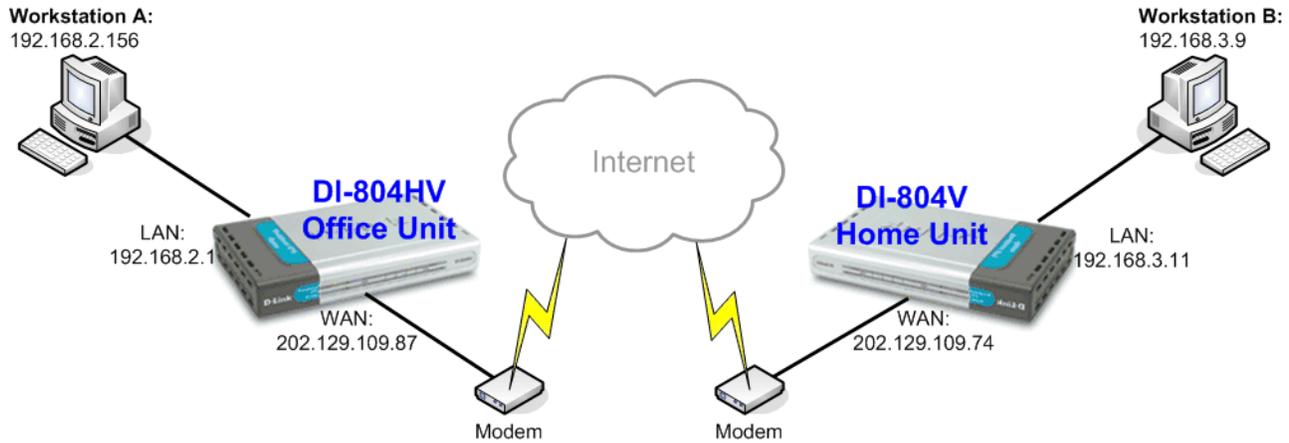


Setting up VPN connection: DI-804HV to DI-804V

Date: 23 Oct 2003

Doc version: 2.0

Author: Neil Stent



Office Unit: DI-804HV (firmware 1.34)

LAN IP: 192.168.2.1 Subnet Mask: 255.255.255.0

WAN IP: 202.129.109.87 Subnet Mask: 255.255.255.224

Default Gateway: 202.129.109.65

Workstation A:

IP: 192.168.2.156 Subnet Mask: 225.255.255.0

Default Gateway: 192.168.2.1

Home Unit: DI-804V (firmware 4.73)

LAN IP: 192.168.3.11 Subnet Mask: 255.255.255.0

WAN IP: 202.129.109.74 Subnet Mask: 255.255.255.224

Default Gateway: 202.129.109.65

Workstation B:

IP: 192.168.3.9 Subnet Mask: 225.255.255.0

Default Gateway: 192.168.3.11

Please note:

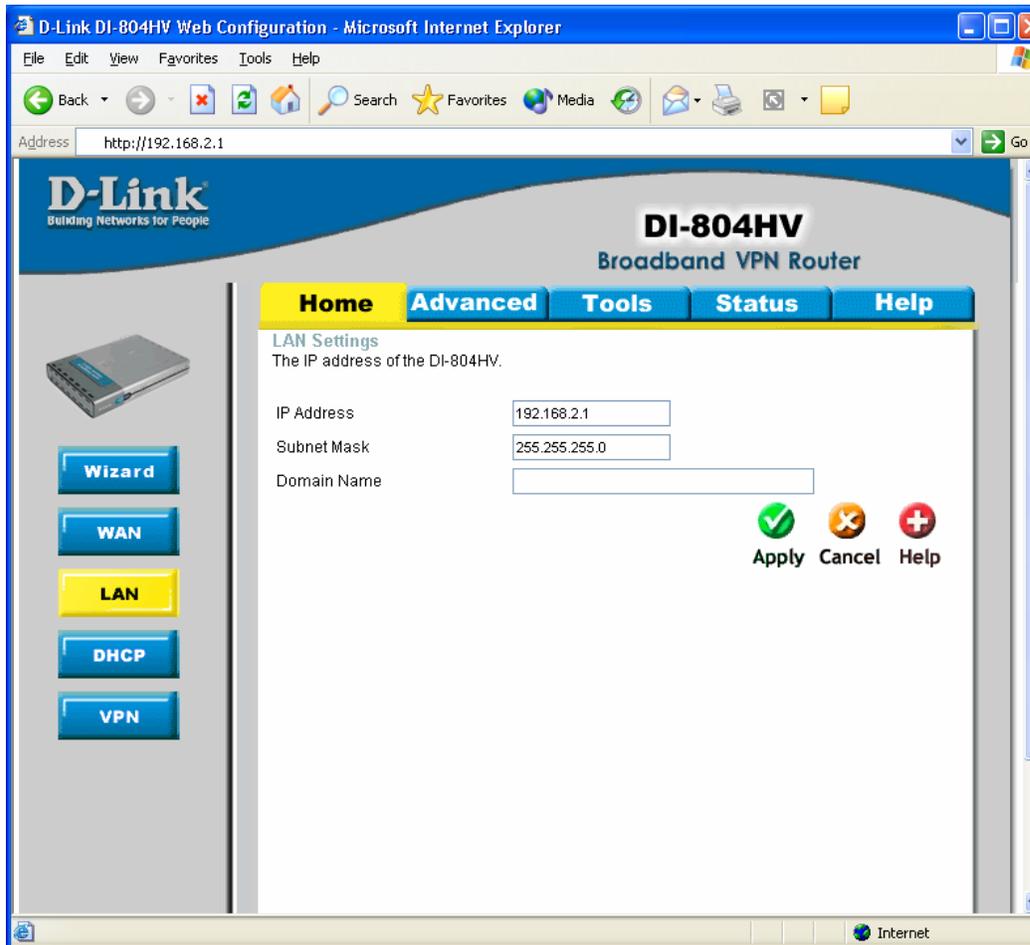
For any IPsec VPN connection you need to make sure that the LAN IP subnets on each location are different. As you can see in the above example the LAN IP of the Office DI-804HV is 192.168.2.1 and the Home DI-804V is 192.168.3.1. If you had a third location it should be 192.168.4.x, etc... (where x is any number from 1 to 254).

