TP-LINK®

User Guide

TL-WR842N

300Mbps Multi-Function Wireless N Router

Rev: 4.0.1

1910011575

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 © 2016 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

CE1588

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.

Canadian Compliance Statement

This device complies with Industry Canada license-exempt RSSs. 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.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil nedoit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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.

CAN ICES-3 (B)/NMB-3(B)

Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

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。

安全諮詢及注意事項

- 請使用原裝電源供應器或只能按照本產品注明的電源類型使用本產品。
- 清潔本產品之前請先拔掉電源線。請勿使用液體、噴霧清潔劑或濕布進行清潔。
- 注意防潮，請勿將水或其他液體潑灑到本產品上。
- 插槽與開口供通風使用，以確保本產品的操作可靠並防止過熱，請勿堵塞或覆蓋開口。
- 請勿將本產品置放於靠近熱源的地方。除非有正常的通風，否則不可放在密閉位置中。
- 請不要私自打開機殼，不要嘗試自行維修本產品，請由授權的專業人士進行此項工作。

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	IE	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 Multi-Function Wireless N Router**
Model No.: **TL-WR842N**
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 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 +A2: 2013

EN 50385: 2002

The product carries the CE Mark:

CE1588

Person is responsible for marking this declaration:

Yang Hongliang
Product Manager of International Business

Date of issue: 17/08/2015

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

Package Contents **1**

Chapter 1. Introduction **2**

1.1 Overview of the Router 2

1.2 Conventions 3

1.3 Main Features 3

1.4 Panel Layout 4

1.4.1 The Front Panel 4

1.4.2 The Rear Panel 5

Chapter 2. Connecting the Router **6**

2.1 System Requirements 6

2.2 Installation Environment Requirements 6

2.3 Connecting the Router 6

Chapter 3. Quick Installation Guide **8**

3.1 TCP/IP Configuration 8

3.2 Quick Installation Guide 9

Chapter 4. Configuring the Router **17**

4.1 Login 17

4.2 Status 17

4.3 Quick Setup 18

4.4 WPS 19

4.5 Network 21

4.5.1 WAN 21

4.5.2 MAC Clone 31

4.5.3 LAN 32

4.6 Wireless 33

4.6.1 Wireless Settings 33

4.6.2 Wireless Security 36

4.6.3 Wireless MAC Filtering 38

4.6.4 Wireless Advanced 41

4.6.5 Wireless Statistics 42

4.7 Guest Network 43

4.7.1 Wireless Settings 43

4.7.2 Storage Sharing 44
4.8 DHCP 45
4.8.1 DHCP Settings 46
4.8.2 DHCP Clients List 47
4.8.3 Address Reservation 47
4.9 VPN 48
4.9.1 IKE 49
4.9.2 IPsec 50
4.9.3 Security Alliance List 52
4.10 USB Settings 53
4.10.1 Storage Sharing 54
4.10.2 FTP Server 55
4.10.3 Media Server 57
4.10.4 Print Server 60
4.10.5 User Accounts 60
4.11 Forwarding 62
4.11.1 Virtual Servers 62
4.11.2 Port Triggering 64
4.11.3 DMZ 66
4.11.4 UPnP 67
4.12 Security 68
4.12.1 Basic Security 68
4.12.2 Advanced Security 70
4.12.3 Local Management 71
4.12.4 Remote Management 72
4.13 Parental Control 73
4.14 Access Control 76
4.14.1 Rule 77
4.14.2 Host 82
4.14.3 Target 84
4.14.4 Schedule 86
4.15 Advanced Routing 88
4.15.1 Static Routing List 88
4.15.2 System Routing Table 89
4.16 Bandwidth Control 90
4.16.1 Control Settings 90

4.16.2 Rules List 91
4.17 IP & MAC Binding Setting 92
4.17.1 Binding Settings 92
4.17.2 ARP List 93
4.18 Dynamic DNS 94
4.18.1 Comexe DDNS 94
4.18.2 Dyndns DDNS 95
4.18.3 No-IP DDNS 96
4.19 IPv6 Support 97
4.19.1 IPv6 Status 98
4.19.2 IPv6 Setup 99
4.20 System Tools 107
4.20.1 Time Setting 107
4.20.2 Diagnostic 109
4.20.3 Firmware Upgrade 111
4.20.4 Factory Defaults 112
4.20.5 Backup & Restore 112
4.20.6 Reboot 113
4.20.7 Password 114
4.20.8 System Log 114
4.20.9 Statistics 117
4.21 Logout 119
Appendix A: FAQ 120
Appendix B: Configuring the PCs 126
Appendix C: Specifications 130
Appendix D: Glossary 131

Package Contents

The following items should be found in your package:

- TL-WR842N 300Mbps Multi-Function Wireless N Router
- DC Power Adapter for TL-WR842N 300Mbps Multi-Function Wireless N Router
- Quick Installation Guide
- Ethernet Cable

☞ **Note:**

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

Chapter 1. Introduction

1.1 Overview of the Router

The TL-WR842N 300Mbps Multi-Function Wireless N Router integrates 4-port Switch, Firewall, NAT-Router and Wireless AP. Powered by 2x2 MIMO technology, the 300Mbps Multi-Function 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. Additionally, the TL-WR842N provides a USB port which supports storage/FTP/Media/Print Server.

Incredible Speed

The TL-WR842N 300Mbps Multi-Function Wireless N 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 Router will give you the unexpected networking experience at speed much faster than 802.11g. It is also compatible with all IEEE 802.11g and IEEE 802.11b products.

Multiple Security Protections

With multiple protection measures, including SSID broadcast control and wireless LAN 64/128/152-bit WEP encryption, Wi-Fi Protected Access (WPA2- PSK, WPA- PSK), as well as advanced Firewall protections, the TL-WR842N 300Mbps Multi-Function Wireless N Router provides complete data privacy.

Flexible Access Control

The TL-WR842N 300Mbps Multi-Function Wireless N 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.

Simple Installation

Since the 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 Router, please look through this guide to know all the Router's functions.

1.2 Conventions

The Router or TL-WR842N mentioned in this guide stands for TL-WR842N 300Mbps Multi-Function Wireless N Router without any explanation.

1.3 Main Features

- Complies with IEEE 802.11n to provide a wireless data rate of up to 450Mbps.
- One 10/100M Auto-Negotiation RJ45 Internet port, four 10/100M Auto-Negotiation RJ45 LAN ports, supporting Auto MDI/MDIX.
- Provides USB Port supporting storage/FTP/Media/Print Server.
- Provides WPA/WPA2, WPA-PSK/WPA2-PSK authentication, TKIP/AES encryption security.
- Up to 5 VPN tunnels enable remote VPN connections.
- Up to 2 SSIDs support multiple wireless networks with different SSIDs and passwords.
- Shares data and Internet access for users, supporting Dynamic IP/Static IP/PPPoE Internet access.
- Supports Virtual Server, Special Application and DMZ host.
- Supports UPnP, Dynamic DNS, Static Routing.
- Provides Automatic-connection and Scheduled Connection on certain time to the Internet
- Built-in NAT and DHCP server supporting static IP address distributing.
- Supports Parental Control and Access Control.
- Connects Internet on demand and disconnects from the Internet when idle for PPPoE.
- Provides 64/128/152-bit WEP encryption security and wireless LAN ACL (Access Control List).
- Supports Flow Statistics.
- Supports firmware upgrade and Web management.
- Supports Tether App management.
- Supports Guest Network.
- Supports IPV6 Internet Connection.

1.4 Panel Layout

1.4.1 The Front Panel

Figure 1-1 Front Panel sketch

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

Name	Status	Indication
(Power)	Off	Power is off.
	On	Power is on.
	Flash	The device is initializing or upgrading.
(WLAN)	Off	The Wireless function is disabled.
	On	The Wireless function is working properly.
(LAN4-1)	Off	No device are connected to the corresponding port.
	On	A device is connected to the corresponding port.
(Internet)	Off	The WAN port is not connected.
	Orange	The WAN port is connected, but there is no Internet connection.
	Green	The router is connected to the Internet.
(USB)	Off	No storage device or printer is plugged into the USB port.
	On	A storage device or printer has connected to the USB port.
(WPS)	Slow Flash	A wireless device is connecting to the network by WPS function. This process will last in the first 2 minutes.
	On	A wireless device has been successfully added to the network by WPS function.
	Quick Flash	A wireless device failed to be added to the network by WPS function.

Table 1-1 The LEDs Description

☞ **Note:**

After a device is successfully added to the network by WPS function, the WPS LED will keep on for about 5 minutes and then turn off.

1.4.2 The Rear Panel

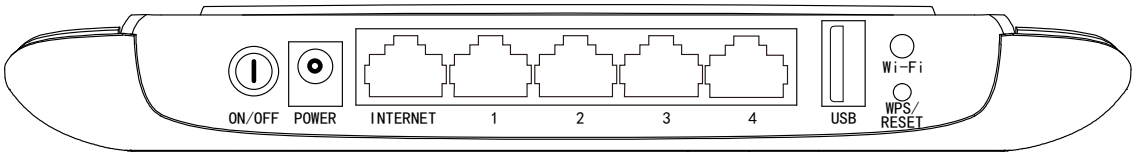


Figure 1-2 Rear Panel sketch

The following parts are located on the rear panel (View from left to right).

- **ON/OFF:** The switch of the power.
- **POWER:** The Power socket is where you will connect the power adapter. Please use the power adapter provided with this TL-WR842N 300Mbps Multi-Function Wireless N Router.
- **INTERNET:** This port is where you will connect the DSL/cable Modem, or Ethernet.
- **1,2,3,4 (LAN):** These ports (1, 2, 3, 4) connect the Router to the local PC(s).
- **USB:** The USB port connects to a USB storage device or a USB printer.
- **Wi-Fi:** With the router powered on, press and hold the Wi-Fi button (approximately 2 seconds) until the WLAN LED turns on or off.
- **WPS/RESET:** Press this button to quickly establish a connection between the Router and client devices that support Wi-Fi Protected Setup. Press and hold this button for more than 5 seconds (approximately 8 seconds) to reset the Router.

  There are two ways to reset to the Router's factory defaults:

  1) Use the **Factory Defaults** function on "**System Tools → Factory Defaults**" page in the Router's Web-based Utility.
  2) Use the Factory Default **WPS/RESET** button: With the Router powered on, use a pin to press and hold the **WPS/RESET** button (approximately 8 seconds) until the SYS LED becomes quick-flash from slow-flash. And then release the button and wait the Router to reboot to its factory default settings.
- **Wireless antenna:** To receive and transmit the wireless data.

Chapter 2. Connecting the Router

2.1 System Requirements

- Broadband Internet Access Service (DSL/Cable/Ethernet)
- One DSL/Cable Modem that has an RJ45 connector (which is not necessary if the Router is connected directly to the 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

- Place the Router in a well-ventilated place far from any heater or heating vent
- Avoid direct irradiation of any strong light (such as sunlight)
- Keep at least 2 inches (5 cm) of clear space around the Router
- Operating Temperature: 0℃~40℃ (32℉~104℉)
- Operating Humidity: 10%~90%RH, Non-condensing

2.3 Connecting the Router

If your Internet connection is through an Ethernet cable from the wall instead of through a DSL / Cable / Satellite modem, connect the Ethernet cable directly to the router's Internet port, then follow steps 4 and 5 to complete the hardware connection.

1. Turn off the modem and remove the backup battery if it has one.
2. Connect the modem to the Internet port on your router with an Ethernet cable.
3. Turn on the modem, and then wait about 2 minutes for it to restart.
4. Turn on the router.

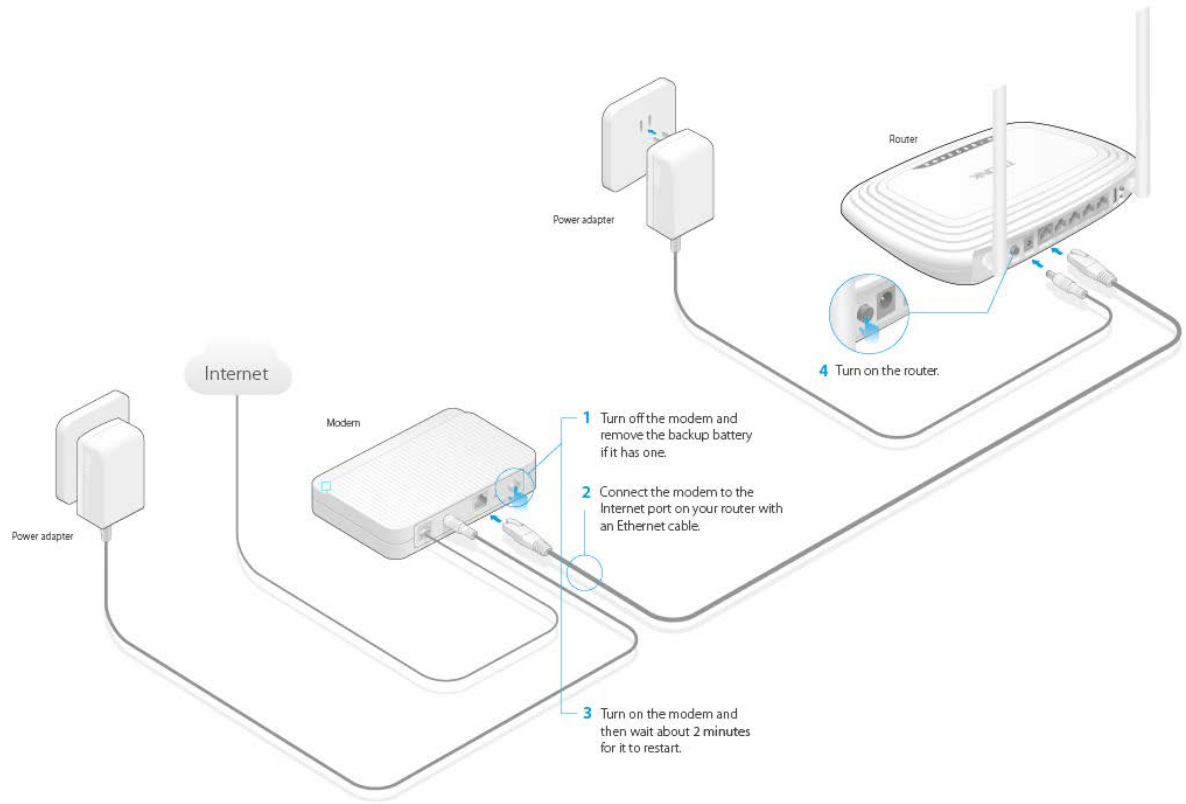


Figure 2-1 Hardware Installation

5. Verify that the hardware connection is correct by checking these LEDs.

Chapter 3. Quick Installation Guide

This chapter will show you how to configure the basic functions of your 300Mbps Multi-Function Wireless N Router using **Quick Setup Wizard** within minutes.

3.1 TCP/IP Configuration

The default domain name of the Router is http://tplinkwifi.net 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 ports of the Router and then you can configure the IP address for your PC by the following method: 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 Appendix B: "Configuring the PC". 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 between your PC and the Router. The following example is in Windows XP.

Open a command prompt, and type *ping 192.168.0.1*, and then press **Enter**.

- If the result displayed is similar to the Figure 3-1, it means the connection between your PC and the Router has been established well.

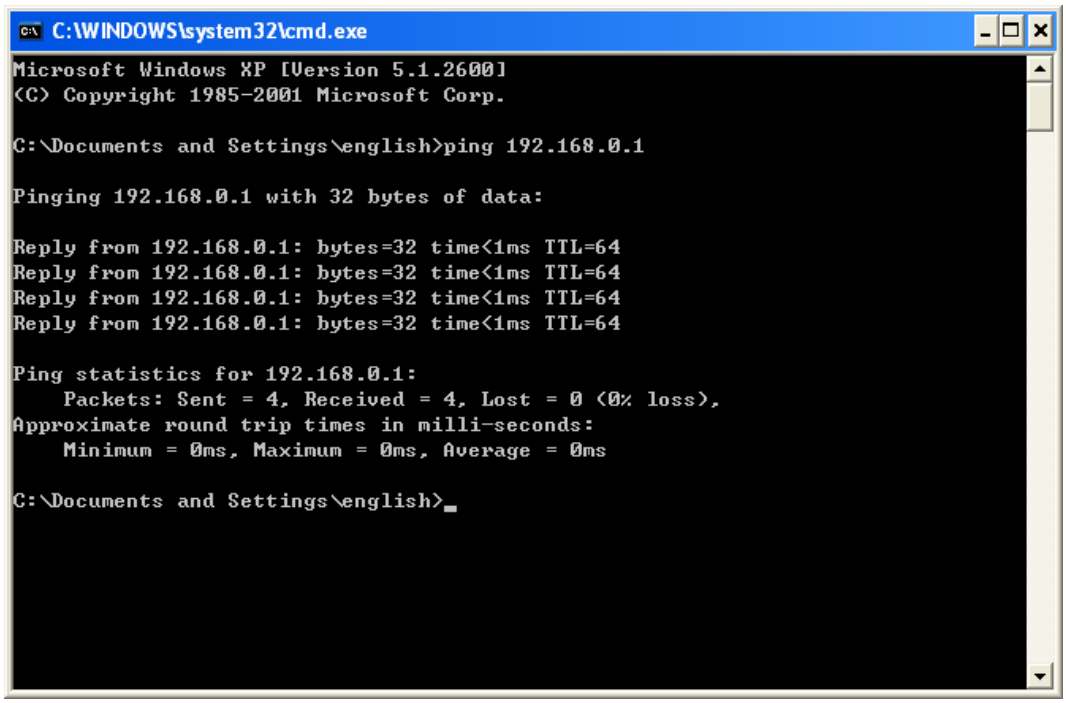


Figure 3-1 Success result of Ping command

➢ If the result displayed is similar to Figure 3-2, it means the connection between your PC and the Router failed.

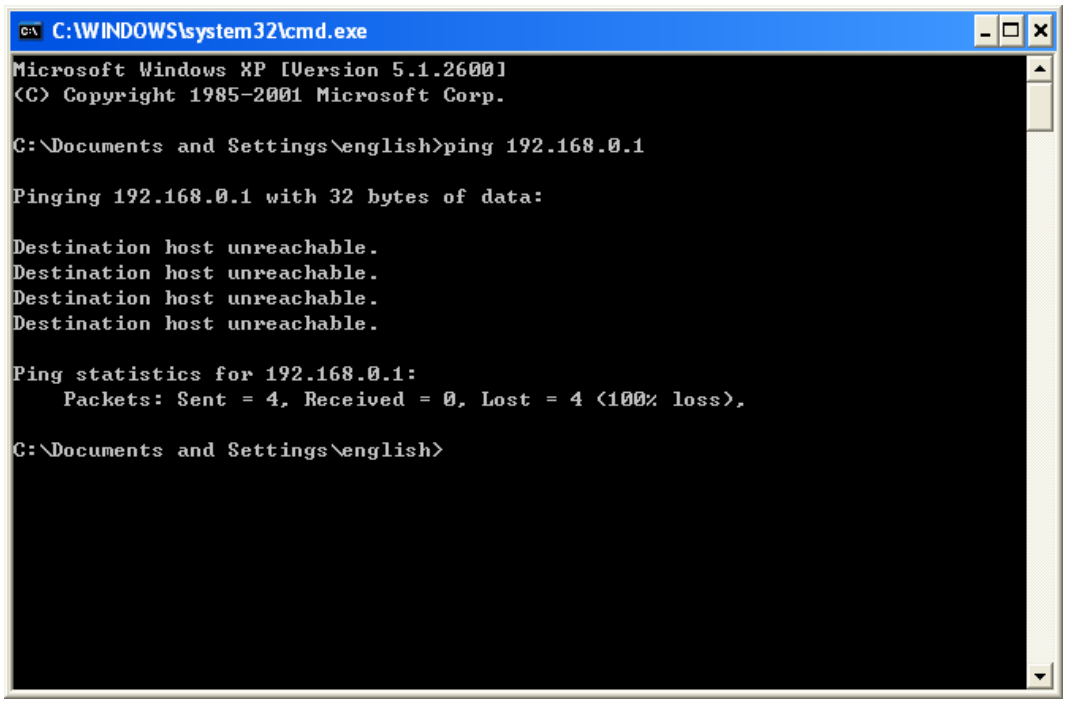


Figure 3-2 Failure result of Ping command

Please check the connection following these steps:

1. Is the connection between your PC and the Router correct?

☞ **Note:**

The 1/2/3/4 LEDs of LAN ports which you link to on the Router and LEDs on your PC's adapter should be lit.

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

☞ **Note:**

If the Router's IP address is 192.168.0.1, your PC's IP address must be within the range of 192.168.0.2 ~ 192.168.0.254.

3. Is the default LAN IP of the Router correct?

☞ **Note:**

If the LAN IP of the modem connected with your router is 192.168.0.x, the default LAN IP of the Router will automatically switch from 192.168.0.1 to 192.168.1.1 to avoid IP conflict. Therefore, in order to verify the network connection between your PC and the Router, you can open a command prompt, and type *ping 192.168.1.1*, and then press **Enter**.

3.2 Quick Installation Guide

With a Web-based utility, it is easy to configure and manage the 300Mbps Multi-Function Wireless N 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. However, as the USB

Settings interface may not be opened with some web browsers, it is strongly recommended that you use Internet Explorer.

1. To access the configuration utility, open a web-browser and type in the default domain name http://tplinkwifi.net in the address field.

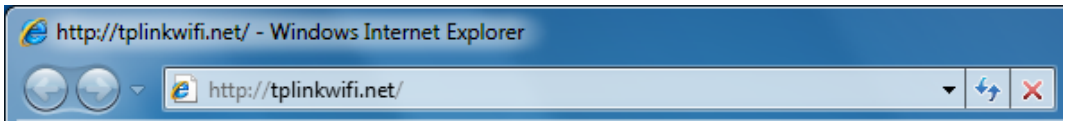


Figure 3-3 Log in the Router

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

Figure 3-4 Login Windows

Note:

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.

2. After successful login, the **Quick Setup** page will appear for you to quickly configure your router. Click **Next**.

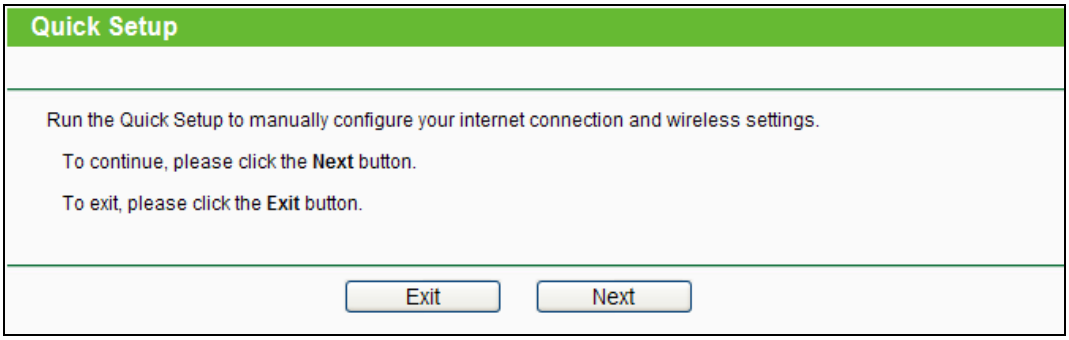


Figure 3-5 Quick Setup

☞ **Note:**

The Router will automatically detect the Internet connection. If the Internet is available, the Router will direct you to **Step 5**; otherwise, you need to continue with **Step 3**.

3. Select **Auto-Detect** to detect the Internet connection type and then click **Next**.

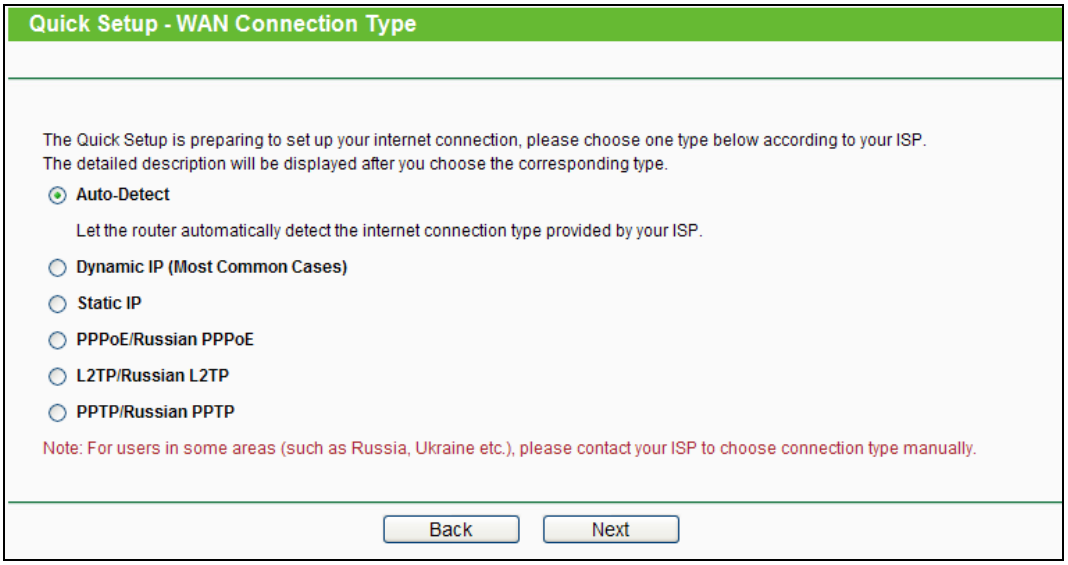


Figure 3-6 WAN Connection Type

The router provides **Auto-Detect** function and supports five types of WAN connection: **Dynamic IP**, **Static IP**, **PPPoE/Russian PPPoE**, **L2TP/Russian L2TP**, and **PPTP/Russian PPTP**. It's recommended that you make use of the **Auto-Detect** function. If you are sure of what kind of connection type your ISP provides, you can select the very type and click **Next** to go on configuring.

4. If you select **Auto-Detect**, the router will automatically detect the connection type your ISP provides. Make sure the cable is securely plugged into the Internet port before detection. The appropriate configuration page will be displayed when an active Internet service is successfully detected by the router.

   1) If the connection type detected is **Dynamic IP**, there will appear the MAC Clone page (as shown in Figure 3-7). In most cases, there is no need to clone the MAC address. You can select "**No, I do NOT need to clone MAC address**" and then click **Next**. If it is necessary in your case, please select "**Yes, I need to clone MAC address**" and then click **Next**.

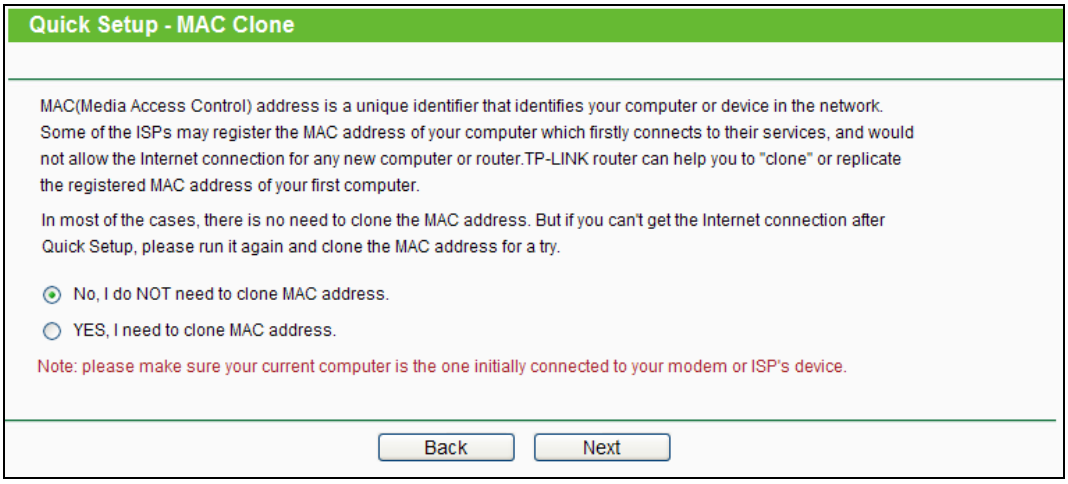


Figure 3-7 Quick Setup - MAC Clone

2) If the connection type detected is **Static IP**, the next screen will appear as shown in Figure 3-8. Configure the following parameters and then click **Next** to continue.

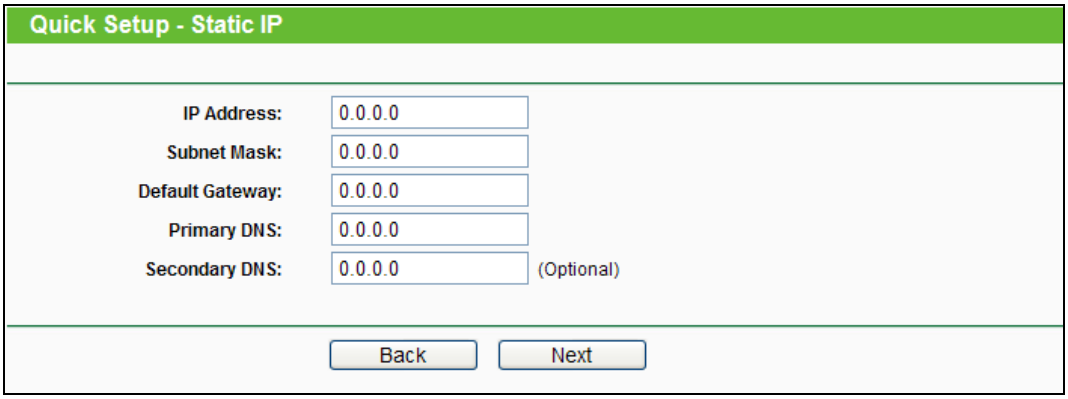


Figure 3-8 Quick Setup - Static IP

- **IP Address -** This is the WAN IP address as seen by external users on the Internet (including your ISP). Your ISP will provide you with the IP address you need to enter here. Enter the IP address into the field.
- **Subnet Mask -** The Subnet Mask is used for the WAN IP address. Your IPS will provide you with the subnet mask which is usually 255.255.255.0.
- **Default Gateway -** Your ISP will provide you with the Gateway address which is the ISP server's address. Enter the gateway IP address into the box if required.
- **Primary DNS -** Enter the DNS Server IP address into the box if required.
- **Secondary DNS -** （Optional） If your ISP provides another DNS server, enter it into this field.

3) If the connection type detected is **PPPoE/Russian PPPoE**, the next screen will appear as shown in Figure 3-9. Configure the following parameters and then click **Next** to continue.

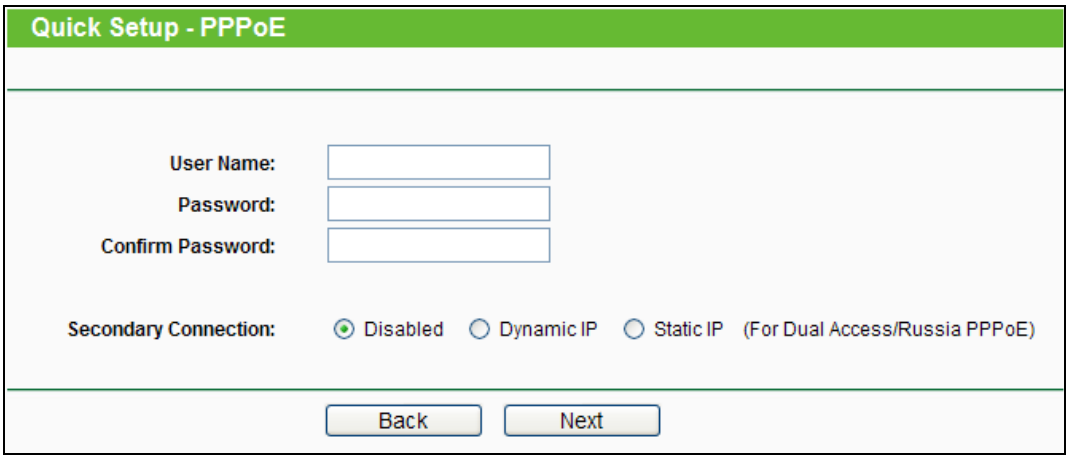


Figure 3-9 Quick Setup - PPPoE/Russia PPPoE

- **User Name/Password -** Enter the **User Name** and **Password** provided by your ISP. These fields are case-sensitive. If you have difficulty with this process, please contact your ISP.
- **Confirm Password -** Enter the password again to make sure that the password is correct.

Check the radio button of **Dynamic/Static IP** to activate the secondary connection if your ISP provides an extra Connection type such as Dynamic/Static IP to connect to a local area network.

4) If the connection type detected is **L2TP/ Russian L2TP**, the next screen will appear as shown in Figure 3-10.Configure the following parameters and then click **Next** to continue.

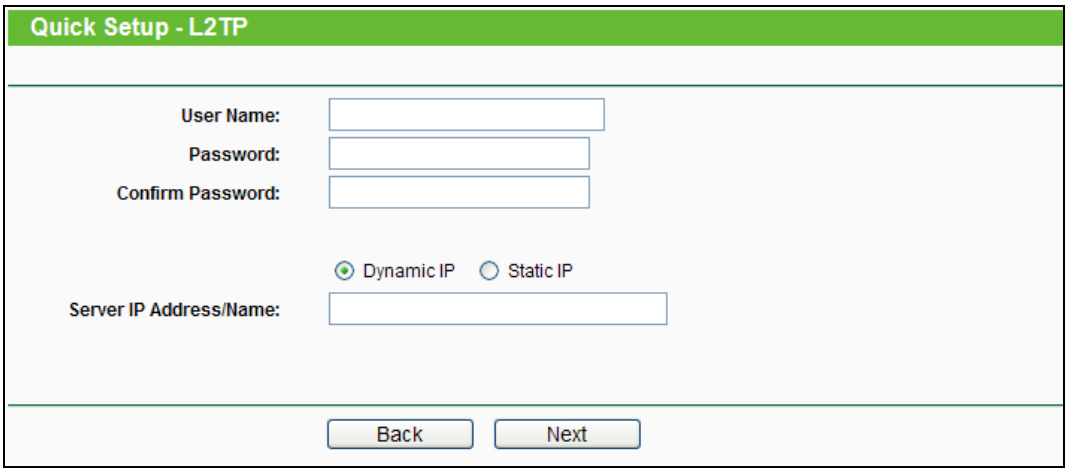
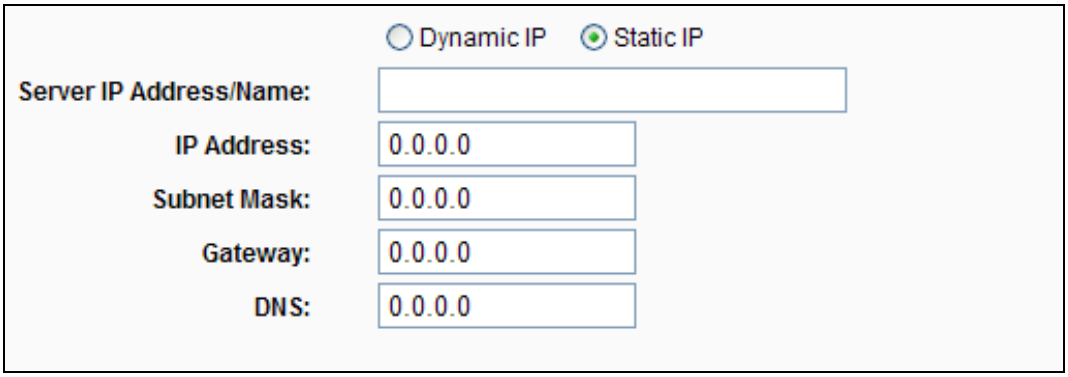


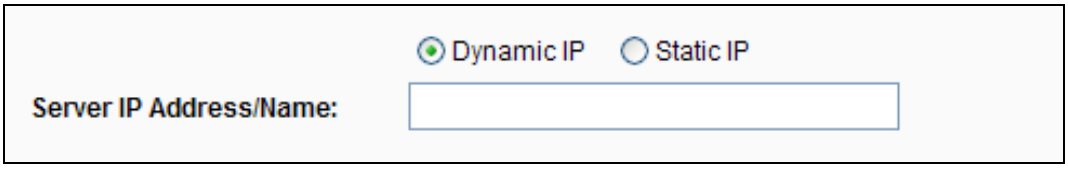
Figure 3-10 Quick Setup - PPTP/Russia PPTP

- **User Name/Password -** Enter the **User Name** and **Password** provided by your ISP. These fields are case-sensitive. If you have difficulty with this process, please contact your ISP.

Select **Static IP** if IP Address/ Subnet Mask/ Gateway and DNS server address have been provided by your ISP. Then please enter server IP address or domain name provided by your ISP, and also enter the corresponding parameters.



Select **Dynamic IP** if none of the above parameters are provided. Then you just need to enter server IP address or domain name provided by your ISP.



5) If the connection type detected is **PPTP/Russian PPTP**, the next screen will appear as shown in Figure 3-11. Configure the following parameters and then click **Next** to continue.

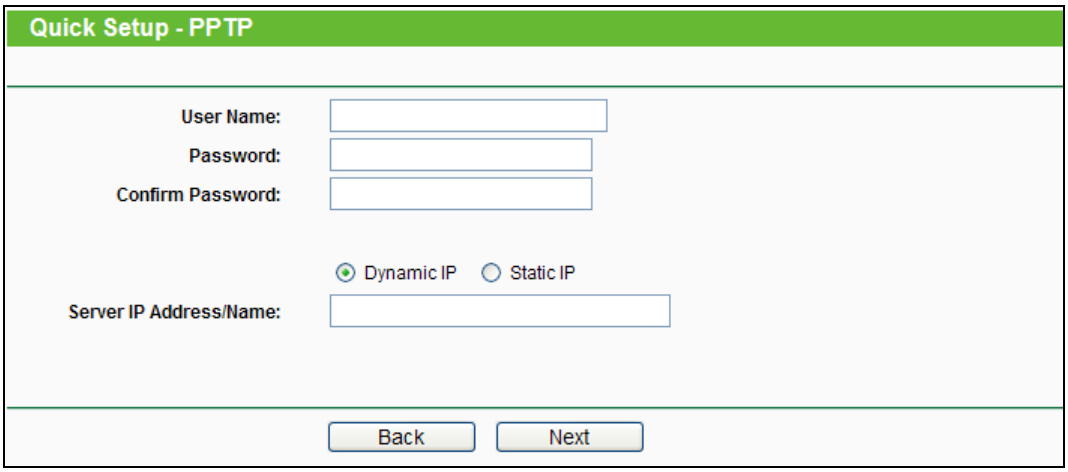
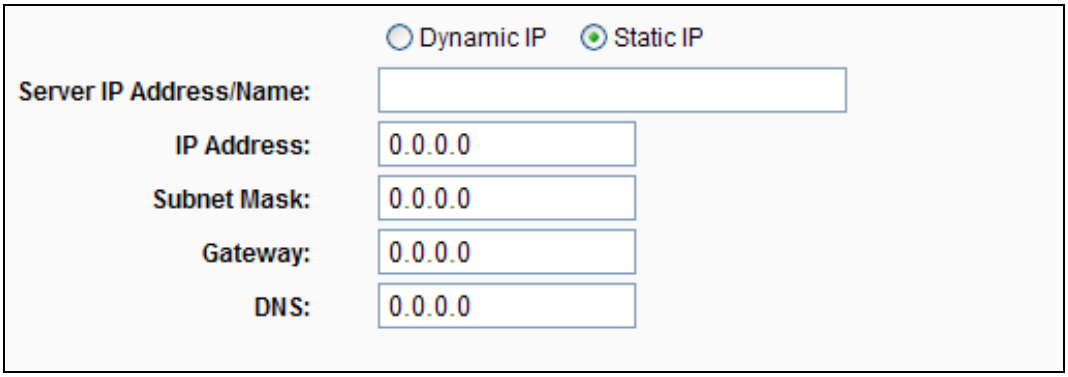


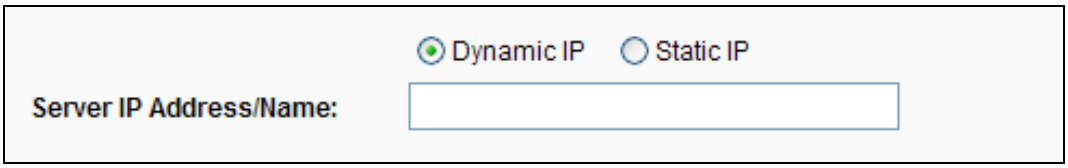
Figure 3-11 Quick Setup - L2TP/Russia L2TP

- **User Name/Password -** Enter the **User Name** and **Password** provided by your ISP. These fields are case-sensitive. If you have difficulty with this process, please contact your ISP.

Select **Static IP** if IP Address/ Subnet Mask/ Gateway and DNS server address have been provided by your ISP. Then please enter server IP address or domain name provided by your ISP, and also enter the corresponding parameters.



Select **Dynamic IP** if none of the above parameters are provided. Then you just need to enter server IP address or domain name provided by your ISP.



5. Configure the basic parameters for 2.4GHz wireless network in the following screen as shown in Figure 3-12, and then click **Next**.

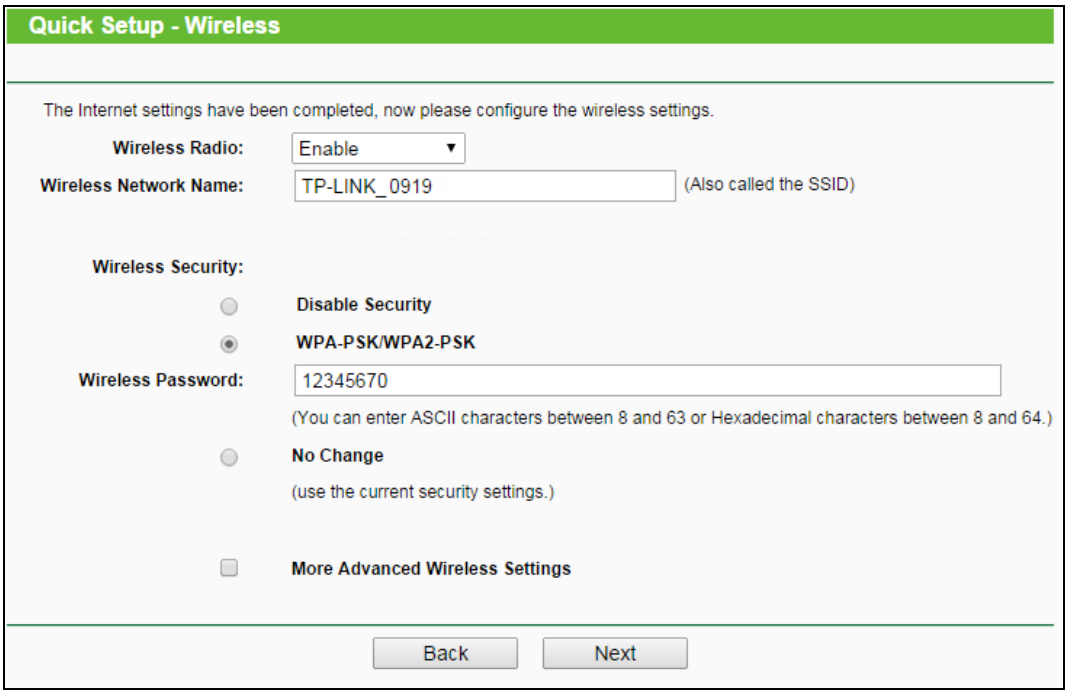
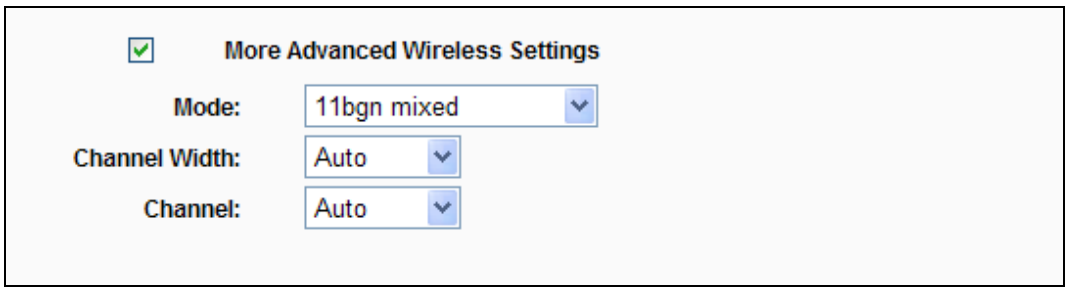


Figure 3-12 Quick Setup - Wireless

- **Wireless Radio -** Displays whether the wireless function is enabled or not.
- **Wireless Network Name -** Also called the SSID (Service Set Identification). Enter a value of up to 32 characters. The same name must be assigned to all wireless devices in your network. The default SSID is set to be TP-LINK_XXXX. This value is case-sensitive. For example, *TEST* is NOT the same as *test*.
- **Wireless Security**

- **Disable Security -** The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect the router without encryption.
- **WPA-PSK/WPA2-PSK -** It's selected by default, with the default PSK password the same as the default PIN code.
- **No Change -** If you chose this option, wireless security configuration will not change!

The above settings are only for basic wireless parameters. For advanced settings, please check "**More Advanced Wireless Settings**", and then you can set the following parameters.



- **Band -** This field displayed the operating frequency being configured.
- **Mode -** This field determines the wireless mode which the router works on.
  - **11bg mixed -** Select if you are using both 802.11b and 802.11g wireless clients.
  - **11bgn mixed -** Select if you are using a mix of 802.11b, 11g, and 11n wireless clients.
- **Channel Width -** Select any channel width from the drop-down list. The default setting is "Auto", which can adjust the channel width for your clients automatically.
- **Channel -** 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. If you select "Auto", then the AP will select the best channel automatically.

6. Click the **Finish** button to complete the **Quick Setup**.

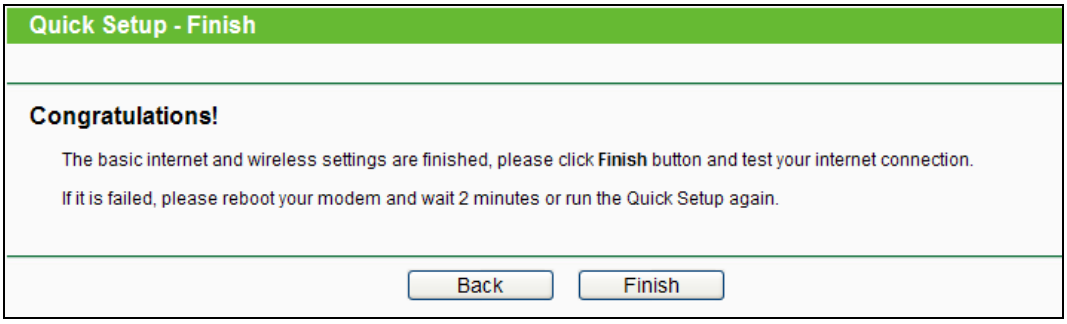


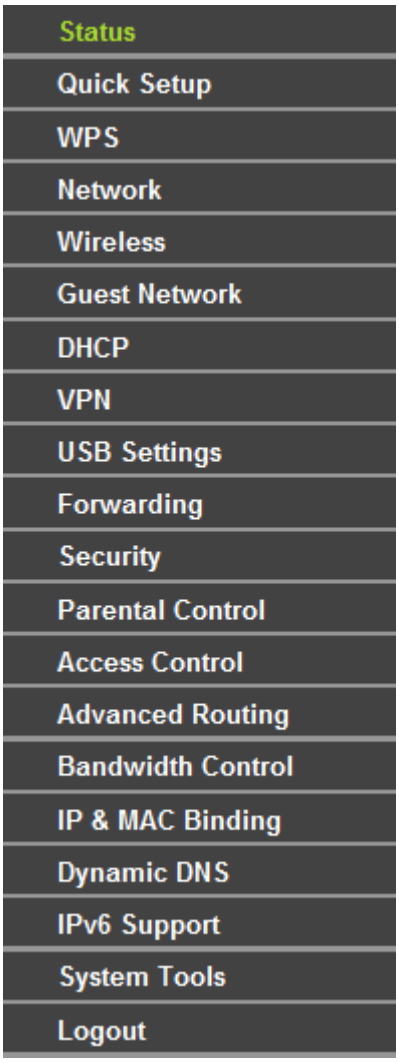
Figure 3-13 Quick Setup - Finish

Chapter 4. Configuring the Router

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

4.1 Login

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



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

4.2 Status

The Status page provides the current status information about the Router. All information is read-only.

