

## How to configure VPN function on TP-LINK Routers

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## 1. VPN Overview

VPN (Virtual Private Network) is a private network established via the public network, generally via the Internet. However, the private network is a logical network without any physical network lines, so it is called Virtual Private Network.

With the wide application of the Internet, more and more data are needed to be shared through the Internet. Connecting the local network to the Internet directly, though can allow the data exchange, will cause the private data to be exposed to all the users on the Internet. The VPN (Virtual Private Network) technology is developed and used to establish the private network through the public network, which can guarantee a secured data exchange.

VPN adopts the tunneling technology to establish a private connection between two endpoints. It is a connection secured by encrypting the data and using point-to-point authentication. As the packets are encapsulated and de-encapsulated in the Router, the tunneling topology implemented by encapsulating packets is transparent to users.

The tunneling protocols supported by TP-LINK Routers are as below:

<b>Product Model</b>	<b>Tunneling Protocol</b>
<b>TL-ER6120</b>	IPsec、PPTP、L2TP
<b>TL-ER6020</b>	IPsec、PPTP、L2TP
<b>TL-ER604W</b>	IPsec、PPTP、L2TP
<b>TL-R600VPN</b>	IPsec、PPTP

## 2. How to configure LAN-to-LAN IPsec VPN on TP-LINK Router

Suitable for: TL-ER6120, TL-ER6020, TL-ER604W, TL-R600VPN



To setup an IPsec VPN tunnel on TP-LINK routers you need to perform the following steps:

- A. Connecting the devices together
- B. Verify the settings needed for IPsec VPN on router
- C. Configuring IPsec VPN settings on TL-ER6120 (Router A)
- D. Configuring IPsec VPN settings on TL-R600VPN (Router B)
- E. Checking IPsec SA

**NOTE:** We use TL-ER6120 and TL-R600VPN in this example, the way to configure IPsec VPN on TL-ER6020/TL-ER604W is the same as that on TL-ER6120.

### A. Connecting the devices together

Before setup a VPN tunnel, you need to ensure that the two routers are connected to the Internet. After ensuring that there is an active Internet connection on each router, you need to verify the VPN settings of the two routers, please follow the instruction below.

### B. Verify the settings needed for IPsec VPN on router

To verify the settings needed on the two routers, please login the router's management webpage.

Router A's Status page:

**TP-LINK**

**TL-ER6120**

**System Status**

**Network**

- Status
- System Mode
- WAN
- LAN
- DMZ
- MAC Address
- Switch

**User Group**

**Advanced**

**Firewall**

**VPN**

**Services**

**Maintenance**

**Logout**

**Device Info**

Firmware Version: 1.0.0 Build 20111114 Rel.52682  
 Hardware Version: TL-ER6120 v1.0

**System Time**

System Time: 2012-02-08 10:11:16 Wednesday  
 Running Time: 14 Hour, 34 Min, 53 Sec

**WAN**

WAN1	Link Up	WAN2	Link Down
Primary Connection:	PPPoE/Russian PPPoE	Primary Connection:	Dynamic IP
Status:	Connected	Status:	Connecting...
Online Time:	6 Sec	IP Address:	0.0.0.0
IP Address:	218.18.0.233	Subnet Mask:	0.0.0.0
Subnet Mask:	255.255.255.255	Gateway:	0.0.0.0
MAC Address:	90-F6-52-49-A0-67	MAC Address:	90-F6-52-49-A0-68
Secondary Connection:	---	Secondary Connection:	---
Status:	---	Status:	---
IP Address:	---	IP Address:	---
Subnet Mask:	---	Subnet Mask:	---

**LAN/DMZ**

Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.0.1	255.255.255.0	Enabled	90-F6-52-49-A0-66

*Annotations:*  
 - A green box points to the WAN1 IP Address (218.18.0.233) with the text: "This will be Router B's Remote Gateway IP".  
 - A green box points to the LAN IP Address (192.168.0.1) with the text: "This is Router A's Local Subnet".

Router B's Status page:

**TP-LINK**

**Status**

Firmware Version: 1.0.0 Build 120118 Rel.41877n  
 Hardware Version: R600VPN v1 00000000

**LAN**

MAC Address: 90-F6-52-26-1C-44  
**IP Address: 192.168.10.1**  
 Subnet Mask: 255.255.255.0

This is Router B's Local Subnet

**WAN**

MAC Address: 90-F6-52-26-1C-45  
**IP Address: 218.18.1.208**  
 Subnet Mask: 255.255.255.255  
 Default Gateway: 218.18.1.208  
 DNS Server: 202.96.134.33, 202.96.128.86  
 Online Time: 0 day(s) 00:04:49

This will be Router A's Remote Gateway IP (connect on Demand)  
 Disconnect

### C. Configuring IPsec VPN settings on TL-ER6120 (Router A)

Step 1 : On the management webpage, click on VPN then IKE Proposal.

Under IKE Proposal, enter Proposal Name whatever you like, select Authentication, Encryption and DH Group, we use MD5,3DES, DH2 in this example.

**TP-LINK**

TL-ER6120

IKE Policy | IKE Proposal

**IKE Proposal**

Proposal Name: test1  
 Authentication: MD5  
 Encryption: 3DES  
 DH Group: DH2

Select MD5, 3DES, DH2

Click on Add

Add  
 Clear  
 Help

**List of IKE Proposal**

No.	Name	Auth	Encr	DH	Action
No entries.					

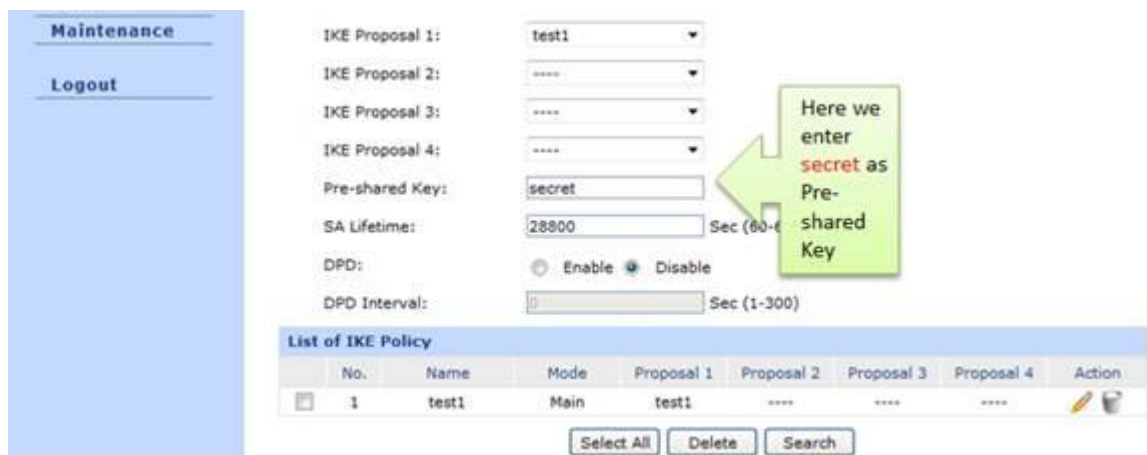
Select All | Delete | Search

Step 2 : Click on Add.

Step 3 : Click on IKE Policy, enter Policy Name whatever you like, select Exchange Mode, in this example we use Main, select IP Address as ID Type.



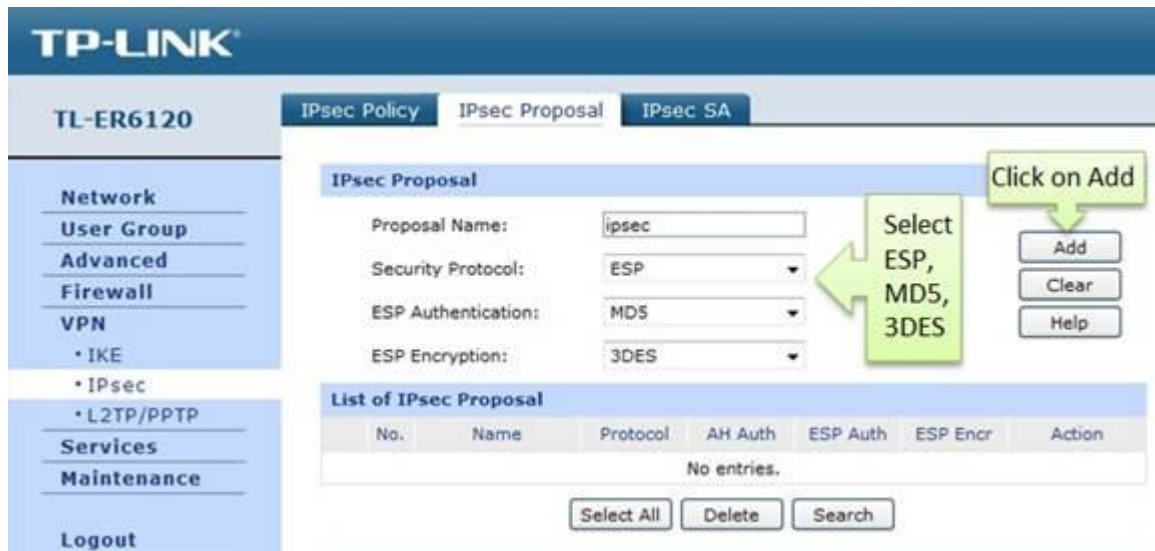
Step 4 : Under IKE Proposal 1, we use test1 in this example. Enter Pre-shared Key and SA Lifetime you want, DPD is disabled.



Step 5 : Click on Add.



Step 6 : Click on IPsec on the left menu, then IPsec Proposal. Select Security Protocol, ESP Authentication and ESP Encryption you want to enable on VPN tunnel. Here we use ESP, MD5 and 3DES for example.



Step 7 : Click on Add.

Step 8 : Click on IPsec Policy, enter Policy Name whatever you like, the Mode should be LAN-to-LAN. Enter Local Subnet and Remote Subnet.



Step 9 : Select WAN you use and type in Remote Gateway. In this example, the Remote Gateway is Router B's WAN IP address, 218.18.1.208.

Step 10 : Look for Policy Mode and select IKE.

Step 11 : Under IKE Policy, we select test1 which is used.

Step 12 : Under IPsec Proposal, we use ipsec1 in this example.

Step 13 : Look for PFS, we set NONE here, under SA Lifetime, enter "28800" or the period you want.

Step 14 : Look for Status then select Activate

The screenshot shows the IPsec Policy configuration interface. On the left is a navigation menu with 'L2TP/PPTP', 'Services', 'Maintenance', and 'Logout'. The main area contains the following fields:

- Local Subnet: 192.168.0.0 / 24
- Remote Subnet: 192.168.10.0 / 24
- WAN: [Dropdown]
- Remote Gateway: 192.168.1.200 (IP Address/Domain Name)
- Policy Mode:  IKE  Manual
- IKE Policy: test1
- IPsec Proposal 1: ipsec1
- IPsec Proposal 2: ----
- IPsec Proposal 3: ----
- IPsec Proposal 4: ----
- PFS: NONE
- SA Lifetime: 28800
- Status:  Activate  Inactivate

Below the form is a table titled 'List of IPsec Policy':

No.	Name	Local Subnet	Remote Subnet	Policy Mode
1	ipsec	192.168.0.0/24	192.168.10.0/24	IKE

Annotations with arrows point to the 'Select IKE' dropdown, the 'test1 and ipsec1 are used' dropdowns, the 'Enter "28800"' input field, and the 'Select Activate' button. At the bottom left, there is a copyright notice: 'Copyright © 2011 TP-LINK TECHNOLOGIES CO., LTD. All Rights Reserved.'

Step 15 : Click on Add.

The screenshot shows the 'IPsec Policy' configuration page. The 'General' section has 'IPsec:' set to  Enable  Disable. The 'IPsec Policy' section has 'Policy Name: ipsec', 'Mode: LAN-to-LAN', and 'Local Subnet: 192.168.0.0 / 24'. On the right, there are buttons for 'Save', 'Add', 'Clear', and 'Help'. An annotation 'Click on Add' points to the 'Add' button.

Step 16 : Select Enable then click on Save.

The screenshot shows the 'IPsec Policy' configuration page. The 'General' section has 'IPsec:' set to  Enable  Disable. The 'IPsec Policy' section has 'Policy Name: ipsec', 'Mode: LAN-to-LAN', and 'Local Subnet: 192.168.0.0 / 24'. On the right, there are buttons for 'Add', 'Clear', and 'Help'. An annotation 'Click on Save' points to the 'Save' button.

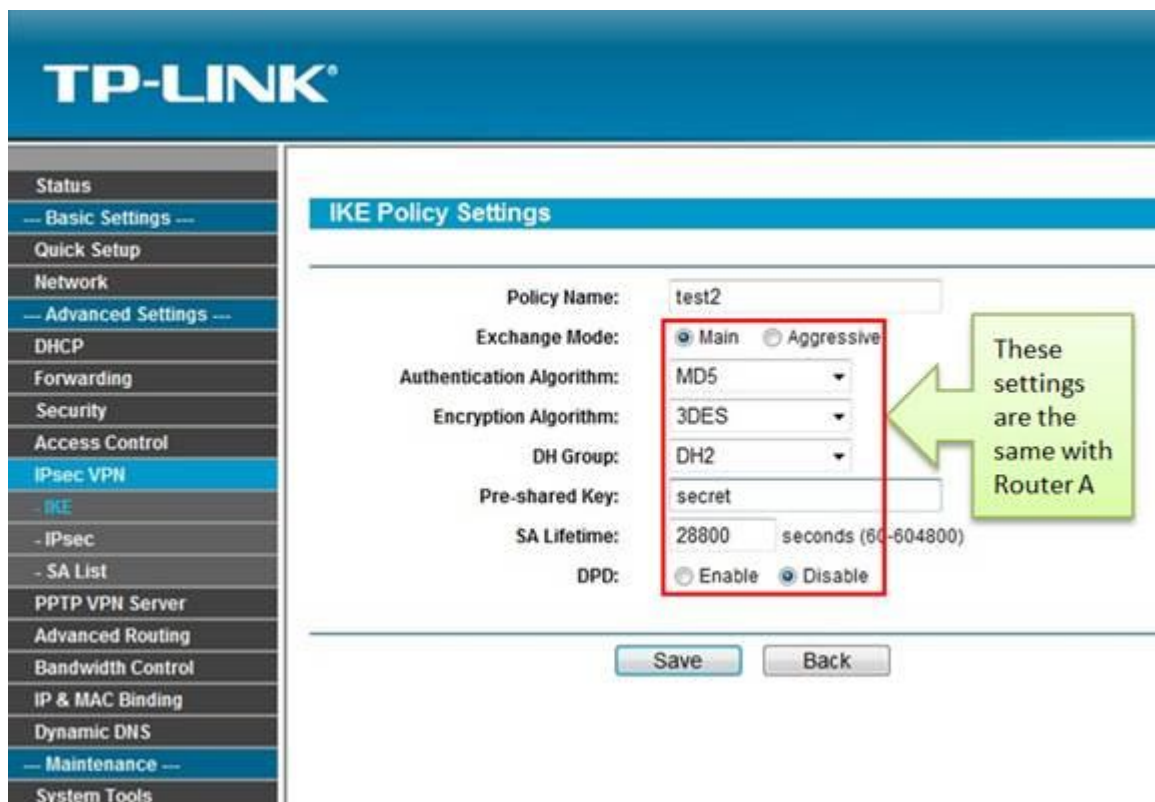


## D. Configuring IPsec VPN settings on TL-R600VPN (Router B)

Step 1 : Go to IPsec VPN -> IKE, click on Add New



Step 2 : Enter Policy Name whatever you like, here we use test2. Exchange Mode, select Main.



Step 3 : Authentication Algorithm and Encryption Algorithm are the same with Router A, we use MD5 and 3DES in this example.

Step 4 : DH Group, select DH2, the same with Router A.

Step 5 : Enter Pre-share Key and SA Lifetime, make sure that they are the same with Router A.

Step 6 : Click on Save.

Step 7 : Click on IPsec on left side, click on Add New.



Step 8 : Enter Policy Name, we use ipsec2 in this example.

