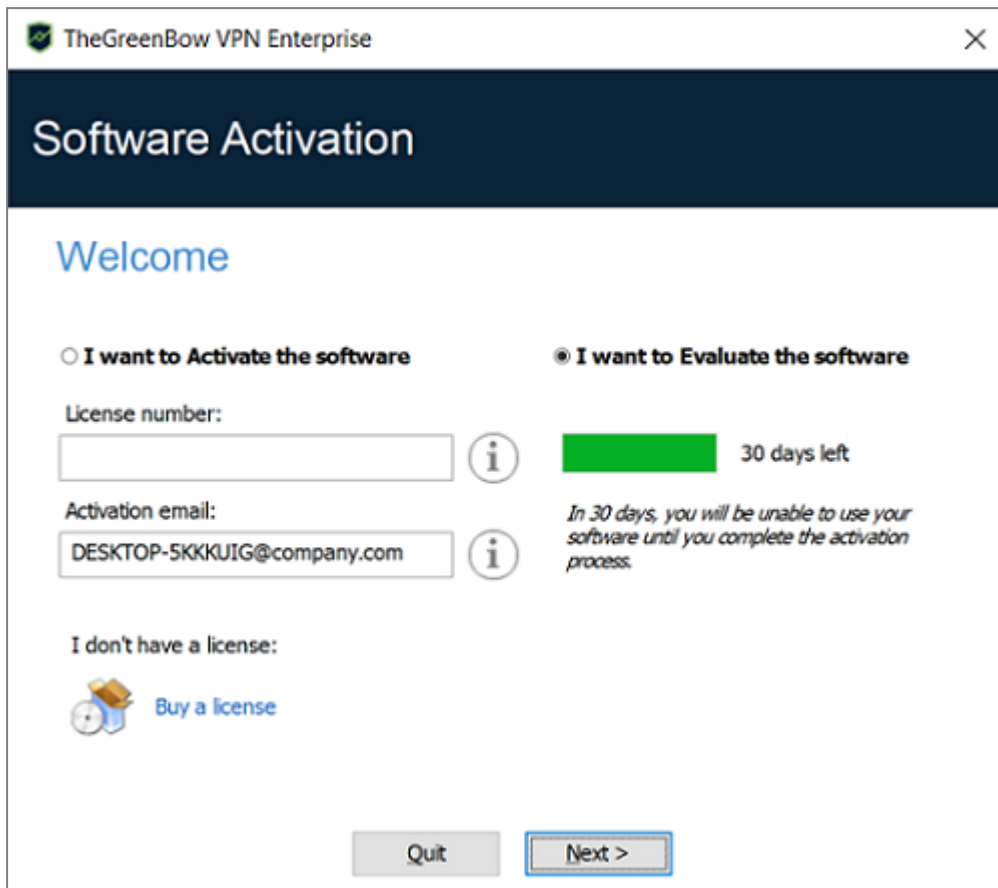


Your system has not been modified and you can resume installation at a later time.

### 3.4 Trial period

The first time the software is installed on a workstation, if no license key is provided to the installer, the VPN Client will enter a 30-day trial period. During this trial period, the VPN Client is fully operational, and all functions are unlocked.

The activation window will be displayed every time the software is started during the trial period. It shows the number of days remaining in the trial period.



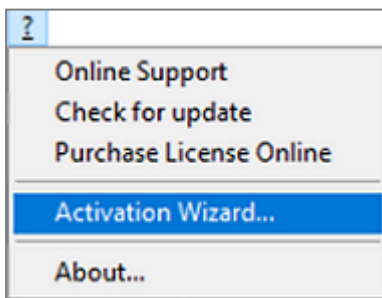
Select **I want to evaluate the software**, then click on **Next >** to run the software.

During the trial period, the **About...** window will display the number of days remaining until the trial ends.





During the trial period, the activation window can be accessed at any time using the ? > **Activation Wizard** menu item in the main interface (**Configuration Panel**).



### 3.5 Configuring Windows

Once you have completed installation, you need to make sure that a Windows sign-in option is disabled.

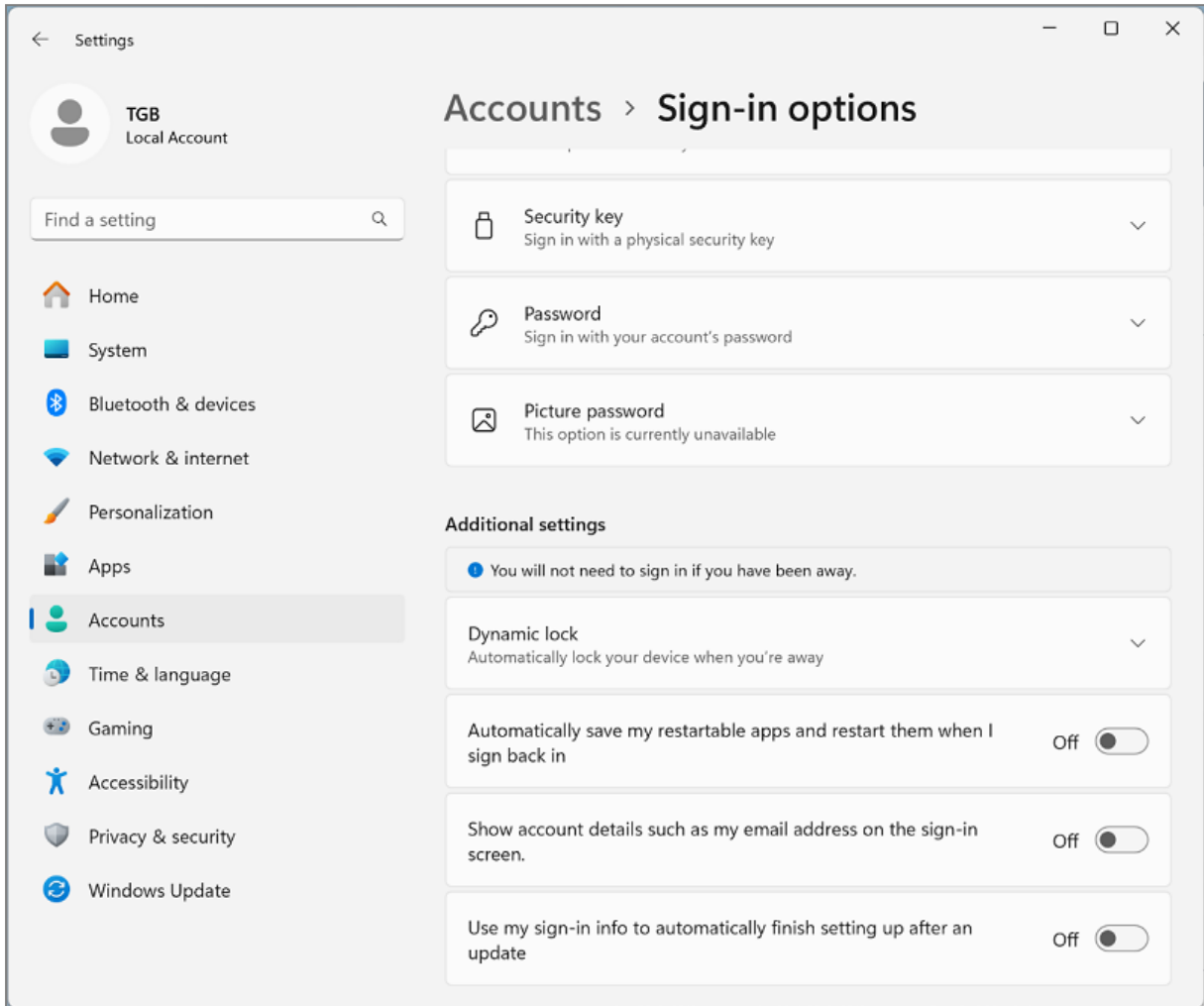
**i** **NOTE**

This option is not available (Windows 10) or grayed out (Windows 11) if your workstation is joined to a domain, or if your organization has applied work or e-mail policies to your workstation.



### 3.5.1 Windows 11

In Windows 11, select **Start**, and then **Settings > Accounts > Sign-in options** and under **Additional settings** disable **Use my sign-in info to automatically finish setting up after an update**, as shown in the screenshot below:



### 3.5.2 Windows 10

In Windows 10, select **Start**, and then **Settings > Accounts > Sign-in options** and under **Privacy** disable **Use my sign-in info to automatically finish setting up my device after an update or restart**, as shown in the screenshot below:



The screenshot shows the Windows Settings application window. The left sidebar contains the following navigation items: Home, Find a setting (search bar), Accounts, Your info, Email & accounts, Sign-in options (highlighted), Access work or school, Family & other users, and Sync your settings. The main content area is titled 'Sign-in options' and includes the following sections:

- Dynamic lock:** A section with a lock icon. It states: "Windows can use devices that are paired to your PC to know when you're away and lock your PC when those devices go out of range." Below this is a checkbox labeled "Allow Windows to automatically lock your device when you're away", which is currently unchecked. A link for "Bluetooth & other devices" and a "Learn more" link are provided.
- Restart apps:** A section with the heading "Restart apps". It states: "Automatically save my restartable apps when I sign out and restart them after I sign in." Below this is a toggle switch labeled "Off", which is currently turned off.
- Privacy:** A section with the heading "Privacy". It contains two items:
  - "Show account details such as my email address on the sign-in screen." with a toggle switch labeled "Off", which is currently turned off.
  - "Use my sign-in info to automatically finish setting up my device after an update or restart." with a toggle switch labeled "Off", which is currently turned off.A "Learn more" link is located at the bottom of this section.



## 4. Activating the software

If the software has not been activated during its silent installation (refer to the “[Deployment Guide](#)”), the VPN Client must be activated to continue to work beyond the trial period.

The activation procedure can be accessed every time the software is launched or using the ? > **Activation Wizard** menu item in the main interface.

### 4.1 Step 1

In the **License number** field, enter the license number you received by e-mail. The license number can be copy-pasted directly from the purchase confirmation e-mail into this field.

The license number consists of the characters [0..9] and [A..F], possibly grouped 6 by 6 and separated by hyphens.

In the **Activation email** field, enter the e-mail address used to identify your activation. This information is used for recovering the activation information if it is lost.

TheGreenBow VPN Enterprise

### Software Activation

Welcome

I want to Activate the software       I want to Evaluate the software

License number:  
123456-123456-123456-123456      30 days left

Activation email:  
john.doe@company.com      *In 30 days, you will be unable to use your software until you complete the activation process.*

I don't have a license:  
[Buy a license](#)

Quit      Next >

#### **i** NOTE

The **Activation email** field is filled by default with the username of the workstation on which the software is installed (as follows: *username@company.com*). This allows administrators of a “master” software license to individually identify all activated workstations. It allows them to manage software activations and deactivations in a deterministic way.

### 4.2 Step 2

Click on **Next >**. The online activation process will run automatically.

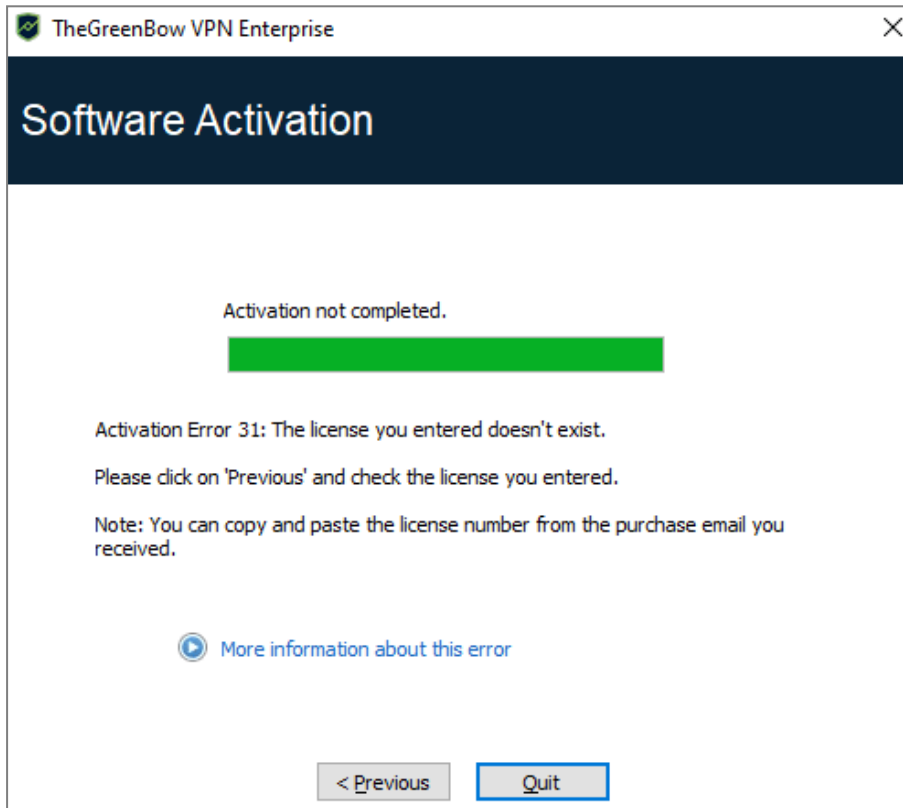
Once the activation has been carried out successfully, click on **Run** to run the software.



**i NOTE**  
The software activation is linked to the workstation on which the software has been installed. Consequently, a license number allowing a single activation cannot be reused on another workstation once it is activated. Conversely, a license number activation can be canceled by simply uninstalling the software.

### 4.3 Activation errors

Software activation may fail for various reasons. The error is always displayed in the activation window. It is sometimes followed by a link that displays more information about the error or suggests actions to solve the problem.



TheGreenBow lists all activation errors and [procedures for solving activation issues](#) on its website.

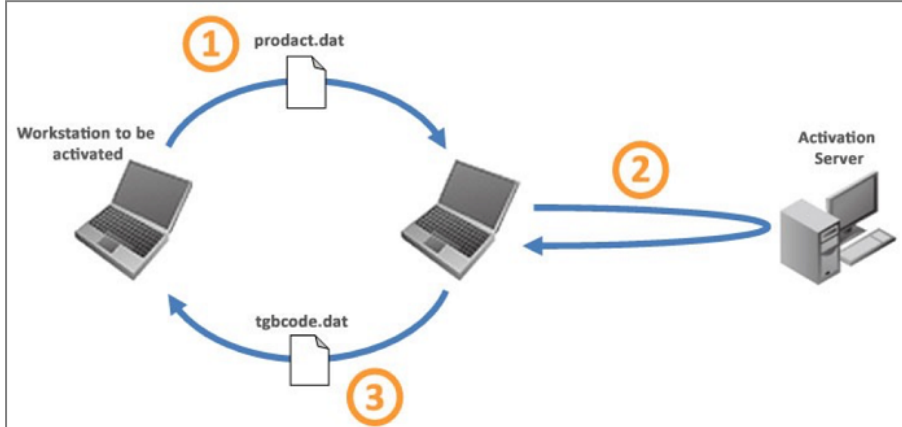
The following are the most common activation errors:

No.	Meaning	Troubleshooting
31	Wrong license number	Check license number.
33	The license number is already activated on a different workstation	Uninstall the software on the workstation with the activated license or contact Stormshield's Sales department.
53, 54	Communication with the activation server is impossible	Ensure that the workstation is connected to the Internet. Check that communication is not blocked by a firewall or proxy. Configure the firewall to let the communication through or the proxy to reroute it properly.



### 4.4 Manual activation

When activation fails due to a communication issue with the activation server, the software can be activated manually on [TheGreenBow's website](https://www.thegreenbow.com/en/support/license-management/manual-license-activation/). The procedure is as follows:



1	<i>product.dat</i> file	Retrieve the <i>product.dat</i> file from the <b>Documents</b> directory in Windows on the workstation that you want to activate. The <i>product.dat</i> file is a text file that contains the workstation information used for the activation. If this file cannot be found in the <b>Documents</b> directory, carry out the software activation steps on the workstation. This will generate the file even if activation fails.
2	Activation	On a workstation connected to the activation server (the activation server is the TheGreenBow server, which can be accessed on the Internet), open the manual activation page (refer to the detailed procedure below), and post the <i>product.dat</i> file. Let the server automatically create the <i>tgbcodes</i> before downloading it.
3	<i>tgbcodes</i> file	Copy the <i>tgbcodes</i> file to the <b>Documents</b> Windows directory on the workstation that you want to activate. Start the software; it will be activated.

To proceed with manual activation, follow the steps below:

1. On a workstation connected to TheGreenBow's website, open the following webpage: <https://www.thegreenbow.com/en/support/license-management/manual-license-activation/>



**Manual license activation**

This page enables to Offline Activate TheGreenBow Software whenever you experience online activation problems (such as activation server unreachable, problem of internet connexion, etc..).

**Step 1 - Sending the product.dat file**

To proceed to a Manual Software Activation, you will need the activation file 'product.dat'.

Where can I find the activation file 'product.dat' on my computer ?

**Attachment** [Add a file](#)

The files must be in .DAT format and must be less than 5MB in size.

**Step 2 - Analysis**

**Step 3 - Activation**

2. Click **Add a file** and open the *product.dat* file created on the workstation that you want to activate.
3. Click on **Send**. The activation server will check the validity of the information contained in the *product.dat* file.
4. Click **Submit**. The activation server will provide a link to download a file containing the activation code for the workstation to be activated.

**Manual license activation**

This page enables to Offline Activate TheGreenBow Software whenever you experience online activation problems (such as activation server unreachable, problem of internet connexion, etc..).

**Step 3 - Activation**

✓ Your activation code is correctly generated.

To activate your software :

- Download your activation file below
- Copy it to the directory where you found "product.dat"
- Quit and restart your software

[Download the .dat file](#)

The file name has the following format: *tgbcod*<sub>[date]</sub><sub>[code]</sub>.dat (e.g. *tgbcod*<sub>20210615\_1029</sub>.dat).



### 4.5 License and activated software

Once the software is activated, the license number and e-mail address used for activation is shown in the **About...** window of the software.







## 5. Updating the software

### 5.1 How to get an update

Software updates are provided according to the following rules:

During the subscription period	All updates can be installed The subscription starts on the date of purchase of the software.
No subscription	The software cannot be used or updated

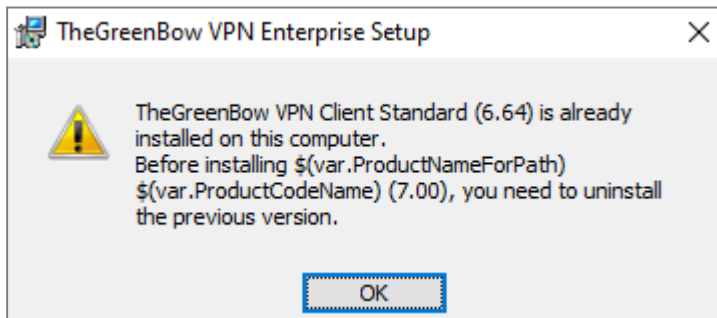
**! IMPORTANT**

Performing an update from SN VPN Client Standard to SN VPN Client Exclusive and vice versa is not allowed.

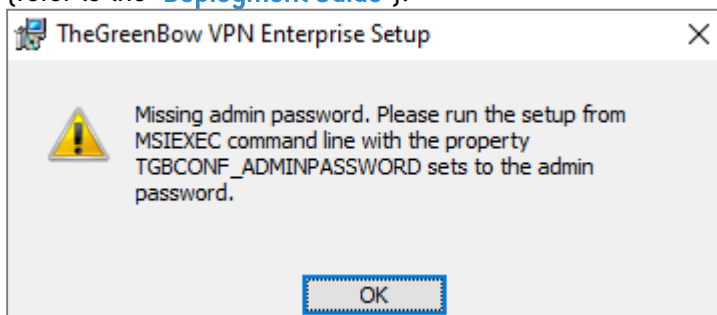
### 5.2 Update procedure

Updating SN VPN Client Exclusive allows you to upgrade to a newer version of the software while preserving the settings, the VPN configuration, and the license. It is performed in the same way as a normal installation (see section [Installation procedure](#)) except in the following two cases:

1. If the license of the installed product is not compatible with SN VPN Client Exclusive 7.5.006, updating will not be possible and the following screen is displayed. In this case, you will need to uninstall the previous version of the software before you install the new one.



2. If access to the **Configuration Panel** is protected by a password on the version that is already installed, the update cannot be performed using the graphical interface of the installation program. In this case, the following screen is displayed. You can either delete the password protecting access to the **Configuration Panel**, then proceed with the update, or perform the update in the command line using the `TGBCONF_ADMINPASSWORD` property (refer to the "[Deployment Guide](#)").





## 5.3 Updating the VPN configuration

During an update, the VPN configuration is backed up and restored.

### **i** NOTE

If access to the **Configuration Panel** is password-protected, you must enter the password during the update to authorize configuration restoration.

## 5.4 Automation

The way an update is carried out can be customized by a series of command-line options or an initialization file.

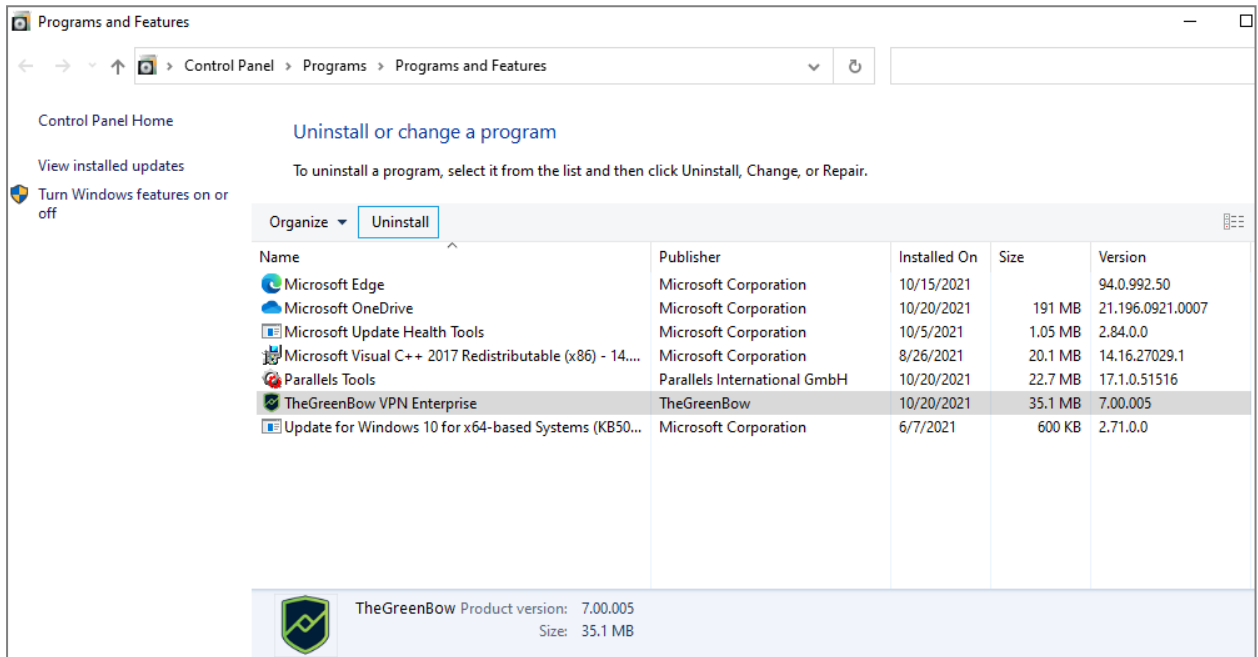
These options are described in the "[Deployment Guide](#)".



## 6. Uninstalling the software

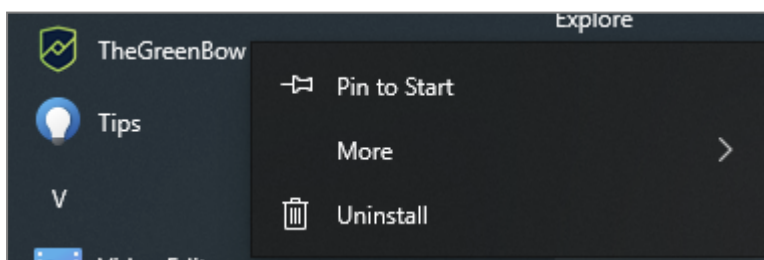
To uninstall the VPN Client, proceed as follows:

1. Open the Windows **Control Panel**.
2. Select **Uninstall a program**.
3. Select **SN VPN Client Exclusive** in the list of programs.
4. Click **Uninstall** and follow the instructions to uninstall the program.



OR

1. Open the Windows **Start** menu.
2. Right-click on the **SN VPN Client Exclusive** program, then select **Uninstall**.



3. The Windows **Control Panel** is displayed. Select **SN VPN Client Exclusive** in the list of programs.
4. Click **Uninstall** and follow the instructions to uninstall the program.

### **i** NOTE

Administrator privileges are required to install or uninstall the program on the workstation.



## 7. Getting started with the software

### 7.1 Introduction

SN VPN Client Exclusive graphical interface allows you to perform the following actions:

1. Configure the software (startup mode, language, access control, etc.)
2. Manage VPN tunnel configurations, certificates, imports, exports, etc.
3. Use VPN tunnels (open, close, identify incidents, etc.)
4. Switch to TrustedConnect mode (automatically open a tunnel when no trusted network is detected)

The graphical interface includes the following elements:

- The **Connection Panel** (list of VPN tunnels to open)
- The **Configuration Panel**, which can be displayed from the Connection Panel or using the icon in the taskbar and consists of the following items:
  - A **set of menus** for VPN configuration and software management
  - **The VPN configuration tree**,
  - VPN tunnel configuration tabs,
  - A **status bar**
- The **TrustedConnect Panel** to use the Always-On and TND features (specific executable file)
- An icon on the taskbar and the associated menu, which is different **for the TrustedConnect Panel** and **for the Connection/Configuration Panel**

### 7.2 Starting the software

Once the installation or update is complete, if you have not unchecked the **Launch VPN Client** box and you have not activated the software, the activation window is displayed (see chapter [Activating the software](#)). When the software has been activated or if you choose to try it out, SN VPN Client Exclusive will start minimized and the SN VPN Client Exclusive icon will appear in the taskbar. The taskbar icon is described in detail in the paragraph entitled [Taskbar icon](#) below.

If you have unchecked the **Launch VPN Client** checkbox at the end of the installation or update procedure, you can either double-click the corresponding desktop icon or open the Windows **Start** menu and then select the program in the list.

#### 7.2.1 Verifying the VPN Client's integrity

All binary files that make up SN VPN Client Exclusive except drivers) are signed with a certificate issued for THEGREENBOW (SISTECH S.A.), whereas drivers are signed with a certificate issued for THEGREENBOW SA. This allows users to verify the integrity of the software and its modules.

You can verify the authenticity of the software by displaying the properties of any of its modules by right-clicking the module and then selecting the **Digital signatures** tab.

If one of the VPN Client's modules is corrupted, the software will not be operational. Depending on the case, a Windows pop-up will be shown or a message will be displayed in the **Console**.



### 7.2.2 Starting the VPN Client using the shortcut on the desktop

During the installation of the software, a shortcut to run the application is created on the Windows desktop.

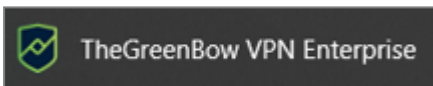
SN VPN Client Exclusive can be started directly by double-clicking on this icon.



The VPN Client will start minimized and the SN VPN Client Exclusive icon will appear in the taskbar (see paragraph entitled [Taskbar icon](#) below).

### 7.2.3 Starting the VPN Client using the Windows Start menu

Once the installation is complete, you can start SN VPN Client Exclusive by clicking on the SN VPN Client Exclusive program name in the Windows **Start** menu.

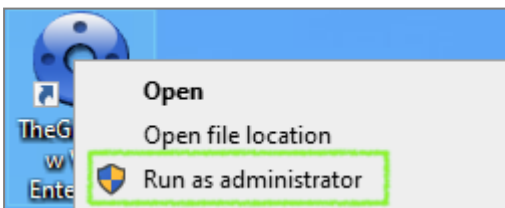


The VPN Client will start minimized and the SN VPN Client Exclusive icon will appear in the taskbar (see paragraph entitled [Taskbar icon](#) below).

### 7.2.4 Running the VPN Client as administrator

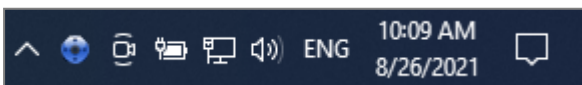
By default, access to the VPN Client's **Configuration Panel** is restricted to Windows administrators only.

To start the VPN Client in administrator mode and be able to access the **Configuration Panel**, right-click on the **SN VPN Client Exclusive** icon and then select **Run as administrator**.



### 7.2.5 Taskbar icon

Under normal operating conditions, the taskbar icon shows the status of the SN VPN Client Exclusive **Connection Panel/Configuration Panel**.



The color of the icon changes when a VPN tunnel is open:

	Blue icon: no VPN tunnel open
--	-------------------------------



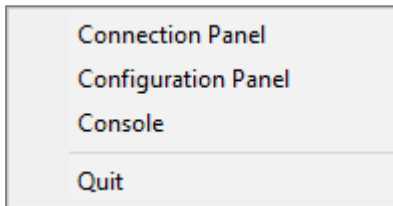
Green icon: at least one VPN tunnel is open

The tooltip for the icon always shows the software status:

- **VPN Tunnel opened** if one or several tunnels are open
- **SN VPN Client Exclusive** when the VPN Client is running, but no tunnels are open.

Left-clicking the icon opens the **Connection Panel**.

Right-clicking the VPN Client icon in the taskbar opens the contextual menu associated with the icon:



The administrator can limit the options displayed in the menu (see section [Showing options in systray menu](#)). The contextual menu contains the following items:

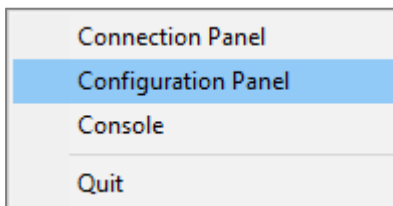
1. **Connection Panel**: opens the **Connection Panel**
2. **Configuration Panel**: opens the **Configuration Panel** (if the VPN Client has been run with administrator privileges)
3. **Console**: opens the VPN traces window
4. **Quit**: closes all open VPN tunnels and quits the software

#### **i** NOTE

If the software has not been run as administrator and the **Restrict access to Configuration Panel to administrator** option has not been disabled, when the user selects the **Configuration Panel** option, a message is displayed indicating that the software must be run as administrator to access the **Configuration Panel** (see paragraph [Running the VPN Client as administrator](#) above).

## 7.3 Configuring a VPN tunnel

To open the **Configuration Panel**, you must first have started the VPN Client as administrator (see paragraph [Running the VPN Client as administrator](#) above). If this is not the case, quit and restart the VPN Client as administrator. If it is, right-click on the taskbar icon (see the paragraph entitled [Taskbar icon](#) above), and then select the **Configuration Panel** menu item. The **Configuration Panel** is described in chapter [Configuration Panel](#).



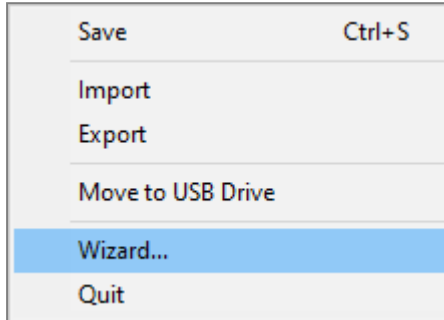
#### **i** NOTE

When the **Restrict access to Configuration Panel to administrator** option is disabled (see section



[[Restricting access to the Configuration Panel](#)], you do not need to run the VPN Client as administrator to be able to access the Configuration Panel.

Then, open the **Configuration Wizard** by selecting the **Configuration > Configuration Wizard** menu item.



Use the wizard as described in chapter [Configuration Wizard](#) below.

## 7.4 Automating the opening of a VPN tunnel

SN VPN Client Exclusive allows you to automate the opening of a VPN tunnel. It can be opened automatically in the following ways:

1. When Windows is started, before or after logging on
2. When traffic to the remote network is detected (see chapter [Automation](#))
3. When the **TrustedConnect Panel** is used, if the VPN Client detects that the workstation is not located in the trusted network (see chapter [Configuring the TrustedConnect Panel](#)).

## 7.5 Opening a VPN tunnel from the TrustedConnect Panel

The **TrustedConnect Panel** is described in chapter [TrustedConnect Panel](#). It is used to automate the opening of a VPN connection when the workstation is located outside the trusted network and keep the connection open even if the network interface changes.

The **TrustedConnect Panel** is run using a different executable file than the one for the **Configuration Panel**. If the **TrustedConnect Panel** is not launched automatically when the session starts, it can be executed from the VPN Client's installation folder: the executable file is named *VpnDialer.exe* (no desktop shortcut is created for this application during software installation).

### **i** NOTE

The **TrustedConnect Panel** (run using the *VpnDialer.exe* executable file) cannot be run at the same time as the **Configuration Panel** or the **Connection Panel** (both run using the *VpnConf.exe* executable file, the desktop shortcut, or the Start menu).

When *VpnConf.exe* is running and you are running *VpnDialer.exe*, all tunnels opened in *VpnConf.exe* will be closed and *VpnDialer.exe* (TrustedConnect) will attempt to automatically launch the configured tunnel.

However, when *VpnDialer.exe* (TrustedConnect) is running, you cannot run *VpnConf.exe* immediately. You must first quit *VpnDialer.exe* before you can run *VpnConf.exe*.

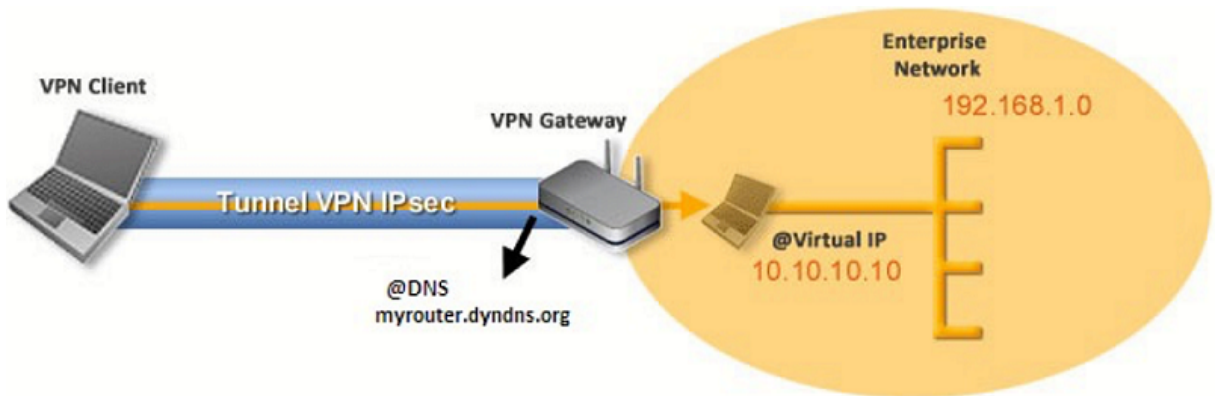


## 8. Configuration Wizard

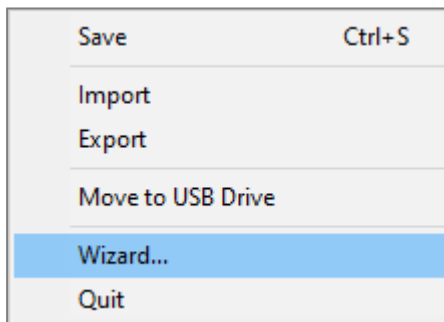
The **Configuration Wizard** is used to configure a VPN tunnel in three easy steps.

The way the **Configuration Wizard** works is illustrated in the example below:

- The tunnel is open between a workstation and a VPN gateway that has been assigned the DNS address “myrouter.dyndns.org”
- The company’s local network is 192.168.1.0 (it may, for example, include machines that have been assigned the IP addresses 192.168.1.3, 192.168.1.4, etc.)
- Once the tunnel is open, the remote workstation will have the following IP address on the company’s network: 10.10.10.10



In the main interface, open the **VPN Configuration Wizard: Configuration > Wizard**....



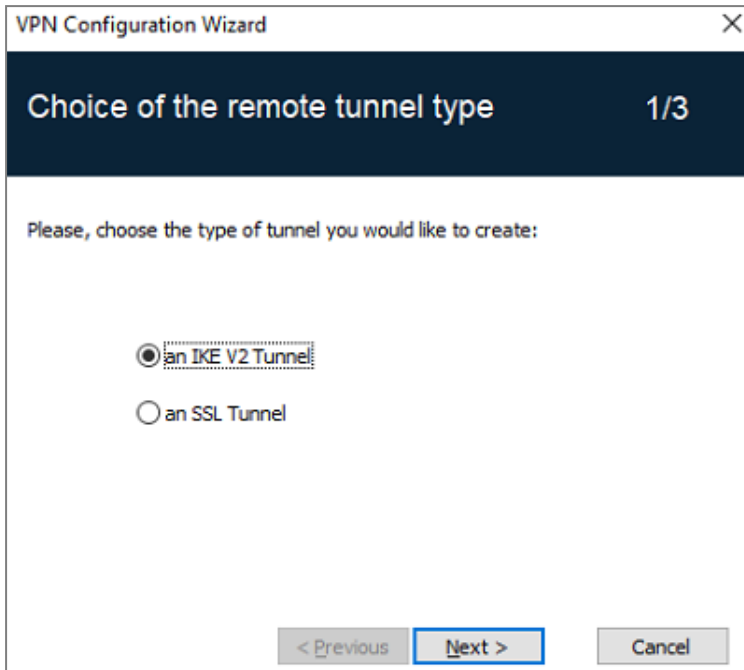
**TIP**

We recommend configuring IKEv2 tunnels with a certificate. Refer to chapter [Security recommendations](#).

### 8.1 Step 1

Choose the VPN protocol to be used for the tunnel: IKEv2 or SSL.