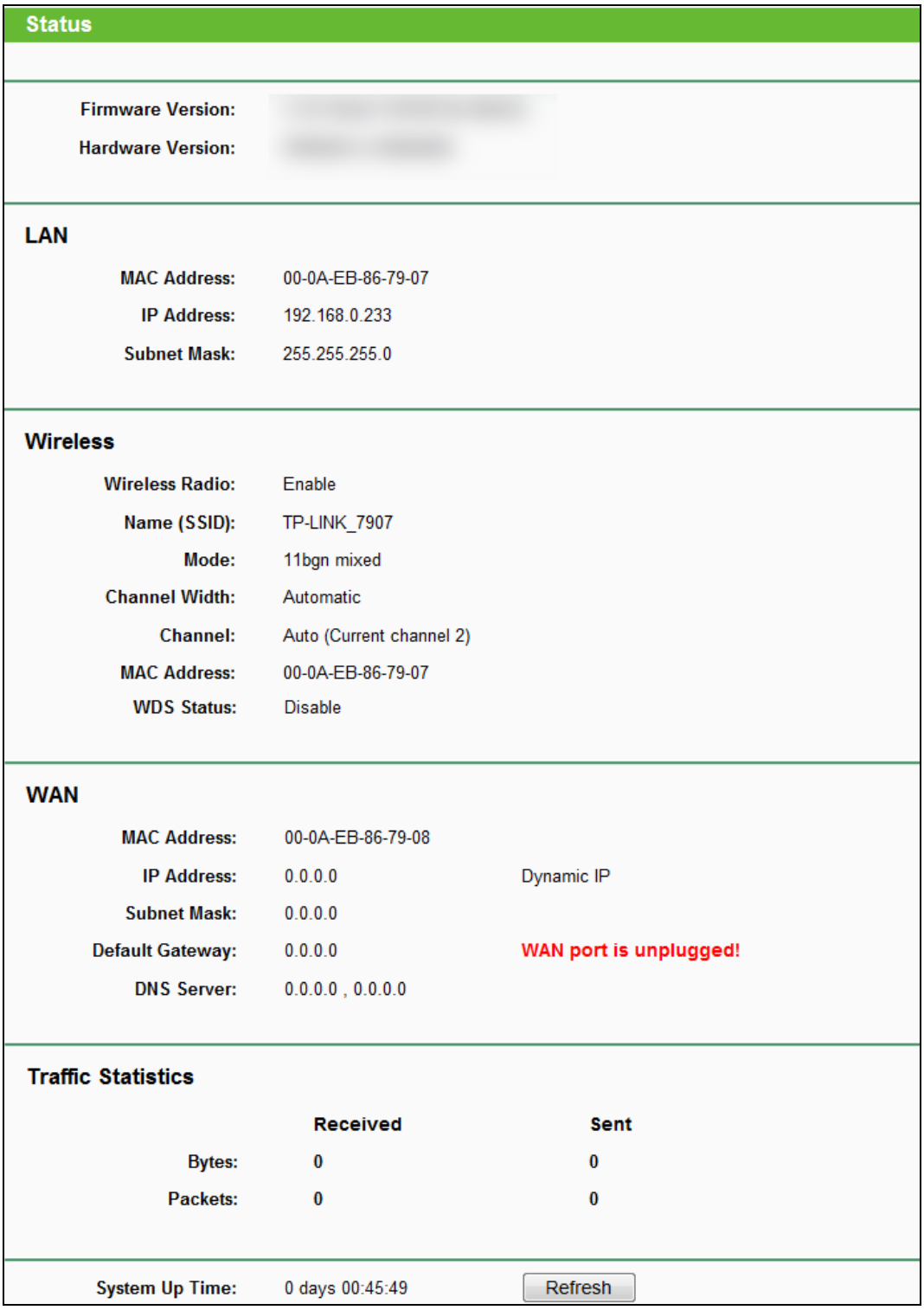


Figure 4-1 Status

4.3 Quick Setup

Please refer to 3.2 Quick Installation Guide.

4.4 WPS

This section will guide you to add a new wireless device to an existing network quickly by WPS (Wi-Fi Protected Setup) function.

Choose menu “WPS”, and you will see the next screen (shown in Figure 4-2).

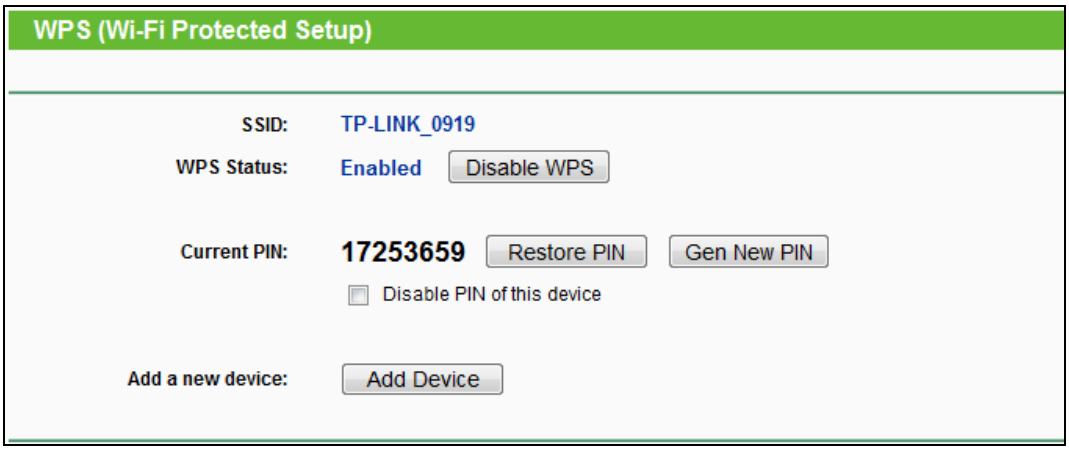


Figure 4-2 WPS

- **SSID -** It display the SSID (Wireless Network Name) of the router.
- **WPS Status -** Enable or disable the WPS function here.
- **Current PIN -** The current value of the Router's PIN is displayed here. The default PIN of the Router can be found in the label or User Guide.
- **Restore PIN -** Restore the PIN of the Router to its default.
- **Gen New PIN -** Click this button, and then you can get a new random value for the Router's PIN. You can ensure the network security by generating a new PIN.
- **Disable PIN of this device -** WPS external registrar of entering this device's PIN can be disabled or enabled manually. If this device receives multiple failed attempts to authenticate an external Registrar, this function will be disabled automatically.
- **Add device -** You can add a new device to the existing network manually by clicking this button.

To add a new device:

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and Router using either Push Button Configuration (PBC) method or PIN method.

☞ **Note:**

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

I. Use the Wi-Fi Protected Setup Button

Use this method if your client device has a Wi-Fi Protected Setup button.

Step 1: Press the **WPS/RESET** button on the back panel of the Router, as shown in the following figure.

You can also keep the default WPS Status as **Enabled** and click the **Add device** button in Figure 4-2, then Choose "**Press the button of the new device in two minutes**" and click **Connect**. (Shown in the following figure)

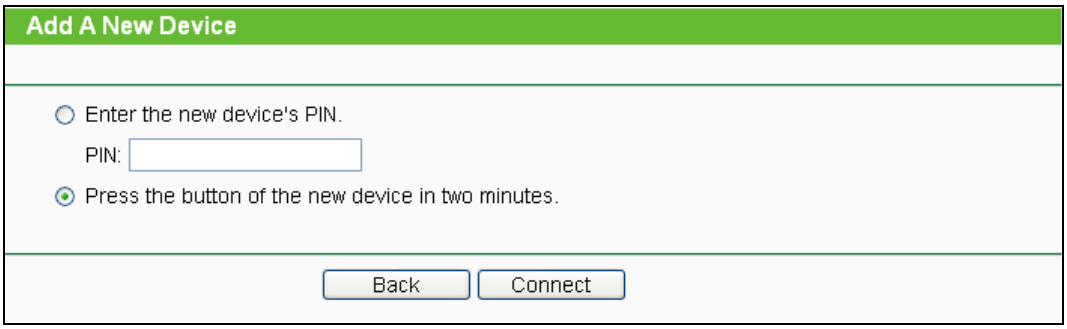


Figure 4-3 Add A New Device

Step 2: Press and hold the WPS button of the client device directly.

Step 3: The Wi-Fi Protected Setup LED flashes for two minutes during the Wi-Fi Protected Setup process.

Step 4: When the WPS LED is on, the client device has successfully connected to the Router.

Step 5: Refer back to your client device or its documentation for further instructions.

II. Enter the client device's PIN on the Router

Use this method if your client device has a Wi-Fi Protected Setup PIN number.

Step 1: Keep the default WPS Status as **Enabled** and click the **Add device** button in Figure 4-2, then the following screen will appear.

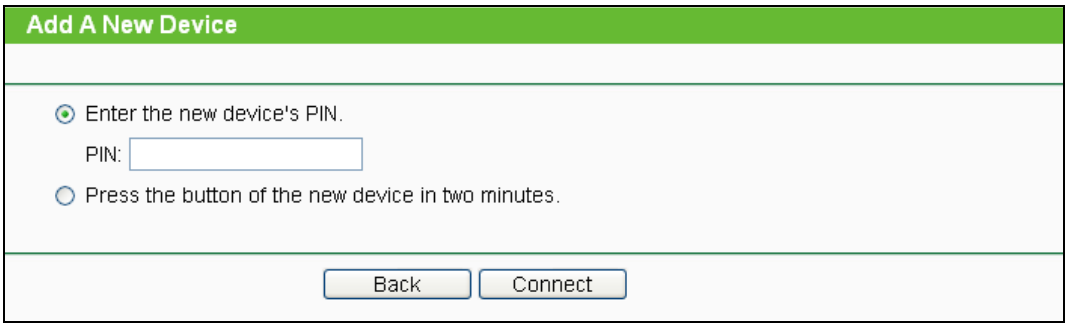


Figure 4-4 Add A New Device

Step 2: Enter the PIN number from the client device in the field on the above WPS screen. Then click **Connect** button.

Step 3: "**Connect successfully**" will appear on the screen of Figure 4-4, which means the client device has successfully connected to the Router.

III. Enter the Router's PIN on your client device

Use this method if your client device asks for the Router's PIN number.

Step 1: On the client device, enter the PIN number listed on the Router's Wi-Fi Protected Setup screen. (It is also labeled on the bottom of the Router.)

Step 2: The Wi-Fi Protected Setup LED flashes for two minutes during the Wi-Fi Protected Setup process.

Step 3: When the WPS LED is on, the client device has successfully connected to the Router.

Step 4: Refer back to your client device or its documentation for further instructions.

☞ **Note:**

1) The WPS LED on the Router will light green for five minutes if the device has been successfully added to the network.

2) The WPS function cannot be configured if the Wireless Function of the Router is disabled. Please make sure the Wireless Function is enabled before configuring the WPS.

4.5 Network

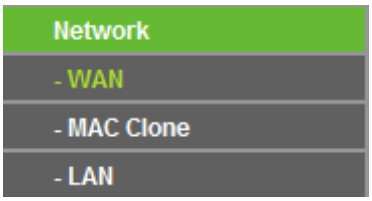


Figure 4-5 the Network menu

There are three submenus under the Network menu (shown in Figure 4-5): **WAN**, **MAC Clone** and **LAN**. Click any of them, and you will be able to configure the corresponding function.

4.5.1 WAN

Choose menu "**Network → WAN**", you can configure the IP parameters of the WAN on the screen below.

1. If your ISP provides the DHCP service, please choose **Dynamic IP** type, and the Router will automatically get IP parameters from your ISP. You can see the page as follows (Figure 4-6):

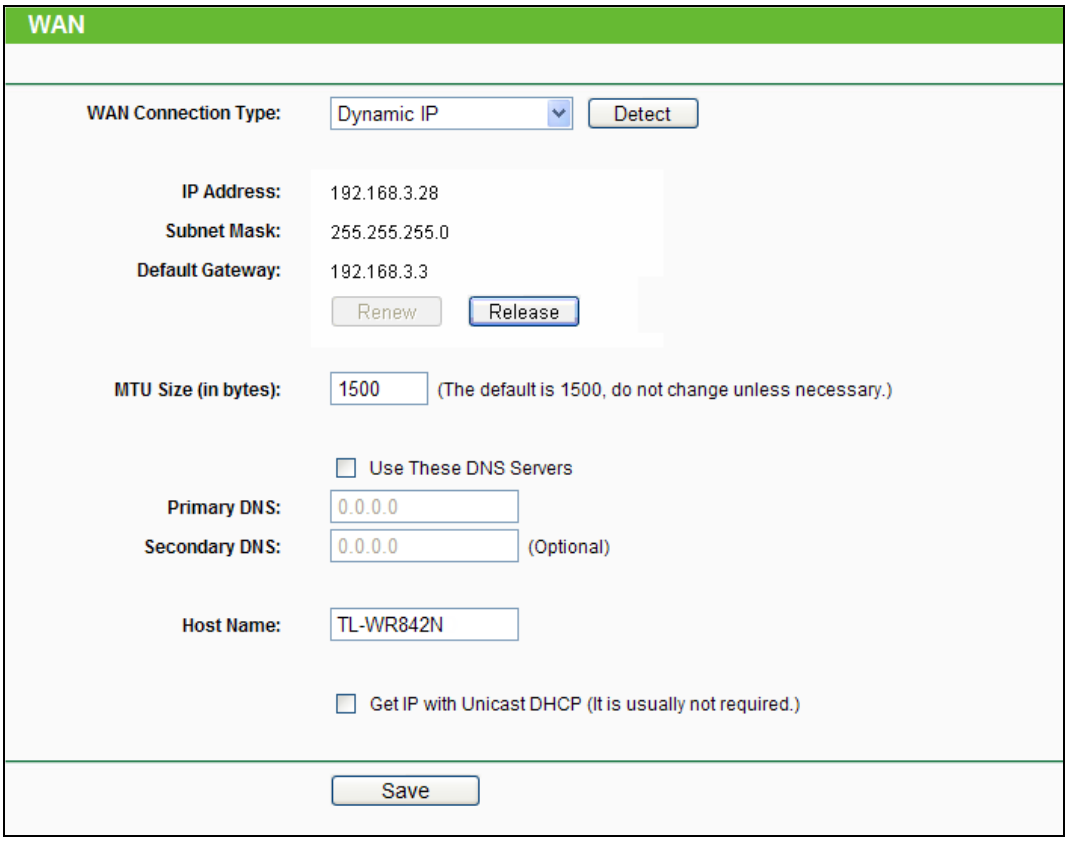


Figure 4-6 WAN - Dynamic IP

This page displays the WAN IP parameters assigned dynamically by your ISP, including IP address, Subnet Mask, Default Gateway, etc. Click the **Renew** button to renew the IP parameters from your ISP. Click the **Release** button to release the IP parameters.

- **MTU Size -** The normal **MTU** (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default **MTU Size** unless required by your ISP.
- **Use These DNS Servers -** If your ISP gives you one or two DNS addresses, select **Use These DNS Servers** and enter the primary and secondary addresses into the correct fields. Otherwise, the DNS servers will be assigned dynamically from your ISP.

Note:

If you find error when you go to a website after entering the DNS addresses, it is likely that your DNS servers are set up improperly. You should contact your ISP to get DNS server addresses.

- **Host Name -** This option specifies the Host Name of the Router.
- **Get IP with Unicast DHCP -** A few ISPs' DHCP servers do not support the broadcast applications. If you cannot get the IP Address normally, you can choose this option. (It is rarely required.)

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

2. If your ISP provides a static or fixed IP Address, Subnet Mask, Gateway and DNS setting, select **Static IP**. The Static IP settings page will appear, shown in Figure 4-7.

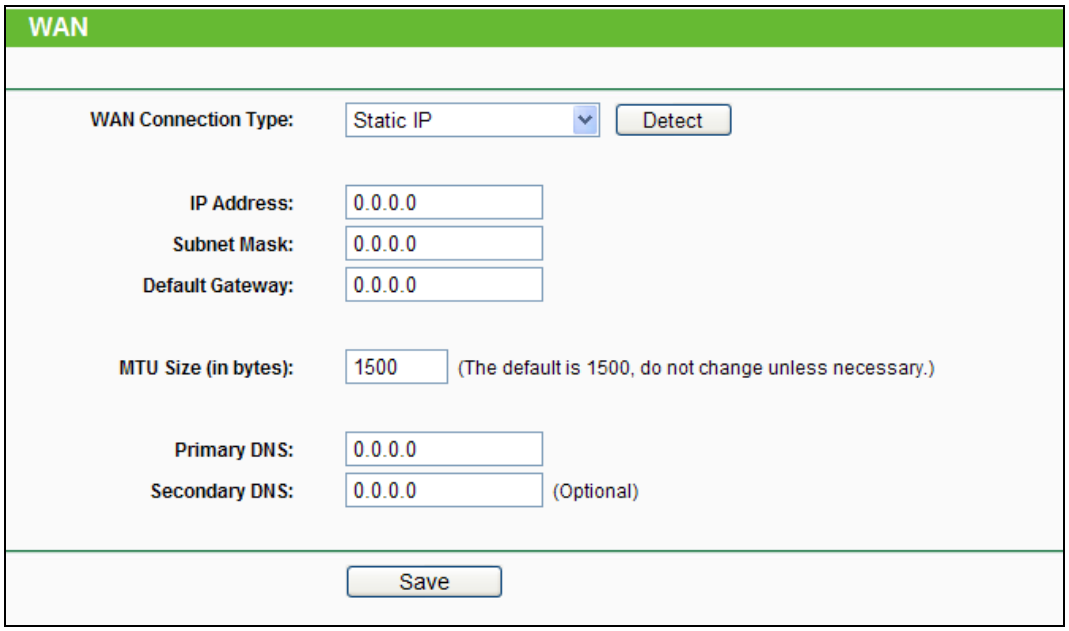


Figure 4-7 WAN - Static IP

- **IP Address -** Enter the IP address in dotted-decimal notation provided by your ISP.
- **Subnet Mask -** Enter the subnet Mask in dotted-decimal notation provided by your ISP, usually is 255.255.255.0.
- **Default Gateway -** (Optional) Enter the gateway IP address in dotted-decimal notation provided by your ISP.
- **MTU Size -** The normal **MTU** (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default **MTU Size** unless required by your ISP.
- **Primary/Secondary DNS -** Enter one or two DNS addresses in dotted-decimal notation provided by your ISP.

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

3. If your ISP provides a PPPoE connection, select **PPPoE/Russia PPPoE** option. And you should enter the following parameters (Figure 4-8):

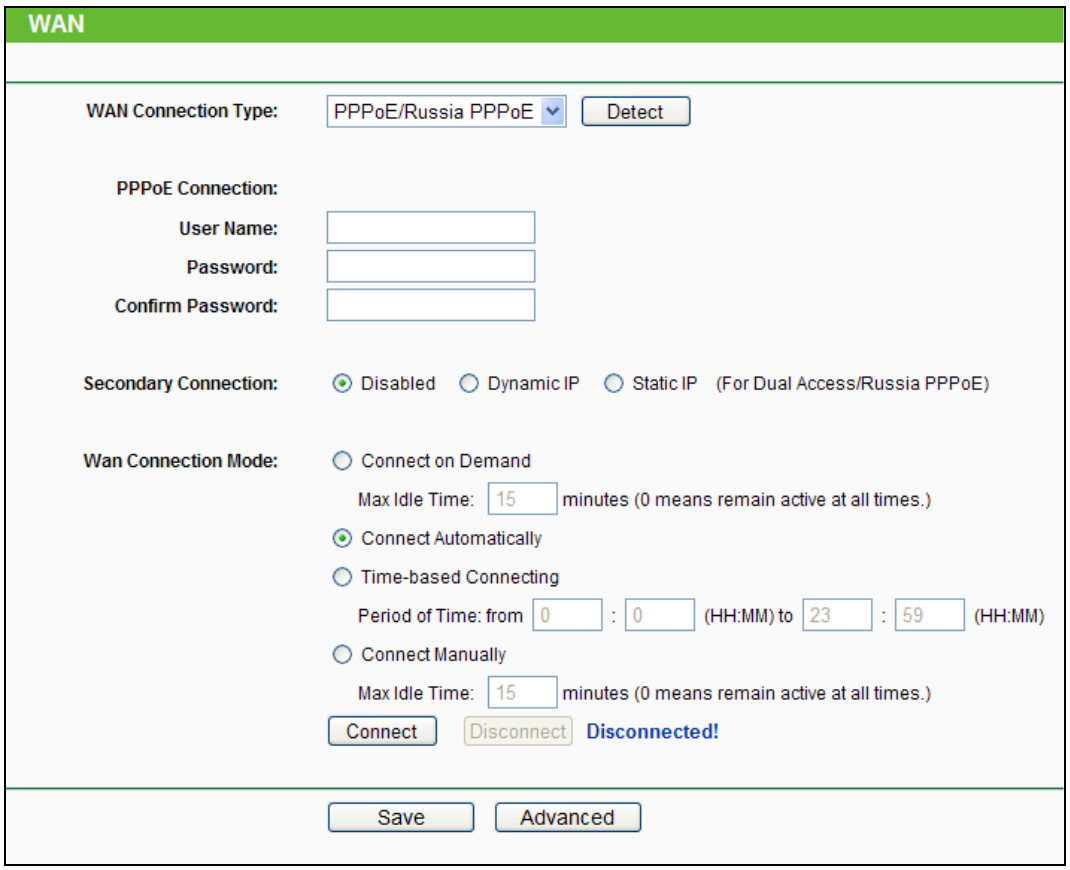


Figure 4-8 WAN - PPPoE

- **User Name/Password -** Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- **Secondary Connection -** It's available only for PPPoE Connection. If your ISP provides an extra Connection type such as Dynamic/Static IP to connect to a local area network, then you can check the radio button of Dynamic/Static IP to activate this secondary connection.
  - **Disabled -** The Secondary Connection is disabled by default, so there is PPPoE connection only. This is recommended.
  - **Dynamic IP -** You can check this radio button to use Dynamic IP as the secondary connection to connect to the local area network provided by ISP.
  - **Static IP -** You can check this radio button to use Static IP as the secondary connection to connect to the local area network provided by ISP.
- **Connect on Demand -** In this mode, the Internet connection can be terminated automatically after a specified inactivity period (**Max Idle Time**) and be re-established when you attempt to access the Internet again. If you want your Internet connection keeps active all the time, please enter "0" in the **Max Idle Time** field. Otherwise, enter the number of minutes you want to have elapsed before your Internet access disconnects.
- **Connect Automatically -** The connection can be re-established automatically when it was down.

- **Time-based Connecting -** The connection will only be established in the period from the start time to the end time (both are in HH:MM format).

  ☞ **Note:**

  Only when you have configured the system time on "**System Tools → Time**" page, will the **Time-based Connecting** function take effect.

- **Connect Manually -** You can click the **Connect/Disconnect** button to connect/disconnect immediately. This mode also supports the **Max Idle Time** function as **Connect on Demand** mode. The Internet connection can be disconnected automatically after a specified inactivity period and not be re-established until you click **Connect** button.

  Click the **Connect** button to connect immediately. Click the **Disconnect** button to disconnect immediately.

Caution: Sometimes the connection cannot be terminated although you specify a time to Max Idle Time because some applications are visiting the Internet continually in the background.

If you want to do some advanced configurations, please click the **Advanced** button, and the page shown in Figure 4-9 will then appear:

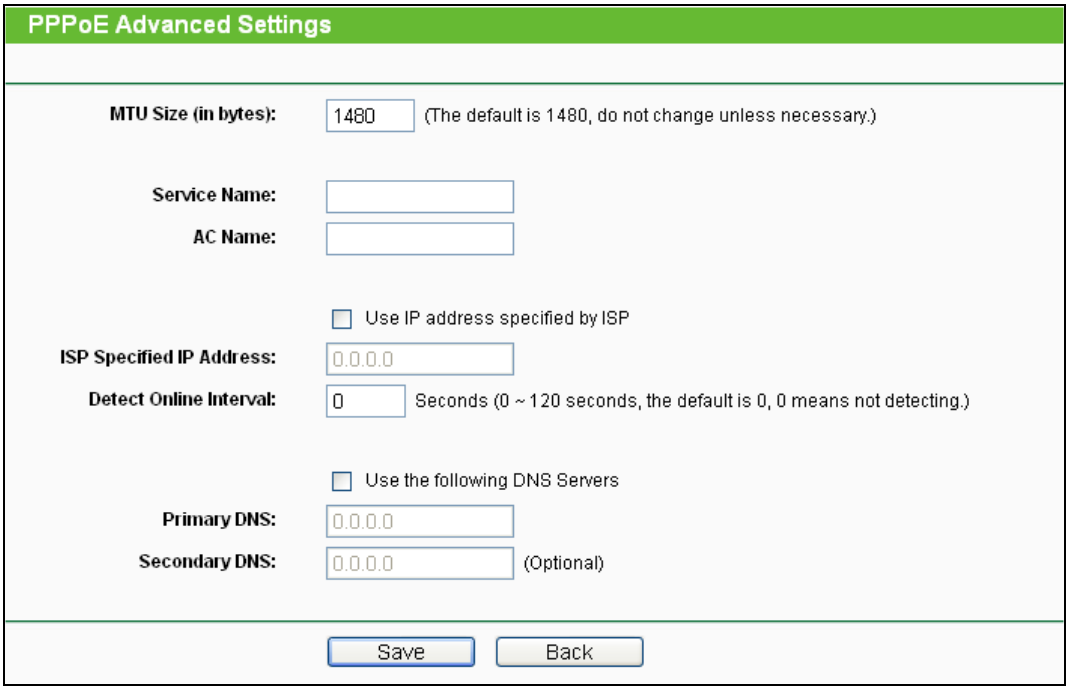


Figure 4-9 PPPoE Advanced Settings

- **MTU Size -** The default MTU size is "1480" bytes, which is usually fine. It is not recommended that you change the default **MTU Size** unless required by your ISP.

- **Service Name/AC Name -** The service name and AC (Access Concentrator) name should not be configured unless you are sure it is necessary for your ISP. In most cases, leaving these fields blank will work.

- **ISP Specified IP Address -** If your ISP does not automatically assign IP addresses to the Router during login, please click "**Use IP address specified by ISP**" check box and enter the IP address provided by your ISP in dotted-decimal notation.
- **Detect Online Interval -** The Router will detect Access Concentrator online at every interval. The default value is "0". You can input the value between "0" and "120". The value "0" means no detect.
- **Primary DNS/Secondary DNS -** If your ISP does not automatically assign DNS addresses to the Router during login, please click "**Use the following DNS servers**" check box and enter the IP address in dotted-decimal notation of your ISP's primary DNS server. If a secondary DNS server address is available, enter it as well.

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

4. If your ISP provides BigPond Cable (or Heart Beat Signal) connection, please select **BigPond Cable**. And you should enter the following parameters (Figure 4-10):

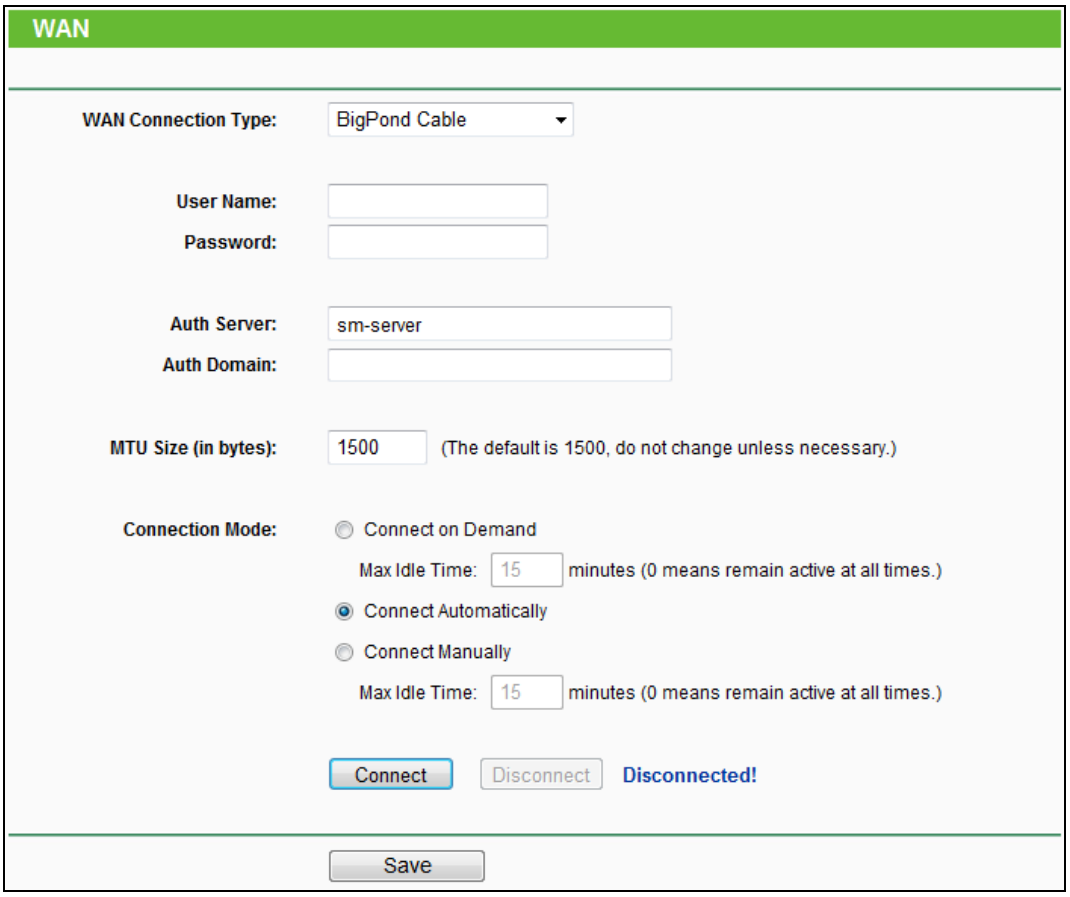


Figure 4-10 WAN - BigPond Cable

- **User Name/Password -** Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- **Auth Server -** Enter the authenticating server IP address or host name.
- **Auth Domain -** Type in the domain suffix server name based on your location.

e.g.

NSW / ACT - **nsw.bigpond.net.au**
VIC / TAS / WA / SA / NT - **vic.bigpond.net.au**
QLD - **qld.bigpond.net.au**

- **MTU Size -** The normal **MTU** (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default **MTU Size** unless required by your ISP.
- **Connect on Demand -** In this mode, the Internet connection can be terminated automatically after a specified inactivity period (**Max Idle Time**) and be re-established when you attempt to access the Internet again. If you want your Internet connection keeps active all the time, please enter "0" in the **Max Idle Time** field. Otherwise, enter the number of minutes you want to have elapsed before your Internet access disconnects.
- **Connect Automatically -** The connection can be re-established automatically when it was down.
- **Connect Manually -** You can click the **Connect**/**Disconnect** button to connect/disconnect immediately. This mode also supports the **Max Idle Time** function as **Connect on Demand** mode. The Internet connection can be disconnected automatically after a specified inactivity period and not be re-established until you click **Connect** button.

  Click the **Connect** button to connect immediately. Click the **Disconnect** button to disconnect immediately.

Caution: Sometimes the connection cannot be terminated although you specify a time to Max Idle Time because some applications are visiting the Internet continually in the background.

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

5. If your ISP provides L2TP connection, please select **L2TP/Russia L2TP** option. And you should enter the following parameters (Figure 4-11):

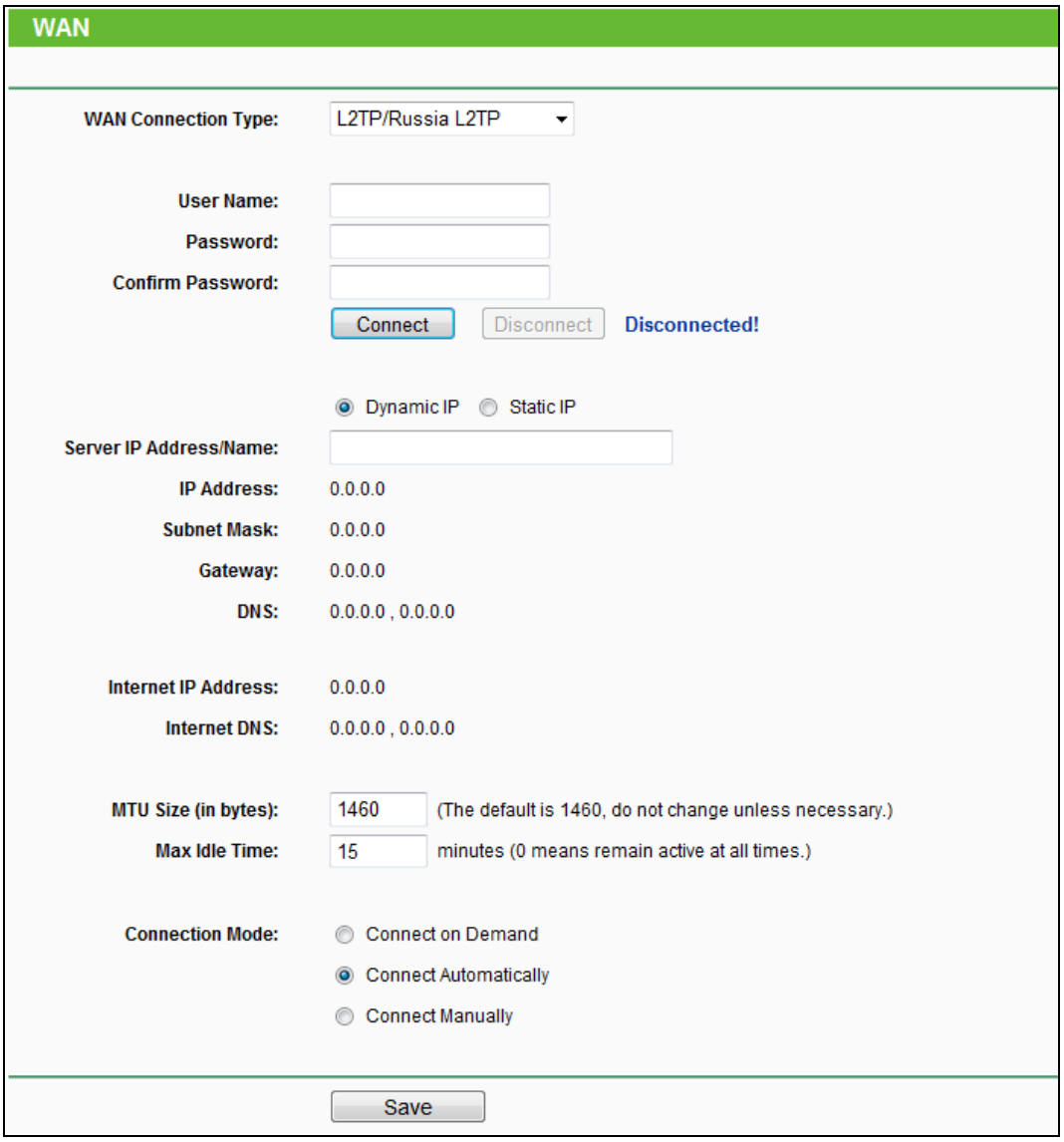


Figure 4-11 WAN - L2TP/Russia L2TP

- **User Name/Password/Confirmpassword -** Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- **Dynamic IP/ Static IP -** Choose either as you are given by your ISP. Click the **Connect** button to connect immediately. Click the **Disconnect** button to disconnect immediately.
- **Connect on Demand -** You can configure the Router to disconnect from your Internet connection after a specified period of inactivity (**Max Idle Time**). If your Internet connection has been terminated due to inactivity, **Connect on Demand** enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate **Connect on Demand**, check the radio button. If you want your Internet connection to remain active at all times, enter 0 in the **Max Idle Time** field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- **Connect Automatically -** Connect automatically after the Router is disconnected. To use this option, check the radio button.
- **Connect Manually -** You can configure the Router to make it connect or disconnect manually. After a specified period of inactivity (**Max Idle Time**), the Router will disconnect from your Internet connection, and you will not be able to re-establish your connection automatically as soon as you attempt to access the Internet again. To use this option, check the radio button. If you want your Internet connection to remain active at all times, enter "0" in the **Max Idle Time** field. Otherwise, enter the number of minutes that you wish to have the Internet connecting last unless a new link is requested.

Caution: Sometimes the connection cannot be disconnected although you specify a time to **Max Idle Time**, because some applications are visiting the Internet continually in the background.

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

6. If your ISP provides PPTP connection, please select **PPTP/Russia PPTP** option. And you should enter the following parameters (Figure 4-12):

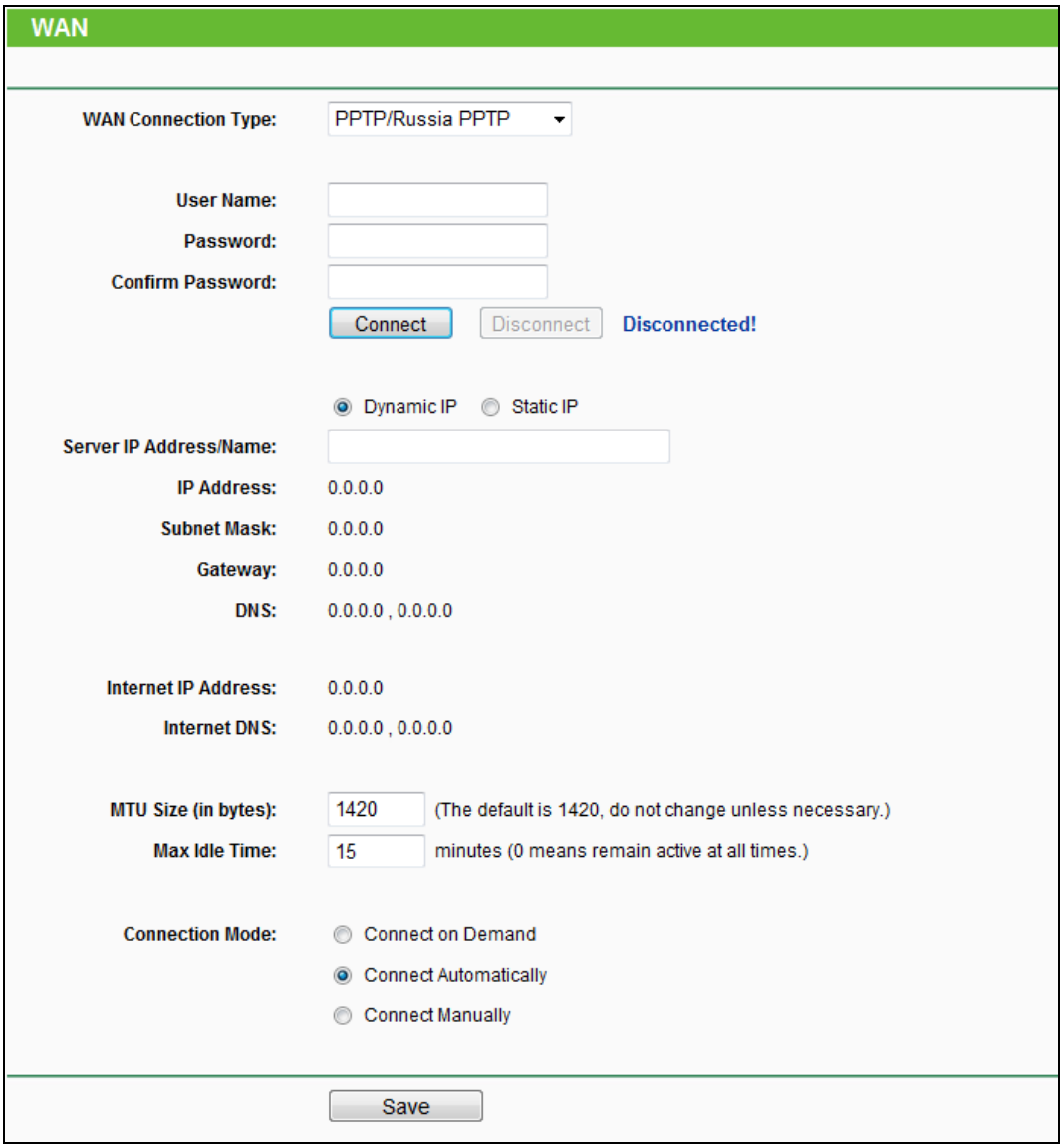


Figure 4-12 WAN - PPTP/Russia PPTP

- **User Name/Password/Confirmpassword -** Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- **Dynamic IP/ Static IP -** Choose either as you are given by your ISP and enter the ISP's IP address or the domain name.

  If you choose static IP and enter the domain name, you should also enter the DNS assigned by your ISP. And click the **Save** button.

  Click the **Connect** button to connect immediately. Click the **Disconnect** button to disconnect immediately.
- **Connect on Demand -** You can configure the Router to disconnect from your Internet connection after a specified period of inactivity (**Max Idle Time**). If your Internet connection has been terminated due to inactivity, **Connect on Demand** enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet

again. If you wish to activate **Connect on Demand**, check the radio button. If you want your Internet connection to remain active at all times, enter “0” in the **Max Idle Time** field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- **Connect Automatically -** Connect automatically after the Router is disconnected. To use this option, check the radio button.
- **Connect Manually -** You can configure the Router to make it connect or disconnect manually. After a specified period of inactivity (**Max Idle Time**), the Router will disconnect from your Internet connection, and you will not be able to re-establish your connection automatically as soon as you attempt to access the Internet again. To use this option, click the radio button. If you want your Internet connection to remain active at all times, enter "0" in the **Max Idle Time** field. Otherwise, enter the number in minutes that you wish to have the Internet connecting last unless a new link is requested.

Caution: Sometimes the connection cannot be disconnected although you specify a time to **Max Idle Time** because some applications are visiting the Internet continually in the background.

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

☞ **Note:**

If you don't know how to choose the appropriate connection type, click the **Detect** button to allow the Router to automatically search your Internet connection for servers and protocols. The connection type will be reported when an active Internet service is successfully detected by the Router. This report is for your reference only. To make sure the connection type your ISP provides, please refer to the ISP. The various types of Internet connections that the Router can detect are as follows:

- **PPPoE -** Connections which use PPPoE that requires a user name and password.
- **Dynamic IP -** Connections which use dynamic IP address assignment.
- **Static IP -** Connections which use static IP address assignment.

The Router can not detect PPTP/L2TP/BigPond connections with your ISP. If your ISP uses one of these protocols, then you must configure your connection manually.

4.5.2 MAC Clone

Choose menu “**Network → MAC Clone**”, you can configure the MAC address of the WAN on the screen below, Figure 4-13:

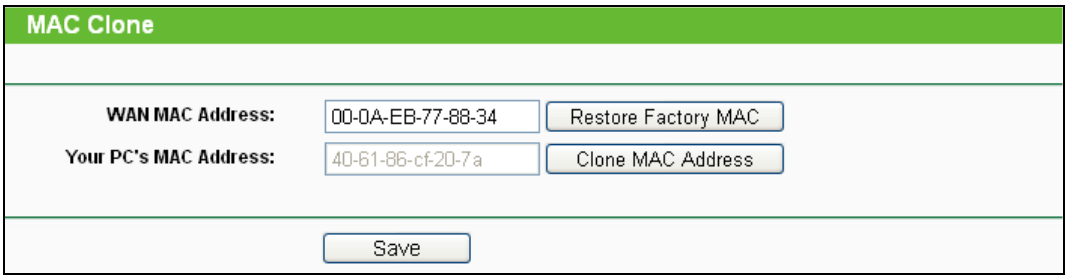


Figure 4-13 MAC Address Clone

Some ISPs require that you register the MAC Address of your adapter. Changes are rarely needed here.

- **WAN MAC Address -** This field displays the current MAC address of the WAN port. If your ISP requires you to register the MAC address, please enter the correct MAC address into this field in XX-XX-XX-XX-XX-XX format (X is any hexadecimal digit).
- **Your PC's MAC Address -** This field displays the MAC address of the PC that is managing the Router. If the MAC address is required, you can click the **Clone MAC Address** button and this MAC address will fill in the **WAN MAC Address** field.

Click **Restore Factory MAC** to restore the MAC address of WAN port to the factory default value.

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

Note:

Only the PC on your LAN can use the **MAC Address Clone** function.

4.5.3 LAN

Choose menu "**Network → LAN**", you can configure the IP parameters of the LAN on the screen as below.

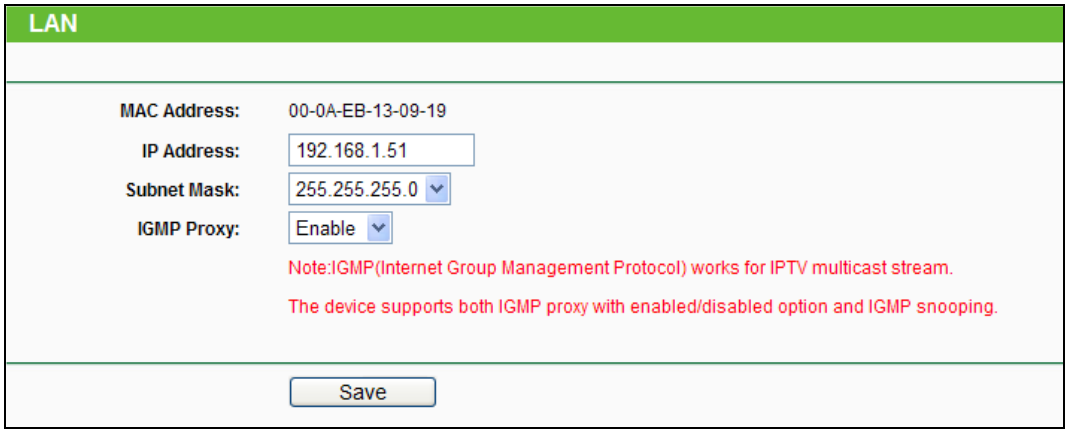


Figure 4-14 LAN

- **MAC Address -** The physical address of the Router, as seen from the LAN. The value can't be changed.

- **IP Address -** Enter the IP address of your Router or reset it in dotted-decimal notation (factory default: 192.168.0.1).
- **Subnet Mask -** An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.
- **IGMP Proxy** - If you want to watch TV through IGMP, please Enable it.

☞ **Note:**

1) If you change the LAN IP address, you must use the new IP address to login to the Router.
2) If the new LAN IP address you set is not in the same subnet with the previous one, the IP Address pool in the DHCP server will be configured automatically, but the Virtual Server and DMZ Host will not take effect until they are re-configured.

4.6 Wireless

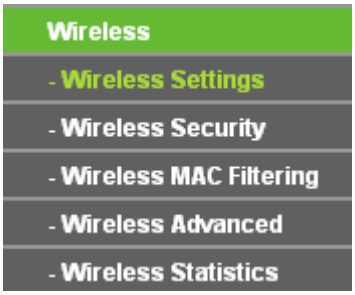


Figure 4-15 Wireless menu

There are five submenus under the Wireless menu (shown in Figure 4-15): **Wireless Settings**, **Wireless Security**, **Wireless MAC Filtering**, **Wireless Advanced** and **Wireless Statistics**. Click any of them, and you will be able to configure the corresponding function.

4.6.1 Wireless Settings

Choose menu "**Wireless → Wireless Settings**", you can configure the basic settings for the wireless network on this page.

