



# TheGreenBow IPsec VPN Client Configuration Guide

## Netgear FVS114

WebSite: <http://www.thegreenbow.com>

Contact: [support@thegreenbow.com](mailto:support@thegreenbow.com)

Configuration Guide written by:

Writer: TheGreenBow Engineering Team

Company: [www.thegreenbow.com](http://www.thegreenbow.com)

## Table of contents

1	Introduction .....	3
1.1	Goal of this document .....	3
1.2	VPN Network topology .....	3
1.3	Netgear FVS114 Restrictions.....	3
1.4	Netgear FVS114 VPN Gateway.....	3
1.5	Netgear FVS114 VPN Gateway product info .....	3
2	Netgear FVS114 VPN configuration .....	4
3	TheGreenBow IPSec VPN Client configuration .....	8
3.1	VPN Client Phase 1 (IKE) Configuration.....	8
3.2	VPN Client Phase 2 (IPSec) Configuration .....	10
3.3	Open IPSec VPN tunnels.....	10
4	Tools in case of trouble .....	11
4.1	A good network analyser: Wireshark .....	11
5	VPN IPSec Troubleshooting .....	12
5.1	« PAYLOAD MALFORMED » error (wrong Phase 1 [SA]) .....	12
5.2	« INVALID COOKIE » error.....	12
5.3	« no keystate » error .....	12
5.4	« received remote ID other than expected » error.....	12
5.5	« NO PROPOSAL CHOSEN » error .....	13
5.6	« INVALID ID INFORMATION » error.....	13
5.7	I clicked on “Open tunnel”, but nothing happens.....	13
5.8	The VPN tunnel is up but I can’t ping !.....	13
6	Contacts.....	15

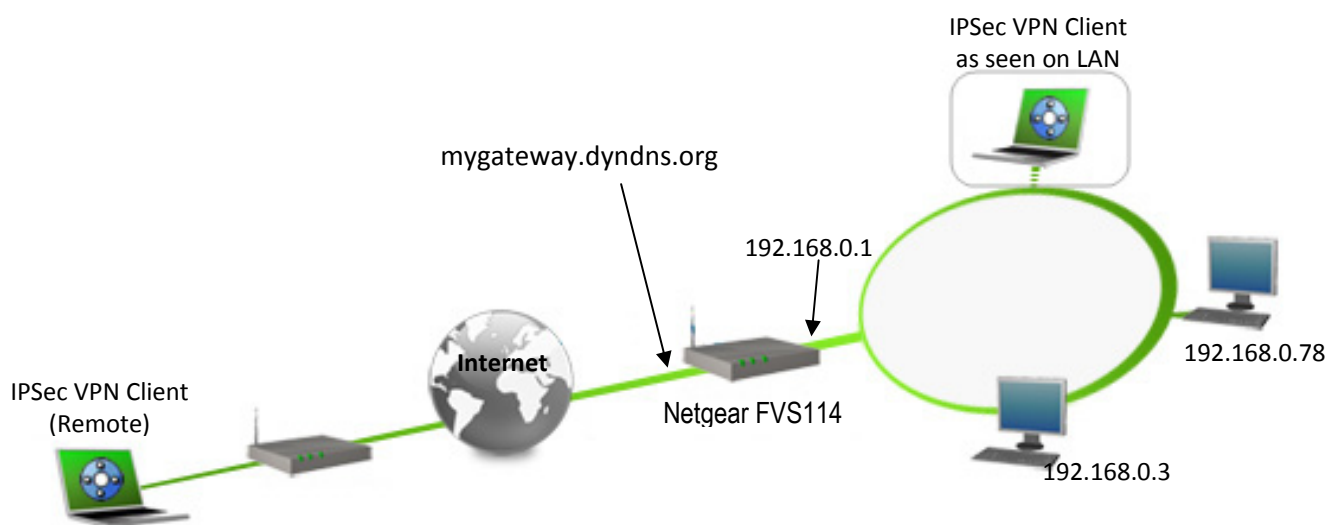
## 1 Introduction

### 1.1 Goal of this document

This configuration guide describes how to configure TheGreenBow IPsec VPN Client software with a Netgear FVS114 VPN router to establish VPN connections for remote access to corporate network

### 1.2 VPN Network topology

In our VPN network example (diagram hereafter), we will connect TheGreenBow IPsec VPN Client software to the LAN behind the Netgear FVS114 router. The VPN client is connected to the Internet with a DSL connection or through a LAN. All the addresses in this document are given for example purpose.



