TP-LINK®

User Guide

TL-WR720N

150Mbps Wireless N Router

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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.

National restrictions

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

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

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

Canadian Compliance Statement

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

(1) This device may not cause interference, and

(2)This device must accept any interference, including interference that may cause undesired operation of the device.

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

(1) cet appareil ne doit pas provoquer d'interférences et

(2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité de l'appareil.

Industry Canada Statement

Complies with the Canadian ICES-003 Class B specifications.

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

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

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

Korea Warning Statements:

당해 무선설비는 운용중 전파혼신 가능성이 있음.

NCC Notice & BSMI Notice

注意！

依據 低功率電波輻射性電機管理辦法

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

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

減少電磁波影響，請妥適使用。

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。

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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: **150Mbps Wireless N Router**

Model No.: **TL-WR720N**

Trademark: **TP-LINK**

We declare under our own responsibility that the above products satisfy all the technical regulations applicable to the product within the scope of Council Directives:

Directives 1999/5/EC, Directives 2004/108/EC, Directives 2006/95/EC, Directives 1999/519/EC, Directives 2011/65/EU

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

EN 300 328 V1.8.1
EN 301 489-1 V1.9.2 & EN 301 489-17 V2.2.1
EN 55022: 2010 + AC: 2011
EN 55024: 2010
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011
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: 2014

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Package Contents

The following items should be found in your package:

- TL-WR720N 150Mbps Wireless N Router
- Power Adapter for TL-WR720N 150Mbps Wireless N Router
- Quick Installation Guide
- Resource CD for TL-WR720N 150Mbps Wireless N Router, including:
  - This Guide
  - Other Helpful Information

☞ **Note:**

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

Chapter 1. Introduction

1.1 Overview of the Router

The 150Mbps 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.

Incredible Speed

The TL-WR720N 150Mbps Wireless N Router provides up to 150Mbps 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 650% 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-WR720N 150Mbps Wireless N Router provides complete data privacy.

Flexible Access Control

The TL-WR720N 150Mbps 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-WR720N mentioned in this guide stands for TL-WR720N 150Mbps Wireless N Router without any explanation.

1.3 Main Features

- Make use of IEEE 802.11n wireless technology to provide a wireless data rate of up to 150Mbps
- One 10/100M Auto-Negotiation RJ45 WAN port, two 10/100M Auto-Negotiation RJ45 LAN ports supporting Auto MDI/MDIX
- Provides WPA/WPA2, WPA-PSK/WPA2-PSK authentication, TKIP/AES encryption security
- Shares data and Internet access for users, supporting Dynamic IP/Static IP/PPPoE Internet access
- Up to 4 SSIDs supporting multiple wireless networks with different SSIDs and passwords
- Supports Virtual Server, Special Application and DMZ host
- Supports UPnP, Dynamic DNS
- Provides Automatic-connection and Scheduled Connection on certain time to the Internet
- Connects Internet on demand and disconnects from the Internet when idle for PPPoE
- Built-in NAT and DHCP server supporting static IP address distributing
- Supports Stateful Packet Inspection
- Supports Parental Control and Access Control
- Provides 64/128/152-bit WEP encryption security and wireless LAN ACL (Access Control List)
- Supports Flow Statistics
- Supports firmware upgrade and Web management

1.4 Panel Layout

1.4.1 The Front Panel

Figure 1-1 Front Panel sketch

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

Name	Status	Indication
(Power)	Off	Power is off.
	On	Power is on.
(System)	Flashing	The Router is working properly.
	On /Off	The Router has a system error.
(WLAN)	Off	The Wireless function is disabled.
	Flashing	The Wireless function is enabled.
(LAN1,2) (WAN),	Off	There is no device linked to the corresponding port.
	On	There is a device linked to the corresponding port but there is no activity.
	Flashing	There is an active device linked to the corresponding 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

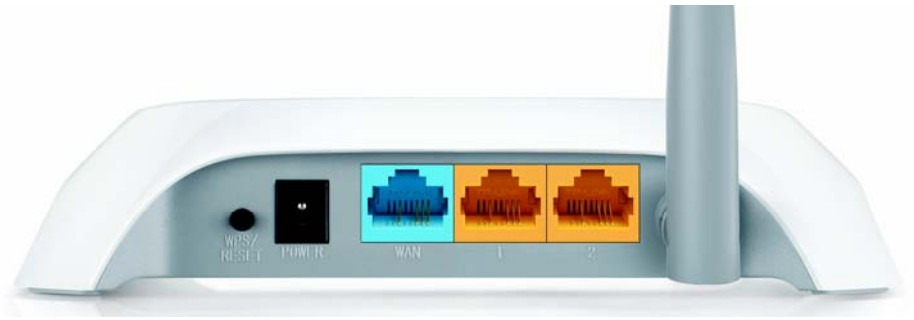


Figure 1-2 Rear Panel sketch

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

- **WPS/RESET:** This button is used for both WPS and Reset function. To use the WPS function, press it for less than five seconds; to use the RESET function, press it for more than five seconds.

  - **Used as RESET button:**

  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 Reset button: With the Router powered on, press and hold the **RESET** button (at least 5 seconds) until the SYS LED becomes quick-flash from slow-flash. Then release the button and wait the Router to reboot to its factory default settings.

  - **Used as WPS button:**

  WPS: If you have client devices, such as wireless adapters, that support Wi-Fi Protected Setup, then you can press this button to quickly establish a connection between the Router and client devices and automatically configure wireless security for your wireless network.

- **POWER:** The Power socket is where you will connect the power adapter. Please use the power adapter provided with this TL-WR720N 150Mbps Wireless N Router.
- **WAN:** The WAN port is where you will connect the DSL/cable Modem, or Ethernet.
- **LAN (1-2):** These ports connect the Router to the local PC(s).
- **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 5.0 , Netscape Navigator 6.0 or above

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

Before installing the Router, make sure your PC is connected to the Internet through the broadband service successfully. If there is any problem, please contact your ISP. After that, please install the Router according to the following steps. Don't forget to pull out the power plug and keep your hands dry.

1. Power off your PC, Cable/DSL Modem, and the Router.
2. Locate an optimum location for the Router. The best place is usually at the center of your wireless network. The place must accord with the Installation Environment Requirements.
3. Connect the PC(s) and each Switch/Hub in your LAN to the LAN Ports on the Router, shown in Figure 2-1. (If you have the wireless NIC and want to use the wireless function, you can skip this step.)
4. Connect the DSL/Cable Modem to the WAN port on the Router, shown in Figure 2-1.
5. Connect the power adapter to the power socket on the Router, and the other end into an electrical outlet. The Router will start to work automatically.

6. Power on your PC and Cable/DSL Modem.

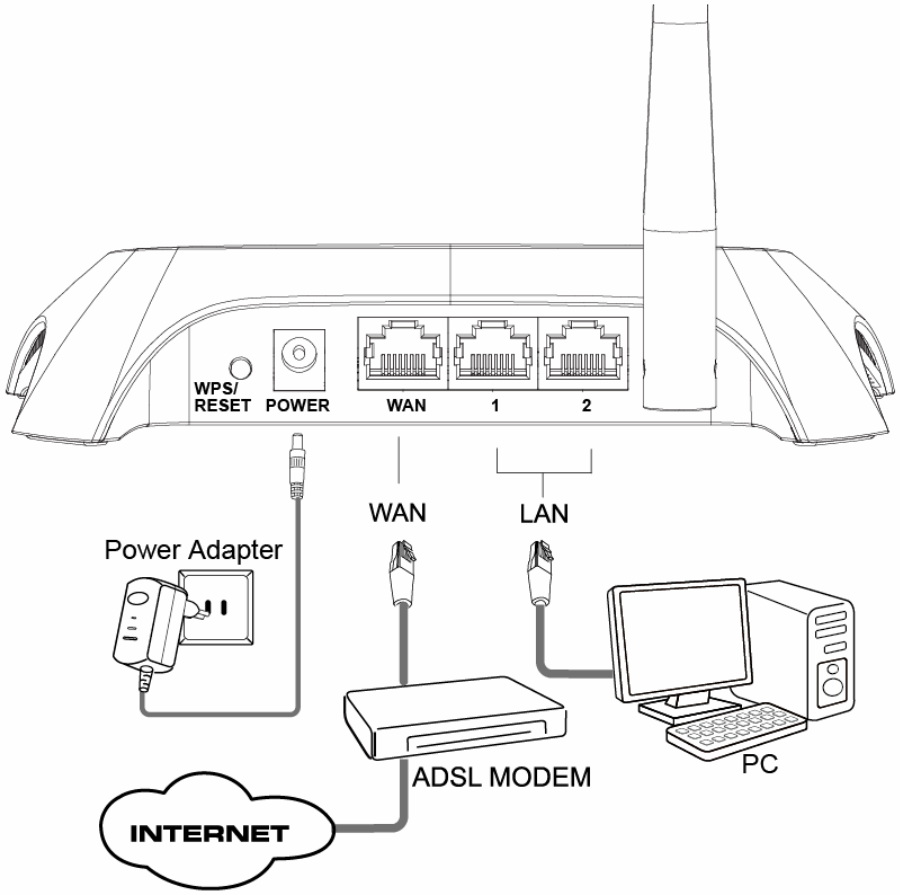


Figure 2-1 Hardware Installation of the 150Mbps Wireless N Router

Chapter 3. Quick Installation Guide

This chapter will show you how to configure the basic functions of your 150Mbps Wireless N Router using **Quick Setup Wizard** within minutes.

3.1 TCP/IP Configuration

The default domain name of the 150Mbps Wireless N Router is http://tplinkwifi.net, the default IP address is 192.168.0.1, and the default Subnet Mask is 255.255.255.0. These values can be changed as you desire. In this guide, we all use 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 following the steps below:

1) Set up the TCP/IP Protocol in "**Obtain an IP address automatically**" mode on your PC. If you need instructions as to how to do this, please refer to Appendix B: Configuring the PC.

2) Then the built-in DHCP server will assign IP address for the PC.

Now, you can run the Ping command in the **command prompt** to verify the network connection between your PC and the Router. The following example is in Windows XP OS.

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.

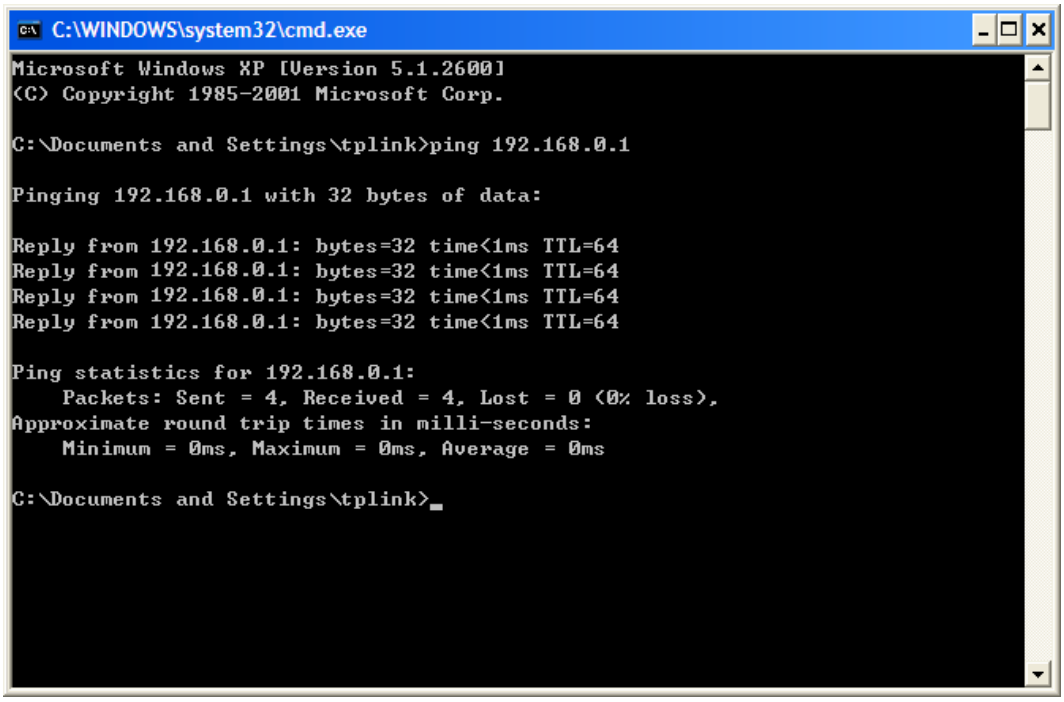


Figure 3-1 Success result of Ping command

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

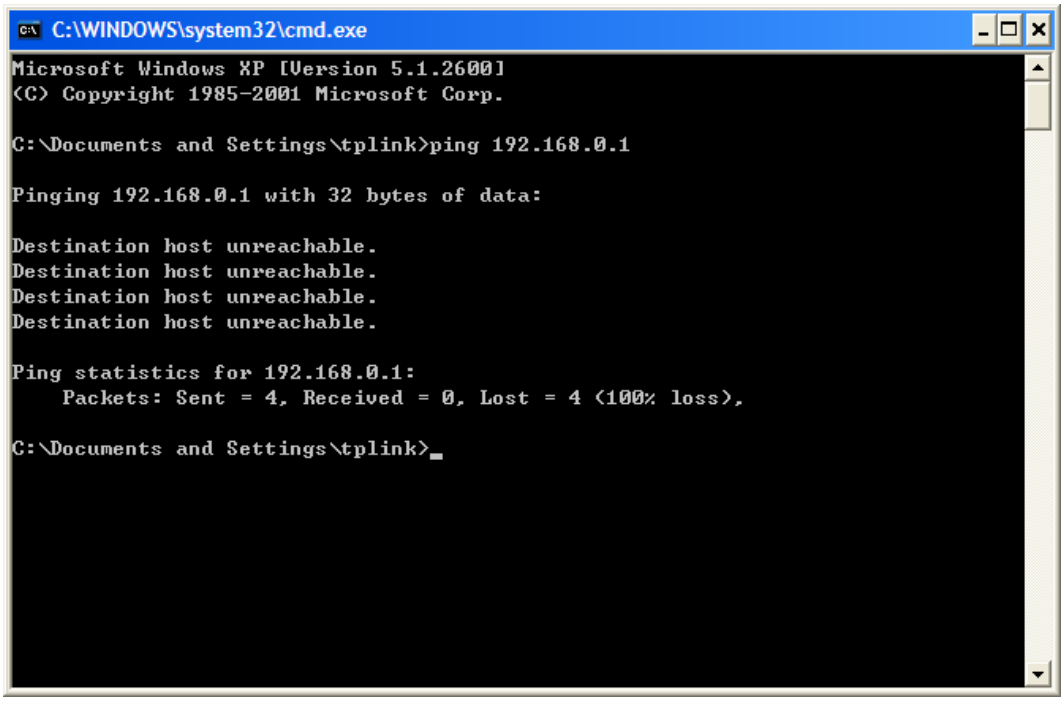


Figure 3-2 Failure result of Ping command

Please check the connection following these steps:

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

☞ **Note:**

The 1/2 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. Try the IP address 192.168.1.1.

☞ **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 (Internet Explorer or Netscape® Navigator) utility, it is easy to configure and manage the 150Mbps Wireless N Router. The Web-based utility can be used on any Windows, Macintosh or UNIX OS with a Web browser.

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

Figure 3-3 Login the Router

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

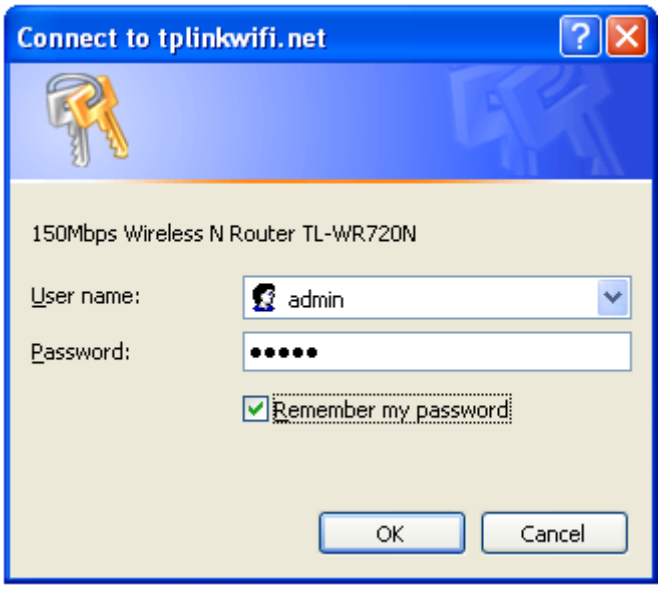


Figure 3-4 Login Windows

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 successfully log in, you can click the **Quick Setup** to quickly configure your Router.

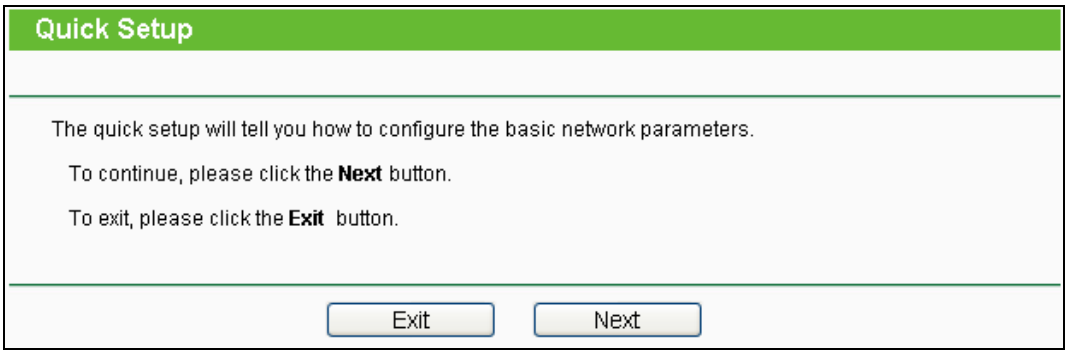


Figure 3-5 Quick Setup

3. Click **Next**, and then **WAN Connection Type** page will appear as shown in Figure 3-6.

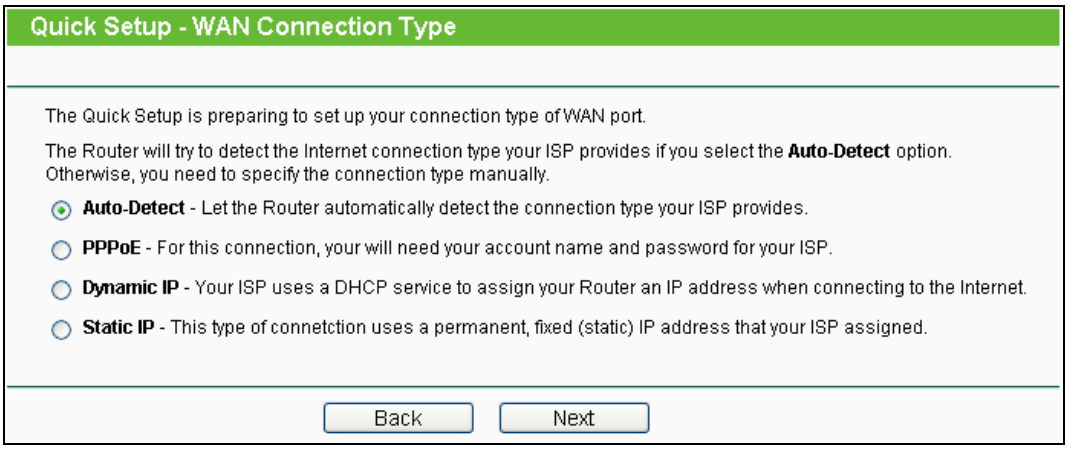


Figure 3-6 Choose WAN Connection Type

The Router provides **Auto-Detect** function and supports three popular ways **PPPoE**, **Dynamic IP** and **Static IP** to connect to the Internet. 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 WAN port before detection. The appropriate configuration page will be displayed when an active Internet service is successfully detected by the Router.

   - If the connection type detected is **PPPoE**, the next screen will appear as shown in Figure 3-7.

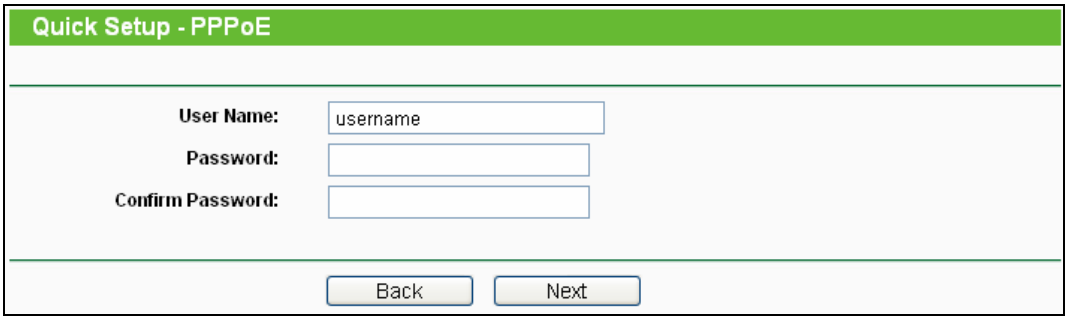


Figure 3-7 Quick Setup – PPPoE

   - **User Name and 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 -** Re-enter the password provided by your ISP to ensure the Password you entered is correct. If the Password is different from the Confirm Password, the screen will appear as shown below. Click **OK**, and re-enter the Password and Confirm Password.

- If the connection type detected is Dynamic IP, the next screen will appear as shown in Figure 3-9.
- If the connection type detected is Static IP, the next screen will appear as shown in Figure 3-8.

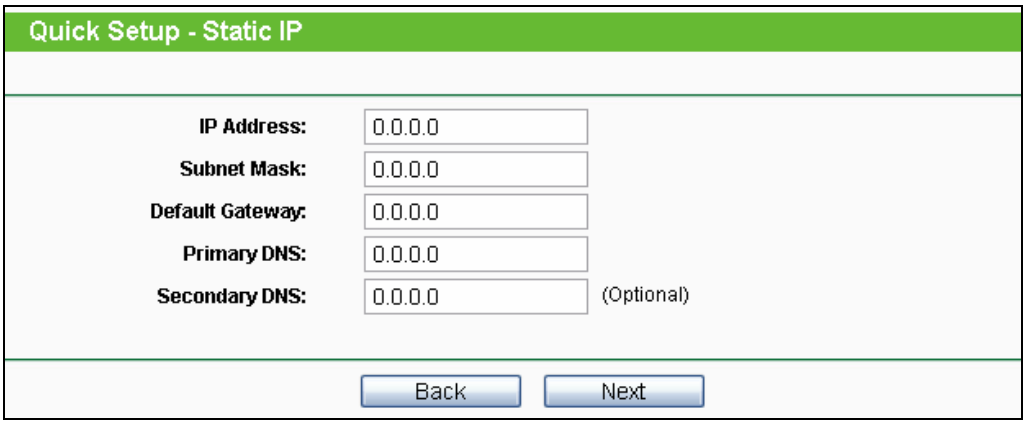


Figure 3-8 Quick Setup - Static IP

- **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.

5. Click **Next** to continue, the Wireless settings page will appear as shown in Figure 3-9.

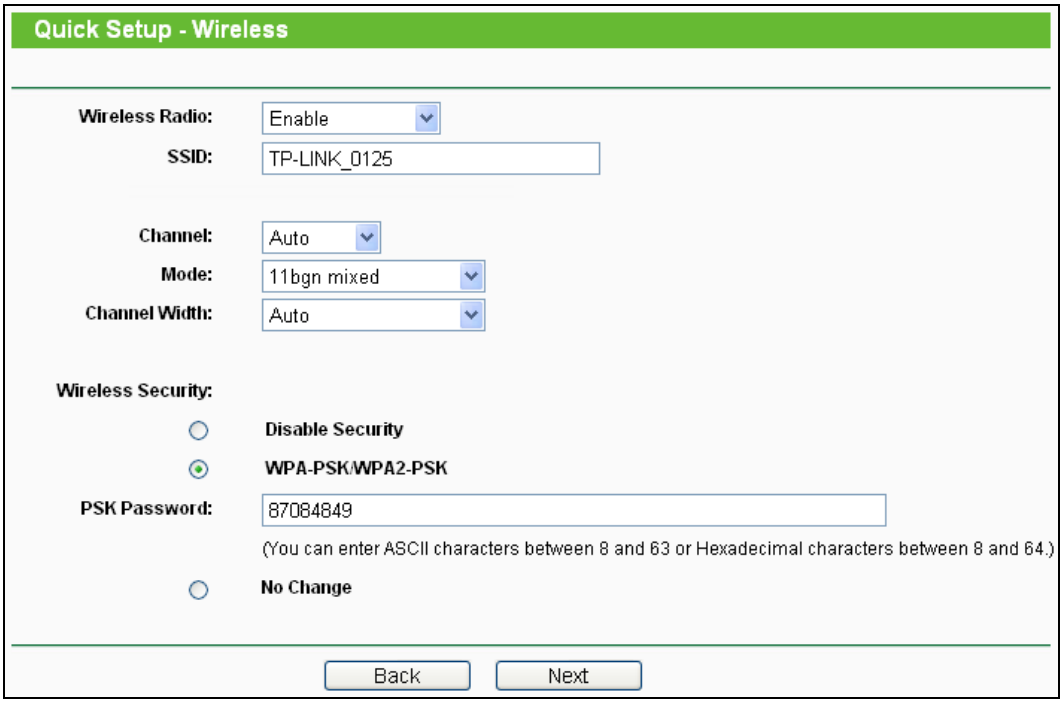


Figure 3-9 Quick Setup – Wireless

- **Wireless Radio -** Enable or disable the wireless radio by choosing from the drop-down list.
- **SSID -** Enter a value of up to 32 characters. The same name of SSID (Service Set Identification) must be assigned to all wireless devices in your network. Considering your wireless network security, the default SSID is set to be TP-LINK_XXXXXX (XXXXXX indicates the last unique six numbers of each Router's MAC address). This value is case-sensitive. For example, *TEST* is NOT the same as *test*.
- **Channel -** This field determines which operating frequency will be used. The default channel is set to **Auto**, so the AP 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.
- **Mode -** This field determines the wireless mode which the Router works on.
- **Channel Width -** Select any channel width from the drop-down list. The default setting is automatic, which can automatically adjust the channel width for your clients.

- **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. It is strongly recommended that you choose one of following options to enable security.
- **WPA-PSK/WPA2-PSK -** Select WPA based on pre-shared passphrase.
  - **PSK Password** - You can enter **ASCII** or **Hexadecimal** characters.

    For **ASCII**, the key can be made up of any numbers from 0 to 9 and any letters from A to Z, and the length should be between 8 and 63 characters.

    For **Hexadecimal**, the key can be made up of any numbers from 0 to 9 and letters from A to F, and the length should be between 8 and 64 characters.

    Please also note the key is case sensitive, which means that upper and lower case keys will affect the outcome. It would also be a good idea to write down the key and all related wireless security settings.
- **No Change -** If you choose this option, wireless security configuration will not change!

These settings are only for basic wireless parameters. For advanced settings, please refer to Section 4.6: Wireless.

6. Click the **Next** button. You will then see the **Finish** page.

If you don't make any changes on the **Wireless** page, you will see the **Finish** page as shown in Figure 3-10. Click the **Finish** button to finish the **Quick Setup**.

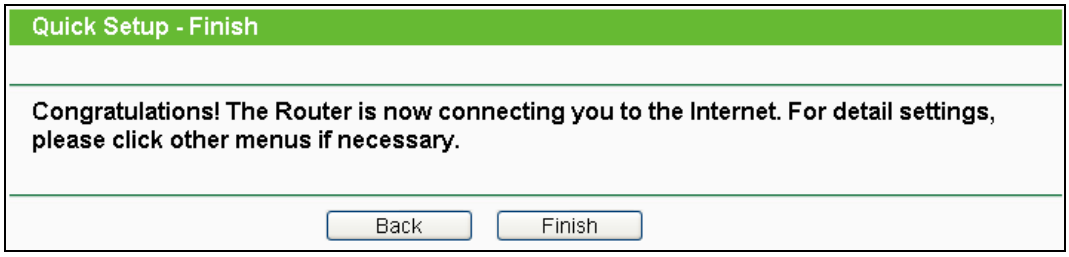


Figure 3-10 Quick Setup – Finish

If there is something changed on the **Wireless** page, you will see the **Finish** page as shown in Figure 3-11. Click the **Reboot** button to make your wireless configuration take effect and finish the **Quick Setup**.