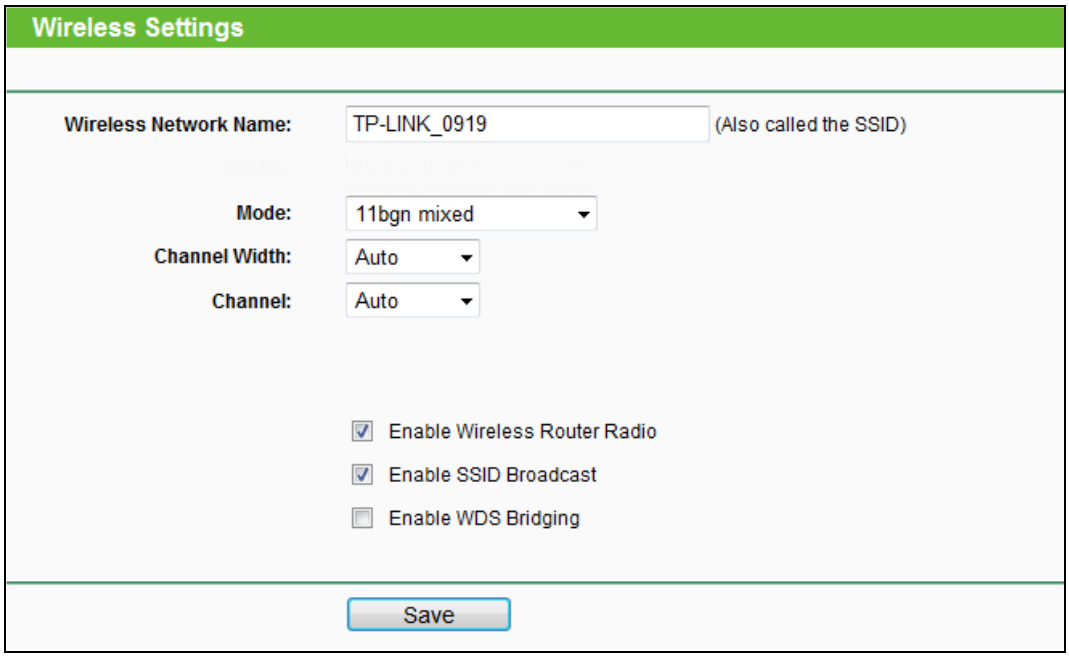


Figure 4-16 Wireless Settings

- **Wireless Network Name** - Enter a value of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your network. Considering your wireless network security, the default SSID is set to be TP-LINK_XXXX (XXXX indicates the last unique four numbers of each Router's MAC address). This value is case-sensitive. For example, TEST is NOT the same as test.
- **Mode -** Select the desired mode.

  11bg mixed - Select if you are using both 802.11b and 802.11g wireless clients.

  11bgn mixed - Select if you are using a mix of 802.11b, 11g, and 11n wireless clients.

  Select the desired wireless mode. It is strongly recommended that you set the Mode **11bng mixed**, and all of 802.11b, 802.11g and 802.11n wireless stations can connect to the Router.
- **Channel width -** Select the channel width from the drop-down list. The default setting is automatic, which can adjust the channel width for your clients automatically.
- **Channel -** This field determines which operating frequency will be used. The default channel is set to **Auto**, so the Router will choose the best channel automatically. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point.

  ☞ **Note:**

  If **11bg mixed** is selected in the **Mode** field, the **Channel Width** selecting field will turn grey and the value will become 20M, which is unable to be changed.

- **Enable Wireless Router Radio** - The wireless radio of the Router can be enabled or disabled to allow wireless stations access. If enabled, the wireless stations will be able to access the Router. Otherwise, wireless stations will not be able to access the Router.
- **Enable SSID Broadcast** - If you select the Enable SSID Broadcast checkbox, the wireless router will broadcast its name (SSID) on the air.
- **Enable WDS Bridging** - You can select this to enable WDS Bridging, with this function, the Router can bridge two or more WLANs.

Note:

If this checkbox is selected, you had better make sure the following settings are correct.

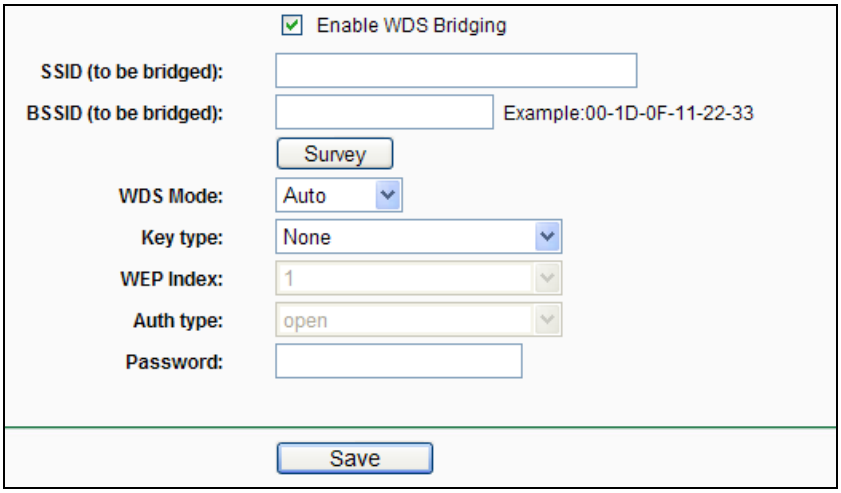


Figure 4-17

- **SSID(to be bridged)** - The SSID of the AP your Router is going to connect to as a client. You can also use the search function to select the SSID to join.
- **BSSID(to be bridged)** - The BSSID of the AP your Router is going to connect to as a client. You can also use the search function to select the BSSID to join.
- **Survey -** Click this button, you can search the AP which runs in the current channel.
- **WDS Mode** - This field determines which WDS Mode will be used. It is not necessary to change the WDS Mode unless you notice network communication problems with root AP. If you select Auto, then Router will choose the appropriate WDS Mode automatically.
- **Key type** - This option should be chosen according to the AP's security configuration. It is recommended that the security type is the same as your AP's security type.
- **WEP Index** - This option should be chosen if the key type is WEP(ASCII) or WEP(HEX).It indicates the index of the WEP key.
- **Auth Type** - This option should be chosen if the key type is WEP(ASCII) or WEP(HEX).It indicates the authorization type of the Root AP.

- **Password** - If the AP your Router is going to connect needs password, you need to fill the password in this blank.

4.6.2 Wireless Security

Choose menu "**Wireless → Wireless Security**", you can configure the security settings of your wireless network.

There are five wireless security modes supported by the Router: WEP (Wired Equivalent Privacy), WPA (Wi-Fi Protected Access), WPA2 (Wi-Fi Protected Access 2), WPA-PSK (Pre-Shared Key), WPA2-PSK (Pre-Shared Key).

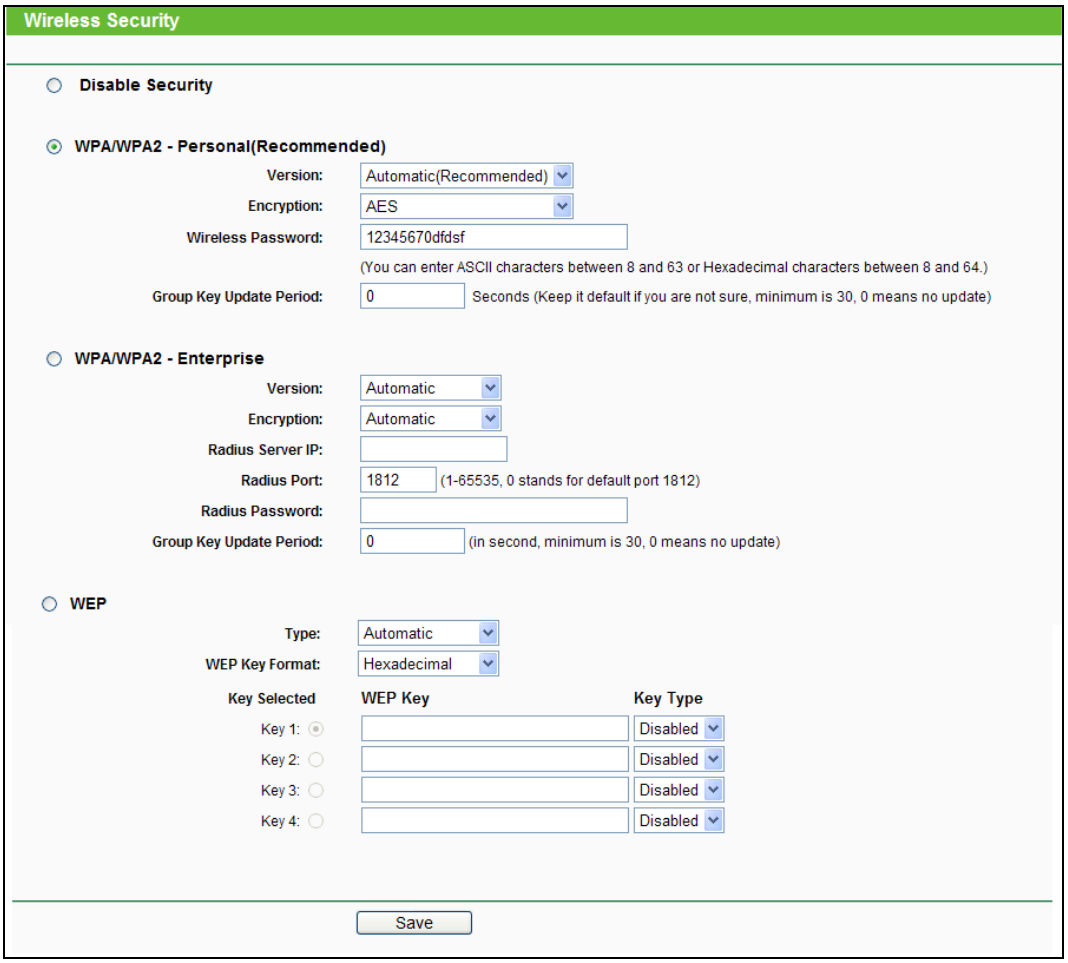


Figure 4-18 Wireless Security

- **Disable Security -** If you do not want to use wireless security, check this radio button. But it's strongly recommended to choose one of the following modes to enable security.

- **WPA /WPA2 - Personal (Recommended) -** It's the WPA/WPA2 authentication type based on pre-shared passphrase.

  - **Version -** you can choose the version of the WPA-PSK security on the drop-down list. The default setting is **Automatic**, which can select **WPA-PSK** (Pre-shared key of WPA) or **WPA2-PSK** (Pre-shared key of WPA) automatically based on the wireless station's

capability and request.

- **Encryption -** When **WPA-PSK** or **WPA** is set as the Authentication Type, you can select either **Automatic**, or **TKIP** or **AES** as Encryption.

Note:

If you check the **WPA-PSK/WPA2-PSK** radio button and choose TKIP encryption, you will find a notice in red as shown in Figure 4-19.

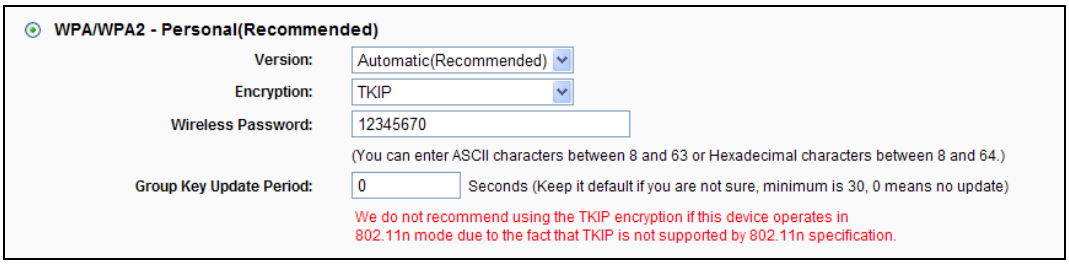


Figure 4-19 WPA/WPA2 - Personal

- **Wireless Password -** You can enter ASCII characters between 8 and 63 characters or 8 to 64 Hexadecimal characters.
- **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.

➢ **WPA /WPA2- Enterprise -** It's based on Radius Server.

- **Version -** you can choose the version of the WPA security on the drop-down list. The default setting is **Automatic**, which can select **WPA (**Wi-Fi Protected Access) or **WPA2 (**WPA version 2) automatically based on the wireless station's capability and request.
- **Encryption -** You can select either **Automatic**, or **TKIP** or **AES.**

Note:

If you check the **WPA/WPA2- Enterprise** radio button and choose TKIP encryption, you will find a notice in red as shown in Figure 4-20.

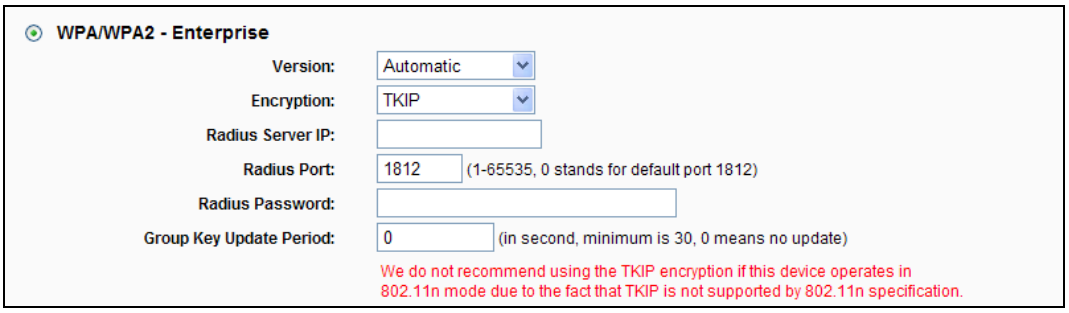


Figure 4-20 WPA/WPA2 - Enterprise

- **Radius Server IP -** Enter the IP address of the Radius server.
- **Radius Port -** Enter the port number of the Radius server.

- **Radius Password -** Enter the password for the Radius server.
- **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.

➢ **WEP -** It is based on the IEEE 802.11 standard. If you check this radio button, you will find a notice in red as show in Figure 4-21.

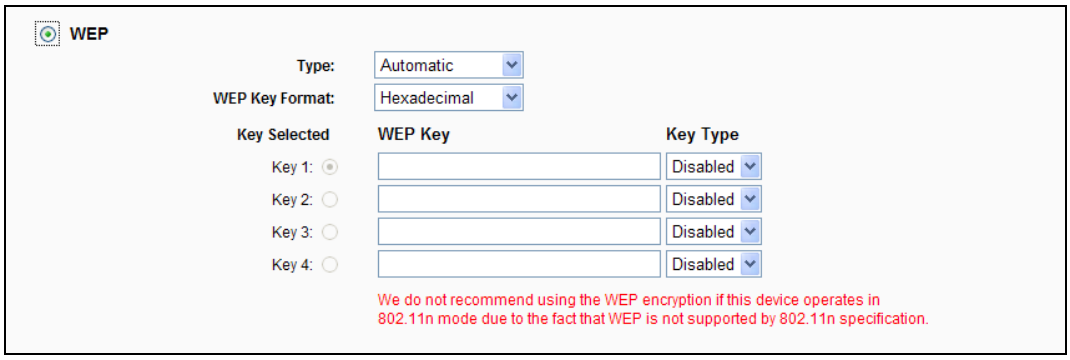


Figure 4-21 WEP

- **Type -** you can choose the type for the WEP security on the drop-down list. The default setting is **Automatic**, which can select **Shared Key** or **Open System** authentication type automatically based on the wireless station's capability and request.
- **WEP Key Format - Hexadecimal** and **ASCII** formats are provided here. **Hexadecimal** format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. **ASCII** format stands for any combination of keyboard characters in the specified length.
- **WEP Key -** Select which of the four keys will be used and enter the matching WEP key that you create. Make sure these values are identical on all wireless stations in your network.
- **Key Type -** You can select the WEP key length (64-bit, or 128-bit, or 152-bit.) for encryption. "Disabled" means this WEP key entry is invalid.

  64-bit - You can enter 10 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 ASCII characters.

  128-bit - You can enter 26 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 13 ASCII characters.

  152-bit - You can enter 32 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 16 ASCII characters.

  ☞ **Note:**

  If you do not set the key, the wireless security function is still disabled even if you have selected Shared Key as Authentication Type.

Be sure to click the **Save** button to save your settings on this page.

4.6.3 Wireless MAC Filtering

Choose menu "**Wireless → MAC Filtering**", you can control the wireless access by configuring

the **Wireless MAC Filtering** function, shown in Figure 4-22.

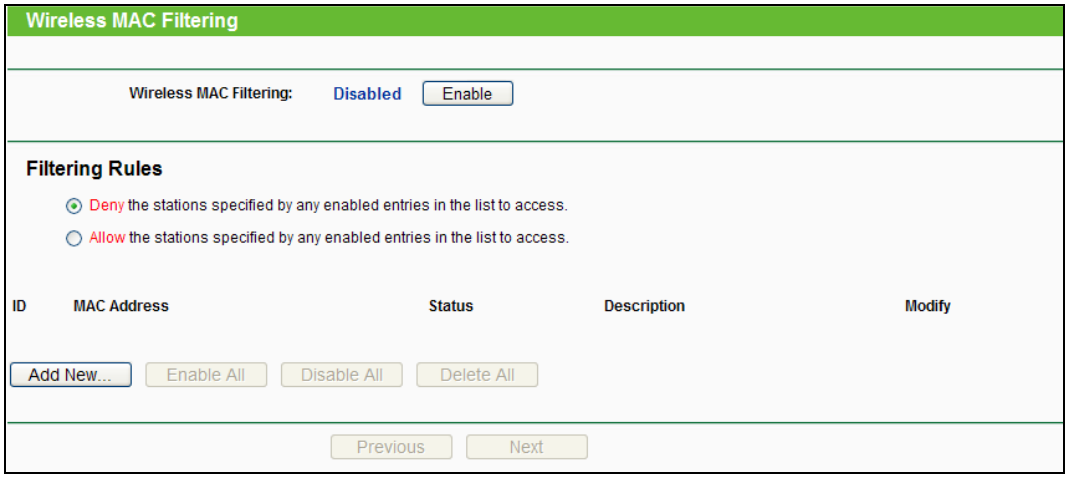


Figure 4-22 Wireless MAC Filtering

To filter wireless users by MAC Address, click **Enable**. The default setting is **Disabled**.

- **MAC Address -** The wireless station's MAC address that you want to filter.
- **Status -** The status of this entry, either **Enabled** or **Disabled**.
- **Description -** A simple description of the wireless station.

To Add a Wireless MAC Address filtering entry, click the **Add New…** button. The "**Add or Modify Wireless MAC Address Filtering entry**" page will appear, shown in Figure 4-23:

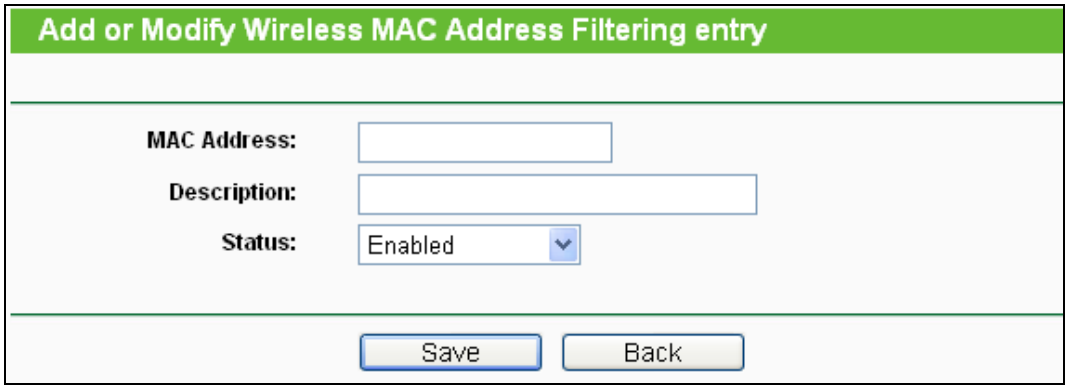


Figure 4-23 Add or Modify Wireless MAC Address Filtering entry

To add or modify a MAC Address Filtering entry, follow these instructions:

1. Enter the appropriate MAC Address into the **MAC Address** field. The format of the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). For example: 00-0A-EB-B0-00-0B.
2. Give a simple description for the wireless station in the **Description** field. For example: Wireless station A.
3. Select **Enabled** or **Disabled** for this entry on the **Status** drop-down list.

4. Click the **Save** button to save this entry.

To modify or delete an existing entry:

1. Click the **Modify** in the entry you want to modify. If you want to delete the entry, click the **Delete**.
2. Modify the information.
3. Click the **Save** button.

Click the **Enable All** button to make all entries enabled

Click the **Disable All** button to make all entries disabled.

Click the **Delete All** button to delete all entries.

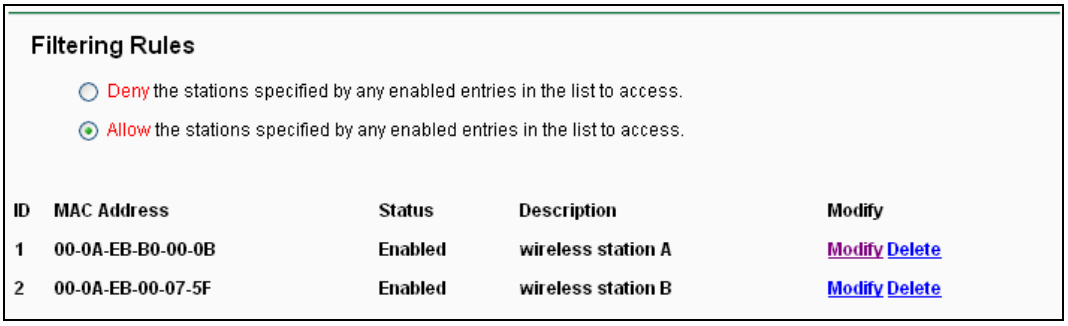
Click the **Next** button to go to the next page.

Click the **Previous** button to return to the previous page.

For example: If you desire that the wireless station A with MAC address 00-0A-EB-B0-00-0B and the wireless station B with MAC address 00-0A-EB-00-07-5F are able to access the Router, but all the other wireless stations cannot access the Router, you can configure the **Wireless MAC Address Filtering** list by following these steps:

1. Click the **Enable** button to enable this function.
2. Select the radio button "**Allow the entries specified by any enabled entries in the list to access**" for **Filtering Rules**.
3. Delete all or disable all entries if there are any entries already.
4. Click the **Add New...** button.
   1) Enter the MAC address 00-0A-EB-B0-00-0B/00-0A-EB-00-07-5F in the **MAC Address** field.
   2) Enter wireless station A/B in the **Description** field.
   3) Select **Enabled** in the **Status** drop-down list.
   4) Click the **Save** button.
   5) Click the **Back** button.

The filtering rules that configured should be similar to the following list:



4.6.4 Wireless Advanced

Choose menu "**Wireless → Wireless Advanced**", you can configure the advanced settings of your wireless network.

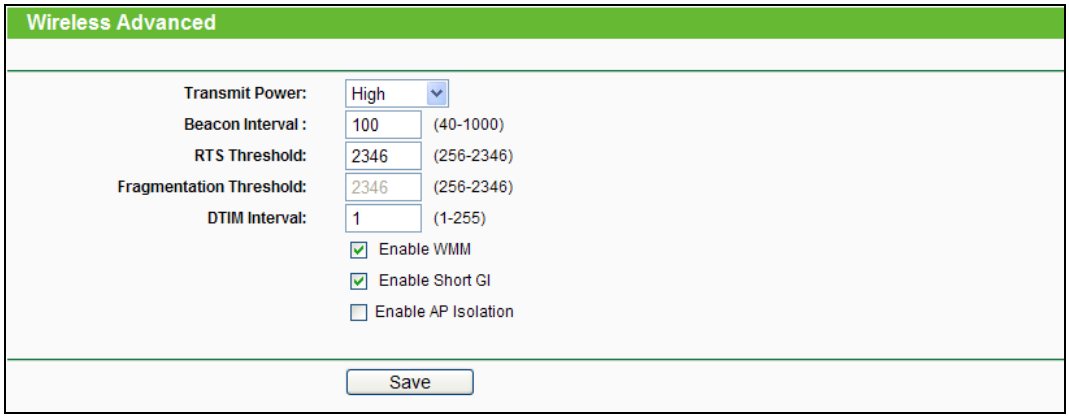


Figure 4-24 Wireless Advanced

- **Transmit Power -** Here you can specify the transmit power of Router. You can select High, Middle or Low which you would like. High is the default setting and is recommended.
- **Beacon Interval -** Enter a value between 20-1000 milliseconds for Beacon Interval here. The beacons are the packets sent by the Router to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. The default value is 100.
- **RTS Threshold -** Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Router will send RTS frames to a particular receiving station and negotiate the sending of a data frame. The default value is 2346.
- **Fragmentation Threshold -** This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance because of excessive packets. 2346 is the default setting and is recommended.
- **DTIM Interval -** This value determines 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. When the Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. You can specify the value between 1-15 Beacon Intervals. The default value is 1, which indicates the DTIM Interval is the same as Beacon Interval.
- **Enable WMM - WMM** function can guarantee the packets with high-priority messages being transmitted preferentially. It is strongly recommended.

- **Enable Short GI -** This function is recommended for it will increase the data capacity by reducing the guard interval time.
- **Enabled AP Isolation -** This function can isolate wireless stations on your network from each other. Wireless devices will be able to communicate with the Router but not with each other. To use this function, check this box. AP Isolation is disabled by default.

☞ **Note:**

If you are not familiar with the setting items in this page, it's strongly recommended to keep the provided default values; otherwise it may result in lower wireless network performance.

4.6.5 Wireless Statistics

Choose menu "**Wireless → Wireless Statistics**", you can see the MAC Address, Current Status, Received Packets and Sent Packets for each connected wireless station.

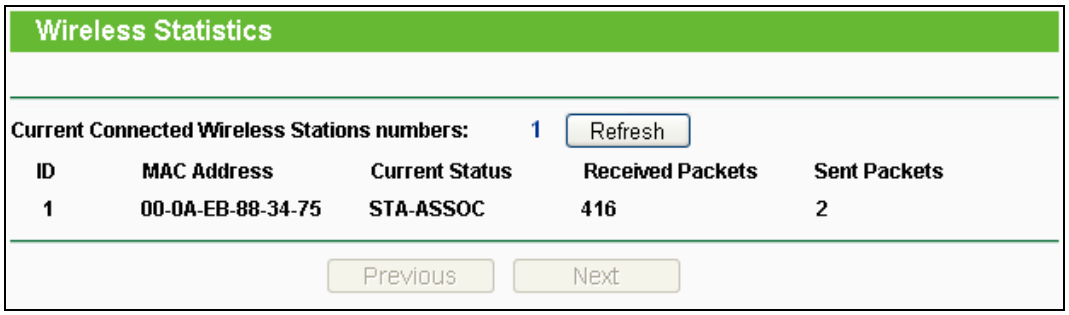


Figure 4-25 Wireless Statistics

- **MAC Address -** The connected wireless station's MAC address
- **Current Status -** The connected wireless station's running status, one of **STA-AUTH/ STA-ASSOC/ STA-JOINED/ WPA/ WPA-PSK/ WPA2/ WPA2-PSK/ AP-UP/ AP-DOWN/ Disconnected**
- **Received Packets -** Packets received by the station
- **Sent Packets -** Packets sent by the station

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.

If the numbers of connected wireless stations go beyond one page, click the **Next** button to go to the next page and click the **Previous** button to return the previous page.

☞ **Note:**

This page will be refreshed automatically every 5 seconds.

4.7 Guest Network

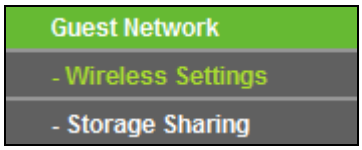


Figure 4-26 The Guest Network menu

There are two submenus under the Guest Network menu (shown in Figure 4-26): **Wireless Settings** and **Storage Sharing**. Click either of them, and you will be able to configure the corresponding functions.

4.7.1 Wireless Settings

Choose menu "**Guest Network → Wireless Settings**", you can configure the Guest Network Wireless Settings on the page as shown in Figure 4-27.

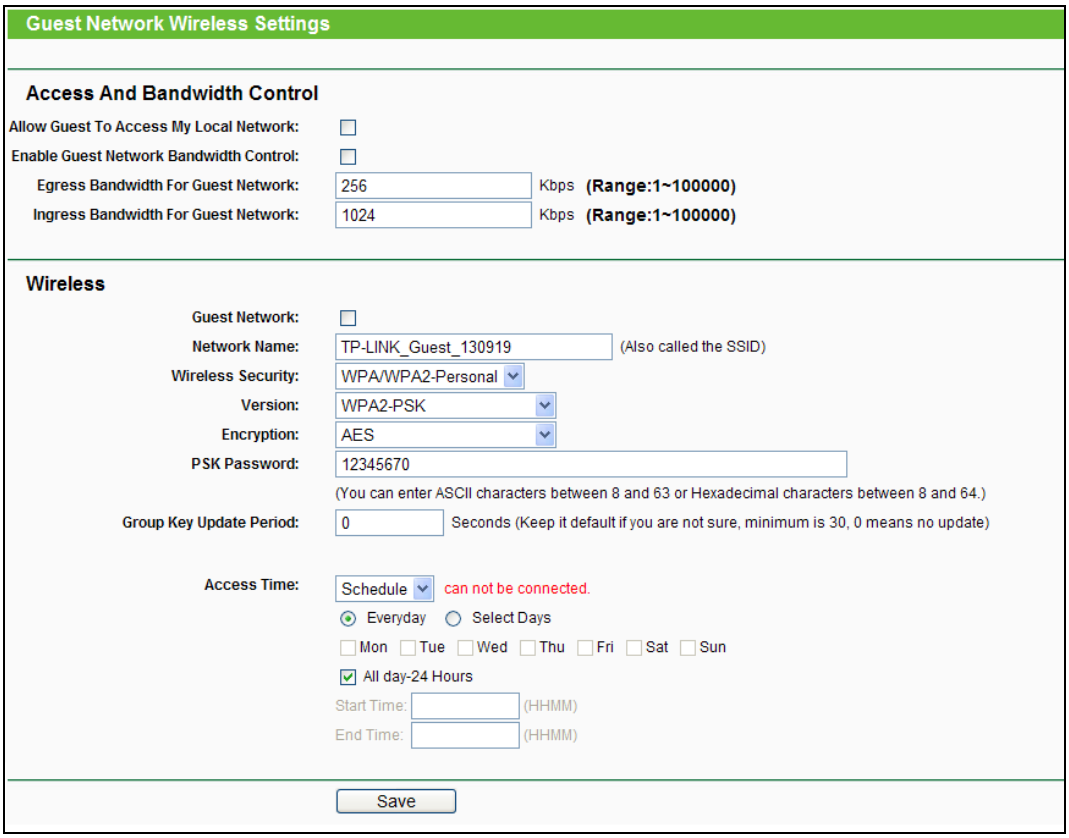


Figure 4-27 Guest Network Wireless Settings

- **Allow Guest To Access My Local Network** - If enabled, guests can communicate with hosts.
- **Enable Guest Network Bandwidth Control** - If enabled, the Guest Network Bandwidth Control rules will take effect.
- **Egress Bandwidth For Guest Network** - The upload speed through the WAN port for Guest Network.

- **Ingress Bandwidth For Guest Network** - The download speed through the WAN port for Guest Network.
- **Guest Network** - Enabled or disable the Guest Network function here.
- **Network Name** - Enter a value of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your Guest Network.
- **Wireless Security** - You can configure the security of Guest Network here.
- **Access Time** - During this time the wireless stations could accessing the AP.

Note:

The range of bandwidth for Guest Network is calculated according to the setting of Bandwidth Control on the page "Bandwidth Control->Control Settings".

4.7.2 Storage Sharing

Choose menu "**Guest Network → Storage Sharing**", you can configure the Guest Network Storage Sharing on the page as shown in Figure 4-28. When a share folder is added, you can view its display name, volume partition, folder path and you can delete the share folder by clicking the **Delete** button.

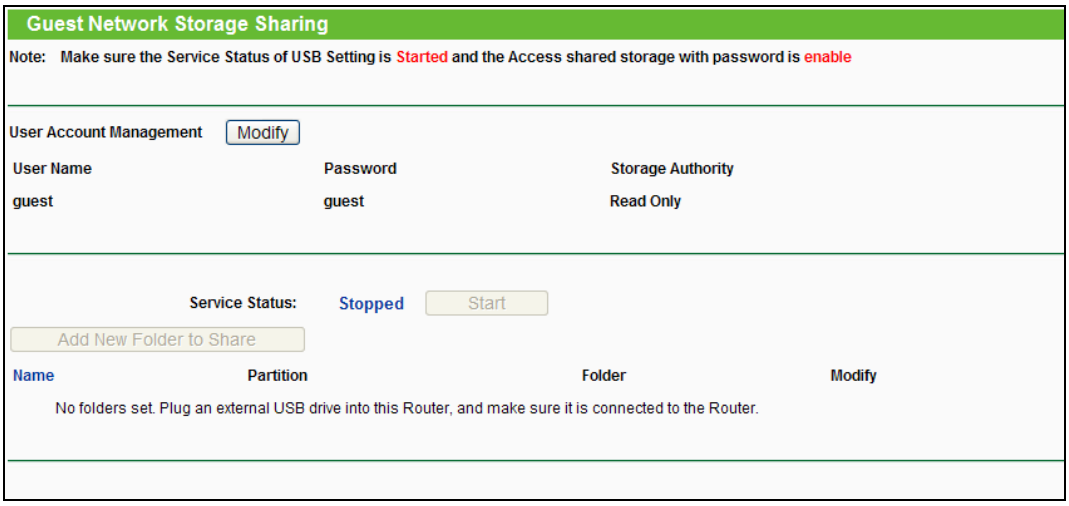


Figure 4-28 Guest Network Storage Sharing

- **User Name** - The user name is guest for Guest Network, which can't be changed.
- **Password** - Enter the password in the Password field. The password must be composed of alphanumeric symbols not exceeding 15 characters in length.
- **Confirm Password** - Re-enter the password here.
- **Storage Authority** - Authority of user: Read Only or Read and Write.
- **Name** - This folder's display name.
- **Partition** - The volume that the folder resides. Volume 1-8 is mapping to USB port 1, Volume 9-16 is mapping to USB port 2.
- **Folder** - The real full path of the specified folder.

You can edit the share folder by clicking **Edit**.

You can delete the share folder by clicking **Delete**.

Follow the instructions below to set up your Guest Network Storage Sharing:

1. Plug an external USB hard disk drive or USB flash drive into this Router.
2. Make sure the Service Status on the page “USB Settings -> Storage Sharing” is **Started**.
3. Make sure the Access shared storage with password on the page “USB Settings -> Storage Sharing” is **Enabled**.
4. Click the **Start** button to start the Guest Network Storage Sharing.
5. Click the **Add New Folder to Share** button to specify a folder to share for the guests.

There is one default user account that can access the Guest Network Storage Sharing. Clicking **Modify** on Figure 4-28, there will pop up Figure 4-29, where you can change the password and storage authority of the account.

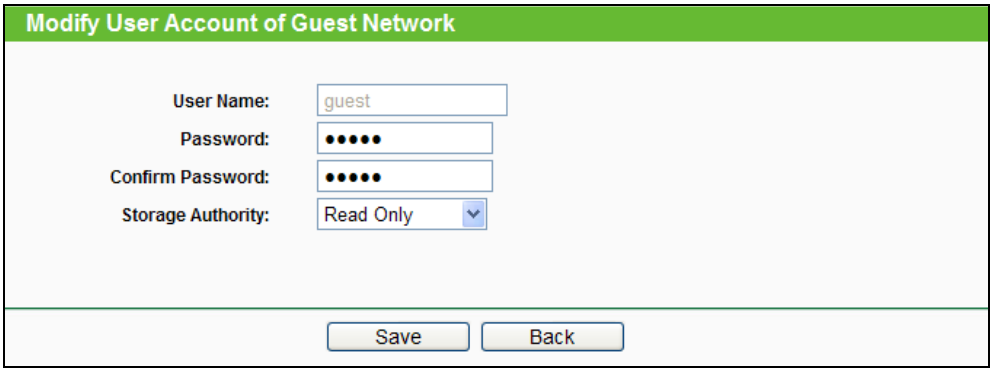


Figure 4-29 Modify User Account of Guest Network

Note:

1. If you want guests visit folders of Guest Network Storage Sharing with guest account, you must enable Access shared storage with password on the page “USB Settings -> Storage Sharing”, or the guests can't access to the Guest Network Storage Sharing.
2. The max share folders number is 6. If you want to share a new folder when the number has reached 6, you can delete a share folder and then add a new one.

4.8 DHCP

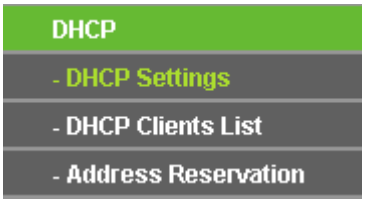


Figure 4-30 The DHCP menu

There are three submenus under the DHCP menu (shown in Figure 4-30), **DHCP Settings**, **DHCP Clients List** and **Address Reservation**. Click any of them, and you will be able to configure the corresponding function.

4.8.1 DHCP Settings

Choose menu "**DHCP → DHCP Settings**", you can configure the DHCP Server on the page as shown in Figure 4-31.The Router is set up by default as a DHCP (Dynamic Host Configuration Protocol) server, which provides the TCP/IP configuration for all the PC(s) that are connected to the Router on the LAN.

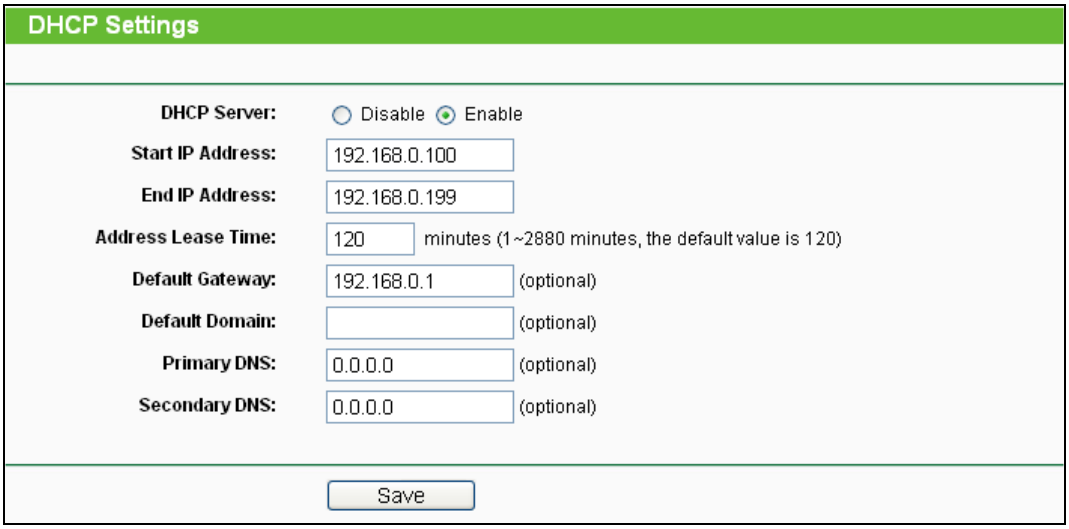


Figure 4-31 DHCP Settings

- **DHCP Server - Enable** or **Disable** the DHCP server. If you disable the Server, you must have another DHCP server within your network or else you must configure the computer manually.
- **Start IP Address -** Specify an IP address for the DHCP Server to start with when assigning IP addresses. 192.168.0.100 is the default start address.
- **End IP Address -** Specify an IP address for the DHCP Server to end with when assigning IP addresses. 192.168.0.199 is the default end address.
- **Address Lease Time -** The **Address Lease Time** is the amount of time a network user will be allowed connection to the Router with their current dynamic IP Address. Enter the amount of time in minutes and the user will be "leased" this dynamic IP Address. After the time is up, the user will be automatically assigned a new dynamic IP address. The range of the time is 1 ~ 2880 minutes. The default value is 120 minutes.
- **Default Gateway -** (Optional.) It is suggested to input the IP address of the LAN port of the Router. The default value is 192.168.0.1.
- **Default Domain -** (Optional.) Input the domain name of your network.
- **Primary DNS -** (Optional.) Input the DNS IP address provided by your ISP or consult your ISP.
- **Secondary DNS -** (Optional.) Input the IP address of another DNS server if your ISP provides two DNS servers.

☞ **Note:**

To use the DHCP server function of the Router, you must configure all computers on the LAN as "Obtain an IP Address automatically".

4.8.2 DHCP Clients List

Choose menu "**DHCP → DHCP Clients List**", you can view the information about the clients attached to the Router in the screen as shown in Figure 4-32.

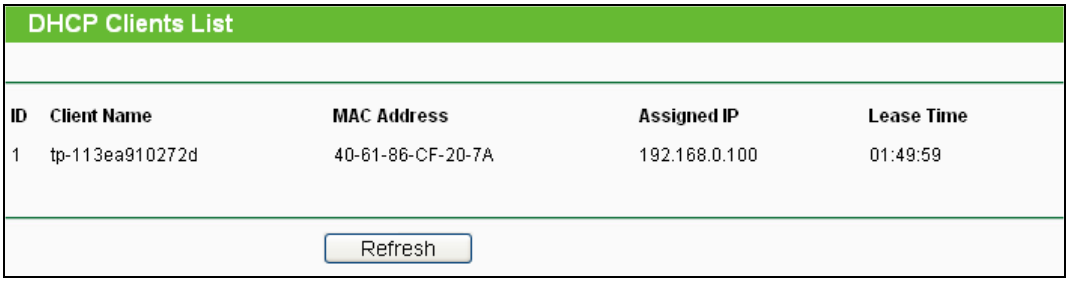


Figure 4-32 DHCP Clients List

- **Client Name -** The name of the DHCP client
- **MAC Address -** The MAC address of the DHCP client
- **Assigned IP -** The IP address that the Router has allocated to the DHCP client
- **Lease Time -** The time of the DHCP client leased. After the dynamic IP address has expired, a new dynamic IP address will be automatically assigned to the user.

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

4.8.3 Address Reservation

Choose menu "**DHCP → Address Reservation**", you can view and add a reserved address for clients via the next screen (shown in Figure 4-33).When you specify a reserved IP address for a PC on the LAN, that PC will always receive the same IP address each time when it accesses the DHCP server. Reserved IP addresses should be assigned to the servers that require permanent IP settings.

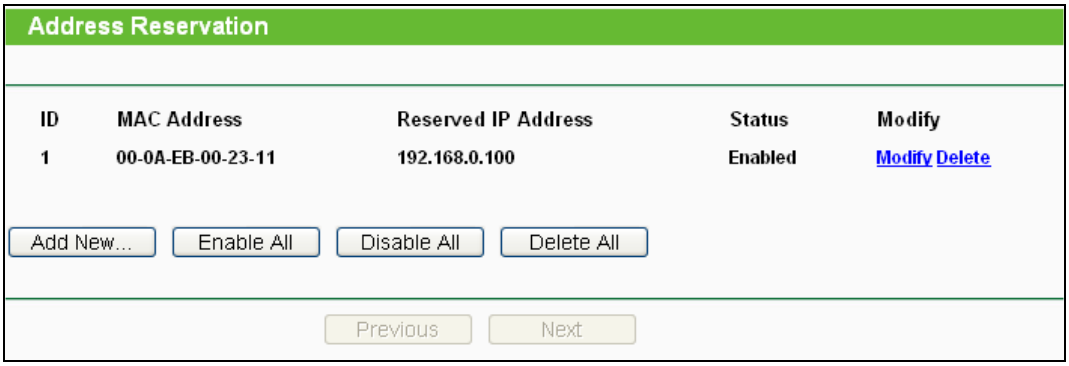


Figure 4-33 Address Reservation

- **MAC Address -** The MAC address of the PC for which you want to reserve an IP address.
- **Reserved IP Address -** The IP address reserved for the PC by the Router.
- **Status -** The status of this entry, either **Enabled** or **Disabled**.

To Reserve an IP address:

1. Click the **Add New…** button. Then Figure 4-34 will pop up.
2. Enter the MAC address (in XX-XX-XX-XX-XX-XX format.) and IP address (in dotted-decimal notation) of the computer for which you want to reserve an IP address.
3. Click the **Save** button.

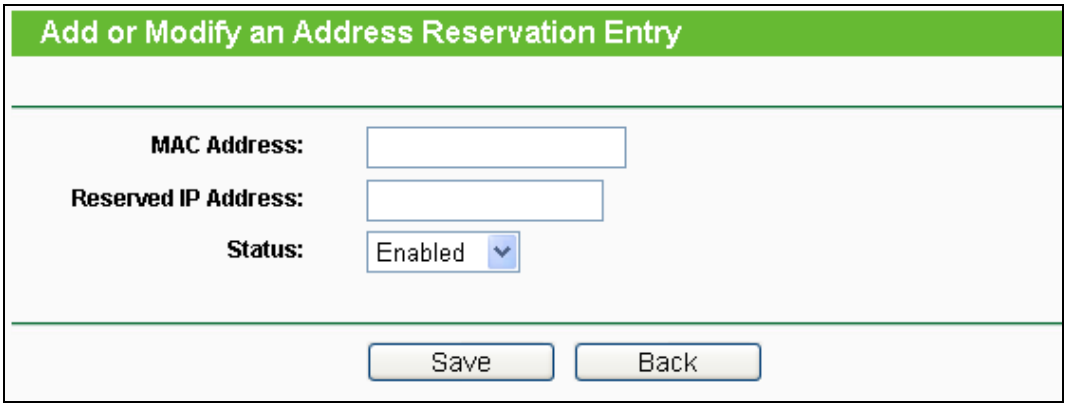


Figure 4-34 Add or Modify an Address Reservation Entry

To modify or delete an existing entry:

1. Click the **Modify** in the entry you want to modify. If you want to delete the entry, click the **Delete**.
2. Modify the information.
3. Click the **Save** button.

Click the **Enable/Disable All** button to make all entries enabled/disabled.

Click the **Delete All** button to delete all entries.

Click the **Next** button to go to the next page and Click the **Previous** button to return the previous page.

4.9 VPN

Figure 4-35 The VPN menu

There are three submenus under the VPN menu (shown in Figure 4-35), **IKE**, **IPsec** and **Security Alliance List**. Click any of them, and you will be able to configure the corresponding function.

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

4.9.1 IKE

IKE (Internet Key Exchange) Proposal is used for key negotiation before VPN tunnels based on IPSec are established. Here you could easily set up high-security connections with IKE but make sure that the IKE settings should be the same for the local and peer endpoints.

Choose menu "**VPN → IKE**", you can view the information of IKE Policies in this table (shown in Figure 4-37) and edit them by the action buttons.

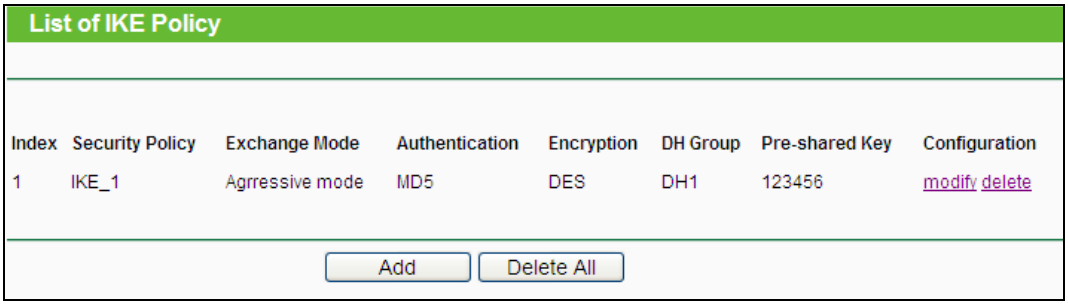


Figure 4-36 List of IKE Policy

To add a new IKE Policy entry, click the **Add** button and the next screen will pop-up as shown in Figure 4-37. You can set parameters for IKE Policy entry on this page.

