TheGreenBow IPSec VPN Client
Configuration Guide
Phion Netfence

Website:  http://www.thegreenbow.com
Contact:  support@thegreenbow.com
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1 Introduction

1.1 Goal of this document
This configuration guide describes how to configure the GreenBow IPSec VPN Client with a Phion VPN gateway.

1.2 VPN Network topology
In our VPN network example (diagram hereafter), we will connect the GreenBow IPSec VPN Client to the LAN behind the Phion VPN gateway. 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 Phion Netfence Restrictions
Depending on the Release version, Phion may not support NAT-T.
Furthermore Phion does not support Encryption Mode Transport for Phase 2, Aggressive Mode and Hybrid Mode for Phase 1 in any Release version.

It is mandatory to set explicitly IKE Config Mode for the Greenbow IPSec VPN Client, otherwise Phion Netfence won’t assign Personal Network Information.

1.4 Phion VPN Gateway
VPN configuration and Testing have been conducted with Phion Netfence Release version 3.6.0
2 Phion Netfence VPN configuration

This section describes how to build an IPSec VPN configuration with your Phion VPN gateway. Once connected to your Phion VPN gateway, you must select “VPN Settings first”.

Preconditions:
- Root Certificate
- Server Certificate
- Client Certificate

1) Import a root Certificate that has been issued by a Certificate Authority (CA) before (for example Phion PKI or any other CA).

2) Import a server certificate in PEM or PKCS12 format that is signed by the root certificate.

NOTE: When importing is done in PEM format you also have to import the private key.
3) Define a Personal Network that should be assigned to your local workstation when the IPSec Tunnel is up and running.

For proceeding select “Client to Site” settings and define your External CA.
1) Define your IPSec settings that are going to be used during key exchange with the IPSec VPN Client.

NOTE: The settings for Phase 1 and Phase 2 must match exactly those defined within IPSec VPN Client otherwise connection establishment won’t be performed (see VPN IPSec Troubleshooting).

2) Enter the common section (IKE Config Mode) and define a Personal Network and a Remote LAN to which your workstation gets access to. Assuming that the IPSec VPN Client reaches the VPN gateway with IP 214.1.2.50 you have to state explicitly that this IP address is allowed to receive Network Information from the VPN gateway. To do so define an Access Control List.
3) Link your common and IPSec settings to a new policy

4) Define your Group VPN Settings and link to your previously defined Server and Root Certificate. For the Server Protocol Key choose “From Server Cert”
5) Create a new Rule your Policy applies to where Certificate Conditions from the IPSec VPN Client can be entered. Again the workstation IP must be entered here in order to belong to this defined group. Furthermore peer condition must be set to IPSec Client.
3 TheGreenBow IPSec VPN Client configuration

3.1 VPN Client Phase 1 (IKE) Configuration

The remote VPN Gateway IP address is either an explicit IP address, or a DNS Name

Import a PKS12 or PEM Client Certificate here issued by a CA.

NOTE: Authentication does not work with preshared keys

Select IKE Config Mode in order to get the information automatically from the VPN gateway. The Client won’t request any network information in this mode.

It is mandatory to set a Remote ID because the IPSec Client expects that from the VPN gateway during identification establishment in Phase 1.

NOTE: This must match exactly the SubjectAltName set in the VPN gateway server certificate.

You can also define a local ID set in the Client Certificate
3.2 VPN Client Phase 2 (IPSec) Configuration

Do not define a Virtual VPN Client Address and a remote LAN network.

REMEMBER: We use IKE Config Mode and get this info from the VPN gateway.

You may notice that we have selected SHA as authentication algorithm despite that fact MD5 algorithm is used for phase 2 in Phion IPSec settings. The real authentication algorithm used is defined in main configuration page of the Phion IPSec settings.