If you are using DSL-300, DSL-300+, DSL-302G modem or DSL-500, DSL-504, DSL-604+ router please see **Appendix 3** at the end of this document.

Office DI-804HV Settings:

Log into the router's WEB interface and go to Home > LAN. Change the IP address of the LAN port of the router to required IP.

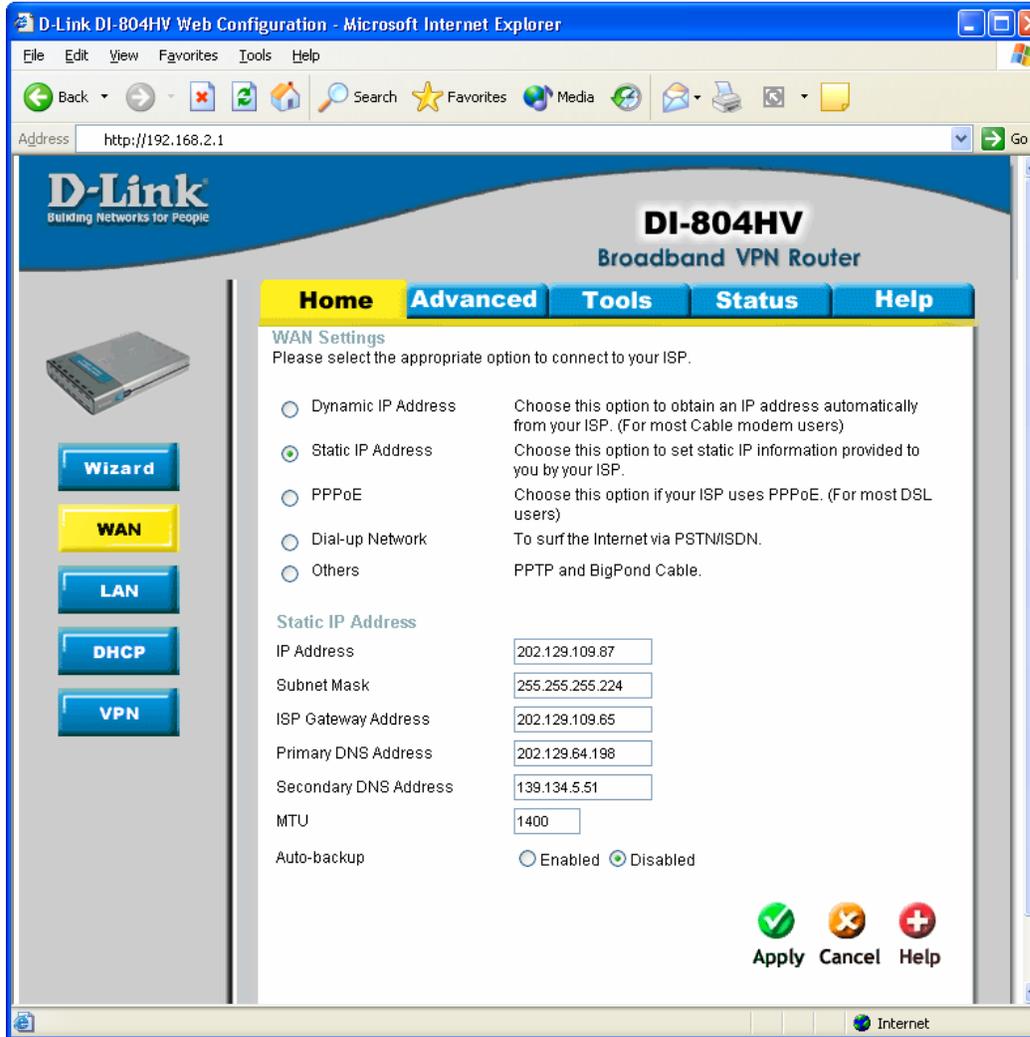
Once you have changed the LAN IP address on the router, make sure your PC has an IP address from the same subnet (192.168.2.x in this example), you may just need to renew IP on your PC or reboot.



