

D-Link And TheGreenBow Solution

DI-824VUP Wireless VPN Router Application Note

Version 1.00
(2009-4-24)

Revision History

Date	Rev.	Description	Editor
2009-4-24	1.0	Interoperability Compliance Testing Negotiate mode for Phase1 and Phase2 using TheGreenBow VPN Client and D-Link product's Wireless VPN router DI-824VUP.	John Yoong

1. Introduction

The objective of this document is to provide a guide describing how to configure the devices to achieve the same environment as show at the network topology.

Users of this document are expected to already possess basic knowledge of D-Link devices and TheGreenBow VPN program, and are familiar with how to perform basic configurations. Only important configurations, such as those pertaining to interfacing and integrating, will be described in this document.

For purpose of reference, configuration files for each device are available for download.

2. Audience

This document is intended for project engineers or end users that need to implement VPN router DI series and TheGreenBow software at the sites.

3. Objective

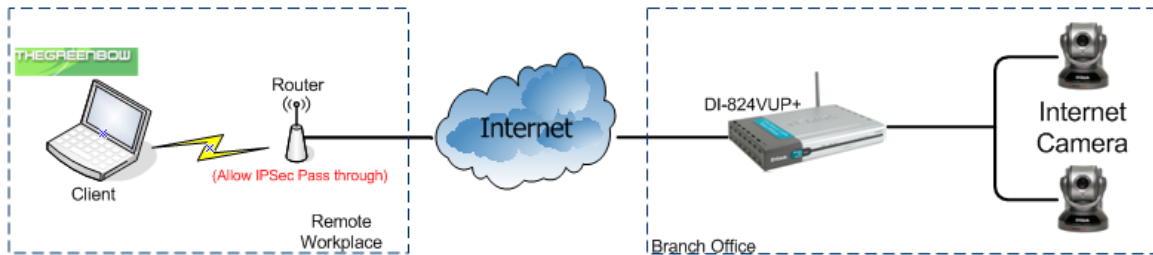
This topology consist the scenarios that integrates using TheGreenBow VPN program and D-Link Wireless VPN router DI-824VUP+ and demonstrate integrations and network solutions to OBUs, and in addition, to Partners and Customers from D-Link International.

4. List of Equipment and Software

The table below shows the devices information.

Device No.	Device Name	Device Model	Firmware
1	TheGreenBow VPN Client Software	-	4.6x
2	Wireless VPN Router	DI-824VUP+	1.06b21

5. Network Diagram



Note: DI-824VUP+ Router is set to allow IPSec pass through.

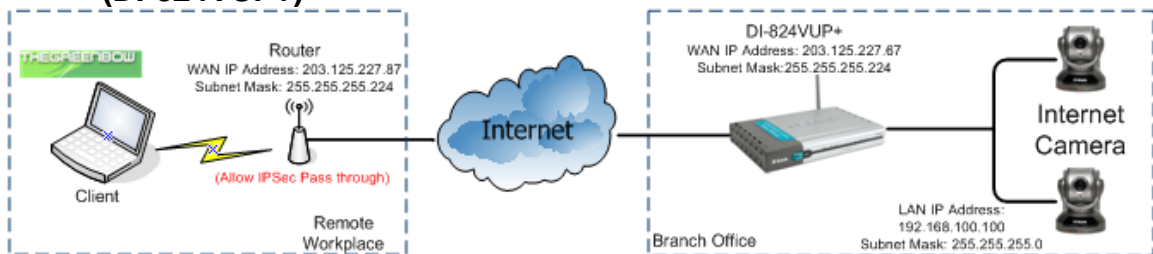
It is important to note that this application note is also applicable to the following VPN routers:

- **DI-804HV**
- **DI-808HV**
- **DI-824VUP**
- **DI-824VUP+**

6. Configurations

In this document, we will only describe the main configurations for this Scenario. The configurations setting for all the D-Link products will not be described here and for more detail about the product you can download their user guide.

6.1 TheGreenBow VPN client and D-Link wireless VPN router solutions (DI-824VUP+)



In this scenario the user can connect back to the Branch office cameras by using TheGreenBow VPN client tunneling to DI-824VUP+.

