# TP-LINK®

## **User Guide**

## **TD-W8968**

300Mbps Wireless N USB ADSL2+ Modem Router



#### **COPYRIGHT & TRADEMARKS**

Specifications are subject to change without notice. **TP-LINK**° is a registered trademark of **TP-LINK** TECHNOLOGIES CO., LTD. Other brands and product names are trademarks or registered trademarks of their respective holders.

No part of the specifications may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from **TP-LINK** TECHNOLOGIES CO., LTD. Copyright © 2015 **TP-LINK** TECHNOLOGIES CO., LTD. All rights reserved.

http://www.tp-link.com

#### **FCC STATEMENT**



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

### **FCC RF Radiation Exposure Statement:**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

## **CE Mark Warning**

## **C€1588**

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

#### **National Restrictions**

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

Country	Restriction	Reason/remark
Bulgaria	None	General authorization required for outdoor use and public service
France	Outdoor use limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. Refarming of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012
Italy	None	If used outside of own premises, general authorization is required
Luxembourg	None	General authorization required for network and service supply(not for spectrum)
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund
Russian Federation	None	Only for indoor applications

Note: Please don't use the product outdoors in France.

## **Canadian Compliance Statement**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2)This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux norms CNR exemptes de licence d'Industrie Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- (1) cet appareil ne doit pas provoquer d'interférences et
- (2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité de l'appareil.

This device has been designed to operate with the antennas listed below, and having a maximum gain of 5 dBi. Antennas not included in this list or having a gain greater than 5 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

#### **Industry Canada Statement**

Complies with the Canadian ICES-003 Class B specifications.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device complies with RSS 210 of Industry Canada. This Class B device meets all the requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## **Korea Warning Statements**

당해 무선설비는 운용중 전파혼신 가능성이 있음.

#### **NCC Notice & BSMI Notice**

#### 注意!

依據 低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性或功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通行;經發現有干擾現象時,應立即停用,並改善至無干擾時方得繼續使用。前項合法通信,指依電信規定作業之無線電信。低功率射頻電機需忍受合法通信或工業、科學以及醫療用電波輻射性電機設備之干擾。

減少電磁波影響,請妥適使用。



Продукт сертифіковано згідно с правилами системи УкрСЕПРО на відповідність вимогам нормативних документів та вимогам, що передбачені чинними законодавчими актами України.



#### **Safety Information**

- When product has power button, the power button is one of the way to shut off the product; when there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.
- Don't disassemble the product, or make repairs yourself. You run the risk of electric shock and voiding the limited warranty. If you need service, please contact us.
- Avoid water and wet locations.

This product can be used in the following countries:

AT	BG	BY	CA	CZ	DE	DK	EE
ES	FI	FR	GB	GR	HU	ΙE	IT
LT	LV	MT	NL	NO	PL	PT	RO
RU	SE	SK	TR	UA	US		

#### **DECLARATION OF CONFORMITY**

For the following equipment:

Product Description: 300Mbps Wireless N USB ADSL2+ Modem Router

Model No.: TD-W8968 Trademark: TP-LINK

We declare under our own responsibility that the above products satisfy all the technical

regulations applicable to the product within the scope of Council Directives:

Directives 1999/5/EC, Directives 2004/108/EC, Directives 2006/95/EC, Directives 1999/519/EC,

Directives 2011/65/EU

The above product is in conformity with the following standards or other normative documents

EN 300 328 V1.8.1

EN 301 489-1 V1.9.2 & EN 301 489-17 V2.2.1

EN 55022: 2010 + AC: 2011

EN 55024: 2010

EN 61000-3-2: 2006 + A1: 2009 + A2: 2009

EN 61000-3-3: 2013

EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011

EN 50385: 2002

The product carries the CE Mark:

**C€1588** 

Person responsible for making this declaration:

Yang Hongliang

**Product Manager of International Business** 

Date of issue: 2015

TP-LINK TECHNOLOGIES CO., LTD

Building 24 (floors 1, 3, 4, 5), and 28 (floors 1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

## **CONTENTS**

Pad	ckage	Contents	1
Ch	apter '	1. Product Overview	2
1.1	Overv	riew of the Modem Router	2
1.2	Main I	Features	3
1.3	Panel	Layout	4
	1.3.1	The Front Panel	4
	1.3.2	The Back Panel	<u>5</u>
Ch	apter 2	2. Connecting the Modem Router	7
2.1	Syste	m Requirements	7
2.2	Install	ation Environment Requirements	7
2.3	Conne	ecting the Modem Router	8
Ch	apter :	3. Quick Installation Guide	9
3.1	TCP/I	P Configuration	9
3.2	Quick	Installation Guide	10
Ch	apter 4	4. Configuring the Modem Router	15
4.1	Login		15
4.2	Device	e Info	15
4.3	Quick	Setup	16
4.4	Opera	ation Mode	16
4.5	Advar	nced Setup	17
	4.5.1	Layer2 Interface	18
	4.5.2	WAN Service	19
	4.5.3	3G Settings	28
	4.5.4	MAC Clone	31
	4.5.5	LAN	32
	4.5.6	NAT	36
	4.5.7	Security	
	4.5.8	Parental Control	
	4.5.9	Quality of Service	
		Bandwidth Control	
	4.5.11	Routing	51

	4.5.12	DNS	. 52
	4.5.13	DSL	. 54
	4.5.14	UPnP	. 55
	4.5.15	Interface Grouping	. 55
	4.5.16	IP Tunnel	. 57
	4.5.17	IPSec	. 59
	4.5.18	Multicast	61
4.6	IPTV.		62
4.7	Wirele	ss	63
	4.7.1	Basic	. 63
	4.7.2	Security	. 64
	4.7.3	Wireless Schedule	. 77
	4.7.4	MAC Filter	. 78
	4.7.5	Wireless Bridge	. 79
	4.7.6	Advanced	. 80
	4.7.7	Station info	. 82
4.8	Guest	Network	82
	4.8.1	Basic	. 82
	4.8.2	Station list	. 83
4.9	USB S	Settings	84
	4.9.1	USB Mass Storage	. 84
	4.9.2	User Accounts	. 85
	4.9.3	Storage Sharing	. 86
	4.9.4	FTP Server	. 88
	4.9.5	Media Server	. 89
	4.9.6	Print Server	. 90
4.10	)Diagn	ostics	91
4.1	l Mana	gement	91
	4.11.1	Settings	. 92
	4.11.2	System Log	. 94
	4.11.3	SNMP Agent	. 95
	4.11.4	TR-069 client	. 96
	4.11.5	Internet Time	. 98
	4.11.6	Access Control	. 98
	4.11.7	Upgrade Firmware	100
	4.11.8	Reboot	101

4.12Logout	101
Appendix A: Specifications	103
Appendix B: Troubleshooting	104
Appendix C: Technical Support	107

## **Package Contents**

The following contents should be found in your package:

- One TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router
- One power Adapter for TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router
- Quick Installation Guide
- One RJ45 cable  $\triangleright$
- > Two RJ11 cables
- One ADSL splitter
- > One Resource CD for TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router, including:
  - This User Guide
  - Other Helpful Information

#### 

Make sure that the package contains the above items. If any of the listed items are damaged or missing, please contact your distributor.

Version 3<sup>rd</sup> and version 4<sup>th</sup> of TD-W8968 are sharing this User Guide. They are similar to each other so we will take version 4th for example throughout this Guide for simplicity. Differences will not be presented in this guide.

## **Chapter 1. Product Overview**

Thank you for choosing the TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router.

#### 1.1 Overview of the Modem Router

The TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router integrates 4-port Switch, Firewall, NAT-router and Wireless AP. Powered by 2x2 MIMO technology, the Wireless N router delivers exceptional range and speed, which can fully meet the need of Small Office/Home Office (SOHO) networks and the users demanding higher networking performance.

The TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router utilizes integrated ADSL2+ transceiver and high speed MIPS CPU. The modem router supports full-rate ADSL2+ connectivity conforming to the ITU and ANSI specifications.

In addition to the basic DMT physical layer functions, the ADSL2+ PHY supports dual latency ADSL2+ framing (fast and interleaved) and the I.432 ATM Physical Layer.

The modem router provides up to 300Mbps wireless connection with other 802.11n wireless clients. The incredible speed makes it ideal for handling multiple data streams at the same time, which ensures your network stable and smooth. The performance of this 802.11n wireless modem router will give you the unexpected networking experience at speed 650% faster than 802.11g. It is also compatible with all IEEE 802.11g and IEEE 802.11b products.

With multiple protection measures, including SSID broadcast control and wireless LAN 64/128 WEP encryption, Wi-Fi protected Access (WPA2-PSK, WPA-PSK), as well as advanced Firewall protections, the TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router provides complete data privacy.

The modem router provides flexible access control, so that parents or network administrators can establish restricted access policies for children or staff. It also supports Virtual Server and DMZ host for Port Triggering, and then the network administrators can manage and monitor the network in real time with the remote management function.

Since the modem router is compatible with virtually all the major operating systems, it is very easy to manage. Quick Setup Wizard is supported and detailed instructions are provided step by step in this user guide. Before installing the modern router, please look through this guide to know all the modem router's functions.

#### 1.2 Main Features

- One RJ11 LINE port, four 10/100M Auto-Negotiation RJ45 LAN ports, supporting Auto MDI/MDIX
- Complies with IEEE 802.11n to provide a wireless data rate of up to 300Mbps
- $\triangleright$ Quick response semi-conductive surge protect circuit, reliable surge-protect function
- AFE to support Annex A and L deployments  $\triangleright$
- $\triangleright$ Provides external splitter
- $\triangleright$ Multi-user sharing a high-speed Internet connection
- Connecting the internet on demand and disconnecting from the Internet when idle for PPPoE  $\triangleright$
- Provides WPA/WPA2, WPA-PSK/WPA2-PSK data security, TKIP/AES encryption security  $\triangleright$
- Provides 64/128-bit WEP encryption security and wireless LAN ACL (Access Control List)
- Adopts Advanced DMT modulation and demodulation technology  $\triangleright$
- Supports access control, parents and network administrators can establish restricted access policies based on time of day for children or staff
- $\triangleright$ Supports Virtual Server, Port Triggering and DMZ host
- Supports UPnP, Dynamic DNS, Static Routing  $\triangleright$
- ➤ Supports bridge mode and router function
- $\triangleright$ Supports Web management
- $\triangleright$ Supports firmware upgrade
- $\triangleright$ Supports Flow Statistics
- Built-in firewall supporting IP address filtering, MAC address filtering and parental control  $\triangleright$
- $\triangleright$ Built-in DHCP server
- Supports USB Storage Sharing, Print Server, FTP Server, Media Server  $\triangleright$
- Supports IPv6
- $\triangleright$ Supports Guest Network
- Supports WPS

## 1.3 Panel Layout

#### 1.3.1 The Front Panel

The modem router's LEDs are located on the front panel (View from left to right).



Figure 1-1

#### **LED Explanation:**

Name	Status	Indication
	On	The modem router is powered on.
<b>(</b> Power)	Off	The modem router is off. Please ensure that the power adapter is connected correctly.
	On	ADSL line is synchronized and ready to use.
Ψ(ADSL)	Flash	The ADSL negotiation is in progress.
	Off	ADSL synchronization fails. Please refer to <b>Note 1</b> for troubleshooting.
	On	The network is available with a successful Internet connection.
Ø(Internet)	Flash	There is data being transmitted or received via the Internet.
Ø(Internet)	Off	There is no successful Internet connection or the modem router is operating in Bridge mode. Please refer to <a href="Note 2">Note 2</a> for troubleshooting.
	On	Wireless is enabled but no data is being transmitted.
종(WLAN)	Flash	The modem router is sending or receiving data over the wireless network.
	Off	Wireless is disabled.
	On	A wireless device has been successfully added to the network by <b>WPS</b> function.
⊕(WPS)	Slow Flash	<b>WPS</b> handshaking is in process and will continue for about 2 minutes. Please press the <b>WPS</b> button on other wireless devices that you want to add to the network while the LED is flashing.
	Quick Flash	A wireless device has failed to be added to the network by WPS function. Please refer to 4.6.2.1 WPS Setup for more information.
<b>•</b> ← (USB)	On	A storage device or printer has connected to the USB port.

	Flash	The modem router is sending or receiving data over this USB port.
	Off	No storage device or printer is plugged into the USB port.
	On	There is a device connected to this LAN port.
<b>□</b> (LAN1-4)	Flash	The modem router is sending or receiving data over this LAN port.
	Off	There is no device connected to this LAN port.

#### P Note:

- 1. If the ADSL LED is off, please check your Internet connection first. Refer to 2.3 Connecting the Modem Router for more information about how to make Internet connection correctly. If you have already made a right connection, please contact your ISP to make sure if your Internet service is available now.
- 2. If the Internet LED is off, please check your ADSL LED first. If your ADSL LED is also off, please refer to Note 1. If your ADSL LED is GREEN ON, please check your Internet configuration. You may need to check this part of information with your ISP and make sure everything have been input correctly. Refer to **4.2 Device Info** for more information.

#### 1.3.2 The Back Panel

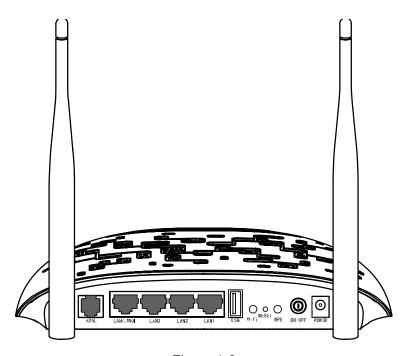


Figure 1-2

- > ADSL: Connect to the Modem Port of Splitter or to the telephone line.
- > LAN1, LAN2, LAN3, LAN4/WAN: Through these ports, you can connect the modem router to your PC or the other Ethernet network devices. Enable EWAN function and you will be able to connect to Cable/FTTH/VDSL/ADSL device.
- > **USB**: The USB port connects to a USB storage device or a USB printer.
- > WiFi: The switch for the WiFi function.

- > **RESET:** There are two ways to reset the modem router's factory defaults.
- 1) Use the Restore Default function on Management -> settings -> Restore Default page in the modem router's Web-based Utility.
- 2) Use the Factory Default **RESET** button: With the modem router powered on, use a pin to press and hold the RESET button for at least 5 seconds. And the modem router will reboot to its factory default settings.
- ➤ **WPS:** The switch for the WPS function. For details, please refer to <u>4.6.2.1 WPS Setup</u>.
- > **ON/OFF:** The switch for the power.
- **POWER:** The Power plug is where you will connect the power adapter.
- > Wireless Antennas: To receive and transmit the wireless data.

## **Chapter 2. Connecting the Modem Router**

#### 2.1 System Requirements

- Broadband Internet Access Service (DSL/Cable/Ethernet).
- PCs with a working Ethernet Adapter and an Ethernet cable with RJ45 connectors.
- > TCP/IP protocol on each PC.
- ➤ Web browser, such as Microsoft Internet Explorer, Mozilla Firefox or Apple Safari.

#### 2.2 Installation Environment Requirements

- The Product should not be located where it will be exposed to moisture or excessive heat.
- > Place the modem router in a location where it can be connected to the various devices as well as to a power source.
- > Make sure the cables and power cord are safely placed out of the way so they do not create a tripping hazard.
- > The modem router can be placed on a shelf or desktop.
- > Keep away from the strong electromagnetic radiation and the device of electromagnetic sensitive.

Generally, **TD-W8968** is placed on a horizontal surface. The device also can be mounted on the wall as shown in Figure 2-1.

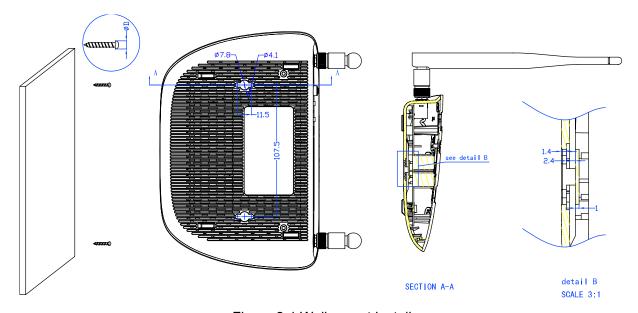


Figure 2-1 Wall-mount Install

#### Note:

The diameter of the screw, 4.1mm<D<7.8mm, and the distance of two screws is 107.5mm. The screw that project from the wall need around 4mm based, and the length of the screw need to be at least 20mm to withstand the weight of the product.

#### 2.3 Connecting the Modem Router

Before installing the device, please make sure your broadband service provided by your ISP is available. If there is any problem, please contact your ISP. Before cable connection, cut off the power supply and keep your hands dry. You can follow the steps below to install it.

Step 1: Connect the ADSL Line.

Method one: Plug one end of the twisted-pair ADSL cable into the ADSL port on the rear panelTD-W8968, and insert the other end into the wall socket.

Method two: You can use a separate splitter. External splitter can divide the data and voice, and then you can access the Internet and make calls at the same time. The external splitter has three ports:

- · LINE: Connect to the wall jack
- PHONE: Connect to the phone sets
- MODEM: Connect to the ADSL port of TD-W8968

Plug one end of the twisted-pair ADSL cable into the ADSL port on the rear panel of **TD-W8968**. Connect the other end to the MODEM port of the external splitter.

- Step 2: Connect the Ethernet cable. Attach one end of a network cable to your computer's Ethernet port or a regular hub/switch port, and the other end to the LAN port on the modem router TD-W8968.
- Step 3: Power on the computers and LAN devices.
- Step 4: Attach the power adapter. Connect the power adapter to the power connector on the rear of the device and plug in the adapter to a electrical outlet or power extension. The electrical outlet shall be installed near the device and shall be easily accessible.

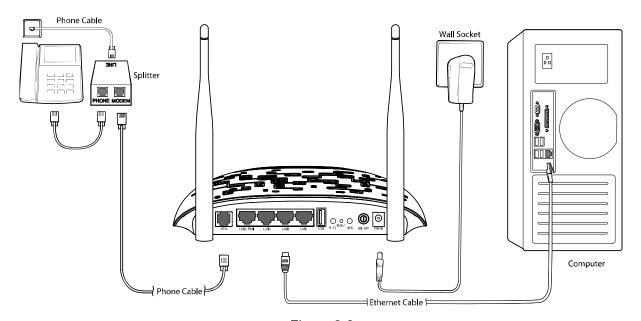


Figure 2-2

## Chapter 3. Quick Installation Guide

This chapter will show you how to configure the basic functions of your TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router using Quick Setup Wizard within minutes.

#### 3.1 TCP/IP Configuration

The default IP address of the TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router is 192.168.1.1. And the default Subnet Mask is 255.255.255.0. These values can be changed as you desire. In this guide, we use all the default values for description.

Connect the local PC to the LAN/WAN port of the modem router. And then you can configure the IP address for your PC in the following way.

- Obtain an IP address automatically
  - 1) Set up the TCP/IP Protocol in "Obtain an IP address automatically" mode on your PC. If you need instructions as to how to do this, please refer to T3 in Appendix B: Troubleshooting.
  - 2) Then the built-in DHCP server will assign IP address for the PC.

Now, you can run the Ping command in the command prompt to verify the network connection. Please click the **Start** menu on your desktop, select **run** tab, type **cmd or command** in the field and press Enter. Type ping 192.168.1.1 on the next screen, and then press Enter.