Next go to the Home > WAN page, choose the type of connection your ISP requires. In our example it is Static IP Address.

You need to have static IP address on WAN port of at least one unit out of two participating in VPN connection. Some PPPoE connections have static IP as well (in most of such cases you do not have to specify the IP – your ISP will be providing you with the same IP every time you connect).

After setting up WAN port click on Apply to save settings.



Next make sure you can access the Internet (that will confirm that you have set WAN settings correctly), then log back into the router and go into Home > VPN.

Make sure you have VPN Enable box ticked.

Type in a name for the Tunnel Name, something related to the VPN connection would be a good idea, e.g. *Office, Home* etc...

Then click on "More" button to the right of the ID "1"

D-Link DI-804HV Web Configuration - Microsoft Internet Explorer

Address: http://192.168.2.1

D-Link
Building Networks for People

DI-804HV
Broadband VPN Router

Home Advanced Tools Status Help

VPN Settings

| Item | Setting |
|------------------------|--|
| VPN | <input checked="" type="checkbox"/> Enable |
| NetBIOS broadcast | <input type="checkbox"/> Enable |
| Max. number of tunnels | 1 |

| ID | Tunnel Name | Method |
|----|-------------|----------|
| 1 | test | IKE More |
| 2 | | IKE More |
| 3 | | IKE More |
| 4 | | IKE More |
| 5 | | IKE More |

Previous page Next page

Dynamic VPN Settings... L2TP Server Setting... PPTP Server Setting...

Apply Cancel Help

If the remote location does not have a static IP address please use **Dynamic VPN Settings**, instead of the More button.

On the Tunnel 1 page enter the required information:

Local Subnet/Netmask are characteristics of the network where the Unit you are currently configuring is installed.

Remote Subnet/Netmask are for the network located on the other end of the VPN connection.

Make sure that you specify the Remote Gateway being public IP (the address Internet Provider assigns) of the remote network (WAN address on remote router).

Preshare Key: this can be anything up to 31 characters long (write down this key as you will need it when configuring the Home Unit).

Then click Apply, then click on "Select IKE Proposal..."

D-Link DI-804HV Web Configuration - Microsoft Internet Explorer

Address: http://192.168.2.1

D-Link
Building Networks for People

DI-804HV
Broadband VPN Router

Home Advanced Tools Status Help

VPN Settings - Tunnel 1

| Item | Setting |
|----------------------|---------------------------------|
| Tunnel Name | test |
| Aggressive Mode | <input type="checkbox"/> Enable |
| Local Subnet | 192.168.2.0 |
| Local Netmask | 255.255.255.0 |
| Remote Subnet | 192.168.3.0 |
| Remote Netmask | 255.255.255.0 |
| Remote Gateway | 202.129.109.74 |
| Preshare Key | test |
| IKE Proposal index | Select IKE Proposal... |
| IPsec Proposal index | Select IPsec Proposal... |

Back Apply Cancel Help

Dynamic VPN Settings page will look a bit different:

D-Link DI-804HV Web Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://192.168.2.1

D-Link
Building Networks for People

DI-804HV
Broadband VPN Router

Home **Advanced** **Tools** **Status** **Help**

VPN Settings - Dynamic VPN Tunnel

| Item | Setting |
|----------------------|--|
| Tunnel Name | test |
| Dynamic VPN | <input checked="" type="checkbox"/> Enable |
| Local Subnet | 192.168.2.0 |
| Local Netmask | 255.255.255.0 |
| Preshare Key | test |
| IKE Proposal Index | Select IKE Proposal... |
| IPSec Proposal Index | Select IPSec Proposal... |

Back Apply Cancel Help

Below is the example how you can setup IKE Proposal.