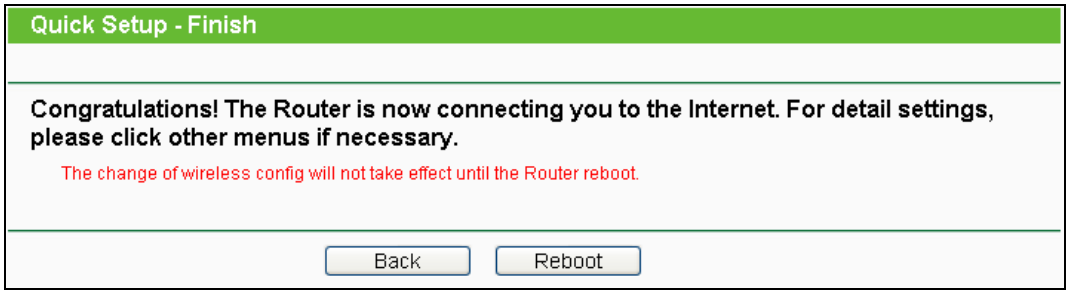


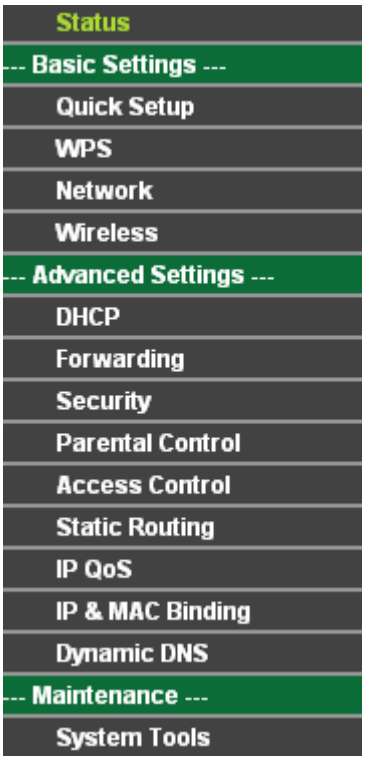
Figure 3-11 Quick Setup - Finish

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 menu on the left of the Web-based utility. On the right, there are the corresponding explanations and instructions.



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

4.2 Status

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

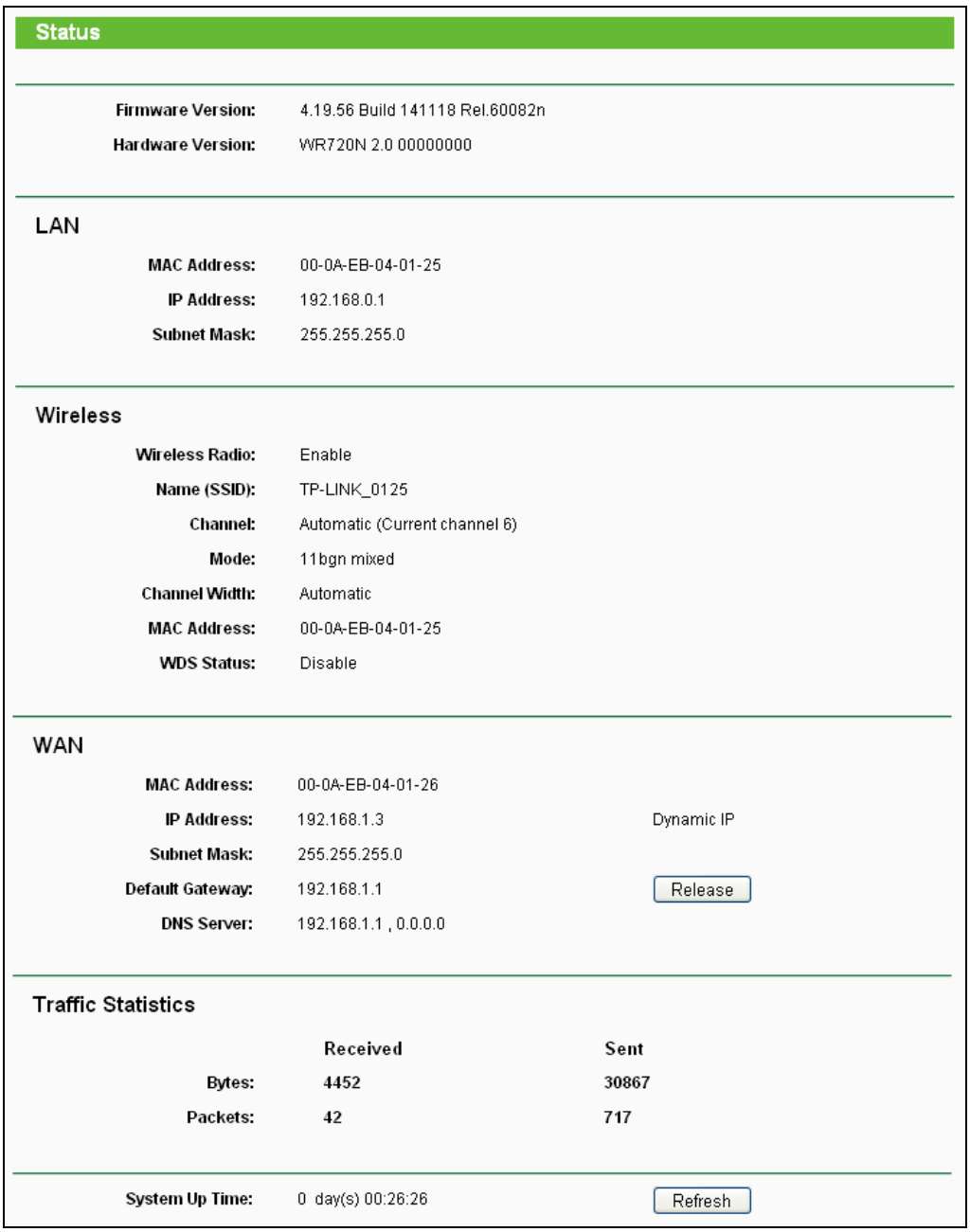


Figure 4-1 Router Status

4.3 Quick Setup

Please refer to Section 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.

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

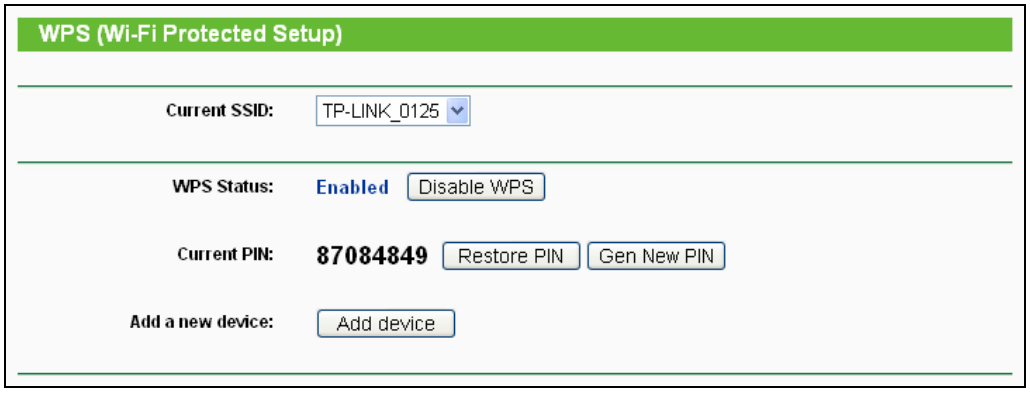


Figure 4-2 WPS

- **Current SSID –** The router supports multi-SSID and you can choose one SSID which you want to configure its WPS function from the drop-down list. For example, if your wireless client wants to connect to one of the router’s SSID “TP-LINK_E3C860” by WPS， you should select TP-LINK_E3C860 as Current SSID.
- **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.
- **Add device -** You can add a new device to the existing network manually by clicking this button.

b). 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 button on the back panel of the Router.

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)

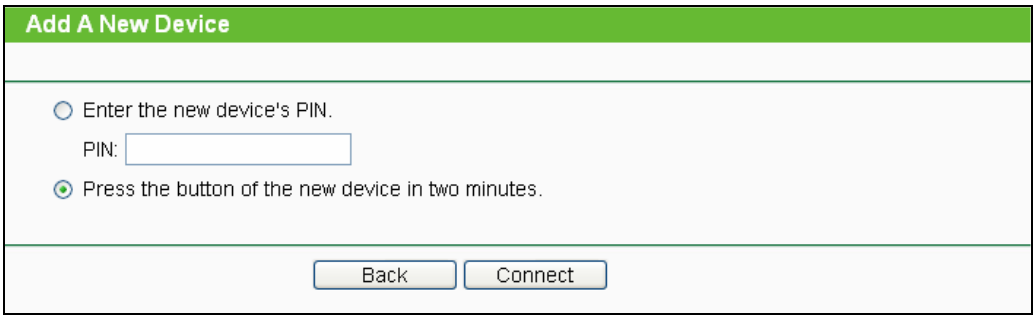


Figure 4-3 Add A New Device

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.

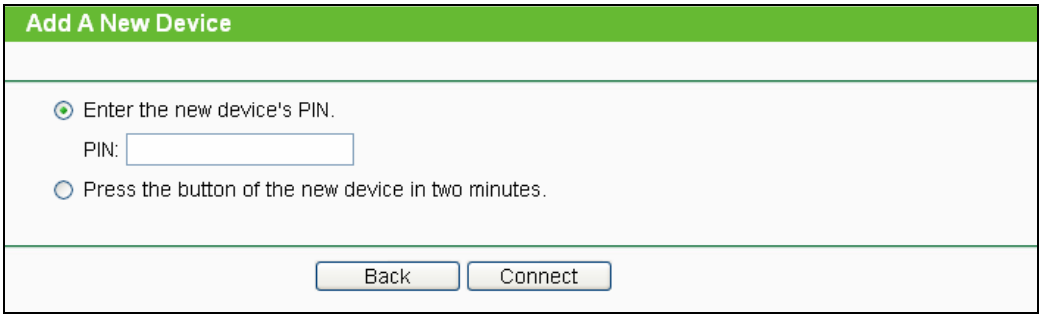


Figure 4-4 Add A New Device

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

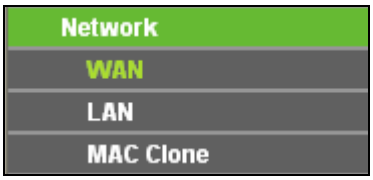


Figure 4-5 the Network menu

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

4.5.1 WAN

Choose menu "**Network→WAN**", and then 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):

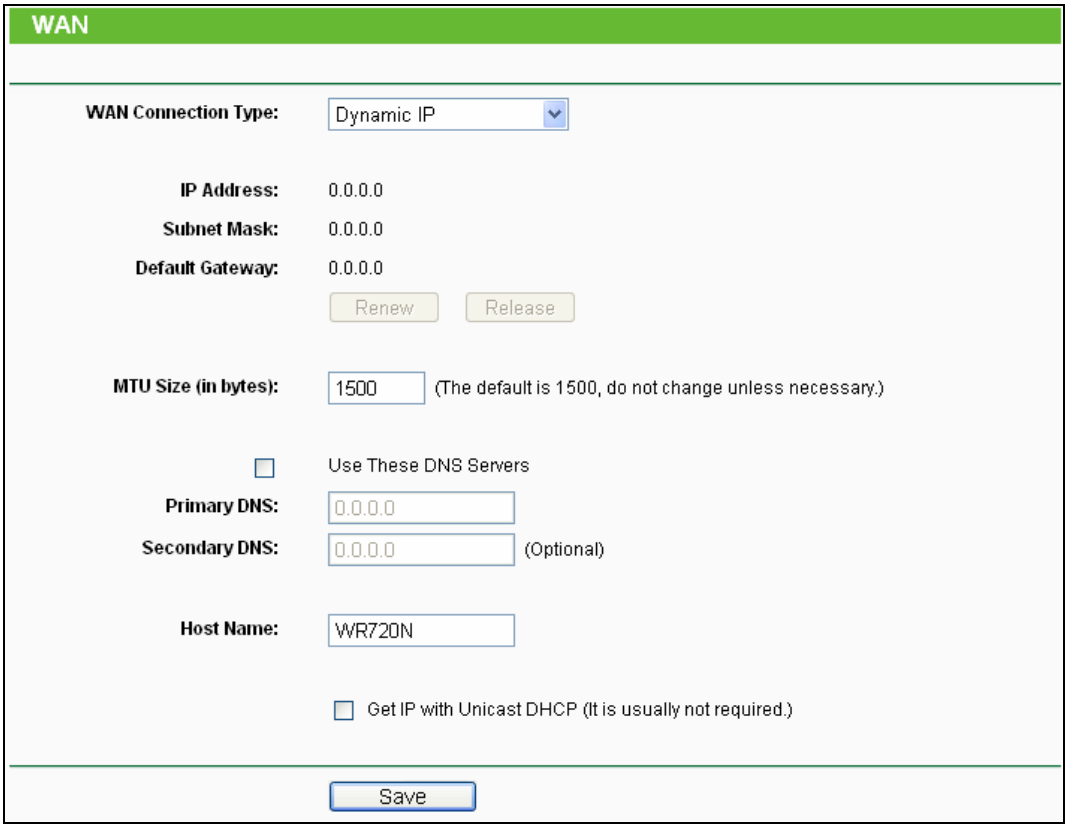


Figure 4-6 WAN - Dynamic IP

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 Web site 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.

- **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.)

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 as shown in Figure 4-7.

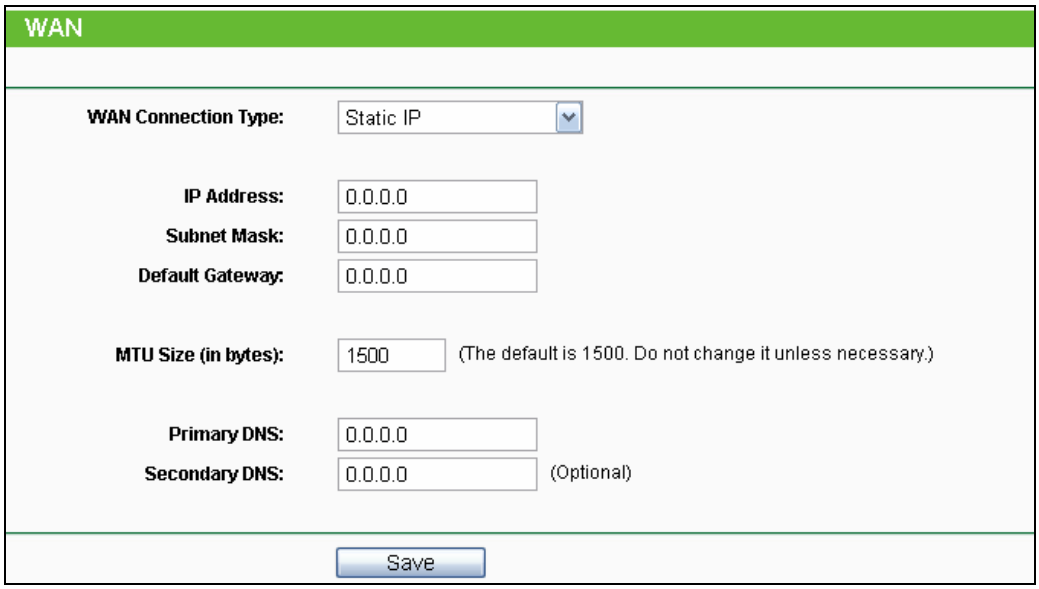


Figure 4-7 WAN - Static IP

- **IP Address -** Enter the IP address in dotted-decimal notation provided by your ISP.
- **Subnet Mask -** Enter the subnet Mask provided by your ISP in dotted-decimal notation. Usually, the Sub Mask is 255.255.255.0.
- **Default Gateway -** Enter the gateway IP address provided by your ISP in dotted-decimal notation.
- **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.

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

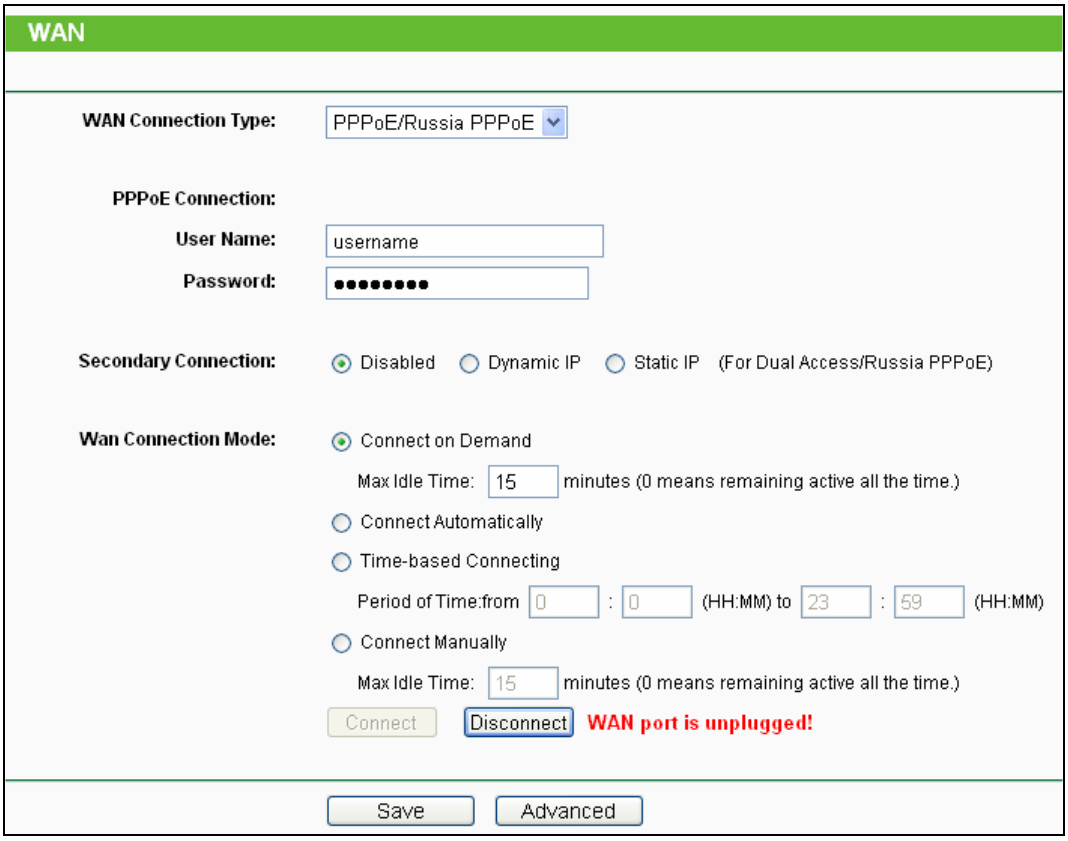


Figure 4-8 WAN - PPPoE

- **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 Settings** page, will the **Time-based Connecting** function can 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 re-established when you attempt to access the Internet again.

Caution: Sometimes the connection cannot be terminated although you specify a time to Max Idle Time, since 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:

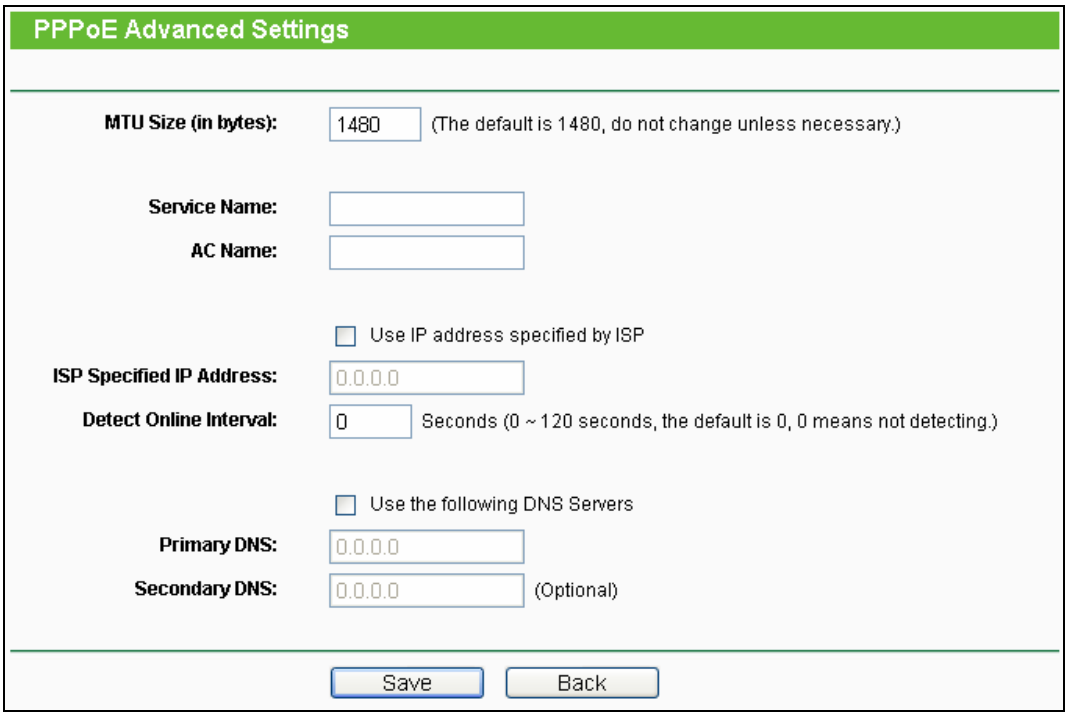


Figure 4-9 PPPoE Advanced Settings

- **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, which 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.

- **DNS IP address -** 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):

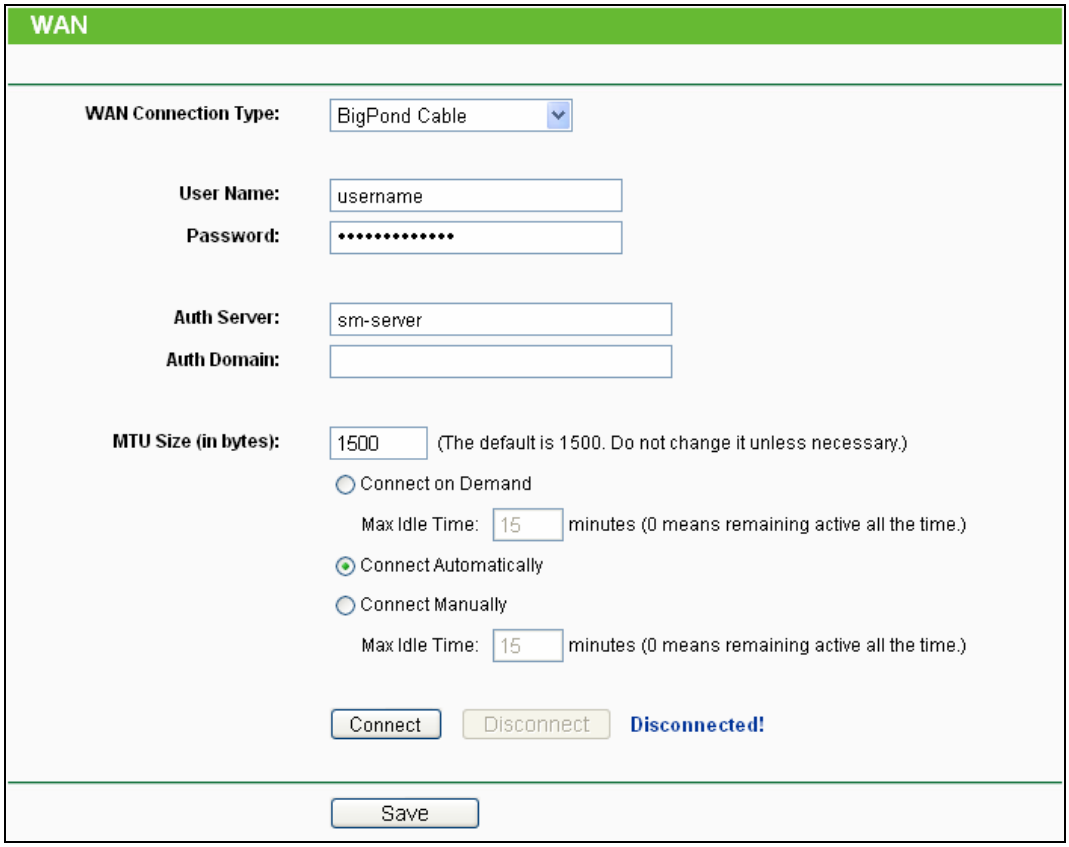


Figure 4-10 WAN – BigPond Cable

- **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 re-established when you attempt to access the Internet again.

  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):

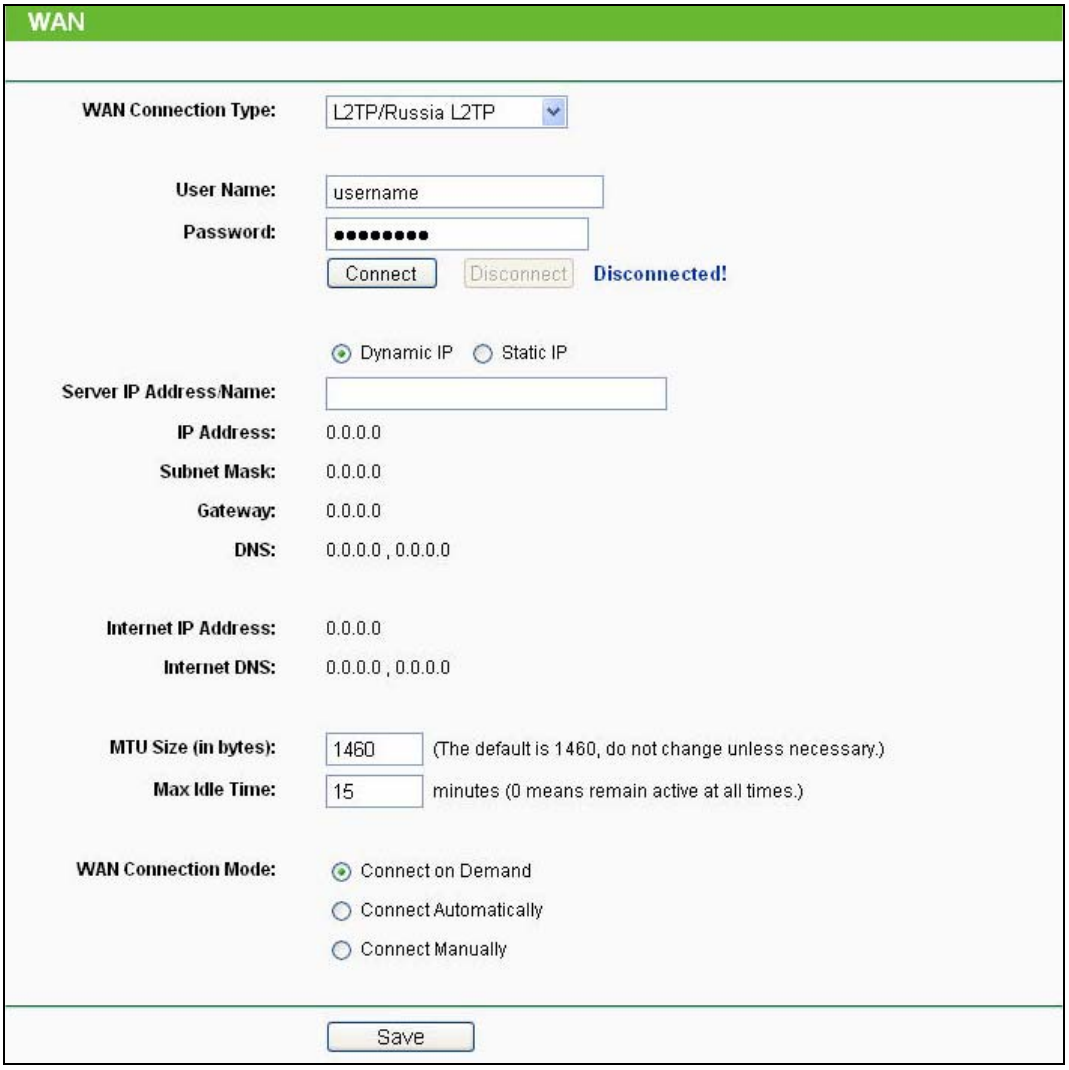


Figure 4-11 WAN –L2TP

- **User Name/Password -** 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**, 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 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, click 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**, since some applications is visiting the Internet continually in the background.

