 TheGreenBow IPsec VPN Client  
Configuration Guide  
Omron MR504DV

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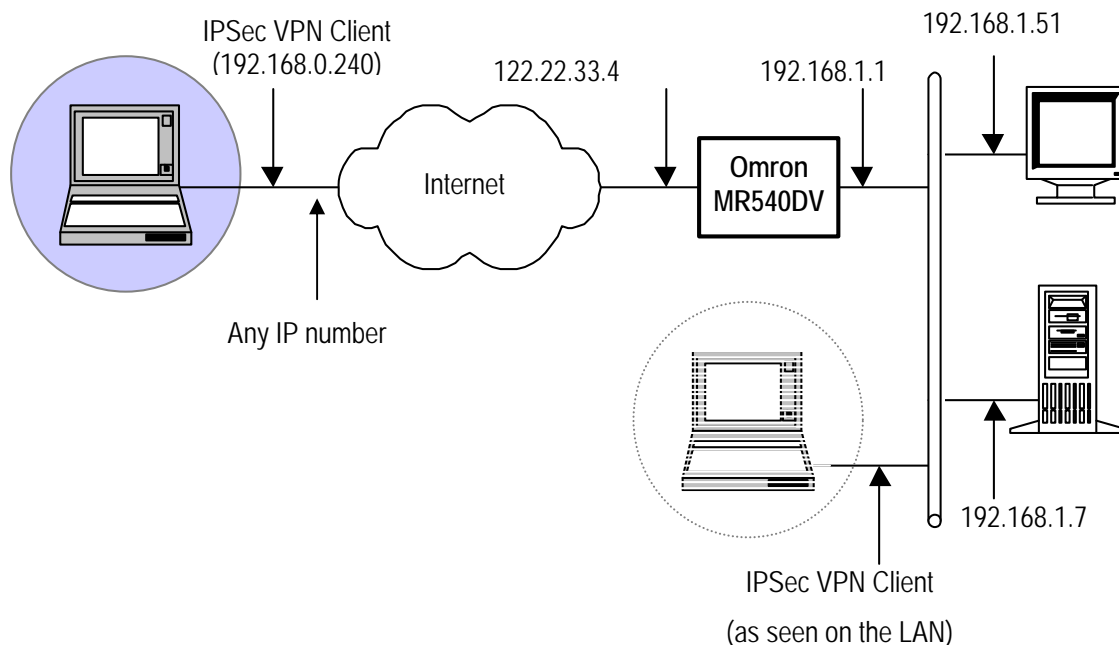
# 1 Introduction

## 1.1 Goal of this document

This configuration guide describes how to configure TheGreenBow IPsec VPN Client with a Omron MR504DV VPN router.

## 1.2 VPN Network topology

In our VPN network example (diagram hereafter), we will connect TheGreenBow IPsec VPN Client to the LAN behind the Omron MR504DV router. The VPN client is connected to the Internet with an optical fibre connection or through a LAN. All the addresses in this document are given for example purpose.



## 1.3 OMRON MR504DV Availability

This router is currently sold in Japan and thus it has a Japanese interface.

## 1.4 OMRON MR504DV VPN Gateway product info

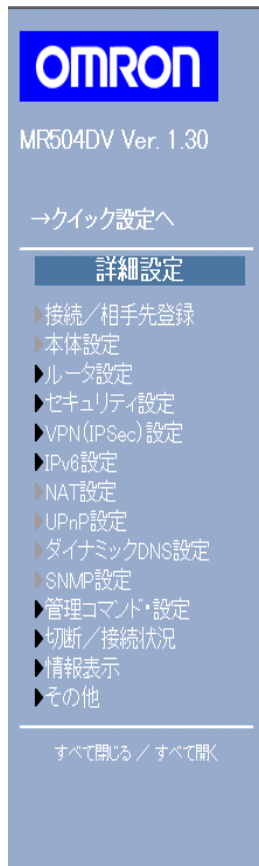
The Omron router is shipped with a manual CD containing the manual in PDF form. In addition the Omron website contains configuration examples.