We used the following settings:

ID 1, Name: test, Group 1, DES, MD5, 3600, Sec

The screenshot shows the configuration page for the D-Link DI-804HV Broadband Hardware VPN Router. The page is titled "VPN Settings - Tunnel 1 - Set IKE Proposal". On the left side, there is a navigation menu with buttons for "Wizard", "WAN", "LAN", "DHCP", and "VPN" (which is highlighted in yellow). The main content area has a navigation bar with "Home", "Advanced", "Tools", "Status", and "Help". Below the navigation bar, there is a table for "IKE Proposal index" with a single entry "test" and a "Remove" button. Below that is a table with columns: ID, Proposal Name, DH Group, Encrypt algorithm, Auth algorithm, Life Time, and Life Time Unit. The table contains 10 rows, with the first row (ID 1) having the following values: Proposal Name: test, DH Group: Group 1, Encrypt algorithm: DES, Auth algorithm: MD5, Life Time: 3600, Life Time Unit: Sec. The remaining rows (IDs 2-10) have empty Proposal Name fields, DH Group: Group 1, Encrypt algorithm: 3DES, Auth algorithm: SHA1, Life Time: 0, and Life Time Unit: Sec. Below the table is a "Proposal ID" dropdown menu with "-- select one --" and an "Add to Proposal index" button. At the bottom right, there are four icons: a left arrow (Back), a green checkmark (Apply), a red X (Cancel), and a red plus sign (Help).

| Item | Setting |
|--------------------|--|
| IKE Proposal index | test <input type="button" value="Remove"/> |

| ID | Proposal Name | DH Group | Encrypt algorithm | Auth algorithm | Life Time | Life Time Unit |
|----|---------------|----------|-------------------|----------------|-----------|----------------|
| 1 | test | Group 1 | DES | MD5 | 3600 | Sec. |
| 2 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 3 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 4 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 5 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 6 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 7 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 8 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 9 | | Group 1 | 3DES | SHA1 | 0 | Sec. |
| 10 | | Group 1 | 3DES | SHA1 | 0 | Sec. |

Proposal ID -- select one --

Click Apply, then click on Back.

Click on "IPSec Proposal" and you should see a page similar to the one below. Configure it the same way as on the IKE Proposal page, then click Apply.

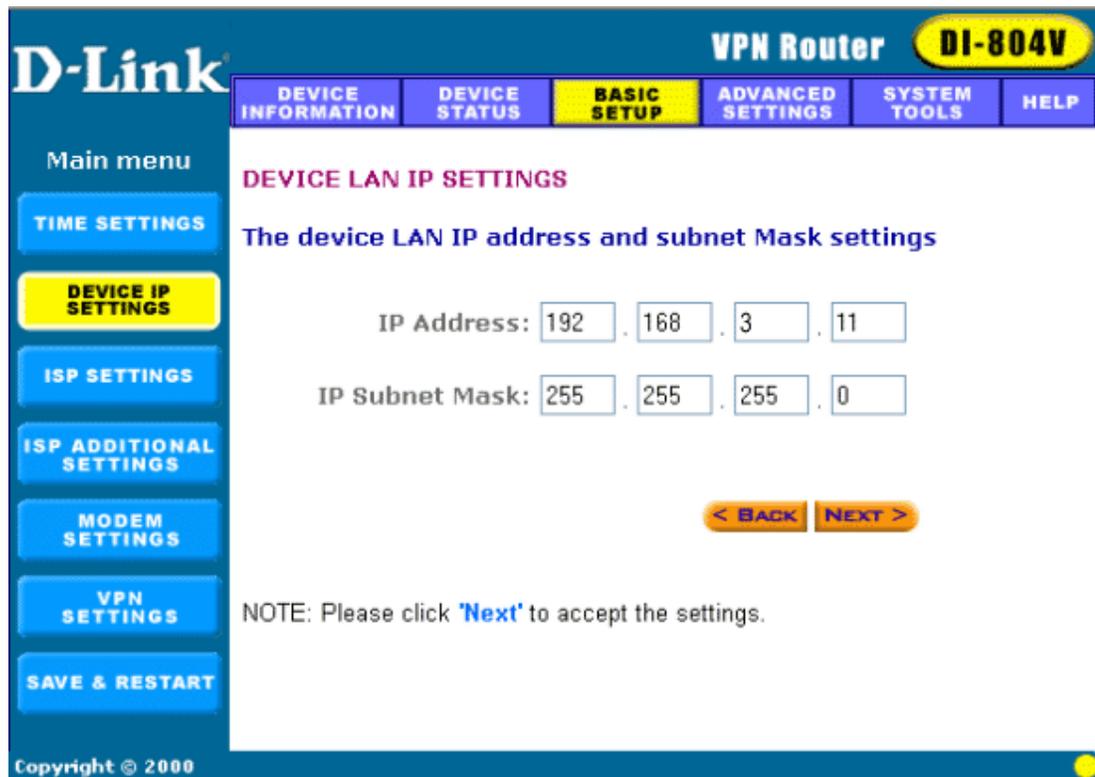
The screenshot shows the configuration interface for the D-Link DI-804HV Broadband Hardware VPN Router. The page is titled "VPN Settings - Tunnel 1 - Set IPSEC Proposal". On the left sidebar, there are navigation buttons for Wizard, WAN, LAN, DHCP, and VPN (highlighted in yellow). The main content area has a navigation bar with Home, Advanced, Tools, Status, and Help. Below the navigation bar, there is a table for IPsec proposals. The table has columns for ID, Proposal Name, DH Group, Encap protocol, Encrypt algorithm, Auth algorithm, Life Time, and Life Time Unit. The first row is filled with "test", "Group 1", "ESP", "DES", "MD5", "3600", and "Sec.". Below the table, there is a "Propose ID" dropdown menu set to "-- select one --" and an "Add to Proposal index" button. At the bottom right, there are four icons: a purple arrow for Back, a green checkmark for Apply, an orange X for Cancel, and a red plus sign for Help.

