Windows VPN Client

Stormshield SNS 4.2 DR Mode Configuration Guide

Latest update: 25 February 2022
Document reference number: 20220225_CG_Stormshield_EN_1.3

Table of contents

Document revision history

Version	Date	Sections/pages concerned	Description of change	Author
1.0	2021-12-01	All	Initial draft	BB
1.1	2022-02-10	All	Updated for SNS 4.2 with new screenshots	AL, NT
1.2	2022-02-18	1.2 4.1.1	Corrected a typographical error. Added another method to enable CRL validation.	
1.3	2022-02-25	1.2 2.7	Corrected the version number of the DR mode. Corrected the CN value to be entered in the Peer ID field.	

1 Introduction

1.1 Purpose of document

This configuration guide describes how to configure TheGreenBow Windows Enterprise VPN Client version 6.8 to establish VPN connections to the Stormshield SNS firewall version 4.2, using ANSSI *Diffusion Restreinte*[1] (DR) mode.

1.2 DR mode

In this document, we will configure the Stormshield SNS firewall with the ANSSI *Diffusion Restreinte* (DR) mode turned on.

For more information on the ANSSI *Diffusion Restreinte* (DR) mode introduced in SNS firewall version 4.2, refer to the following page: https://documentation.stormshield.eu/SNS/v4/en/Content/Release_Notes_SNS/4.2.1-Features.htm.

To do this, we will set up the following configuration:

- Protocol: IPsec IKEv2
- Diffie Hellman: DH19
- Encryption: AES GCM 256
- Authentication: Certificate, using Method 9 (ECDSA with SHA-256 on the P-256 SECP curve and SHA256)
- Certificate revocation: CRL enabled
- UDP port: 4500

1.3 Software versions used

We used the following software versions to draft this document:

- Stormshield SNS version 4.2.8
- TheGreenBow Windows Enterprise VPN Client version 6.86.015

The instructions contained in this configuration guide should also work with newer versions of the Stormshield SNS firewall and TheGreenBow Windows Enterprise VPN Client.

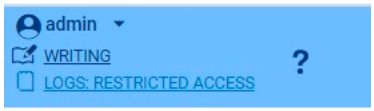
[1] *Diffusion Restreinte* means restricted information.

2 Configuring the Stormshield firewall

This section describes how to configure your Stormshield firewall.

2.1 Enabling writing mode

On the top right corner of the configuration window, you should see the following screen:



You must be in writing mode to be able to edit and save the configuration.

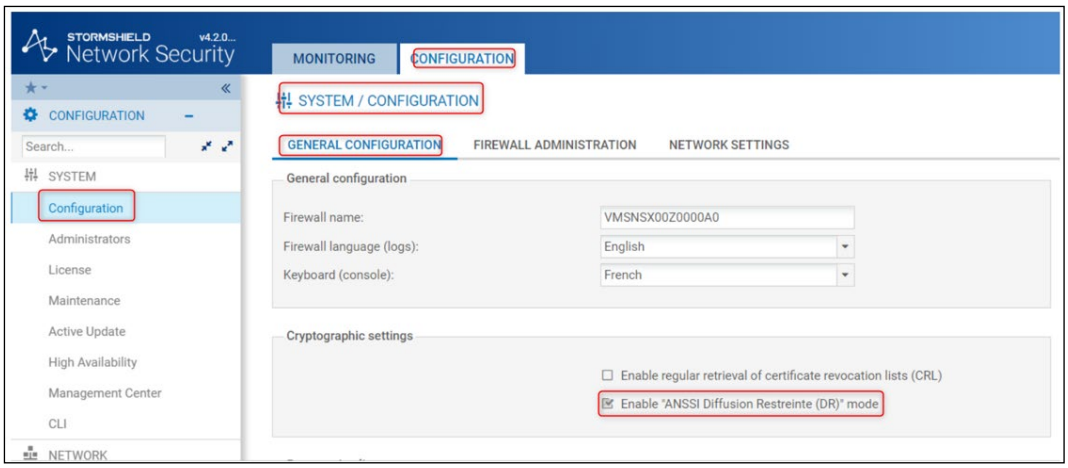
If this is not the case, and you see the following:

Click **READING**. The writing mode is enabled.

2.2 Enabling ANSSI Diffusion Restreinte mode

Once you have logged in to your Stormshield Network Security firewall, proceed as follows in the user interface:

1. From the left menu, select **SYSTEM** and then **Configuration**.
2. Under the **GENERAL CONFIGURATION** tab, click **Enable "ANSSI Diffusion Restreinte (DR)" mode**.



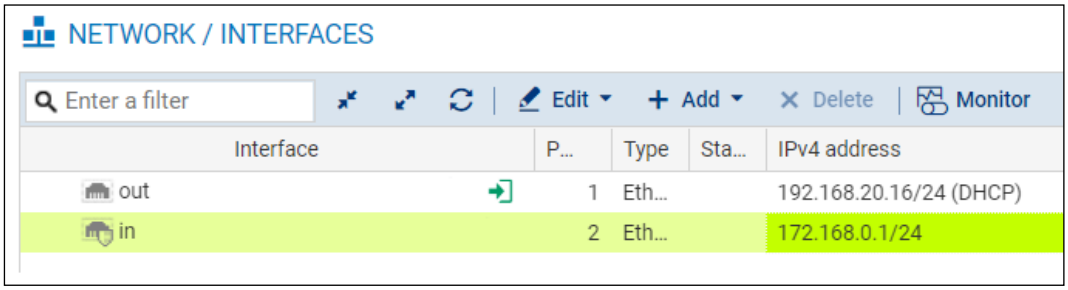
3. Click **APPLY**.

4. Click **Save This Configuration**.
5. The following message is displayed: “You will need to restart your appliance to apply changes”.
6. Click on the **Restart** icon ( ) to restart.

2.3 Configuring Network/Interfaces

Once you have enabled the ANSSI DR mode, proceed as follows to configure the Network/Interfaces:

1. From the left menu, select **Network** and then **Interfaces**.
2. Configure the WAN (**out**) and LAN (**in**) network interfaces to reflect your network topology. The following is an example:



2.4 Creating certificates

To create the required certificates, from the left menu, select **OBJECTS / CERTIFICATE AND PKI** and then **CONFIGURATION**.

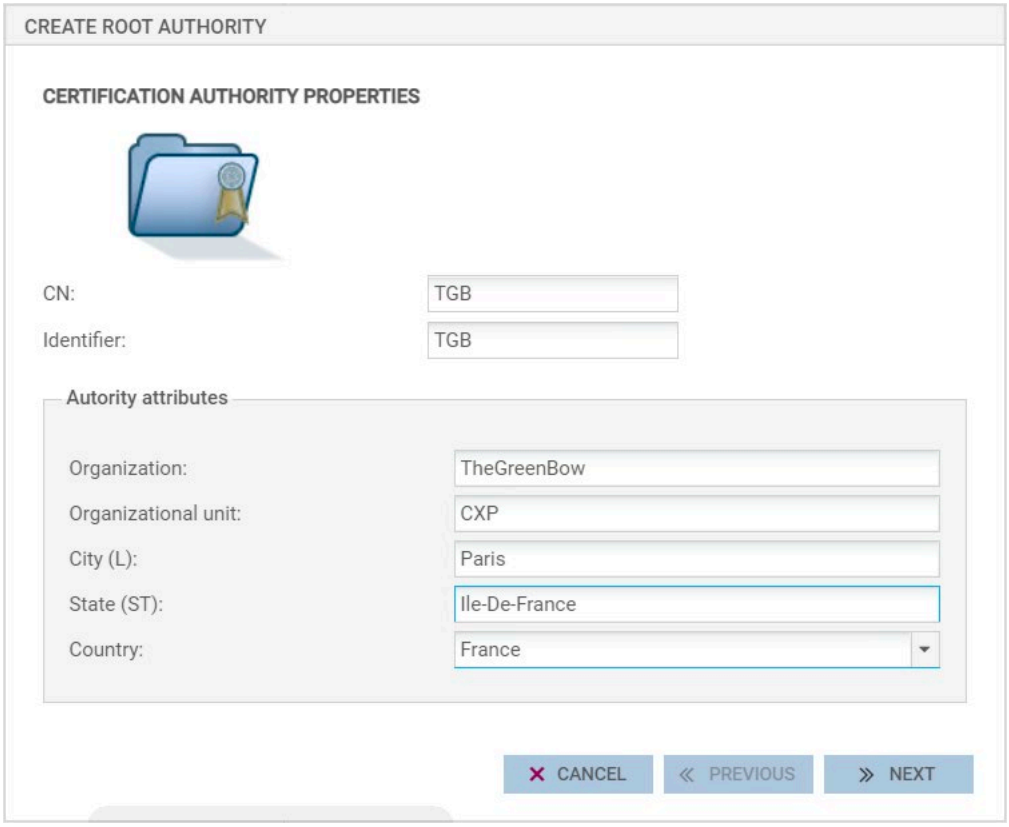
Follow the instructions below to create a set consisting of a Root Authority (CA), a User Identity, and a Server Identity.

2.4.1 Creating a Root Authority

To create a Root Authority, proceed as follows:

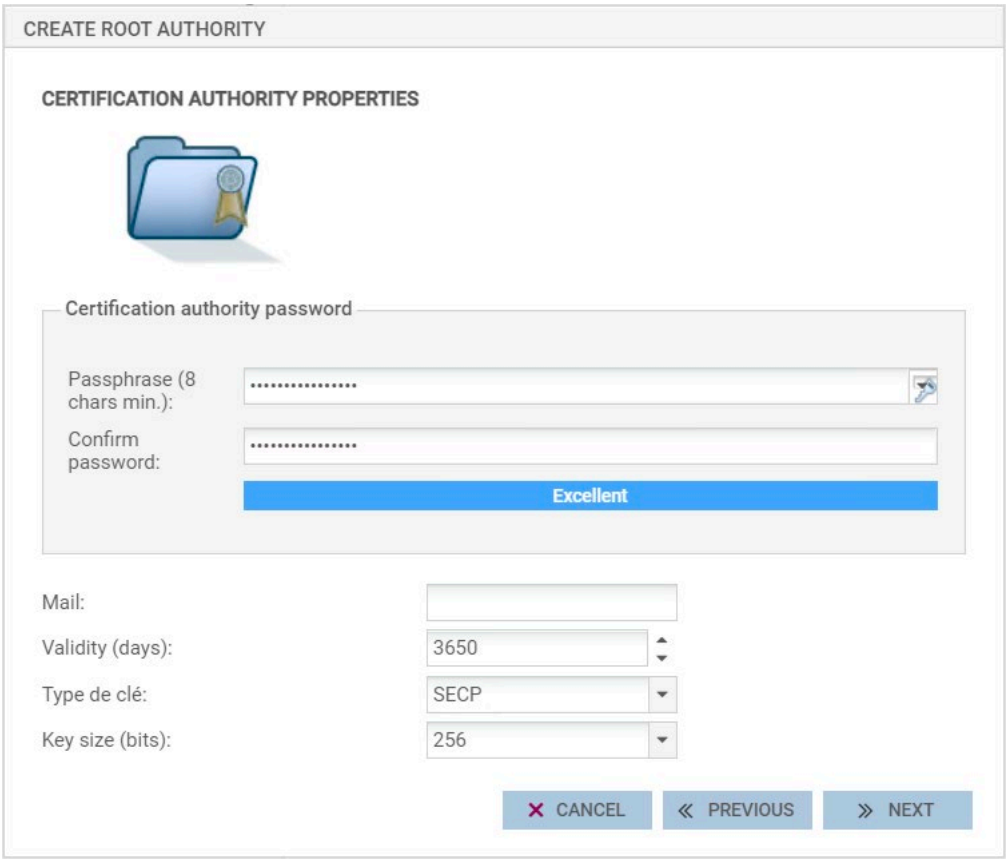
1. Click **+ Add Root Authority**.

2. Fill in the **Root Authority Certificate** with relevant values for the **Authority attributes**, i.e. Organization, Organizational unit, City, State, and Country, as shown in the following screenshot.