All configurations are based on Wireless VPN Router DI-824VUP+ (F/W: **1.06b21**) and TheGreenBow VPN Client software (F/W: **4.60.0.0**)

The steps in this configuration are:

- **Setup DI-824VUP+ for VPN tunneling**
 - **Setup Dynamic VPN**
- **Setup TheGreenBow VPN client**

- Setup Phase 1
- Setup Phase 2

6.1.1) Setup DI-824VUP+ for VPN tunneling

6.1.1.1) Setup Dynamic VPN

- 1) Click on the “VPN” and select the “Dynamic VPN”, please ensure all other VPN setting is clear or disable.

The screenshot shows the configuration interface for a D-Link AirPlus G+ High-Speed 2.4GHz Wireless VPN Router. The 'VPN' tab is selected in the sidebar. The main content area displays the 'VPN Settings' section with the following configuration:

Item	Setting
VPN	<input checked="" type="checkbox"/> Enable
NetBIOS broadcast	<input type="checkbox"/> Enable
Max. number of tunnels	4

ID	Tunnel Name	Method
1	<input type="text"/>	IKE <input type="button" value="More"/>
2	<input type="text"/>	IKE <input type="button" value="More"/>
3	<input type="text"/>	IKE <input type="button" value="More"/>
4	<input type="text"/>	IKE <input type="button" value="More"/>
5	<input type="text"/>	IKE <input type="button" value="More"/>

Navigation buttons: Previous page, Next page, Dynamic VPN Settings... (highlighted), L2TP Server Setting..., PPTP Server Setting..., View VPN Status...
Action buttons: Apply (checkmark), Cancel (X), Help (+)

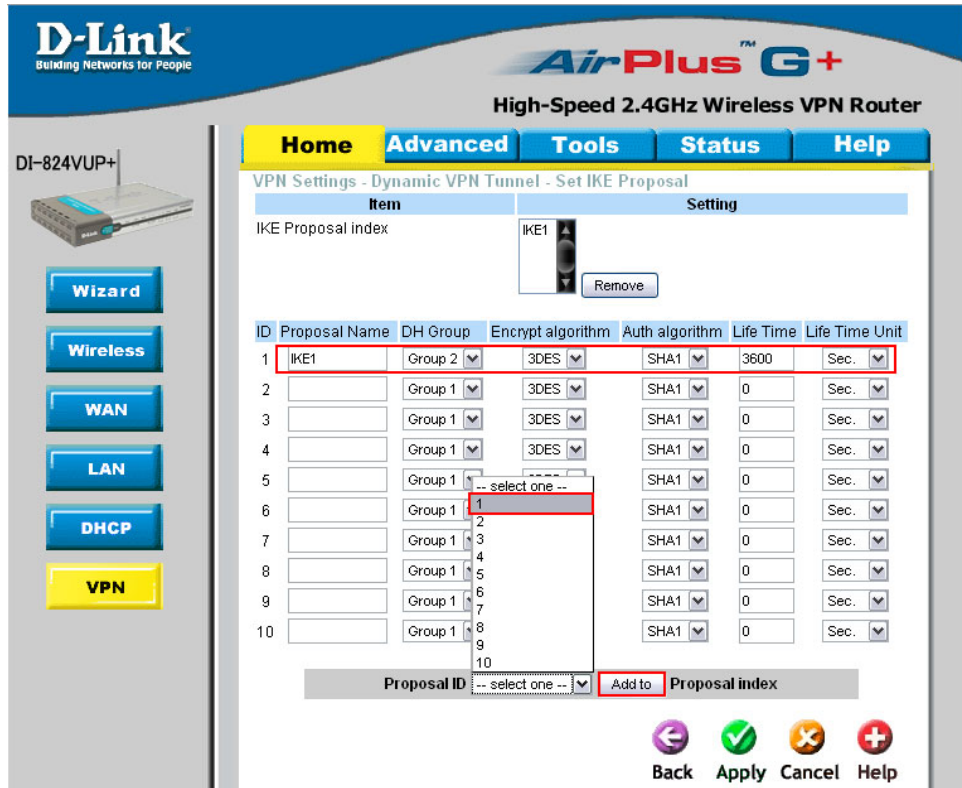
- 2) Fill in the details as show below and for the “Preshare key” must be the same as the preshare key set in Thegreenbow VPN Client software. Next click on “IKE Proposal”

The screenshot shows the configuration page for a Dynamic VPN Tunnel on a D-Link AirPlus G+ router. The page is titled "VPN Settings - Dynamic VPN Tunnel" and has a navigation bar with "Home", "Advanced", "Tools", "Status", and "Help". On the left, there is a sidebar with buttons for "Wizard", "Wireless", "WAN", "LAN", "DHCP", and "VPN". The main content area contains a table of settings:

Item	Setting
Tunnel Name	DynIPsec
Dynamic VPN	<input checked="" type="checkbox"/> Enable
IPSec NAT Traversal	<input type="checkbox"/> Enable
Local Subnet	192.168.100.0
Local Netmask	255.255.255.0
Preshare Key
Extended Authentication (xAUTH)	<input type="checkbox"/> Enable Server mode Set Local user...
IKE Proposal index	Select IKE Proposal...
IPSec Proposal index	Select IPSec Proposal...