Step 9 : Enter Local Subnet and Remote Subnet, and then enter Remote Gateway, it's Router A's WAN IP address, 218.18.0.233.



Step 10 : Look for Exchange mode, please select IKE, and Security Protocol, we use ESP here.

Step 11 : Authentication Algorithm and Encryption Algorithm are the same with Router A, we use MD5 and 3DES in this example.

Step 12 : IKE Security Policy, we use test2 in this example.

Step 13 : Look for PFS, we set NONE here, under Lifetime, enter "28800" or the period you want.

Step 14 : Look for Status then select Enable.

Step 15 : Click on Save.

Step 16 : Enable IPsec and then click on Save.

**TP-LINK**

Status

- Basic Settings
- Quick Setup
- Network
- Advanced Settings
- DHCP
- Forwarding
- Security
- Access Control
- IPsec VPN**
- IKE
- IPsec
- SA List

**List of IPsec Policy**

Select Enable

IPsec:  Enable  Disable  Click on Save

ID	Policy Name	Local Subnet	Remote Subnet	Exchange Mode	Status	Modify
1	ipsec2	192.168.10.0/24	192.168.0.0/24	IKE	Enabled	<a href="#">Modify</a> <a href="#">Delete</a>

Current No. 1 Page

## E. Checking IPsec SA

Router A:

**TP-LINK**

TL-ER6120

- Network
- User Group
- Advanced
- Firewall
- VPN**
- IKE
- IPsec
- L2TP/PPTP
- Services

**List of IPsec SA**

No.	Name	SPI	Direction	Tunnel	Data Flow	Protocol	AH Auth	ESP Auth	ESP Encr
1	ipsec	619756860	in	218.18.0.233<- 218.18.1.208	192.168.0.0/24<- 192.168.10.0/24	ESP	---	MD5	3DES
2	ipsec	127921571	out	218.18.0.233-> 218.18.1.208	192.168.0.0/24-> 192.168.10.0/24	ESP	---	MD5	3DES

Router B:

- Status
- Basic Settings ---
- Quick Setup
- Network
- Advanced Settings ---
- DHCP
- Forwarding
- Security
- Access Control
- IPsec VPN**
- IKE
- IPsec
- SA List

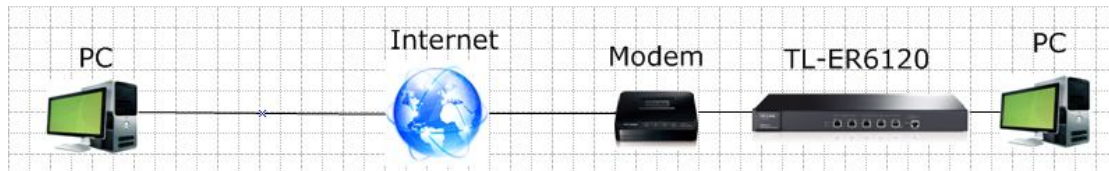
List of Security Association

ID	Name	SPI	Tunnel Initiator	Tunnel Receiver	Security Protocol	AH Auth	ESP Auth	ESP Encr
1	ipsec2	619756860	218.18.1.208	218.18.0.233	ESP	--	MD5	3DES
2	ipsec2	127921571	218.18.0.233	218.18.1.208	ESP	--	MD5	3DES

Refresh

### 3. How to configure GreenBow IPsec VPN Client with a TP-LINK VPN Router

Suitable for: TL-ER6120, TL-ER6020, TL-ER604W



GreenBow IPsec VPN Client is an IPsec VPN client software developed by TheGreenBow company. It can be downloaded from download page for TL-ER6120 (<http://www.tp-link.com/en/support/download/?model=TL-ER6120&version=V1>) or official website of TheGreenBow ([http://www.thegreenbow.com/vpn/vpn-client.html?utm\\_expid=333874-5.xSdTaggCQhu28X37j2BKrw.1&utm\\_referrer=http%3A%2F%2Fwww.thegreenbow.com%2Fservices.html](http://www.thegreenbow.com/vpn/vpn-client.html?utm_expid=333874-5.xSdTaggCQhu28X37j2BKrw.1&utm_referrer=http%3A%2F%2Fwww.thegreenbow.com%2Fservices.html)).

To setup an IPsec VPN tunnel between the GreenBow IPsec VPN Client and the TP-LINK VPN Router you need to perform the following steps:

- A. Make sure PCs of two sides can access to Internet
- B. Configuring the TP-LINK VPN Router
- C. Configuring the GreenBow VPN Client

#### A. Make sure PCs of two sides can access to Internet

Before setup a VPN tunnel, you need to ensure that PCs of two sides are connected to the Internet. After ensuring that there is an active Internet connection on each side, you need to verify the VPN settings of the two sides, please follow the instruction below.

#### B. Configuring the TP-LINK VPN Router

Step 1:

Access the router's management webpage, verify the settings needed on the router.

**Device Info**

Firmware Version: 1.0.2 Build 20120719 Rel.42888  
 Hardware Version: TL-ER6120 v1.0

**System Time**

System Time: 2012-09-05 16:07:49 Wednesday  
 Running Time: 5 Day, 4 Hour, 46 Min, 5 Sec

**WAN**

WAN1	Link Up	WAN2	Link Down
Primary Connection:	PPPoE/Russian PPPoE	Primary Connection:	Dynamic IP
Status:	Connected	Status:	Connecting...
Online Time:	5 Min, 49 Sec	Online Time:	0.0.0.0
IP Address:	183.14.247.247	IP Address:	0.0.0.0
Subnet Mask:	255.255.255.255	Subnet Mask:	0.0.0.0
MAC Address:	90-F6-52-BD-EE-FB	MAC Address:	90-F6-52-BD-EE-FC
Secondary Connection:	---	Secondary Connection:	---
Status:	---	Status:	---
IP Address:	---	IP Address:	---
Subnet Mask:	---	Subnet Mask:	---

**LAN/DMZ**

Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.0.1	255.255.255.0	Enabled	90-F6-52-BD-EE-FA

*Annotations:*  
 - A green box points to the WAN1 IP Address (183.14.247.247) with the text: "This IP address should be typed in GreenBow software as remote gateway."  
 - A green box points to the LAN IP Address (192.168.0.1) with the text: "This is Remote LAN subnet address for GreenBow software"

Step 2:

On the management webpage, click on VPN then IKE Proposal. Under IKE Proposal, enter Proposal Name whatever you like, select Authentication, Encryption and DH Group, we use MD5, 3DES, DH2 in this example.

**IKE Proposal**

Proposal Name:



Authentication:

Encryption:

DH Group:

Buttons: Save, Clear, Help

**List of IKE Proposal**

No.	Name	Auth	Encr	DH	Action
1	1	MD5	3DES	DH2	 

Step 3:

Click on IKE Policy, enter Policy Name whatever you like, select Exchange Mode, in this example we use Main, select FQDN as ID Type and enter Local ID and Remote ID whatever you like, here we enter "1234" for Local ID and "4321" for Remote ID.

**IKE Policy**

Policy Name:

Exchange Mode:  Main  Aggressive

Local ID Type:  IP Address  FQDN

Local ID:

Remote ID Type:  IP Address  FQDN

Remote ID:

IKE Proposal 1:

IKE Proposal 2:

IKE Proposal 3:

IKE Proposal 4:

Pre-shared Key:

SA Lifetime:  Sec (1-6)

DPD:  Enable  Disable

DPD Interval:  Sec (1-300)

Save  
Clear  
Help

Here we enter **123456** as Pre-shared Key

**NOTE:** No matter on Main mode or Aggressive mode, once the client PC is behind a NAT device, we have to select FQDN as ID Type and the NAT device must support VPN passthrough, otherwise the VPN tunnel can't be established.

**Step 4:**

Under IKE Proposal 1, we select 1 in this example. Enter Pre-shared Key and SA Lifetime you want, DPD is disabled.

**Step 5:**

Click on IPsec on the left menu, then IPsec Proposal. Select Security Protocol, ESP Authentication and ESP Encryption you want to enable on VPN tunnel. Here we use ESP, MD5 and 3DES for example.

### IPsec Proposal

Proposal Name:

Security Protocol:

ESP Authentication:

ESP Encryption:

### List of IPsec Proposal

	No.	Name	Protocol	AH Auth	ESP Auth	ESP Encr	Action
<input type="checkbox"/>	1	123	ESP	---	MD5	3DES	 

Step 6:

Click on IPsec Policy, enter Policy Name whatever you like, the Mode should be Client-to-LAN. Enter Local Subnet and select WAN port.

### General

IPsec:  Enable  Disable

### IPsec Policy

Policy Name:

Mode:

Local Subnet:  /

Remote Subnet:  /

WAN:

Remote Host:

Policy Mode:  IKE  Manual

IKE Policy:

IPsec Proposal 1:

IPsec Proposal 2:

IPsec Proposal 3:

IPsec Proposal 4:

PFS:

SA Lifetime:  Sec (120-604800)

Status:  Activate  Inactivate



Step 7:

Look for Policy Mode and select IKE. Under IKE Policy, we select 123 which is used. Under IPsec Proposal, we use 123 in this example.



Step 8:

Look for PFS, we set NONE here, under SA Lifetime, enter "28800" or the period you want. Look for Status then select Activate.

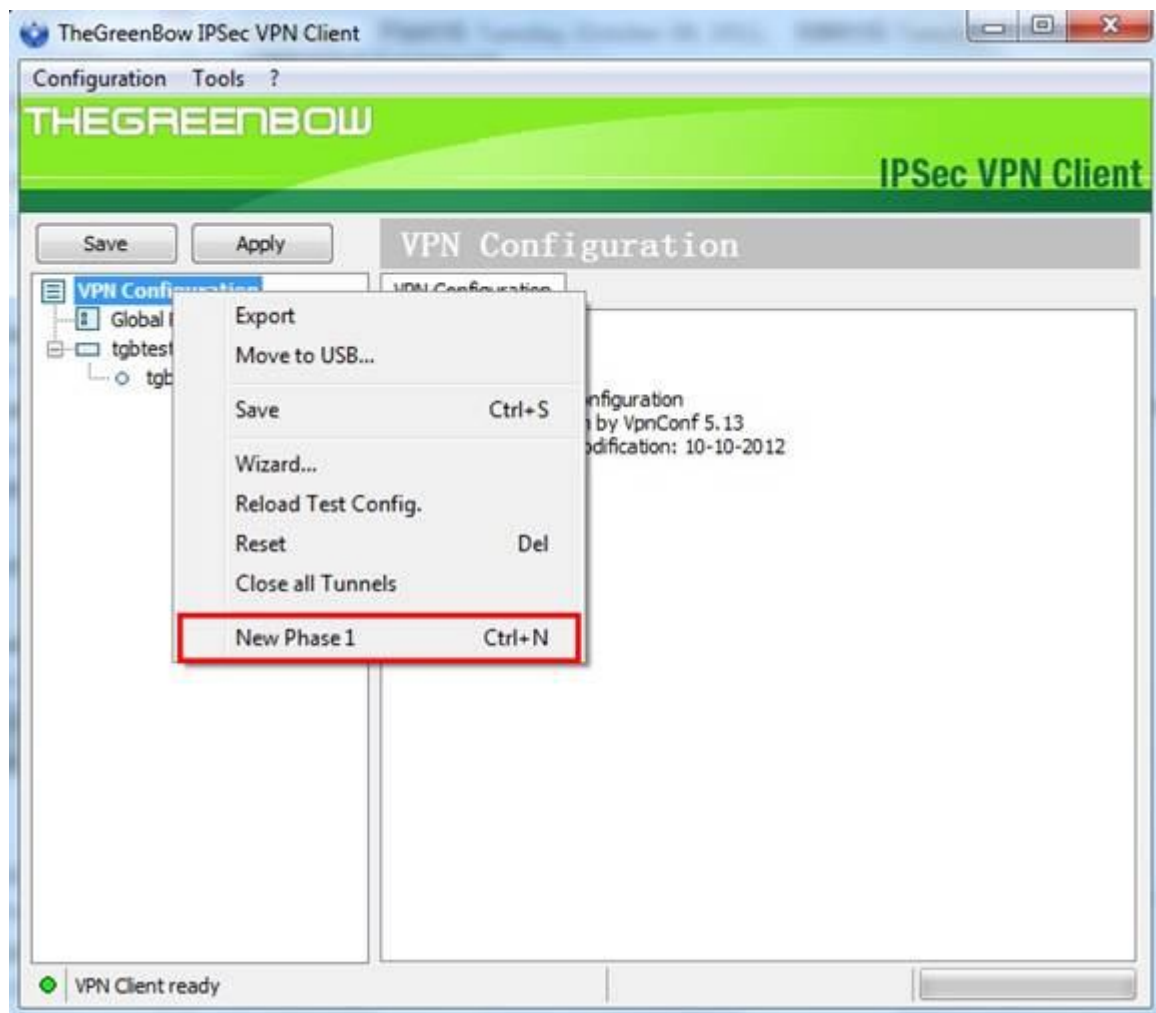
Step 9:

Enable IPsec and then click on Save.

### C. Configuring the GreenBow VPN Client

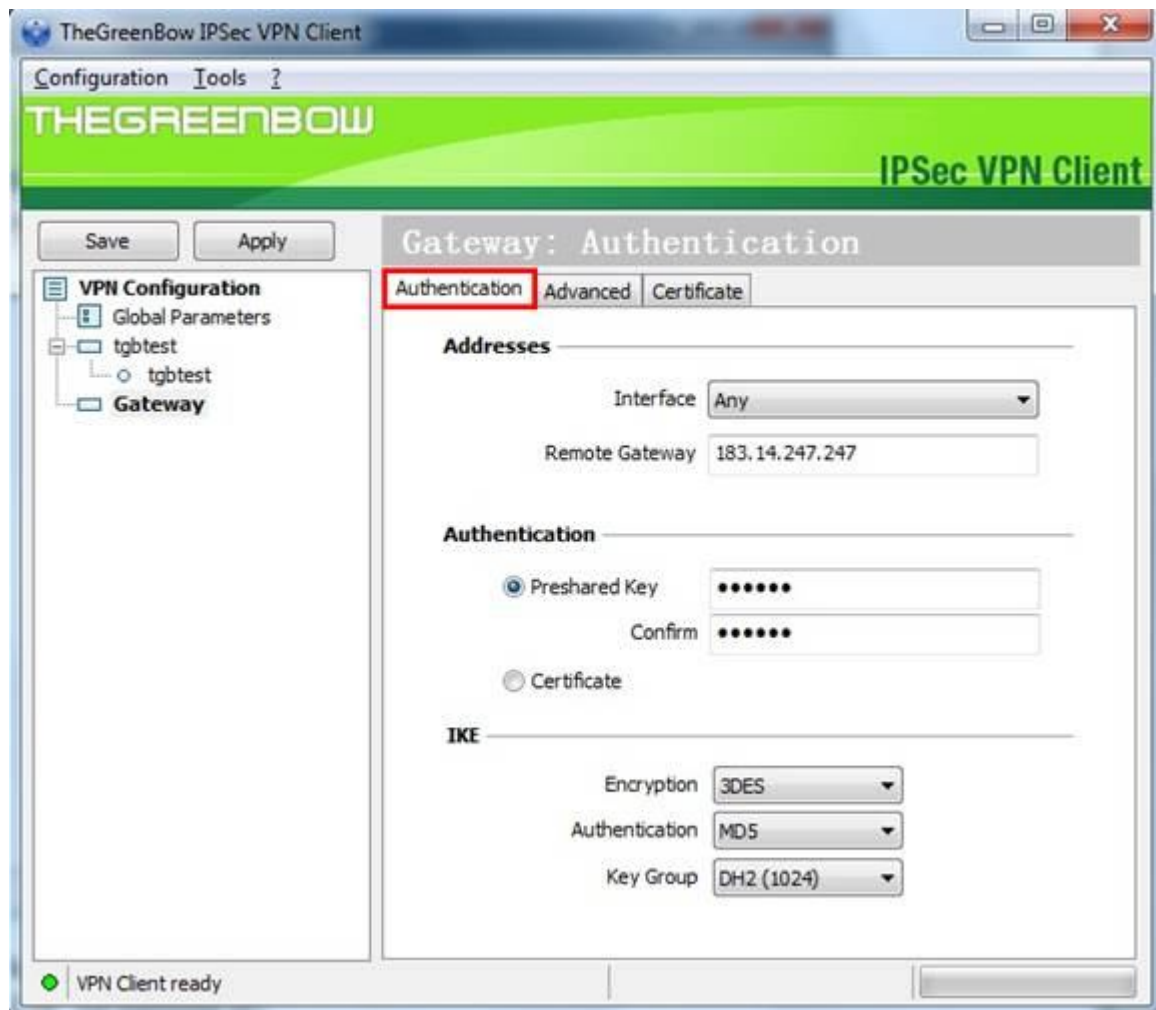
Step 1:

Right click on VPN Configuration and click on New Phase 1.