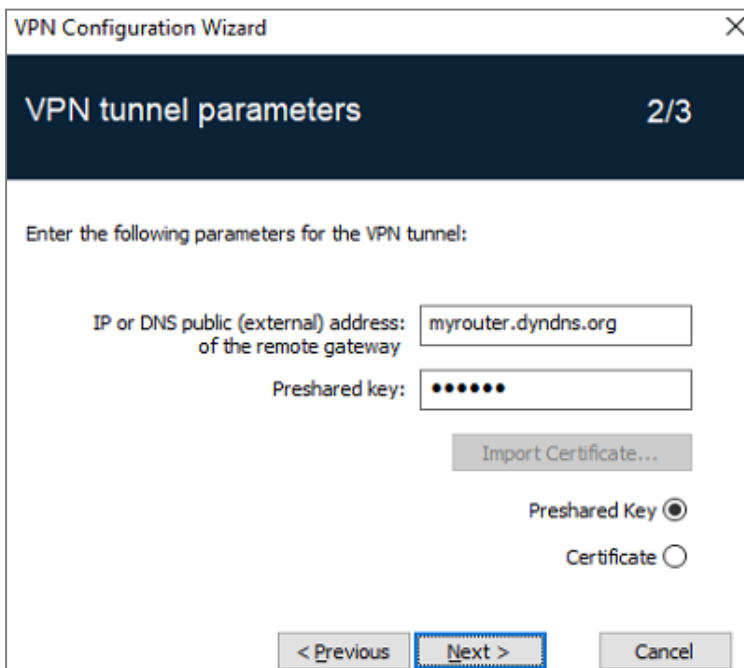


## 8.2 Step 2

### 8.2.1 Configuring an IPsec/IKEv2 tunnel

Enter the following values:

- The IP or DNS address on the internet network side of the VPN gateway (e.g. myrouter.dyndns.org)
- A preshared key that must be configured identically on the gateway
- OR: A certificate that must be imported using the **Import Certificate...** button (see section [Importing a certificate to the VPN configuration](#))





### 8.2.2 For an SSL tunnel (OpenVPN)

Enter the following values:

- The IP or DNS address on the internet network side of the VPN gateway (e.g. myrouter.dyndns.org)
- A certificate that must be imported using the **Import Certificate...** button (see section [Importing a certificate to the VPN configuration](#))

The screenshot shows a window titled "VPN Configuration Wizard" with a close button in the top right. The main header is "VPN tunnel parameters" with a progress indicator "2/3". Below the header, it says "Enter the following parameters for the VPN tunnel:". There are two input fields: "IP or DNS public (external) address: of the remote gateway" containing "myrouter.dyndns.org", and "Certificate Common Name" containing "<Click the import button>". Below these is an "Import Certificate..." button and a "Login required" checkbox which is unchecked. At the bottom are three buttons: "< Previous", "Next >", and "Cancel".

### 8.3 Step 3

Review the Summary window to check whether the configuration is correct and then click **Finish**.

The screenshot shows a window titled "VPN Configuration Wizard" with a close button in the top right. The main header is "Configuration Summary" with a progress indicator "3/3". Below the header, it says "The tunnel configuration is correctly completed :". A box contains the following summary information: "Tunnel name : Ikev2Gateway", "Tunnel type is IKE V2", "Gateway name or address : myrouter.dyndns.org", and "Preshared key : \*\*\*\*\*". Below this box, it says "You may change these parameters anytime directly with the main interface.". At the bottom are three buttons: "< Previous", "Finish" (highlighted with a blue border), and "Cancel".



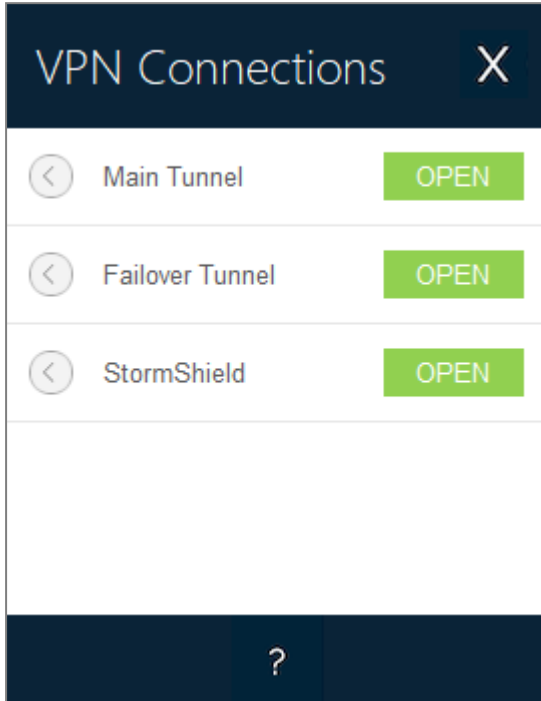
The tunnel that has just been configured now appears in the VPN configuration tree of the main interface.

Double-click the tunnel to open it or use the tabs of the main interface for further configuration.



# 9. Connection Panel

The **Connection Panel** allows you to easily open and close the configured VPN connections:



The **Connection Panel** can be customized. You can select the VPN connections to be shown. You can also rename or sort the VPN connections.

Refer to chapter [Configuring the Connection Panel](#).

To open a VPN connection, simply click the relevant **OPEN** button.

To increase the height of the **Connection Panel** window to display a greater number of tunnels at once, press the Ctrl key and the + key on the numeric keypad.




To decrease the height of the **Connection Panel** window, press the Ctrl key and the – key on the numeric keypad.

The icon to the left of the connection name indicates the status of the connection:

	Connection closed. Click this icon to open the VPN configuration for this connection in the <b>Configuration Panel</b> . Caution: access to the <b>Configuration Panel</b> may be restricted (see section <a href="#">Restricting access to the Configuration Panel</a> )
	Connection being opened or closed.
	Connection open. When there is traffic on this connection, the color intensity of the disk at the center of the icon changes.
	The connection experienced an incident while opening or closing. Clicking the warning icon will open a pop-up window giving detailed or additional information about the incident.

The buttons on the **Connection Panel** have the following function:



	Opens the <b>About...</b> window.
	Opens the <b>Configuration Panel</b> . Caution: access to the <b>Configuration Panel</b> may be restricted (see section <a href="#">Restricting access to the Configuration Panel</a> )
	Closes the <b>Connection Panel</b> .

The following keyboard shortcuts are available for the **Connection Panel**:

Esc (or Alt+F4)	Closes the <b>Connection Panel</b> .
Ctrl+Enter	Opens the <b>Configuration Panel</b> (if enabled).
Ctrl+O	Opens the selected VPN connection.
Ctrl+W	Closes the selected VPN connection.
Up/down arrows	Moves the cursor from one VPN connection to another.



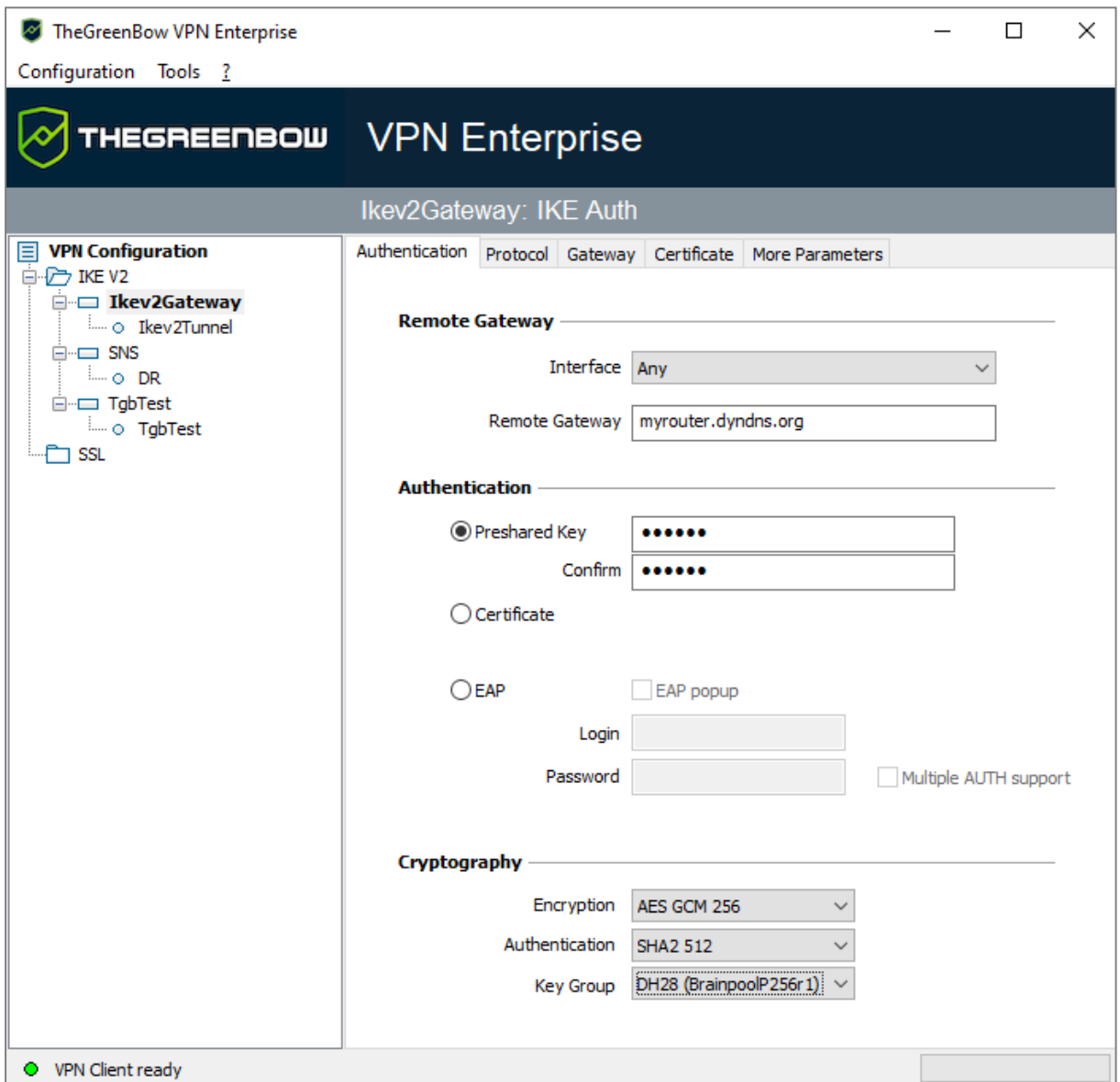
# 10. Configuration Panel

The **Configuration Panel** is the administrator's interface for SN VPN Client Exclusive.

It is only accessible if the VPN Client has been started as Windows administrator (see paragraph [Running the VPN Client as administrator](#) in section [Starting the software](#) above), or for any user if the option **Restrict access to the Configuration Panel to administrator** has been unchecked (not recommended).

It includes the following items:

- A set of menus for VPN configuration and software management,
- The VPN configuration tree,
- VPN tunnel configuration tabs,
- A status bar.





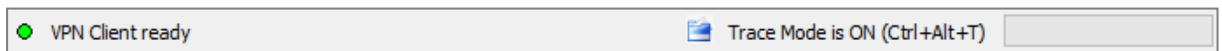
## 10.1 Menus


The following menus are available in the **Configuration Panel**:

- Configuration
  - Save
  - Import: [Import a VPN configuration](#)
  - Export: [Export a VPN configuration](#)
  - [Configuration Wizard](#)
  - Quit: Close all open VPN tunnels and quit the software
- Tools
  - [Connection Panel](#)
  - [Connections Configuration](#)
  - **Console**: IKE connection traces window
  - Reset IKE: Restart the IKE service
  - Options: Protection, display, startup, language management, PKI management options
- ?
  - Online support: Access to online support
  - [Check for update](#): Check for available updates
  - Purchase license online: Access the online store
  - [Activation Wizard...](#)
  - [About...](#)

## 10.2 Status bar

The status bar at the bottom of the main interface displays multiple items:



- The “LED” on the left edge is green when all the software’s services are operational (IKE service)
- The text on the left shows the software status (**VPN Client ready**, **Saving configuration**, **Applying configuration**, etc.).
- When the trace mode is enabled, the text “Trace Mode is ON” is shown in the middle of the status bar.
- The  icon, which appears to the left of this text, is a clickable icon that opens the folder containing the log files generated by the trace mode.
- The progress bar on the right side of the status bar shows the progress when saving a configuration.

## 10.3 Shortcuts

Ctrl+S	Save the VPN configuration
Ctrl+Enter	Switch to the <b>Connection Panel</b>
Ctrl+D	Opens the <b>VPN Console</b> window

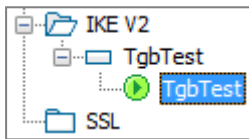


Ctrl+Alt+R	Restart the IKE service
Ctrl+Alt+T	Enable the trace mode (log generation)

## 10.4 VPN configuration tree

### 10.4.1 Usage

The left side of the **Configuration Panel** is the tree structure of the VPN configuration. The tree can contain an infinite number of tunnels.



Under the root called "VPN Configuration", there are two levels that allow you to create the following respectively:

- IPsec IKEv2 tunnels, specified by an IKE Auth and a Child SA, knowing that each IKE Auth can contain more than one Child SA
- SSL/TLS tunnels

Clicking on an IKE Auth, Child SA, or TLS will open the corresponding VPN configuration tabs on the right-hand side of the **Configuration Panel**. See the following sections for further details:

1. IPsec IKEv2 tunnel
  - [IKEv2 \(IKE Auth\): Authentication](#)
  - [IKEv2 \(Child SA\): IPsec](#)
2. SSL tunnel (OpenVPN)
  - [SSL: TLS](#)

An icon is associated with each tunnel (Child SA, or TLS). This icon shows the status of the VPN tunnel:

	Tunnel is closed
	Tunnel is being opened
	Tunnel is open
	Incident when opening or closing the tunnel

You can edit and change the name of any item in the tree by clicking twice in a row on it, without double-clicking.

If there are any unsaved changes in the VPN configuration, the modified item is shown in bold. As soon as the tree is saved, all text formatting is removed.

**NOTE**  
Two items in the tree cannot have the same name. The software displays a message to the user if the name entered is already in use.



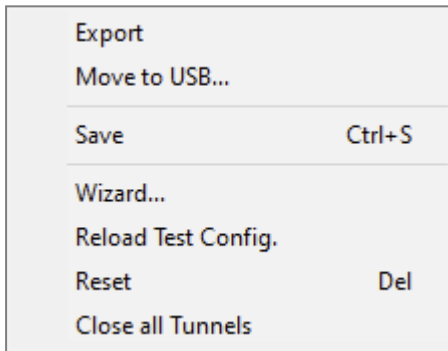


### 10.4.2 Contextual menus

#### VPN Configuration

Right clicking the VPN configuration (root of the tree) displays the following contextual menu:

<b>Export</b>	Exports the entire VPN configuration.
<b>Save</b>	Saves the VPN configuration.
<b>Configuration Wizard</b>	Opens the <a href="#">VPN Configuration Wizard</a> .
<b>Reload default configuration</b>	This menu is used to reload the default configuration at any time.
<b>Reset</b>	Resets the VPN configuration after confirmation by the user.
<b>Close all tunnels</b>	Closes all open tunnels.

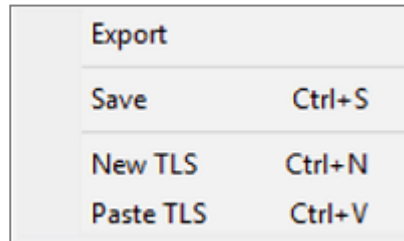


#### IKEv2, SSL

Right-clicking the **IKEv2** or **SSL** items will display the following contextual menu, which allows you to export, save, create, or paste an IKE Auth/SSL:



IKEv2 menu



SSL menu

<b>Export</b>	Exports all IKEv2 tunnels.
<b>Save</b>	Saves all IKEv2 tunnels.
<b>New IKE Auth New TLS</b>	Creates a new IKE Auth/TLS. The parameters of this new IKE Auth/TLS will be filled in with default values.
<b>Paste IKE Auth Paste TLS</b>	Adds an IKE Auth/TLS that has been previously copied to the clipboard.



### IKE Auth

Right-clicking an IKE Auth displays the following contextual menu:

Copy	Ctrl+C
Rename	F2
Delete	Del
<hr/>	
New Child SA	Ctrl+N
Paste Child SA	Ctrl+V

<b>Copy</b>	Copies the selected IKE Auth to the clipboard.
<b>Rename</b>	Renames the IKE Auth. This menu is disabled as long as one of the tunnels of the relevant IKE Auth is open.
<b>Delete</b>	Deletes the IKE Auth, including any associated Child SAs, after confirmation by the user. This menu is disabled as long as one of the tunnels of the relevant IKE Auth is open.
<b>New Child SA</b>	Adds a new Child SA to the selected IKE Auth.
<b>Paste Child SA</b>	Adds the Child SA that has been copied to the clipboard to the IKE Auth.

### Child SA or TLS

Right-clicking a Child SA or TLS displays the following contextual menu:

Open tunnel	Ctrl+O
<hr/>	
Export	
<hr/>	
Copy	Ctrl+C
Rename	F2
Delete	Del

Menu with tunnel closed

Close tunnel	Ctrl+W
<hr/>	
Export	
<hr/>	
Copy	Ctrl+C
Rename	F2
Delete	Del

Menu with tunnel open

<b>Open tunnel</b>	Displayed if the VPN tunnel is closed. Opens the selected (Child SA or TLS) tunnel.
<b>Close tunnel</b>	Displayed if the VPN tunnel is open. Closes the selected (Child SA or TLS) tunnel.
<b>Export</b>	Exports the selected Child SA/TLS. This function allows users to export the entire tunnel, i.e. both the Child SA and its associated IKE Auth, or TLS, and thus to create a fully operational, single-tunnel VPN configuration (which becomes immediately functional when imported).
<b>Copy</b>	Copies the selected Child SA/TLS.
<b>Rename</b>	Renames the selected Child SA/TLS. This menu is disabled while the tunnel is open.



<b>Delete</b>	Deletes the selected Child SA/TLS after confirmation by the user. This menu is disabled while the tunnel is open.
---------------	--

### 10.4.3 Shortcuts

The following shortcuts are available for tree management:

F2	Used to edit the name of the selected phase
Del	Deletes a selected phase, following confirmation by the user. If the actual VPN configuration is selected (root of the tree), the software asks whether a full reset of the configuration should be performed.
Ctrl+O	Opens the corresponding VPN tunnel if a Child SA/TLS is selected.
Ctrl+W	Closes the corresponding VPN tunnel if a Child SA/TLS is selected.
Ctrl+C	Copies the selected phase to the clipboard.
Ctrl+V	Pastes (adds) the phase that has previously been copied to the clipboard.
Ctrl+N	If the VPN configuration is selected, creates a new IKE Auth. If an IKE Auth is selected, creates a Child SA/TLS.
Ctrl+S	Saves the VPN configuration.



# 11. TrustedConnect Panel

## 11.1 Introduction

The **TrustedConnect Panel** allows you to permanently keep a secure connection to the trusted network thanks to the following features:

- **Trusted Network Detection (TND)**: Used to determine whether the workstation is within the trusted network based on the DNS suffixes and on beacon identification
- **Always-On**: Ensures that the connection remains secure whenever the network interface changes, for example, between Ethernet, Wi-Fi and 4G/5G.

### **i** NOTE

As of SN VPN Client Exclusive version 7.5, the **TrustedConnect Panel**'s behavior changes according to the compliance level reported by the Secure Connection Agent (SCA), which determines whether a workstation should be allowed to access the corporate network (see section [Selecting the tunnel to open according to the compliance level](#)).

## 11.2 Interface

When it is used for the first time, the **TrustedConnect Panel** is displayed in the center of the screen.

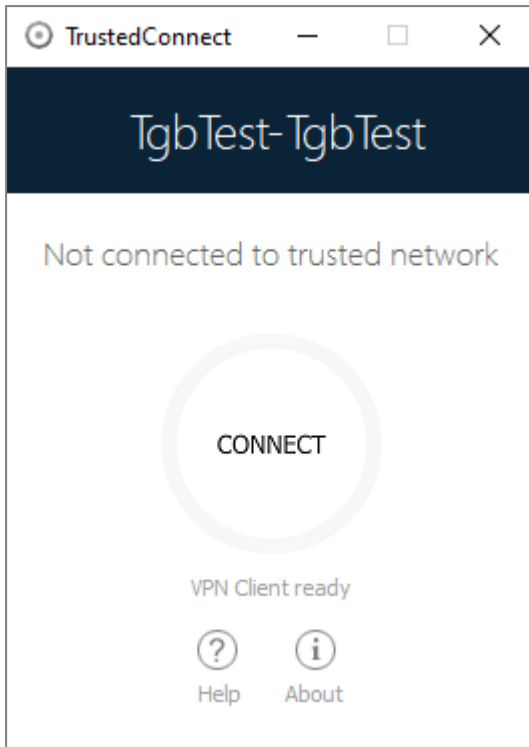
For subsequent uses, the **TrustedConnect Panel** memorizes the place to which the user has moved it.

The interface of the **TrustedConnect Panel** includes the following items:

- A title that identifies the name of the connection being managed
- An information message about the connection status
- A Connect button
- A message that indicates the current status of the software and displays possible error codes
- A help button that gives access to a document with help for the user
- An information button that displays essential information about the software
- A set of icons whose color reflects the connection status

### **i** NOTE

As of version SN VPN Client Exclusive 7.4, you can enable an option that allows users to select the desired connection by clicking the title banner (see section [Choosing the connection](#)).



You can minimize the **TrustedConnect Panel** at any time either to the taskbar, by clicking the **Minimize** button in the title bar, or to the notification area, by clicking on the **Close** button in the title bar.

Conversely, you can display the **TrustedConnect Panel** at any time by clicking the **TrustedConnect** icon in the taskbar or in the notification area.

To quit the software right-click the **TrustedConnect** icon in the notification area and then select **Quit**.

**i NOTE**  
Administrators can disable the disconnect button. In this case, a tunnel can no longer be closed once it is open. Refer to section [Disabling the disconnect button](#) for more details.



### 11.3 Taskbar icon and color codes

The taskbar icon of the **TrustedConnect Panel** application is slightly different from that of the SN VPN Client Exclusive **Configuration Panel/Connection Panel**.

The various icons in the **TrustedConnect Panel** have the following meaning:

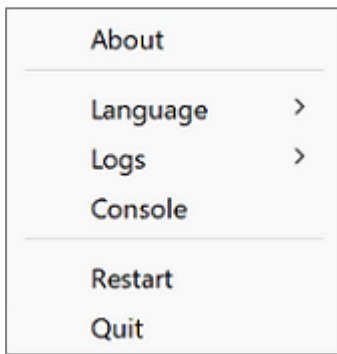
	This state means that the <b>TrustedConnect Panel</b> is not managing any connection on the workstation. Generally, this state is encountered when the user explicitly requests the VPN connection to be closed.
	This state means that the workstation is directly connected to the corporate network, which is considered as a trusted network.



	This state means that the workstation is connected to the corporate network through a VPN connection. The workstation thus is physically located on a network that is not considered as trusted.
	This state means that the VPN connection could not be established.

### 11.4 Contextual menu

Right clicking the **TrustedConnect Panel** icon in the taskbar opens the contextual menu associated with the icon:



The contextual menu contains the following items:

<b>About...</b>	Opens the <b>About...</b> window.
<b>Language</b>	Used to switch between French and English.
<b>Logs</b>	Used to start logging. Once logging is started, two additional options are shown to display the logs and stop logging.
<b>Console</b>	Opens the <b>VPN Console</b> window with VPN traces.
<b>Restart</b>	Restarts the tunnel.
<b>Quit</b>	Closes the VPN tunnel and quits the software.

**i NOTE**  
 Administrators can disable the menu or some of its options. Refer to section [Removing menu items](#) for more details.

### 11.5 Usage

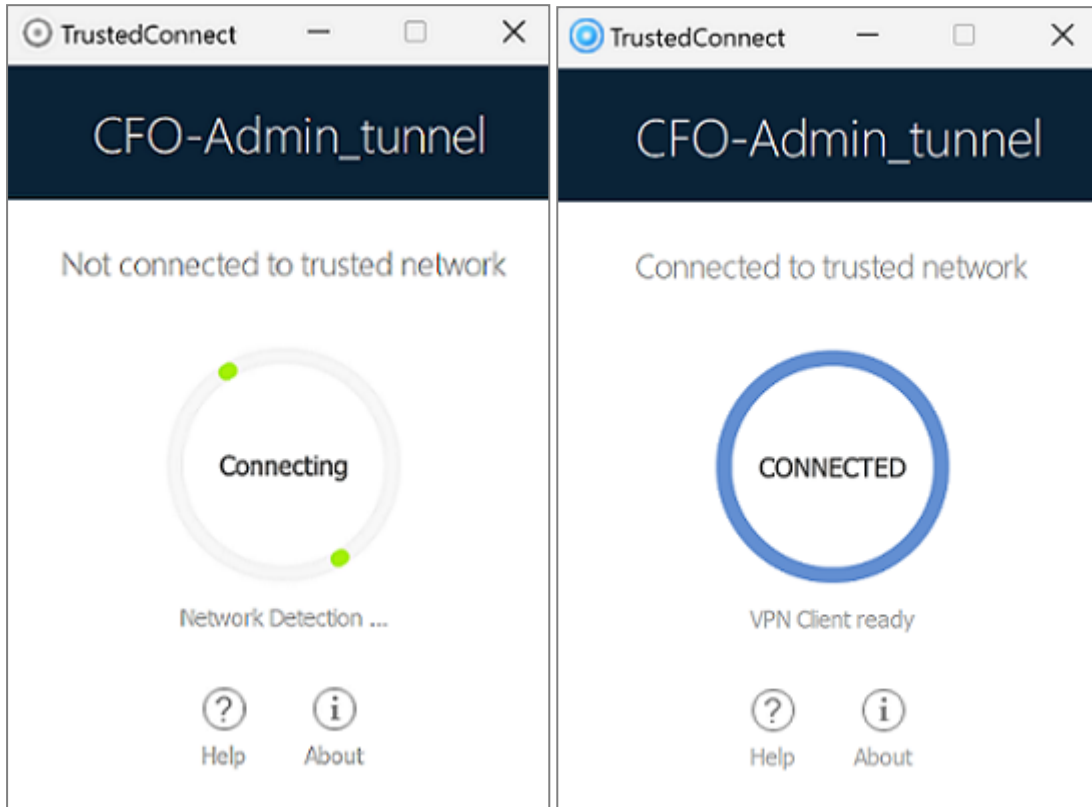
There are two types of use depending on whether the workstation is already connected to the corporate network or not.

**i NOTE**  
 As of version SN VPN Client Exclusive 7.3, you can disable the TND function to open a tunnel even when the workstation is located on the trusted network. Refer to section [Disabling TND](#) for more details.



### 11.5.1 Workstation connected to corporate network

The **TrustedConnect Panel** switches to the **CONNECTED** status after having detected trusted networks:



The window of the **TrustedConnect Panel** then automatically minimizes either to the taskbar or to the notification area, depending on the behavior that the administrator has configured.

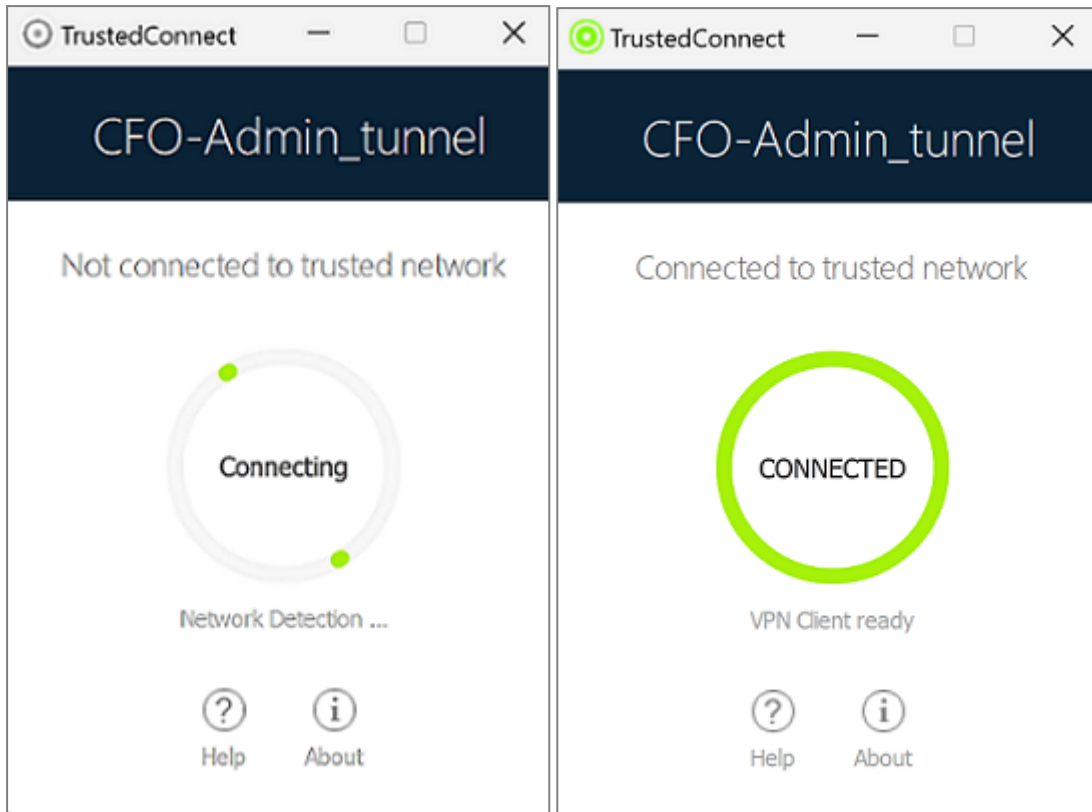
Refer to the “[Deployment Guide](#)”.

To display the window again, select the application in the taskbar. When connected to the corporate network, users cannot perform any action on the connection status.

### 11.5.2 Workstation not connected to corporate network

When switching to a network that is not considered as trusted, the **TrustedConnect Panel** will automatically open the VPN tunnel.

The button’s animation shows the progress of the connection being established until it is established.



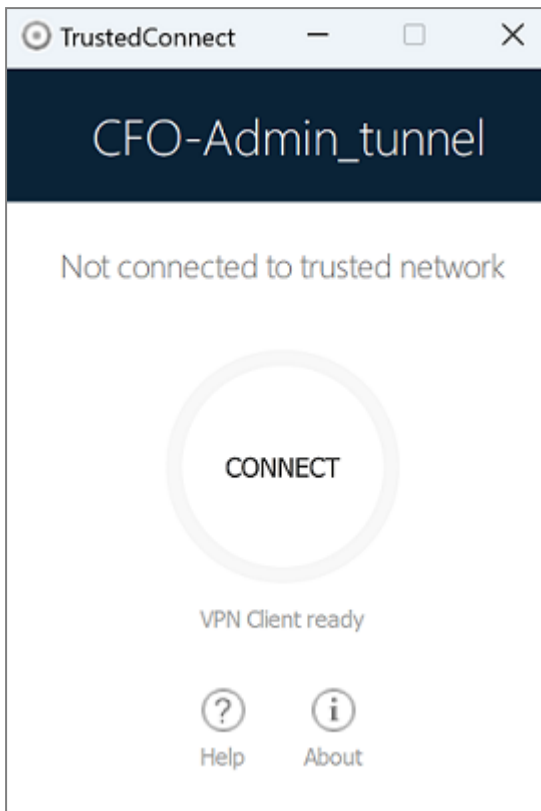
Once the connection is established, the window of the **TrustedConnect Panel** automatically minimizes either to the taskbar or to the notification area, depending on the behavior that the administrator has configured.

The connection may not be established for various reasons. The information message below the button provides a first level of information. The various possible cases of connection failure are detailed in the next section.

When the tunnel is mounted and the workstation is shown as being on the corporate network, you can click inside the connection status indicator ring to stop the tunnel.

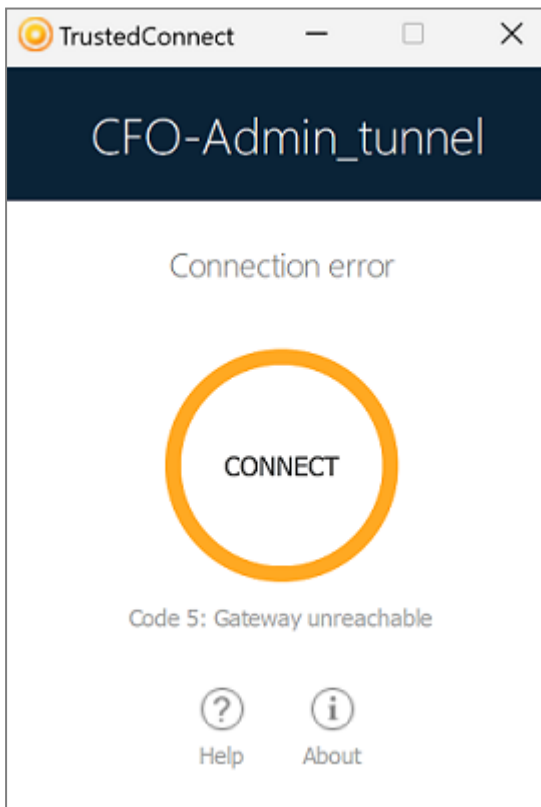
The application then switches to the state **Not connected** and you can click the button to manually open the tunnel again:





### 11.6 Error cases

An orange Connect button, an error code, and a brief message describing the error are shown in the **TrustedConnect Panel** interface to identify the main error cases.





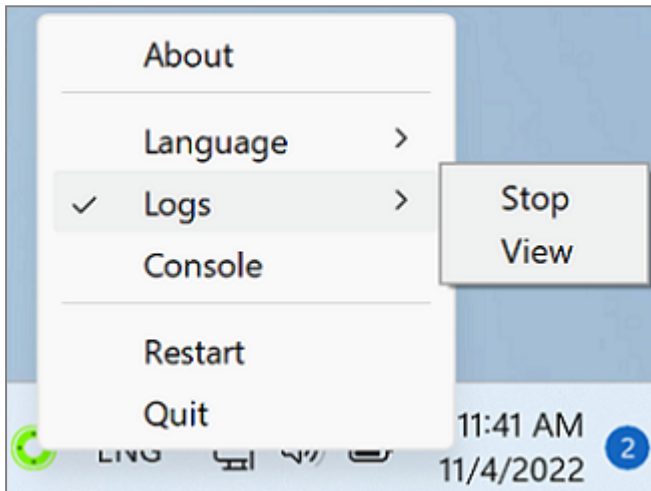
Contact the network administrator to resolve the issue. The error code shown may provide some indication or explanation as to the issue encountered. If the administrator requests the logs, refer to the procedure described in the next section.

The list of error codes is provided in the appendix of this document (see section [TrustedConnect Panel diagnostics](#)).

### 11.7 Generating logs and Console

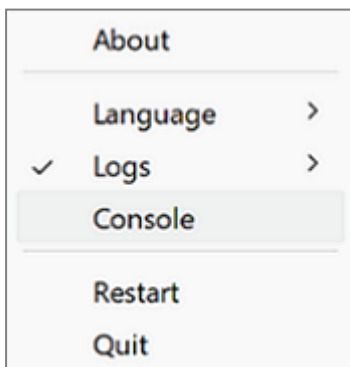
The **TrustedConnect Panel** allows you to create and view logs.

To initiate the creation of log files, right click the **TrustedConnect** icon in the notification area, select **Logs**. A check mark next to the menu item indicates that logging is enabled:



To view the logs, access the system menu and select the item **Access logs**. A window with the log folder is shown with a certain number of files. You can send these files to the administrator when you encounter any issues.

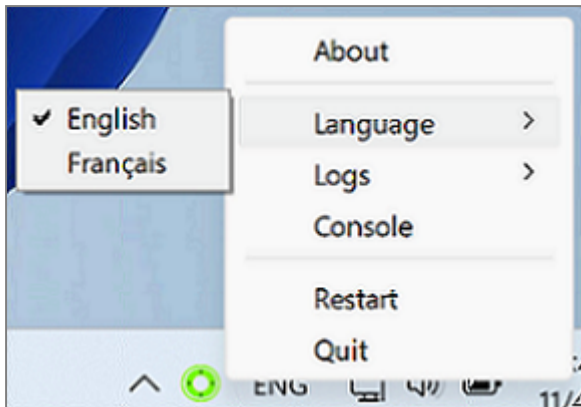
You can now also display the **Console** window with VPN traces directly from the **TrustedConnect Panel's** contextual menu.



To find out how to use the **Console** window, refer to section [Console](#).

### 11.8 Selecting the language

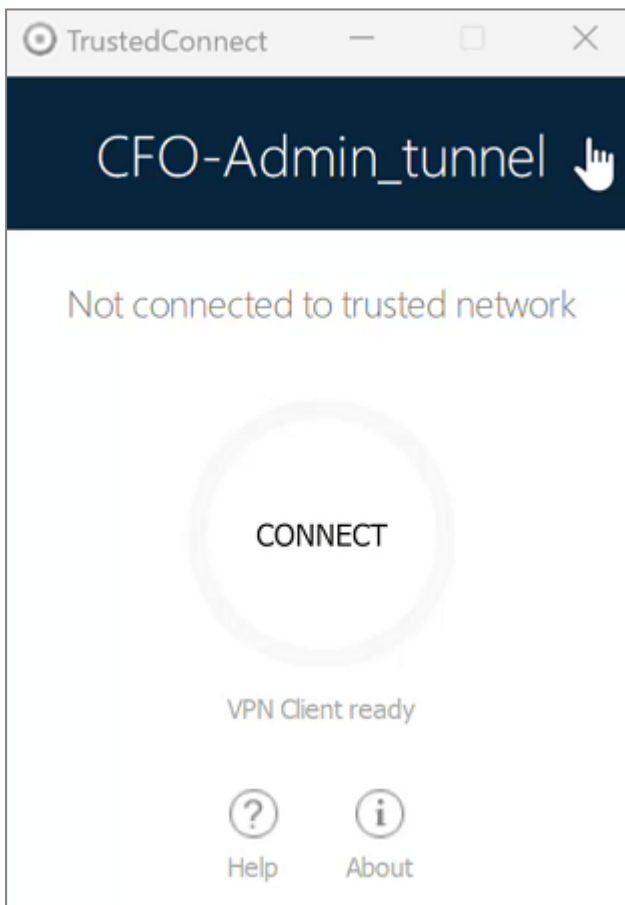
The **TrustedConnect Panel** allows you to select the software's display language: French or English. To select the language, access the menu and select the **Languages** item. In the submenu, select **English** or **Français**:



### 11.9 Choosing the connection

If you enabled this option using the MSI property `DIALERBEHAVIOR` when you installed the VPN Client (refer to the [“Deployment Guide”](#)), as of version SN VPN Client Exclusive 7.4, users can choose between the connections available in the VPN configuration, if it contains two or more.