### 1.3 Netgear FVS114 Restrictions

No known restrictions.

### 1.4 Netgear FVS114 VPN Gateway

Our tests and VPN configuration have been conducted with Netgear FVS114 firmware release V1.1\_10.

### 1.5 Netgear FVS114 VPN Gateway product info

All product info, User Guide and knowledge base for the Netgear FVS114 VPN Gateway can be found on the Netgear website: <http://www.netgear.com/>

Netgear FVS114 Product page	<a href="http://kb.netgear.com/app/products/model/a_id/2419">http://kb.netgear.com/app/products/model/a_id/2419</a>
Netgear FVS114 User Guide	<a href="http://kbserver.netgear.com/pdf/fvs114_ref_manual_29Apr05.pdf">http://kbserver.netgear.com/pdf/fvs114_ref_manual_29Apr05.pdf</a>
Netgear FVS114 FAQ/Knowledge Base	<a href="http://kb.netgear.com/app/products/model/a_id/2419">http://kb.netgear.com/app/products/model/a_id/2419</a>

Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

## 2 Netgear FVS114 VPN configuration

This section describes how to build an IPSec VPN configuration with your Netgear FVS114 VPN router.

Once connected to your Netgear FVS114 VPN gateway, select “VPN” and “IKE Policies” tabs.

Click on “Add” to create an IKE Policy.



Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

In this configuration, we've selected the Aggressive Mode and chose for the local ID (fvs\_local.com) and Remote ID(fvs\_remote.com) an FQDN Identifier (it shall match respectively to Remote ID and Local ID for the VPN Client software).

Also, we set a Preshared Key (1234567890) and chose the different algorithms for IKE (i.e. 3DES, SHA which shall match the IKE part in Phase 1 of the VPN Client software).

Click on "Apply" once you finished configuring "IKE Policies".

### IKE Policy Configuration

**General**

Policy Name: Gateway1

Direction/Type: Responder

Exchange Mode: Aggressive Mode

**Local**

Local Identity Type: Fully Qualified Domain Name

Local Identity Data: fvs\_local

**Remote**

Remote Identity Type: Fully Qualified Domain Name

Remote Identity Data: fvs\_remote

**IKE SA Parameters**

Encryption Algorithm: 3DES

Authentication Algorithm: SHA-1

Authentication Method:  Pre-shared Key

Pre-shared Key: 0123456789

RSA Signature (requires Certificate)

Diffie-Hellman (DH) Group: Group 2 (1024 Bit)

SA Life Time: 28800 (secs)

Back Apply Cancel

Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

Go to the tab “VPN” and “VPN Policies”.

Click on “Add Auto Policy” to create a VPN Policy.

The screenshot shows the configuration interface for a Netgear ProSafe VPN Firewall FVS114. At the top left is a circular logo with the text "SWITCHES | WIRELESS | ROUTERS | ADAPTERS | HUBS" around a central figure. To the right of the logo, the text "NETGEAR ProSafe VPN Firewall FVS114" is displayed in blue, with "settings" in a large, grey, stylized font below it. The main content area is titled "VPN Policies" in blue. On the left side, there is a dark blue navigation menu with the following items: "VPN" (highlighted with a green circle), "VPN Wizard", "IKE Policies", "VPN Policies" (highlighted with a green circle), and "CAs". In the main content area, there are two buttons: "Add Auto Policy" (highlighted with a green circle) and "Add Manual Policy".

Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

In VPN – Auto policy, we’ve configured an IP for Remote VPN Endpoint. Which should match Remote IP configuration and as well as “VPN client address” in VPN Client.

Local IP range is the LAN subnet of FVS114.

Click on “Apply” once you finished configuring “VPN Policies”.