If the result displayed is similar to the screen below, the connection between your PC and the modem router has been established.

```
Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = Oms, Maximum = Oms, Average = Oms
```

Figure 3-1

If the result displayed is similar to the screen shown below, it means that your PC has not connected to the modem router.

```
Pinging 192.168.1.1 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Figure 3-2

You can check it following the steps below:

#### 1) Is the connection between your PC and the modem router correct?

The LEDs of LAN port which you link to the device and the LEDs on your PC's adapter should

#### 2) Is the TCP/IP configuration for your PC correct?

If the modem router's IP address is 192.168.1.1, your PC's IP address must be within the range of 192.168.1.2 ~ 192.168.1.254.

#### 3.2 Quick Installation Guide

With a Web-based utility, it is easy to configure and manage the TD-W8968 300Mbps Wireless N USB ADSL2+ Modem Router. The Web-based utility can be used on any Windows, Macintosh or UNIX OS with a Web browser, such as Microsoft Internet Explorer, Mozilla Firefox or Apple Safari.

Step 1. To access the configuration utility, open a web-browser and type the default address http://tplinkmodem.net in the address field of the browser.



Figure 3-3

After a moment, a login window will appear, similar to the Figure 3-4. Enter admin for the user name and password, both in lower case letters. Then click the **Login** button or press the **Enter** key.



Figure 3-4

#### P Note:

- 1) Do not mix up the user name and password with your ADSL account user name and password which are needed for PPP connections.
- 2) If the above screen does not pop up, it means that your Web-browser has been set to a proxy. Go to Tools menu→Internet Options→Connections→LAN Settings, in the screen that appears, cancel the Using Proxy checkbox, and click **OK** to finish it.
- Step 2. After your successful login, you will see the Login screen as shown in Figure 3-5. Click Quick Setup menu to access Quick Setup Wizard.

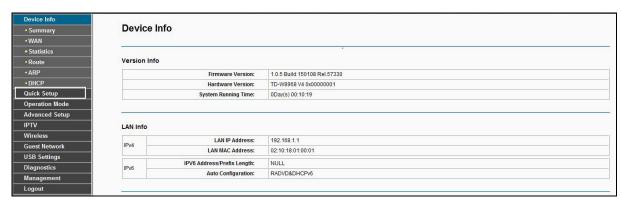


Figure 3-5

Step 3. Click Next to continue.

Quick Setup - Start
This guide will help you set basic parameters for Internet connection. Please click NEXT to continue.  For function or parameters in details, please click the corresponding menu on the left.
Next

Figure 3-6

**Step 4.** Choose the **Operation Mode** for Internet access, and then click **Next**. For **ADSL Modem Router Mode** and **Wireless Router Mode**, **3G Router Mode** can be set as a backup internet access method. If you do not want to configure 3G settings now, just untick the option.

Quick Setup-Operation mo	ode		
You can select which operation mode the router work	You can select which operation mode the router works in.		
Choose Operation mode :			
	○ Wireless Router Mode		
	○ 3G Router Mode		
	☐ Enable IPv6 in this operation mode.		
	Next		

Figure 3-7

- ➤ ADSL Modem Router Mode: In this mode, the device enables multi-users to share Internet via ADSL using its ADSL port and share it wirelessly at 300Mbps wireless 802.11n speeds.
- ➤ Wireless Router Mode: In this mode, the device enables multi-users to share Internet via Ethernet WAN (EWAN) using its interchangeable LAN/WAN port and share it wirelessly at 300Mbps wireless 802.11n speeds.

> 3G Router Mode: In this mode, the device allows multi-users to share a 3G mobile broadband connection via wired or wireless connection.

#### P Note:

If you are unwilling to configure WAN Service now, you can click the Skip WAN button. Then you can configure WAN service referring to 4.4.1 Layer2 Interface.

- Step 5. Configure parameters for WAN connection. For ADSL Modem Router Mode and Wireless Router Mode, 3G Router Mode
- If ADSL Modem Router Mode is chosen, please select your Country and ISP from the drop-down list, and enter related parameters provided by your ISP. Then click Next. Here we use **PPPoE** as an example.

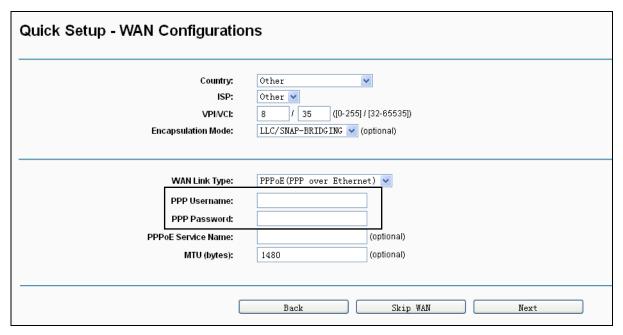


Figure 3-8

#### P Note:

If your country or ISP is not listed, please select **Other**. Then you can manually enter the VPI/VCI values and select Encapsulation Mode provided by your ISP.

If Wireless Router Mode is chosen, please select WAN Link Type provided by your ISP and enter the related parameters, then click **Next**. Here we use **PPPoE** as an example.

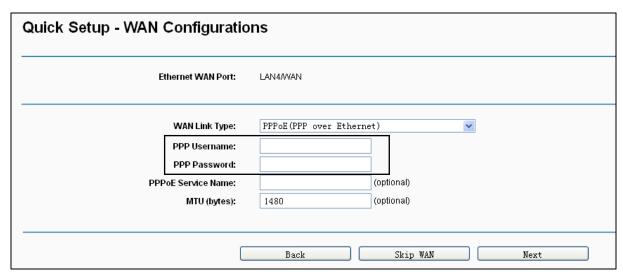


Figure 3-9

If 3G Router Mode is chosen, you should first insert your 3G USB modem on the USB port of the modem router. Then select your location and mobile ISP. Click Save to continue.

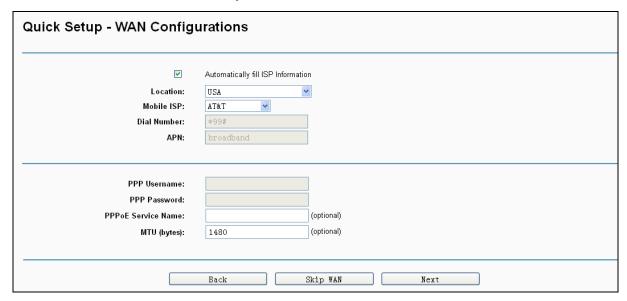


Figure 3-10

Step 6. The WLAN function is enabled by default. You can rename your wireless network name and create your own password in this page. The default wireless name is TP-LINK\_XXXXXX, and the default wireless password, the same as the PIN code, is printed on the bottom label. Click Next to continue.

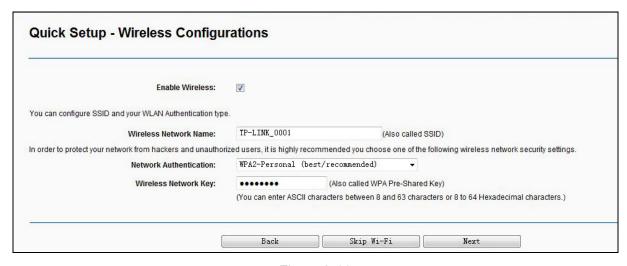


Figure 3-11

Step 7. You will see the Summary screen, click Confirm to make your settings take effect.

## **Chapter 4. Configuring the Modem Router**

This chapter will show each Web page's key function and the configuration way.

#### 4.1 Login

After your successful login, you will see the eight main menus on the left of the Web-based utility. On the right, there are the corresponding explanations and instructions.



The detailed explanations for each Web page's key function are listed below.

#### 4.2 Device Info

Choose "Device Info" menu, there are six submenus under the main menu: Summary, WAN, Statistics, Route, ARP and DHCP. This Device Info section mainly introduces the elementary information about the modem router and its current settings in use. Click any of them, and you will be able to view the corresponding information.

Choose "Device Info"→"Summary", you will see the Summary screen (shown in Figure 4-1). The first table indicates the information about the version including Software and Hardware. The second table displays the current status of the Internet connection. This information will vary depending on the settings of the modem router configured on the Advanced Setup screen.

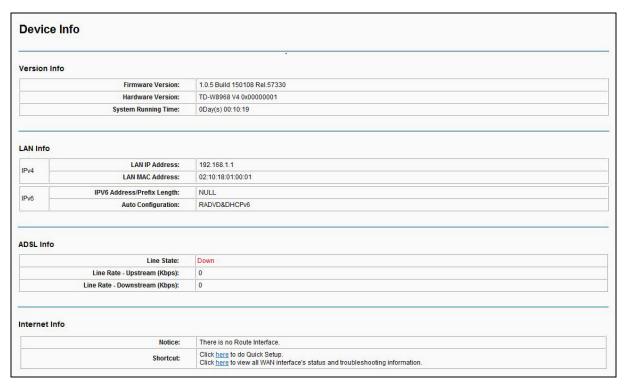


Figure 4-1

#### P Note:

Click the other submenus under the main menu **Device Info**, and you will be able to view the corresponding information about **WAN**, **Statistics**, **Route**, **ARP** and **DHCP**.

#### 4.3 Quick Setup

Please refer to Section 3.2 Quick Installation Guide.

#### 4.4 Operation Mode

Choose "Operation Mode", and you will see the screen as shown in Figure 4-2. The modem router supports three operation mode types: ADSL Modem Router Mode, Wireless Router Mode and 3G Router Mode. Select your desired mode and then click Save/Apply. Then the modem router will reboot. Please wait.

Operation mode	
You can select which operation mode the router work	s in. A reset is needed to apply settings.
Choose Operation mode :	ADSL Modem Router Mode
	○ Wireless Router Mode
	○ 3G Router Mode
	Save/Apply

Figure 4-2

- > ADSL Modem Router Mode: In this mode, the device enables multi-users to share Internet via ADSL using its ADSL port and share it wirelessly at 300Mbps wireless 802.11n speeds.
- > Wireless Router Mode: In this mode, the device enables multi-users to share Internet via Ethernet WAN (EWAN) using its interchangeable LAN/WAN port and share it wirelessly at 300Mbps wireless 802.11n speeds.
- > 3G Router Mode: In this mode, the device allows multi-users to share a 3G mobile broadband connection via wired or wireless connection.

#### 4.5 Advanced Setup

In ADSL Modem Router Mode, choose "Advanced Setup", there are many submenus under the main menu. Click any one of them, and you will be able to configure the corresponding function.



This Advanced Setup section mainly introduces how to configure the modem router for adequate use. The detailed explanations for each subsection are provided below.

#### 

To completely configure the WAN Interface, you need to first select the Layer2 Interface (4.5.1 Layer2 Interface) according to the connection ISP provides for you, and then to select the type of the connection (4.5.2 WAN Service) for the further configuration.

#### 4.5.1 Layer2 Interface

#### 4.5.1.1 ATM Interface

Choose "Advanced Setup"→"Layer2 Interface"→"ATM Interface", you can Configure ATM interfaces on the screen below.

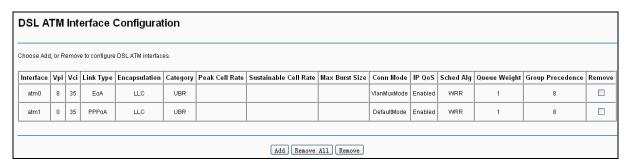


Figure 4-3

> Remove: Select the check box in the table on the screen above and then click the Remove button, the corresponding interface will be deleted in the table.

#### P Note:

If the interface is used by the configuration of the 4.5.2 WAN Service, you need to remove the corresponding WAN Service entry first before you can remove it here.

Add: Click the button, and you can add a new interface in the next screen.

ATM PVC Configuration	
This screen allows you to configure an ATM PVC iden	ntifier (VPI and VCI), select DSL latency, select a service category. Otherwise choose an existing interface by selecting the checkbox to enable it.
VPI: [0-255]	0
VCI: [32-65535]	35
Select DSL Link Type (EoA is for PPPoE, IPoE, and B  © EoA	ridge.)
O PPPoA	
○ IPoA	
Encapsulation Mode:	LLC/SNAP-BRIDGING V
Service Category:	UBR Without PCR 💌
Select IP QoS Scheduler Algorithm  • Weighted Round Robin	
<ul> <li>Weighted Fair Queuing</li> </ul>	
Weight Value of the default queue: [1- MPAAL Group Preceden	
	Back Save/Apply

Figure 4-4

> VPI/VCI: the VPI and VCI values provided by your ISP. Do not change them unless it was required by your ISP.

- > DSL Link Type: Select a DSL Link Type which is provided by your ISP. The options include **EoA** (it is for PPPoE, IPoE, and Bridge), **PPPoA** (PPP over ATM) and **IPoA** (IP over ATM).
- Encapsulation Mode: The mode of the data processing over the Link Type you have selected. Uses the default setting, if you are not sure.
- > Service Category: Select the type of the service assigned by your ISP in the drop-down list. The default type is **UBR Without PCR**.

#### 

Enabling packet level QoS for PVC improves performance for selected classes of applications. While QoS consumes system resources; therefore the number of PVC(s) will be reduced. Besides this, it cannot be set for the connection type of CBR and Real-time VBR. If you select the QoS service, the Quality of Service menu will be added to the Web-based Utility, the detailed configuration will be described in 4.4.9 Quality of Service.

#### 4.5.1.2 ETH Interface

If your modem router works on Wireless Router Mode, choose "Advanced Setup"→"Layer2 Interface → ETH Interface", you can see ETH WAN interface on the screen below.

ETH WAN Interface	
Interface/(Name)	Connection Mode
eth3/(LAN4/WAN)	DefaultMode

Figure 4-5

#### 4.5.1.3 USB 3G Interface

If you enable 3G as backup access or your modem router works on 3G Router Mode, choose "Advanced Setup"→"Layer2 Interface"→"USB 3G Interface", you can see USB 3G interface status on the screen below.

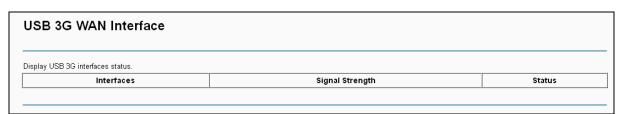


Figure 4-6

#### 4.5.2 WAN Service

Choose "Advanced Setup"→"WAN Service", and you will see the WAN Port Information Table in the screen similar to Figure 4-7, which describes the WAN port settings and the relevant manipulation to each interface. After you add a new Lay2 Interface, please follow the instructions below to complete the further configuration of WAN Interface. There are five different configurations for the connection types, which are PPPoE, IPoE, Bridge, PPPoA, and IPoA. You can select the corresponding types according to your needs.

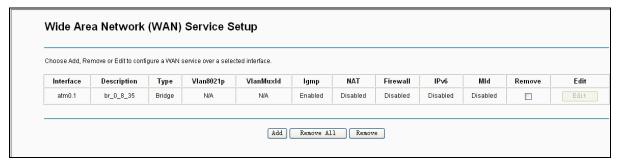


Figure 4-7

#### P Note:

The following section adopts different VPI, VCI to introduce further configuration for the different connection types, if you need to change the configuration of ATM PVC (VPI/VCI), you should go to the previous section (4.5.1 Layer2 Interface) to configure them again.

#### 4.5.2.1 ATM-EoA-PPPoE

If your ISP provides a **PPPoE** connection and you need to use an ATM Interface, follow the steps below to add a WAN service over a selected ATM interface:

- 1. Add a **new** ATM interface and select **EoA** option for DSL Link Type (4.5.1.1 ATM Interface).
- 2. Click the **Add** button on the screen Figure 4-7 and you will enter the next screen as shown in Figure 4-8. Click **Next**.

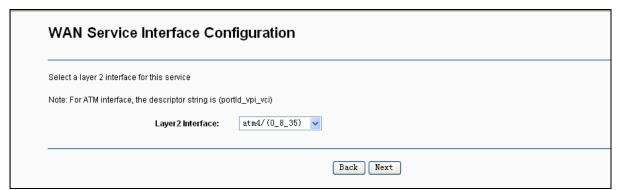


Figure 4-8

 Select the WAN service type in Figure 4-9. If your ISP provides a PPPoE connection, select PPPoE option. You can create a service name for the Service Description or leave it the default name. Click Next.

Select WAN service type:			
PPP over Ethernet (PPPoE)			
IP over Ethernet			
<ul><li>Bridging</li></ul>			
Enter Service Desc	ription:	pppoe_0_8_35	
	rity and 802.1		
For tagged service, enter valid 802.1P Priority an For untagged service, set -1 to both 802.1P Priorit Enter 802.1P Priorit Enter 802.1Q VLAN ID [0	rity and 802.1 ty [0-7]:	1Q VLAN ID.	
For untagged service, set -1 to both 802.1P Prior  Enter 802.1P Priorit	rity and 802.1 ty [0-7]:	1Q VLAN ID.	

Figure 4-9

Enter the following parameters and then click Next.

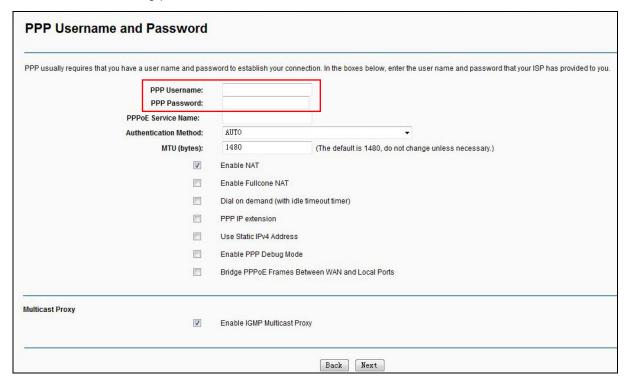


Figure 4-10

- PPP Username/Password: Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- PPPoE Service Name: Enter the Service Name if it was provided by your ISP. If you leave it blank, the default name will be the same as the Service Description on the previous screen.

> Authentication Method: Select the Authentication Method from the drop-down list, the default method is AUTO, and you can leave it as a default setting.

#### **☞** Note:

If you are not sure about the PPP IP extension and PPP Debug Mode etc. below, please don't select these options.

- > MTU Size: Maximum Transmission Unit Size. Check this box then you can change the MTU size. The default MTU value is 1480 Bytes. It is not recommended that you change the default value unless required by your ISP.
- > Enable NAT: This technology translates the IP addresses of a local area network to a different IP address for the Internet. If this modem router is hosting your network's connection to the Internet, please select the check box. If another router exists in your network, you don't need to select the option.
- > Enable Fullcone NAT: It is a type of NAT, if not enabled, the default NAT will act.
- > Dial on demand (with idle timeout timer): The modem router will cut off the Internet connection after it has been inactive for a specific period of time (idle timeout), and it will automatically re-establish the connection as soon as you attempt to access the Internet again. If your Internet is charged by time you may want to select this option in order to save money.
- > PPP IP extension: Select this option to get the public IP address from the PPP server to your PC, and the NAT and SPI Firewall will be closed. Sometimes you can think it as bridge while PPP dialing in the modem router. It's a special feature deployed by some ISP. Unless your ISP specifically requires this setup, do not select it.
- > Use Static IPv4 Address: If your ISP gives you a static WAN, Gateway and DNS IP address, select this option to enter them manually.
- > Enable PPP Debug Mode: Select this option to debug the PPP function and you can see many PPP log information in the System Log. Only PPP has this debug Mode.
- > Bridge PPPoE Frames Between WAN and Local Ports: Select this option to start PPP connection in your local PC.
- > Enable IGMP Multicast Proxy: IGMP (Internet Group Management Protocol) is used to manage multicasting on TCP/IP networks. Some ISPs use IGMP to perform remote configuration for client devices, such as the router. The default value is disabled, and if you are
- 5. Select a preferred wan interface as the system default gateway in Figure 4-11 and click **Next**.

		t gateways but only one will be used according to the priority with the first being
Selected Default Gateway Interface		e changed by removing all and adding them back in again. Available Routed WAN Interfaces
ppp1.2		
ppp0.1		
	->	
	<u></u>	

Figure 4-11

6. Configure the DNS Server Addresses on the screen below and click **Next**.

Select DNS Server Interface from available V protocol is configured, Static DNS server IP: DNS Server Interfaces can have multiple W last one the lowest priority if the WAN interfa  Select DNS Server Interface from avail	addresses must be entered. AN interfaces served as system dn ce is connected. Priority order can b	s servers but only one	will be used according to the prio	ity with the first being the higest a
Selected DNS Server Interfaces	anomayou	Av	ailable WAN Interfaces	
ppp1.2 ppp0.1				
pppor 1				
	->			
	<-			
Ouse the following Static DNS IP address	:			
Primary DNS server:				
Secondary DNS server:				

Figure 4-12

- Select DNS Server Interface from available WAN Interfaces: You can select this option to automatically get DNS server information from the selected WAN interface.
- Use the following Static DNS IP Address: You can select this option to manually enter the primary and /or optional secondary DNS server IP addresses provided by your ISP.

#### **☞** Note:

If only single PVC with IPoA is configured, you must enter static DNS server IP addresses.

7. On the next screen you will see the detailed settings you've made. Please click the Save/Apply button to save these settings.

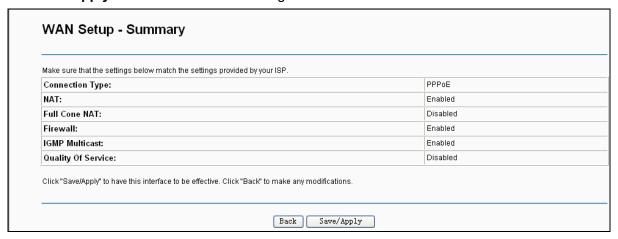


Figure 4-13

On the next screen you will see the WAN Port Information Table with the new configuration.

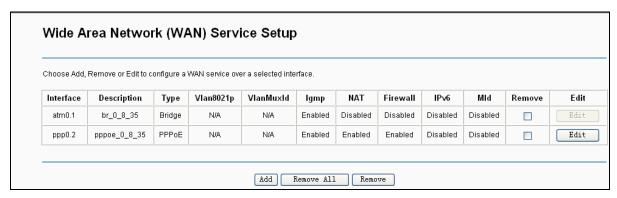


Figure 4-14

- Remove All: Click Remove All, then all the interface in the table will be deleted.
- **Remove:** Select the check box in the table above and then click **Remove**, the corresponding interface will be deleted in the table.

#### 4.5.2.2 ATM-EoA-IPoE

If your ISP provides an **IPoE** connection and you need to use an ATM Interface, follow the steps below to add a WAN service over a selected ATM interface:

- 1. Add a **new** ATM interface and select **EoA** option for DSL Link Type (4.5.1.1 ATM Interface).
- 2. Click the **Add** button on the screen (as shown Figure 4-7). Select WAN Service Interface over ATM PVC on the next screen (as shown Figure 4-8).
- 3. If your ISP provides an IPoE connection, select **IPoE** option for the **WAN service type** on the screen (as shown Figure 4-9), and click **Next** button to continue.
- 4. Enter parameters in the following blanks to configure the WAN IP Address and click Next.

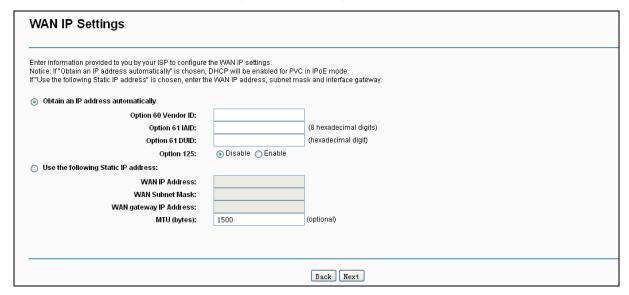


Figure 4-15

> Obtain an IP address automatically: Select this option, the modem router will be able to obtain IP network information dynamically from a DHCP server provided by your ISP.

#### P Note:

1) The response message from a DHCP server typically contains a number of configuration parameters (DHCP options) for the modem router. The DHCP options include IP network

information, and also the vendor-specific options. In some cases, the modem router is implemented to perform user-defined operations (as shown below). You can implement your own treatment of all such options.

- 2) If the modem router is functioning as a DHCP client, it must identify itself in option 61 (client-identifier) in every DHCP message. DUID/IAID is portion of option 61.
  - Option 60 Vendor ID: The option code 60 used to identify Vendor class.
  - Option 61 IAID: IAID (Identity Association ID) assigns an Identity Association ID to individual interfaces. In cases where the device is functioning with a single DHCP client identity, it must use value 1 for IAID for all DHCP interactions. In cases where the device is functioning with multiple DHCP client identities, the values of IAID have to start at 1 for the first identity and be incremented for each subsequent identity. For example, the device may use IAID value 1 for the first physical interface and value 2 for the second. Alternatively, the device may use IAID value 1 for the virtual circuit corresponding to the first connection object in the data model and value 2 for the second connection object in the data model.
