TP-LINK®

User Guide

TL-WR802N
300Mbps Wireless N Nano Router

Rev: 1.0.2
1910011469
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http://www.tp-link.com
FCC STATEMENT

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

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

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

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

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

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

FCC RF Radiation Exposure Statement:

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

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

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.

RF Exposure Information

This device meets the EU requirements (1999/519/EC) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

The device complies with RF specifications when the device used at 20 cm from your body.

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:

<table>
<thead>
<tr>
<th>Country</th>
<th>Restriction</th>
<th>Reason/remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belarus</td>
<td>Not implemented</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>Implemented</td>
<td>This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund on Svalbard</td>
</tr>
<tr>
<td>Italy</td>
<td>Implemented</td>
<td>The public use is subject to general authorisation by the respective service provider</td>
</tr>
</tbody>
</table>
| Russian Federation    | Limited implementation | **1. SRD with FHSS modulation**
|                       |                        | 1.1. Maximum 2.5 mW e.i.r.p.                                                                                                               |
|                       |                        | 1.2. Maximum 100 mW e.i.r.p. Permitted for use SRD for outdoor applications without restriction on installation height only for purposes of gathering telemetry information for automated monitoring and resources accounting systems. Permitted to use SRD for other purposes for outdoor applications only when the installation height is not exceeding 10 m above the ground surface. 1.3. Maximum 100 mW e.i.r.p. Indoor applications |
|                       |                        | **2. SRD with DSSS and other than FHSS wideband modulation**
|                       |                        | 2.1. Maximum mean e.i.r.p. density is 2 mW/MHz. Maximum 100 mW e.i.r.p.                                                                      |
|                       |                        | 2.2. Maximum mean e.i.r.p. density is 20 mW/MHz. Maximum 100 mW e.i.r.p. It is permitted to use SRD for outdoor applications                     |
applications only for purposes of gathering telemetry information for automated monitoring and resources accounting systems or security systems.

2.3. Maximum mean e.i.r.p. density is 10 mW/MHz. Maximum 100 mW e.i.r.p. Indoor applications

<table>
<thead>
<tr>
<th>Country</th>
<th>Implementation</th>
<th>e.i.r.p. ≤100 mW with built-in antenna with amplification factor up to 6 dBi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine</td>
<td>Limited</td>
<td></td>
</tr>
</tbody>
</table>

**ATTENTION:** Due to EU law, the country settings must be identical to the country where the device is operating (important due to non-harmonised frequencies in the EU).

**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.

Le présent appareil est conforme aux CNR d’Industrie Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes :

1) l’appareil ne doit pas produire de brouillage;

2) l’utilisateur de l’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

**Radiation Exposure Statement:**

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

**Déclaration d'exposition aux radiations:**

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

**Industry Canada Statement**

CAN ICES-3 (B)/NMB-3(B)
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。前項合法通行，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行或工業、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。

产品经理

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

EAC
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.

- Adapter shall be installed near the equipment and shall be easily accessible.

- The plug considered as disconnect device of adapter.

- Use only power supplies which are provided by manufacturer and in the original packing of this product.

This product can be used in the following countries:

<table>
<thead>
<tr>
<th>AT</th>
<th>BG</th>
<th>BY</th>
<th>CA</th>
<th>CZ</th>
<th>DE</th>
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<td>ES</td>
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<td>LT</td>
<td>LV</td>
<td>MT</td>
<td>NL</td>
<td>NO</td>
<td>PL</td>
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<td>RU</td>
<td>SE</td>
<td>SG</td>
<td>SK</td>
<td>TR</td>
<td>UA</td>
<td>US</td>
<td></td>
</tr>
</tbody>
</table>
DECLARATION OF CONFORMITY

For the following equipment:
Product Description: 300Mbps Wireless N Nano Router
Model No.: TL-WR802N
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 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 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: October 8, 2015
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Package Contents

The following items should be found in your package:

- One TL-WR802N 300Mbps Wireless N Nano Router
- Quick Installation Guide
- One RJ-45 Ethernet Cable
- One USB Cable

☞ Note:

Make sure that the package contains the above items. If any of the listed items is damaged or missing, please contact your distributor.
Chapter 1. Introduction

1.1 Overview of the Router

Small enough to fit in the average pocket, the TL-WR802N 300Mbps Wireless N Nano Router is uniquely suited to provide robust wireless networking to travelers, students, or anyone else for work or play.

**Incredible Speed**

TL-WR802N supports the newest 802.11n standards, and provides backward compatibility with older 802.11b/g standards as well. The up-to-300Mbps wireless speed makes it ideal for handling multiple data streams at the same time, which ensures your network stable and smooth.

**Multiple Operation Modes**

The TL-WR802N 300Mbps Wireless N Nano Router supports five operation modes. Wireless Router mode creates an instant private wireless network and share Internet to multiple Wi-Fi devices, which is suitable for most hotel and home network. Access Point mode creates a wireless network for Wi-Fi devices. The wireless devices are exposed to the wired network. Range Extender mode extends your home wireless range by copying the same wireless name and password. Client mode works as a wireless adapter for any Ethernet-enabled devices, such as Smart TV, Game Console and PC. Hotspot Router mode accesses the Internet wirelessly in areas with no wired ISP infrastructure.

**Reliable Security Protections**

With multiple protection measures, including SSID broadcast control and wireless LAN 64/128/152-bit WEP encryption, WiFi protected Access (WPA2-PSK, WPA-PSK), as well as advanced Firewall protections, the TL-WR802N 300Mbps Wireless N Nano Router provides complete data privacy.

**Flexible Access Control**

The TL-WR802N 300Mbps Wireless N Nano Router supports Virtual Server and DMZ host for Port Triggering, and then the network administrators can manage and monitor the network in real time with the remote management function.

Since the 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-WR802N mentioned in this guide stands for TL-WR802N 300Mbps Wireless N Nano Router without any explanation.

Parameters provided in the pictures are just references for setting up the product, which may differ from the actual situation.

You can set the parameters according to your demand.

1.3 Main Features

- Complies with IEEE 802.11n/g/b
- Wireless speed up to 300Mbps
- Powered by external power adapter or USB connection to computer
- Travel size design, ideal for home or travel use
- Compact and portable, powerful wireless signal as well
- Perfectly compatible with almost all the 2.4GHz Wi-Fi devices
- Supports AP, Router, Range Extender, Bridge, and Client modes
- Supports WEP, WPA/WPA2, WPA-PSK/WPA2-PSK encryptions

1.4 Panel Layout

Figure 1-1 TL-WR802N sketch
LED

<table>
<thead>
<tr>
<th>Status</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>The router is connected to the root Wi-Fi network or Internet.</td>
</tr>
<tr>
<td>Blinking</td>
<td>Blinking steadily: The router is disconnected from the root Wi-Fi network or Internet. Blinking irregularly: The router is booting or updating firmware.</td>
</tr>
</tbody>
</table>

Table 1-1 The LED Description

- **LAN/WAN:** Functions as the LAN port in Hotspot Router, Range Extender, and Access Point mode. Functions as the WAN port in Wireless Router mode. As LAN, it connects the Router to the local PC; as WAN, it enables you connect the DSL/cable Modem, or Ethernet.

- **Reset:** It is used to reset the Router to its factory defaults. With the Router powered on, use a pin to press and hold the **Reset** button (about 5 seconds) until the LED becomes quick-flash from slow-flash. And then release the button and wait the Router to reboot to its factory default settings.
Chapter 2. Connecting the Router

2.1 System Requirements

- Each PC in the LAN needs a working Ethernet Adapter
- TCP/IP protocol must be installed on each PC
- Web browser, such as Microsoft Internet Explorer 5.0 or later, Mozilla Firefox, Apple Safari
- If the device is configured to Wireless Router/Access Point mode, you also need 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.)

2.2 Installation Environment Requirements

- Place the Router in a well-ventilated place far from any heater or heating vent
- Place the Router in a location where it can be connected to the various devices as well as to a power source
- 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, please make sure your broadband service provided by your ISP is available. If there is any problem, please contact with your ISP.

Please choose the operation mode you need and carry out the corresponding steps. There are five operation modes supported by this router: **Wireless Router, Hotspot Router, Access Point, Range Extender** and **Client**.

2.3.1 Wireless Router Mode

As a wireless router, TL-WR802N enables multi-user to share a wired (Ethernet) connection to wireless devices, such as in a hotel room, small office, etc.

The default mode of TL-WR802N is Wireless Router. On this mode, the wired port LAN/WAN works as WAN, it can be connected to DSL Modem or directly connected to a wired network with an Ethernet cable. Devices could connect to the router wirelessly.
1. Connect the LAN/WAN port of TL-WR802N to the wired Internet.
2. Connect TL-WR802N to the power.

2.3.2 Hotspot Router Mode

In hotspot router mode, TL-WR802N enables user to create your personal Wi-Fi hotspot from a public Wi-Fi network such as in a hotel room, trade show, etc.

On this mode, the LAN port devices share the same IP from public Wi-Fi through Wireless port. While connecting to public Wi-Fi, the Wireless port works as a WAN port. The LAN/WAN port acts as a LAN port.
2.3.3 Access Point Mode

As the supplement of wired LAN, TL-WR802N enables the wired LAN to connect to the Internet wirelessly.

Connect TL-WR802N to the power and connect the Ethernet cable correctly, you can surf the Internet by connecting your PC(s) to the router wirelessly.

On this mode, the wired port LAN/WAN works as LAN. The Pre-encryption function is opened by default and the default password is the last unique eight numbers of each Router’s MAC address.

![Figure 2-3 Hardware Installation of the TL-WR802N in AP Mode](image)

1. Connect the LAN/WAN port of TL-WR802N to the wired network port with an Ethernet cable.
2. Connect TL-WR802N to the power.

2.3.4 Range Extender Mode

TL-WR802N is used to extend the range of wireless signal of the existing AP or wireless router. On this mode, the wired port LAN/WAN works as LAN. Computer could connect to the device by either wired or wireless way.
Connect TL-WR802N to the power.

### 2.3.5 Client Mode

TL-WR802N is used as a wireless network card to connect the wireless network signal or wireless router.

On this mode, the wired port LAN/WAN works as LAN.

1. Connect the PC to the LAN/WAN port of TL-WR802N router with an Ethernet cable.
2. Connect TL-WR802N to the power.
Chapter 3. Quick Installation Guide

This chapter will show you how to configure the basic functions of your TL-WR802N 300Mbps Wireless N Nano Router using Quick Setup Wizard within minutes.

3.1 TCP/IP Configuration

The default IP addresses of the TL-WR802N have two: 192.168.0.254 for AP mode, Range Extender mode and Client mode, and 192.168.0.1 for Wireless Router mode and Hotspot Router mode. And the default Subnet Mask is 255.255.255.0. These values can be changed as you desire. In this guide, we use all the default values for description. Here we take “192.168.0.254” as an example.

Connect the local PC to the LAN port of the Router. And then you can configure the IP address for your PC as the following steps:

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.

Then connect to the Router through wireless connection following the steps below:

1) Click the icon \[ \text{Connect} \] at the bottom of your desktop. Click refresh button, and then select the default SSID of the Router. Click Connect.
2) Enter the Security key. Click OK.

3) If you can see Connected after the default SSID, you’ve successfully connected to the wireless network.

Note:
1. The default SSID and Password of your Router are on the Wi-Fi Info Card. Both are case-sensitive.
2. The pre-encryption function is enabled by default and the default Network key/Security key is the Password on the label.

Now, you can run the Ping command in the command prompt to verify the network connection between your PC and the Router.

Open a command prompt, and type ping 192.168.0.254, 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](image)

- If the result displayed is similar to the Figure 3-2, it means the connection between your PC and the Router has failed.
Please check the connection following these steps:

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

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

☞ Note:
If the Router’s IP address is 192.168.0.254, your PC’s IP address must be within the range of 192.168.0.1 ~ 192.168.0.253.

3.2 Quick Installation Guide

With a Web-based utility, it is easy to configure and manage the TL-WR802N. The Web-based utility can be used on any Windows, Macintosh or UNIX OS with a Web browser, such as Microsoft Internet Explorer, Mozilla Firefox or Apple Safari.

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

After a moment, a login window will appear, similar to the Figure 3-3. Enter admin for the User Name and Password, both in lower case letters. Then click the Login button or press the Enter key.
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 a successful login, you can click the Quick Setup menu to quickly configure your Router.

3. Click Next in Figure 3-4, and then Working Mode page will appear, shown in Figure 3-5.
You can configure your device quickly by the following steps in different modes.

### 3.2.1 Wireless Router Mode

When you choose Wireless Router on Operation Mode page in Figure 3-5, take the following steps:

1. Click Next in Figure 3-5, and then WAN Connection Type page will appear as shown in Figure 3-6.

The Router supports five popular ways Dynamic IP, Static IP, PPPoE/Russian PPPoE, L2TP/Russian L2TP and PPTP/Russian PPTP to connect to the Internet. To make sure the connection type your ISP provides, please refer to the ISP. Make sure the cable is securely plugged into the WAN port before detection.
- Auto Detect - If you don't know the connection type your ISP provides, use this option to allow the Quick Setup to search your Internet connection for servers and protocols and determine your ISP configuration.

- Dynamic IP - Your ISP uses a DHCP service to assign your Router an IP address for connecting to the Internet. When the Router connects to a DHCP server, or the ISP supplies you with DHCP connection, please choose this type. If you choose this type of connection, you can click Next and proceed to Figure 3-12.

![Figure 3-7 Quick Setup – MAC Clone](image)

- Static IP - This type of connection uses a permanent, fixed (static) IP address that your ISP assigned. In this type, you should fill in the IP address, Subnet Mask, Default Gateway, and DNS IP address manually, which are specified by your ISP. Then click Next and proceed to Figure 3-12.

![Figure 3-8 Quick Setup - Static IP](image)

- PPPoE/Russian PPPoE - For this connection, you will need your account name and password from your ISP.
If you have applied ADSL to realize Dial-up service, you should choose this type. Under this condition, you should fill in both the User Name and Password that the ISP supplied. Please note that these fields are case-sensitive.

**Quick Setup - PPPoE**

- **L2TP/Russian L2TP** - For this connection, you will need your account name and password from your ISP.

  If you have applied ADSL to realize Dial-up service, you should choose this type. Under this condition, you should fill in both the User Name and Password that the ISP supplied. Please note that these fields are case-sensitive.

**Quick Setup - L2TP**

- **PPTP/Russian PPTP** - For this connection, you will need your account name and password from your ISP.

  If you have applied ADSL to realize Dial-up service, you should choose this type. Under this condition, you should fill in both the User Name and Password that the ISP supplied. Please note that these fields are case-sensitive.
2. Then, the **Wireless** page will appear as shown in Figure 3-12. Set the wireless parameters. It is recommended that you rename an SSID, choose a Security Type and enter a Password. Then click **Next**.

| Wireless Radio | Enable |
| Wireless Network Name | TP-LINK_795E (Also called the SSID) |
| Region | United States |
| Warning | Ensure you select a correct country to conform local law. Incorrect settings may cause interference. |
| Wireless Security | Disable Security |
| Wireless Network Name | WPA-PSK/WPA2-PSK |
| Wireless Password | 12345670 |
| (You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 0 and 64.) |
| No Change | (use the current security settings.) |
| More Advanced Wireless Settings | |

**Figure 3-12 Quick Setup - Wireless**

- **Wireless Radio** - Enable or disable the wireless radio choosing from the pull-down list.
- **Wireless Network Name** - Enter a string of up to 32 characters. The same name of SSID (Service Set Identification) must be assigned to all wireless devices in your network. The default SSID is set to be TP-LINK_XXXX (XXXX indicates the last unique four numbers of each Router’s MAC address). But it is recommended strongly that you
change your network's name (SSID) to a different value. This value is case-sensitive. For example, TEST is NOT the same as test.

- **Region** - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

- **Wireless Security** - You can configure the security settings of your wireless network.
  - **Disable Security** - The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect the Router without encryption.
  - **WPA-PSK/WPA2-PSK** - Input the password of your broadcast SSID.
  - **No Change** - If you chose this option, wireless security configuration will not change.

3. The **Review Setting** page is shown as Figure 3-13. Click the **Reboot** button to make your wireless configuration take effect and finish the **Quick Setup**.

![Figure 3-13 Quick Setup – Review Setting](image-url)
3.2.2 Hotspot Router Mode

When you choose **Hotspot Router Mode** on **Working Mode** page in Figure 3-5, take the following steps:

1. Click **Next**, and then **WAN Connection Type** page will appear as shown in Figure 3-14.

   ![Quick Setup - WAN Connection Type](image)

   Figure 3-14 Quick Setup – WAN Connection Type

   In most case, select **Dynamic IP**.

   - **Dynamic IP** - Your ISP uses a DHCP service to assign your Router an IP address for connecting to the Internet. When the Router connects to a DHCP server, or the ISP supplies you with DHCP connection, please choose this type.

2. The router will scan for the wireless network automatically, and then AP List page will appear as shown in Figure 3-15. Find the SSID of the Access Point you want to access, and click **Next**.
3. You can configure the basic settings for the wireless network on this page.
Figure 3-16  Quick Setup - Static IP

- **SSID** - The SSID of the AP your router is going to connect to as a client.
- **BSSID** - The BSSID of the AP your router is going to connect to as a client.
- **Key type** – The Key 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** - 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.
- **Local SSID** - Enter a value of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your network.
- **Wireless Security Mode** - You can configure the security settings of your wireless network.
- **Wireless Password** - Input the password of your Local SSID.

4. The **Review Setting** page is shown as Figure 3-17. Click the **Reboot** button to make your wireless configuration take effect and finish the **Quick Setup**.
Congratulations! This device is now connecting you to the Internet. For detailed settings, please click other menus if necessary.