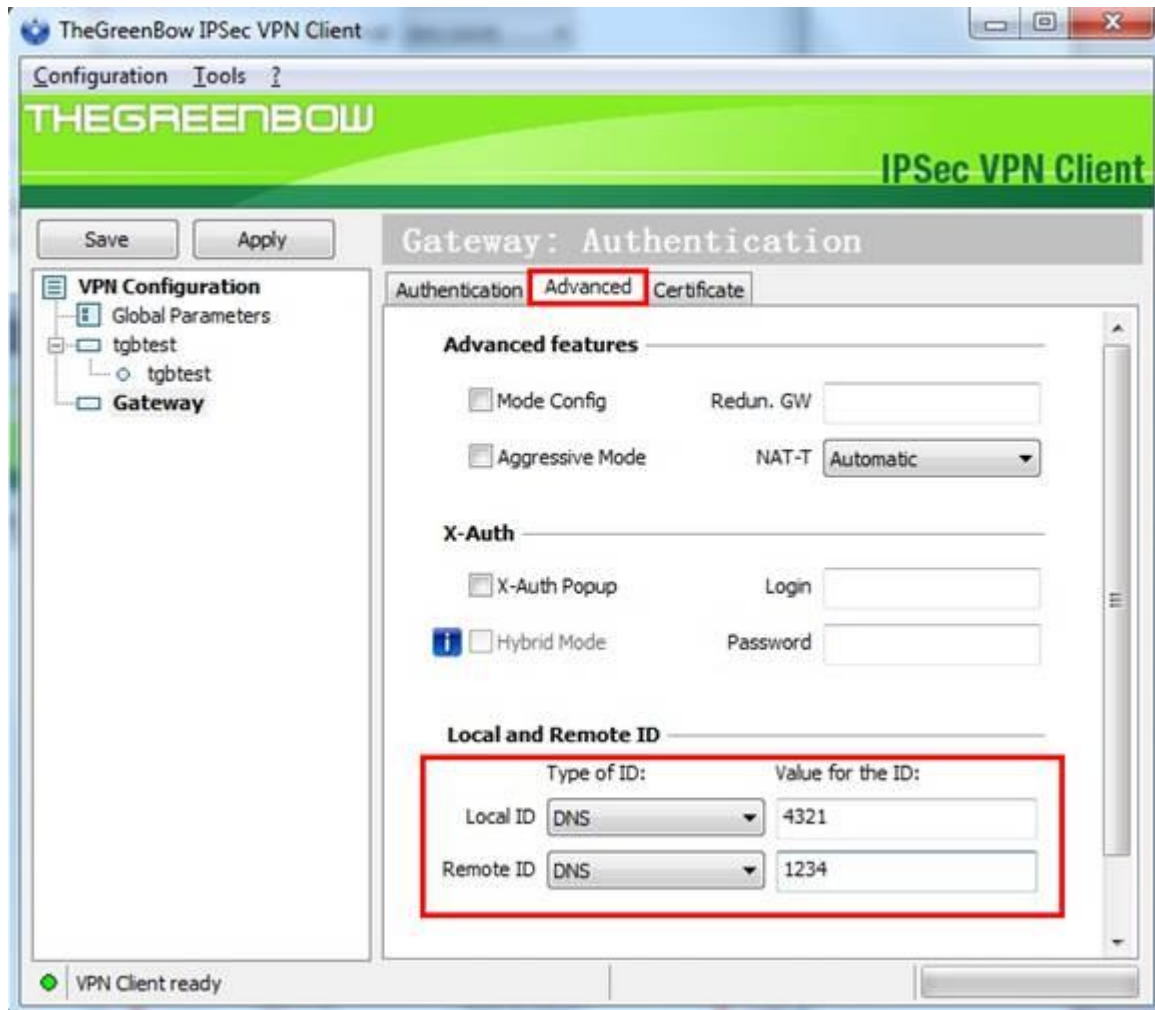
Step 2:

Under Remote Gateway, enter the router's WAN IP address, the Pre-shared Key should be the same with router's, it is "123456".on IKE section, the Encryption, Authentication and Key Group are the same with router's, we use 3DES, MD5and DH2 here.



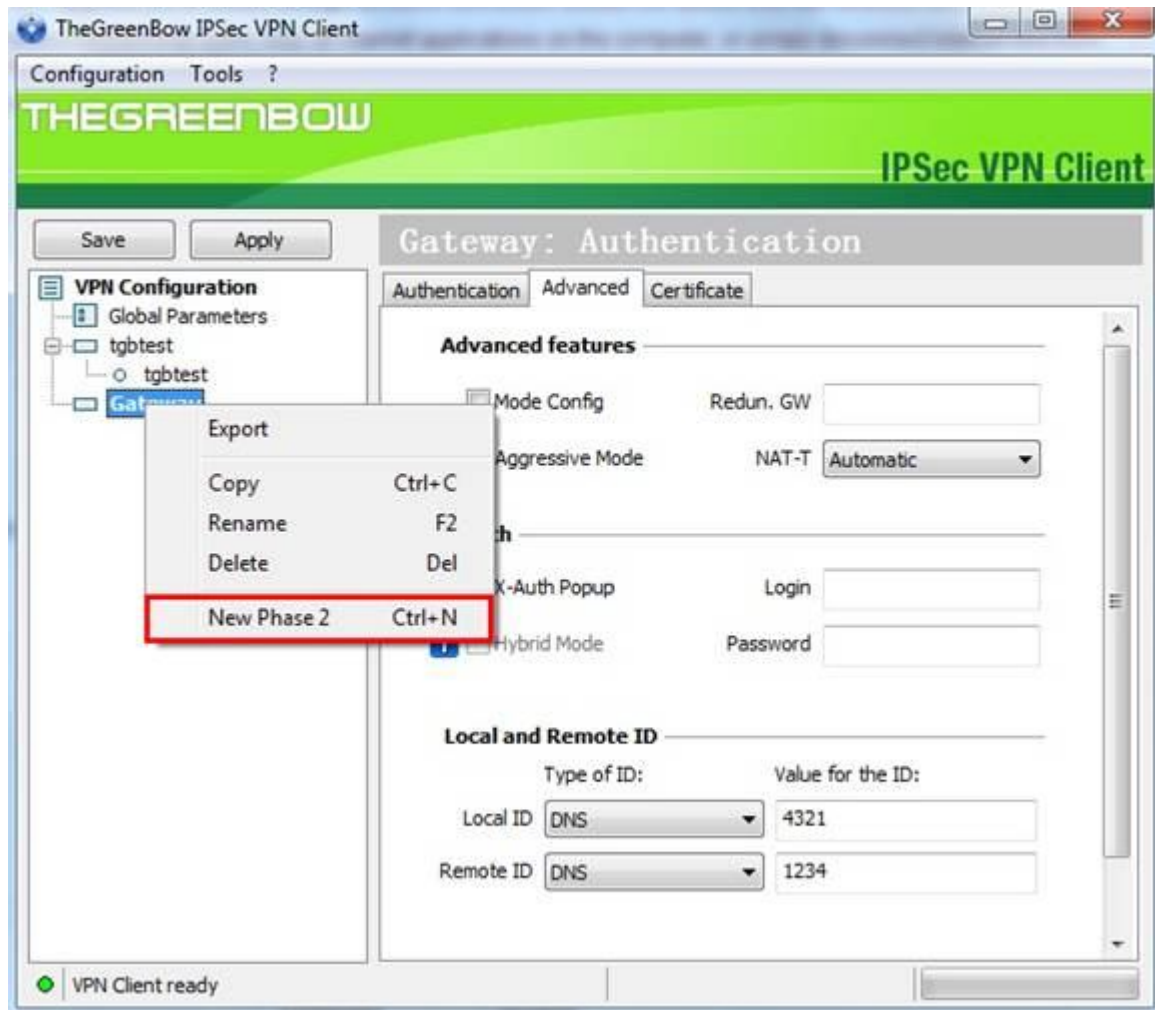
Step 3:

Go to Advanced tab, select DNS as Type of ID, and then enter "4321" for Local ID and "1234" for Remote ID.



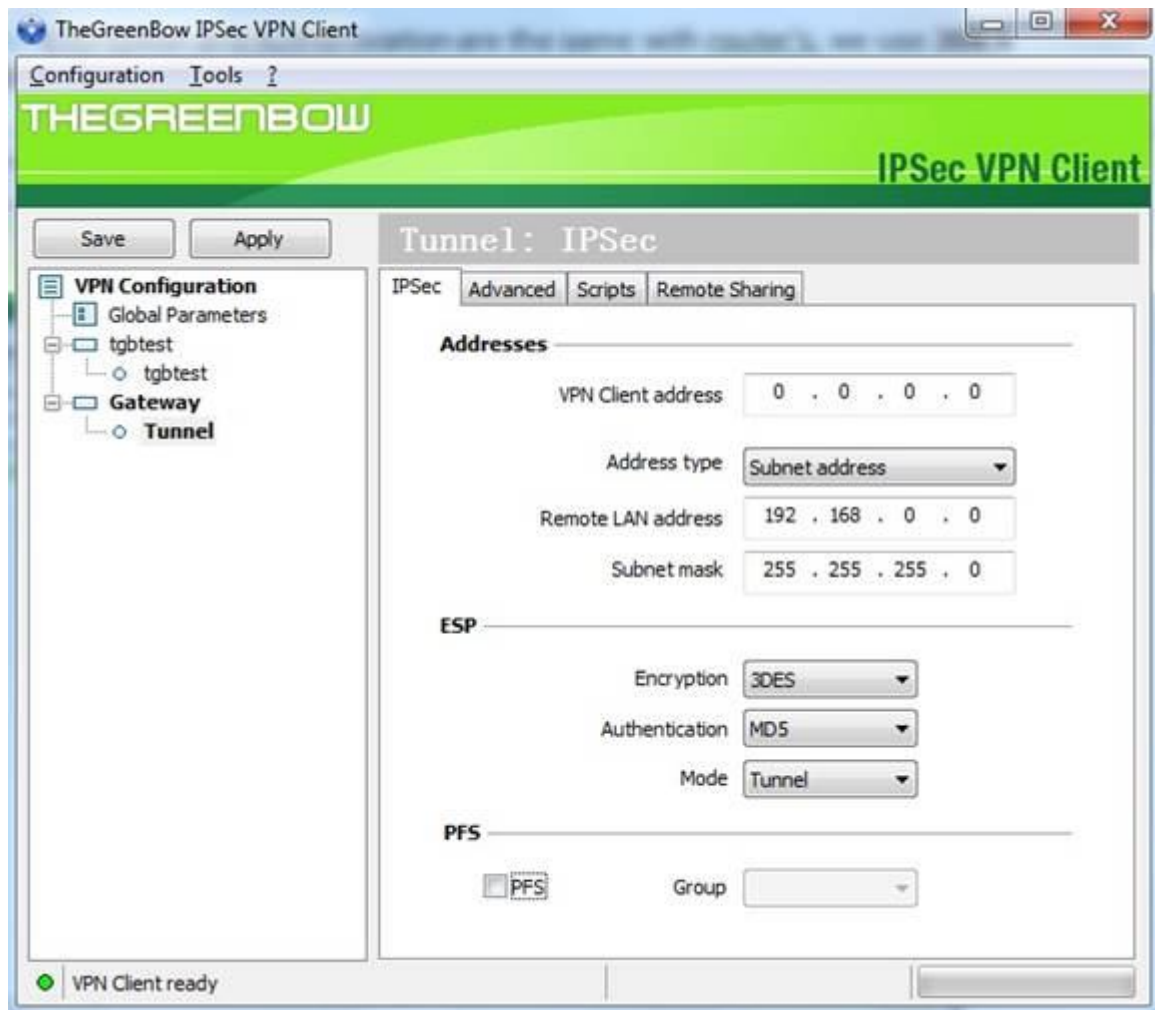
Step 4:

Right click on Phase 1, add a new phrase 2.



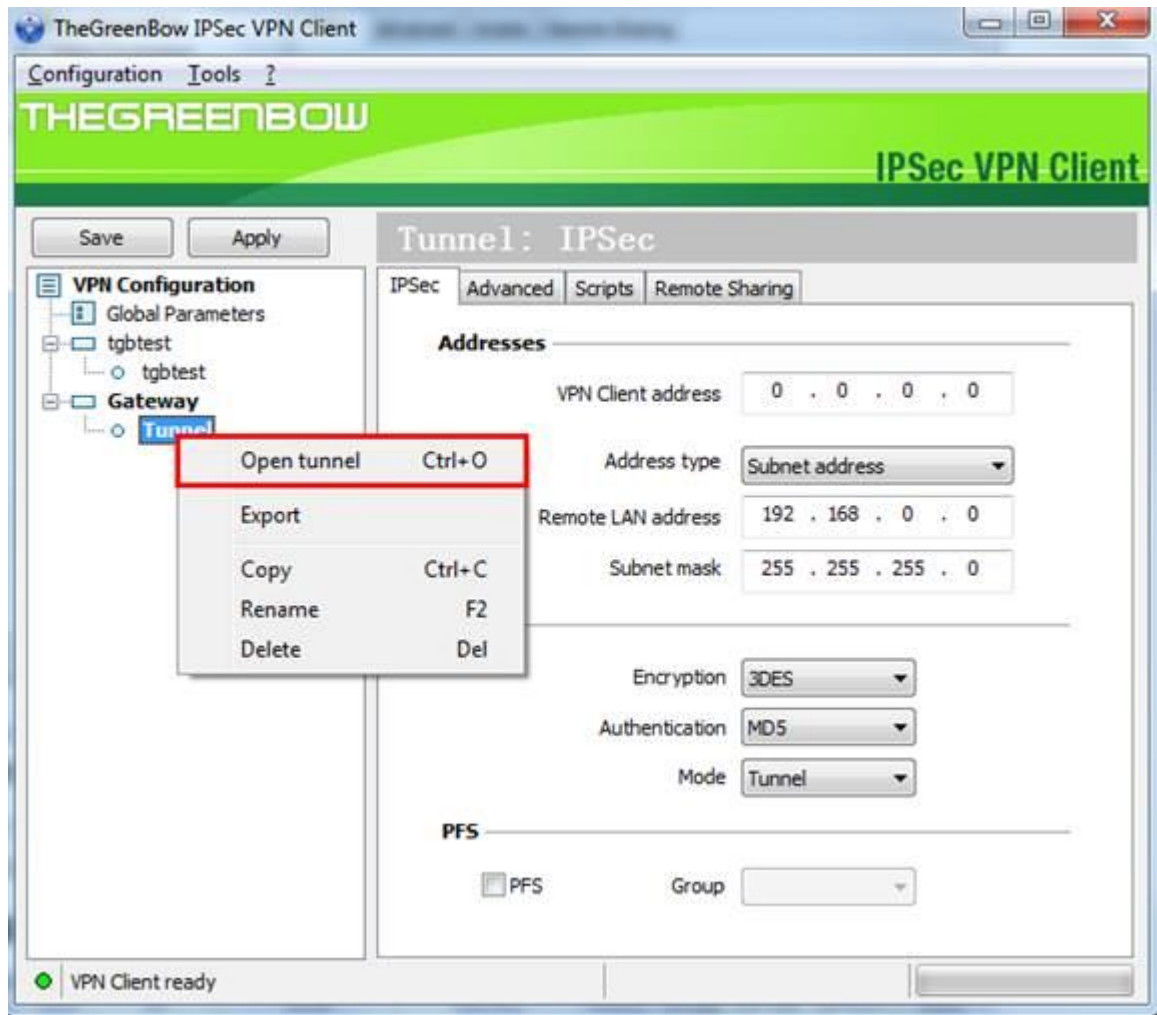
Step 5:

Enter remote LAN address and Subnet mask, in the example, the IP address is 192.168.0.0, Subnet mask is 255.255.255.0. Encryption and Authentication are the same with routers; we use 3DES and MD5 here. The Mode should be Tunnel.