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

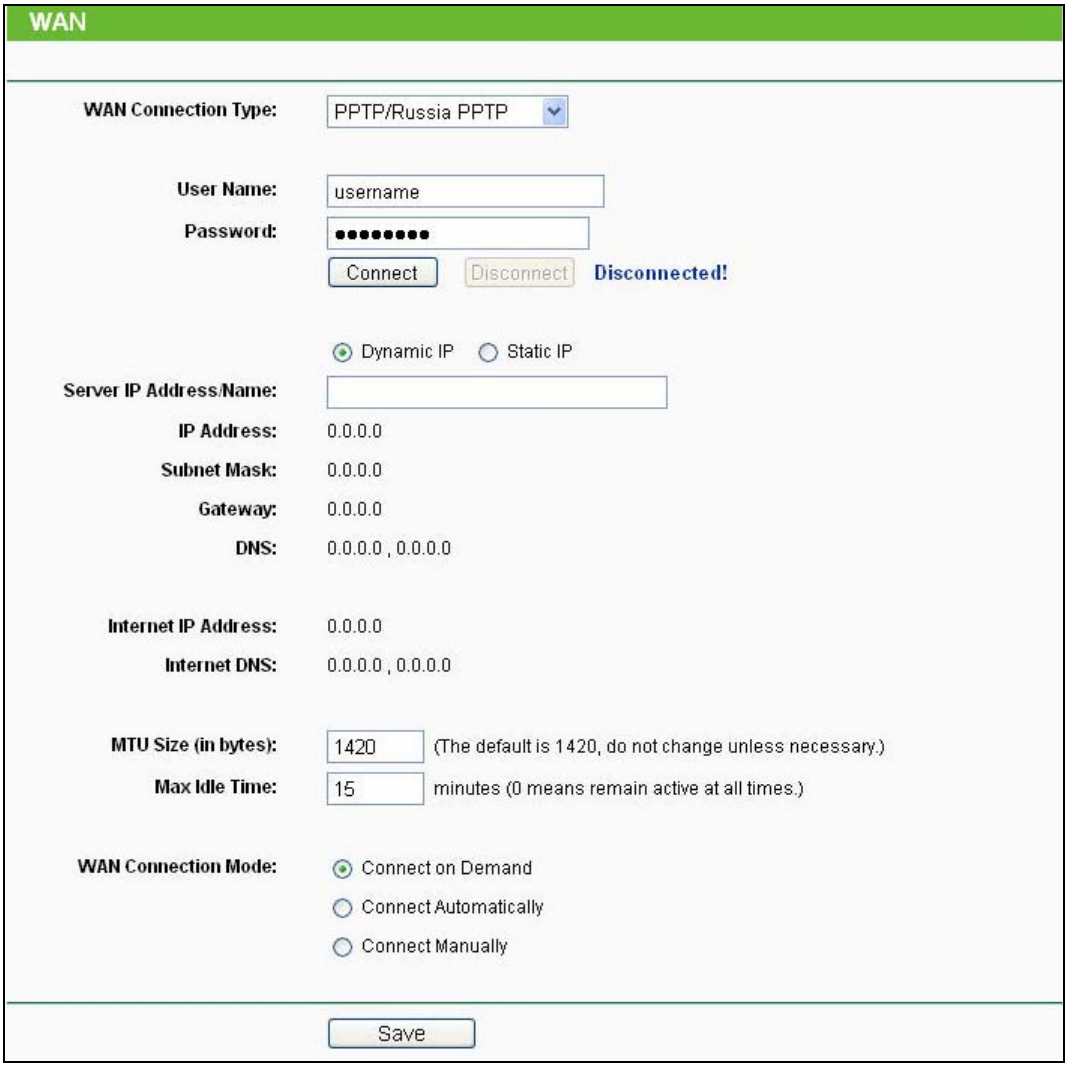


Figure 4-12 WAN –PPTP

- **User Name/Password -** 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**, 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 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, click 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, since some applications are visiting the Internet continually in the background.

☞ **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 LAN

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

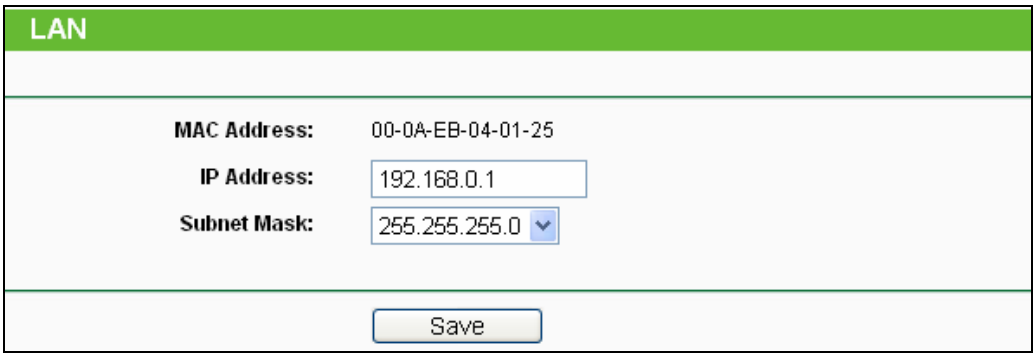


Figure 4-13 LAN

- **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.

Note:

1. If you change the IP Address of LAN, you must use the new IP Address to login the Router.
2. If the new LAN IP Address you set is not in the same subnet, the IP Address pool of the DHCP server will change accordingly at the same time，while the Virtual Server and DMZ Host will not take effect until they are re-configured.

4.5.3 MAC Clone

Choose menu "**Network→MAC Clone**", and then you can configure the MAC address of the WAN on the screen below, Figure 4-14:

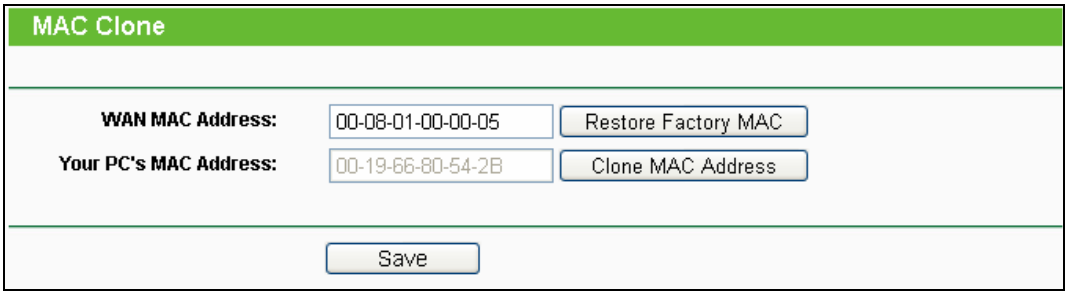


Figure 4-14 MAC Address Clone

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.

4.6 Wireless

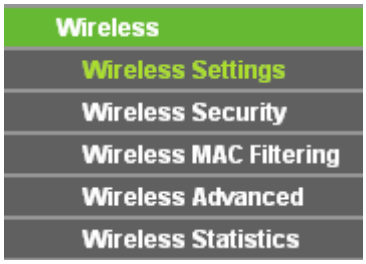


Figure 4-15 Wireless menu

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 Setting**", and then you can configure the basic settings for the wireless network on this page.

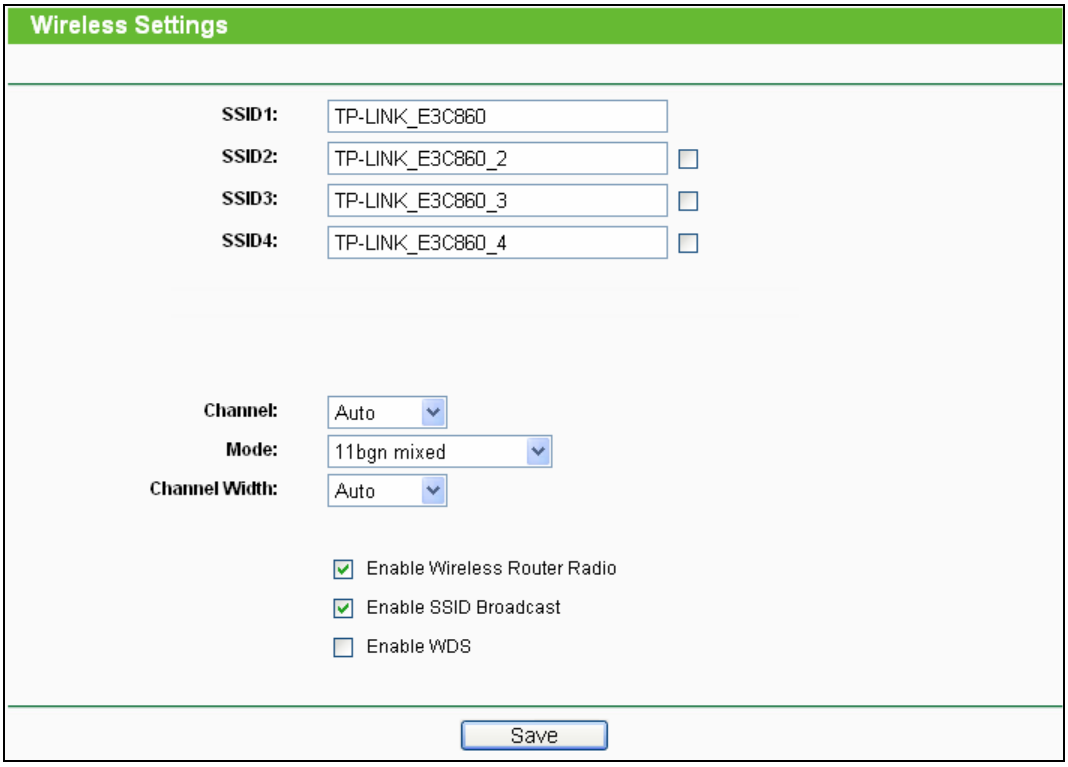


Figure 4-16 Wireless Settings

- **SSID (1-4) -** Up to four SSIDs for each BSS (Basic Service Set) can be entered in the filed SSID1 ~ SSID4. The name can be up to 32 characters. The same name (SSID) must be assigned to all wireless devices in your network. Check the Enable box to enable the desired SSID. The wireless stations connected to different SSIDs can not communicate with each other.

☞ **Note:**

Multiple SSIDs can be set up in public places, like coffee house, for guests to allow virtual segregation stations which share the same channel.

- **Channel -** This field determines which operating frequency will be used. The default channel is set to **Auto**, so the AP 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.

- **Mode -** Select the desired mode. The default setting is 11bgn mixed.

11b only - Select if all of your wireless clients are 802.11b.

11g only - Select if all of your wireless clients are 802.11g.

11n only- Select only if all of your wireless clients are 802.11n.

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. When 802.11g mode is selected, only 802.11g wireless stations can connect to the Router. When 802.11n mode is selected, only 802.11n wireless stations can connect to the AP. It is strongly recommended that you set the Mode to **802.11b&g&n**, and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the Router.

- **Channel width -** Select any channel width from the drop-down list. The default setting is **Auto** which can automatically adjust the channel width for your clients.

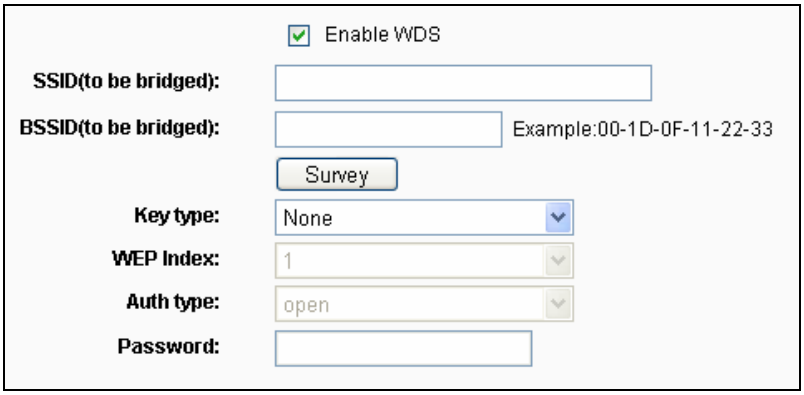
☞ **Note:**

If **11b only**, **11g only**, or **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 this Router can be enabled or disabled to allow wireless stations access.

- **Enable SSID Broadcast -** When wireless clients survey the local area for wireless networks to associate with, they will detect the SSID broadcast by the Router. If you select the **Enable SSID Broadcast** checkbox, the Wireless Router will broadcast its name (SSID) on the air.

- **Enable WDS -** Check this box to enable WDS. With this function, the Router can bridge two or more WLANs. If this checkbox is selected, you will have to set the following parameters as shown below. Make sure the following settings are correct.



- **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.
- **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**", and then you can configure the security settings of your wireless network.

The router has a default wireless password which is the same as PIN code and you can check the PIN code on the label attached to the product.

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), WPA2-PSK (Pre-Shared Key) and WPA-PSK (Pre-Shared Key).

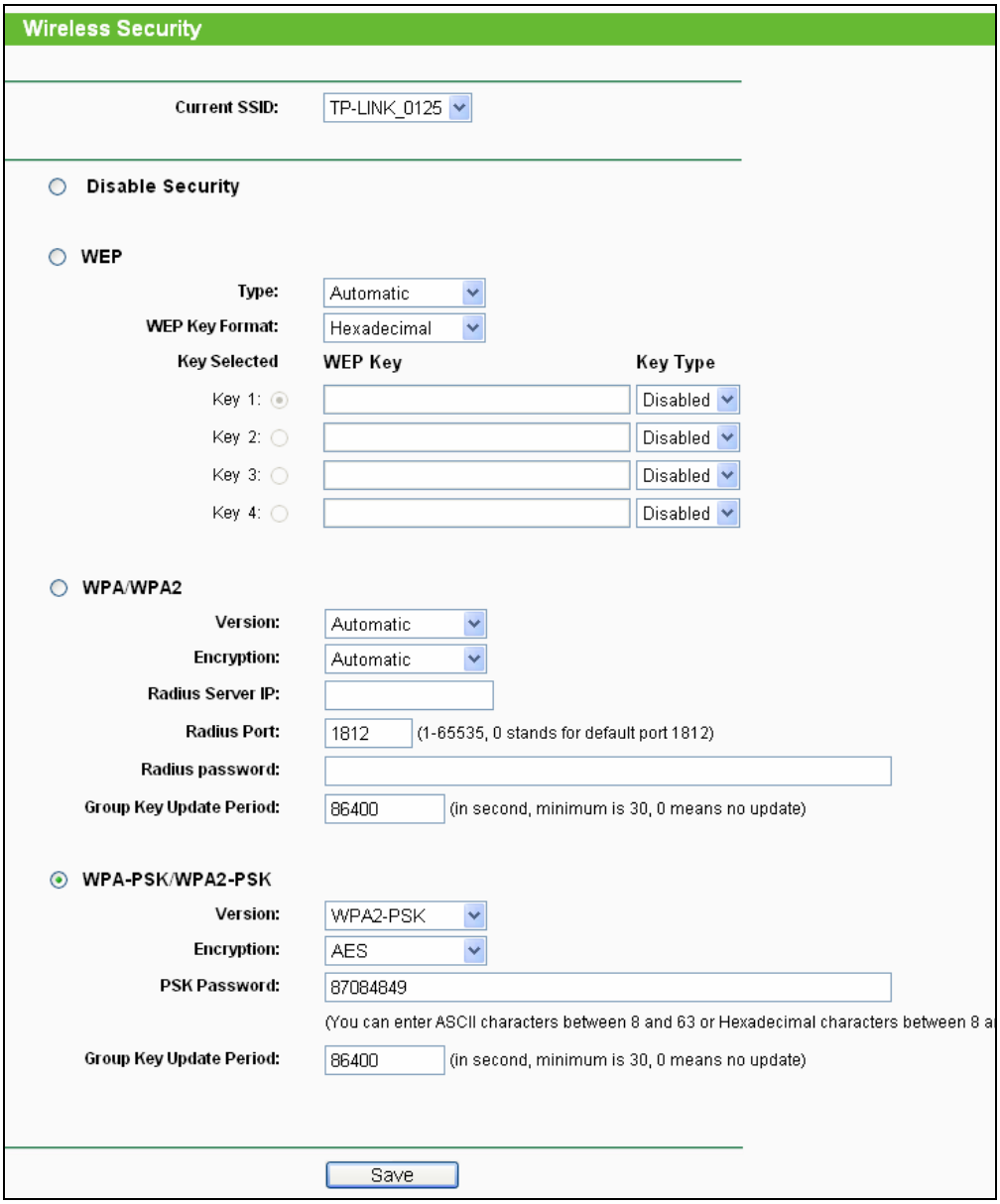


Figure 4-17

- **Disable Security -** If you do not want to use wireless security, select this check box, but it's strongly recommended to choose one of the following modes to enable security.
- **WEP -** It is based on the IEEE 802.11 standard. If you select this check box, you will find a notice in red as show in Figure 4-18.

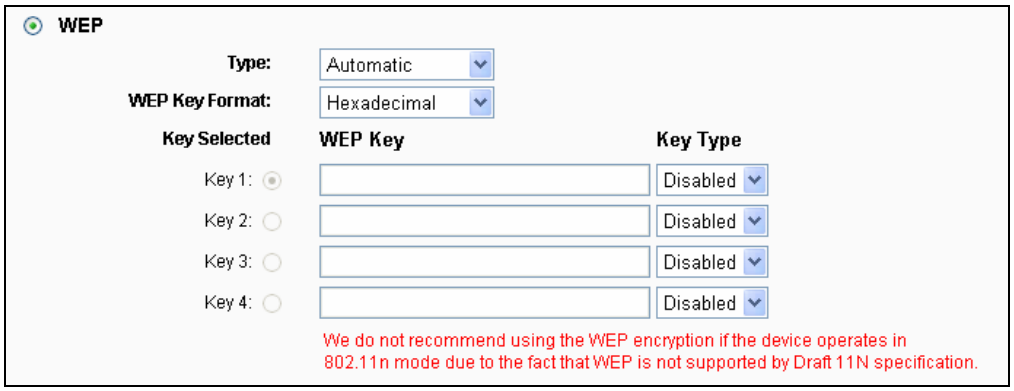


Figure 4-18

- **Type -** you can choose the type for the WEP security on the drop-down list. The default setting is **Automatic**, which can select **Open System** or **Shared Key** authentication type automatically based on the wireless station's capability and request.
- **WEP Key Format - Hexadecimal** and **ASCII** formats are provided. **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.

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

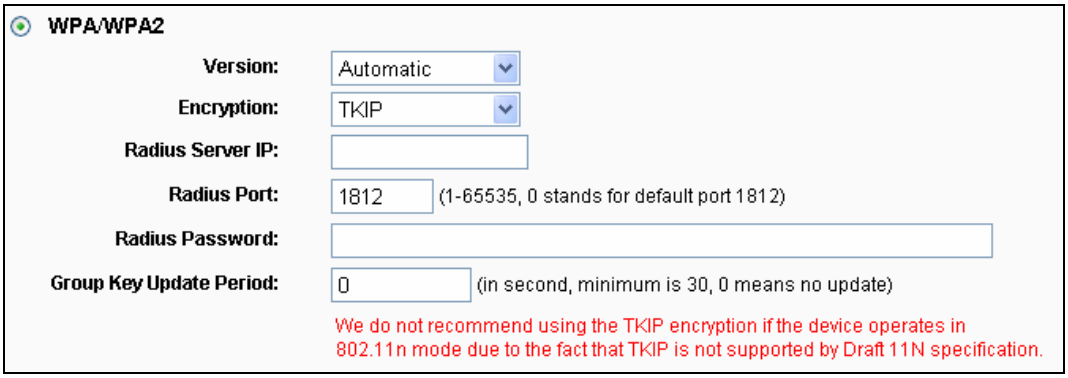


Figure 4-19

- **Radius Server IP -** Enter the IP address of the Radius Server.
- **Radius Port -** Enter the port that radius service used.
- **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.

➢ **WPA-PSK/WPA2-PSK -** 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 4-20.

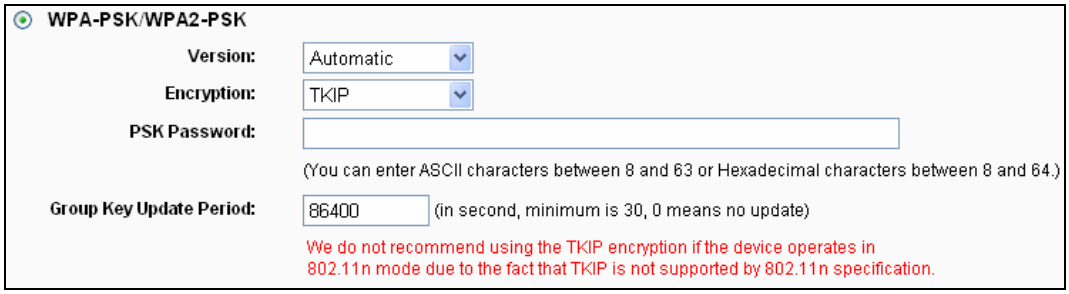


Figure 4-20

- **PSK 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.

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**", and then you can control the wireless access by configuring the Wireless MAC Address Filtering function, shown in Figure 4-21.

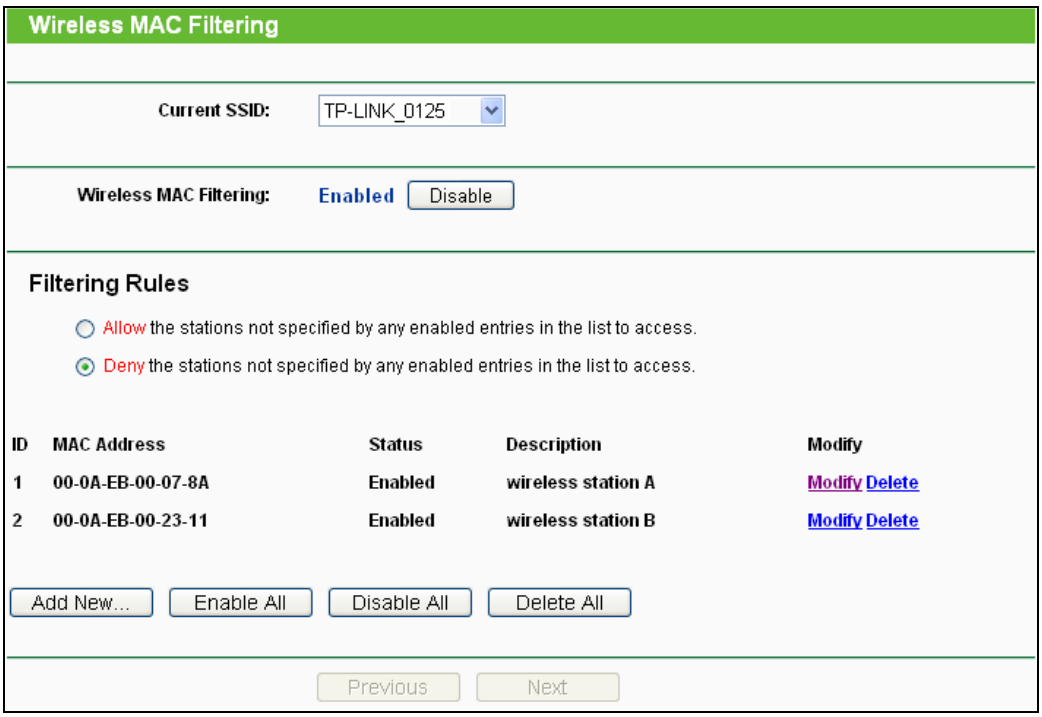


Figure 4-21 Wireless MAC address Filtering

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 as shown in Figure 4-22:

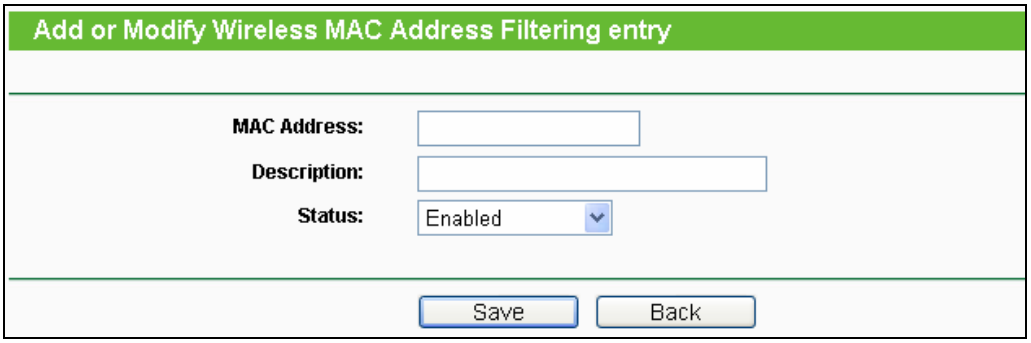


Figure 4-22 Add or Modify Wireless MAC Address Filtering entry

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-00-07-8A.
2. Enter a simple description of 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 **Disabled All** button to make all entries disabled.

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

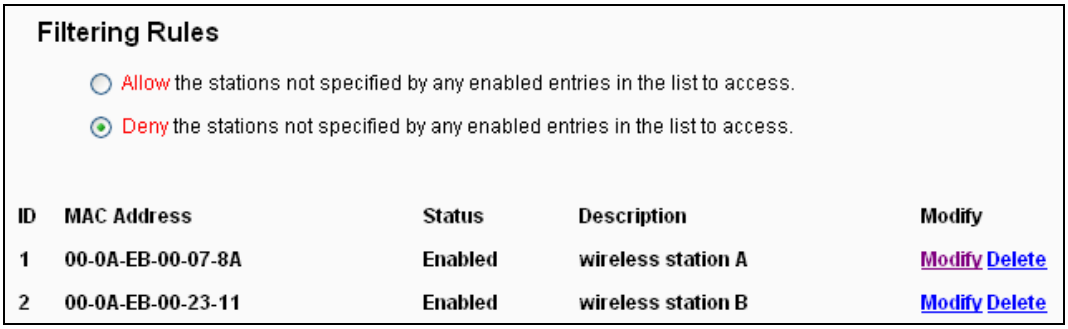
Click the **Next** button to go to the next page.

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-00-07-8A and the wireless station B with MAC address 00-0A-EB-00-23-11 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: **Deny the stations not 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 and enter the MAC address 00-0A-EB-00-07-8A /00-0A-EB-00-23-11 in the **MAC Address** field, then enter wireless station A/B in the **Description** field, while select **Enabled** in the **Status** drop-down list. Finally, click the **Save** and 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**", and then you can configure the advanced settings of your wireless network.