Changing working mode configuration will not take effect until this device is rebooted.

Confirm the configuration you have set. If anything is wrong, please go Back to reset. It's recommended to take a note of these settings that you'll need later for reference.

### Wireless Settings

- **Operation Mode**: Hotspot Router
- **Main Router/AP Wireless Network Name (SSID)**:
- **Main Router/AP MAC Address (BSSID)**:
- **Range Extender Wireless Network Name**:
- **Wireless Security Mode**: Most Secure (WPA/WPA2-PSK)
- **Wireless Password**: 12345670

### Network Settings

- **Default Access**: http://tplinkwifi.net
- **Login User Name**: admin
- **Login Password**: admin
- **LAN IP Address**: 192.168.0.21

Save these settings as a text file for future reference.

---

**Note:**

The operating distance or range of your wireless connection varies significantly based on the physical placement of the Router. For best results, place your Router:

- Near the center of the area in which your wireless stations will operate.
- In an elevated location such as a high shelf.
- Away from the potential sources of interference, such as PCs, microwaves, and cordless phones.
- Away from large metal surfaces.

Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the Router.

### 3.2.3 Access Point Mode

When you choose **Access Point** on **Operation Mode** page in Figure 3-5, take the following steps:
1. Click **Next** in Figure 3-5, and then **Wireless Setting** page will appear as shown in Figure 3-18.

![Figure 3-18 Quick Setup – Wireless Setting](image)

- **Wireless Network Name (SSID)** - Enter a string of up to 32 characters. The same name of SSID (Service Set Identification) must be assigned to all wireless devices in your network. The default SSID is set to be TP-LINK_XXXX (XXXX indicates the last unique four numbers of each Router’s MAC address). But it is recommended strongly that you change your networks name (SSID) to a different value. This value is case-sensitive. For example, **TEST** is NOT the same as **test**.

- **Region** - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

- **Channel** - This field determines which operating frequency will be used. The default channel is set to **Auto**. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point.

- **AP Wireless Password** - Input the password of your broadcast SSID.

2. Click the **Next** button in Figure 3-18. You can configure the IP parameters of LAN on this page.

If you are not familiar with the setting items in this page, it's strongly recommended to keep the provided default values, otherwise may result in low wireless network performance.
Type - Choosing SmartDHCP to get IP address from remoter DHCP server, or choosing static IP to config IP address manually.

- **IP Address** - Enter the IP address of your system in dotted-decimal notation (factory default: 192.168.0.254).

- **Subnet Mask** - An address code that determines the size of the network. Normally 255.255.255.0 is used as the subnet mask.

3. Click the **Next** button in Figure 3-19. You will then see the **Review** setting page.
3.2.4 Range Extender Mode

When you choose **Range Extender Mode** on **Working Mode** page in Figure 3-5, take the following steps:

1. AP list page will appear as shown in Figure 3-21. Find the SSID of the Access Point you want to access, and select the choose checkbox in the corresponding row. For example, the 7th item is selected. The target network's SSID will be automatically filled into the corresponding box which is shown as the Figure 3-22.

![Figure 3-21 AP List](image)

2. **Wireless Setting** page will appear as shown in Figure 3-22.

![Figure 3-22 Quick Setup - Wireless](image)

- **Wireless Name of Root AP** - The SSID of AP that you want to access.
- **MAC Address of Root AP** - The MAC address of AP that you want to access.
➢ **Region** - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

➢ **WDS Mode** - In WDS Repeater mode, the AP with WDS enabled will relay data to an associated root AP. AP function is enabled meanwhile. The wireless repeater relays signal between its stations and the root AP for greater wireless range. Please input the MAC address of root AP in the field "MAC Address of Root AP".

➢ **Wireless Security Mode** - This option should be chosen according to the security configuration of the AP you want to access. It is recommended that the security type is the same as your AP’s security type.

➢ **Root AP Wireless Password** - If the AP your router is going to connect need password, you need to fill the password in this blank.

☞ **Note:**
If you know the SSID of the desired AP, you can also input it into the field "SSID" manually.

3. Click the **Next** button. You can configure the IP parameters of LAN on this page.

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

![Quick Setup - Network Setting](image_url)

Figure 3-23 Quick Setup – Network Settings

4. Click the **Next** button. You will then see the **Review Setting** page.
3.2.5 Client Mode

When you choose Client on Working Mode page in Figure 3-5, take the following steps:

1. AP List page will appear as shown below. Find the SSID of the Access Point you want to access, and select the choose checkbox in the corresponding row. For example, the 7th item is selected. The target network’s SSID will be automatically filled into the corresponding box which is shown as the Figure 3-26.
2. Click **Next** in Figure 3-25, and then **Wireless Setting** page will appear as shown in Figure 3-26.

![Wireless Setting Page](image)

**Quick Setup - Wireless Setting**

- **Wireless Name of Root AP** - Enter the SSID that you want to access.
- **MAC Address of Root AP** - Enter the MAC address of AP that you want to access.
- **Region** - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.
- **Wireless Security Mode** - This option should be chosen according to the security configuration of the AP you want to access. It is recommended that the security type is the same as your AP’s security type.
- **Root AP Wireless Password** - If the AP your router is going to connect need password, you need to fill the password in this blank.

3. Click the **Next** button. You can configure the IP parameters of LAN on this page.

If you are not familiar with the setting items in this page, it's strongly recommended to keep the provided default values, otherwise may result in low wireless network performance.
3. Click the **Next** button in Figure 3-27. You will then see the **Review Setting** page. Click the **Reboot** button to make your wireless configuration take effect and finish the Quick Setup.
Chapter 4. Configuration for Wireless Router Mode

This chapter will show each Web page's key functions and the configuration way for Wireless Router Mode of TL-WR802N.

4.1 Login

After your successful login, you can configure and manage the device. There are main menus on the left of the web-based utility. Submenus will be available after you click one of the main menus. On the right, there are the corresponding explanations and instructions.

![Status Menu](image)

Figure 4-1

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 on Wireless Router Mode. All information is read-only.
### Status

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware Version</td>
<td>3.16.8 Build 150717 Rel 488006</td>
</tr>
<tr>
<td>Hardware Version</td>
<td></td>
</tr>
</tbody>
</table>

### LAN

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC Address</td>
<td>C4-E9-84-35-7B-6E</td>
</tr>
<tr>
<td>IP Address</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>

### Wireless

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Mode</td>
<td>Wireless Router</td>
</tr>
<tr>
<td>Wireless Radio</td>
<td>Enable</td>
</tr>
<tr>
<td>Name (SSID)</td>
<td>TP-LINK_785E</td>
</tr>
<tr>
<td>Mode</td>
<td>1bgn mixed</td>
</tr>
<tr>
<td>Channel Width</td>
<td>Automatic</td>
</tr>
<tr>
<td>Channel</td>
<td>Auto (Current channel 4)</td>
</tr>
<tr>
<td>MAC Address</td>
<td>C4-E9-84-35-7B-6E</td>
</tr>
</tbody>
</table>

### WAN

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC Address</td>
<td>C4-E9-84-35-7B-6F</td>
</tr>
<tr>
<td>IP Address</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>Default Gateway</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>DNS Server</td>
<td>0.0.0.0 , 0.0.0.0</td>
</tr>
<tr>
<td>Online Time</td>
<td>0 day(s) 00:00:00 Connecting...</td>
</tr>
</tbody>
</table>

### Traffic Statistics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Received</th>
<th>Sent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bytes</td>
<td>101,201</td>
<td>40,880</td>
</tr>
<tr>
<td>Packets</td>
<td>207</td>
<td>373</td>
</tr>
</tbody>
</table>

### System Up Time: 0 days 00:19:00

---

**Figure 4-2**

- **Firmware Version** - The version information of the Router's firmware.
- **Hardware Version** - The version information of the Router's hardware.
- **LAN** - This field displays the current settings or information for the LAN, you can configure them in the **Network > LAN** page.
  - **MAC Address** - The physical address of the Router, as seen from the LAN.
  - **IP Address** - The LAN IP address of the Router.
- Subnet Mask - The subnet mask associated with LAN IP address.

- **Wireless** - This field displays basic information or status for wireless function, you can configure them in the **Wireless > Wireless Settings** page.

- **Operation Mode** - The current wireless working mode in use.

- **Wireless Radio** - Indicates whether the wireless radio feature of the AP is enabled or disabled.

- **Name (SSID)** - The SSID of the Router.

- **Mode** - The current wireless mode which the Router works on.

- **Channel Width** - The current wireless channel width in use.

- **Channel** - The current wireless channel in use.

- **MAC Address** - The physical address of the Router, as seen from the WLAN.

- **WDS Status** - The status of WDS connection.

- **WAN** - This field displays the current settings or information for the WAN, you can configure them in the **Network > WAN** page.

- **MAC Address** - The physical address of the WAN port, as seen from the Internet.

- **IP Address** - The current WAN (Internet) IP Address. This field will be blank or 0.0.0.0 if the IP Address is assigned dynamically and there is no connection to the Internet.

- **Subnet Mask** - The subnet mask associated with the WAN IP Address.

- **Default Gateway** - The Gateway currently used by the Router is shown here. When you use **Dynamic IP** as the connection Internet type, the **Renew** button will be displayed here. Click the **Renew** Button to obtain new IP parameters dynamically from the ISP. And if you have got an IP address, **Release** button will be displayed here. Click the **Release** button to release the IP address the Router has obtained from the ISP.

- **DNS Server** - The DNS (Domain Name System) server IP addresses currently used by the Router.

- **Traffic Statistics** - The Router’s traffic statistics.

  - **Received (Bytes)** - Traffic that counted in bytes has been received out from the WAN port.

  - **Received (Packets)** - Traffic that counted in packets has been received out from the WAN port.

  - **Sent (Bytes)** - Traffic that counted in bytes has been sent out from the WAN port.

  - **Sent (Packets)** - Traffic that counted in packets has been sent out from the WAN port.

- **System Up Time** - The length of the time since the Router was last powered on or reset.

Click the **Refresh** button to get the latest status and settings of the Router.
4.3 Quick Setup

Please refer to Section 3.2: "Quick Installation Guide."

4.4 WPS

WPS (Wi-Fi Protected Setup) can help you to quickly and securely connect to a network. This section will guide you to add a new wireless device to an existing network quickly by function. The WPS function is only available when the Operation Mode is set to Access Point. Select menu "WPS", you will see the next screen shown in Figure 4-3.

Figure 4-3  WPS

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

To add a new device:

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and device 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.

For the configuration of the new device, here takes the Wireless Adapter of our company for example.

I. By PBC
If the wireless adapter supports Wi-Fi Protected Setup and the Push Button Configuration (PBC) method, you can add it to the network by PBC with the following two methods.

Method One:
Step 1: Keep the WPS Status as Enabled and click the Add Device button in Figure 4-3, then the following screen will appear.

![Add A New Device](image)

Step 2: Choose “Press the button of the new device in two minutes” and click Connect.
Step 3: For the configuration of the wireless adapter, please choose “Push the button on my access point or wireless router” in the configuration utility of the WPS as below, and click Connect.
Step 4: Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

The WPS Configuration Screen of Wireless Adapter

**Method Two:** Enter the PIN into my AP.

Step 1: For the configuration of the wireless adapter, please choose “**Enter the PIN of this device into my access point or wireless router**” in the configuration utility of the WPS as below, and click **Connect**.

The WPS Configuration Screen of Wireless Adapter

**Note:**

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

Step 2: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 4-3.
Step 3: Choose “Enter the new device’s PIN” and enter the PIN code (take 16952898 for example) of the wireless adapter in the field after PIN as shown in the figure below. Then click Connect.

![Add A New Device](image)

**Figure 4-5 Add A New Device**

**Method Three:** Enter the PIN from my AP

Step 1: Get the Current PIN code of the AP in Figure 4-3 (each AP has its unique PIN code. Here takes the PIN code 12345670 of this AP for example).

Step 2: For the configuration of the wireless adapter, please choose “Enter the PIN of my access point or wireless router” in the configuration utility of the WPS as below, and enter the PIN code of the AP into the field after “Access Point PIN”. Then click Connect.

![The WPS Configuration Screen of Wireless Adapter](image)

**Note:**

The default PIN code of the AP can be found in its label or the WPS configuration screen as Figure 4-3.
You will see the following screen when the new device has successfully connected to the network.

- **Note:**
  1. The WPS LED on the AP 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 AP is disabled. Please make sure the Wireless function is enabled before configuring the WPS.

### 4.5 Operation Mode

The Router supports five operation mode types: **Wireless Router, Hotspot Router, Access Point, Range Extender** and **Client**. Please select one you want. Click **Save** to save your choice, which is shown as Figure 4-7.

![Figure 4-7 Wireless Working Mode Settings](image-url)
4.6 Network

There are three submenus under the Network menu (shown in Figure 4-8): **WAN**, **MAC Clone** and **LAN**. Click any of them, and you will be able to configure the corresponding function.

4.6.1 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 follow (Figure 4-9):

   ![WAN page](Figure 4-9)

   This page displays the WAN IP parameters assigned dynamically by your ISP, including **IP address**, **Subnet Mask**, **Default Gateway**, etc. Click the **Renew** button to renew the IP parameters from your ISP. Click the **Release** button to release the IP parameters.
MTU Size - The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default MTU Size unless required by your ISP.

Use These DNS Servers - If your ISP gives you one or two DNS addresses, select Use These DNS Servers and enter the primary and secondary addresses into the correct fields. Otherwise, the DNS servers will be assigned dynamically from your ISP.

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

Host Name - This option specifies the Host Name of the Router.

Get IP with Unicast DHCP - A few ISPs’ DHCP servers do not support the broadcast applications. If you cannot get the IP Address normally, you can choose this option. (It is rarely required.)

Click the Save button to save your settings.

2. If your ISP provides a static or fixed IP Address, Subnet Mask, Default Gateway and DNS setting, select Static IP. The Static IP settings page will appear as shown in Figure 4-10.

<table>
<thead>
<tr>
<th>WAN Connection Type:</th>
<th>Static IP</th>
<th>Detect</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address:</td>
<td>0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>Subnet Mask:</td>
<td>0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>Default Gateway:</td>
<td>0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>MTU Size (in bytes):</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>(The default is 1500, do not change unless necessary)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary DNS:</td>
<td>0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>Secondary DNS:</td>
<td>0.0.0.0</td>
<td>(Optional)</td>
</tr>
</tbody>
</table>

Figure 4-10  WAN - Static IP

IP Address - Enter the IP address in dotted-decimal notation provided by your ISP.

Subnet Mask - Enter the subnet Mask in dotted-decimal notation provided by your ISP, usually is 255.255.255.0.

Default Gateway - Enter the gateway IP address in dotted-decimal notation provided by your ISP.
- **MTU Size** - The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default MTU Size unless required by your ISP.

- **Primary/Secondary DNS** - (Optional) Enter one or two DNS addresses in dotted-decimal notation provided by your ISP.

Click the Save button to save your settings.

3. If your ISP provides a PPPoE connection, select **PPPoE/Russia PPPoE** option. Then you should enter the following parameters (Figure 4-11):

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WAN Connection Type</strong></td>
<td>Select PPPoE/Russia PPPoE or Detect.</td>
</tr>
<tr>
<td><strong>User Name</strong></td>
<td>Enter the User Name provided by your ISP.</td>
</tr>
<tr>
<td><strong>Password</strong></td>
<td>Enter the Password provided by your ISP.</td>
</tr>
<tr>
<td><strong>Confirm Password</strong></td>
<td>Enter again the Password provided by your ISP to ensure the password you entered is correct.</td>
</tr>
<tr>
<td><strong>Secondary Connection</strong></td>
<td>Available only for PPPoE Connection. If your ISP provides an extra Connection type such as Dynamic/Static IP, check the radio button.</td>
</tr>
</tbody>
</table>

**User Name/Password** - Enter the User Name and Password provided by your ISP. These fields are case-sensitive.

**Confirm Password** - Enter again the Password provided by your ISP to ensure the password you entered is correct.

**Secondary Connection** - It’s available only for PPPoE Connection. If your ISP provides an extra Connection type such as Dynamic/Static IP to connect to a local area network, then you can check the radio button of Dynamic/Static IP to activate this secondary connection.

- **Disabled** - The Secondary Connection is disabled by default, so there is PPPoE connection only. This is recommended.
• **Dynamic IP** - You can check this radio button to use Dynamic IP as the secondary connection to connect to the local area network provided by ISP.

• **Static IP** - You can check this radio button to use Static IP as the secondary connection to connect to the local area network provided by ISP.

- **Connect on Demand** - In this mode, the Internet connection can be terminated automatically after a specified inactivity period (**Max Idle Time**) and be re-established when you attempt to access the Internet again. If you want your Internet connection keeps active all the time, please enter “0” in the **Max Idle Time** field. Otherwise, enter the number of minutes you want to have elapsed before your Internet access disconnects.

- **Connect Automatically** - The connection can be re-established automatically when it was down.

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

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

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

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

If you want to do some advanced configurations, please click the **Advanced** button, and the page shown in Figure 4-12 will then appear:
Figure 4-12 PPPoE Advanced Settings

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

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

- **ISP Specified IP Address** - If your ISP does not automatically assign IP addresses to the Router during login, please click “Use IP address specified by ISP” check box and enter the IP address provided by your ISP in dotted-decimal notation.

- **Detect Online Interval** - The Router will detect Access Concentrator online at every interval. The default value is “0”. You can input the value between “0” and “120”. The value “0” means no detect.

- **Primary DNS/Secondary DNS** - If your ISP does not automatically assign DNS addresses to the Router during login, please click “Use the following DNS servers” check box and enter the IP address in dotted-decimal notation of your ISP’s primary DNS server. If a secondary DNS server address is available, enter it as well.