| ID | Proposal Name | DH Group | Encap protocol | Encrypt algorithm | Auth algorithm | Life Time | Life Time Unit |
|----|---------------|----------|----------------|-------------------|----------------|-----------|----------------|
| 1 | test | Group 1 | ESP | DES | MD5 | 3600 | Sec. |
| 2 | | None | ESP | 3DES | None | 0 | Sec. |
| 3 | | None | ESP | 3DES | None | 0 | Sec. |
| 4 | | None | ESP | 3DES | None | 0 | Sec. |
| 5 | | None | ESP | 3DES | None | 0 | Sec. |
| 6 | | None | ESP | 3DES | None | 0 | Sec. |
| 7 | | None | ESP | 3DES | None | 0 | Sec. |
| 8 | | None | ESP | 3DES | None | 0 | Sec. |
| 9 | | None | ESP | 3DES | None | 0 | Sec. |
| 10 | | None | ESP | 3DES | None | 0 | Sec. |

This is all you need to do to configure the DI-804HV Office Unit. Now you need to setup the DI-804V Home Unit.

Home DI-804V VPN Connection settings:

Log into the router and go to Basic Setup > Device IP Settings. This is the page where you change the IP address on LAN port of the router. Once you have changed it, make sure your PC has an IP address from the same subnet (192.168.3.x in this example).



The screenshot shows the D-Link VPN Router DI-804V web interface. The top navigation bar includes 'DEVICE INFORMATION', 'DEVICE STATUS', 'BASIC SETUP' (highlighted), 'ADVANCED SETTINGS', 'SYSTEM TOOLS', and 'HELP'. The left sidebar contains a 'Main menu' with buttons for 'TIME SETTINGS', 'DEVICE IP SETTINGS' (highlighted), 'ISP SETTINGS', 'ISP ADDITIONAL SETTINGS', 'MODEM SETTINGS', 'VPN SETTINGS', and 'SAVE & RESTART'. The main content area is titled 'DEVICE LAN IP SETTINGS' and contains the text 'The device LAN IP address and subnet Mask settings'. Below this, there are two rows of input fields: 'IP Address' with values 192, 168, 3, and 11; and 'IP Subnet Mask' with values 255, 255, 255, and 0. At the bottom right of the form area are '< BACK' and 'NEXT >' buttons. A note at the bottom states: 'NOTE: Please click 'Next' to accept the settings.' The footer of the page reads 'Copyright © 2000'.

D-Link VPN Router **DI-804V**

DEVICE INFORMATION | DEVICE STATUS | **BASIC SETUP** | ADVANCED SETTINGS | SYSTEM TOOLS | HELP

Main menu

TIME SETTINGS

DEVICE IP SETTINGS

ISP SETTINGS

ISP ADDITIONAL SETTINGS

MODEM SETTINGS

VPN SETTINGS

SAVE & RESTART

DEVICE LAN IP SETTINGS

The device LAN IP address and subnet Mask settings

IP Address: . . .

IP Subnet Mask: . . .

< BACK | NEXT >

NOTE: Please click 'Next' to accept the settings.

Copyright © 2000

Then go to Basic Setup > Cable/DSL Settings. On this page you to set up WAN port settings according to your ISP requirements. In our example WAN port of DI-804V has static IP address.

D-Link VPN Router **DI-804V**

DEVICE INFORMATION | DEVICE STATUS | **BASIC SETUP** | ADVANCED SETTINGS | SYSTEM TOOLS | HELP

Main menu

TIME SETTINGS

DEVICE IP SETTINGS

ISP SETTINGS

ISP ADDITIONAL SETTINGS

MODEM SETTINGS

VPN SETTINGS

Basic Setup - Cable/DSL ISP Settings

Computer Name:

Domain Name:

ISP Settings

Static IP Settings

IP assigned by your ISP: . . .

IP subnet mask: . . .

ISP Gateway Address: . . .

Dynamic DNS Static DNS

DNS1: . . .

DNS2: . . .

Copyright © 2000

Under Basic Setup > VPN Settings you need to create a new VPN Tunnel entry and specify settings for your VPN connection.

Remote IP Network is the Subnet IP of the network on the other end of the VPN tunnel.