  - Option 61 DUID: Specifies the name of the interface whose link-layer address the server is to use as its DUID (DHCP Unique Identifier). You must enter a value for this parameter or the server will not start. When the server starts, the DUID is written to the system log.
  - Option 125: The option 125 allows DHCP server to be pre-configured with policy for handling classes of devices in a certain way without requiring DHCP server to be able to parse the unique format used in client-identifier option.
- Use the following Static IP address: If you are provided with a static IP/gateway Address, please select this option, and then enter the WAN IP Address, WAN Subnet Mask and WAN gateway IP Address manually.
- 5. You will see the next screen as below. You can enable the NAT, SPI Firewall, and IGMP Multicast, if you are not sure about the settings, just leave the default settings. Click Next.

Network Address Translation Settings					
Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).					
☑ Enable NAT					
☐ Enable Fullcone NAT					
□ Enable Firewall					
IGMP Multicast					
☑ Enable IGMP Multicast					
Back Next					

Figure 4-16

- Fig. 12 Enable NAT: This technology translates the IP addresses of a local area network to a different IP address for the Internet. If this modem router is hosting your network's connection to the Internet, please select the check box. If another router exists in your network, you don't need to select the option.
- > Enable Firewall: A SPI firewall enhances network's security. Select the option to use a firewall, or else without a firewall.

Finable IGMP Multicast: This is disabled by default. This setting will not allow IGMP (Internet Group Management Protocol) packets to be forwarded to the LAN. IGMP is used to manage multicasting on TCP/IP networks. Most users will not need to enable this. Some ISPs use IGMP to perform remote configuration for client devices, such as the router. If you are unsure, check with your ISP.

#### P Note:

If you select the **Enable NAT** checkbox, the **NAT** menu will be added to the Web-based Utility. We will describe the detailed configuration in 4.5.6 NAT.

6. Select a preferred WAN interface as the system default gateway and click Next.

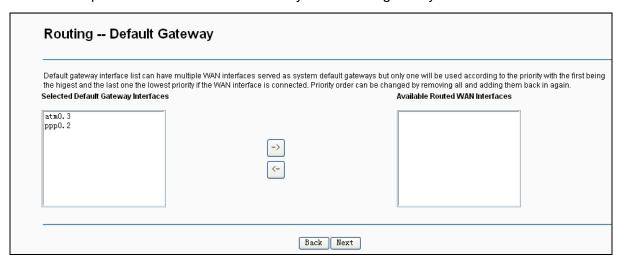


Figure 4-17

7. Configure the DNS Server Addresses on the screen as follows.

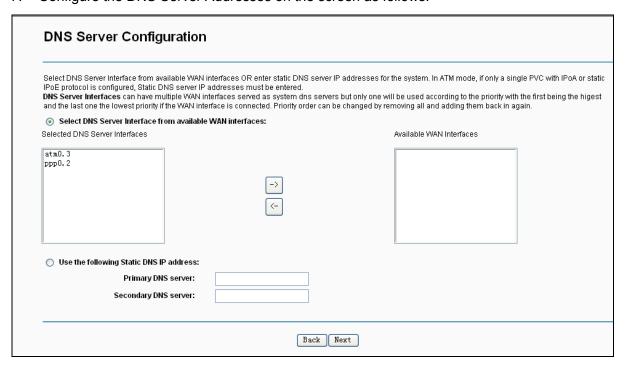


Figure 4-18

#### P Note:

If only single PVC with IPoA is configured, you must enter static DNS server IP addresses.

8. On the next screen (as shown Figure 4-19) you will see the detailed settings you've made. Please click the **Apply/Save** button to save these settings.

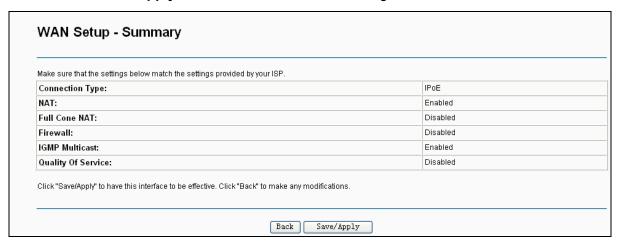


Figure 4-19

## 4.5.2.3 ATM-EoA-Bridging

If you want to adopt the Bridge service and you need to use an ATM Interface, follow the steps below to add a WAN service over a selected ATM interface:

- 1. Add a new ATM interface and select **EoA** option for DSL Link Type (see 4.5.1.1 ATM Interface).
- 2. Click the Add button on the screen Figure 4-7. Select WAN Service Interface over ATM PVC on the next screen (as shown Figure 4-8).
- Select Bridging option for the WAN service type on the screen (as shown Figure 4-9), and click Next button to continue.
- 4. On the screen (as shown Figure 4-13) you will see the detailed settings you've made. Please click the **Apply/Save** button to save these settings.

#### 4.5.2.4 ATM-PPPoA

If your ISP provides a **PPPoA** connection and you need to use an ATM Interface, follow the steps below to add a WAN service over a selected ATM interface:

- 1. Add a new ATM interface and select **PPPoA** option for DSL Link Type (see 4.5.1.1 ATM Interface).
- 2. Click the **Add** button on the screen Figure 4-7 and the next configuration is similar to **PPPoE**, (see section 4.5.2.1 ATM-EoA-PPPoE). The difference is that you don't need to set the PPPoE Service Name and Bridge PPPoE Frames Between WAN and Local Ports on the screen of Figure 4-10.

### 4.5.2.5 ATM-IPoA

If your ISP provides an IPoA connection and you need to use an ATM Interface, follow the steps below to add a WAN service over a selected ATM interface.

 Add a new ATM interface and select IPoA option for DSL Link Type (see 4.5.1.1 ATM Interface).

2. Click the Add button on the screen Figure 4-7 and the next configuration is similar to IPoE (see section 4.5.2.2 ATM-EoA-IPoE). The difference is that you have to manually set the Static IP Address on the screen of Figure 4-15, and the Static IP Address for DNS Server on the screen of Figure 4-18.

## P Note:

ETH and ATM service can not coexist. If the ATM Interface had configured, you cannot configure any other WAN service over the ETH Interface until the ATM Interface is deleted.

### 4.5.2.6 ETH-PPPoE

If your ISP provides a PPPoE connection, click the Add button on the screen Figure 4-7 and the following configuration is similar to PPPoE over ATM interface (see section 4.5.2.1 ATM-EoA-PPPoE).

### 4.5.2.7 ETH-IPoE

If your ISP provides an IPoE connection, click the Add button on the screen Figure 4-7 and the next configuration is similar to **IPoE** over ATM interface (see section 4.5.2.2 ATM-EoA-IPoE).

## 4.5.2.8 ETH-Bridge

If you want to adopt the Bridge service, click the Add button on the screen Figure 4-7 and the next configuration is similar to **Bridge** over ATM interface (see section 4.5.2.3 ATM-EoA-Bridg).

# 4.5.3 3G Settings

Choose menu "Advanced Setup→3G Settings", you can configure parameters for 3G function on the screen below. To use the 3G function, you should first insert your USB modem on the USB port of the modem router. There is already much 3G USB modem information embedded in the modem router. The USB modem parameters will be set automatically if the card is supported by the modem router. If your USB modem inserted is supported by the modem router, then "Identify successfully" will display in the USB 3G Modem field as shown in Figure 4-20.

Some 3G USB modem may not be supported by the modem router. For more information, please refer to Compatibility List on our website: www.tp-link.com. If your 3G USB modem is incompatible with our modem router, please feel free to contact our technical support.

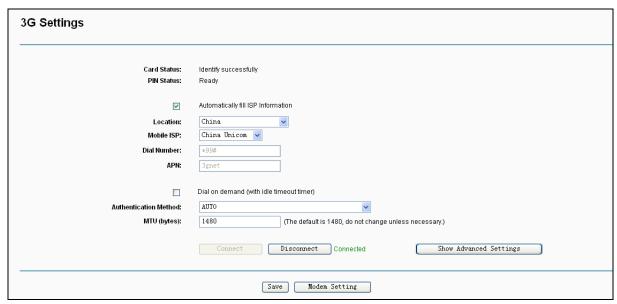


Figure 4-20

- Location: The location where you're enjoying the 3G card.
- > **Mobile ISP:** The ISP (Internet Service Provider) you apply to for 3G service. The modem router will show the default Dial Number and APN of that ISP.

## Note:

If your **Location** or **Mobile ISP** is not listed, please untick the box before **Automatically fill ISP Information**. Then fill the **Dial Number** and **APN** blanks below.

Dial on demand: Dial on demand is dependent on the traffic. If there is no traffic (or Idle) for a pre-specified period of time (Inactivity Timeout), the connection will drop down automatically. And once there is traffic send or receive, the connection will be automatically on. If you want your Internet connection to remain active at all times, enter 0 in the Inactivity Timeout field.

## P Note:

Sometimes the connection cannot be disconnected although you specify a time to **Inactivity Timeout** because some applications visit the Internet continually in the background.

- > Connect/Disconnect: You can click the Connect/Disconnect button to connect/disconnect connection immediately.
- > **Authentication Method:** Some ISPs need a specific authentication type, please confirm it with your ISP or keep it Auto.
- MTU size(in bytes): The default MTU (Maximum Transmission Unit) size is 1480 bytes, which is usually fine. For some ISPs, you need modify the MTU. This should not be done unless you are sure it is necessary for your ISP.

#### Note:

3G settings is unavailable when operation mode is not 3G Router Mode and the backup is not enabled. Please tick the box in the next screen to **enable 3G as a backup solution for Internet access** or change settings on Operation Mode if you want to use 3G.

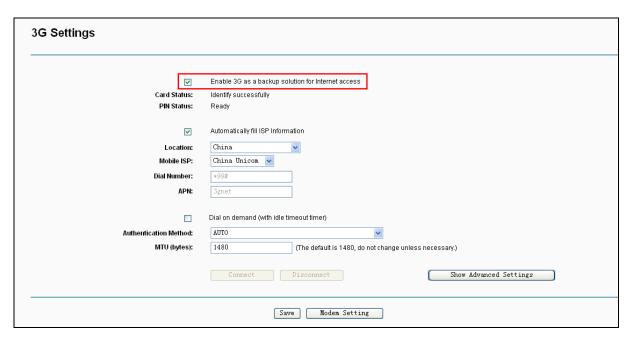


Figure 4-21

Click **Modem Settings** in Figure 4-20, 3G Modem settings can be shown as below.

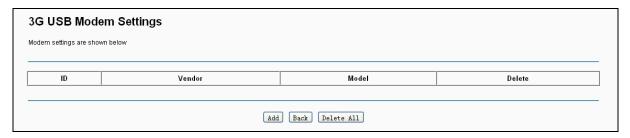


Figure 4-22

## To upload 3G USB Modem Configuration File:

- Click the Add button. Then Figure 4-23 will pop up.
- Click the Browse button in Figure 4-23, and then select the right file from the drop-down list.

Click the **Upload Settings** button to upload the file.

3G USB Modem Settings File
Settings File Name: Browse  Please Note: If you restore the Device's factory setting, the bin file will be lost. In the event that you do lose the bin file, you will need to re-upload it, or download our latest firmware from <a href="https://www.tp-link.com">www.tp-link.com</a> . The updated firmware will be installed into your 3G Device and restore all of its functions.
Upload Settings

Figure 4-23

Click **Show Advanced Settings** in Figure 4-20, advanced settings can be shown as below.

PPP Username: PPP Password:	(optional)  Enable Fullcone NAT  PPP IP extension  Use Static IPv4 Address  Use Static DNS IP address  Enable PPP Debug Mode
Multicast Proxy	Enable IGMP Multicast Proxy

Figure 4-24

- > PPP Username/Password: Enter the Username and Password provided by your ISP. These fields are case-sensitive.
- > **Use Static IPv4 Address:** If your ISP specifies an IP address for you, click the checkbox and fill the Static IPv4 Address.
- ➤ Use Static DNS IP Address: If your ISP specifies a DNS IP address for you, click the checkbox and fill the Primary DNS and Secondary DNS blanks below. The Secondary DNS is optional. Otherwise, the DNS servers will be assigned dynamically from ISP.
- > **Primary DNS:** Enter the DNS IP address in dotted-decimal notation provided by your ISP.
- > **Secondary DNS:** (Optional) Enter another DNS IP address in dotted-decimal notation provided by your ISP.

Once the connection is successful, you will find the 3G screen is similar to Figure 4-20. Click menu "**Device Info**" **HAN**" and you will see the 3G status is similar to Figure 4-25.

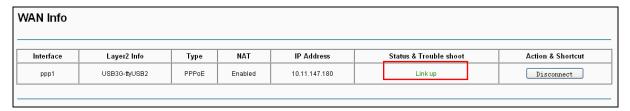


Figure 4-25

Click the Save button to save your settings.

# 4.5.4 MAC Clone

Choose menu "Advanced Setup"→"MAC Clone", you can configure the MAC address of the WAN Interface as shown below.

The WAN Interface List displays the Lay2 Interfaces you have configured on the section <u>4.5.1</u> <u>Layer2 Interface</u> and its default MAC Address. If you have not configured corresponding WAN Service for the interface on the section <u>4.5.2 WAN Service</u>, the blank for MAC Address will display "Need a corresponding WAN Service".

The last one of WAN Interface List displays your PC's current address.

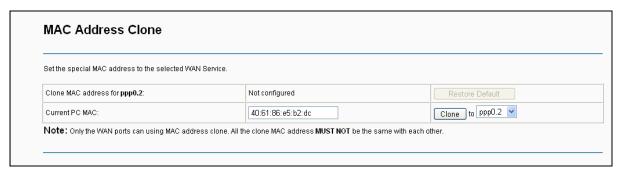


Figure 4-26

Type the new value for the WAN Interface who's MAC Address you want to change.

You can select corresponding WAN Interface from the drop-down list and click **Clone** button to clone your current PC MAC.

Click Restore Default button to restore the WAN Interface's default MAC Address.

# Note:

Only the WAN Ports can use MAC Address Clone function. All the clone MAC addresses must not be the same with each other.

## 4.5.5 LAN

Choose "Advanced Setup"→"LAN", and you will see the LAN screen including IPv4 LAN Config and IPv6 LAN Config. The section allows you to configure the modem router's LAN ports settings.

# 4.5.5.1 IPv4 LAN Config

Choose "Advanced Setup"→"LAN" →"IPv4LAN Config", and you will see the LAN screen (shown in Figure 4-27), here you can configure LAN IPv4interface for your modem router.

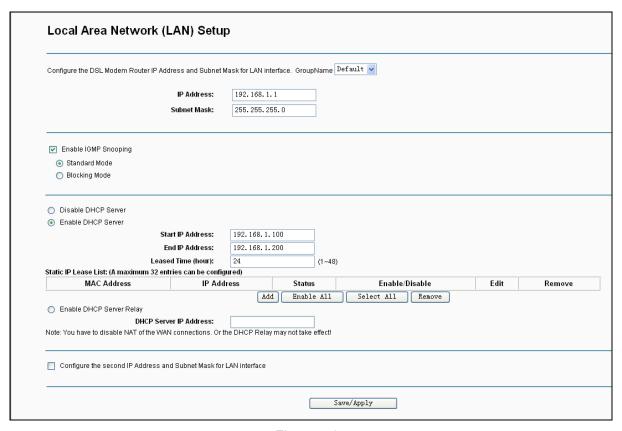


Figure 4-27

- ▶ IP Address: You can configure the modem router's IP Address and Subnet Mask for LAN Interface.
  - **IP Address:** Enter the modem router's local IP Address, then you can access to the Web-based Utility via the IP Address, the default value is 192.168.1.1.
  - Subnet Mask: Enter the modern router's Subnet Mask, the default value is 255.255.255.0.
- ➤ **Enable IGMP Snooping:** If you select the option, please choose the IGMP Mode: Standard Mode or Blocking Mode.
- DHCP Server: These settings allow you to configure the modem router's Dynamic Host Configuration Protocol (DHCP) server function. The DHCP server is enabled by default for the modem router's Ethernet LAN interface. DHCP service will supply IP settings to computers which are configured to automatically obtain IP settings that are connected to the modem router though the Ethernet port. When the modem router is set for DHCP, it becomes the default gateway for DHCP client connected to it. Keep in mind that if you change the IP address of the modem router, you must change the range of IP addresses in the pool used for DHCP on the LAN.
  - Start IP Address: Enter a value for the DHCP server to start with when issuing IP addresses. Because the default IP address for the modem router is 192.168.1.1, the default Start IP Address is 192.168.1.2, and the Start IP Address must be 192.168.1.2 or greater, but smaller than 192.168.1.254.
  - End IP Address: Enter a value for the DHCP server to end with when issuing IP addresses. The End IP Address must be smaller than 192.168.1.254. The default End IP Address is 192.168.1.254.

- Leased Time (hour): The Leased Time is the amount of time in which a network user will be allowed connection to the modem router with their current dynamic IP address. Enter the amount of time, in hours, then the user will be "leased" this dynamic IP address. After the dynamic IP address has expired, the user will be automatically assigned a new dynamic IP address. The default is 24 hours.
- > Static IP Lease List: The function allows you to specify a reserved IP address for a PC on the LAN, that PC will always obtain the assigned IP address each time when it accesses the DHCP server. Reserved IP addresses should be assigned to servers that require permanent IP settings. Click the Add button in Figure 4-27, and then you will set the rule in the screen as below.

DHCP Static IP Lease	
Enter the Mac address and Static IP address then click "Save/Apply" .  MAC Address:  IP Address:	
	Save/Apply

Figure 4-28

- MAC Address: The MAC address of the computer on the LAN which you want to reserve an IP.
- IP Address: The IP address you want to reserved to the computer.
- > Configure the second IP Address and Subnet Mask: You can configure the modem router's second IP Address and Subnet Mask for LAN Interface through which you can also access to the Web-based Utility as the default IP Address and Subnet Mask.

## 4.5.5.2 IPv6 LAN Config

Choose "Advanced Setup"→"LAN" →"IPv6 LAN Config", and you will see the LAN screen (shown in Figure 4-29), here you can configure LAN IPv6 interface for your modem router.

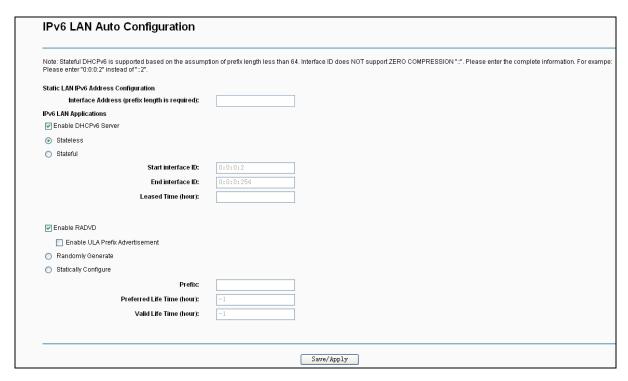
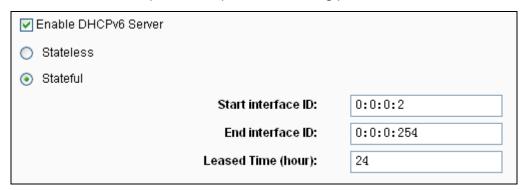


Figure 4-29

- Interface Address (prefix length is required): Here enter the prefix length of your interface address.
- ▶ IPv6 LAN Applications: Select a type to assign IPv6 addresses to the computers in your LAN. DHCPv6 Server and RADVD are provided.

### For DHCPv6 Server:

- 1) If Stateless is selected, it doesn't need to be configured.
- 2) If **Stateful** is selected, please complete the following parameters.



- **Start interface ID:** Enter a value for the DHCPv6 server to start with when issuing IPv6 addresses.
- **End interface ID:** Enter a value for the DHCPv6 server to end with when issuing IPv6 addresses.
- Leased Time (hour): The Leased Time is the amount of time in which a network user will be allowed to connect to the modem router with their current dynamic IPv6 address. Enter the amount of time, in hours, then the user will be "leased" this dynamic IPv6 address. After the dynamic IPv6 address has expired, the user will be automatically assigned a new dynamic IPv6 address. The default is 24 hours.

## For RADVD:

- 1) If **Randomly Generate** is selected, it doesn't need to be configured.
- 2) If **Statically Configure** is selected, please complete the following parameters.

☑ Enable RADVD	
✓ Enable ULA Prefix Advertisement	
<ul> <li>Randomly Generate</li> </ul>	
<ul> <li>Statically Configure</li> </ul>	
Prefix:	
Preferred Life Time (hour):	-1
Valid Life Time (hour):	-1
	·

**Prefix:** Enter a value for the site prefix.

Click **Save/Apply** to make the configuration take effect.

## 4.5.6 NAT

NAT (Network Address Translation) allows you to share one WAN (Wide Area Network) IP address for multiple computers on your LAN (Local Area Network).

### Note:

When you select PPPoA or PPPoE for the WAN Setup, or when you select Enable NAT for the type of IPoA and IPoE connection (4.5.2 WAN Service), you will see the NAT menu in the Web-based Utility.

Choose "Advanced Setup" → "NAT", there are three submenus under the main menu: Virtual Servers, Port Triggering, DMZ Host and ALG. Click any of them, and you will be able to configure the corresponding function.

## 4.5.6.1 Virtual Servers

Choose "Advanced Setup"→"NAT"→"Virtual Servers", you can set up virtual servers on the screen below (shown in Figure 4-30).

Virtual servers can be used for setting up public services on your LAN, such as DNS, Email and FTP. A virtual server is defined as a service port, and all requests from the Internet to this service port will be redirected to the computer specified by the server IP. Any PC that was used for a virtual server must have a static or reserved IP Address because its IP Address may change when using the DHCP function.

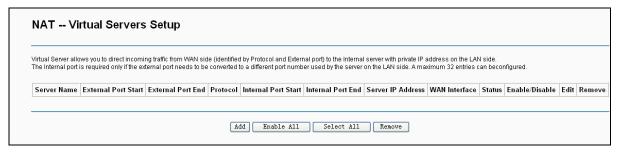


Figure 4-30

- **Virtual Server Table:** The table indicates the information about the Virtual Server entries.
  - Server Name: This is the name of the Virtual Server. It is exclusive and must be filled in.
  - External Port Start: The base number of External Ports. You can type a service port or leave it blank.
  - External Port End: The end number of External Ports. You can type a service port or leave it blank.
  - **Protocol:** The protocol used for this application, **TCP**, **UDP**, or **TCP/UDP**.
  - Internal Port Start: The base number of Internal Ports. You can type a service port or leave it blank.
  - Internal Port End: The end number of Internal Ports. You can type a service port or leave it blank.
  - Server IP Address: The IP Address of the PC providing the service application.
  - WAN Interface: The WAN Service Interface providing the service application.
- **Add:** Click the **Add** button to add a new entry.
- Remove: Select the check box in the table (shown in Figure 4-30) and then click the Remove button, then the corresponding entry will be deleted in the table.

## To add a virtual server entry:

Click the Add button on the preceding screen Figure 4-30, and then you will see the new Virtual Server in the next screen as shown in Figure 4-31.

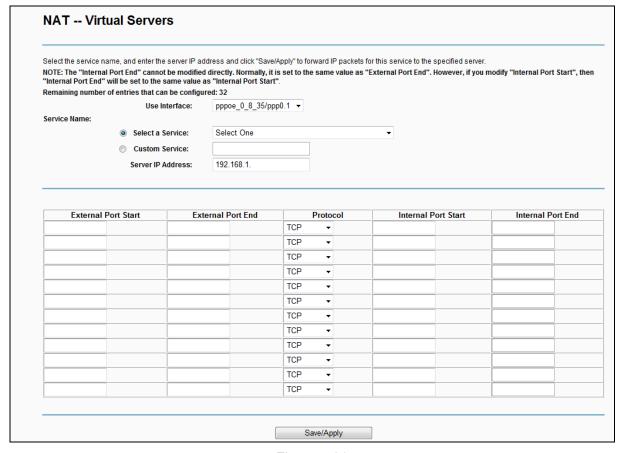


Figure 4-31

- 2. Select the Interface which you want to use from the drop-down list.
- 3. Select the service which you want to use from the drop-down list. If the list does not have the service you need, type the name of the custom service in the text box.
- 4. Type the IP Address of the computer in the **Server IP Address** text box.
- 5. Enter the External Port Start, External Port End, Internal Port Start and Internal Port End in the table, and then select the protocol used for this Virtual Server, **TCP**, **UDP** or **All**.
- 6. Click **Save/Apply** to enable virtual server and then you will see your setting as shown in Figure 4-30.

## P Note:

If you select the service from the drop-down list, the External Port Start, External Port End, Internal Port Start, Internal Port End and the Protocol will be added in the table automatically. You only need to enter the Server IP Address for the Virtual Server.

## 4.5.6.2 Port Triggering

Choose "Advanced Setup"→"NAT"→"Port Triggering", you can set Port Triggering on the screen (shown in Figure 4-32).

Some applications require that specific ports in the modem router's firewall should be opened for access by remote devices. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote device using the triggering ports. The modem router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the open ports. A maximum 32 entries can be configured.