### VPN - Auto Policy

#### General

Policy Name: Remote1

IKE policy: Gateway1

IKE Keep Alive

Ping IP Address: 0 . 0 . 0 . 0

Remote VPN Endpoint: Address Type: IP Address  
Address Data: 192.168.10.1

SA Life Time: 86400 (Seconds)  
0 (Kytbes)

IPsec PFS PFS Key Group: Group 2 (1024 Bit)

NetBIOS Enable

#### Traffic Selector

Local IP: Subnet address

Start IP address: 192 . 168 . 0 . 0

Finish IP address: 0 . 0 . 0 . 0

Subnet Mask: 255 . 255 . 255 . 0

Remote IP: Single address

Start IP address: 192 . 168 . 10 . 1

Finish IP address: 0 . 0 . 0 . 0

Subnet Mask: 0 . 0 . 0 . 0

#### AH Configuration

Enable Authentication

Authentication Algorithm: MD5

#### ESP Configuration

Enable Encryption

Encryption Algorithm: 3DES

Enable Authentication

Authentication Algorithm: SHA-1

Back Apply Cancel

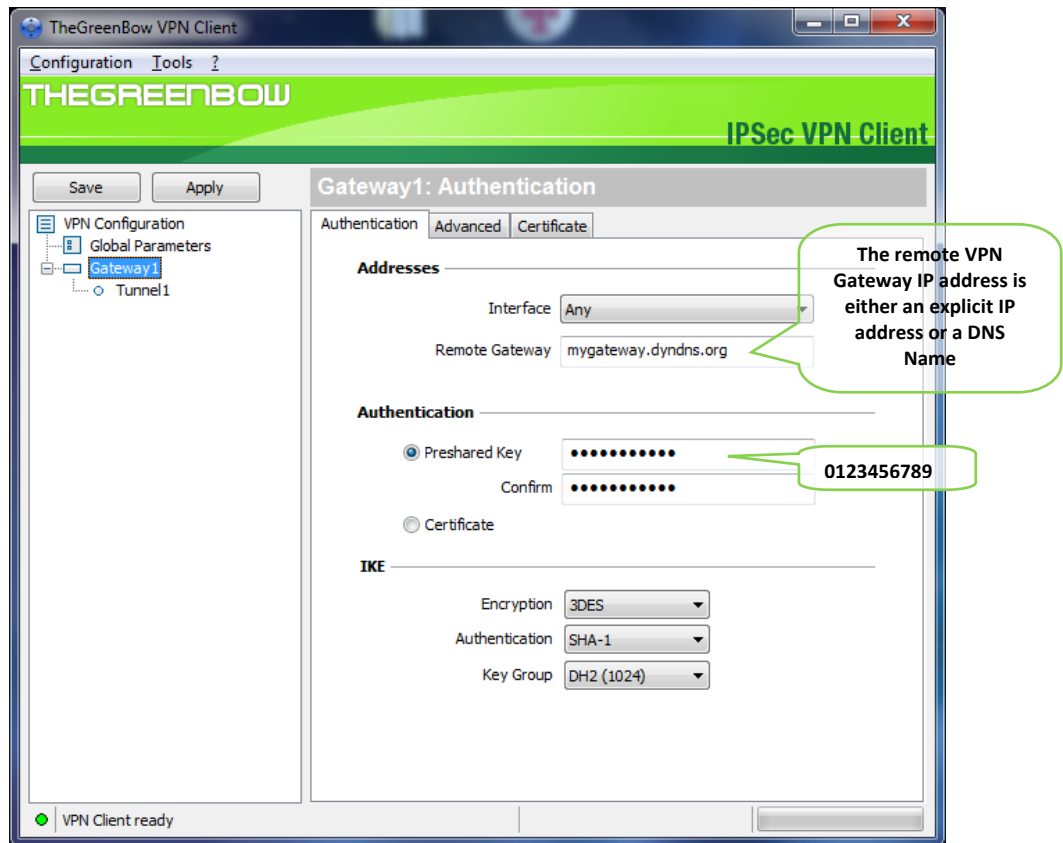
Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

### 3 TheGreenBow IPSec VPN Client configuration

This section describes the required configuration to connect to a Netgear FVS114 VPN router via VPN connections.

To download the latest release of TheGreenBow IPSec VPN Client software, please go to [http://www.thegreenbow.com/vpn\\_down.html](http://www.thegreenbow.com/vpn_down.html).