<http://www.omron.co.jp/ped-j/portal/support/mr504dv.html>

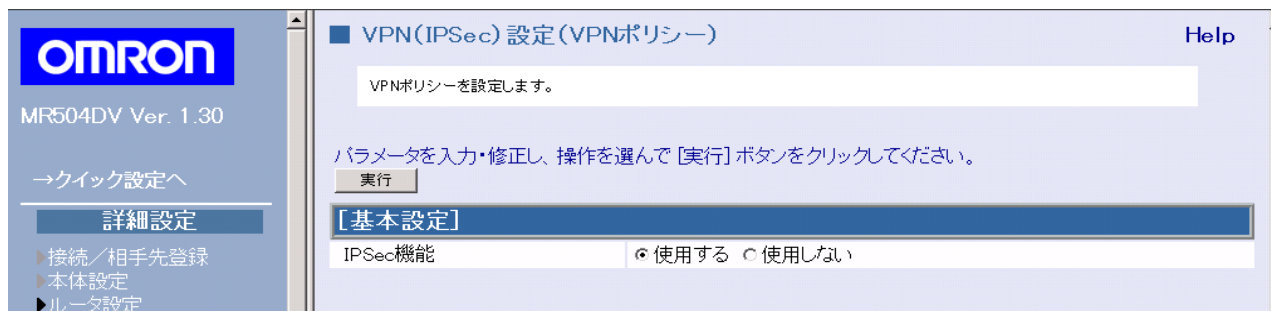
## 2 Omron MR540DV VPN configuration

Ensure that you can connect to the Omron MR540DV router (ping) and then start the browser and point it to the Omron MR540DV routers IP address.

Login (default user is: admin) and process to detailed configuration. Then proceed to VPN (IPSec) 設定。



Don't forget to enable IPSec; you need to check the 使用する field!



VPN(IPSec) 設定 (VPNポリシー) Help

VPNポリシーを設定します。

以下の項目を入力・修正して、[設定] ボタンをクリックしてください。

**[基本]**

登録番号

ポリシー  使用しない  使用する

**[IPアドレス]**

リモートゲートウェイアドレス  動的  固定

IPアドレス

ローカルIPアドレス

開始IPアドレス

終了IPアドレス

サブネットマスク

リモートIPアドレス

開始IPアドレス

終了IPアドレス

サブネットマスク

NAT+VPN IPアドレス

As this configuration is for a Road Warrior who may connect from any place the gateway doesn't have a fixed IP address. We check the **moving (動的)** field.

At the top we enter the IP range for the VPN client (here start address and netmask).

NAT+VPN IPアドレス

開始IPアドレス

終了IPアドレス

サブネットマスク

**[認証]**

認証プロトコル

アルゴリズム(AH)

アルゴリズム(ESP)

暗号化プロトコル

アルゴリズム

**[キー交換]**

キー管理方式  手動キー交換  IKE (Internet Key Exchange)

方向

ローカルIDタイプ

ID

リモートIDタイプ

ID

相手認証方式  事前共有鍵を使用する  証明書を使用する

事前共有鍵

ハッシュアルゴリズム

暗号化アルゴリズム

交換モード

IKE Keep Alive  使用しない  使用する

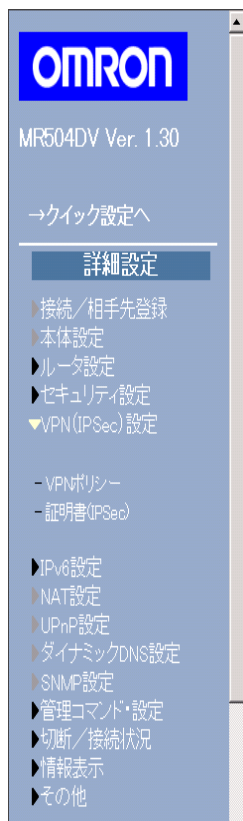
In the second block we use confirmation protocol (ESP), the corresponding algorithm and the encryption algorithm and protocol.

In the third block we select IKE (Internet Key Exchange) and we specify that we want to use a preshared key. This is considerably simpler than using certificates.

IPアドレス	0.0.0.0
pingリトライ間隔	6 (秒)
pingリトライ回数	10 (回)
IKE自動接続	<input type="radio"/> 使用しない <input checked="" type="radio"/> 使用する
ISAKMPリトライ間隔	5 (秒)
ISAKMPリトライ回数	10 (回)
ISAKMP SA 有効期間	28800 (秒)
IPSec SA 有効期間	28800 (秒)
DH グループ	Group 2 (1024 Bit)
IKE PFS	Group 2 (1024 Bit)
<b>[MSS設定]</b>	
MSS変換機能	<input type="radio"/> OFF <input checked="" type="radio"/> ON
MSSサイズ	1352
<b>[Path MTU Discovery]</b>	
DFビット	コピー
<b>[NAT-Traversal]</b>	
NAT-Traversal機能	<input checked="" type="radio"/> 使用しない <input type="radio"/> 使用する
IKEネゴシエーション機能	<input checked="" type="radio"/> 使用しない <input type="radio"/> 使用する
<input type="button" value="設定"/> <input type="button" value="やり直し"/>	

We also enter the hash algorithm, encryption algorithm and main mode to be used. Check IKE Keep Alive and enter the remote IP address. Enter other parameters as shown above to use your values.