At the bottom right, there are four icons: a left arrow (Back), a green checkmark (Apply), an orange X (Cancel), and a red plus sign (Help).

- 3) Fill in the setting and select the “Encrypt” and “Auth” algorithm and lastly, add the profile to the setting to activate it.



D-Link Building Networks for People **AirPlus G+** High-Speed 2.4GHz Wireless VPN Router

DI-824VUP+

Wizard
Wireless
WAN
LAN
DHCP
VPN

VPN Settings - Dynamic VPN Tunnel - Set IKE Proposal

Item Setting

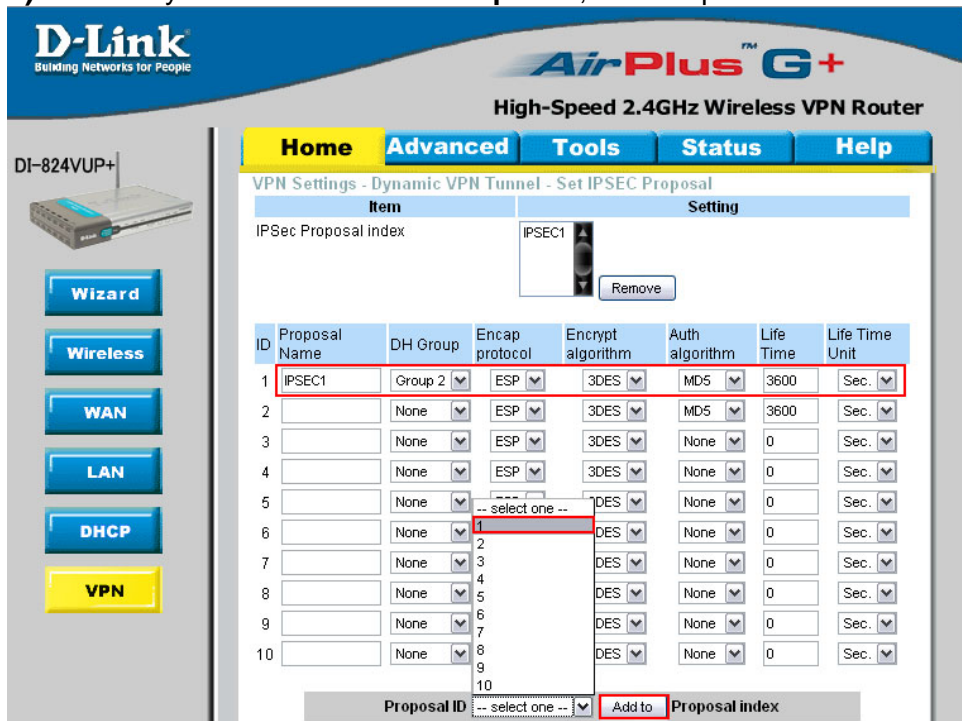
IKE Proposal index: IKE1 [Remove]

ID	Proposal Name	DH Group	Encrypt algorithm	Auth algorithm	Life Time	Life Time Unit
1	IKE1	Group 2	3DES	SHA1	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	-- select one --	SHA1	0	Sec.
6		Group 1	1	SHA1	0	Sec.
7		Group 1	2	SHA1	0	Sec.
8		Group 1	3	SHA1	0	Sec.
9		Group 1	4	SHA1	0	Sec.
10		Group 1	5	SHA1	0	Sec.

Proposal ID: -- select one -- [Add to] Proposal index

Back Apply Cancel Help

4) Lastly is to set the "IPSec Proposal", add the profile to active it.