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

4. If your ISP provides BigPond Cable connection, please select BigPond Cable option. Then you should enter the following parameters (Figure 4-13):
Figure 4-13 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.

- **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.

- **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 to keep 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. Then you should enter the following parameters (Figure 4-14):

![WAN Configuration](image)

- **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, check the radio button. If you want your Internet connection to remain active at all times, enter 0 in the Max Idle Time field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- Connect Automatically - Connect automatically after the Router is disconnected. To use this option, check the radio button.

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

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

Click the Save button to save your settings.

6. If your ISP provides PPTP connection, please select PPTP/Russia PPTP option. And you should enter the following parameters (Figure 4-15):
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**, check the radio button.

   If you want your Internet connection to remain active at all times, enter “0” in the **Max**
Idle Time field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- Connect Automatically - Connect automatically after the Router is disconnected. To use this option, check the radio button.

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

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

Click the Save button to save your settings.

4.6.2 MAC Clone

Choose menu "Network → MAC Clone", and then you can configure the WAN MAC address on the screen below, as shown in Figure 4-16:

<table>
<thead>
<tr>
<th>MAC Clone</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAN MAC Address: 00-1D-0F-01-06-29</td>
</tr>
<tr>
<td>Your PC's MAC Address: 0C-32-5D-F7-31-8D</td>
</tr>
</tbody>
</table>

Figure 4-16  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 To 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:**

1. Only the PC on your LAN can use the **MAC Address Clone** function.
2. If you change WAN MAC Address when the WAN connection is PPPoE, it will not take effect until the connection is re-established.

### 4.6.3 LAN

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

![Figure 4-17 LAN](image)

- **MAC Address** - The physical address of the LAN ports, as seen from the LAN. The value can't be changed.
- **IP Address** - Enter the IP address of your Router in dotted-decimal notation (factory default: 192.168.0.1).
- **Subnet Mask** - An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.
- **IGMP Proxy** - The Internet Group Management Protocol (IGMP) feature allows your devices in LAN can watch TV.

**Note:**

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

There are five submenus under the Wireless menu (shown in Figure 4-18): 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.

4.7.1 Wireless Settings

Choose menu “Wireless → Wireless Settings”, and then you can configure the basic settings for the wireless network on this page.

- **Wireless Network Name** - Enter a string of up to 32 characters. The same name of SSID (Service Set Identification) must be assigned to all wireless devices in your network. The default SSID is set to be TP-LINK_XXXX (XXXX indicates the last unique four numbers of each Router’s MAC address). But it is recommended strongly that you change your networks name (SSID) to a different value. This value is case-sensitive. For example, TEST is NOT the same as test.

- **Region** - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of
the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

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

When 11bg mixed mode is selected, only 11bg mixed wireless stations can connect to the Router. It is strongly recommended that you set the Mode to 11bgn mixed, and all of 802.11b/g/n wireless stations can connect to the Router.

> **Note:**

If **11bg mixed mode** 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.

- **Channel Width** - Select any channel width from the pull-down list. The default setting is automatic, which can automatically adjust the channel width for your clients.

- **Channel** - This field determines which operating frequency will be used. The default channel is set to **Auto**. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point.

- **Enable Wireless Router Radio** - The wireless radio of the Router can be enabled or disabled to allow wireless stations access. If enabled, the wireless stations will be able to access the Router. Otherwise, wireless stations will not be able to access the Router.

- **Enable SSID Broadcast** - If you select the **Enable SSID Broadcast** checkbox, the wireless router will broadcast its name (SSID) on the air.

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

### 4.7.2 Wireless Security

Choose menu “Wireless → Wireless Security”, and then you can configure the security settings of your wireless network.

There are three wireless security modes supported by the Router: WPA/WPA2-Personal, WPA/WPA2-Enterprise and WEP (Wired Equivalent Privacy).
- **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. But it's strongly recommended to choose one of the following modes to enable security.

- **WPA-PSK/WPA2-Personal** - 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.

### Wireless Security

<table>
<thead>
<tr>
<th>Option</th>
<th>Settings</th>
<th>Key Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Disable Security</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WPA/WPA2 - Personal</strong></td>
<td><strong>Version</strong>: WPA2-PSK&lt;br&gt;<strong>Encryption</strong>: AES&lt;br&gt;<strong>Wireless Password</strong>: 12345670&lt;br&gt;<strong>Group Key Update Period</strong>: 0 Seconds</td>
<td></td>
</tr>
<tr>
<td><strong>WPA/WPA2 - Enterprise</strong></td>
<td><strong>Version</strong>: Automatic&lt;br&gt;<strong>Encryption</strong>: Automatic&lt;br&gt;<strong>Radius Server IP</strong>: &lt;input&gt;&lt;br&gt;<strong>Radius Port</strong>: 1812 (1-65535, 0 stands for default port 1812)&lt;br&gt;<strong>Radius Password</strong>: &lt;input&gt;&lt;br&gt;<strong>Group Key Update Period</strong>: 0 Seconds (in second, minimum is 30, 0 means no update)</td>
<td></td>
</tr>
<tr>
<td><strong>WEP</strong></td>
<td><strong>Type</strong>: Automatic&lt;br&gt;<strong>WEP Key Format</strong>: Hexadecimal&lt;br&gt;<strong>Key Selected</strong>: &lt;input&gt;&lt;br&gt;<strong>WEP Key</strong>: &lt;input&gt;&lt;br&gt;<strong>Key Type</strong>: Disabled</td>
<td></td>
</tr>
</tbody>
</table>

---

**Figure 4-20 Wireless Security**
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 4-21.

<table>
<thead>
<tr>
<th>WPA/WPA2 - Personal/Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version:</strong> Automatic (Recommended)</td>
</tr>
<tr>
<td><strong>Encryption:</strong> TKIP</td>
</tr>
<tr>
<td><strong>Wireless Password:</strong> (You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64)</td>
</tr>
<tr>
<td><strong>Group Key Update Period:</strong> Enter 0 to disable the update.</td>
</tr>
</tbody>
</table>

![Figure 4-21](attachment:image.jpg)

- **WPA/WPA2-Enterprise** - It's based on Radius Server.
  - **Version** - you can choose the version of the WPA security from the pull-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 Automatic, TKIP or AES.
  - **Radius Server IP** - Enter the IP address of the Radius server.
  - **Radius Port** - Enter the port that Radius server 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.

- **WEP** - It is based on the IEEE 802.11 standard.
  - **Type** - you can choose the type for the WEP security on the pull-down list. The default setting is Automatic, which can select Shared Key or Open System authentication type automatically based on the wireless station's capability and request.
  - **WEP Key Format** - Hexadecimal and ASCII formats are provided here. Hexadecimal format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. ASCII format stands for any combination of keyboard characters in the specified length.
  - **WEP Key (Password)** - Select which of the four keys will be used and enter the matching WEP key that you create. Make sure these values are identical on all wireless stations in your network.
  - **Key Type** - You can select the WEP key length (64-bit, or 128-bit, or 152-bit.) for encryption. "Disabled" means this WEP key entry is invalid.
64-bit - You can enter 10 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 ASCII characters.

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

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

Note:
If you do not set the key, the wireless security function is still disabled even if you have selected Shared Key as Authentication Type.
Be sure to click the Save button to save your settings on this page.

4.7.3 Wireless MAC Filtering

Choose menu “Wireless → Wireless MAC Filtering”, and then you can control the wireless access by configuring the Wireless MAC Filtering function, as shown in Figure 4-22.

<table>
<thead>
<tr>
<th>Wireless MAC Filtering</th>
<th>Enabled</th>
<th>Disable</th>
</tr>
</thead>
</table>

Filtering Rules
- **De** (deny the stations specified by any enabled entries in the list to access.
- **Allow** (allow the stations specified by any enabled entries in the list to access.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add New...</td>
<td>Enable All</td>
<td>Disable All</td>
<td>Delete All</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4-22 Wireless MAC Filtering

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

- **MAC Address** - The wireless station’s MAC address that you want to access.
- **Status** - The status of this entry, either **Enable** or **Disable**.
- **Description** - A simple description of the wireless station.

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

1. Enter the appropriate MAC Address into the MAC Address field. The format of the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). For example: 00-0A-EB-B0-00-0B.

2. Give a simple description for the wireless station in the Description field. For example: Wireless station A.

3. Select Enabled or Disabled for this entry on the Status 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.
Click the Previous button to return to the previous page.

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

1. Click the Enabled button to enable this function.

2. Select the radio button “Allow the stations specified by any enabled entries in the list to access” for Filtering Rules.

3. Delete all or disable all entries if there are any entries already.
4. Click the **Add New...** button.

1) Enter the MAC address 00-0A-EB-B0-00-0B/00-0A-EB-00-07-5F in the **MAC Address** field.
2) Enter wireless station A/B in the **Description** field.
3) Select **Enabled** in the **Status** pull-down list.
4) Click the **Save** button.
5) Click the **Back** button.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-0A-EB-B0-00-0B</td>
<td>Enabled</td>
<td>wireless station A</td>
<td>Modify/Delete</td>
</tr>
<tr>
<td>2</td>
<td>00-0A-EB-00-07-5F</td>
<td>Enabled</td>
<td>wireless station B</td>
<td>Modify/Delete</td>
</tr>
</tbody>
</table>

**Figure 4-24 Filtering Rules**

### 4.7.4 Wireless Advanced

Choose menu **“Wireless → Wireless Advanced”**, and then you can configure the advanced settings of your wireless network.

- **Transmit Power** - Here you can specify the transmit power of Router. You can select High, Middle or Low which you would like. High is the default setting and is recommended.
- **Beacon Interval** - Enter a value between 20-1000 milliseconds for Beacon Interval here. The beacons are the packets sent by the Router to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. The default value is 100.
- **RTS Threshold** - Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Router will send RTS frames to a
particular receiving station and negotiate the sending of a data frame. The default value is 2346.

- **Fragmentation Threshold** - This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance because of excessive packets. 2346 is the default setting and is recommended.

- **DTIM Interval** - This value determines the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. You can specify the value between 1-255 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.

- **Enable AP Isolation** - This function isolate all connected wireless stations so that wireless stations cannot access each other through WLAN. This function will be disabled if WDS/Bridge is enabled.

⚠️ **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.

### 4.7.5 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Current Status</th>
<th>Received Packets</th>
<th>Sent Packets</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70-73-C8:4F-C8-C9</td>
<td>STA ASSOC</td>
<td>46</td>
<td>16</td>
<td>Allow</td>
</tr>
</tbody>
</table>

![Figure 4-26 Wireless Statistics](image)

- **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.

Configure - The button is used for loading the item to the Wireless MAC Filtering list.
  - Allow - If the Wireless MAC Filtering function enable, allow the station to access.
  - Deny - If the Wireless MAC Filtering function enable, deny the station to access.

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

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

Note:
This page will be refreshed automatically every 5 seconds.

4.8 DHCP

There are three submenus under the DHCP menu (shown in Figure 4-27), DHCP Settings, DHCP Clients List and Address Reservation. Click any of them, and you will be able to configure the corresponding function.

4.8.1 DHCP Settings

Choose menu “DHCP → DHCP Settings”, and then you can configure the DHCP Server on the page as shown in Figure 4-28. 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 4-28 DHCP Settings

- **DHCP Server** - Enable or Disable the DHCP server. If you disable the Server, you must have another DHCP server within your network or else you must configure the computer manually.

- **Start IP Address** - Specify an IP address for the DHCP Server to start with when assigning IP addresses. 192.168.0.100 is the default start address.

- **End IP Address** - Specify an IP address for the DHCP Server to end with when assigning IP addresses. 192.168.0.199 is the default end address.

- **Address Lease Time** - The Address Lease Time is the amount of time a network user will be allowed connection to the Router with their current dynamic IP Address. Enter the amount of time in minutes and the user will be "leased" this dynamic IP Address. After the time is up, the user will be automatically assigned a new dynamic IP address. The range of the time is 1 ~ 2880 minutes. The default value is 120 minutes.

- **Default Gateway** (Optional) - It is suggested to input the IP address of the LAN port of the Router. The default value is 192.168.0.1.

- **Default Domain** (Optional) - Input the domain name of your network.

- **Primary DNS** - (Optional) Input the DNS IP address provided by your ISP or consult your ISP. Or consult your ISP.

- **Secondary DNS** (Optional) - Input the IP address of another DNS server if your ISP provides two DNS servers.

⚠️ **Note:**
To use the DHCP server function of the Router, you must configure all computers on the LAN as "Obtain an IP Address automatically".
4.8.2 DHCP Client List

Choose menu “DHCP → DHCP Client List”, and then you can view the information about the clients attached to the Router in the screen as shown in Figure 4-29.

<table>
<thead>
<tr>
<th>ID</th>
<th>Client Name</th>
<th>MAC Address</th>
<th>Assigned IP</th>
<th>Lease Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>tplink14129</td>
<td>9C-82-6D-F7-31-80</td>
<td>192.168.0.101</td>
<td>01:15:47</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>70-73-08-1F-C8-C9</td>
<td>192.168.0.101</td>
<td>01:58:32</td>
</tr>
</tbody>
</table>

Figure 4-29 DHCP Client List

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

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

4.8.3 Address Reservation

Choose menu “DHCP → Address Reservation”, and then you can view and add a reserved address for clients via the next screen (shown in Figure 4-30). 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Reserved IP Address</th>
<th>Status</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>05-11-22-33-44-AA</td>
<td>192.168.0.169</td>
<td>Enabled</td>
<td>Modify/Disable</td>
</tr>
</tbody>
</table>

Figure 4-30 Address Reservation

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

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

To modify or delete an existing entry:

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

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

4.9 Forwarding

There are four submenus under the Forwarding menu (shown in Figure 4-32): Virtual Servers, Port Triggering, DMZ and UPnP. Click any of them, and you will be able to configure the corresponding function.
4.9.1 Virtual Servers

Choose menu “Forwarding → Virtual Servers”, and then you can view and add virtual servers in the screen as shown in Figure 4-33. Virtual servers can be used for setting up public services on your LAN, such as DNS, Email and FTP. A virtual server is defined as a service port, and all requests from the Internet to this service port will be redirected to the computer specified by the server IP. Any PC that was used for a virtual server must have a static or reserved IP Address because its IP Address may be changed when using the DHCP function.

![Virtual Servers Table]

- **Service Port** - The numbers of External Ports. You can type a service port or a range of service ports (in XXX – YYY format, XXX is the start port number, YYY is the end port number).
- **Internal Port** - The Internal Service Port number of the PC running the service application. You can leave it blank if the Internal Port is the same as the Service Port, or enter a specific port number when Service Port is a single one.
- **IP Address** - The IP Address of the computer providing 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, either Enabled or Disabled.
- **Modify** - To modify or delete an existing entry.

**To setup a virtual server entry:**

1. Click the Add New... button, the next screen will pop-up as shown in Figure 4-34.
2. Select the service port you want to use from the Common Service Port list. If the Common Service Port list does not have the service that you want to use, type the service port number or service port range in the Service Port box.
3. Type the IP Address of the computer in the IP Address box.
4. Select the protocol used for this application, either TCP, UDP, or All.
5. Select the Enabled to enable the virtual server.
6. Click the Save button.
Note:
If your computer or server has more than one type of available service, please select another service, and enter the same IP Address for that computer or server.

To modify or delete an existing entry:
1. Click the Modify in the entry you want to modify. If you want to delete the entry, click the Delete.
2. Modify the information.
3. Click the Save button.

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

Click the Delete All button to delete all entries.

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

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.

4.9.2 Port Triggering
Choose menu “Forwarding → Port Triggering”, and then you can view and add port triggering in the screen as shown in Figure 4-35. Some applications require multiple connections, like Internet games, video conferencing, Internet calling and so on. These applications cannot work with a pure NAT Router. Port Triggering is used for some of these applications that can work with an NAT Router.
Once the Router is configured, the operation is as follows:

1. A local host makes an outgoing connection 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.

- **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 that triggered this rule. You can input at most 5 groups of ports (or port sections). Every group of ports must be set apart with ",". For example, 2000-2038, 2050-2051, 2085, 3010-3030.
- **Incoming Protocol** - The protocol used for Incoming Ports Range, either TCP or UDP, or ALL (all protocols supported by the Router).
- **Status** - The status of this entry, either Enabled or Disabled.
- **Modify** - To modify or delete an existing entry.

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 4-36.
2. Select a common application from the **Common Applications** drop-down list, then the Trigger Port field and the Incoming Ports field will be automatically filled. If the Common Applications do not have the application you need, enter the Trigger Port and the Incoming Ports manually.
3. Select the protocol used for Trigger Port from the **Trigger Protocol** drop-down list, either TCP, UDP, or All.
4. Select the protocol used for Incoming Ports from the **Incoming Protocol** drop-down list, either TCP or UDP, or All.
5. Select **Enabled** in **Status** field.

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

![Add or Modify a Port Triggering Entry](image)

**Figure 4-36  Add or Modify a Port Triggering 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.

**Note:**

1. When the trigger connection is released, the corresponding opening ports will be closed.

2. Each rule is allowed to be used only by one host on LAN synchronously. The trigger connection of other hosts on LAN will be refused.

3. Incoming Port Range cannot overlap each other.

**4.9.3 DMZ**

Choose menu **“Forwarding → DMZ”**, and then you can view and configure DMZ host in the screen as shown in Figure 4-37. 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. DMZ host forwards all the ports at the same time. Any PC whose port is being forwarded must have its DHCP client function disabled and should have a new static IP Address assigned to it because its IP Address may be changed when using the DHCP function.
To assign a computer or server to be a DMZ server:

1. Check the **Enable** radio button.
2. Enter the IP Address of a local host in the **DMZ Host IP Address** field.
3. Click the **Save** button.