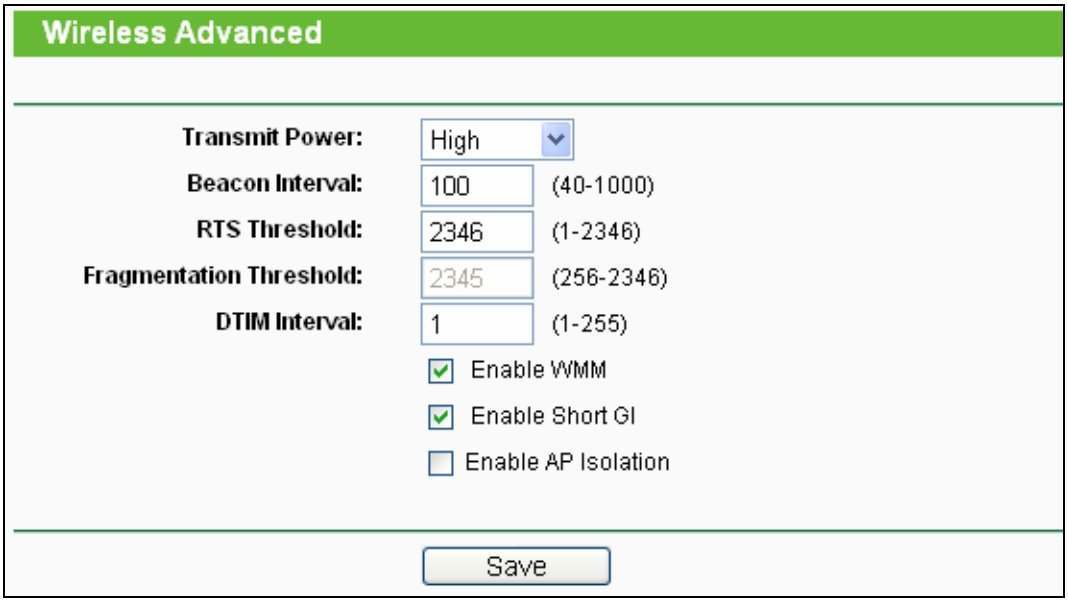


Figure 4-23 Wireless Advanced

- **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 40-1000 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 since excessive packets. 2345 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 1-255 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 enabled.

- **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**", and then you can see the MAC Address, Current Status, Received Packets and Sent Packets for each connected wireless station.

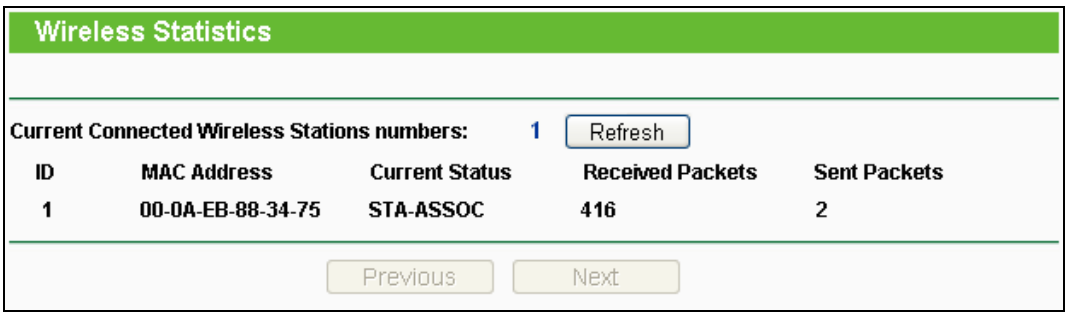


Figure 4-24 The Router attached wireless stations

- **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 to the previous page.

Note:

This page will be refreshed automatically every 5 seconds.

4.7 DHCP

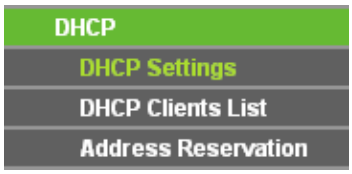


Figure 4-25 The DHCP menu

There are three submenus under the DHCP menu (shown in Figure 4-25): **DHCP Settings**, **DHCP Clients List** and **Address Reservation.** Click any of them, and you will be able to configure the corresponding function.

4.7.1 DHCP Settings

Choose menu "**DHCP→DHCP Settings**", and then you can configure the DHCP Server on the page (shown in Figure 4-26).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.

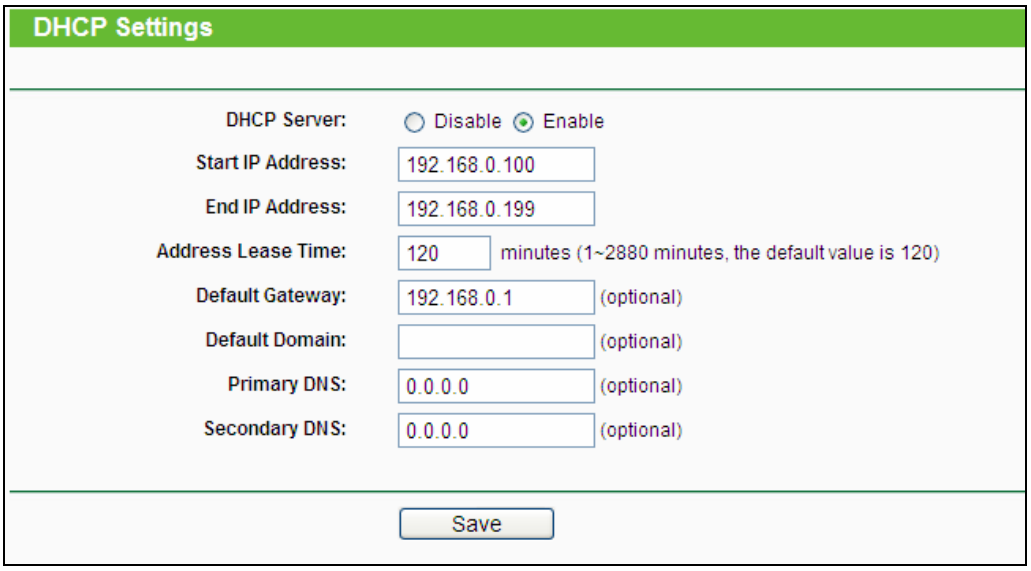


Figure 4-26 DHCP Settings

- **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) Suggest to input the IP address of the LAN port of the Router, 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" mode.

4.7.2 DHCP Clients List

Choose menu "**DHCP→DHCP Clients List**", and then you can view the information about the clients attached to the Router in the next screen (shown in Figure 4-27).

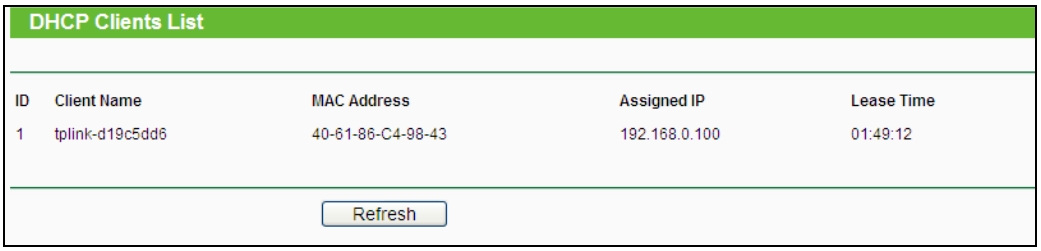


Figure 4-27 DHCP Clients List

- **ID -** The index of the DHCP Client.
- **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.

4.7.3 Address Reservation

Choose menu "**DHCP→Address Reservation**", and then you can view and add a reserved address for clients via the next screen (shown in Figure 4-28). 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 4-28 Address Reservation

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

To Reserve IP addresses:

1. Click the **Add New …** button. (Pop-up Figure 4-29)
2. Enter the MAC address (in XX-XX-XX-XX-XX-XX format) and IP address of the computer you wish to add in dotted-decimal notation.
3. Click the **Save** button when finished.

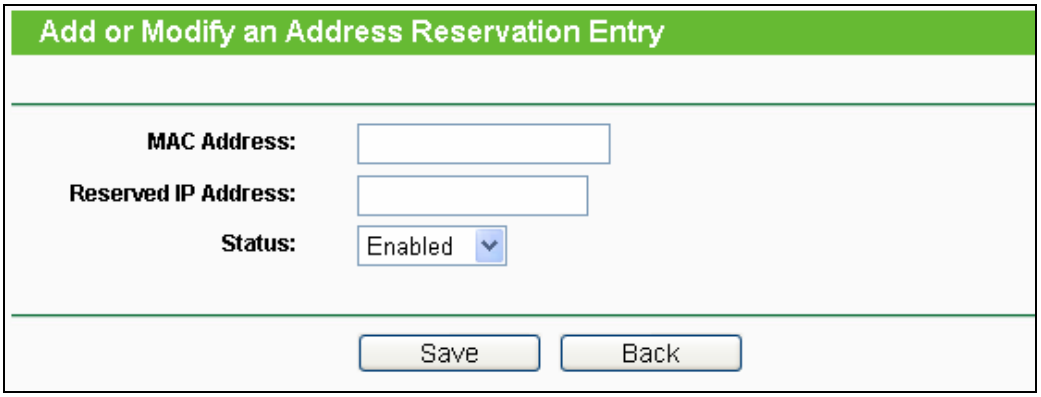


Figure 4-29 Add or Modify an Address Reservation Entry

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 to the previous page.

4.8 Forwarding

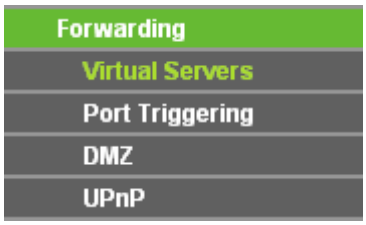


Figure 4-30 The Forwarding menu

There are four submenus under the Forwarding menu (shown in Figure 4-30): **Virtual Servers**, **Port Triggering**, **DMZ** and **UPnP**. Click any of them, and you will be able to configure the corresponding function.

4.8.1 Virtual Servers

Choose menu "**Forwarding→Virtual Servers**", and then you can view and add virtual servers in the next screen (shown in Figure 4-31). 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.

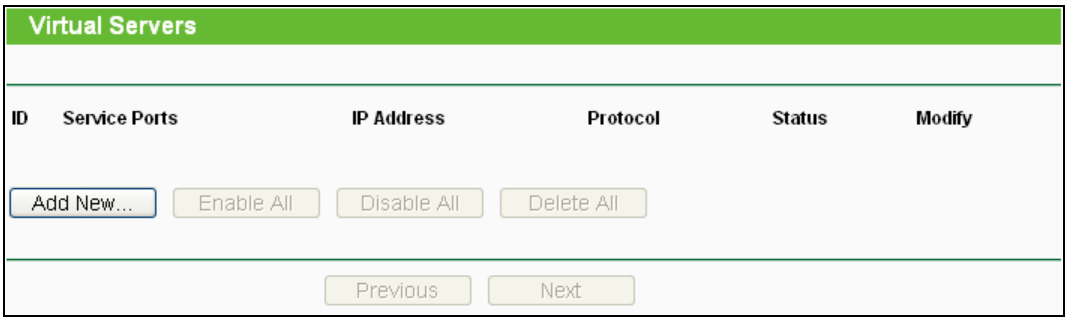


Figure 4-31 Virtual Servers

- **Service Ports** - 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).
- **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.
- **Modify** - To modify or delete an existing entry.

To setup a virtual server entry:

1. Click the **Add New...** button. (pop-up Figure 4-32)
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.

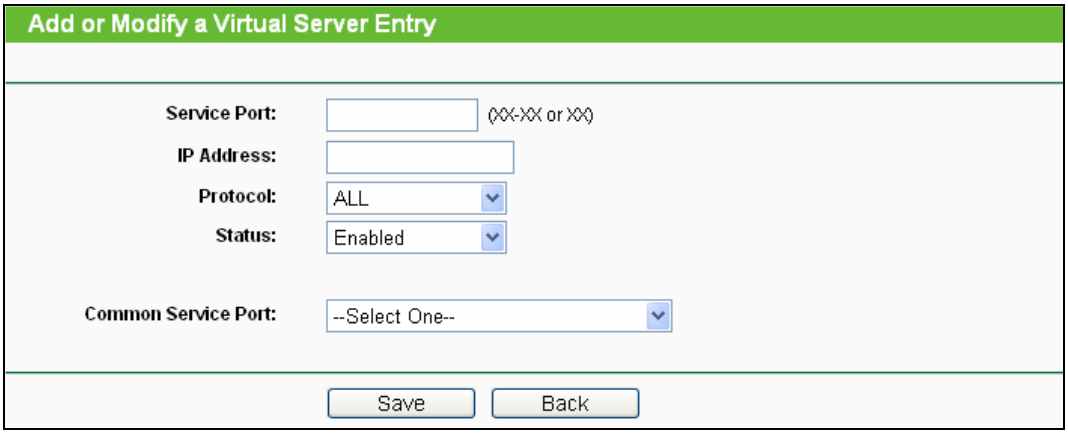


Figure 4-32 Add or Modify a Virtual Server Entry

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.

4.8.2 Port Triggering

Choose menu "**Forwarding→Port Triggering**", you can view and add port triggering in the next screen (shown in Figure 4-33). 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.

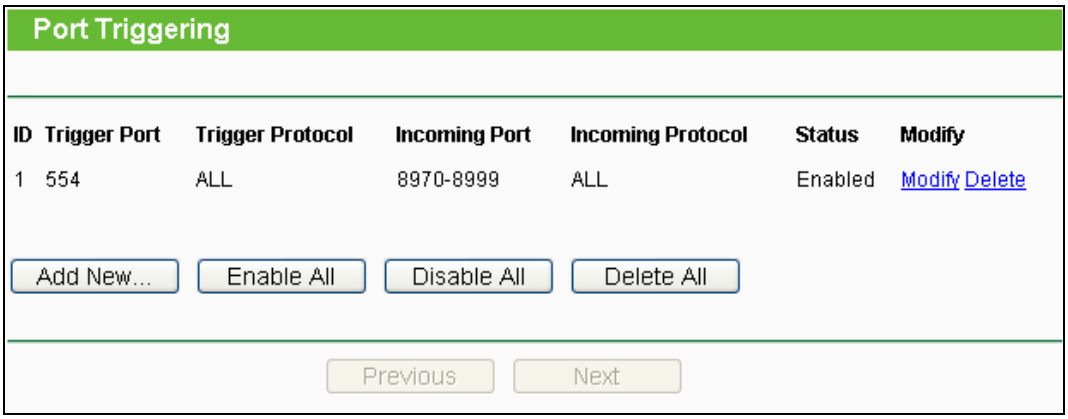


Figure 4-33 Port Triggering

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 4-34.
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 **Enable** in **Status** field.

6. Click the **Save** button to save the new rule.

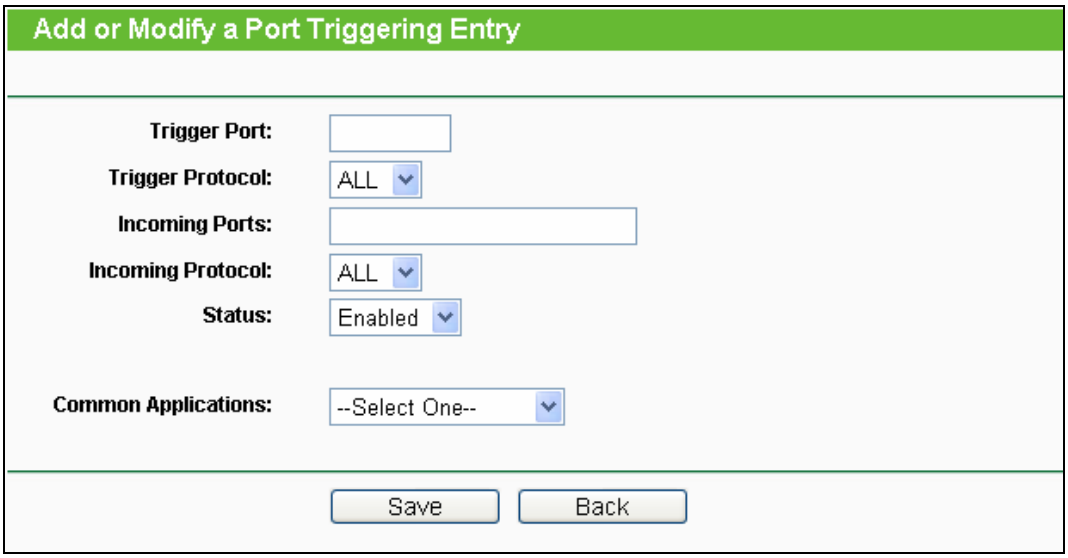


Figure 4-34 Add or Modify a Triggering Entry

- **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 Ports** - 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:

1. Find the desired entry in the table.
2. 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.

4.8.3 DMZ

Choose menu "**Forwarding→DMZ**", and then you can view and configure DMZ host in the screen (shown in Figure 4-35).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.

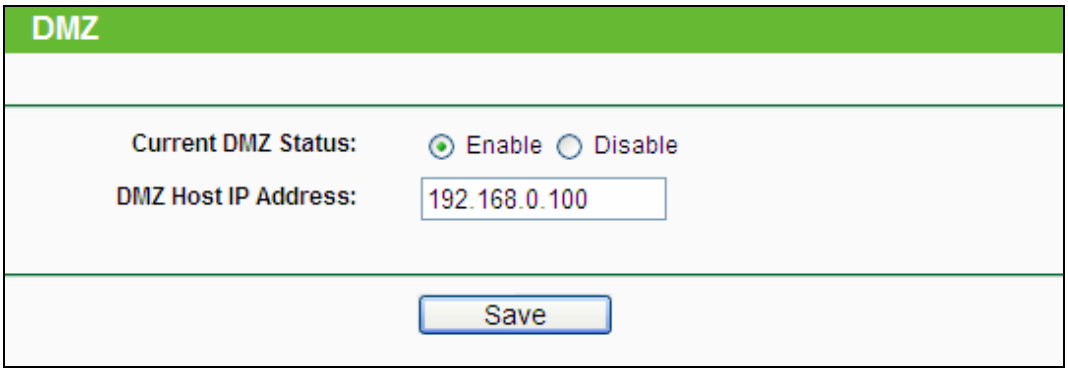


Figure 4-35 DMZ

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.

4.8.4 UPnP

Choose menu "**Forwarding→UPnP**", and then you can view the information about **UPnP** in the screen (shown in Figure 4-36). 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.

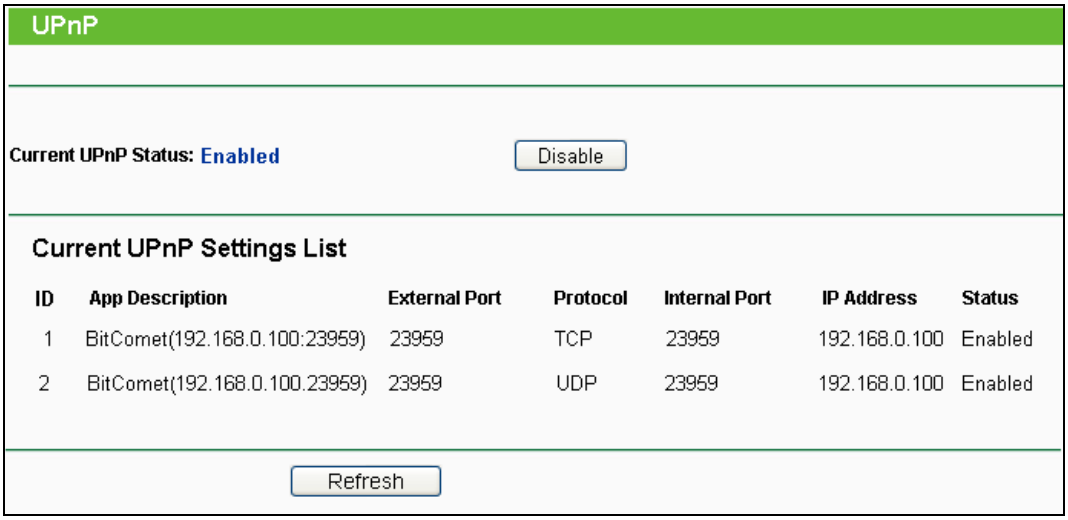


Figure 4-36 UPnP Setting

- **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.

4.9 Security

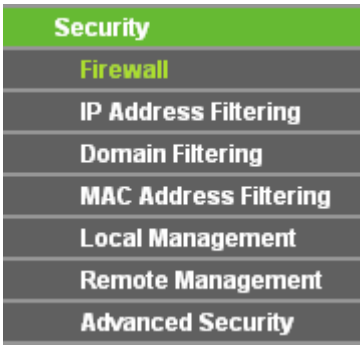


Figure 4-37 The Security menu

There are seven submenus under the Security menu as shown in Figure 4-37: **Firewall**, **IP Address Filtering**, **Domain Filtering**, **MAC Address Filtering**, **Local Management**, **Remote Management** and **Advanced Security**. Click any of them, and you will be able to configure the corresponding function.

4.9.1 Firewall

Using the Firewall page, you can turn the general firewall switch on or off. The default setting for the switch is off. If the general firewall switch is off, even if IP Address Filtering, Domain Filtering and MAC Address Filtering are enabled, their settings are ineffective.

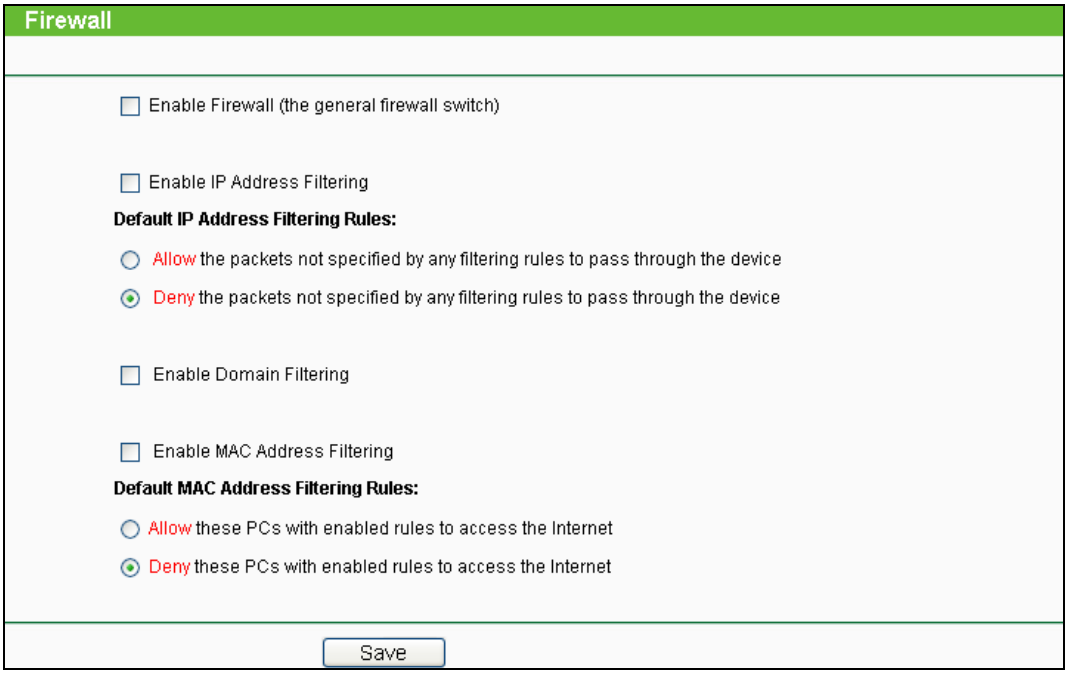


Figure 4-38 Firewall Settings

- **Enable Firewall -** the general firewall switch is on or off.
- **Enable IP Address Filtering -** set IP Address Filtering is enabled or disabled. There are two default filtering rules of IP Address Filtering, either Allow or Deny passing through the router.
- **Enable Domain Filtering -** set Domain Filtering is enabled or disabled.

- **Enable MAC Address Filtering -** set MAC Address Filtering is enabled or disabled. You can select the default filtering rules of MAC Address Filtering, either Allow or Deny accessing the router.

4.9.2 IP Address Filtering

The IP address Filtering feature allows you to control Internet Access by specific users on your LAN based on their IP addresses. The IP address filtering is set on this page:

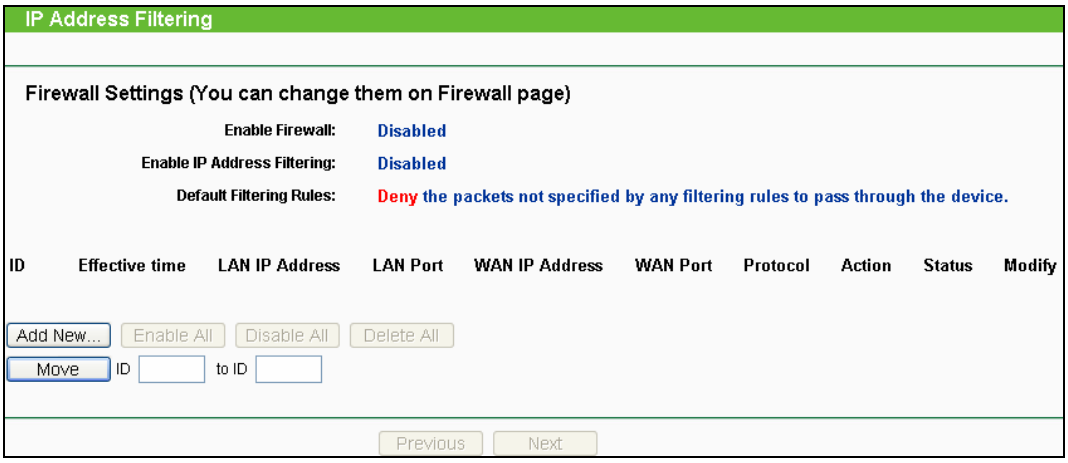


Figure 4-39 IP address Filtering

To disable the IP Address Filtering feature, keep the default setting, **Disabled**. To set up an IP Address Filtering entry, click **Enable** Firewall and **Enable** IP Address Filtering on the Firewall page, and click the **Add New…** button. The page "**Add or Modify an IP Address Filtering entry**" will appear shown in Figure 4-40:

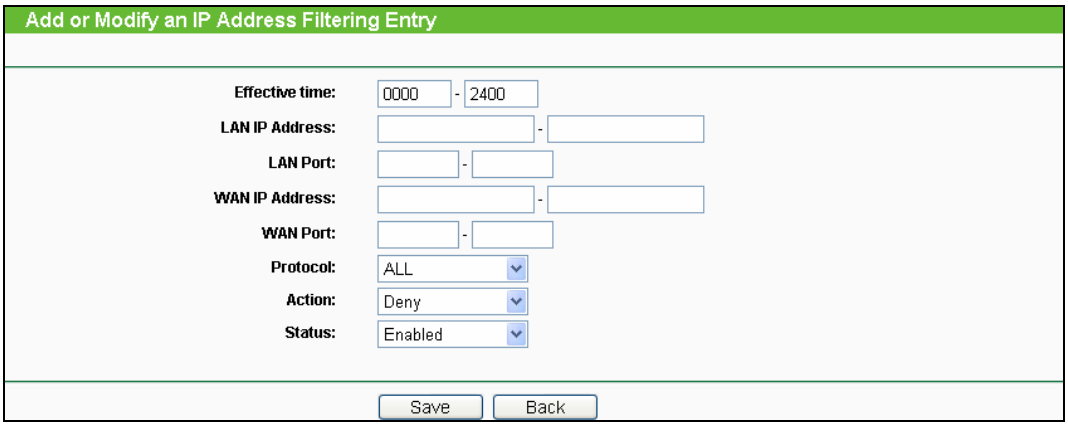


Figure 4-40 Add or Modify an IP Address Filtering Entry

To create or modify an IP Address Filtering entry, please follow these instructions:

1. **Effective Time -** Enter a range of time in HHMM format, which point to the range time for the entry to take effect. For example, 0803 - 1705, the entry will take effect from 08:03 to 17:05.
2. **LAN IP Address -** Enter a LAN IP Address or a range of LAN IP addresses in the field, in dotted-decimal notation format. For example, 192.168.0.20 - 192.168.0.30. Keep the field open, which means all LAN IP Addresses have been put into the field.

3. **LAN Port -** Enter a LAN Port or a range of LAN ports in the field. For example, 1030 - 2000. Keep the field open, which means all LAN ports have been put into the field.