When this option is enabled, users will see the mouse pointer change into a hand when it hovers over the connection name in the **TrustedConnect Panel**'s title banner after having closed any open tunnel.



**! IMPORTANT**

The pointer does not change into a hand and users cannot change active connections while a connection is open or being initialized or closed.

To change connection, follow these steps:

1. If the **TrustedConnect Panel** is not displayed on the screen, click its icon in the taskbar to display it.
2. If a connection is open, click the **CONNECTED** button to close the tunnel. The connection status indicator ring becomes gray, and the button label changes to **CONNECT**.
3. Click the connection name in the blue title banner. The name of the next connection available in the configuration is displayed. Keep clicking to scroll through the names of all the connections available in the configuration until you reach the one you want to enable.
4. Click the **CONNECT** button. The VPN Client will attempt to establish the connection. If it succeeds, the connection status indicator ring becomes green and the button label changes to **CONNECTED**. The **TrustedConnect Panel** is then minimized to the taskbar.

**i NOTE**

The **TrustedConnect Panel** stores the last connection that has been enabled. If you quit the **TrustedConnect Panel**, this connection will open automatically the next time you start.

**i NOTE**

When the **TrustedConnect Panel** is configured with several connections of which at least one is in GINA mode, make sure to account for the information provided in the paragraph entitled Special use case in section [Overview](#).

For error cases, refer to section [Error cases](#).

## 11.10 Current limitations

The **TrustedConnect Panel** (run using the *VpnDialer.exe* executable file) cannot be run at the same time as the **Configuration Panel** or the **Connection Panel** (both run using the *VpnConf.exe* executable file, the desktop shortcut, or the Start menu).

When *VpnConf.exe* is running and you are running *VpnDialer.exe*, all tunnels opened in *VpnConf.exe* will be closed and *VpnDialer.exe* (TrustedConnect) will attempt to automatically launch the configured tunnel.

However, when *VpnDialer.exe* (TrustedConnect) is running, you cannot run *VpnConf.exe* immediately. You must first quit *VpnDialer.exe* before you can run *VpnConf.exe*.

The **TrustedConnect Panel** (*VpnDialer.exe*) is currently only available in French and English.



## 12. “About...” window

The **About...** window can be accessed as follows:

- Click the ? menu in the **Configuration Panel** and choose **About...**
- Use the system menu in the **Configuration Panel**
- Click the [?] button in the **Connection Panel**
- Click the [?] button in the **TrustedConnect Panel**



The **About...** window displays the following information:

- The name and version number of the software
- When the software is activated, the license number and e-mail address used for activation
- During the software trial period, the number of days remaining before the trial period expires
- The version numbers of all software components

You can select and copy the contents of the entire list of version numbers (right-click on the list and choose **Select all**), for example to send the information for analysis purposes. When the **About...** window is open, if SN VPN Client Exclusive has not been activated, the software tries to connect to the activation server to validate the license.



## 13. Importing and exporting the VPN configuration

### 13.1 Importing a VPN configuration

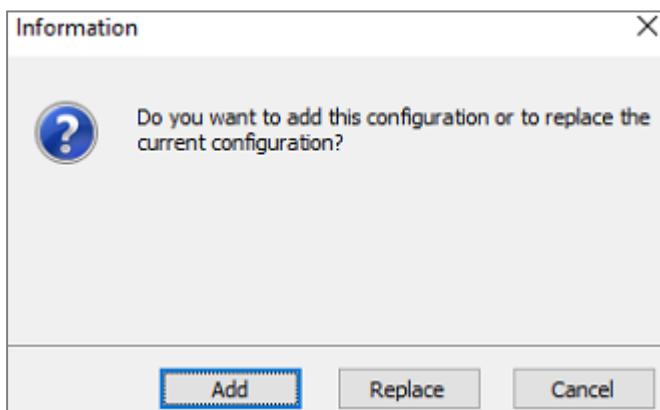
SN VPN Client Exclusive allows you to import a VPN configuration in various ways:

- From the **Configuration** menu in the **Configuration Panel** (main interface), choose **Import**
- From the command line, use the `/import` option.  
The use of command-line options within the software is covered in the “[Deployment Guide](#)”. In particular, it details all the options available for importing a VPN configuration: `/import`, `/add`, `/replace` or `/importonce`.

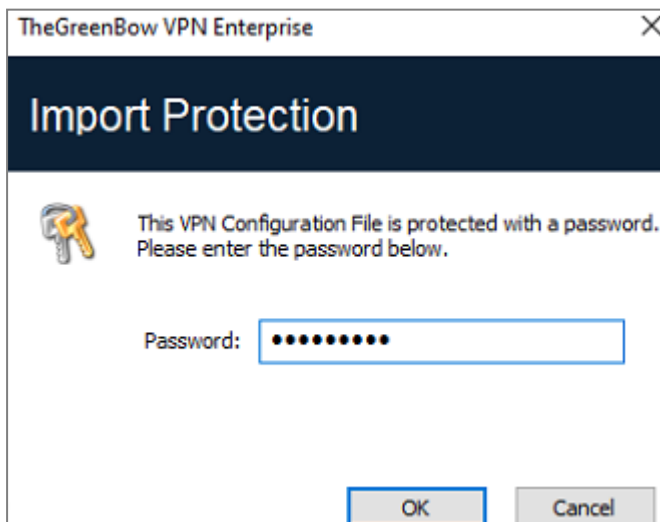
#### **i** NOTE

SN VPN Client Exclusive can check the integrity of the VPN configuration file (see the MSI property `SIGNFILE` in the “[Deployment Guide](#)”). In this case, a signature is generated during export and the integrity of the file is checked during import.

When importing a VPN configuration, users are prompted to specify whether they want to add the new VPN configuration to the current one or replace (overwrite) the current configuration with the new one:

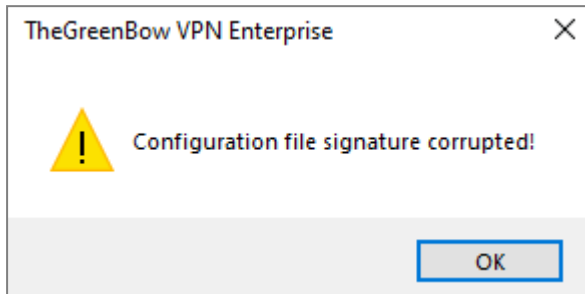


If the imported VPN configuration has been exported with a password protection (see section [Exporting a VPN configuration](#) below), users will have to provide the password.

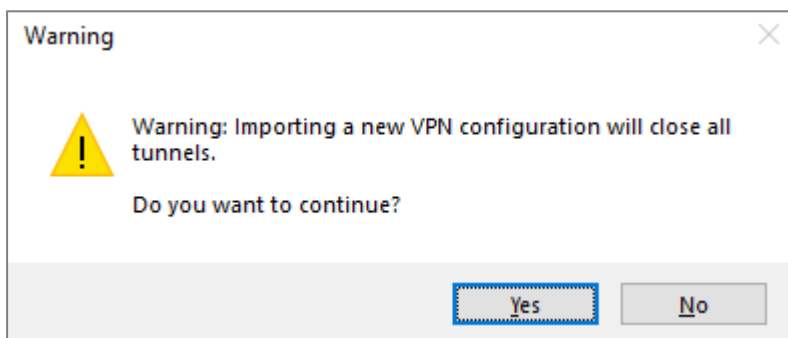




If the VPN configuration is exported with an integrity check (see section [Exporting a VPN configuration](#) below) and it has been corrupted, a warning will be displayed to the user and the software will not import the configuration.



If one or several tunnels are open when importing, the following information window will be displayed to let you know that the import will close all open tunnels:



Once this message has been confirmed and the import has been completed, you will need to reopen the tunnels.

**i** NOTE

If some of the VPN tunnels added have the same name as certain tunnels in the current configuration, they are automatically renamed during import (an increment will be added between brackets).

## 13.2 Exporting a VPN configuration

SN VPN Client Exclusive allows you to export a VPN configuration in various ways:

1. From the **Configuration** menu, choose **Export**: the complete VPN configuration is exported.
2. From the contextual menu at the root of the **VPN configuration tree**, choose **Export**: the complete VPN configuration is exported.
3. From the contextual menu associated with an **IKE Auth**, choose **Export**: the entire IKE Auth (including all Child SAs it contains) is exported.
4. From the contextual menu associated with a **Child SA**, choose **Export**: the Child SA is exported along with the IKE Auth with which it is associated.
5. From the contextual menu associated with a **TLS**, choose **Export**: the TLS is exported.



- Using the `/export` option in the command line.  
The use of command-line options within the software is covered in the “[Deployment Guide](#)”. In particular, it details all the options available for exporting a VPN configuration: `/export` or `/exportonce`. Regardless of the method used, the export starts with the choice of protection for the exported VPN configuration: it can be exported with (encryption) or without (clear text) password protection. If a password has been set, users will be required to enter it when importing.

**i NOTE**

By default, the extension of exported VPN configuration files is `.tgb`.

**i NOTE**

Whether it is exported with or without encryption, the exported VPN configuration can benefit from integrity protection.  
Protecting the integrity of a VPN configuration when it is exported is a feature that can be enabled using an MSI installer property. This function is covered in the “[Deployment Guide](#)”.

TheGreenBow VPN Enterprise

## Export Protection

You are about to export a VPN Configuration.  
You may protect this configuration with a password.  
It will be automatically asked to the user when imported.

Don't protect the exported VPN Configuration

Protect the exported VPN Configuration

Password

Confirm

Hide password

OK Cancel

We recommend that you always export VPN configurations with a password protection (encrypted).

**i NOTE**

As of version 7.3, the password must follow ANSSI recommendations, i.e. be at least 16 characters in length and use a 90-character alphabet, including at least one uppercase character, one lowercase character, and one special character.

If an exported VPN configuration is integrity-protected, but is corrupted subsequently, a warning will be displayed to the user during the import and the software will not import the configuration (see section [Importing a VPN configuration](#) above).





### 13.3 Merging VPN configurations

Several configurations can be merged by successively importing all VPN configurations and choosing **Add** each time (see section [Importing a VPN configuration](#) above).

### 13.4 Splitting a VPN configuration

Using the various export options available (exporting an IKE Auth/TLS with all the corresponding Child SAs/TLSs or exporting a single tunnel), a VPN configuration can be split into as many “sub-configurations” as desired (see section [Exporting a VPN configuration](#) above).

This method can be used to deploy the configurations for a pool of workstations: derive the VPN configurations for each individual workstation from a common VPN configuration prior to sending them to each user for import.



## 14. Configuring a VPN tunnel

### 14.1 SSL or IPsec IKEv2 VPN

SN VPN Client Exclusive allows you to create and configure several types of VPN tunnels.

It also allows you to open them simultaneously.

SN VPN Client Exclusive allows you to configure the following types of tunnels:

- IPsec IKEv2
- SSL

The procedure used to create a new VPN tunnel is described in the previous sections:

[Configuration Wizard](#) and [VPN configuration tree > Contextual menus](#).



#### TIP

We recommend configuring IKEv2 tunnels with a certificate. Refer to chapter [Security recommendations](#).

### 14.2 Editing and saving a VPN configuration

SN VPN Client Exclusive allows you to modify the VPN tunnels and test these modifications “on-the-fly” without saving the VPN configuration.

All unsaved changes in the VPN configuration are clearly shown in the tree, as the name of modified items appears in bold.

The VPN configuration can be saved at any time using either of the following:

- Ctrl+S shortcut
- **Configuration > Save** menu item

A warning will be displayed if a VPN configuration has been changed and the user tries to quit the software without saving.



## 14.3 Configuring an IPsec IKEv2 tunnel

### 14.3.1 IKE Auth: Authentication

Authentication	Protocol	Gateway	Certificate
<b>Remote Gateway</b>			
Interface	Any		
Remote Gateway	tgbtest.dyndns.org		
<b>Integrity</b>			
<input checked="" type="radio"/> Preshared Key	.....		
Confirm	.....		
<input type="radio"/> Certificate			
<input type="radio"/> EAP	<input type="checkbox"/> EAP popup		
Login			
Password			<input type="checkbox"/> Multiple AUTH support
<b>Cryptography</b>			
Encryption	AES GCM 256		
Integrity	SHA2 512		
Key Group	DH21 (ECP 521)		

### Addresses

<p><b>Interface</b></p>	<p>Name of the network interface on which the VPN connection is open. The software can decide automatically which interface to use by selecting <b>Any</b>.</p> <div data-bbox="384 1541 965 1648"> </div> <p>We recommend choosing this option if the tunnel being configured is to be deployed on a different workstation.</p> <div data-bbox="384 1749 1388 1984" style="background-color: #e6f2ff; padding: 10px;"> <p><b>NOTE</b></p> <p>When the network interface has several IP addresses, you can specify the address using the dynamic parameter <i>local_subnet</i> (see section <a href="#">Displaying more parameters</a>). Only IPv4 addresses are supported. The address format to be entered as a dynamic parameter value is as follows: <i>aaa.bbb.ccc.ddd/xx</i>. If the subnet mask is omitted by entering only <i>aaa.bbb.ccc.ddd</i>, the address will correspond to <i>aaa.bbb.ccc.ddd/32</i>.</p> </div>
<p><b>Remote Gateway</b></p>	<p>IP (IPv4 or IPv6) or DNS address of the remote VPN gateway. This field is mandatory.</p>



## Authentication

<b>Preshared Key</b>	<p>Password or key shared by the remote gateway.</p> <div style="border: 1px solid #0070c0; padding: 5px;"><p><b>i NOTE</b> The preshared key is an easy way to configure a VPN tunnel. However, it is less flexible in terms of security management than the use of certificates. Refer to chapter <a href="#">Security recommendations</a>.</p></div>
<b>Certificate</b>	<p>Use a certificate to authenticate the VPN connection.</p> <div style="border: 1px solid #0070c0; padding: 5px;"><p><b>i NOTE</b> Using the <b>Certificate</b> option strengthens the security in terms of VPN connection management (mutual authentication, verification of validity periods, revocation, etc.). Refer to chapter <a href="#">Security recommendations</a>.</p></div> <p>Refer to the dedicated chapter <a href="#">Managing certificates</a>.</p>
<b>EAP</b>	<p>The Extensible Authentication Protocol (EAP) mode is used to authenticate the user based on a login name and password. When the EAP mode is selected, a pop-up window will prompt the user to enter a login name and password every time the tunnel is opened.</p> <p>When the EAP mode is selected, you can choose to display a prompt for the EAP login name and password every time the tunnel is opened (using the <b>EAP popup</b> checkbox) or to store them in the VPN configuration by entering them in the <b>Login</b> and <b>Password</b> fields.</p> <p>We recommend not to use the latter mode (see chapter <a href="#">Security recommendations</a>).</p>
<b>Multiple AUTH support</b>	<p>Enables the combination of certificate and EAP authentications.</p> <p>The VPN Client supports “Certificate then EAP” double authentication. The VPN Client does not support “EAP then Certificate” double authentication.</p>

## Cryptography

<b>Encryption</b>	Encryption algorithm negotiated during the authentication phase: Auto, AES CBC (128, 192, 256), AES CTR (128, 192, 256), AES GCM (128, 192, 256).
<b>Integrity</b>	Integrity algorithm negotiated during the authentication phase: Auto, SHA2 256, SHA2 384, SHA2 512.
<b>Key Group</b>	Length of Diffie-Hellman key: Auto, DH14 (MODP 2048), DH15 (MODP 3072), DH16 (MODP 4096), DH17 (MODP 6144), DH18 (MODP 8192), DH19 (ECP 256), DH20 (ECP 384), DH21 (ECP 521) DH28 (BrainpoolP256r1).

Refer to chapter [Security recommendations](#) on the choice of algorithm.

**Auto** means that the VPN Client automatically adapts to the gateway parameters.



### 14.3.2 IKE Auth: Protocol

Authentication	Protocol	Gateway	Certificate
<b>Identity</b>			
Local ID	DER ASN1 DN	C = FR, ST = IDF, L = Paris, O = The	
Remote ID			
<b>Advanced features</b>			
Fragmentation	<input type="checkbox"/>	Fragment size	
IKE Port	500	<input type="checkbox"/> Enable NATT offset	
NAT Port	4500		
Childless	<input type="checkbox"/>		

#### **i** NOTE

If you use an IPsec DR gateway, you must add the dynamic parameter *nonce\_size* (see section [Displaying more parameters](#)) and set its value to 16. These gateways will not accept any other nonce size.

#### Identity

<b>Local ID</b>	<p>Local ID is the identifier that the VPN Client sends to the remote VPN gateway during the authentication phase.</p> <p>According to the type selected, this identifier can be any of the following:</p> <ul style="list-style-type: none"> <li>• IPv4 Address: an IPv4 address (type = IPV4 ADDR), e.g. 195.100.205.101</li> <li>• DNS: a domain name (type = FQDN), e.g. gw.mydomain.net</li> <li>• KEY ID: a character string (type = KEY ID), e.g. 123456</li> <li>• Email: an e-mail address (type = USER FQDN),</li> <li>• IPv6 Address: an IPv6 address (type = IPV6 ADDR), e.g. 2345:0:9d38:6ab8:1c47:3a1c:a96a:b1c3</li> <li>• DER ASN1 DN: X.509 subject of a certificate (type = DER ASN1 subject DN); this field is automatically filled in with the subject of an X.509 certificate when the tunnel is associated with a user certificate (see chapter <a href="#">Managing certificates</a>)</li> </ul> <p>If this parameter is not set, the VPN Client's IP address is used by default.</p>
-----------------	--



<b>Remote ID</b>	<p>Remote ID is the identifier of the authentication phase that the VPN Client expects to receive from the VPN gateway.</p> <p>According to the type selected, this identifier can be any of the following:</p> <ul style="list-style-type: none"> <li>• IPv4 Address: an IPv4 address (type = IPV4 ADDR), e.g. 80.2.3.4</li> <li>• DNS: a domain name (type = FQDN), e.g. router.mydomain.com</li> <li>• Email: an e-mail address (type = USER FQDN), e.g. admin@mydomain.com</li> <li>• IPv6 Address: an IPv6 address (type = IPV6 ADDR), e.g. 2345:0:9d38:6ab8:1c47:3a1c:a96a:b1c3</li> <li>• DER ASN1 DN: the X.509 subject of a certificate (type = DER ASN1 DN)</li> <li>• KEY ID: a character string (type = KEY ID), e.g. 123456</li> </ul>
------------------	---

### Advanced functions

<b>IKEv2 fragmentation</b>	<p>Enables IKEv2 packet fragmentation in accordance with RFC 7383.</p> <p>This function prevents IKEv2 packets from being fragmented by the IP network they're passing through.</p> <p>The fragment size must generally be set to a value that is smaller by 200 bytes than the MTU of the physical interface, e.g. 1300 bytes for a typical 1500-byte MTU.</p>
<b>IKE port</b>	<p>IKE Init exchanges (during the IKE Authentication phase) use the UDP protocol and port 500 by default. IKE port configuration can bypass the networking hardware (firewalls, routers) that filter port 500.</p> <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b> The remote VPN gateway must also be able to perform the IKE Auth exchanges on a port other than 500.</p> </div>
<b>NAT port</b>	<p>IKE Auth exchanges, IKE Child SA exchanges, and IPsec traffic use the UDP protocol and port 4500 by default. NAT port configuration can bypass the networking hardware (firewalls, routers) that filter port 4500.</p> <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b> The remote VPN gateway must also be able to perform the IKE Child SA exchanges on a port other than 4500.</p> </div>
<b>Enable NAT offset</b>	<p>When the IKE port is different from 500, it may be necessary to check this option for the gateway to accept the connection.</p>
<b>Childless</b>	<p>When this mode is enabled, the VPN Client will attempt to initiate IKE exchanges without creating any Child SA in accordance with RFC 6023. We recommend using this mode.</p>



### 14.3.3 IKE Auth: Gateway

Authentication	Protocol	Gateway	Certificate	More Parameters
<b>Dead Peer Detection (DPD)</b>				
Check interval	<input type="text" value="30"/>	sec.		
Max. number of retries	<input type="text" value="5"/>			
Delay between retries	<input type="text" value="15"/>	sec.		
<b>Lifetime</b>				
Lifetime	<input type="text" value="1800"/>	sec.		
<b>Gateway related parameters</b>				
Redundant Gateway	<input type="text"/>			
Retransmissions	<input type="text" value="3"/>			
Gateway timeout	<input type="text" value="5"/>	sec.		

#### Dead Peer Detection (DPD)

<b>Check interval</b>	The Dead Peer Detection (DPD) function enables the VPN Client to detect whether the VPN gateway has become unreachable or inactive. The check interval is the time period between two consecutive DPD check messages sent, expressed in seconds. The DPD function is enabled upon opening the tunnel (after the authentication phase). When linked to a redundant gateway, DPD allows the VPN Client to automatically switch between gateways when one of them is unavailable.
<b>Max. number of retries</b>	Number of consecutive unsuccessful attempts before concluding that the VPN gateway is unreachable.
<b>Delay between retries</b>	Time between two DPD messages when the VPN gateway is not responding, expressed in seconds.

#### Lifetime

<b>Lifetime</b>	Lifetime of the IKE Authentication phase. The lifetime is expressed in seconds. The default value is 14,400 seconds [4 h].
-----------------	--



### Gateway-related parameters

<b>Redundant Gateway</b>	<p>Used to define the address of a spare VPN gateway that the VPN Client will switch to when the initial gateway is unavailable or unreachable. The address of the redundant VPN gateway can be either an IP or a DNS address.</p> <div style="background-color: #fff9c4; padding: 10px;"><p><b>! IMPORTANT</b> The <b>Redundant Gateway</b> function cannot be configured together with the <b>Fallback Tunnel</b> function. You must choose one or the other, failing which the VPN Client could invoke undefined behavior.</p></div> <p>Refer to chapter <a href="#">Redundant gateway</a>.</p>
<b>Retransmissions</b>	Number of IKE protocol message resends before failure.
<b>Gateway timeout</b>	Interval between two retransmissions.

#### 14.3.4 IKE Auth: Certificate

Refer to chapter [Managing certificates](#).

#### 14.3.5 Child SA: Overview

The purpose of the Child SA (Security Association IPsec) of a VPN tunnel is to negotiate the security parameters that will be applied to the data going through the VPN tunnel.

To configure Child SA parameters, select the Child SA in the VPN configuration tree. The parameters can be configured in the right-hand tabs of the **Configuration Panel**.

If any changes are made to a tunnel, it will appear in bold in the VPN configuration tree. You do not need to save a VPN configuration for it to be taken into account. The tunnel can be tested with the modified configuration immediately.





### 14.3.6 Child SA: Child SA:

Child SA
Advanced
Automation
Remote Sharing

IPV4
IPV6

**Traffic selectors**

VPN Client address

Address type Subnet address

Remote LAN address

Subnet mask

Request configuration from the gateway

**Cryptography**

Encryption Auto

Integrity Auto

Diffie-Hellman Auto

Extended Sequence Number No

**Lifetime**

Child SA Lifetime  sec.

#### Traffic selectors

<b>VPN Client address</b>	<p>“Virtual” IP address of the workstation, the way it will be “seen” on the remote network. From a technical standpoint, it is the source IP address of the IP packets going through the IPsec tunnel.</p> <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b></p> <p>The default size of the local virtual network is 24. To use another network size (e.g. 32), you must add the dynamic parameter <i>local_virtual_network_size</i> set to the desired value (possible values: 1 to 32; see section <a href="#">Displaying more parameters</a>).</p> </div>
<b>Address type</b>	<p>The endpoint of the tunnel can be a network or a remote workstation. Refer to section <a href="#">Configuring the address type</a> below.</p>



<b>Request configuration from the gateway</b>	<p>This option (also called “Configuration Payload” or “Mode CP”) lets the VPN Client get all the information required for the VPN connection from the gateway: VPN Client address, remote LAN address, subnet mask, and DNS addresses.</p> <p>When this option is checked, all corresponding fields are disabled (uneditable). They are filled in dynamically as the tunnel is opened with the values sent by the VPN gateway during the Mode CP exchange.</p> <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p><b>i NOTE</b> Mode CP allows the gateway to configure up to 16 subnets. In this case, only the first subnetwork will be entered in the <b>Traffic selectors</b> section. All the subnetworks configured by the gateway must be entered in the <b>Console</b>.</p> </div> <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <p><b>i NOTE</b> If more than 16 subnetworks are configured by the gateway, only the first 16 will be taken into account.</p> </div>
---	--

## Cryptography

<b>Encryption</b>	Encryption algorithm negotiated during the IPsec phase: Auto, AES CBC (128, 192, 256), AES CTR (128, 192, 256), AES GCM (128, 192, 256).
<b>Integrity</b>	Integrity algorithm negotiated during the IPsec phase: Auto, SHA2 256, SHA2 384, SHA2 512.
<b>Diffie-Hellman</b>	Length of Diffie-Hellman key: Auto, DH14 (MODP 2048), DH15 (MODP 3072), DH16 (MODP 4096), DH17 (MODP 6144), DH18 (MODP 8192), DH19 (ECP 256), DH20 (ECP 384), DH21 (ECP 521), DH28 (BrainpoolP256r1).
<b>Extended Sequence Number</b>	Allows you to use 64-bit extended sequence numbers (see RFC 4304): Auto, No, Yes. We recommend using the ESN mode.

Refer to chapter [Security recommendations](#) on the choice of algorithm.

**Auto** means that the VPN Client automatically adapts to the gateway parameters.

### **i NOTE**

If the IP address of the VPN Client workstation is included in the address range for a remote network (e.g. @workstation IP=192.168.10.2 and @remote network=192.168.10.x), then opening a tunnel will prevent the workstation from communicating on the local network. All communications will go through the VPN tunnel.

## Lifetime

<b>Child SA Lifetime</b>	Time interval, expressed in seconds, between two renegotiations. The default value for the Child SA lifetime is 1,800 s (30 min).
--------------------------	--

## IPv4/IPv6

<b>IPv4/IPv6</b>	Refer to chapter <a href="#">IPv4 and IPv6</a> .
------------------	--



### Configuring the address type

<p>If the endpoint of the tunnel is a network, choose the <b>Subnet address</b> type and then enter the <b>Remote LAN address</b> and <b>Subnet mask</b>:</p>	<table border="1"><tr><td>Address type</td><td>Subnet address</td></tr><tr><td>Remote LAN address</td><td>192 . 168 . 175 . 0</td></tr><tr><td>Subnet mask</td><td>255 . 255 . 255 . 0</td></tr></table>	Address type	Subnet address	Remote LAN address	192 . 168 . 175 . 0	Subnet mask	255 . 255 . 255 . 0
Address type	Subnet address						
Remote LAN address	192 . 168 . 175 . 0						
Subnet mask	255 . 255 . 255 . 0						
<p>As an alternative, you can also select <b>Range address</b> and enter the <b>Start address</b> and <b>End address</b>:</p>	<table border="1"><tr><td>Address type</td><td>Range address</td></tr><tr><td>Start address</td><td>192 . 168 . 175 . 1</td></tr><tr><td>End address</td><td>192 . 168 . 175 . 10</td></tr></table>	Address type	Range address	Start address	192 . 168 . 175 . 1	End address	192 . 168 . 175 . 10
Address type	Range address						
Start address	192 . 168 . 175 . 1						
End address	192 . 168 . 175 . 10						
<p>If the endpoint of the tunnel is a workstation, choose the <b>Single address</b> type and then enter the <b>Remote host address</b>:</p>	<table border="1"><tr><td>Address type</td><td>Single address</td></tr><tr><td>Remote host address</td><td>192 . 168 . 175 . 1</td></tr></table>	Address type	Single address	Remote host address	192 . 168 . 175 . 1		
Address type	Single address						
Remote host address	192 . 168 . 175 . 1						

#### NOTES

- The function **Automatically open this tunnel on traffic detection** is used to automatically open a tunnel when traffic with one of the addresses specified in the address range is detected (provided that this address range is authorized in the VPN gateway configuration).
- **“All traffic through the VPN tunnel” configuration**  
The VPN Client can be configured so that all the workstation's outbound traffic goes through the VPN tunnel. To implement this function, select **Subnet address** as the address type and specify *0.0.0.0* as the **Remote LAN address** and **Subnet mask**.



### 14.3.7 Child SA: Advanced

Child SA
Advanced
Automation
Remote Sharing

IPV4
IPV6

**Alternate servers**

DNS Suffix

	Type	IP Address
i	Add DNS	
	Add WINS	

**Tunnel traffic check**

Period and IP Address of the remote host to ping:

IPV4 Address

Check interval  sec.

**Miscellaneous**

Disable Split Tunneling

#### Alternate servers

<b>DNS Suffix</b>	Domain suffix to be added to all machine names. This is an optional parameter. When it is specified, the VPN Client will try to translate the machine address without adding the DNS suffix. However, if translation fails, the DNS suffix will be added, and the Client will try to translate the address again.
<b>Alternate servers</b>	Table containing the IP addresses of the DNS (maximum 2) and WINS (maximum 2) servers available on the remote network. The IP addresses will be IPv4 or IPv6 addresses depending on the network type configured in the <b>Child SA</b> tab.

**i NOTE**

When Mode CP is enabled (see the **Request configuration from the gateway** parameter in the **Child SA** tab), these fields will be grayed out (uneditable). They are automatically filled in as the tunnel is opened with the values sent by the VPN gateway during the Mode CP exchange.



## Tunnel traffic check

<b>Traffic check after opening</b>	<p>The VPN Client can be configured so that connectivity to the remote network is checked on a regular basis. If connectivity has been lost, the VPN Client will automatically close the tunnel and attempt to open it again.</p> <p>The <b>IPV4/IPV6</b> field is the address of a machine within the remote network, which should reply to pings sent by VPN Client. If a ping goes unanswered, the connection is considered lost.</p> <div style="border: 1px solid #0070C0; padding: 5px;"><p><b>i NOTE</b></p><p>If the tunnel is configured in IPv4 (see the button at the top right of the tab), then the IPv4 field is displayed. If the tunnel is configured in IPv6, then the IPv6 field is displayed.</p></div>
<b>Check interval</b>	<p>The <b>Check interval</b> indicates the time interval in seconds between two pings sent by the VPN Client to the machine with the IP address specified above.</p>

## Miscellaneous

<b>Disable Split Tunneling</b>	<p>When this option is selected, only the traffic going through the tunnel is authorized.</p> <p>The <b>Disable Split Tunneling</b> configuration option increases the “leakproofness” of the workstation, provided that the VPN tunnel is open. More specifically, this function eliminates the risk of incoming data flows that do not go through the VPN tunnel. When combined with the All traffic through the VPN tunnel configuration (see section <a href="#">Configuring the address type</a>), this option guarantees the complete leakproofness of the workstation, provided that the VPN tunnel is open. We recommend using this mode.</p>
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### 14.3.8 Child SA: Automation

Refer to chapter [Automation](#).

### 14.3.9 Child SA: Remote sharing

Refer to chapter [Remote Desktop Sharing](#).

## 14.4 Configuring an SSL/OpenVPN tunnel

### 14.4.1 Introduction

SN VPN Client Exclusive can be used to open SSL VPN tunnels.

SSL VPN tunnels established by SN VPN Client Exclusive are compatible with OpenVPN and can establish secure connections with all gateways implementing this protocol.



### 14.4.2 SSL: Authentication

Authentication Security Gateway Establishment Automation Certificate Remote Sharing

**Remote Gateway**

Interface

Remote Gateway

**Authentication**

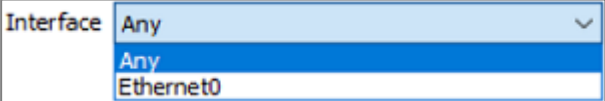
**Extra Authentication**

Enabled  Popup when tunnel opens

Login

Password

#### Remote Gateway

<b>Interface</b>	Name of the network interface on which the VPN connection is open. The software can decide automatically which interface to use by selecting <b>Any</b> .
	
	We recommend choosing this option if the tunnel being configured is to be deployed on a different workstation.
<b>Remote Gateway</b>	IP (IPv4 or IPv6) or DNS address of the remote VPN gateway. This field is mandatory.

#### Authentication

<b>Select certificate</b>	Choose a certificate for VPN connection authentication. Refer to the dedicated chapter <a href="#">Managing certificates</a> .
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#### Extra Authentication

<b>Extra Authentication</b>	This option increases the security level by asking the user to enter a login name and password whenever a tunnel is opened. When the box <b>Popup when tunnel opens</b> is checked, users will be prompted for their login name and password whenever they open the tunnel. When it is unchecked, the login name and password must be entered here permanently. Users therefore will not need to enter them every time they open the tunnel.
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### 14.4.3 SSL: Security

Authentication Security Gateway Establishment Automation Certificate Remote Sharing

**Initial Authentication (TLS)**

Security Suite


**Traffic Security Suite**

Authentication

Encryption

Compression

**Extra HMAC (TLS-Auth)**

  Enabled      Key Direction

#### Initial Authentication (TLS)

<b>Security Suite</b>	<p>This parameter is used to configure the security level of the authentication phase during the SSL exchange.</p> <ul style="list-style-type: none"><li>• <b>Auto:</b> All cryptography suites (except null) are sent to the gateway, which will use the best fit.</li><li>• <b>TLS v1.2 — Medium:</b> Only “medium” cryptography suites are sent to the gateway. In the current version, these are suites that use 128-bit encryption algorithms.</li><li>• <b>TLS v1.2 — High:</b> Only strong cryptography suites are sent to the gateway. In the current version, these are suites that use 128-bit or higher encryption algorithms.</li><li>• <b>TLS v1.3:</b> TLS 1.3 suite negotiated with the gateway, including: TLS_AES_128_GCM_SHA256 TLS_AES_256_GCM_SHA384 TLS_CHACHA20_POLY1305_SHA256 TLS_AES_128_CCM_SHA256 TLS_AES_128_CCM_8_SHA256</li></ul> <p>For further information: <a href="https://www.openssl.org/docs/man1.1.1/man1/ciphers.html">https://www.openssl.org/docs/man1.1.1/man1/ciphers.html</a></p>
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### Traffic Security Suite

<b>Authentication</b>	<p>Authentication algorithm negotiated for traffic: Auto, SHA-224, SHA-256, SHA-384, SHA-512.</p> <div style="border: 1px solid #0070c0; padding: 5px; background-color: #e6f2ff;"> <p><b>i NOTE</b> If the <b>Extra HMAC</b> option is enabled (see below), the authentication algorithm cannot be set to <b>Auto</b>. It will have to be configured explicitly and must be identical to the one chosen at the gateway end.</p> </div>
<b>Encryption</b>	<p>Traffic encryption algorithm: Auto, AES-128-CBC, AES-192-CBC, AES-256-CBC.</p>
<b>Compression</b>	<p>Traffic compression: Auto, LZ0, No, LZ4.</p>

**Auto** means that the VPN Client automatically adapts to the gateway parameters

### Extra HMAC (TLS-Auth)

<b>Extra HMAC</b>	<p>This option adds an authentication layer to the packets exchanged between the VPN Client and the VPN gateway. For this option to be fully operational, it must also be configured on the gateway (on gateways, this option is often referred to as "TLS-Auth").</p> <p>If this option is enabled, a key must be entered in the field below the checked box. The same key must also be entered on the gateway. It consists of a string of hexadecimal characters, in the following format:</p> <pre>-----BEGIN Static key----- 362722d4fbff4075853fbe6991689c36 b371f99aa7df0852ec70352122aee7be ... 515354236503e382937d1b59618e5a4a cb488b5dd8ce9733055a3bdc17fb3d2d-----END Static key-----</pre> <p>The <b>Key Direction</b> must also be defined:</p> <ul style="list-style-type: none"> <li>• <b>BiDir</b>: The specified key is used in both directions (default mode)</li> <li>• <b>Client</b>: The key direction must be defined as <b>Server</b> in the gateway.</li> <li>• <b>Server</b>: The key direction must be defined as <b>Client</b> in the gateway.</li> </ul>
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### 14.4.4 SSL: Gateway

Authentication	Security	Gateway	Establishment	Automation	Certificate	Remote Sharing
<b>Dead Peer Detection (DPD)</b>						
Ping Gateway (s)	<input type="text" value="0"/>	On Dead Peer Detection	<input type="radio"/> Close tunnel			
Detect Gateway (s)	<input type="text" value="0"/>		<input type="radio"/> Re-open tunnel			
<b>Gateway related parameters</b>						
<input type="checkbox"/> Explicit Exit						
Check Gateway Certificate						<input type="text" value="Yes"/>
Check Gateway Options						<input type="text" value="Apply"/>
Validate the subject of the gateway certificate	<input type="text"/>					
Redundant Gateway	<input type="text"/>					
<b>Miscellaneous</b>						
<input type="checkbox"/> Disable Split Tunneling						

#### Dead Peer Detection (DPD)

The Dead Peer Detection (DPD) function enables both endpoints of the tunnel to mutually make sure the other one is active.

The DPD function is enabled once the tunnel is open. When linked to a redundant gateway, DPD allows the VPN Client to automatically switch between gateways when one of them is unavailable.

<b>Ping Gateway (s)</b>	Period, expressed in seconds, between two pings sent by the VPN Client to the gateway. Sending this ping enables the gateway to determine whether the VPN Client is still active.
<b>Detect Gateway (s)</b>	Time, expressed in seconds, after which the gateway is considered down if no ping has been received.
<b>On Dead Peer Detection</b>	When the gateway is detected as unavailable (i.e. once the <b>Detect Gateway</b> time has expired), the tunnel can be closed, or the VPN Client may try to open it again.