#### 3.1 VPN Client Phase 1 (IKE) Configuration

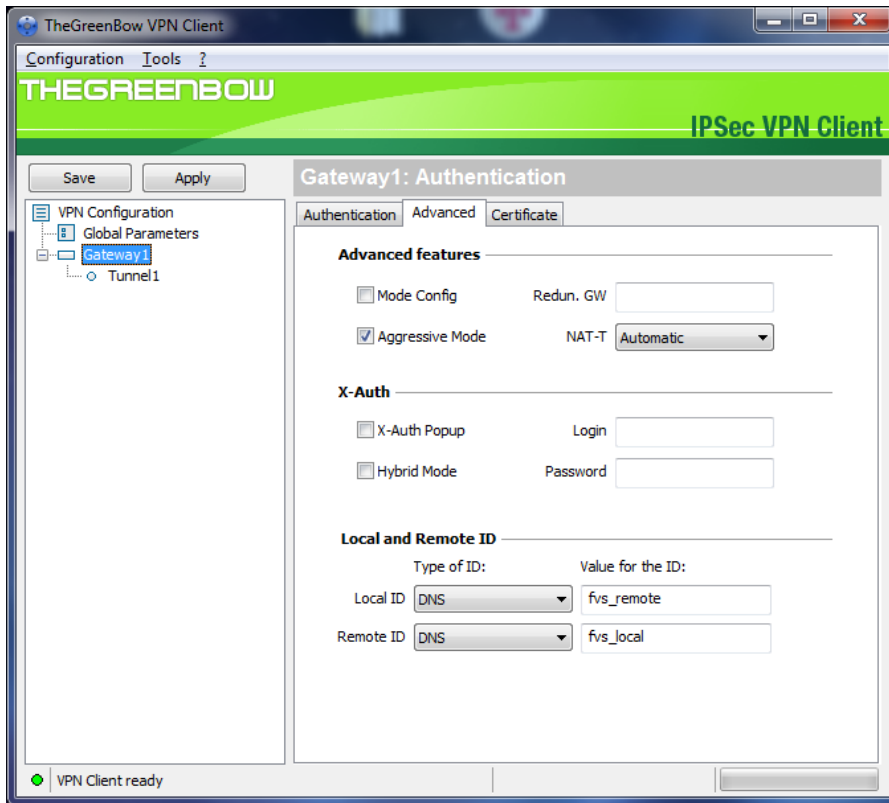


**Phase 1 configuration**

You may use Preshared key or Certificates for User Authentication with the Netgear FVS114 router. This configuration is one example of what can be accomplished in term of User Authentication. You may want to refer to either the Netgear FVS114 router user guide or TheGreenBow IPSec VPN Client software User Guide for more details on User Authentication options.