4. **WAN IP Address -** Enter a WAN IP Address or a range of WAN IP Addresses in the field, in dotted-decimal notation format. For example, 61.145.238.6 – 61.145.238.47. Keep the field open, which means all WAN IP Addresses have been put into the field.

5. **WAN Port -** Enter a WAN Port or a range of WAN Ports in the field. For example, 25 – 110. Keep the field open, which means all WAN Ports have been put into the field.

6. **Protocol -** Select which protocol is to be used, either **TCP, UDP**, or **All** (all protocols supported by the router).

7. **Action -** Select either **Allow** or **Deny** through the router.

8. **Status -** Select **Enabled** or **Disabled** for this entry on the **Status** pull-down list.

9. 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 **Disabled All** button to make all entries disabled.

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

You can change the entry's order as desired. Fore entries are before hind entries. Enter the ID number in the first box you want to move and another ID number in second box you want to move to, and then click the **Move** button to change the entry's order.

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

For example: If you desire to block E-mail received and sent by the IP Address 192.168.0.7 on your local network, and to make the PC with IP Address 192.168.0.8 unable to visit the website of IP Address 202.96.134.12, while other PC(s) have no limit you should specify the following IP address filtering list:

ID	Effective time	LAN IP Address	LAN Port	WAN IP Address	WAN Port	Protocol	Action	Status	Modify
1	0000-2400	192.168.0.7-	25-	-	-	ALL	Deny	Enabled	Modify Delete
2	0000-2400	192.168.0.7-	110-	-	-	ALL	Deny	Enabled	Modify Delete
3	0000-2400	192.168.0.8-	-	202.96.134.12-	-	ALL	Deny	Enabled	Modify Delete

4.9.3 Domain Filtering

The Domain Filtering page allows you to control access to certain websites on the Internet by specifying their domains or key words.

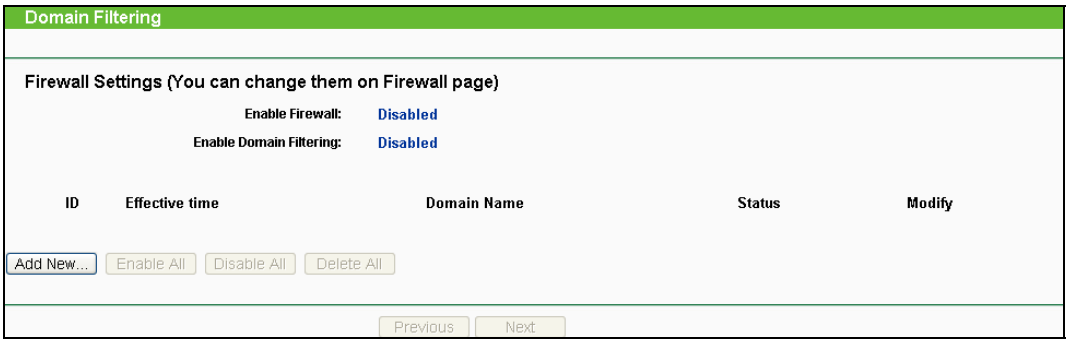


Figure 4-41 Domain Filtering

Before adding a Domain Filtering entry, you must ensure that **Enable** Firewall and **Enable** Domain Filtering have been selected on the Firewall page. To Add a Domain filtering entry, click the **Add New…** button. The page "**Add or Modify a Domain Filtering Entry** " will appear, shown in Figure 4-42:

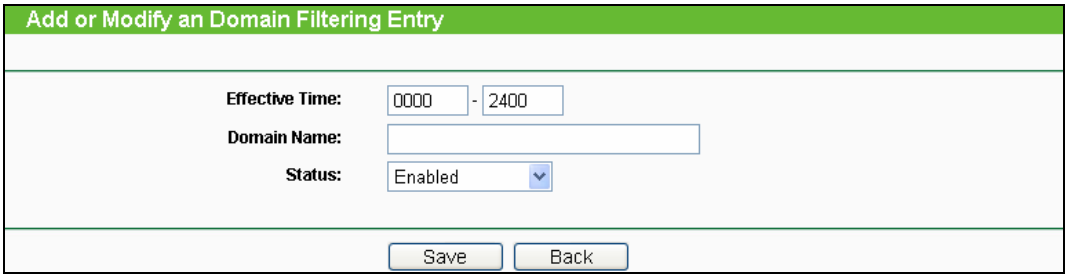


Figure 4-42 Add or Modify a Domain Filtering entry

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

1. **Effective Time -** Enter a range of time in HHMM format specifying the time for the entry to take effect. For example, if you enter: 0803 - 1705, than the entry will take effect from 08:03 to 17:05.
2. **Domain Name -** Type the domain or key word as desired in the field. A blank in the domain field means all websites on the Internet. For example: www.xxyy.com.cn, .net.
3. Select **Enabled** or **Disabled** for this entry on the **Status** pull-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 and the **Previous** button to return to the previous page.

For example: if you want to block the PC(s) on your LAN to access websites www.xxyy.com.cn, www.aabbcc.com and websites with .net in the end on the Internet while no limit for other websites, you should specify the following Domain filtering list:

ID	Effective time	Domain Name	Status	Modify
1	0000-2400	www.xxyy.com	Enabled	Modify Delete
2	0800-2000	www.aabbcc.com	Enabled	Modify Delete
3	0000-2400	.net	Enabled	Modify Delete

4.9.4 MAC Address Filtering

Like the IP Address Filtering page, the MAC Address Filtering page allows you to control access to the Internet by users on your local network based on their MAC Address.

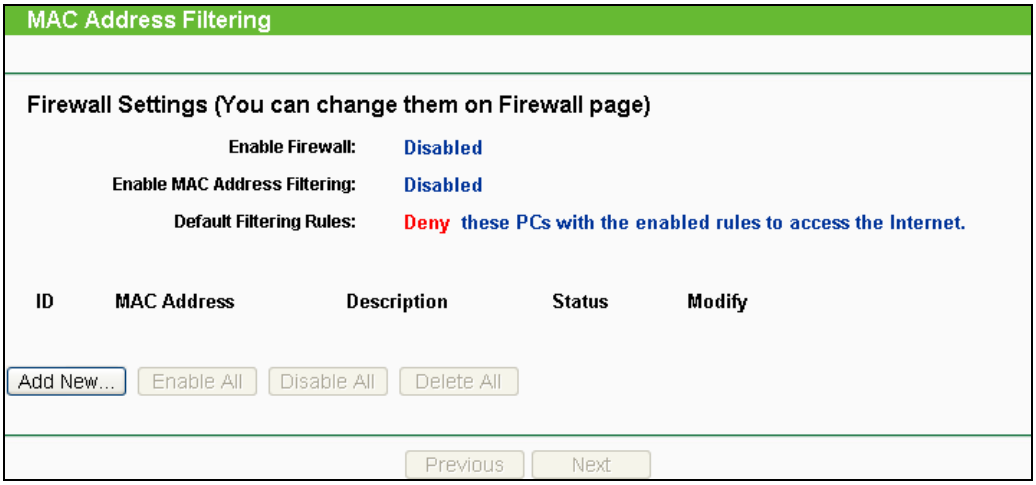


Figure 4-43 MAC address Filtering

Before setting up MAC Filtering entries, you must ensure that **Enable** Firewall and **Enable** MAC Filtering have been selected on the Firewall page. To Add a MAC Address filtering entry, clicking the **Add New…** button. The page "**Add or Modify a MAC Address Filtering entry**" will appear, shown in Figure 4-44:

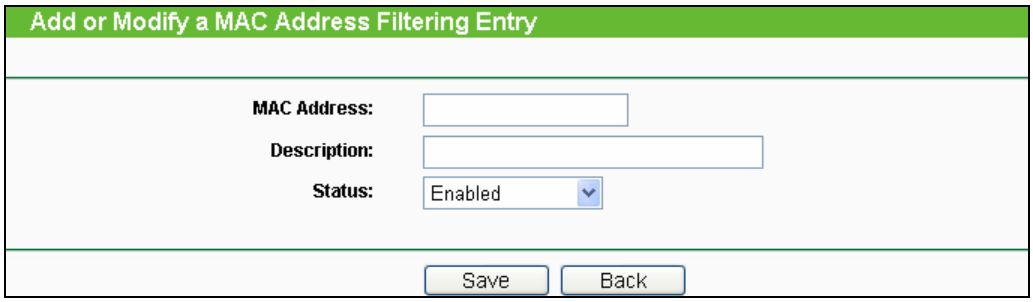


Figure 4-44 Add or Modify a MAC Address Filtering entry

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: 00-0E-AE-B0-00-0B.
2. Type the description of the PC in the **Description** field. Fox example: John's PC.
3. Select **Enabled** or **Disabled** for this entry on the **Status** pull-down list.
4. Click the **Save** button to save this entry.

To add additional entries, repeat steps 1-4.

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 and click the **Previous** button to return to the previous page.

Fox example: If you want to block the PC with MAC addresses 00-0A-EB-00-07-BE and 00-0A-EB-00-07-5F to access the Internet, first, enable the **Firewall** and **MAC Address Filtering** on the **Firewall** page, then, you should specify the Default MAC Address Filtering Rule "**Deny these PC(s) with effective rules to access the Internet**" on the Firewall page and the following MAC address filtering list on this page:

ID	MAC Address	Description	Status	Modify
1	00-0A-EB-00-07-BE	John's computer	Enabled	Modify Delete
2	00-0A-EB-00-07-5F	Alice's computer	Enabled	Modify Delete

4.9.5 Local Management

Choose menu "**Security → Local Management**", and then you can configure the management rule in the screen as shown in Figure 4-45. The management feature allows you to deny computers in LAN from accessing the Router.

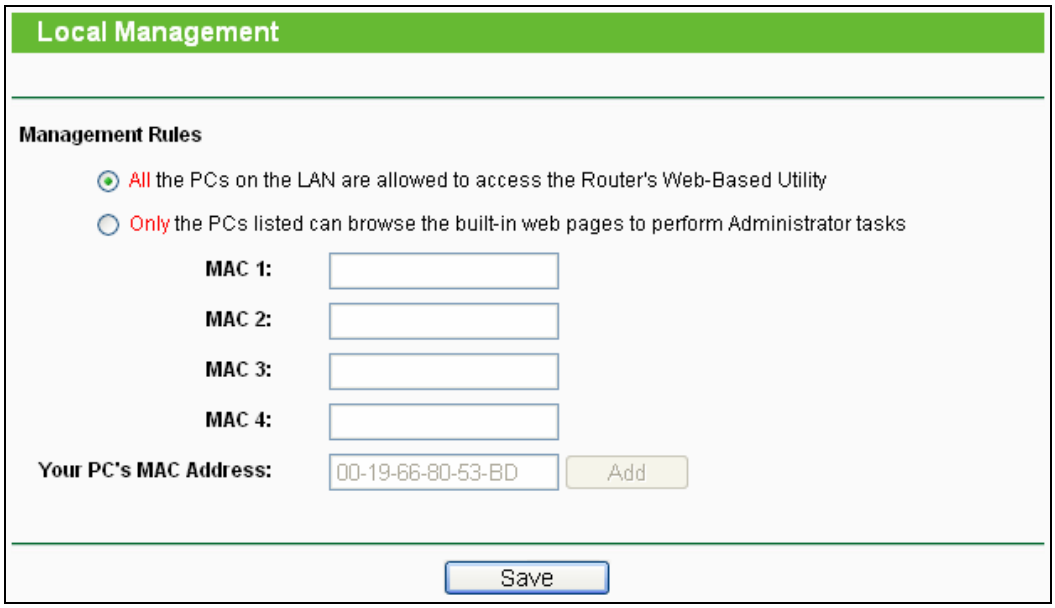


Figure 4-45 Local Management

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 at least 5 seconds to reset the Router's factory defaults on the Router's Web-Based Utility.

4.9.6 Remote Management

Choose menu "**Security → Remote Management**", and then you can configure the Remote Management function in the screen as shown in Figure 4-46. This feature allows you to manage your Router from a remote location via the Internet.

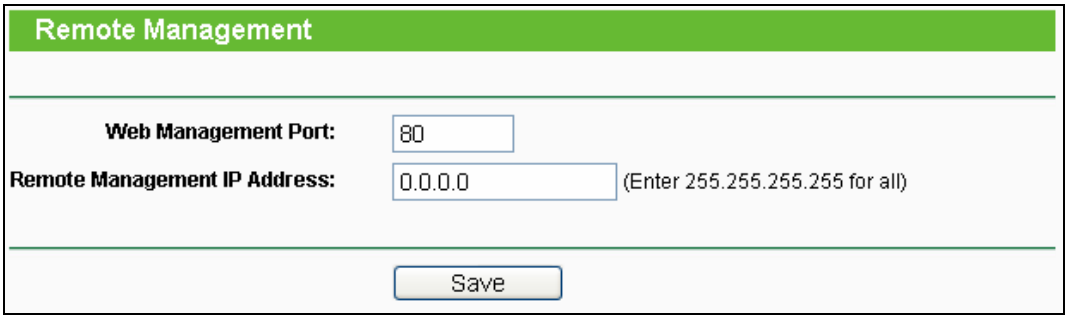


Figure 4-46 Remote Management

- **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.

4.9.7 Advanced Security

Using Advanced Security page, you can protect the router from being attacked by TCP-SYN Flood, UDP Flood and ICMP-Flood from LAN.

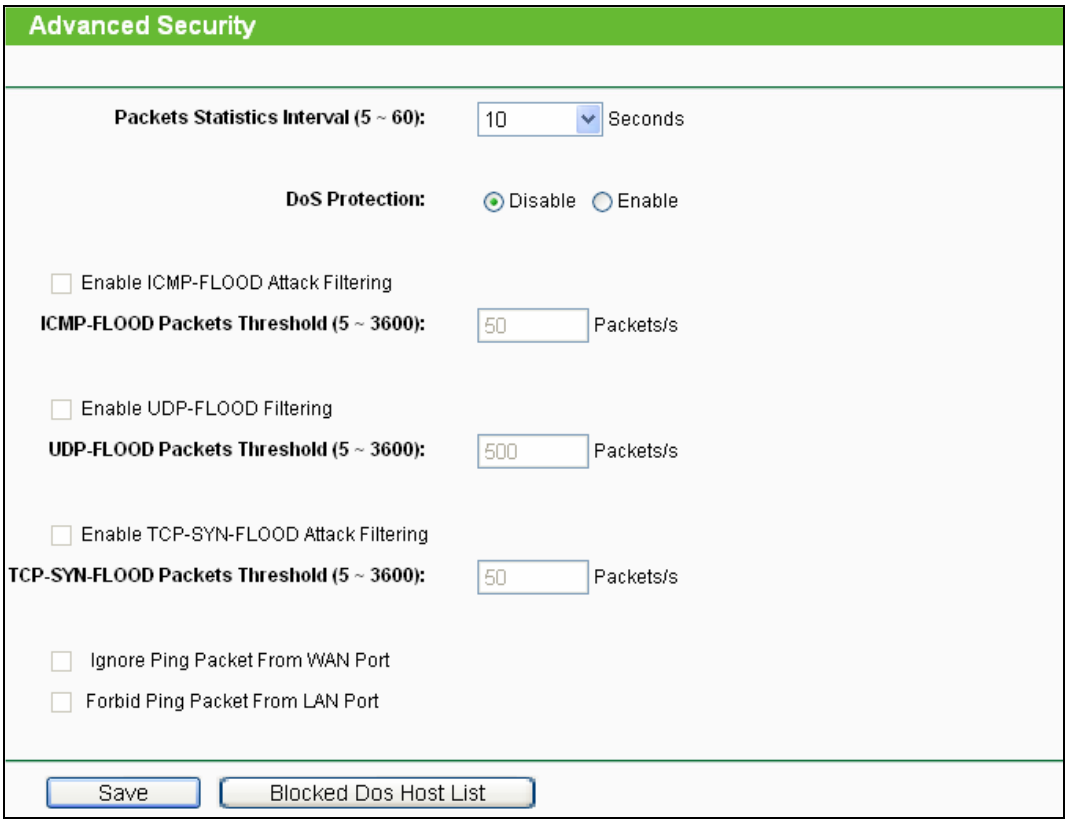


Figure 4-47 Advanced Security settings

- **Packets Statistic interval (5 ~ 60) -** The default value is 10. Select a value between 5 and 60 seconds in the pull-down list. The **Packets Statistic interval** value indicates the time section of the packets statistic. The result of the statistic used for analysis by **SYN Flood**, **UDP Flood** and **ICMP-Flood**.
- **DoS Protection - Enable** or **Disable** the DoS protection function. Only when it is enabled, will the flood filters be effective.
- **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 packets. When the current **ICMP-FLOOD** Packets numbers is beyond the set value, the router will start up 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 50. Enter a value between 5 ~ 3600 packets. When the current **UPD-FLOOD** Packets numbers is beyond the set value, the router will start up 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 packets. When the current **TCP-SYN-FLOOD** Packets numbers is beyond the set value, the router will start up the blocking function immediately.

- **Ignore Ping Packet from WAN Port - Enable** or **Disable** ignore ping packet from WAN port. The default is disabled. If enabled, the ping packet from the Internet cannot access the router.
- **Forbid Ping Packet from LAN Port -** Enable or Disable forbidding Ping Packet to access the router from the LAN port. The default value is disabled. If enabled, the ping packet from the LAN port cannot access the router. (Defends against some viruses)

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

Click the **Blocked DoS Host Table** button to display the DoS host table by blocking. The page will appear:

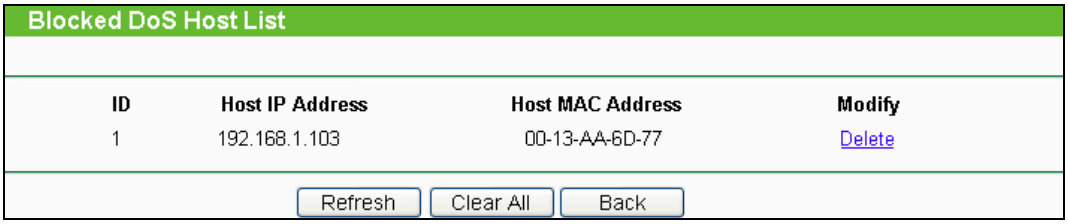


Figure 4-48 Thwarted DoS Host Table

This page shows **Host IP Address** and **Host MAC Address** for each host blocked by the router.

- **Host IP Address-** The IP address that blocked by DoS are displayed here.
- **Host MAC Address -** The MAC address that blocked by DoS are displayed here.

To update this page and to show the current blocked host, click on the **Refresh** button.

Click the **Clear All** button to clear all displayed entries. After the table is empty the blocked host will regain the capability to access Internet.

Click the **Return** button to return to the **Advanced Security** page.

4.10 Parental Control

Choose menu "**Parental Control**", and then you can configure the parental control in the screen as shown in Figure 4-49. 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.

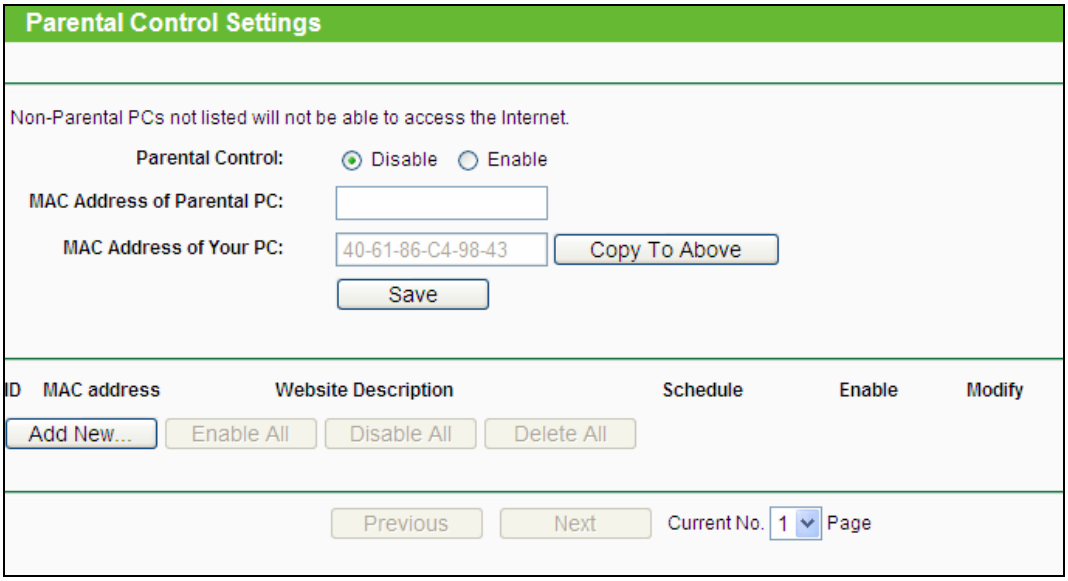


Figure 4-49 Parental Control Settings

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 4-50.

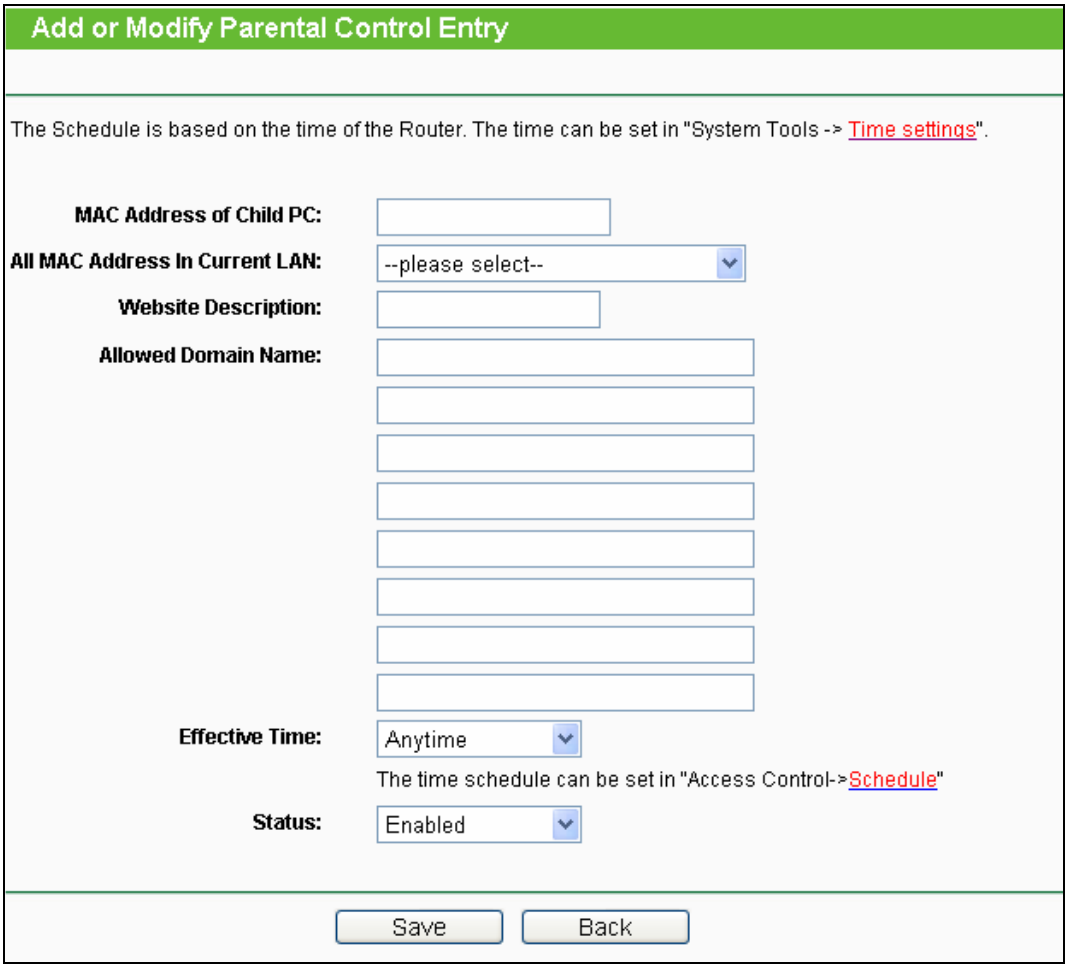


Figure 4-50 Add or Modify Parental Control Entry

- **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.

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 Google) 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. google) in the **Allowed Domain Name** field. Any domain name with keywords in it (www.google.com, www.google.com.hk) 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.google.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 Google" in the **Website Description** field.
   4) Enter "www.google.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 4-51.

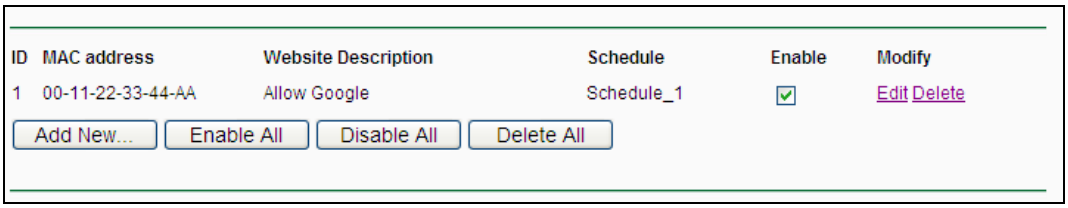


Figure 4-51 Parental Control Settings

4.11 Access Control

Figure 4-52 Access Control

There are four submenus under the Access Control menu as shown in Figure 4-52: **Rule**, **Host**, **Target** and **Schedule**. Click any of them, and you will be able to configure the corresponding function.

4.11.1 Rule

Choose menu "**Access Control → Rule**", and then you can view and set Access Control rules in the screen as shown in Figure 4-53.

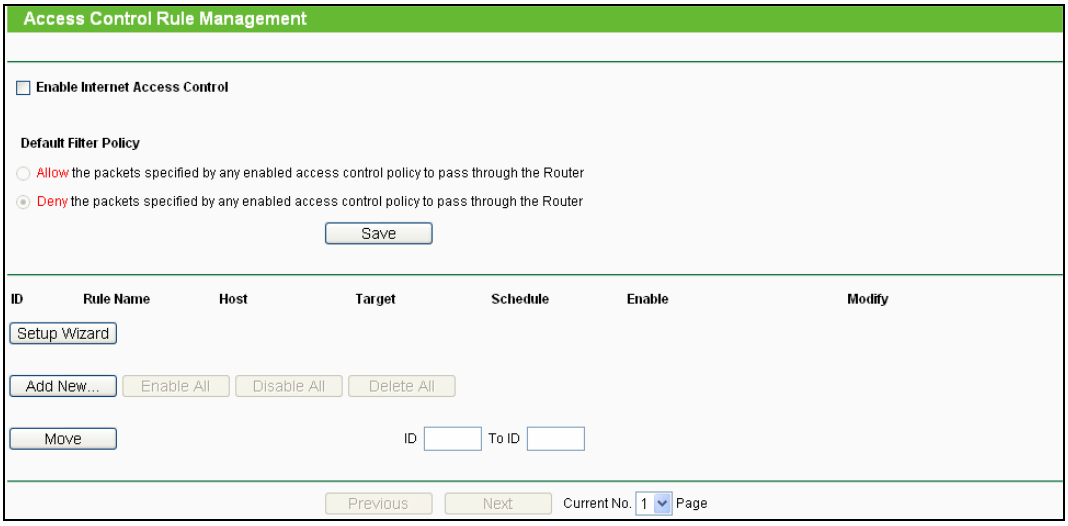


Figure 4-53 Access Control Rule Management

- **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 4-54.