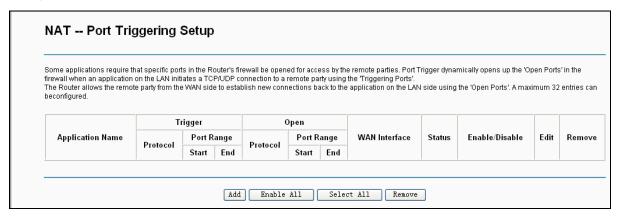


Figure 4-32

- Port Triggering Table: The table indicates the information about the Port Triggering entries.
  - Application (Name): This is the name of the Port Triggering. It is exclusive and must be filled.
  - **Trigger:** It includes the Protocol and the Start and End value of the Trigger Ports.
  - Open: It includes the Protocol and the Start and End value of the Open Ports.
  - WAN Interface: The WAN Service Interface setting the Port Triggering.
- Add: Click the button to add a new entry.
- Remove: Select the check box in the table (shown in Figure 4-32) and then click the Remove button, then the corresponding entry will be deleted in the table.

## To add a new Port Triggering:

1. Click the **Add** button in Figure 4-32, and then you will see the new Port Triggering in the next screen as shown in Figure 4-33.

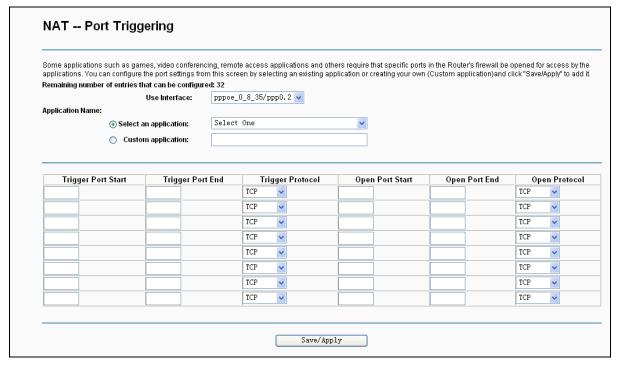


Figure 4-33

- 2. Select the application from the drop-down list. If the list does not have the application that you want, select the **Custom application** radio button, and type the name of the custom application in the text box.
- 3. Enter the **Trigger Port Start**, **Trigger Port End**, **Open Port Start** and **Open Port End** in the table, and then select the **Trigger protocol** and **Open protocol**, **TCP**, **UDP** or **All**.
- 4. Click **Save/Apply** to enable the settings and then you will see your settings as shown in Figure 4-32.

#### ✓ Note:

If you select the application from the drop-down list, the External Port Start, External Port End, Internal Port Start, Internal Port End and the Protocol will be added in the table automatically.

### 4.5.6.3 DMZ Host

Choose "Advanced Setup"→"NAT"→"DMZ Host", you can set up DMZ Host on the screen (shown in Figure 4-34).

The DMZ host feature can make a local host be exposed to the Internet for a special-purpose service, such as online gaming or video conferencing.

NAT DMZ Host	
The DSL Modern Router will forward IP packets from the WAN that do not belong to any of the applications configured in the Virtual Servers table to the DMZ host computer. Enter the computer's IP address and click 'Save/Apply' to activate the DMZ host. Clear the IP address field and click 'Save/Apply' to deactivate the DMZ host.	
DMZ Host IP Address:	
	Save/Apply

Figure 4-34

### To add a new DMZ Host:

You can enter the computer's IP address and then click Save/Apply to activate the DMZ host you set on this page.

## 

DMZ host forwards all the ports at the same time. Any PC whose port is being forwarded must have its DHCP client function disabled and should have a new static IP Address assigned to it because its IP Address may change while using the DHCP function.

#### 4.5.6.4 ALG

Choose "Advanced Setup"→"NAT"→"ALG", and then you can configure the basic security in the screen as shown in Figure 4-35.

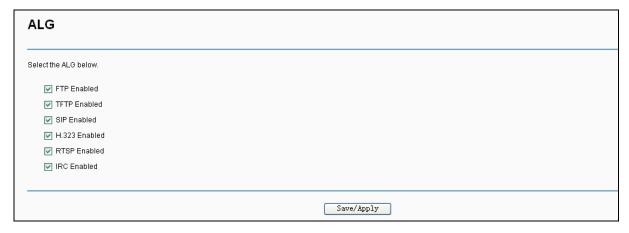


Figure 4-35

Click the **Save/Apply** button to save your settings.

# 4.5.7 Security

Choose "Advanced Setup"→"Security", and you will see the security screen including IP **Filtering** and **MAC Filtering** (only effective in Bridging mode) submenus.

## 4.5.7.1 IP Filtering

The IP address filtering feature makes it possible for administrators to control user's access to the Internet, which is based on user's IP. The IP address filtering here means Outgoing, the detailed descriptions are provided below.

Choose "Advanced Setup"→"Security"→"IP Filtering", you can configure Outgoing Filtering rules on the screen (shown in Figure 4-36).

The Outgoing IP Filtering feature allows you to control some IP traffic from LAN to access to some specifically addresses. By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.



Figure 4-36

## Set up an Outgoing IP Filtering rule:

Click the Add button in Figure 4-36, and you will see the next screen as shown in Figure 4-37.

The screen allows you to create a filter rule to identify outgo the rule to take effect. Click 'Save/Apply' to save and activate	ng IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be sati- the filter.
Filter Name:	sendmail-filter
IP Version:	IPv4 v
Protocol:	TCP/UDP V
Source IP address[/prefix length]:	192. 168. 1. 222
Source Port (port or port:port):	
Destination IP address[/prefix length]:	210. 17. 188. 204
Destination Port (port or port:port):	25

Figure 4-37

- 2. Enter the **Filter name** for the rule, it is exclusive and must be filled.
- 3. Select the protocol: TCP/UDP, TCP, UDP or ICMP in the drop-down list for the connection between the Source IP address and Destination IP address.
- 4. Enter a Source IP Address in dotted-decimal notation format and then type Source Port (port or port: port) in the text boxes separately.
- Enter a **Destination IP Address** in dotted-decimal notation format and then type **Destination Port** (port or port: port) in the text boxes separately.
- 6. Click **Save/Apply** to save this entry.

### P Note:

When you add an Outgoing IP Filtering entry, you must configure at least one condition on the preceding screen except the Filter name. If you leave the Protocol blank, it means that the rule is effective to all protocols, if you leave the Source IP Address and/or Destination IP Address blank, it suggests that all Source IP Addresses and/or Destination IP Addresses are controlled by the rule, if you leave the Source Port and/or Destination Port blank, it suggests that all Source Ports and/or Destination Ports are controlled by the rule.

## 4.5.7.2 MAC Filtering

Choose "Advanced Setup" > "Security" > "MAC Filtering", you can configure MAC Filtering rules on the screen as shown in Figure 4-38. The section allows you to control access to the Internet by users on your local network based on their MAC Address.

### P Note:

MAC Filtering is only effective on ATM PVC(s) configured in Bridging mode.

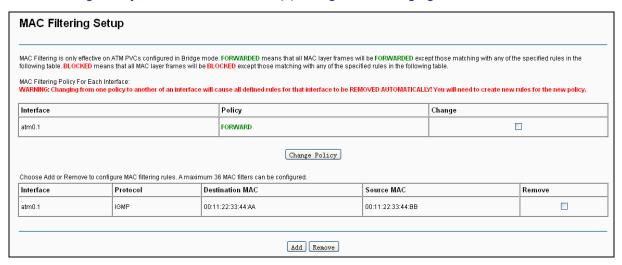


Figure 4-38

- Select the Change checkbox and click the Change Policy button to change from one policy to another. When you set FORWARDED, it means that all MAC layer frames will be forwarded except those matching with any of the specified rules in the table (shown in Figure 4-38). While BLOCKED means that all MAC layer frames will be blocked except those matching with any of the specified rules in the preceding table.
- Add: Click the Add button, and then you can add a new MAC Filter in the next screen (shown in Figure 4-38).
- Remove: Select the check box in the table (shown in Figure 4-38) and then click the Remove button, and then the corresponding entry will be deleted in the table.

## To add a MAC Filtering rule:

1. Click the **Add** button in Figure 4-38, and you will see the next screen similar to in Figure 4-39.

Add MAC Filter	
Create a filter to identify the MAC layer frames by specifying	t least one condition below. If multiple conditions are specified, all of them take effect. Click "Save/Apply" to save and activate the filter.
Protocol Type:	IGMD ^
Destination MAC Address:	00:11:22:33:44:AA
Source MAC Address:	00:11:22:33:44:BB
WAN Interfaces (Configured in Bridge mode only):	br_0_8_35/atm0.1 🕶
	Save/Apply

Figure 4-39

Select Protocol Type in the drop-down list for the rule.

- Enter Destination MAC Address and Source MAC Address in the text box.
- 4. Select **Frame Direction** in the drop-down list for the rule.
- 5. Select the **WAN interfaces** from the drop-down list.
- 6. Click **Save/Apply** to save this entry and then you will see your settings as shown in Figure 4-38.

### 4.5.8 Parental Control

Choose "Advanced Setup"→"Parental Control", and you will see the Parental Control screen including Time Restriction and URL Filter. Time Restriction allows you to control the Internet activities of the child by restricting the time of surfing. URL Filter limits every computer connected to the modem router to access certain websites. These two features work independently.

### 4.5.8.1 Time Restriction

This feature allows you add time of day restriction to a special LAN device connected to the modem router.

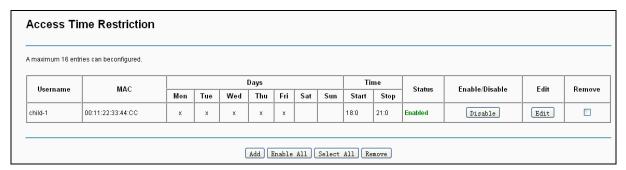


Figure 4-40

### To add a Time Restriction entry:

1. Click the **Add** button in Figure 4-40, and then you will see the next screen as shown in Figure 4-41.

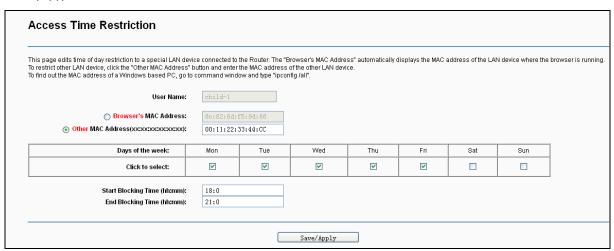


Figure 4-41

- 2. Enter the **User Name** of the LAN device connected to the modem router.
- To restrict the device where the browser is running, select the Browser's MAC Address radio button. The MAC Address has been automatically displayed in the text box. To restrict

other LAN devices, click **Other MAC Address** radio button and enter the MAC address of the other LAN device.

- 4. Select the day to allow the rule to take effect in the table.
- 5. Enter the **Start Blocking Time** and **End Blocking Time** in the text box separately, and then the device controlled will then be unable to connect to the internet during that time.
- 6. Click **Save/Apply** to save this entry and then you will see your settings as shown in Figure 4-40.

### Note:

The Time Restriction will not work correctly before the time of the device is set in "Management → Internet Time".

### 4.5.8.2 URL Filter

This feature allows you to configure the filter rules based on URL to control all the computers in the LAN to access the specified port, and it is independent with Time Restriction feature.

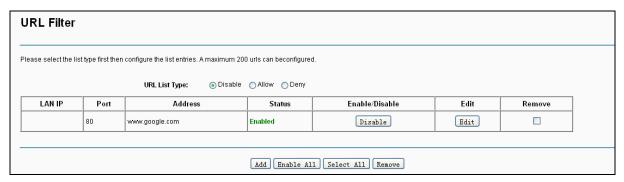


Figure 4-42

There are three policies for the URL Filter.

- > **Disable**: URL Filter function will not take effect.
- Allow: Only allow the PCs to access the specified URL.
- Deny: Block the PCs to access the specified URL.

## To add a URL Filter entry:

- 1. Check the **Deny** or **Allow** radio button. Here we take **Deny** for example.
- 2. Click the **Add** button in Figure 4-42 and then you will see the next screen as shown in Figure 4-43. Enter the URL Address and Port Number.

Parental Control URL Filter Edit	
Enter the address then click "Save/Apply" to edit the entry to t	he URL filter. LAN IP is optional if you want to configure for specific LAN PC.  - (optional)
Port Number:	(Default 80 will be applied if leave blank.)
Address:	www.google.com Add More
Save/Apply	

Figure 4-43

3. Click Save/Apply to save this entry and then you will see your settings as shown in Figure 4-42. Every computer connected to the modem router will not access this URL address on the port.

## 4.5.9 Quality of Service

Choose "Advanced Setup"→"Quality of Service", you can enable QoS (Quality of Service) on the screen shown in Figure 4-44. QoS helps to prioritize data as it enters your modem router. By attaching special identification marks or headers to incoming packets, QoS determines which queue the packets enter, based priority. This is useful when there are certain types of data you want to give higher priority, such as voice data packets give higher priority than Web data packets. This option will provide better service of selected network traffic over various technologies.

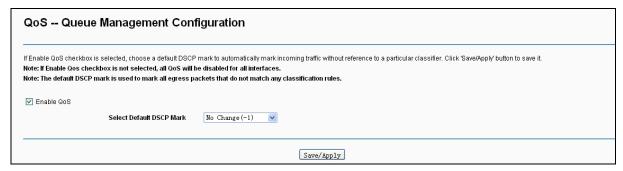


Figure 4-44

Select the **Enable QoS** checkbox to enable all QoS for all interfaces.

Select a Default DSCP Mark from drop-down list to automatically mark incoming traffic without reference to a particular classifier.

Click **Save/Apply** to save the current configuration.

### P Note:

The default DSCP mark is used to mark all egress packets that do not match any classification rules.

## 4.5.9.1 Queue Config

Choose "Advanced Setup"→"Quality of Service"→"Queue Config", you can set up virtual servers on the screen below.

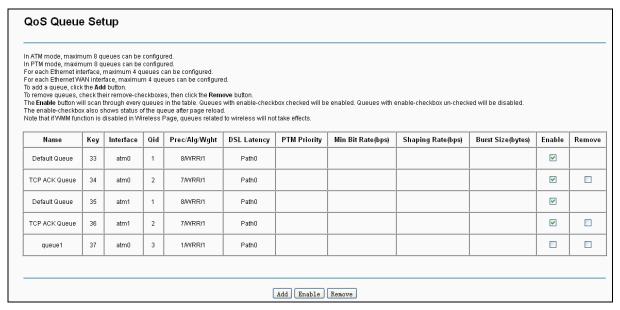


Figure 4-45

Click the **Add** button in Figure 4-45, and you can configure the QoS queue entry on the next screen as shown in Figure 4-46.

QoS Queue Configuration	
This screen allows you to configure a QoS queue and add i	tto a selected layer2 interface.  queue1
Enable:	Disable v
Interface: Queue Precedence:	atm0   1 (WRR) (lower value, higher priority)  - The precedence list shows the scheduler algorithm for each precedence level.  - Queues of equal precedence will be scheduled based on the algorithm.  - Queues of unequal precedence will be scheduled based on SP.
Queue Weight:	1 [1-63]
DSL Latency:	Path0 v
Save/Apply	

Figure 4-46

- Name: Set a name for the entry.
- **Enable**: Select Enable option to take this entry effect.
- Interface: Assigned a specific Wan Service for this QoS queue entry.
- Queue Precedence: Specify precedence for this QoS queue entry.
- DSL Latency: Select latency path for the type of data transmission, only Path0 is available for this modem router.

After you specify the condition, click **Save/Apply** to save the entry and then you will see you settings as shown in Figure 4-45.

### Note:

- 1) Lower integer values for precedence imply higher priority for this queue relative to others.
- 2) The queue entry configured here will be used by the classifier to place ingress packets appropriately.

## 4.5.9.2 QoS Classification

This section will guide you to create a traffic class rule to classify the upstream traffic, assign queue which defines the precedence and the interface and optionally overwrite the IP header DSCP byte.

A rule consists of a class name and at least one condition below. All of the specified conditions in this classification rule must be satisfied for the rule to take effect.

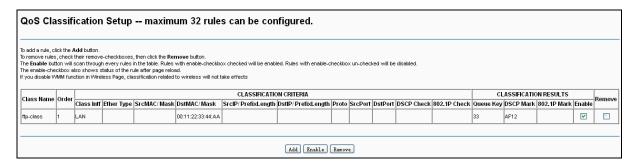


Figure 4-47

Click the **Add** button Figure 4-47, and you can configure the QoS on the next screen.

Add Network Traffic Class Rule		
This screen creates a traffic class rule to classify the ingress traffic Click 'Save/Apply' to save and activate the rule.	into a priority queue and optionally mark the DSCP or Ethernet priority of the packet.	
Traffic Class Name:	ftp-class	
Rule Order:	Last	
Rule Status:	Enable 💌	
Specify Classification Criteria (A blank criterion indicates it is not used for classification.)		
Class Interface:	LAN	
Ether Type:	V	
Source MAC Address:		
Source MAC Mask:		
Destination MAC Address:	00:11:22:33:44:AA	
Destination MAC Mask:		
Specify Classification Results (A blank value indicates no operation.)		
Specify Class Queue (Required):	atmO.1@PathO@Key33@Pre8@Wt1	
Mark Differentiated Service Code Point (DSCP):	AF12 (001100)	
Mark 802.1p priority:	<u>v</u>	
Class non-vian packets egress to a non-vian interface will be tagge     Class vian packets egress to a non-vian interface will have the pack     Class non-vian packets egress to a vian interface will be tagged will     Class vian packets egress to a vian interface will be additionally tag	ket p-bits re-marked by the class rule p-bits. No additional vlan tag is added. th the interface VID and the class rule p-bits.	
	Apply/Save	

Figure 4-48

After you specify the condition, click Save/Apply to save the entry.

## 4.5.10 Bandwidth Control

Choose "Advanced Setup"→"Bandwidth Control" and then you will see the screen as shown in Figure 4-49. This page allows you to enable this function and to configure the value of Total Upstream/Downstream Bandwidth.

Bandwidth Control		
This page allows you to enable or disable Bandwidth Control. Only when the box before "Enable Bandwidth Control" is checked can the following configurations take effect. Click "Save/Apply" button to save it.  Note: If Enable checkbox is not selected, all Bandwidth Control rules will be disactived.		
■ your line type is ADSL, make sure that Total OpsitealinD  ■ Enable Bandwidth Control	ownstream Bandwidth is not greater than Line Upstream Downstream Rate, otherwise Bandwidth Control may not take effect.	
Line Type:	ADSL Other	
Total Upstream Bandwidth:	Kbps	
Total Downstream Bandwidth:	Kbps	
	Save/Apply	

Figure 4-49

- Enable Bandwidth Control: Check this box to enable the Bandwidth Control function.
- > Total Upstream Bandwidth (Kbps): Enter the upload speed through the WAN port.
- > Total Downstream Bandwidth (Kbps): Enter the download speed through the WAN port.
- Save/Apply: Click this button to make the configuration take effect.

### 

The Total Upstream Bandwidth and Total Downstream Bandwidth are required to be configured.

### 4.5.10.1 Rules List

Choose "Advanced Setup"→"Bandwidth Control" →"Rules List" and then you will see the screen as shown in Figure 4-50. This page allows you to view and configure TC rules.

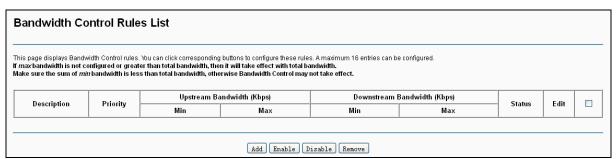


Figure 4-50

To add a TC rule, click the **Add** button and you can configure it in the screen as shown in Figure 4-51.

Bandwidth Control Rule Configuration	
This page allows you to configure a Bandwidth Control rule of downstream packets.  Click "Save/Apply" to save the rule.	entry. Each of the rules can be configured for a specific priority. The rule entry configured here will be used to control the rates of upstream and
Rule Status:	Enable    Disable
IP Range:	192. 168. 1. 101 - 192. 168. 1. 103
Port Range:	80 -
Protocol:	TCP 🔻
Priority:	Highest 🗸
	Min Rate Max Rate
Upstream:	100 - 200 Kbps
Downstream:	400 - 800 Kbps
Save/Apply	

Figure 4-51

- **Rule Status**: Select the status of the rule from the drop-down list to enable or disable the rule.
- IP Range: Enter a single IP address or a range of IP addresses.
- > Port Range: Enter a single port or a range of ports.
- **Protocol**: Select a protocol type from the drop-down list. TCP, UDP and ALL are available here.
- **Priority**: Select priority form the drop-down list. There are five options: Highest, 1, 2, 3, 4, 5, 6 and Lowest. The default precedence of the rule is 4.
- > Upstream: Enter the min and max upload speed through the WAN port.
- Downstream: Enter the min and max download speed through the WAN port.

After completing the above configuration, click the **Save/Apply** button to make it take effect and then you will see the following list as shown in Figure 4-52. If you want to modify the rule, click the **Edit** button. If you want to delete the rule, check the **Remove** box first and then click the **Remove** button.

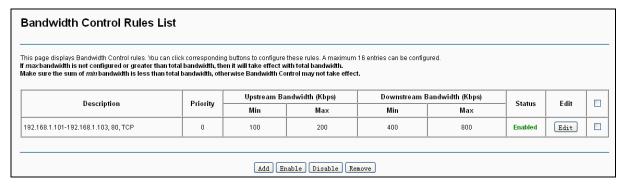


Figure 4-52

#### P Note:

The priority, max upstream/downstream rate and min upstream/downstream rate work on allocation of surplus upload/download bandwidth. For rules with different priority, the surplus bandwidth is firstly allocated to the rule with the highest priority according to its max upstream/downstream rate. If there still has surplus bandwidth, it is allocated to the rule with hypo-high priority. For rules with the same priority, the surplus bandwidth is allocated to them

according to their min upstream/downstream rate. The greater a rule's min upstream/downstream rate is, the more bandwidth it gets.

# **4.5.11 Routing**

Choose "Advanced Setup" → "Routing", it includes three menus: Default Gateway, Static Route and RIP. The detailed descriptions are provided below.

## 4.5.11.1 Default Gateway

Choose "Advanced Setup" → "Routing" → "Default Gateway", you can see the Default Gateway screen.

	tiple WAN interfaces served as system default gateways but cted. Priority order can be changed by removing all and addi	t only one will be used according to the priority with the first being the highest and the last or ing them back in again.
Selected Default Gateway Interfaces		Available Routed WAN Interfaces
	->	
	<-	
Select a preferred wan interface as the sys	tem default IPv6 gateway.  AN Interface NO CONFIGURED INTERFACE	

Figure 4-53

## 4.5.11.2 Static Route

Choose "Advanced Setup"→"Routing"→"Static Route". You can see the Static Route screen, this screen allows you to configure the static routes (shown in Figure 4-54). A static route is a pre-determined path that network information must travel to reach a specific host or network.



Figure 4-54

## To add static routing entries:

1. Click the **Add** button in Figure 4-54, and you will see the screen as shown in Figure 4-55.

Routing Static Route Add							
Enter the destination network address, subnet mask, gatew	ay AND/OR avail	lable WAN interface t	hen click "Save/A	apply" to add the er	itry to the routing tabl	9.	
IP Version:	IPv4	~					