Remote IP Netmask is the Subnet Mask of the network on the other end of the VPN tunnel.

Remote Gateway IP is public IP (the address Internet Provider assigns) of the remote network (WAN address on remote router). If it is Dynamic IP just type 0.0.0.0 here.

Under PreShared Key you need to enter the same key you have specified in Office DI-804HV settings.

D-Link VPN Router **DI-804V**

DEVICE INFORMATION | DEVICE STATUS | **BASIC SETUP** | ADVANCED SETTINGS | SYSTEM TOOLS | HELP

Main menu

- TIME SETTINGS
- DEVICE IP SETTINGS
- ISP SETTINGS
- ISP ADDITIONAL SETTINGS
- MODEM SETTINGS
- VPN SETTINGS**
- SAVE & RESTART

VPN SETTINGS

Connection Name: test

Local IPSEC Identifier: []

Remote IPSEC Identifier: []

Remote IP Network: 192 . 168 . 2 . 0

Remote IP Netmask: 255 . 255 . 255 . 0

Remote Gateway IP: 202 . 129 . 109 . 87

Network Interface: WAN ETHERNET

Secure Association: Main Mode Aggressive Manual

Perfect Forward Secure: Enabled Disabled

Encryption Protocol: DES

PreShared Key: test

Key Life: 28800 Seconds

IKE Life Time: 3600 Seconds

SAVE

| Enable | Connection Name | Local IPSEC ID | Remote IPSEC ID | Command |
|-------------------------------------|-----------------|----------------|-----------------|----------|
| <input checked="" type="checkbox"/> | test | | | Edit Del |

Click on Save to save the settings.

This is all you need to do to configure the VPN connection between Office Unit and Home Unit.

Appendix 1. How to test your VPN connection.

Make sure that computers on both locations can access the Internet.

To bring the VPN tunnel up you just need to try to access any IP address on the network at the remote location.

To do this in Windows go to **Start > Run**, type *command* and click on OK.

Depending on what location you are at will depend on what you type in.

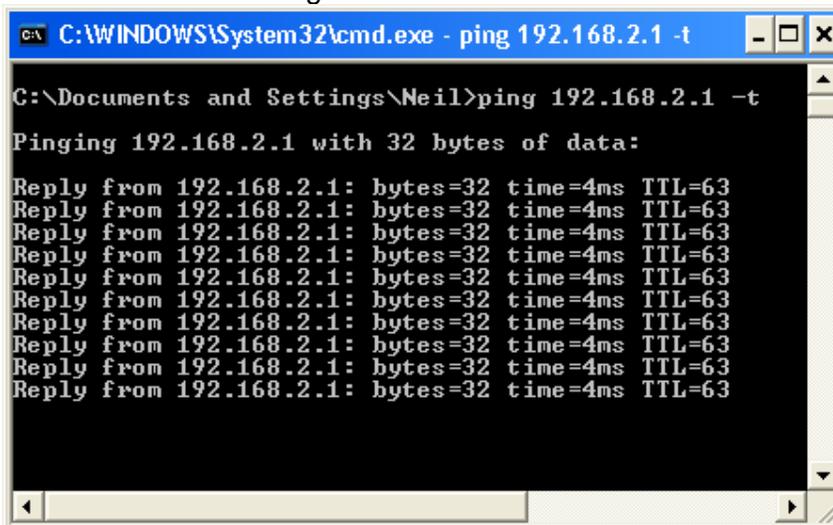
If you are located on the 192.168.2.x side (Office) type in the following and press Enter (this will ping the IP of the Home Unit):

```
ping 192.168.3.11 -t
```

Or if your location is network with 192.168.3.x (Home) type:

```
ping 192.168.2.1 -t
```

You should see messages similar to the ones below:



```
C:\WINDOWS\System32\cmd.exe - ping 192.168.2.1 -t
C:\Documents and Settings\Neil>ping 192.168.2.1 -t
Pinging 192.168.2.1 with 32 bytes of data:
Reply from 192.168.2.1: bytes=32 time=4ms TTL=63
```

If you see a message saying Reply from... that means that VPN tunnel has been established successfully and you can communicate with remote network via VPN.

If you now log into the DI-804HV and go into Status > Log you can see the VPN connection log.