#### Gateway-related parameters

<b>Explicit Exit</b>	This parameter configures the VPN Client to send a specific VPN tunnel closing frame to the gateway when closing the tunnel. If this option is not selected, the gateway will use DPD to close the tunnel at its end, which is less effective.
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<b>Check Gateway Certificate</b>	<p>Specifies the control level applied to the gateway certificate. In the current version, two levels are available:</p> <ul style="list-style-type: none"><li>• <b>Yes</b> (the certificate's validity is checked)</li><li>• <b>No</b> (the certificate's validity is not checked)</li></ul> <p>The <b>Lite</b> option is reserved for future use. In this version, it is equivalent to the <b>Yes</b> option.</p> <p>If the <b>Check gateway certificate signature</b> option is enabled in the <b>PKI Options</b> (see section <b>PKI Options</b>), the present option on the <b>Gateway</b> tab is grayed out and the option is set to <b>Yes</b>.</p>
<b>Check Gateway Options</b>	<p>Used to determine the level of consistency between the VPN tunnel and gateway parameters (encryption algorithms, compression, etc.).</p> <ul style="list-style-type: none"><li>• <b>Yes</b>: Consistency is checked for all VPN parameters. The VPN tunnel will not open if any parameter is different.</li><li>• <b>No</b>: Consistency is not checked before opening the tunnel. The VPN tunnel will try to open, even though no traffic may pass through because certain parameters are not consistent.</li><li>• <b>Lite</b>: Consistency between the VPN Client and the gateway is only checked for essential parameters.</li><li>• <b>Apply</b>: Gateway parameters will be applied.</li></ul>
<b>Validate the subject of the gateway certificate</b>	<p>If this field is filled in, the VPN Client will check that the subject of the certificate received from the gateway is, indeed, the one specified.</p>
<b>Redundant Gateway</b>	<p>Defines the address of a spare VPN gateway that the VPN Client will switch to when the initial gateway is unavailable or unreachable. The address of the redundant VPN gateway can be either an IP or a DNS address.</p> <div style="border: 1px solid orange; background-color: #fff9c4; padding: 10px;"><p><b>! IMPORTANT</b> The <b>Redundant Gateway</b> function cannot be configured together with the <b>Fallback Tunnel</b> function. You must choose one or the other, failing which the VPN Client could invoke undefined behavior.</p></div> <p>Refer to chapter <a href="#">Redundant gateway</a>.</p>

## Miscellaneous

<b>Disable Split Tunneling</b>	<p>When this option is selected, only the traffic going through the tunnel is authorized. The <b>Disable Split Tunneling</b> configuration option increases the "leakproofness" of the workstation, provided that the VPN tunnel is open. More specifically, this function eliminates the risk of incoming data flows that do not go through the VPN tunnel.</p>
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### 14.4.5 SSL: Establishment

Authentication	Security	Gateway	Establishment	Automation	Certificate	Remote Sharing
<b>Key Renegotiation</b>						
Bytes (KB)	<input type="text" value="0"/>	Lifetime (sec)	<input type="text" value="3600"/>			
Packets	<input type="text" value="0"/>					
<b>Tunnel Options</b>						
Physic.If MTU	<input type="text" value="0"/>	Tunnel IPV4	<input type="text" value="Auto"/>			
Tunnel MTU	<input type="text" value="0"/>	Tunnel IPV6	<input type="text" value="Auto"/>			
<b>Tunnel Establishment Options</b>						
Port	<input type="text" value="1194"/>	<input type="checkbox"/> TCP	Authentication timeout	<input type="text" value="15"/>		
Retransmissions	<input type="text" value="2"/>	Traffic setup timeout	<input type="text" value="10"/>			
<b>Traffic</b>						
Traffic detection to open tunnel			Tunnel traffic check			
IPV4	<input type="text"/>	/	<input type="text"/>	IPV4	<input type="text"/>	
IPV6	<input type="text"/>	/	<input type="text"/>	IPV6	<input type="text"/>	

#### Key Renegotiation

<b>Bytes (KB), Packets, Lifetime (sec)</b>	<p>Keys can be renegotiated when any of the three criteria (which can be combined) expire:</p> <ul style="list-style-type: none"> <li>• Traffic volume, expressed in KB</li> <li>• Quantity of packets, expressed in number of packets</li> <li>• Lifetime, expressed in seconds</li> </ul> <p>If more than one criterion is set, keys will be renegotiated when the first of these expires.</p>
--	--

#### Tunnel Options

<b>Physical interface MTU</b>	<p>Maximum size of OpenVPN packets. Used to set a packet size so that OpenVPN frames are not fragmented at the network level. The default value for MTU is 0, meaning that the software will use the MTU value of the physical interface.</p>
<b>Tunnel MTU</b>	<p>Virtual interface MTU. When values have been entered, we recommend setting a lower value for the tunnel MTU than that of the physical interface MTU. The default value for MTU is 0, meaning that the software will use the MTU value of the physical interface.</p>



<b>Tunnel IPv4</b>	<p>Defines the VPN Client's behavior when it receives an IPv4 configuration from the gateway:</p> <ul style="list-style-type: none"> <li>• <b>Auto:</b> Accepts the information sent by the gateway</li> <li>• <b>Yes:</b> Checks whether the information sent by the gateway matches the configured behavior. If this is not the case, a warning message is displayed in the <b>Console</b> and the tunnel is not established.</li> <li>• <b>No:</b> Ignores</li> </ul> <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;"> <p><b>i NOTE</b> Please check that <b>IPv4 tunnel</b> and <b>IPv6 tunnel</b> aren't both set to <b>No</b>.</p> </div>
<b>Tunnel IPv6</b>	<p>Defines the VPN Client's behavior when it receives an IPv6 configuration from the gateway:</p> <ul style="list-style-type: none"> <li>• <b>Auto:</b> Accepts the information sent by the gateway</li> <li>• <b>Yes:</b> Checks whether the information sent by the gateway matches the configured behavior. If this is not the case, a warning message is displayed in the <b>Console</b> and the tunnel is not established.</li> <li>• <b>No:</b> Ignores</li> </ul> <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;"> <p><b>i NOTE</b> Please check that <b>IPv4 tunnel</b> and <b>IPv6 tunnel</b> aren't both set to <b>No</b>.</p> </div>

### Tunnel Establishment Options

<b>Port/TCP</b>	<p>Port number used to establish the tunnel. The default port value is set to 1194. The tunnel will use UDP by default. The <b>TCP</b> option is used to transport the tunnel over TCP.</p>
<b>Authentication Timeout</b>	<p>Time allowed to establish the authentication phase. When this time expires, it is assumed that the tunnel will not open. When this timeout expires, the tunnel is closed.</p>
<b>Retransmissions</b>	<p>Number of retries for sending a protocol message. If there is no response by the time the defined number of retries is reached, the tunnel is closed.</p>
<b>Traffic setup timeout</b>	<p>Tunnel establishment phase: time after which the tunnel is closed, if not all the steps have been completed.</p>

### Traffic

<b>Traffic detection to open the tunnel</b>	<p>With OpenVPN, the remote network's details are not configured [they are automatically obtained during the tunnel opening exchange with the gateway]. To implement traffic detection with OpenVPN, the remote network's details must therefore be stated explicitly. That is the purpose of the <b>IPv4</b> and <b>IPv6</b> fields. It is not mandatory to fill in both fields. The <b>IP</b> field is a sub-network address, configured as an IP address and a prefix length. Example: IP = 192.168.1.0 / 24: the first 24 bits of the IP address are taken into account, i.e. the network: 192.168.1.x</p> <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;"> <p><b>i NOTE</b> These parameters are linked to the traffic detection function. The <b>Automatically open this tunnel on traffic detection</b> box must be checked on the <b>Automation</b> tab for the <b>IPv4</b> and <b>IPv6</b> fields to be enabled.</p> </div>
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<b>Tunnel traffic check</b>	<p>If these fields are filled in, the VPN Client will try to ping these addresses after opening the VPN tunnel. The connection status (reply to pings or no reply to pings) is shown in the <b>Console</b>. It is not mandatory to fill in both fields.</p> <div data-bbox="367 380 1385 481"><p><b>i NOTE</b> No particular steps are taken if the ping goes unanswered.</p></div>
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### 14.4.6 SSL : Automation

Refer to chapter [Automation](#).

### 14.4.7 SSL : Certificate

Refer to chapter [Managing certificates](#).

### 14.4.8 SSL : Remote sharing

Refer to chapter [Remote Desktop Sharing](#).



## 15. Redundant gateway

SN VPN Client Exclusive can be used to manage a redundant VPN gateway.

When combined with Dead Peer Detection (DPD) settings, this function allows the VPN Client to automatically switch to the redundant gateway as soon as the main gateway is detected as being down or unavailable.

If a peer is lost and a redundant gateway has been configured, the tunnel will automatically try to open again. You can configure a redundant gateway that is identical to the main one, in order to benefit from the automatic reopening mode without actually having to use two gateways.

The algorithm for taking into account the redundant gateway is as follows:

- The VPN Client contacts the initial gateway to open the VPN tunnel.
- If the tunnel cannot be opened after N attempts, the VPN Client contacts the redundant gateway.

The same algorithm applies to the redundant gateway:

- If the redundant gateway is unavailable, the VPN Client will try to open the VPN tunnel with the initial gateway.

### NOTES

- The VPN Client will not try to contact the redundant gateway if the initial gateway can be reached, but issues are experienced when opening the tunnel.
- The VPN Client will not try to contact the redundant gateway if the initial gateway cannot be reached due to a DNS resolution issue.

### IMPORTANT

The **Redundant Gateway** function cannot be configured together with the **Fallback Tunnel** function. You must choose one or the other, failing which the VPN Client could invoke undefined behavior.



# 16. Automation

SN VPN Client Exclusive can perform automated actions for each VPN tunnel, such as switching to a fallback tunnel, opening the tunnel automatically if certain criteria are met, running batches or scripts at various stages while opening or closing a tunnel, etc.

These automated actions can be performed on any type of tunnel: IKEv2 and SSL.

These automated actions are configured for each tunnel type on the **Automation** tab of the corresponding tunnel: Child SA (IKEv2) or TLS (SSL).

Authentication	Security	Gateway	Establishment	Automation	Certificate	Remote Sharing
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**Tunnel fallback**

Tunnel to switch to:

Message to display:

Fallback retries:

Allow the user to refuse the fallback.

**Automatic Open mode**

Automatically open this tunnel when VPN Client starts after logon.

Automatically open this tunnel when USB stick is inserted.

Automatically open this tunnel on traffic detection.

**Gina mode**

Enable before Windows logon.

Automatically open this tunnel when Gina starts at logon

**Scripts**

Run this script :

Before tunnel opens:  

When tunnel is opened:  

Before tunnel closes:  

After tunnel is closed:

## 16.1 Tunnel fallback

Refer to chapter [Fallback tunnel](#).

**! IMPORTANT**  
The **Redundant Gateway** function cannot be configured together with the **Fallback Tunnel**



function. You must choose one or the other, failing which the VPN Client could invoke undefined behavior.

## 16.2 Automatic Open mode

<b>Automatically open this tunnel when VPN Client starts after logon</b>	The tunnel will automatically open when the VPN Client is started.
<b>Automatically open this tunnel when USB stick is inserted</b>	If the tunnel is configured with a certificate stored on a smart card or token, it will automatically be opened when the smart card or token is inserted.
<b>Automatically open this tunnel on traffic detection</b>	The tunnel will automatically open when traffic is detected that is heading towards an IP address on the remote network.

## 16.3 GINA mode

<b>Enable before Windows logon</b>	This option specifies that the VPN connection can be opened before the Windows logon: it appears in the GINA connections window (see chapter <a href="#">GINA mode</a> below).
<b>Automatically open this tunnel when GINA starts at logon</b>	When this option is enabled, the tunnel will automatically open before the Windows logon. This option is enabled if the option <b>Enable before Windows logon</b> is selected.

## 16.4 Scripts

<b>Before tunnel opens</b>	The specified command line is executed before the tunnel opens.
<b>When tunnel is opened</b>	The specified command line is executed as soon as the tunnel is open.
<b>Before tunnel closes</b>	The specified command line is executed before the tunnel closes.
<b>After tunnel is closed</b>	The specified command line is executed as soon as the tunnel is closed.

The command lines can be as follows:

- Calling a "batch" file, e.g. *C:\vpn\batch\script.bat*
- Running a program, e.g. *C:\Windows\notepad.exe*
- Opening a web page, e.g. *https://my.site*
- etc.

There are many possible applications, such as the following:

- Creating a semaphore file when the tunnel is open, so that a third-party application can detect the instant when the tunnel is open
- Opening one of the company's intranet servers automatically once the tunnel is open
- Cleaning or checking a configuration before opening the tunnel
- Checking the workstation (antivirus is up-to-date, correct versions of applications, etc.) before opening the tunnel





- Automatic cleaning (file deletion) of a workspace on the workstation before closing the tunnel
- Application for counting openings, closings, and durations of VPN tunnels
- Changing the network configuration, once the tunnel has been opened, then restoring the initial network configuration once the tunnel has been closed
- etc.

**i** NOTE

Scripts cannot be configured for a tunnel configured in GINA mode. Data entry fields are disabled.



## 17. Fallback tunnel

SN VPN Client Exclusive is equipped with a fallback tunnel function, which automatically attempts to open a second tunnel if the first one cannot be opened.

This function can be configured on the **Automation** tab of each tunnel IKEv2 or SSL.

**Tunnel fallback**

Tunnel to switch to

Message to display

Fallback retries

Allow the user to refuse the fallback.

### ! IMPORTANT

The **Redundant Gateway** function cannot be configured together with the **Fallback Tunnel** function. You must choose one or the other, failing which the VPN Client could invoke undefined behavior.

<b>Tunnel to switch to</b>	This field displays the list of tunnels to which the software can automatically switch if the current tunnel is unavailable.
<b>Message to display</b>	As this function can automatically switch from one tunnel to another, with the second being, for example, less secure than the first, this option is used to display a warning message to the user. This message will be displayed every time the connection switches to the fallback tunnel.
<b>Max. number of retries</b>	The number of fallback attempts is set to avoid infinite switching loops (tunnel 1 falling back to tunnel 2 falling back in turn to tunnel 1).
<b>Allow the user to refuse the fallback</b>	Used to configure the fallback function so that the user gets to decide whether to fall back from one tunnel to another.



## 18. IPv4 and IPv6

SN VPN Client Exclusive is compatible with IPv4 and IPv6 protocols, both for communicating with the gateway and with the remote network. The VPN Client allows you to combine the use of IPv4 and IPv6, for example to open a secure IPv4 connection in a VPN tunnel transported over IPv6.

The choice between IPv4 and IPv6 is made either based on the IP address if it is digital or based on the DNS resolution. In the latter case, the resolution of the gateway name will provide an IPv4 or IPv6 IP address, or both. If both are provided, preference is given to the IPv4 address.

For IKEv2 VPN tunnels, the IPv4 or IPv6 protocol configuration can be accessed in the top-right corner of the **Child SA** tab.

Child SA | Advanced | Automation | Remote Sharing | **IPv4** | IPv6

**Traffic selectors**

VPN Client address: 0 . 0 . 0 . 0

Address type: Subnet address

Remote LAN address: 0 . 0 . 0 . 0

Subnet mask: 0 . 0 . 0 . 0

Request configuration from the gateway

The IP protocol configured using the **IPv4/IPv6** button is exactly the same as the protocol used on the remote network.

Child SA | Advanced | Automation | Remote Sharing | More Parameters | IPv4 | **IPv6**

**Traffic selectors**

VPN Client address: ::

Address type: Subnet address

Remote LAN address: ::

Prefix length: 0

Request configuration from the gateway

### **i** NOTE

Choosing between IPv4 and IPv6 has an impact on the settings of the tunnel's other configuration tabs. The IPv4/IPv6 selection button therefore still is shown on the top-right corner of these other tabs, but it is disabled.



## 19. Managing certificates

### 19.1 Introduction

SN VPN Client Exclusive includes a selection of interfacing functions with all types of certificates, issued by any PKI, and on any type of storage device, such as smart card, token, certificate store, and configuration file.

SN VPN Client Exclusive implements the following features:

- Automatic selection of the medium to use from among several
- PKCS#11 and CNG access to tokens and smart cards
- Selection of certificates to use according to multiple criteria: subject, key usage, etc.
- Management of certificates on user's side (the VPN Client's side), such as VPN gateway certificates, including validity date, certificate chain, root certificate, intermediate certificate, and CRL management
- Certificate authority (CA) management
- Option to pre-configure all PKI parameters for automatic integration during installation

SN VPN Client Exclusive provides additional security features for PKI management, such as automatically opening or closing a tunnel upon insertion or removal of a smart card or token, or even the ability to configure the PKI interface in the software setup file in order to automate deployment.

The list of smart cards and tokens compatible with SN VPN Client Exclusive is available on TheGreenBow's website at: <https://www.thegreenbow.com/en/support/integration-guides/compatible-vpn-tokens/>.

The certificates to be used are configured and specified in three steps as follows:

1. The **Certificate** tab of the relevant tunnel: IKE Auth (IKEv2) or TLS (SSL).
2. The **PKI Options** tab of the **Tools > Options** window in the **Configuration Panel**.
3. A configuration file for smart card readers and tokens called *vpnconf.ini* (refer to the "**Deployment Guide**").

The following certificate types are supported:

- RSASSA-PKCS1-v1.5 with SHA-2 (only if the corresponding dynamic parameter has been configured, see section [Certificate authentication methods](#))
- RSASSA-PSS with SHA-2 (only if the corresponding dynamic parameter has been configured, see section [Certificate authentication methods](#))
- ECDSA "secp256r1" with SHA-2 (256 bits)
- ECDSA "BrainpoolP256r1" with SHA-2 (256 bits)

To find out more about the authentication methods and cryptography used in the SN VPN Client Exclusive, refer to section [Basic cryptography concepts](#) in the appendix.

### 19.2 User certificate

#### 19.2.1 Overview

The VPN Client sends the user certificate to the gateway so that it can authenticate the user.

It must comply with the following constraints (ANSSI security recommendations):



- The Key Usage extension must be present, marked as critical, and only contain the value *digitalSignature*.
- The Extended Key Usage extension must be present, marked as critical, and only contain the value *id-kp-clientAuth*.

If these constraints are not observed, the VPN Client will display a warning in the **Console** but will not prevent communication with the gateway. However, the gateway should refuse the authentication of the VPN Client.

### 19.2.2 Dynamic parameters

As of version SN VPN Client Exclusive 7.4, two dynamic parameters now replace the corresponding MSI properties. They are defined within the IKE\_AUTH authentication payload and apply to a given tunnel, whereas the MSI properties apply to all tunnels.

#### user\_cert\_dnpattern

The dynamic parameter `user_cert_dnpattern` is used to specify the certificate to be used. When it is defined, SN VPN Client Exclusive searches for the certificate whose subject contains the [text] pattern on the token, smart card or in the Windows certificate store.

If this dynamic parameter is not specified, the VPN Client searches for the first certificate that meets the other characteristics configured.

#### user\_cert\_keyusage

The dynamic parameter `user_cert_keyusage` is used to select a certificate based on its “key usage” field:

- 0 or undefined : Certificate is not selected based on “key usage” field.
- 1 : Certificate is selected based on “key usage” field whose attribute `digitalSignature=1`.
- 2 : Certificate is selected based on “key usage” field whose attributes `digitalSignature=1` and `keyEncipherment=1`.

#### **i** NOTE

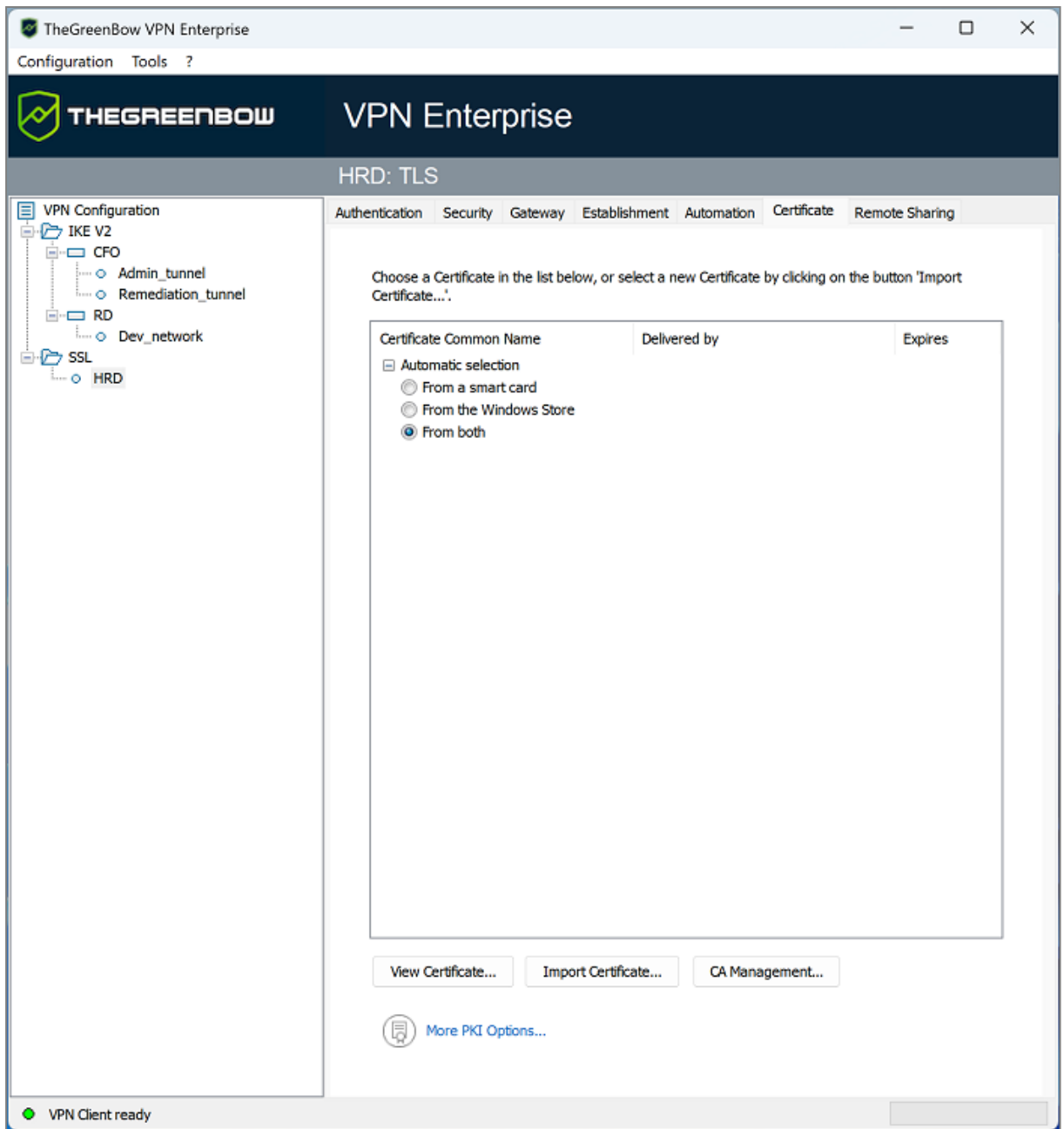
When the value of the dynamic parameter `user_cert_keyusage` is set to 2, the **Only use authentication certificate** check box on the **PKI Options** tab is grayed out (see section [PKI Options](#)).

### 19.2.3 Automatic selection

As of version SN VPN Client Exclusive 7.4, an option can be used to automatically select the user certificate from a token/smart card, the Windows certificate store, or both.

The **Certificate** tab of an IKE or SSL connection includes an **Automatic selection** entry with the following options:

- From a smart card
- From the Windows Store
- From both



If you choose the latter option, the software will first look for the user certificate on a token/smart card. If it cannot find any, it will continue to search for a certificate in the Windows Certificate Store.

If you choose **From a smart card** or **From both** and you use several token/smart card readers, you must configure the dynamic parameter `reader_pattern` to specify the reader from which the certificate should be selected (see section [Displaying more parameters](#)). As value for this parameter, specify the name of the drive (e.g. `NEOWAVE`) or `Virtual` if it is a Trusted Platform Module (TPM).

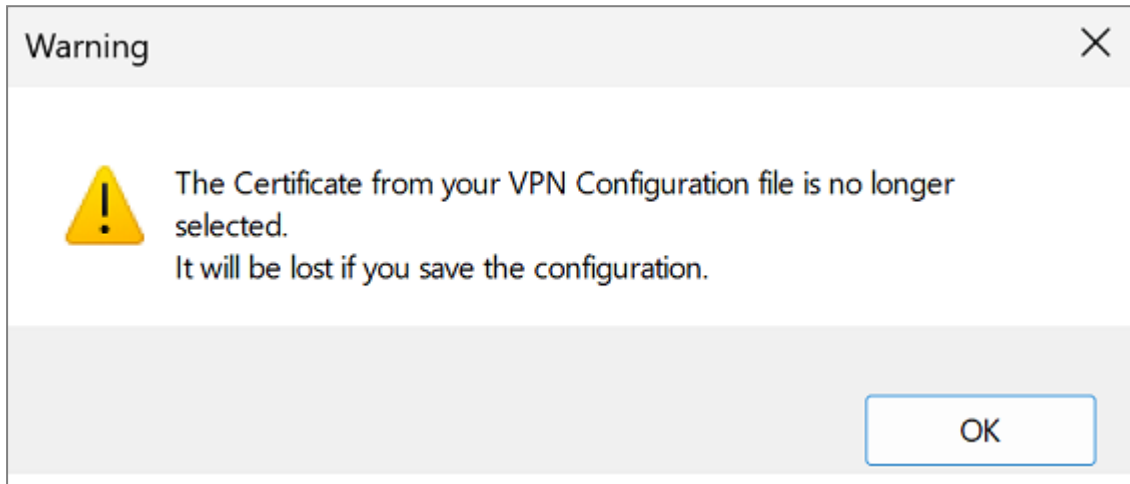
**i** NOTE

As of version SN VPN Client Exclusive 7.5, when several smart cards from the same manufacturer are used with identical smart card readers, the dynamic parameter `user_smartcard_tip` can be set



to a desired value at the IKE Auth level, which will be displayed when the password is requested to help clearly identify the smart card (see section [Displaying more parameters](#)).

If you have previously imported a certificate into the configuration and you decide to choose automatic selection, a warning will be displayed to inform you that the certificate will be removed from the configuration when you save it.



### 19.3 Selecting a certificate (Certificate tab)

The VPN Client can assign a user certificate to a VPN tunnel.

There can only be one certificate per tunnel, but each tunnel can have its own certificate.

The VPN Client allows you to choose a stored certificate:

- In the VPN configuration file (see below [Importing a certificate to the VPN configuration](#))
- On a smart card or token (see below [Using a certificate stored on a smart card or token](#))
- In the Windows Certificate Store (see below [Using a certificate stored in the Windows Certificate Store](#))

The **Certificate** tab for the relevant tunnel lists all accessible storage media that contain certificates.

- The smart card or token is compatible with CNG or PKCS#11
- The smart card or token middleware is correctly installed on the computer
- Where appropriate, the smart card is correctly inserted into the corresponding reader

If a medium does not contain any certificates, it simply will not appear in the list (e.g. if the VPN configuration file does not contain any certificates, it will not appear in the list).

Clicking the desired medium displays the list of certificates it contains.

#### **i** NOTE

For smart cards readers, the reader is displayed with a warning icon in front, if the smart card is



not inserted.

Certificate Common Name	Delivered by	Expires
<input type="checkbox"/> Windows Personal Certificat...		
<input type="radio"/> Automatic selection		
<input type="radio"/> CXP-Demo	CXP_CA	03-15-2031

Click the desired certificate to assign it to the VPN tunnel.

**i** NOTE

Only available certificates that have not expired are displayed.

Authentication Protocol Gateway Certificate More Parameters

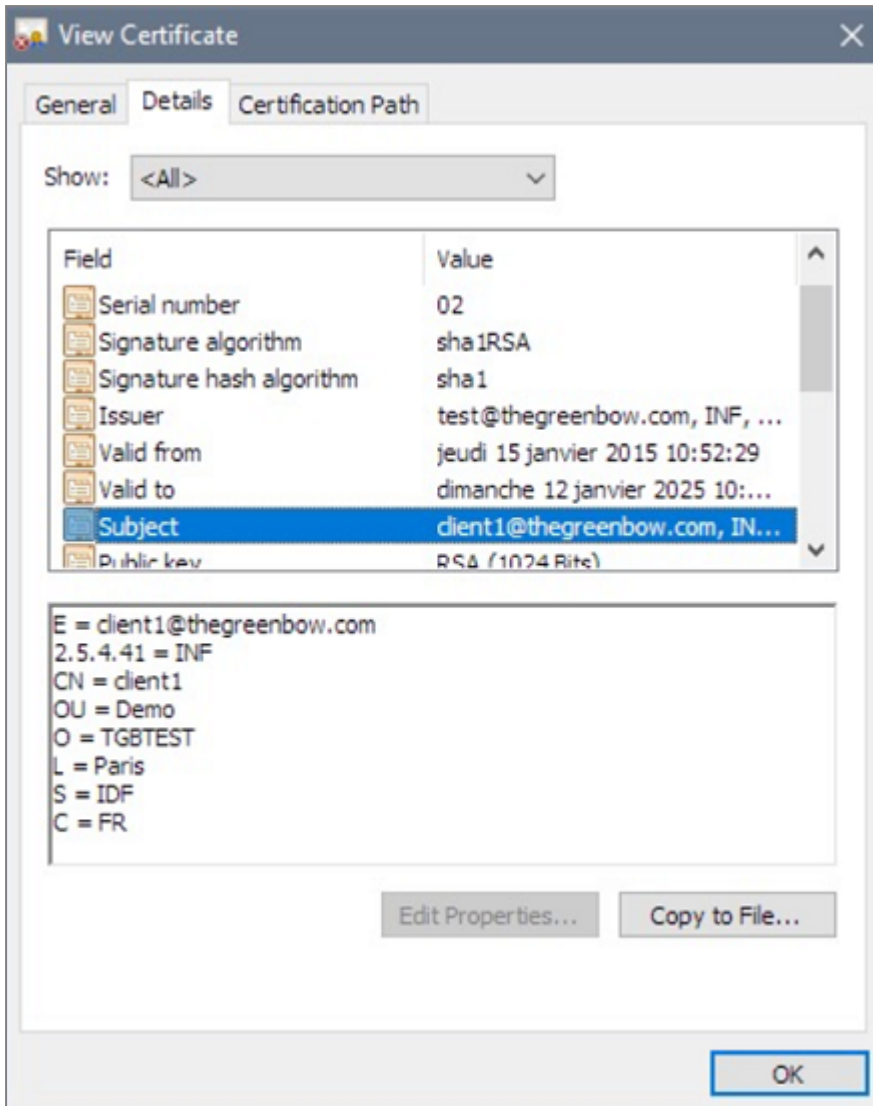
Choose a Certificate in the list below, or select a new Certificate by clicking on the button 'Import Certificate...'.

Certificate Common Name	Delivered by	Expires
<input type="checkbox"/> Automatic selection		
<input type="radio"/> From a smart card		
<input type="radio"/> From the Windows Store		
<input type="radio"/> From both		
<input type="checkbox"/> VPN Configuration File		
<input checked="" type="radio"/> CLIENT_1_RSA_OCT2022	FGCAINTER2MAY2022	04-06-2032
<input type="checkbox"/> Windows Personal Certifica...		
<input type="radio"/> CLIENT_1_RSA_OCT2022	FGCAINTER2MAY2022	04-06-2032
<input type="checkbox"/> Badgeo ID 2.0		
<input type="radio"/> CLIENT_1AUGUST2022_1	FGCAINTER2MAY2022	04-06-2032

More PKI Options...

Once a certificate has been selected, the **View Certificate** button will show detailed information about the certificate.





**i NOTE**  
Once a certificate has been selected, the tunnel's Local ID type will automatically switch to **DER ASN1 DN** and the certificate's subject will be used as the default value of this **Local ID**. See below to find out how to automatically assign a DNS or e-mail value retrieved from the certificate.

Authentication	Protocol	Gateway	Certificate
<b>Identity</b>			
Local ID	DER ASN1 DN		
Remote ID			



As of version SN VPN Client Exclusive 7.3, you can select **DNS** or **Email** from the **Local ID** drop-down list to automatically assign to the Local ID a DNS or e-mail value retrieved from the certificate.

If you choose **DNS**, the Local ID will automatically take the value of the *dNSName* field of the certificate subject alternative name (*SubjAltName*). If this field has not been filled in (no *SubjAltName* in the certificate or no *dNSName* in the *SubjAltName*), the CN value of the certificate subject will be used instead. If the latter value is also missing, no certificate is available to configure the tunnel and any attempt to establish the tunnel will fail.

If you choose **Email**, the Local ID will automatically take the value of the *rfc822Name* field of the certificate subject alternative name (*SubjAltName*). If this field has not been filled in (no *SubjAltName* in the certificate or no *rfc822Name* in the *SubjAltName*), the *Email* value of the certificate subject will be used instead. If the latter value is also missing, no certificate is available to configure the tunnel and any attempt to establish the tunnel will fail.

#### **i** NOTE

As of version SN VPN Client Exclusive 7.4, an option can be used to automatically select the user certificate from a token/smart card, the Windows certificate store, or both (see section [Automatic selection](#)).

## 19.4 Importing a certificate to the VPN configuration

SN VPN Client Exclusive can import certificates in PEM/PFX or PKCS#12 format to the VPN configuration. This solution is less secure than using the Windows Certificate Store, a smart card, or a token, but it makes it easier to transport certificates.

This solution has the advantage of combining the certificate (user-specific) and the VPN configuration (generic) in a single file, which can easily be sent to the user's workstation and imported into the VPN Client.

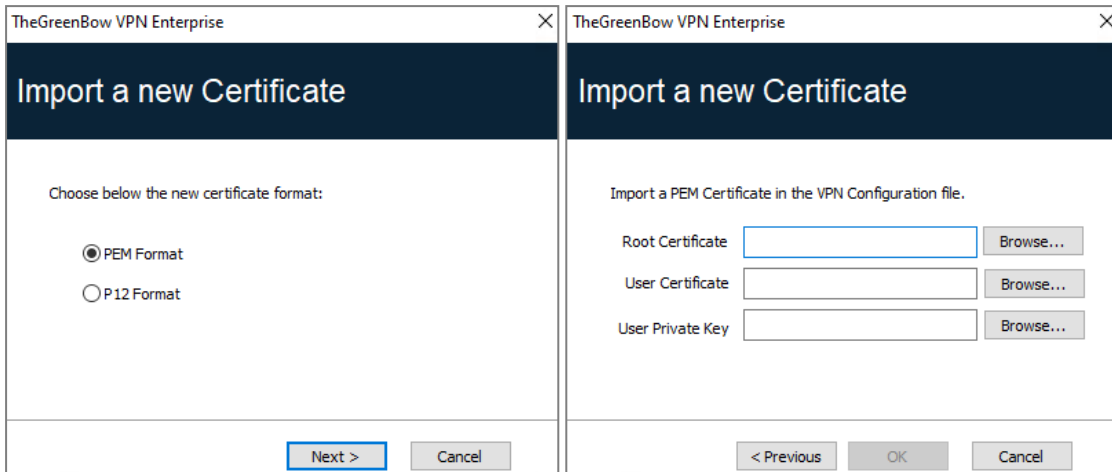
Nevertheless, the disadvantage of transporting certificates in a VPN configuration is that each configuration then becomes user-specific. We therefore do not recommend this solution for a substantial deployment.

#### **!** IMPORTANT

Whenever you import a certificate into a VPN configuration, we strongly recommend that you protect the configuration file with a password when you export it (see section [Exporting a VPN configuration](#)) so that the certificate does not become visible in clear text.

### 19.4.1 Importing a PEM/PFX certificate

1. On the **Certificate** tab of an IKE Auth, click **Import Certificate...**
2. Choose **PEM Format**.
3. Click on **Browse** to select the **Root Certificate** and the **User Certificate** as well as the **User Private Key** to import.
4. Click on **OK** to confirm.

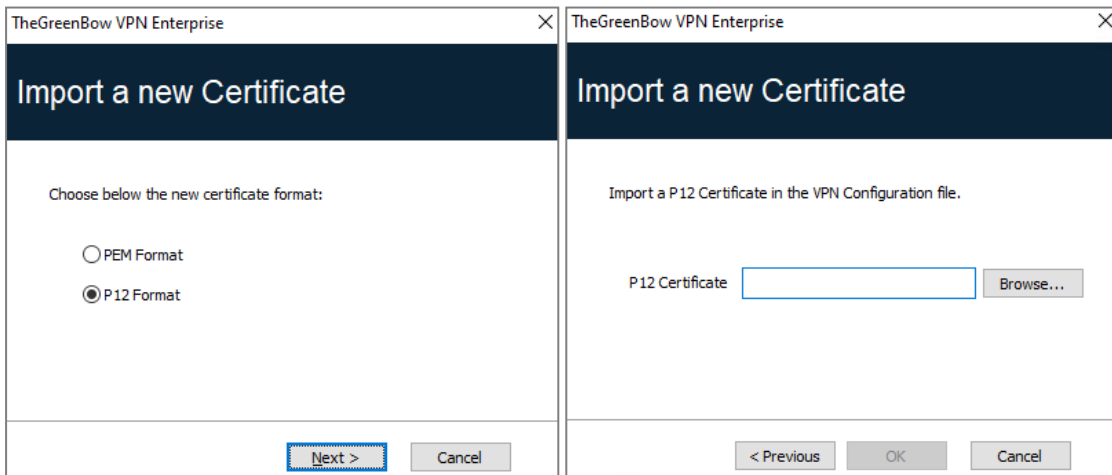


The certificate is shown and is selected in the certificate list displayed on the **Certificate** tab. Save the VPN configuration. The certificate will be saved in the VPN configuration.

**i** **NOTE**  
The file containing the private key may not be encrypted.

### 19.4.2 Importing a PKCS#12 certificate

1. On the **Certificate** tab of a Child SA, click **Import Certificate ...**
2. Choose **P12 Format**.
3. Click on **Browse** to select the PKCS#12 certificate to import.
4. If it is password-protected, enter the password and click on **OK** to confirm.



The certificate is shown and is selected in the certificate list displayed on the **Certificate** tab. Save the VPN configuration. The certificate will be saved in the VPN configuration.

**i** **NOTE**  
All CAs in the file that are in PKCS#12 format will also be imported to the VPN configuration.



## 19.5 Using a certificate stored on a smart card or token

When a VPN tunnel is configured to use a certificate stored on a smart card or token, users will be prompted for the PIN code required to access this smart card or token every time a tunnel is opened.

If the smart card is not inserted or the token cannot be accessed, the tunnel will not open.

If the certificate found does not meet the configured criteria (see section [Importing a certificate depending on the store used device](#) below), the tunnel will not open.

If an incorrect PIN is entered, SN VPN Client Exclusive will show a warning, informing users that they only have three (in most cases) consecutive attempts to unlock the smart card or token.

SN VPN Client Exclusive implements a mechanism to automatically detect smart card insertion.

Tunnels that are associated with a certificate stored on a smart card will therefore be established automatically when the smart card is inserted. Likewise, removing the smart card will close all the corresponding tunnels.