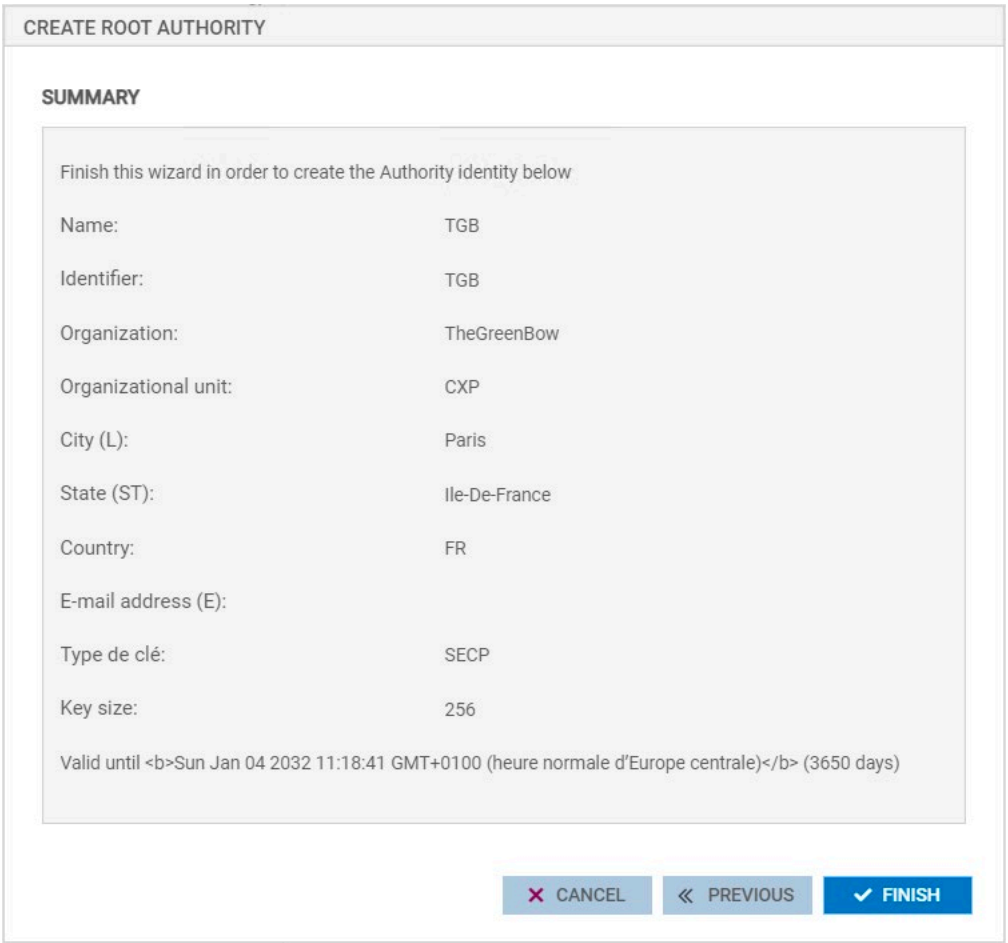
3. Click » **NEXT**.

4. Enter a passphrase to secure the certification authority, making sure to keep it for later use.
5. Choose the relevant **Validity** (days), and then select **SECP** with a key size of 256 bits.



6. Click » **NEXT**.

The summary should appear as follows:



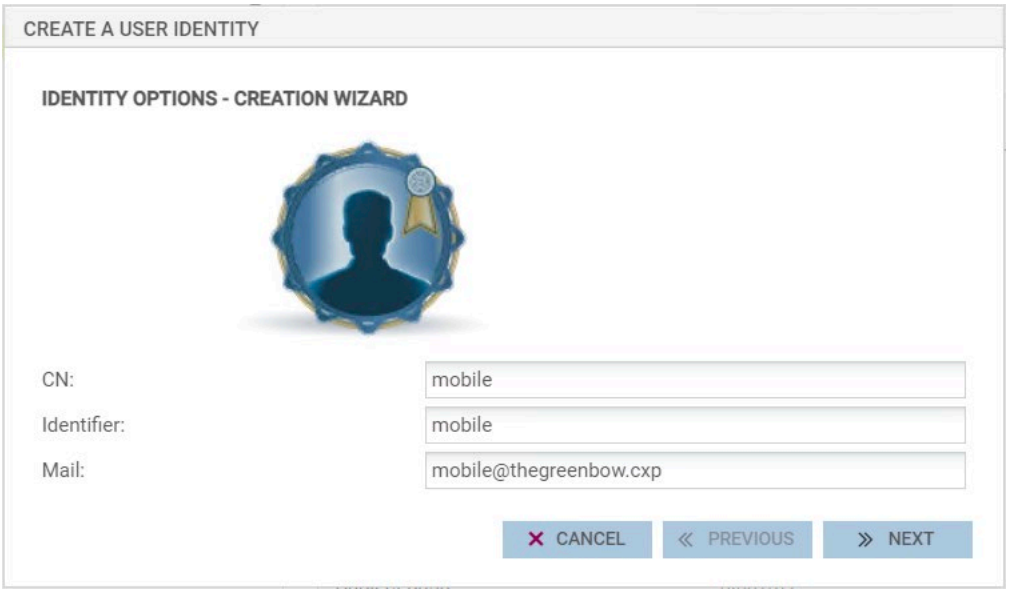
7. Click **FINISH**.

2.4.2 Creating a User Identity

To create a User Identity, proceed as follows:

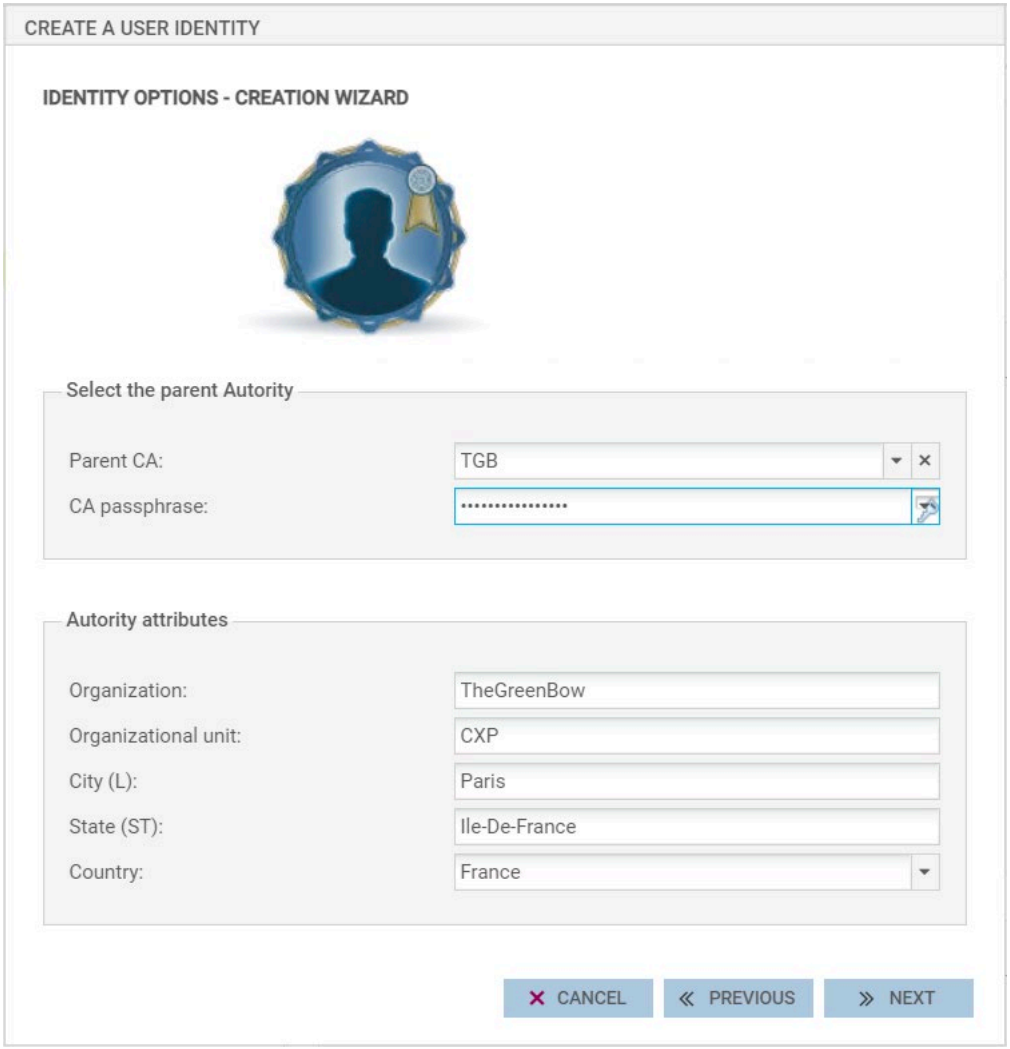
1. Click **+ Add User Identity**.

2. Fill in the **CN**, **Identifier**, and **Mail** fields.



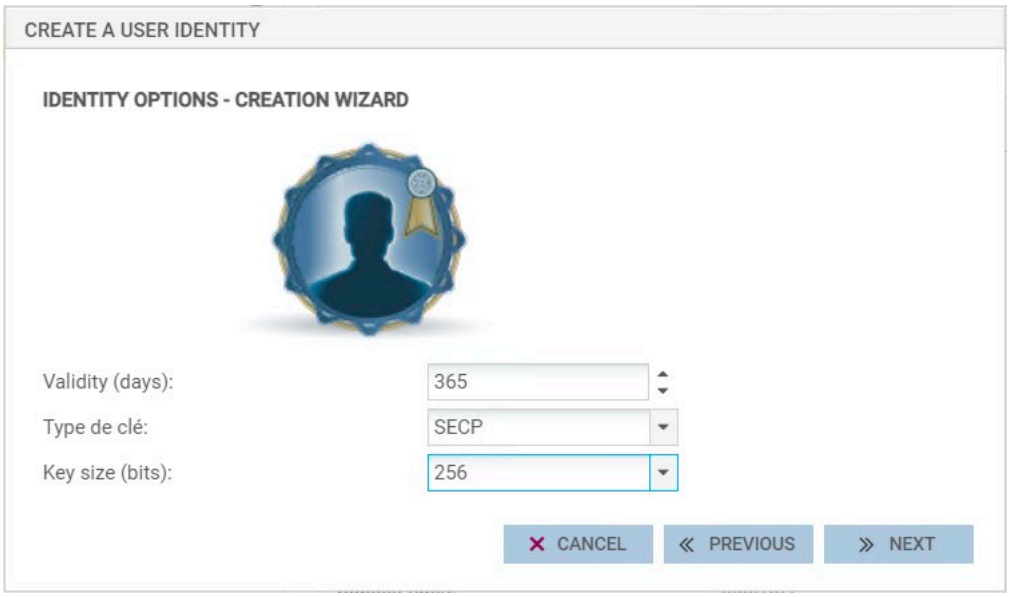
3. Click **» NEXT**.

4. In the **Parent CA** drop-down list, select the Root Authority that you created in the previous section.
5. Enter the **CA passphrase** that you have set for this Root Authority.
6. Fill in the **Authority attributes** fields.



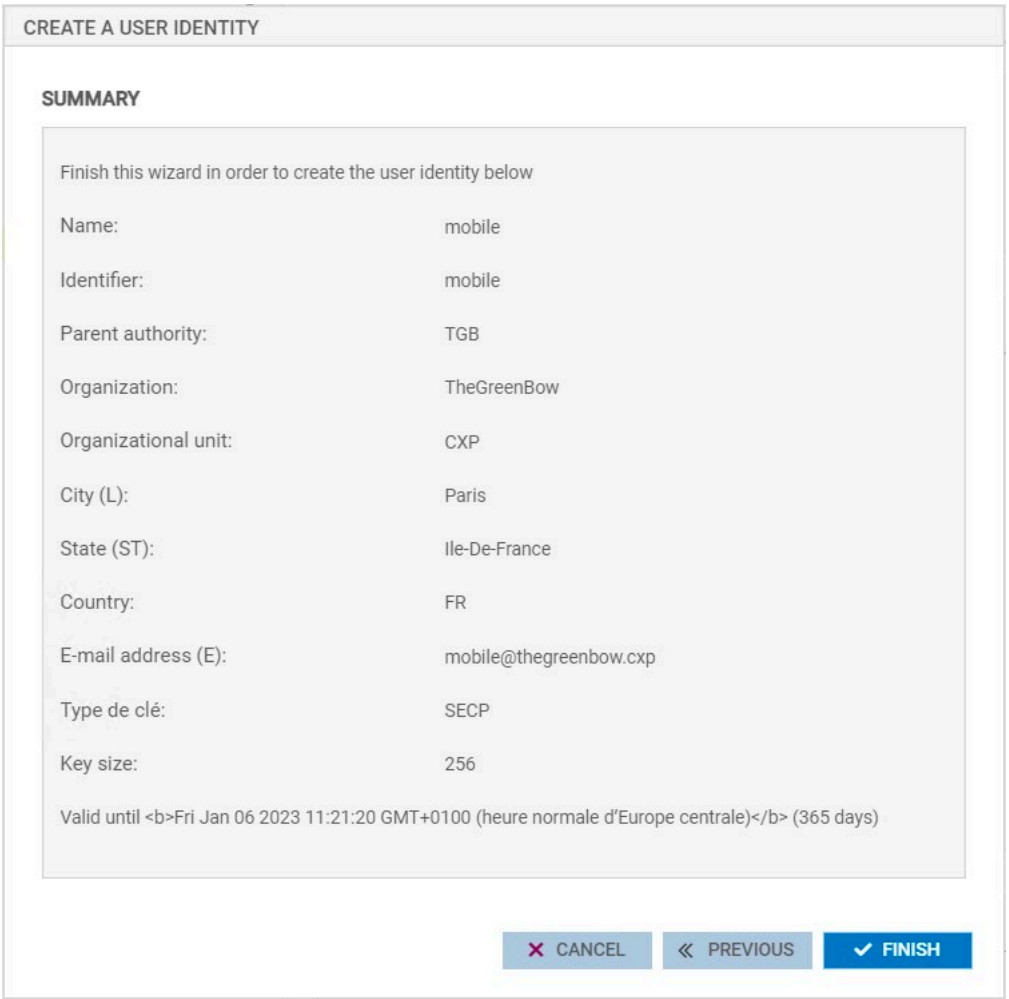
7. Click » **NEXT**.