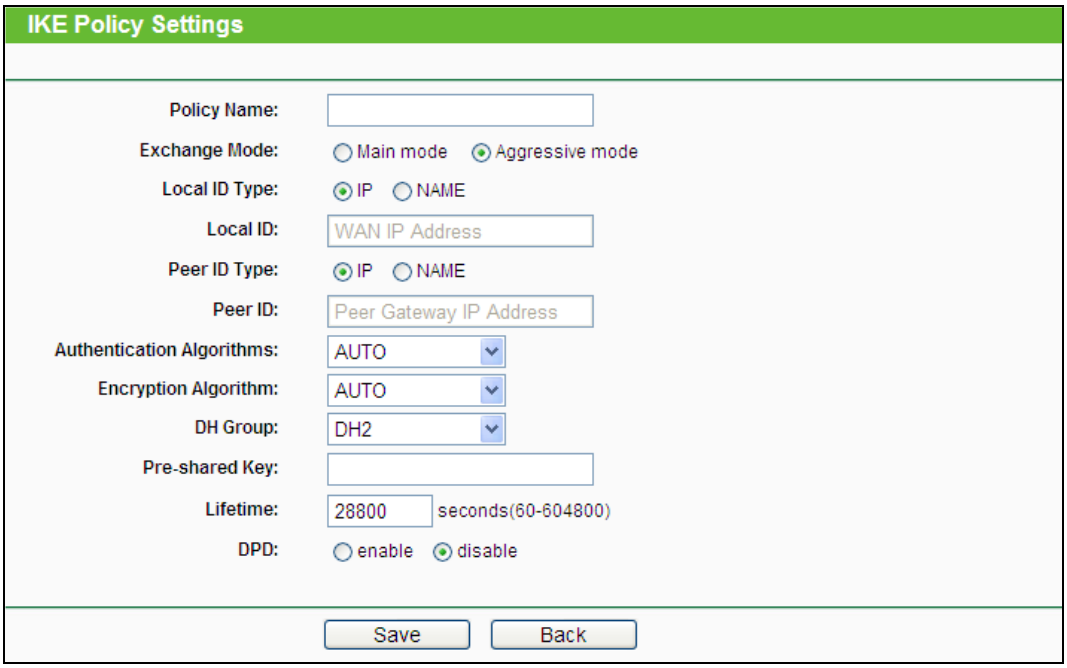


Figure 4-37 IKE Policy Settings

- **Policy Name -** Specify a unique name to the IKE policy for identification and management purposes.
- **Exchanged Mode -** Select the IKE Exchange Mode in phase 1, and ensure the remote VPN peer uses the same mode.
  - **Main mode -** Provides identity protection and exchanges more information, which applies to the scenarios with higher requirement for identity protection.
  - **Aggressive mode -** Establishes a faster connection but with lower security, which applies to scenarios with lower requirement for identity protection.
- **Local/Peer ID Type -** Select the type of Local ID/Peer ID for negotiation in **Aggressive mode**.
- **Local/Peer ID -** If "IP" is selected, enter the IP Address of gateway for negotiation; if "NAME" is selected, enter the name for negotiation.
- **Authentication Algorithm -** Select the authentication algorithm for IKE Negotiation.
- **Encryption Algorithm -** Select the encryption algorithm for IKE Negotiation.
- **DH Group -** Select the parameter of Diffie-Hellman algorithm for IKE Negotiation.
- **Pre-shared Key -** Manually enter ASCII characters for the Pre-shared key that should be the same for the local and peer endpoints.
- **Lifetime -** Manually enter the number of seconds for the IKE Lifetime (The period of time to pass before establishing a new IKE security association (SA) with the peer endpoint). The default value is 28800.
- **DPD -** Enable or disable DPD (Dead Peer Detect) function. If enabled, a Dead Peer Detection (DPD) packet is sent from the VPN Concentrator to the VPN Client to ensure its peer is still there.
- **DPD Interval -** Manually enter the number of seconds for the DPD Interval. The default value is 10.

To modify or delete an existing entry:

1. Find the desired entry in the table.
2. Click **modify** or **delete** as desired on the **Configuration** column.

Click the **Delete All** button to delete all entries.

4.9.2 IPsec

IPsec (IP Security) is a set of services and protocols defined by IETF (Internet Engineering Task Force) to provide high security for IP packets and prevent attacks.

To ensure a secured communication, the two IPsec peers use IPsec protocol to negotiate the data encryption algorithm and the security protocols for checking the integrity of the transmission data, and exchange the key to data de-encryption.

Choose menu "**VPN → IPsec**", you can view the information of IPsec Policies in this table (shown in Figure 4-38) and edit them by the action buttons. Check the **Enable** box and click the **Save** button to enable IPsec function.

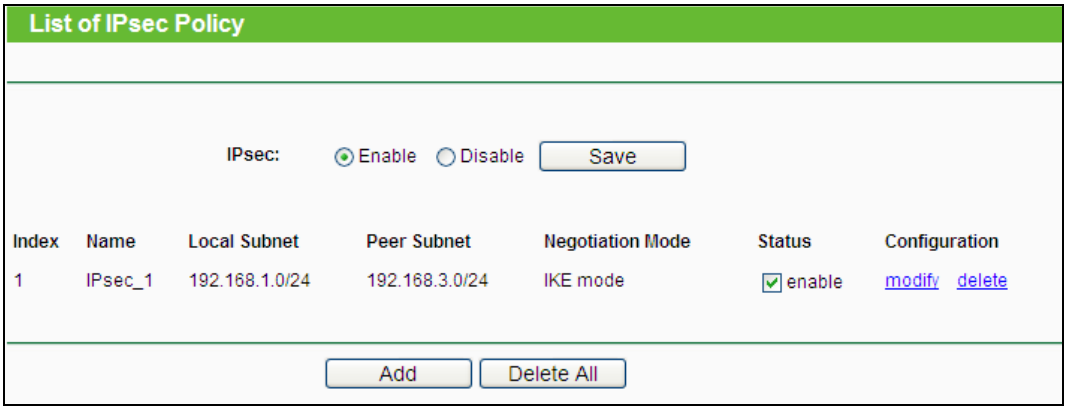


Figure 4-38 List of IPsec Policy

To add a new IPsec Policy entry, click the **Add** button and the next screen will pop-up as shown in Figure 4-39. You can set parameters for IPsec Policy entry on this page.

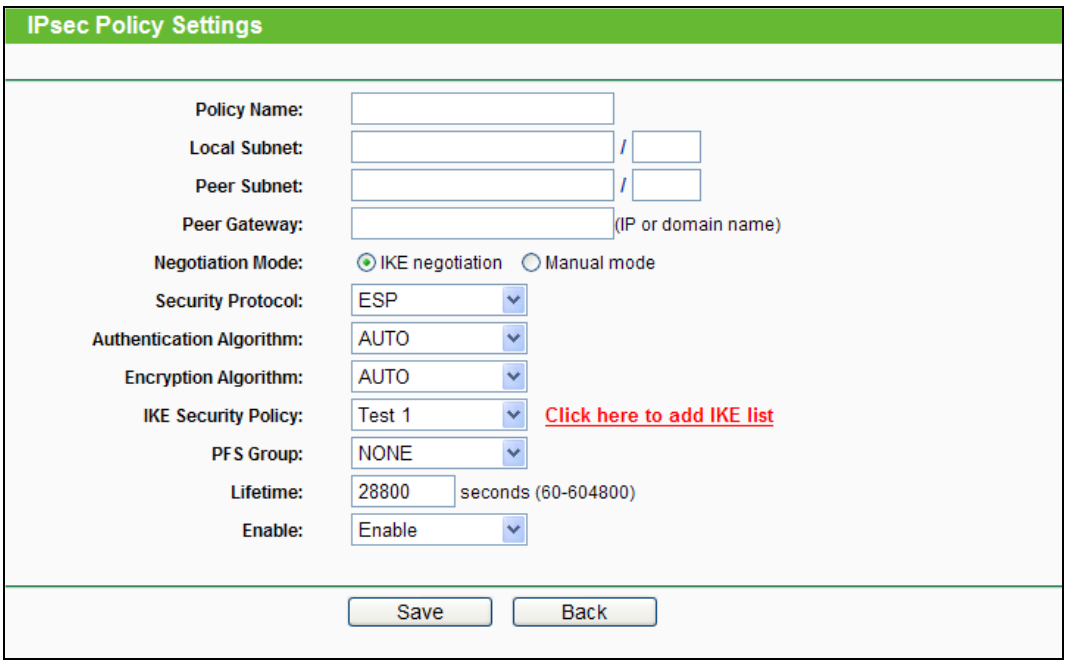


Figure 4-39 IPsec Policy Settings

- **Policy Name -** Enter the name for the IPsec Policy.
- **Local Subnet -** Enter the local (LAN) subnet and mask.(ex. 192.168.0.0/24)
- **Peer Subnet -** Enter the Peer subnet and mask.

- **Peer Gateway -** Enter the Peer gateway or domain.
- **Negotiation Mode -** Here you could find two options, IKE Negotiation Mode and Manually Mode. You are recommended to select the default mode-- IKE Negotiation Mode, and all the parameters could be negotiated automatically according to IKE. If Manually Mode is selected, you should manually set up the Encryption and SPI parameters according to the instructions.
- **Security Protocol -** Select the Security Protocol from the drop-down list. Here you could find AH (Authentication Header) and ESP (Encapsulation Security Payload) protocols.
- **Authentication Algorithm -** Select the Authentication Algorithm for IPsec connection. You could also keep the default value "Auto".
- **Encryption Algorithm -** Select the Encryption Algorithm for IPsec connection. You could also keep the default value "Auto".
- **In SPI -** It is for direction in SPI parameter set in manual mode, and the parameter must be the same as peer **Out SPI.**
- **In Authentication Key -** It is for direction in authentication key set in manual mode, and the key must be the same as peer **Out Authentication Key.**
- **Out SPI -** It is for direction out SPI parameter set in manual mode, and the parameter must be same as peer **In SPI.**
- **Out Authentication Key -** It is for direction out authentication key set in manual mode, and the key must **be** same as peer **In Authentication Key.**
- **PFS Group -** Select the PFS property from the drop-down list that should be the same for the local and remote endpoints. If you select "None" for local endpoint, any value is accepted for remote endpoint.
- **Lifetime -** Manually enter the number of seconds for the IPsec Lifetime. The default value is 28800.
- **Enable** - Enable or Disable current policy.

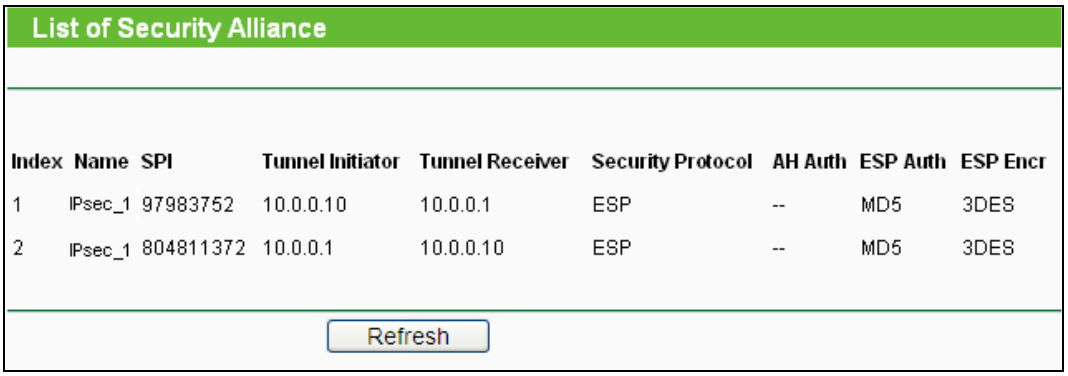
To modify or delete an existing entry:

1. Find the desired entry in the table.
2. Click **modify** or **delete** as desired on the **Configuration** column.

Click the **Delete All** button to delete all entries.

4.9.3 Security Alliance List

Choose "**VPN→Security Alliance List**", you can view the information of the IPsec SA (Security Alliance) in this table (shown in Figure 4-40).



Index	Name	SPI	Tunnel Initiator	Tunnel Receiver	Security Protocol	AH Auth	ESP Auth	ESP Encr
1	IPsec_1	97983752	10.0.0.10	10.0.0.1	ESP	--	MD5	3DES
2	IPsec_1	804811372	10.0.0.1	10.0.0.10	ESP	--	MD5	3DES

Figure 4-40 List of Security Alliance

- **Name -** Here displays the name or description of the IPsec policy.
- **SPI -** Here displays the SPI (Security Parameter Index) of each specific IPsec policy.
- **Tunnel Initiator -** Tunnel initiator gateway.
- **Tunnel Receiver -** Tunnel receiver gateway.
- **Security Protocol -** Here displays the Security Protocol of the IPsec policy.
- **AH Auth -** Here displays the AH Authentication Algorithm of the IPsec policy.
- **ESP Auth -** Here displays the ESP Authentication Algorithm of the IPsec policy.
- **ESP Encr -** Here displays the ESP Encryption Algorithm of the IPsec policy.

Figure 4-40 displays the connection status of the NO.1 entry in the List of IPsec policy in Figure 4-39. As shown in the figure, the IP address of WAN and the default gateway of remote peer are 10.0.0.10 and 10.0.0.1 respectively. Security protocol and other parameters for IPsec tunnel and the remote router should be configured the same.

As Security Association is unidirectional, an ingoing SA and an outgoing SA are created to protect data flows for each tunnel after IPsec tunnel is successfully established. The ingoing SPI value and outgoing SPI value are different. However, the Incoming SPI value must match the Outgoing SPI value at the other end of the tunnel, and vice versa.

4.10 USB Settings

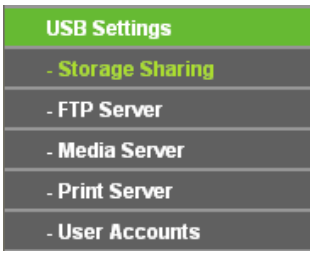


Figure 4-41 The USB Settings menu

There are four submenus under the USB Settings menu (shown in Figure 4-41), **Storage Sharing**, **FTP Server**, **Media Server**, **Print Server** and **User Accounts**. Click any of them, and you will be

able to configure the corresponding function.

4.10.1 Storage Sharing

Choose menu "**USB Settings→Storage Sharing**", you can configure a USB disk drive attached to the Router and view volume and share properties such as share name, capacity, used space, and free space, etc on this page as shown below.

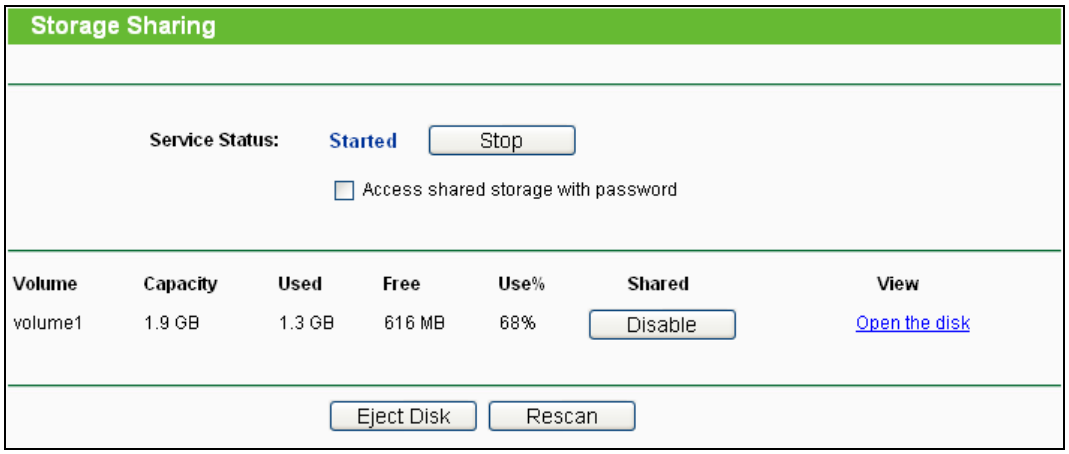


Figure 4-42 Storage Sharing

- **Service Status -** Indicates the Network Sharing service's current status. You can click the **Start** button to start the Storage Sharing service and click the **Stop** button to stop it.
- **Volume -** The volume name of the USB drive the users have access to.
- **Capacity -** The storage capacity of the USB driver.
- **Used -** The used space of the USB driver.
- **Free -** The available space of the USB driver.
- **Use% -** The percentage of the used space.
- **Shared -** Indicates the shared or non-shared status of the volume. When the volume is shared, you can click the **Disable** to stop sharing the volume; when volume is non-shared, you can click the **Enable** button to share the volume.

Click the **Start** button to start the Network Sharing service.

Click the **Stop** button to stop the Network Sharing service.

Click the **Eject Disk** button to safely remove the USB storage device that is connected to USB port. This takes the drive offline. A message (as shown in Figure 4-43) will appear on your web browser when it is safe to detach the USB disk.

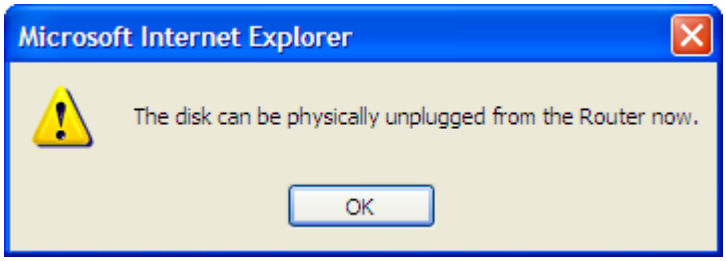


Figure 4-43 Safe Unplug Message

Click the **Rescan** button to start a new scan.

Follow the instructions below to set up your Router as a file server:

1. Plug an external USB hard disk drive or USB flash drive into this Router.
2. Click the **Rescan** button to find the USB drive that has been attached to the Router.
3. Click the **Start** button to start the Storage Sharing service.
4. Click the **Enable** button under **Shared** to enable the disk to share.
5. Click the **Open the disk** to visit the sharing disk.

☞ **Note:**

1. The Router cannot automatically locate new USB drive. You have to click the **Rescan** button manually to display a list of volumes and information about them.
2. The new settings will not take effect until you restart the service.
3. To unplug the USB drive, click **Eject Disk** button first. Simply pulling USB drive out of the USB port can cause damage to the device and loss of data.
4. Mounted volumes are subject to the 8-volume limit. So you cannot access more than 8 volumes on the USB storage device.

4.10.2 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.

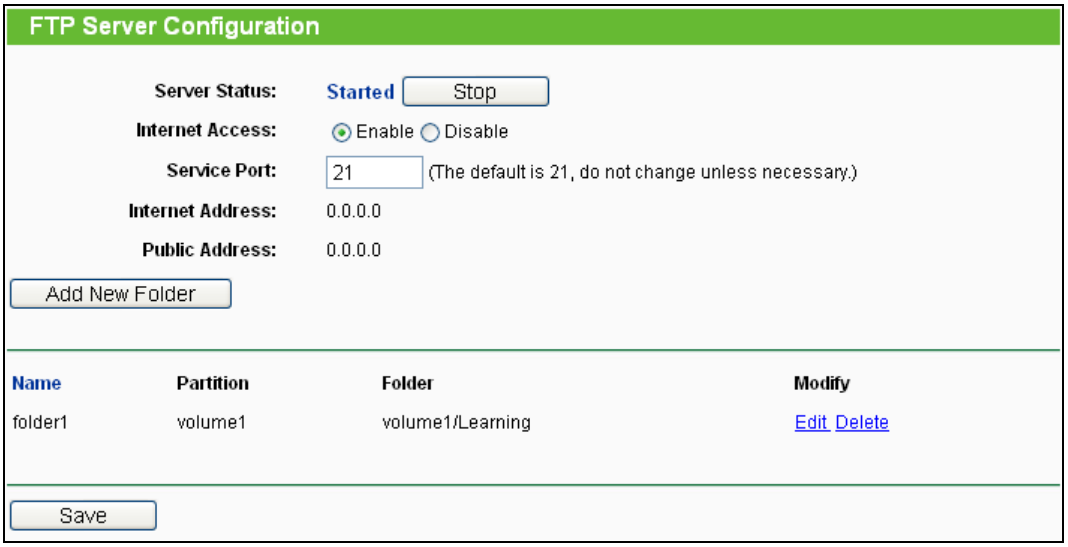


Figure 4-44 FTP Server Configuration

- **Server Status -** Indicates the FTP Server's current status.
- **Internet Access -** Select enable to allow access of the FTP server from the Internet. Otherwise, select disable to only allow local network access.
- **Service Port -** Enter the FTP Port number to use. The default is 21.
- **Name -** This folder's display name.
- **Partition -** The name of the partition is displayed.
- **Folder -** The real full path of the specified folder.

To set up your FTP Server, please follow the instructions below:

1. Plug an external USB hard disk drive or USB flash drive into this Router.
2. Click the **Enable/Disable** radio box to enable/disable Internet access to FTP from WAN port.
3. Specify a port for the FTP server to use (The default port number is 21).
4. The **Internet Address** displays the WAN IP address of this router, so that other users can access FTP via this address.
5. If WAN type is PPPOE/PPTP/L2TP, two connections will be available. Therefore, users can access FTP server via two connections. Users in a private LAN can access ftp server via **Public Address** while Internet users can access ftp server via **Internet Address**.
6. Click the **Start** button to start the ftp server.

To add a new folder, follow the instructions below.

1. Click **Add New Folder** in Figure 4-44.

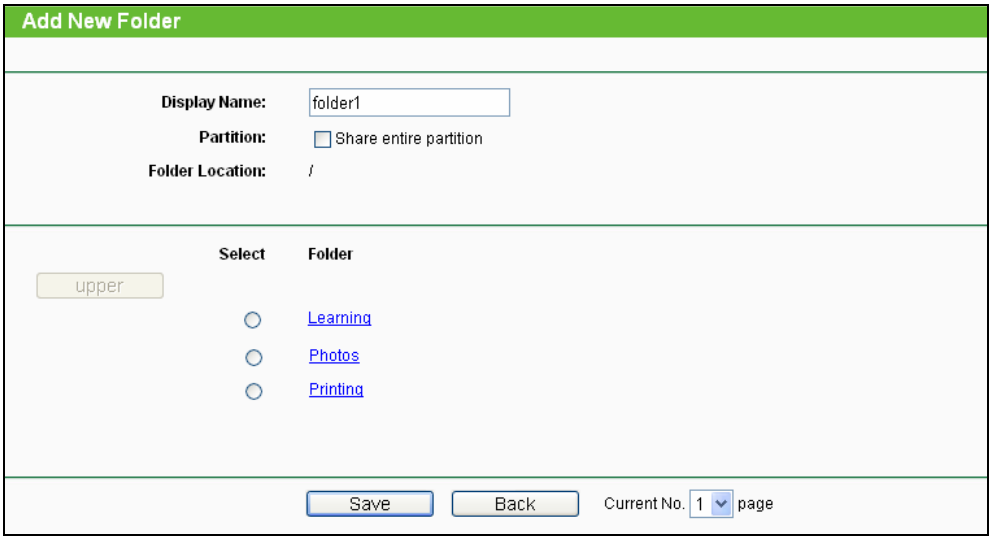


Figure 4-45 Add or Modify Share Folder

2. Select the **Share entire partition** or a specific folder option.
3. Enter display name of the share folder in **Display Name** filed.
4. Click the **Save** button to save the settings.

You can click the **upper** button to go to the upper folder.
You can click the **Back** button to return to the ftp server configuration page.

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 need to restart FTP Server to make the changes take effect.
3. The max FTP clients number is 2.

4.10.3 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.

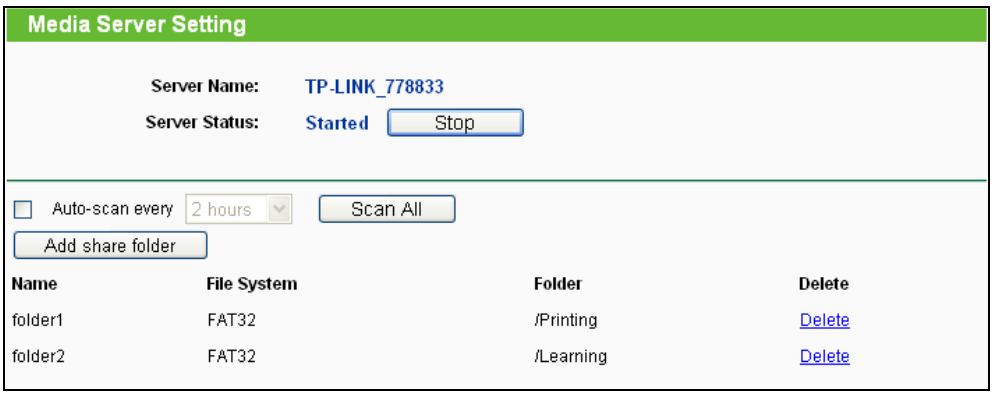


Figure 4-46 Media Server Setting

- **Server Name** - The name of this Media Server.
- **Server Status** - Indicates the Media Server's current status, started or stopped. You can click the **Start** button to start the Media Server and click the **Stop** button to stop it.
- **Name** - The display name of this folder.
- **File System** - The file system type on the partition can be FAT32 or NTFS.
- **Folder** - The real full path of the specified folder.
- **Delete** - You can delete the share folder by clicking **Delete**.

To set up your media server, please follow the instructions below:

1. Plug an external USB hard disk drive or USB flash drive into this Router, and then the screen will appear as shown in Figure 4-47.

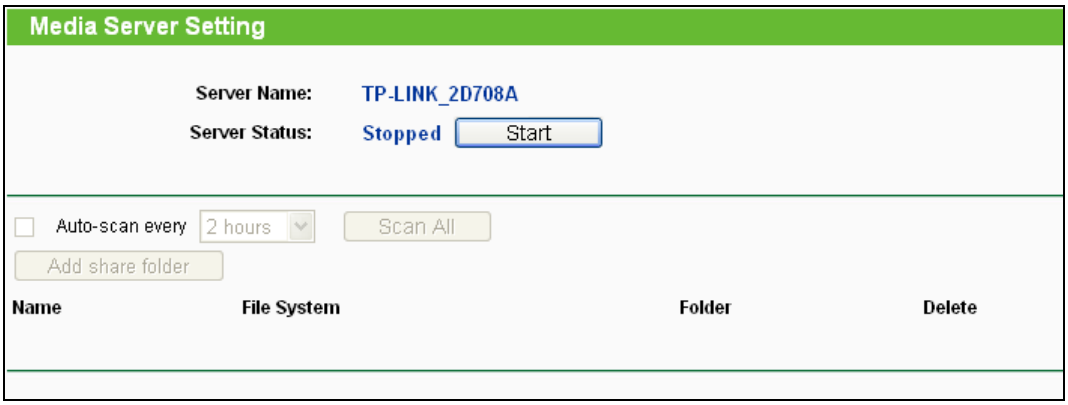


Figure 4-47 Media Server Setting

2. Click the **Start** button to start the media server, and then the screen will appear as shown in Figure 4-48.

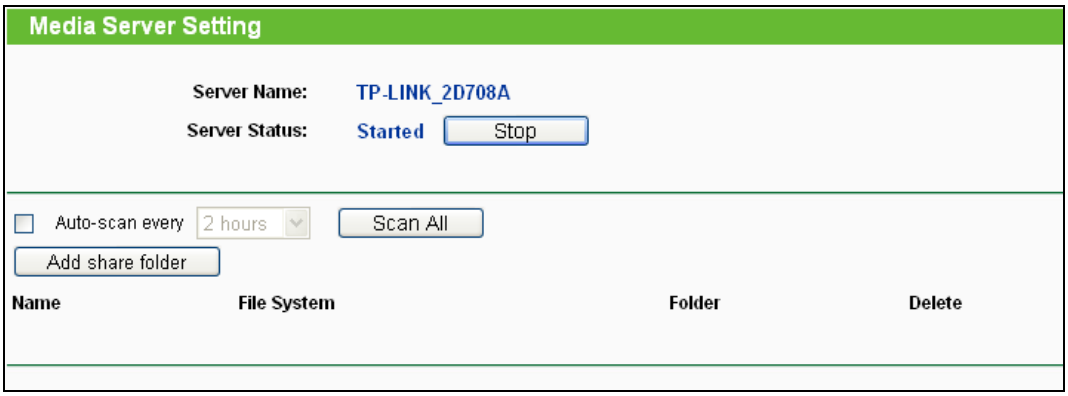


Figure 4-48 Media Server Setting

3. Click the **Add share folder** button to specify a folder as the search path of media server. The screen will then appear as shown in Figure 4-49.

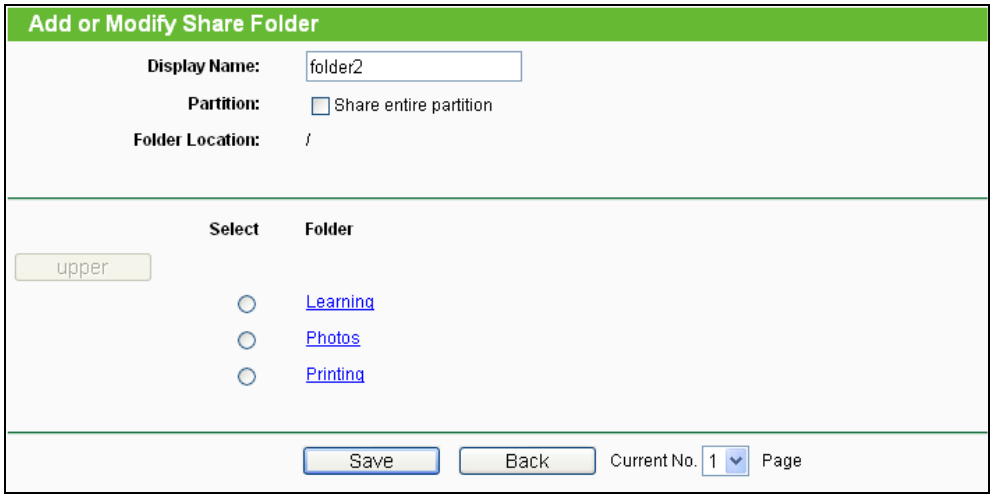


Figure 4-49 Add New Folder

- **Display Name** - You can enter a display name for the share folder.
- **Share entire partition** - You can select this option and then the folders contained in this partition will all be shared.
- **Folder Location**- Displays the location of this folder.
- **Select** - You can select this option to share the specified folder.
- **Folder** - Name of folders that is in current path.
- **upper** - You can click the **upper** button to get into the upper folder.
- **Save** - You can click the **Save** button to save your settings and the page will be redirected to the media server configuration page.
- **Back** - You can click the **Back** button to discard the settings and just go to the media server configuration page.

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

a) Select the **Share entire partition** or a specified folder option.

b) Enter the display name of the share folder in **Display Name** edit box.

c) Click the **Save** button to save the configuration and the page will be redirected to the media server configuration page as shown in Figure 4-50.

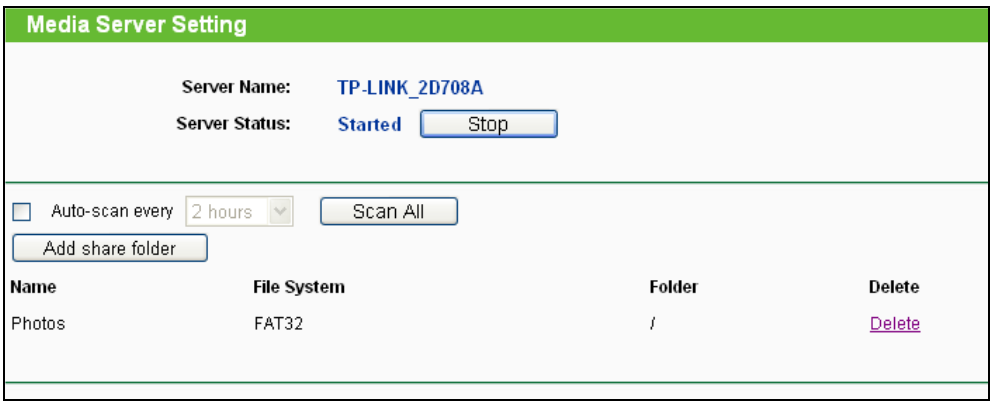


Figure 4-50 Media Server Setting

4. Click the **Scan All** button to scan all the share folders immediately. You can also tick the **Auto-scan every** at the 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 to share a new folder when the number has reached 6, you can delete an existing share folder and then add a new one.

4.10.4 Print Server

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

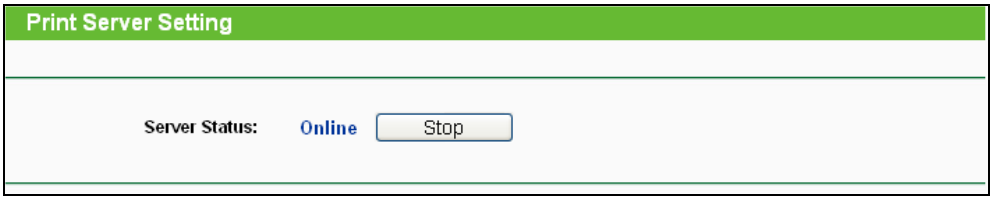


Figure 4-51 Pint Server Setting

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

- **Online -** Indicates the print service has been turned on. 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.

4.10.5 User Accounts

You can specify the user name and password for Storage Sharing and FTP Server users on this page. **Storage Sharing** users can use Internet Explorer to access files on the USB drive. FTP Server users can log into the FTP Server via FTP Client.

There are two default user accounts that can access the Storage Sharing and FTP Server. They are Administrator and Guest (as shown in Figure 4-52). Administrator has read/write access to Storage Sharing and can access FTP Server while Guest has read-only access to Storage Sharing and can not access FTP Server.

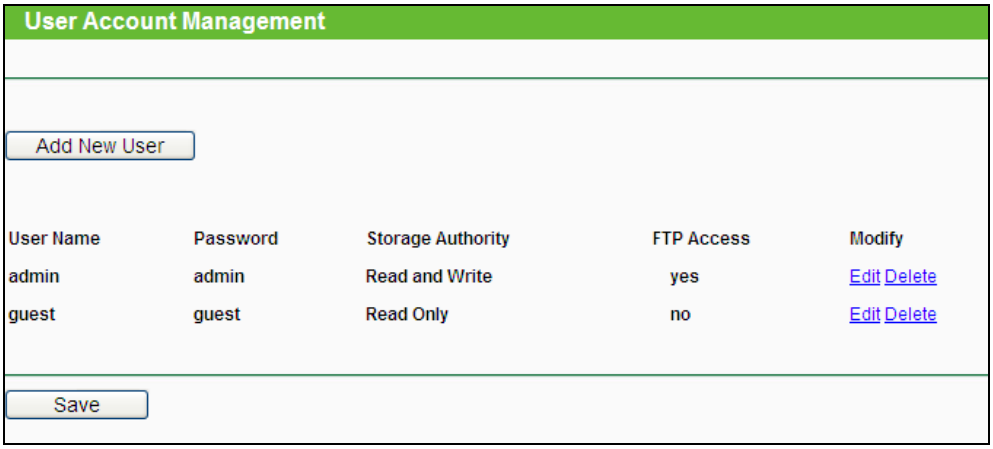


Figure 4-52 User Account Management

Only Administrator can use a Web browser to transfer the files from a PC to the Writable shared volume on the USB drive.

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

1. Click **Add New User** button, and the screen will appear as shown in Figure 4-53.
2. Self-define a **User Name**.
3. Enter the password in the **Password** field.
4. Re-enter the password in the **Confirm Password** field.
5. Choose the Storage Authority from the drop-down list, **Read and Write** or **Read Only**.
6. Choose FTP Access from the drop-down list, **Yes** or **No**.

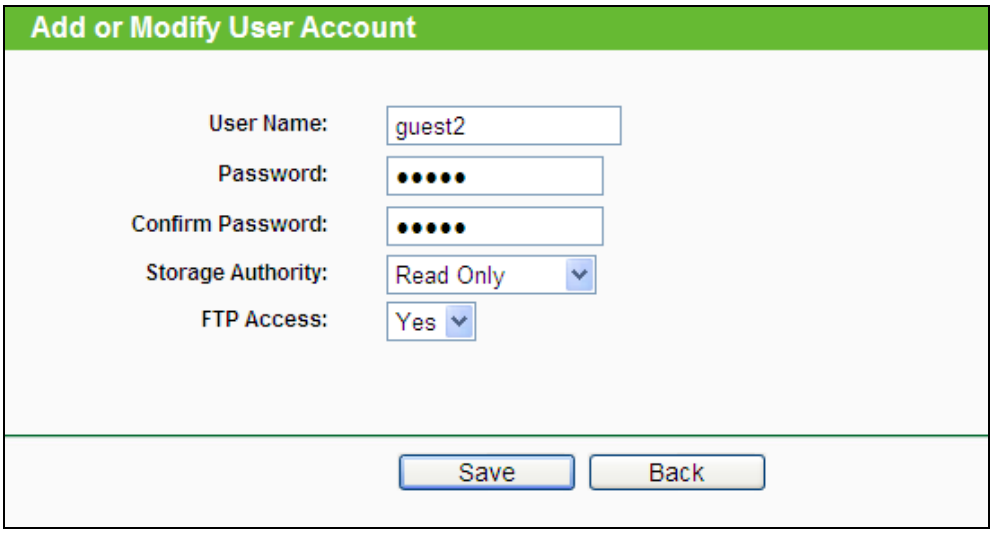


Figure 4-53 Add or Modify User Account

- **User Name -** Type the user name that you want to give access to the USB drive. The user name must be composed of alphanumeric symbols not exceeding 15 characters in length.
- **Password -** Enter the password in the Password field. The password must be composed of alphanumeric symbols not exceeding 15 characters in length. For security purposes, the

password for each user account is not displayed.

- **Confirm Password -** Re-enter the password here.
- **Storage Authority -** Choose **Read and Write** or **Read Only** from the drop-down list to assign access authority of Storage Sharing to the user.
- **FTP Access -** Choose **Yes** or **No** from the drop-down list to decide whether the user can access FTP Server or not.
- **Save** - You can click the **SAVE** button to save your settings.
- **Back** - You can click the **Back** button to discard the settings and just go to the media server configuration page.

Note:

1. The two default user accounts cannot be deleted.
2. Please restart the service for the new settings to take effect.
3. If you cannot use the new user name and password to access the shares, press **Windows logo** + **R** to open the Run dialog box and type **net use \\192.168.0.1 /delete /yes** and press Enter. (192.168.0.1 is your router's LAN IP address. If the LAN IP of the modem connected with your router is 192.168.0.x, the default LAN IP of the Router will automatically switch from 192.168.0.1 to 192.168.1.1 to avoid IP conflict; in this case, please try **net use \\192.168.1.1 /delete / yes**.)

4.11 Forwarding

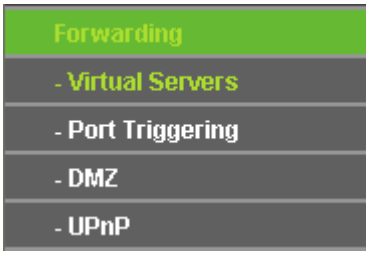


Figure 4-54 The Forwarding menu

There are four submenus under the Forwarding menu (shown in Figure 4-54): **Virtual Servers**, **Port Triggering**, **DMZ** and **UPnP**. Click any of them, and you will be able to configure the corresponding function.

4.11.1 Virtual Servers

Choose menu "**Forwarding→Virtual Servers**", and then you can view and add virtual servers in the next screen (shown in Figure 4-55). Virtual servers can be used for setting up public services on your LAN. A virtual server is defined as a service port, and all requests from 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.

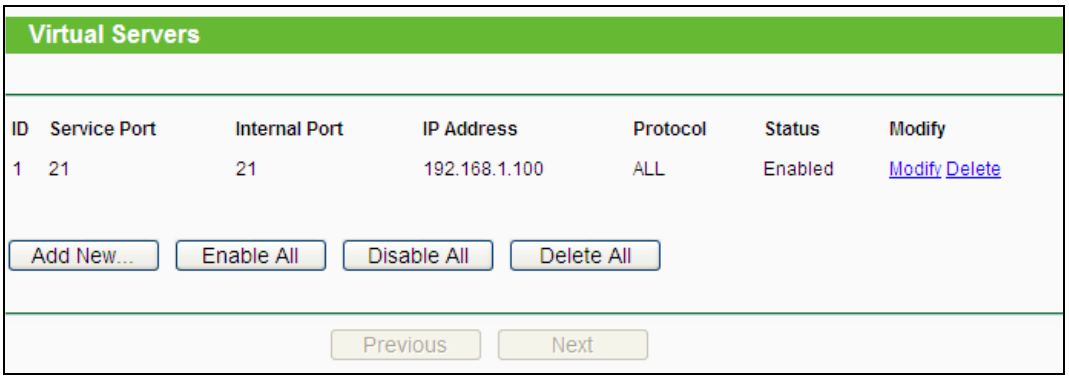


Figure 4-55 Virtual Servers

- **Service Port** - The numbers of External Service Ports. You can enter a service port or a range of service ports (the format is XXX - YYY; XXX is the Start port and YYY is the End port).
- **Internal Port** - The Internal Service Port number of the PC running the service application. You can leave it blank if the **Internal Port** is the same as the **Service Port**, or enter a specific port number when **Service Port** is a single one.
- **IP Address** - The IP address of the PC running the service application.
- **Protocol** - The protocol used for this application, either **TCP**, **UDP**, or **All** (all protocols supported by the Router).
- **Status** - The status of this entry, "Enabled" means the virtual server entry is enabled.
- **Common Service Port** - Some common services already exist in the drop-down list.
- **Modify** - To modify or delete an existing entry.

To set up a virtual server entry:

1. Click the **Add New...** button. (pop-up Figure 4-56)
2. Select the service you want to use from the **Common Service Port** list. If the **Common Service Port** menu does not list the service that you want to use, enter the number of the service port or service port range in the **Service Port** field.
3. Enter the IP address of the computer running the service application in the **IP Address** field.
4. Select the protocol used for this application in the **Protocol** drop-down list, either **TCP**, **UDP**, or **All**.
5. Select the **Enabled** option in the **Status** drop-down list.
6. Click the **Save** button.

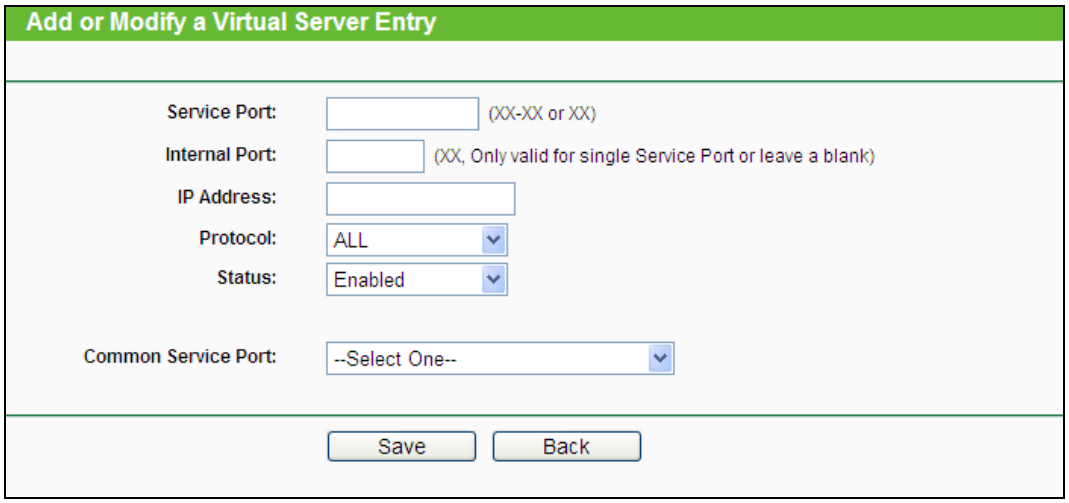


Figure 4-56 Add or Modify a Virtual Server Entry

Note:

It is possible that you have a computer or server that has more than one type of available service. If so, select another service, and type the same IP address for that computer or server.

To modify or delete an existing entry:

1. Find the desired entry in the table.
2. Click **Modify** or **Delete** as desired on the **Modify** column.

Click the **Enable/ Disable All** button to make all entries enabled/ disabled.
Click the **Delete All** button to delete all entries.
Click the **Next** button to go to the next page and click the **Previous** button to return to the previous page.

Note:

If you set the service port of the virtual server as 80, you must set the Web management port on **Security -> Remote Management** page to be any other value except 80 such as 8080. Otherwise there will be a conflict to disable the virtual server.

4.11.2 Port Triggering

Choose menu "**Forwarding→Port Triggering**", you can view and add port triggering in the next screen (shown in Figure 4-57). Some applications require multiple connections, like Internet games, video conferencing, Internet telephoning and so on. Port Triggering is used for some of these applications that cannot work with a pure NAT Router.

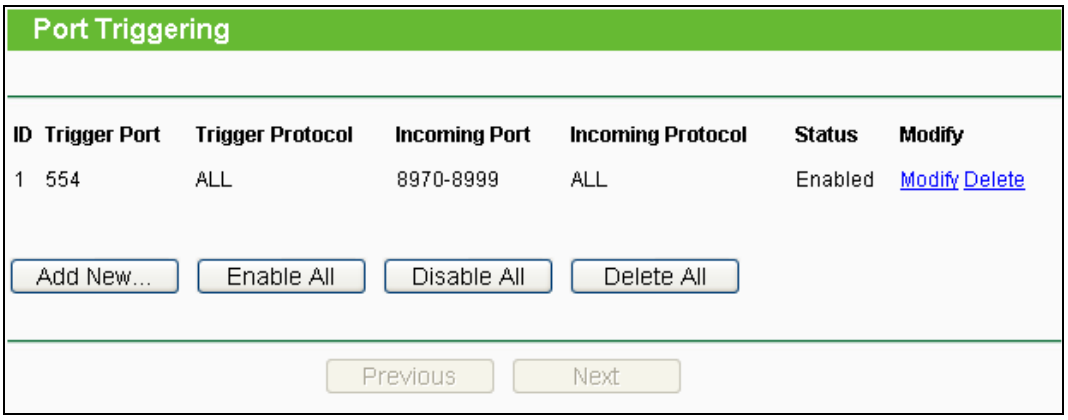


Figure 4-57 Port Triggering

To add a new rule, follow the steps below.

1. Click the **Add New…** button, the next screen will pop-up as shown in Figure 4-58.
2. Select a common application from the **Common Applications** drop-down list, then the **Trigger Port** field and the **Incoming Ports** field will be automatically filled. If the **Common Applications** do not have the application you need, enter the **Trigger Port** and the **Incoming Ports** manually.
3. Select the protocol used for Trigger Port from the **Trigger Protocol** drop-down list, either **TCP**, **UDP**, or **All**.
4. Select the protocol used for Incoming Ports from the **Incoming Protocol** drop-down list, either **TCP** or **UDP**, or **All.**
5. Select **Enabled** in **Status** field.
6. Click the **Save** button to save the new rule.