Step 6:

Click Save and Apply and then right click on Phrase 2(Tunnel), click on Open Tunnel.



Step 7:

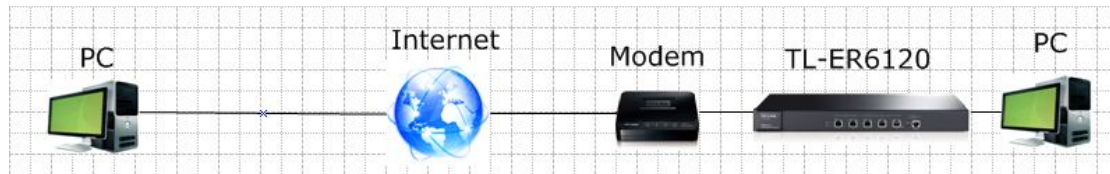
If the client connect to the VPN Server successfully, you can see IPsec SA on the list.

List of IPsec SA									
No.	Name	SPI	Tunnel	Data Flow	Protocol	AH Auth	ESP Auth	ESP Encr	Status
1	123	2646071062<-> 1641697897	183.14.247.247<-> 183.37.236.61	192.168.0.0/24<-> 192.168.1.100/32	ESP	---	MD5	3DES	Connected

Refresh Search Help

## 4. How to configure Shrew Soft VPN IPsec Client with TP-LINK Router

Suitable for: TL-ER6120, TL-ER6020, TL-ER604W



Shrew Soft VPN IPsec Client is an VPN Client software developed by Shrew Soft Inc. It can be downloaded from official website of Shrew Soft(<https://www.shrew.net/download/vpn>).

To set up an IPsec VPN tunnel, you need to perform the following steps:

- A. Make sure PCs of two sides can access to Internet**
- B. Configuring IPsec VPN settings on TL-ER6120**
- C. Configuring the Shrew VPN Client**

### **A. Make sure PCs of two sides can access to Internet**

Before setup a VPN tunnel, you need to ensure that PCs of two sides are connected to the Internet. After ensuring that there is an active Internet connection on each side, you need to verify the VPN settings of the two sides, please follow the instruction below.

### **B. Configuring IPsec VPN settings on TL-ER6120**

Step 1: Access the router's management webpage; verify the settings needed on the router.

TL-ER6120 System Status

**Device Info**

Firmware Version: 1.0.3 Build 20121022 Ref.54185  
 Hardware Version: TL-ER6120 v1.0

**System Time**

System Time: 2012-10-26 17:42:31 Friday  
 Running Time: 37 Min, 28 Sec

**WAN**

WAN1	Link Up	WAN2	Link Down
Primary Connection: Dynamic IP		Primary Connection: Dynamic IP	
Status: Connected		Status: Connecting...	
IP Address: 10.10.10.156		Address: 0.0.0.0	
Subnet Mask: 255.255.255.0		Subnet Mask: 0.0.0.0	
Gateway: 10.10.10.1		Gateway: 0.0.0.0	
MAC Address: 90-F6-52-BD-EE-FB		MAC Address: 90-F6-52-BD-EE-FC	
Secondary Connection: ---		Secondary Connection: ---	
Status: ---		Status: ---	
IP Address: ---		IP Address: ---	
Subnet Mask: ---		Subnet Mask: ---	

**LAN/DMZ**

Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.1.1	255.255.255.0	Enabled	90-F6-52-BD-EE-FA

**Annotations:**

- This LAN Subnet Address is for Shrew's Remote Network Resource (points to 192.168.1.1)
- This is for Shrew's Host Name or IP Address (points to 10.10.10.156)

Step 2: On the management webpage, click on VPN then IKE Proposal. Under IKE Proposal, enter Proposal Name whatever you like, select Authentication, Encryption and DH Group, we use MD5, 3DES, DH2 in this example. Click on Add.

TL-ER6120 IKE Policy **IKE Proposal**

**IKE Proposal**

Proposal Name: test  
 Authentication: MD5  
 Encryption: 3DES  
 DH Group: DH2

**Buttons:** Add, Clear, Help

**List of IKE Proposal**

No.	Name	Auth	Encr	DH	Action
No entries.					

**Buttons:** Select All, Delete, Search

Step 3: Click on IKE Policy, enter Policy Name whatever you like, we select Aggressive for Exchange Mode, select FQDN as ID Type and enter Local ID whatever you like, here we enter "123" for Local ID and "321" for Remote ID.



TL-ER6120 IKE Policy IKE Proposal

**Network**

**User Group**

**Advanced**

**Firewall**

**VPN**

- IKE
- IPsec
- L2TP/PPTP

**Services**

**Maintenance**

**Logout**

### IKE Policy

Policy Name:

Exchange Mode:  Main  Aggressive

Local ID Type:  IP Address  FQDN

Local ID:

Remote ID Type:  IP Address  FQDN

Remote ID:

IKE Proposal 1:

IKE Proposal 2:

IKE Proposal 3:

IKE Proposal 4:

Pre-shared Key:

SA Lifetime:  Sec (60-604800)

DPD:  Enable  Disable

DPD Interval:  Sec (1-300)

#### List of IKE Policy

No.	Name	Mode	Proposal 1	Proposal 2	Proposal 3	Proposal 4	Action
No entries.							

**NOTE:** No matter on Main mode or Aggressive mode, once the client PC is behind a NAT device, we have to select FQDN as ID Type and the NAT device must support VPN passthrough, otherwise the VPN tunnel can't be established.

Step 4: Under IKE Proposal 1, we select test in this example. Enter Pre-shared Key and SA Lifetime you want, DPD is disabled. Click on Add.

Step 5: Click on IPsec on the left menu, then IPsec Proposal. Select Security Protocol, ESP Authentication and ESP Encryption you want to enable on VPN tunnel. Here we use ESP, MD5 and 3DES for example. Click on Add.

TL-ER6120

IPsec Policy IPsec Proposal IPsec SA

**IPsec Proposal**

Proposal Name:

Security Protocol:

ESP Authentication:

ESP Encryption:

**List of IPsec Proposal**

No.	Name	Protocol	AH Auth	ESP Auth	ESP Encr.	Action
No entries.						

Step 6: Click on IPsec Policy, enter Policy Name whatever you like, the Mode should be Client-to-LAN. Enter Local Subnet and select WAN port.

TP-LINK

TL-ER6120

IPsec Policy IPsec Proposal IPsec SA

**General**

IPsec:  Enable  Disable

**IPsec Policy**

Policy Name:

**Mode:**

Local Subnet:  /

Remote Subnet:  /

WAN:

Remote Host:

Policy Mode:  IKE  Manual

IKE Policy:

IPsec Proposal 1:

IPsec Proposal 2:

IPsec Proposal 3:

IPsec Proposal 4:

PFS:

SA Lifetime:  Sec (120-604800)

Status:  Activate  Inactivate

**List of IPsec Policy**

No.	Name	Mode	Local Subnet	Remote Subnet	Policy Mode	Status	Action
No entries.							

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Step 7: Look for Policy Mode and select IKE. Under IKE Policy, we select ike which is used. Under IPsec Proposal, we use test in this example.

Step 8: Look for PFS, we set NONE here, under SA Lifetime, enter "28800" or the period you want. Look for Status then select Activate.

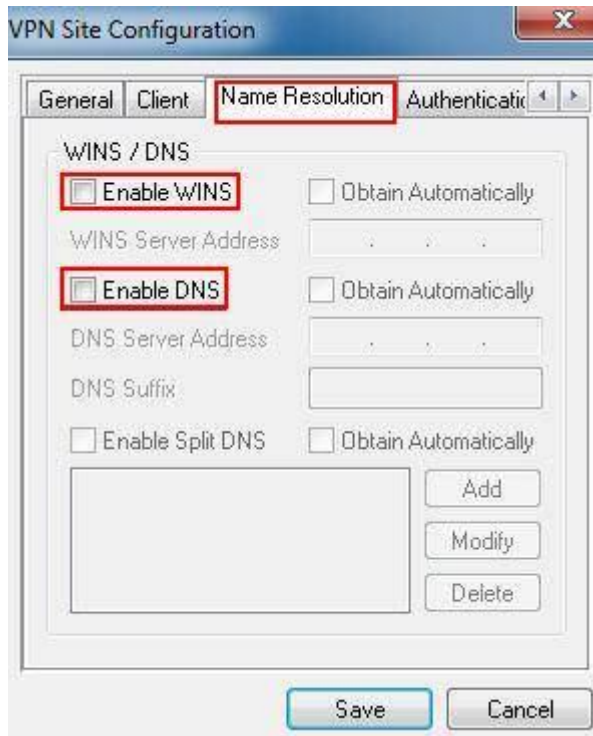
Step 9: Enable IPsec and then click on Add.

### C. Configuring the Shrew VPN Client

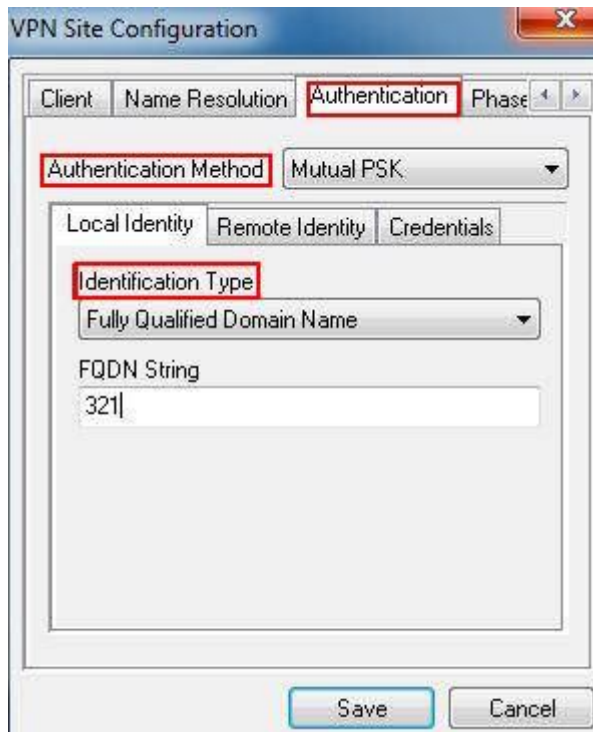
Step 1: Click on Add. Under Host Name or IP Address, enter the TL-ER6120's WAN IP address, select disable for Auto Configuration. Under Address Method, we select Using an existing adapter and current address.



Step 2: Click on Name Resolution on the top menu, don't tick the Enable WINS and Enable DNS.



Step 3: Click on Authentication on the top menu, select Mutual PSK as Authentication. Under Identification Type, select Fully Qualified Domain Name and enter "321" for FQDN String.



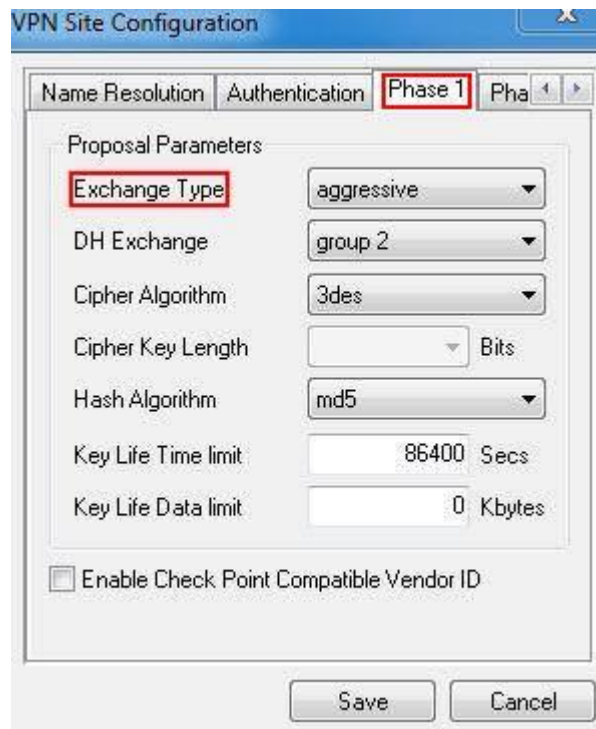
Step 4: Click on Remote Identity, select Fully Qualified Domain Name as Identification Type and enter "123" for FQDN String.



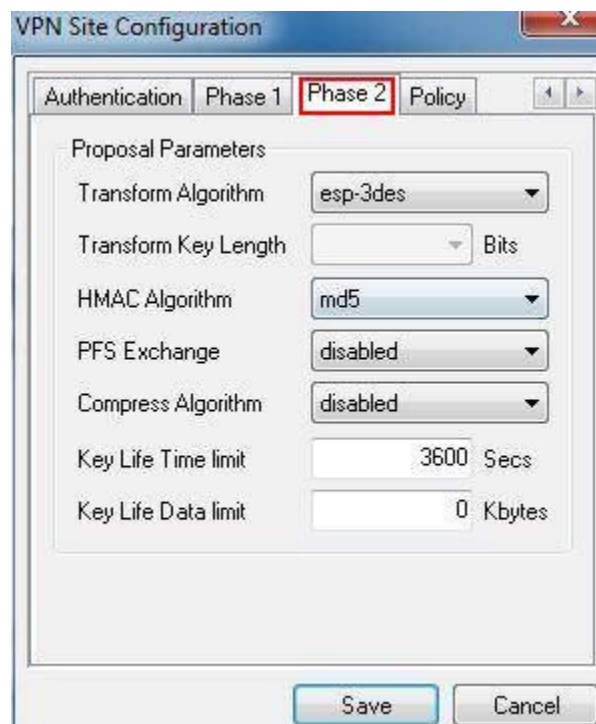
Step 5: Click on Credentials, the Pre Shared Key, should be the same as the Pre-shared Key on the TL-ER6120, it's "123456789".



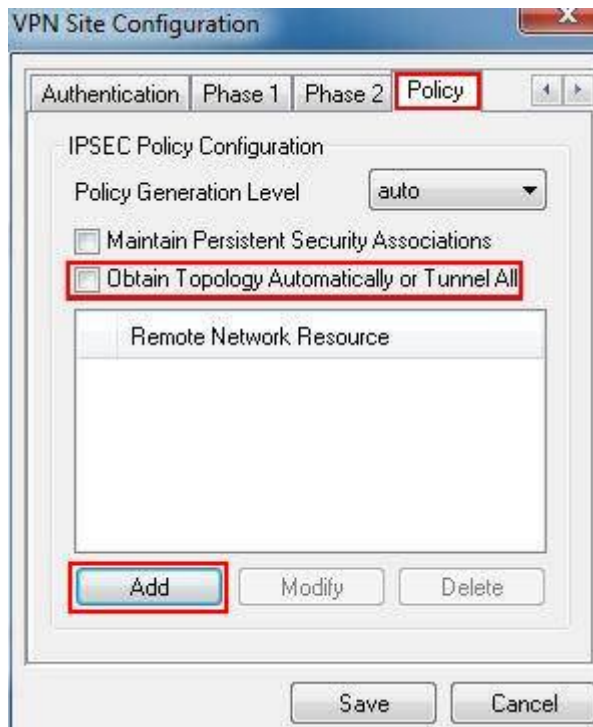
Step 6: Click on Phase 1, under the Proposal Parameters, the Exchange Type, DH Exchange, Cipher Algorithm, and Hash Algorithm are the same with TL-ER6120's, we use aggressive, group 2, 3des, md5 here.