**Note:**
After you set the DMZ host, the firewall related to the host will not work.

### 4.9.4 UPnP

Choose menu “**Forwarding → UPnP**”, and then you can view the information about **UPnP** (Universal Plug and Play) in the screen as shown in Figure 4-38. The 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>App Description</th>
<th>External Port</th>
<th>Protocol</th>
<th>Internal Port</th>
<th>IP Address</th>
<th>Status</th>
</tr>
</thead>
</table>

**Current UPnP Status** - UPnP can be enabled or disabled by clicking the **Enable** or **Disable** button.

**Current UPnP Settings List** - This table displays the current UPnP information.

- **App Description** - The description provided by the application in the UPnP request.
- **External Port** - The external port the Router opens for the application.
- **Protocol** - The type of protocol the Router opens for the application.
- **Internal Port** - The Internal port the Router opens for local host.
- **IP Address** - The IP address of the UPnP device that is currently accessing the Router.
- Status - The status of the port is displayed here. "Enabled" means that the port is still active. Otherwise, the port is inactive.

Click Refresh to update the Current UPnP Settings List.

4.10 Security

4.10.1 Basic Security

Choose menu “Security → Basic Security”, you can configure the basic security in the screen as shown in Figure 4-40.

![Basic Security](image)

Figure 4-40 Basic Security

There are four submenus under the Security menu as shown in Figure 4-39: Basic Security, Advanced Security, Local Management and Remote Management. Click any of them, and you will be able to configure the corresponding function.
- Firewall - A firewall protects your network from the outside world. Here you can enable or disable the Router's firewall.

  - SPI Firewall - SPI (Stateful Packet Inspection, also known as dynamic packet filtering) helps to prevent cyber attacks by tracking more state per session. It validates that the traffic passing through the session conforms to the protocol. SPI Firewall is enabled by factory default. If you want all the computers on the LAN exposed to the outside world, you can disable it.

- VPN - VPN Passthrough must be enabled if you want to allow VPN tunnels using IPSec, PPTP, or L2TP protocols to pass through the Router’s firewall.

  - PPTP Passthrough - Point-to-Point Tunneling Protocol (PPTP) allows the Point-to-Point Protocol (PPP) to be tunneled through an IP network. To allow PPTP tunnels to pass through the Router, keep the default, Enable.

  - L2TP Passthrough - Layer 2 Tunneling Protocol (L2TP) is the method used to enable Point-to-Point sessions via the Internet on the Layer 2 level. To allow L2TP tunnels to pass through the Router, keep the default, Enable.

  - IPSec Passthrough - Internet Protocol Security (IPSec) is a suite of protocols for ensuring private, secure communications over Internet Protocol (IP) networks, through the use of cryptographic security services. To allow IPSec tunnels to pass through the Router, keep the default, Enable.

- ALG - It is recommended to enable Application Layer Gateway (ALG) because ALG allows customized Network Address Translation (NAT) traversal filters to be plugged into the gateway to support address and port translation for certain application layer "control/data" protocols such as FTP, TFTP, H323 etc.

  - FTP ALG - To allow FTP clients and servers to transfer data across NAT, keep the default Enable.

  - TFTP ALG - To allow TFTP clients and servers to transfer data across NAT, keep the default Enable.

  - H323 ALG - To allow Microsoft NetMeeting clients to communicate across NAT, keep the default Enable.

Click the Save button to save your settings.

4.10.2 Advanced Security

Choose menu “Security → Advanced Security”, you can protect the Router from being attacked by TCP-SYN Flood, UDP Flood and ICMP-Flood in the screen as shown in Figure 4-41.
Figure 4-41 Advanced Security

- **Packets Statistics Interval (5~60)** - The default value is 10. Select a value between 5 and 60 seconds from the drop-down list. The Packets Statistics Interval value indicates the time section of the packets statistics. The result of the statistics is used for analysis by SYN Flood, UDP Flood and ICMP-Flood.

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

  ✨ Note:
  
  DoS Protection will take effect only when the Traffic Statistics in “System Tool → Traffic Statistics” is enabled.

- **Enable ICMP-FLOOD Attack Filtering** - Enable or Disable the ICMP-FLOOD Attack Filtering.

- **ICMP-FLOOD Packets Threshold (5~3600)** - The default value is 50. Enter a value between 5 ~ 3600. When the current ICMP-FLOOD Packets number is beyond the set value, the Router will startup the blocking function immediately.

- **Enable UDP-FLOOD Filtering** - Enable or Disable the UDP-FLOOD Filtering.

- **UDP-FLOOD Packets Threshold (5~3600)** - The default value is 500. Enter a value between 5 ~ 3600. When the current UDP-FLOOD Packets number is beyond the set value, the Router will startup the blocking function immediately.
- Enable TCP-SYN-FLOOD Attack Filtering - Enable or Disable the TCP-SYN-FLOOD Attack Filtering.

- TCP-SYN-FLOOD Packets Threshold (5~3600) - The default value is 50. Enter a value between 5 ~ 3600. When the current TCP-SYN-FLOOD Packets numbers is beyond the set value, the Router will startup the blocking function immediately.

- Ignore Ping Packet From WAN Port - Enable or Disable Ignore Ping Packet From WAN Port. The default setting is disabled. If enabled, the ping packet from the Internet cannot access the Router.

- Forbid Ping Packet From LAN Port - Enable or Disable Forbid Ping Packet From LAN Port. The default setting is disabled. If enabled, the ping packet from LAN cannot access the Router. This function can be used to defend against some viruses.

Click the Save button to save the settings.

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

### 4.10.3 Local Management

Choose menu “Security → Local Management”, you can configure the management rule in the screen as shown in Figure 4-42. The management feature allows you to deny computers in LAN from accessing the Router.

![Local Management](image)

**Figure 4-42 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, press and hold the WPS button for more than 5 seconds to reset the Router to factory defaults.

### 4.10.4 Remote Management

You can configure the Remote Management function on this page. This feature allows you to manage your Router from a remote location, via the Internet.

![Remote Management](image)

**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 interface to a custom port by entering that number in this box provided. Choose a number between 1024 and 65535, 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. The default IP Address is 0.0.0.0. It means this function is disabled. To enable this function, change the default IP Address to another IP Address as desired.

To access the router, you will 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 you use port number 8080, enter in your browser: http://202.96.12.8:8080. You will be asked for the router's password. After successfully entering the password, you will be able to access the router's Web-based utility.

**Note:**

Be sure to change the router's default password to a very secure password.
4.11 Parental Control

Choose menu “Parental Control”, and you can configure the parental control in the screen as shown in Figure 4-44. 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 4-44 Parental Control Settings](Image)

- **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”.
- **Modify** - Here you can edit or delete an existing entry.

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

1. Click the **Add New...** button and the next screen will pop-up as shown in Figure 4-45.
2. Enter the MAC address of the PC (e.g. 00-11-22-33-44-AA) you’d like to control in the MAC Address of Child PC field. Or you can choose the MAC address from the All Address in Current LAN drop-down list.
3. Give a description (e.g. Allow TP-LINK) for the website allowed to be accessed in the Website Description field.
4. Enter the allowed domain name of the website, either the full name or the keywords (e.g. tp-link) in the Allowed Domain Name field. Any domain name with keywords in it (e.g. www.tp-link.com) will be allowed.

5. Select from the Effective Time drop-down list the schedule (e.g. Schedule_1) you want the entry to take effect. 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 return to the previous page.

---

**Add or Modify Parental Control Entry**

The Schedule is based on the time of the Router. The time can be set in "System Tools -> Time settings".

- **MAC Address of Children’s PC**: 
- **All MAC Address In Current LAN**: 
- **Website Description**: 
- **Allowed Website Name**: 
- **Effective Time**: 
- **Status**: 

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

1. Click “Parental Control” menu on the left to enter the Parental Control Settings page. Check Enable and enter the MAC address 00-11-22-33-44-BB in the MAC Address of Parental PC field.
2. Click “Access Restriction → 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:
   - Click Add New... button.
   - Enter 00-11-22-33-44-AA in the MAC Address of Child PC field.
   - Enter “Allow TP-LINK” in the Website Description field.
   - Enter “www.tp-link.com” in the Allowed Domain Name field.
   - Select “Schedule_1” you create just now from the Effective Time drop-down list.
   - 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 4-46.

![Figure 4-46](image)

4.12 Access Control

![Figure 4-47](image)

There are four submenus under the Access Restriction menu as shown in Figure 4-47: Rule, Host, Target and Schedule. Click any of them, and you will be able to configure the corresponding function.

4.12.1 Rule

Choose menu “Access Control → Rule”, you can view and set Access Restriction rules in the screen as shown in Figure 4-48.
**Access Control Rule Management**

- **Enable Internet Access Control** - Select the check box to enable the Internet Access Restriction 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.

- **Action** - Here displays the action the Router takes to deal with the packets. It could be **Allow** or **Deny**. **Allow** means that the Router permits the packets to go through the Router. **Deny** means that the Router rejects the packets to go through the Router.

- **Status** - This field displays the status of the rule. **Enabled** means the rule will take effect, **Disabled** means the rule will not take effect.

- **Modify** - Here you can edit or delete an existing rule.

**To add a new rule, please follow the steps below.**

1. Click the **Add New**… button and the next screen will pop-up as shown in Figure 4-49.
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-down 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”.

---

Figure 4-48  Access Control Rule Management
6. In the **Action** field, select **Deny** or **Allow**.

7. In the **Status** field, select **Enabled** or **Disabled** to enable or disable your entry.

8. 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.

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

---

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

1. Click "**Access Control → Host**" in the left to enter the Host Settings page. Add a new entry with the Host Description is **Host_1** and MAC Address is 00-11-22-33-44-AA.

2. Click "**Access Control → Target**" in the left to enter the Target Settings page. Add a new entry with the Target Description is **Target_1** and Domain Name is **www.tp-link.com**.

3. Click "**Access Control → Schedule**" in the left to enter the Schedule Settings 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.

4. Click "**Access Control → Rule**" in the left to return to the Access Restriction Rule Management page. Select "**Enable Internet Access Restriction**" and choose "Deny the packets not specified by any access Restriction policy to pass through the Router".

5. 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 Action field, select Allow.
- In Status field, select Enabled.
- Click Save to complete the settings.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>Rule Name</th>
<th>Host</th>
<th>Target</th>
<th>Schedule</th>
<th>Status</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rule_1</td>
<td>Host_1</td>
<td>Target_1</td>
<td>Schedule_1</td>
<td>✔️</td>
<td>Edit Delete</td>
</tr>
</tbody>
</table>

Figure 4-50  Rule Settings

4.12.2 Host

Choose menu “Access Control → Host”, you can view and set a Host list in the screen as shown in Figure 4-51. The host list is necessary for the Access Restriction Rule.

- 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 4-52.
     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 4-53.
  
  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 return to the previous page.

---

**Add or Modify a Host Entry**

<table>
<thead>
<tr>
<th>Mode: IP Address</th>
<th>Host Description</th>
<th>LAN IP Address</th>
</tr>
</thead>
</table>

![Figure 4-52 Add or Modify a Host Entry](image)

**Add or Modify a Host Entry**

<table>
<thead>
<tr>
<th>Mode: MAC Address</th>
<th>Host Description</th>
<th>MAC Address</th>
</tr>
</thead>
</table>

![Figure 4-53 Add or Modify a Host Entry](image)

---

**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 4-51 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.
Choose menu “Access Control → Target”, you can view and set a Target list in the screen as shown in Figure 4-55. The target list is necessary for the Access Restriction Rule.

- **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.
   - If you select **IP Address**, the screen shown is Figure 4-56.
     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.
   - If you select **Domain Name**, the screen shown is Figure 4-57.
     1) In **Target Description** field, create a unique description for the target (e.g. **Target_1**).
2) In **Domain Name** field, enter the domain name, either the full name or the keywords (for example TP-LINK) in the blank. Any domain name with keywords in it (e.g. www.tp-link.com) will be blocked or allowed. You can enter 4 domain names.

3. 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 return to the previous page.

---

### Add or Modify an Access Target Entry

<table>
<thead>
<tr>
<th>Mode: IP Address</th>
<th>Target Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address:</td>
<td></td>
</tr>
<tr>
<td>Target Port:</td>
<td></td>
</tr>
<tr>
<td>Protocol: All</td>
<td></td>
</tr>
<tr>
<td>Common Service Port:</td>
<td>Please Select-</td>
</tr>
</tbody>
</table>

[Figure 4-56  Add or Modify an Access Target Entry](#)

### Add or Modify an Access Target Entry

<table>
<thead>
<tr>
<th>Mode: Domain Name</th>
<th>Target Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain Name:</td>
<td></td>
</tr>
</tbody>
</table>

[Figure 4-57  Add or Modify an Access Target Entry](#)

---

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

1. Click **Add New...** button in Figure 4-55 to enter the Add or Modify an Access Target Entry page.
2. In **Mode** field, select Domain Name from the drop-down list.
3. In **Target Description** field, create a unique description for the target (e.g. Target_1).
4. In **Domain Name** field, enter www.tp-link.com.
5. Click **Save** to complete the settings.
Then you will go back to the Target Settings page and see the following list,

![Target Settings](image)

4.12.4 Schedule

Choose menu “Access Control → Schedule”, you can view and set a Schedule list in the next screen as shown in Figure 4-59. The Schedule list is necessary for the Access Restriction Rule.

![Schedule Settings](image)

- **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 4-59 and the next screen will pop-up as shown in Figure 4-60.
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 return to the previous page.

---

**Figure 4-60 Advanced Schedule Settings**

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

1. Click **Add New...** button shown in Figure 4-59 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.

---

**Figure 4-61 Schedule Settings**
4.13 Advanced Routing

There are two submenus under the Network menu (shown in Figure 4-62): **Static Routing List** and **System Routing Table**. Click any of them, and you will be able to configure the corresponding function.

### 4.13.1 Static Routing List

Choose menu “Static Routing”, and you can configure the static route in the next screen, shown in Figure 4-63. A static route is a pre-determined path that network information must travel to reach a specific host or network.

#### To add static routing entries, follow the steps below.

1. Click **Add New…** shown in Figure 4-63, you will see the following screen Figure 4-64.

#### Add or Modify a Static Route Entry

- **Destination Network**
- **Subnet Mask**
- **Default Gateway**
- **Status**

2. Enter the following data.

- **Destination Network** - 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.

- Default Gateway - This is the IP Address of the gateway device that allows for contact between the Router and the network or host.

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

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

Click the Delete button to delete the entry.

Click the Enable All button to enable all the entries.

Click the Disable All button to disable all the entries.

Click the Delete All button to delete all the entries.

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

4.13.2 System Routing Table

Choose menu “Advanced Routing → System Routing Table”, and you can views all of the valid route entries in use. The Destination IP address, Subnet Mask, Gateway, and Interface will be displayed for each entry.

<table>
<thead>
<tr>
<th>ID</th>
<th>Destination Network</th>
<th>Subnet Mask</th>
<th>Gateway</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>192.168.0.0</td>
<td>255.255.255.0</td>
<td>0.0.0.0</td>
<td>LAN &amp; WLAN</td>
</tr>
<tr>
<td>2</td>
<td>192.0.0.0</td>
<td>255.0.0.0</td>
<td>0.0.0.0</td>
<td>LAN &amp; WLAN</td>
</tr>
</tbody>
</table>

Figure 4-65  Routing Table

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

- Subnet Mask - The Subnet Mask determines which portion of an IP address is the network portion, and which portion is the host portion.

- Gateway - This is the IP address of the gateway device that allows for contact between the Router and the network or host.

- Interface - This interface tells you whether the Destination IP Address is on the LAN & WLAN (internal wired and wireless networks), the WAN (Internet).

Click the Refresh button to refresh the data displayed.
4.14 Bandwidth Control

There are two submenus under the Bandwidth Control menu as shown in Figure 4-66. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

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

![Bandwidth Control Settings](image_url)

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

4.14.2 Rule List
Choose menu “Bandwidth Control → Rule List”, you can view and configure the Bandwidth Control rules in the screen below.
Figure 4-68  Bandwidth Control Rule List

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

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

**Step 1:** Click **Add New...** shown in Figure 4-68, you will see a new screen shown in Figure 4-69.

**Step 2:** Enter the information like the screen shown below.

Figure 4-69  Bandwidth Control Rule Settings

- **Enable** - Enable or disable the rule.
- **IP Range** - Interior PC address range. If both are blank (or 0.0.0.0), the domain is no effective.
- **Port Range** - The port range which the Interior PC access the outside PC. If all are blank (or 0), the domain is no effective.
- **Protocol** - Transport layer protocol, here there are All, TCP, UDP.
- **Egress Bandwidth** - The max and the min upload speed which through the WAN port, default number is 0.

- **Ingress Bandwidth** - The max and the min download speed through the WAN port, default number is 0.

Step 3: Click the **Save** button.

### 4.15 IP & MAC Binding

There are two submenus under the IP & MAC Binding menu: **Binding Setting** 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.

#### 4.15.1 Binding Setting

This page displays the IP & MAC Binding Setting table; you can operate it in accord with your desire.

![Binding Settings Table](image)

- **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** - Whether or not enable the ARP binding.

- **Modify** - Edit or delete item.
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.

**IP & MAC Binding Settings**

<table>
<thead>
<tr>
<th>Bind</th>
<th>MAC Address</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Save][Back]

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

**To add IP & MAC Binding entries:**

1. Click the Add New… button.
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:**

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

**To find an existing entry:**

1. Click the Find button (shown in Figure 4-71).
2. Enter the MAC Address or IP Address.
3. Enter the Find button in the next page (shown in Figure 4-73).

**Find IP & MAC Binding Entry**

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>IP Address</th>
<th>Bind Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-0A-EB-07-BE</td>
<td>192.168.3.173</td>
<td>☑</td>
</tr>
</tbody>
</table>

[Find][Back]

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.