8. Choose the relevant **Validity** (days), and then select **SECP** with a key size of 256 bits.



9. Click » **NEXT**.

The summary should appear as follows:



10. Click **FINISH**.

2.4.3 Creating a Server Identity

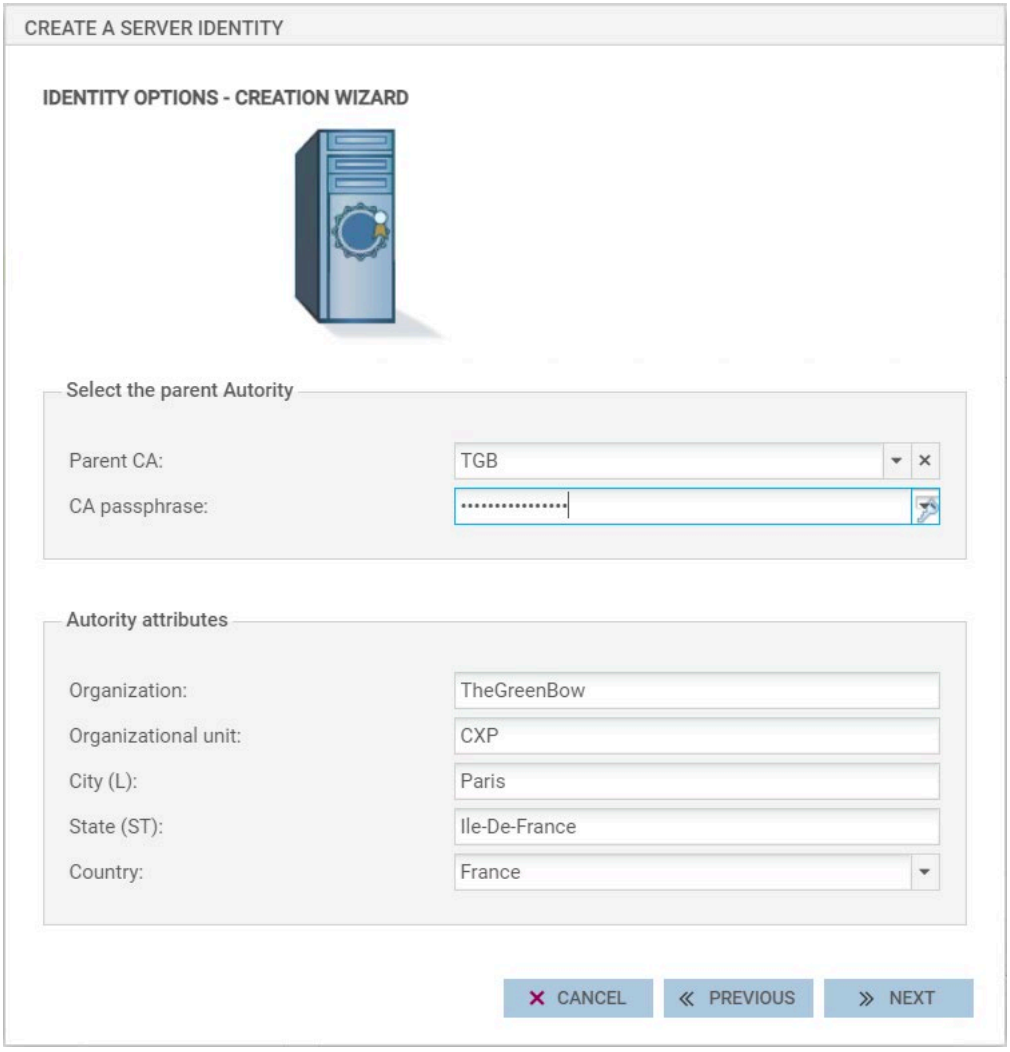
To create a Server Identity, proceed as follows:

1. Click **+ Add Server Identity**.

2. Fill in the **FQDN** and **ID** fields.

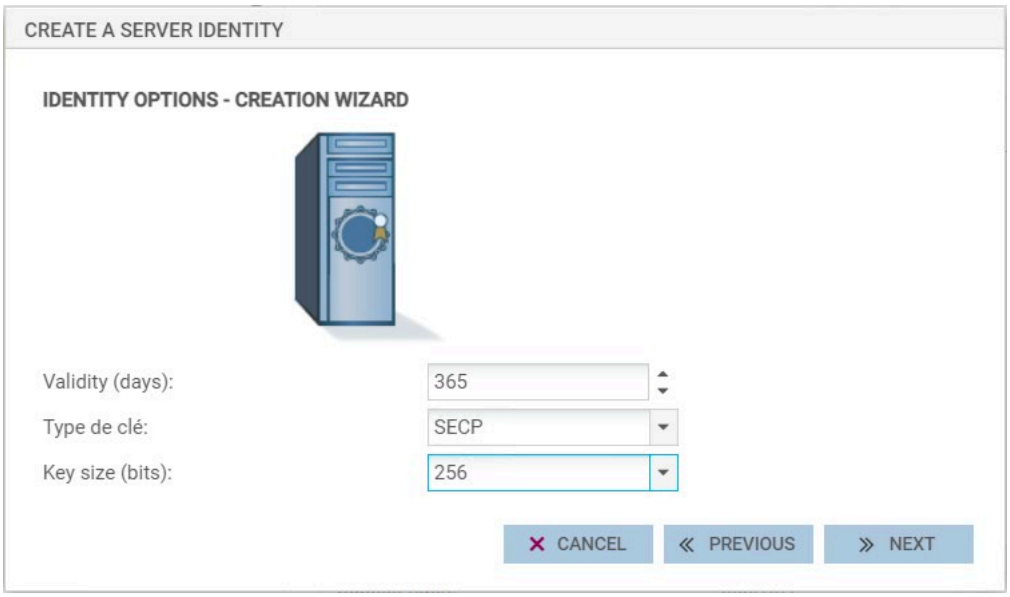
3. Click » **NEXT**.

4. In the **Parent CA** drop-down list, select the Root Authority that you created in the previous section
5. Enter the **CA passphrase** that you have set for this Root Authority.
6. Fill in the **Authority attributes** fields.



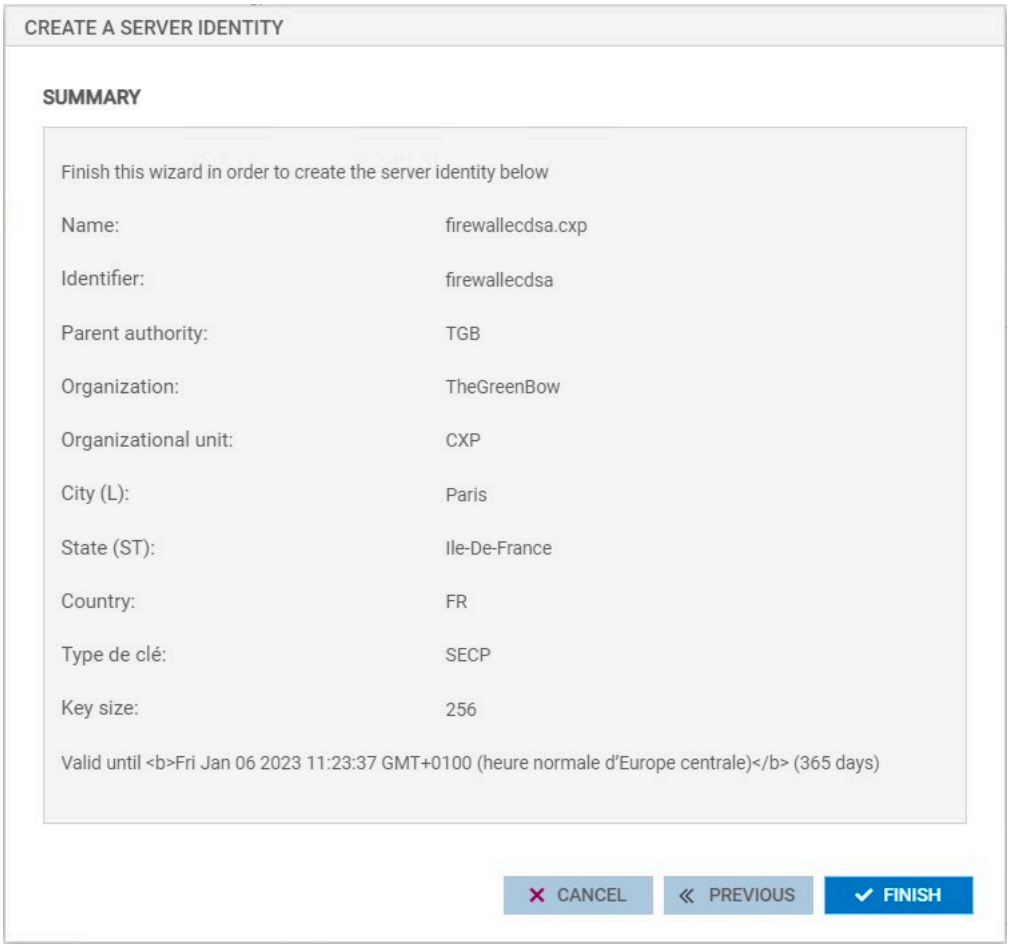
7. Click » **NEXT**.

8. Choose the relevant **Validity** (days), and then select **SECP** with a key size of 256 bits.



9. Click » **NEXT**.

   The summary should appear as follows:



10. Click **FINISH**.

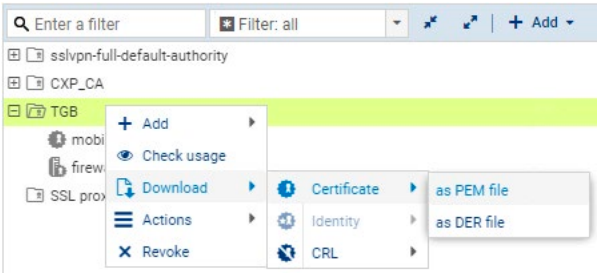
In the left-hand menu, you should now see the following:

- A Root Authority (e.g. **TGB**) that contains the following two items:
  - A User Identity (e.g. **mobile)**
  - A Server Identity (e.g. **firewallecdsa)**

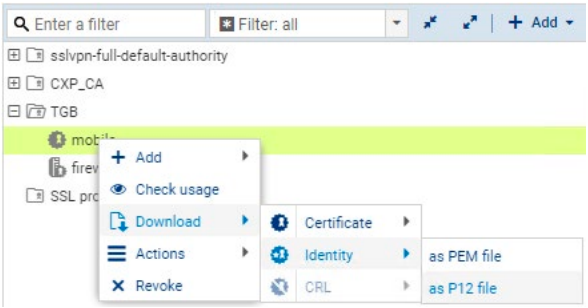
2.4.4 Exporting certificates

To export the certificates, proceed as follows:

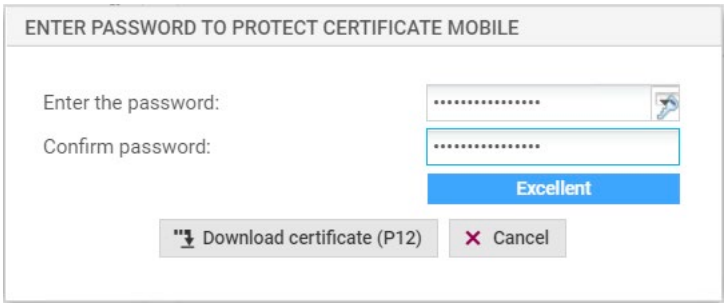
1. Start by downloading the Root Authority. To do so, right-click the Root Authority (e.g. TGB), and then select **Download** > **Certificate** > **as PEM file**.