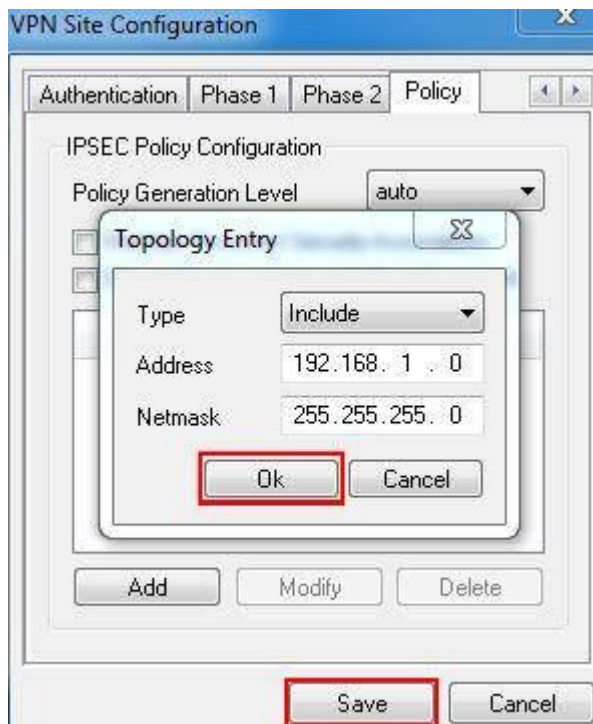
Step 7: Click on Phase 2, under the Proposal Parameters, the Transform Algorithm, HMAC Algorithm are the same with TL-ER6120's we use esp-3des, md5 here. PFS Exchange and Compress Algorithm are disabled.



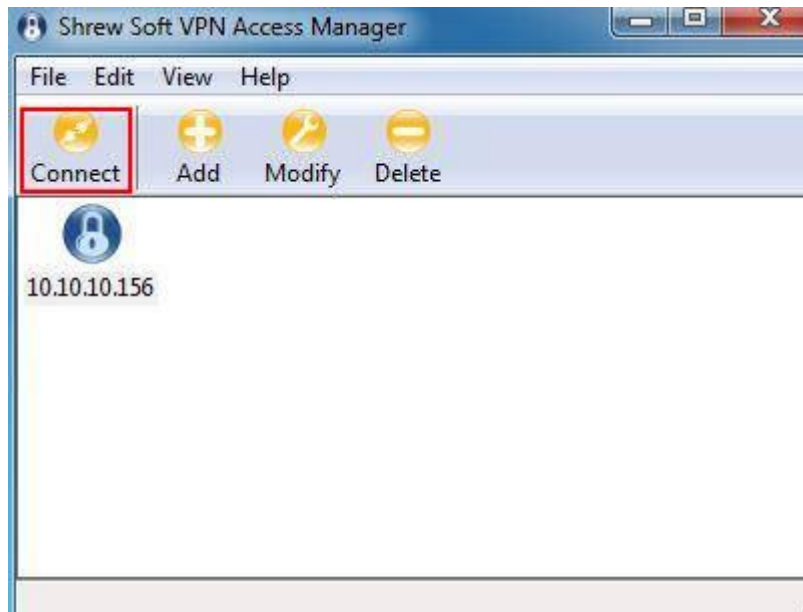
Step 8: Click on Policy, don't tick Obtain Topology Automatically or Tunnel All. Then click on Add.



Step 9: Select Include as Type, enter the TL-ER6120's LAN Subnet Address and Subnet Mask, it's 192.168.1.0, 255.255.255.0. Then click on OK and Save.



Step 10: Click on Connect.

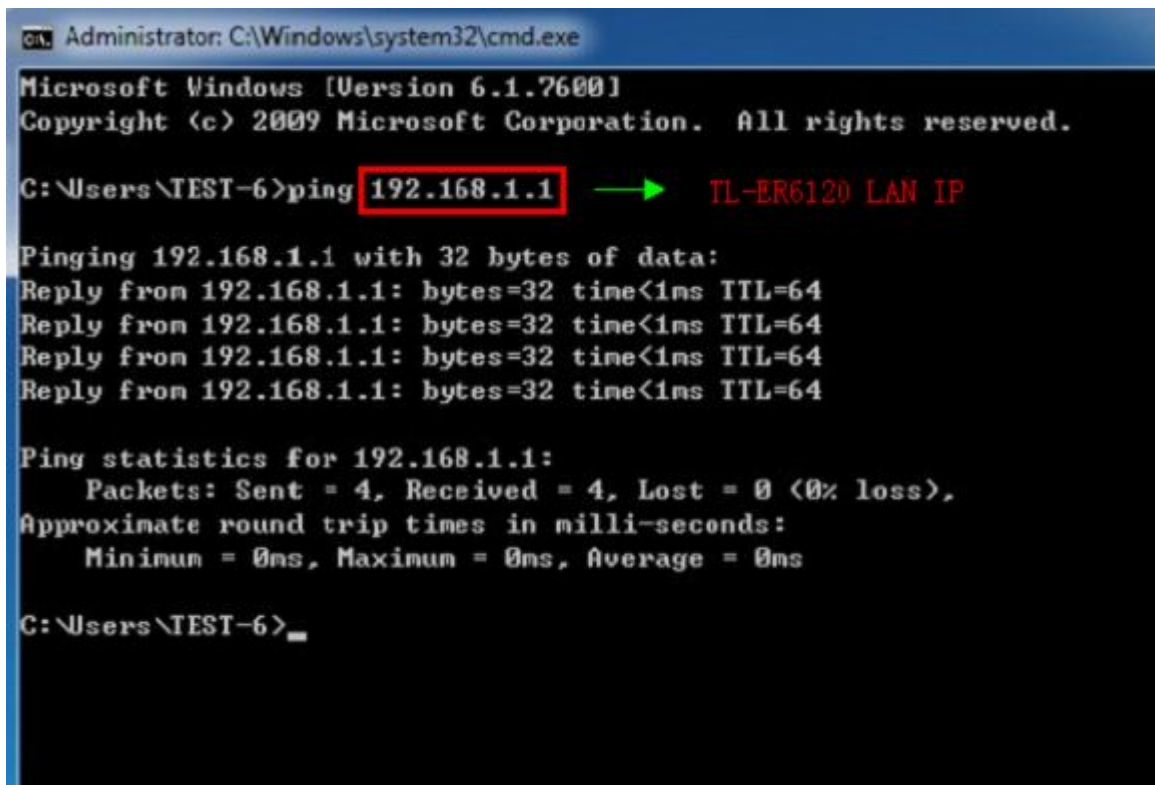
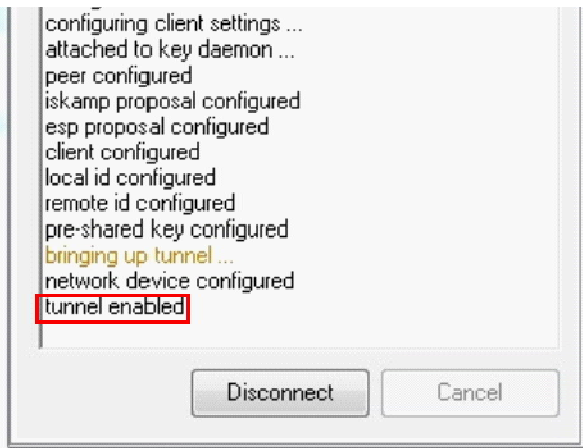


Step 11: Click on Connect.

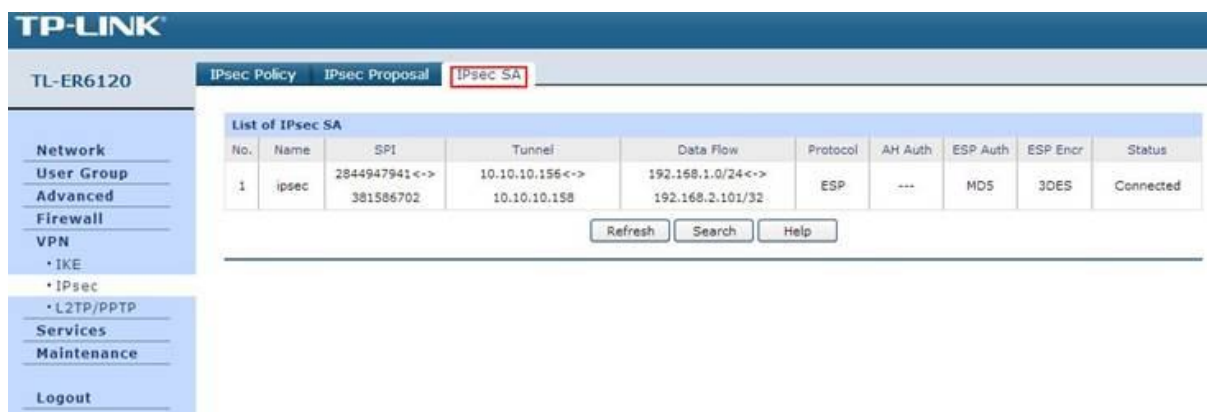


Step 12: After Shrew Soft VPN show tunnel enabled as the followings, you need ping TL-ER6120 LAN IP.





Step 13: If client connect to the VPN Server successfully, you can see IPsec SA on the list.



## 5. How to configure LAN-to-LAN L2TP/PPTP VPN on TP-LINK Router

Suitable for: TL-ER6120, TL-ER6020, TL-ER604W



LAN-to-LAN L2TP/PPTP VPN connection is established between two VPN routers. To configure LAN-to-LAN L2TP/PPTP VPN on TL-LINK Routers, please follow the instructions below:

- A. Connecting the devices together
- B. Verify the settings needed for L2TP/PPTP VPN on Router
- C. Configuring a L2TP/PPTP Server on TP-LINK router(Router A)
- D. Configuring a L2TP/PPTP Client on TP-LINK router(Router B)

**NOTE:** We give the guide to configure LAN-to-LAN PPTP VPN in this example, the way to configure LAN-to-LAN L2TP VPN is similar. If the TP-LINK Router configured as PPTP Server is behind a NAT device, Virtual Server or DMZ should be configured on the NAT device, otherwise the VPN tunnel can't be established.

### A. Connecting the devices together

Before setup a VPN tunnel, you need to ensure that the two routers are connected to the Internet. After ensuring that there is an active Internet connection on each router, you need to verify the VPN settings of the two routers, please follow the instruction below.

### B. Verify the settings needed for PPTP VPN on Router

Router A's Status Page:

Device Info				
Firmware Version:	1.0.1 Build 20120417 Rel.62469			
Hardware Version:	TL-ER6120 v1.0			
System Time				
System Time:	2012-05-17 19:02:34 Thursday			
Running Time:	26 Min, 16 Sec			
WAN				
WAN1	Link Up	WAN2	Link Down	
Primary Connection:	PPPoE/Russian PPPoE	Primary Connection:	Dynamic IP	
Status:	Connected	Status:	Connecting...	
Online Time:	1 Min, 55 Sec	IP Address:	0.0.0.0	
IP Address:	183.37.240.111	Subnet Mask:	0.0.0.0	
Subnet Mask:	255.255.255.255	Gateway:	0.0.0.0	
MAC Address:	B0-48-7A-DD-87-EF	MAC Address:	B0-48-7A-DD-87-F0	
Secondary Connection:	---	Secondary Connection:	---	
Status:	---	Status:	---	
IP Address:	---	IP Address:	---	
Subnet Mask:	---	Subnet Mask:	---	
LAN/DMZ				
Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.0.1	255.255.255.0	Enabled	B0-48-7A-DD-87-EE

Router B's Status Page:

Device Info				
Firmware Version:	1.0.1 Build 20120417 Rel.62469			
Hardware Version:	TL-ER6120 v1.0			
System Time				
System Time:	2012-05-17 19:07:36 Thursday			
Running Time:	2 Day, 10 Hour, 42 Min, 28 Sec			
WAN				
WAN1	Link Up	WAN2	Link Down	
Primary Connection:	PPPoE/Russian PPPoE	Primary Connection:	Dynamic IP	
Status:	Connected	Status:	Connecting...	
Online Time:	28 Min, 33 Sec	IP Address:	0.0.0.0	
IP Address:	183.16.194.116	Subnet Mask:	0.0.0.0	
Subnet Mask:	255.255.255.255	Gateway:	0.0.0.0	
MAC Address:	B0-48-7A-DD-8A-0B	MAC Address:	B0-48-7A-DD-8A-0C	
Secondary Connection:	---	Secondary Connection:	---	
Status:	---	Status:	---	
IP Address:	---	IP Address:	---	
Subnet Mask:	---	Subnet Mask:	---	
LAN/DMZ				
Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.1.1	255.255.255.0	Enabled	B0-48-7A-DD-8A-0A

### C. Configuring a PPTP Server on TP-LINK router

Step 1 : Access Router A's management page, click on VPN->L2TP/PPTP->IP Address Pool, enter Pool Name and IP Address Range, and then click on Add.

**NOTE:** IP Address pool must be different range from LAN IP address range.

Step 2 : Go to L2TP/PPTP Tunnel, look for protocol, select PPTP; the Mode should be Server.

Step 3 : Enter Account Name and Password whatever you like, here we use "pptp" as account name, password is "pptp".

Step 4 : Under Tunnel, select LAN-to-LAN.

Step 5 : Under IP Address Pool, select “VPN” we have added before.

Step 6 : Under Remote Subnet, enter Router B’s local subnet, we enter “192.168.1.0/24” in this example.

Step 7 : Look for Status, select Active.

Step 8 : Click on Add and then click on Save.

#### D. Configuring a PPTP client on TP-LINK Router

Step 1 : Access Router B’s management page, go to L2TP/PPTP Tunnel, look for protocol, select PPTP; the Mode should be Client.

Step 2 : Enter “pptp” as Account Name and “pptp” as Password.

L2TP/PPTP Tunnel | IP Address Pool | List of L2TP/PPTP Tunnel

**General**

Enable VPN-to-Internet

Hello Interval:  Sec (60-1000)

**L2TP/PPTP Tunnel**

Protocol:  L2TP  PPTP

Mode:  Server  Client

Account Name:

Password:

WAN:

Server IP:  (IP address / Domain name)

Encryption:  Enable  Disable

Pre-shared Key:

Client IP:

IP Address Pool:

Remote Subnet:  /

Status:  Activate  Inactivate

**List of Configurations**

No.	Protocol	Account Name	Mode	Tunnel	Server IP	IP Address Pool	Remote Subnet	Encry	Status	Action
No entries.										

Select All | Activate | Inactivate | Delete | Search

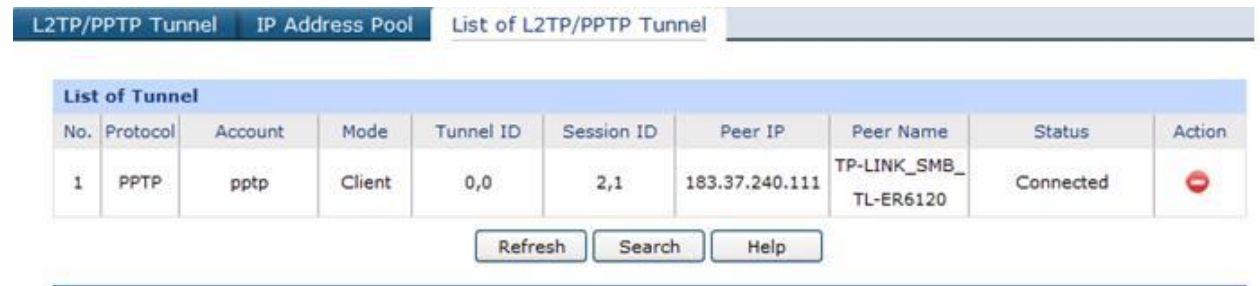
Step 3 : Under Server IP, enter Router A’s IP address, which is 183.37.240.111.

Step 4 : Under Remote Subnet, enter Router B’s local subnet, we enter “192.168.1.0/24” in this example.

Step 5 : Look for Status, select Active.

Step 6 : Click on Add and then click on Save.

Step 7: If the PPTP tunnel is established successfully, you can check it on List of Tunnel.