The screenshot shows a Microsoft Internet Explorer browser window displaying the web management interface of a D-Link DI-804HV Broadband VPN Router. The address bar shows the URL `http://192.168.3.11/`. The interface features a navigation menu with tabs for Home, Advanced, Tools, Status, and Help. The 'Status' tab is selected, and the 'Log' sub-tab is active. The main content area displays the VPN connection log, which includes the following text:

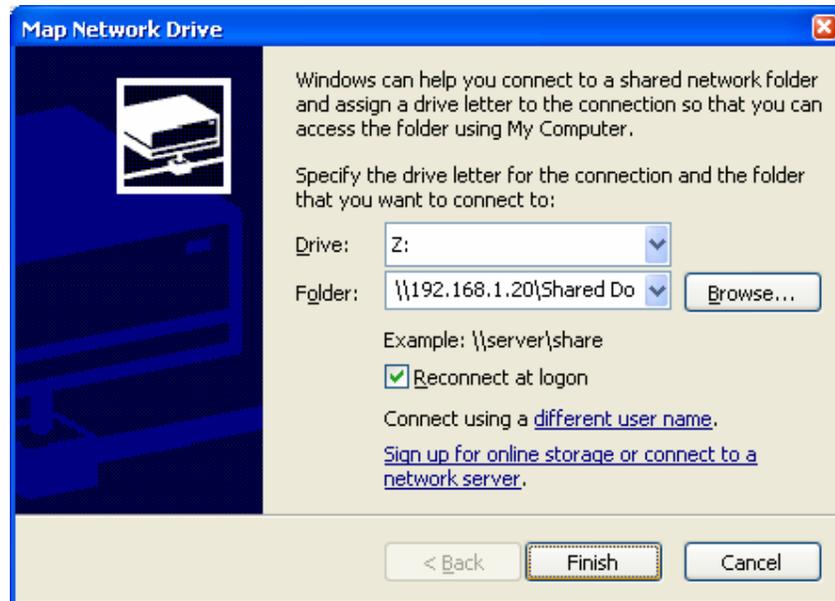
WAN Type: Static IP Address (V1.34)
Display time: Tue Oct 21 00:00:14 2003

*Send IKE M1(INIT) : 202.129.109.74 --> 202.129.109.87
Tuesday, 21 October 2003 12:00:01 AM Receive IKE M1(INIT) : 202.129.109.87 --> 202.129.109.74
Tuesday, 21 October 2003 12:00:01 AM Try to match with ENC:DES AUTH:PSK HASH:SHA1 Group:Group1
Tuesday, 21 October 2003 12:00:01 AM Send IKE M2(RESPI) : 202.129.109.74 --> 202.129.109.87
Tuesday, 21 October 2003 12:00:01 AM Receive IKE M3(KEYINIT) : 202.129.109.87 --> 202.129.109.74
Tuesday, 21 October 2003 12:00:01 AM Send IKE M4(KEYRESP) : 202.129.109.74 --> 202.129.109.87
Tuesday, 21 October 2003 12:00:01 AM Receive IKE M5(IDINIT) : 202.129.109.87 --> 202.129.109.74
Tuesday, 21 October 2003 12:00:01 AM Send IKE M6(IDRESP) : 202.129.109.74 --> 202.129.109.87
Tuesday, 21 October 2003 12:00:01 AM IKE Phase1 (ISAKMP SA) established : 202.129.109.74 <-> 202.129.109.87
Tuesday, 21 October 2003 12:00:02 AM Receive IKE Q1(QINIT) : [202.129.109.87]--> [202.129.109.74]
Tuesday, 21 October 2003 12:00:02 AM Requested routing is [192.168.2.0|202.129.109.87]<-> [202.129.109.74|192.168.3.0]
Tuesday, 21 October 2003 12:00:02 AM Try to match with MODE:Tunnel PROTOCOL:ESP-DES AUTH:SHA1 HASH:Others PFS(Group):Group1
Tuesday, 21 October 2003 12:00:02 AM Send IKE Q2(QRESP) : 192.168.3.0 --> 192.168.2.0
Tuesday, 21 October 2003 12:00:02 AM Receive IKE Q3(QHASH) : [192.168.2.0|202.129.109.87]--> [202.129.109.74|192.168.3.0]
Tuesday, 21 October 2003 12:00:02 AM IKE Phase2 (IPSEC SA) established : [192.168.2.0|202.129.109.87]<-> [202.129.109.74|192.168.3.0]
Tuesday, 21 October 2003 12:00:02 AM inbound SPI = 0x2000010, outbound SPI = 0x2000010

Appendix 2

Connecting to remote computers/drives via VPN

You can map remote computers' drives by opening Windows Explorer and going to Tools > Map Network Drive (you need to specify the IP address of the computer on remote network and the name of the shared folder):



Alternatively you can do Search > Computers or People > Computer on Network > specify the IP address of the computer you are trying to connect to.

If you do not see computers in My Network Places or My Network Neighbourhood you may need to enable NetBIOS over TCP/IP in Windows. Or use the methods described above. Note that firewall/antivirus software installed on your or remote computer may stop you from accessing shared folders.

Appendix 3

Note to DSL-300, DSL-300+, DSL-302G modems users and DSL-500, DSL-504, DSL-604+ users.

If you are using **DSL-300** to connect your DI-804HV/DI-804V to the Internet please avoid using **192.168.1.x** addresses on your networks as it is the the temporary subnet used by the modem.