### 4.15.2 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 configure the items on the ARP list also. This page displays the ARP List; it shows all the existing IP & MAC Binding entries.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>IP Address</th>
<th>Status</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-32-3F-EF-3D</td>
<td>192.168.1.100</td>
<td>Unbound</td>
<td>Load, Delete</td>
</tr>
<tr>
<td>2</td>
<td>00-32-3F-EF-3D</td>
<td>192.168.0.173</td>
<td>Bound</td>
<td>Load, Delete</td>
</tr>
</tbody>
</table>

Figure 4-74 ARP List

- **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.
- **Status** - Enabled or Disabled of the MAC address and IP address binding.
- **Configure** - Load or delete 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.

### 4.16 Dynamic DNS

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

4.16.1 No-IP DDNS

If the dynamic DNS Service Provider you select is www.noip.com, the page will appear as shown in Figure 4-75.

![Figure 4-75 No-IP DDNS Settings](image)

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.

☞ Note:

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

4.16.2 Comexe.cn DDNS

If the dynamic DNS Service Provider you select is www.comexe.cn, the page will appear as shown in Figure 4-76.
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.

**4.16.3 Dyndns DDNS**

If the dynamic DNS **Service Provider** you select is [www.dyndns.com](http://www.dyndns.com), the page will appear as shown in Figure 4-77.
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.

### 4.17 System Tools

**System Tools**

- SNMP
- Time Settings
- Diagnostic
- Firmware Upgrade
- Factory Defaults
- Backup & Restore
- Reboot
- Password
- System Log
- Statistics

Figure 4-78 The System Tools menu
There are nine submenus under the System Tools menu: SNMP, Time Settings, Diagnostic, Firmware Upgrade, Factory Defaults, Backup and 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.

### 4.17.1 SNMP

Choose menu “System Tools → SNMP”, and then you can get the SNMP settings in the following screen.

![SNMP Settings](image)

- **SNMP Agent** - Choose **Enable** to open this function if you want to have remote control through SNMPv1/v2 agent with MIB-II. Choose **Disable** to close this function.
- **SysContact** - The textual identification of the contact person for this managed node.
- **SysName** - An administratively-assigned name for this managed node.
- **SysLocation** - The physical location of this node.
- **Get Community** - Enter the community name that allows Read-Only access to this device’s SNMP information. The community name can be considered a group password. The default setting is **public**.
- **Get Source** - Get source defines the IP address or subnet for management systems that can read information from this 'get' community device.
- **Set Community** - Enter the community name that allows Read/Write access to this device’s SNMP information. The community name can be considered a group password. The default setting is **private**.
Set Source - Set source defines the IP address or subnet for management systems that can control this 'set' community device. Click the Save button to save your settings.

Note:
A restricted source can be a specific IP address (e.g. 10.10.10.1), or a subnet - represented as IP/BITS (e.g. 10.10.10.0/24). If an IP Address of 0.0.0.0 is specified, the agent will accept all requests under the corresponding community name.

4.17.2 Time Settings

You can set time manually or get GMT from the Internet for the router on this page:

To set time manually, follow the steps below:
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.

For automatic time synchronization:
1. Enter the address of the NTP Server 1 or NTP Server 2.
2. Click the Get GMT button to get GMT time from Internet if you have connected to Internet.
**Note:**

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, if not, the time limited on these functions will not take effect.

- The time will be lost if the router is turned off.
- The router will obtain GMT automatically from Internet if it has already connected to Internet.

### 4.17.3 Diagnostic

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

![Diagnostic Tools](image)

**Diagnostic Tool**

- **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** - Type the destination IP address (such as 202.108.22.5) or Domain name (such as www.baidu.com).

- **Pings Count** - The number of Ping packets for a Ping connection.

- **Ping Packet Size** - The size of Ping packet.

- **Ping Timeout** - Set the waiting time for the reply of each Ping packet. If there is no reply in the specified time, the connection is overtime.

- **Traceroute Max TTL** - The max number of hops for a Traceroute connection.

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.

![Diagnostic Results](image)

**Note:**

Only one user can use this tool at one time. "Ping Count", "Ping Packet Size" and "Ping Timeout" are Ping Parameters. "Traceroute Max TTL" is Traceroute Parameter.

### 4.17.4 Firmware Upgrade

The page allows you to upgrade the latest version firmware to keep your router up-to-date.
New firmware is posted at www.tp-link.com and can be downloaded for free. If the router is not experiencing difficulties, there is no need to upgrade firmware, unless the new firmware supports a new feature you need.

**Note:**

1. When you upgrade the router’s firmware, you will lose current configuration settings, so make sure you backup the router’s settings before you upgrade its firmware.
2. Make sure that your computer is connected to the Internet through the cable when you upgrade the firmware. To upgrade through wireless connection is not allowed.
3. Set your IP address as static IP before upgrading.

To upgrade the router's firmware, follow these instructions:

1. Download the latest firmware upgrade file from our website http://www.tp-link.com.
2. Enter or select the path name where you save the downloaded file on the computer into the File blank.
3. Click the Upgrade button.

- **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 current hardware version.

**Note:**

The firmware version must correspond to the hardware. The upgrade process takes a few minutes and the Router will restart automatically when the upgrade is completed. It is important to keep power on during the entire process. Loss of power during the upgrade could damage the Router.

### 4.17.5 Factory Defaults

This page allows you to restore the factory default settings for the router.

![Figure 4-84 Restore Factory Default](image)

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

- The default User Name: admin
- The default Password: admin
- The default access: tplinkwifi.net
**Note:**
Any settings you have saved will be lost when the default settings are restored.

### 4.17.6 Backup & Restore

This page allows you to save current configuration of router as backup or restore the configuration file you saved before.

![Backup & Restore Configuration](image)

- Click the **Backup** button to save all configuration settings as a backup file in your local computer.
- To restore the router's configuration, follow these instructions:
  - Click the **Browse** button to select the backup file which you want to restore.
  - Click the **Restore** button.

**Note:**
The current configuration will be covered with the uploading configuration file. The restoration process lasts for 20 seconds and the router will restart automatically. Keep the router on during the restoring process to prevent any damage.

### 4.17.7 Reboot

This page allows you to reboot the router.

![Reboot](image)

Click the **Reboot** button to reboot the router.

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

- Change LAN IP Address. (System will reboot automatically)
- MAC Clone (system will reboot automatically)
- DHCP service function.
- Static address assignment of DHCP server.
- Web Service Port of the router.
- Upgrade the firmware of the router (system will reboot automatically).
- Restore the router's settings to factory default (system will reboot automatically).

### 4.17.8 Password

This page allows you to change the factory default user name and password of the router.

![Password](image)

**Username and password can contain between 1 - 15 characters and may not include spaces.**

- **Old User Name:**
- **Old Password:**
- **New User Name:**
- **New Password:**
- **Confirm New Password:**

**Figure 4-87 Password**

It is recommended strongly that you change the factory default user name and password of the router. All users who try to access the router’s Web-based utility or Quick Setup will be prompted.

**Note:**

The new user name and password must not exceed 14 characters in length and must 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.

### 4.17.9 System Log

This page allows you to query the logs of the router.
Figure 4-88 System Log

- **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. The result will be shown in the later log soon.
- **Clear Log** - All the logs will be deleted from this device permanently, not just from the page.

4.17.10 Statistics

The Statistics page displays the network traffic of each PC in LAN, including total traffic and traffic of the last **Packets Statistic interval** seconds.
- Current Statistics Status - Enable or Disable. The default value is disabled. To enable, click the **Enable** button. If disabled, the function of DoS protection in Security settings will be ineffective.

- Packets Statistics Interval - The default value is 10. Select a value between 5 and 60 seconds in the pull-down list. The Packets Statistic interval indicates the time section of the packets statistic.

- Sorted Rules - Here displays sort as desired.

**Statistics Table:**

<table>
<thead>
<tr>
<th>IP Address</th>
<th>The IP Address displayed with statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td>Packets</td>
<td>The total amount of packets received and transmitted by the router.</td>
</tr>
<tr>
<td>Bytes</td>
<td>The total amount of bytes received and transmitted by the router.</td>
</tr>
<tr>
<td><strong>Current</strong></td>
<td></td>
</tr>
<tr>
<td>Packets</td>
<td>The total amount of packets received and transmitted in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>Bytes</td>
<td>The total amount of bytes received and transmitted in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>ICMP Tx</td>
<td>The total amount of the ICMP packets transmitted to WAN in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>UDP Tx</td>
<td>The total amount of the UDP packets transmitted to WAN in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>TCP SYN Tx</td>
<td>The total amount of the TCP SYN packets transmitted to WAN in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
</tbody>
</table>

Click the **Save** button to save the **Packets Statistic interval** value.

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

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

### 4.18 Logout

Click the **Logout** tab at the bottom of the main menu, and then the web-page will be logged out and return to the login window.
Chapter 5. Configuration for Access Point Mode

This chapter will show each Web page’s key functions and the configuration way for Access Point Mode of TL-WR802N.

5.1 Login

After your successful login, you can configure and manage the device. There are main menus on the left of the web-based utility. Submenus will be available after you click one of the main menus. On the right, there are the corresponding explanations and instructions.

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

5.2 Status

The Status page provides the current status information about the Router on Access Point Mode. All information is read-only.
Figure 5-2 Status

- **Firmware Version** - The version information of the Router’s firmware.
- **Hardware Version** - The version information of the Router’s hardware.
- **Wired** - This field displays the current settings or information for the LAN, you can configure them in the **Network > LAN** page.
  - **MAC address** - The physical address of the Router, as seen from the LAN.
  - **IP address** - The LAN IP address of the Router.
  - **Subnet Mask** - The subnet mask associated with LAN IP address.
- **Wireless** - This field displays basic information or status for wireless function, you can configure them in the **Wireless > Wireless Settings** page.
  - **Operation Mode** - The current wireless working mode in use.
  - **Wireless Network Name** - The SSID of the AP.
  - **Channel** - The current wireless channel in use.
  - **Mode** - The current wireless mode which the Router works on.
  - **Channel Width** - The current wireless channel width in use.
• **MAC Address** - The physical address of the Router, as seen from the WLAN.

➢ **Traffic Statistics** - The Router’s traffic statistics.

• **Received (Bytes)** - Traffic that counted in bytes has been received out from the WAN port.

• **Received (Packets)** - Traffic that counted in packets has been received out from the WAN port.

• **Sent (Bytes)** - Traffic that counted in bytes has been sent out from the WAN port.

• **Sent (Packets)** - Traffic that counted in packets has been sent out from the WAN port.

➢ **System Up Time** - The length of the time since the Router was last powered on or reset.

Click the **Refresh** button to get the latest status and settings of the Router.

### 5.3 Quick Setup

Please refer to **Section 3.2: "Quick Installation Guide."**

### 5.4 WPS

**WPS (Wi-Fi Protected Setup)** can help you to quickly and securely connect to a network. This section will guide you to add a new wireless device to an existing network quickly by function. The WPS function is only available when the Operation Mode is set to Access Point. Select menu "WPS", you will see the next screen shown in Figure 5-3.

![WPS (Wi-Fi Protected Setup)](image)

Figure 5-3  WPS

➢ **WPS Status** - To enable or disable the WPS function here.

➢ **Current PIN** - The current value of the device’s PIN is displayed here. The default PIN of the device can be found in the label or User Guide.

➢ **Restore PIN** - Restore the PIN of the device to its default.

➢ **Gen New PIN** - Click this button, and then you can get a new random value for the device’s PIN. You can ensure the network security by generating a new PIN.

➢ **Disable PIN of this Device** - WPS external registrar of entering the device’s PIN can be
disabled or enabled manually. If the device receives multiple failed attempts to authenticate an external Registrar, this function will be disabled automatically.

- **Add Device** - You can add a new device to the existing network manually by clicking this button.

**To add a new device:**

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and device 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.

For the configuration of the new device, here takes the Wireless Adapter of our company for example.

**II. By PBC**

If the wireless adapter supports Wi-Fi Protected Setup and the Push Button Configuration (PBC) method, you can add it to the network by PBC with the following two methods.

**Method One:**

Step 1: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 5-3, then the following screen will appear.

![Add A New Device](image)

**Figure 5-4  Add A New Device**

Step 2: Choose "**Press the button of the new device in two minutes**" and click **Connect**.

Step 3: For the configuration of the wireless adapter, please choose "**Push the button on my access point or wireless router**" in the configuration utility of the WPS as below, and click **Connect**.
Step 4: Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

**Method Two:** Enter the PIN into my AP

Step 1: For the configuration of the wireless adapter, please choose “**Enter the PIN of this device into my access point or wireless router**” in the configuration utility of the WPS as below, and click **Connect**.
The WPS Configuration Screen of Wireless Adapter

Note:

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

Step 2: Keep the WPS Status as Enabled and click the Add Device button in Figure 5-3.
Step 3: Choose “Enter the new device’s PIN” and enter the PIN code (take 16952898 for example) of the wireless adapter in the field after PIN as shown in the figure below. Then click Connect.

Figure 5-5 Add A New Device

Method Three: Enter the PIN from my AP.

Step 1: Get the Current PIN code of the AP in Figure 5-3 (each AP has its unique PIN code. Here takes the PIN code 12345670 of this AP for example).
Step 2: For the configuration of the wireless adapter, please choose “Enter the PIN of my access point or wireless router” in the configuration utility of the WPS as below, and enter the PIN code of the AP into the field after “Access Point PIN”. Then click Connect.

The WPS Configuration Screen of Wireless Adapter

❄ Note:

The default PIN code of the AP can be found in its label or the WPS configuration screen as Figure 5-3.

You will see the following screen when the new device has successfully connected to the network.

Add A New Device

- Enter the new device's PIN.
  
  PIN: [ ]

- Press the button of the new device in two minutes.

Connect successfully!

Figure 5-6
Note:
1. The WPS LED on the AP 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 AP is disabled. Please make sure the Wireless function is enabled before configuring the WPS.

5.5 Operation Mode

The Router supports five operation mode types: **Wireless Router**, **Access Point**, **Range Extender**, **Client** and **Hotspot Router**. Please select one you want. Click **Save** to save your choice, which is shown as Figure 5-7.

![Figure 5-7 Wireless Working Mode Settings](image)

5.6 Network

![Figure 5-8 the Network menu](image)

There is only one submenu under the Network menu (shown in Figure 5-8): **LAN**.

5.6.1 LAN

Choose menu "**Network** ➔ **LAN**", and then you can configure the IP parameters of the LAN on the screen as below.
> **MAC Address** - The physical address of the LAN ports, as seen from the LAN. The value cannot be changed.

> **Type** - Choosing Smart IP (DHCP) to get IP address from DHCP server, or choosing static IP to config IP address manually.

> **IP Address** - Enter the IP address of your system in dotted-decimal notation (factory default - 192.168.0.254).

> **Subnet Mask** - An address code that determines the size of the network. Normally 255.255.255.0 is used as the subnet mask.

**Note:**

1. If you change the IP Address of LAN, you must use the new IP Address to login to the Router.
2. If the new LAN IP Address you set is not in the same subnet with the previous one, the IP Address pool in the DHCP server will be configured automatically, while the Virtual Server and DMZ Host will not take effect until they are re-configured.
3. When you choose the **Smart IP(DHCP)** mode, the DHCP Server function will be disabled.

### 5.7 Wireless

![Wireless menu](image)
There are six submenus under the Wireless menu (shown in Figure 5-10): **Wireless Settings**, **Wireless Security**, **Wireless MAC Filtering**, **Wireless Advanced**, **Wireless Statistics** and **Throughput Monitor**. Click any of them, and you will be able to configure the corresponding function.

### 5.7.1 Wireless Settings

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

![Wireless Settings - AP](image)

- **Wireless Network Name** - Enter a string of up to 32 characters. The same name of SSID (Service Set Identification) must be assigned to all wireless devices in your network. The default SSID is set to be TP-LINK_XXXX (XXXX indicates the last unique four numbers of each Router’s MAC address). But it is recommended strongly that you change your networks name (SSID) to a different value. This value is case-sensitive. For example, `TEST` is NOT the same as `test`.

- **Region** - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

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

When 11bg mixed mode is selected, only 11bg mixed wireless stations can connect to the Router. It is strongly recommended that you set the Mode to 11bgn mixed, and all of 802.11b/g/n wireless stations can connect to the Router.
Note:

If 11bg mixed mode 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.

- **Channel Width** - Select any channel width from the pull-down list. The default setting is automatic, which can automatically adjust the channel width for your clients.

- **Enable Wireless Router Radio** - The wireless radio of the Router can be enabled or disabled to allow wireless stations access. If enabled, the wireless stations will be able to access the Router. Otherwise, wireless stations will not be able to access the Router.

- **Enable SSID Broadcast** - If you select the Enable SSID Broadcast checkbox, the wireless router will broadcast its name (SSID) on the air.

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

Note:

1. The operating distance or range of your wireless connection varies significantly based on the physical placement of the Router. For best results, place your Router.
   - Near the center of the area in which your wireless stations will operate.
   - In an elevated location such as a high shelf.
   - Away from the potential sources of interference, such as PCs, microwaves, and cordless phones.
   - Away from large metal surfaces.

2. Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the Router.

### 5.7.2 Wireless Security

Choose menu “Wireless → Wireless Security”, and then you can configure the security settings of your wireless network.

There are three wireless security modes supported by the Router: WPA/WPA2-Personal, WPA/WPA2-Enterprise and WEP (Wired Equivalent Privacy).
**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. But it’s strongly recommended to choose one of the following modes to enable security.

**WPA-PSK/WPA2-Personal** - 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/WPA2-Personal** radio button and choose TKIP encryption, you will find a notice in red as shown in Figure 5-13.