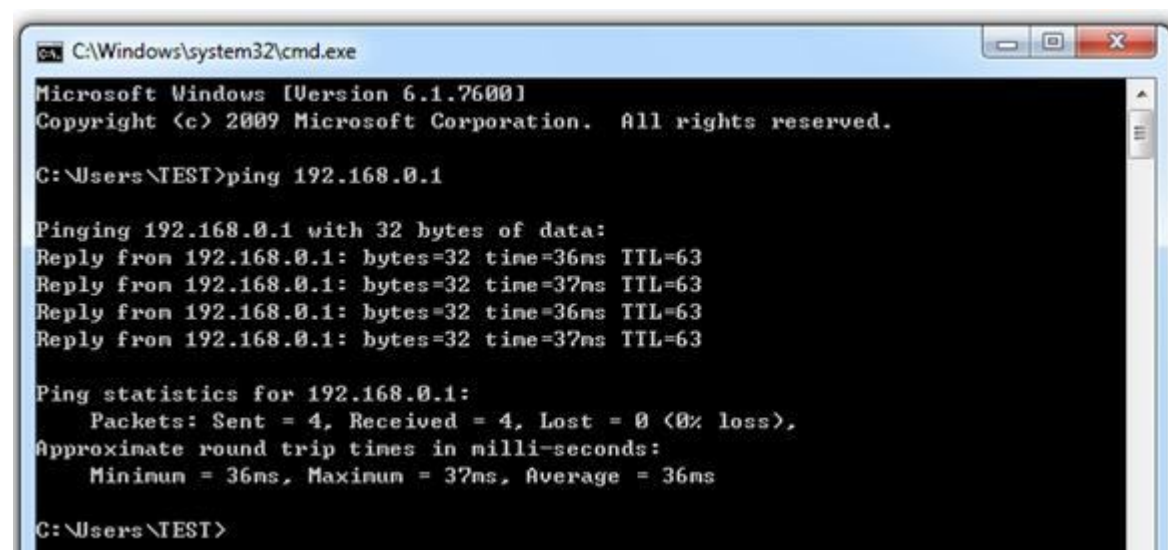


The screenshot shows a web-based interface with three tabs: 'L2TP/PPTP Tunnel', 'IP Address Pool', and 'List of L2TP/PPTP Tunnel'. The 'List of Tunnel' tab is active, displaying a table with the following data:

No.	Protocol	Account	Mode	Tunnel ID	Session ID	Peer IP	Peer Name	Status	Action
1	PPTP	pptp	Client	0,0	2,1	183.37.240.111	TP-LINK_SMB_ TL-ER6120	Connected	

Below the table are three buttons: 'Refresh', 'Search', and 'Help'.

Also, PC within the local subnet of Router B, can ping Router A's LAN IP (192.168.0.1).



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\TEST>ping 192.168.0.1

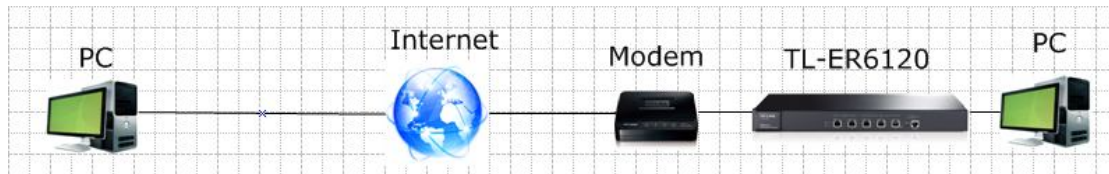
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time=36ms TTL=63
Reply from 192.168.0.1: bytes=32 time=37ms TTL=63
Reply from 192.168.0.1: bytes=32 time=36ms TTL=63
Reply from 192.168.0.1: bytes=32 time=37ms TTL=63

Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 36ms, Maximum = 37ms, Average = 36ms