3.3 Open IPSec VPN tunnels

Once both Phion VPN gateway and TheGreenBow IPSec VPN Client 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 Microsoft Windows 2000 Server.
<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Source</th>
<th>Destination</th>
<th>Protocol</th>
<th>Info</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>0.000004</td>
<td>192.168.1.2</td>
<td>192.168.1.2</td>
<td>ISAKMP</td>
<td>Identity Protection (Main Mode)</td>
</tr>
<tr>
<td>2</td>
<td>0.153337</td>
<td>192.168.1.2</td>
<td>192.168.1.3</td>
<td>ISAKMP</td>
<td>Identity Protection (Main Mode)</td>
</tr>
<tr>
<td>3</td>
<td>0.203332</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ISAKMP</td>
<td>Identity Protection (Main Mode)</td>
</tr>
<tr>
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<td>192.168.1.2</td>
<td>192.168.1.3</td>
<td>ISAKMP</td>
<td>Identity Protection (Main Mode)</td>
</tr>
<tr>
<td>5</td>
<td>0.302682</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ISAKMP</td>
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</tr>
<tr>
<td>6</td>
<td>0.310186</td>
<td>192.168.1.2</td>
<td>192.168.1.3</td>
<td>ISAKMP</td>
<td>Identity Protection (Main Mode)</td>
</tr>
<tr>
<td>7</td>
<td>0.313742</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ISAKMP</td>
<td>Quick Mode</td>
</tr>
<tr>
<td>8</td>
<td>0.323393</td>
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<td>192.168.1.3</td>
<td>ISAKMP</td>
<td>Quick Mode</td>
</tr>
<tr>
<td>9</td>
<td>0.323741</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ISAKMP</td>
<td>Quick Mode</td>
</tr>
<tr>
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<td>0.334980</td>
<td>192.168.1.2</td>
<td>192.168.1.3</td>
<td>ISAKMP</td>
<td>Quick Mode</td>
</tr>
<tr>
<td>11</td>
<td>0.692260</td>
<td>192.168.1.2</td>
<td>192.168.1.3</td>
<td>ESP</td>
<td>ESP (SPI=0x91b8fabc)</td>
</tr>
<tr>
<td>12</td>
<td>1.692568</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ESP</td>
<td>ESP (SPI=0x91b8fabc)</td>
</tr>
<tr>
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<td>192.168.1.3</td>
<td>ESP</td>
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<tr>
<td>14</td>
<td>2.693800</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ESP</td>
<td>ESP (SPI=0x91b8fabc)</td>
</tr>
<tr>
<td>15</td>
<td>2.694029</td>
<td>192.168.1.3</td>
<td>192.168.1.2</td>
<td>ESP</td>
<td>ESP (SPI=0x91b8fabc)</td>
</tr>
</tbody>
</table>

Frame 1 (142 bytes on wire, 142 bytes captured)

Ethernet II, Src: 00:10:00:ad:f1:73, Dst: 00:10:00:b5:07:2f, ff
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: ethereal

Ethereal 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.ethereal.com/. It can be used to follow protocol exchange between two devices. For installation and use details, read its specific documentation.
5 VPN IPSec Troubleshooting

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

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

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

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

The « Remote ID » value (see « Advanced » Button) does not match what the remote endpoint is expected.
5.5 « NO PROPOSAL CHOSEN » error

| 115911 | Default (SA CNXVPN1-P1) SEND phase 1 Main Mode [SA][VID] |
| 115911 | Default (SA CNXVPN1-P1) RECV phase 1 Main Mode [SA][VID] |
| 115912 | 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] |
| 122626 | 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
- If you still cannot ping, follow ICMP traffic on VPN server LAN interface and on LAN computer interface (with Ethereal 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 ethereal (http://www.ethereal.com) on one of your target computer. You can check that your pings arrive inside the LAN.
6 Contacts

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

Technical support by email at support@thegreenbow.com

Sales contacts at +33 1 43 12 39 37 or by email at info@thegreenbow.com