If you are using **DSL-300+** to connect your DI-804HV/DI-804V to the Internet please avoid using **192.168.0.x** addresses on your networks as it is the the temporary subnet used by the modem. Also note that DSL-300+ links to MAC address of the device connected to it directly. So if you configured the modem while it was connected to your PC directly or to another router, you will need to reconfigure it while it is connected to your DI-804HV/DI-804V. Here are the steps:

1. Connect the DSL-300+ modem to the WAN port of your DI-804HV.
2. Set WAN port on DI-804HV to "Dynamic IP" and set LAN port to subnet different from 192.168.0.x (e.g. 192.168.3.1)
3. Renew IP address on your computer so it will be on 192.168.3.x subnet and log into the DSL-300+ using your Internet browser: <http://192.168.0.1>
4. In the DSL-300+ interface select **Account Management**. Put a tick next to your account and click on **Delete**.
5. Select **Account Configuration** and reconfigure the modem according to your ISP requirements. Click on **OK** to save settings.

If you are using **DSL-500, DSL-504, DSL-604+** router to connect your DI-804HV/DI-804V to the Internet please avoid using **192.168.0.x** addresses on your networks as it is the the default LAN subnet used by the routers. You may change it to a different subnet (e.g. 192.168.33.1) if you wish, under **Configuration > Ethernet IP**.

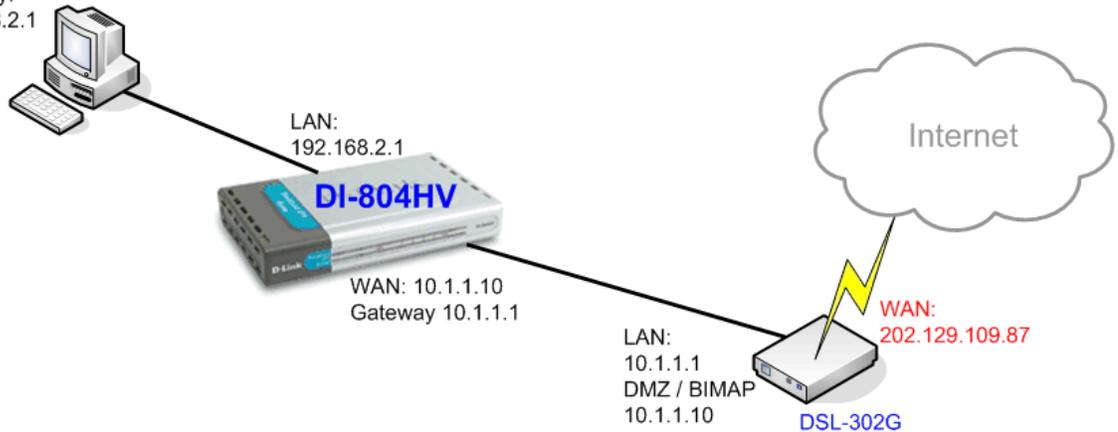
Note that you need to enable VPN passthrough on the router. Or go to **NAT Configuration** and enable **DMZ**: specify the IP address of the WAN port of DI-804HV there.

DI-804HV WAN port should be set with static IP from the same subnet as DSL-xxx LAN port. Default Gateway should be set as DSL-xxx LAN port IP address.

Please keep in mind that with DSL-xxx routers with NAT enabled your public IP address will be located on the WAN port of DSL-xxx router. WAN port of DI-804HV will have private IP address. When setting up **Remote Gateway** in VPN you will need to use public IPs on DSL-xxx routers' WAN ports (see example with DSL-302G below).

With **DSL-302G** the setup is similar. This modem uses **10.1.1.1** address on LAN.

Workstation A:
192.168.2.156
Gateway:
192.168.2.1



In order to enable VPN traffic passthrough in this modem you need to do the following:
Log into the modem's WEB interface and select **WAN > NAT**. Under NAT Options select **NAT Rule Entry**. Click on **Add** button.
Under **Rule Flavor** select **BIMAP**. Set **Rule ID** as next number in the rules table (in our case it is 2). **IF Name** = **ALL**. **Local Address** will be the IP on the WAN port of your DI-804HV which is connected to this modem. **Global address** leave as 0.0.0.0:

NAT Rule - Add

| NAT Rule Information | | | | |
|------------------------|--|---|---|----|
| Rule Flavor: | BIMAP <input type="button" value="v"/> | | | |
| Rule ID: | 2 | | | |
| IF Name: | ALL <input type="button" value="v"/> | | | |
| Local Address: | 10 | 1 | 1 | 10 |
| Global Address: | 0 | 0 | 0 | 0 |

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Then click on **Submit** to apply the settings.

When setting up **Remote Gateway** in VPN you will need to use public IP on DSL-302G's WAN port.

D-Link Australia & NZ Technical Support Team can be contacted on +61 2 88991800 or support@dlink.com.au

~ End of Document ~