C:\Users\TEST>
```

## 6. How to configure a PPTP Server on TP-LINK Router

Suitable for: TL-ER6120, TL-ER6020, TL-ER604W



PPTP (Point to Point Tunneling Protocol) Server is used to create a VPN connection for remote clients. To configure PPTP Server on TP-LINK router, please follow the instructions below:

- A. Make sure PCs of two sides can access to Internet**
- B. Configuring a PPTP Server on TP-LINK router**
- C. Configuring PPTP client on remote PC (Windows 7)**

**NOTE:** If the TP-LINK Router is behind a NAT device, Virtual Server or DMZ should be configured on the NAT device, otherwise the VPN tunnel can't be established.

### **A. Make sure PCs of two sides can access to Internet**

Before setup a VPN tunnel, you need to ensure that PCs of two sides are connected to the Internet. After ensuring that there is an active Internet connection on each side, you need to verify the VPN settings of the two sides, please follow the instruction below.

### **B. Configuring a PPTP Server on TP-LINK router**

Step 1:

Access the router's management webpage, verify the settings needed on the router.

**Device Info**

Firmware Version: 1.0.0 Build 20111114 Rel.52682  
 Hardware Version: TL-ER6120 v1.0

**System Time**

System Time: 2012-03-02 10:09:08 Friday  
 Running Time: 1 Hour, 25 Min, 15 Sec

**WAN**

WAN1	Link Up	WAN2	Link Down
Primary Connection:	PPPoE/Russian PPPoE	Primary Connection:	Dynamic IP
Status:	Connected	Status:	Connecting...
Online Time:	9 Min, 37 Sec	IP Address:	0.0.0.0
IP Address:	218.18.1.74	Subnet Mask:	0.0.0.0
Subnet Mask:	255.255.255.255	Gateway:	0.0.0.0
MAC Address:	90-F6-52-49-A0-67	MAC Address:	90-F6-52-49-A0-68
Secondary Connection:	---	Secondary Connection:	---
Status:	---	Status:	---
IP Address:	---	IP Address:	---
Subnet Mask:	---	Subnet Mask:	---

**LAN/DMZ**

Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.0.1	255.255.255.0	Enabled	90-F6-52-49-A0-66

*Note: Annotations in the original image indicate that 218.18.1.74 is the public IP for remote users and 192.168.0.1 is the LAN IP address range.*

Step 2:

Click on VPN->L2TP/PPTP->IP Address Pool, enter Pool Name and IP Address Range, and then click on Add.

**TP-LINK**

TL-ER6120

L2TP/PPTP Tunnel | IP Address Pool | List of L2TP/PPTP Tunnel

**IP Address Pool**

Enter Pool Name

Pool Name:

IP Address Range:  -

Click on Add

**List of IP Address Pool**

No.	Pool Name	IP Address Range	Action
No entries.			

**NOTE: IP Address pool must be different range from LAN IP address range.**

Step 3:

Look for protocol, select PPTP; the Mode should be Server.



L2TP/PPTP Tunnel IP Address Pool List of L2TP/PPTP Tunnel

**General**

Enable VPN-to-Internet

Hello Interval:  Sec (60-1000)

**L2TP/PPTP Tunnel**

Protocol:  L2TP  PPTP

Mode:  Server  Client

Account Name:

Password:

Tunnel:

Max Connections:  (1-10)

Encryption:  Enable  Disable

Pre-shared Key:

Client IP:

IP Address Pool:

Remote Subnet:

Status:  Activate  Inactivate

**List of Configurations**

No.	Protocol	Account Name	Mode	Tunnel	Server IP	IP Address Pool	Remote Subnet	Encry	Status	Action
No entries.										

Annotations in the image:

- Click on Save → Save
- Click on Add → Add, Clear, Help
- Enter Account Name and Password (pointing to Account Name and Password fields)

Step 4:

Enter Account Name and Password whatever you like, here we use “client” as account name, password is “123456”.

Step 5:

Under Tunnel, select Client-to-LAN.

Step 6:

The tunnel supports up to 10 connections, we enter 5 in this example.

Step 7:

Under IP Address Pool, select “group” we have added before.

Step 8:

Look for Status, select Active.

Step 9:

Click on Add and then click on Save.

### C. Configuring PPTP client on remote PC (Windows 7)

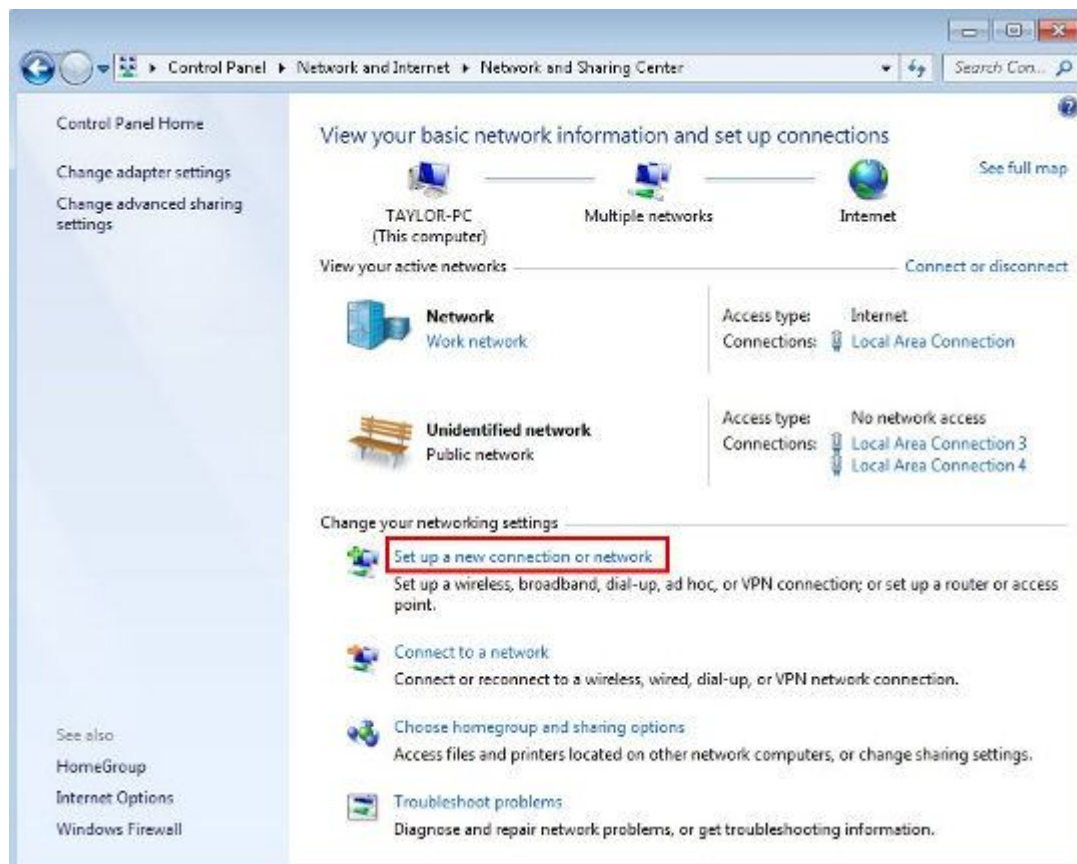
**NOTE:** For remote PC to connect to PPTP server, it can use Windows built-in PPTP software or Third-party PPTP software.

Step 1:

Click on Start->Control Panel->Network and Internet->Network and Sharing Center.

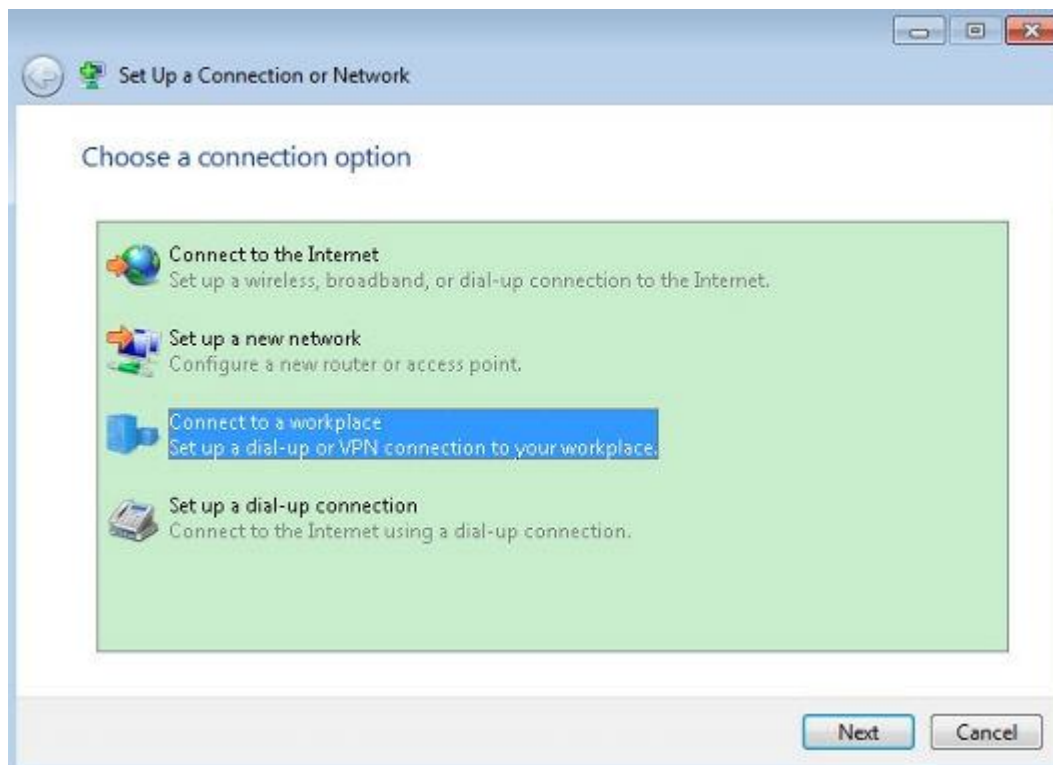
Step 2:

Click on Set up a new connection or network.



Step 3:

Choose Connect to a workplace, and then click on Next.



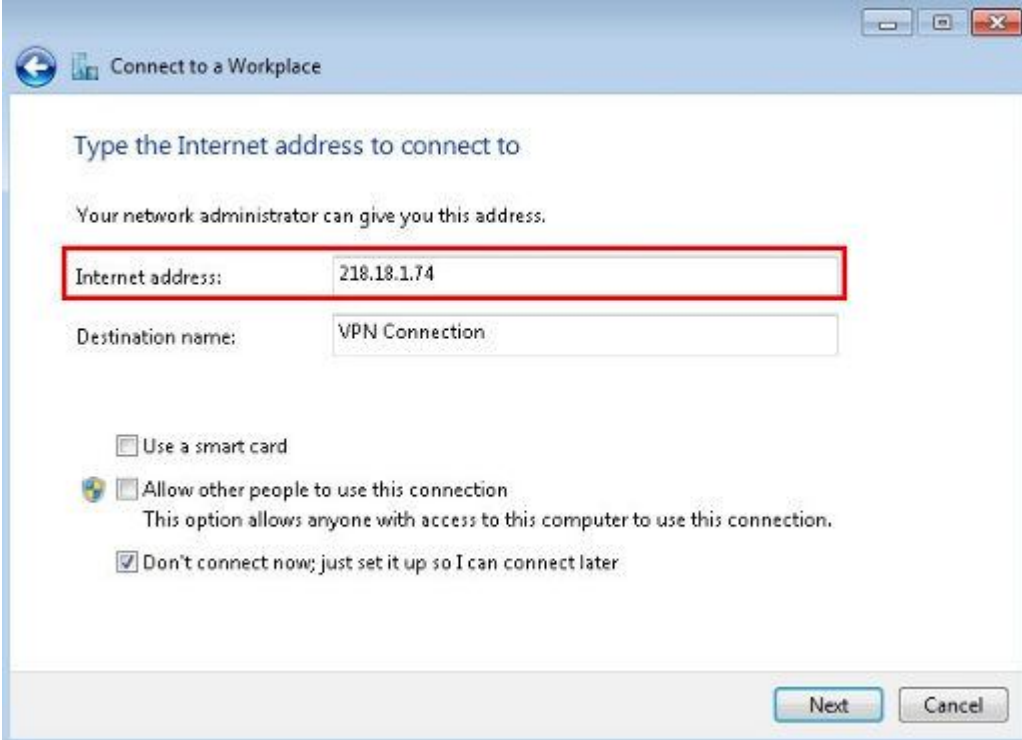
Step 4:

Select Use my Internet connection (VPN)



Step 5:

Under Internet address field, enter router's WAN IP address, and then click on Next.



Connect to a Workplace

Type the Internet address to connect to

Your network administrator can give you this address.

Internet address: 218.18.1.74

Destination name: VPN Connection

Use a smart card

Allow other people to use this connection  
This option allows anyone with access to this computer to use this connection.

Don't connect now; just set it up so I can connect later

Next Cancel

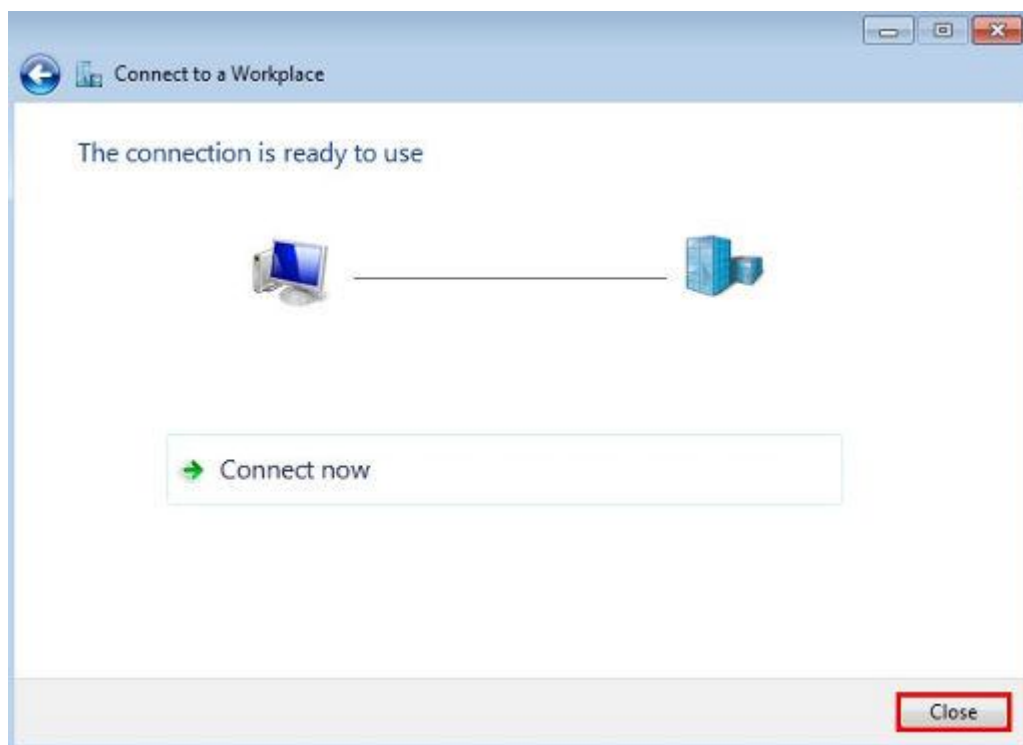
Step 6:

Enter User name and Password, and then click on Create.



Step 7:

The VPN connection is created and ready to use, click on Close.



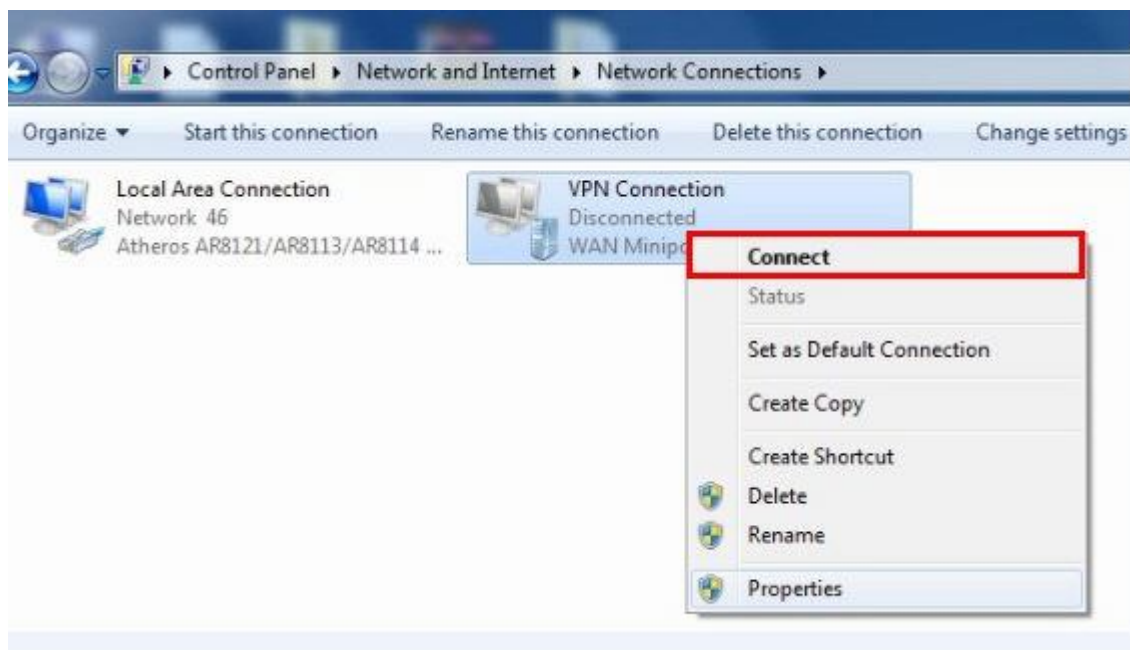
Step 8:

Go to Network and Sharing Center and click on Change adapter settings on the left menu.



Step 9:

Right Click on VPN Connection and select Connect.



Step 10:

Enter User name and Password and then click on Connect.