To implement this function, check **Automatically open this tunnel when a USB stick is inserted** (see chapter [Automation](#)).

### **i** NOTE

As of version SN VPN Client Exclusive 7.4, an option can be used to automatically select the user certificate from a token/smart card, the Windows certificate store, or both (see section [Automatic selection](#)).

### **i** NOTE

As of version SN VPN Client Exclusive 7.5, when several smart cards from the same manufacturer are used with identical smart card readers, the dynamic parameter *user\_smartcard\_tip* can be set to a desired value at the IKE Auth level, which will be displayed when the password is requested to help clearly identify the smart card (see section [Displaying more parameters](#)).

## 19.6 Using a certificate stored in the Windows Certificate Store

### 19.6.1 Required characteristics

### **i** NOTE

To offer finer granularity in how the choice of certificate store to use is configured, as of version SN VPN Client Exclusive 7.5, this choice is no longer made at the workstation level, but at the tunnel level.

For SN VPN Client Exclusive to identify a certificate available in the Windows Certificate Store, the certificate must meet the following criteria:

- The certificate must be certified by a certification authority (which excludes self-signed certificates)
- By default, the certificate must be located in the “Personal” Certificate Store (it represents the personal identity of the user who wants to open a VPN tunnel to the corporate network)  
To use the Windows Machine Certificate Store, add dynamic parameter *MACHINESTORE* set to the value true (see section [Displaying more parameters](#)).

**i NOTE**

Microsoft provides a standard management tool (*certmgr.msc*) to manage the certificates in the Windows Certificate Store. To run this tool, go to the Windows **Start** menu and then enter *certmgr.msc* in the **Search for programs or files** field.

## 19.6.2 Importing a certificate depending on the store used

When importing certificates using the CNG middleware, the store used (user or machine store) must be specified in the command line. Below you will find examples of command lines with the options you need to specify.

- User store:

```
certutil -csp KSP -user -importpfx CertFileName.p12
```

- Machine store:

```
certutil -csp KSP -importpfx CertFileName.p12
```

**i NOTE**

In command lines, the **-user** option of the *certutil* command is used to specify the user store. When it is omitted, the machine store will be used by default.

**i NOTE**

As of version SN VPN Client Exclusive 7.4, an option can be used to automatically select the user certificate from a token/smart card, the Windows certificate store, or both (see section [Automatic selection](#)).

## 19.7 PKI options: specifying the certificate and its storage device

SN VPN Client Exclusive provides several ways in which to specify the certificate to use, as well as to select the smart card reader or token that contains the certificate.

This feature is available under the [More PKI options](#) link at the bottom of the **Certificate** tab and on the **PKI options** tab of the **Options** configuration window.

## 19.8 VPN gateway certificate

We recommend forcing SN VPN Client Exclusive to check the certificate chain of the certificate received from the VPN gateway (default behavior).

See section [Certificate Check](#).

To do this, you need to import the root certificate and all certificates in the certificate chain (root certificate authority and intermediate certificate authorities) to the configuration file.

If the option is checked, the VPN Client will also use the Certificate Revocation List (CRL) of the various certificate authorities.

If these CRLs are not in the certificate store, or if these CRLs cannot be downloaded when the VPN tunnel is opened, the VPN Client will not be able to validate the gateway certificate.

Checking each item in the chain implies the following:



- Checking gateway certificate expiration date
- Checking certificate validity start date
- Checking signatures of all certificates in the certificate chain (including root certificate, intermediate certificates, and server certificate)
- Checking whether the CRLs of all certificate issuers within the chain of trust

**i** NOTE

As of version SN VPN Client Exclusive 7.5, you can check the revocation of the gateway certificate using Online Certificate Status Protocol Stapling (OCSP Stapling). To do this, you must add the dynamic parameter `enable_OCSP` set to the value `true` (see section [Displaying more parameters](#)).

## 19.8.1 Preventing or limiting CRL download

### Introduction

A Certificate Revocation List (CRL) contains all the certificates that are no longer valid (validity date has expired, private key associated with the certificate has been lost or compromised, a field concerning the owner has been changed, etc.) and therefore cannot be trusted.

CRLs are defined in the RFC [5280](#) and [6818](#).

CRLs are published by certificate authorities (CAs) and Public Key Infrastructures (PKIs).

In some cases, these lists can be relatively large (several MB). Downloading them can therefore take time and slow down the time it takes to open a tunnel when a great number of users contacts the HTTP server at the same time.

SN VPN Client Exclusive provides two dynamic parameters described below to speed up the time it takes to open a tunnel. These parameters work independently from one another and can be combined.

The first dynamic parameter, named `check_user_crl`, prevents the download of the CRL used to validate the user certificate. The second, named `crl_cache_duration`, limits the download of the CRL used to validate the gateway CRL.

### Preventing download of CRL used to validate the user certificate

By default, when the VPN Client verifies the user certificate (e.g. because it is issued by a known CA), it also verifies the CRL to determine whether the certificate is still valid. If the certificate is no longer valid, a simple warning is entered in the **Console**. Ultimately, it is up to the gateway to decide whether the user certificate can be accepted or not.

In order to prevent downloading the CRL and thus speed up the time it takes to open a tunnel, you can add the dynamic parameter `check_user_crl` set to the value `false` (see section [Displaying more parameters](#)). In this case, the user certificate CRL is not verified. The gateway will handle this verification.

### Limiting download of CRL used to validate the gateway certificate

If you want to limit the number of times a CRL is downloaded to validate the gateway certificate without preventing its download altogether—again with the aim to speed up the time it takes to open a tunnel—you can add the dynamic parameter `crl_cache_duration` set to a value corresponding to the number of hours during which the CRL is stored in the cache memory (see section [Displaying more parameters](#)).



When the value of the parameter is set to zero, the caching of the CRL is disabled. Caching is limited to a maximum of seven days, i.e. 168 hours. Any value greater than 168 will be considered equal to the maximum of seven days.

When this dynamic parameter is configured with a value different from zero, the CRL will be stored in a cache memory and an expiration time in hours will be set for this CRL. As long as the expiration time has not passed, the CRL in the cache memory will be used and no download is performed. When the time has expired, the CRL is downloaded and updated in the cache memory.

### 19.8.2 Constraints on the Key Usage extension

The gateway certificate must comply with the following constraints on the Key Usage extension. The extension must:

- Be present
- Be marked as non-critical, and
- Only contain the values *digitalSignature* and/or *nonRepudiation*

In the event that the VPN gateway does not comply with the constraints on the Key Usage extension mentioned above, you can configure the VPN Client so that it validates the certificate despite this, by adding the dynamic parameter *allow\_server\_and\_client\_auth* set to the value *true* (see section [Displaying more parameters](#)).

In this configuration, the certificate will also be validated if the Key Usage extension contains one of the following combinations of values:

- *digitalSignature* + *keyEncipherment* + *keyAgreement*
- *digitalSignature* + *keyAgreement*
- *nonRepudiation* + *keyEncipherment*
- *nonRepudiation* + *keyEncipherment* + *keyAgreement*
- *nonRepudiation* + *keyAgreement*
- *keyEncipherment*
- *keyEncipherment* + *keyAgreement*

Moreover, in this configuration the Key Usage extension can be marked as non-critical.

#### **i** NOTE

In accordance with security requirements, the *keyEncipherment* value of the Key Usage extension has been deprecated and replaced with the *nonRepudiation* value, which is now accepted by default. However, SN VPN Client Exclusive version 7.5 continues to accept the *keyEncipherment* value without needing to use dynamic parameter *allow\_extra\_keyusage*.

#### **💡** TIP

We recommend that you give preference to the *nonRepudiation* value over the *keyEncipherment* value of the Key Usage extension.

### 19.8.3 Constraints on the Extended Key Usage extension

The gateway certificate must comply with the following constraints on the Extended Key Usage extension. The extension may be present or not. If it is present, it must:



- Be marked as non-critical, and
- Only contain the following values:
  - `id-kp-serverAuth` or
  - `id-kp-serverAuth + id-kp-ipsecIKE`

In the event that the VPN gateway does not comply with the constraints on the Extended Key Usage extension mentioned above, you can configure the VPN Client so that it validates the certificate despite this, by adding the dynamic parameter `allow_server_and_client_auth` set to the value `true` (see section [Displaying more parameters](#)).

In this configuration, the certificate will also be validated if the Extended Key Usage extension contains one of the following combinations of values:

- `id-kp-ServerAuth + id-kp-ClientAuth` or
- `id-kp-ServerAuth + id-kp-ClientAuth + id-kp-ipsecIKE`

## 19.9 Managing certification authorities

### 19.9.1 Overview

If the SN VPN Client Exclusive is configured to check gateway certificates, the Certificate Authorities (CAs) must also be accessible.

You must import the gateway's root CA into the configuration.

If the gateway is not configured to send CAs, you must also import the intermediate CAs into the configuration.

#### **i** NOTE

As of version SN VPN Client Exclusive 7.3, you can create configurations with more than three certificate authorities (CAs).

The following intermediate CA types are supported:

- RSASSA-PKCS1-v1.5 with SHA-2,
- RSASSA-PSS with SHA-2,
- ECDSA "secp256r1" with SHA-2
- ECDSA "BrainpoolP256r1" with SHA-2

The following Root CA types are supported:

- RSASSA-PKCS1-v1.5 with SHA-2,
- RSASSA-PSS with SHA-2,
- ECDSA "secp256r1" with SHA-2
- ECDSA "BrainpoolP256r1" with SHA-2

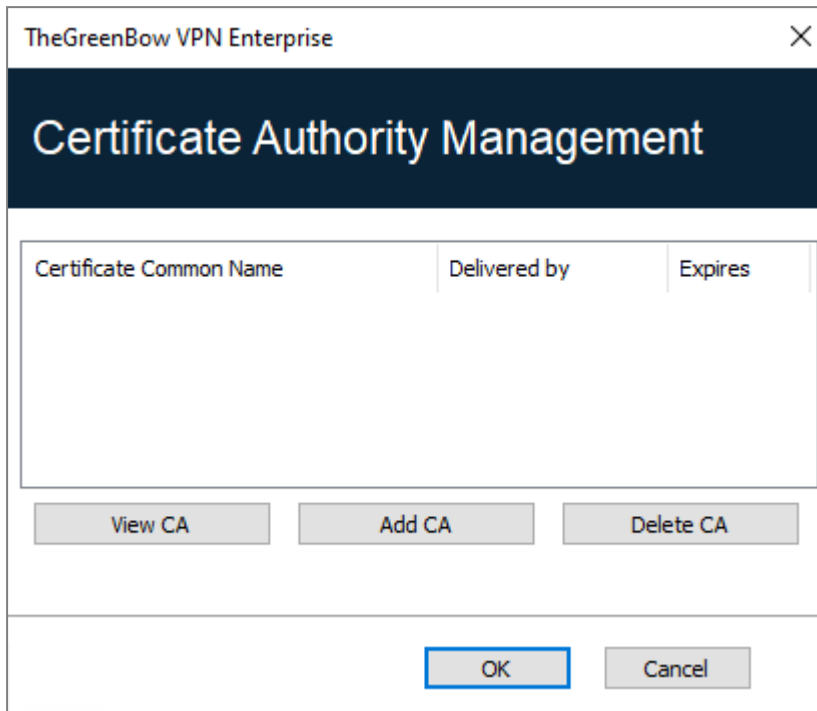
#### **i** NOTE

For security reasons, the Windows Certificate Store may not be used to access CAs.





## 19.9.2 Importing a certificate authority



1. In the **Certificate Authority Management** window, click on **Add CA**.
2. Choose the desired CA certificate type (PEM or DER).
3. Click on **Browse** and then select the CA to import.

## 19.9.3 IPsec DR mode

To be able to use SN VPN Client Exclusive in IPsec DR (Restricted) mode, compliance with ANSSI's IPsec DR framework requires the *Certification Authority* value in the certificate request payload (CERTREQ) to be a concatenated list of SHA-2 hashes derived from the public keys of the trusted certification authorities.

As of SN VPN Client Exclusive version 7.5, the VPN Client automatically detects the format (SHA-1 or SHA-2) based on the length of the certificate request payload [CERTREQ] it receives from the gateway. This automatic selection is only performed if the dynamic parameter *sha2\_in\_cert\_req* is not present.

If you want to select the format manually, you can add the dynamic parameter *sha2\_in\_cert\_req* set to the value *true* for SHA-2 or *false* for SHA-1 (see section [Displaying more parameters](#)).

### **i** NOTE

If the length of the certificate request payload cannot be used to determine the format, SHA-1 is used. When connecting to a gateway configured in IPsec Restricted mode, you must therefore use the dynamic parameter *sha2\_in\_cert\_req* to make sure the correct format is selected.



## 20. Remote Desktop Sharing

Opening a Remote Desktop session on a Windows computer over the internet usually requires that you establish a secure connection and enter the connection parameters (address of the remote computer, etc.).

SN VPN Client Exclusive allows you to simplify and automatically secure the opening of a Remote Desktop session: The VPN connection to the remote workstation is established and the Remote Desktop Protocol (RDP) session automatically opens on this remote workstation with a single click.

To set up Remote Desktop Sharing, proceed as follows:

1. Select the VPN tunnel (Child SA or TLS) in which the Remote Desktop session will be opened.
2. Select the **Remote Sharing** tab.
3. Enter an alias for the connection (the name will be used to identify the connection in the various software menus), then enter the IP address or the Windows name of the remote workstation.

Alias	Name or IP address
-------	--------------------

4. Click **Add**. The Remote Desktop Sharing (RDP) session will be added to the list of sessions.





Child SA   Advanced   Automation   Remote Sharing   **IPV4**   IPV6

Enter below the IP address of the remote computer you want to connect to, and choose an alias.

Alias

Computer name or IP address

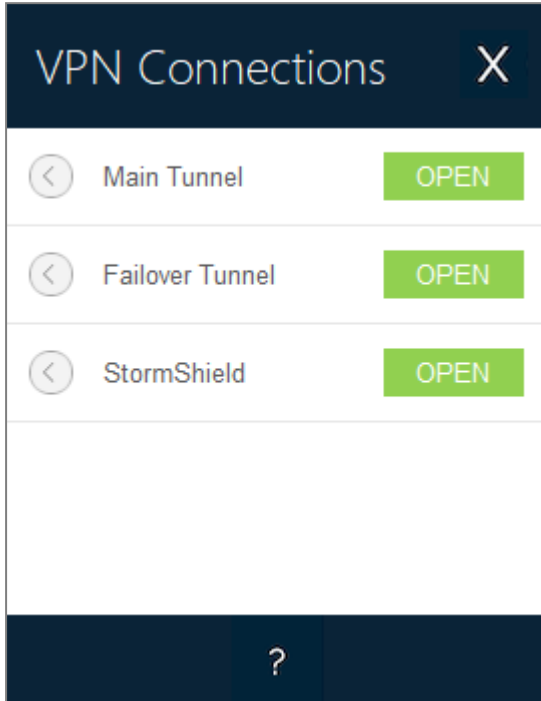
Alias	Name or IP address	
 Corporate_desktop	192.168.175.50	

To open this RDP connection with a single click, we recommend displaying it specifically in the **Connection Panel** using the function described in detail in the section entitled [Configuring the Connection Panel](#) in the next chapter.



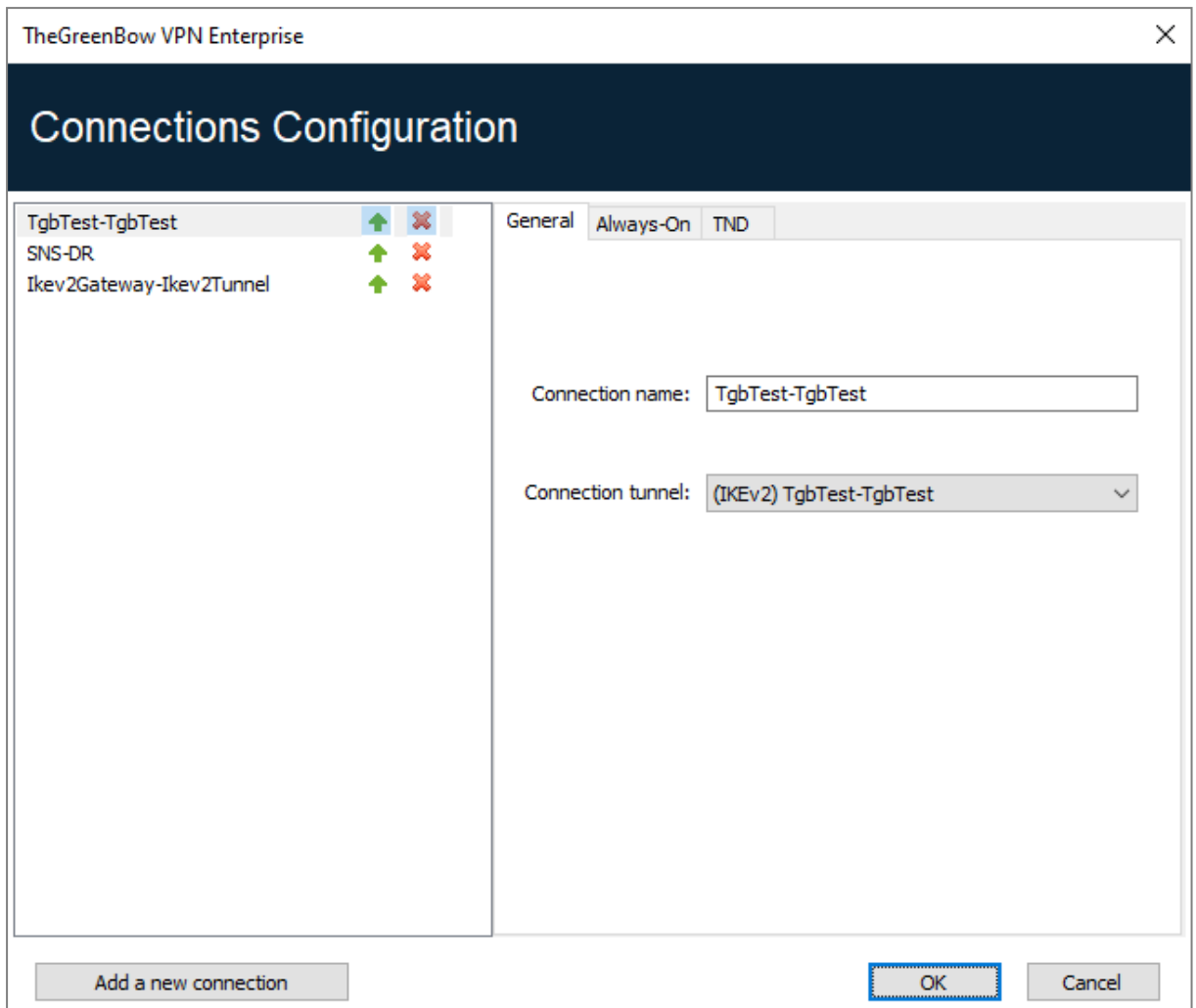
## 21. Configuring the Connection Panel

SN VPN Client Exclusive **Connection Panel** is entirely configurable.



VPN connections can be VPN tunnels or **Remote desktop** connections, i.e. a VPN tunnel for which the **Remote desktop** function has been specified.

A window that can be accessed from the **Tools > Connections Configuration** menu allows you to manage VPN connections in the **Connection Panel**, i.e. creating, naming, and sorting them.



The configuration window in the **Connection Panel** is used for the following actions:

- Choosing the VPN connections that are shown in the **Connection Panel**
- Creating and sorting VPN connections
- Renaming VPN connections
- Configuring **Always-On** in the **TrustedConnect Panel**
- Configuring **TND** (Trusted Network Detection) in the **TrustedConnect Panel**

The left side of the window shows the list of connections as they appear in the **Connection Panel**.

The right side contains the following three tabs:

- **General**
- **Always-On**
- **TND**

The **General** tab shows the parameters of each connection: its name, the associated VPN tunnel and possibly the Remote Desktop Sharing (RDP) connection, if it has been configured.

To create a new VPN connection, click **Add a new connection**, choose a name and select the corresponding VPN tunnel. If a Remote Desktop Sharing connection is configured, an option used to select it automatically appears below the selected tunnel. Once they have been confirmed, changes made in the **Connection Panel** configuration window instantly appear in the **Connection Panel**.



The **Always-On** and **TND** tabs are described in chapter [Configuring the Connection Panel](#) below.

**i** NOTE

The **Connection Panel**'s configuration is stored in the VPN configuration file. Therefore, it can be exported into *.tgb* files, which are useful for deploying an identical **Connection Panel** across all workstations.



## 22. Configuring the TrustedConnect Panel

The **TrustedConnect Panel** is described in chapter [TrustedConnect Panel](#). It allows you to automatically open a VPN connection when you're outside the trusted network and keep the connection open even if the network interface changes.

For it to be taken into account, this VPN connection must meet the following conditions:

1. The VPN connection must be the first VPN connection defined in the **Connection Panel**. To configure this first connection, refer to chapter [Configuring the Connection Panel](#) above.
2. The VPN connection must be configured in IKEv2.

The following functions of the **TrustedConnect Panel** can be configured:

- Exclude network interfaces from Always-On
- Trusted Network Detection (TND)
- Manage token or smart card removal
- Manage scripts linked to the VPN tunnel
- Minimize the HMI
- Purge log files

### 22.1 Always-On

#### 22.1.1 Operating principle

The **Always-On** feature, which is always enabled with the **TrustedConnect Panel**, ensures that the connection remains secure whenever the network interface changes.

The following network interfaces are supported:

- Virtual adapter (e.g. vmware)
- Wi-Fi
- Ethernet
- USB modem (i.e. smartphone)
- Bluetooth modem (i.e. smartphone)

The following network events trigger automatic tunnel reconnection (and, where appropriate, detection of the trusted network), unless they have been explicitly excluded (see section [Configuring Always-On](#)):

- Connection to a network (API addresses ignored)
- Disconnection from a network
- An adapter changes IP address or DHCP switches to static or vice versa
- ipconfig /release
- ipconfig /renew
- Switch to airplane mode

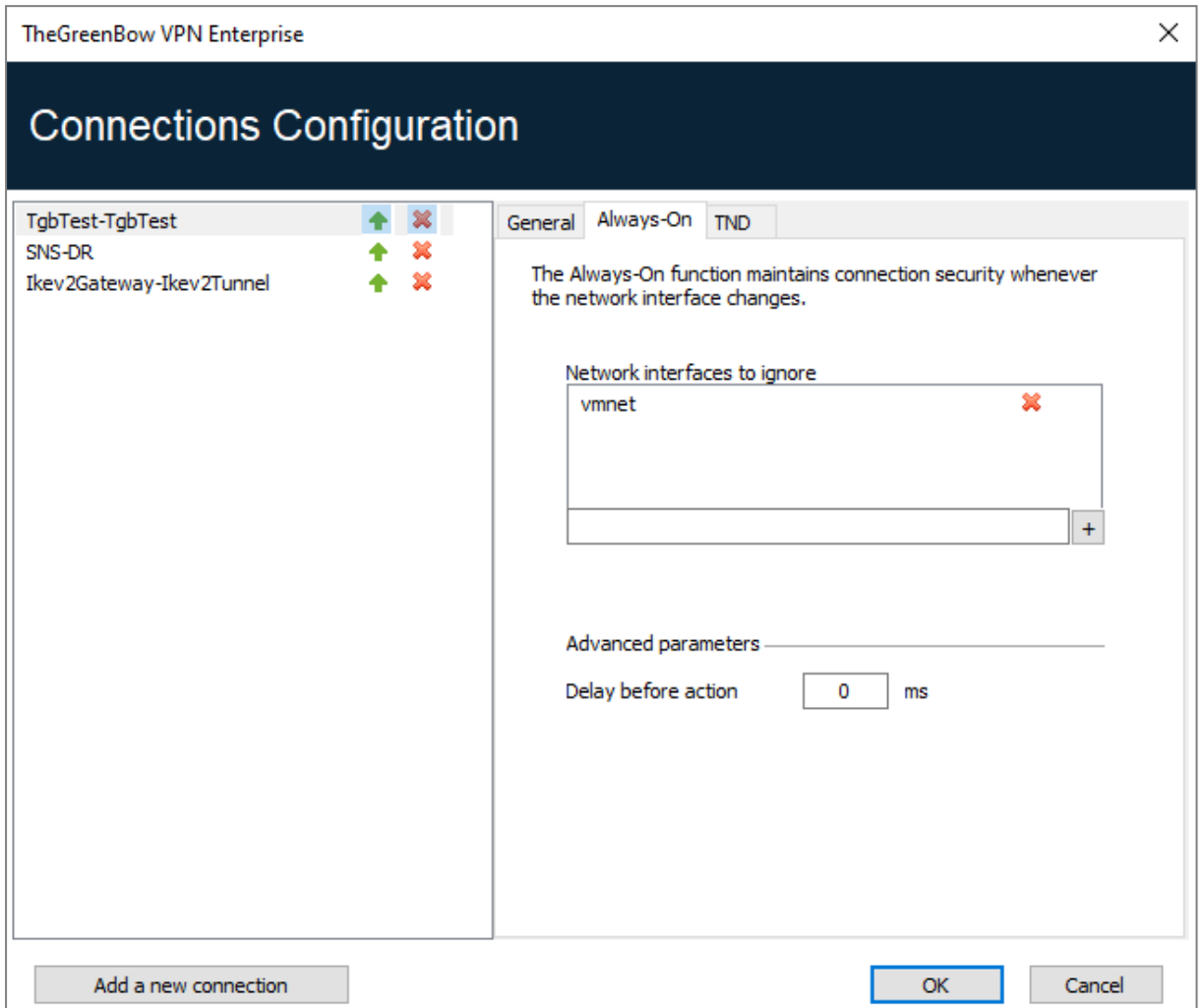
#### 22.1.2 Configuring Always-On

The **Always-On** feature is enabled as soon as the **TrustedConnect Panel** is used for open a VPN tunnel. You can configure it to exclude certain network interfaces from automatic reconnection



to the VPN tunnel.

The **Always-On** tab in the **Connections Configuration** window allows you to configure the settings for the **Always-On** feature:



**Network interfaces to ignore**

Network interfaces can be excluded from Always-On monitoring. An interface is excluded using the **description** property (visible with `ipconfig /all`). The value of this parameter must contain part or all of the **description** field of the network interface to be excluded. If the value only contains part of the description, then any interface whose **description** field contains the value defined will be excluded from monitoring. The values of this parameter are not case sensitive (all character strings are converted to lowercase before comparison). You can specify several network interfaces to exclude by specifying the parts of their respective descriptions separated by a comma. Example: To exclude any interface whose **description** field contains the character strings *Hyper-V* and *vmnet*, enter *HyperV,vmnet*.





<b>Delay before action</b>	<p>The time required to take into account a new network interface varies from one system to the next. If it is too long, it may interfere with the TND mechanism, which may lead the VPN Client to attempt establishing a VPN connection even though the workstation is connected to the trusted network.</p> <p>To avoid this issue, this parameter is used to delay the triggering of the TND mechanism (see next section).</p> <p>It is expressed in milliseconds. If the default value needs to be changed, we recommend specifying a value greater than or equal to 3000 ms.</p> <p>By default, the value is equal to 0 and the TND mechanism is started immediately, which is suitable in most cases.</p>
----------------------------	---

## 22.2 Trusted Network Detection (TND)

### 22.2.1 Operating principle

#### General information

This feature consists in detecting whether the workstation is connected to the corporate network (trusted network) or not.

When the VPN Client detects that workstation is not on the corporate network, the predefined tunnel is opened automatically. This feature is referred to as Trusted Network Detection (TND) in this document.

The **TrustedConnect Panel** uses one of the following two methods to detect whether the workstation is on a trusted network:

1. If it detects a trusted DNS suffix, it verifies whether it can access a trusted web server and whether the server's certificate is valid (see section 21.2.1.2 HTTPS method)
2. If it detects an Active Directory (AD) server, it searches for a domain name that matches a list of trusted domains (see section 21.2.1.3 AD method).

#### HTTPS method

The existing HTTPS method remains available. It is carried out in two steps:

1. The **TrustedConnect Panel** checks whether the DNS suffixes of the network interfaces available on the workstation are part of the list of trusted DNS suffixes (list configured in the software, see below).
2. It then automatically accesses a trusted web server in HTTPS mode and checks that its certificate is valid.

Both methods are required and must be combined to detect whether the workstation is on a trusted network: the VPN Client starts by testing whether a trusted DNS suffix is available; if none are found, the VPN Client does not continue the test and concludes that the workstation is not connected to the trusted network; if it does find one, it continues the test sequence by verifying the access to the trusted server and the validity of its certificate.

At the first accessible trusted server found whose certificate is valid, the VPN Client concludes that the workstation is connected to the trusted network.

In all the other cases listed below, the VPN Client concludes that the workstation is not connected to the trusted network and automatically attempts to open the configured VPN connection:

- No DNS suffix has been found in the list of trusted DNS suffixes
- The list of trusted DNS suffixes is empty



- The list of trusted server URLs is empty
- No trusted server is accessible or none has a valid certificate

Therefore, to enable the Trusted Network Detection (TND) feature, the following parameters must be configured:

- A list of DNS suffixes
- A list of trusted server URLs

#### **i** NOTE

On some workstations, a few seconds are required before the interface is ready to transmit when a network interface appears. To mitigate this time delay, there is a **Delay before action** option on the **Always-On** tab (see previous section).

### AD method

This Trusted Network Detection (TND) method, introduced with SN VPN Client Exclusive version 7.5, allows you to use connection to an Active Directory (AD) server to determine whether the workstation is on a trusted network. This method comes in three variants:

- **AD only:** checks whether the workstation is joined to a domain and, if this is the case, the domain name is checked against a list of trusted domain names (if the list is empty, any domain is accepted)
- **LDAP:** same as AD only, plus additional validation by connecting to an LDAP directory service
- **LDAPS:** same as AD only, plus additional secure validation by connecting to an LDAPS directory service

#### **i** NOTE

In GINA mode, the workstation must be declared as not being part of a trusted network as long as no user has logged on to Windows.

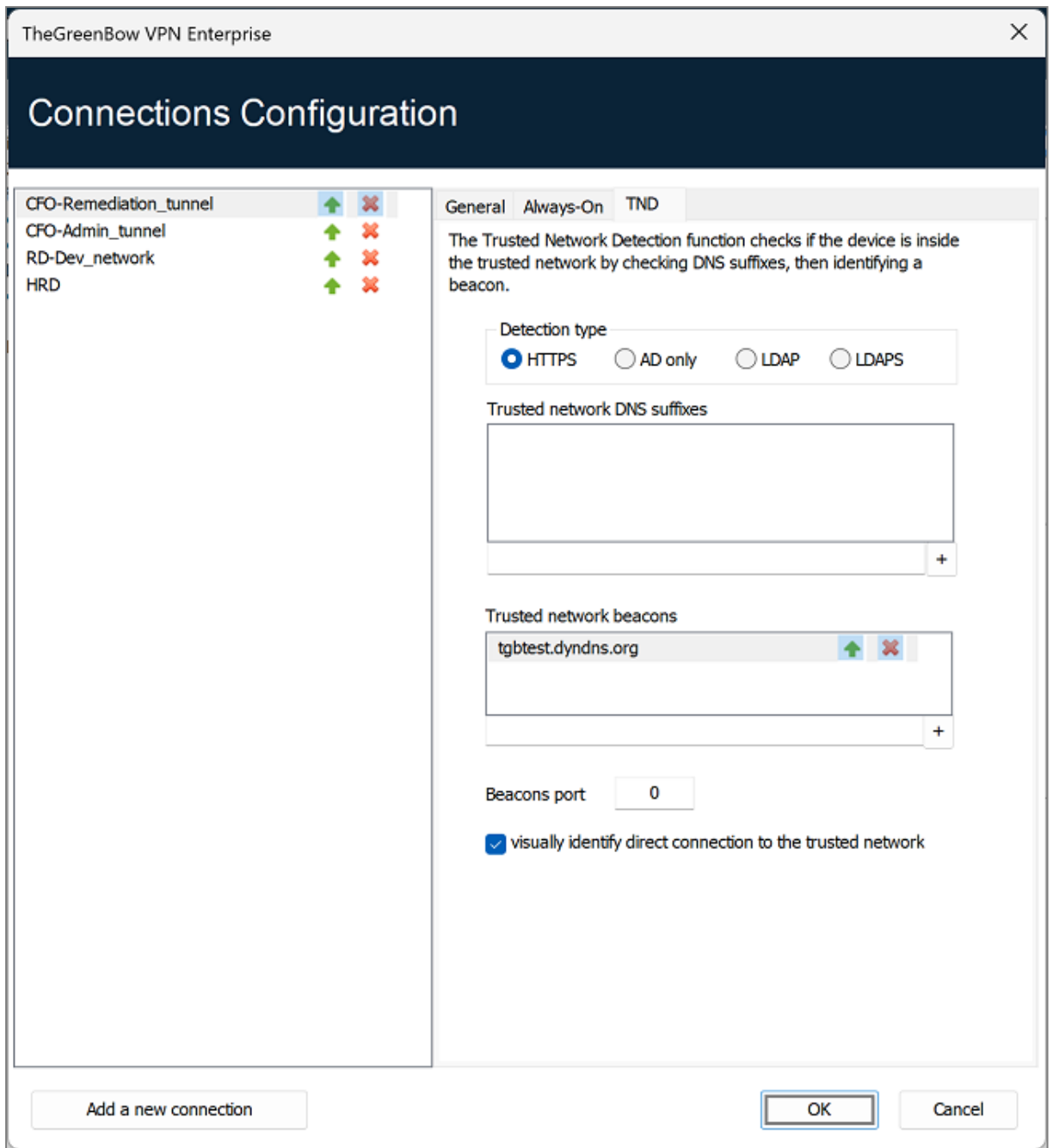
### 22.2.2 Configuring TND

The **TND** tab in the **Connections Configuration** window allows you to configure the settings for the **Trusted Network Detection** feature.

Four radio buttons allow you to select the type of detection to be performed:

- HTTPS
- AD only
- LDAP
- LDAPS

The following are the options detection type HTTPS:



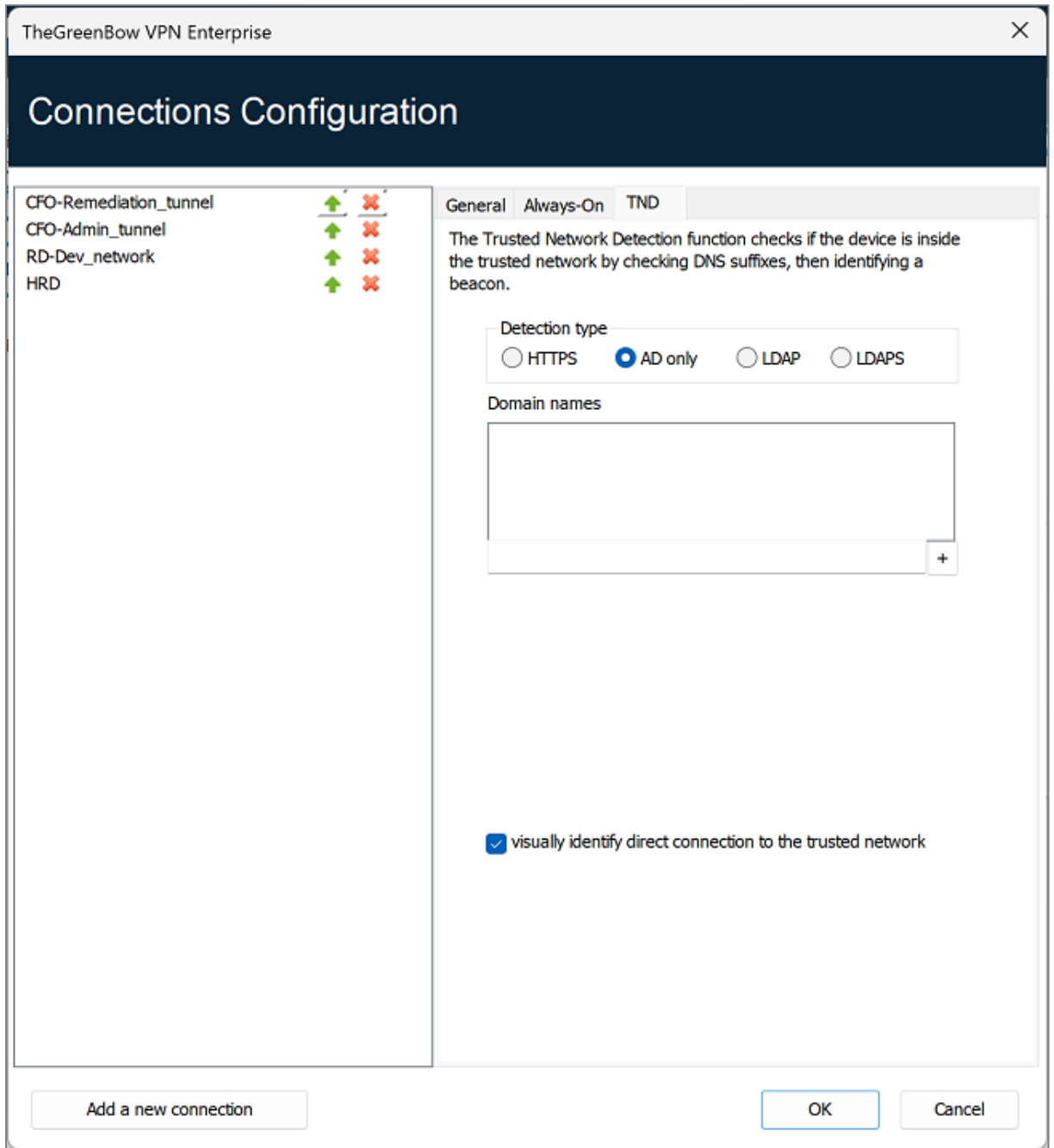
**Trusted network DNS suffixes**

This parameter defines the list of trusted DNS suffixes. This list can contain several DNS suffixes. To do this, enter the DNS suffix name you want to add, and then click the + button to the right of the input field. Repeat these steps as many times as necessary.