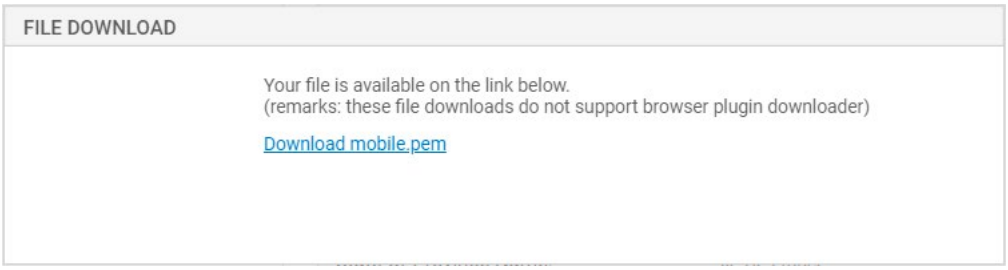
2. Download the User Identity. To do so, right-click the User Identity (e.g. mobile), and then select **Download** > **Identity** > **as P12 file**.



3. Enter a password to protect the P12 file.



4. Click **Download certificate (P12)**.



5. Click **Download User_Identity.pem** (in this case, mobile is the name of the user identity).

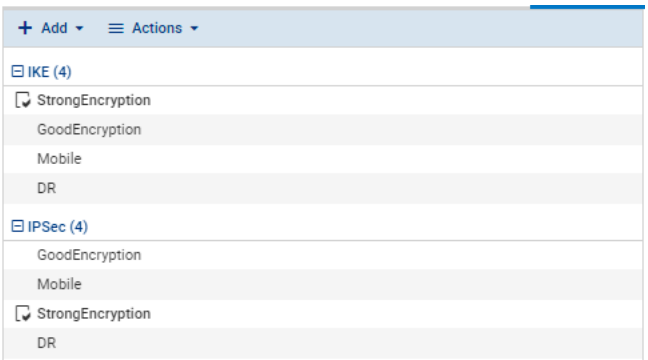
You will later need to import this P12 file into the VPN Client, using the password that you just set.

2.5 VPN encryption profiles

To generate the VPN encryption profiles, proceed as follows:

1. From the left menu, select **VPN** / **IPSEC VPN** and then **ENCRYPTION PROFILES**.

   You should see the following screen:

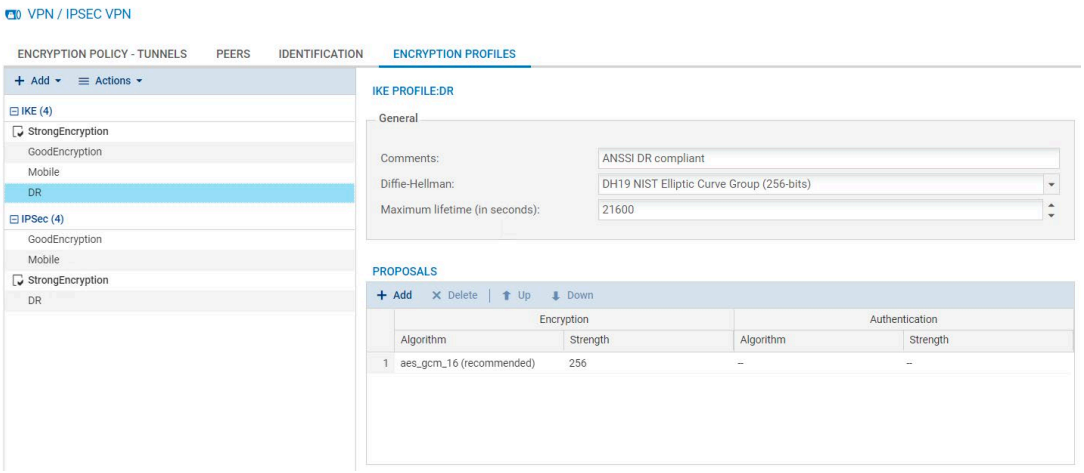


2. Proceed with generating the IKE and IPsec profiles as described below.

2.5.1 IKE profile

To generate the IKE profile, proceed as follows:

1. Under **IKE (4)**, select **DR**.
2. Configure the following parameters:
   - Diffie-Hellman: DH 19 NIST Elliptic Curve Group (256-bits)
   - Maximum lifetime (in seconds): 21600
   - Encryption proposal: aes_gcm_16 (Strength: 256)

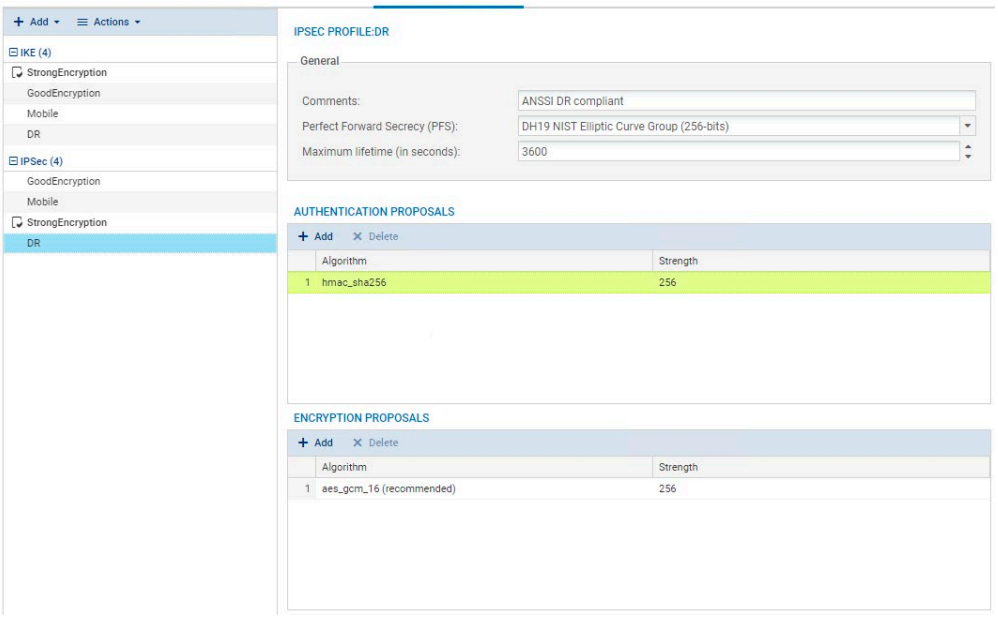


3. Click **APPLY**.
4. Click **SAVE**.
5. Click **YES, ACTIVATE NOW**.

2.5.2 IPsec profile

To generate the IPsec profile, proceed as follows:

1. Under **IPSec (4)** select **DR** and configure the following parameters:
   - Diffie-Hellman: DH 19 NIST Elliptic Curve Group (256-bits)
   - Maximum lifetime (in seconds): 3600
   - Authentication Proposals: Hmac_sha256 (256)
   - Encryption proposal: aes_gcm_16 (Strength: 256)

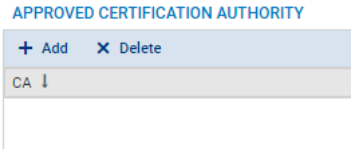


2. Click **APPLY**.
3. Click **SAVE**.
4. Click **YES, ACTIVATE NOW**.

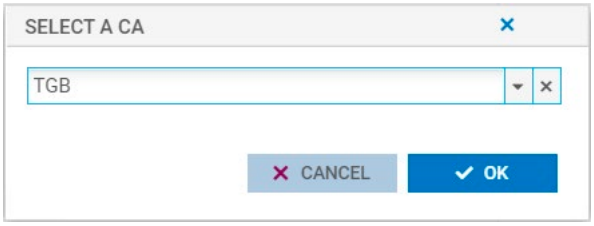
2.6 Identification

To add an identification, proceed as follows:

1. From the left menu, select **VPN** / **IPSEC VPN** and then **IDENTIFICATION**.
2. On the **APPROVED CERTIFICATION AUTHORITY** tab, click **+ Add**.

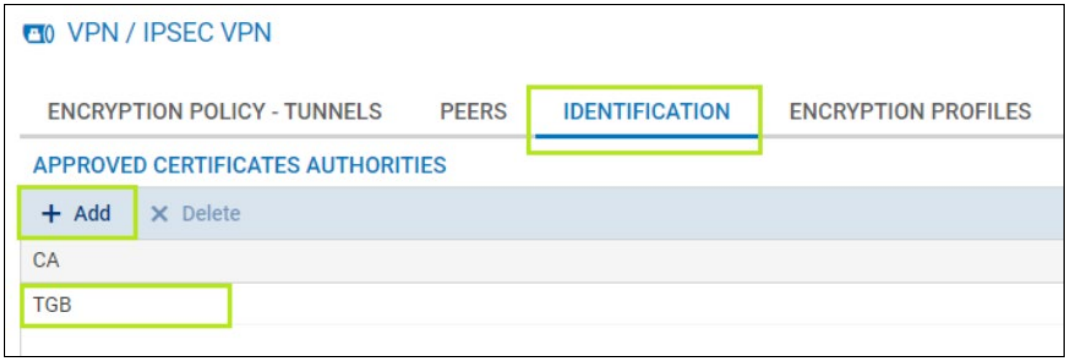


3. Select the CA that you created earlier (e.g. TGB) from the list.



4. Click **OK**.

You should now see the following screen:

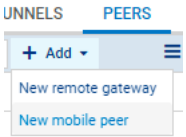


5. Click **APPLY**.

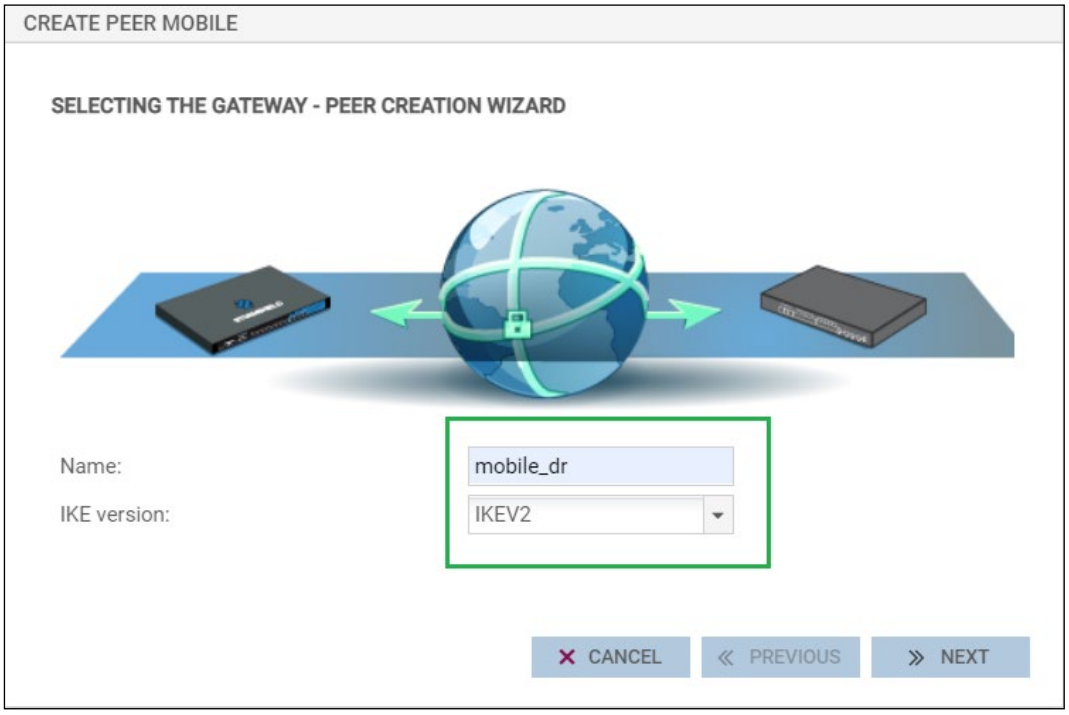
2.7 Peers

To create a peer, proceed as follows:

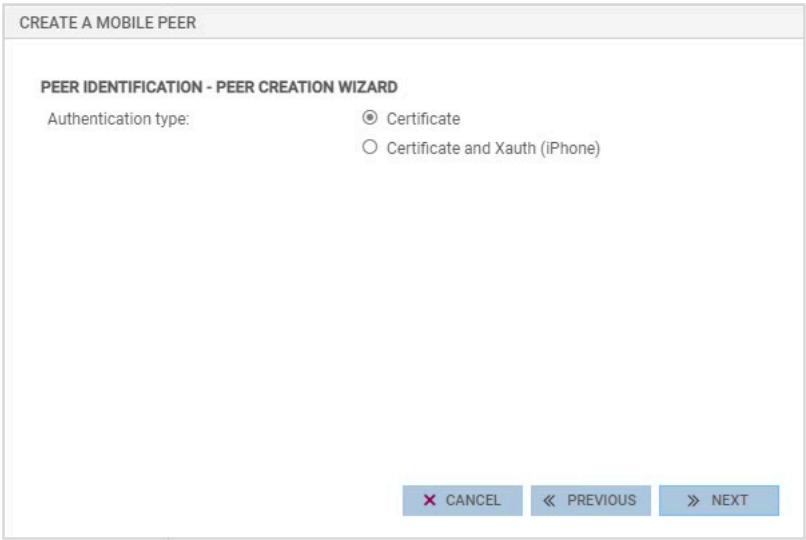
1. From the left menu, select **VPN** / **IPSEC VPN** and then **PEERS**.