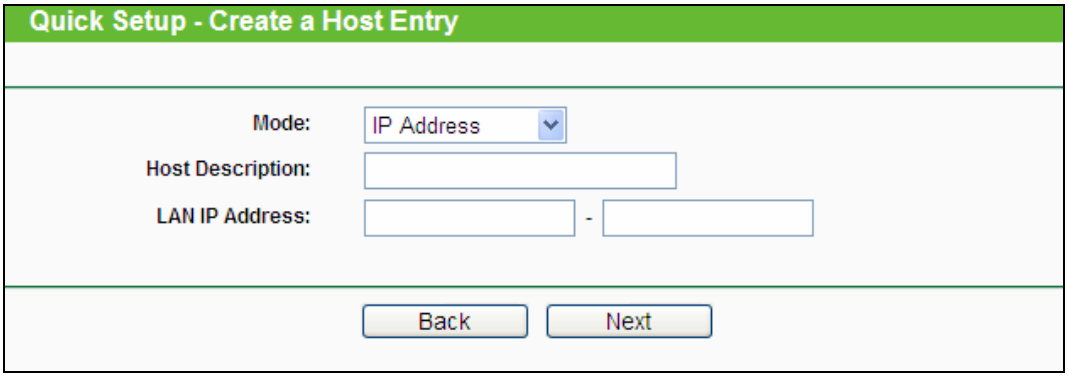


Figure 4-54 Quick Setup – Create a Host Entry

- **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 4-55.

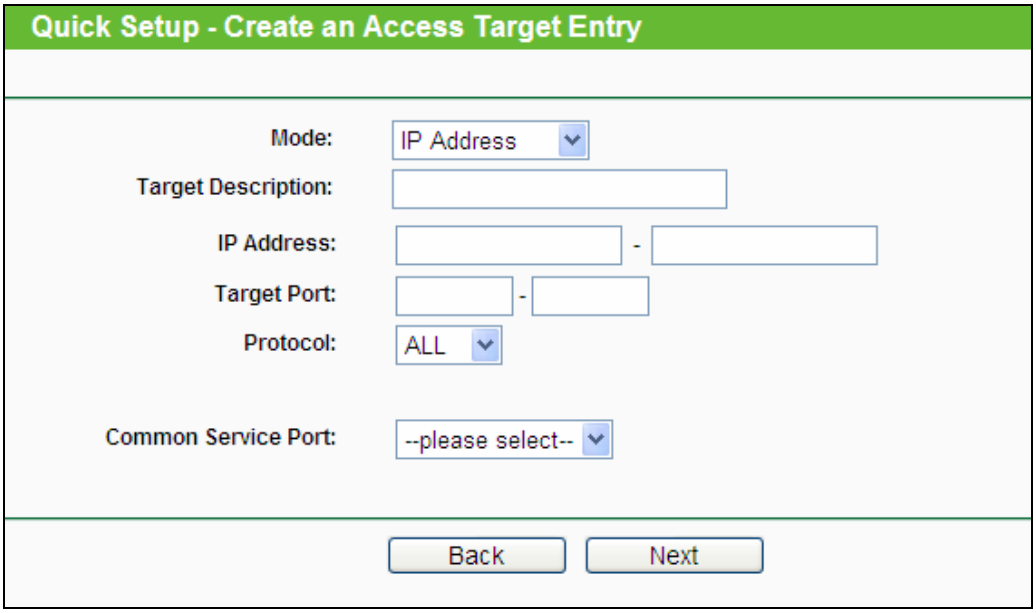


Figure 4-55 Quick Setup – Create an Access Target Entry

- **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, google). Any domain name with keywords in it (www.google.com, www.google.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 4-56.

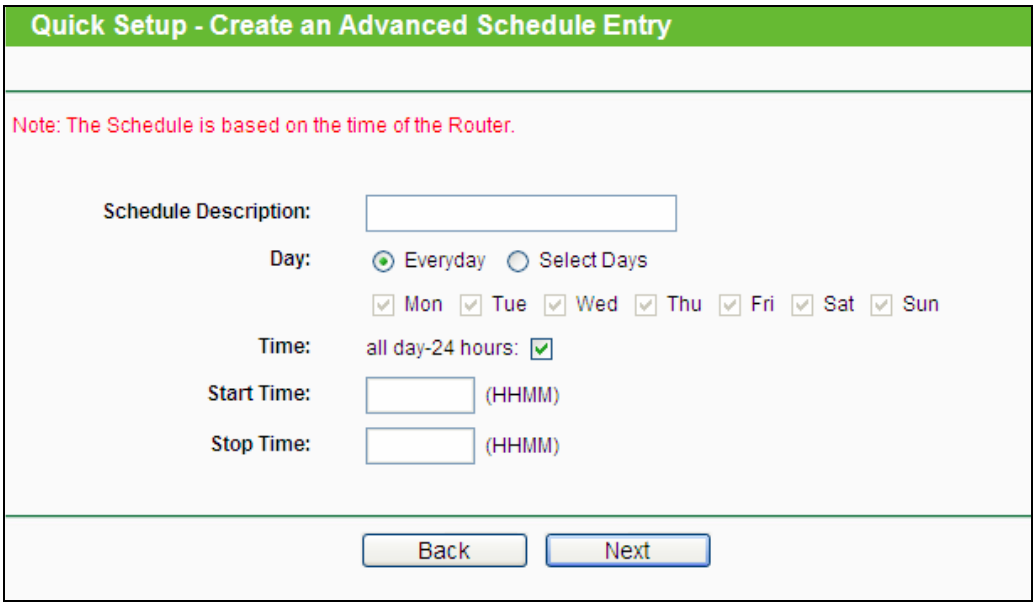


Figure 4-56 Quick Setup – Create an Advanced Schedule Entry

- **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 4-57.

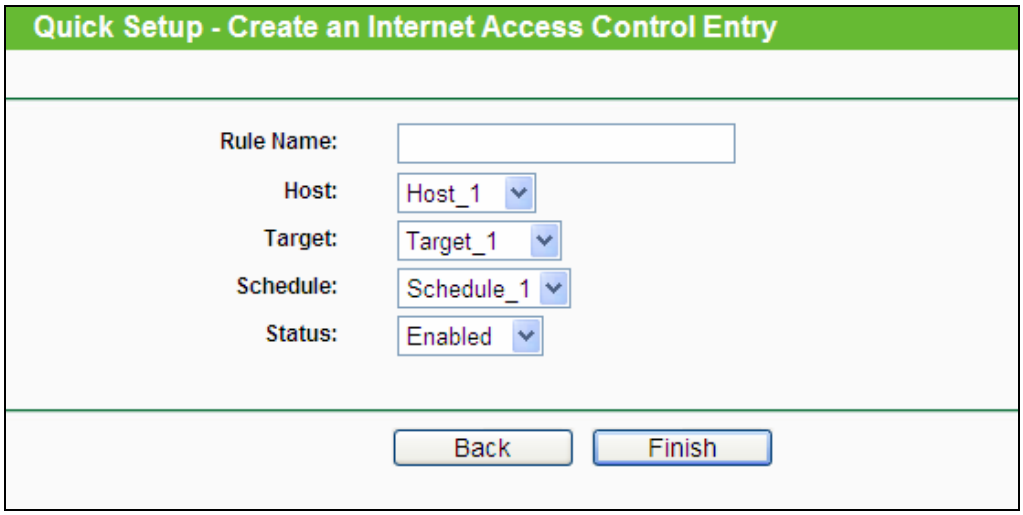


Figure 4-57 Quick Setup – Create an Internet Access Control Entry

- **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, **Enable** or **Disable**. Select **Enable** so that the rule will take effect. Select **Disable** 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 4-58.
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.

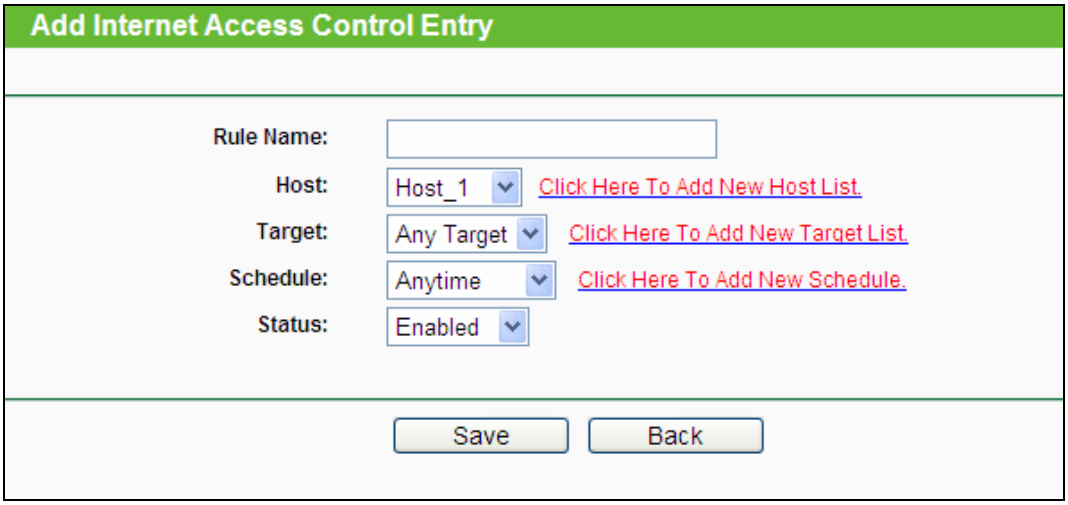


Figure 4-58 Add Internet Access Control Entry

For example: If you desire to allow the host with MAC address 00-11-22-33-44-AA to access www.google.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.google.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

4.11.2 Host

Choose menu "**Access Control → Host**", and then you can view and set a Host list in the screen as shown in Figure 4-59. The host list is necessary for the Access Control Rule.

Figure 4-59 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 4-60.
     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 4-61.
     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.

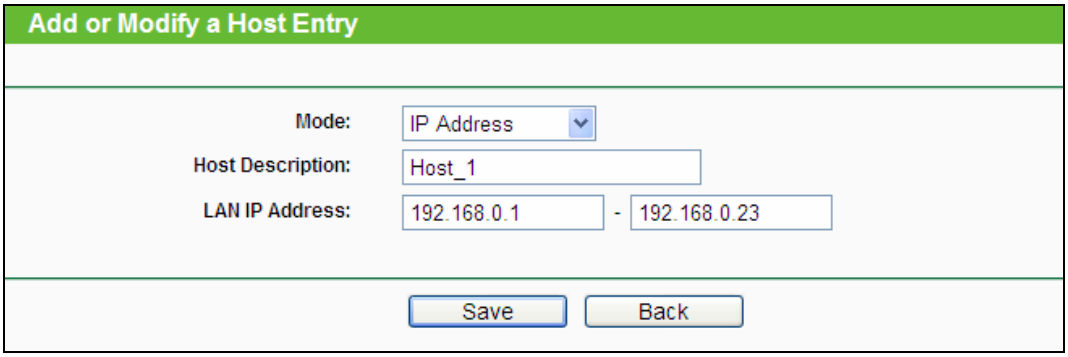


Figure 4-60 Add or Modify a Host Entry

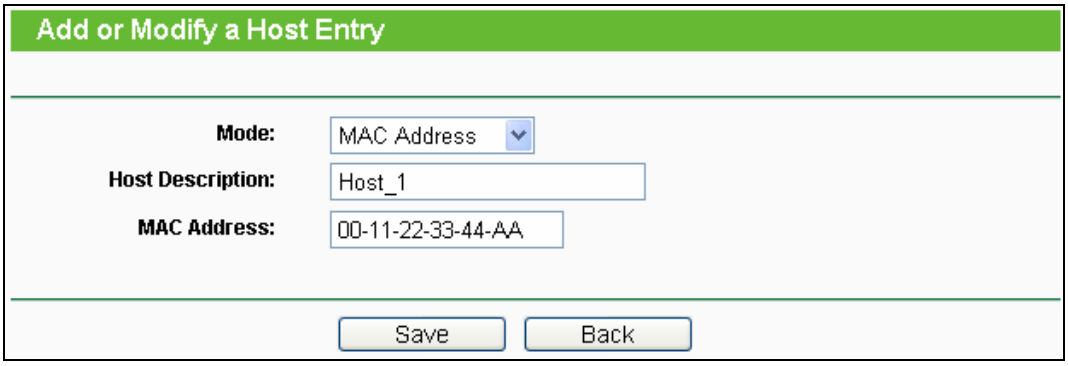


Figure 4-61 Add or Modify a Host Entry

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 4-59 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

4.11.3 Target

Choose menu "**Access Control → Target**", and then you can view and set a Target list in the screen as shown in Figure 4-62. The target list is necessary for the Access Control Rule.

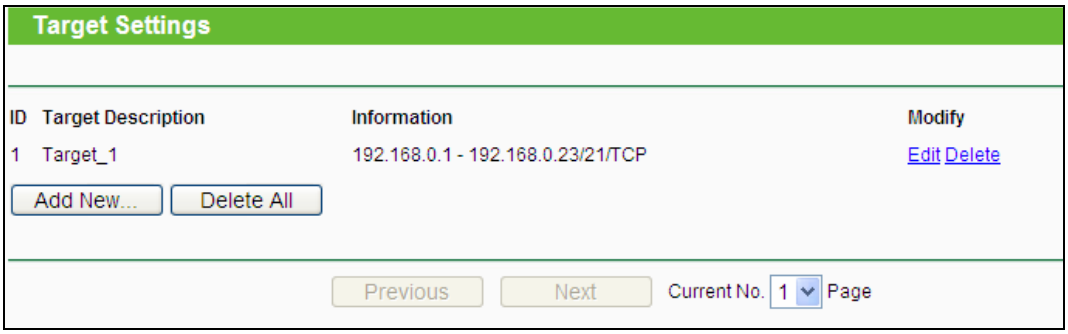


Figure 4-62 Target Settings

- **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 4-63.

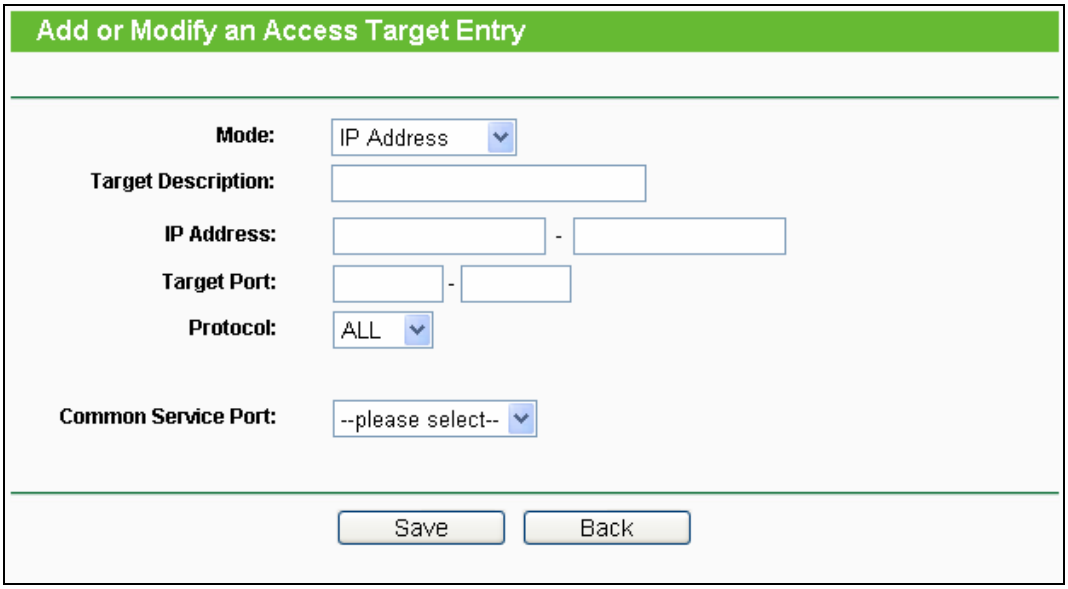


Figure 4-63 Add or Modify an Access Target Entry

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 4-64.

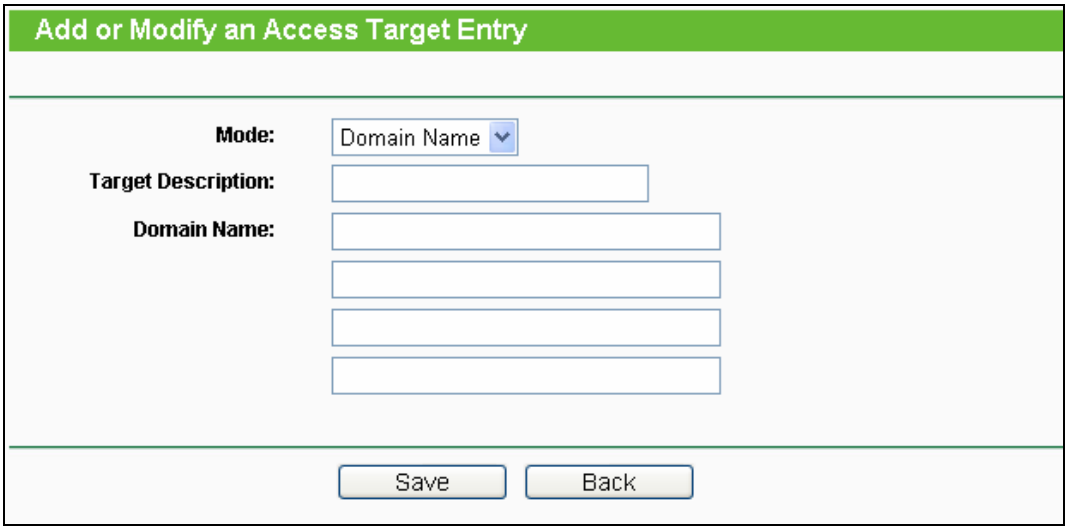


Figure 4-64 Add or Modify an Access Target Entry

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, google) in the blank. Any domain name with keywords in it (www.google.com, www.google.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.google.com** only, you should first follow the settings below:

1. Click **Add New…** button in Figure 4-62 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.google.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.google.com	Edit Delete

4.11.4 Schedule

Choose menu "**Access Control → Schedule**", and then you can view and set a Schedule list in the next screen as shown in Figure 4-65. The Schedule list is necessary for the Access Control Rule.

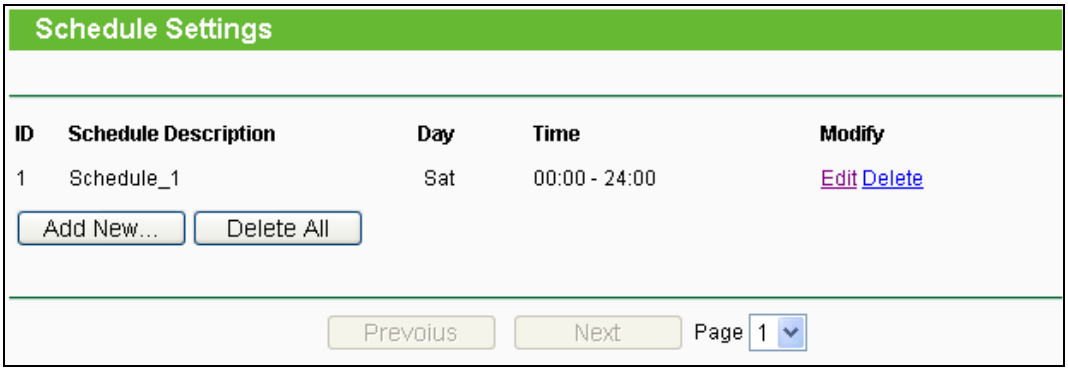


Figure 4-65 Schedule Settings

- **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 4-65 and the next screen will pop-up as shown in Figure 4-66.
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.

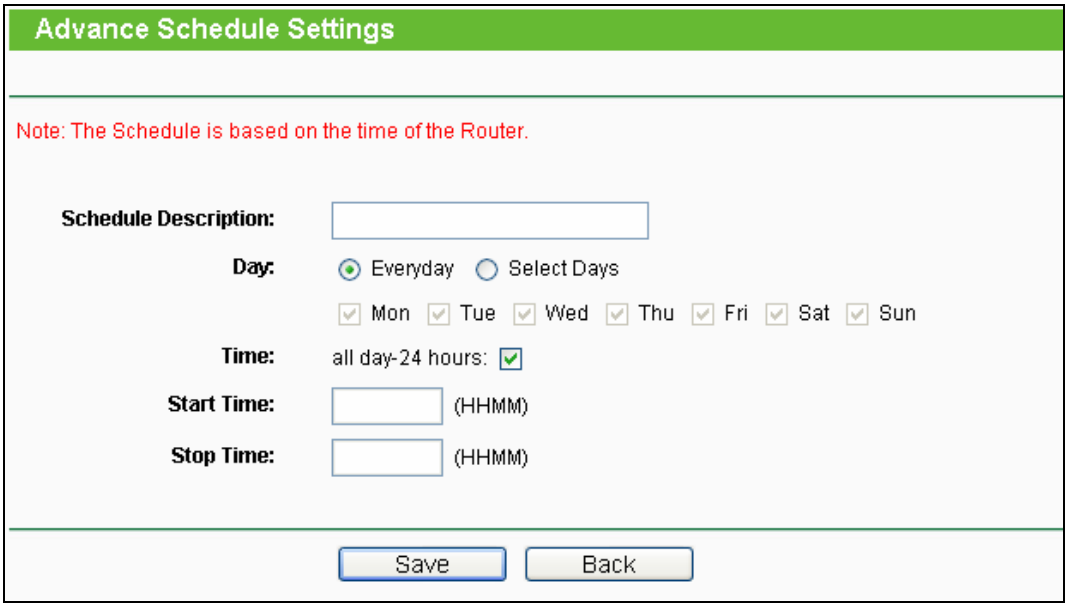


Figure 4-66 Advanced Schedule Settings

For example: If you desire to restrict the internet activities of host with MAC address 00-11-22-33-44-AA to access www.google.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 4-65 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

4.12 Static Routing

A static route is a pre-determined path that network information must travel to reach a specific host or network. To add or delete a route, work in the area under the Static Routing page.

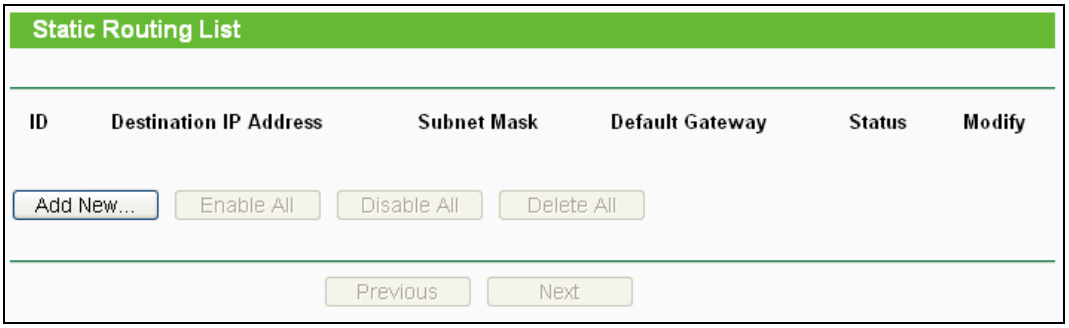


Figure 4-67 Static Routing List

To add static routing entries:

1. Click the **Add New** button.
2. Enter the following data:

- **Destination IP Address -** The **Destination IP Address** 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.
- **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** pull-down list.
4. Click the **Save** button to save it.

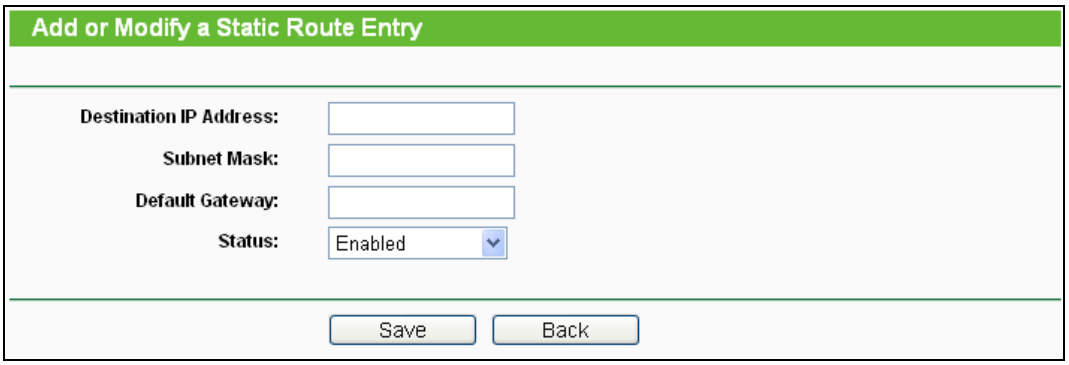


Figure 4-68 Add or Modify a Static Route Entry

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 **Disabled All** button to make all entries disabled.

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

4.13 IP QoS

You can configure the IP QoS function on this page.

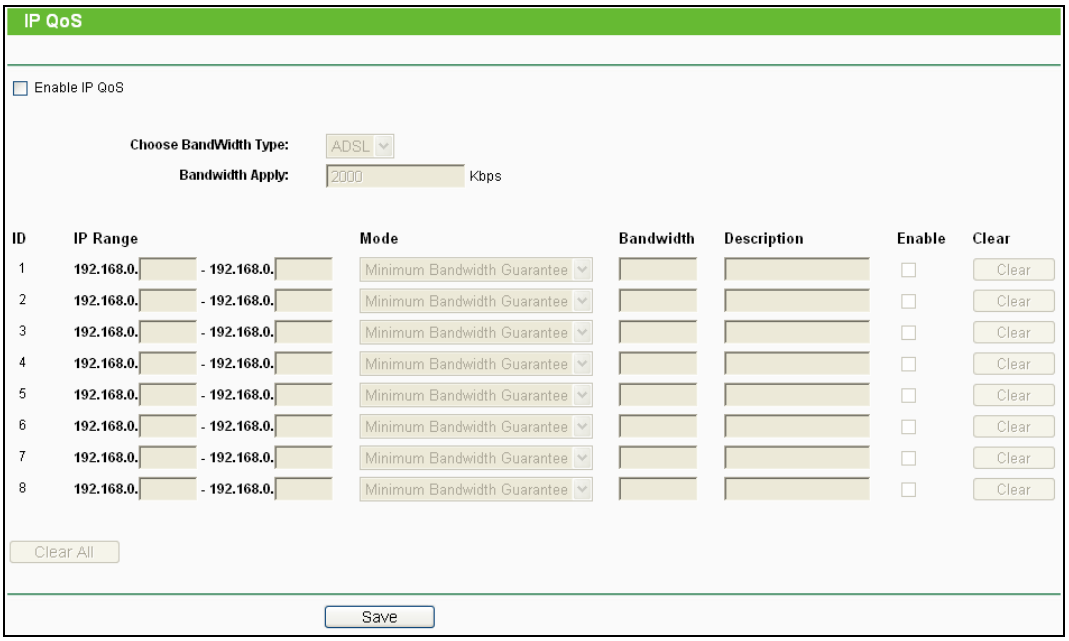


Figure 4-69 IP QoS

- **Enable IP QoS -** Enable or disable the function of IP QoS.
- **Choose BandWidth Type -** Select the network connection type from the drop-down list.
- **Bandwidth Apply -** The bandwidth you get. If you are not clear about that, please contact with your ISP for help.
- **IP Range -** IP range of this entry.
- **Mode -** There are two types of mode: Minimum Bandwidth Guarantee and Maximum Bandwidth Limit.
- **Bandwidth -** The bandwidth you supply to this entry.
- **Description -** The description for this entry.

Click **Enable** to enable this entry.

Click the **Clear** button to clear a single entry.

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

Click the **Save** button to save all configurations.

☞ **Note:**

1. The conversion relation of bandwidth: 1Mbps = 1000Kbps.
2. Please choose the Network Connection Type and set the bandwidth according to your Network. If you are not clear about that, please contact with your ISP for help.
3. If no IP QoS item is enabled, the Bandwidth Apply won't be effective.
4. IP address range for different entries could not have intersection with each other.
5. After the configurations, click the **Save** button for the change to take effect.

4.14 IP & MAC Binding

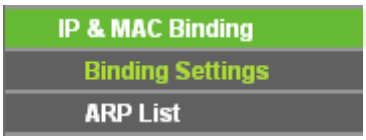


Figure 4-70 the IP & MAC Binding menu

There are two submenus under the IP &MAC Binding menu (shown in Figure 4-70): **Binding Settings** and **ARP List**. Click any of them, and you will be able to scan or configure the corresponding function. The detailed explanations for each submenu are provided below.

