



STORMSHIELD



TECHNICAL NOTE

STORMSHIELD NETWORK SECURITY

CONFIGURING A 3G/4G MODEM ON SNS

Product concerned: SNS 3.2.0 and higher versions

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Reference: [sns-en-configuring_3G_4G_modem_technical_note](#)



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Getting started

3G/4G modems can be linked up to Stormshield Network Security firewalls in order to provide Internet access. Two types of modems are supported:

- Ethernet over USB modems, and
- USB modems.

In this document, you will learn how to identify the various parameters needed for configuring a 3G/4G modem on the firewall. While we are unable to set out the configuration for all modems on the market, configuration examples for some of the most common models can be found in the [Stormshield Knowledge Base](#) (authentication required).



Configuring a 3G/4G modem using the Ethernet over USB protocol

The configuration of such modems requires the creation of a "USB stick / Modem" interface and needs the following parameters:

- *VendorId* (VID): identifier of the modem vendor.
- *ProductIdInit*: identifier of the product when it is initially detected as a storage device.
- *ModeSwitchString*: string that allows switching from storage device mode to modem mode.
- *ProductId* (PID): identifier of the product as a modem.

Once the modem is connected to the firewall and configured, the public IP address will be assigned to the modem, which will then act as a router for the firewall.

Retrieving the configuration parameters *VendorId* and *ProductIdInit*

1. Log on to the firewall console via SSH using a *PuTTY* program.
2. Enable debug mode for the 3G/4G modem manager using the command:

```
sysctl hw.usb.u3g.debug=1
```

3. Connect your modem to the firewall's USB port.
4. Enter the command:

```
ndmesg
```

5. Identify the lines that begin with the string *u3g_test_autoinst* and note the parameters between brackets after the name of the modem vendor:

Example:

```
[2018-01-10 09:19:24]ugen4.2: <XXX> at usb4
[2018-01-10 09:19:24]u3g_test_autoinst: checking if device XXX:XXX (12d1:1f01) is
a umass device and needs to be ejected
[2018-01-10 09:19:24]u3g_test_autoinst: device XXX:XXX (12d1:1f01) was not
matched => will not be ejected
[2018-01-10 09:19:24]umass0: <Mass Storage> on usb4
```

For the modem in this example, the *VendorId* is "12d1" and the *ProductIdInit* "1f01".

Retrieving the parameters *ModeSwitchString* and *ProductId*

1. Refer to the file [device_reference.txt](#) which lists a large number of modem references.
2. In this file, look for the *ProductIdInit* value noted earlier. It should match a *DefaultProduct* string.
The associated parameters *ProductId* and *ModeSwitchString* are respectively identifiable in the file by the strings *TargetProduct* and *MessageContent*.

A few configuration examples for common models can be found in the [Stormshield Knowledge Base](#) [authentication required].



Creating the USB/Modem interface on the firewall

1. In the menu **Configuration > Network > Interfaces**, click on **Add**.
2. Select **Add a USB stick / modem**.
3. In the **Identification of the USB stick / modem** section, name the interface.
4. In the **Address range** section, enter the IPv4 address associated with this interface or leave it as *Dynamic IP (DHCP)* if this modem does not have a set address.
5. In **Modem parameters** select one of the available customized profiles (*Custom modem 1* or *Custom modem 2*) and click on **Configuration of the modem**.
6. In the window **Configuration of the modem X**, select **Enable** and enter the following parameters:
 - **Name** of the modem (for information only),
 - **Model** of the modem (for information only),
 - **Vendor ID**: enter the value of the *VendorId* parameter,
 - **Initial product ID**: enter the value of the *ProductIdInit* parameter,
 - **MessageContent for modem mode**, enter the value of the *ModeSwitchString* parameter,
 - **Target product ID**: enter the value of the *ProductId* parameter.

The screenshot shows two windows from the Stormshield configuration interface. The main window is titled 'ADD A USB STICK / MODEM WIZARD - (STEP 1 OF 1)'. It has three sections: 'Identification of the USB stick / modem' with fields for Name (My-usbethernet), Comments, Color, and This interface is (external (public)); 'Address range' with IPv4 address (Dynamic IP (DHCP)); and 'Modem parameters' with USB modem (Custom modem 2) and a 'Configuring the modem...' button. At the bottom are 'Previous', 'Finish', and 'Cancel' buttons. A smaller dialog box titled 'CONFIGURING THE MODEM 0' is open over the main window. It has a checked 'Enable' checkbox and fields for Name (4G USB-Ethernet Modem), Model (Modem Model), Vendor ID (12d1), Initial product ID (1f01), MessageContent for modem mode (55534243123456780000), and Target product ID (14dc). It also has dropdown menus for Configuration command port and Monitoring command port, and three text fields for Initialization string no. 1, 2, and 3. At the bottom are 'Apply' and 'Cancel' buttons.

7. Click on **Apply** then on **Finish**.
8. Disconnect your modem from the firewall's USB port.
9. Reconnect your modem to the firewall's USB port.



Configuring a 3G/4G USB modem

The configuration of such modems requires the creation of a "Modem" interface that needs to retrieve several parameters:

- Name of the access point (given by your access provider).
- Number to dial to initialize the connection (given by your access provider).
- IP address of the remote server (given by your access provider).
- PIN of the SIM card (information given with your SIM card).
- *VendorId* (VID): identifier of the modem vendor.
- *ProductIdInit*: identifier of the product when it is initially detected as a storage device.
- *ModeSwitchString*: string that allows switching from storage device mode to modem mode.
- *ProductId* (PID): identifier of the product as a modem.