<b>Trusted network beacons</b>	<p>This parameter defines the list of IP addresses (or DNS names) of the trusted servers to be used. This list can contain several IP addresses (or DNS names). The VPN Client will then successively test all IP addresses (or DNS names) and all certificates associated with each server until it finds one that is accessible and valid. The IP addresses (or DNS names) must be separate by a comma in the list, without any blank spaces. You do not need to add the <i>https://</i> prefix to IP address (or DNS name).</p> <div data-bbox="464 535 1386 674"><p><b>! IMPORTANT</b> By default, the <b>TrustedConnect Panel</b> tries to connect to the <code>/index.html</code> page. If this page does not exist on the server, the server cannot be used as a beacon.</p></div>
<b>Beacons port</b>	<p>This parameter defines the port to be used to reach trusted servers. Only a single port can be configured, and it will be used with all IP addresses (or DNS names). If this parameter is not configured, the VPN Client will use the port 443 by default.</p>
<b>Visually identify direct connection to the trusted network</b>	<p>This option adds a visual cue to the <b>TrustedConnect Panel</b> to indicate that the VPN Client is connected to the trusted network. If the box is checked, the taskbar icon and the color of the circle in the panel is blue when the machine is connected to the trusted network and green when a tunnel is open. If the box is unchecked, the taskbar icon and the color of the circle in the panel remains green in both cases. No distinction is made between the trusted network and an open tunnel.</p>

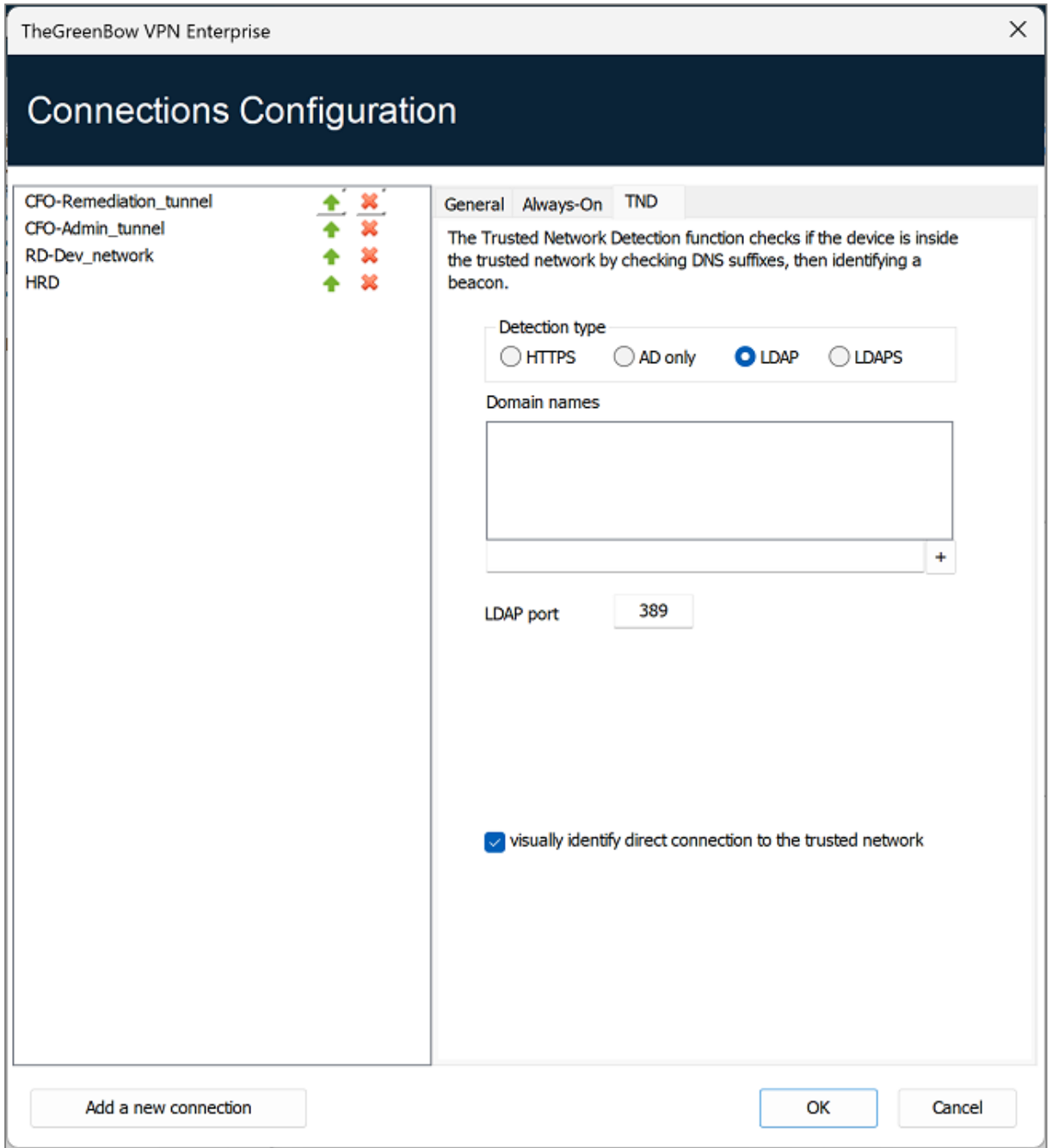
The following are the options detection type **AD only**:



<b>Domain names</b>	<p>This parameter defines the list of trusted domain names. This list can contain several domain names.</p> <p>To do this, enter the domain name you want to add, and then click the + button to the right of the input field.</p> <p>Repeat these steps as many times as necessary.</p> <p>Domain names are not case sensitive.</p>
<b>Visually identify direct connection to the trusted network</b>	<p>This option adds a visual cue to the <b>TrustedConnect Panel</b> to indicate that the VPN Client is connected to the trusted network.</p> <p>If the box is checked, the taskbar icon and the color of the circle in the panel is blue when the machine is connected to the trusted network and green when a tunnel is open.</p> <p>If the box is unchecked, the taskbar icon and the color of the circle in the panel remains green in both cases. No distinction is made between the trusted network and an open tunnel.</p>



The following are the options detection type LDAP:



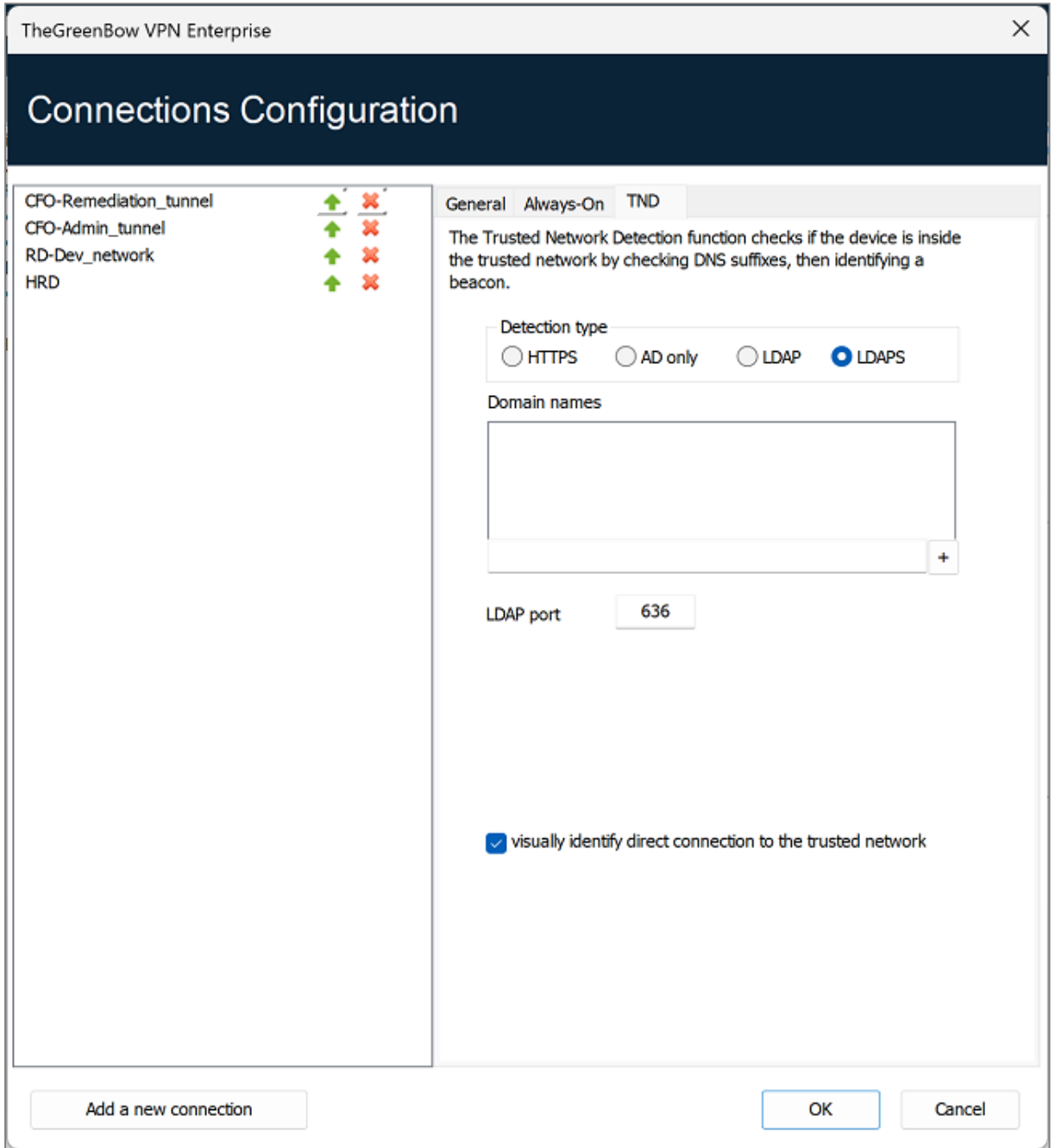
<b>Domain names</b>	This parameter defines the list of trusted domain names. This list can contain several domain names. To do this, enter the domain name you want to add, and then click the + button to the right of the input field. Repeat these steps as many times as necessary. Domain names are not case sensitive.
<b>LDAP port</b>	This parameter defines the port to use to reach the LDAP server. You can only configure one port, which will be used for all domain names. The default value is 389.



**Visually identify direct connection to the trusted network**

This option adds a visual cue to the **TrustedConnect Panel** to indicate that the VPN Client is connected to the trusted network.  
If the box is checked, the taskbar icon and the color of the circle in the panel is blue when the machine is connected to the trusted network and green when a tunnel is open.  
If the box is unchecked, the taskbar icon and the color of the circle in the panel remains green in both cases. No distinction is made between the trusted network and an open tunnel.

The following are the options detection type LDAPS:



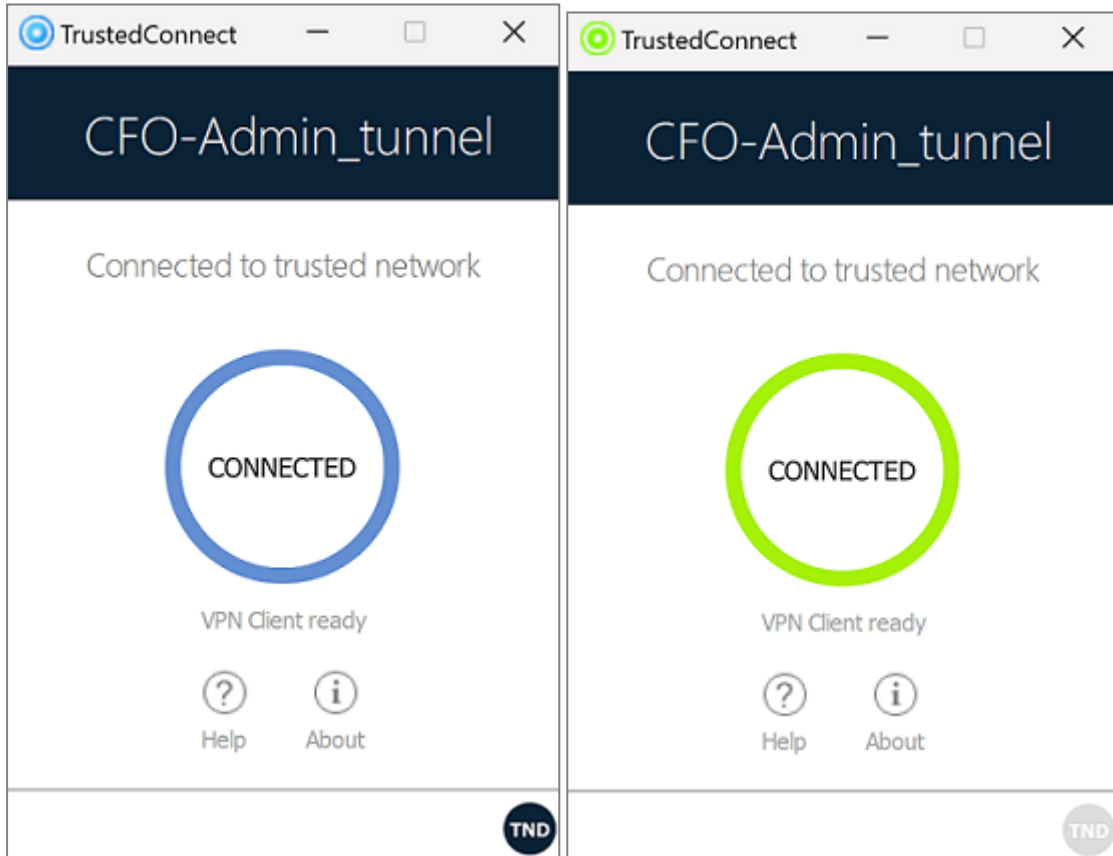


<b>Domain names</b>	This parameter defines the list of trusted domain names. This list can contain several domain names. To do this, enter the domain name you want to add, and then click the + button to the right of the input field. Repeat these steps as many times as necessary. Domain names are not case sensitive.
<b>LDAPS port</b>	This parameter defines the port to use to reach the LDAPS server. You can only configure one port, which will be used for all domain names. The default value is 636.
<b>Visually identify direct connection to the trusted network</b>	This option adds a visual cue to the <b>TrustedConnect Panel</b> to indicate that the VPN Client is connected to the trusted network. If the box is checked, the taskbar icon and the color of the circle in the panel is blue when the machine is connected to the trusted network and green when a tunnel is open. If the box is unchecked, the taskbar icon and the color of the circle in the panel remains green in both cases. No distinction is made between the trusted network and an open tunnel.

### 22.2.3 Disabling TND

In some cases, it may be useful to be able to open a tunnel to access certain resources even when the trusted network has been detected.

The MSI property *DIALERBEHAVIOR*, to be configured during installation, adds an option in the status bar that allows users to disable and later re enable the TND function.







When the TND function is disabled (gray TND icon), the tunnel will be mounted systematically. When it is enabled (blue TND icon), no tunnel can be mounted when a trusted network has been detected (default behavior).

Refer to the “[Deployment Guide](#)” for the corresponding instructions.

## 22.3 Scripts

The **TrustedConnect Panel** can run scripts when a tunnel is opened or closed. To configure this feature, refer to chapter [Automation](#).

## 22.4 Minimizing the panel

By default, the **TrustedConnect Panel** is automatically minimized to the notification area (systray) after two seconds, when the workstation has been detected as being connected to the trusted network (either physically or through the VPN tunnel).

You can set the time delay before the VPN Client’s HMI is minimized, as well as the type of minimization. The **TrustedConnect Panel** can be minimized to the taskbar or to the notification area (systray, by default).

### **i** NOTE

The time delay and minimization type only apply to automatic minimization of the **TrustedConnect Panel** when a connection to the trusted network is detected.

These configurations must be made using the properties of the VPN Client installer.

Refer to the “[Deployment Guide](#)” for the corresponding instructions.

## 22.5 Disabling the disconnect button

For better workstation protection, administrators can disable the disconnect button as soon as a connection is being established (TND check, opening a tunnel, etc.). To do this, you must use the MSI property *BTNBEHAVIORTC* or the corresponding parameter in the *vpnsetup.ini* file during installation.

When this option is enabled, clicking on the **Connecting** or **Connected** button on the **TrustedConnect Panel** will have no effect. Users cannot close the tunnel.

Refer to the “[Deployment Guide](#)” for the corresponding instructions.

## 22.6 Removing menu items

For better workstation protection, administrators can disable all or part of the menu options. To do this, you must use the MSI property *MENUIITEMTC* or the corresponding parameter in the *vpnsetup.ini* file during installation.

When this option is enabled, users will only have access to some menu options (to access logs, quit the interface, etc.), or will have no menu access at all.

Refer to the “[Deployment Guide](#)” for the corresponding instructions.



## 22.7 Automatically restarting the TrustedConnect Panel

To enhance workstation protection, administrators can force the **TrustedConnect Panel** to automatically restart when it is shut down. To do this, you must use the MSI property `RESTARTGUITC` or the corresponding parameter in the `vpnsetup.ini` file during installation.

When this option is enabled, the **TrustedConnect Panel** will be automatically restarted when users quit the software or if it crashes.

Refer to the "[Deployment Guide](#)" for the corresponding instructions.

## 22.8 Purging logs

You can configure the number of days during which log files are kept. The default value is 10 days.

This configuration must be made using the properties of the VPN Client installer.

Refer to the "[Deployment Guide](#)" for the corresponding instructions.

## 22.9 Behavior when smart card or token is removed

You can configure the behavior of the **TrustedConnect Panel** when the smart card or token is removed from the reader while a VPN tunnel is open.

This configuration must be made using the properties of the VPN Client installer.

Refer to the "[Deployment Guide](#)" for the corresponding instructions.



## 23. GINA mode

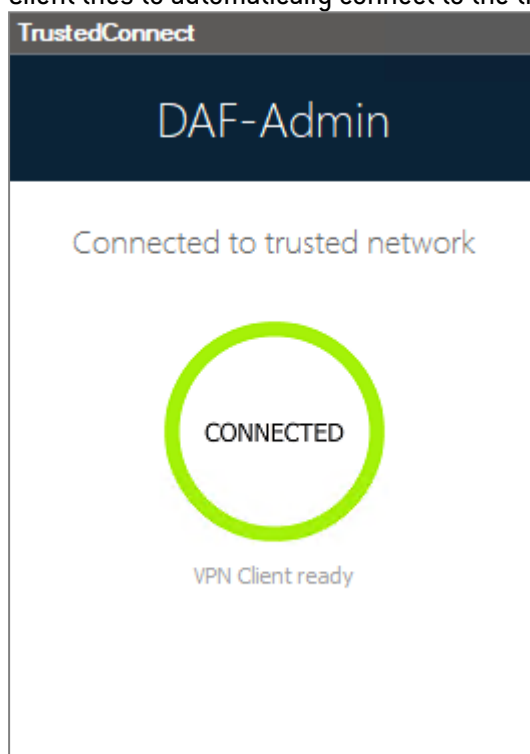
### 23.1 Overview

The GINA mode allows you to open VPN connections before the Windows logon.

This function can, for example, create a secure connection to an access rights management server so that the user workstation access rights can be obtained before opening a user session.

When a tunnel is configured “in GINA mode”, the following two situations are possible:

1. If the VPN Client is configured to start up in **TrustedConnect** mode (refer to section [General](#)), then the **TrustedConnect Panel** will be displayed on the Windows logon screen and the VPN Client tries to automatically connect to the trusted network.

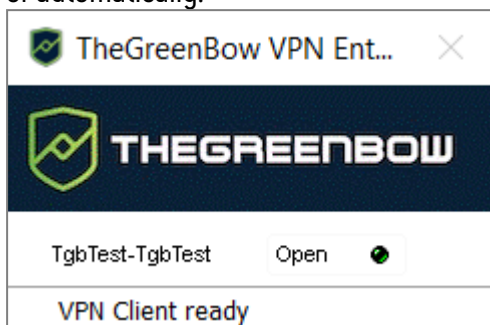


#### **i** NOTE

As of version SN VPN Client Exclusive 7.4, if you enabled the option that allows users to choose the connection in the **TrustedConnect Panel** using the MSI property `DIALERBEHAVIOR` when you installed the VPN Client (see [“Deployment Guide”](#)), users can choose the connection before they log on to Windows (see section [Choosing the connection](#)).



2. Otherwise, a window allowing you to open a tunnel that is similar to the **Connection Panel** will be displayed on the Windows logon screen. It allows you to open a VPN tunnel manually or automatically.



### **i** NOTE

As of SN VPN Client Exclusive version 7.5, the behavior of the GINA mode changes according to compliance level reported by the Secure Connection Agent (SCA), which determines whether a workstation should be allowed to access the corporate network (see section [In GINA mode](#))

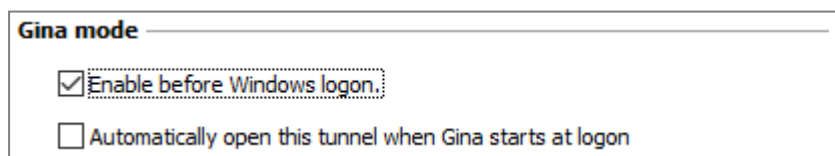
### Special use case

If you want to use several tunnels, one of which for the GINA mode and another for connecting the user in TrustedConnect mode after Windows logon, the user tunnel must be the first in the list of connections.

This way, the GINA tunnel will be opened when the workstation starts up, and then a transition to the user tunnel will take place when the user logs on to Windows. Likewise, a transition from the user tunnel to the GINA tunnel will take place when the user logs off from Windows.

## 23.2 Configuring the GINA mode

Configuring the GINA mode for a VPN connection is done on the **Automation** tab of the relevant tunnel.



Refer to chapter [Automation](#).

## 23.3 Using the GINA mode

When the VPN tunnel is configured in GINA mode, the window used to open GINA tunnels is displayed on the Windows logon screen. The tunnel will open automatically if it is configured accordingly.

A GINA-mode VPN tunnel can perfectly implement an EAP authentication (users must enter their login name and password) or a certificate-based authentication (users must enter the PIN code required to access the smart card).

### **Security considerations**

A tunnel configured in GINA mode can be opened before Windows logon, i.e. by any user of the workstation. We therefore strongly recommend that you set up a strong authentication method that is certificate-based and, if possible, stored on a removable device.

**i NOTE**

For the **Automatically open this tunnel on traffic detection** option to be operational after Windows logon, the **Enable before Windows logon** option must not be checked.

**! IMPORTANT**

- Limitation: Scripts and USB mode are not available for VPN tunnels configure in GINA mode.
- A VPN tunnel configured with a certificate stored in the Windows user certificate store cannot be used in GINA mode. The reason for this is that the GINA mode is run before a Windows user is identified (prior to opening any session). The software simply cannot identify the user's certificate in the Windows machine certificate store.



## 24. Filtering mode

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SN VPN Client Exclusive includes advanced features called Filtering Mode and Captive Portal Detection (CPD) that are intended for a specific use and which must be added when installing the software before they can be used.

The Filtering Mode in the Windows Enterprise VPN Client is a function used to filter the workstation's inbound and outbound data flows. It is enabled as soon as the VPN Client is not connected to a trusted network. Consequently, it is only available with the **TrustedConnect Panel**.

The time users have to connect to the captive portal can be configured in the **CPD** tab in the **Connections Configuration** window. The default value is 180 s (3 min).



# 25. Secure Connection Agent

## 25.1 Overview

As of SN VPN Client Exclusive version 7.5, the VPN Client is able to communicate with a separately supplied add-on called Secure Connection Agent (SCA). It is part of the extended product offering and serves as a link between VPN Clients and the Connection Management Center (CMC).

The SCA provides the following two functions:




1. Endpoint compliance monitoring: the SCA checks whether the endpoint should be allowed to access the corporate network. The VPN Client will adapt its behavior according to the reported compliance level.
2. Forwarding of the VPN Client's audit traces to the Connection Management Center (CMC).

## 25.2 Endpoint compliance monitoring

### 25.2.1 Introduction

The endpoint compliance function checks the availability and status of the Windows firewall and of any antivirus provider that is registered with the Windows Security Center.

Currently there are three levels of compliance defined and the VPN Client will act differently according to each of these levels, as described in the truth table below.

Virus & threat protection		Firewall & network protection		Result
0	+	0	=	 Cannot open any tunnel
1	+	0	=	 Switch to a remediation area
0	+	1	=	
1	+	1	=	 Access sensitive network



A remediation VPN connection should be considered as a VPN tunnel with restricted access. It could for example allow a system administrator to take control over the PC from the corporate network.

**i** NOTE

After logging on to Windows, the Secure Connection Agent will use the last known compliance level until the Windows Security Center service has started.

## 25.2.2 Configuring the VPN Client

When the Secure Connection Agent (SCA) detects near compliance, a remediation connection will be opened if such a connection has been configured.

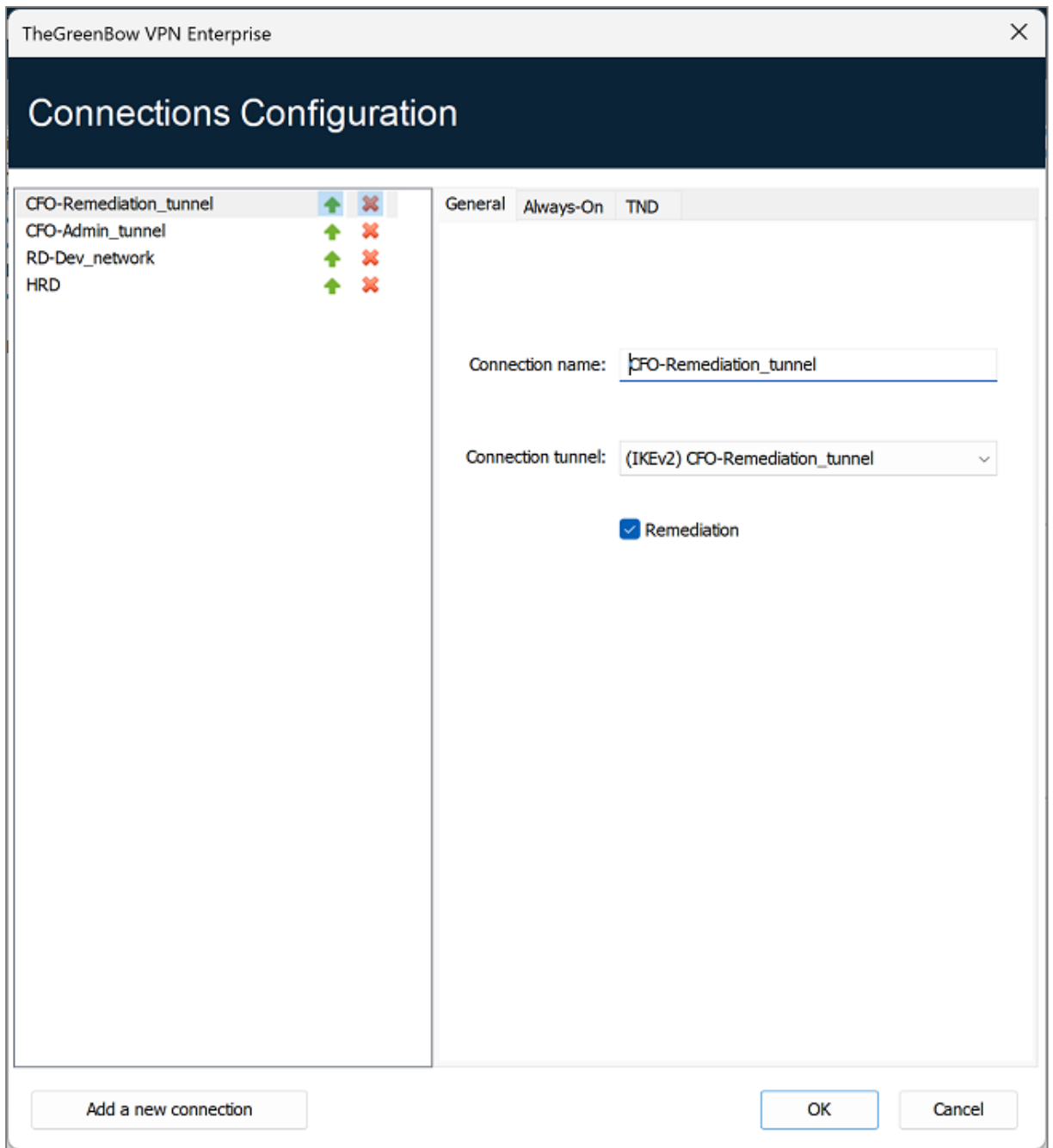
To configure a remediation connection, proceed as follows:

1. Access the SN VPN Client Exclusive's **Configuration Panel**.
2. From the **Tools** menu, choose **Connections Configuration** to open the **Connections Configuration** window.
3. On the **General tab**, check the **Remediation** box for the connection to be used as a remediation connection.

**i** NOTE

This information is stored in the configuration file.





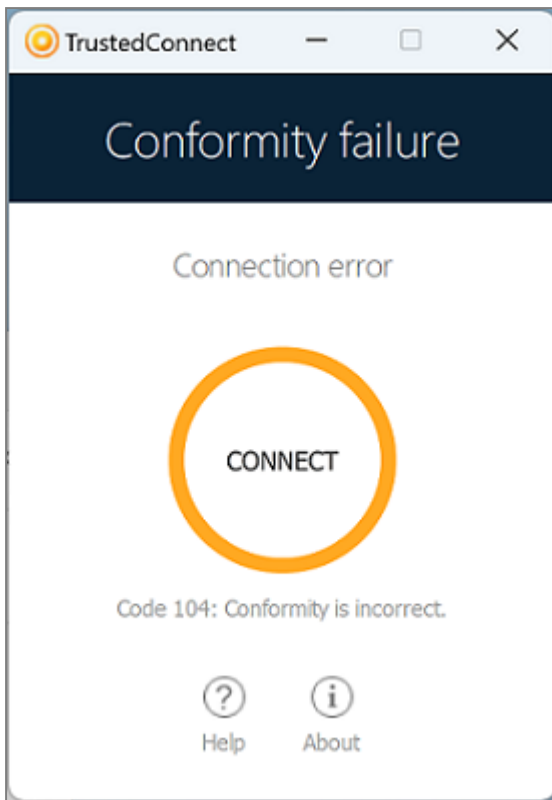
**! IMPORTANT**  
The **Remediation** box must only be checked for a single connection. If the **Remediation** box is checked for several connections, it will be impossible to know which connection will be used.

### 25.2.3 Selecting the tunnel to open according to the compliance level

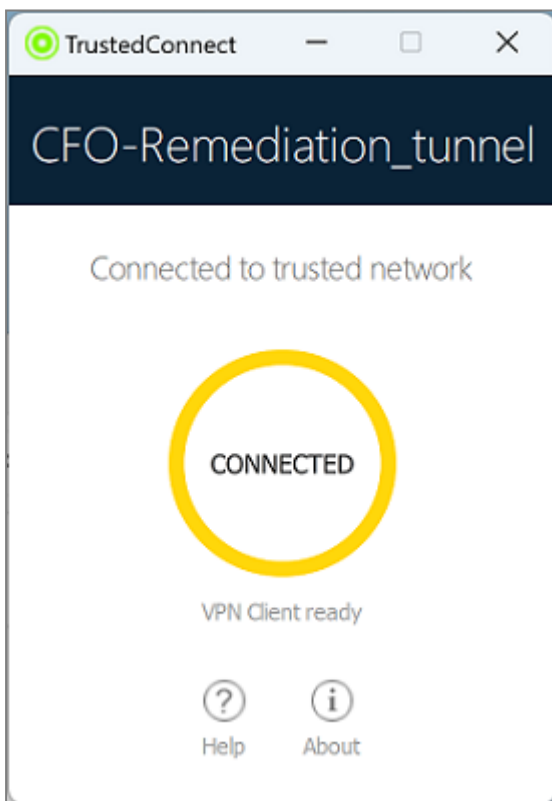
#### In the TrustedConnect Panel

The **TrustedConnect Panel** uses the compliance level when a tunnel is selected.

When the compliance check fails, the following message is displayed:



When the workstation must go over a remediation area and a remediation tunnel has been configured, the following message is displayed:



The **TrustedConnect Panel** takes into account compliance changes on the fly. The **TrustedConnect Panel**'s behavior can be configured using the MSI property *DIALERBEHAVIOR* (see the "[Deployment Guide](#)") in order to cause an automatic switchover to the following:



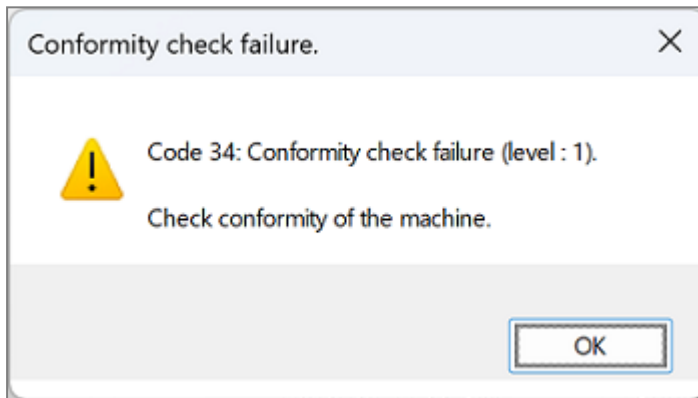
- A compliance error or a remediation tunnel when the compliance level is no longer satisfactory
- A normal tunnel when compliance level becomes satisfactory again
- The remediation tunnel when the compliance level requires switching to a remediation area

### In the Connection Panel

The compliance check can be performed in the **Connection Panel** in a similar fashion to how it works in the **TrustedConnect Panel** (see section [In the TrustedConnect](#)).

The main difference with the **TrustedConnect Panel** resides in the fact that there is no automation in the **Connection Panel**. The verification to decide whether the tunnel should be opened according to the compliance level is only made when the tunnel is actually being opened.

When the tunnel should not be opened, an error is displayed on the screen and a message is recorded in the **Console**:



If a remediation tunnel is configured, the user will be able to open it in order to bring the workstation into compliance.

When the SCA is not installed and therefore the compliance check is not enabled, any tunnel linked to any connection can be opened.

#### **!** IMPORTANT

The compliance level is only available at the connection level, not at the tunnel level. The compliance check therefore is only handled in the **Connection Panel** mode. Any user who can access the VPN Client's **Configuration Panel** can mount any tunnel regardless of the compliance level.

### In GINA mode

Because the information required to switch to a remediation tunnel is not available before logging on to Windows, opening a remediation tunnel is not possible in GINA mode. However, it won't be possible to open any tunnel as long as the workstation does not meet any of the compliance criteria.



## 25.3 Forwarding audit traces from the VPN Client to the CMC

### 25.3.1 Introduction

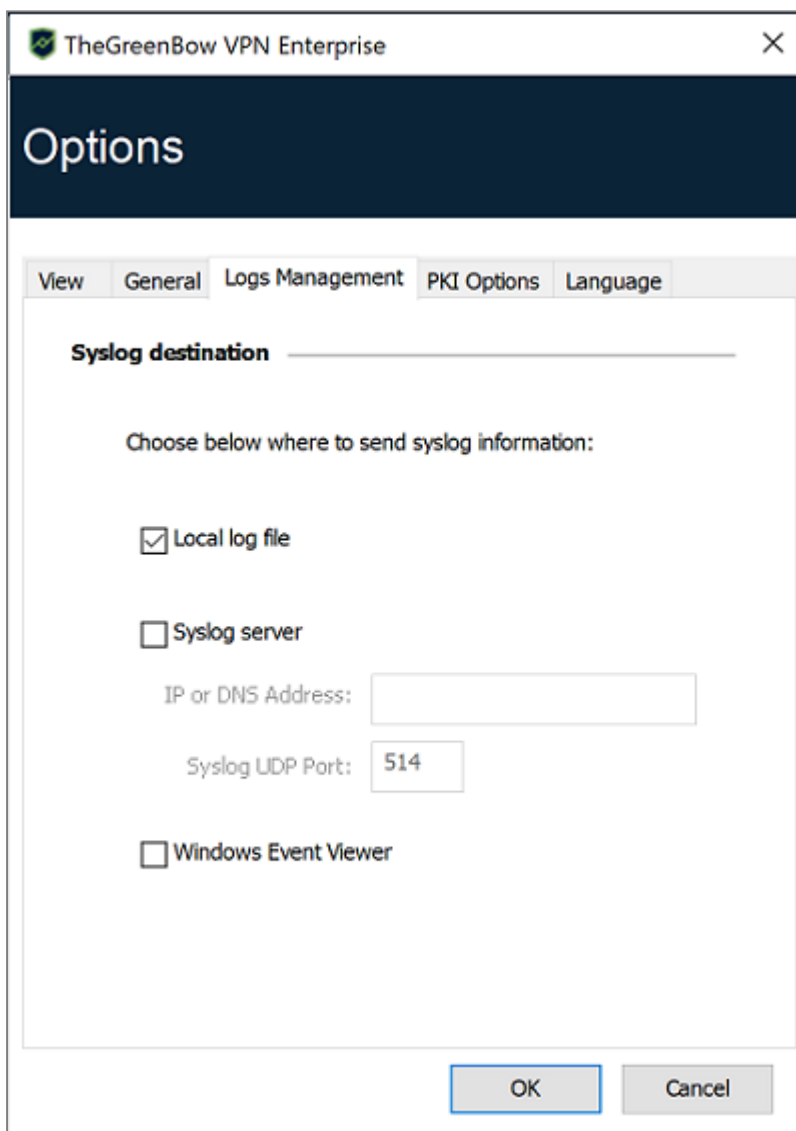
Audit trace forwarding is used to collect the audit traces generated by the VPN Client (stored in the *LogFiles\System* sub-folder) and forward them to the Connection Management Center (CMC).

### 25.3.2 Configuring the VPN Client

Audit traces can only be forwarded if the VPN Client generates audit traces in the first place!

To enable audit traces, proceed as follows:

1. Access the SN VPN Client Exclusive's **Configuration Panel**.
2. From the **Tools** menu, choose **Options...**
3. Select the **Logs Management** tab.
4. Check the **Local log file** box.
5. Click **OK**.





Refer to chapter [Administrator logs, Console, and traces](#) for a complete description of the various types of logs available.