![WPA/WPA2 - Personal](image)

- **Version** - you can choose the version of the WPA security from the pull-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 **Automatic**, **TKIP** or **AES**.

- **Radius Server IP** - Enter the IP address of the Radius server.

- **Radius Port** - Enter the port that Radius server 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.

- **WEP** - It is based on the IEEE 802.11 standard.

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

  - **WEP Key Format** - **Hexadecimal** and **ASCII** formats are provided here. **Hexadecimal** format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. **ASCII** format stands for any combination of keyboard characters in the specified length.

  - **WEP Key (Password)** - 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.

5.7.3 Wireless MAC Filtering

Choose menu “Wireless → Wireless MAC Filtering”, and then you can control the wireless access by configuring the Wireless MAC Filtering function, as shown in Figure 5-14.

<table>
<thead>
<tr>
<th>Wireless MAC Filtering</th>
<th>Enabled</th>
<th>Disable</th>
</tr>
</thead>
</table>

**Filtering Rules**
- **Deny** the stations specified by any enabled entries in the list to access.
- **Allow** the stations specified by any enabled entries in the list to access.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add New...</td>
<td>Enable All</td>
<td>Disable All</td>
<td>Delete All</td>
<td></td>
</tr>
</tbody>
</table>

Figure 5-14  Wireless MAC Filtering

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

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

To Add a Wireless MAC Address filtering entry, click the **Add New...** button. The "Add or Modify Wireless MAC Address Filtering entry" page will appear, shown in Figure 5-15:
To add or modify a MAC Address Filtering entry, follow these instructions:

1. Enter the appropriate MAC Address into the MAC Address field. The format of the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). For example: 00-0A-EB-B0-00-0B.

2. Give a simple description for the wireless station in the Description field. For example: Wireless station A.

3. Select Enabled or Disabled for this entry on the Status 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.
Click the Previous button to return to the previous page.

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

1. Click the Enable button to enable this function.

2. Select the radio button “Allow the stations 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.
• Enter the MAC address 00-0A-EB-B0-00-0B/00-0A-EB-00-07-5F in the MAC Address field.
• Enter wireless station A/B in the Description field.
• Select Enabled in the Status pull-down list.
• Click the Save button.
• Click the Back button.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-0A-EB-B0-00-0B</td>
<td>Enabled</td>
<td>wireless station A</td>
<td>Modify, Delete</td>
</tr>
<tr>
<td>2</td>
<td>00-0A-EB-00-07-5F</td>
<td>Enabled</td>
<td>wireless station B</td>
<td>Modify, Delete</td>
</tr>
</tbody>
</table>

5.7.4 Wireless Advanced

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

- **Transmit Power** - Here you can specify the transmit power of Router. You can select High, Middle or Low which you would like. High is the default setting and is recommended.

- **Beacon Interval** - Enter a value between 20-1000 milliseconds for Beacon Interval here. The beacons are the packets sent by the Router to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. The default value is 100.

- **RTS Threshold** - Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Router will send RTS frames to a particular receiving station and negotiate the sending of a data frame. The default value is 2346.
- Fragmentation Threshold - This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance because of excessive packets. 2346 is the default setting and is recommended.

- DTIM Interval - This value determines the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. You can specify the value between 1-255 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.

- Enable AP Isolation - This function isolate all connected wireless stations so that wireless stations cannot access each other through WLAN. This function will be disabled if WDS/Bridge is enabled.

☞ 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.

### 5.7.5 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Current Status</th>
<th>Received Packets</th>
<th>Sent Packets</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70-88-9F-0F-C6-C9</td>
<td>STA-ASSOC</td>
<td>46</td>
<td>16</td>
<td>[Allow]</td>
</tr>
</tbody>
</table>

Figure 5-17 Wireless Statistics

- MAC Address - The connected wireless station's MAC address.

- Received Packets - Packets received by the station.
- Sent Packets - Packets sent by the station.
- Configure - The button is used for loading the item to the Wireless MAC Filtering list.

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

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

**Note:**
This page will be refreshed automatically every 5 seconds.

### 5.7.6 Throughput Monitor

Choose menu "Wireless → Throughput Monitor", and then you can see watch wireless throughput information.

#### Throughput Monitor

<table>
<thead>
<tr>
<th>Rate: bps</th>
<th>Run Time: 0 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Transmit: bps</th>
<th>Max Receive: bps</th>
<th>Min Transmit: bps</th>
<th>Average Receive: bps</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Figure 5-18 Wireless Statistics

- **Rate** - The Throughput unit.
- **Run Time** – The time this function is running.
- **Transmit** – Wireless transmit rate information.
- **Receive** – Wireless receive rate information.

Click the Start button to start wireless throughput monitor. 
Click the Stop button to start wireless throughput monitor.
5.8 DHCP

There are three submenus under the DHCP menu (shown in Figure 5-19), DHCP Settings, DHCP Client List and Address Reservation. Click any of them, and you will be able to configure the corresponding function.

5.8.1 DHCP Settings

Choose menu “DHCP → DHCP Settings”, and then you can configure the DHCP Server on the page as shown in Figure 5-20. 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 in the LAN.

- **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

---

**Figure 5-19** The DHCP menu

**Figure 5-20** DHCP Settings
amount of time in minutes and the user will be "leased" this dynamic IP Address. After the
time is up, the user will be automatically assigned a new dynamic IP address. The range of
the time is 1 ~ 2880 minutes. The default value is 120 minutes.

- **Default Gateway** (Optional) - It is suggested to input the IP address of the LAN port of the
Router. The default value is 192.168.0.254.

- **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:**
1. To use the DHCP server function of the Router, you must configure all computers on the LAN
as "Obtain an IP Address automatically".
2. When you choose the **Smart IP (DHCP)** mode in **Network → LAN**, the DHCP Server
function will be disabled. You will see the page as below.

![Figure 5-21 DHCP Settings](image)

**5.8.2 DHCP Client List**

Choose menu “**DHCP → DHCP Clients List**”, and then you can view the information about the
clients attached to the Router in the screen as shown in Figure 5-22.
**DHCP Client List**

<table>
<thead>
<tr>
<th>ID</th>
<th>Client Name</th>
<th>MAC Address</th>
<th>Assigned IP</th>
<th>Lease Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>billm14129</td>
<td>00-11-22-33-44-AA</td>
<td>192.168.0.100</td>
<td>01:15:47</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>76-73-81-40-09</td>
<td>192.168.0.101</td>
<td>01:52:32</td>
</tr>
</tbody>
</table>

Figure 5-22  DHCP Client List

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

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

### 5.8.3 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 5-23). 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.

**Address Reservation**

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Reserved IP Address</th>
<th>Status</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-11-22-33-44-AA</td>
<td>192.168.0.169</td>
<td>Enabled</td>
<td>Modify delete</td>
</tr>
</tbody>
</table>

Figure 5-23  Address Reservation

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

To Reserve an IP address:
1. Click the **Add New...** button. Then Figure 5-24 will pop-up.
2. Enter the MAC address (in XX-XX-XX-XX-XX-XX format.) and IP address (in dotted-decimal notation) of the computer for which you want to reserve an IP address.

3. Click the **Save** button.

![Figure 5-24 Add or Modify an Address Reservation Entry](image)

**To modify or delete an existing entry:**

1. Click the **Modify** in the entry you want to modify. If you want to delete the entry, click the **Delete**.

2. Modify the information.

3. Click the **Save** button.

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

### 5.9 System Tools

![Figure 5-25 The System Tools menu](image)

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

5.9.1 SNMP

Choose menu “System Tools → SNMP”, and then you can get the SNMP settings in the following screen.

![SNMP Settings](image)

- **SNMP Agent** - Choose *Enable* to open this function if you want to have remote control through SNMPv1/v2 agent with MIB-II. Choose *Disable* to close this function.
- **SysContact** - The textual identification of the contact person for this managed node.
- **SysName** - An administratively-assigned name for this managed node.
- **SysLocation** - The physical location of this node.
- **Get Community** - Enter the community name that allows Read-Only access to this device’s SNMP information. The community name can be considered a group password. The default setting is *public*.
- **Get Source** - Get source defines the IP address or subnet for management systems that can read information from this 'get' community device.
- **Set Community** - Enter the community name that allows Read/Write access to this device’s SNMP information. The community name can be considered a group password. The default setting is *private*.
- **Set Source** - Set source defines the IP address or subnet for management systems that can control this 'set' community device.

Click the *Save* button to save your settings.
Note:
A restricted source can be a specific IP address (e.g. 10.10.10.1), or a subnet - represented as IP/BITS (e.g. 10.10.10.0/24). If an IP Address of 0.0.0.0 is specified, the agent will accept all requests under the corresponding community name.

5.9.2 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 5-27  Diagnostic Tools

- **Diagnostic Tool** - Check the radio button to select one diagnostic tool.
  - **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** - Type the destination IP address (e.g. 202.108.22.5) or Domain name (e.g. http://www.tp-link.com).
- **Pings Count** - The number of Ping packets for a Ping connection. The default is 4.
- Ping Packet Size - The size of Ping packet. The default is 64.
- Ping Timeout - Set the waiting time for the reply of each Ping packet. If there is no reply in the specified time, the connection is overtime. The default is 800.
- Traceroute Max TTL - The max number of hops for a Traceroute connection. 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.

![Diagnostic Results](image)

**Note:**

Only one user can use this tool at one time. Options “Number of Pings”, “Ping Size” and “Ping Timeout” are used for **Ping** function. Option “Tracert Hops” are used for **Tracert** function.

### 5.9.3 Ping Watch Dog

Choose menu “**System Tools** → **Ping Watch Dog**”, and then you can monitor of the particular connection to remote host using the Ping tool in the following screen.

![Ping Watch Dog Utility](image)

- **Enable** - Turn on/off Ping Watch Dog.
- IP Address - The IP address of the target host where the Ping Watch Dog Utility is sending ping packets.

- Interval - Time interval between two ping packets which are sent out continuously.

- Delay - Time delay before first ping packet is sent out when this device is restarted.

- Fail Count - Upper limit of the ping packet this device can drop continuously. If this value is overrun, this device will restart automatically.

Be sure to click the Save button to make your settings in operation.

### 5.9.4 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.

![Firmware Upgrade](image)

**Firmware Version** - This displays the current firmware version.

**Hardware Version** - This 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 more recent firmware upgrade file from the TP-LINK website (http://www.tp-link.com).
2. Type the path and file name of the update file into the File field, or click the Browse button to locate the update file.
3. Click the Upgrade button.

**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, otherwise, the Router may be damaged.

4. The Router will reboot after the upgrading has been finished.

5.9.5 Factory Defaults

Choose menu “System Tools → Factory Defaults”, and you can restore the configurations of the Router to factory defaults on the following screen.

![Factory Defaults](image)

Figure 5-31 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 access: tplinkwifi.net

**Note:**
All changed settings will be lost when defaults are restored.

5.9.6 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 5-32.

![Backup & Restore](image)

Figure 5-32 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 locate the update file for the Router, or enter the exact path to the Setting file in the text box.
  - Click the **Restore** button.
Note:
The current configuration will be covered by the uploading configuration file. The upgrade process lasts for 20 seconds and the Router will restart automatically. Keep the Router on during the upgrading process to prevent any damage.

5.9.7 Reboot

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

![Reboot](image)

Figure 5-33 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).

5.9.8 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 5-34.
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.

Click the Save button when finished.

Click the Clear All button to clear all.

**5.9.9 System Log**

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

**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. The result will be shown in the later log soon.

➢ **Clear Log** - All the logs will be deleted from this device permanently, not just from the page.

### 5.10 Logout

Click the **Logout** tab at the bottom of the main menu, and then the web-page will be logged out and return to the login window.
Chapter 6. Configuration for Range Extender Mode

This chapter will show each Web page's key functions and the configuration way for Range Extender Mode of TL-WR802N.

6.1 Login

After your successful login, you can configure and manage the device. There are main menus on the left of the web-based utility. Submenus will be available after you click one of the main menus. On the right, there are the corresponding explanations and instructions.

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

6.2 Status

The Status page provides the current status information about the Router on Range Extender Mode. All information is read-only.
Figure 6-2  Status

- **Firmware Version** - The version information of the Router’s firmware.
- **Hardware Version** - The version information of the Router’s hardware.
- **Wired** - This field displays the current settings or information for the LAN, you can configure them in the **Network > LAN** page.
  - **MAC address** - The physical address of the Router, as seen from the LAN.
  - **IP address** - The LAN IP address of the Router.
  - **Subnet Mask** - The subnet mask associated with LAN IP address.
- **Wireless** - This field displays basic information or status for wireless function, you can configure them in the **Wireless > Wireless Settings** page.
  - **Operation Mode** - The current wireless working mode in use.
  - **Wireless Name of Root AP** - The SSID of Root AP.
  - **Channel** - The current wireless channel in use.
  - **Mode** - The current wireless mode which the Router works on.
  - **Channel Width** - The current wireless channel width in use.
- MAC Address - The physical address of the Router, as seen from the WLAN.

➢ Traffic Statistics - The Router’s traffic statistics.

• Received (Bytes) - Traffic that counted in bytes has been received out from the WAN port.
• Received (Packets) - Traffic that counted in packets has been received out from the WAN port.
• Sent (Bytes) - Traffic that counted in bytes has been sent out from the WAN port.
• Sent (Packets) - Traffic that counted in packets has been sent out from the WAN port.

➢ System Up Time - The length of the time since the Router was last powered on or reset.

Click the Refresh button to get the latest status and settings of the Router.

6.3 Quick Setup
Please refer to Section 3.2: "Quick Installation Guide."

6.4 WPS

WPS (Wi-Fi Protected Setup) can help you to quickly and securely connect to a network. This section will guide you to add a new wireless device to an existing network quickly by function. The WPS function is only available when the Operation Mode is set to Access Point. Select menu "WPS", you will see the next screen shown in Figure 5-3.

![WPS Screen](image)

Figure 6-3  WPS

➢ WPS Status - To enable or disable the WPS function here.

➢ Current PIN - The current value of the device’s PIN is displayed here. The default PIN of the device can be found in the label or User Guide.

➢ Restore PIN - Restore the PIN of the device to its default.

➢ Gen New PIN - Click this button, and then you can get a new random value for the device’s PIN. You can ensure the network security by generating a new PIN.

➢ Disable PIN of this Device - WPS external registrar of entering the device’s PIN can be
disabled or enabled manually. If the device receives multiple failed attempts to authenticate an external Registrar, this function will be disabled automatically.

- **Add Device** - You can add a new device to the existing network manually by clicking this button.

**To add a new device:**

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and device 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.

For the configuration of the new device, here takes the Wireless Adapter of our company for example.

**III. By PBC**

If the wireless adapter supports Wi-Fi Protected Setup and the Push Button Configuration (PBC) method, you can add it to the network by PBC with the following two methods.

**Method One:**

Step 1: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 5-3, then the following screen will appear.

![Add A New Device](image)

**Figure 6-4 Add A New Device**

Step 2: Choose “**Press the button of the new device in two minutes**” and click **Connect**.

Step 3: For the configuration of the wireless adapter, please choose “**Push the button on my access point or wireless router**” in the configuration utility of the WPS as below, and click **Connect**.
Step 4: Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

**Method Two:** Enter the PIN into my AP.

Step 1: For the configuration of the wireless adapter, please choose “**Enter the PIN of this device into my access point or wireless router**” in the configuration utility of the WPS as below, and click **Connect**.
The WPS Configuration Screen of Wireless Adapter

Note:

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

Step 2: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 5-3.

Step 3: Choose **“Enter the new device’s PIN”** and enter the PIN code (**take 16952898 for example**) of the wireless adapter in the field after **PIN** as shown in the figure below. Then click **Connect**.

![Add A New Device](image)

Figure 6-5 Add A New Device

**Method Three**: Enter the PIN from my AP.

Step 1: Get the Current PIN code of the AP in Figure 5-3 (each AP has its unique PIN code. Here takes the PIN code 12345670 of this AP for example).
Step 2: For the configuration of the wireless adapter, please choose “Enter the PIN of my access point or wireless router” in the configuration utility of the WPS as below, and enter the PIN code of the AP into the field after “Access Point PIN”. Then click Connect.

The WPS Configuration Screen of Wireless Adapter

☞ Note:

The default PIN code of the AP can be found in its label or the WPS configuration screen as Figure 6-3.

You will see the following screen when the new device has successfully connected to the network.

<table>
<thead>
<tr>
<th>Add A New Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter the new device's PIN.</td>
</tr>
<tr>
<td>PIN: 12345678</td>
</tr>
<tr>
<td>Press the button of the new device in two minutes.</td>
</tr>
<tr>
<td>Connect successfully!</td>
</tr>
</tbody>
</table>

☞ Note:

1. The WPS LED on the AP 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 AP is disabled. Please make sure the Wireless function is enabled before configuring the WPS.

6.5 Operation Mode

The Router supports five operation mode types: **Wireless Router**, **Access Point**, **Range Extender**, **Client** and **Hotspot Router**. Please select one you want. Click **Save** to save your choice, which is shown as Figure 6-7.

![Operation Mode](image)

**Figure 6-7 Working Mode**

6.6 Network

There is only one submenu under the Network menu (shown in Figure 6-8): **LAN**.

6.6.1 LAN

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

![LAN](image)

**Figure 6-9 LAN**
MAC Address - The physical address of the LAN ports, as seen from the LAN. The value can't be changed.

Type - Choosing Smart IP (DHCP) to get IP address from DHCP server, or choosing static IP to config IP address manually.

IP Address - Enter the IP address of your system in dotted-decimal notation (factory default - 192.168.0.254).

Subnet Mask - An address code that determines the size of the network. Normally 255.255.255.0 is used as the subnet mask.