2. Click **+ Add**.
3. Select **New mobile peer**.
4. In the **CREATE PEER MOBILE** window:
   - Enter a name (e.g. mobile_dr)
   - Select **IKE v2**.

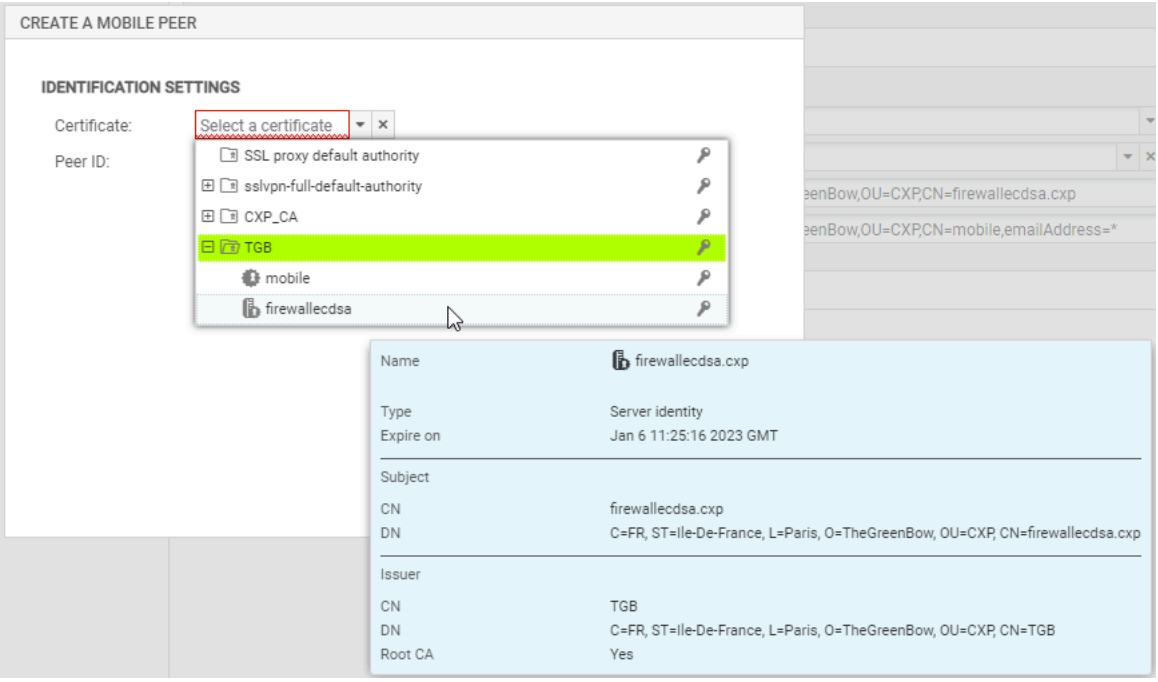


5. Click » **NEXT**.



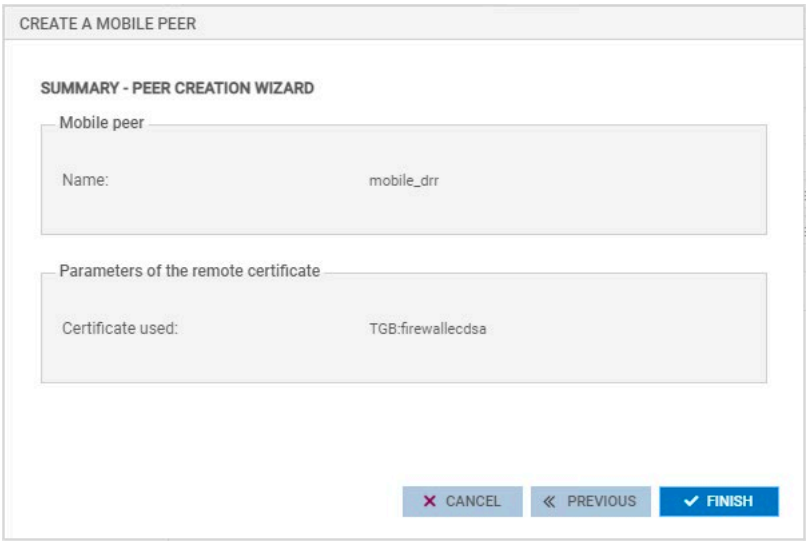
6. Click » **NEXT**.

7. In the next screen, select the Server Identity that you created earlier (e.g firewallecdsa).



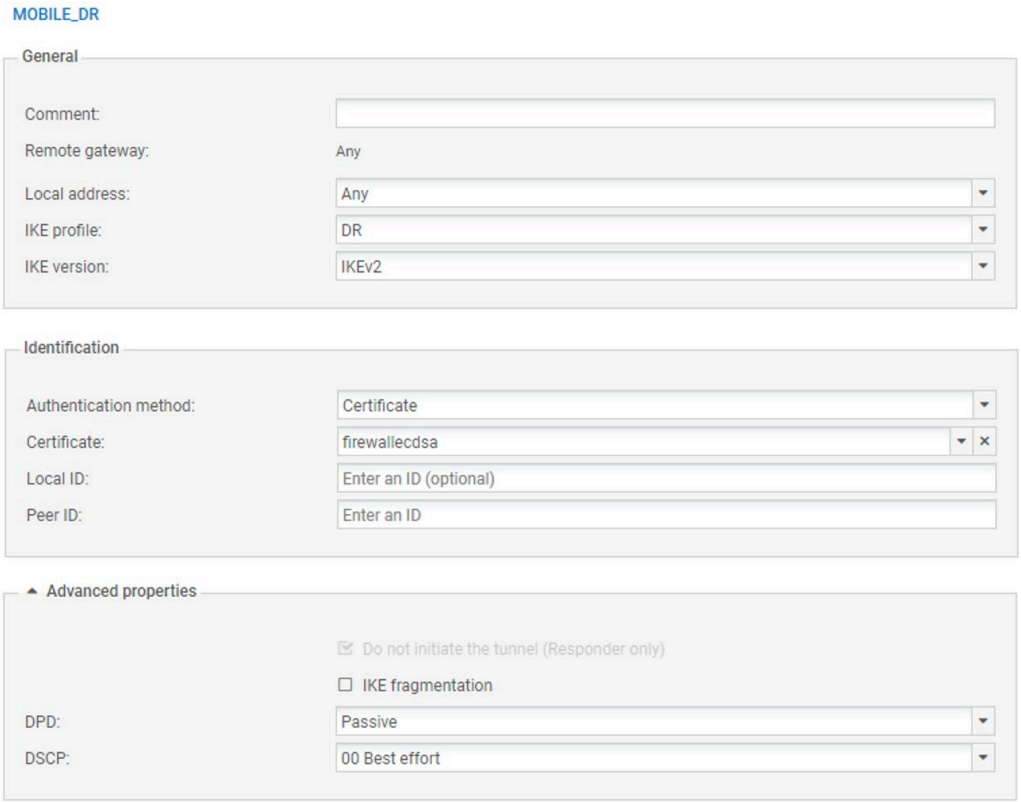
Ignore the **PEER ID** field at this stage.

8. Click » **NEXT**.



9. Click **FINISH**.

You should see the following screen:



10. Copy the **Issued** field from the Server Identity that you created under **CERTIFICATES AND PKI / CONFIGURATION** (see section 2.4.3 Creating a Server Identity) and paste it into the **Local ID** field.

    For example:

```
C=FR,ST=Ile-De-
France,L=Paris,O=TheGreenBow,OU=CXP,CN=firewallecdsa.cxp
```

11. Copy the **Issued** field from the User Identity that you created under **CERTIFICATES AND PKI / CONFIGURATION** (see section 2.4.2 Creating a User Identity) and paste it into the **Peer ID** field, making sure to replace the `CN` and `emailAddress` values with a wildcard ("*").

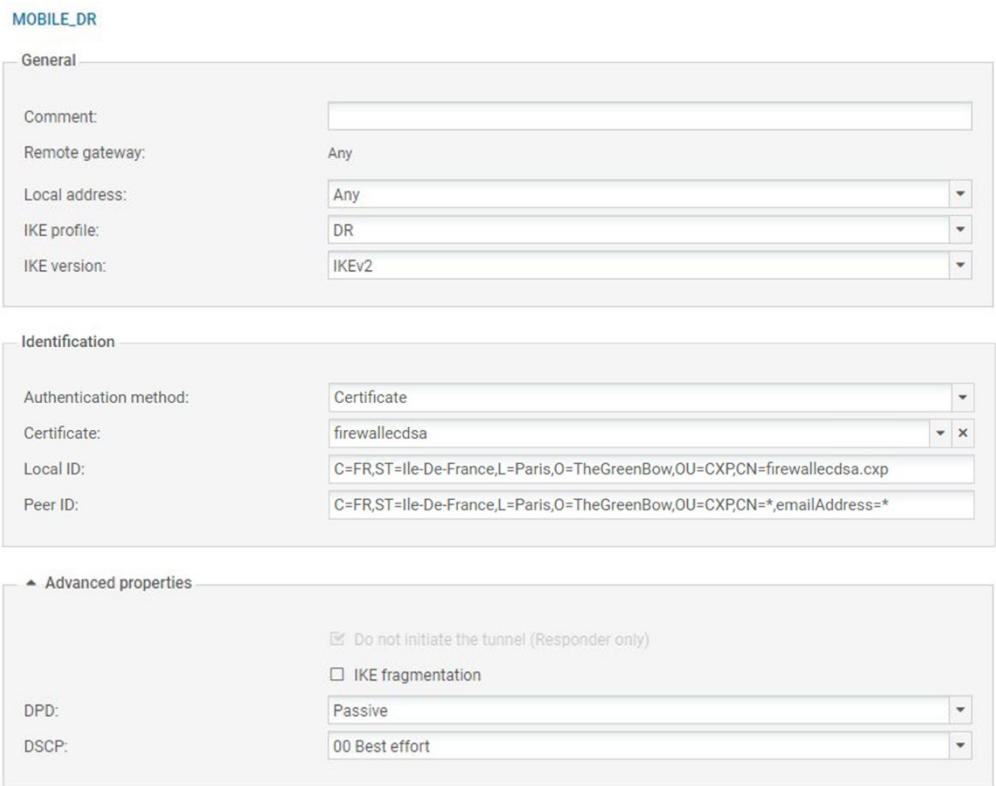
Using wildcards will allow you to use the same configuration for all mobile users, each having a different Peer ID.