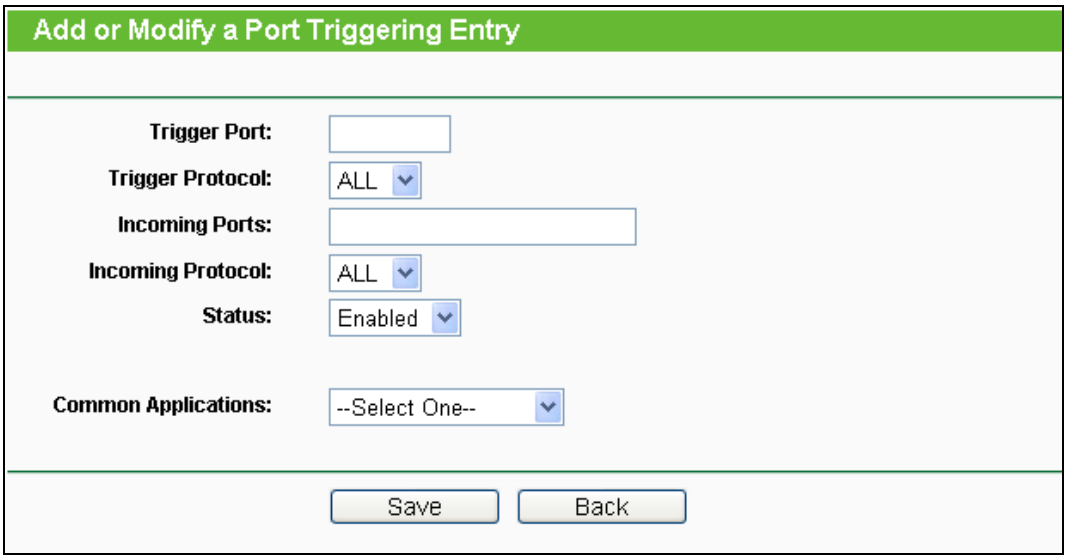


Figure 4-58 Add or Modify a Triggering Entry

- **Trigger Port** - The port for outgoing traffic. An outgoing connection using this port will trigger this rule.

- **Trigger Protocol** - The protocol used for Trigger Ports, either **TCP**, **UDP**, or **All** (all protocols supported by the Router).
- **Incoming Port** - The port or port range used by the remote system when it responds to the outgoing request. A response using one of these ports will be forwarded to the PC which triggered this rule. You can input at most 5 groups of ports (or port sections). Every group of ports must be separated with ",", for example, 2000-2038, 2046, 2050-2051, 2085, 3010-3030.
- **Incoming Protocol** - The protocol used for **Incoming Port**, either **TCP**, **UDP**, or **ALL** (all protocols supported by the Router).
- **Status** - The status of this entry, Enabled means the Port Triggering entry is enabled.
- **Modify** - To modify or delete an existing entry.
- **Common Applications** - Some popular applications already listed in the drop-down list of **Incoming Protocol**.

To modify or delete an existing entry:

3. Find the desired entry in the table.
4. Click **Modify** or **Delete** as desired on the **Modify** column.

Click the **Enable All** button to make all entries enabled.
Click the **Disable All** button to make all entries disabled.
Click the **Delete All** button to delete all entries

Once the Router is configured, the operation is as follows:

1. A local host makes an outgoing connection to an external host using a destination port number defined in the **Trigger Port** field.
2. The Router records this connection, opens the incoming port or ports associated with this entry in the **Port Triggering** table, and associates them with the local host.
3. When necessary, the external host will be able to connect to the local host using one of the ports defined in the **Incoming Ports** field.

☞ **Note:**

1. When the trigger connection is released, the corresponding opened ports will be closed.
2. Each rule can only be used by one host on the LAN at a time. The trigger connection of other hosts on the LAN will be refused.
3. **Incoming Ports** ranges cannot overlap each other.

4.11.3 DMZ

Choose menu "**Forwarding→DMZ**", and then you can view and configure DMZ host in the screen (shown in Figure 4-59).The DMZ host feature allows one local host to be exposed to the Internet

for a special-purpose service such as Internet gaming or videoconferencing. The Router forwards packets of all services to the DMZ host. 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 be changed when using the DHCP function.

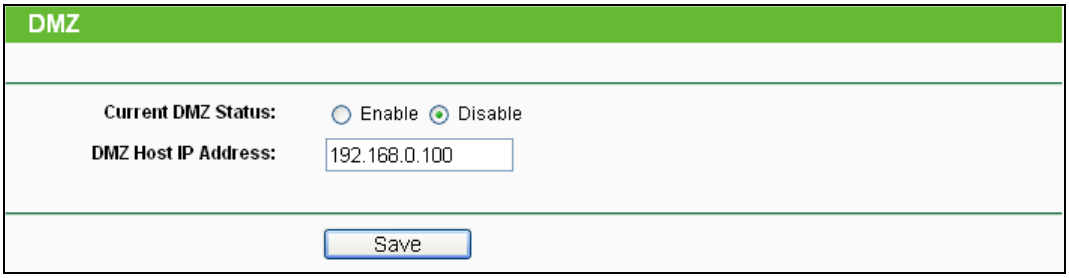


Figure 4-59 DMZ

To assign a computer or server to be a DMZ server:

1. Click the **Enable** button.
2. Enter the IP address of a local PC that is set to be DMZ host in the **DMZ Host IP Address** field.
3. Click the **Save** button.

4.11.4 UPnP

Choose menu "**Forwarding→UPnP**", and then you can view the information about **UPnP** in the screen (shown in Figure 4-60). The **Universal Plug and Play (UPnP)** feature allows the devices, such as Internet computers, to access the local host resources or devices as needed. UPnP devices can be automatically discovered by the UPnP service application on the LAN.

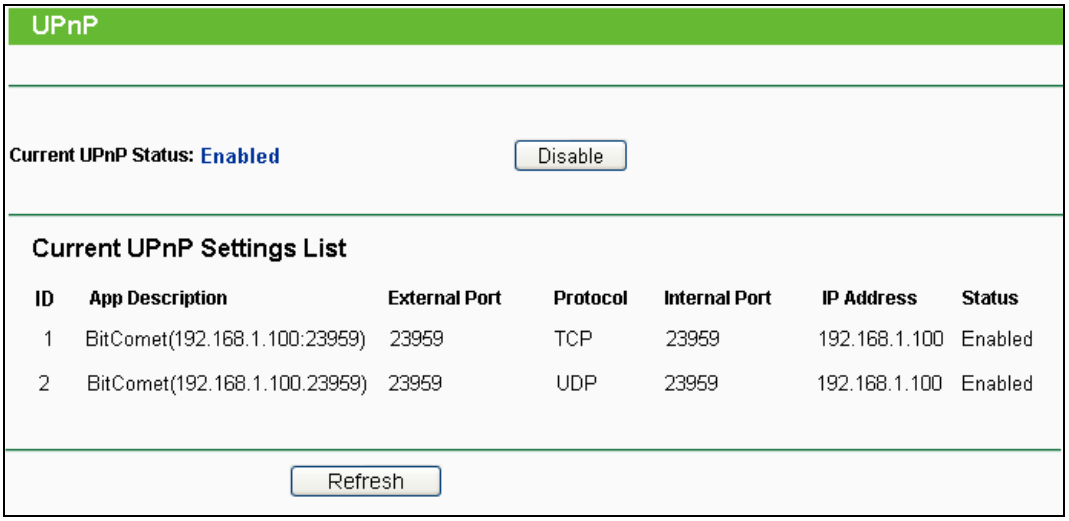


Figure 4-60 UPnP Setting

- **Current UPnP Status -** UPnP can be enabled or disabled by clicking the **Enable** or **Disable** button. This feature is enabled by default.
- **Current UPnP Settings List -** This table displays the current UPnP information.

- **App Description** - The description about the application which initiates the UPnP request.
- **External Port** - The port which the Router opened for the application.
- **Protocol** - The type of protocol which is opened.
- **Internal Port** - The port which the Router opened for local host.
- **IP Address** - The IP address of the local host which initiates the UPnP request.
- **Status** - Either Enabled or Disabled. "Enabled" means that the port is still active; otherwise, the port is inactive.

Click the **Enable** button to enable UPnP.

Click the **Disable** button to disable UPnP.

Click the **Refresh** button to update the Current UPnP Settings List.

4.12 Security

Figure 4-61 The Security menu

There are four submenus under the Security menu as shown in Figure 4-61: **Basic Security**, **Advanced Security**, **Local Management** and **Remote Management**. Click any of them, and you will be able to configure the corresponding function.

4.12.1 Basic Security

Choose menu "**Security → Basic Security**", and then you can configure the basic security in the screen as shown in Figure 4-62.

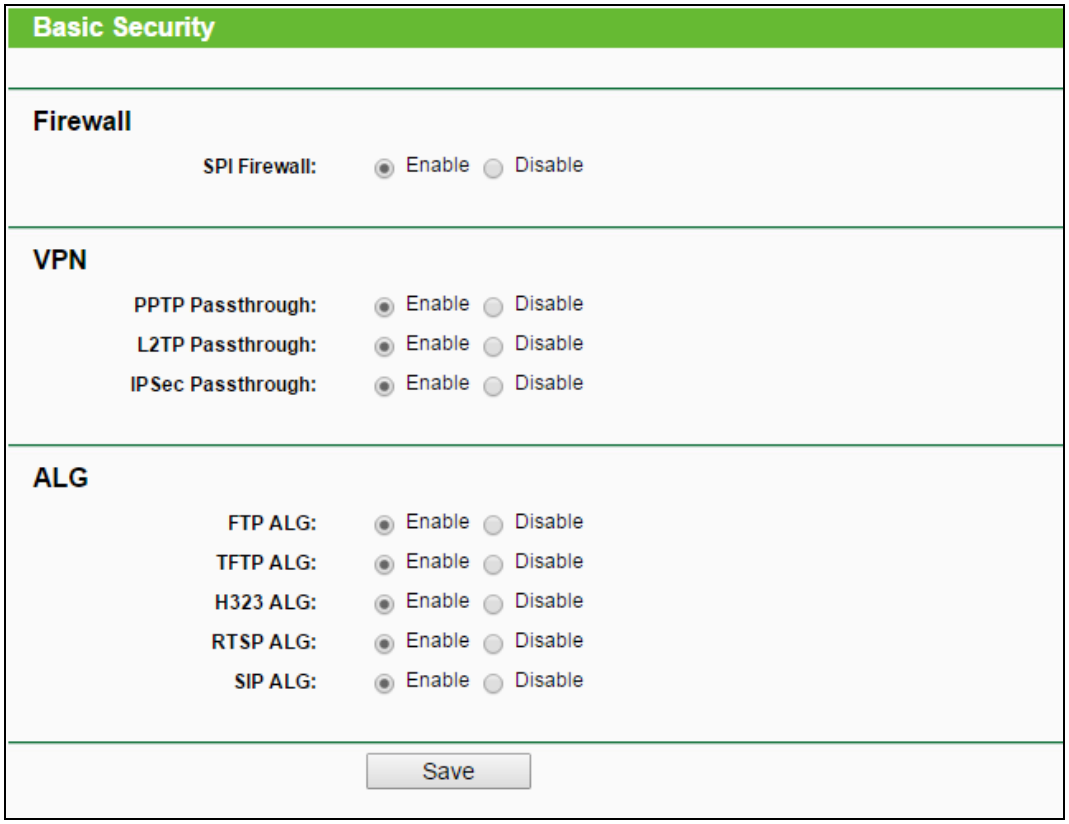


Figure 4-62 Basic Security

- **Firewall -** A firewall protects your network from the outside world. Here you can enable or disable the Router's firewall.
  - **SPI Firewall** - SPI (Stateful Packet Inspection, also known as dynamic packet filtering) helps to prevent cyber attacks by tracking more state per session. It validates that the traffic passing through the session conforms to the protocol. SPI Firewall is enabled by factory default. If you want all the computers on the LAN exposed to the outside world, you can disable it.
- **VPN -** VPN Passthrough must be enabled if you want to allow VPN tunnels using VPN protocols to pass through the Router.
  - **PPTP Passthrough** - Point-to-Point Tunneling Protocol (PPTP) allows the Point-to-Point Protocol (PPP) to be tunneled through an IP network. To allow PPTP tunnels to pass through the Router, click **Enable**.
  - **L2TP Passthrough** - Layer Two Tunneling Protocol (L2TP) is the method used to enable Point-to-Point sessions via the Internet on the Layer Two level. To allow L2TP tunnels to pass through the Router, click **Enable**.
  - **IPSec Passthrough** - Internet Protocol security (IPSec) is a suite of protocols for ensuring private, secure communications over Internet Protocol (IP) networks, through the use of cryptographic security services. To allow IPSec tunnels to pass through the Router, click **Enable**.
- **ALG -** It is recommended to enable Application Layer Gateway (ALG) because ALG allows

customized Network Address Translation (NAT) traversal filters to be plugged into the gateway to support address and port translation for certain application layer "control/data" protocols such as FTP, TFTP, H323 etc.

- **FTP ALG** - To allow FTP clients and servers to transfer data across NAT, click **Enable**.
- **TFTP ALG** - To allow TFTP clients and servers to transfer data across NAT, click **Enable**.
- **H323 ALG** - To allow Microsoft NetMeeting clients to communicate across NAT, click **Enable**.
- **RTSP ALG** - To allow some media player clients to communicate with some streaming media servers across NAT, click **Enable**.
- **SIP ALG** - To allow some multimedia clients to communicate across NAT, click **Enable**.

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

4.12.2 Advanced Security

Choose menu "**Security → Advanced Security**", and then you can protect the Router from being attacked by TCP-SYN Flood, UDP Flood and ICMP-Flood in the screen as shown in Figure 4-63.

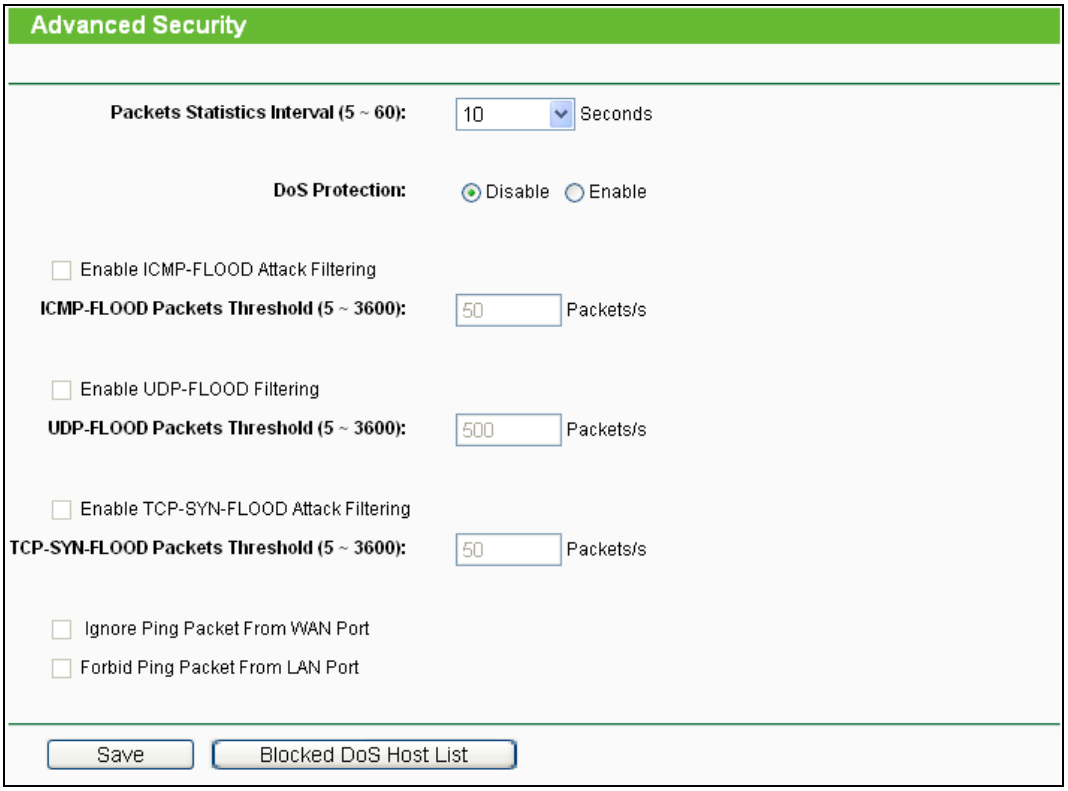


Figure 4-63 Advanced Security

➢ **Packets Statistics Interval (5~60) -** The default value is 10. Select a value between 5 and 60 seconds from the drop-down list. The Packets Statistics Interval value indicates the time

section of the packets statistics. The result of the statistics is used for analysis by SYN Flood, UDP Flood and ICMP-Flood.

- **DoS Protection -** Denial of Service protection. Check the Enable or Disable button to enable or disable the DoS protection function. Only when it is enabled, will the flood filters be enabled.

☞ **Note:**

Dos Protection will take effect only when the traffic Statistics in "**System Tools → Statistics**" is enabled.

- **Enable ICMP-FLOOD Attack Filtering -** Enable or Disable the ICMP-FLOOD Attack Filtering.
- **ICMP-FLOOD Packets Threshold (5~3600) -** The default value is 50. Enter a value between 5 ~ 3600. When the current ICMP-FLOOD Packets number is beyond the set value, the Router will startup the blocking function immediately.
- **Enable UDP-FLOOD Filtering -** Enable or Disable the UDP-FLOOD Filtering.
- **UDP-FLOOD Packets Threshold (5~3600) -** The default value is 500. Enter a value between 5 ~ 3600. When the current UPD-FLOOD Packets number is beyond the set value, the Router will startup the blocking function immediately.
- **Enable TCP-SYN-FLOOD Attack Filtering -** Enable or Disable the TCP-SYN-FLOOD Attack Filtering.
- **TCP-SYN-FLOOD Packets Threshold (5~3600) -** The default value is 50. Enter a value between 5 ~ 3600. When the current TCP-SYN-FLOOD Packets numbers is beyond the set value, the Router will startup the blocking function immediately.
- **Ignore Ping Packet From WAN Port -** Enable or Disable Ignore Ping Packet From WAN Port. The default setting is disabled. If enabled, the ping packet from the Internet cannot access the Router.
- **Forbid Ping Packet From LAN Port -** Enable or Disable Forbid Ping Packet From LAN Port. The default setting is disabled. If enabled, the ping packet from LAN cannot access the Router. This function can be used to defend against some viruses.

Click the **Save** button to save the settings.

Click the **Blocked DoS Host List** button to display the DoS host table by blocking.

4.12.3 Local Management

Choose menu "**Security → Local Management**", and then you can configure the management rule in the screen as shown in Figure 4-64. The management feature allows you to deny computers in LAN from accessing the Router.

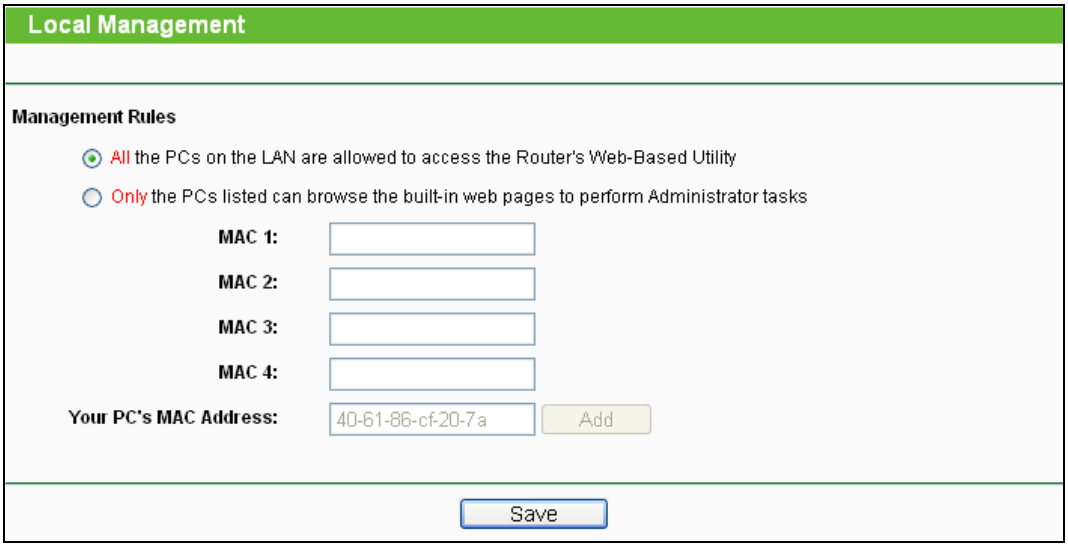


Figure 4-64 Local Management

By default, the radio button "**All the PCs on the LAN are allowed to access the Router's Web-Based Utility**" is checked. If you want to allow PCs with specific MAC Addresses to access the Setup page of the Router's Web-Based Utility locally from inside the network, check the radio button "**Only the PCs listed can browse the built-in web pages to perform Administrator tasks**", and then enter each MAC Address in a separate field. The format for the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). Only the PCs with MAC address listed can use the password to browse the built-in web pages to perform Administrator tasks while all the others will be blocked.

After click the **Add** button, your PC's MAC Address will be placed in the list above.

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

☞ **Note:**

If your PC is blocked but you want to access the Router again, use a pin to press and hold the **WPS/RESET** button on the back panel for approximately 8 seconds to reset to the Router's factory defaults.

4.12.4 Remote Management

Choose menu "**Security → Remote Management**", and then you can configure the Remote Management function in the screen as shown in Figure 4-65. This feature allows you to manage your Router from a remote location via the Internet.

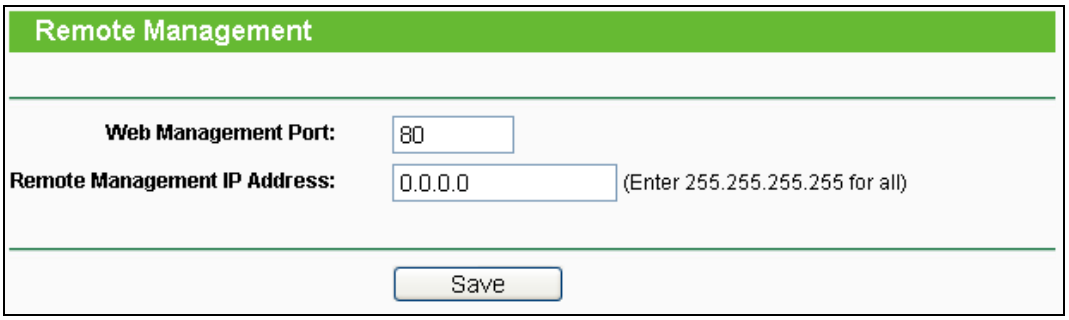


Figure 4-65 Remote Management

- **Web Management Port -** Web browser access normally uses the standard HTTP service port 80. This Router's default remote management web port number is 80. For greater security, you can change the remote management web port to a custom port by entering that number in the box provided. Choose a number between 1 and 65534 but do not use the number of any common service port.
- **Remote Management IP Address -** This is the current address you will use when accessing your Router from the Internet. This function is disabled when the IP address is set to the default value of 0.0.0.0. To enable this function change 0.0.0.0 to a valid IP address. If set to 255.255.255.255, then all the hosts can access the Router from internet.

Note:

1. To access the Router, you should type your Router's WAN IP address into your browser's address (in IE) or Location (in Navigator) box, followed by a colon and the custom port number. For example, if your Router's WAN address is 202.96.12.8, and the port number used is 8080, please enter http://202.96.12.8:8080 in your browser. Later, you may be asked for the Router's password. After successfully entering the username and password, you will be able to access the Router's web-based utility.
2. Be sure to change the Router's default password to a very secure password.

4.13 Parental Control

Choose menu "**Parental Control**", and then you can configure the parental control in the screen as shown in Figure 4-66. The Parental Control function can be used to control the internet activities of the child, limit the child to access certain websites and restrict the time of surfing.

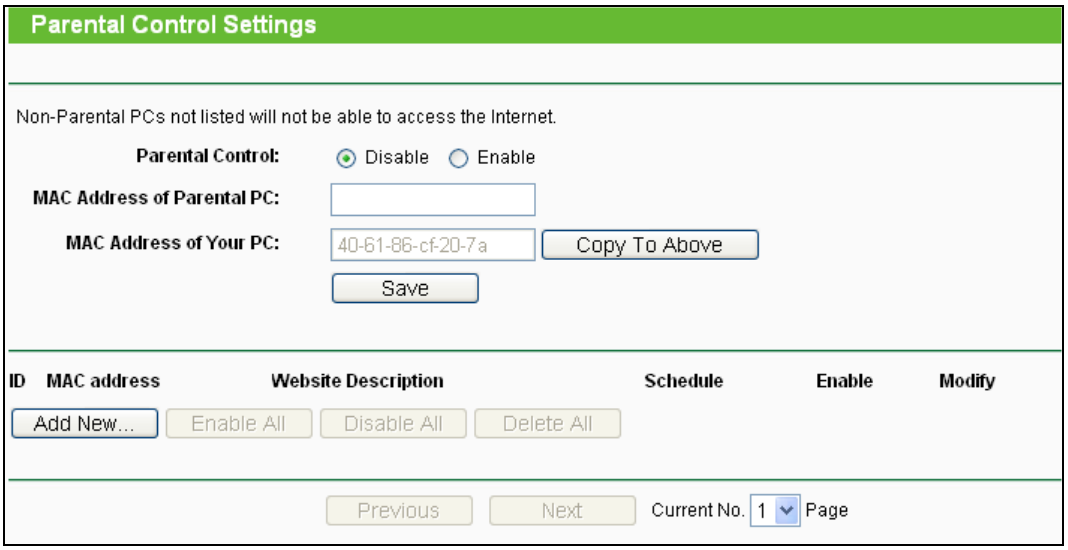


Figure 4-66 Parental Control Settings

- **Parental Control -** Check **Enable** if you want this function to take effect; otherwise, check **Disable**.
- **MAC Address of Parental PC -** In this field, enter the MAC address of the controlling PC, or you can make use of the **Copy To Above** button below.
- **MAC Address of Your PC -** This field displays the MAC address of the PC that is managing this Router. If the MAC Address of your adapter is registered, you can click the **Copy To Above** button to fill this address to the MAC Address of Parental PC field above.
- **Website Description -** Description of the allowed website for the PC controlled.
- **Schedule -** The time period allowed for the PC controlled to access the Internet. For detailed information, please go to "**Access Control → Schedule**".
- **Enable** - Check this option to enable a specific entry.
- **Modify -** Here you can edit or delete an existing entry.

To add a new entry, please follow the steps below.

1. Click the **Add New…** button and the next screen will pop-up as shown in Figure 4-67.

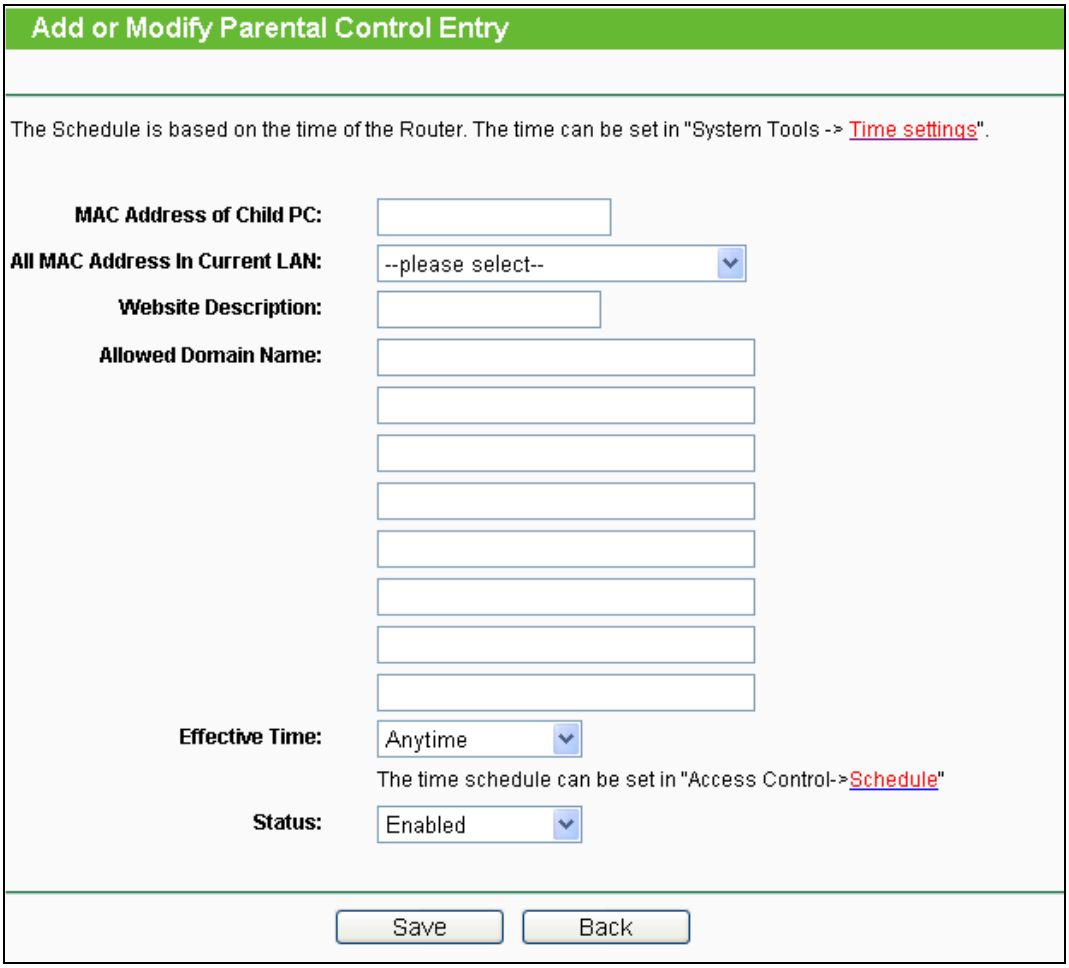


Figure 4-67 Add or Modify Parental Control Entry

2. Enter the MAC address of the PC (e.g. 00-11-22-33-44-AA) you'd like to control in the **MAC Address of Child PC** field, or you can choose the MAC address from the **All Address in Current LAN** drop-down list.
3. Give a description (e.g. Allow TP-LINK) for the website allowed to be accessed in the **Website Description** field.
4. Enter the allowed domain name of the website, either the full name or the keywords (e.g. TP-LINK) in the **Allowed Domain Name** field. Any domain name with keywords in it (www.tp-link.com, www.tp-link.com.cn) will be allowed.
5. Select from the Effective Time drop-down list the schedule (e.g. Schedule_1) you want. If there are not suitable schedules for you, click the **Schedule** in red below to go to the Advance Schedule Settings page and create the schedule you need.
6. In the Status field, you can select **Enabled** or **Disabled** to enable or disable your entry.
7. Click the **Save** button.

Click the **Enable All** button to enable all the rules in the list.

Click the **Disable All** button to disable all the rules in the list.

Click the **Delete All** button to delete all the entries in the table.

Click the **Next** button to go to the next page, or click the **Previous** button to return to the previous page.

For example: If you desire that the child PC with MAC address 00-11-22-33-44-AA can access www.tp-link.com on Saturday only while the parent PC with MAC address 00-11-22-33-44-BB is without any restriction, you should follow the settings below.

1. Click "**Parental Control**" menu on the left to enter the Parental Control Settings page. Check Enable and enter the MAC address 00-11-22-33-44-BB in the MAC Address of Parental PC field.
2. Click "**Access Control → Schedule**" on the left to enter the Schedule Settings page. Click **Add New...** button to create a new schedule with Schedule Description is Schedule_1, Day is Sat and Time is all day-24 hours.
3. Click "**Parental Control**" menu on the left to go back to the Add or Modify Parental Control Entry page:
   1. Click **Add New...** button.
   2. Enter 00-11-22-33-44-AA in the **MAC Address of Child PC** field.
   3. Enter "Allow TP-LINK" in the **Website Description** field.
   4. Enter "www.tp-link.com" in the **Allowed Domain Name** field.
   5. Select "Schedule_1" you create just now from the **Effective Time** drop-down list.
   6. In **Status** field, select Enable.
4. Click **Save** to complete the settings.

   Then you will go back to the **Parental Control Settings** page and see the following list, as shown in Figure 4-68.

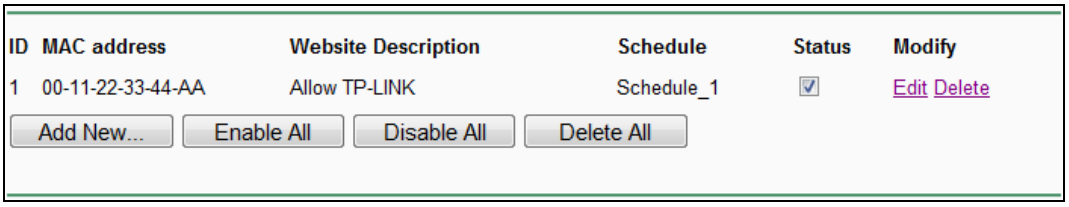


Figure 4-68 Parental Control Settings

4.14 Access Control

Figure 4-69 Access Control

There are four submenus under the Access Control menu as shown in Figure 4-69: **Rule**, **Host**, **Target** and **Schedule**. Click any of them, and you will be able to configure the corresponding function.

4.14.1 Rule

Choose menu "**Access Control → Rule**", and then you can view and set Access Control rules in the screen as shown in Figure 4-70.

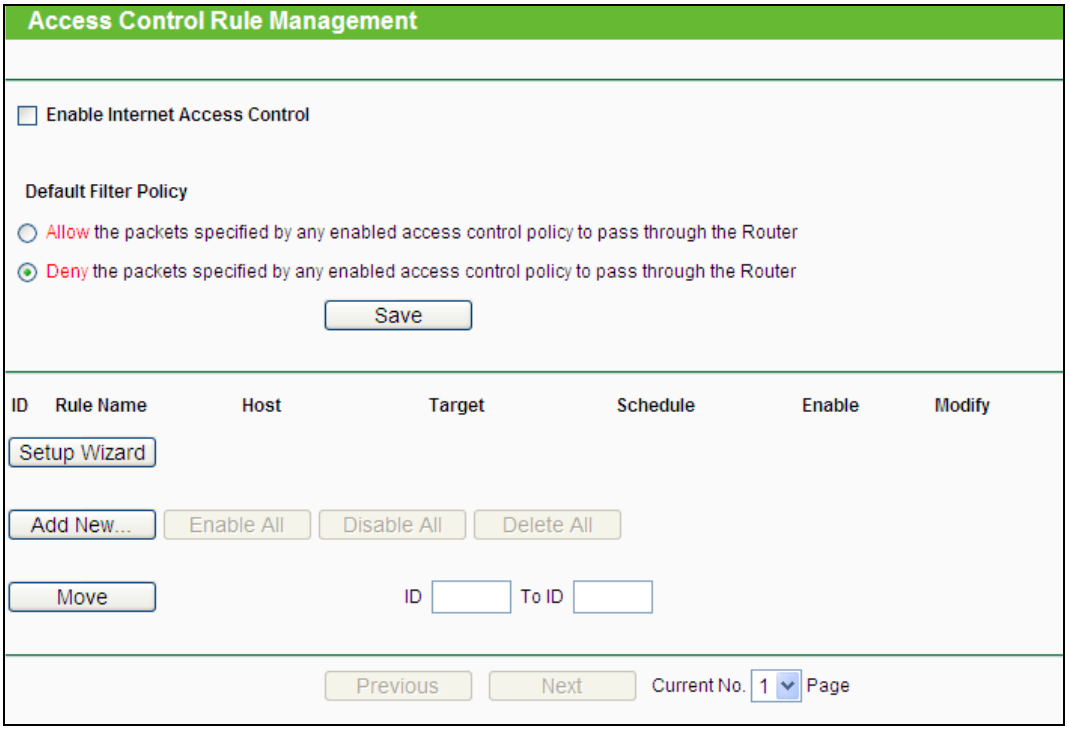


Figure 4-70 Access Control Rule Management

- **Enable Internet Access Control -** Select the check box to enable the Internet Access Control function, so the Default Filter Policy can take effect.
- **Rule Name -** Here displays the name of the rule and this name is unique.
- **Host -** Here displays the host selected in the corresponding rule.
- **Target -** Here displays the target selected in the corresponding rule.
- **Schedule -** Here displays the schedule selected in the corresponding rule.
- **Enable -** Here displays the status of the rule, enabled or not. Check this option to enable a specific entry.
- **Modify -** Here you can edit or delete an existing rule.
- **Setup Wizard -** Click the **Setup Wizard** button to create a new rule entry.
- **Add New... -** Click the **Add New...** button to add a new rule entry.
- **Enable All -** Click the **Enable All** button to enable all the rules in the list.

- **Disable All -** Click the **Disable All** button to disable all the rules in the list.
- **Delete All -** Click the **Delete All** button to delete all the entries in the table.
- **Move -** You can change the entry's order as desired. Enter in the first box the ID number of the entry you want to move and in the second box another ID number, and then click the **Move** button to change the entries' order.
- **Next -** Click the **Next** button to go to the next page.
- **Previous -** Click the **Previous** button to return to the previous page.

There are two methods to add a new rule.

Method One:

1. Click **Setup Wizard** button and the next screen will appear as shown in Figure 4-71.

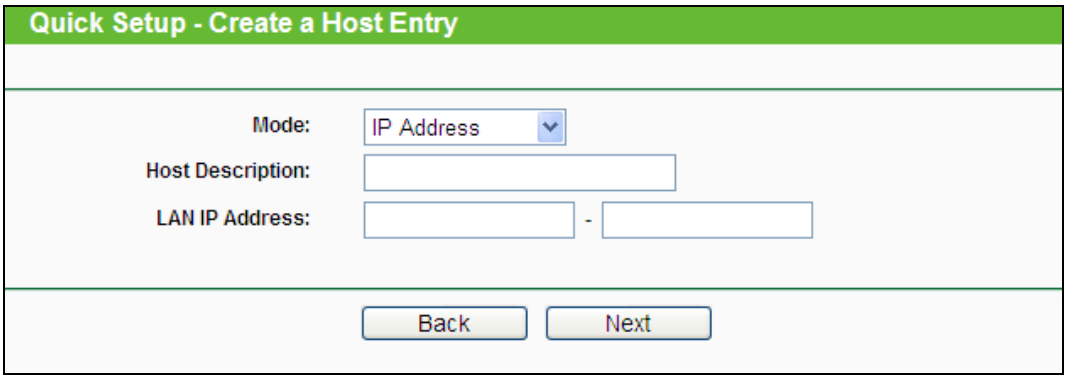


Figure 4-71 Quick Setup - Create a Host Entry

- **Host Description** - In this field, create a unique description for the host (e.g. Host_1).
- **Mode** - Here are two options, **IP Address** and **MAC Address**. You can select either of them from the drop-down list.

If the **IP Address** is selected, you can see the following item:

- **LAN IP Address** - Enter the IP address or address range of the host in dotted-decimal format (e.g. 192.168.0.23).

If the MAC Address is selected, you can see the following item:

- **MAC Address** - Enter the MAC address of the host in XX-XX-XX-XX-XX-XX format (e.g. 00-11-22-33-44-AA).

2. Click **Next** when finishing creating the host entry, and the next screen will appear as shown in Figure 4-72.

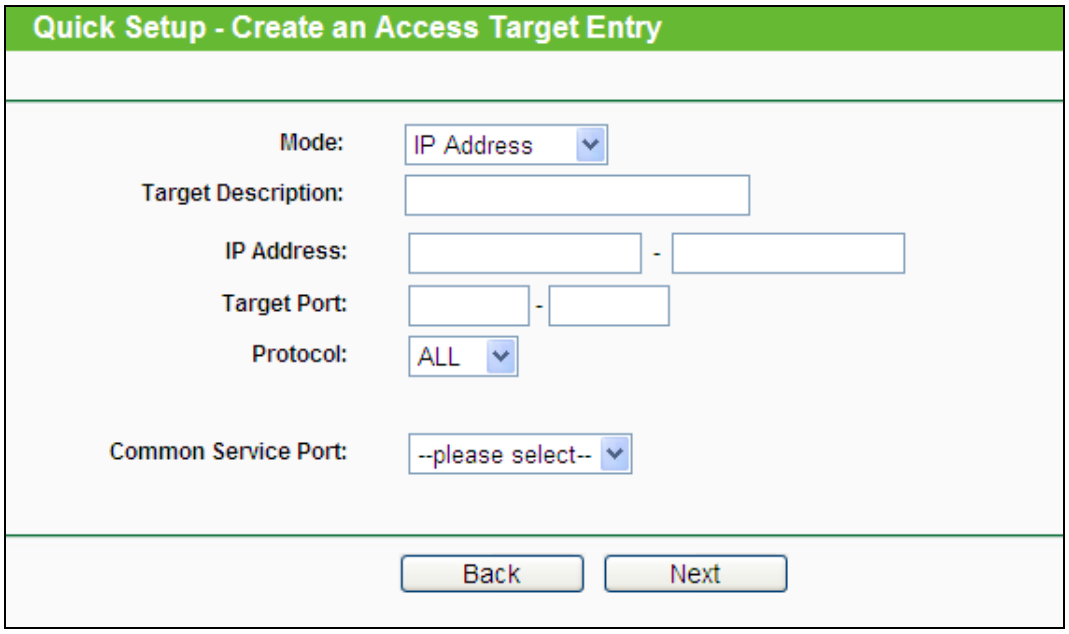


Figure 4-72 Quick Setup - Create an Access Target Entry

- **Target Description** - In this field, create a description for the target. Note that this description should be unique (e.g. Target_1).
- **Mode** - Here are two options, IP Address and Domain Name. You can choose either of them from the drop-down list.

If the **IP Address** is selected, you will see the following items:

- **IP Address** - Enter the IP address (or address range) of the target (targets) in dotted-decimal format (e.g. 192.168.0.23).
- **Target Port** - Specify the port or port range for the target. For some common service ports, you can make use of the Common Service Port item below.
- **Protocol** - Here are four options, All, TCP, UDP, and ICMP. Select one of them from the drop-down list for the target.
- **Common Service Port** - Here lists some common service ports. Select one from the drop-down list, and the corresponding port number will be filled in the Target Port field automatically. For example, if you select "FTP", "21" will be filled in the Target Port automatically.

If the **Domain Name** is selected, you will see the following items:

- **Domain Name** - Here you can enter 4 domain names, either the full name or the keywords (for example, TP-LINK). Any domain name with keywords in it (www.tp-link.com, www.tp-link.com.cn) will be blocked or allowed.

3. Click **Next** when finishing creating the access target entry, and the next screen will appear as shown in Figure 4-73.

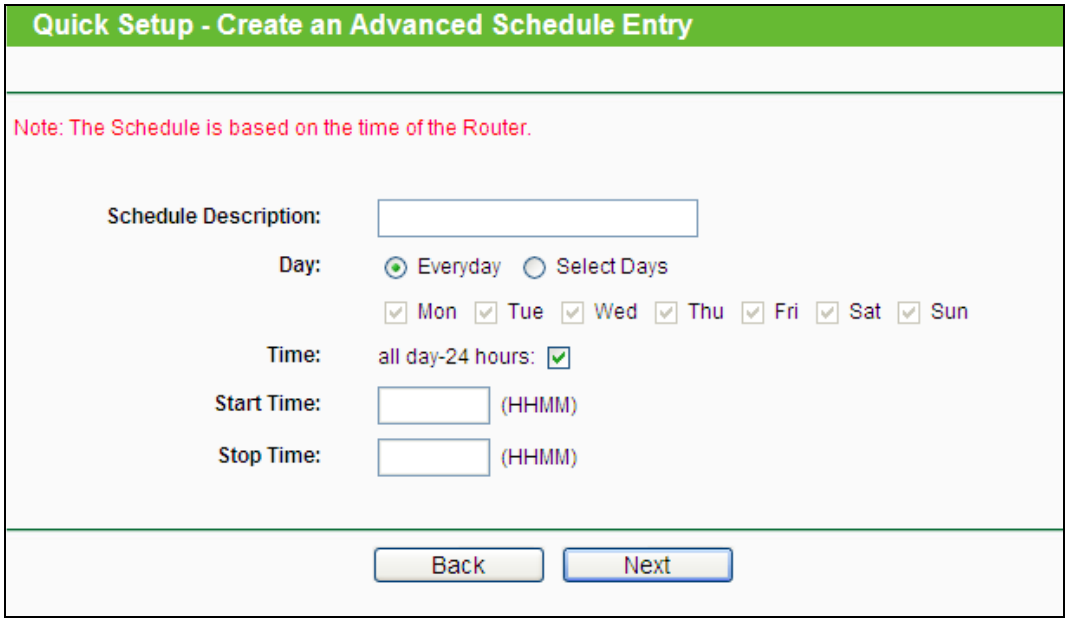


Figure 4-73 Quick Setup - Create an Advanced Schedule Entry

- **Schedule Description** - In this field, create a description for the schedule. Note that this description should be unique (e.g. Schedule_1).
- **Day** - Choose Select Days and select the certain day (days), or choose Everyday.
- **Time** - Select "24 hours", or specify the Start Time and Stop Time yourself.
- **Start Time** - Enter the start time in HHMM format (HHMM are 4 numbers). For example 0800 is 8:00.
- **Stop Time** - Enter the stop time in HHMM format (HHMM are 4 numbers). For example 2000 is 20:00.

4. Click **Next** when finishing creating the advanced schedule entry, and the next screen will appear as shown in Figure 4-74.

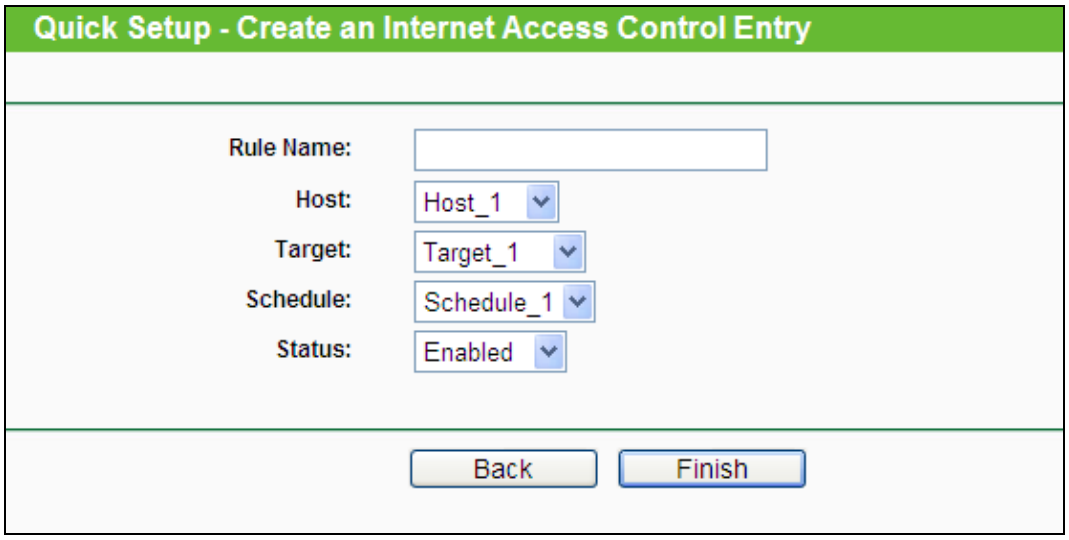


Figure 4-74 Quick Setup - Create an Internet Access Control Entry

- **Rule** - In this field, create a name for the rule. Note that this name should be unique (e.g. Rule_1).
- **Host** - In this field, select a host from the drop-down list for the rule. The default value is the **Host Description** you set just now.
- **Target** - In this filed, select a target from the drop-down list for the rule. The default value is the **Target Description** you set just now.
- **Schedule** - In this field, select a schedule from the drop-down list for the rule. The default value is the **Schedule Description** you set just now.
- **Status** - In this field, there are two options, **Enabled** or **Disabled**. Select **Enabled** so that the rule will take effect. Select **Disabled** so that the rule won't take effect.

5. Click **Finish** to complete adding a new rule.

Method Two:

1. Click the **Add New…** button and the next screen will pop up as shown in Figure 4-75.
2. Give a name (e.g. Rule_1) for the rule in the **Rule Name** field.
3. Select a host from the **Host** drop-down list or choose "**Click Here To Add New Host List**".
4. Select a target from the **Target** drop-sown list or choose "**Click Here To Add New Target List**".
5. Select a schedule from the **Schedule** drop-down list or choose "**Click Here To Add New Schedule**".
6. In the **Status** field, select **Enabled** or **Disabled** to enable or disable your entry.
7. Click the **Save** button.