4.14.1 Binding Settings

This page displays the **IP & MAC Binding Setting** table; you can operate it in accord with your desire (shown in Figure 4-71).

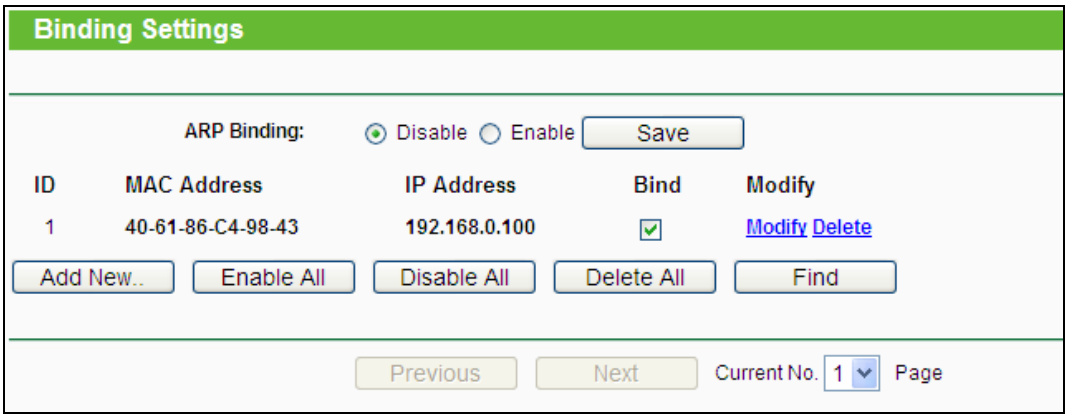


Figure 4-71 Binding Setting

- **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 4-72).

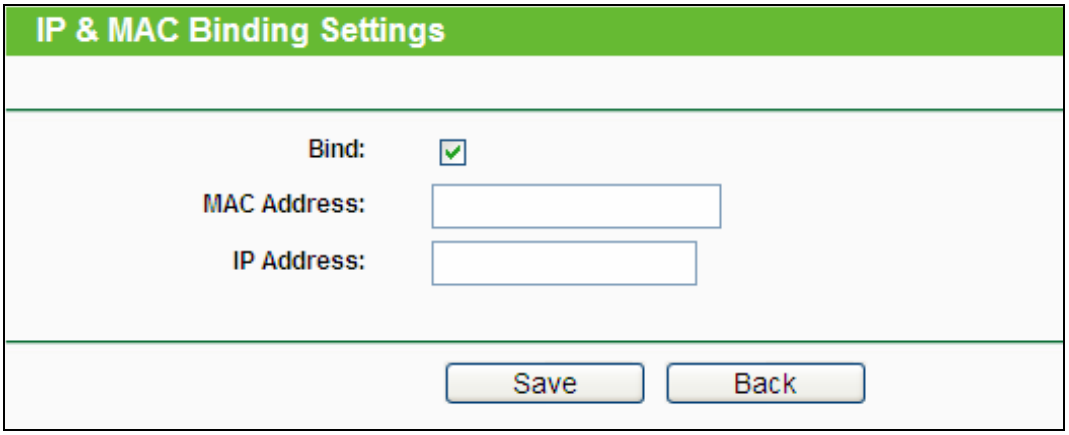


Figure 4-72 IP & MAC Binding Setting (Add & Modify)

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

1. Click the **Add New...** button as shown in Figure 4-71.
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 4-71.
2. Enter the MAC Address or IP Address.
3. Click the **Find** button in the page as shown in Figure 4-73.

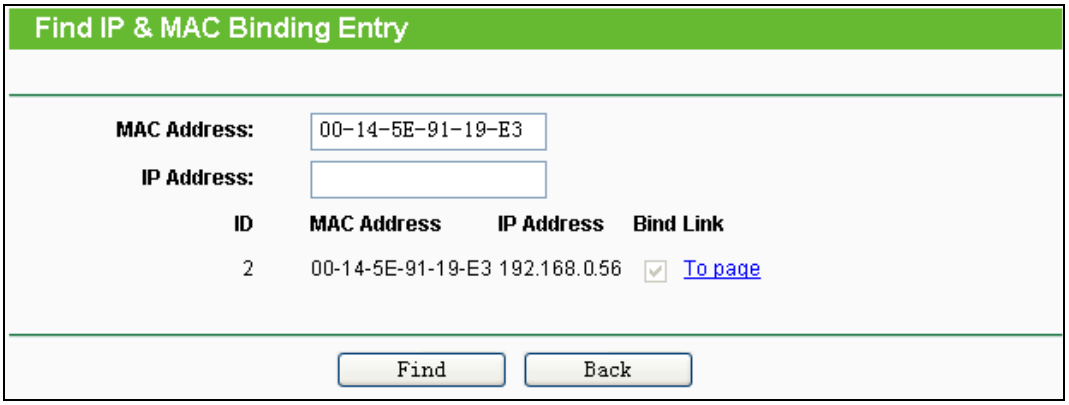


Figure 4-73 Find IP & MAC Binding Entry

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

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

4.14.2 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 4-74).

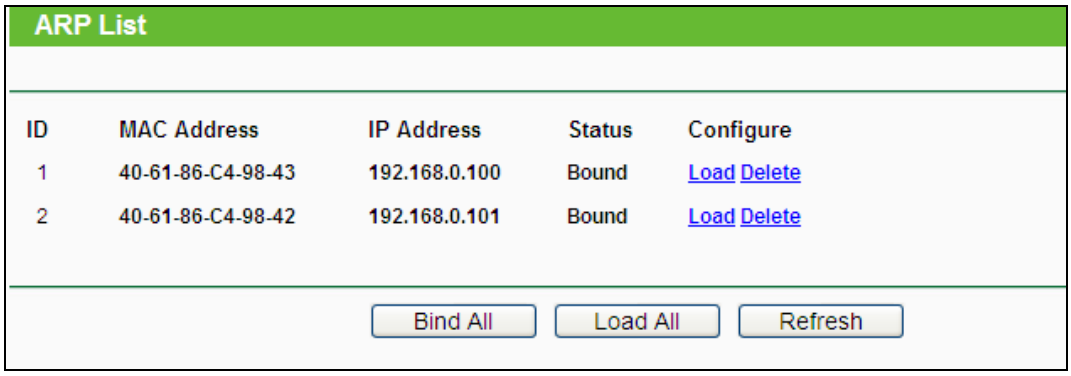


Figure 4-74 ARP List

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.

4.15 Dynamic DNS

The router offers a Dynamic Domain Name System (**DDNS**) feature. DDNS lets you assign a fixed host and domain name to a dynamic Internet IP Address. It is useful when you are hosting your own website, FTP server, or other server behind the router. Before using this feature, you need to sign up for DDNS service providers such as www.dyndns.org. The Dynamic DNS client service provider will give you a password or key.

To set up for DDNS, follow these instructions:

4.15.1 Comexe.cn DDNS

If your selected dynamic DNS **Service Provider** is www.comexe.cn, the page will appear as shown in Figure 4-75:

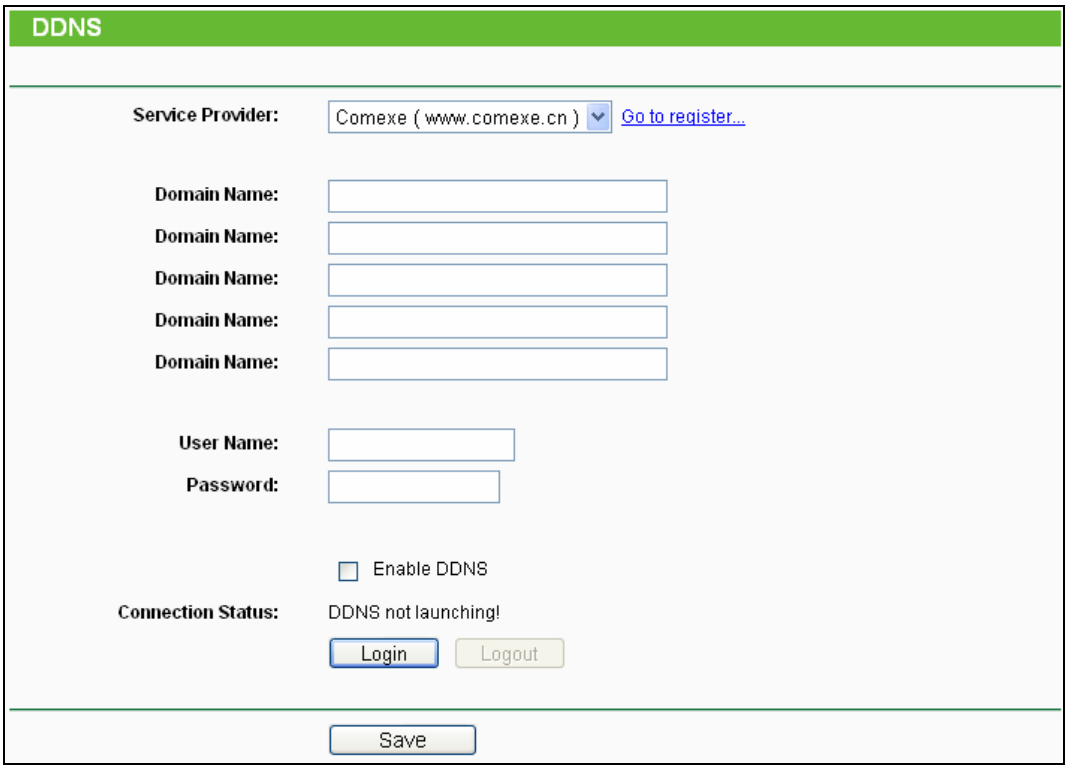


Figure 4-75 Comexe.cn DDNS Settings

To set up for DDNS, follow these instructions:

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

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

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

4.15.2 Dyndns.org DDNS

If your selected dynamic DNS Service Provider is www.dyndns.org, the page will appear as shown in Figure 4-76:

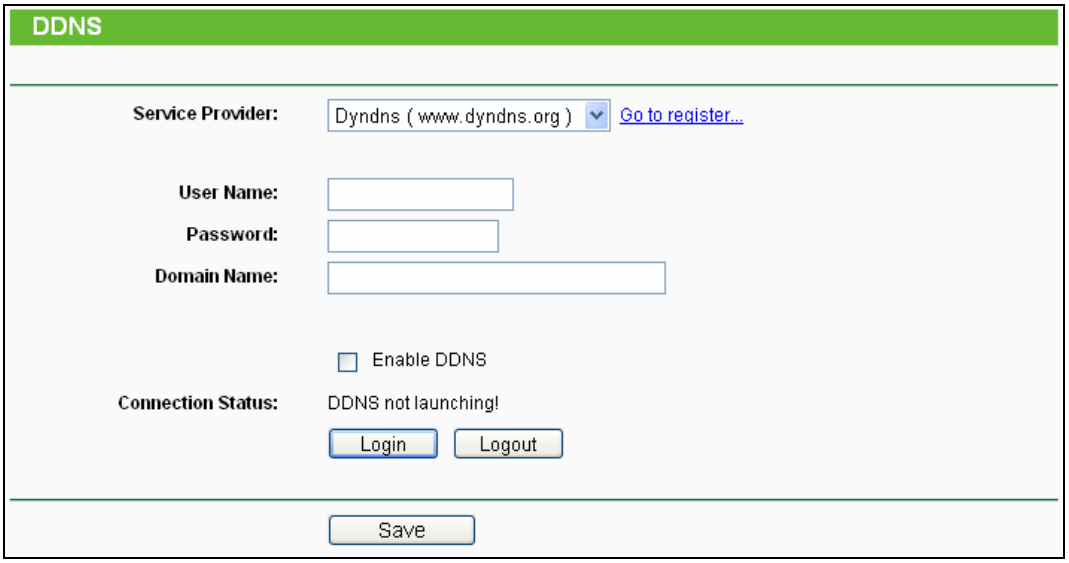


Figure 4-76 Dyndns.org DDNS Settings

To set up for DDNS, follow these instructions:

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

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

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

4.15.3 No-ip.com DDNS

If the dynamic DNS **Service Provider** you select is www.no-ip.com, the page will appear as shown in Figure 4-77:

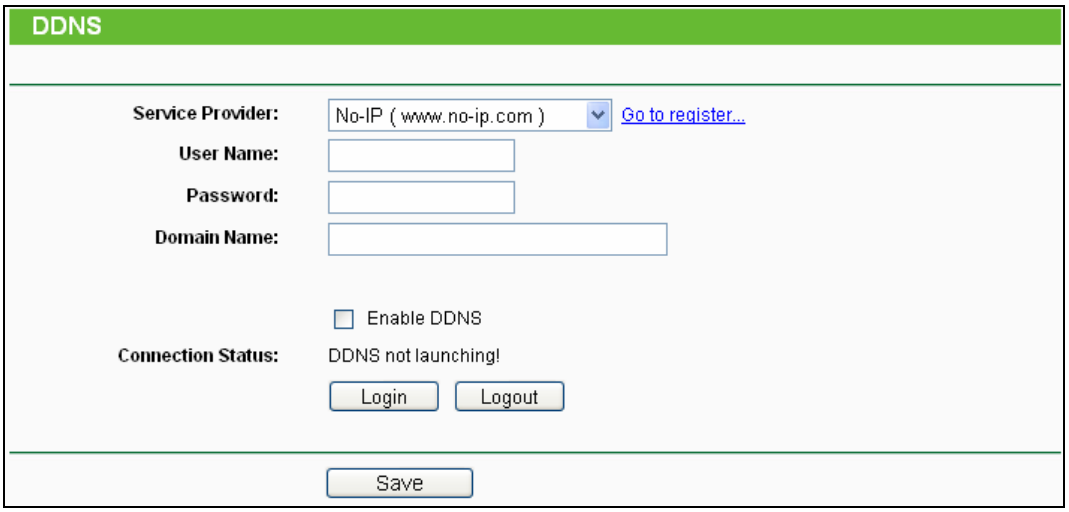


Figure 4-77 No-ip.com DDNS Settings

To set up for DDNS, follow these instructions:

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

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

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

4.16 System Tools

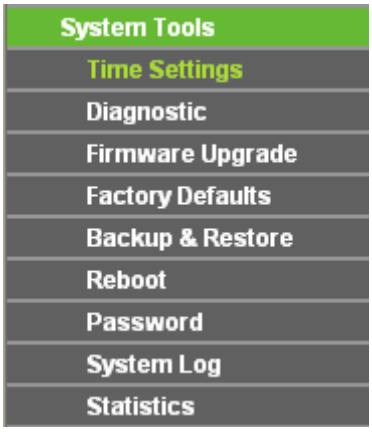


Figure 4-78 The System Tools menu

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.

4.16.1 Time Settings

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

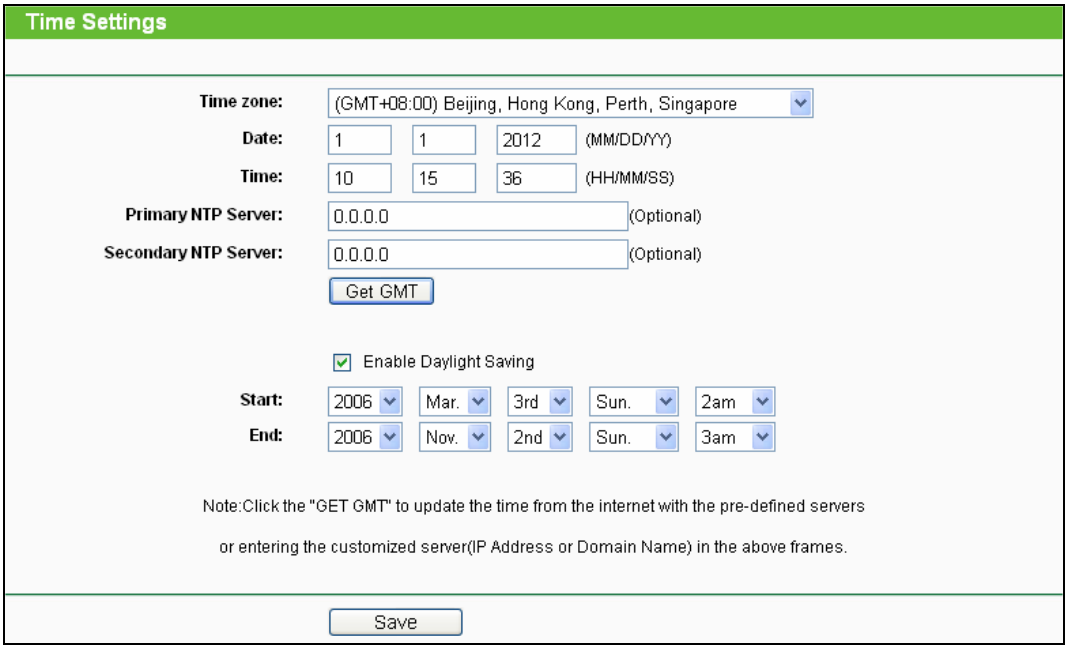


Figure 4-79 Time settings

- **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.
- **Primary NTP Server / Secondary NTP Server -** Enter the address or domain of the **Primary NTP Server** or **Secondary NTP Server**, 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.

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 I** or **NTP Server II**.
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 4-80 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.

4.16.2 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.

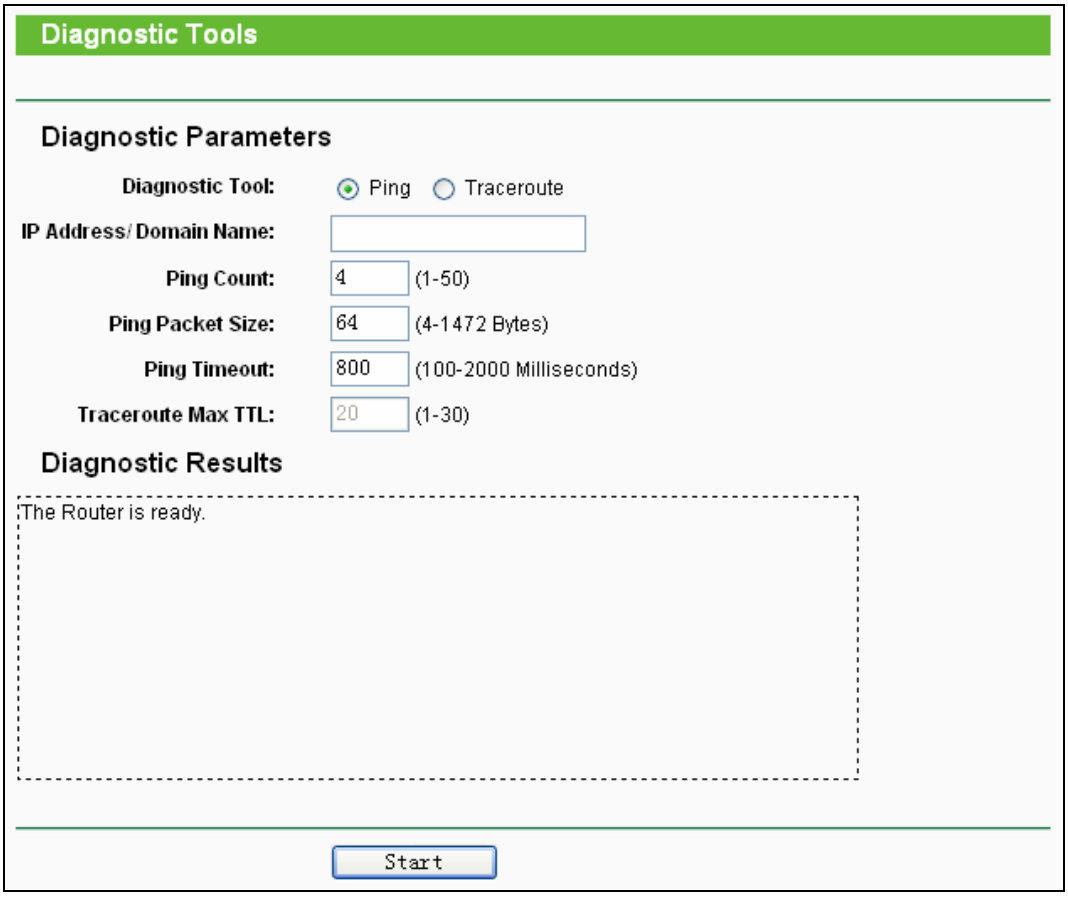


Figure 4-81 Diagnostic Tools

- **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.

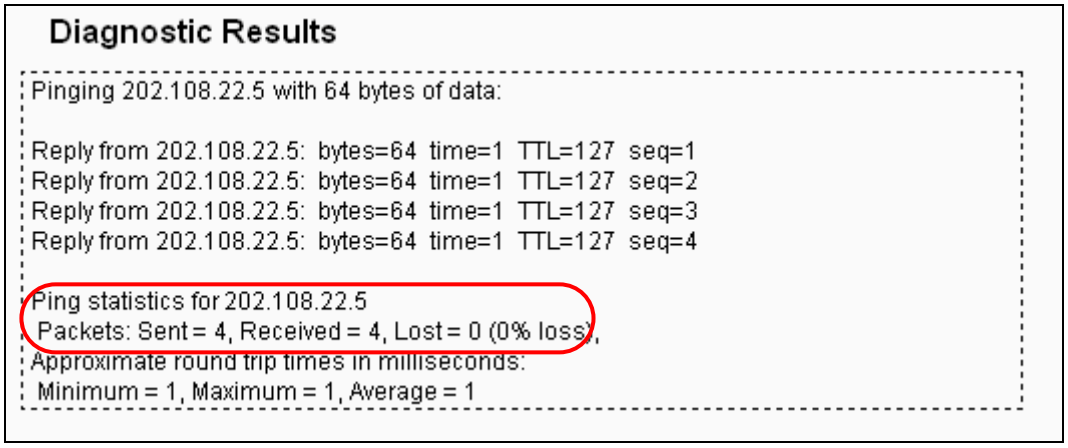


Figure 4-82 Diagnostic Results

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.

4.16.3 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.

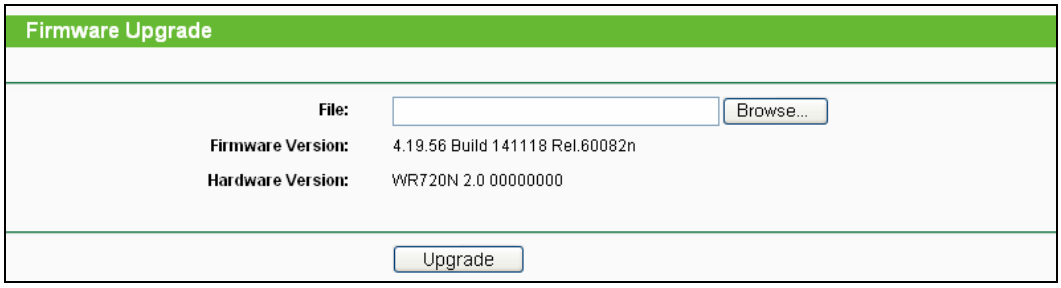


Figure 4-83 Firmware Upgrade

- **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 Name** blank.
3. Click the **Upgrade** button.
4. The Router will reboot while the upgrading has been finished.

☞ **Note:**

1) New firmware versions are posted at http://www.tp-link.com and can be downloaded for free. There is no need to upgrade the firmware unless the new firmware has a new feature you want to use. However, when experiencing problems caused by the Router rather than the configuration, you can try to upgrade the firmware.
2) When you upgrade the Router's firmware, you may lose its current configurations, so before upgrading the firmware please write down some of your customized settings to avoid losing important settings.
3) Do not turn off the Router or press the Reset button while the firmware is being upgraded. Loss of power during the upgrade could damage the Router.
4) The firmware version must correspond to the hardware.
5) The upgrade process takes a few moments and the Router restarts automatically when the upgrade is complete.

4.16.4 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.

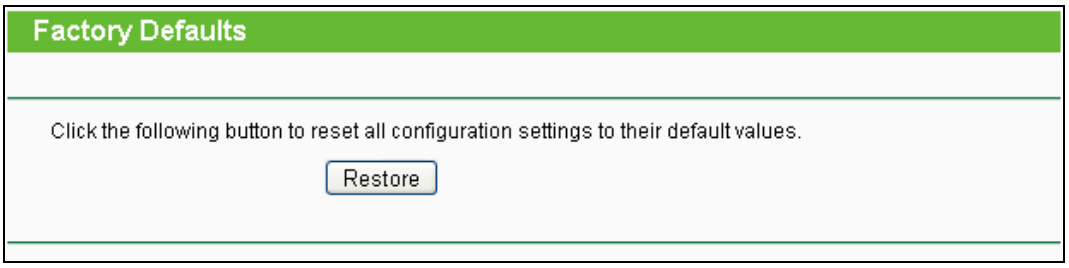


Figure 4-84 Restore Factory Default

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.

4.16.5 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 4-85.

Figure 4-85 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.

4.16.6 Reboot

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

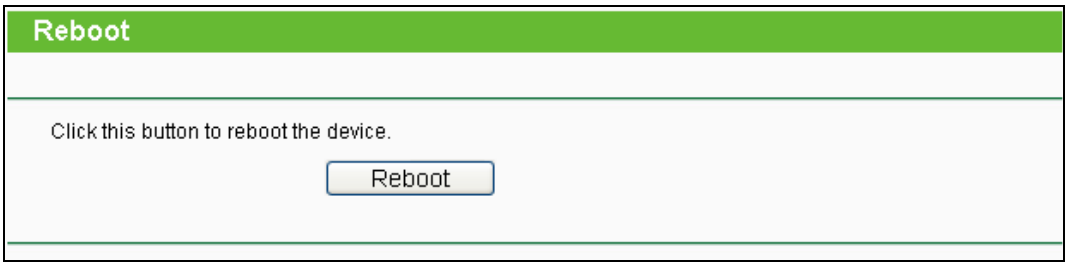


Figure 4-86 Reboot the Router

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 Wireless configurations.
- 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.

4.16.7 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 4-87.

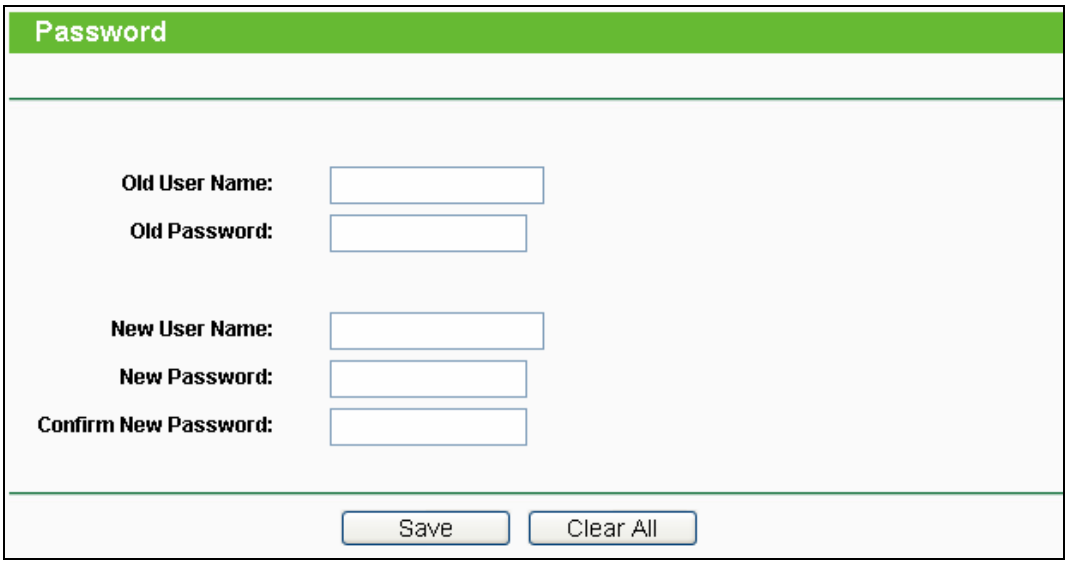


Figure 4-87 Password

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.