The router also supports certificates. Certificates can be generated or imported. The configuration file can be exported and when necessary re-imported again.

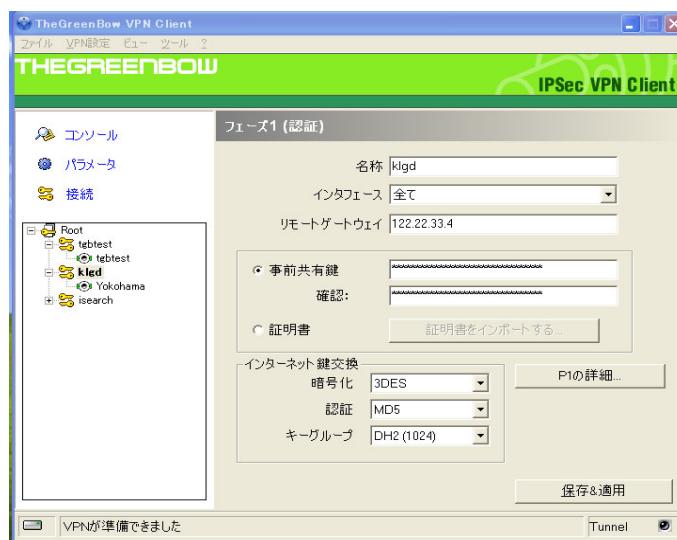


### 3 TheGreenBow IPsec VPN Client configuration

This section describes the required configuration to connect to a Omron MR504DV VPN router.

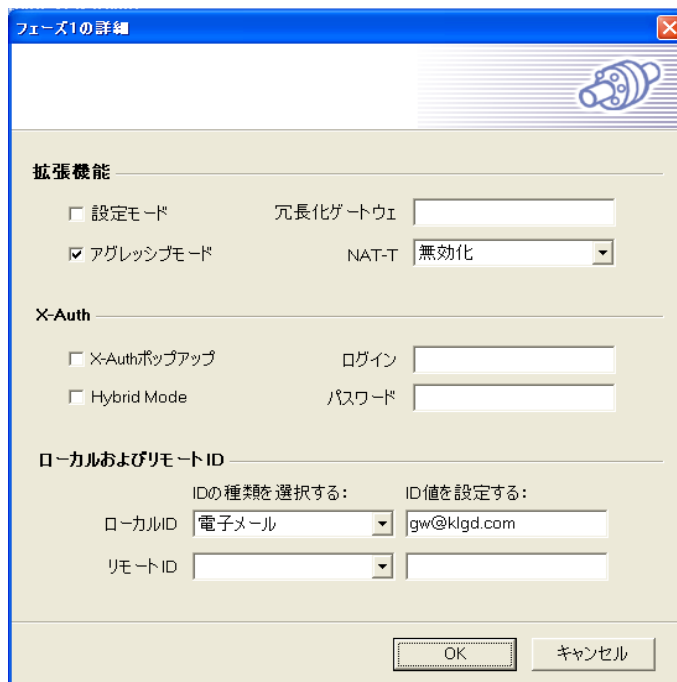
To download the latest release of TheGreenBow IPsec VPN Client software, please go to [http://www.thegreenbow.com/vpn\\_down.html](http://www.thegreenbow.com/vpn_down.html).

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



Phase 1 configuration

You may use either Preshared, Certificates, USB Tokens or X-Auth for User Authentication with the Omron MR504DV router. This configuration is one example of what can be accomplished in term of User Authentication. You may want to refer to either the Omron MR504DV router user guide or TheGreenBow IPsec VPN Client User Guide for more details on User Authentication options.