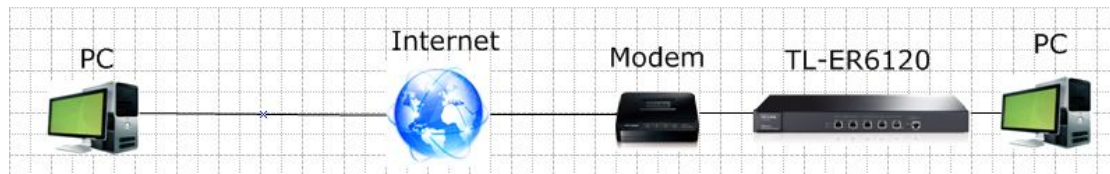
Step 11:

If the PPTP tunnel is established successfully, you can check it on List of Tunnel.



## 7. How to configure a L2TP Server on TP-LINK Router

Suitable for: TL-ER6120, TL-ER6020, TL-ER604W



L2TP (Layer 2 Tunneling Protocol) Server is used to create a VPN connection for remote clients. To configure L2TP Server on TP-LINK router, please follow the instructions below:

- A. Make sure PCs of two sides can access to Internet
- B. Configuring a L2TP Server on TP-LINK router
- C. Configuring L2TP client on remote PC (Windows 7)

**NOTE:** If the TP-LINK Router is behind a NAT device, Virtual Server or DMZ should be configured on the NAT device, otherwise the VPN tunnel can't be established.

### A. Make sure PCs of two sides can access to Internet

Before setup a VPN tunnel, you need to ensure that PCs of two sides are connected to the Internet. After ensuring that there is an active Internet connection on each side, you need to verify the VPN settings of the two sides, please follow the instruction below.

### B. Configuring a L2TP Server on TP-LINK router

Step 1:

Access the router's management web page; verify the settings needed on the router.



**Device Info**

Firmware Version: 1.0.0 Build 20111114 Rel.52682  
Hardware Version: TL-ER6120 v1.0

**System Time**

System Time: 2012-07-18 10:29:36 Wednesday  
Running Time: 4 Day, 22 Hour, 3 Min, 52 Sec

**WAN**

WAN1	Link Up	WAN2	Link Down
Primary Connection:	PPPoE/Russian PPPoE	Primary Connection:	Dynamic IP
Status:	Connected	Connecting...	
Online Time:	3 Sec	0.0.0.0	
IP Address:	113.97.237.50	0.0.0.0	
Subnet Mask:	255.255.255.255	0.0.0.0	
MAC Address:	90-F6-52-BD-EE-FB	90-F6-52-BD-EE-FC	
Secondary Connection:	---	Secondary Connection:	---
Status:	---	Status:	---
IP Address:	---	IP Address:	---
Subnet Mask:	---	Subnet Mask:	---

**LAN/DMZ**

Interface	IP Address	Subnet Mask	DHCP Server	MAC Address
LAN	192.168.0.1	255.255.255.0	Enabled	90-F6-52-BD-EE-FA

This IP address should be typed in VPN client

Step 2:

Click on VPN->L2TP/PPTP->IP Address Pool, enter Pool Name and IP Address Range, and then click on Add.

NOTE: IP Address pool must be different range from LAN IP address range.

**TP-LINK**

TL-ER6120

L2TP/PPTP Tunnel | IP Address Pool | List of L2TP/PPTP Tunnel

**IP Address Pool**

Pool Name:  **Enter Pool Name**

IP Address Range:  -  **Click on Add**

**List of IP Address Pool**

No.	Pool Name	IP Address Range	Action
No entries.			

Step 3:

Look for protocol, select L2TP; the Mode should be Server.

**General**

Enable VPN-to-Internet

Hello Interval:  Sec (60-1000)

**L2TP/PPTP Tunnel**

Protocol:  L2TP  PPTP

Mode:  Server  Client

Account Name:

Password:

Tunnel:

Max Connections:  (1-10)

Encryption:  Enable  Disable

Pre-shared Key:

Client IP:

IP Address Pool:

Remote Subnet:  /

Status:  Activate  Inactivate

**List of Configurations**

No.	Protocol	Account Name	Mode	Tunnel	Server IP	IP Address Pool	Remote Subnet	Encry	Status	Action
No entries.										

Step 4:

Enter Account Name and Password whatever you like, here we use “tplinktest” as account name, password is “1234”.

Step 5:

Under Tunnel, select Client-to-LAN.

Step 6:

The tunnel supports up to 10 connections, we enter 10 in this example.

Step 7:

Under Encryption, select Enable, and then enter “5678” as Pre-shared Key.

Step 8:

Under IP Address Pool, select “test1” we have added before.

Step 9:

Look for Status, select Active.

Step 10:

Click on Add.

Step 11:

As we enabled Encryption, we need to go to VPN->IPsec, enable IPsec and then click on Save.



### C. Configuring L2TP client on remote PC (Windows 7)

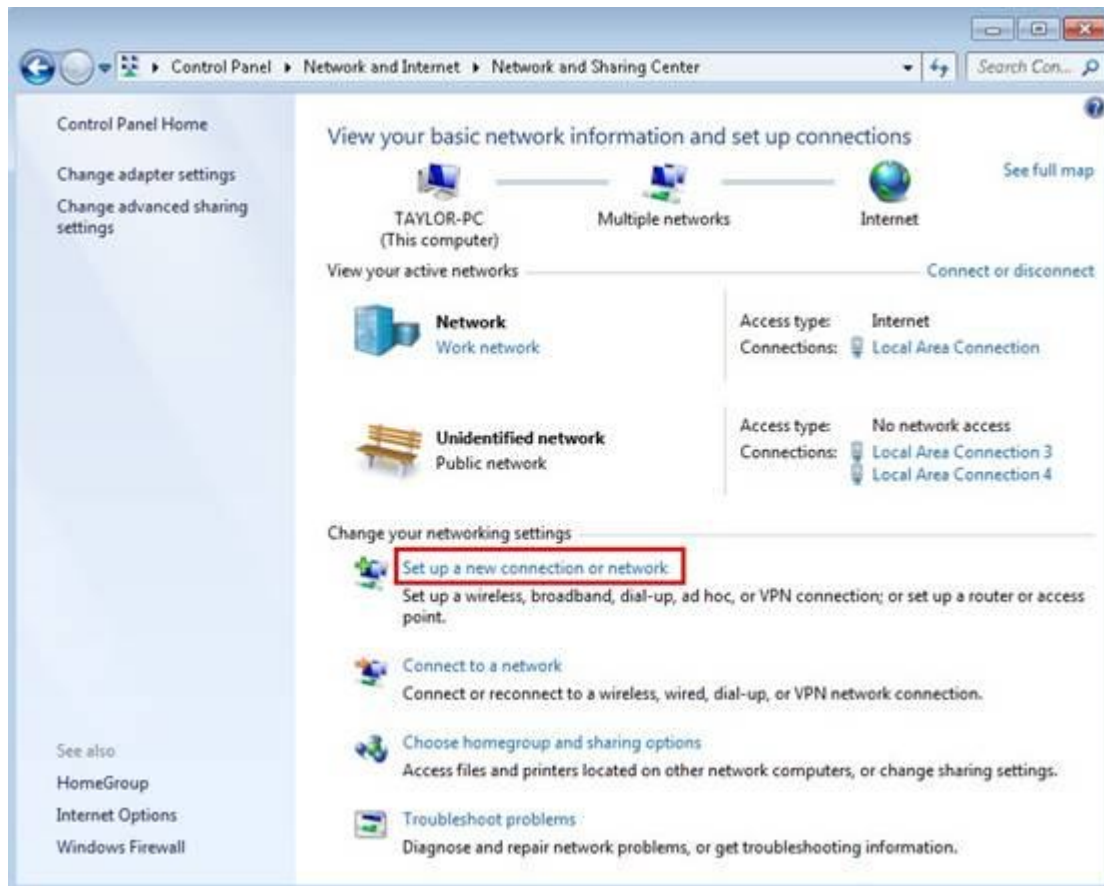
**NOTE:** For remote PC to connect to L2TP server, it can use Windows built-in L2TP software or Third-party L2TP software.

Step 1:

Click on Start->Control Panel->Network and Internet->Network and Sharing Center.

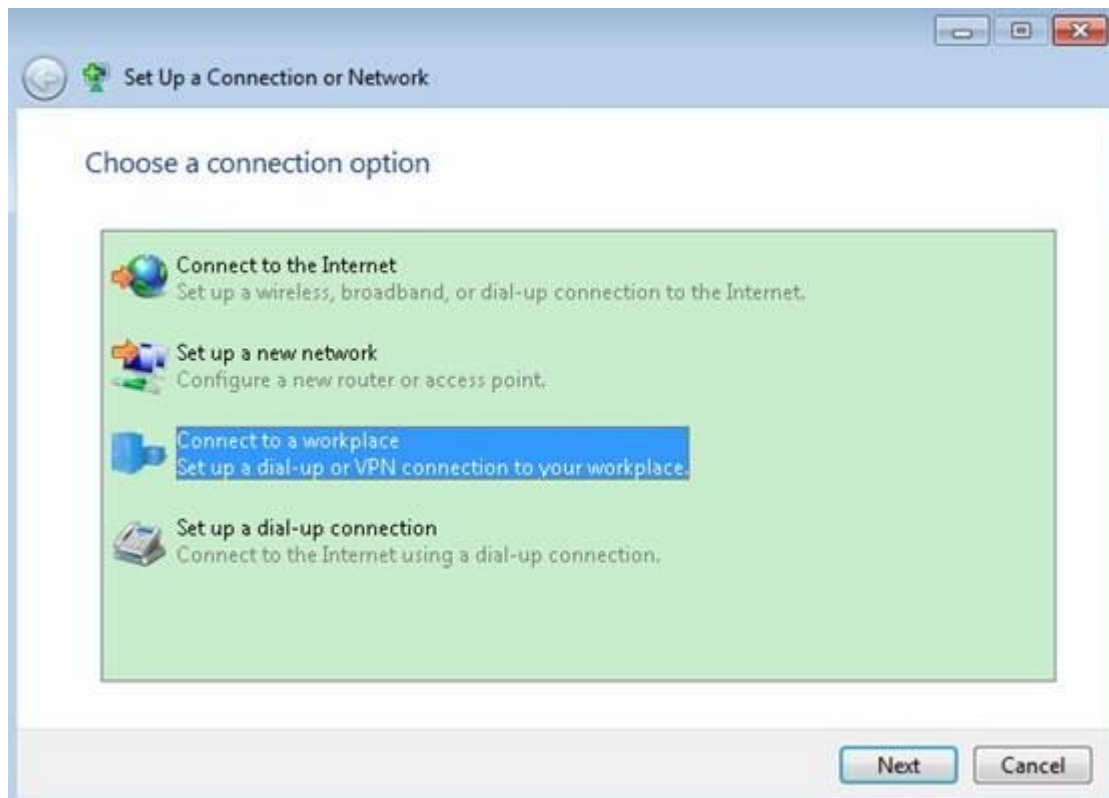
Step 2:

Click on Set up a new connection or network.



Step 3:

Choose Connect to a workplace, and then click on Next.



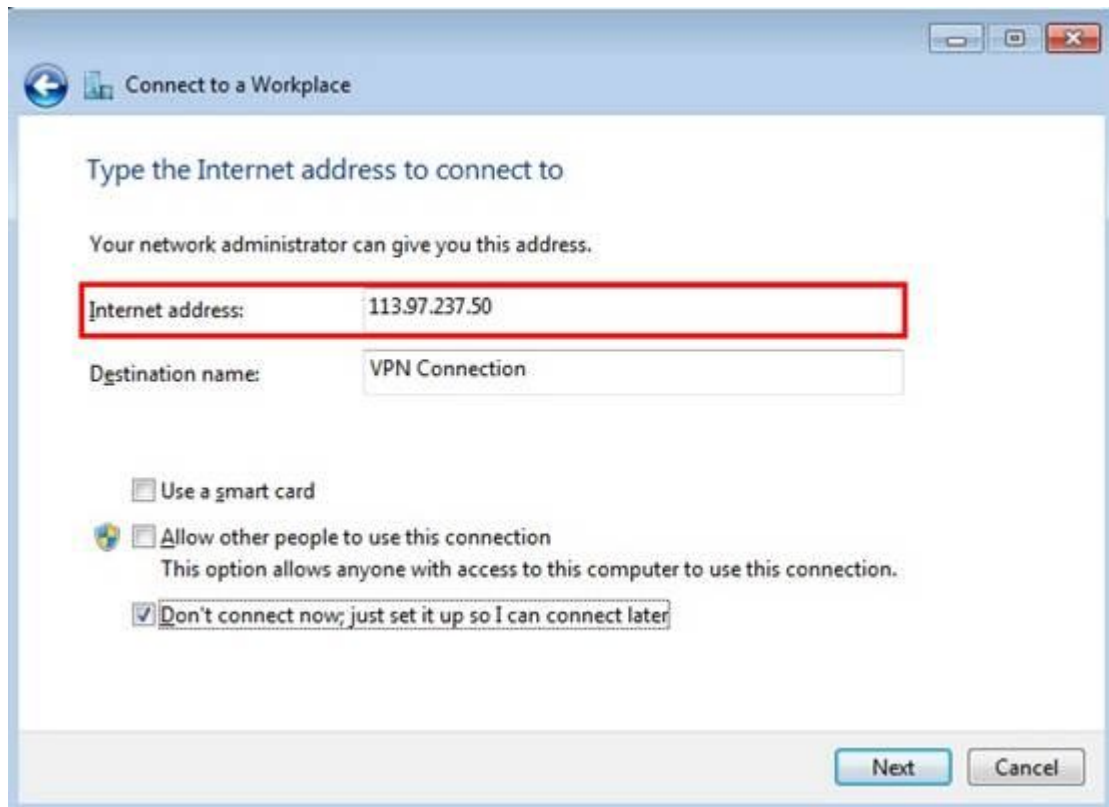
Step 4:

Select Use my Internet connection (VPN)



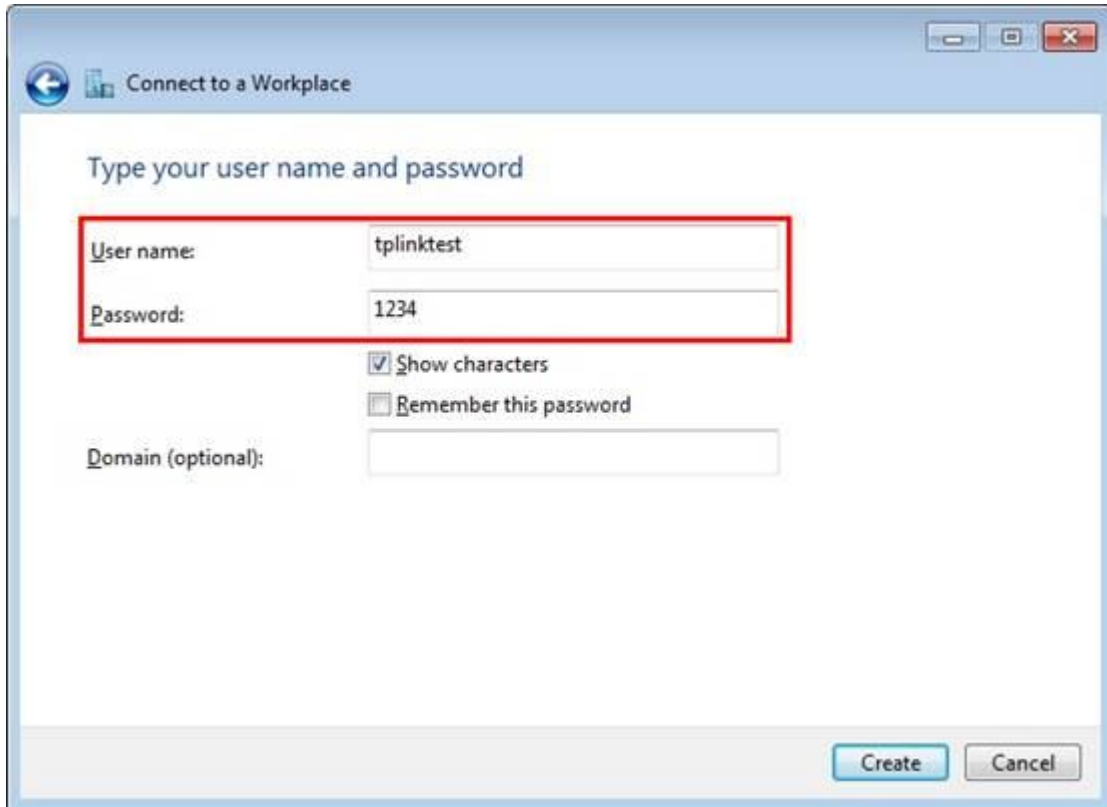
Step 5:

Under Internet address field, enter router's WAN IP address, and then click on Next.



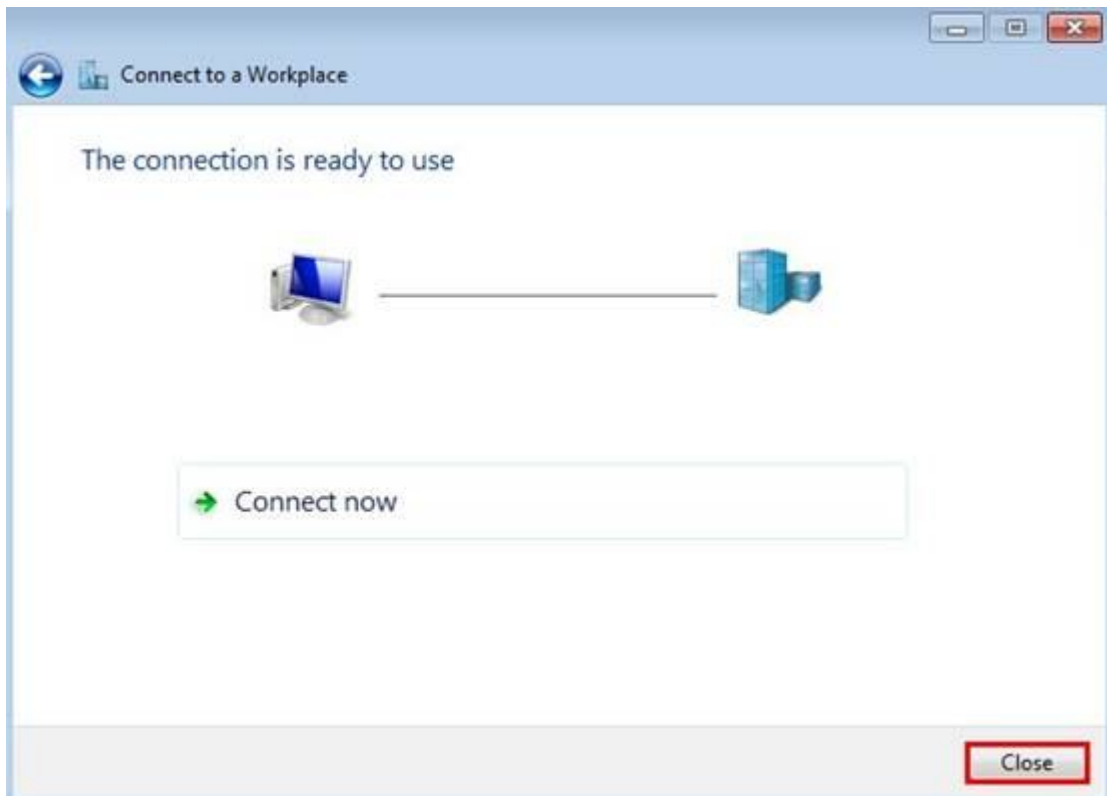
Step 6:

Enter User name and Password, and then click on Create.



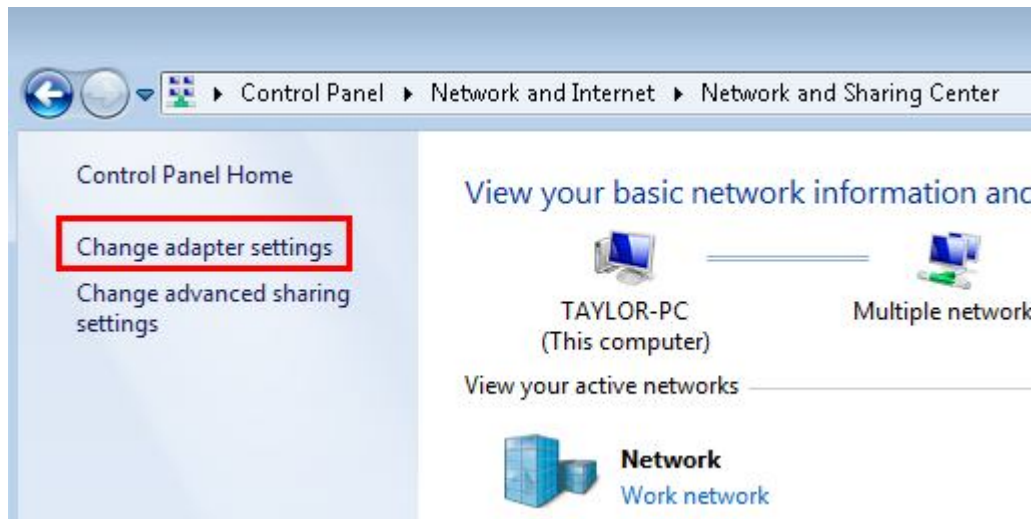
Step 7:

The VPN connection is created and ready to use, click on Close.



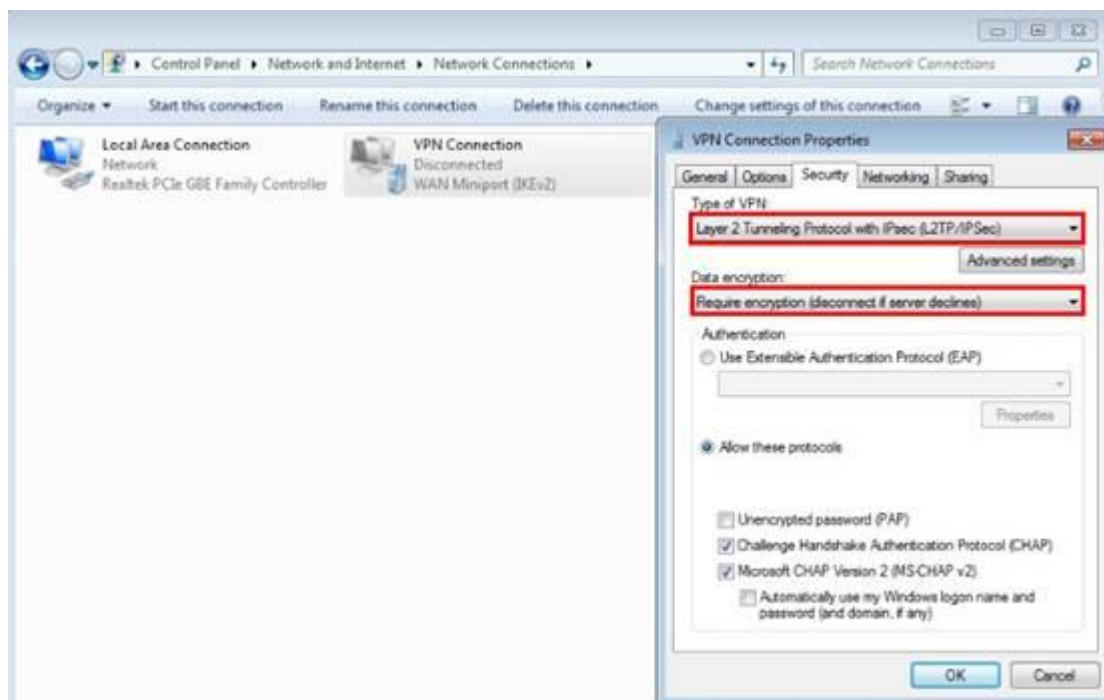
Step 8:

Go to Network and Sharing Center and click on Change adapter settings on the left menu.



Step 9:

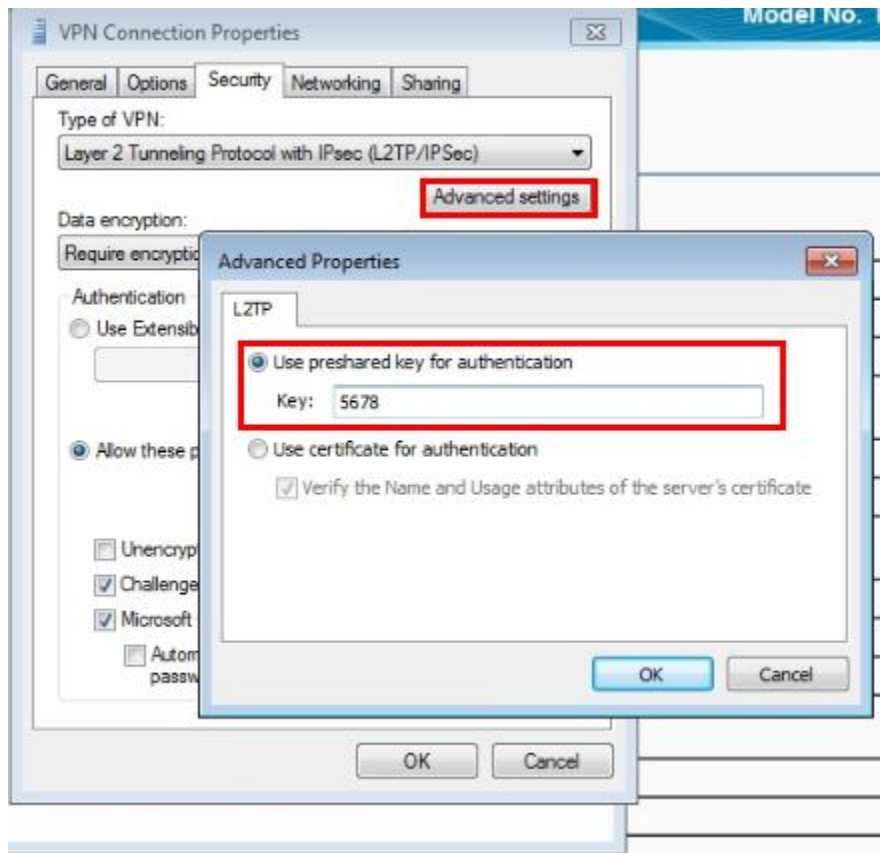
Right Click on VPN Connection and select Properties. On the Security tab, Select Layer 2 Tunneling Protocol with IPsec (L2TP/IPsec), under Data encryption, select Require encryption (disconnect if server declines).





Step 10:

Click on Advanced settings, pick Use preshared key for authentication, and then enter the key, here is “5678”.



Step 11:

Double click on VPN Connection, enter User name and Password and then click on Connect.