4.16.8 System Log

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

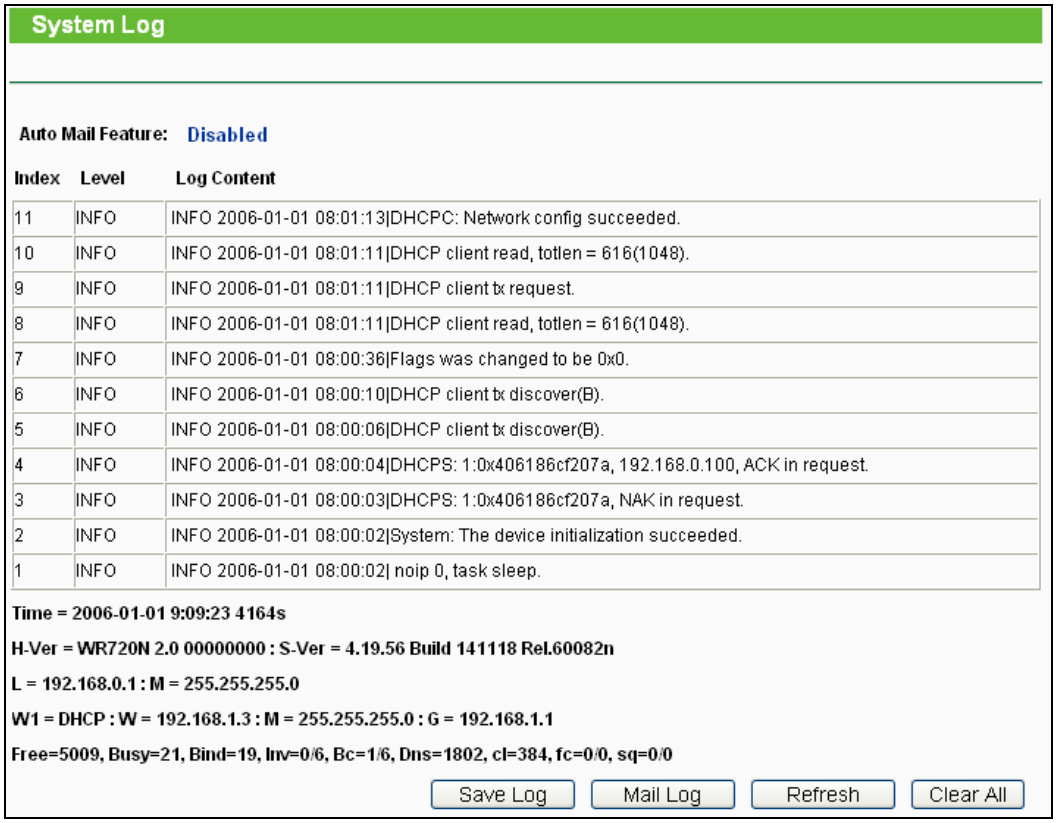


Figure 4-88 System Log

- **Auto Mail Feature -** Indicates whether auto mail feature is enabled or not.
- **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 4-89.

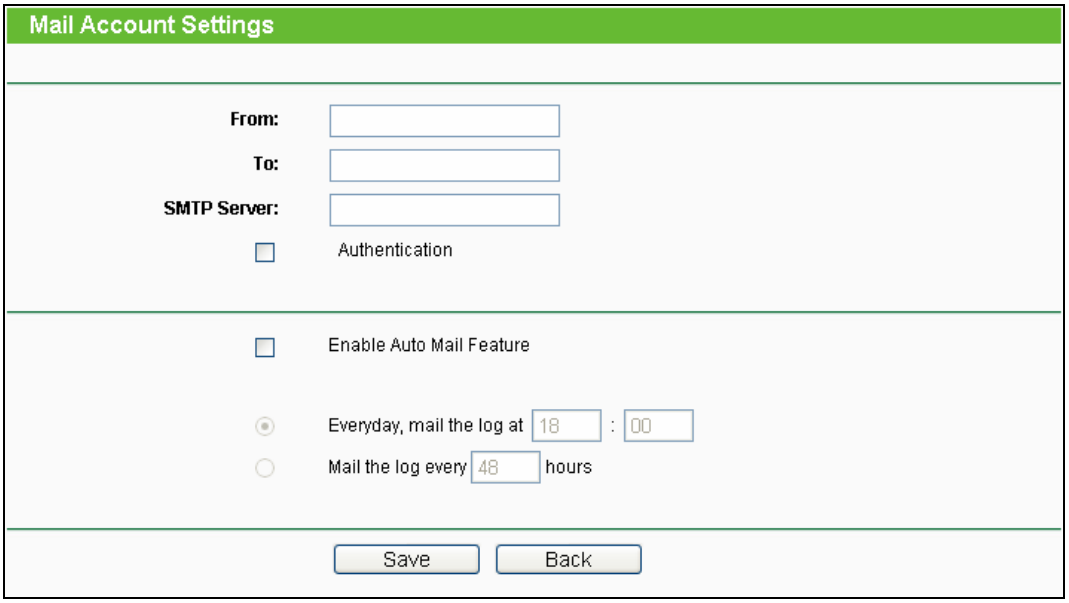


Figure 4-89 Mail Account Settings

- **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 excluded.
- **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 4-89.

Click **Save** to keep your settings.

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

- **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.

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

4.16.9 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.

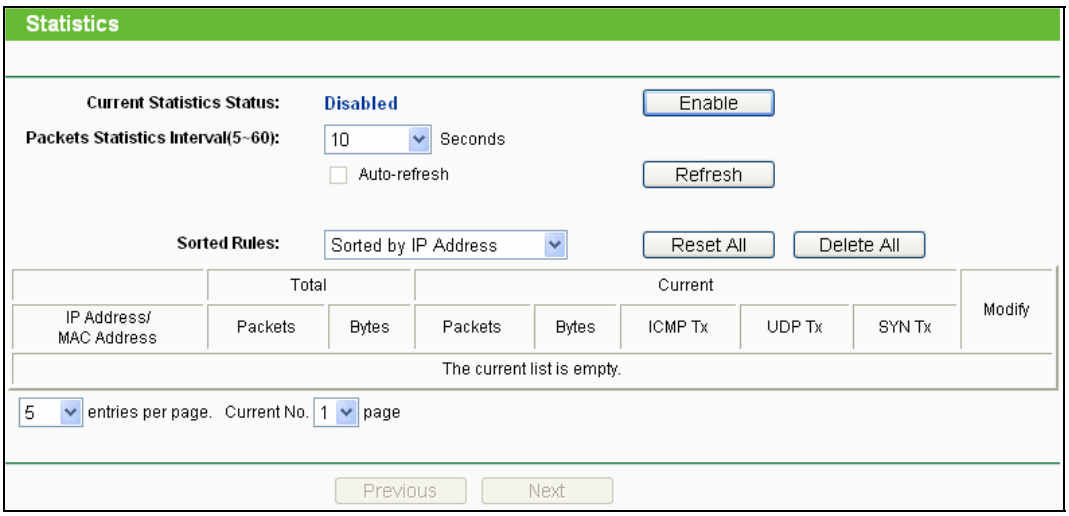


Figure 4-90 Statistics

- **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.

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”.

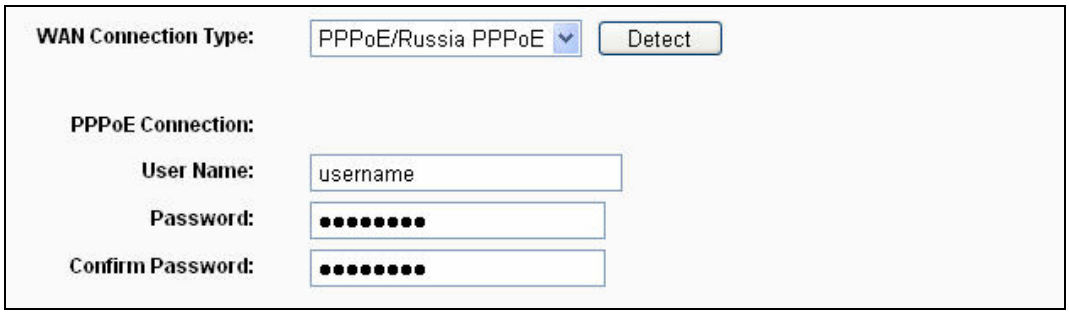


Figure A-1 PPPoE Connection Type

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.

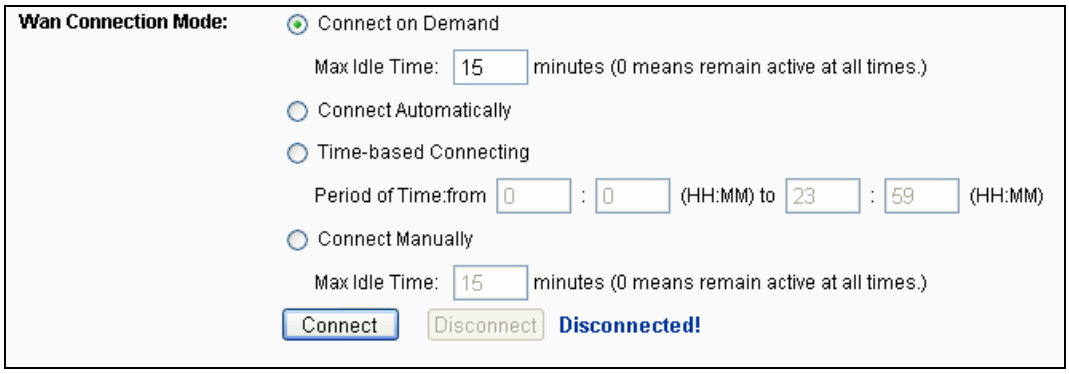


Figure A-2 PPPoE Connection Mode

☞ **Note:**

i. 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.

ii. 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.

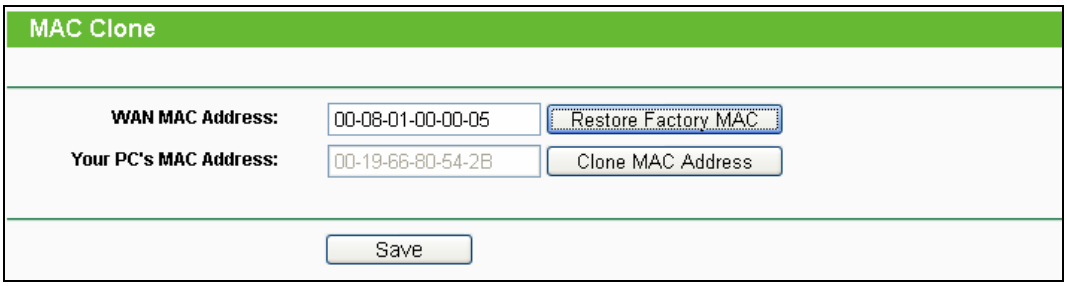


Figure A-3 MAC Clone

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**.

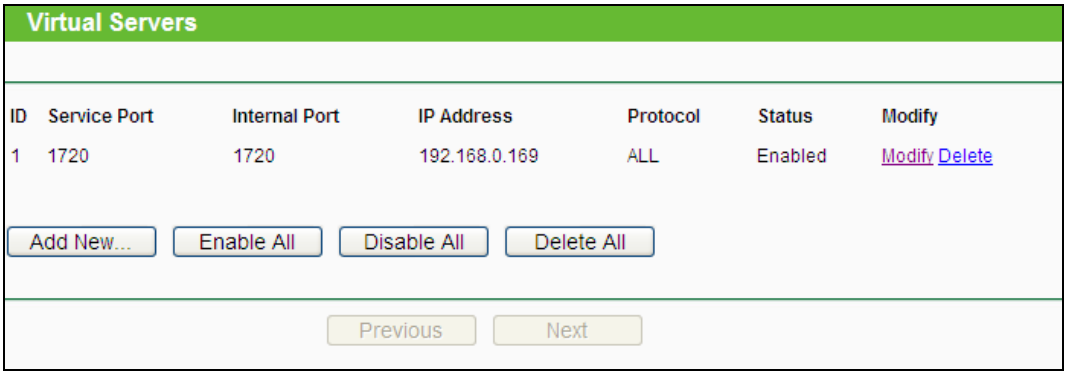


Figure A-4 Virtual Servers

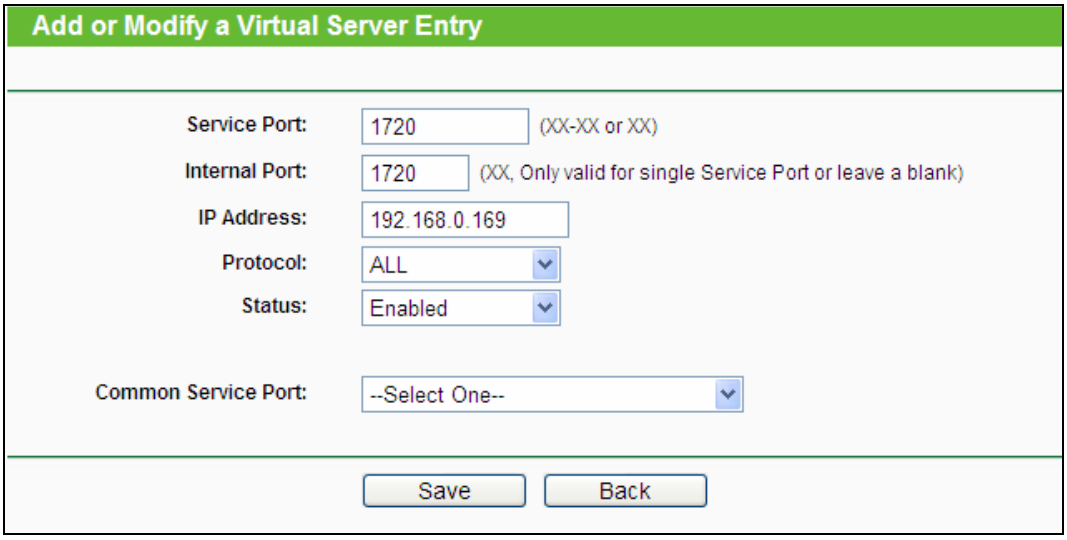


Figure A-5 Add or Modify a Virtual server Entry

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.

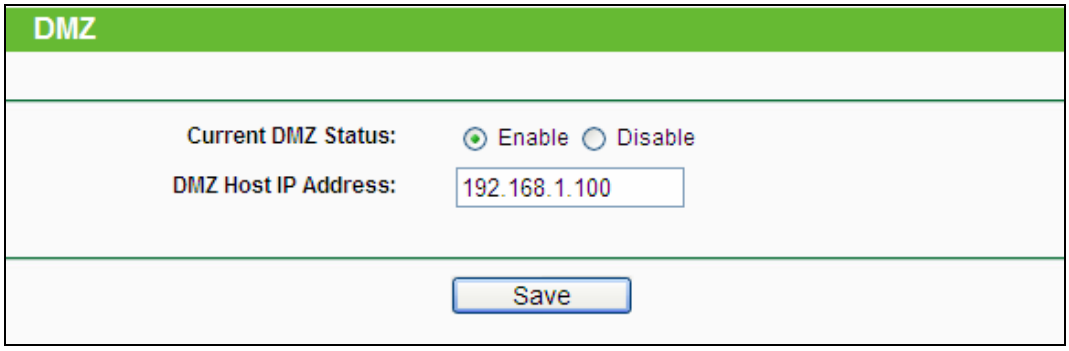


Figure A-6 DMZ

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.

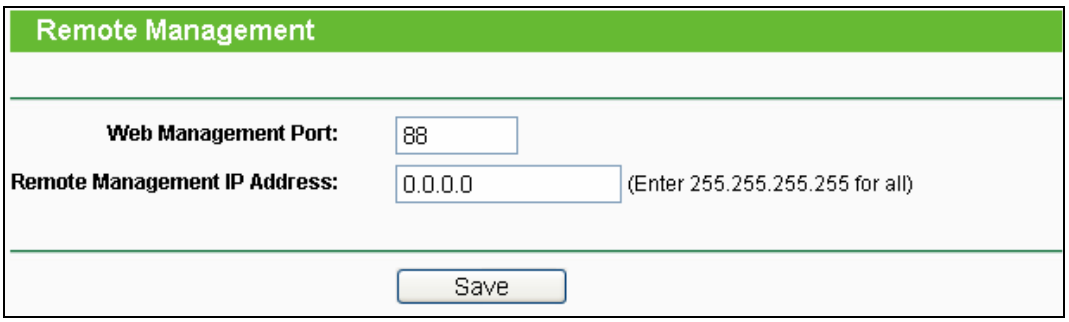


Figure A-7 Remote Management

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 192.168.1.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 192.168.0.169 for an example, remember to **Enable** and **Save**.

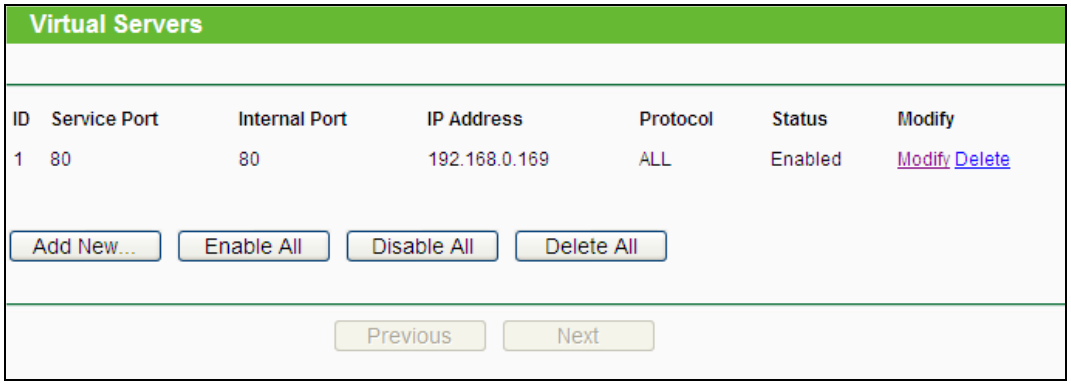


Figure A-8 Virtual Servers

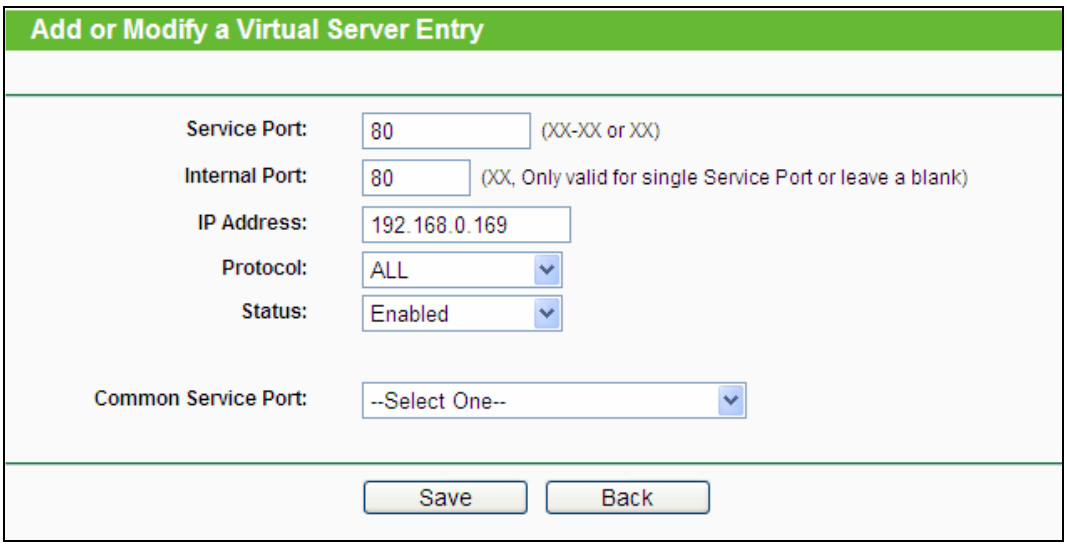


Figure A-9 Add or Modify a Virtual server Entry

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 XP. 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, point to **Settings**, and then click **Control Panel**.

2) Click the **Network and Internet Connections** icon, and then click on the **Network Connections** tab in the appearing window.

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

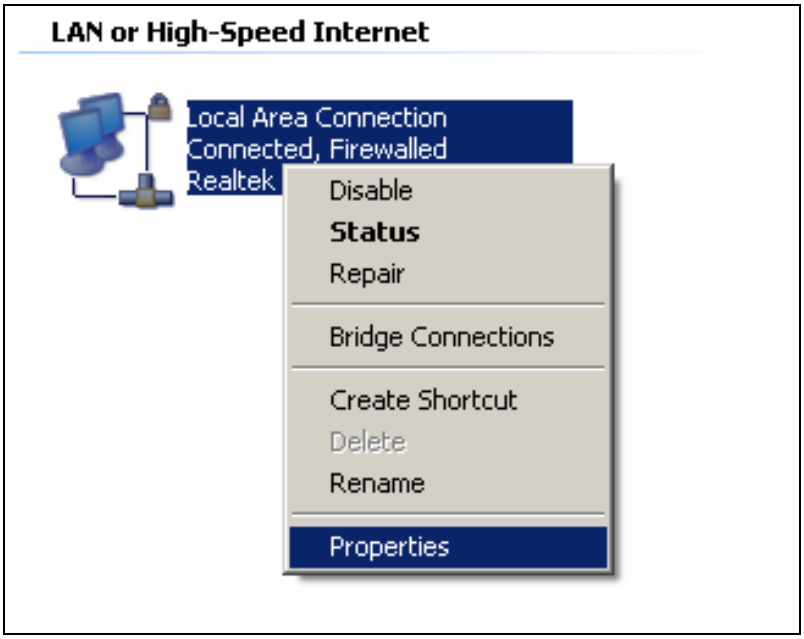


Figure B-1

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

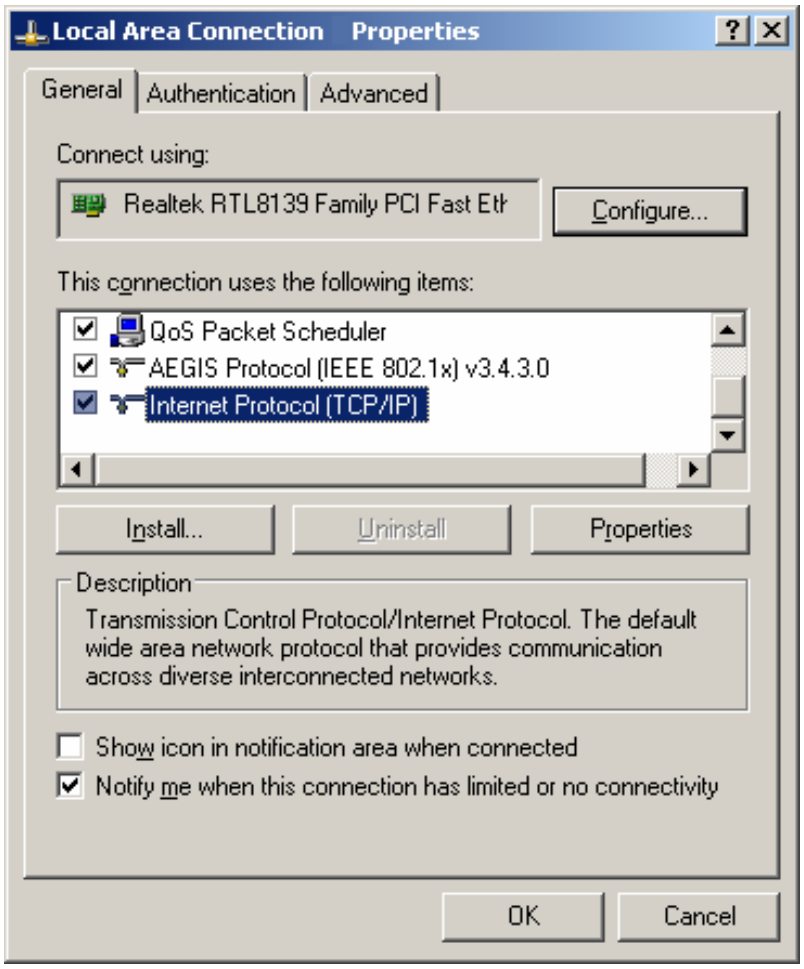


Figure B-2

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

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

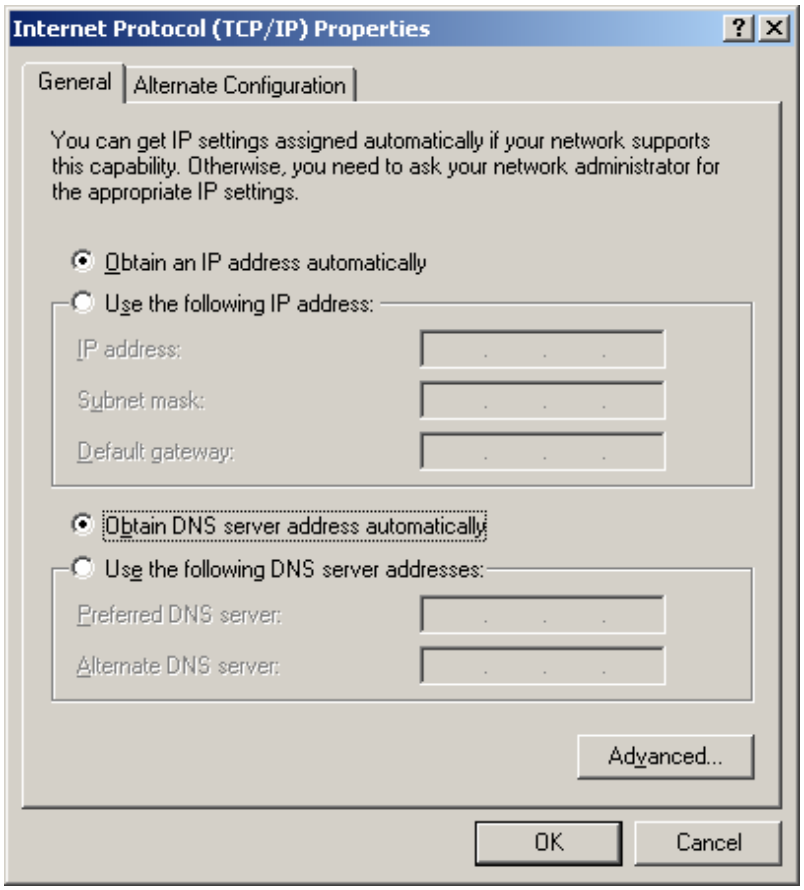


Figure B-3

Appendix C: Specifications

General	
Standards	IEEE 802.3, IEEE 802.3u, IEEE802.11n, IEEE802.11b, IEEE 802.11g
Protocols	TCP/IP, PPPoE, DHCP, ICMP, NAT, SNTP
Ports	One 10/100M Auto-Negotiation WAN RJ45 port, Two 10/100M Auto-Negotiation LAN RJ45 ports supporting Auto MDI/MDIX
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	PWR, SYS, WLAN, WAN, LAN, WPS
Safety & Emissions	FCC, CE
Wireless	
Frequency Band*	2.4~2.4835GHz
Radio Data Rate	11n：up to 150Mbps（Automatic） 11g：54/48/36/24/18/12/9/6M（Automatic） 11b：11/5.5/2/1M（Automatic）
Frequency Expansion	DSSS(Direct Sequence Spread Spectrum)
Modulation	DBPSK, DQPSK, CCK, OFDM, 16-QAM, 64-QAM
Security	WEP/WPA/WPA2/WPA2-PSK/WPA-PSK
Sensitivity @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
Environmental and Physical	
Temperature.	Operating : 0℃~40℃ (32℉~104℉)
	Storage: -40℃~70℃(-40℉~158℉)
Humidity	Operating: 10% - 90% RH, Non-condensing
	Storage: 5% - 95% 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.