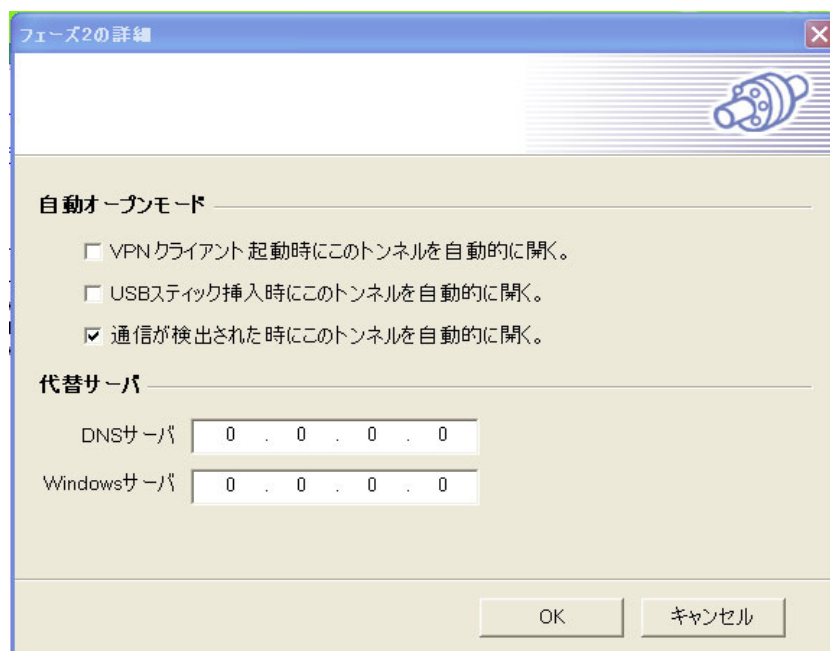
### 3.2 VPN Client Phase 2 (IPSec) Configuration



You may define a static virtual IP address here.  
If you use 0.0.0.0, you will have error "Local-ID" is missing. It does not prevent you from establishing a tunnel

Enter the IP address (and subnet mask) of the remote LAN.

Phase 2 Configuration



Phase 2 – Advanced

### 3.3 Open IPSec VPN tunnels

Once both Omron MR504DV 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 Omron MR504 DV VPN router.

```

20080409 131143 Default (SA Test_VPN-P1) SEND phase 1 Main Mode [SA] [VID] [VID] [VID] [VID] [VID]
20080409 131143 Default (SA Test_VPN-P1) RECV phase 1 Main Mode [SA] [VID] [VID]
20080409 131143 Default (SA Test_VPN-P1) SEND phase 1 Main Mode [KEY_EXCH] [NONCE] [NAT_D] [NAT_D]
20080409 131143 Default (SA Test_VPN-P1) RECV phase 1 Main Mode [KEY_EXCH] [NONCE] [NAT_D] [NAT_D]
20080409 131143 Default (SA Test_VPN-P1) SEND phase 1 Main Mode [HASH] [ID]
20080409 131143 Default (SA Test_VPN-P1) RECV phase 1 Main Mode [HASH] [ID]
20080409 131143 Default phase 1 done: initiator id 192.168.6.100, responder id 192.168.1.10
20080409 131143 Default (SA Test_VPN-Test-P2) SEND phase 2 Quick Mode [HASH] [SA] [KEY_EXCH] [NONCE] [ID] [ID]
20080409 131143 Default (SA Test_VPN-Test-P2) RECV phase 2 Quick Mode [HASH] [SA] [KEY_EXCH] [NONCE] [ID] [ID]
20080409 131143 Default (SA Test_VPN-Test-P2) SEND phase 2 Quick Mode [HASH]

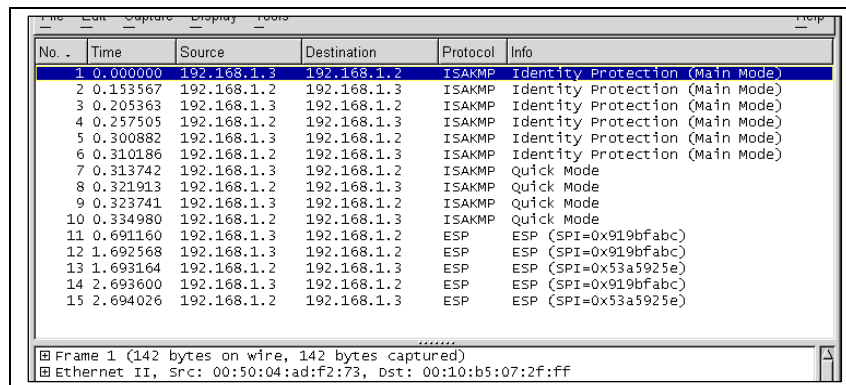
```

## 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	192.168.1.3	192.168.1.2	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

## 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.

## 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_cg_omron_mr50
Doc.version	1.0 – Aug 2008
VPN version	4.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.

	Doc.Ref	tgbvpn_cg_omron_mr50
	Doc.version	1.0 – Aug 2008
	VPN version	4.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)