Once the modem is connected to the firewall and configured, the public IP address will be assigned to the firewall, which can then be contacted at this address (e.g., for remote administration).

Retrieving the configuration parameters *VendorId* and *ProductIdInit*

1. Log on to the firewall console via SSH using a *PuTTY* program.
2. Enable debug mode for the 3G/4G modem manager using the command:

```
sysctl hw.usb.u3g.debug=1
```

3. Connect your modem to the firewall's USB port.
4. Enter the command:

```
ndmmsg
```

5. Identify the lines that begin with the string *u3g_test_autoinst* and note the parameters between brackets after the name of the modem vendor:

Example:

```
[2018-01-10 09:19:24] ugen4.2: <XXXX> at usb4
[2018-01-10 09:19:24] u3g_test_autoinst: checking if device XXXX:XXXX(12d1:15cf)
is a umass device and needs to be ejected
[2018-01-10 09:19:24] u3g_test_autoinst: device XXXX:XXXX(12d1:15cf) was not
matched => will not be ejected
[2018-01-10 09:19:24] umass0: <Mass Storage> on usb4
[2018-01-10 09:19:24] da0 at umass-sim0 bus 0 scbus2 target 0 lun 1
[2018-01-10 09:19:24] da0: <XXXX TF CARD Storage 2.31> Removable Direct Access
SCSI-2 device
[2018-01-10 09:19:24] da0: Serial Number 0123456789ABCDEF
[2018-01-10 09:19:24] da0: 40.000MB/s transfers
[2018-01-10 09:19:24] da0: Attempt to query device size failed: NOT READY, Medium
not present
[2018-01-10 09:19:24] da0: quirks=0x2<NO_6_BYTE>
```

For the modem in this example, the *VendorId* is "12d1" and the *ProductIdInit* "15cf".



Retrieving the parameters *ModeSwitchString* and *ProductId*

1. Refer to the file [device_reference.txt](#) which lists a large number of modem references.
2. In this file, look for the *ProductIdInit* value noted earlier. It should match a *DefaultProduct* string.
The associated parameters *ProductId* and *ModeSwitchString* are respectively identifiable in the file by the strings *TargetProduct* and *MessageContent*.

A few configuration examples for common models can be found in the [Stormshield Knowledge Base](#) [authentication required].

Creating the Modem interface on the firewall

1. In the menu **Configuration > Network > Interfaces**, click on **Add**.
2. Select **Add a modem**.
3. In the **Modem ID** section, name the interface.
4. Click on **Next**.
5. In the **Configuration of the modem** section, select "3G/4G" as the **Modem type** then enter the following parameters:
 - **Name of access point**: this is specific to each access provider and is given when you sign up for your 3G/4G subscription,
 - **Number to dial**: this is number that the modem has to dial in order to log on to the access provider's network. The default value is "99#",
 - **IP address of the remote server**: this address is given by your access provider,
 - **PIN code of the SIM card**: information given with your SIM card,
 - **USB modem**: the value **Automatic detection** is suggested by default.
If your modem is not automatically recognized, choose one of the customized profiles (*Custom modem 1* or *Custom modem 2*) then click on **Configuration of the modem**.
5. In the window **Configuration of the modem X**, select **Enable** and enter the following parameters:
 - **Name** of the modem (for information only),
 - **Model** of the modem (for information only),
 - **Vendor ID**: enter the value of the *VendorId* parameter,
 - **Initial product ID**: enter the value of the *ProductIdInit* parameter.
 - **MessageContent for modem mode**, enter the value of the *ModeSwitchString* parameter.
 - **Target product ID**: enter the value of the *ProductId* parameter.
 - **Configuration command port**: this is the number of the serial port dedicated to sending configuration commands ("AT" commands) to the modem. The most common value is 0.
 - **Monitoring command port**: this is the number of the serial port dedicated to sending monitoring commands ("AT" commands) to the modem. The most common value is 1.
 - **Initialization string no. 1**: this string is optional. It allows "AT" configuration commands to be sent to the modem before it is used. Example: "ATZ" (modem reinitialization command), "AT^CURC=0" (command that allows periodic messages to be disabled).
 - **Initialization string no. 2**: this string is optional.
 - **Initialization string no. 3**: this string is optional.



CREATE A NEW MODEM
MODEM CREATION WIZARD

Configuration of the modem

Modem type : 3G/4G

Access point name : operator

Number to dial : *99#

Default IP address of the remote server : 169.254.0.1

PIN code of the SIM card : 1234

USB modem : Custom modem 2

Query domain name servers and create associated host objects

Set the maximum size of TCP packets (MSS) in order to prevent their fragmentation
This limit will be applied to all profiles.

CONFIGURING THE MODEM 1

Enable

Name: My 4G Key

Model: KeyBrand

Vendor ID: 12d1

Initial product ID: 15cf

MessageContent for modem mode: 55534243123456780000

Target product ID: 15b6

Configuration command port: 0

Monitoring command port: 1

Initialization string no. 1: AT^CURC=0

Initialization string no. 2:

Initialization string no. 3:

6. Click on **Apply** then on **Next**.
7. In the **Authentication** section, if necessary, enter the **Username** and **Password** for connecting to the access provider's services.
8. Click on **Next**.
9. In **Routing**: use the gateway obtained by the modem, choose if you are adding this gateway to the list of main gateways, the list of backup gateways or if you intend to choose later. Do note that 3G/4G traffic may be expensive depending on which telecoms operator you choose. This factor may help you in making your choice.
10. Click on **Next**.
11. Confirm the summary of the configuration by clicking on **Finish**.
12. Disconnect your modem from the firewall's USB port.
13. Reconnect your modem to the firewall's USB port.



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documentation@stormshield.eu

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