For instance, if the **Issued for** screen shows the following information:

Then the **Peer ID** field should contain the following value:

```
C=FR,ST=Ile-De-
France,L=Paris,O=TheGreenBow,OU=CXP,CN=*,emailAddress=*
```

The screen should now appear as follows:

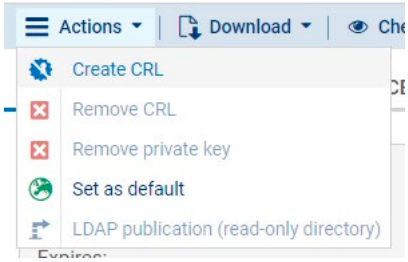


12. Click **APPLY**.
13. Click **SAVE**.
14. Click **YES, ACTIVATE NOW**.

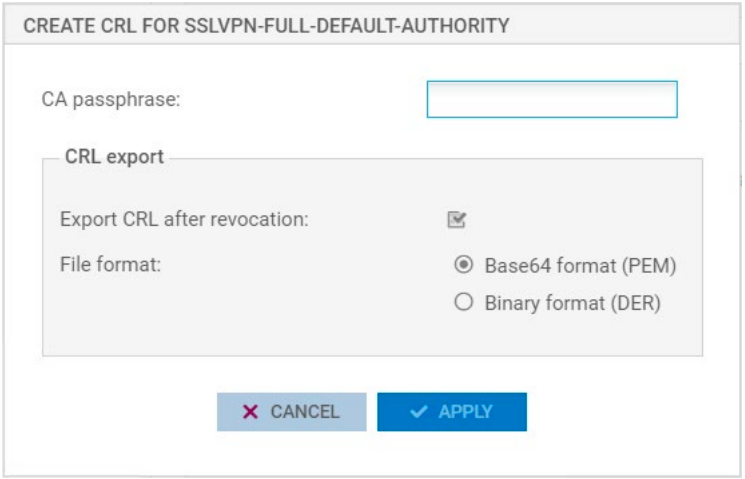
2.8 Creating a CRL

To create a CRL, proceed as follows:

1. From the left menu, select **OBJECTS / CERTIFICATES AND PKI**, click **Actions** and then select **Create CRL**.



2. Enter the **CA passphrase**.
3. Check **Export CRL after revocation** and select **Base64 format (PEM)**.

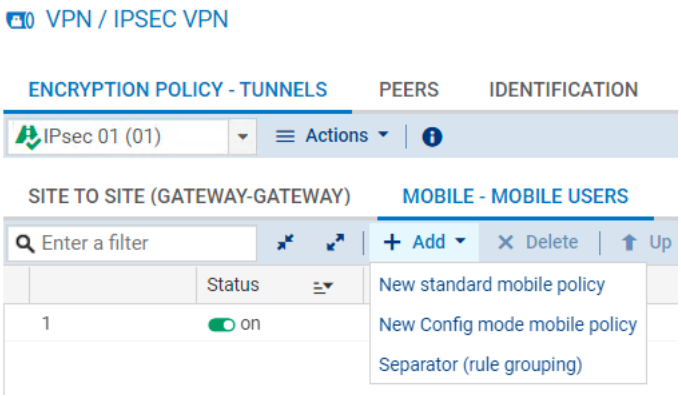


4. Click **APPLY**.
5. Download the generated CRL file (we will not use it in this document).

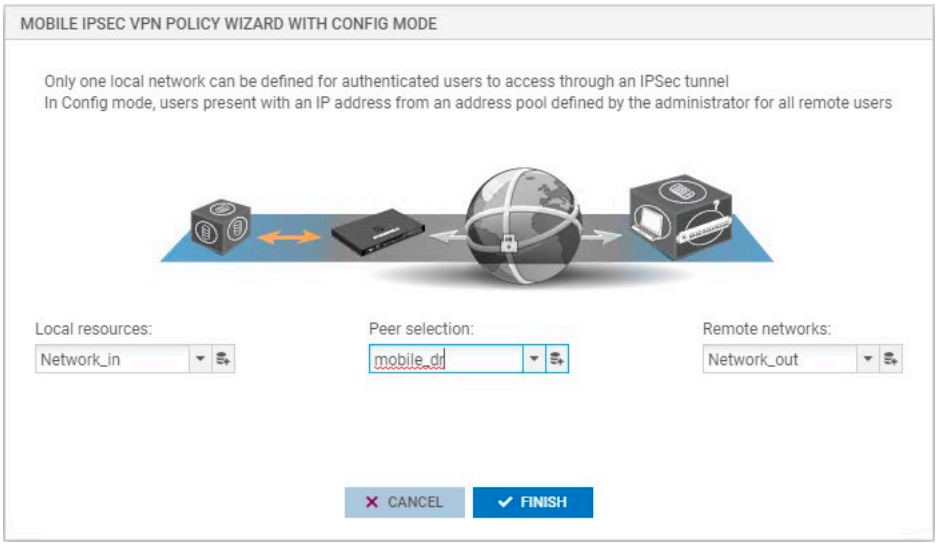
2.9 Configuring a mobile policy

To configure a mobile policy, proceed as follows:

1. From the **VPN / IPSEC VPN** menu, select the **Encryption Policy – Tunnels** tab.
2. Select **Mobile – Mobile Users** and then click **+ Add**.
3. Choose **New Config mode mobile policy**.

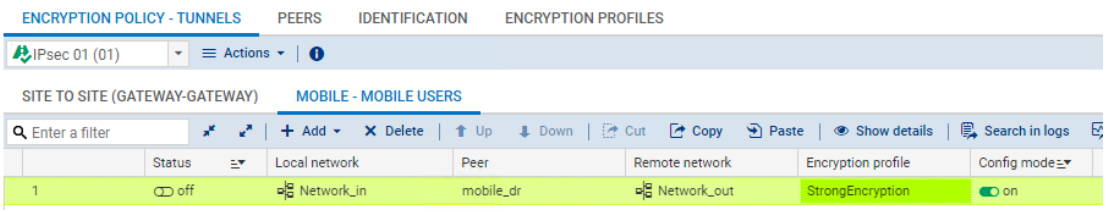


4. On the following screen fill in the fields as follows:
   - Local resources: Network_in
   - Peer selection: mobile_dr
   - Remote networks: Network_out



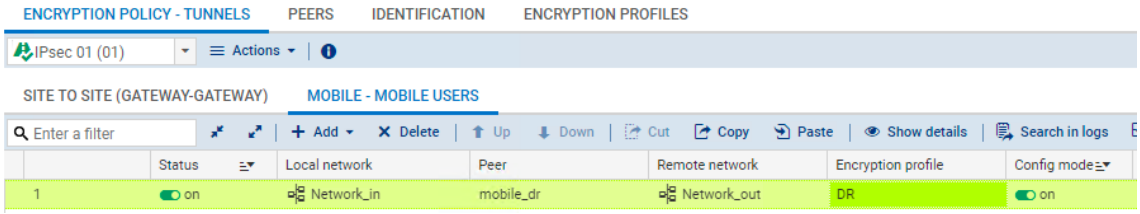
5. Click **FINISH**.

   You should now see the following screen:

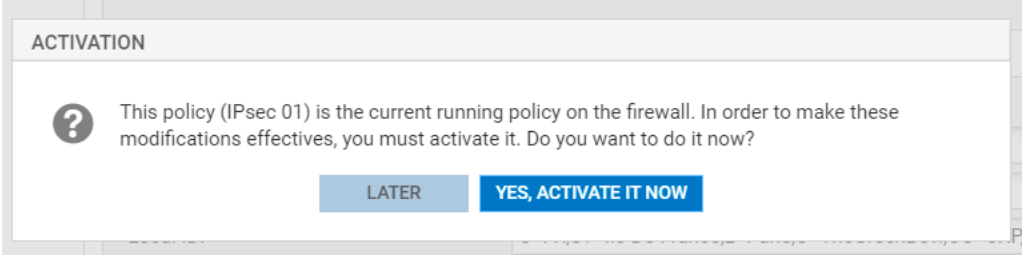


6. Switch the **Status** to **ON**.
7. Change **Encryption profile** to **DR**.

You should now see the following screen:



8. Click **APPLY**.
9. Click **FINISH**.
10. Click **SAVE**.



11. Click **YES, ACTIVATE IT NOW**.

2.10 Filtering rules

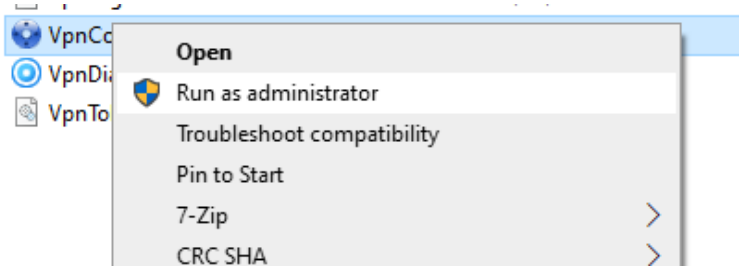
Where appropriate, integrate the filtering rules to allow IPsec traffic through the configured SNS network interfaces (refer to SNS documentation).

3 Configuring TheGreenBow VPN Client

This section describes the required configuration for TheGreenBow's Windows Enterprise VPN Client to connect to the SNS firewall configured according to the instructions set forth in the previous section.

3.1 Launching the VPN Client

By default, only administrators can access the Windows Enterprise VPN Client Configuration Panel. Therefore, right-click **vpnconf.exe** in the **File Explorer** and select **Run as administrator**.



3.2 Creating a new IKE Auth

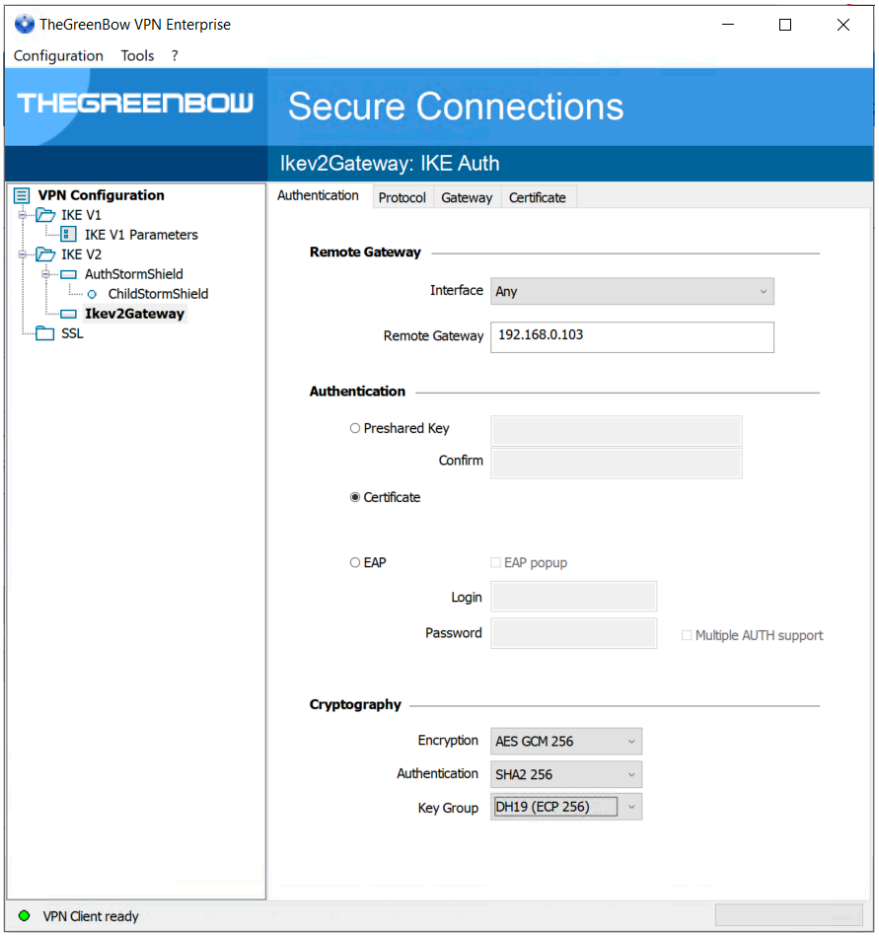
Configure TheGreenBow Windows Enterprise VPN Client as described below.

Start by creating a new IKEv2 IKE Auth. To do so, right-click the IKE v2 branch of the VPN configuration tree and select **New IKE Auth**.

3.2.1 Authentication tab

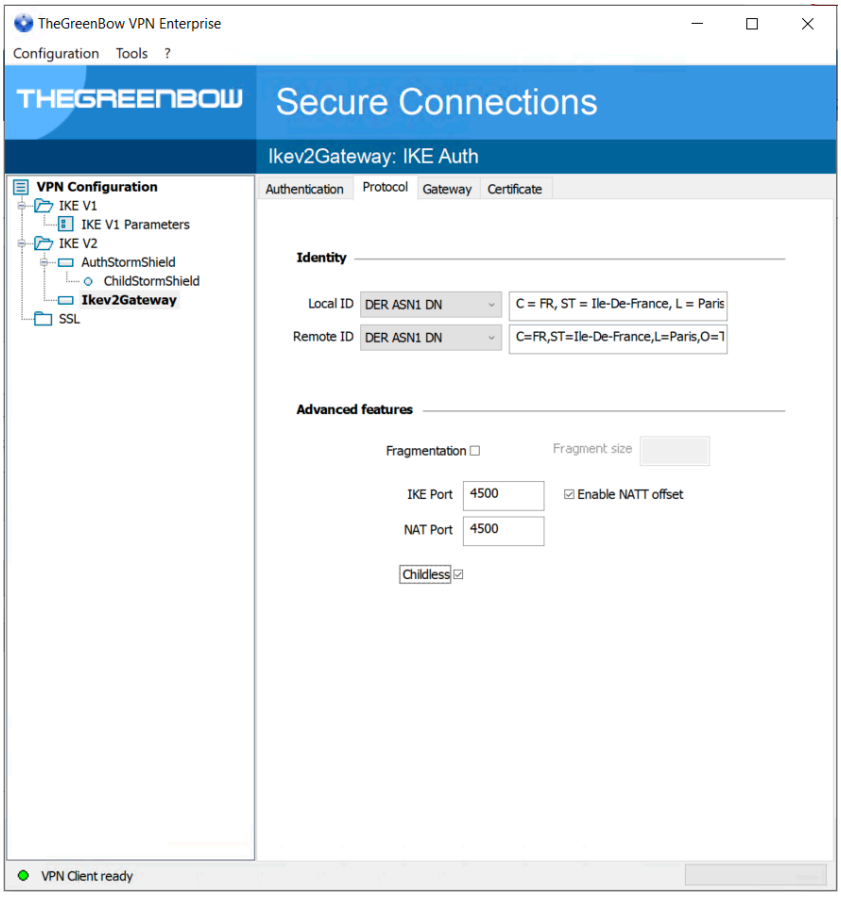
Select the **Authentication** tab and enter the following parameters:

- Interface: Any
- Remote Gateway: the IP address of the SNS gateway in your network.
- Authentication: certificate
- Cryptography:
  - Encryption: AES GCM 256
  - Authentication: SHA2 256
  - Key Group: DH19 (ECP 256)


TheGreenBow VPN Enterprise
Configuration Tools ?
THEGREENBOW
Secure Connections
Ikev2Gateway: IKE Auth
VPN Configuration
IKE V1
IKE V1 Parameters
IKE V2
AuthStormShield
ChildStormShield
Ikev2Gateway
SSL
Authentication Protocol Gateway Certificate
Remote Gateway
Interface Any
Remote Gateway 192.168.0.103
Authentication
Preshared Key
Confirm
Certificate
EAP
EAP popup
Login
Password
Multiple AUTH support
Cryptography
Encryption AES GCM 256
Authentication SHA2 256
Key Group DH19 (ECP 256)
VPN Client ready

3.2.2 Protocol tab

Set the following additional parameters in the **Protocol** tab:



The **Local ID** `DER ASN1 DN` will be automatically updated with the subject from the imported certificate (see below).