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

6.7 Wireless

There are six submenus under the Wireless menu (shown in Figure 6-10): Wireless Settings, Wireless Security, MAC Filtering, Wireless Advanced, Wireless Statistics and Throughput Monitor. Click it, and you will be able to configure the corresponding function.

6.7.1 Wireless Settings

Choose menu “Wireless → Wireless Settings”, and then you can configure the basic settings for the wireless network on this page.
Wireless Name of Root AP - The SSID of AP that you want to access.

MAC Address of Root AP - The MAC address of AP that you want to access.

Survey - Click this button, you can search the AP which runs in the environment.

Region - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

Wireless Security Mode - This option should be chosen according to the security configuration of the AP you want to access. It is recommended that the security type is the same as your AP's security type.

Wireless Password - If the AP your router is going to connect need password, you need to fill the password in this blank.

Click Survey button on the Wireless page as shown in Figure 6-11, and then AP List page will appear as shown in Figure 6-12. Find the SSID of the Access Point you want to access, and click Connect in the corresponding row. For example, the second item is selected. The target network’s SSID will be automatically filled into the corresponding box which is shown as the Figure 6-11.
Be sure to click the **Save** button to save your settings on this page.

**Note:**

1. The operating distance or range of your wireless connection varies significantly based on the physical placement of the Router. For best results, place your Router.
   - Near the center of the area in which your wireless stations will operate.
   - In an elevated location such as a high shelf.
   - Away from the potential sources of interference, such as PCs, microwaves, and cordless phones.
   - Away from large metal surfaces.

2. Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the Router.

**6.7.2 Wireless Security**

Choose menu “**Wireless → Wireless Security**”, and then you can configure the security settings of your wireless network.

There are three wireless security modes supported by the Router: WPA/WPA2-Personal, WPA/WPA2-Enterprise and WEP (Wired Equivalent Privacy).
Figure 6-13 Wireless Security

- **Disable Security** - The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect the Router without encryption. But it’s strongly recommended to choose one of the following modes to enable security.

- **WPA-PSK/WPA2-Personal** - 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/WPA2-Personal** radio button and choose TKIP encryption, you will find a notice in red as shown in Figure 6-14.

![Figure 6-14](image)

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

- **Version** - you can choose the version of the WPA security from the pull-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 **Automatic**, **TKIP** or **AES**.

- **Radius Server IP** - Enter the IP address of the Radius server.

- **Radius Port** - Enter the port that Radius server 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.

**WEP** - It is based on the IEEE 802.11 standard.

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

- **WEP Key Format** - **Hexadecimal** and **ASCII** formats are provided here. **Hexadecimal** format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. **ASCII** format stands for any combination of keyboard characters in the specified length.

- **WEP Key (Password)** - 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.

6.7.3 Wireless MAC Filtering

Choose menu "Wireless → Wireless MAC Filtering", and then you can control the wireless access by configuring the Wireless MAC Filtering function, as shown in Figure 6-15.

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 access.
- **Status** - The status of this entry, either Enabled or Disabled.
- **Description** - A simple description of the wireless station.

To Add a Wireless MAC Address filtering entry, click the Add New... button. The "Add or Modify Wireless MAC Address Filtering entry" page will appear, shown in Figure 6-16:
To add or modify a MAC Address Filtering entry, follow these instructions:

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

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

1. Click the Enable button to enable this function.
2. Select the radio button “Allow the stations 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.
   - Enter the MAC address 00-0A-EB-B0-00-08/00-0A-EB-00-07-5F in the **MAC Address** field.
   - Enter wireless station A/B in the **Description** field.
   - Select **Enabled** in the **Status** pull-down list.
   - Click the **Save** button.
   - Click the **Back** button.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-0A-EB-B0-00-08</td>
<td>Enabled</td>
<td>wireless station A</td>
<td>Modify Delete</td>
</tr>
<tr>
<td>2</td>
<td>00-0A-EB-00-07-5F</td>
<td>Enabled</td>
<td>wireless station B</td>
<td>Modify Delete</td>
</tr>
</tbody>
</table>

### 6.7.4 Wireless Advanced

Choose menu **“Wireless → Wireless Advanced”**, and then you can configure the advanced settings of your wireless network.

#### Wireless Advanced

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmit Power</td>
<td>High, Middle, Low</td>
</tr>
<tr>
<td>Beacon Interval</td>
<td>100, 46-1000, 268-2348</td>
</tr>
<tr>
<td>RTS Threshold</td>
<td>2346, 268-2348</td>
</tr>
<tr>
<td>Fragmentation Threshold</td>
<td>2346, 268-2348</td>
</tr>
<tr>
<td>DIFS Interval</td>
<td>1, 1-255</td>
</tr>
<tr>
<td>Enable WMM</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Enable Short GI</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Enable AP Isolation</td>
<td>Yes, No</td>
</tr>
</tbody>
</table>

![Figure 6-17 Wireless Advanced](image)

- **Transmit Power** - Here you can specify the transmit power of Router. You can select High, Middle or Low which you would like. High is the default setting and is recommended.
- **Beacon Interval** - Enter a value between 20-1000 milliseconds for Beacon Interval here. The beacons are the packets sent by the Router to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. The default value is 100.
- **RTS Threshold** - Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Router will send RTS frames to a particular receiving station and negotiate the sending of a data frame. The default value is 2346.
- Fragmentation Threshold - This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance because of excessive packets. 2346 is the default setting and is recommended.

- DTIM Interval - This value determines the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. You can specify the value between 1-255 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.

- Enable AP Isolation - This function isolate all connected wireless stations so that wireless stations cannot access each other through WLAN. This function will be disabled if WDS/Bridge is enabled.

느 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.

6.7.5 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Current Status</th>
<th>Received Packets</th>
<th>Sent Packets</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70-60-5f-fb-ce-c9</td>
<td>STA-ASSOC</td>
<td>46</td>
<td>16</td>
<td>Allow</td>
</tr>
</tbody>
</table>

Figure 6-18 Wireless Statistics

- MAC Address - The connected wireless station's MAC address.

- Received Packets - Packets received by the station. 
- Sent Packets - Packets sent by the station. 
- Configure - The button is used for loading the item to the Wireless MAC Filtering list.

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.

### 6.7.6 Throughput Monitor

Choose menu "Wireless → Throughput Monitor", and then you can see watch wireless throughput information.

<table>
<thead>
<tr>
<th>Rate: bps</th>
<th>Run Time: 0 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>0.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Transmit</th>
<th>Max Transmit</th>
<th>Min Transmit</th>
<th>Average Transmit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mbps</td>
<td>Mbps</td>
<td>Mbps</td>
<td>Mbps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Receive</th>
<th>Max Receive</th>
<th>Min Receive</th>
<th>Average Receive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mbps</td>
<td>Mbps</td>
<td>Mbps</td>
<td>Mbps</td>
</tr>
</tbody>
</table>

![Figure 6-19 Wireless Statistics](image)

- Rate - The Throughput unit. 
- Run Time – The time this function is running. 
- Transmit – Wireless transmit rate information. 
- Receive – Wireless receive rate information.

Click the Start button to start wireless throughput monitor.

Click the Stop button to start wireless throughput monitor.
6.8 DHCP

There are three submenus under the DHCP menu (shown in Figure 6-20), **DHCP Settings**, **DHCP Client List** and **Address Reservation**. Click any of them, and you will be able to configure the corresponding function.

### 6.8.1 DHCP Settings

Choose menu “**DHCP → DHCP Settings**”, and then you can configure the DHCP Server on the page as shown in Figure 6-21. 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 in the LAN.

![DHCP Settings](image)

- **DHCP Server** - **Enable** or **Disable** the DHCP server. If you disable the Server, you must have another DHCP server within your network or else you must configure the computer manually.
- **Start IP Address** - Specify an IP address for the DHCP Server to start with when assigning IP addresses. 192.168.0.100 is the default start address.
- **End IP Address** - Specify an IP address for the DHCP Server to end with when assigning IP addresses. 192.168.0.199 is the default end address.
- **Address Lease Time** - The **Address Lease Time** is the amount of time a network user will be allowed connection to the Router with their current dynamic IP Address. Enter the
amount of time in minutes and the user will be "leased" this dynamic IP Address. After the
time is up, the user will be automatically assigned a new dynamic IP address. The range of
the time is 1 ~ 2880 minutes. The default value is 120 minutes.

- **Default Gateway** (Optional) - It is suggested to input the IP address of the LAN port of the
Router. The default value is 192.168.0.254.

- **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:**

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

2. When you choose the Smart IP (DHCP) mode in Network → LAN, the DHCP Server function
will be disabled. You will see the page as below.

<table>
<thead>
<tr>
<th>DHCP Server:</th>
<th>Disable</th>
<th>Enable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start IP Address:</td>
<td>192.168.0.100</td>
<td></td>
</tr>
<tr>
<td>End IP Address:</td>
<td>192.168.0.199</td>
<td></td>
</tr>
<tr>
<td>Address Lease Time:</td>
<td>120 minutes (1~2880 minutes, the default value is 120)</td>
<td></td>
</tr>
<tr>
<td>Default Gateway:</td>
<td>192.168.0.254 (Optional)</td>
<td></td>
</tr>
<tr>
<td>Default Domain:</td>
<td>(Optional)</td>
<td></td>
</tr>
<tr>
<td>Primary DNS:</td>
<td>192.168.0.254 (Optional)</td>
<td></td>
</tr>
<tr>
<td>Secondary DNS:</td>
<td>192.168.0.254 (Optional)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The DHCP settings function cannot be configured if you have chosen Smart IP (DHCP) in Network → LAN
on this situation the device will help you configure the DHCP automatically as you need.

![Figure 6-22 DHCP Settings](image)

**6.8.2 DHCP Client List**

Choose menu "DHCP → DHCP Client List", and then you can view the information about the
clients attached to the Router in the screen as shown in Figure 6-23.
6.8.3 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 6-24). 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.

To Reserve an IP address:
1. Click the Add New… button. Then Figure 6-24 will pop-up.

Figure 6-24  Address Reservation

- 150 -
2. Enter the MAC address (in XX-XX-XX-XX-XX-XX format) and IP address (in dotted-decimal notation) of the computer for which you want to reserve an IP address.

3. Click the **Save** button.

![Add or Modify an Address Reservation Entry](image)

**To modify or delete an existing entry:**

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

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

### 6.9 System Tools

![System Tools](image)

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

### 6.9.1 SNMP

Choose menu “System Tools → SNMP”, and then you can get the SNMP settings in the following screen.

![SNMP Settings](image)

- **SNMP Agent** - Choose Enable to open this function if you want to have remote control through SNMPv1/v2 agent with MIB-II. Choose Disable to close this function.
- **SysContact** - The textual identification of the contact person for this managed node.
- **SysName** - An administratively-assigned name for this managed node.
- **SysLocation** - The physical location of this node.
- **Get Community** - Enter the community name that allows Read-Only access to this device’s SNMP information. The community name can be considered a group password. The default setting is public.
- **Get Source** - Get source defines the IP address or subnet for management systems that can read information from this ‘get’ community device.
- **Set Community** - Enter the community name that allows Read/Write access to this device’s SNMP information. The community name can be considered a group password. The default setting is private.
- **Set Source** - Set source defines the IP address or subnet for management systems that can control this ‘set’ community device.

Click the **Save** button to save your settings.
Note:
A restricted source can be a specific IP address (e.g. 10.10.10.1), or a subnet - represented as IP/BITS (e.g. 10.10.10.0/24). If an IP Address of 0.0.0.0 is specified, the agent will accept all requests under the corresponding community name.

6.9.2 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.

![Diagnostic Tools](image)

- **Diagnostic Tool** - Check the radio button to select one diagnostic tool.
  - **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** - Type the destination IP address (e.g. 202.108.22.5) or Domain name (e.g. http://www.tp-link.com).
- 154 -

- **Pings Count** - The number of Ping packets for a Ping connection. The default is 4.

- **Ping Packet Size** - The size of Ping packet. The default is 64.

- **Ping Timeout** - Set the waiting time for the reply of each Ping packet. If there is no reply in the specified time, the connection is overtime. The default is 800.

- **Traceroute Max TTL** - The max number of hops for a Traceroute connection. 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.

![Diagnostic Results](image)

---

**Note:**

Only one user can use this tool at one time. Options "Number of Pings", "Ping Size" and "Ping Timeout" are used for **Ping** function. Option "Tracert Hops" are used for **Tracert** function.

### 6.9.3 Ping Watch Dog

Choose menu "**System Tools → Ping Watch Dog**", and then you can monitor of the particular connection to remote host using the Ping tool in the following screen.

![Ping Watch Dog Utility](image)

- **Enable** - Turn on/off Ping Watch Dog.
IP Address - The IP address of the target host where the Ping Watch Dog Utility is sending ping packets.

Interval - Time interval between two ping packets which are sent out continuously.

Delay - Time delay before first ping packet is sent out when this device is restarted.

Fail Count - Upper limit of the ping packet this device can drop continuously. If this value is overrun, this device will restart automatically.

Be sure to click the Save button to make your settings in operation.

6.9.4 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.

Firmware Upgrade

<table>
<thead>
<tr>
<th>File:</th>
<th>Browse...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware Version:</td>
<td></td>
</tr>
<tr>
<td>Hardware Version:</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6-31 Firmware Upgrade

Firmware Version - This displays the current firmware version.

Hardware Version - This 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 more recent firmware upgrade file from the TP-LINK website (http://www.tp-link.com).
2. Type the path and file name of the update file into the File field, or click the Browse button to locate the update file.
3. Click the Upgrade button.

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, otherwise, the Router may be damaged.

4. The Router will reboot after the upgrading has been finished.

6.9.5 Factory Defaults

Choose menu “System Tools → Factory Defaults”, and you can restore the configurations of the Router to factory defaults on the following screen.

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

- The default User Name: admin
- The default Password: admin
- The default access: tplinkwifi.net

Note:
All changed settings will be lost when defaults are restored.

6.9.6 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 6-33.

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 locate the update file for the Router, or enter the exact path to the Setting file in the text box.
- Click the Restore button.
Note:

The current configuration will be covered by the uploading configuration file. The upgrade process lasts for 20 seconds and the Router will restart automatically. Keep the Router on during the upgrading process to prevent any damage.

6.9.7 Reboot

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

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

- 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).

6.9.8 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 6-35.
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.

Click the Save button when finished.

Click the Clear All button to clear all.

6.9.9 System Log

Choose menu “System Tools → System Log”, and then you can view the logs of the Router.
- 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. The result will be shown in the later log soon.

- Clear Log - All the logs will be deleted from this device permanently, not just from the page.

### 6.10 Logout

Click the **Logout** tab at the bottom of the main menu, and then the web-page will be logged out and return to the login window.
Chapter 7. Configuration for Client Mode

This chapter will show each Web page’s key functions and the configuration way for Client Mode of TL-WR802N.

7.1 Login

After your successful login, you can configure and manage the device. There are main menus on the left of the web-based utility. Submenus will be available after you click one of the main menus. On the right, there are the corresponding explanations and instructions.

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

7.2 Status

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

<table>
<thead>
<tr>
<th>Firmware Version:</th>
<th>3.16.9 Build 105717 Rel.48900es</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Version:</td>
<td></td>
</tr>
</tbody>
</table>

#### Wired
- **MAC Address:** C4-E9-84-35-78-5E
- **IP Address:** 192.168.0.254
- **Subnet Mask:** 255.255.255.0

#### Wireless
- **Operation Mode:** Client
- **Wireless Name of Root AP:**
  - **Channel:** 8
  - **Mode:** 11bgn mixed
  - **Channel Width:** Automatic
  - **Max Tx Rate:** 300Mbps
  - **MAC Address:** C4-E9-84-35-78-5E
  - **Client Status:** Init.

#### Traffic Statistics

<table>
<thead>
<tr>
<th>Received</th>
<th>Sent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bytes:</td>
<td>738</td>
</tr>
<tr>
<td></td>
<td>730</td>
</tr>
<tr>
<td>Packets:</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**System Up Time:** 0 days 00:09:44

---

**Figure 7-2 Status**

- **Firmware Version** - The version information of the Router’s firmware.
- **Hardware Version** - The version information of the Router’s hardware.
- **Wired** - This field displays the current settings or information for the LAN, you can configure them in the **Network > LAN** page.
  - **MAC address** - The physical address of the Router, as seen from the LAN.
  - **IP address** - The LAN IP address of the Router.
  - **Subnet Mask** - The subnet mask associated with LAN IP address.
- **Wireless** - This field displays basic information or status for wireless function, you can configure them in the **Wireless > Wireless Settings** page.
  - **Operation Mode** - The current wireless working mode in use.
  - **Wireless Name of Root AP** - The SSID of Root AP.
  - **Channel** - The current wireless channel in use.
  - **Mode** - The current wireless mode which the Router works on.
  - **Channel Width** - The current wireless channel width in use.
- TL-WR802N 300Mbps Wireless N Nano Router -

- **MAC Address** - The physical address of the Router, as seen from the WLAN.

  - **Traffic Statistics** - The Router’s traffic statistics.
    - **Received (Bytes)** - Traffic that counted in bytes has been received out from the WAN port.
    - **Received (Packets)** - Traffic that counted in packets has been received out from the WAN port.
    - **Sent (Bytes)** - Traffic that counted in bytes has been sent out from the WAN port.
    - **Sent (Packets)** - Traffic that counted in packets has been sent out from the WAN port.

  - **System Up Time** - The length of the time since the Router was last powered on or reset.

Click the **Refresh** button to get the latest status and settings of the Router.

### 7.3 Quick Setup

Please refer to Section 3.2: "Quick Installation Guide."