## 26. Options

### 26.1 View

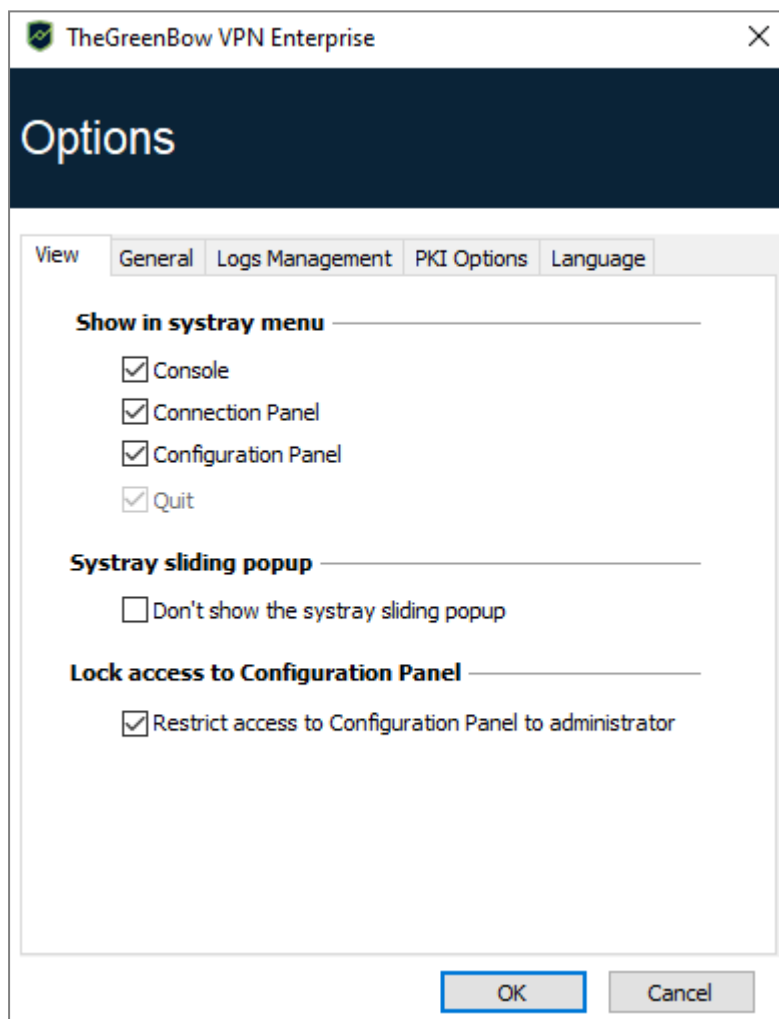
Using the options listed on the **View** tab in the **Options** window, you can hide nearly all of the software's interfaces:

- Options in the taskbar menu
- Fade-out pop-up in the taskbar
- Access to the **Configuration Panel**

#### 26.1.1 Showing options in systray menu

You can choose to hide the **Console**, **Configuration Panel** and **Connection Panel** options in the taskbar (systray) menu. The menu can thus be reduced to the single item **Quit**.

The taskbar menu's **Quit** item cannot be removed using the software. However, it can be deleted using the installation options (see "[Deployment Guide](#)").





### 26.1.2 Showing the systray fade-out pop-up

When the **Don't show the systray sliding popup** option is disabled, a fade-out pop-up appears above the VPN Client icon in the taskbar when a VPN tunnel is opened or closed.

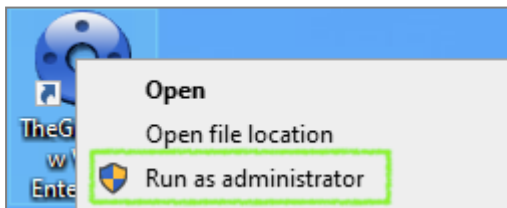
This pop-up shows the tunnel status when it is being opened or closed and automatically fades out unless the mouse cursor is placed directly over it:

Tunnel is open	
Tunnel is closed	
Failed to open the tunnel: the window will briefly explain what happened and provide a hyperlink for more information about the incident.	

### 26.1.3 Restricting access to the Configuration Panel

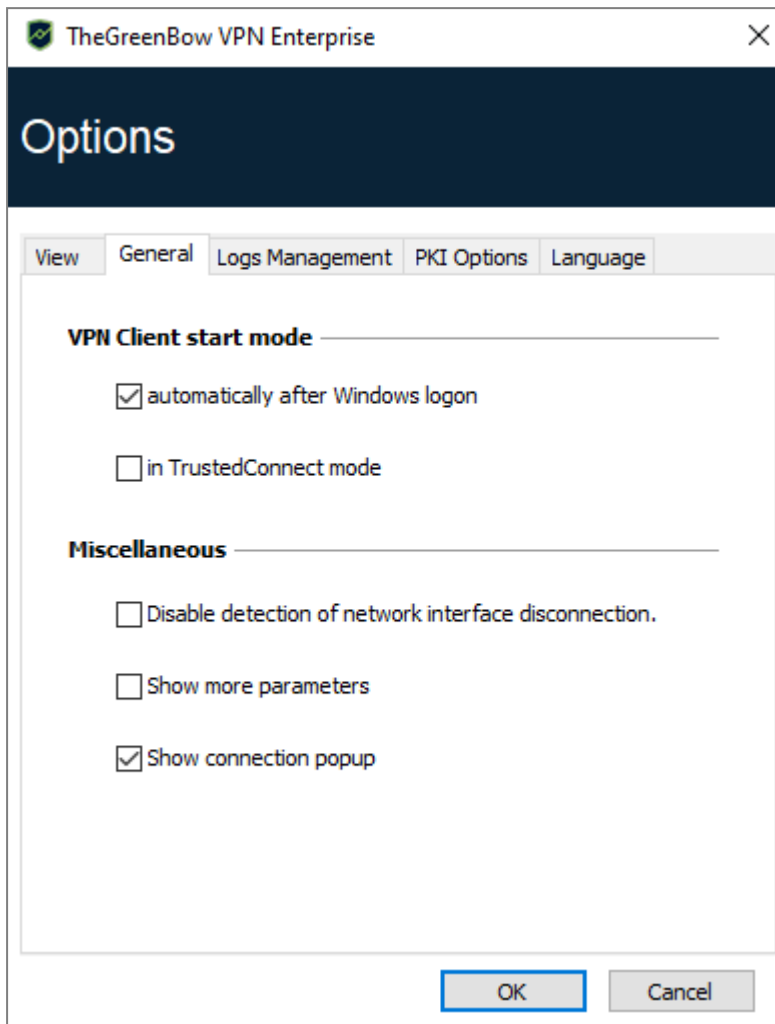
In SN VPN Client Exclusive, the interface of the **Configuration Panel** is restricted to administrators, by default. To give users access to the **Configuration Panel**, uncheck the **Restrict access to Configuration Panel to administrators** option.

To start the VPN Client in administrator mode, right-click on the **SN VPN Client Exclusive** icon and then select the **Run as administrator** menu item.





## 26.2 General



### 26.2.1 VPN Client startup mode

If the option **automatically after Windows logon** is checked, the VPN Client will start automatically when the user session is opened.

If the option is not checked, the user must start the VPN Client manually, either by double-clicking on the desktop icon or by selecting the software in the Windows **Start** menu.

Refer to section [Starting the software](#) for further details.

If the **in TrustedConnect mode** option is also checked, the VPN Client will start up showing the **TrustedConnect Panel**. Otherwise, the VPN Client will start up showing the **Connection Panel**.

### 26.2.2 Disabling detection of network interface disconnection

The standard behavior of the VPN Client is to close the VPN tunnel at its end as soon as a communication issue is encountered on the remote VPN gateway.

For unreliable physical networks prone to frequent micro-disconnections, this function can have drawbacks (which can go as far as not being able to open a VPN tunnel).

When the **Disable detection of network interface disconnection** box is checked, the VPN Client will not close tunnels as soon as a disconnection is observed. This guarantees a very stable





VPN tunnel, even on unreliable physical networks, typically wireless networks such as Wi-Fi, 4G, 5G or satellite.

### 26.2.3 Show connection popup

A connection window will be displayed automatically every time a VPN connection is established.

This feature can be disabled by unchecking the **Show connection popup** box.

### 26.2.4 Displaying more parameters

If required, you can configure additional dynamic parameters for the SN VPN Client Exclusive under its IKE Auth configuration. Only the following dynamic parameters are documented in this guide:

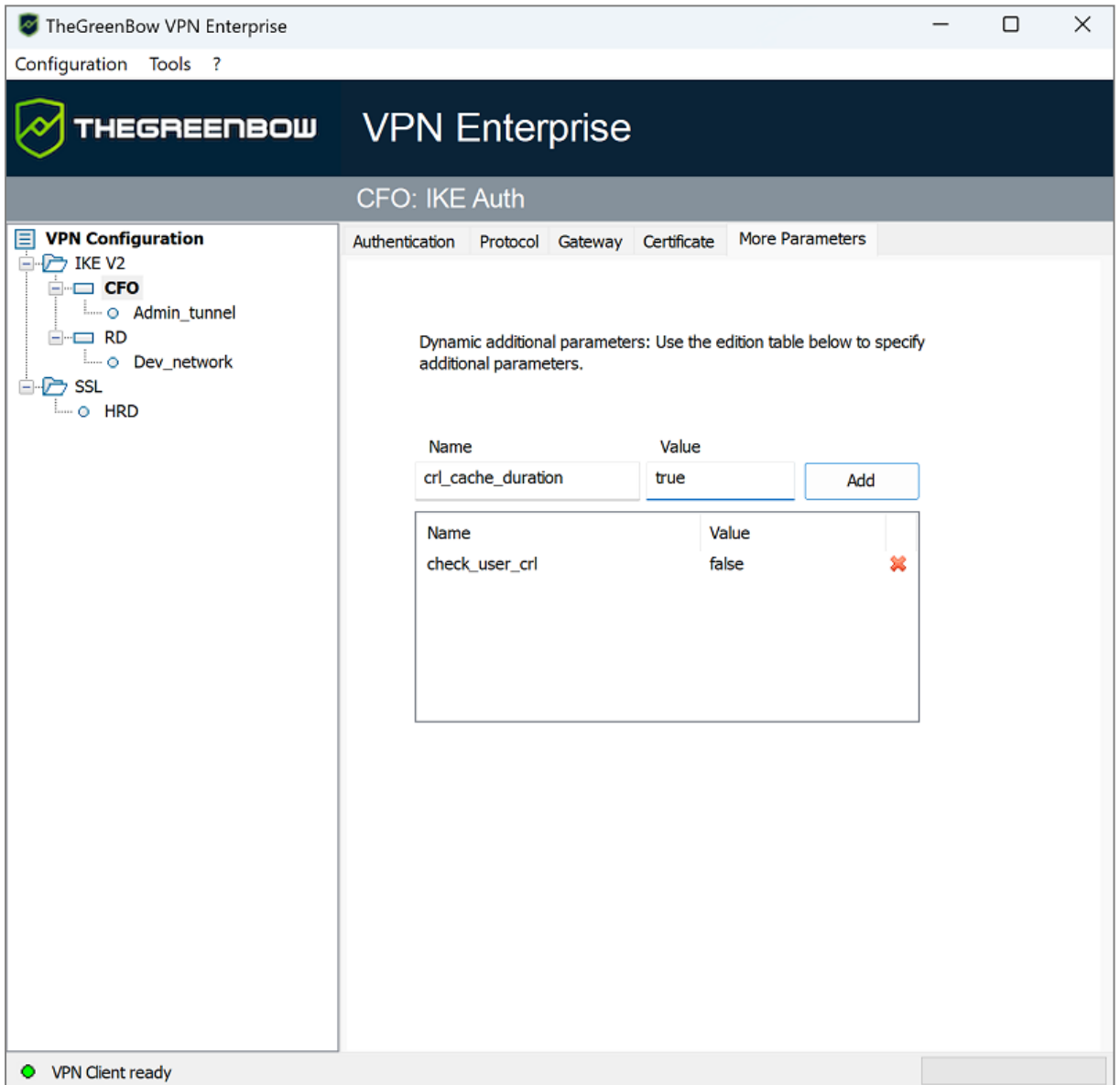
- Specify the IP address of the network interface
  - *local\_subnet* (see section [Addresses](#))
- Specify nonce size for IPsec DR gateways
  - *nonce\_size* (see section [IKE Auth: Protocol](#))
- Specify the size of the virtual local network
  - *local\_virtual\_network\_siz* (see section [Traffic selectors](#))
- Select a certificate based on its subject
  - *user\_cert\_dnpattern* (see section [user\\_cert\\_dnpattern](#))
- Select a certificate based on its “key usage” field
  - *user\_cert\_keyusage* (see section [user\\_cert\\_keyusage](#))
- Select the token/smart card reader to be used for automatic user certificate selection
  - *reader\_pattern* (see section [Dynamic parameters](#))
- Define certificate store to use at tunnel level
  - *MACHINESTORE* (see section [Required characteristics](#))
- Enable the Online Certificate Status Protocol (OCSP)
  - *enable\_OCSP* (see section [VPN gateway certificate](#))
- Prevent or limit CRL download
  - *check\_user\_crl* (see section [Preventing or limiting CRL download](#))
  - *crl\_cache\_duration* (see section [Preventing or limiting CRL download](#))
- Validate the certificate even if it does not comply with the constraints on the Key Usage extension
  - *allow\_server\_extra\_keyusage* (see section [Constraints on the Key Usage extension](#))
- Validate the certificate even if it does not comply with the constraints on the Extended Key Usage extension
  - *allow\_server\_and\_client\_auth* (see section [Constraints on the Extended Key Usage extension](#))
- Use the SHA-2 hash algorithm in the certificate request payload
  - *sha2\_in\_cert\_req* (see section [Managing certification authorities](#))



- Use other certificate authentication methods
  - *Method14\_RSASSA\_PKCS1* (see section [Certificate authentication methods](#))
  - *Method1\_PKCS1v15\_Scheme* (see section [Certificate authentication methods](#))
- Use method 214 or method 14 to authenticate Brainpool user certificates
  - *use\_method\_214* (see section [Certificate authentication methods](#))
- Display a customized message in the PIN code request pop-up window
  - *user\_smartcard\_tip* (see section [Using a certificate stored on a smart card or token](#))

Under certain circumstances, the Stormshield support team may ask you to add other dynamic parameters (Name, Value) that are not documented in this guide. These are intended to manage specific use cases, either in the installed version of the software or in patches that will be provided to you.

To enable the **More parameters** tab in the VPN tunnel configuration window as shown below, check the **Show more parameters** option on the **General** tab in the **Options** window.





## 26.3 Managing logs

Refer to section [Administrator logs](#).

## 26.4 PKI Options

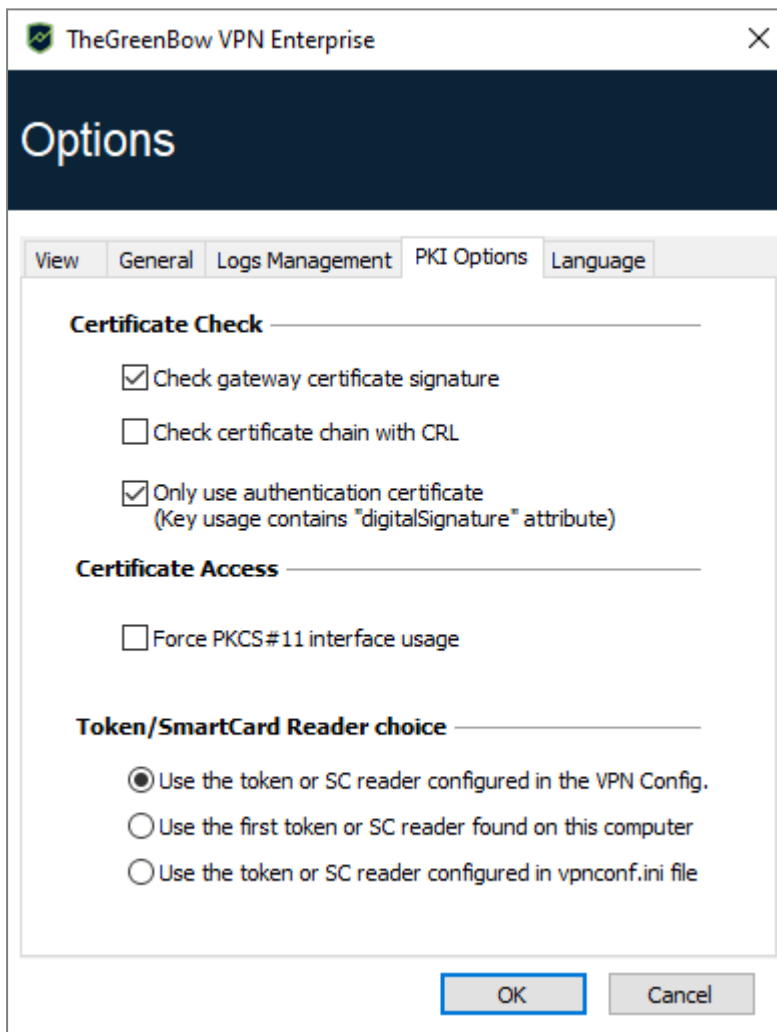
The **PKI Options** tab is used to fine-tune smart card and token management and to further specify certificate access.

PKI options include the following:

- Configuring rules for gateway certificate verification (validity, CRL, key usage)
- Specifying the certificate that the VPN Client must use to open a VPN tunnel
- Defining the smart card reader or token to use on the user workstation

### **i** NOTE

When deploying the software, all these options can be preconfigured when SN VPN Client Exclusive is installed. This mechanism is described in the [“Deployment Guide”](#).





### 26.4.1 Certificate Check

<p><b>Check gateway certificate signature</b></p>	<p>When this option is selected, the VPN gateway certificate is checked (including its validity date), as well as all certificates in the certificate chain down to the root certificate.</p> <div style="border: 1px solid #ccc; background-color: #f0f0f0; padding: 5px; margin-top: 10px;"> <p><b>TIP</b></p> <p>When this option is selected, the subject of the gateway certificate must be entered in the Remote ID of the tunnel concerned to prevent vulnerability <a href="#">2018_7293</a> from being exploited.</p> </div>
<p><b>Check certificate chain with CRL</b></p>	<p>When this option is selected, the VPN Client checks the Certificate Revocation List (CRL) of the VPN gateway certificate, as well as the CRL of all certificates in the certificate chain down to the root certificate.</p> <p>The root and intermediate certificates must be imported into the configuration or available in the Windows Certificate Store. Likewise, the CRLs must also be accessible, either in the Windows Certificate Store or available for download.</p> <div style="border: 1px solid #ccc; background-color: #e0f0ff; padding: 5px; margin-top: 10px;"> <p><b>NOTE</b></p> <p>As of SN VPN Client Exclusive version 7.5, you can check the revocation of the gateway certificate using Online Certificate Status Protocol Stapling (OCSP Stapling). To do this, you must add the dynamic parameter <code>enable_OCSP</code> set to the value <code>true</code> (see section <a href="#">Displaying more parameters</a>).</p> </div>
<p><b>Certs of Gateway and Client are issued by different CA</b></p>	<p>If the VPN Client and the VPN gateway use certificates from a different certificate authority, this box must be checked.</p>
<p><b>Only use authentication certificate</b></p>	<p>When this option is checked, the VPN Client will only take into account <b>Authentication</b> certificates (i.e. certificates whose Key Usage extension contains the <code>digitalSignature</code> attribute).</p> <p>This function allows you to automatically select a certificate when several are stored on the same smart card or token.</p> <p>The checkbox is grayed out when the MSI <code>KEYUSAGE</code> property is set to 2 or 3 during installation (refer to the "<a href="#">Deployment Guide</a>").</p>

### 26.4.2 Certificate Access

<p><b>Force PKCS#11 interface usage</b></p>	<p>The VPN Client knows how to handle the PKCS#11 and CNG APIs in order to access the certificate for smart cards or tokens.</p> <p>When this option is checked, the VPN Client will only consider the PKCS#11 API to access the certificate for smart cards and tokens.</p>
<p><b>Use the first certificate found</b></p>	<p>When this option is checked, the VPN Client will use the first certificate found on the specified smart card reader or token.</p>

### 26.4.3 Token/Smart Card Reader choice

<p><b>Use the token/SC reader configured in the VPN Config.</b></p>	<p>The VPN Client uses the reader or token specified in the VPN configuration file to search for a certificate.</p>
---	---



<b>Use the first token or SC reader found on this computer</b>	The VPN Client uses the first smart card or token found on the workstation to search for a certificate.
<b>Use the token or SC reader configured in vpnconf.ini file</b>	The VPN Client uses the <code>vpnconf.ini</code> configuration file to identify the smart card readers or tokens to use to search for a certificate. Refer to the “ <a href="#">Deployment Guide</a> ”.  <b>NOTE</b> Since the use of the <code>vpnconf.ini</code> file only applies to the PKCS#11 interface, this option requires that the <b>Force PKCS#11 interface usage</b> option be selected.

## 26.5 Managing languages

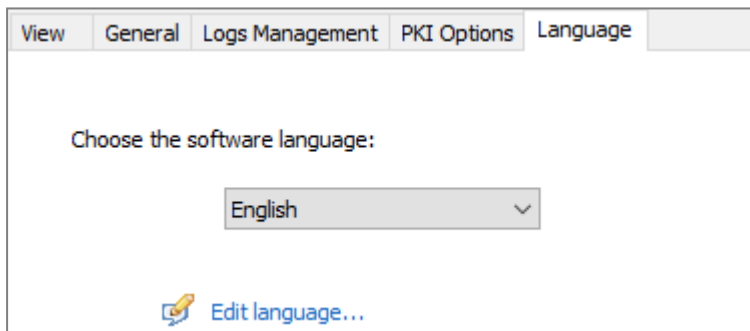
### 26.5.1 Choosing a language

SN VPN Client Exclusive can run in several languages.

You can change languages while running the software.

To choose another language, open the **Tools > Options** menu, then select the **Language** tab.

Choose the desired language in the drop-down menu:

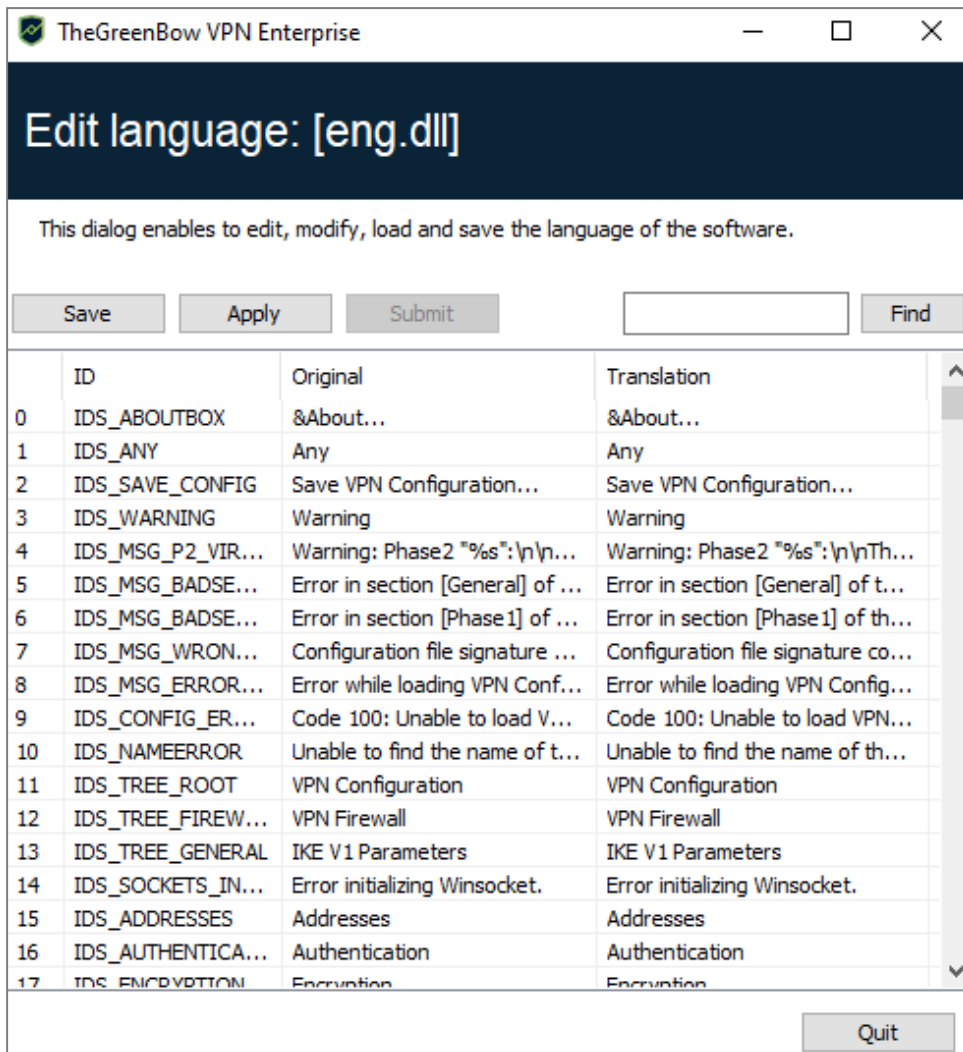


The list of languages available in the standard version of the software is provided in an appendix in section [SN VPN Client Exclusive technical data](#).

### 26.5.2 Editing or creating a language

SN VPN Client Exclusive lets you create new translations or edit the language used, then test these changes dynamically through an integrated translation tool.

On the **Language** tab, click on the **Edit language...** link to display the translation window:



The translation window is split into 4 columns, which display the number of the character string, its identifier, its string in the original language and its translation in the selected language respectively.

Using the translation window, you can perform the following actions:

- Translate each character string by clicking on the corresponding row.
- Search for a specific character string in any column of the table (use the **Find** field then the **F3** key to browse through every occurrence of the character string you have entered).
- Save the changes (**Save** button).

#### **!** IMPORTANT

The characters or character strings below must not be modified during translation:

**%s** the software will replace it with a character string

**%d** the software will replace it with a digit

**\n** indicates a carriage return

**&** indicates that the following character should be underlined

**%m-%d-%Y** indicates a date format (in this case US format: month-day-year). Only edit this field if you are certain of the format used in the target language.

The **IDS\_SC\_P11\_3** string must be left as is.



## 27. Administrator logs, console, and traces

SN VPN Client Exclusive comes equipped with three types of logs:

1. Administrator logs are specifically designed for software activity and usage reports.
2. The **Console** provides detailed information on the tunnels as well as the related opening and closing steps. It essentially consists of the IKE messages and provides high-level information about the establishment of the VPN tunnel. It is intended for administrators to identify possible VPN connection issues.
3. The Trace mode makes every component of the software write an activity log about its inner workings. This mode is intended for Stormshield support to diagnose software issues.

### 27.1 Administrator logs

SN VPN Client Exclusive can collect administrator logs: tunnel opening, expired certificate, connection duration, wrong login/password, changes to the VPN configuration, import or export of this configuration, etc. Administrator logs provide a first level of analysis for any issues that may be encountered.

The following actions can be performed on collected logs either exclusively or simultaneously:

- Store in a local file
- Record in the Windows Event Log
- Send to a Syslog server

Administrator logs are configured in the **Tools > Options...** window on the **Logs management** tab.



The screenshot shows a dialog box titled "TheGreenBow VPN Enterprise" with a close button (X) in the top right corner. The main title is "Options". Below the title is a tabbed interface with five tabs: "View", "General", "Logs Management", "PKI Options", and "Language". The "PKI Options" tab is selected. Under the heading "Syslog destination", there is a line of text: "Choose below where to send syslog information:". Below this are four options, each with a checkbox:

- Local log file
- Syslog server
  - IP or DNS Address:
  - Syslog UDP Port:
- Windows Event Viewer

At the bottom of the dialog box are two buttons: "OK" and "Cancel".

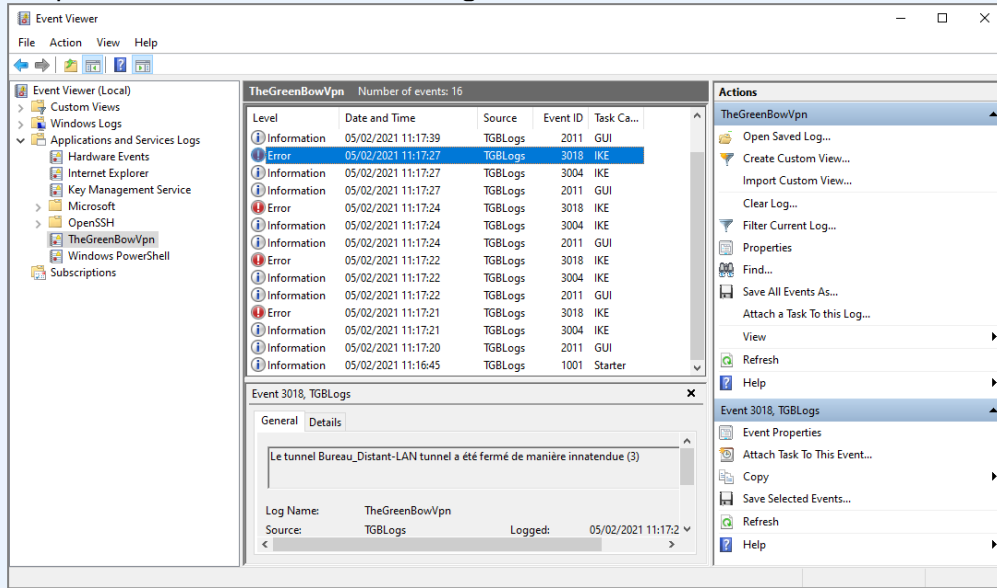
### **i** NOTES

- Administrator logs are listed in section [Administrator logs](#) in the appendixes.
- Administrator logs are only available in English. They are not localized into any other language.
- When administrator logs are stored in a local file, the path to these logs is the **System** sub-directory in the logging directory: *C:\ProgramData\Stormshield\Network VPN Client Exclusive\LogFiles\System*.  
Read access to this directory is available in all modes, but write access is only available in Administrator mode.





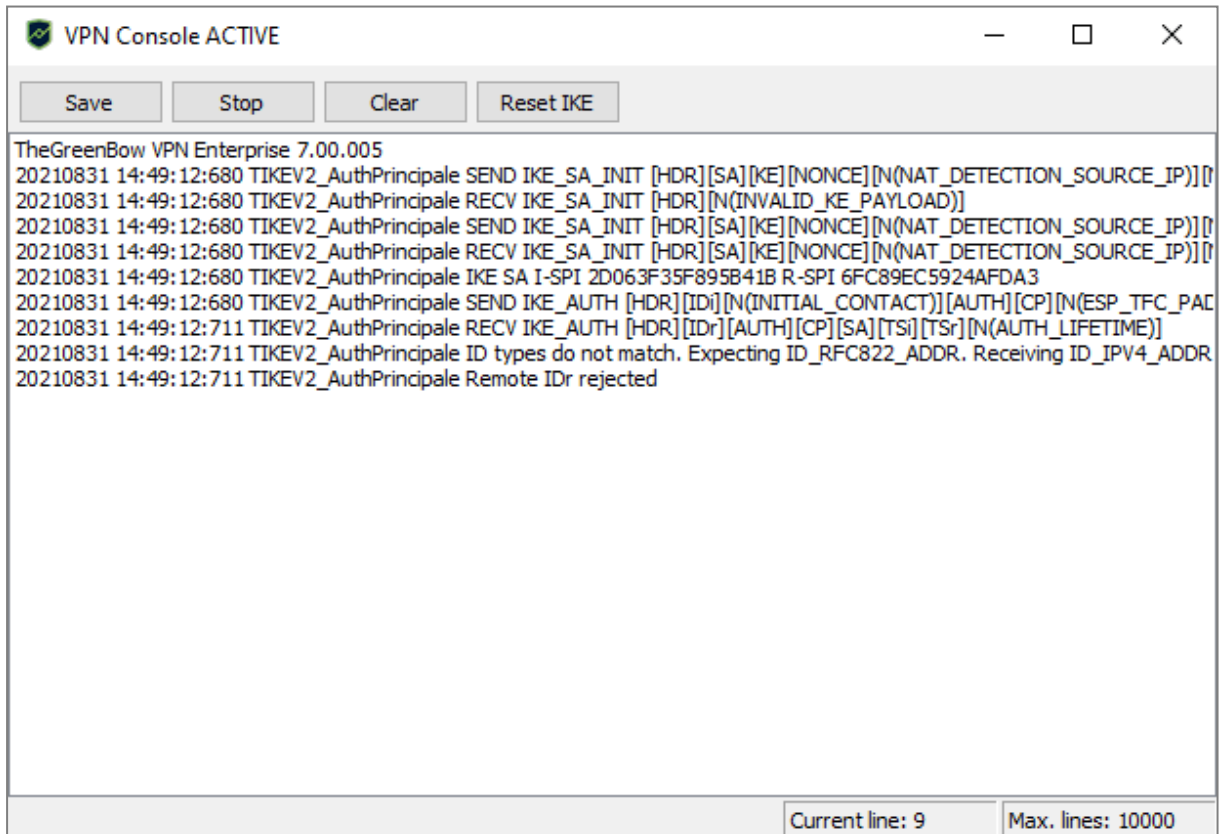
- The path for SN VPN Client Exclusive logs in the Windows Event Viewer is the following:



## 27.2 Console

Access the **Console** using either of the following methods:

- **Tools > Console** menu in the **Configuration Panel** (main interface)
- **Console** option in the **TrustedConnect Panel**'s contextual menu
- CTRL+D shortcut when the **Configuration Panel** is open
- From the software's taskbar menu, choose **Console**





The **Console** has the following functions:

- **Save:** Saves all the traces displayed in the window into a file
- **Start / Stop:** Starts/stops a **Console** log
- **Clear:** Clears the contents of the window
- **Reset IKE:** Restarts the IKE service

## 27.3 Trace mode

Trace mode is enabled using the following shortcut: Ctrl+Alt+T.

You do not need to restart the software when you enable the trace mode.

When the trace mode is enabled, every component of SN VPN Client Exclusive generates activity logs. The logs produced are stored in a folder that you can access by clicking the blue **folder** icon located in the status bar of the **Configuration Panel** (main interface).



### **i** NOTES

- Trace logs can only be enabled on the **Configuration Panel** and access to the **Configuration Panel** can be restricted to administrators.
- Even though logs do not contain any sensitive information, we recommend that, if enabled by the administrator, said administrator ensures that they are disabled and, if possible, deleted when quitting the software.
- Log files are generated every day and kept for 10 days by default. The software automatically deletes any files that are older than this. The period during which logs are kept can be configured using the `VPNLOGPURGE` property of the VPN Client installer (refer to the "[Deployment Guide](#)").
- Administrator logs stored in a local file will not be deleted (see section [Administrator logs](#)).



## 28. Security recommendations

### 28.1 Assumptions

To maintain a proper security level, the operating conditions and usages listed below must be observed.

#### 28.1.1 Profile and responsibilities of administrators

The system and network administrator as well as the security administrator, respectively tasked with installing the software and defining the VPN security policies, are nonhostile. They are trained to carry out the tasks for which they are responsible and follow administrative manuals and procedures.

The security administrator regularly ensures that the product's configuration is in line with the one that he or she has set up and performs the necessary updates when necessary.

The product's logging function is enabled and properly configured. Administrators are responsible for regularly reviewing the logs.

#### 28.1.2 Profile and responsibilities of users

Users of the software are nonhostile and have been properly trained on how to use it. More specifically, users execute the tasks for which they are responsible to ensure proper operation of the product and do not reveal the information used for their authentication with the VPN gateway.

#### 28.1.3 Compliance with management rules for cryptographic elements

Bi-keys and certificates used to open the VPN tunnel are generated by a trustworthy certificate authority that guarantees compliance with management rules for these cryptographic elements and, more specifically, with the specifications laid out by your local cybersecurity agency, e.g. [RGS\_B1] and [RGS\_B2] in France (only available in French).

### 28.2 User workstation

The machine on which SN VPN Client Exclusive is installed and run must be clean and properly administered. More specifically:

- Antivirus software must be installed, and its signature database must be updated on a regular basis.
- It must be protected by a firewall that controls (partitions or filters) the workstation's inbound and outbound communications that do not go through the VPN Client.
- Its operating system is up to date with the various security patches.
- Its configuration is such that it is protected against local attacks (memory forensics, patch, or binary corruption).

Configuration recommendations to strengthen the workstation are available on the ANSSI website (in French), such as the following (the list is non-exhaustive):

- [Computer health guide](#) (Guide d'hygiène informatique, document only available in French)
- [Configuration guide](#) (Guide de configuration, document only available in French)



- [Password](#) (Mot de passe, document only available in French)

## 28.3 VPN Client administration

SN VPN Client Exclusive is designed to be installed and configured with “administrator” privileges and then to be used with “user” privileges only.

We recommend that you protect access to the VPN configuration with a password and restrict the software’s visibility to end users (default behavior of SN VPN Client Exclusive) as detailed in section [Restricting access to the Configuration Panel](#).

We recommend that you enable the hash integrity check for the VPN configuration file using the MSI property *SIGNFILE* set to 1 when installing the software (see MSI *SIGNFILE* property in the “[Deployment Guide](#)”). When the property is not specified during installation, its default value is 0 (disabled).

The software must therefore be run as administrator to be able to access the **Configuration Panel**.

We recommend keeping the **Start VPN Client after Windows Logon** mode enabled, which is the default mode upon installation.

Lastly, please note that SN VPN Client Exclusive will apply the same VPN configuration to all users of a multiple-user workstation. We therefore recommend running the software on a dedicated workstation (for instance by keeping an administrator account and a user account, as mentioned above).

## 28.4 VPN Configuration

### 28.4.1 Sensitive information in the VPN configuration

We recommend that you do not store any sensitive data in the VPN configuration file.

In this regard, we recommend that you do not use the following features of the software:

- Do not use the EAP (password/login) mode alone, but only in combination with a certificate.
- If EAP is used, do not store the EAP login name/password in the VPN configuration (function described in section [Authentication](#)),
- Do not import any certificates to the VPN configuration (function described in section [Importing a certificate to the VPN configuration](#)) and preferably use certificates stored on removable devices (tokens) or in the Windows Certificate Store,
- Do not use the “Preshared key” mode (function described in section [IKE Auth: Authentication](#)) and preferably use the “Certificate” mode with certificates stored on removable media (tokens) or in the Windows Certificate Store.,
- Do not export the VPN configuration without encrypting it, i.e. not password-protected (function described in section [Exporting a VPN configuration](#)).

### 28.4.2 User authentication

The user authentication functions available in SN VPN Client Exclusive are described below, from the weakest to the strongest.

It should be noted that preshared key authentication, despite being easy to implement, enables any user of the workstation to establish a VPN tunnel without cross-checking their authentication.



Type of user authentication	Strength
Preshared key	Weak
EAP	
EAP popup	
Certificate stored in the VPN configuration	
Certificate in the Windows Certificate Store	
Certificate on a smart card or token	Strong

### 28.4.3 VPN gateway authentication

We recommend that you implement a check on the VPN gateway certificate as described in section [PKI Options](#).