Destination IP address/prefix length:							
Interface:		~					
Gateway IP Address:							
(optional: metric number should be greater than or equal to	zero)						
Metric:							

Figure 4-55

- 2. Enter the following data:
- IP Version: Select the version of IP.
- > **Destination IP Address/prefix length:** The **Destination IP Address** is the address of the network or host that you want to assign to a static route.
- ➤ Interface: Select the Interface name in the text box, or else, the default Use Interface will be adopted for the Static Route.
- Gateway IP Address: If you select the IPoE or IPoA mode for Interface, the screen above will display this item, you should type the Gateway address correctly, and the other option for Interface will adopt the default Gateway address for the Static Route.
- Click Save/Apply to save your settings.

### Note:

Gateway IP address should be correctly configured if IP based Interface (IPoE, IPoA) is selected.

### 4.5.11.3 RIP

Choose "Advanced Setup"→"Routing"→"RIP", you can see the screen as shown in Figure 4-56.

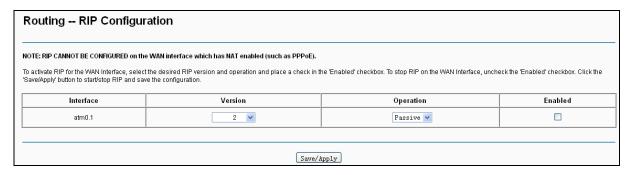


Figure 4-56

## P Note:

RIP cannot be configured on the WAN Interface which has NAT enabled (such as PPPoE).

## 4.5.12 DNS

When you select the connection type **PPPoE**, **PPPoA** or **IPoA** for WAN configuration, you will see the **DNS** menu which includes **DNS Server** and **Dynamic DNS** submenus.

### 4.5.12.1 DNS Server

Choose "Advanced Setup"→"DNS"→"DNS Server", and you can see the DNS Server Configuration screen as shown in Figure 4-57.

DNS server IP addresses must be entered.	enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, S ed as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest prior by removing all and adding them back in again.
Select DNS Server Interface from available WAN int	es:
Use the following Static DNS IP address:     Primary DNS server:	Available WAN Interfaces  ->  ->
Secondary DNS server:  Select the configured WAN interface for IPv6 DNS server in Note that selecting a WAN interface for IPv6 DNS server w	
Obtain IPv6 DNS info from a WAN interface:	
WAN Interface selected:	NO CONFIGURED INTERFACE V
Use the following Static IPv6 DNS address:	
-	
Primary IPv6 DNS server:	

Figure 4-57

For PPPoA, PPPoE enabled PVC(s), please select the Select DNS Server Interface from available WAN interfaces checkbox, this modem router will accept automatically the first received DNS assignment from the selected configured WAN interface during the connection establishment.

For single PVC with IPoA, static IPoE protocol, please select the Use the following Static DNS IP address checkbox, and enter the primary and /or optional secondary DNS server IP addresses provided by your ISP.

Here you can also select a configured WAN interface for IPv6 DNS server or enter the static IPv6 DNS server Addresses provided by your ISP.

Click the **Save/ Apply** button to save the new configuration.

## 4.5.12.2 Dynamic DNS

Choose "Advanced Setup"→"DNS"→"Dynamic DNS", you can see the Dynamic DNS screen, this screen allows you to configure the Dynamic DNS (shown in Figure 4-58).

The modem router offers a Dynamic Domain Name System (DDNS) feature. DDNS lets you assign a fixed host and domain name to a dynamic Internet IP Address. The Dynamic DNS service allows you to alias a dynamic IP address to a static hostname in any of the many domains, allowing your modem router to be more easily accessed from various locations on the Internet.



Figure 4-58

# To add a DDNS entry:

1. Click the **Add** button (pop-up after Figure 4-58), and then you will set the DDNS in the next screen (shown in Figure 4-59).

This page allows you to add a Dynamic DNS address fr	om DynDNS.org, TZO or NO-IP.
D-DNS provider:	No-IP
Hostname:	
Interface:	~
No-IP Settings	
Username:	
Password:	

Figure 4-59

- 2. Select **D-DNS provider** in the drop-down list.
- 3. Enter the **Hostname** of the DNS Server, and select the corresponding **Interface** for the DDNS, you can leave it default.
- 4. Type the **User Name** and **Password** for your DDNS account.

Click Save/Apply to save your settings.

## 4.5.13 DSL

Choose "Advanced Setup"→"DSL", you can see the DSL Settings screen, this screen allows you to configure the DSL (shown in Figure 4-60).

DSL Settings	
Select the modulation below.	
G.Dmt Enabled	
☑ G.lite Enabled	
▼ T1.413 Enabled	
✓ ADSL2 Enabled	
✓ AnnexL Enabled	
✓ ADSL2+ Enabled	
AnnexM Enabled	
Select the phone line pair below.	
Inner pair	
Outer pair	
Capability	
✓ Bitswap Enable	
SRA Enable	
	Save/Apply

Figure 4-60

You can select the modulation type, phone line pair and the capability of Bitswap or SRA. After you set them up, click **Save/Apply** to save the configurations.

## 4.5.14 UPnP

Choose "Advanced Setup"→"UPnP", you can Enable or Disable the UPnP (Universal Plug and Play) protocol on the screen.

UPnP (Universal Plug and Play) is a distributed, open networking standard that uses TCP/IP for simple peer-to-peer network connectivity between devices. An UPnP device can dynamically join a network, obtain an IP address, convey its capabilities and learn about other devices on the network. In turn, a device can leave a network smoothly and automatically when it is no longer in use. UPnP broadcasts are only allowed on the LAN.



Figure 4-61

Select the checkbox and click **Save/Apply** to enable the UPnP function.

# 4.5.15 Interface Grouping

Choose "Advanced Setup"→"Interface Grouping", you can configure multiple ports to PVC and bridging groups to perform as an independent network.

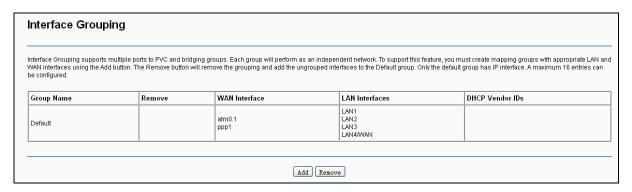


Figure 4-62

To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the **Add** button. The **Remove** button will remove the grouping and add the ungrouped interfaces to the Default group. Only the default group has IP interface.

## To create a new interface group:

1. Click the **Add** button. You can add a new interface group in the next screen.

nterface grouping Configuration	•		
create a new interface group: Enter the Group name and the group name must be unio	que and select either 2. (dynamic) or 3. (static) b	elow:	
If you like to automatically add LAN clients to a WAN Inter (DHCP option 60) will be denied an IP address from the		string. By configuring a DHCP vendor ID string any DHCP client request w	ith the specified vendor
Select interfaces from the available interface list and add te that these clients may obtain public IP addresses	it to the grouped interface list using the arrow bu	uttons to create the required mapping of the ports.	
Click Apply/Save button to make the changes effective im PORTANT If a vendor ID is configured for a specific clie	•	tached to the modem to allow it to obtain an appropriate IP address.	
Group Name:			
WAN Interface used in the grouping ouped LAN Interfaces	br_0_8_35/atm0.1	Available LAN Interfaces	
^	-> <-	LANI LAN2 LAN3 LAN4/WAN	
utomatically Add Clients With the following HCP Vendor IDs		. ✓	

Figure 4-63

- 2. Enter a unique name for Group.
- 3. Select the Interface which you want to use from the drop-down list.

#### P Note:

If you like to automatically add LAN clients to a WAN Interface in the new group add the DHCP vendor ID string. By configuring a DHCP vendor ID string any DHCP client request with the

specified vendor ID (DHCP option 60) will be denied an IP address from the local DHCP server.

4. Select interfaces from the available interface list and add it to the grouped interface list using the arrow buttons to create the required mapping of the ports.

### Note:

These clients may obtain public IP addresses.

5. Click **Save/Apply** to make the entry effective immediately.

#### P Note:

If a vendor ID is configured for a specific client device, please REBOOT the client device attached to the modem to allow it to obtain an appropriate IP address.

## 4.5.16 IP Tunnel

IPv6 tunnel is a kind of transition mechanism to enable IPv6-only hosts to reach IPv4 services and to allow isolated IPv6 hosts and networks to reach each-other over IPv4-only infrastructure before IPv6 completely supplants IPv4. It is a temporary solution for networks that do not support native dual-stack, where both IPv6 and IPv4 run independently.

Choose "Advanced Setup" → "IP Tunnel", it includes two menus: IPv6inIPV4 and IPv4inIPv6, The detailed descriptions are provided below.

### 4.5.16.1 IPv6inIPv4

Choose "Advanced Setup"→""IP Tunnel"→"IPv6inIPv4", you can see the 6in4 tunnel configuration screen. This screen allows you to configure the static routes (shown in Figure 4-64).



Figure 4-64

Click the Add button in Figure 4-64, and you can configure the 6in4 tunnel on the next screen as shown in Figure 4-65.

rrently, only 6rd configuration is supported.				
Tunnel Name:				
Mechanism:	6RD	~		
Associated WAN Interface:		~		
Associated LAN Interface:	LAN/br0	~		
	Manual	matic		
IPv4 Mask Length:				
6rd Prefix with Prefix Length:				
Border Relay IPv4 Address:				

Figure 4-65

Mechanism: 6RD, this type is used in the situation that your WAN connection is IPv4 while LAN connection is IPv6.

- Associated WAN Interface: Select a WAN connection from the drop-down list. Only the connected WAN connections can be shown in the drop-down list.
- Associated LAN Interface: Select a LAN connection from the drop-down list. Only the connected LAN connections can be shown in the drop-down list.
- **IPv4 Mask Length:** The length of the selected WAN connection's IPv4 mask.
- $\triangleright$ **6rd Prefix with Prefix Length:** The length of the 6rd prefix.
- Border Relay IPv4 Address: The IPv4 address of the border relay router of 6RD tunnel.

Click **Save/Apply** to make the configuration take effect.

# Note:

In this type, there should not have any IPv6 WAN connections. If there are IPv6 WAN connections, the page will prompt you to delete all the IPv6 WAN connections.

#### 4.5.16.2 IPv4inIPv6

Choose "Advanced Setup"→""IP Tunnel"→"IPv4inIPv6". You can see the 4in6 tunnel configuration screen, this screen allows you to configure the static routes (shown in Figure 4-66).

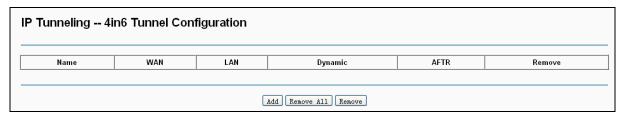


Figure 4-66

Click the Add button in Figure 4-66, and you can configure the 6in4 tunnel on the next screen as shown in Figure 4-67.

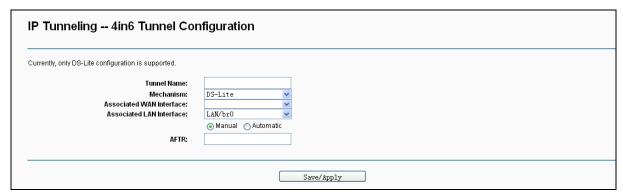


Figure 4-67

- Mechanism: DS-Lite, this type is used in the situation that your WAN connection is IPv6 while LAN connection is IPv4.
- > Associated WAN Interface: Select a WAN connection from the drop-down list. Only the connected WAN connections can be shown in the drop-down list.
- Associated LAN Interface: Select a LAN connection from the drop-down list. Only the connected LAN connections can be shown in the drop-down list.
- **AFTR:** Enter the IPv6 address of the remote node.

Click Save/Apply to make the configuration take effect.

## Note:

In this type, there should not have any IPv4 WAN connections. If there are IPv4 WAN connections, the page will prompt you to delete all the IPv4 WAN connections.

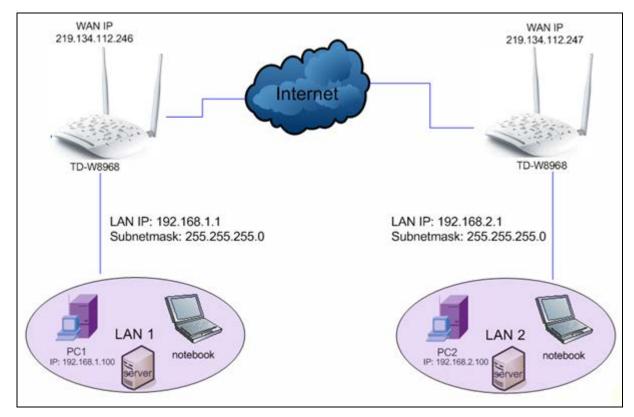
### 4.5.17 IPSec

Choose "Advanced Setup"→"IPSec", you can Add/Remove or Enable/Disable the IPSec tunnel connections on the screen as shown in Figure 4-68.



Figure 4-68

This section will guide you to configure a VPN tunnel between two TD-W8968s. The topology is as follows.



## P Note:

You could also use other VPN routers to set VPN tunnels with TD-W8968N. TD-W8968N supports up to 10 VPN tunnels simultaneously.

Click Add New Connection in Figure 4-68 and then you will enter the screen shown in Figure 4-69.

Sec Settings
ec oettings
•
IPSec Connection Name: new connection
Remote IPSec Gateway Address(URL/IPv4): 0. 0. 0. 0. 0
Tunnel access from local IP addresses: Subnet
Tunnel access from local IP addresses: Subnet   IP Address for VPN: 0, 0, 0, 0
IP Subnetmask: 255, 255, 255, 0
Tunnel access from remote IP addresses: Subnet
IP Address for VPN: 0. 0. 0. 0
IP Subnetmask: 255. 255. 255. 0
Key Exchange Method: Auto (IKE)
Authentication Method: Pre-Shared Key
Pre-Shared Key: key
Perfect Forward Secrecy: Disable V
Advanced IKE Settings: Show Advanced Settings
Save/Apply

Figure 4-69

- IPSec Connection Name: Enter a name for your VPN.
- > Remote IPSec Gateway Address (IP or Domain Name): Enter the destination gateway IP address in the box which is the public WAN IP or Domain Name of the remote VPN server endpoint. (For example: Input 219.134.112.247 in Device1, Input 219.134.112.246 in Device 2)
- > Tunnel access from local IP addresses: Choose Subnet if you want the Whole LAN to join the VPN network, or else choose Single Address if you want single IP to join the VPN network.
- > IP Address for VPN: Enter the IP address of your LAN. (For example: Input 192.168.1.1 in **Device1**, Input **192.168.2.1** in **Device2**)
- > IP Subnetmask: Enter the Subnet mask of your LAN. (For example: Input 255.255.255.0 in both **Device1** and **Device2**)
- > Tunnel access from remote IP addresses: Choose Subnet if you want the Remote Whole LAN to join the VPN network, or else choose Single Address if you want single IP to join the VPN network.
- > IP Address for VPN: Enter the IP address of the Remote LAN. ( For example: Input **192.168.2.1** in **Device1**, Input **192.168.1.1** in **Device2**)
- > IP Subnetmask: Enter the subnetmask of the remote LAN. ( For example: Input **255.255.255.0** in both **Device1** and **Device2**)
- **Key Exchange Method:** Select Auto (IKE) or Manual.
- > Authentication Method: Select Pre-Shared Key (recommended).
- Pre-Shared Key: Input the Pre-Shared key for Authentication. (For example: Input 12345678)
- Perfect Forward Secrecy: PFS is an additional security protocol.

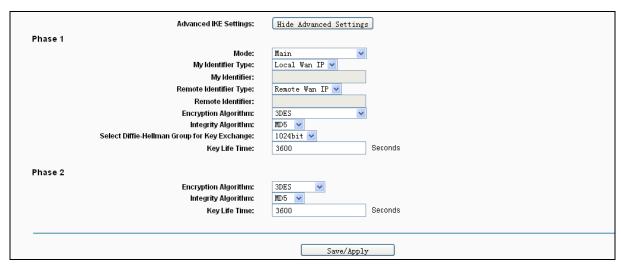
We recommend you leave the Advanced Settings as default value.

After complete the basic settings and click Save/Apply in both **Device1** and **Device2**, PCs in LAN1 could communicate with PCs in remote LAN2. (For example: You can ping the IP address of PC2 which is 192.168.2.100 in PC1)

### Note:

The VPN Servers Endpoint from both ends must use the same pre-shared keys and Perfect Forward Secrecy settings.

Click **Show Advanced Settings** and then you can configure the Advanced Settings.



- ➤ Main Mode: Select Main Mode to configure the standard negotiation parameters for IKE phase1.
- ➤ **Aggressive Mode:** Select Aggressive Mode to configure IKE phase1 of the VPN Tunnel to carry out negotiation in a shorter amount of time. (Not Recommended-Less Secure)

### Note:

The difference between the two is that aggressive mode will pass more information in fewer packets, with the benefit of slightly faster connection establishment, at the cost of transmitting the identities of the security firewall in the clear. When using aggressive mode, some configuration parameters such as Diffie-Hellman groups, and PFS can not be negotiated, resulting in a greater importance of having "compatible" configuration on both ends.

## > Key Life Time:

Enter the number of seconds for the IPSec lifetime. It is the period of time to pass before establishing a new IPSec security association (SA) with the remote endpoint. The default value is 3600.

### P Note:

If you want to change the default settings of **Advanced Settings**, please make sure that both VPN server endpoints use the same Encryption Algorithm, Integrity Algorithm, Diffie-Hellman Group and Key Life time in both **phase1** and **phase2**.

### 4.5.18 Multicast

Choose "Advanced Setup"→"Multicast", you can configure the IGMP protocol on the screen.

Enter IGMP protocol configuration fields if you want modify d	ofault values chown halow	
Default Version:	3	
Query Interval:	125	
Query Response Interval:	10	
Last Member Query Interval:	10	
Robustness Value:	2	
Maximum Multicast Groups:	25	
Maximum Multicast Data Sources (for IGMP√3 : (1 - 24):	10	
Maximum Multicast Group Members:	25	
Fast Leave Enable:	<b>V</b>	
LAN to LAN (Intra LAN) Multicast Enable:		
		Save/Apply

Figure 4-70

Click Apply/Save to save your settings.

## **4.6 IPTV**

Choose "IPTV", and you will see the screen as shown in Figure 4-71.

IPTV Settir	ngs					
☑ Enable IPTV						
	Please select the LAN port for IPTV connection and connect the set-top box (STB) to that port.					
	○ LAN1 ⊙ LAN2 ○ LAN3 ○ LAN4					
	Please set PVC parameters for IPTV connection.					
	VPI: 0 (0-255)					
	VCI: 35 (1-65535)					
	Enable IPTV Bandwidth Guarantee Device's Bandwidth Control Function is disabled, Click here to enable it.					
	Save/Apply					

Figure 4-71

- > Enable IPTV: Check this box to enable IPTV. If this checkbox is selected, please set the following parameters as shown in the figure below. Make sure the following settings are
- ➤ VPI (0~255): Identifies the virtual path between endpoints in an ATM network. The valid range is from 0 to 255. Please input the value provided by your ISP.
- ➤ VCI (1~65535): Identifies the virtual channel endpoints in an ATM network. The valid range is from 1 to 65535 (1 to 31 is reserved for well-known protocols). Please input the value provided by your ISP.

Click the **Save/Apply** button to save your settings.

# 4.7 Wireless

Choose "Wireless", there are six submenus to configure Wireless LAN settings. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.



#### 4.7.1 Basic

Choose "Wireless"→"Basic", you will see the screen of Wireless--Basic settings shown as below. The basic settings for wireless networking are set on this screen.

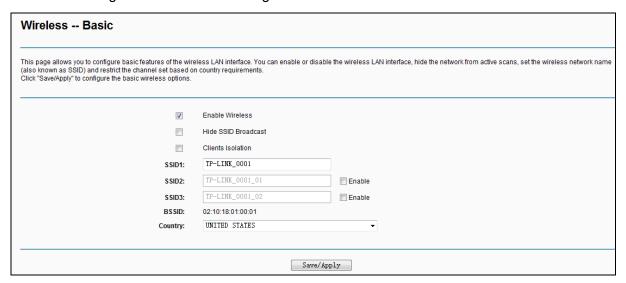


Figure 4-72

This page allows you to configure basic features of the wireless LAN interface. You can enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the channel set based on Region requirements.

- > Enable Wireless: If you want to use wireless features, you must select "Enable Wireless". If you deselect "Enable Wireless" option, all the Wireless settings below will be disabled.
- > Hide SSID Broadcast: When wireless clients survey the local area for wireless networks to associate with, you can select this option to avoided being surveyed.
- > Clients Isolation: Select this option to enable AP isolation function so that stations associated to the AP will not be able to communicate with each other.
- > SSID1: Wireless network name. Enter a desired SSID which is case-sensitive and must not exceed 32 characters. The SSID is shared among all points in a wireless network and it must

be identical for all devices in the wireless network. Make sure this setting is the same for all stations in your wireless network. Type the desired SSID in the space provided.

- > SSID2/3: The modem router can broadcast three SSIDs at most. Tick the box to enable SSID2 or SSID3 as needed.
- > **BSSID**: Show the MAC address of the modem router.
- **Country:** Restrict the channel set and transmit power.

Click Apply/Save to save your settings.

# 4.7.2 Security

Choose "Wireless"→"Security", you will see the screen of Wireless--Security settings shown as below. You can configure security features of the wireless LAN interface by manually setting the network authentication or through WPS (Wi-Fi Protected Setup) method.

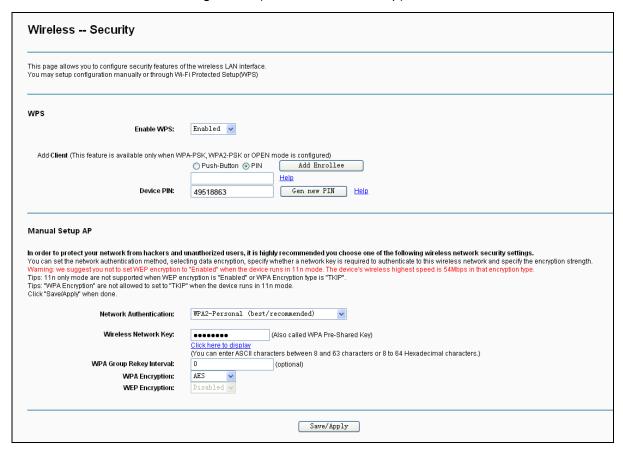


Figure 4-73

#### 4.7.2.1 WPS Setup

This section will guide you to add a new wireless device to an existing network quickly by **WPS** (or called QSS) method.

#### P Note:

1) This feature is available only when OPEN, WPA-PSK, WPA2-PSK or Mixed WPA2/WPA-PSK mode is configured.

2) To build a successful connection by WPS, you should also do the corresponding configuration of the new device for WPS function meanwhile.

# I. By PBC

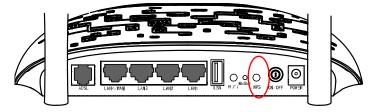
If the wireless adapter supports WPS and the Push Button Configuration (PBC) method, you can add it to the network by PBC with the following two methods. Click Push-Button, you will see the screen as shown below.

Wireless Security		
This page allows you to configure security features of the wireless LAN interface. You may setup configuration manually or through Wi-Fi Protected Setup(WPS)		
WPS Enable WPS:	Enabled •	
Add Client (This feature is available only when W	PA-PSK, WPA2-PSK or OPEN mode is configured)	
Device PIN:	Push-Button PIN Add Enrollee      Gen new PIN Help	