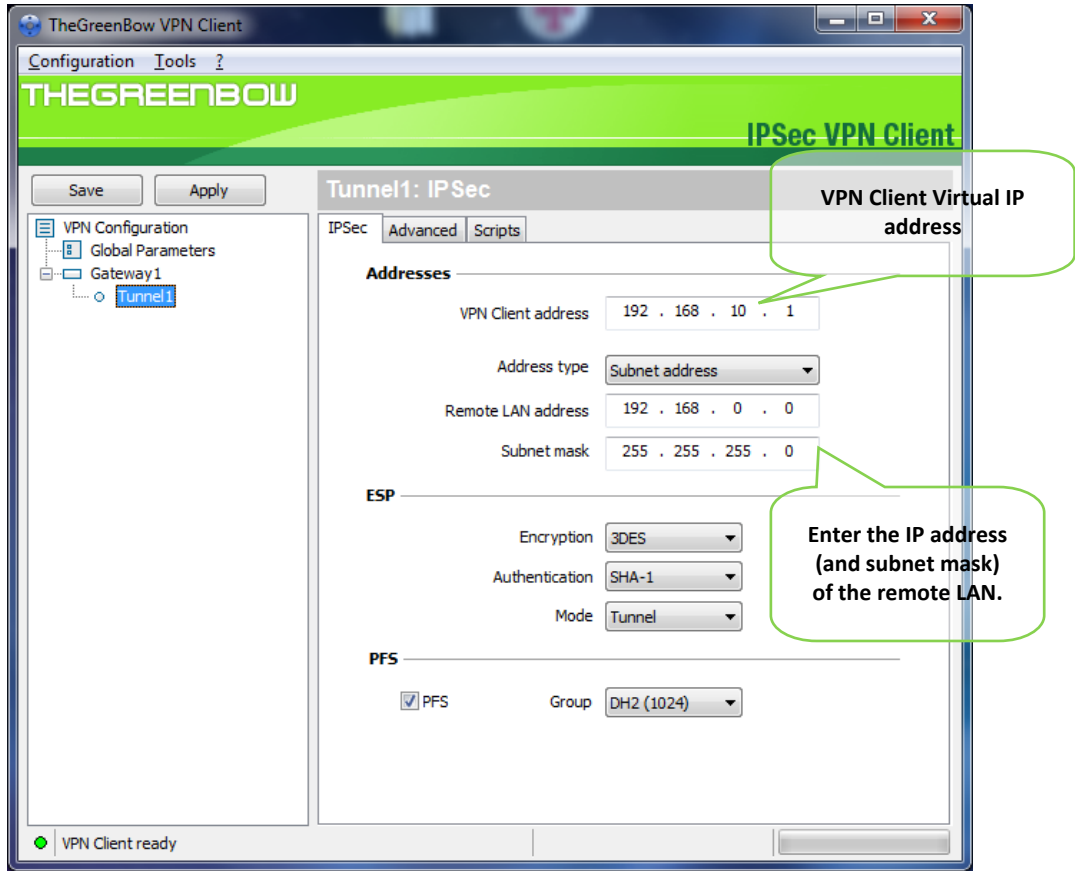


Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x



**Phase 1 Advanced configuration**

### 3.2 VPN Client Phase 2 (IPSec) Configuration



**Phase 2 Configuration**

### 3.3 Open IPSec VPN tunnels

Once both Netgear FVS114 router and TheGreenBow IPSec VPN Client software have been configured accordingly, you are ready to open VPN tunnels. First make sure you enable your firewall with IPSec traffic.

1. Click on **"Save & Apply"** to take into account all modifications we've made on your VPN Client configuration
2. Click on **"Open Tunnel"**, or generate traffic that will automatically open a secure IPSec VPN Tunnel (e.g. ping, IE browser)
3. Select **"Connections"** to see opened VPN Tunnels
4. Select **"Console"** if you want to access to the IPSec VPN logs and adjust filters to display less IPSec messaging. The following example shows a successful connection between TheGreenBow IPSec VPN Client and a Netgear FVS114 VPN router.

```

2011-02-21 13:41:32 Default (SA Gateway1-P1) SEND phase 1 Aggressive Mode [SA] [KEY_EXCH] [NONCE] [ID] [VID] [VID] [VID] [VID]
2011-02-21 13:41:35 Default (SA Gateway1-P1) RECV phase 1 Aggressive Mode [HASH] [SA] [KEY_EXCH] [NONCE] [ID]
2011-02-21 13:41:35 Default (SA Gateway1-P1) SEND phase 1 Aggressive Mode [HASH]
2011-02-21 13:41:35 Default phase 1 done: initiator id fvs_remote, responder id fvs_local
2011-02-21 13:41:35 Default (SA Gateway1-Tunnel1-P2) SEND phase 2 Quick Mode [HASH] [SA] [KEY_EXCH] [NONCE] [ID] [ID]
2011-02-21 13:41:37 Default (SA Gateway1-Tunnel1-P2) RECV phase 2 Quick Mode [HASH] [SA] [KEY_EXCH] [NONCE] [ID] [ID]
2011-02-21 13:41:37 Default (SA Gateway1-Tunnel1-P2) SEND phase 2 Quick Mode [HASH]
    
```

Doc.Ref	tgbvpn Ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

## 4 Tools in case of trouble

Configuring an IPSec VPN tunnel can be a hard task. One missing parameter can prevent a VPN connection from being established. Some tools are available to find source of troubles during a VPN establishment.