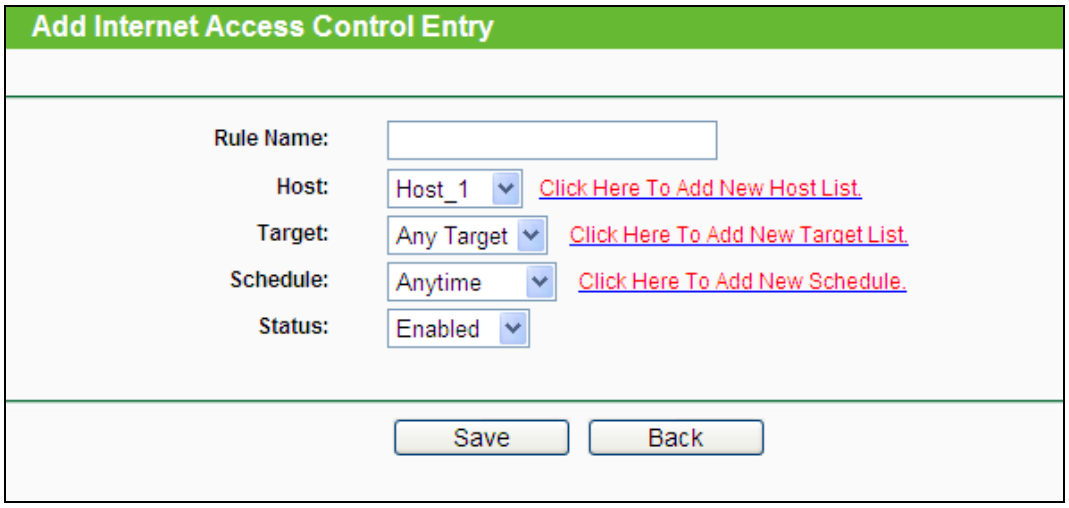


Figure 4-75 Add Internet Access Control Entry

For example: If you desire to allow the host with MAC address 00-11-22-33-44-AA to access www.tp-link.com only from 18:00 to 20:00 on Saturday and Sunday, and forbid other hosts in the

LAN to access the Internet, you should follow the settings below:

1. Click the submenu **Rule of Access Control** in the left to return to the Rule List page. Select Enable Internet Access Control and choose "Allow the packets specified by any enabled access control policy to pass through the Router".
2. We recommend that you click **Setup Wizard** button to finish all the following settings.
3. Click the submenu **Host of Access Control** in the left to enter the Host List page. Add a new entry with the Host Description is Host_1 and MAC Address is 00-11-22-33-44-AA.
4. Click the submenu **Target of Access Control** in the left to enter the Target List page. Add a new entry with the Target Description is Target_1 and Domain Name is www.tp-link.com.
5. Click the submenu **Schedule of Access Control** in the left to enter the Schedule List page. Add a new entry with the Schedule Description is Schedule_1, Day is Sat and Sun, Start Time is 1800 and Stop Time is 2000.
6. Click the submenu **Rule of Access Control** in the left, Click **Add New...** button to add a new rule as follows:
   - In Rule Name field, create a name for the rule. Note that this name should be unique, for example Rule_1.
   - In Host field, select Host_1.
   - In Target field, select Target_1.
   - In Schedule field, select Schedule_1.
   - In Status field, select Enable.
   - Click Save to complete the settings.

Then you will go back to the Access Control Rule Management page and see the following list.

ID	Rule Name	Host	Target	Schedule	Enable	Modify
1	Rule_1	Host_1	Target_1	Schedule_1	✓	Edit Delete

4.14.2 Host

Choose menu "**Access Control → Host**", and then you can view and set a Host list in the screen as shown in Figure 4-76. The host list is necessary for the Access Control Rule.

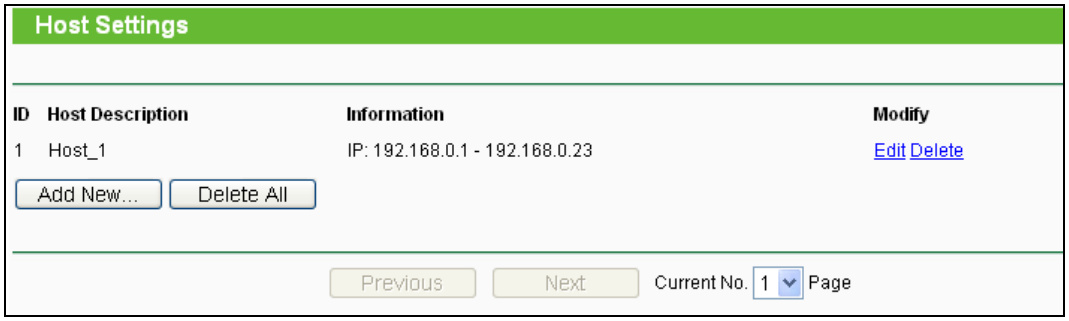


Figure 4-76 Host Settings

- **Host Description -** Here displays the description of the host and this description is unique.
- **Information -** Here displays the information about the host. It can be IP or MAC.
- **Modify -** To modify or delete an existing entry.

To add a new entry, please follow the steps below.

1. Click the **Add New…** button.
2. In the **Mode** field, select IP Address or MAC Address.
   - If you select IP Address, the screen shown is Figure 4-77.
     1) In **Host Description** field, create a unique description for the host (e.g. Host_1).
     2) In **LAN IP Address** field, enter the IP address.
   - If you select MAC Address, the screen shown is Figure 4-78.
     1) In **Host Description** field, create a unique description for the host (e.g. Host_1).
     2) In **MAC Address** field, enter the MAC address.
3. Click the **Save** button to complete the settings.

Click the **Delete All** button to delete all the entries in the table.

Click the **Next** button to go to the next page, or click the **Previous** button to return to the previous page.

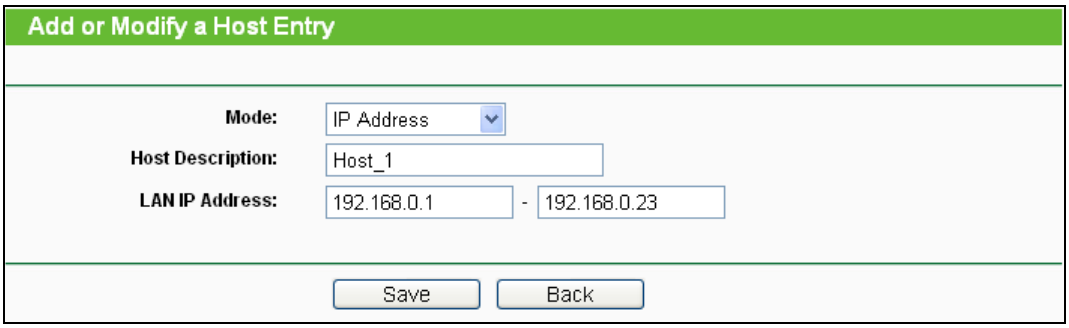


Figure 4-77 Add or Modify a Host Entry

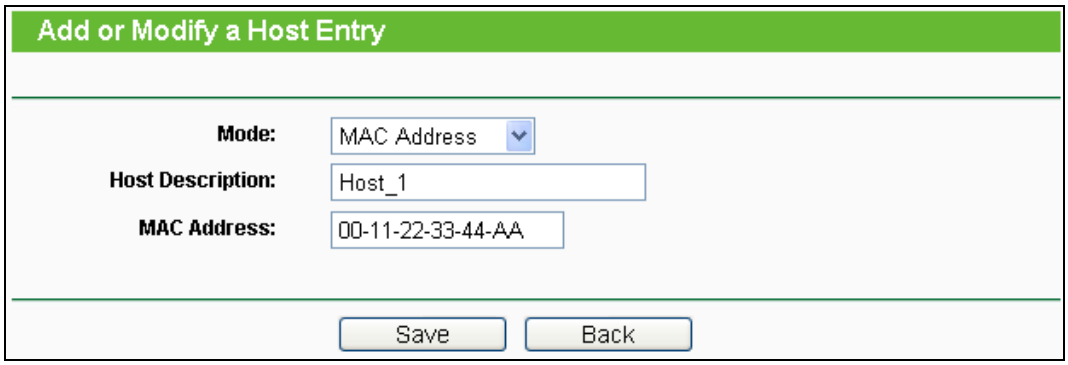


Figure 4-78 Add or Modify a Host Entry

For example: If you desire to restrict the internet activities of host with MAC address 00-11-22-33-44-AA, you should first follow the settings below:

1. Click **Add New...** button in Figure 4-76 to enter the Add or Modify a Host Entry page.
2. In **Mode** field, select MAC Address from the drop-down list.
3. In **Host Description** field, create a **unique** description for the host (e.g. Host_1).
4. In **MAC Address** field, enter 00-11-22-33-44-AA.
5. Click **Save** to complete the settings.

Then you will go back to the Host Settings page and see the following list.

ID	Host Description	Information	Modify
1	Host_1	MAC: 00-11-22-33-44-AA	Edit Delete

4.14.3 Target

Choose menu "**Access Control → Target**", and then you can view and set a Target list in the screen as shown in Figure 4-79. The target list is necessary for the Access Control Rule.

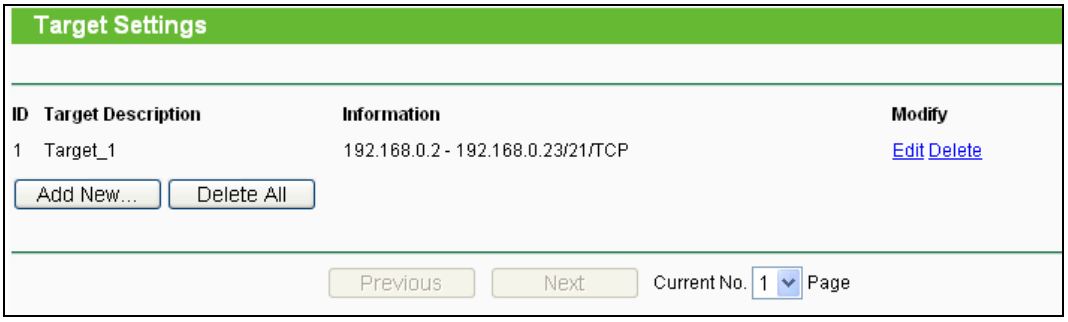


Figure 4-79 Target Settings

- **Target Description -** Here displays the description about the target and this description is unique.
- **Information -** The target can be IP address, port, or domain name.
- **Modify -** To modify or delete an existing entry.

To add a new entry, please follow the steps below.

1. Click the **Add New…** button.
2. In Mode field, select **IP Address** or **Domain Name**.
3. If you select **IP Address**, the screen shown is Figure 4-80.

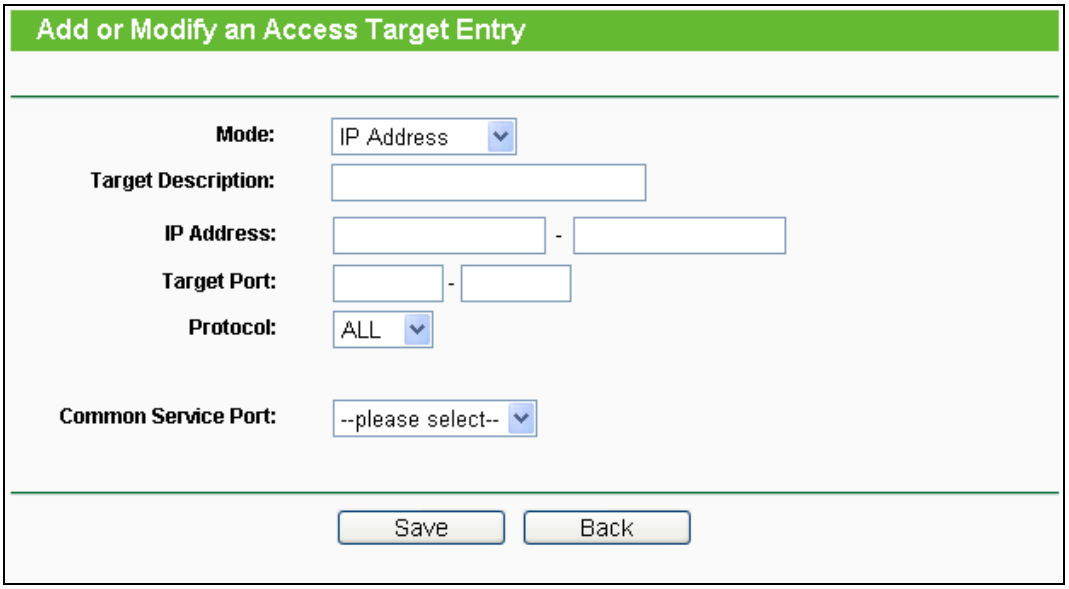


Figure 4-80 Add or Modify an Access Target Entry

1) In **Target Description** field, create a unique description for the target (e.g. Target_1).
2) In **IP Address** field, enter the IP address of the target.
3) Select a common service from **Common Service Port** drop-down list, so that the **Target Port** will be automatically filled. If the **Common Service Port** drop-down list doesn't have the service you want, specify the **Target Port** manually.
4) In **Protocol** field, select TCP, UDP, ICMP or ALL from the drop-down list.

4. If you select **Domain Name**, the screen shown is Figure 4-81.

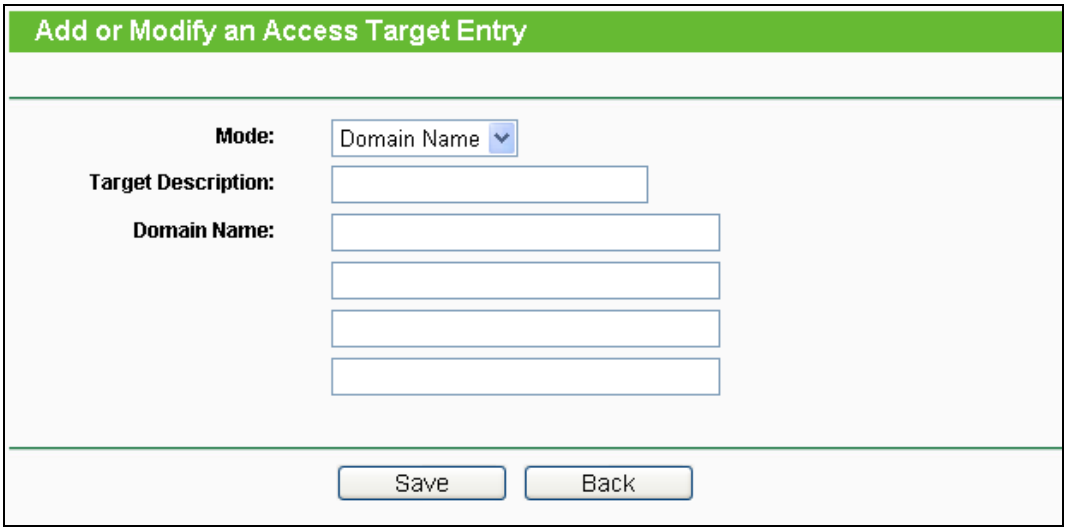


Figure 4-81 Add or Modify an Access Target Entry

1) In **Target Description** field, create a unique description for the target (e.g. Target_1).
2) In **Domain Name** field, enter the domain name, either the full name or the keywords (for example, TP-LINK) in the blank. Any domain name with keywords in it (www.tp-link.com, www.tp-link.com.cn) will be blocked or allowed. You can enter 4 domain names.

5. Click the **Save** button.

Click the **Delete All** button to delete all the entries in the table.

Click the **Next** button to go to the next page, or click the **Previous** button to return to the previous page.

For example: If you desire to restrict the internet activities of host with MAC address 00-11-22-33-44-AA in the LAN to access **www.tp-link.com** only, you should first follow the settings below:

1. Click **Add New…** button in Figure 4-79 to enter the Add or Modify an Access Target Entry page.
2. In **Mode** field, select Domain Name from the drop-down list.
3. In **Target Description** field, create a unique description for the target (e.g. Target_1).
4. In **Domain Name** field, enter www.tp-link.com.
5. Click **Save** to complete the settings.

Then you will go back to the Target Settings page and see the following list.

ID	Target Description	Information	Modify
1	Target_1	www.tp-link.com	Edit Delete

4.14.4 Schedule

Choose menu "**Access Control → Schedule**", and then you can view and set a Schedule list in the next screen as shown in Figure 4-82. The Schedule list is necessary for the Access Control Rule.

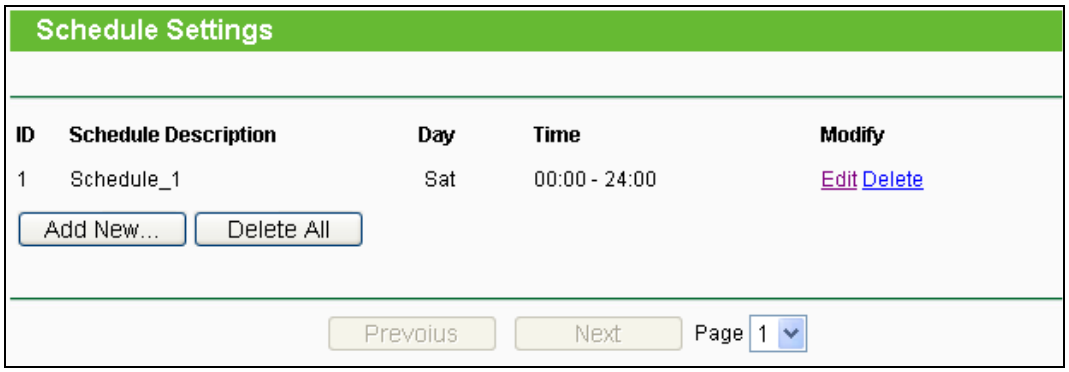


Figure 4-82 Schedule Settings

- **Schedule Description** - Here displays the description of the schedule and this description is unique.
- **Day** - Here displays the day(s) in a week.
- **Time** - Here displays the time period in a day.
- **Modify** - Here you can edit or delete an existing schedule.

To add a new schedule, follow the steps below:

1. Click **Add New...** button shown in Figure 4-82 and the next screen will pop-up as shown in Figure 4-83.
2. In **Schedule Description** field, create a unique description for the schedule (e.g. Schedule_1).
3. In **Day** field, select the day or days you need.
4. In **Time** field, you can select all day-24 hours or you may enter the Start Time and Stop Time in the corresponding field.
5. Click **Save** to complete the settings.

Click the **Delete All** button to delete all the entries in the table.

Click the **Next** button to go to the next page, or click the **Previous** button to return to the previous page.

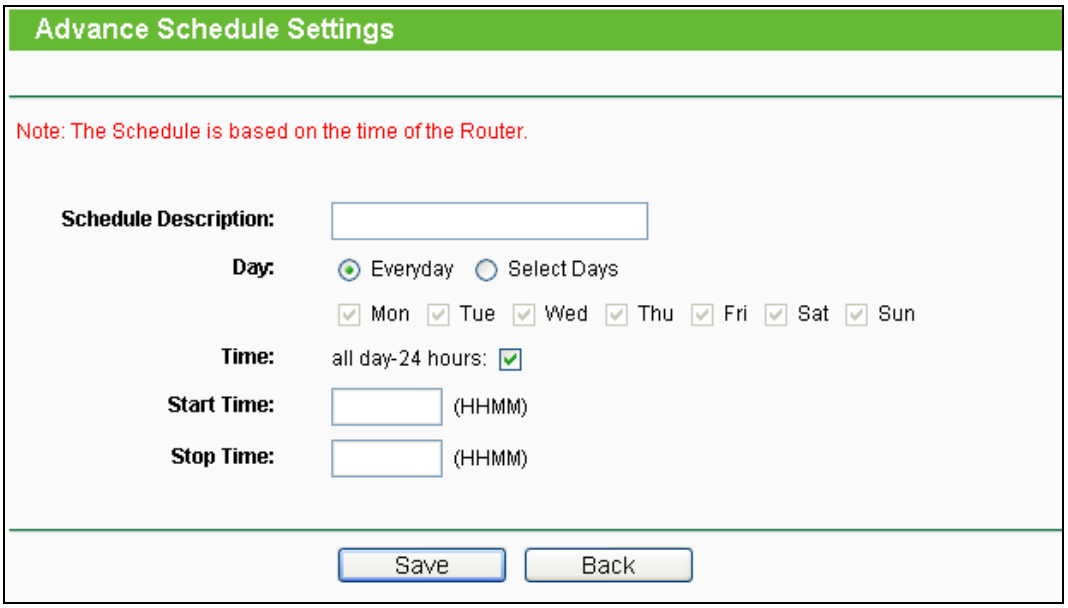


Figure 4-83 Advanced Schedule Settings

For example: If you desire to restrict the internet activities of host with MAC address 00-11-22-33-44-AA to access www.tp-link.com only from **18:00 to 20:00** on **Saturday** and **Sunday**, you should first follow the settings below:

1) Click **Add New...** button shown in Figure 4-82 to enter the Advanced Schedule Settings page.
2) In **Schedule Description** field, create a unique description for the schedule (e.g. Schedule_1).
3) In **Day** field, check the Select Days radio button and then select Sat and Sun.
4) In **Time** field, enter 1800 in Start Time field and 2000 in Stop Time field.
5) Click **Save** to complete the settings.

Then you will go back to the Schedule Settings page and see the following list.

ID	Schedule Description	Day	Time	Modify
1	Schedule_1	Sat Sun	18:00 - 20:00	Edit Delete

4.15 Advanced Routing

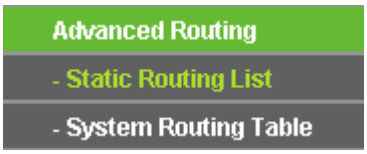


Figure 4-84 Advanced Routing

There are two submenus under the Advanced Routing menu as shown in Figure 4-84: **Static Routing List** and **System Routing Table**. Click either of them, and you will be able to configure the corresponding function.

4.15.1 Static Routing List

Choose menu "**Advanced Routing → Static Routing List**", and then you can configure the static route in the next screen (shown in Figure 4-85). A static route is a pre-determined path that network information must travel to reach a specific host or network.

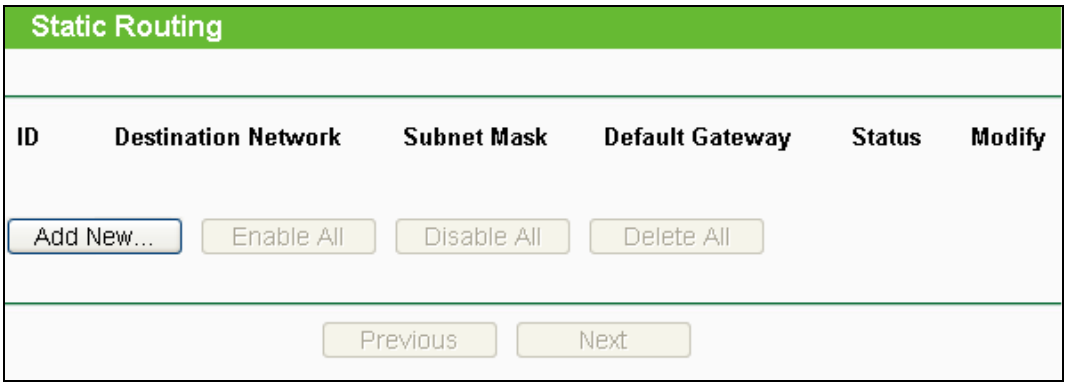


Figure 4-85 Static Routing

To add static routing entries:

1. Click **Add New…** shown in Figure 4-85, you will see the following screen.

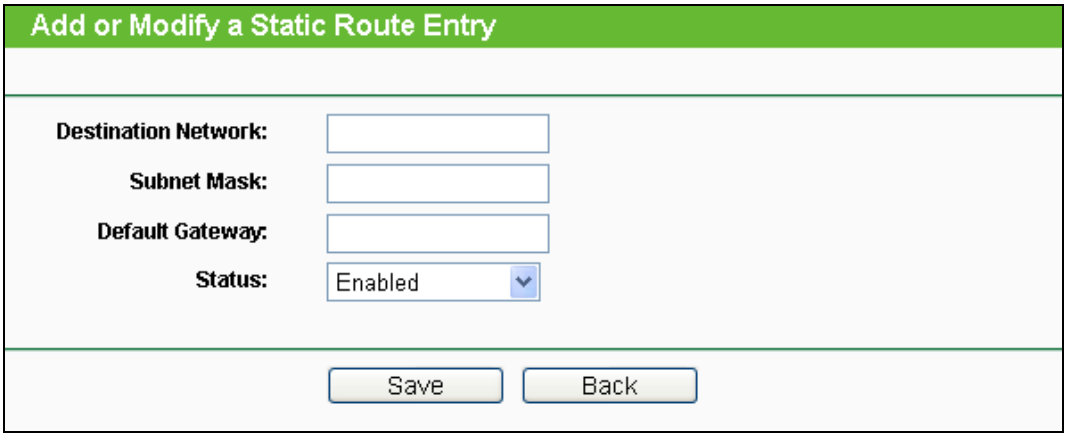


Figure 4-86 Add or Modify a Static Route Entry

2. Enter the following data:

- **Destination Network** - The Destination Network is the address of the network or host that you want to assign to a static route.
- **Subnet Mask -** The **Subnet Mask** determines which portion of an IP Address is the network portion, and which portion is the host portion.
- **Default Gateway** - This is the IP Address of the gateway device that allows for contact between the Router and the network or host.

3. Select **Enabled** or **Disabled** for this entry on the **Status** drop-down list.

4. Click the **Save** button to make the entry take effect.

Other configurations for the entries:

Click the **Delete** button to delete the entry.

Click the **Enable All** button to enable all the entries.

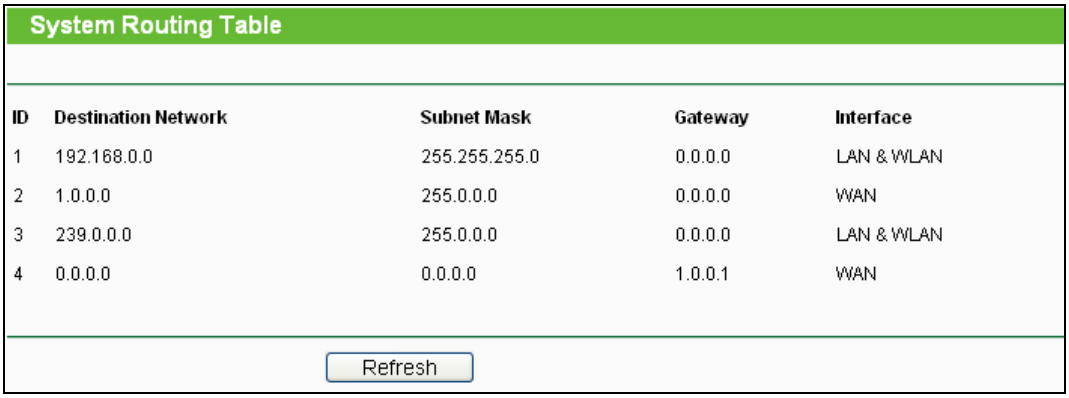
Click the **Disable All** button to disable all the entries.

Click the **Delete All** button to delete all the entries.

Click the **Previous** button to view the information in the previous screen, click the **Next** button to view the information in the next screen.

4.15.2 System Routing Table

Choose menu "**Advanced Routing → System Routing Table**", and then you can view the System Routing Table in the next screen (shown in Figure 4-87). System routing table views all of the valid route entries in use. The Destination IP address, Subnet Mask, Gateway, and Interface will be displayed for each entry.



ID	Destination Network	Subnet Mask	Gateway	Interface
1	192.168.0.0	255.255.255.0	0.0.0.0	LAN & WLAN
2	1.0.0.0	255.0.0.0	0.0.0.0	WAN
3	239.0.0.0	255.0.0.0	0.0.0.0	LAN & WLAN
4	0.0.0.0	0.0.0.0	1.0.0.1	WAN

Figure 4-87 System Routing Table

- **Destination Network** - The Destination Network is the address of the network or host to which the static route is assigned.

- **Subnet Mask** - The Subnet Mask determines which portion of an IP address is the network portion, and which portion is the host portion.
- **Gateway** - This is the IP address of the gateway device that allows for contact between the Router and the network or host.
- **Interface** - This interface tells you either the Destination IP Address is on the **LAN & WLAN** (internal wired and wireless networks), or on the **WAN** (Internet).

4.16 Bandwidth Control

Figure 4-88 Bandwidth Control

There are two submenus under the Bandwidth Control menu as shown in Figure 4-88: **Control Settings** and **Rules List**. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

4.16.1 Control Settings

Choose menu "**Bandwidth Control → Control Settings**", and then you can configure the Egress Bandwidth and Ingress Bandwidth in the next screen. Their values you configure should be less than 100000Kbps. For optimal control of the bandwidth, please select the right Line Type and ask your ISP for the total bandwidth of the egress and ingress.

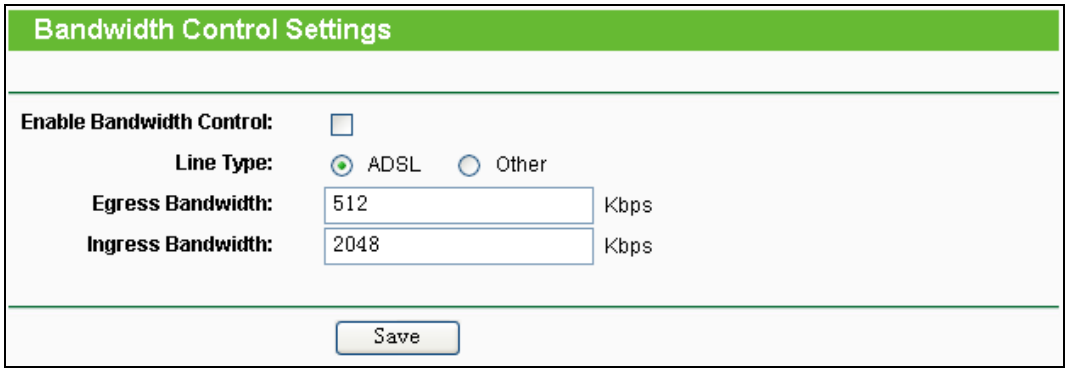


Figure 4-89 Bandwidth Control Settings

- **Enable Bandwidth Control -** Check this box so that the Bandwidth Control settings can take effect.
- **Line Type -** Select the right type for you network connection. If you don't know how to choose, please ask your ISP for the information.
- **Egress Bandwidth** - The upload speed through the WAN port.
- **Ingress Bandwidth -** The download speed through the WAN port.

4.16.2 Rules List

Choose menu "**Bandwidth Control → Rules List**", and then you can view and configure the Bandwidth Control rules in the screen below.

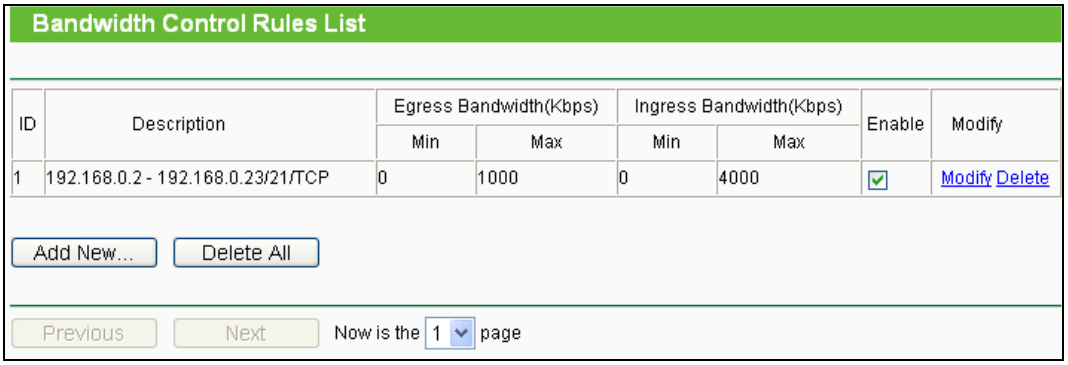


Figure 4-90 Bandwidth Control Rules List

- **Description -** This is the information about the rules such as address range.
- **Egress bandwidth -** This field displays the max and mix upload bandwidth through the WAN port, the default is 0.
- **Ingress bandwidth -** This field displays the max and mix download bandwidth through the WAN port, the default is 0.
- **Enable -** This displays the status of the rule.
- **Modify -** Click **Modify** to edit the rule. Click **Delete** to delete the rule.

To add/modify a Bandwidth Control rule, follow the steps below.

1. Click **Add New…** shown in Figure 4-90, you will see a new screen shown in Figure 4-91.
2. Enter the information like the screen shown below.

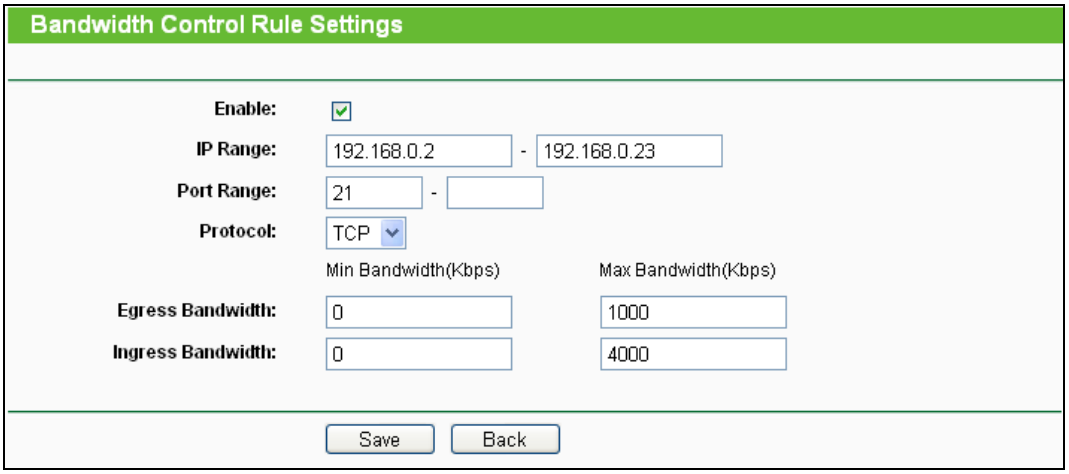


Figure 4-91 Bandwidth Control Rule Settings

3. Click the **Save** button.

4.17 IP & MAC Binding Setting

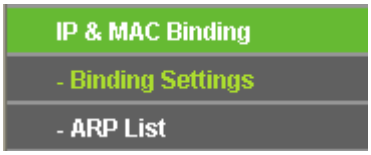


Figure 4-92 the IP & MAC Binding menu

There are two submenus under the IP &MAC Binding menu (shown in Figure 4-92): **Binding Settings** and **ARP List**. Click either of them, and you will be able to scan or configure the corresponding function. The detailed explanations for each submenu are provided below.

4.17.1 Binding Settings

This page displays the **IP & MAC Binding Setting** table; you can operate it in accord with your desire (shown in Figure 4-93).

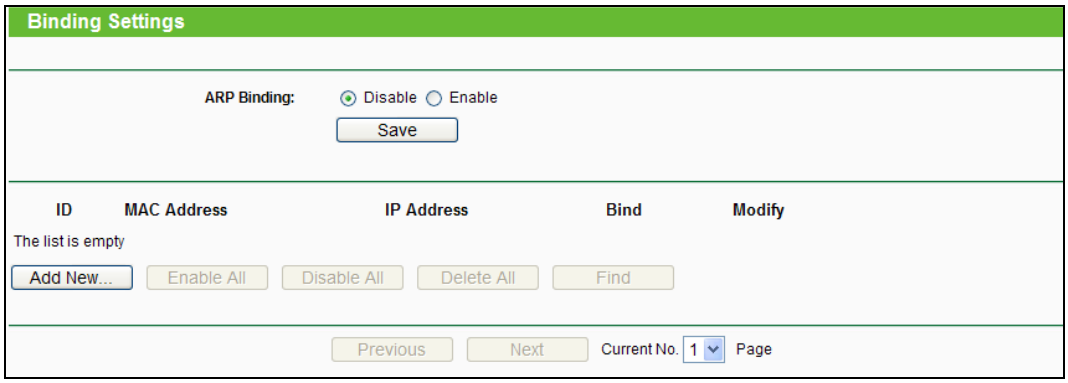


Figure 4-93 Binding Setting

- **MAC Address -** The MAC address of the controlled computer in the LAN.
- **IP Address -** The assigned IP address of the controlled computer in the LAN.
- **Bind -** Check this option to enable ARP binding for a specific device.
- **Modify -** To modify or delete an existing entry.

When you want to add or modify an IP & MAC Binding entry, you can click the **Add New…** button or **Modify** button, and then you will go to the next page. This page is used for adding or modifying an IP & MAC Binding entry (shown in Figure 4-94).

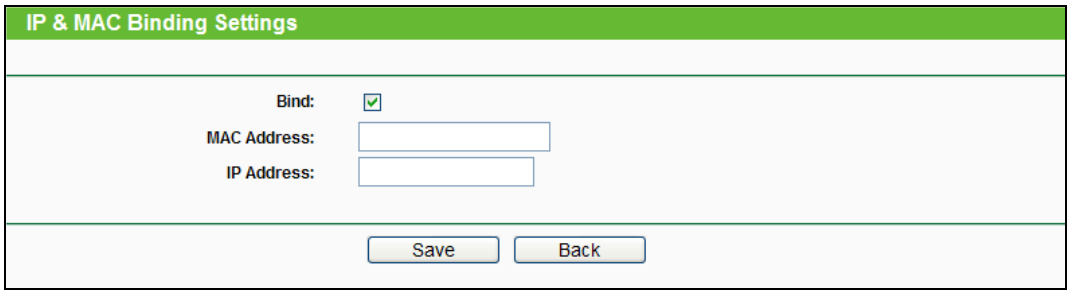


Figure 4-94 IP & MAC Binding Setting (Add & Modify)

To add IP & MAC Binding entries, follow the steps below.

1. Click the **Add New...** button as shown in Figure 4-93.
2. Enter the MAC Address and IP Address.
3. Select the Bind checkbox.
4. Click the **Save** button to save it.

To modify or delete an existing entry, follow the steps below.

1. Find the desired entry in the table.
2. Click **Modify** or **Delete** as desired on the **Modify** column.

To find an existing entry, follow the steps below.

1. Click the **Find** button as shown in Figure 4-93.
2. Enter the MAC Address or IP Address.
3. Click the **Find** button in the page as shown in Figure 4-95.

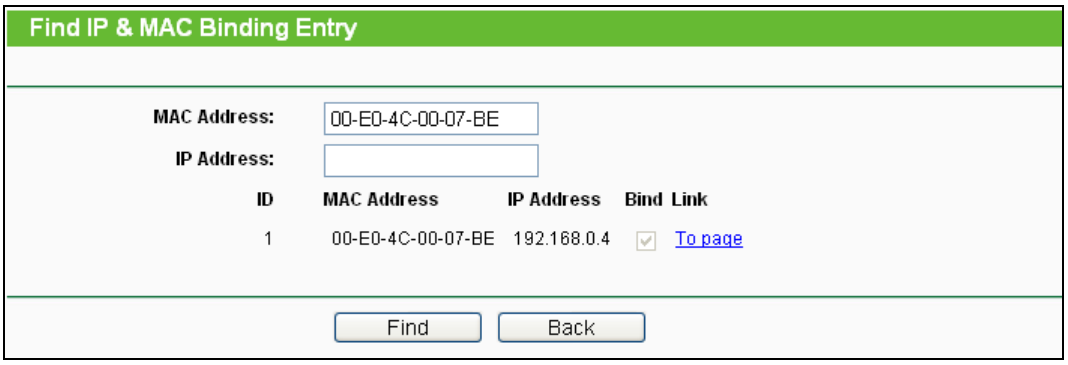


Figure 4-95 Find IP & MAC Binding Entry

Click the **Enable All** button to make all entries enabled.
Click the **Delete All** button to delete all entries.

4.17.2 ARP List

To manage the computer, you could observe the computers in the LAN by checking the relationship of MAC address and IP address on the ARP list, and you could also configure the items on the ARP list. This page displays the ARP List; it shows all the existing IP & MAC Binding entries (shown in Figure 4-96).

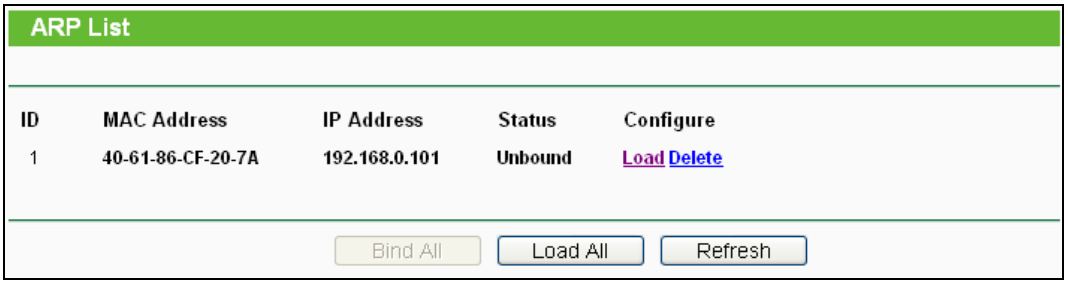


Figure 4-96 ARP List

1. **MAC Address -** The MAC address of the controlled computer in the LAN.
2. **IP Address -** The assigned IP address of the controlled computer in the LAN.

3. **Status -** Indicates whether or not the MAC and IP addresses are bound.

4. **Configure -** Load or delete an item.

   - **Load -** Load the item to the IP & MAC Binding list.
   - **Delete -** Delete the item.

Click the **Bind All** button to bind all the current items, available after enable.

Click the **Load All** button to load all items to the IP & MAC Binding list.

Click the **Refresh** button to refresh all items.

Note:

An item could not be loaded to the IP & MAC Binding list if the IP address of the item has been loaded before. Error warning will prompt as well. Likewise, "Load All" only loads the items without interference to the IP & MAC Binding list.

4.18 Dynamic DNS

Choose menu "**Dynamic DNS**", and you can configure the Dynamic DNS function.

The Router offers the **DDNS** (Dynamic Domain Name System) feature, which allows the hosting of a website, FTP server, or e-mail server with a fixed domain name (named by yourself) and a dynamic IP address, and then your friends can connect to your server by entering your domain name no matter what your IP address is. Before using this feature, you need to sign up for DDNS service providers such as www.comexe.cn, dyn.com, or www.noip.com. The Dynamic DNS client service provider will give you a password or key.

4.18.1 Comexe DDNS

If the dynamic DNS **Service Provider** you select is www.comexe.cn, the page will appear as shown in Figure 4-97.

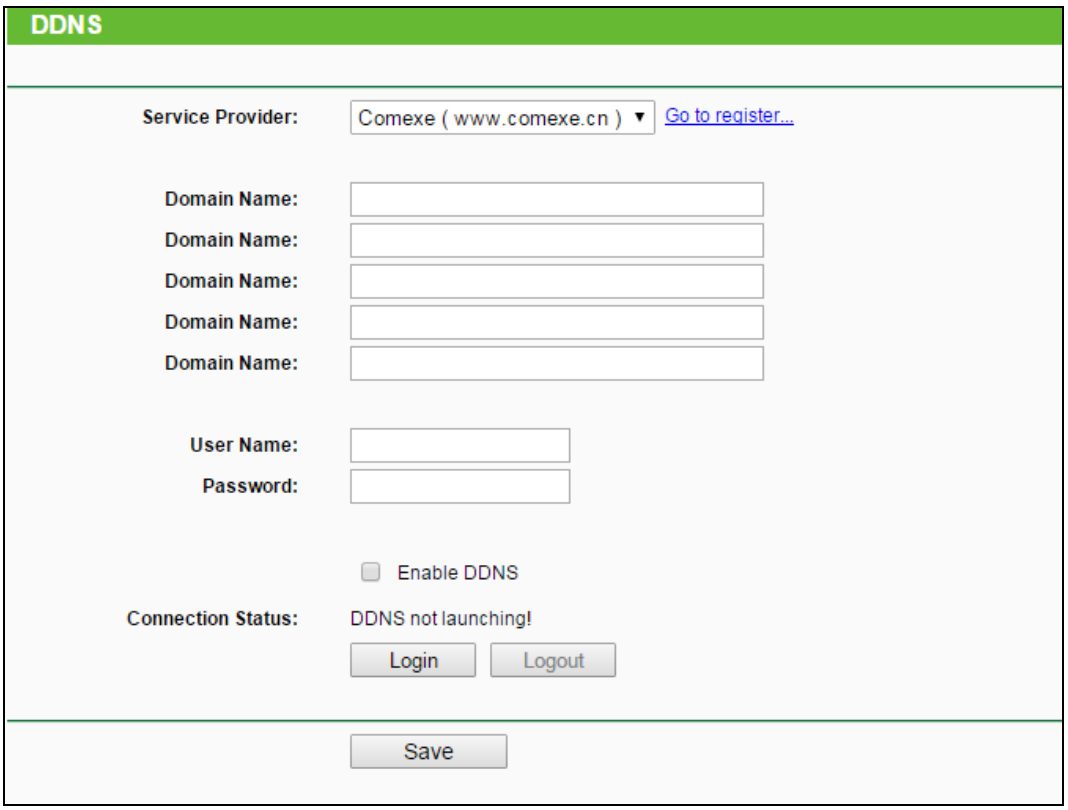


Figure 4-97 Comexe.cn DDNS Settings

To set up for DDNS, follow these instructions:

1. Enter the **Domain Name** your dynamic DNS service provider gave.
2. Enter the **User Name** for your DDNS account.
3. Enter the **Password** for your DDNS account.
4. Click the **Login** button to login the DDNS service.

Connection Status -The status of the DDNS service connection is displayed here.

Click **Logout** to log out of the DDNS service.

☞ **Note:**

If you want to login again with another account after a successful login, please click the **Logout** button, then input your new username and password and click the **Login** button.

4.18.2 Dyndns DDNS

If the dynamic DNS **Service Provider** you select is dyn.com, the page will appear as shown in Figure 4-98.

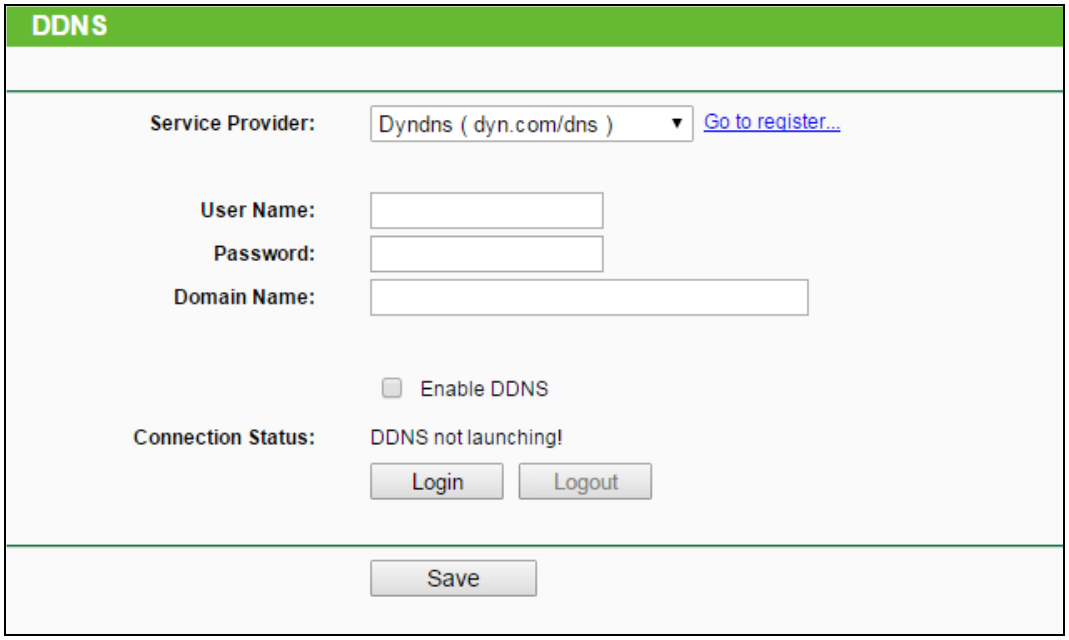


Figure 4-98 Dyn.com DDNS Settings

To set up for DDNS, follow these instructions:

1. Enter the **User Name** for your DDNS account.
2. Enter the **Password** for your DDNS account.
3. Enter the **Domain Name** you received from dynamic DNS service provider.
4. Click the **Login** button to login to the DDNS service.