Figure 4-74

**Method One:** Hardware push button.

Step 1: Press the WPS button on the back panel of the modem router.



Step 2: Press and hold the WPS button of the adapter directly for 2 or 3 seconds.



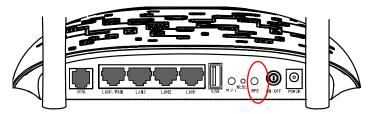
Step 3: Wait for a while until the next screen of adapter appears. Click Finish to complete the WPS configuration.



Figure 4-75

# **Method Two:**

Step 1: Press the WPS button on the back panel of the modem router.



Step 2: For the configuration of the wireless adapter, please choose "Push the button on my access point" in the configuration utility of the WPS as below, and click Next.



Figure 4-76

Step 3: Wait for a while until the next screen appears. Click Finish to complete the WPS configuration.



Figure 4-77

# II. By PIN

If the new device supports Quick Security Setup and the PIN method, you can add it to the network by PIN with the following two methods.

**Method One:** Enter the PIN of wireless adapter into my modem router.

Step 1: Select the **PIN** checkbox and enter the PIN code of the wireless adapter in the field under as shown below. Then click **Add Enrollee**.

Wireless Security			
This page allows you to configure security features of the wireless LAN interface. You may setup configuration manually or through Wi-Fi Protected Setup (WPS)			
WPS			
Enable WPS:	Enabled v		
Add Client (This feature is available only when WPA-PSK, WPA2-PSK or OPEN mode is configured)  OPush-Button OPIN Add Enrollee			
	16952898 Help		
Device PIN:	12279180 Gen new PIN Help		

Figure 4-78

#### Note:

The PIN code of the adapter is always displayed on the WPS configuration screen.

Step 2: For the configuration of the wireless adapter, please choose "Enter a PIN into my access point or a registrar" in the configuration utility of the WPS as below, and click Next.



Figure 4-79

#### P Note:

In this example, the default PIN code of this adapter is 16952898 as the preceding figure shown.

**Method Two:** Enter the PIN of my modem router into the wireless adapter.

Step 1: Get the Current PIN code generated by the modem router as shown below. You can click **Gen New PIN** to get a new PIN code for modem router.



Figure 4-80

Step 2: For the configuration of the wireless adapter, please choose "Enter a PIN from my access point" in the configuration utility of the WPS as below, and enter the PIN code of the modem router into the field after "Access Point PIN". Then click Next.



Figure 4-81

# 4.7.2.2 Manual Setup AP

Follow the instructions below to configure security features of the wireless LAN interface manually. You can set the network authentication method, select data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.

r		
Manual Setup AP		
In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings.  You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type.  Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: "WPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.  Click "Save/Apply" when done.		
Network Authentication:	WPA2-Personal (best/recommended)	
Wireless Network Key:	(Also called WPA Pre-Shared Key)	
	Click here to display (You can enter ASCII characters between 8 and 63 characters or 8 to 64 Hexadecimal characters.)	
WPA Group Rekey Interval:	0 (optional)	
WPA Encryption:	AES V	
WEP Encryption:	Disabled v	
	Save/Apply	

Figure 4-82

> Network Authentication: Select an authentication type from the drop-down list.

#### **☞** Note:

For most users, it is recommended to use the default Wireless LAN Performance settings. Any changes made to these settings may adversely affect your wireless network. Under certain circumstances, changes may benefit performance. Carefully consider and evaluate any changes to these wireless settings.

#### 1. WEP

WEP is a basic encryption method offering two levels of encryption, 64-bit and 128-bit encryption. To configure the WEP encryption, there are two ways.

- Keep the Network Authentication of Open (insecurity) and select Enabled from the WEP Encryption drop-down list, as shown in Figure 4-83. Open (insecurity) with WEP encryption disable allows any wireless station to associate with the access point.
- Select Shared (good) from the Network Authentication drop-down list, as shown in Figure 4-84. Shared (good) must enable WEP encryption. Network using Open or Shared authentication with WEP encryption only allows stations using the same network key encryption to associate with it. Follow the instructions below to configure the Shared Keys.

Manual Setup AP		
You can set the network authentication metho encryption strength.  Warning: we suggest you not to set WEP encr	rs and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. d, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the yption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. WEP encryption is "Enabled" or WPA Encryption type is "TKIP". to "TKIP" when the device runs in 11n mode.	
Network Authentication:	Open (insecurity)	
WEP Encryption:	Enabled v	
Encryption Strength:	128-bit 🔻	
Current Network Key:	1 🗸	
Network Key 1:		
Network Key 2:		
Network Key 3:		
Network Key 4:		
	Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys	
Apply/Save		

Figure 4-83

You can set the network authentication metho encryption strength. Warning: we suggest you not to set WEP enc	rs and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. d, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the yption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. WEP encryption is "Enabled" or WPA Encryption type is "TKIP". to "TKIP" when the device runs in 11n mode.		
Network Authentication:	Shared (good)		
WEP Encryption:	Enabled v		
Encryption Strength:	128-bit •		
Current Network Key:	1 🔻		
Network Key 1:			
Network Key 2:			
Network Key 3:			
Network Key 4:			
	Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys		
Apply/Save			

Figure 4-84

- **Encryption Strength:** Select the appropriate level of encryption, 64-bit or 128-bit.
- > Current Network Key: To indicate which WEP key to use, select a transmission key number.
- > Network Key 1-4: If you want to manually enter the WEP keys, then enter them in the network Key 1-4 fields.

# **Configure WEP Settings**

- 1. Select Shared (good) from the Network Authentication drop-down list. The menu will change to offer the appropriate settings.
- 2. Select **64-bit** from the **WEP Encryption** drop-down list.
- 3. Select "1" from Current Network Key drop-down list.
- 4. Type in the password in the **Network Key 1** field.
- 5. Click **Save/Apply** to save the new configuration.

Manual Setup AP		
You can set the network authentication method, selec Warning: we suggest you not to set WEP encryption to	mauthorized users, it is highly recommended you choose one of the following wireless network security settings.  ting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type.  cryption is "Enabled" or WPA Encryption type is "TKIP".  "when the device runs in 11n mode.	
Network Authentication:	Shared (good)	
WEP Encryption:	Enabled v	
Encryption Strength:	64-bit V	
Current Network Key:		
Network Key 1:	1234567890	
Network Key 2:		
Network Key 3:		
Network Key 4:		
	Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys	
Save/Apply		

Figure 4-85

# 

We use Network Authentication Shared (good), Encryption Strength 64-bit, Current Network Key "1" and enter 10 hexadecimal digits"1234567890" in the Network Key 1 for example, as shown in Figure 4-85 above.

#### 2. WPA-Enterprise

WPA security for wireless communication has been developed to overcome some of the shortcomings of WEP. WPA combines the key generation with the authentication services of a RADIUS server.

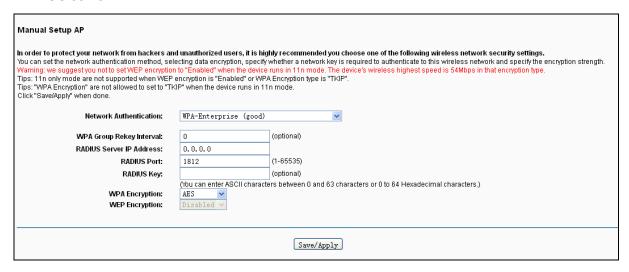


Figure 4-86

- > WPA Group ReKey Interval: Enter the Key Renewal period, which tells the modem router how often it should change encryption keys.
- > RADIUS Server IP Address: The IP address of the RADIUS server.
- > RADIUS Port: The port of the RADIUS server. The default number is 1812.
- > RADIUS Key: The password of the RADIUS Server.
- ➤ **WPA Encryption:** Select the encryption you want to use: TKIP+ AES or AES (AES is an encryption method stronger than TKIP).

# **Configure WPA settings**

- Select WPA from the Network Authentication drop-down list. The menu will change to offer the appropriate settings.
- 2. Change the WPA Group Rekey Interval as desired.
- 3. Type in the IP address of the RADIUS server used in the RADIUS Server IP Address field.
- 4. Change the **RADIUS Port** if necessary.
- 5. Type in the password in the **RADIUS Key** field.
- 6. Use the default setting **AES** of WPA Encryption.
- 7. Click Save/Apply to save the new configuration.

Manual Setup AP		
In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: TWPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.  Click "Apply/Save" when done.		
Network Authentication:	WPA-Enterprise (good	i) 🗸
WPA Group Rekey Interval:	30	(optional)
RADIUS Server IP Address:	192.168.1.20	
RADIUS Port:	1812	(1-65535)
RADIUS Key:	•••••	(optional)
WPA Encryption: WEP Encryption:	(You can enter ASCII char AES v Disabled v	acters between 0 and 63 characters or 0 to 64 Hexadecimal characters.)
		Apply/Save

Figure 4-87

#### 3. WPA-Personal

WPA-Personal requires a shared key and does not use a separate server for authentication. PSK keys can be ASCII or Hex type.

Manual Setup AP		
In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: "WPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.  Click "Apply/Save" when done.		
Network Authentication:	WPA-Personal (better/recommended)	
Wireless Network Key:	(Also called WPA Pre-Shared Key)  Click here to display (You can enter ASCII characters between 8 and 63 characters or 8 to 64 Hexadecimal characters.)	
WPA Group Rekey Interval:	30 (optional)	
WPA Encryption:	AES V	
WEP Encryption:	Disabled v	
	Apply/Save	

Figure 4-88

- > Wireless Network Key: Enter the key shared by the modem router and your other network devices. It must have 8-63 ASCII characters or 8-64 Hexadecimal digits.
- > Click here to display: Click it to show you the WPA Pre-Shared Key.

# **Configure WPA-Personal settings**

- 1. Select WPA-Personal. The menu will change to offer the appropriate settings as the picture show above.
- 2. WPA-Personal requires a shared key. Type the key in the space provided. PSK keys can be ASCII or Hex type.
- 3. Change the Group Key Interval as desired or use the default setting.
- 4. Click **Save/Apply** to save the new configuration.

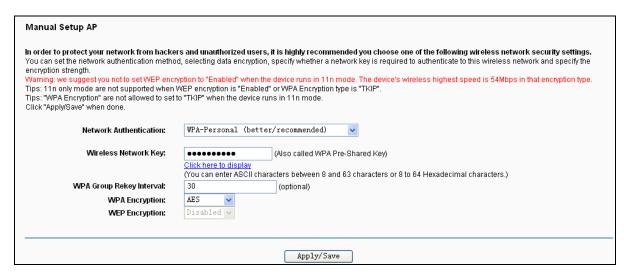


Figure 4-89

#### Note:

If you click the option "Click here to display", the Figure 4-90 will pop-up, and it shows the password you have set. In addition, it won't show the blank characters in both ends of the password phrase.

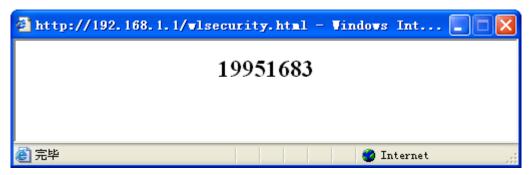


Figure 4-90

# 4. WPA2-Enterprise

To configure WPA2-Enterprise settings, select the WPA2-Enterprise option from the drop-down list. The menu will change to offer the appropriate settings. The steps of these settings are similar to WPA settings.

Manual Setup AP				
You can set the network authentication metho encryption strength.  Warning: we suggest you not to set WEP encr Tips: 11n only mode are not supported when ' Tips: "WPA Encryption" are not allowed to set	In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: "WPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.			
Click "Apply/Save" when done.				
Network Authentication:	WPA2-Enterprise	(better) v		
WPA2 Preauthentication:	Disabled 🗸			
Network Re-auth Interval:	36000	(optional)		
WPA Group Rekey Interval:	0	(optional)		
RADIUS Server IP Address:	0.0.0.0			
RADIUS Port:	1812	(1-65535)		
RADIUS Key:		(optional)		
		characters between 0 and 63 characters or 0 to 64 Hexadecimal characters.)		
WPA Encryption:	AES 🗸			
WEP Encryption:	Disabled 🗸			
		Apply/Save		

Figure 4-91

- > WPA2 Preauthentication: Select Enable from the drop-down list, Stations will authenticate with the AP during the scanning process, and once association is required, the station has been already authenticated.
- > Network Re-auth Interval: Enter a value in seconds as the frequency interval to enable periodic Network Re-authentication function, while leave it blank or enter "0" to disable it.

#### 5. WPA2-Personal

To configure WPA2-Personal settings, select the WPA2- Personal option from the drop-down list. The menu will change to offer the appropriate settings. WPA2- Personal requires a shared key and does not use a separate server for authentication. PSK keys can be ASCII or Hex type.

Manual Setup AP			
In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: "WPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.  Click "Apply/Save" when done.			
Network Authentication:	WPA2-Personal (best/recommended)		
Wireless Network Key:	(Also called WPA Pre-Shared Key)  Click here to display  (You can enter ASCII characters between 8 and 63 characters or 8 to 64 Hexadecimal characters.)		
WPA Group Rekey Interval:	0 (optional)		
WPA Encryption:	AES 🔻		
WEP Encryption:	Disabled v		
	Apply/Save		

Figure 4-92

#### 6. Mixed WPA2/WPA Enterprise

To configure Mixed WPA2/WPA Enterprise settings, select the Mixed WPA2/WPA Enterprise option from the drop-down list. The menu will change to offer the appropriate settings. The steps to these settings are similar to those for WPA-PSK.

Manual Setup AP			
In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.  Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: "WPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.  Click "Apply/Save" when done.			
Network Authentication:	Mixed WPA2/WPA Enter	prise (adaptive) 🔻	
WPA2 Preauthentication:	Disabled 🗸		
Network Re-auth Interval:	36000	(optional)	
WPA Group Rekey Interval:	0	(optional)	
RADIUS Server IP Address:	0.0.0.0		
RADIUS Port:	1812	(1-65535)	
RADIUS Key:		(optional)	
	(You can enter ASCII chara	cters between 0 and 63 characters or 0 to 64 Hexadecimal characters.)	
WPA Encryption:	AES 🕶		
WEP Encryption:	Disabled 🗸		
		Apply/Save	

Figure 4-93

#### 7. Mixed WPA2/WPA Personal

To configure Mixed WPA2/WPA-Personal settings, select the Mixed WPA2/WPA Personal option from the drop-down list. The menu will change to offer the appropriate settings. The steps of this setting are the same with WPA-PSK.

Manual Setup AP		
In order to protect your network from hackers and unauthorized users, it is highly recommended you choose one of the following wireless network security settings. You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.		
Warning: we suggest you not to set WEP encryption to "Enabled" when the device runs in 11n mode. The device's wireless highest speed is 54Mbps in that encryption type. Tips: 11n only mode are not supported when WEP encryption is "Enabled" or WPA Encryption type is "TKIP".  Tips: "WPA Encryption" are not allowed to set to "TKIP" when the device runs in 11n mode.  Click "Apply/Save" when done.		
Network Authentication:	Mixed WPA2/WPA-PSK Personal(adaptive) v	
Wireless Network Key:	(Also called WPA Pre-Shared Key)	
	Click here to display (You can enter ASCII characters between 8 and 63 characters or 8 to 64 Hexadecimal characters.)	
WPA Group Rekey Interval:	0 (optional)	
WPA Encryption:	AES 🗸	
WEP Encryption:	Disabled v	
	Apply/Save	

Figure 4-94

# 4.7.3 Wireless Schedule

Choose menu "Wireless"→"Wireless Schedule", you can configure the Task Schedule as shown below. Please set the modem router's system time first.

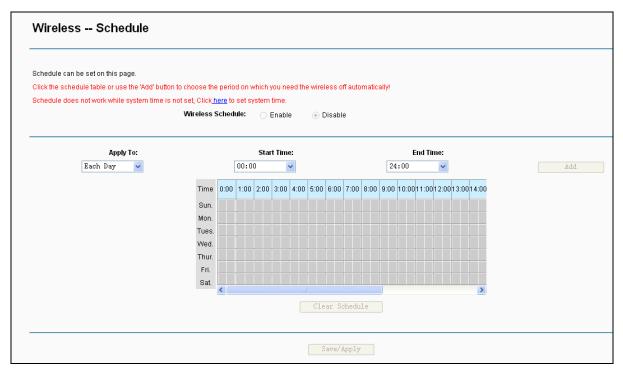


Figure 4-95

#### Note:

The time you set is the period you need the wireless off.

Before configure the wireless schedule, please set system time first which refer to <u>4.10.5 Internet</u> <u>Time</u>, then you can enable or disable Wireless Schedule.

- Apply To: Select the day or days you need the wireless off.
- > Start Time, End Time: You can select all day-24 hours or you may enter the Start Time and End Time in the corresponding field.
- Add: Click this button to add your selected time to the below table.

Click the **Clear Schedule** button to clear your settings in the table.

Click the **Save/Apply** button to complete the settings.

#### 4.7.4 MAC Filter

Choose "Wireless"→"MAC Filter", you will see the screen of Wireless--MAC Filter settings shown as below.

Wireless MAC Filter							
A maximum 64 entries can be configured.							
	MAC Restrict Mode:	<ul><li>Disabled</li></ul>	Allow	O Deny	Note: If 'a	illow' is choosed and mac filter is empty, WPS will be disabled	
	MAC	Address				Remove	
				Add Remove	]		

Figure 4-96

Wireless access can be filtered by using the MAC addresses of the wireless devices transmitting within your network's RADIUS. To filter wireless users by MAC Address, either permitting or blocking access. If you do not wish to filter users by MAC Address, select Disabled.

- **Disabled:** Select this option to disable MAC Filter function.
- > Allow: Select this option to enable MAC Filter function that allow wireless access by the devices listed on this screen.
- Deny: Select this option to enable MAC Filter function that block wireless access from the devices listed on this screen.
- Add: Click this button to add the MAC Address.
- Remove: Select the item of the MAC Address and click this button to remove it.

When you click the **Add** button, the pop-up picture shown below, and then you can type the MAC Address in the MAC Address field.

#### P Note:

The form of MAC Address must be "xx:xx:xx:xxxxx, like "00:13:0A:55:FF:09".

Wireless MAC Filter		
Enter the MAC address and click "Save/Apply" to add the f	MAC address to the wireless MAC address filters.  00:13:04:55:FF:09	
	Save/Apply	

Figure 4-97

When you finished making changes to the MAC Filter List screen, click Save/Apply to save the changes.

# 4.7.5 Wireless Bridge

Choose "Wireless"→"Wireless Bridge", you will see the screen of Wireless--Bridge settings shown as below. You can configure wireless bridge features of the wireless LAN interface and click **Apply/Save** button to save the current configuration.

Wireless Bridge					
This page allows you to configure wireless bridge features of the wireless LAN interface. You can select Wireless Bridge (also known as Wireless Distribution System) to disable access point functionality. Wireless bridge functionality will still be available and wireless stations will be able to associate to the AP. Select Disabled in Bridge Restrict which disables wireless bridge restriction. Any wireless bridge will be granted access.  Click "Refresh" to update the remote bridges. Wait for few seconds to update.  Click "RewApply" to configure the wireless bridge options.  Tip 1: Only "Open" or "Shared" Network Authentication support Wireless Bridge.  If you want remote wireless devices connect to this router by bridge Mode, set the Network Authentication to "Open" or "Shared" first!  Tip2: Other APs can bridge to device Only with the same channel as device.					
AP Mode: Access Point  Bridge Restrict: Disabled					
Refresh Save/Apply					

Figure 4-98

> AP Mode: Select an AP Mode from the drop-down list. Options available are: Access Point and Wireless Bridge.

- Access Point: Select this option to allow wireless stations including AP clients to access.
- Wireless Bridge: Also known as WDS (Wireless Distribution System), it will bridges the wireless stations which also in bridge mode to connect two or more remote LANs.

# **Bridge Restrict**:

- Disabled: Select this option to disables wireless bridge restriction, that any wireless bridge will be granted access.
- Enabled: Select this option (as shown below) to enables wireless bridge restriction, please enter the MAC address of the Remote Bridges that you want to connect with, and only these Remote Bridges are granted access.

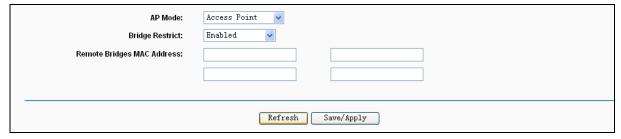


Figure 4-99

- **Enabled (Scan)**: Select this option to enables wireless bridge restriction, and it will scan the environment for APs that exist around the device. Only those selected AP will be granted access.
- Refresh: Click this button to scan and display the APs.

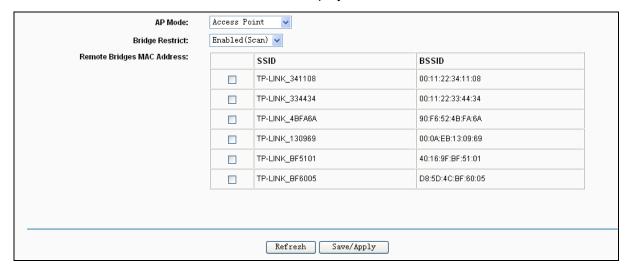


Figure 4-100