The **Remote ID** must be of type `DER ASN1 DN` and contain the same value as the **Local ID** field of the SNS (see step 10 in section 2.7 Peers), for example:

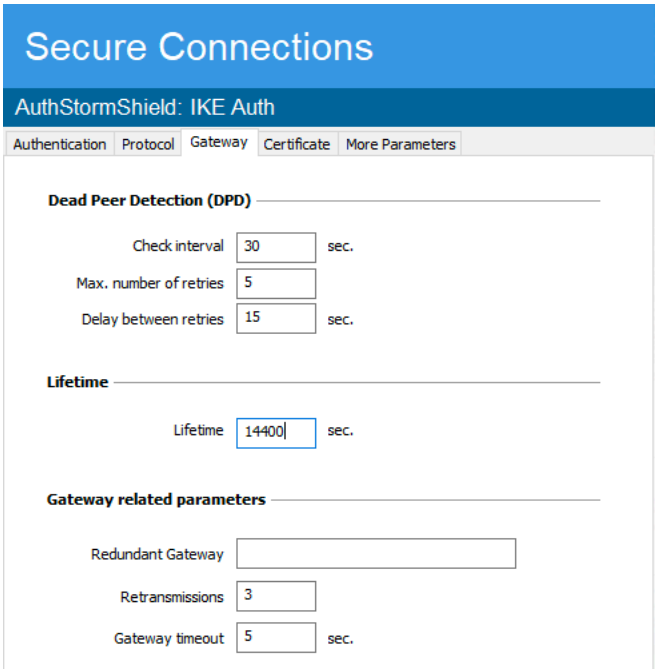
```
C=FR,ST=Ile-De-
France,L=Paris,O=TheGreenBow,OU=CXP,CN=firewallecdsa.cxp
```

Under Advanced features, set the following parameters:

- IKE port: 4500
- Nat Port 4500
- Childless: selected

3.2.3 Gateway tab

You can keep the default parameters on the **Gateway** tab or change them according to your requirements.

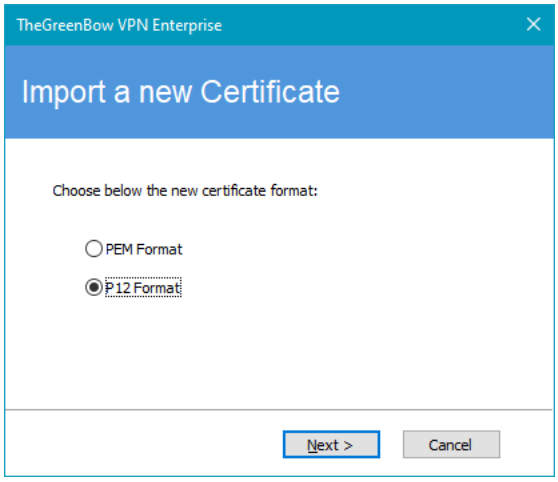


We recommend that you configure a lower lifetime value in the VPN Client than in the firewall, so that renegotiations are initiated by the VPN Client (in this case, we use 14400 for the VPN Client and 28800 for the firewall).

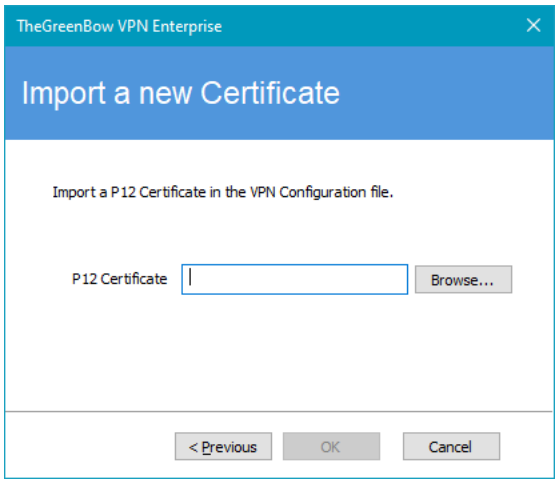
3.2.4 Certificate tab

To import the user certificate, proceed as follows:

1. Select the **Certificate** tab.
2. Click **Import Certificate...**

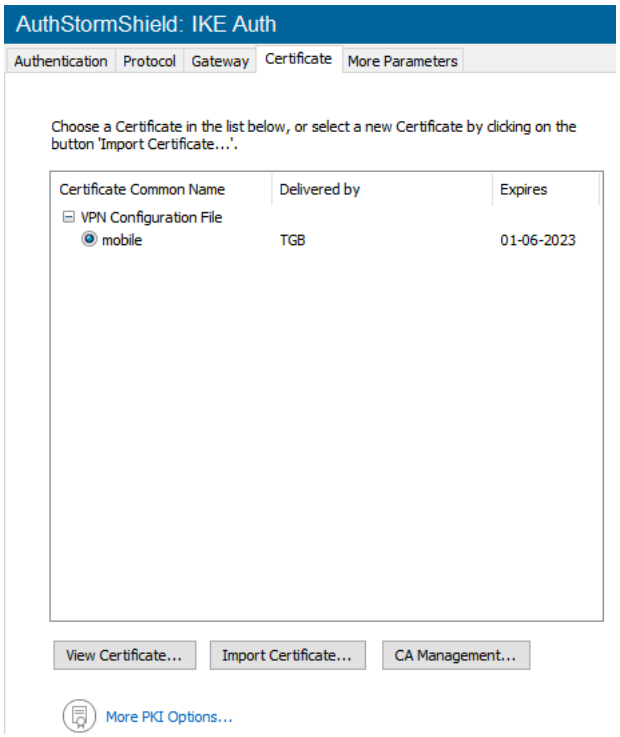


3. Select **P12 Format**.
4. Click **Next >**.



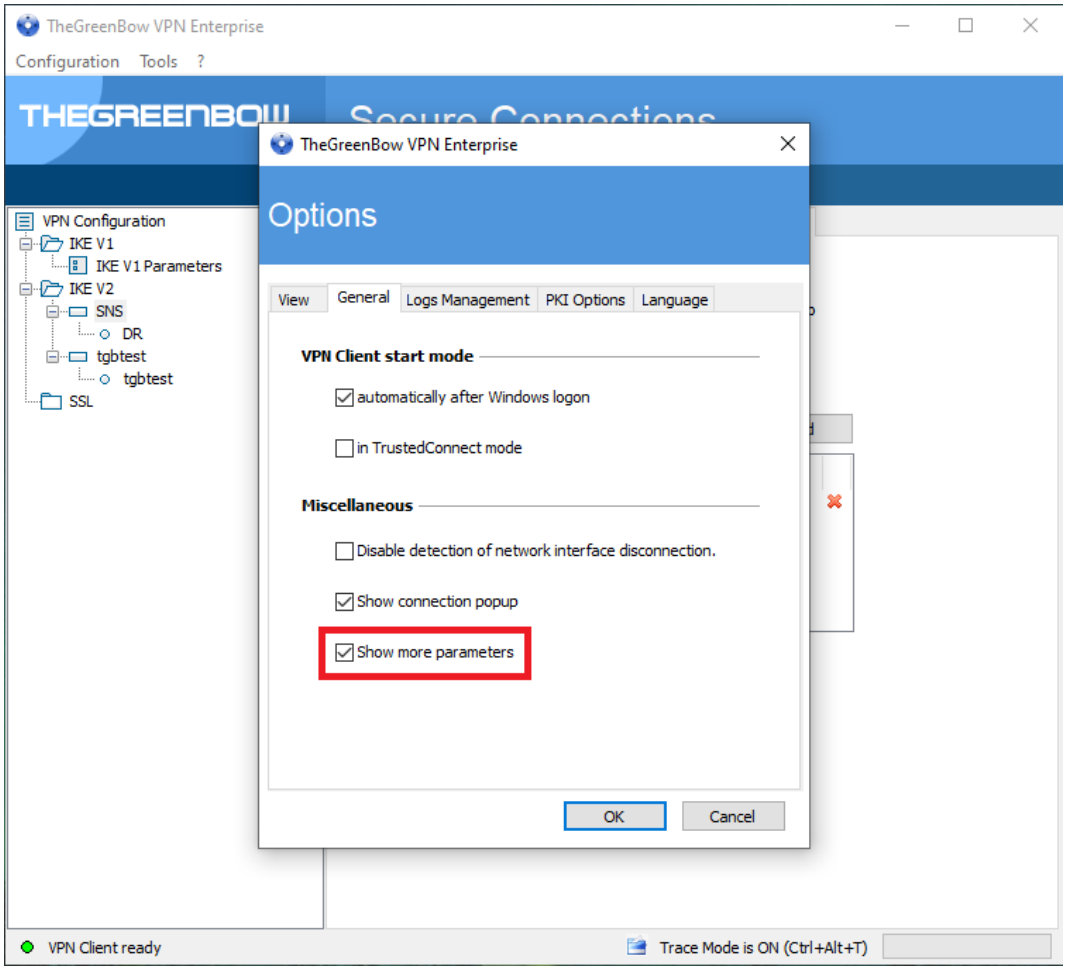
5. Click **Browse...**
6. Select the User Identity that you have previously downloaded from the SNS firewall (e.g. Mobilep12.pem).
7. Enter the password when prompted.
8. Click **OK**.

You should now see the following screen:

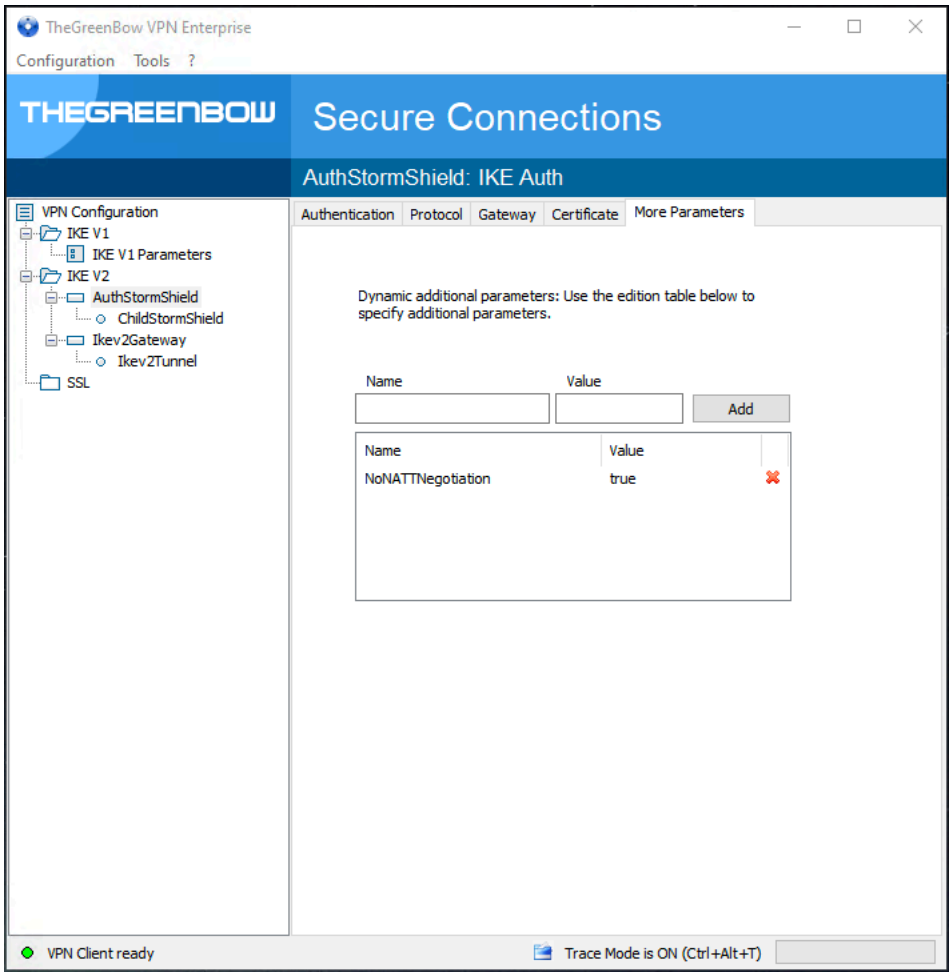


3.2.5 More Parameters tab

To show the **More Parameters** tab, from the **Tools** menu, choose **Options**, and then select the **General** tab and then check the **Show more parameters** box.