Connection Status -The status of the DDNS service connection is displayed here.

Click **Logout** to logout of the DDNS service.

☞ **Note:**

If you want to login again with another account after a successful login, please click the **Logout** button, then input your new username and password and click the **Login** button.

4.18.3 No-IP DDNS

If the dynamic DNS **Service Provider** you select is www.noip.com, the page will appear as shown in Figure 4-99.

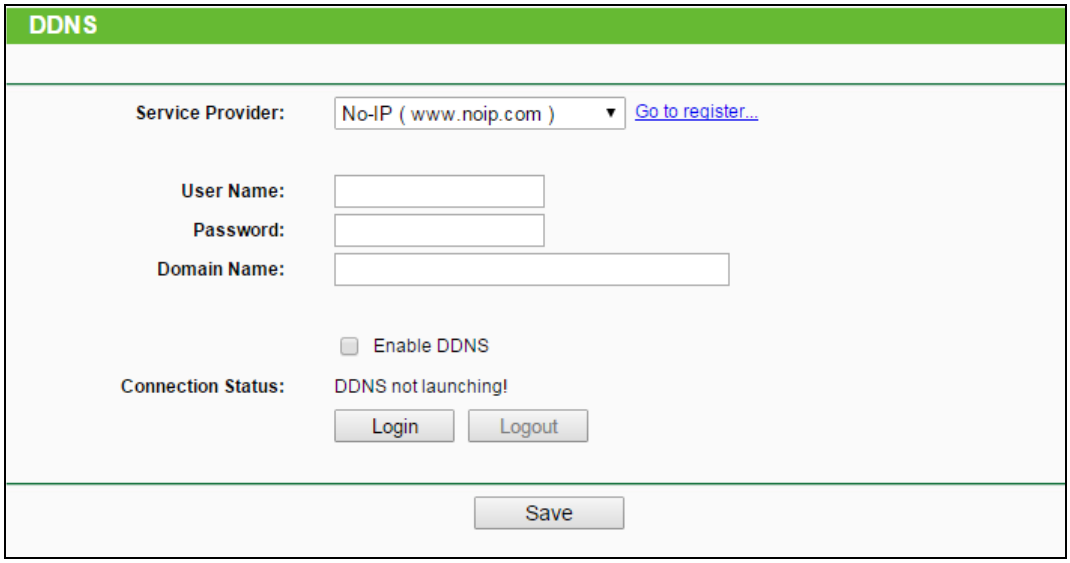


Figure 4-99 Noip.com DDNS Settings

To set up for DDNS, follow these instructions:

1. Enter the **User Name** for your DDNS account.
2. Enter the **Password** for your DDNS account.
3. Enter the **Domain Name** you received from dynamic DNS service provider.
4. Click the **Login** button to login to the DDNS service.

Connection Status - The status of the DDNS service connection is displayed here.

Click **Logout** to log out the DDNS service.

Note:

If you want to login again with another account after a successful login, please click the **Logout** button, then input your new username and password and click the **Login** button.

4.19 IPv6 Support

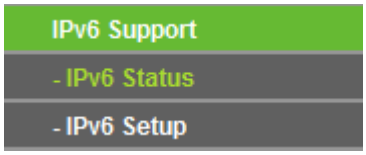


Figure 4-100 IPv6 Support

There are two submenus under the IPv6 Support menu (shown in Figure 4-100): **IPv6 Status** and **IPv6 Setup**. Click either of them, and you will be able to scan or configure the corresponding function. The detailed explanations for each submenu are provided below.

4.19.1 IPv6 Status

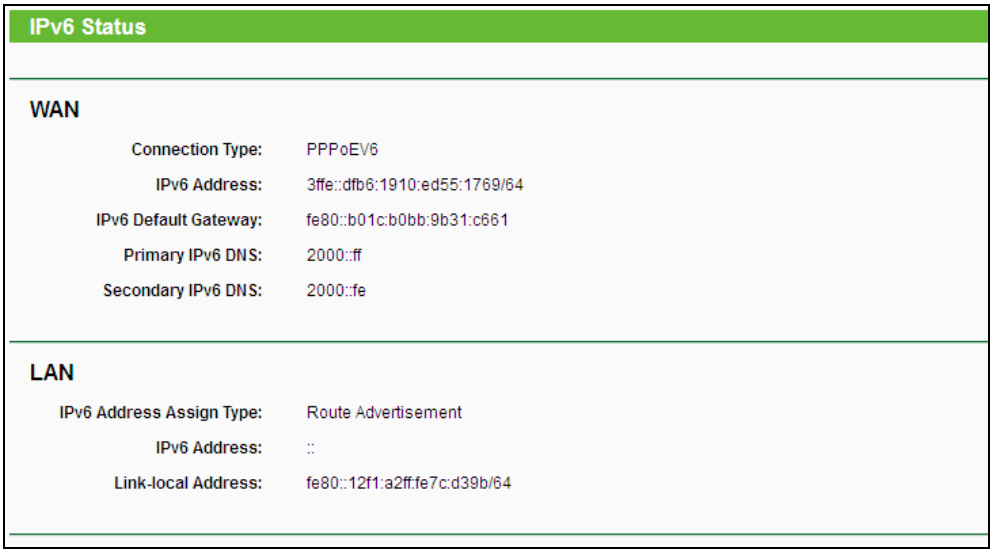


Figure 4-101 IPv6 Status

The **IPv6 Status** page displays the router's current IPv6 status and configuration. All information is read-only.

- **WAN**
  - **Connection Type** - The IPv6 connection way for WAN.
  - **IPv6 Address** - The WAN IPv6 address.
  - **IPv6 Default Gateway** - The router's default gateway.
  - **Primary IPv6 DNS** - The primary IPv6 DNS address.
  - **Secondary IPv6 DNS** - The secondary IPv6 DNS address.
- **LAN**
  - **IPv6 Address Assign Type** - The way how the router assign IPv6 address for PC in LAN, RADVD (Router Advertisement Daemon) and DHCPv6 (Dynamic Host Configuration Protocol for IPv6) Server.
  - **IPv6 Address** - The LAN global IPv6 address of the router.
  - **Link-local Address** - The LAN Link-local Address of the router.

4.19.2 IPv6 Setup

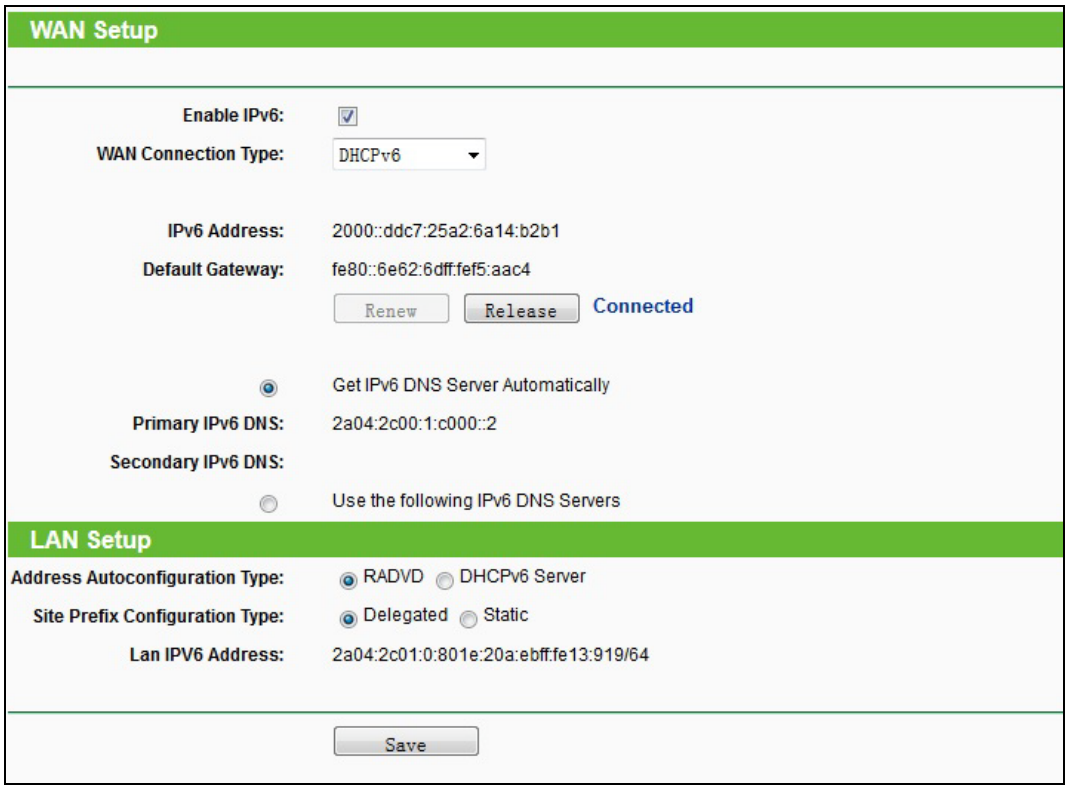


Figure 4-102 Enable/Disable IPv6

- **Enable IPv6** - Tick the checkbox to enable the IPv6 function. It's enabled by default.
- **WAN Connection Type** - Choose the correct WAN connection type based on your ISP network topology.
  - **SLAAC** - Connections which use RADVD IPv6 address assignment.
  - **DHCPv6** - Connections which use dynamic IPv6 address assignment.
  - **Static IPv6** - Connections which use static IPv6 address assignment.
  - **PPPoEv6** - Connections which use PPPoEV6 that requires a user name and password.
  - **Tunnel 6to4** - Connections which use 6to4 address assignment.

Different types of WAN connection require you to do different settings. Below are the detailed explanations for the respective type.

1) SLAAC

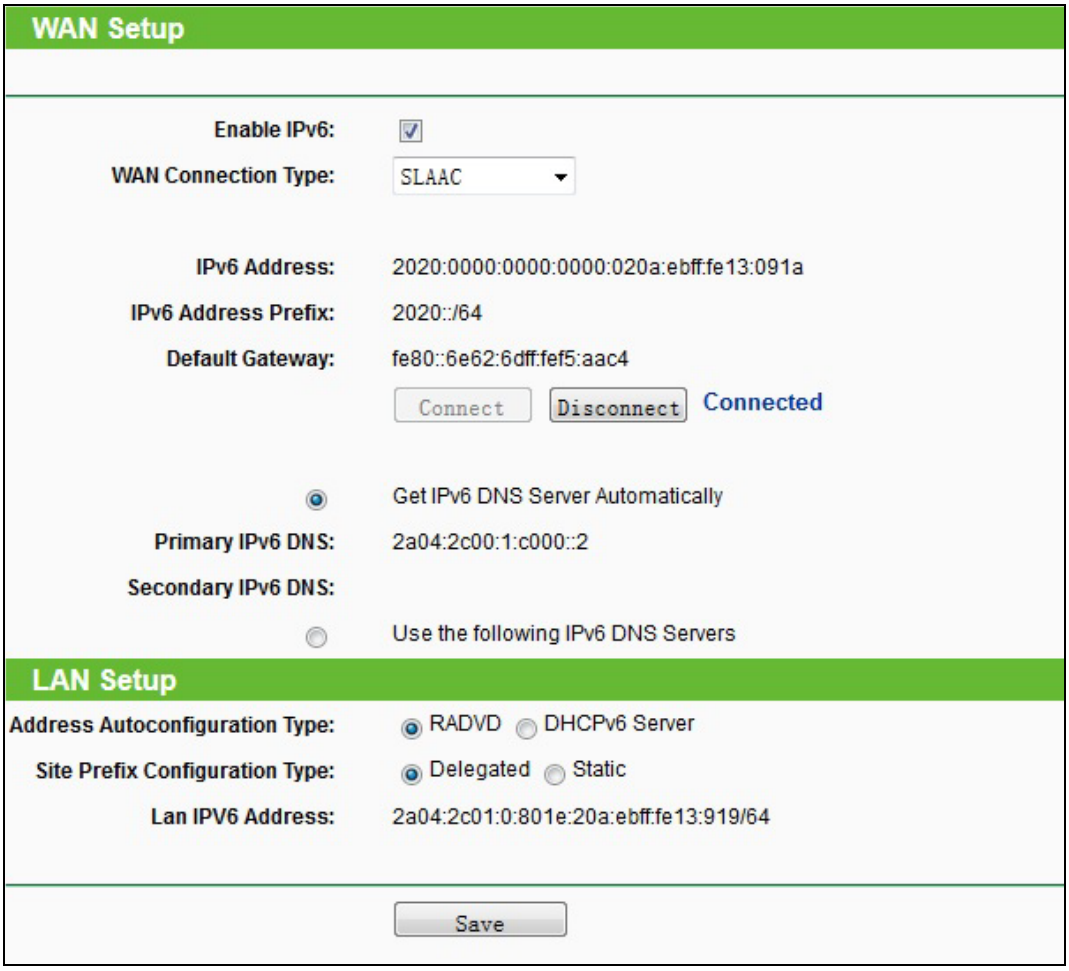


Figure 4-103 SLAAC

- **IPv6 Address** - The IPv6 address assigned by your ISP dynamically.
- **IPv6 Address Prefix** - Display the IPv6 Prefix Length in dotted-decimal notation provided by your ISP.
- **Default Gateway** - Display the default gateway in colon-hexadecimal notation provided by your ISP.

Click the **Connect** button to connect immediately.
Click the **Disconnect** button to disconnect immediately.

If your ISP gives you one or two DNS IPv6 addresses, select **Use the following IPv6 DNS Servers** and enter the **Primary IPv6 DNS** and **Secondary IPv6 DNS** into the correct fields. Otherwise, leave the default selection **Get IPv6 DNS Server Automatically**, and the DNS servers will be assigned from ISP dynamically.

- **Primary IPv6 DNS** - Enter the DNS IPv6 address in dotted-decimal notation provided by your ISP.

- **Secondary IPv6 DNS** - Enter another DNS IPv6 address in dotted-decimal notation provided by your ISP.

Note:

If you get Address not found error when you access a Web site, it is likely that your DNS servers are set up improperly. You should contact your ISP to get DNS server addresses.

- **Address Autoconfiguration Type**- **RADVD** (Router Advertisement Daemon) and **DHCPv6** (Dynamic Host Configuration Protocol for IPv6) **Server**.
- **Site Prefix Configuration Type** - The type of IPv6 address prefix.
  - **Delegated** - Get the IPv6 address prefix from the ISP automatically, and the device will delegate it to the LAN.
  - **Static** - Configure the **Site Prefix** and **Site Prefix Length** manually. Please contact your ISP to get more information before you configure them.
- **LAN IPv6 Address** - Display the LAN IPv6 address created by the device.

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

2) DHCPv6

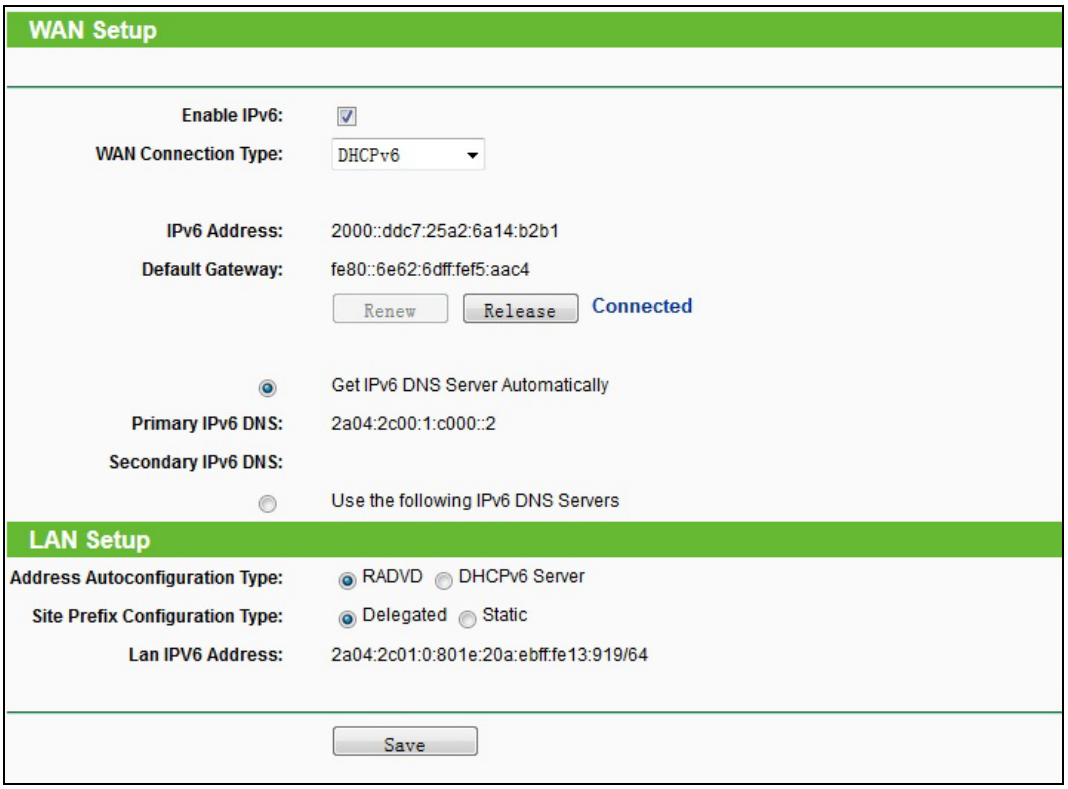


Figure 4-104 DHCPv6

- **IPv6 Address** - The IPv6 address assigned by your ISP dynamically.

- **Default Gateway** - Display the default gateway in colon-hexadecimal notation provided by your ISP.

Click the **Renew** button to renew the IPv6 parameters from your ISP.
Click the **Release** button to release the IPv6 parameters from your ISP.

If your ISP gives you one or two DNS IPv6 addresses, select **Use the following IPv6 DNS Servers** and enter the **Primary IPv6 DNS** and **Secondary IPv6 DNS** into the correct fields. Otherwise, leave the default selection **Get IPv6 DNS Server Automatically**, and the DNS servers will be assigned from ISP dynamically.

- **Primary IPv6 DNS** - Enter the DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Secondary IPv6 DNS** - Enter another DNS IPv6 address in dotted-decimal notation provided by your ISP.

☞ **Note:**

If you get Address not found error when you access a Web site, it is likely that your DNS servers are set up improperly. You should contact your ISP to get DNS server addresses.

- **Address Autoconfiguration Type** - **RADVD** (Router Advertisement Daemon) and **DHCPv6** (Dynamic Host Configuration Protocol for IPv6) **Server**.
- **Site Prefix Configuration Type** - The type of IPv6 address prefix.
  - **Delegated** - Get the IPv6 address prefix from the ISP automatically, and the device will delegate it to the LAN.
  - **Static** - Configure the **Site Prefix** and **Site Prefix Length** manually. Please contact your ISP to get more information before you configure them.
- **LAN IPv6 Address** - Display the LAN IPv6 address created by the device.

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

3) Static IPv6

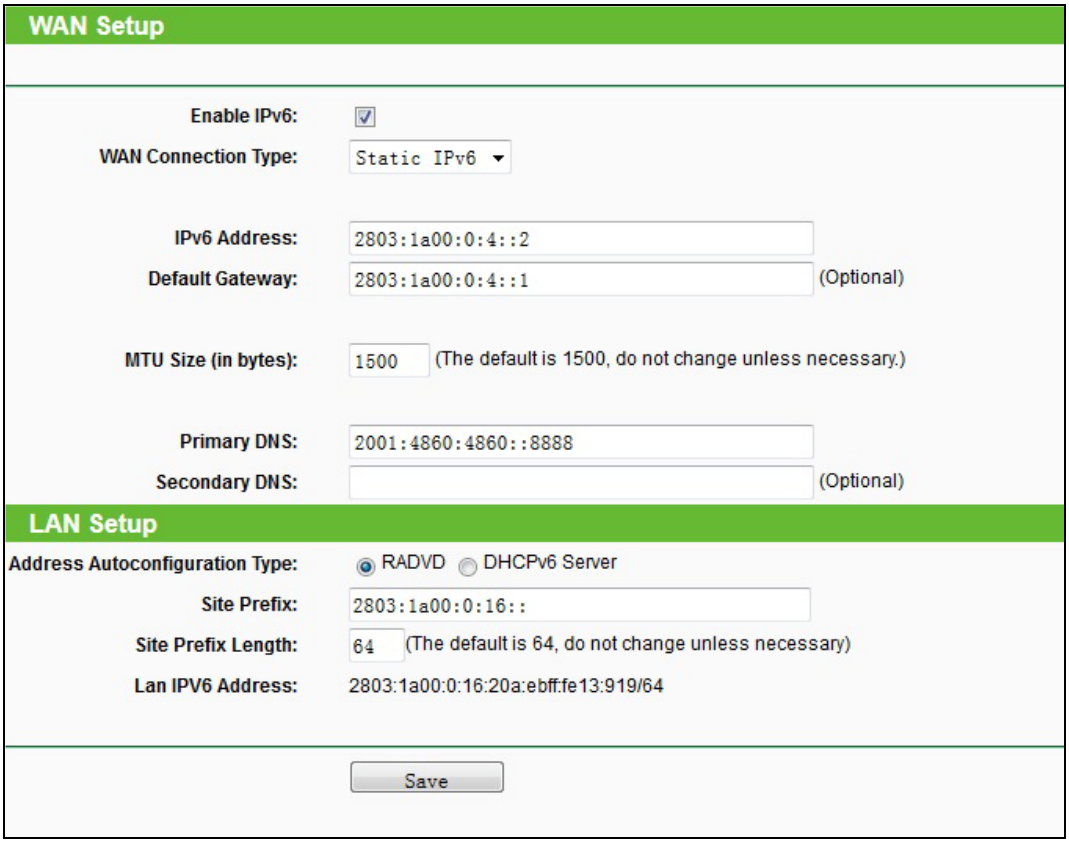


Figure 4-105 Static IPv6

- **IPv6 Address** - Enter the IPv6 address in dotted-decimal notation provided by your ISP.
- **Default Gateway** - Enter the default gateway in dotted-decimal notation provided by your ISP.
- **MTU Size (in bytes)** - The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs, you may need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection.
- **Primary DNS** - Enter the DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Secondary DNS** - Enter another DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Address Autoconfiguration Type** - **RADVD** (Router Advertisement Daemon) and **DHCPv6** (Dynamic Host Configuration Protocol for IPv6) **Server**.
- **Site Prefix Configuration Type** - The type of IPv6 address prefix.
  - **Delegated** - Get the IPv6 address prefix from the ISP automatically, and the device will delegate it to the LAN.
  - **Static** - Configure the **Site Prefix** and **Site Prefix Length** manually. Please contact your ISP to get more information before you configure them.

- **LAN IPv6 Address** - Display the LAN IPv6 address created by the device.

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

4) PPPoEv6

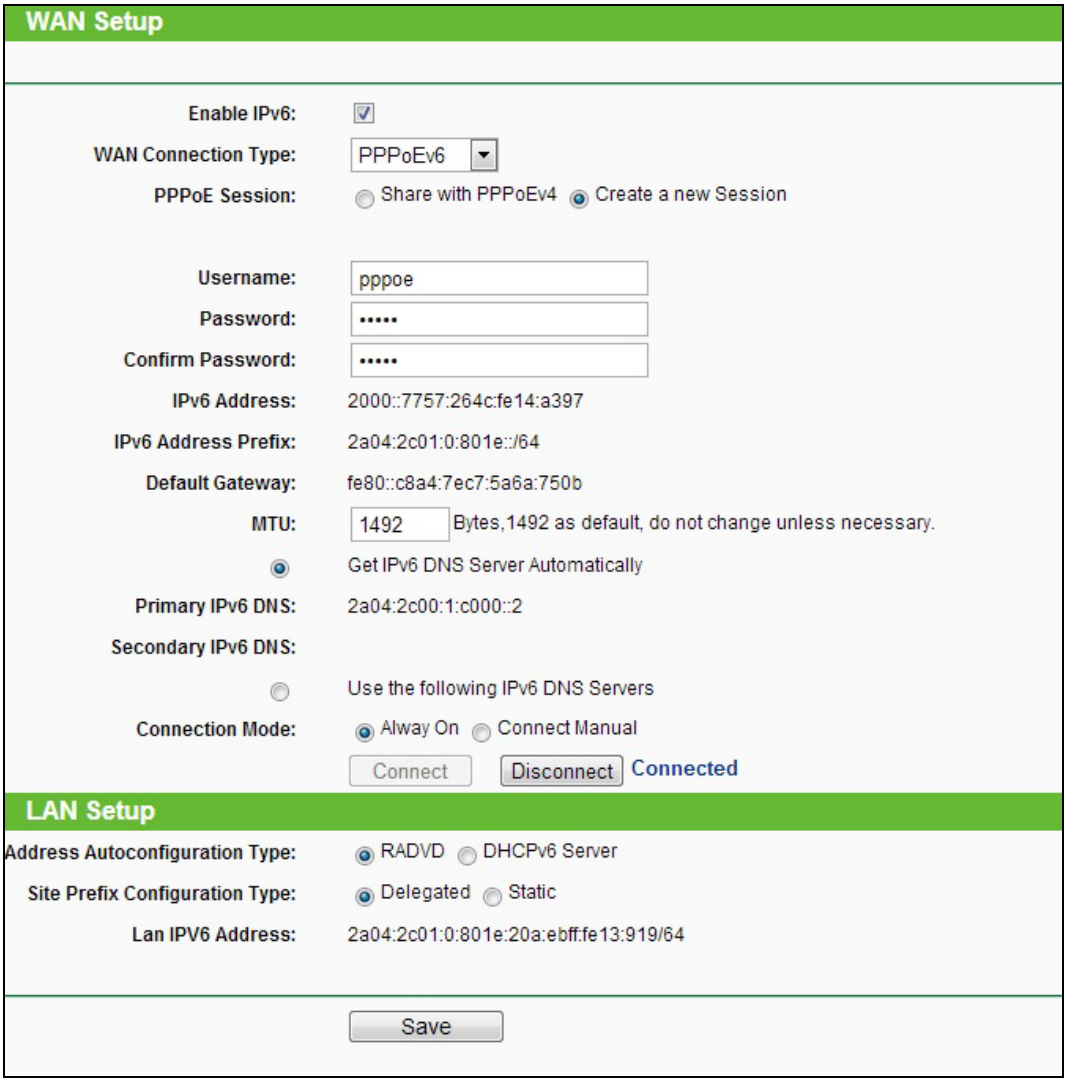


Figure 4-106 PPPoEv6

- **PPPoE Session** - The PPP session type for IPv6 connection. There are two types:
  - **Share with PPPoEv4** - The PPPoEv6 and PPPoEv4 use the same PPP session.
  - **Create a new Session** - The PPPoEv6 and PPPoEv4 use different PPP sessions. It is default to select this option.
- **User Name/Password** - Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- **IPv6 Address** - Enter the IPv6 address in dotted-decimal notation provided by your ISP.
- **Default Gateway** - Enter the default gateway in dotted-decimal notation provided by your ISP.

- **MTU Size (in bytes)** - The normal MTU (Maximum Transmission Unit) value is 1492 Bytes. For some ISPs, you may need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection.
- **Primary DNS** - Enter the DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Secondary DNS** - Enter another DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Connection Mode** - The way to connect the ISP.
  - **Alway On** - Connect automatically.
  - **Connect Manual** - Connect by the user manually.

Click the **Connect** button to connect immediately.
Click the **Disconnect** button to disconnect immediately.

- **Address Autoconfiguration Type** - **RADVD** (Router Advertisement Daemon) and **DHCPv6** (Dynamic Host Configuration Protocol for IPv6) **Server**.
- **Site Prefix Configuration Type** - The type of IPv6 address prefix.
  - **Delegated** - Get the IPv6 address prefix from the ISP automatically, and the device will delegate it to the LAN.
  - **Static** - Configure the **Site Prefix** and **Site Prefix Length** manually. Please contact your ISP to get more information before you configure them.
- **LAN IPv6 Address** - Display the LAN IPv6 address created by the device.

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

5) Tunnel 6to4

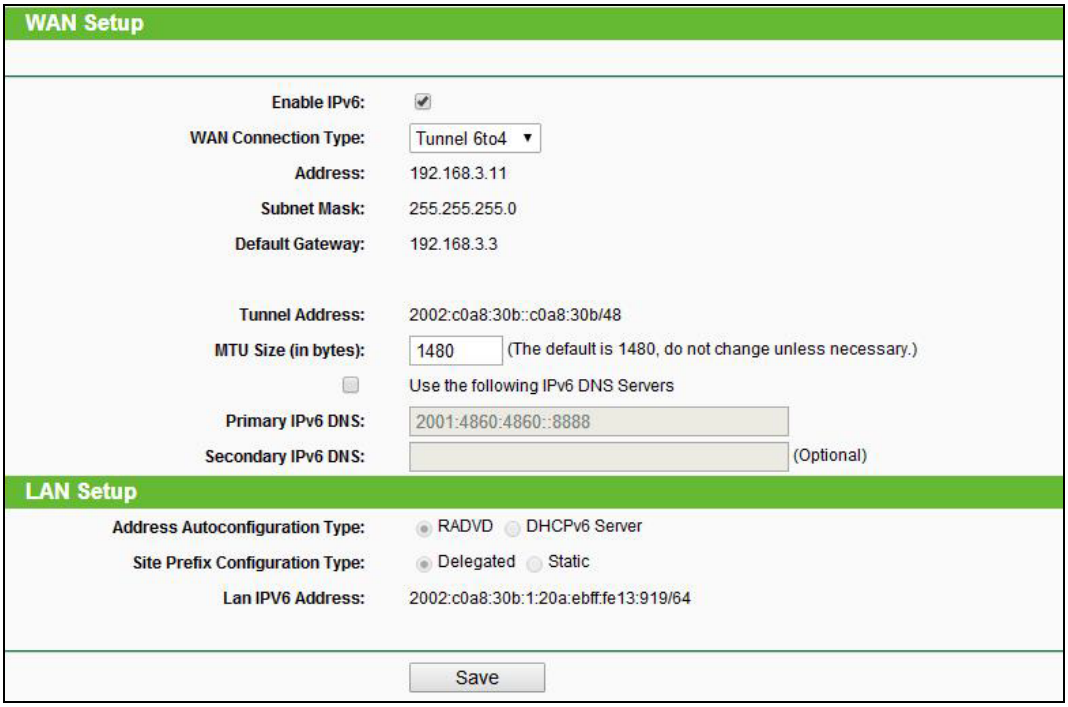


Figure 4-107 Tunnel 6to4

- **Address/Subnet Mask/Default Gateway** - The IPv4 address/ subnet mask/ default gateway assigned, in dotted-decimal notation.
- **Tunnel Address** - The 6to4 tunnel address created by the device to access to the IPv6 network.
- **MTU Size** - The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1480 Bytes. For some ISPs, you may need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection.

If your ISP gives you one or two DNS IPv6 addresses, select **Use the following IPv6 DNS Servers** and enter the **Primary IPv6 DNS** and **Secondary IPv6 DNS** into the correct fields. Otherwise, the DNS servers will be assigned from ISP dynamically.

- **Primary IPv6 DNS** - Enter the DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Secondary IPv6 DNS** - Enter another DNS IPv6 address in dotted-decimal notation provided by your ISP.
- **Address Autoconfiguration Type** - **RADVD** (Router Advertisement Daemon) and **DHCPv6** (Dynamic Host Configuration Protocol for IPv6) **Server**.
- **Site Prefix Configuration Type** - The type of IPv6 address prefix.
  - **Delegated** - Get the IPv6 address prefix from the ISP automatically, and the device will delegate it to the LAN.

- **Static** - Configure the **Site Prefix** and **Site Prefix Length** manually. Please contact your ISP to get more information before you configure them.

➢ **LAN IPv6 Address** - Display the LAN IPv6 address created by the device.

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

4.20 System Tools

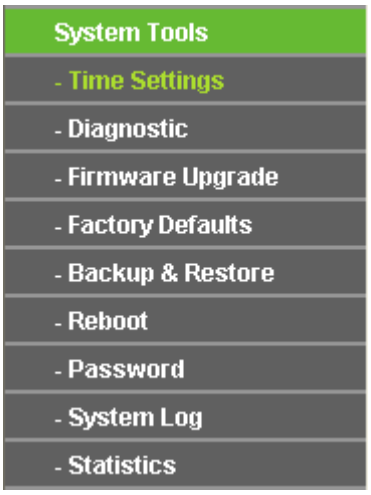


Figure 4-108 The System Tools menu

Choose menu "**System Tools**", and you can see the submenus under the main menu: **Time Settings**, **Diagnostic**, **Firmware Upgrade**, **Factory Defaults**, **Backup & Restore**, **Reboot**, **Password**, **System Log** and **Statistics**. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

4.20.1 Time Setting

Choose menu "**System Tools→Time Setting**", and then you can configure the time on the following screen.

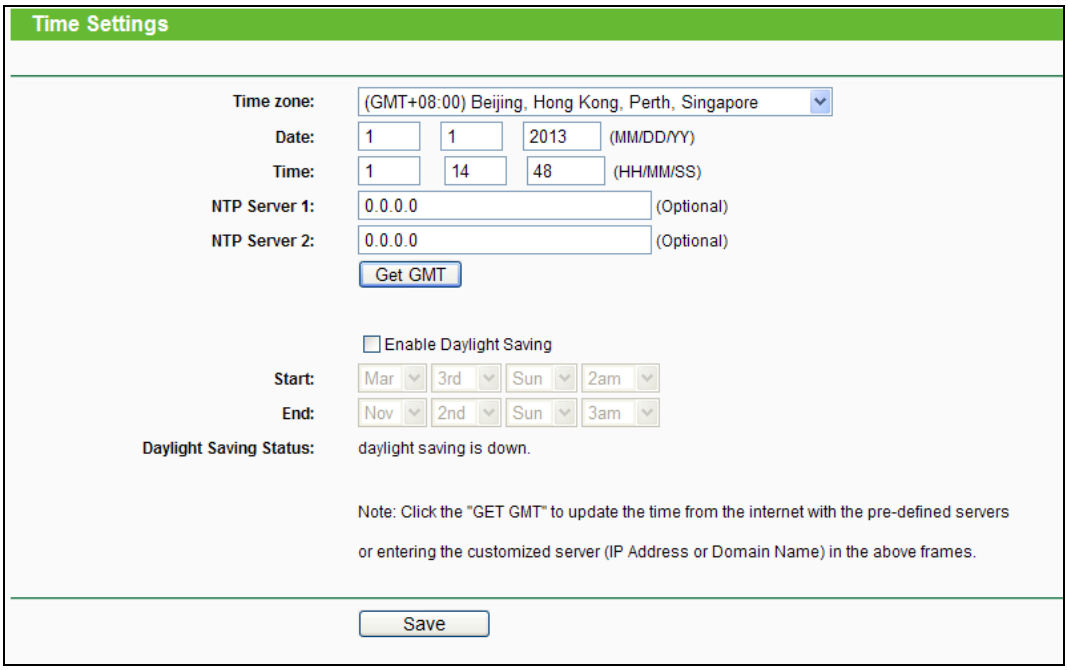


Figure 4-109 Time settings

- **Time Zone -** Select your local time zone from this pull down list.
- **Date -** Enter your local date in MM/DD/YY into the right blanks.
- **Time -** Enter your local time in HH/MM/SS into the right blanks.
- **NTP Server 1 / NTP Server 2 -** Enter the address or domain of the **NTP Server 1** or **NTP Server 2**, and then the Router will get the time from the NTP Server preferentially. In addition, the Router built-in some common NTP Servers, so it can get time automatically once it connects the Internet.
- **Enable Daylight Saving -** Check the box to enable the Daylight Saving function.
- **Start -** The time to start the Daylight Saving. Select the month in the first field, the week in the second field, the day in the third field and the time in the last field.
- **End -** The time to end the Daylight Saving. Select the month in the first field, the week in the second field, the day in the third field and the time in the last field.
- **Daylight Saving Status -** Displays the status whether the Daylight Saving is in use.

To set time manually:

1. Select your local time zone.
2. Enter the **Date** in Month/Day/Year format.
3. Enter the **Time** in Hour/Minute/Second format.
4. Click **Save**.

To set time automatically:

1. Select your local time zone.
2. Enter the address or domain of the **NTP Server 1** or **NTP Server 2**.
3. Click the **Get GMT** button to get system time from Internet if you have connected to the Internet.

To set Daylight Saving:

1. Check the box to enable Daylight Saving.
2. Select the start time from the drop-down lists in the **Start** field.
3. Select the end time from the drop-down lists in the **End** field.
4. Click the **Save** button to save the settings.

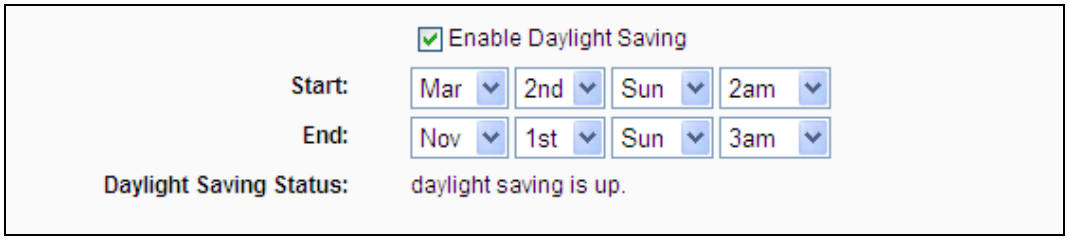


Figure 4-110 Time settings

Note:

1. This setting will be used for some time-based functions such as firewall. You must specify your time zone once you login to the router successfully, otherwise, these functions will not take effect.
2. The time will be lost if the router is turned off.
3. The Router will automatically obtain GMT from the Internet if it is configured accordingly.
4. The Daylight Saving will take effect one minute after the configurations are completed.

4.20.2 Diagnostic

Choose menu "**System Tools → Diagnostic**", and then you can transact **Ping** or **Traceroute** function to check connectivity of your network in the following screen.

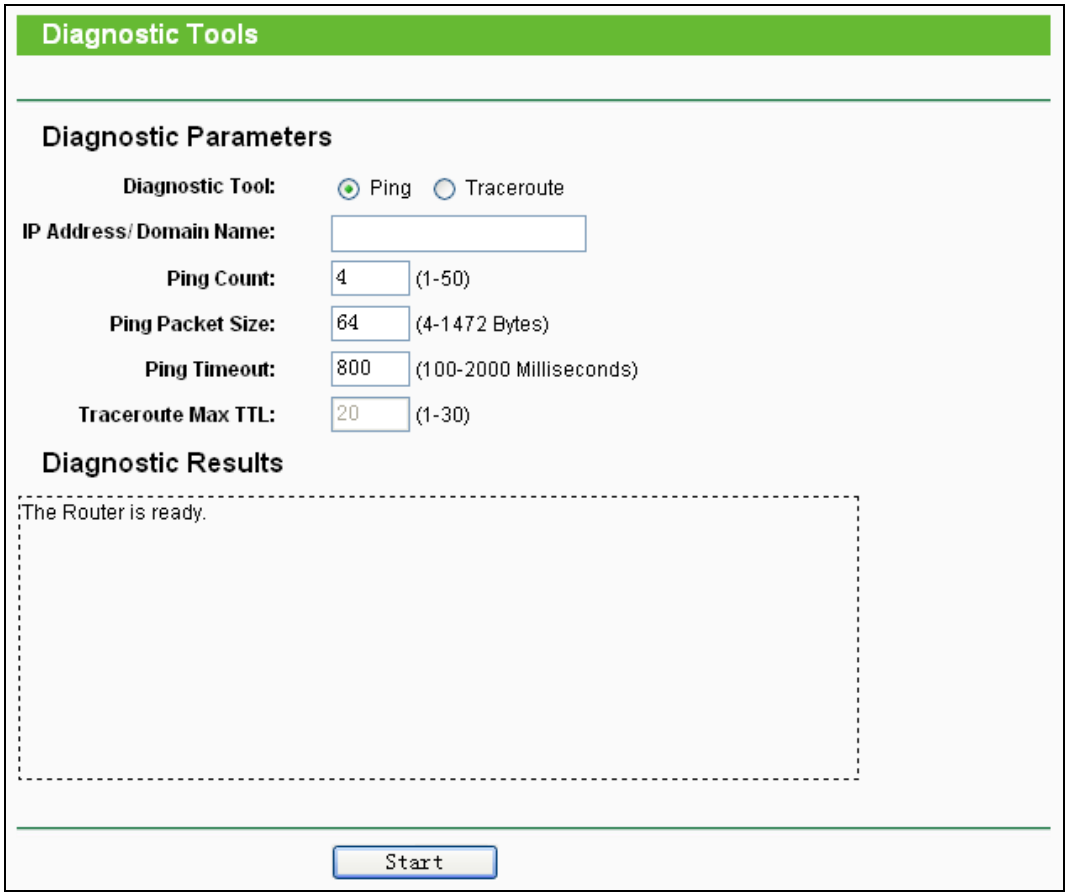


Figure 4-111 Diagnostic Tools

- **Diagnostic Tool** - Check the radio button to select one diagnostic too.
- **Ping** - This diagnostic tool troubleshoots connectivity, reachability, and name resolution to a given host or gateway.
- **Traceroute** - This diagnostic tool tests the performance of a connection.

Note:

You can use ping/traceroute to test both numeric IP address or domain name. If pinging/tracerouting the IP address is successful, but pinging/tracerouting the domain name is not, you might have a name resolution problem. In this case, ensure that the domain name you are specifying can be resolved by using Domain Name System (DNS) queries.

- **IP Address/Domain Name** - Enter the IP Address or Domain Name of the PC whose connection you wish to diagnose.
- **Pings Count -** Specifies the number of Echo Request messages sent. The default is 4.
- **Ping Packet Size -** Specifies the number of data bytes to be sent. The default is 64.
- **Ping Timeout -** Time to wait for a response, in milliseconds. The default is 800.
- **Traceroute Max TTL -** Set the maximum number of hops (max TTL to be reached) in the path to search for the target (destination). The default is 20.

Click **Start** to check the connectivity of the Internet.

The **Diagnostic Results** page displays the result of diagnosis.

If the result is similar to the following screen, the connectivity of the Internet is fine.

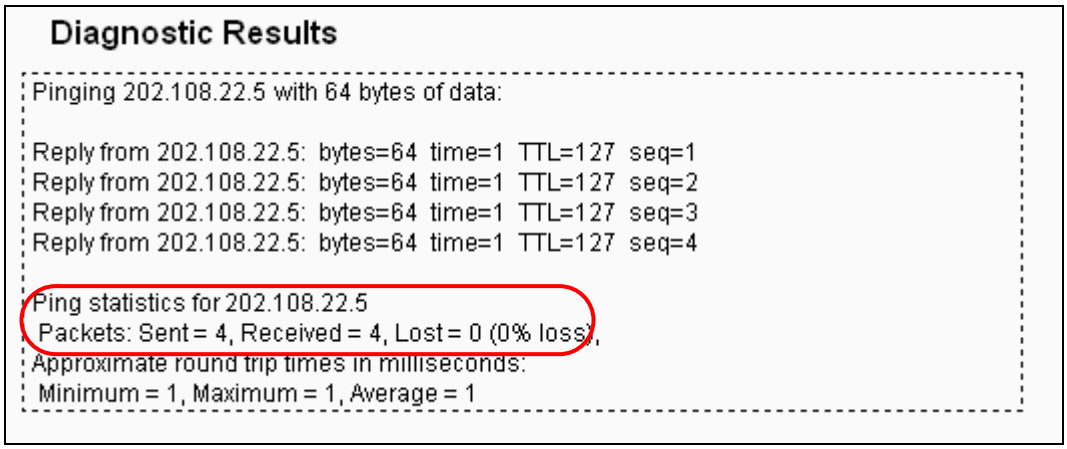


Figure 4-112 Diagnostic Results

Note:

1. Only one user can use the diagnostic tools at one time.
2. "Ping Count", "Ping Packet Size" and "Ping Timeout" are Ping Parameters, and "Traceroute Max TTL" is Traceroute Parameter.

4.20.3 Firmware Upgrade

Choose menu "**System Tools → Firmware Upgrade**", and then you can update the latest version of firmware for the Router on the following screen.

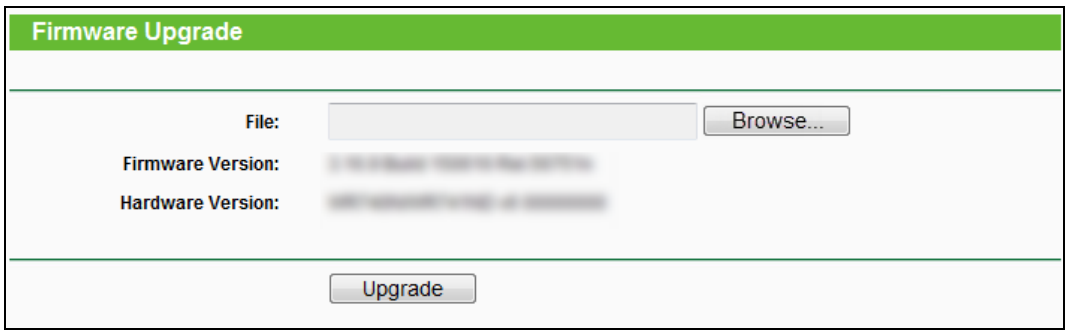


Figure 4-113 Firmware Upgrade

- **Firmware Version -** Displays the current firmware version.
- **Hardware Version -** Displays the current hardware version. The hardware version of the upgrade file must accord with the Router's current hardware version.

To upgrade the Router's firmware, follow these instructions below:

1. Download a most recent firmware upgrade file from our website (www.tp-link.com).
2. Enter or select the path name where you save the downloaded file on the computer into the

File blank.

3. Click the **Upgrade** button.
4. The Router will reboot when the upgrading has been finished.

Note:

The firmware version must correspond to the hardware. The upgrade process takes a few moments and this device restarts automatically when the upgrade is complete. It is important to keep power applied during the entire process. Loss of power during the upgrade could damage this device.

4.20.4 Factory Defaults

Choose menu "**System Tools → Factory Defaults**", and then and you can restore the configurations of the Router to factory defaults on the following screen

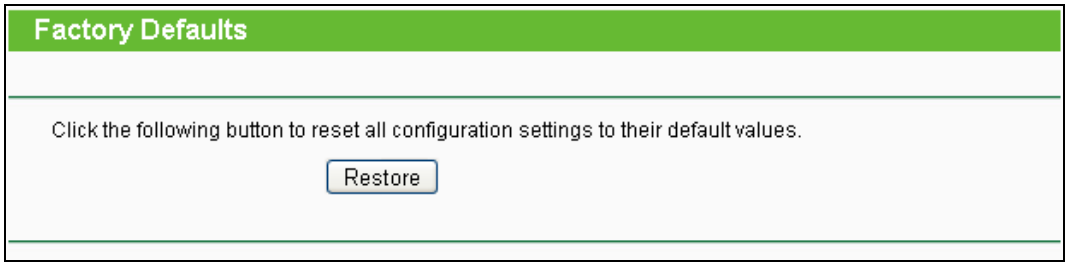


Figure 4-114 Restore Factory Default

Click the **Restore** button to reset all configuration settings to their default values.

- The default **User Name**: admin
- The default **Password**: admin
- The default **IP address**: 192.168.0.1
- The default **Subnet Mask**: 255.255.255.0

Note:

All changed settings will be lost when defaults are restored.

4.20.5 Backup & Restore

Choose menu "**System Tools → Backup & Restore**", and then you can save the current configuration of the Router as a backup file and restore the configuration via a backup file as shown in Figure 4-115.

Figure 4-115 Backup & Restore Configuration

Click the **Backup** button to save all configuration settings as a backup file in your local computer.

To upgrade the Router's configuration, follow these instructions.