# Note:

Only Open or Shared authentication method support wireless bridge, you should choose "Wireless"→"Security" to change authentication method to "open" or "shared" mode first.

#### 4.7.6 Advanced

Choose "Wireless"→"Advanced", you will see the screen of Wireless--Advanced settings shown as below.

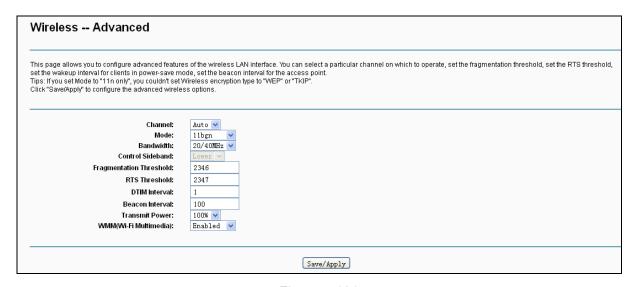


Figure 4-101

- ➤ **Channel:** Select the channel you want to use from the drop-down List. This field determines which operating frequency will be used. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point.
- ➤ **Mode**: In the drop-down list you can select "11b", "11bg", "11bgn" and "11n only". "11bgn" allows both 802.11b, 802.11g and 802.11n wireless stations to connect to the modem router.
- ➤ **Bandwidth**: Select the Bandwidth you want to use from the drop-down List. If bigger bandwidth is selected, device could transmit and receive data with higher speed.
- ➤ **Control Sideband**: If bigger bandwidth is selected, this option will allow you select the Control Sideband you want.
- Fragmentation Threshold: This value specifies the maximum size for a packet before data is fragmented into multiple packets. If you experience a high packet error rate, you may slightly increase the Fragmentation Threshold. Setting the Fragmentation Threshold too low may result in poor network performance. Only minor reduction of the default value is recommended. In most cases, it should remain at its default value of 2346.
- ➤ RTS Threshold: Should you encounter inconsistent data flow, only minor reduction of the default value 2347 is recommended. If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled. The modem router sends Request to Send (RTS) frames to a particular receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission. This mechanism can provide you a quiet communication channel by notifying other stations not to send packet for a period of time. In most cases, keep its default value of 2347.
- ▶ DTIM Interval: This value, between 1 and 255, indicates the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. The countdown unit is measured by the amounts of beacon frames received. When the modem router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. Its clients hear the beacons and awaken to receive the broadcast and multicast messages. The default value is 1.

- Beacon Interval: Enter a value between 20-1000 milliseconds. The Beacon Interval value indicates the frequency interval of the beacon. A beacon is a packet broadcast by the modem router to synchronize the wireless network. The default value is 100.
- Transmit Power: This option will allow you to configure the wireless transmit power. High transmit power will extend the wireless signal range of the device and make the signal transmit more legible. Low transmit power with the smaller wireless signal range that will decrease the probability of interrupt by other Wi-Fi device.
- > WMM (Wi-Fi Multimedia): This function can guarantee the packets with high-priority messages being transmitted preferentially. It is strongly recommended.

# 4.7.7 Station info

Choose "Wireless"→" Station Info", you will see the screen of Wireless--Authenticated **Stations** setting shown as below.

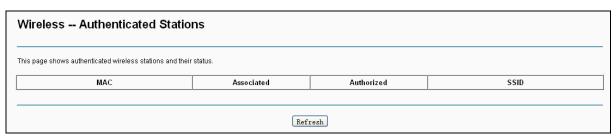


Figure 4-102

This page shows authenticated wireless stations and their status.

- **MAC**: Displays the connected wireless station's MAC address.
- **Associated**: Displays whether the wireless station has associated with the access point.
- $\triangleright$ **Authorized**: Displays the information of Authentication.
- **SSID**: Displays the connected wireless station's SSID.

You cannot change any of the values on this page. To update this page and to show the current connected wireless stations, click on the **Refresh** button.

#### 4.8 Guest Network



There are two submenus under the Guest Network menu: Basic and Station list. Click any of them, and you will be able to scan or configure the corresponding function. The detailed explanations for each submenu are provided below.

#### 4.8.1 Basic

Choose menu "Guest Network"→ "Basic", and you will see the screen as shown in Figure 4-103. This feature allows you to create a separate network for your guests without allowing them to access your main network and the computers connected to it.

Wireless Guest Network	
Guest Network can be set on this page.	
Guest Network:	
Guest SSID:	TP-LINK_Guest02
Authentication Type:	WPA-PSK 🕶
Encryption:	AES v
Wireless Password:	(Enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64.)
	Click here to display
Group Key Update Period:	0 (second, minimun is 30, 0 means no update.)
Allow Guest To Access My Local Network:	Disabled 💌
Allow Guest To Access My USB Storage:	Disabled 💌
Guest Network Isolation:	Disabled 🕶
Guest Network Bandwidth Control:	Disabled V Device's Bandwidth Control Function is disabled, Click here to enable it.
	Save/Apply

Figure 4-103

You can enable or disable Guest Network. When you enable this function, you could set wireless parameters for Guest Network.

- Guest SSID: The guest network name. When setting up a Guest network, it is strongly recommended to use a name that easily distinguishes it from your primary network.
- **Authentication Type:** Select the Authentication Type from the drop-down list.
- **Encryption**: You can select either **AES** or **AES+TKIP**.
- Wireless Password: Here display the default wireless password, you can click Click here to display to see the default wireless password, and you can also enter ASCII characters between 8 and 63 characters or 8 to 64 Hexadecimal characters to create a new password.
- Group Key Update Period: Specify the group key update interval in seconds. The value should be 30 or above. Enter 0 to disable the update.
- Allow Guest to Access my Local Network: The quests have access to your Local Network. but can not login the modem router's web management interface.
- Allow Guest to Access my USB Storage: The guests can access the specified files on the USB storage device via the function of USB Storage Sharing, but the function of FTP Server, Media Server and Print Server are not available in Guest Network. For more details please refer to 4.8.3 Storage Sharing.
- Guest Network Isolation: This function can isolate wireless clients on your guest network from each other. Client isolation is disabled by default.
- Guest Network Bandwidth Control: With this function, you can configure the Upstream Bandwidth and Downstream Bandwidth for guest network.

Click Save/Apply to save your settings.

#### 4.8.2 Station list

Choose menu "Guest Network"→"Station list", you can see the MAC Address, Associated, Authorized, SSID and Interface.

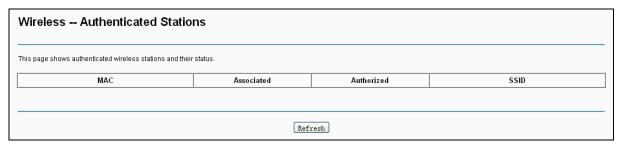
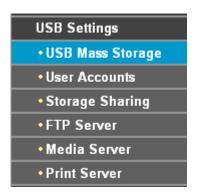


Figure 4-104

- **MAC:** Displays the connected wireless station's MAC address.
- **Associated**: Displays whether the wireless station has associated with the access point.
- **Authorized**: Displays the information of Authentication.
- **SSID**: Displays the connected wireless station's SSID.

You cannot change any of the values on this page. To update this page and to show the current connected wireless stations, click on the Refresh button.

# 4.9 USB Settings



There are six submenus under the USB Settings menu, USB Mass Storage, User Accounts, Storage Sharing, FTP Server, Media Server and Print Server. Click any of them, and you will be able to configure the corresponding function.

# 4.9.1 USB Mass Storage

Choose menu "USB Settings → "USB Mass Storage", you can configure a USB disk drive attached to the modem router and view volume and share properties such as share name, capacity, status, and action, etc on this page as shown below.

#### **USB Mass Storage** This page provides the basic information about the connected USB mass storage, to configure Storage Sharing/FTP/Media Server, please click the corresponding menu on the left side. Disk1: Samsung U5 Rev: 0100 Connected Disconnect Volume Capacity Status Action File System usb1\_1 FAT32 1.8 GB Active <u>Deactivate</u> Refresh 1. Click the REFRESH button to detect your USB device. The Modern Router will automatically activate the first two USB storage devices or up to eight volumes 2. If you want to use other volumes in your storage device(s), please "Deactivate" some unused volumes and "Activate" the other desired volumes 3. Click "Disconnect" button before unplugging your USB device to avoid data loss or damage to the device. Supported USB Mass Storage: hard disk, flash disk or memory card reader, Supported File System Type: FAT32 and NTFS; Supported Volumes: Only two USB storage devices with up to eight volumes could be activated simultaneously, up to four USB storage devices with about eighteen volumes could be recognized.

Figure 4-105

- Volume: The volume name of the USB drive the users have access to.
- File System: The system of the USB drive.
- Capacity: The storage capacity of the USB driver.
- Status: Indicates the shared or non-shared status of the volume. Active means volume can be shared, while **Inactive** means volume can not be shared..
- Action: When the volume is shared, you can click the **Deactivate** to stop sharing the volume; when volume is non-shared, you can click the **Activate** button to share the volume.

Click **Disconnect** to safely remove the USB storage device that is connected to USB port.

# Note:

Before removing the USB storage device, you should click "Disconnect" to make sure that all your data have been saved completely. Removing device directly may cause your USB storage device crashed.

#### 4.9.2 User Accounts

You can specify the user name and password for Storage Sharing and FTP Server users on this page. There are five users here, which provide means to control the access to the USB mass storage by Storage Sharing or FTP. The Super User has the right to read and write to Storage Sharing and FTP Server.

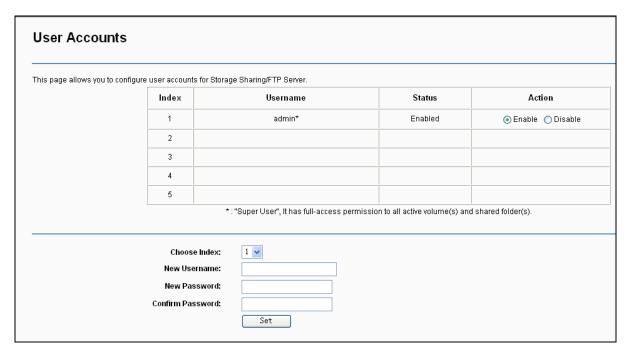


Figure 4-106

# To add a new user account, please follow the steps below:

- 1. Choose the index from the drop-down list of **Choose Index**.
- Self-define a New Username.
- 3. Enter the password in the **New Password** field.
- 4. Re-enter the password in the **Confirm Password** field.

Click the **Set** button, and then a new entry will be added in the table.

# 4.9.3 Storage Sharing

Choose menu "USB Settings" → "Storage Sharing", you can configure a USB disk drive attached to the modem router and view volume and share properties on this page as shown below.

ng Settings
to share the files on the USB storage device with other computers locally.
Server Status: Enabled Disable
Anonymous access to all the volumes
is here to NEDIO 2/04D and to the interest of the state o
is based on NetBIOS/SMB protocol which is supported by most Windows operating system and some other operating syste
ume(s) will be shared and authentication is not required. s the folders with the following methods:
Open "Run" window in the Start menu and enter \\(IP Address) or \\(IP Address)\(Share Name)
e.g. \\192.168.1.1 or \\192.168.1.1\photo;
Open "Connect to Server" window in the Go menu and enter smb://(IP Address) or smb://(IP Address)/(Share Name) e.g. smb://192.168.1.1 or smb://192.168.1.1/photo.

Figure 4-107

- Server Status: Indicates the Storage Sharing's current status.
- Anonymous access to all the volumes: This function is enabled by default, so users can access all activated volumes of Storage Sharing without accounts. If you want to add a shared folder which does not allow anonymous login, uncheck the box to disable this function. And **Folder Table** will be displayed as shown below.

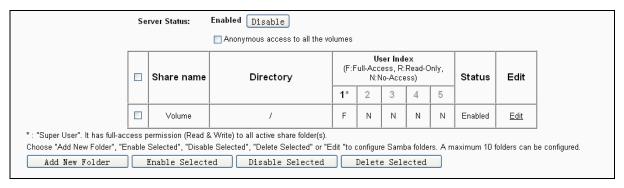


Figure 4-108

- > Share Name: This folder's display name.
- > **Directory:** The real full path of the specified folder.
- User Index: The authorization of the user is displayed. \* users mean Super Users who have the full-access permission to all activated volumes and share folders. Grey users mean the users who have no right to use this function. Others are common users.
- Status: The status of the entry is enabled or disabled.
- **Edit:** Click **Edit** in the table, and then you can modify the entry.

To add a new folder, follow the instructions below.

Click Add New Folder in Figure 4-108.

Share Name: Directory:	/ Browse	
User Access Contro	l Table:	
Index	Username	AccessAuthorization
1*	admin	● Full-Access
2		
3		
4		
5		

Figure 4-109

- 2. Click the Browse button, and then select the Select Volume from the drop-down list.
- 3. Enter display name of the share folder in Share Name filed.

4. Click the **Save/Apply** button to apply the settings.

You can click the upper button to go to the upper folder

Click the **Enable/Disable Selected** button to enable or disable the selected entries.

Click the **Delete Selected** button to delete the selected entries.

#### P Note:

- 1) The max share folders number is 10. If you want to share a new folder when the number has reached 10, you can delete an existing share folder and then add a new one.
- 2) If you want to change the Storage Sharing settings, you can click the Apply button to make the changes take effect.

#### 4.9.4 FTP Server

Choose menu "USB Settings"→"FTP Server", you can create an FTP server that can be accessed from the Internet or your local network.

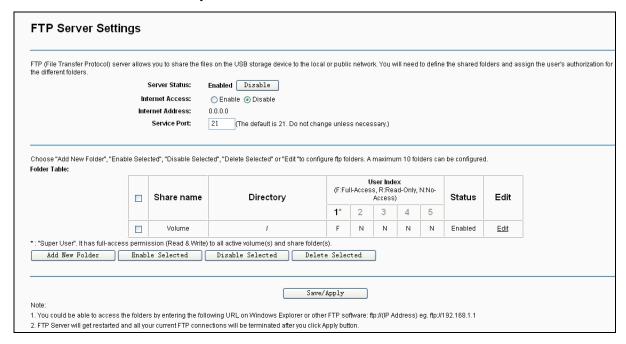


Figure 4-110

- Server Status: Indicates the FTP Server's current status.
- Internet Access: If Internet Access is enabled, user(s) in public network can access FTP server via Internet Address.
- Internet Address: If Internet Access is enabled, WAN IP will be displayed here.
- > Service Port: Enter the FTP Port number to use. The default is 21.
- > Share Name: This folder's display name.
- Directory: The real full path of the specified folder.
- User Index: The authorization of the user is displayed.
- Status: The status of the entry is enabled or disabled.
- **Edit:** Click **Edit** in the table, and then you can modify the entry.

To add a new folder, follow the instructions below.

1. Click Add New Folder in Figure 4-110.

page allow you to set a sh	ared folder and access authorizati	ion for Ftp services!	
	Directory: /	Browse	
	User Access Control Table:		
	Index	Username	AccessAuthorization
	1*	1	Full-Access
	2		
	3		
	4		
	5		

Figure 4-111

- 2. Click the Browse button, and then select the Select Volume from the drop-down list.
- 3. Enter display name of the share folder in **Share Name** filed.
- 4. Click the **Save/Apply** button to apply the settings.

You can click the **upper** button to go to the upper folder.

Click the **Enable/Disable Selected** button to enable or disable the selected entries.

Click the **Delete Selected** button to delete the selected entries.

#### P Note:

- 1. The max share folders number is 10. If you want to share a new folder when the number has reached 10, you can delete an existing share folder and then add a new one.
- 2. If you want to change the FTP settings, you can click the Apply button to make the changes take effect.

#### 4.9.5 Media Server

Choose menu "USB Settings"→"Media Server", you can create media server that allows you to share stored content with other computers and devices on your home network and on the Internet.

Media Server Settings	
Server Enal Server Nar Content Sc	MediaShare: 1
	Save/Apply

Figure 4-112

- **Server Enable**: Select this box to enable this function.
- Server Name: The name of this Media Server.

#### To add a new share folder for your media server, please follow the instructions below:

a) Click **Add New Folder** button, and you will see the screen as shown in Figure 4-113.

Folder Browse		
Share Name: Directory:	/ Browse	
		Save/Apply

Figure 4-113

- b) Enter the name of the share folder in **Share Name** field.
- c) Click the **Save/Apply** button to apply the configuration.
- d) Click the Scan Now to scan all the share folders immediately. You can also select the Auto-Scan, at same time, select an auto scan interval time by drop-down list. In this case, the media server will auto scan the share folders.

# ■ Note:

The max share folders number is 6. If you want share a new folder when the numbers has been reached to be 6, you can delete a share folder and then add a new one.

#### 4.9.6 Print Server

Choose menu "USB Settings"→"Print Server", you can configure print server on this page as shown below.

Print Server Settings	
Server Status: Online Stop	

Figure 4-114

There are three states of the print server, they are as follows:

- Online: Indicates the print service has been turned on, and no user is using the print services at present. You can click the "Stop" button to stop the print service.
- Offline: Indicates the print service feature is disabled. You can click "Start" button to start the print service.
- Busy: Indicates the print service has been turned on, but at this moment other users are using print services.

# 4.10 Diagnostics

Choose "Diagnostics", you will see the Diagnostics screen. This section describes the result of the test for the ENET (Ethernet) Connection, Wireless Connection and ADSL Synchronization. You can refer to the Help menu to get more information about the corresponding test.

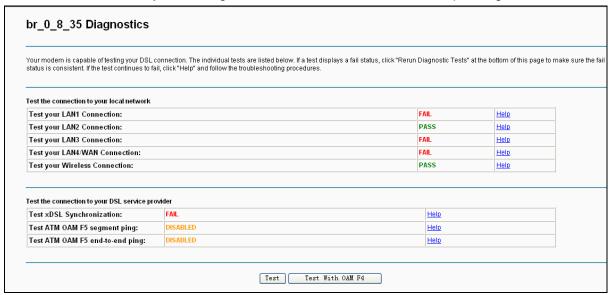


Figure 4-115

#### 4.11 Management

Choose "Management", there are eight submenus under the main menu. They are Settings, System Log, SNMP Agent, TR-069 Client, Internet Time, Access Control, Update Firmware and **Reboot**. Click any of them, and you will be able to configure the corresponding function.



# 4.11.1 Settings

This section provides three important functions for managing the modem router: **Export**(Backup), Import(Update) and Restore Default. The detailed manipulations are described below.

# 4.11.1.1 Export

Choose "Management"→"Settings"→"Export", you can see the Export screen, this screen (shown in Figure 4-116) allows you to save the current configuration of the modem router as a backup file.

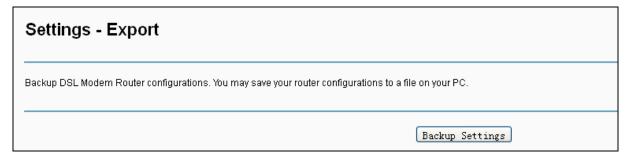


Figure 4-116

# To back up the modem router's current settings:

Click the Backup Settings button on the preceding screen (pop-up Figure 4-116), the following screen will then appear (shown in Figure 4-117).



Figure 4-117

2. Click the **Save** button, and save the file as the appointed file (shown in Figure 4-118).

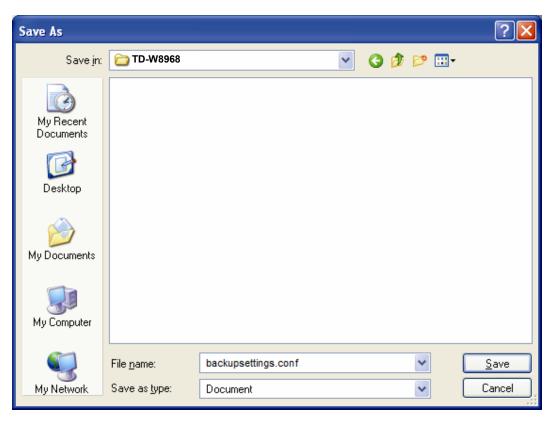


Figure 4-118

#### 4.11.1.2 Import

Choose "Management"→"Settings"→"Import", you can see the Import screen, this screen (shown in Figure 4-119) allows you to update the modem router's settings.

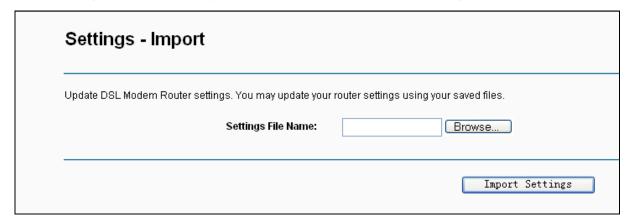


Figure 4-119

# To update the modem router's settings:

- 1. Click the **Browse** button to locate the update file for the device, and you can also enter the exact path to the Setting file in the text box.
- 2. After you have selected the file for updating the settings, click the **Import Settings** button.

# ✓ Note:

The modem router will reboot upon completion. This process will take a while, don't turn off the modem router or press the **Reset** button while processing.

#### 4.11.1.3 Restore Default

Choose "Management"→"Settings"→"Restore Default", you can see the Restore Default screen, this screen (shown in Figure 4-120) allows you to restore the modem router's configuration to the factory defaults on the screen.

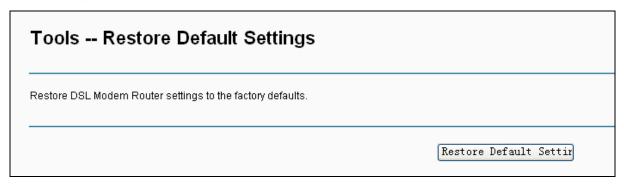


Figure 4-120

- Restore Default Settings: Click this button to restore the modem router's configuration to the factory defaults, and then follow the on-screen instructions to complete it.
- Account and Password: The default user name and its password are both admin.
- $\triangleright$ The default IP Address: 192.168.1.1.
- The default **Subnet Mask:** 255.255.255.0.

# 4.11.2 System Log

Choose "Management"→"System Log", you can see the System Log screen, this screen (shown in Figure 4-121) allows you to view the system log and configure the system log options.

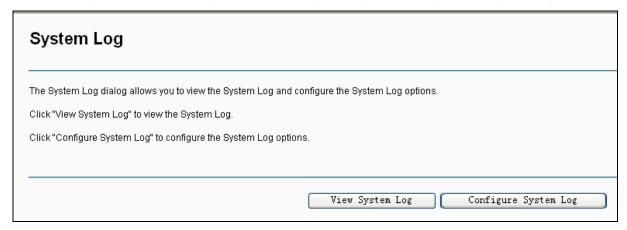


Figure 4-121

# To view the System Log:

Click the View System Log button, you will see the screen (shown in Figure 4-122) which displays the modem router's recent logs.