We recommend that you do not configure the VPN Client to validate certificates that do not comply with the constraints on the Extended Key Usage and Key Usage extensions (do not use dynamic parameters `allow_server_and_client_auth` and `allow_server_extra_keyusage`).

### 28.4.4 Protocol

We recommend that you only configure IPsec/IKEv2 tunnels (and no SSL/OpenVPN tunnels).

### 28.4.5 “All through the tunnel” and “split tunneling” modes

We recommend that you configure the VPN tunnel using the “All traffic through the tunnel” mode and enable the “Disable Split Tunneling” mode.

Refer to the sections [Configuring the address type](#) and [Miscellaneous](#).

### 28.4.6 GINA mode

We recommended that you choose a strong authentication method for all tunnels configured in GINA mode.

### 28.4.7 ANSSI recommendations

The recommendations described above can be complemented by French National Cybersecurity Agency's (ANSSI) IPsec configuration document: [Recommendations for securing IPsec networks](#).



## 29. Appendixes

### 29.1 Shortcuts

#### 29.1.1 Connection Panel

Esc	Closes the window.
Ctrl+Enter	Opens the <b>Configuration Panel</b> (main interface).
Arrow keys	The Up and Down arrow keys are used to select a VPN connection.
Ctrl+O	Opens the selected VPN connection.
Ctrl+W	Closes the selected VPN connection.

#### 29.1.2 VPN configuration tree

F2	Used to edit the name of the selected.
Del	Deletes a selected phase, following confirmation by the user. If the actual configuration is selected (root of the tree), the software asks whether a full reset of the configuration should be performed.
Ctrl+O	Opens the corresponding VPN tunnel if a Child SA is selected.
Ctrl+W	Closes the corresponding VPN tunnel if a Child SA is selected.
Ctrl+C	Copies the selected phase to the clipboard.
Ctrl+V	Pastes (adds) the phase that has previously been copied to the clipboard.
Ctrl+N	If the VPN configuration is selected, creates a new IKE Auth. If an IKE Auth is selected, creates a Child SA.
Ctrl+S	Saves the VPN configuration.

#### 29.1.3 Configuration Panel

Ctrl+Enter	Switches to the <b>Connection Panel</b> .
Ctrl+D	Opens the <b>Console</b> window with VPN traces.
Ctrl+Alt+R	Restarts the IKE service.
Ctrl+Alt+T	Enables trace mode (log generation).
Ctrl+S	Saves the VPN configuration.



## 29.2 Administrator logs

ID Log define	ID Log value	Severity	Log string
LOGID_STARTERINIT	1001	Notice	Starter service is started.
LOGID_VPNCONFSTARTING	2001	Notice	GUI is starting.
LOGID_VPNCONFSTOPPED	2002	Notice	GUI has closed.
LOGID_TGBIKESTARTED	3001	Notice	IKE has started (status %d).
LOGID_TGBIKESTOPPED	3002	Notice	IKE has stopped.
LOGID_TUNNELOPEN	3004	Info	Tunnel %s is asked to open.
LOGID_VPNCONFCRASHED	2003	Notice	GUI crashed (state %d).
LOGID_TGBIKECRASHED	3003	Notice	IKE crashed (state %d).
LOGID_STARTERSTOP	1002	Notice	Starter service is stopped.
LOGID_RESETIKE	2007	Warning	IKE is asked to reset.
LOGID_VPNCONFSTARTED	2008	Notice	GUI has started from user %s.
LOGID_VPNCONFSTOPPING	2009	Notice	GUI is stopping from user %s.
LOGID_VPNCONFLOADERROR	2010	Error	Configuration couldn't load (reason: %s).
LOGID_VPNCONFOPEN TUNNEL	2011	Info	GUI opens tunnel (source: %s).
LOGID_VPNCONF CLOS E TUNNEL	2012	Info	GUI closes tunnel (source: %s).
LOGID_VPNCONFSAVE	2013	Notice	New configuration is saved.
LOGID_VPNCONFIMPORT	2014	Info	%s has been imported.
LOGID_VPNCONFIMPORTERR	2015	Error	%s could not be imported (status %d).
LOGID_VPNCONFEXPORT	2016	Info	%s has been exported.
LOGID_TOKENINSERT	2017	Info	Token %s has been inserted.
LOGID_TOKENEXTRACT	2018	Info	Token %s has been extracted.
LOGID_USBININSERT	2019	Info	USB Key has been inserted.
LOGID_USBEXTRACT	2020	Info	USB Key has been extracted.
LOGID_INSTALLATION	2021	Info	VPN running for the 1st time.
LOGID_UPDATE	2022	Info	VPN software has been updated to version %s.
LOGID_VERSION	2023	Info	VPN Version is %s.
LOGID_GINASTARTED	4001	Notice	GINA has started.
LOGID_GINASTOPPING	4002	Notice	GINA is stopping.



ID Log define	ID Log value	Severity	Log string
LOGID_GINAOPEN_TUNNEL	4003	Info	GINA opens tunnel (source: %s).
LOGID_GINACLOSE_TUNNEL	4004	Info	GINA closes tunnel (source: %s).
LOGID_TUNNELAUTH_OK	3005	Info	Tunnel authentication Ok (%s).
LOGID_TUNNELTRAFFIC_OK	3006	Info	Tunnel %s Ok
LOGID_TUNNELAUTH_NOK	3007	Error	Tunnel authentication failed (reason %d).
LOGID_TUNNELTRAFFIC_NOK	3008	Error	Tunnel %s failed (reason %d).
LOGID_AUTHREKEYING	3009	Info	Tunnel %s initiated rekey (source %d).
LOGID_AUTHREKEYED	3010	Info	Tunnel %s rekeyed.
LOGID_TUNNELREKEYING	3011	Info	Tunnel %s initiated rekey (source %d).
LOGID_TUNNELREKEYED	3012	Info	Tunnel %s rekeyed.
LOGID_PINCODE	3013	Notice/Error	Pin code is entered (status %d).
LOGID_DRIVERNOK	3014	Critical	Driver could not be loaded (status %d).
LOGID_IKEEXT_STOP	1003	Warning	IKEEXT service is stopped.
LOGID_IKEEXT_RESTART	1004	Notice	IKEEXT service is restarted.
LOGID_IKEEXT_ERROR	1005	Critical	IKEEXT could not be stopped (status %d).
SYSTEMLOGID_VIRTIFOK	3015	Info	Virtual interface created successfully (instance %d).
SYSTEMLOGID_VIRTIFNOK	3016	Error	Virtual interface could not be created (error %d).
LOGID_TUNNELCLOSED	3017	Notice	%s tunnel successfully closed [%d min].
LOGID_TUNNELCLOSED_ERR	3018	Error	%s tunnel closed unexpectedly [%d].
LOGID_CERTERROR	3019	Error	Error %d when handling certificate %s.

## 29.3 TrustedConnect Panel diagnostics

The **TrustedConnect Panel** informs the user of any issues that may have occurred while establishing the VPN connection by displaying an error code.

These error codes, their diagnosis and possible solutions are detailed below. This list allows administrators to find possible answers to any issues that users may encounter and report.

Code	Diagnosis	Solution
0	VPN configuration issue VPN connection not found in configuration	<ul style="list-style-type: none"> <li>Make sure that the <i>tgvpn.conf</i> file is available in the VPN Client installation directory.</li> </ul>





Code	Diagnosis	Solution
1	<p>Issue with a certificate The VPN configuration uses a certificate whose private key cannot be found.</p>	<ul style="list-style-type: none"><li>• Check the VPN Client's configuration and any possible associated authentication devices (smart card reader, token, or Windows Certificate Store).</li><li>• Reimport the VPN configuration and then reimport the certificate concerned.</li><li>• Create a ticket and send it to <a href="#">MyStormshield</a> making sure to attach all log files.</li></ul>
3	<p>Configuration issue The message <b>No proposal chosen</b> has been received during an IKE exchange: the cryptographic algorithm suite configured for the IKE_SA_INIT sequence does not match the one configured on the gateway.</p>	<ul style="list-style-type: none"><li>• Verify that the cryptographic algorithm suite for THE IKE_SA_INIT sequence of the VPN connection matches that of the gateway (refer to IKE Auth in the <b>Configuration Panel</b>).</li></ul>
4	<p>Configuration issue The message "No proposal chosen" has been received during an IKE exchange: the cryptographic algorithm suite of the ESP protocol does not match the one configured on the gateway.</p>	<ul style="list-style-type: none"><li>• Verify that the cryptographic algorithm suite of the ESP protocol (refer to the Child SA in the <b>Configuration Panel</b>) matches that of the gateway.</li></ul>
5	<p>Cannot access gateway The gateway address ("Remote Router Address") specified in the VPN configuration is not reachable. If it is an IP address, it cannot be found or cannot be reached. If it is a DNS address it may be inaccessible, indefinite, or cannot be resolved.</p>	<ul style="list-style-type: none"><li>• Check the address of the gateway/remote workstation. For example, try "pinging" this address.</li></ul>
6	<p>Configuration issue The message <b>Remote ID other than expected</b> has been received. This means that the value of the <b>Remote ID</b> does not match the value expected by the remote VPN gateway.</p>	<ul style="list-style-type: none"><li>• Make sure that the <b>Local ID</b> parameter on the VPN client's <b>Protocol</b> tab matches the Remote ID of the remote gateway (or workstation). The Remote ID on the router is the Local ID on the VPN Client and vice versa. Caution:</li></ul>



Code	Diagnosis	Solution
7	<p>Gateway certificate Checking the certificate chain of the certificate received from the VPN gateway is enabled. The gateway certificate chain could not be validated.</p>	<ul style="list-style-type: none"><li>• Check the gateway certificate expiration date.</li><li>• Check the validity start date of the gateway certificate.</li><li>• Check the signatures of all certificates in the certificate chain (including root certificate, intermediate certificates, and gateway certificate).</li><li>• Check whether the CRLs of all certificate issuers in the certificate chain are up to date.</li><li>• Make sure that none of the certificates concerned have been revoked in the corresponding CRL lists.</li><li>• Make sure that the root certificate and all certificates in the certificate chain (root certification authority and intermediate certification authorities) are available in the Windows Certificate Store on the workstation.</li><li>• Make sure that the CRLs of the various certification authorities are available in the Windows Certificate Store, or that these CRLs can be downloaded when the VPN connection is opened.</li></ul>
9	<p>No response from gateway The VPN Client has abandoned the connection, most often after several connection attempts.</p>	<ul style="list-style-type: none"><li>• Check whether the gateway is still accessible from the workstation.</li></ul>
10	<p>Authentication issue The gateway has declined the user's authentication credentials.</p>	<ul style="list-style-type: none"><li>• Check the user certificate.</li><li>• Check that the Local ID on the <b>Protocol</b> tab of the <b>Configuration Panel</b> matches the value and type defined on the gateway. Caution: The Local ID on the VPN Client is the Remote ID on the router and vice versa.</li><li>• Check the logs on the remote gateway to get more information about this issue.</li></ul>
13	<p>Configuration issue An error occurred while establishing the VPN connection. Establishing the VPN connection has been abandoned.</p>	<ul style="list-style-type: none"><li>• Retrieve the user log files. They must be analyzed.</li><li>• Create a ticket and send it to <a href="#">MyStormshield</a> making sure to attach all log files.</li></ul>
14	<p>Network configuration An error occurred while creating the virtual interface used for the VPN connection.</p>	<ul style="list-style-type: none"><li>• Retrieve the user log files. They must be analyzed.</li><li>• Create a ticket and send it to <a href="#">MyStormshield</a> making sure to attach all log files.</li></ul>



Code	Diagnosis	Solution
15	<p>Network configuration</p> <p>The virtual IP address assigned during the VPN connection already exists on one of the workstation's interfaces.</p>	<ul style="list-style-type: none"><li>• Change the virtual IP address (<b>VPN Client address</b> parameter) specified in the VPN Client's configuration.</li><li>• Change the IP address provided by the gateway to the VPN Client.</li></ul>
16	<p>Network configuration</p> <p>An error occurred while creating the virtual interface used for the VPN connection.</p>	<ul style="list-style-type: none"><li>• Retrieve the user log files. They must be analyzed.</li><li>• Create a ticket and send it to <a href="#">MyStormshield</a> making sure to attach all log files.</li></ul>
24	<p>Configuration issue</p> <p>The gateway did not accept the cryptographic algorithm suite provided by the VPN Client.</p>	<ul style="list-style-type: none"><li>• Make sure that the VPN Client's cryptographic algorithm suites match those of the gateway.</li><li>• Check the Local ID and Remote ID. Warning: the Local ID on the router is the Remote ID on the VPN Client and vice versa.</li></ul>
25	<p>Configuration issue</p> <p>The gateway did not accept the remote network configured in the VPN Client or the virtual IP address provided by the VPN Client.</p>	<ul style="list-style-type: none"><li>• Make sure that the virtual IP address (<b>VPN Client address</b> parameter) specified in the VPN Client's configuration is acceptable at the gateway end.</li><li>• Make sure that the remote network (<b>Remote network address</b> parameter) specified in the VPN Client's configuration is acceptable on the gateway end.</li></ul>
26	<p>Configuration issue</p> <p>The VPN client provides its own traffic selectors, while the gateway is configured to provide them.</p>	<ul style="list-style-type: none"><li>• Check the <b>Request configuration from the gateway</b> parameter on the <b>Child SA</b> tab.</li></ul>
27	<p>Gateway error</p> <p>The gateway reported an error not supported by the VPN Client.</p>	<ul style="list-style-type: none"><li>• Analyze the logs on the gateway end.</li><li>• Retrieve the user log files. They must be analyzed.</li><li>• Create a ticket and send it to <a href="#">MyStormshield</a> making sure to attach all log files.</li></ul>
28	<p>Login/password error</p> <p>The gateway has rejected the EAP authentication while establishing the VPN connection.</p>	<ul style="list-style-type: none"><li>• Check the EAP authentication parameters in the VPN Client's configuration.</li><li>• Make sure that the user knows his or her credentials, should he or she need them while establishing the connection.</li></ul>
30	<p>Smart card or token error</p> <p>Cannot access the certificate stored on the smart card or token.</p>	<ul style="list-style-type: none"><li>• Check that the smart card reader or token is correctly configured on the workstation, and that the VPN Client can access it.</li></ul>
31	<p>Captive portal authentication timeout expired</p> <p>No session has been opened on the captive portal. The workstation therefore has no internet connectivity.</p>	<ul style="list-style-type: none"><li>• Click the Connect button in order to authenticate on the captive portal.</li></ul>



Code	Diagnosis	Solution
100	Cannot load the VPN configuration No VPN connection has been found in the configuration file.	<ul style="list-style-type: none"><li>• Make sure that at least one tunnel is configured in the <b>Connection Panel</b>. Go to <b>Tools &gt; Connections Configuration</b>, then add a tunnel and save the configuration.</li></ul>
101	GINA configuration error A tunnel is active before logon, but has not been configured to be used by the <b>TrustedConnect Panel</b> .	<ul style="list-style-type: none"><li>• Make sure that the tunnel which is active before logon is also configured in the <b>Connection Panel</b>. Go to <b>Tools &gt; Connections Configuration</b>, then add a tunnel and save the configuration.</li></ul>
102	IKE initialization error An error occurred while initializing the IKE daemon.	<ul style="list-style-type: none"><li>• Retrieve the user log files.</li><li>• Create a ticket and send it to <a href="#">MyStormshield</a> making sure to attach all log files.</li></ul>
103	DNS error A DNS name could not be resolved in the set of rules for the Filtering Mode.	<ul style="list-style-type: none"><li>• Make sure that the workstation can access the internet.</li><li>• Make sure that the Filtering Mode does not itself block access to DNS queries.</li><li>• Replace DNS names with IP addresses.</li></ul>
200	Software activation The software is not activated and the trial period has expired.	<ul style="list-style-type: none"><li>• Retrieve the user log files.</li><li>• Check software activation.</li></ul>

## 29.4 Basic cryptography concepts

### 29.4.1 SHA, RSA, ECDSA and ECSDSA algorithms

Digital signatures generally involve two different types of algorithms:

- A hash algorithm (SHA: Secure Hash Algorithm)
- A signature algorithm (RSA: initials of the three inventors, ECDSA: Elliptic Curve Digital Signature Algorithm or ECSDSA: Elliptic Curve Schnorr Digital Signature Algorithm)

The strength of RSA encryption depends on the size of the key used. With every doubling of the key length, decryption is six to seven times slower.

According to the NIST and the ANSSI, the recommended minimum key size is 2048 bits.

Hash algorithms can be attacked in either of the following two ways:

- Hash collision
- Preimage

A collision occurs when two distinct files produce the same hash value, and it thus becomes possible to substitute one for the other.

Preimage consists in determining the value of a file from its hash value. A second preimage consists in starting out from the hash value to produce a value that is different from the one originally used with the hash function.

According to the ANSSI, the family of SHA-1 hash functions no longer complies with its general security reference system (RGS) and the SHA-2 family should therefore be used. The NIST similarly encourages US federal agencies to switch from SHA-1 to SHA-2.



The rules applied by the SN VPN Client Exclusive follow NIST and ANSSI recommendations. However, if the implemented PKI does not meet these requirements, some of these restrictions can be removed from the software using dynamic parameters.

**i** NOTE

There are several notations in use for the SHA-2 family of algorithms. For example, SHA-2 (256 bits) is also written SHA-256, SHA-2 (384 bits) is also written SHA-384, and so on. The same applies to elliptic curves. For example, secp256r1 is also referred to as the "P-256 curve", secp384r1 as the "P-384 curve", and secp521r1 as the "P-521 curve".

## 29.4.2 Accessing certificates

### CSP, CNG and PKCS#11: what are the differences?

Certificate management in Windows involves a variety of software and standards regardless of whether certificates are stored in a certificate store, on a token, or on a smart card.

**i** NOTE

Certificates stored on smart cards or tokens are usually copied to the current user's certificate store when the card is inserted into the reader or when the token is connected to the computer.

CSP, CNG, and PKCS#11 are related concepts that all use application programming interfaces (APIs) for certificate management, but the technology implemented is different in each case.

### CSP and KSP

In Windows, certificate management traditionally used independent software modules called Cryptographic Service Providers (CSPs). CSPs actually perform algorithms for authentication, encoding, and encryption.

Today, there is a new generation of independent software modules called Key Storage Providers (KSPs). A KSP is used to create, manage, store, and retrieve private keys.

### CAPI and CNG

Changing security standards have led Microsoft to deprecate the API associated with CSPs, called Cryptography API (CryptoAPI or CAPI). It has now been replaced with Cryptography API: Next Generation (CNG), which separates cryptographic service providers from key storage providers.

For this reason, version 7.2 and higher of the SN VPN Client Exclusive do not support CSPs and only support the CNG API. You therefore need to ensure that the certificate is imported into the Windows Certificate Store with the correct library (see section [Determining a certificate's container type](#) below).

### Machine store and user store

It should also be noted that there are two certificate stores in Windows:

- The machine store that is available to all users of a machine
- The user store that is only available to the current user of a machine

**i NOTE**

In command lines, the **-user** option of the *certutil* command is used to specify the user store. When it is omitted, the machine store will be used by default.

## PKCS#11

In cryptography, PKCS stands for Public Key Cryptography Standards. They are a set of specifications developed by RSA Security.

The PKCS#11 standard provides applications with a method of accessing hardware peripherals (smart cards or tokens), regardless of the type of device. It therefore includes an API serving as a generic interface for a device driver that supports the PKCS#11 standard. This API is supported by version 7.x of the SN VPN Client Exclusive if a corresponding middleware is installed.

## Summary

In summary, there are several types of middleware used to access certificates stored on tokens, on smart cards, and in certificate stores (certmgr.msc):

- **CSP** stands for **Cryptographic Service Provider** (deprecated and replaced with CNG): supported up to 7.x versions.
- **CNG** stands for **Cryptography API: Next Generation**: only API supported in 7.x versions. In this case, you must import the certificate into the Windows store using the right library.
- **PKCS#11** stands for **Public Key Cryptography Standards**: supported by 7.x versions.

### 29.4.3 Determining a certificate's container type

CSP and CNG are Microsoft middleware. In Windows, certificates are stored in containers of CNG or CSP type.

To find out the container used for certificates stored in the certificate store, on a token, or on a smart card, you can list the certificates contained in the (user or machine) store. The information returned specifies the type of supplier based on which you can infer the container type (CSP or CNG). The latter will then allow you to determine whether the certificate is compatible with version 7.2 or higher of the SN VPN Client Exclusive

- To list the certificates contained in the user store, run the following command:

```
certutil -verifystore -user My
```

- To list the certificates contained in the machine store, run the following command:

```
certutil -verifystore My
```

Based on the information returned, you can determine the container type as follows. If the supplier is:

- Microsoft Smart Card Key Storage Provider, the container is of CNG type (compatible with versions 7.2 and higher)
- Microsoft Base Smart Card Crypto Provider, the container is of CSP type (not compatible with versions 7.2 and higher)

### 29.4.4 Certificate format

As of version 7 of the SN VPN Client Exclusive, certificates must be in a format that conforms to a specific key size and hash algorithm.



### Mandatory

- Key length: must be at least 2048 bits for RSA certificates
- Digest algorithm: must be SHA 256, SHA-384, or SHA-512

### Optional

CRL checking for user certificates

As of SN VPN Client Exclusive version 7.5, you can check the revocation of the gateway certificate using Online Certificate Status Protocol Stapling (OCSP Stapling). To do this, you must add the dynamic parameter *enable\_OCSP* set to the value *true* (see section [Displaying more parameters](#)).

## Gateway certificate

### Key Usage extension part

- Must be present,
- Must be marked as critical, and
- Must not contain only the values *digitalSignature* and/or *nonRepudiation*

If this is not the case, refer to the dynamic parameter *allow\_server\_extra\_keyusage* described in section [Constraints on the Key Usage extension](#).

#### **i** NOTE

In accordance with security requirements, the *keyEncipherment* value of the Key Usage extension has been deprecated and replaced with the *nonRepudiation* value, which is now accepted by default. However, SN VPN Client Exclusive version 7.5 continues to accept the *keyEncipherment* value without needing to use dynamic parameter *allow\_extra\_keyusage*.

#### **💡** TIP

We recommend that you give preference to the *nonRepudiation* value over the *keyEncipherment* value of the Key Usage extension.

### Extended Key Usage extension part

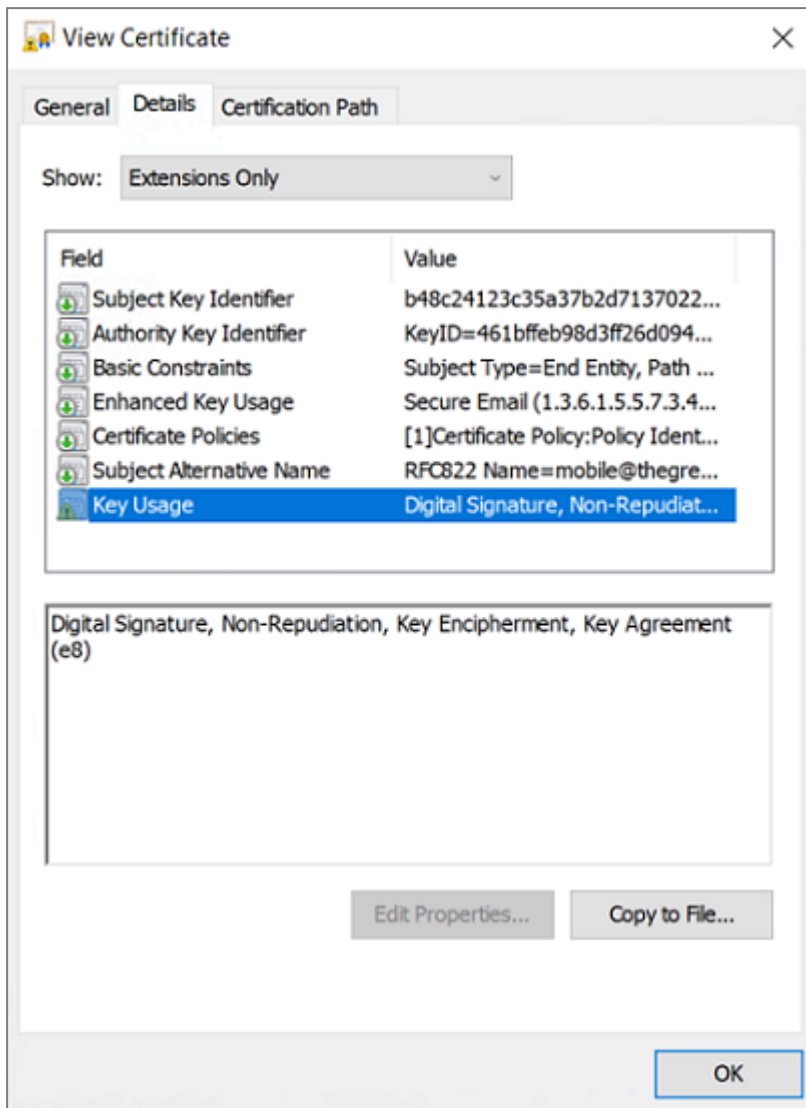
- Can be present or not,
- If it is present, it must:
  - Be marked as non-critical, and
  - Only contain either one of the following values  
*id-kp-serverAuth* or  
*id-kp-serverAuth* and *id-kp-ipsecIKE*

If this is not the case, refer to the dynamic parameter *allow\_server\_and\_client\_auth* described in section [Constraints on the Extended Key Usage extension](#)

## Example of a certificate in Windows

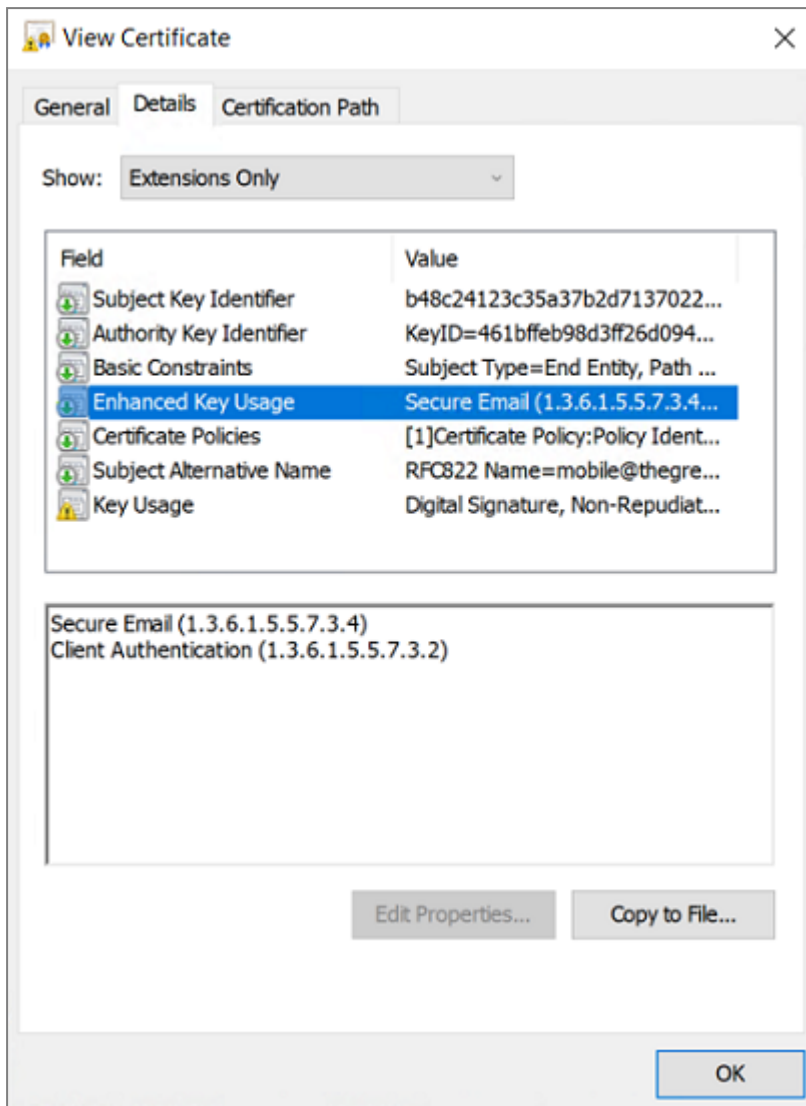
In a Windows PKI, the following is the relationship between a certificate and its extensions:

- Extended Key Usage:



- Key Usage:





### Example of a certificate log

The extensions are included in a certificate log (file named *tg**bikeng**.log*) :

```
20220826 17:20:23:953 Local0.Info [11204] X509v3 extensions
20220826 17:20:23:956 Local0.Info [11204] Basic constraints :
20220826 17:20:23:960 Local0.Info [11204] CA:FALSE
20220826 17:20:23:965 Local0.Info [11204] Netscape Certificate comment :
20220826 17:20:23:968 Local0.Info [11204] TheGreenBow PKI generated server
certificate
20220826 17:20:23:971 Local0.Info [11204] Subject key identifier :
20220826 17:20:23:974 Local0.Info [11204]
FB:D6:5A:EF:FE:1B:DC:68:90:66:B9:D7:47:45:EA:B5:86:97:4A:B3
20220826 17:20:23:978 Local0.Info [11204] Authority key identifier :
20220826 17:20:23:981 Local0.Info [11204] keyIdentifier:
6F:6D:B8:A5:0B:EA:64:82:2E:B4:5F:0A:35:53:8B:80:05:4C:7B:0E
20220826 17:20:23:984 Local0.Info [11204] authorityCertIssuer: C = FR, ST
= Ile-de-France, L = Paris, O = TheGreenBow, OU = QA40, CN = Root CA
20220826 17:20:23:988 Local0.Info [11204] authorityCertSerialNumber: 10:00
20220826 17:20:23:990 Local0.Info [11204] Key usage : critical
20220826 17:20:23:995 Local0.Info [11204] Digital signature
20220826 17:20:24:000 Local0.Info [11204] Extended key usage :
20220826 17:20:24:003 Local0.Info [11204] Server authentication
```



## User certificate

Warning messages may be displayed in the **Console** for a user certificate, but you do not need to remove any restrictions from the VPN Client.

### 29.4.5 Certificate authentication methods

SN VPN Client Exclusive supports the following certificate authentication methods:

- Method 1: RSA Digital Signature with SHA-2 [RFC 7296]
- Method 9: ECDSA “secp256r1” with SHA-2 (256 bits) on the P-256 curve [RFC 4754]
- Method 10: ECDSA “secp384r1” with SHA-2 (384 bits) on the P-384 curve [RFC 4754]
- Method 11: ECDSA “secp521r1” with SHA-2 (512 bits) on the P-521 curve [RFC 4754]
- Method 14: Digital Signature RSASSA-PSS, RSASSA PKCS1 v1\_5, and Brainpool with SHA-2 (256/384/512 bits) [RFC 7427]
- Method 214: ECDSA “BrainpoolP256r1” with SHA-2 (256 bits) on the BrainpoolP256r1 curve (only available with gateways that support this method)

The default authentication method used for RSA certificates (RSASSA-PSS or RSASSA-PKCS1-v1\_5) is method 14 with an RSASSA-PSS signature. If the gateway/firewall uses method 14 with an RSASSA-PKCS1-v1.5 signature, the VPN Client will reject the certificate and the following message will be displayed in the **Console**:

```
RSASSA-PKCS1-v1_5 signature scheme not supported with authentication method 14
```

In the event that the gateway does not support method 14 with an RSASSA PSS signature, you can configure the VPN Client to use method 14 with an *RSASSA-PKCS1-v1\_5* signature, by adding the dynamic parameter *Method14\_RSASSA\_PKCS1* with a value set to *true* or *yes* (see section [Displaying more parameters](#)).

In the event that the gateway does not support method 14 with an *RSASSA-PKCS1-v1\_5* signature, you can configure the VPN Client to use method 1 with an RSA and SHA-2 digital signature, by adding the dynamic parameter *Method1\_PKCS1v15\_Scheme* with a value set to *04* [SHA-256], *05* [SHA-384] or *06* [SHA-512] (see section [Displaying more parameters](#)). The VPN Client will reject any other value entered.

The authentication method used for ECDSA certificates (elliptical curves) depends on the elliptical curve used in the certificate: ECDSA with SHA-256 on the P-256 curve, ECDSA with SHA-384 on the P-384 curve, ECDSA with SHA-512 on the P-521 curve or ECDSA with SHA-256 on the BrainpoolP256r1 curve.

When the VPN Client needs to create a signature for a Brainpool user certificate, authentication method 14 is used by default, which is appropriate for a gateway that is not running in Restricted mode. If this type of certificate is to be used with a gateway running in Restricted mode, the dynamic parameter *use\_method\_214* must be added and set to the value *true* (see section [Displaying more parameters](#)). The NID\_sha256, NID\_sha384, or NID\_sha512 message digest algorithm is used for signature depending on the key size.

#### **i** NOTES

- The SHA-1 algorithm cannot be used in digital signatures.
- SN VPN Client Exclusive will reject RSA certificates with a key size lower than 2048 bits.
- SN VPN Client Exclusive will reject ECDSA certificates with a key size lower than 256 bits.



## 29.5 SN VPN Client Exclusive technical data

### 29.5.1 General

<b>Windows version</b>	Windows 11 64-bit Windows 10 64-bit
<b>Languages</b>	Arabic, Chinese (simplified), Czech, Danish, Dutch, English, Farsi, Finnish, French, German, Greek, Hindi, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Serbian, Slovenian, Spanish, Thai, Turkish

### 29.5.2 Operating mode

<b>Invisible mode</b>	Automatically open tunnel when traffic is detected Control access to VPN configurations Hide part or all the interfaces
<b>Gina</b>	Open a tunnel before Windows logon using: GINA/Credential providers on Windows 10
<b>Scripts</b>	Run configurable scripts when opening or closing a VPN tunnel
<b>Remote Desktop Sharing</b>	Open a remote computer with a single click via RDP and VPN tunnel
<b>TrustedConnect Panel</b>	Automatically open tunnel with Always-On and trusted network detection (TND)

### 29.5.3 Connection/Tunnel

<b>Connection mode</b>	Peer-to-gateway
<b>Networks</b>	IPv4 and IPv6
<b>Protocols</b>	IPsec/IKEv2 SSL/OpenVPN
<b>CP mode</b>	Automatically retrieve network parameters from the VPN gateway

### 29.5.4 Cryptography and authentication

<b>Encryption, Key groups and Hashing (IKEv2)</b>	Symmetric: AES CBC/CTR/GCM 128/192/256 bits Diffie-Hellman: DH 14 (MODP 2048), DH 15 (MODP 3072), DH 16 (MODP 4096), DH 17 (MODP 6144), DH 18 (MODP 8192), DH 19 (ECP 256), DH 20 (ECP 384), DH 21 (ECP 521), DH 28 (BrainpoolP256r1) Hashing: SHA-2 (256/384/512 bits)
---	---



<b>TLS security suites (OpenVPN)</b>	<p>TLS 1.2—Medium          TLS 1.2—High          TLS 1.3:</p> <ul style="list-style-type: none"> <li>• TLS_AES_128_GCM_SHA256</li> <li>• TLS_AES_256_GCM_SHA384</li> <li>• TLS_CHACHA20_POLY1305_SHA256</li> <li>• TLS_AES_128_CCM_SHA256</li> <li>• TLS_AES_128_CCM_8_SHA256</li> </ul>
<b>Encryption and Hashing (OpenVPN)</b>	<p>Symmetric: AES-128-CBC, AES-192-CBC and AES-256-CBC          Hashing: SHA-2 (224/256/384/512 bits)</p>
<b>Authentication</b>	<ul style="list-style-type: none"> <li>• Preshared key</li> <li>• EAP-MSCHAPv2</li> <li>• X.509 certificates</li> <li>• Multiple Auth</li> </ul>
<b>Certificate authentication methods</b>	<ul style="list-style-type: none"> <li>• Method 1: RSA digital signature with SHA-2 [RFC 7296]</li> <li>• Method 9: ECDSA "secp256r1" with SHA-2 (256 bits) on the P-256 curve [RFC 4754]</li> <li>• Method 10: ECDSA "secp384r1" with SHA-2 (384 bits) on the P-384 curve [RFC 4754]</li> <li>• Method 11: ECDSA "secp521r1" with SHA-2 (512 bits) on the P-521 curve [RFC 4754]</li> <li>• Method 14: Digital Signature RSASSA-PSS, RSASSA-PKCS1 v1_5, and Brainpool with SHA-2 (256/384/512 bits)[RFC 7427]</li> <li>• Method 214: ECDSA "BrainpoolP256r1" with SHA-2 (256 bits) on the BrainpoolP256r1 curve (only available with gateways that support this method)</li> </ul>
<b>PKI</b>	<ul style="list-style-type: none"> <li>• Support for certificates in X.509 format</li> <li>• Importing PKCS#12, PEM/PFX certificates</li> <li>• Multiple media: Windows Certificate Store, smart card, token, configuration file</li> <li>• Support for Certificate Revocation List (CRL) and OCSP stapling</li> <li>• Automatically detect a smart card reader or token according to criteria</li> <li>• PKCS#11 and CNG access to tokens and smart cards</li> <li>• Complete check of the "user" and "gateway" certificate chain</li> </ul>

### 29.5.5 Miscellaneous

<b>NAT/NAT-Traversal</b>	NAT-Traversal Draft 1 (enhanced), Draft 2, Draft 3 and RFC 3947, IP address emulation, includes support for: NAT_OA, NAT keepalive, NAT-T aggressive mode, NAT-T in forced, automatic or disabled mode
<b>DPD</b>	RFC 3706. Detection of inactive IKE endpoints.
<b>Redundant gateway</b>	Redundant gateway management, automatically selected when DPD is triggered (inactive gateway)



## 29.5.6 Administration

<b>Deployment</b>	Silent installation using Microsoft Installer (MSI)
<b>VPN configuration management</b>	Import and export options for VPN configurations Secure import/export using passwords, encryption, and integrity control
<b>Automation</b>	Ability to open, close, and monitor a tunnel using command lines (batch and scripts) Ability to start and quit the software using batches
<b>Logs and traces</b>	IKE/IPsec and SSL/OpenVPN log <b>Console</b> and trace mode can be enabled Administrator logs: local file, Windows Event Log, syslog server
<b>Upgrades</b>	Check for available updates from within the software
<b>License and activation</b>	Licenses available on a subscription basis, manual/automatic/silent activation



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