- Click the **Browse…** button to find the configuration file which you want to restore.
- Click the **Restore** button to update the configuration with the file whose path is the one you have input or selected in the blank.

Note:

The current configuration will be covered with the uploading configuration file. Wrong process will lead the device unmanaged. The restoring process lasts for 20 seconds and the Router will restart automatically then. Keep the power of the Router on during the process, in case of any damage.

4.20.6 Reboot

Choose menu "**System Tools → Reboot**", and then you can click the **Reboot** button to reboot the Router via the next screen.

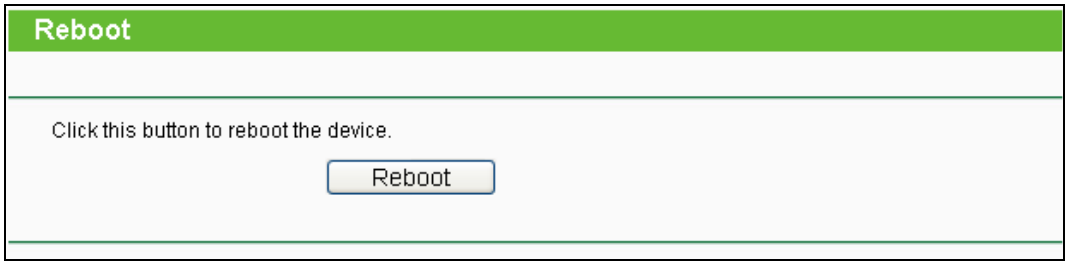


Figure 4-116 Reboot the Router

Some settings of the Router will take effect only after rebooting, which include:

- Change the LAN IP Address (system will reboot automatically).
- Change the DHCP Settings.
- Change the Web Management Port.
- Upgrade the firmware of the Router (system will reboot automatically).
- Restore the Router's settings to factory defaults (system will reboot automatically).

- Update the configuration with the file (system will reboot automatically.

4.20.7 Password

Choose menu "**System Tools → Password**", and then you can change the factory default user name and password of the Router in the next screen as shown in Figure 4-117.

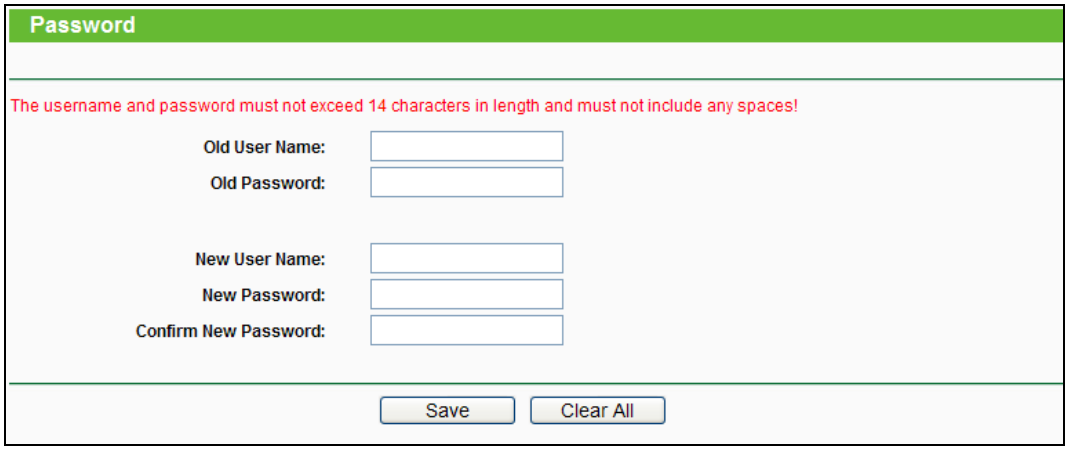


Figure 4-117 Password

It is strongly recommended that you should change the factory default user name and password of the Router, because all users who try to access the Router's Web-based utility or Quick Setup will be prompted for the Router's default user name and password.

Note:

The new user name and password must not exceed 14 characters in length and not include any spaces. Enter the new Password twice to confirm it.

Click the **Save** button when finished.

Click the **Clear All** button to clear all.

4.20.8 System Log

Choose menu "**System Tools → System Log**", and then you can view the logs of the Router.

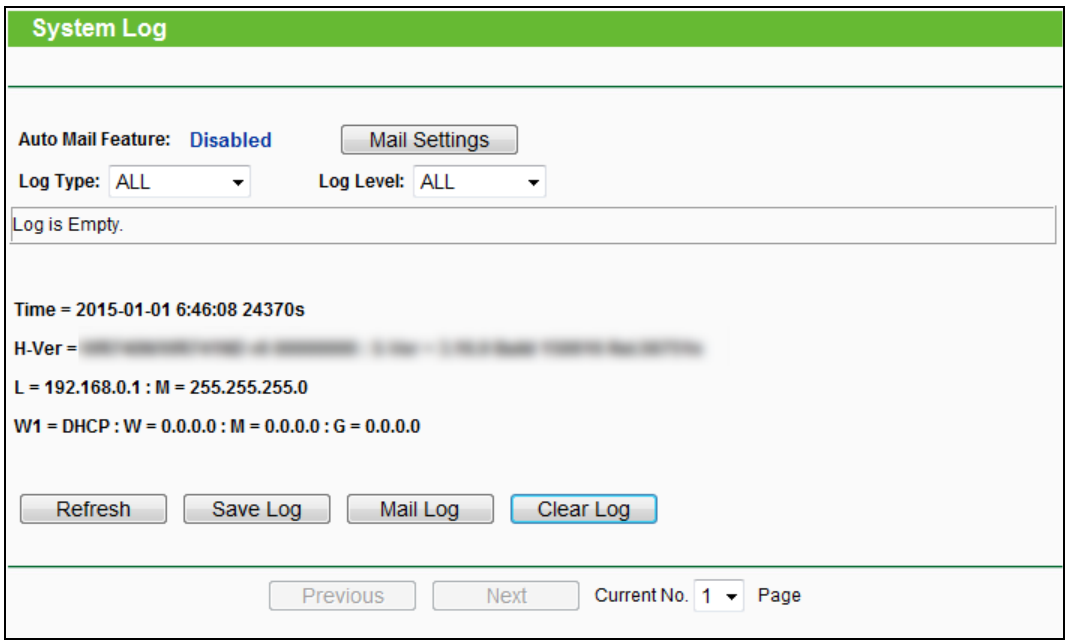


Figure 4-118 System Log

- **Auto Mail Feature -** Indicates whether auto mail feature is enabled or not.
- **Log Type -** By selecting the log type, only logs of this type will be shown.
- **Log Level -** By selecting the log level, only logs of this level will be shown.
- **Refresh -** Refresh the page to show the latest log list.
- **Save Log -** Click to save all the logs in a txt file.
- **Mail Log -** Click to send an email of current logs manually according to the address and validation information set in Mail Settings.
- **Clear Log -** All the logs will be deleted from the Router permanently, not just from the page.
- **Mail Settings -** Set the receiving and sending mailbox address, server address, validation information as well as the timetable for Auto Mail Feature, as shown in Figure 4-119.

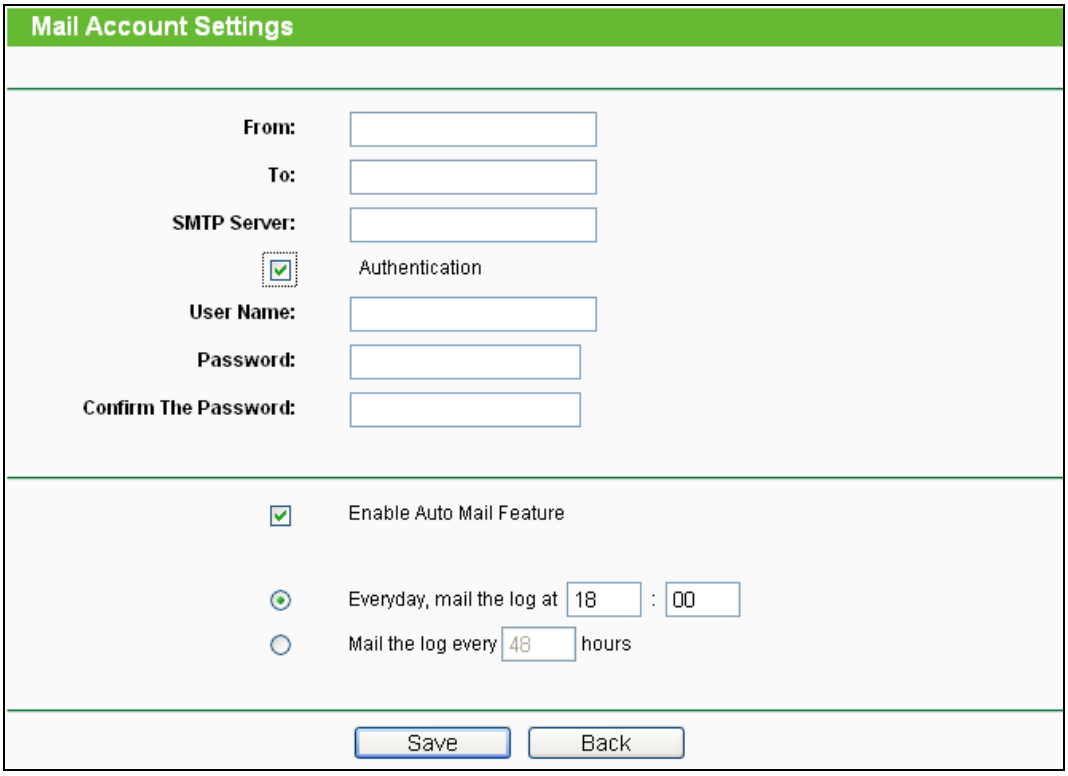


Figure 4-119 Mail Account Settings

- **From -** Your mail box address. The Router would connect it to send logs.
- **To -** Recipient's address. The destination mailbox where the logs would be received.
- **SMTP Server -** Your smtp server. It corresponds with the mailbox filled in the **From** field. You can log on the relevant website for help if you are not clear with the address.
- **Authentication -** Most SMTP Server requires Authentication. It is required by most mailboxes that need User Name and Password to log in.

☞ **Note:**

Only when you select **Authentication**, do you have to enter the User Name and Password in the following fields.

- **User Name -** Your mail account name filled in the From field. The part behind @ is included.
- **Password -** Your mail account password.
- **Confirm The Password -** Enter the password again to confirm.
- **Enable Auto Mail Feature -** Select it to mail logs automatically. You could mail the current logs either at a specified time everyday or by intervals, but only one could be the current effective rule. Enter the desired time or intervals in the corresponding field as shown in Figure 4-119.

Click **Save** to keep your settings.

Click **Back** to return to the previous page.

Click the **Next** button to go to the next page, or click the **Previous** button to return to the previous page.

4.20.9 Statistics

Choose menu "**System Tools → Statistics**", and then you can view the statistics of the Router, including total traffic and current traffic of the last Packets Statistic Interval.

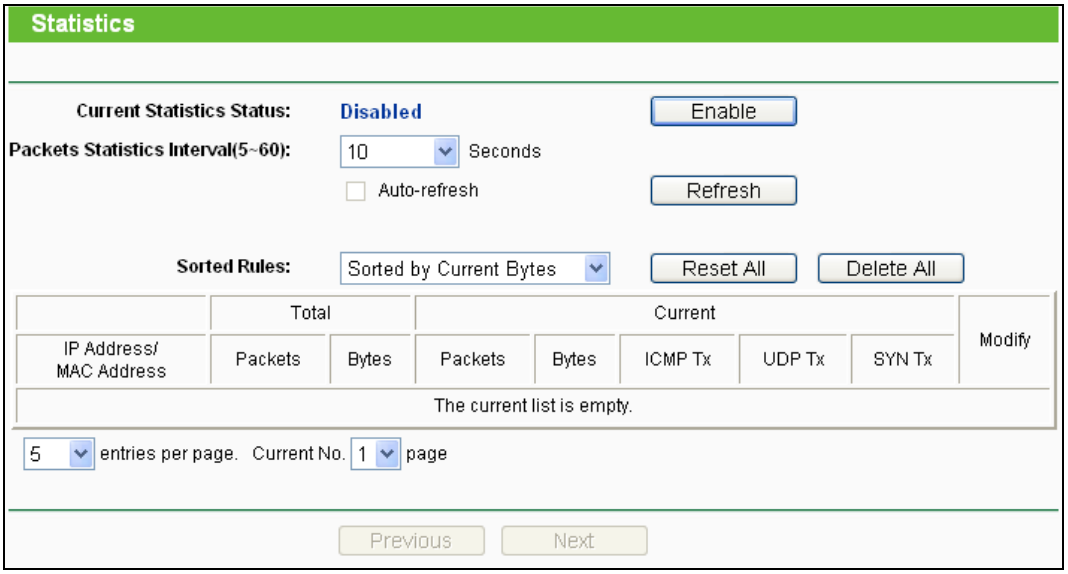


Figure 4-120 Statistics

- **Current Statistics Status -** Enable or Disable. The default value is disabled. To enable it, click the **Enable** button. If it is disabled, the function of DoS protection in Security settings will be disabled.
- **Packets Statistics Interval （5-60） -** The default value is 10. Select a value between 5 and 60 seconds in the drop-down list. The Packets Statistic interval indicates the time section of the packets statistic.
- **Sorted Rules -** Choose how the displayed statistics are sorted.

Select the **Auto-refresh** checkbox to refresh automatically.

Click the **Refresh** button to refresh immediately.

Click **Reset All** to reset the values of all the entries to zero.

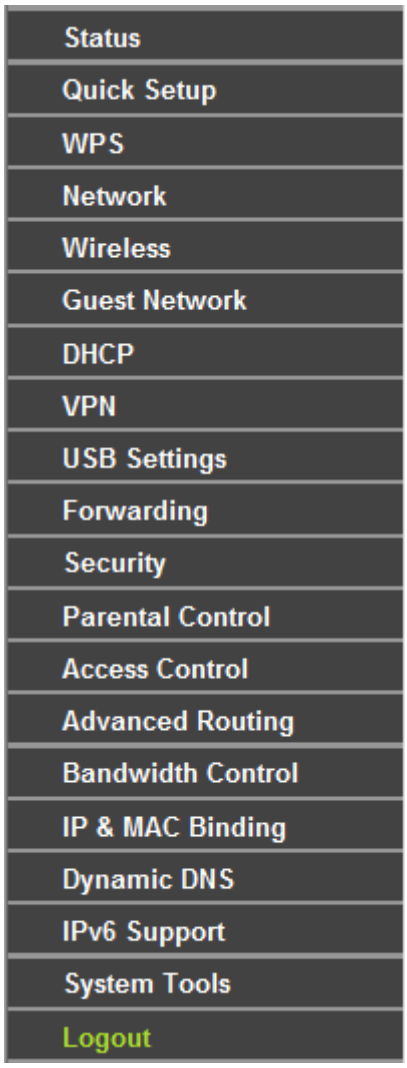
Click **Delete All** to delete all entries in the table.

Statistics Table:

IP/MAC Address		The IP and MAC address are displayed with related statistics.
Total	**Packets**	The total number of packets received and transmitted by the Router.
	Bytes	The total number of bytes received and transmitted by the Router.
Current	**Packets**	The total number of packets received and transmitted in the last Packets Statistic interval seconds.
	Bytes	The total number of bytes received and transmitted in the last Packets Statistic interval seconds.
	ICMP Tx	The number of the ICMP packets transmitted to WAN per second at the specified Packets Statistics interval. It is shown like “current transmitting rate / Max transmitting rate”.
	UDP Tx	The number of UDP packets transmitted to the WAN per second at the specified Packets Statistics interval. It is shown like “current transmitting rate / Max transmitting rate”.
	TCP SYN Tx	The number of TCP SYN packets transmitted to the WAN per second at the specified Packets Statistics interval. It is shown like “current transmitting rate / Max transmitting rate”.
Modify	**Reset**	Reset the value of he entry to zero.
	Delete	Delete the existing entry in the table.

There would be 5 entries on each page. Click **Previous** to return to the previous page and **Next** to the next page.

4.21 Logout



Click the **Logout** tab at the bottom of the main menu, and then the web-page will be logged out and return to the login window.

Appendix A: FAQ

1. How do I configure the Router to access Internet by ADSL users?

1) First, configure the ADSL Modem configured in RFC1483 bridge model.

2) Connect the Ethernet cable from your ADSL Modem to the WAN port on the Router. The telephone cord plugs into the Line port of the ADSL Modem.

3) Login to the Router, click the “Network” menu on the left of your browser, and click "WAN" submenu. On the WAN page, select “PPPoE/Russia PPPoE” for WAN Connection Type. Type user name in the “User Name” field and password in the “Password” field, type password in the “Confirm Password” field again, finish by clicking “Connect”.

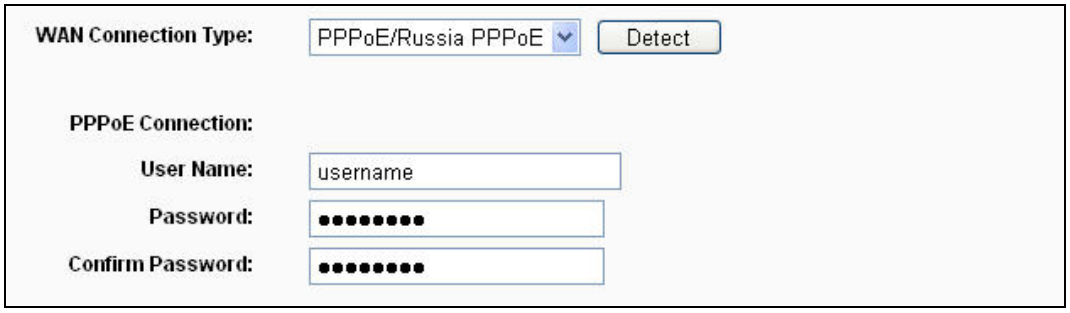


Figure A-1 PPPoE Connection Type

4) If your ADSL lease is in “pay-according-time” mode, select “Connect on Demand” or “Connect Manually” for Internet connection mode. Type an appropriate number for “Max Idle Time” to avoid wasting paid time. Otherwise, you can select “Auto-connecting” for Internet connection mode.

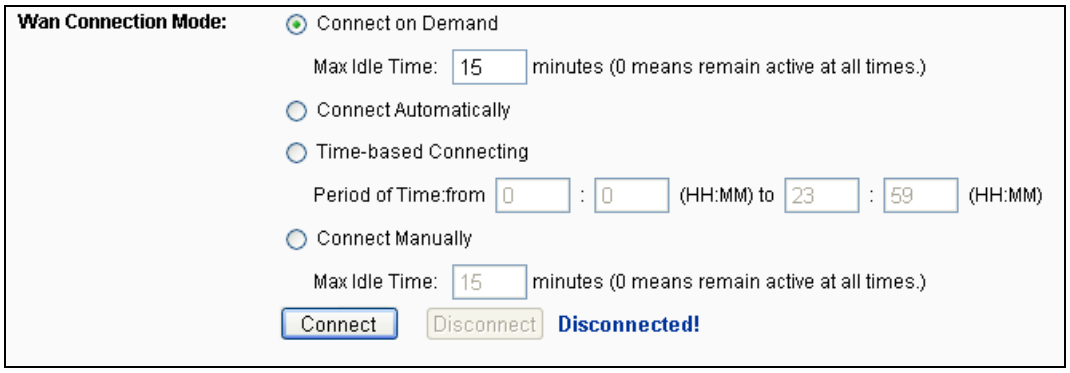


Figure A-2 PPPoE Connection Mode

☞ **Note:**

1) Sometimes the connection cannot be disconnected although you specify a time to Max Idle Time, since some applications is visiting the Internet continually in the background.

2) If you are a Cable user, please configure the Router following the above steps.

2. How do I configure the Router to access Internet by Ethernet users?

1) Login to the Router, click the “Network” menu on the left of your browser, and click "WAN" submenu. On the WAN page, select “Dynamic IP” for "WAN Connection Type", finish by clicking “Save”.

2) Some ISPs require that you register the MAC Address of your adapter, which is connected to your cable/DSL Modem during installation. If your ISP requires MAC register, login to the Router and click the "Network" menu link on the left of your browser, and then click "MAC Clone" submenu link. On the "MAC Clone" page, if your PC’s MAC address is proper MAC address, click the "Clone MAC Address" button and your PC’s MAC address will fill in the "WAN MAC Address" field. Or else, type the MAC Address into the "WAN MAC Address" field. The format for the MAC Address is XX-XX-XX-XX-XX-XX. Then click the "Save" button. It will take effect after rebooting.

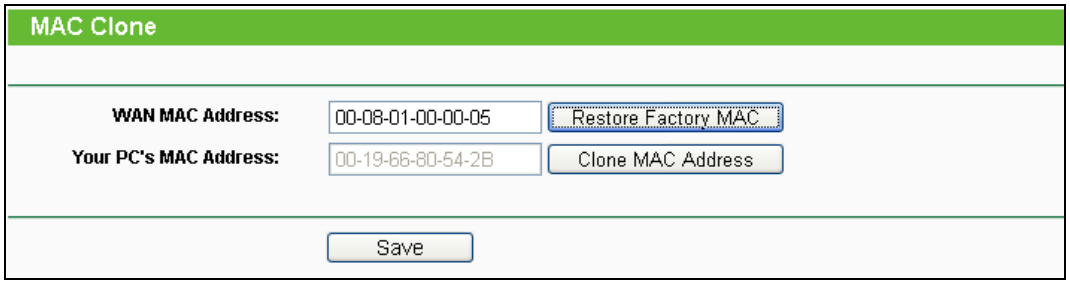


Figure A-3 MAC Clone

3. I want to use Netmeeting, what do I need to do?

1) If you start Netmeeting as a host, you don’t need to do anything with the Router.

2) If you start as a response, you need to configure Virtual Server or DMZ Host and make sure the H323 ALG is enabled.

3) How to configure Virtual Server: Log in to the Router, click the “**Forwarding**” menu on the left of your browser, and click "**Virtual Servers**" submenu. On the "**Virtual Servers**" page, click **Add New…**. Then on the “**Add or Modify a Virtual Server Entry**” page, enter “1720” for the “Service Port” blank, and your IP address for the “IP Address” blank, taking 192.168.0.169 for an example, remember to **Enable** and **Save**.

Figure A-4 Virtual Servers

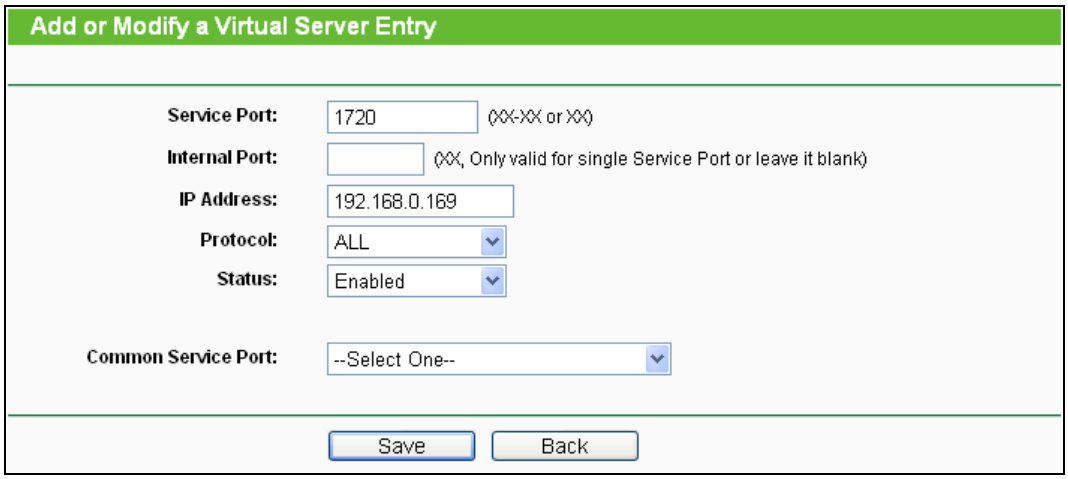


Figure A-5 Add or Modify a Virtual server Entry

Note:

Your opposite side should call your WAN IP, which is displayed on the “Status” page.

4) How to enable DMZ Host: Log in to the Router, click the “**Forwarding**” menu on the left of your browser, and click "**DMZ**" submenu. On the "DMZ" page, click **Enable** radio button and type your IP address into the “DMZ Host IP Address” field, using 192.168.0.169 as an example, remember to click the **Save** button.

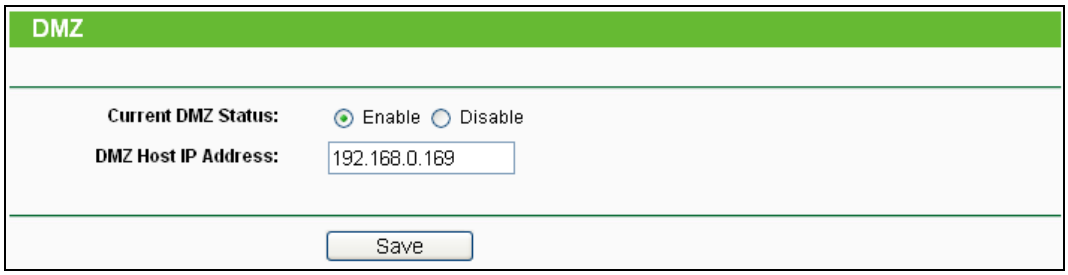


Figure A-6 DMZ

5) How to enable H323 ALG: Log in to the Router, click the "**Security**" menu on the left of your browser, and click "**Basic Security**" submenu. On the "**Basic Security**" page, check the **Enable** radio button next to **H323 ALG**. Remember to click the **Save** button.

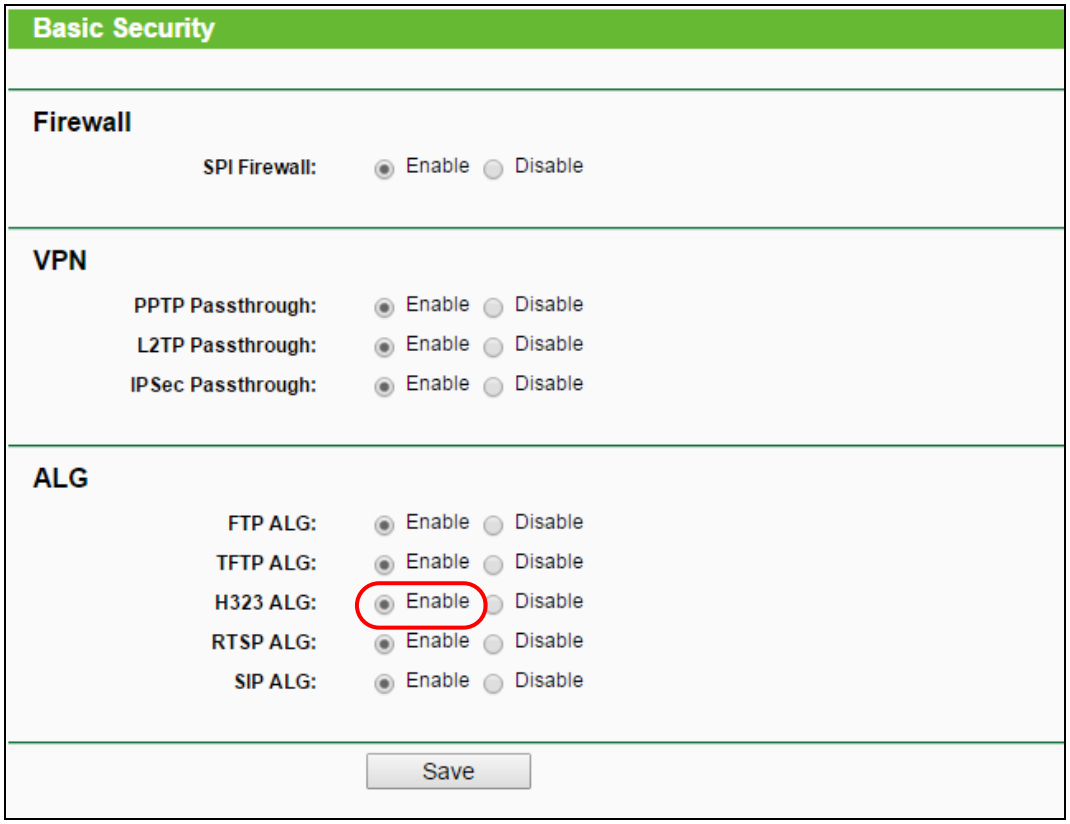


Figure A-7 Basic Security

4. I want to build a WEB Server on the LAN, what should I do?

1) Because the WEB Server port 80 will interfere with the WEB management port 80 on the Router, you must change the WEB management port number to avoid interference.

2) To change the WEB management port number: Log in to the Router, click the "**Security**" menu on the left of your browser, and click "**Remote Management**" submenu. On the "**Remote Management**" page, type a port number except 80, such as 88, into the "Web Management Port" field. Click **Save** and reboot the Router.

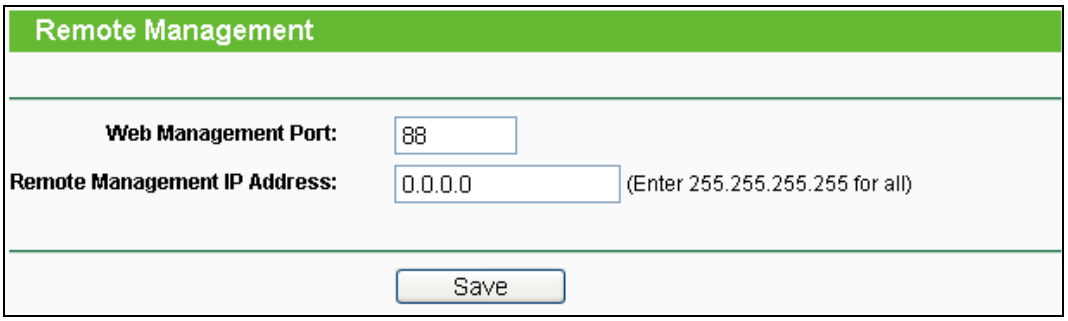


Figure A-8 Remote Management

Note:

If the above configuration takes effect, you can visit and configure the Router by typing http://192.168.0.1:88 (the Router's LAN IP address: Web Management Port) in the address field of the Web browser. If the LAN IP of the modem connected with your router is 192.168.0.x, the default LAN IP of the Router will automatically switch from 192.168.0.1 to 192.168.1.1 to avoid IP conflict; in this case, please try http://192.168.1.1:88.

3) Log in to the Router, click the "**Forwarding**" menu on the left of your browser, and click the "**Virtual Servers**" submenu. On the "**Virtual Servers**" page, click **Add New…**, then on the "**Add or Modify a Virtual Server**" page, enter "80" into the blank next to the "**Service Port**", and your IP address next to the "**IP Address**", assuming 192.168.0.188 for an example, remember to **Enable** and **Save**.

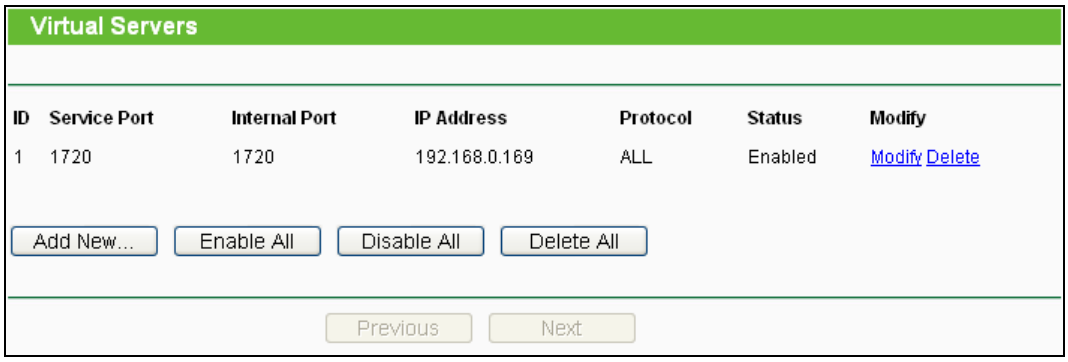


Figure A-9 Virtual Servers

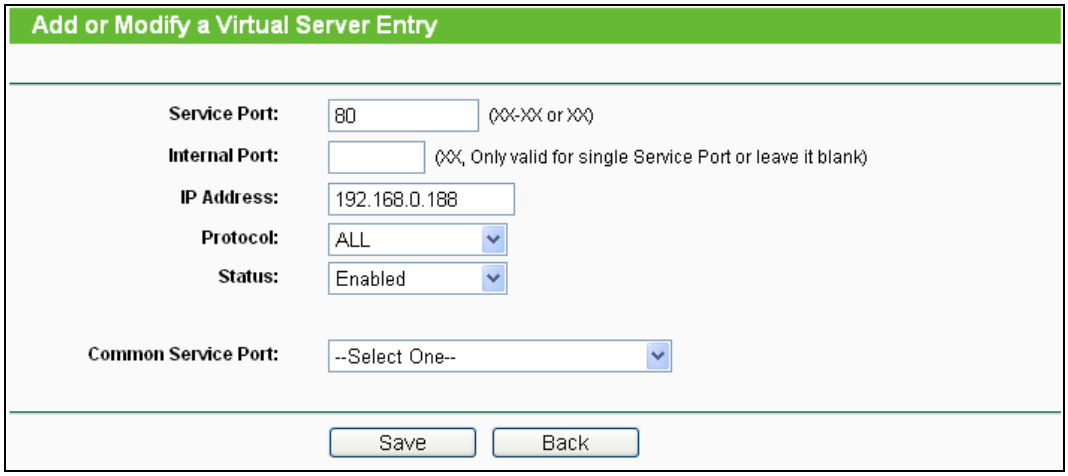


Figure A-10 Add or Modify a Virtual server Entry

5. The wireless stations cannot connect to the Router.

1) Make sure the "**Wireless Router Radio**" is enabled.

2) Make sure that the wireless stations' SSID accord with the Router's SSID.

3) Make sure the wireless stations have right KEY for encryption when the Router is encrypted.

4) If the wireless connection is ready, but you can't access the Router, check the IP Address of your wireless stations.

Appendix B: Configuring the PCs

In this section, we'll introduce how to install and configure the TCP/IP correctly in Windows 7. First make sure your Ethernet Adapter is working, refer to the adapter's manual if needed.

1. Install TCP/IP component

1) On the Windows taskbar, click the **Start** button, and then click **Control Panel**.

2) Click the **Network and Internet**, and click the **Network and Sharing Center**, then click **Change adapter settings**.

3) Right click the icon that showed below, select **Properties** on the prompt page.

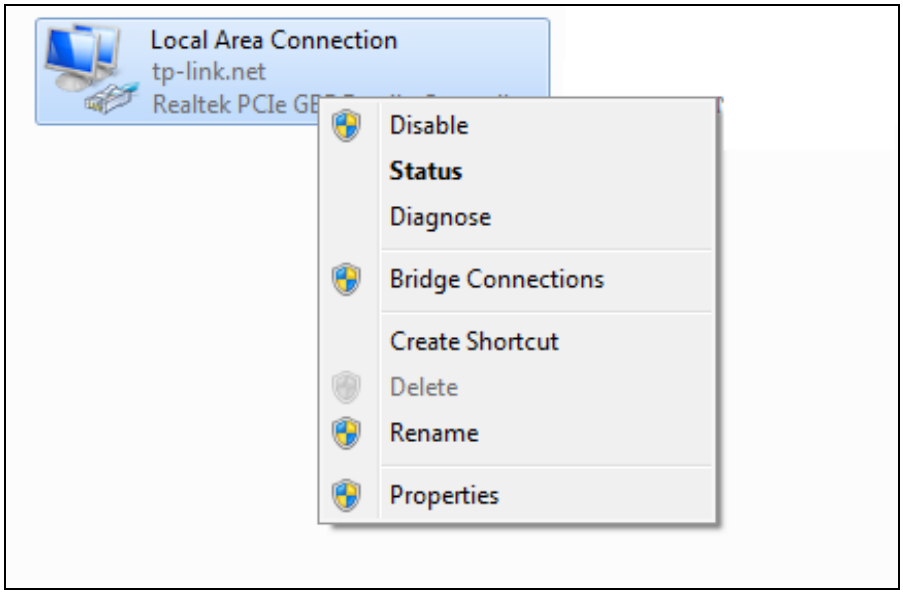


Figure B-1

4) In the prompt page that showed below, double click on the **Internet Protocol Version 4 (TCP/IPv4)**.

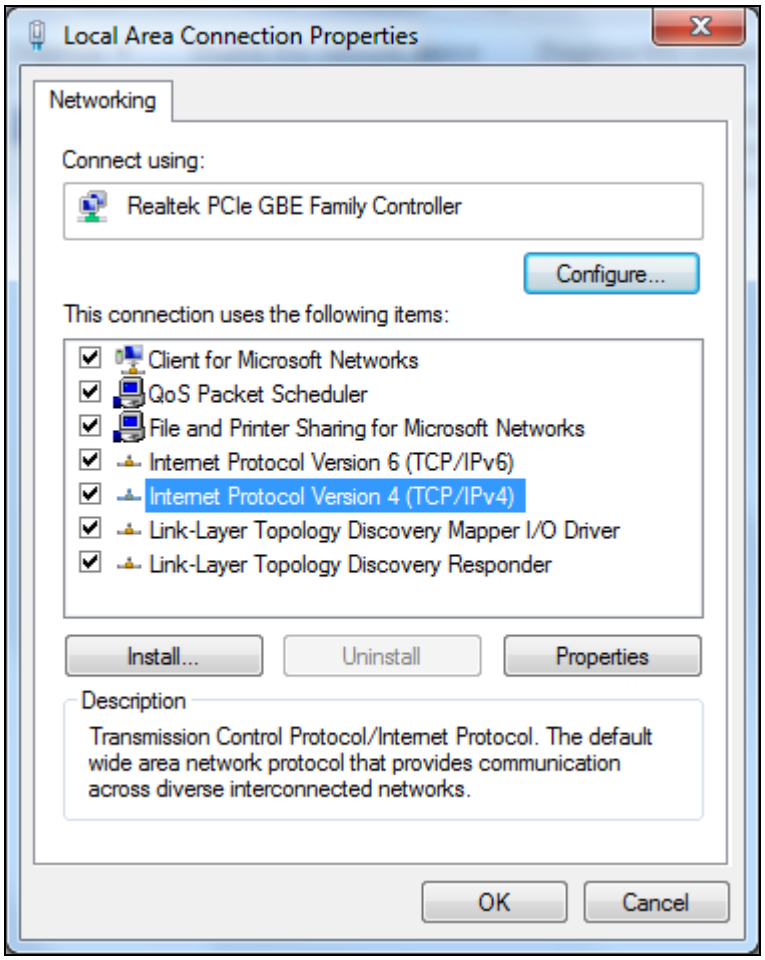


Figure B-2

5) The following **TCP/IP Properties** window will display and the **IP Address** tab is open on this window by default.

Now you have two ways to configure the **TCP/IP** protocol below:

➢ **Setting IP address automatically**

Select **Obtain an IP address automatically**, Choose **Obtain DNS server automatically**, as shown in the Figure below:

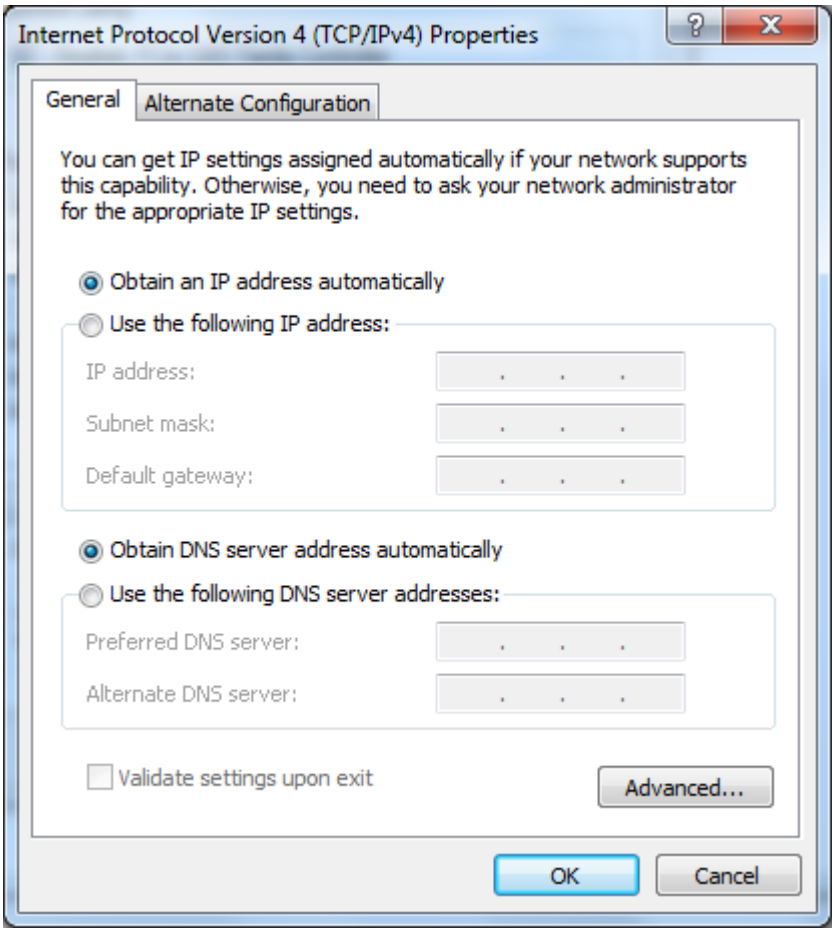


Figure B-3

➢ **Setting IP address manually**

1 Select **Use the following IP address** radio button. And the following items available

2 If the router's LAN IP address is 192.168.0.1, specify the IP address as 192.168.0.x (x is from 2 to 254), and **Subnet mask** is 255.255.255.0.

3 Type the router's LAN IP address (the default IP is 192.168.0.1) into the **Default gateway** field.

4 Select **Use the following DNS server addresses** radio button. In the **Preferred DNS Server** field you can type the DNS server IP address, which has been provided by your ISP

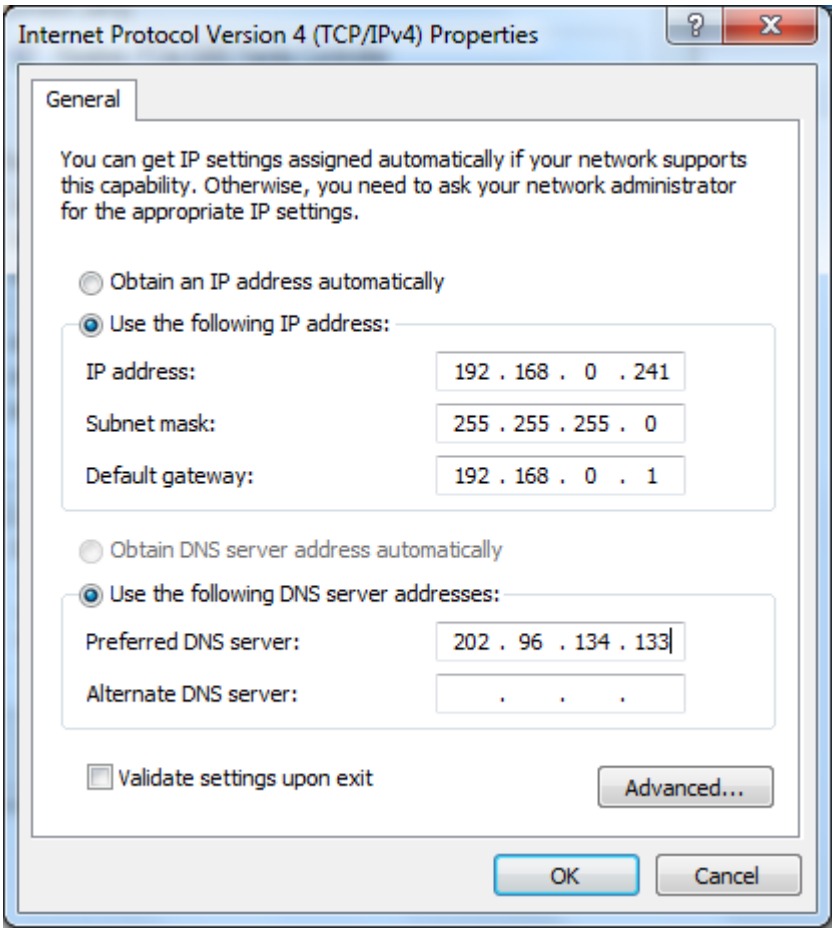
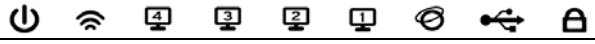

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 241
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 202 . 96 . 134 . 133
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

Figure B-4

Appendix C: Specifications

General	
Standards	IEEE 802.11n, IEEE 802.11g, IEEE 802.11b, IEEE 802.11a, IEEE 802.11e, IEEE 802.11i, IEEE 802.1X, IEEE 802.3X, IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
Protocols	TCP/IP, PPPoE, DHCP, ICMP, NAT, SNTP
Ports	One 10/100M Auto-Negotiation Internet RJ45 port Four 10/100M Auto-Negotiation LAN RJ45 ports supporting Auto MDI/MDIX One USB port supporting storage/FTP/Media/Print Server
Cabling Type	10BASE-T: UTP category 3, 4, 5 cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m)
	100BASE-TX: UTP category 5, 5e cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m)
LEDs	
Safety & Emissions	FCC, CE
Wireless	
Frequency Band*	2.4～2.4835GHz
Radio Data Rate	11b：1/2/5.5/11Mbps 11g：6/9/12/18/24/36/48/54Mbps 11n：up to 300Mbps
Frequency Expansion	DSSS (Direct Sequence Spread Spectrum)
Modulation	DBPSK, DQPSK, CCK, OFDM, 16-QAM, 64-QAM
Security	WEP, WPA/WPA2-Enterprise, WPA2 /WPA-Personal
Sensitivity @PER	270M: -68dBm@10% PER; 130M: -68dBm@10% PER 108M: -68dBm@10% PER; 54M: -68dBm@10% PER 11M: -85dBm@8% PER; 6M: -88dBm@10% PER 1M: -90dBm@8% PER
Antenna Gain	5dBi External Antenna
Environmental and Physical	
Temperature.	Operating : 0℃~40℃ (32℉~104℉)
	Storage: -40℃~70℃ (-40℉~158℉)
Humidity	Operating: 10% - 90% RH, Non-condensing
	Storage: 5% - 90% RH, Non-condensing

* Only 2.412GHz~2.462GHz is allowed to be used in USA, which means only channel 1~11 is available for American users to choose.

Appendix D: Glossary

- **802.11n -** 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) [3] was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **802.11b -** The 802.11b standard specifies a wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- **802.11g -** specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **DDNS** (**D**ynamic **D**omain **N**ame **S**ystem) **-** The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.
- **DHCP** (**D**ynamic **H**ost **C**onfiguration **P**rotocol) **-** A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.
- **DMZ** (**Dem**ilitarized **Z**one) **-** A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.
- **DNS** (**D**omain **N**ame **S**ystem) **-** An Internet Service that translates the names of websites into IP addresses.
- **Domain Name -** A descriptive name for an address or group of addresses on the Internet.
- **DSL** (**D**igital **S**ubscriber **L**ine) **-** A technology that allows data to be sent or received over existing traditional phone lines.
- **ISP** (**I**nternet **S**ervice **P**rovider) **-** A company that provides access to the Internet.
- **MTU** (**Maximum Transmission Unit**) **-** The size in bytes of the largest packet that can be transmitted.
- **NAT** (**N**etwork **A**ddress **T**ranslation) **-** NAT technology translates IP addresses of a local area network to a different IP address for the Internet.

- **PPPoE** (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) **-** PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
- **SSID -** A **S**ervice **S**et **Id**entification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.
- **WEP** (**W**ired **E**quivalent **P**rivacy) **-** A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- **Wi-Fi -** A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.
- **WLAN** (**W**ireless **L**ocal **A**rea **N**etwork) **-** A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.