Figure 4-122

- **Refresh:** Click the button, the information in the table will be updated.
- **Back:** Click the button, the screen will back to the previous page.

# To configure the System Log settings:

Click the Configure System Log button (shown in Figure 4-121), you will see the screen below (shown in Figure 4-123).

System Log Configuration	
	ne selected events. For the Log Level, all events above or equal to the selected level will be logged. For the Display Level, all logged events above ad mode is 'Remote' or 'Both,' events will be sent to the specified IP address and UDP port of the remote syslog server. If the selected mode is '.
Select the desired values and click 'Save/Apply' to configure	the system log options.
Log:	⊙ Disable ○ Enable
Log Level: Display Level: Mode:	Debugging  Error  Local
	Save/Apply

Figure 4-123

- Disable/Enable: Select the Enable to log the events, if you don't want to log these events, please select Disable.
- Log Level: Select the Log level in the drop-down list, for the Log level, all events above or equal to the selected level will be logged.
- Display Level: Select the Display level in the drop-down list, for the Display Level, all logged events above or equal to the selected level will be displayed.
- Mode: Select the mode to record the events. If the selected mode is Local, events will be recorded in the local memory. If the selected mode is Remote, events will be sent to the specified IP address and UDP port of the remote system log server. If the selected mode is Both, events will be sent to the local memory and the remote system log server.

# 4.11.3 SNMP Agent

Choose "Management" → "SNMP Agent", you can see the SNMP-Configuration screen as shown below.

**SNMP** (Simple Network Management Protocol) has been widely applied in the computer networks currently, which is used for ensuring the transmission of the management information between any two nodes. In this way, network administrators can easily search and modify the information on any node on the network. Meanwhile, they can locate faults promptly and implement the fault diagnosis, capacity planning and report generating.

An SNMP Agent is an application running on the router that performs the operational role of receiving and processing SNMP messages, sending responses to the SNMP manager, and sending traps when an event occurs. So a router contains SNMP "agent" software can be monitored and/or controlled by SNMP Manager using SNMP messages.

An SNMP Manager or SNMP Service is an application that performs the operational roles of generating SNMP messages/requests to modify and retrieve management information, and receiving the requested information and trap-event reports that are generated by the SNMP agent. SNMP Manager is the third-party management system. Monitor one is an SNMP Manager.

SNMP - Configuration			
Simple Network Management Protocol (SNMP) allows a ma	nagement app	lication to retrie	ve statistics and status from the SNMP agent in this device.
Select the desired values and click "Save/Apply" to configure	e the SNMP opt	ions.	
SNMP Agent:	<ul><li>Disable</li></ul>	Enable	
Read Community:	public		
Set Community:	private		
System Name:	TP-LINK		
System Location:	unknown		
System Contact:	unknown		
Trap Manager IP:	0.0.0.0		
			Save/Apply

Figure 4-124

> SNMP Agent: You can select the checkbox to disable or enable the function.

# **☞** Note:

SNMP Community string provides a simple method of authentication between the router (SNMP Agent) and a remote network manager (SNMP Manager). You can specify the community string as the password to authenticate the management station to the router.

- > Read Community: This field allows you to specify the SNMP Community string which provides read-only access to the router that the community is only permitted to read the device configuration. The default value is "public".
- > Set Community: This field allows you to specify the SNMP Community string which provides read and write access to the router that the community has the authority to read and change the device configuration. The default value is "private".
- > System Name: Enter alphanumeric string to specify an SNMP community string name. Your router (SNMP agents) will expose management data on the managed systems as this "system name".
- > System Location: The person to notify when problems occur.
- > System Contact: The location of the person that is identified as the system contact.
- > Trap Manager IP: Enter the IP address of the SNMP Manager, where the SNMP Agent forwards trap notifications.

Select the desired values and click **Save/Apply** to configure the SNMP options.

#### 4.11.4 TR-069 client

Choose "Management" → "TR-069 client", you can see the TR-069 client - Configuration screen as shown below.

TR-069 (WAN Management Protocol) allows a Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device.

WAN Management Protocol (TR-069) allows a Auto-Config	uration Server (ACS) to perfor	rm auto-configuration, provision, collection, and diagnostics t
Select the desired values and click "Apply/Save" to configu	re the TR-069 client options.	
Inform	⊙ Disable ○ Enable	
Inform Inter∨al:	300	
ACS URL:		
ACS User Name:	admin	
ACS Password:	••••	
WAN Interface used by TR-069 client:	Any_WAN 🕶	
Display SOAP messages on serial console	Disable	
Connection Request Authentication		
Connection Request User Name:	admin	
Connection Request Password:	*****	
Connection Request URL:		

Figure 4-125

- > Inform: You can select the checkbox to disable or enable the Inform Interval.
- ➤ **Inform Interval:** Type the interval time of your modem router contact with the **ACS**.
- > ACS URL: Please accept this information from your ISP. And through ACS (Auto-Configuration Server) you can perform auto-configuration, provision, collection, and diagnostics to this modem router.
- > ACS User Name: Please accept this User Name information from your ISP.
- ACS Password: Please accept the Password information from your ISP.

#### P Note:

If you want to log on the ACS, you must own the ACS User Name and ACS Password.

- > WAN Interface used by TR-069 Client: Please select the WAN Interface from the drop-down list to perform this function.
- > Connection Request User Name: Type the Connection Request User Name, set it yourself.
- > Connection Request Password: Type the Connection Request Password, set it yourself.

#### P Note:

The Connection Request User Name and Connection Request Password used for ACS log on the router and manage it.

Select the desired values and click **Save/Apply** to configure the TR-069 client options.

#### 4.11.5 Internet Time

Choose "Management"→"Internet Time", you can see the Time settings screen as shown below. Here you can configure the time of the modem router.

Thu Jan 1 00:03:30 1970
Fri Jan 23 09:38:28 2015
Synchronize with PC
1970/01/01
00:03:30
1970 Apr v 1st v Wed v 01:00 v
1970 Oct   Last   Thu   02:00
time.nist.gov ▼
ntp1.tummy.com ▼
None -
None ▼
None
(GMT-00:00) Greenwich Mean Time; Dublin, Edinburgh, London, Lisbon

Figure 4-126

**Enable DST:** Select the checkbox to enable daylight saving function.

# 4.11.6 Access Control



There are two submenus under the Access Control menu: Passwords and Remote Access. The detailed explanations for each submenu are provided below.

#### 4.11.6.1 Passwords

Choose "Management"→"Access Control"→"Passwords", you can see the screen (shown in Figure 4-127) which allows you to change the factory default password of the modem router. The default password is the same as the user name, which is admin/admin, support/support, and user/user respectively.

Access Control Passwords	
Use the fields below to enter up to 16 characters and click "Save/Apply	
Old Password:  New Password:  Confirm Password:	Save/Apply

Figure 4-127

# To change the password:

- 1. Select the **Username** whose password you want to change.
- 2. Enter the **Old Password** in the text box.
- 3. Enter the New Password and Confirm Password. The Confirm Password should be the same as the New Password.
- 4. Click **Save/Apply** to make your change take effect.

# **☞** Note:

- 1) Access to your DSL modem router is controlled through two user accounts: admin and user. The user name "admin" has unrestricted access to change and view configuration of your DSL modem router. The user name "user" can access the DSL modem router, view configuration settings and statistics, as well as, update the modem router's software.
- 2) Admin accounts can do remote management. For security reasons, please change the default password for this account when remote access function is enabled.
- 3) The password cannot contain a space, and its maximum length is 16 characters.

#### 4.11.6.2 Remote Access

Choose "Management"→"Access Control"→"Remote Access", you can see the screen (shown in Figure 4-128) which allows you to change the factory default password of the modem router.

ccess your DSL Modem Router by WAN side through use	r account ( admin ).
Selected WAN Interface:	ppp1 ▼
Web:	
Telnet:	
ICMP(ping):	

Figure 4-128

- **Web:** Select this box, you can access your modem router via web.
- **Telnet:** Select this box, you can access your modem router via command line.
- ICMP(ping): Select this box, PC in public network can ping the WAN address of the modem router.

Click **Save/Apply** to make your change take effect.

# 4.11.7 Upgrade Firmware

Choose "Management" → "Upgrade Firmware", you can see the screen (shown in Figure 4-129) which allows you to upgrade the latest version software to keep the modern router up to date.

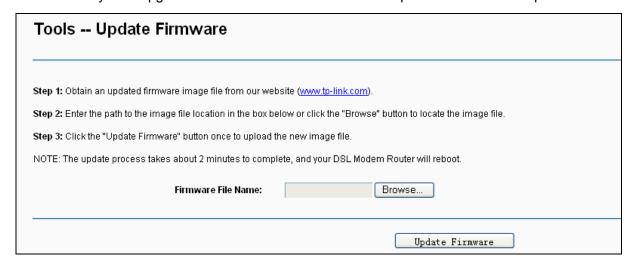


Figure 4-129

- **Browse:** Click the button to locate the latest software for the device.
- Update Firmware: After you have selected the latest software, click the button.

# To update the modem router's software:

Download the latest software upgrade file from the TP-LINK website (<a href="http://www.tp-link.com">http://www.tp-link.com</a>).

- 2. Click **Browse** to view the folders and select the image file or enter the exact path to the image file location in the text box.
- 3. Click the **Update Firmware** button.

#### P Note:

- 1) There is no need to upgrade the firmware unless the new firmware has a new feature you want to use. However, when experiencing problems caused by the modem router itself, you can try to upgrade the firmware.
- 2) Before upgrading the modem router's firmware, you should write down some of your customized settings to avoid losing important configuration settings of the modem router.
- 3) Do not turn off the modern router or press the RESET button while the software is being updated.
- 4) The modem router will reboot after the Upgrading is finished.

#### 4.11.8 Reboot

Choose "Management" → "Reboot", you can see the screen (shown in Figure 4-130) which allows you to reboot the modem router.

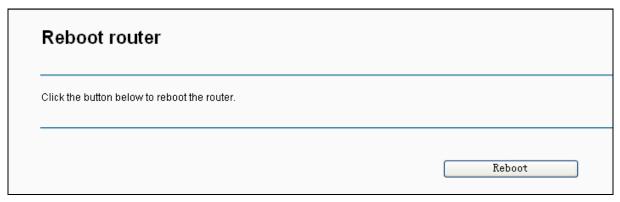


Figure 4-130

# P Note:

- 1) After you clicked the **Reboot** button, please wait for a while before reopening your web browser.
- 2) Do not turn off the modem router or press the RESET button while the modem router is
- 3) If necessary, reconfigure your PC's IP address to match your new configuration.

#### 4.12 Logout

Choose "Logout", and you will back to the login screen as shown in Figure 4-131.



Figure 4-131

# **Appendix A: Specifications**

General		
Standards and Protocols	ANSI T1.413, ITU G.992.1, ITU G.992.2, ITU G.992.3, ITU G.992.5, IEEE 802.3, IEEE 802.3u, IEEE 802.11b , IEEE 802.11g , 802.11n TCP/IP, IPoA , PPPoA , PPPoE, SNTP, HTTP, DHCP, ICMP, NAT	
Safety & Emissions	FCC, CE	
Ports	Four 10/100M Auto-Negotiation RJ45 ports (Auto MDI/MDIX) One RJ11 port One USB 2.0 port	
LEDs	U Power, ♥ ADSL, ♥ Internet, ❤ WLAN, ♠ WPS, ❤ USB,  1,2,3,4(LAN),	
Network Medium	10Base-T: UTP category 3, 4, 5 cable 100Base-TX: UTP category-5 Max line length: 6.5Km	
Data Rates	Downstream: Up to 24Mbps Upstream: Up to 3.5Mbps (With Annex M enabled)	
System Requirement	Internet Explorer 5.0 or later, Netscape Navigator 6.0 or later Win 9x/ ME/ 2000/ XP/ Vista/ 7/ 8	
Physical and Environment		
Working Temperature	0°C ~ 40°C	
Working Humidity	10% ~ 90% RH (non-condensing)	
Storage Temperature	-40°C ~ 70°C	
Storage Humidity	5% ~ 90% RH (non-condensing)	

# **Appendix B: Troubleshooting**

# T1. What can I do if I don't know or forget my password?

- 1) For default wireless password: Please refer to the "Wireless Password/PIN" labeled on the bottom of the modem router.
- 2) For the web management page password: Reset the modem router first and then use the default user name and password: admin/admin.

# T2. How do I restore my modem router's configuration to its factory default settings?

With the modem router powered on, press and hold the **RESET** button on the rear panel for 8 to 10 seconds before releasing it.

#### P Note:

Once the modem router is reset, the current configuration settings will be lost and you will need to re-configure the router.

# T3. What can I do if I cannot access the web-based configuration page?

1) Configure your computer's IP Address.

# For Mac OS X

- Click the Apple icon on the upper left corner of the screen.
- Go to "System Preferences -> Network".
- Select Airport on the left menu bar, and then click Advanced for wireless configuration; or select Ethernet for wired configuration.
- In the Con-figure IPv4 box under TCP/IP, select Using DHCP.
- Click Apply to save the settings.

#### For Windows 7

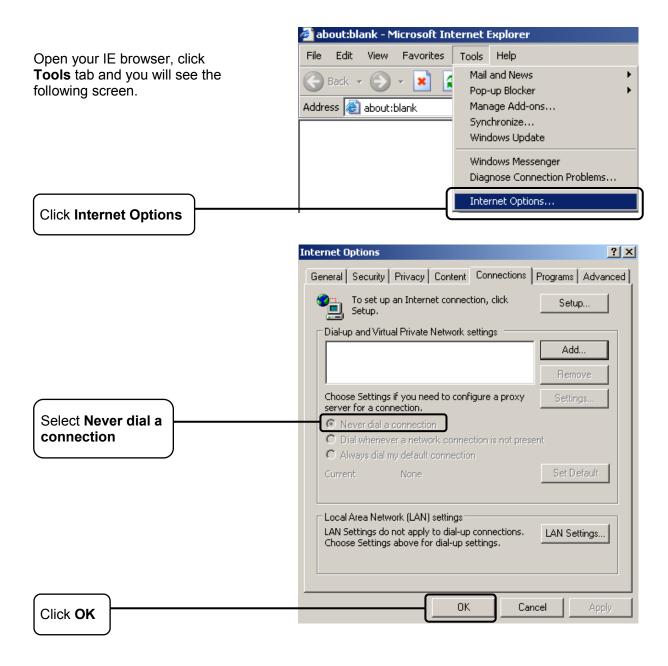
- Click "Start -> Control Panel -> Network and Internet -> View network status -> Change adapter settings".
- Right-click Wireless Network Connection (or Local Area Connection), and then click Properties.
- Select Internet Protocol Version 4 (TCP/IPv4), and then click Properties.
- Select Obtain an IP address automatically and Obtain DNS server address automatically.
   Then click OK.

#### **For Windows XP**

- Click "Start -> Control Panel -> Network and Internet Connections -> Network Connections".
- Right-click Wireless Network Connection (or Local Area Connection), and then click Properties.
- Select Internet Protocol (TCP/IP), and then click Properties.
- Select Obtain an IP address automatically and Obtain DNS server address automatically.
   Then click OK.

#### For Windows 8

- Move your mouse to the lower right corner and you will see Search icon in the Popups.
   Go to " -> Apps". Type Control Panel in the search box and press Enter, then you will go to Control Panel.
- Click "View network status and tasks > Change adapter settings".
- Right-click "Ethernet" and then select Properties.
- Double-click Internet Protocol Version 4 (TCP/IPv4). Select Obtain an IP address automatically, choose Obtain DNS server address automatically and then click OK.
- 2) Configure your IE browser



Now, try to log on to the Web-based configuration page again after the above settings have been configured. If you still cannot access the configuration page, please restore your modem router's factory default settings and reconfigure your modem router following the instructions in 3.2 Quick Installation Guide. Please feel free to contact our Technical Support if the problem still exists.

#### T4. What can I do if I cannot access the Internet?

- 1) Check to see if all the connectors are connected well, including the telephone line, Ethernet cables and power adapter.
- 2) Check to see if you can log on to the web management page of the modem router. If you can, try the following steps. If you cannot, please set your computer referring to T3 then try to see if you can access the Internet. If the problem persists, please go to the next step.
- 3) Consult your ISP and make sure all the VPI/VCI, Connection Type, account username and password are correct. If there are any mistakes, please correct the settings and try again.
- 4) If you still cannot access the Internet, please restore your modem router to its factory default settings and reconfigure your modern router by following the instructions in 3.2 Quick Installation Guide.
- 5) Please feel free to contact our Technical Support if the problem still exists.

# T5. How can I configure the USB features?

Please refer to our Application Guides. They can be found on the resource CD, or on the web.

- 1) CD Access: Open Resource CD and find the folder named "Application Guide". The guides can be found inside this folder.
- 2) Web Access: http://www.tp-link.com/app/usb.

#### Note:

For more details about Troubleshooting and Technical Support contact information, please log on to our Technical Support Website: http://www.tp-link.com/en/support.

# **Appendix C: Technical Support**

# **Technical Support**

■ For more troubleshooting help, go to:

http://www.tp-link.com/en/support/faq

■ To download the latest Firmware, Driver, Utility and User Guide, go to:

http://www.tp-link.com/en/support/download

■ For all other technical support, please contact us by using the following details:

#### <u>Global</u>

Tel: +86 755 2650 4400

Fee: Depending on rate of different carriers, IDD.

E-mail: support@tp-link.com Service time: 24hrs, 7 days a week

#### **USA/Canada**

Toll Free: +1 866 225 8139

E-mail: support.usa@tp-link.com(USA) support.ca@tp-link.com(Canada) Service time: 24hrs, 7 days a week

#### **Turkey**

Tel: 0850 7244 488 (Turkish Service) Fee: Depending on rate of different carriers.

E-mail: support.tr@tp-link.com

Service time: 09:00 to 21:00, 7 days a week

#### Ukraine

Tel: 0800 505 508

Fee: Free for Landline; Mobile: Depending on

rate of different carriers E-mail: support.ua@tp-link.com

Service time: Monday to Friday, 10:00 to 22:00

#### **Brazil**

Toll Free: 0800 608 9799 (Portuguese Service)

E-mail: suporte.br@tp-link.com

Service time: Monday to Friday, 09:00 to 20:00;

Saturday, 09:00 to 15:00

# <u>Indonesia</u>

Tel: (+62) 021 6386 1936

Fee: Depending on rate of different carriers.

E-mail: support.id@tp-link.com

Service time: Sunday to Friday, 09:00 to 12:00, 13:00 to 18:00 \*Except public holidays

#### Australia/New Zealand

Tel: NZ 0800 87 5465 (Toll Free)

AU 1300 87 5465 (Depending on 1300 policy.) E-mail: support.au@tp-link.com (Australia) support.nz@tp-link.com (New Zealand) Service time: 24hrs, 7 days a week

#### Germany/Austria

Tel: +49 1805 875 465 (German Service)

+49 1805 TPLINK +43 820 820 360

Fee: Landline from Germany: 0.14EUR/min.

Landline from Austria: 0.20EUR/min.

E-mail: support.de@tp-link.com

Service time: Monday to Friday, 09:00 to 12:30 and 13:30 to 18:00. GMT+1 or GMT+2 (DST in

Germany)

\*Except bank holidays in Hesse

#### **Singapore**

Tel: +65 6284 0493

Fee: Depending on rate of different carriers.

E-mail: support.sg@tp-link.com Service time: 24hrs, 7 days a week

#### UK

Tel: +44 (0) 845 147 0017

Fee: Landline: 1p-10.5p/min, depending on the time of day. Mobile: 15p-40p/min, depending on your

mobile network.

E-mail: support.uk@tp-link.com Service time: 24hrs, 7 days a week

#### <u>Italy</u>

Tel: +39 023 051 9020

Fee: Depending on rate of different carriers.

E-mail: support.it@tp-link.com

Service time: Monday to Friday, 09:00 to 13:00;

14:00 to 18:00

#### <u>Malaysia</u>

Toll Free: 1300 88 875 465 Email: support.my@tp-link.com Service time: 24hrs, 7 days a week

#### **Poland**

Tel: +48 (0) 801 080 618

+48 223 606 363 (if calls from mobile phone) Fee: Depending on rate of different carriers.

E-mail: support.pl@tp-link.com

Service time: Monday to Friday, 09:00 to 17:00.

GMT+1 or GMT+2 (DST)

#### France

Tel: 0820 800 860 (French service) Fee: 0.118 EUR/min from France Email: support.fr@tp-link.com

Service time: Monday to Friday, 09:00 to 18:00

\*Except French Bank holidays

#### **Switzerland**

Tel: +41 (0) 848 800 998 (German Service)

Fee: 4-8 Rp/min, depending on rate of different

time.

E-mail: support.ch@tp-link.com

Service time: Monday to Friday, 09:00 to 12:30 and

13:30 to 18:00. GMT+1 or GMT+2 (DST)

#### **Russian Federation**

Tel: 8 (499) 754 5560 (Moscow NO.) 8 (800) 250 5560 (Toll-free within RF)

E-mail: support.ru@tp-link.com

Service time: From 09:00 to 21:00 (Moscow time)

\*Except weekends and holidays in RF