D-Link Building Networks for People **AirPlus G+** High-Speed 2.4GHz Wireless VPN Router

DI-824VUP+

Wizard
Wireless
WAN
LAN
DHCP
VPN

VPN Settings - Dynamic VPN Tunnel - Set IPSEC Proposal

Item Setting

IPSec Proposal index: IPSEC1 [Remove]

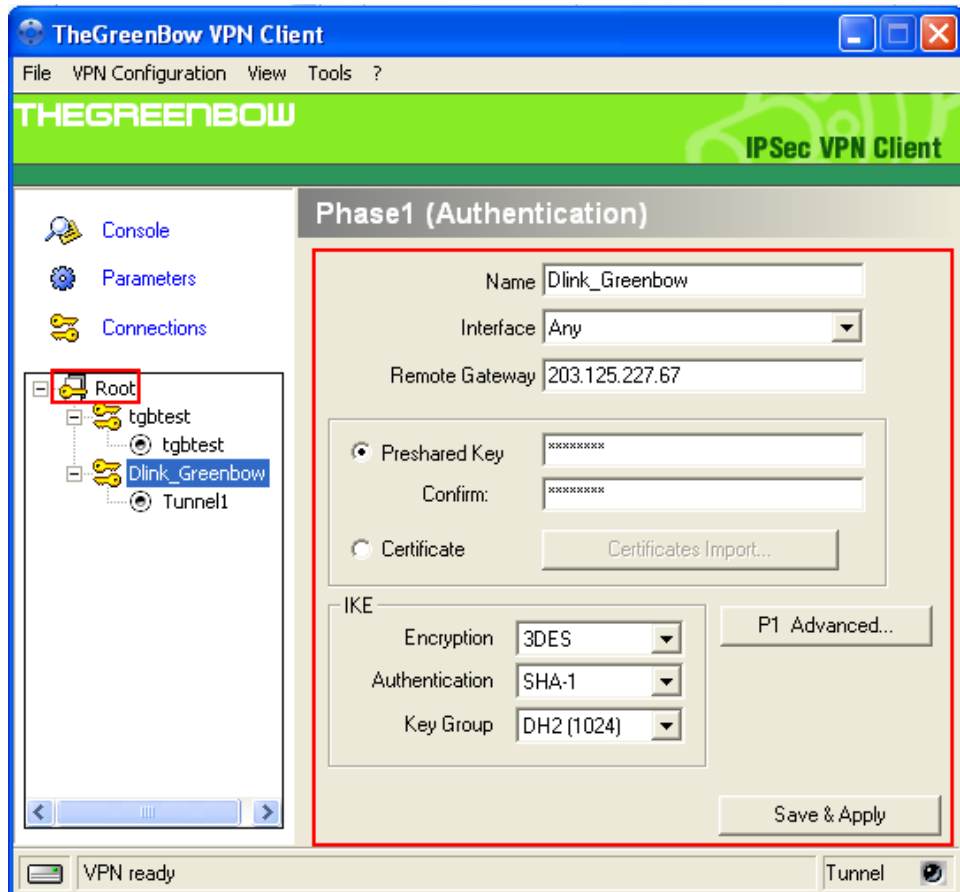
ID	Proposal Name	DH Group	Encap protocol	Encrypt algorithm	Auth algorithm	Life Time	Life Time Unit
1	IPSEC1	Group 2	ESP	3DES	MD5	3600	Sec.
2		None	ESP	3DES	MD5	3600	Sec.
3		None	ESP	3DES	None	0	Sec.
4		None	ESP	3DES	None	0	Sec.
5		None	-- select one --	DES	None	0	Sec.
6		None	1	DES	None	0	Sec.
7		None	2	DES	None	0	Sec.
8		None	3	DES	None	0	Sec.
9		None	4	DES	None	0	Sec.
10		None	5	DES	None	0	Sec.