### 4.1 A good network analyser: Wireshark

Wireshark is a free software that can be used for packet and traffic analysis. It shows IP or TCP packets received on a network card. This tool is available on website <http://www.wireshark.org>. It can be used to follow protocol exchange between two devices. For installation and use details, read its specific documentation (<http://www.wireshark.org/docs/>).

No. .	Time	Source	Destination	Protocol	Info
1	0.000000	192.168.1.3	192.168.1.2	ISAKMP	Identity Protection (Main Mode)
2	0.153567	192.168.1.2	192.168.1.3	ISAKMP	Identity Protection (Main Mode)
3	0.205363	192.168.1.3	192.168.1.2	ISAKMP	Identity Protection (Main Mode)
4	0.257505	192.168.1.2	192.168.1.3	ISAKMP	Identity Protection (Main Mode)
5	0.300882	192.168.1.3	192.168.1.2	ISAKMP	Identity Protection (Main Mode)
6	0.310186	192.168.1.2	192.168.1.3	ISAKMP	Identity Protection (Main Mode)
7	0.313742	192.168.1.3	192.168.1.2	ISAKMP	Quick Mode
8	0.321913	192.168.1.2	192.168.1.3	ISAKMP	Quick Mode
9	0.323741	192.168.1.3	192.168.1.2	ISAKMP	Quick Mode
10	0.334980	192.168.1.2	192.168.1.3	ISAKMP	Quick Mode
11	0.691160	192.168.1.3	192.168.1.2	ESP	ESP (SPI=0x919bfabc)
12	1.692568	192.168.1.2	192.168.1.3	ESP	ESP (SPI=0x919bfabc)
13	1.693164	192.168.1.2	192.168.1.3	ESP	ESP (SPI=0x53a5925e)
14	2.693600	192.168.1.3	192.168.1.2	ESP	ESP (SPI=0x919bfabc)
15	2.694026	192.168.1.2	192.168.1.3	ESP	ESP (SPI=0x53a5925e)

Frame 1 (142 bytes on wire, 142 bytes captured)  
 Ethernet II, Src: 00:50:04:ad:f2:73, Dst: 00:10:b5:07:2f:ff

Doc.Ref	tgvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

## 5 VPN IPSec Troubleshooting

### 5.1 « PAYLOAD MALFORMED » error (wrong Phase 1 [SA])

---

```

114920 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID]
114920 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [NOTIFY]
114920 Default exchange_run: exchange_validate failed
114920 Default dropped message from 195.100.205.114 port 500 due to notification
type PAYLOAD_MALFORMED
114920 Default SEND Informational [NOTIFY] with PAYLOAD_MALFORMED error

```

---

If you have an « PAYLOAD MALFORMED » error you might have a wrong Phase 1 [SA], check if the encryption algorithms are the same on each side of the VPN tunnel.

### 5.2 « INVALID COOKIE » error

---

```

115933 Default message_rcv: invalid cookie(s) 5918ca0c2634288f 7364e3e486e49105
115933 Default dropped message from 195.100.205.114 port 500 due to notification
type INVALID_COOKIE
115933 Default SEND Informational [NOTIFY] with INVALID_COOKIE error

```

---

If you have an « INVALID COOKIE » error, it means that one of the endpoint is using a SA that is no more in use. Reset the VPN connection on each side.

### 5.3 « no keystate » error

---

```

115315 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID]
115317 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [SA][VID]
115317 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [KEY][NONCE]
115319 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [KEY][NONCE]
115319 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [ID][HASH][NOTIFY]
115319 Default ipsec get keystate: no keystate in ISAKMP SA 00B57C50

```

---

Check if the preshared key is correct or if the local ID is correct (see « Advanced » button). You should have more information in the remote endpoint logs.

### 5.4 « received remote ID other than expected » error

---

```

120348 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID]
120349 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [SA][VID]
120349 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [KEY][NONCE]
120351 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [KEY][NONCE]
120351 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [ID][HASH][NOTIFY]
120351 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [ID][HASH][NOTIFY]
120351 Default ike_phase_1_rcv_ID: received remote ID other than expected
support@thegreenbow.fr

```

---

The « Remote ID » value (see « Advanced » Button) does not match what the remote endpoint is expected.

Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

## 5.5 « NO PROPOSAL CHOSEN » error

```

115911 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID]
115913 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [SA][VID]
115913 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [KEY][NONCE]
115915 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [KEY][NONCE]
115915 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [ID][HASH][NOTIFY]
115915 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [ID][HASH][NOTIFY]
115915 Default phase 1 done: initiator id c364cd70: 195.100.205.112, responder id
c364cd72: 195.100.205.114, src: 195.100.205.112 dst: 195.100.205.114
115915 Default (SA CNXVPN1-CNXVPN1-P2) SEND phase 2 Quick Mode
[SA][KEY][ID][HASH][NONCE]
115915 Default RECV Informational [HASH][NOTIFY] with NO_PROPOSAL_CHOSEN error
115915 Default RECV Informational [HASH][DEL]
115915 Default CNXVPN1-P1 deleted

```

If you have an « NO PROPOSAL CHOSEN » error, check that the « Phase 2 » encryption algorithms are the same on each side of the VPN Tunnel.

Check « Phase 1 » algorithms if you have this:

```

115911 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID]
115911 Default RECV Informational [NOTIFY] with NO_PROPOSAL_CHOSEN error

```

## 5.6 « INVALID ID INFORMATION » error

```

122623 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID]
122625 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [SA][VID]
122625 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [KEY][NONCE]
122626 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [KEY][NONCE]
122626 Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [ID][HASH][NOTIFY]
122626 Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [ID][HASH][NOTIFY]
122626 Default phase 1 done: initiator id c364cd70: 195.100.205.112, responder id
c364cd72: 195.100.205.114, src: 195.100.205.112 dst: 195.100.205.114
122626 Default (SA CNXVPN1-CNXVPN1-P2) SEND phase 2 Quick Mode
[SA][KEY][ID][HASH][NONCE]
122626 Default RECV Informational [HASH][NOTIFY] with INVALID_ID_INFORMATION error
122626 Default RECV Informational [HASH][DEL]
122626 Default CNXVPN1-P1 deleted

```

If you have an « INVALID ID INFORMATION » error, check if « Phase 2 » ID (local address and network address) is correct and match what is expected by the remote endpoint.

Check also ID type (“Subnet address” and “Single address”). If network mask is not check, you are using a IPV4\_ADDR type (and not a IPV4\_SUBNET type).

## 5.7 I clicked on “Open tunnel”, but nothing happens.

Read logs of each VPN tunnel endpoint. IKE requests can be dropped by firewalls. An IPSec Client uses UDP port 500 and protocol ESP (protocol 50).

## 5.8 The VPN tunnel is up but I can’t ping !

If the VPN tunnel is up, but you still cannot ping the remote LAN, here are a few guidelines:

- Check Phase 2 settings: VPN Client address and Remote LAN address. Usually, VPN Client IP address should not belong to the remote LAN subnet
- Once VPN tunnel is up, packets are sent with ESP protocol. This protocol can be blocked by firewall. Check that every device between the client and the VPN server does accept ESP
- Check your VPN server logs. Packets can be dropped by one of its firewall rules.
- Check your ISP support ESP

Doc.Ref	tgbvpn_ug-Netgear-fvs114-en
Doc.version	3.0 – Feb 2011
VPN version	5.x

- If you still cannot ping, follow ICMP traffic on VPN server LAN interface and on LAN computer interface (with Wireshark for example). You will have an indication that encryption works.
- Check the “default gateway” value in VPN Server LAN. A target on your remote LAN can receive pings but does not answer because there is a no “Default gateway” setting.
- You cannot access to the computers in the LAN by their name. You must specify their IP address inside the LAN.
- We recommend you to install Wireshark (<http://www.wireshark.org>) on one of your target computer. You can check that your pings arrive inside the LAN.

<b>THEGREENBOW</b> 01011010	Doc.Ref	tgvpn_ug-Netgear-fvs114-en
	Doc.version	3.0 – Feb 2011
	VPN version	5.x

## 6 Contacts

News and updates on TheGreenBow web site: <http://www.thegreenbow.com>

Technical support by email at [support@thegreenbow.com](mailto:support@thegreenbow.com)

Sales contacts by email at [sales@thegreenbow.com](mailto:sales@thegreenbow.com)

**Secure, Strong, Simple.**

TheGreenBow Security Software