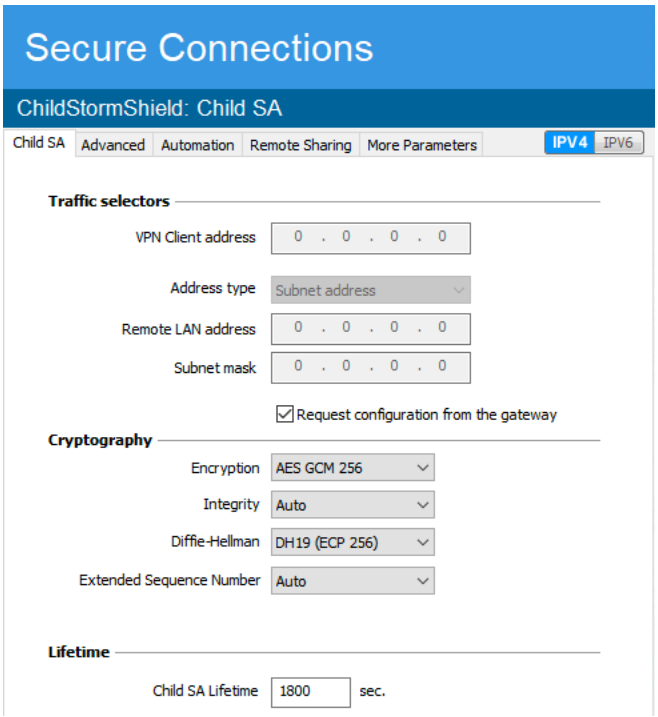
On the **More Parameters** tab, add a dynamic parameter named **NoNATTNegotiation** with its value set to `true`.



This parameter prevents the VPN client from negotiating NAT-T with the firewall, which is prohibited in DR mode.

3.3 Creating a new Child SA

To configure TheGreenBow Windows Enterprise VPN Client for a Child SA, proceed as shown in the following screenshot:



1. Check **Request configuration from the gateway**.
2. Under **Cryptography**, select the following values:
   - Encryption: AES GCM 256
   - Integrity: Auto
   - Diffie-Hellmann: DH19 (ECP 256)
   - Extended Sequence Number: Auto
3. Under Lifetime, enter `1800` in the **Child SA Lifetime** field.

We recommend that you configure a lower lifetime value in the VPN Client than in the firewall, so that renegotiations are initiated by the VPN Client.

3.4 Saving the configuration

In TheGreenBow Windows Enterprise VPN Client, from the **Configuration** menu, select **Save** to account for all the changes you have made to your VPN configuration.

3.5 Opening the VPN connection

Once both the Stormshield firewall and TheGreenBow Windows Enterprise VPN Client have been configured as described above, you are ready to open VPN connections.

Double-click your Child SA tunnel name or click **Open** in the **Connection Panel** to open a tunnel.

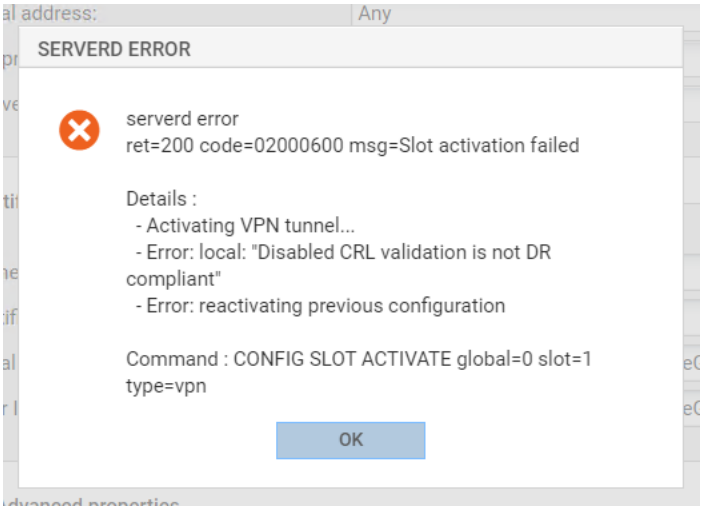
A green icon appears next to the Child SA when the connection is established successfully.

4 Troubleshooting

4.1 SNS firewall

4.1.1 Disabled CRL validation is not DR compliant

If you encounter the “Disabled CRL validation is not DR compliant” error on the SNS firewall, you must first determine the active VPN slot and then enable CRL validation.



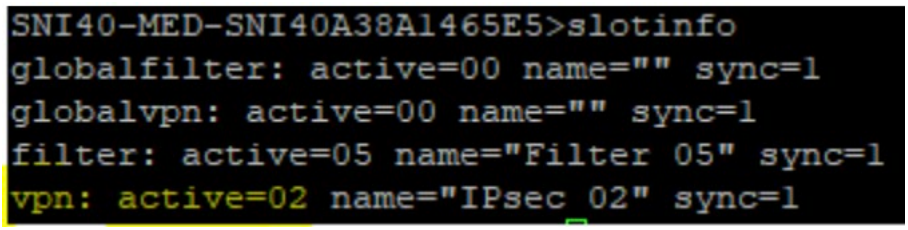
4.1.1.1 Determining the active VPN slot

To determine the active VPN slot, proceed as follows:

1. Connect to the firewall via SSH.
2. Run the following command:

```
slotinfo
```

The command returns the active VPN slot. In this case, `02`:



4.1.1.2 Enabling CRL validation

There are two ways to enable CRL validation:

- Method 1: using the `CONFIG IPSEC UPDATE` command
- Method 2: editing the firewall configuration file in a text editor

4.1.1.2.1 Method 1

To enable CRL validation using the `CONFIG IPSEC UPDATE` command, proceed as follows:

1. If you are no longer connected to the firewall, connect to the firewall via SSH.
2. Run the following commands successively:

```
CONFIG IPSEC UPDATE slot=02 CRLRequired=1
CONFIG IPSEC ACTIVATE
```

Make sure to replace `02` with the result from the `slotinfo` command.

4.1.1.2.2 Method 2

To enable CRL validation by editing the firewall configuration file in a text editor, proceed as follows:

1. Use your favorite text editor (e.g. vi or Joe) to edit the firewall configuration file by running the following command:

```
Joe /Firewall/ConfigFiles/VPN/02
```

Make sure to replace `02` with the result from the `slotinfo` command.

2. In the text editor, set `CRLRequired` to `1`.
3. Save the file (e.g. Ctrl+Alt+K in Joe).
4. Run the following command to disable and then re-enable the VPN configuration:

```
envpn 00 && envpn 02
```

Make sure to replace `02` with the result from the `slotinfo` command.

CRL validation is now enabled. You should no longer get the “Disabled CRL validation is not DR compliant” error.

4.1.1.3 Checking whether CRL validation is enabled

If you simply want to check whether CRL validation is enabled, once you have determined the active VPN slot as described in section 4.1.1.1 Determining the active VPN slot above, proceed as follows:

1. If you are no longer connected to the firewall, connect to the firewall via SSH.
2. Run the following command :

```
cat /Firewall/ConfigFiles/VPN/02 | grep CRL
```

Make sure to replace `02` with the result from the `slotinfo` command.

```
SNI40-MED-SNI40A38A1465E5>cat /Firewall/ConfigFiles/VPN/02 | grep CRL
CRLRequired=0   # Set to 1 to block the tunnel negotiation when the CRL is missi
ng.
```

If `CRLRequired` is equal to `0`, CRL validation is disabled. You must enable CRL validation to use the firewall in DR mode. To do so, refer to section 4.1.1.2 Enabling CRL validation above.

4.2 VPN Client

If the VPN connection cannot be established, check the Console log in TheGreenBow VPN Client to see whether some of the messages displayed match one of the messages described in the following sections.

4.2.1 NO_PROPOSAL_CHOSEN

If you encounter a `NO_PROPOSAL_CHOSEN` error, you might have wrongly configured the Phase 1 [IKE Auth]. Make sure the encryption algorithms are the same at both ends of the VPN connection.

```
20XX0913 16:08:53:387 TIKEV2_Tunnel SEND IKE_SA_INIT
[HDR][SA][NONCE][N(NAT_DETECTION_SOURCE_IP)][N(NAT_DETECTION_DESTINATION_IP)]
[KE][VID][N(FRAGMENTATION_SUPPORTED)]
20XX0913 16:08:53:419 TIKEV2_Tunnel RECV IKE_SA_INIT
[HDR][N(NO_PROPOSAL_CHOSEN)]
```

4.2.2 AUTHENTICATION_FAILED

If you encounter an `AUTHENTICATION_FAILED` error, this means that the certificate sent by the VPN Client does not match what the firewall is

expecting. Make sure the VPN Client's user certificate is correctly configured on the firewall.

```
20XX0913 16:15:22:032 TIKEV2_Tunnel RECV IKE_AUTH
[HDR][N(AUTHENTICATION_FAILED)]
20XX0913 16:15:22:032 TIKEV2_Tunnel Remote endpoint sends error
AUTHENTICATION_FAILED
```

4.2.3 No user certificate available for the connection

Make sure the user certificate has been correctly imported to the VPN Client.

```
20XX0913 16:18:07:491 TIKEV2_Tunnel RECV IKE_SA_INIT
[HDR][SA][KE][NONCE][N(NAT_DETECTION_SOURCE_IP)][N(NAT_DETECTION_DESTINATION_
IP)][CERTREQ][N(FRAGMENTATION_SUPPORTED)][N(MULTIPLE_AUTH_SUPPORTED)]
20XX0913 16:18:07:491 TIKEV2_Tunnel IKE SA I-SPI 8D4467C52C91C316 R-SPI
9DF0F0E4A91F8867
20XX0913 16:18:07:491 TIKEV2_Tunnel No user certificate available for the
connexion
20XX0913 16:18:07:491 TIKEV2_Tunnel Connection aborted.
```

4.2.4 Remote IDr rejected

The `Remote ID` type or value sent by the firewall does not match what the VPN Client is expecting (see **Protocol** tab). Configure the Remote ID type and value in the VPN Client according to the firewall's Local ID.

```
20180913 16:24:32:087 TIKEV2_Tunnel ID types do not match. Expecting
ID_RFC822_ADDR. Receiving ID_DER_ASN1_DN
20180913 16:24:32:087 TIKEV2_Tunnel Remote IDr rejected
```

4.2.5 FAILED_CP_REQUIRED

If you encounter a `FAILED_CP_REQUIRED` error, it means that the firewall is configured to use CP (Configuration Payload) mode, but not the VPN Client. In TheGreenBow Windows Enterprise VPN Client, go to **Traffic selectors** and enable **Request configuration from the gateway**.

```
20XX0913 16:29:46:780 TIKEV2_Tunnel RECV IKE_AUTH
[HDR][IDr][CERT][AUTH][N(AUTH_LIFETIME)][N(FAILED_CP_REQUIRED)][N(TS_UNACCEPT
ABLE)]
20180913 16:29:46:780 TIKEV2_Tunnel Remote endpoint sends error
FAILED_CP_REQUIRED
20XX0913 16:29:46:780 TIKEV2_Tunnel Remote endpoint is expecting a
configuration request from the client
```

5 Contact

5.1 Information

All the information on TheGreenBow products is available on our website: https://thegreenbow.com/.

5.2 Sales

Phone: +33.1.43.12.39.30

E-mail: sales@thegreenbow.com

5.3 Support

There are several pages related to the software's technical support on our website:

Online help

https://www.thegreenbow.com/en/support/online-support/

FAQ

https://www.thegreenbow.com/en/frequently-asked-questions/

Contact form

Technical support can be reached using the form on our website at the following address: https://www.thegreenbow.com/en/support/online-support/technical-support/.

Protect your connections
in any situation

14, rue Auber
75009 Paris – France

sales@thegreenbow.com

www.thegreenbow.com