Proposal ID: -- select one -- [Add to] Proposal index

6.1.2) Setup TheGreenBow VPN Client software

6.1.2.1) Setup Phase 1

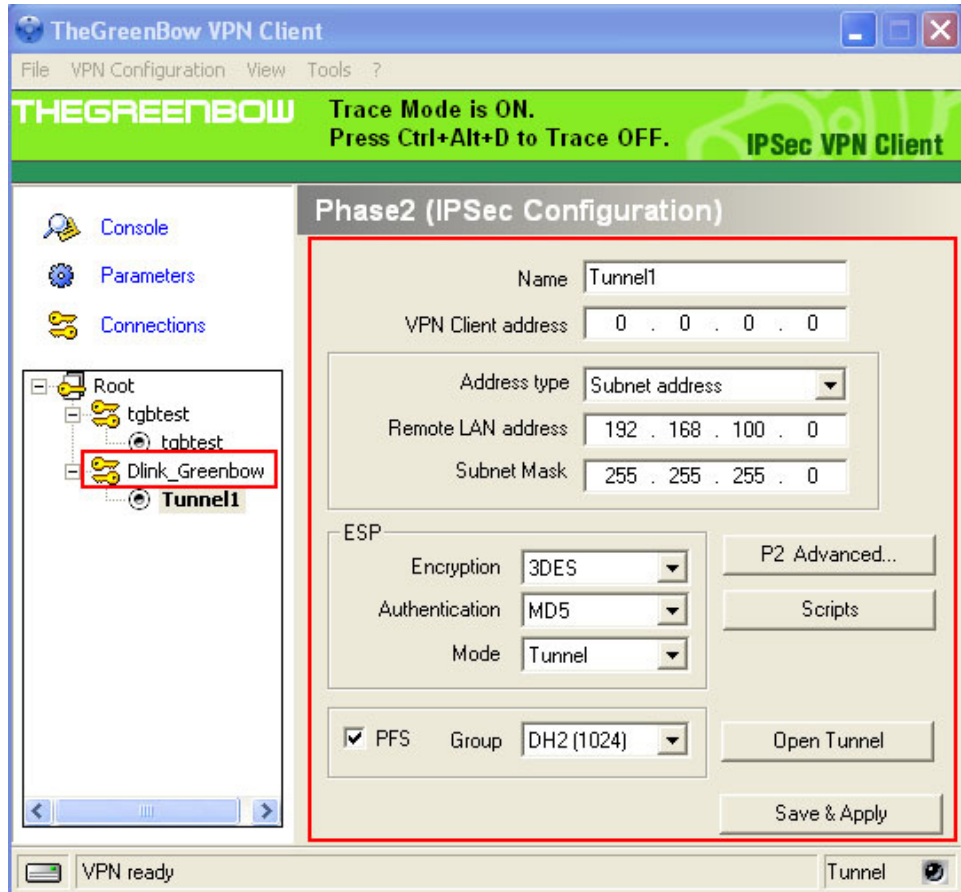
- 1) Right click on the “**Root**” to add a new “**Phase1**”, next fill in the IP address for this VPN Client and Remote gateway IP follow by Preshared Key and IKE setting.



Note: the Preshared Key and IKE must be the same setting set in the Wireless VPN router DI-824VUP+.

6.1.2.2) **Setup Phase 2**

- 1) Right click on the “**Phase1**” to add a new “**Phase2**”, next fill in the VPN Client address for this VPN Client and Remote gateway IP follow by ESP setting.



Note: the ESP Encryption and Authentication setting must be the same in the Wireless VPN router DI-824VUP+ IKE and IPSec setting.

7. Interoperability Compliance Testing

7.1) General Test Approach

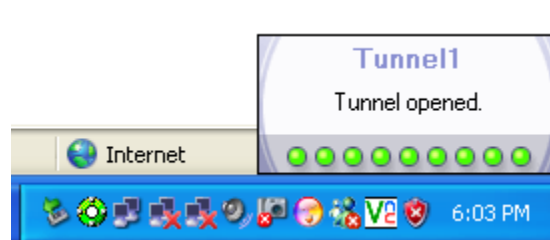
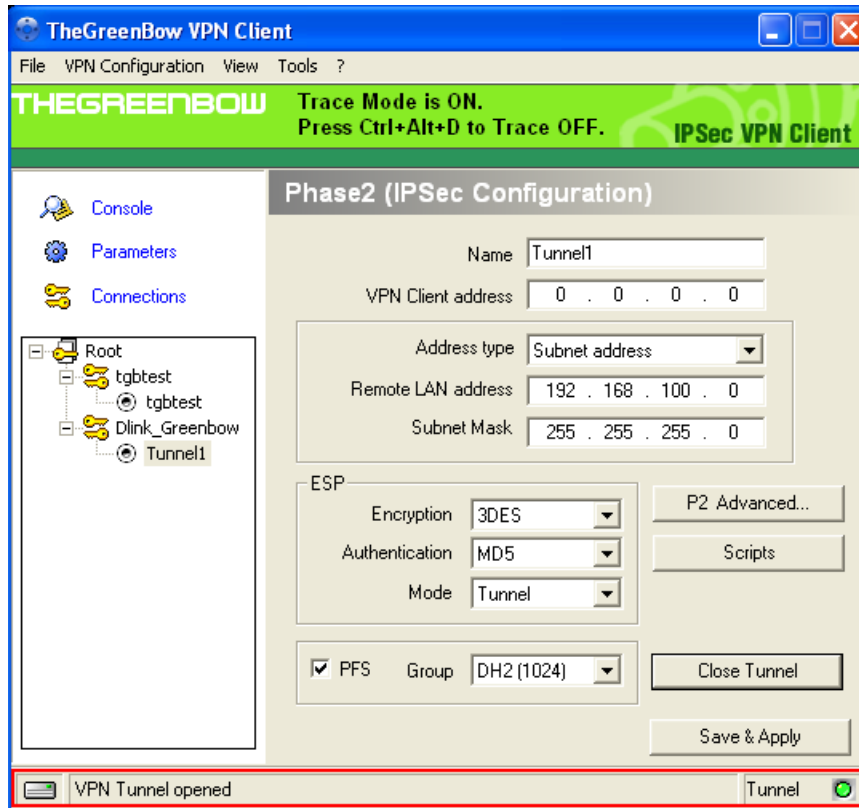
- a. Open the VPN tunnel using different Negotiate Mode in Phase 1 and Phase 2:

Series Negotiate Mode	
Phase 1	Phase 2
AES-SHA	AES-SHA
AES-MD5	AES-SHA
3DES-MD5	AES-SHA
3DES-SHA	AES-SHA
DES-MD5	AES-SHA
DES-SHA	AES-SHA
AES-SHA	AES-MD5
AES-MD5	AES-MD5
3DES-MD5	AES-MD5
3DES-SHA	AES-MD5
DES-MD5	AES-MD5
DES-SHA	AES-MD5
AES-SHA	3DES-SHA
AES-MD5	3DES-SHA
3DES-MD5	3DES-SHA
3DES-SHA	3DES-SHA
DES-MD5	3DES-SHA
DES-SHA	3DES-SHA
AES-SHA	3DES-MD5
AES-MD5	3DES-MD5
3DES-MD5	3DES-MD5
3DES-SHA	3DES-MD5
DES-MD5	3DES-MD5
DES-SHA	3DES-MD5
AES-SHA	DES-SHA
AES-MD5	DES-SHA
3DES-MD5	DES-SHA
3DES-SHA	DES-SHA
DES-MD5	DES-SHA
DES-SHA	DES-SHA
AES-SHA	DES-MD5
AES-MD5	DES-MD5
3DES-MD5	DES-MD5

Series Negotiate Mode	
Phase 1	Phase 2
3DES-SHA	DES-MD5
DES-MD5	DES-MD5
DES-SHA	DES-MD5

7.2) Test Result

- a. The VPN tunnel will be open at any negotiate mode set in Phase 1 and Phase 2.



TheGreenBow VPN Software

- b. The Wireless VPN Router DI-824VUP+ will show the tunnel is up at their VPN status.

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

VPN Status
VPN status display VPN connection state.

IPSec PPTP L2TP

Name	Remote Network IP Address/ Subnet Mask/ Gateway	Local Network IP Address/ Subnet Mask	Type	State	Life Time	Drop
DynIPsec	192.168.2.54/ 255.255.255.255/ 203.125.227.87	192.168.100.0/ 255.255.255.0	ESP tunnel	IKE established	3597	<input type="button" value="Drop"/>
DynIPsec	0.0.0.0/ 255.255.255.255/ 255.255.255.255	192.168.100.0/ 255.255.255.0		Dynamic IPSec	0	

DI-824VUP+ VPN status

- c. VPN Client is able to Ping to the remote network.

```

C:\> Command Prompt - ping 192.168.100.100 -t
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=6ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=6ms TTL=128
Reply from 192.168.100.100: bytes=32 time=6ms TTL=128
Reply from 192.168.100.100: bytes=32 time=8ms TTL=128
Reply from 192.168.100.100: bytes=32 time=4ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
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Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=6ms TTL=128
Reply from 192.168.100.100: bytes=32 time=3ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=4ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128
Reply from 192.168.100.100: bytes=32 time=5ms TTL=128

```

8. Conclusion

The Application Notes demonstrate how D-Link VPN products and TheGreenBow software combined perfectly address the requirements of the small and medium businesses worldwide. The joint VPN solution offer advantages around multiple access control and authorization mechanisms for users and tunneling capabilities to access the entire corporate network; it can also provide different access rights to different users.

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