### 7.4 WPS

**WPS (Wi-Fi Protected Setup)** can help you to quickly and securely connect to a network. This section will guide you to add a new wireless device to an existing network quickly by function. The WPS function is only available when the Operation Mode is set to Access Point. Select menu "WPS", you will see the next screen shown in Figure 5-3.

![WPS (Wi-Fi Protected Setup)](image)

**Figure 7-3  WPS**

- **WPS Status** - To enable or disable the WPS function here.
- **Current PIN** - The current value of the device’s PIN is displayed here. The default PIN of the device can be found in the label or User Guide.
- **Gen New PIN** - Click this button, and then you can get a new random value for the device’s PIN. You can ensure the network security by generating a new PIN.
- **Disable PIN of this Device** - WPS external registrar of entering the device’s PIN can be
disabled or enabled manually. If the device receives multiple failed attempts to authenticate an external Registrar, this function will be disabled automatically.

- **Add Device** - You can add a new device to the existing network manually by clicking this button.

**To add a new device:**

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and device 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.

For the configuration of the new device, here takes the Wireless Adapter of our company for example.

**IV. By PBC**

If the wireless adapter supports Wi-Fi Protected Setup and the Push Button Configuration (PBC) method, you can add it to the network by PBC with the following two methods.

**Method One:**

Step 1: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 5-3, then the following screen will appear.

![Add A New Device](image)

**Add A New Device**

- Enter the new device's PIN.
  - **PIN:** [input field]
- Press the button of the new device in two minutes.

![Back](image) ![Connect](image)

**Figure 7-4** Add A New Device

Step 2: Choose "**Press the button of the new device in two minutes**" and click **Connect**.

Step 3: For the configuration of the wireless adapter, please choose "**Push the button on my access point or wireless router**" in the configuration utility of the WPS as below, and click **Connect**.
Method Two: Enter the PIN into my AP.

Step 1: For the configuration of the wireless adapter, please choose “Enter the PIN of this device into my access point or wireless router” in the configuration utility of the WPS as below, and click Connect.
The WPS Configuration Screen of Wireless Adapter

**Note:**

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

Step 2: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 5-3.

Step 3: Choose "**Enter the new device’s PIN**" and enter the PIN code (take 16952898 for example) of the wireless adapter in the field after **PIN** as shown in the figure below. Then click **Connect**.

![Add A New Device](image)

**Method Three:** Enter the PIN from my AP.

Step 1: Get the Current PIN code of the AP in Figure 5-3 (each AP has its unique PIN code. Here takes the PIN code 12345670 of this AP for example).
Step 2: For the configuration of the wireless adapter, please choose “Enter the PIN of my access point or wireless router” in the configuration utility of the WPS as below, and enter the PIN code of the AP into the field after “Access Point PIN”. Then click Connect.

![The WPS Configuration Screen of Wireless Adapter](image)

Note:
The default PIN code of the AP can be found in its label or the WPS configuration screen as Figure 7-3.

You will see the following screen when the new device has successfully connected to the network.

![Add A New Device](image)

Note:
1. The WPS LED on the AP 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 AP is disabled. Please make sure the Wireless function is enabled before configuring the WPS.

7.5 Operation Mode

The Router supports five operation mode types: Wireless Router, Access Point, Range Extender, Client and Hotspot Router. Please select one you want. Click Save to save your choice, which is shown as Figure 7-7.

![Figure 7-7 Working Mode](image)

7.6 Network

There is only one submenu under the Network menu (shown in Figure 7-8): LAN.

7.6.1 LAN

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

![Figure 7-9 LAN](image)
MAC Address - The physical address of the LAN ports, as seen from the LAN. The value can't be changed.

Type - Choosing Smart IP (DHCP) to get IP address from DHCP server, or choosing static IP to set IP address manually.

IP Address - Enter the IP address of your system in dotted-decimal notation (factory default - 192.168.0.254).

Subnet Mask - An address code that determines the size of the network. Normally 255.255.255.0 is used as the subnet mask.

Note:
1. If you change the IP Address of LAN, you must use the new IP Address to login to the Router.
2. If the new LAN IP Address you set is not in the same subnet with the previous one, the IP Address pool in the DHCP server will be configured automatically, while the Virtual Server and DMZ Host will not take effect until they are re-configured.
3. When you choose the Smart IP (DHCP) mode, the DHCP Server function will be disabled.

7.7 Wireless

Figure 7-10 Wireless menu

There are six submenus under the Wireless menu (shown in Figure 7-10): Wireless Settings, Wireless Security, MAC Filtering, Wireless Advanced, Wireless Statistics and Throughput Monitor. Click any of them, and you will be able to configure the corresponding function.

7.7.1 Wireless Settings

Choose menu “Wireless → Wireless Settings”, and then you can configure the basic settings for the wireless network on this page.
Enable WDS - The AP client can connect to AP with WDS enabled or disabled. If WDS is enabled, all traffic from wired networks will be forwarded in the format of WDS frames consisting of four address fields. If WDS is disabled, three address frames are used. If your AP supports WDS well, please enable this option.

Wireless Name of Root AP - Enter the SSID of AP that you want to access.

MAC Address of Root AP - Enter the MAC address of AP that you want to access.

Region - Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.

Enable Wireless Radio - The wireless radio of the AP can be enabled or disabled to allow or deny wireless stations to access. If enabled, the wireless stations will be able to access the AP, otherwise, wireless stations will not be able to access the AP.

Survey - Click this button, you can search the APs.

Note:
1. The operating distance or range of your wireless connection varies significantly based on the physical placement of the Router. For best results, place your Router.
   - Near the center of the area in which your wireless stations will operate.
   - In an elevated location such as a high shelf.
   - Away from the potential sources of interference, such as PCs, microwaves, and cordless phones.
   - Away from large metal surfaces.

2. Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the Router.
7.7.2 Wireless Security

Choose menu “Wireless → Wireless Security”, and then you can configure the security settings of your wireless network.

There are three wireless security modes supported by the Router: WPA/WPA2-Personal, WPA/WPA2-Enterprise and WEP (Wired Equivalent Privacy).

- **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. But it’s strongly recommended to choose one of the following modes to enable security.

- **WPA-PSK/WPA2-Personal** - 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/WPA2-Personal** radio button and choose TKIP encryption, you will find a notice in red as shown in Figure 7-13.

<table>
<thead>
<tr>
<th>WPA/WPA2 - Personal(Recommended)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version:</strong> Automatic(Recommended)</td>
</tr>
<tr>
<td><strong>Encryption:</strong> TKIP</td>
</tr>
<tr>
<td><strong>WPA Password:</strong></td>
</tr>
<tr>
<td><strong>Group Key Update Period:</strong> 0 Seconds (Keep it default if you are not sure, minimum is 30, 0 means no update)</td>
</tr>
</tbody>
</table>

Figure 7-13

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

- **Version** - you can choose the version of the WPA security from the pull-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 **Automatic**, **TKIP** or **AES**.

- **Radius Server IP** - Enter the IP address of the Radius server.

- **Radius Port** - Enter the port that Radius server 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.

➢ **WEP** - It is based on the IEEE 802.11 standard.

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

- **WEP Key Format** - **Hexadecimal** and **ASCII** formats are provided here. **Hexadecimal** format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. **ASCII** format stands for any combination of keyboard characters in the specified length.
• **WEP Key (Password)** - 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.

### 7.7.3 Wireless MAC Filtering

Choose menu “Wireless → Wireless MAC Filtering”, and then you can control the wireless access by configuring the **Wireless MAC Filtering** function, as shown in Figure 6-15.

![Wireless MAC Filtering](image)

**Figure 7-14 Wireless MAC Filtering**

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

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

To Add a Wireless MAC Address filtering entry, click the **Add New…** button. The "**Add or Modify Wireless MAC Address Filtering entry**" page will appear, shown in Figure 6-16:
To add or modify a MAC Address Filtering entry, follow these instructions:

1. Enter the appropriate MAC Address into the MAC Address field. The format of the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). For example: 00-0A-EB-B0-00-0B.

2. Give a simple description for the wireless station in the Description field. For example: Wireless station A.

3. Select Enabled or Disabled for this entry on the Status 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.

Click the Previous button to return to the previous page.

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

1. Click the Enable button to enable this function.

2. Select the radio button “Allow the stations 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.
   - Enter the MAC address 00-0A-EB-B0-00-0B/00-0A-EB-00-07-5F in the **MAC Address** field.
   - Enter wireless station A/B in the **Description** field.
   - Select **Enabled** in the **Status** pull-down list.
   - Click the **Save** button.
   - Click the **Back** button.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-0A-EB-B0-00-0B</td>
<td>Enabled</td>
<td>wireless station A</td>
<td>Modify/Delete</td>
</tr>
<tr>
<td>2</td>
<td>00-0A-EB-00-07-5F</td>
<td>Enabled</td>
<td>wireless station B</td>
<td>Modify/Delete</td>
</tr>
</tbody>
</table>

### 7.7.4 Wireless Advanced

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

![Wireless Advanced](image)

- **Transmit Power** - Here you can specify the transmit power of Router. You can select High, Middle or Low which you would like. High is the default setting and is recommended.
- **Beacon Interval** - Enter a value between 20-1000 milliseconds for Beacon Interval here. The beacons are the packets sent by the Router to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. The default value is 100.
- **RTS Threshold** - Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Router will send RTS frames to a particular receiving station and negotiate the sending of a data frame. The default value is 2346.
- Fragmentation Threshold - This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance because of excessive packets. 2346 is the default setting and is recommended.

- DTIM Interval - This value determines the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. You can specify the value between 1-255 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.

- Enable AP Isolation - This function isolate all connected wireless stations so that wireless stations cannot access each other through WLAN. This function will be disabled if WDS/Bridge is enabled.

☞ 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.

7.7.5 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Current Status</th>
<th>Received Packets</th>
<th>Sent Packets</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70-73-CB:9F-C8:C9</td>
<td>STA-ASSOC</td>
<td>46</td>
<td>16</td>
<td>Allow</td>
</tr>
</tbody>
</table>

Figure 7-17 Wireless Statistics

- MAC Address - The connected wireless station's MAC address.

- Received Packets - Packets received by the station.
- Sent Packets - Packets sent by the station.
- Configure - The button is used for loading the item to the Wireless MAC Filtering list.

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

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

**Note:**
This page will be refreshed automatically every 5 seconds.

### 7.7.6 Throughput Monitor

Choose menu "Wireless → Throughput Monitor", and then you can see watch wireless throughput information.

**Throughput Monitor**

<table>
<thead>
<tr>
<th>Rate: bps</th>
<th>Run Time: 0s</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Figure 7-18 Wireless Statistics**

- **Rate** - The Throughput unit.
- **Run Time** – The time this function is running.
- **Transmit** – Wireless transmit rate information.
- **Receive** – Wireless receive rate information.

Click the **Start** button to start wireless throughput monitor.
Click the **Stop** button to start wireless throughput monitor.
7.8 DHCP

There are three submenus under the DHCP menu (shown in Figure 7-19), **DHCP Settings**, **DHCP Client List** and **Address Reservation**. Click any of them, and you will be able to configure the corresponding function.

### 7.8.1 DHCP Settings

Choose menu “DHCP → DHCP Settings”, and then you can configure the DHCP Server on the page as shown in Figure 7-20. 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 in the LAN.

![DHCP Settings](image)

- **DHCP Server** - Enable or Disable the DHCP server. If you disable the Server, you must have another DHCP server within your network or else you must configure the computer manually.
- **Start IP Address** - Specify an IP address for the DHCP Server to start with when assigning IP addresses. 192.168.0.100 is the default start address.
- **End IP Address** - Specify an IP address for the DHCP Server to end with when assigning IP addresses. 192.168.0.199 is the default end address.
- **Address Lease Time** - The **Address Lease Time** is the amount of time a network user will be allowed connection to the Router with their current dynamic IP Address. Enter the
amount of time in minutes and the user will be "leased" this dynamic IP Address. After the
time is up, the user will be automatically assigned a new dynamic IP address. The range of
the time is 1 ~ 2880 minutes. The default value is 120 minutes.

- Default Gateway (Optional) - It is suggested to input the IP address of the LAN port of the
Router. The default value is 192.168.0.254.

- 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:
1. To use the DHCP server function of the Router, you must configure all computers on the LAN
as "Obtain an IP Address automatically". This function will take effect until this device reboots.
2. When you choose the Smart IP (DHCP) mode in Network → LAN, the DHCP Server
function will be disabled. You will see the page as below.

![DHCP Settings](image)

Figure 7-21 DHCP Settings

### 7.8.2 DHCP Client List

Choose menu “DHCP → DHCP Client List”, and then you can view the information about the
clients attached to the Router in the screen as shown in Figure 7-22.
### DHCP Client List

<table>
<thead>
<tr>
<th>ID</th>
<th>Client Name</th>
<th>MAC Address</th>
<th>Assigned IP</th>
<th>Lease Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>billm141239</td>
<td>00-60-70-01-80</td>
<td>192.168.0.101</td>
<td>01:19:47</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>76-73-08-1F-08-09</td>
<td>192.168.0.101</td>
<td>01:59:32</td>
</tr>
</tbody>
</table>

![Figure 7-22 DHCP Clients List](image)

- **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.

### 7.8.3 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 7-23). 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 7-23 Address Reservation](image)

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

To Reserve an IP address:
1. Click the **Add New...** button. Then Figure 7-24 will pop-up.
2. Enter the MAC address (in XX-XX-XX-XX-XX-XX format.) and IP address (in dotted-decimal notation) of the computer for which you want to reserve an IP address.

3. Click the **Save** button.

![Add or Modify an Address Reservation Entry](image)

**Figure 7-24 Add or Modify an Address Reservation Entry**

**To modify or delete an existing entry:**

1. Click the **Modify** in the entry you want to modify. If you want to delete the entry, click the **Delete**.

2. Modify the information.

3. Click the **Save** button.

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

### 7.9 System Tools

![System Tools](image)

**Figure 7-25 The System Tools menu**

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

7.9.1 SNMP

Choose menu “System Tools → SNMP”, and then you can get the SNMP settings in the following screen.

![SNMP Settings](image)

- **SNMP Agent** - Choose **Enable** to open this function if you want to have remote control through SNMPv1/v2 agent with MIB-II. Choose **Disable** to close this function.
- **SysContact** - The textual identification of the contact person for this managed node.
- **SysName** - An administratively-assigned name for this managed node.
- **SysLocation** - The physical location of this node.
- **Get Community** - Enter the community name that allows Read-Only access to this device’s SNMP information. The community name can be considered a group password. The default setting is **public**.
- **Get Source** - Get source defines the IP address or subnet for management systems that can read information from this ‘get’ community device.
- **Set Community** - Enter the community name that allows Read/Write access to this device’s SNMP information. The community name can be considered a group password. The default setting is **private**.
- **Set Source** - Set source defines the IP address or subnet for management systems that can control this ‘set’ community device.

Click the **Save** button to save your settings.
🔍 **Note:**

A restricted source can be a specific IP address (e.g. 10.10.10.1), or a subnet - represented as IP/BITS (e.g. 10.10.10.0/24). If an IP Address of 0.0.0.0 is specified, the agent will accept all requests under the corresponding community name.

### 7.9.2 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.

#### Diagnostic Tools

<table>
<thead>
<tr>
<th>Diagnostic Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnostic Tool:</strong></td>
</tr>
<tr>
<td><strong>IP Address/Domain Name:</strong></td>
</tr>
<tr>
<td><strong>Ping Count:</strong></td>
</tr>
<tr>
<td><strong>Ping Packet Size:</strong></td>
</tr>
<tr>
<td><strong>Ping Timeout:</strong></td>
</tr>
<tr>
<td><strong>Traceroute Max TTL:</strong></td>
</tr>
</tbody>
</table>

#### Diagnostic Results

The Router is Ready.

- **Diagnostic Tool** - Check the radio button to select one diagnostic tool.
  - **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 - Type the destination IP address (e.g. 202.108.22.5) or Domain name (e.g. http://www.tp-link.com).

- Pings Count - The number of Ping packets for a Ping connection. The default is 4.

- Ping Packet Size - The size of Ping packet. The default is 64.

- Ping Timeout - Set the waiting time for the reply of each Ping packet. If there is no reply in the specified time, the connection is overtime. The default is 800.

- Traceroute Max TTL - The max number of hops for a Traceroute connection. 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.

![Diagnostic Results](image)

**Note:**

Only one user can use this tool at one time. Options “Number of Pings”, “Ping Size” and “Ping Timeout” are used for Ping function. Option “Tracert Hops” are used for Tracert function.

### 7.9.3 Ping Watch Dog

Choose menu “System Tools → Ping Watch Dog”, and then you can monitor of the particular connection to remote host using the Ping tool in the following screen.

![Ping Watch Dog Utility](image)
- Enable - Turn on/off Ping Watch Dog.
- IP Address - The IP address of the target host where the Ping Watch Dog Utility is sending ping packets.
- Interval - Time interval between two ping packets which are sent out continuously.
- Delay - Time delay before first ping packet is sent out when this device is restarted.
- Fail Count - Upper limit of the ping packet this device can drop continuously. If this value is overrun, this device will restart automatically.

Be sure to click the Save button to make your settings in operation.

7.9.4 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.

![Firmware Upgrade](http://example.com/image.png)

- Firmware Version - This displays the current firmware version.
- Hardware Version - This 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 more recent firmware upgrade file from the TP-LINK website (http://www.tp-link.com).
2. Type the path and file name of the update file into the File field, or click the Browse button to locate the update file.
3. Click the Upgrade button.

**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, otherwise, the Router may be damaged.

4. The Router will reboot after the upgrading has been finished.

7.9.5 Factory Defaults

Choose menu “System Tools → Factory Defaults”, and you can restore the configurations of the Router to factory defaults on the following screen.

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

- The default User Name: admin
- The default Password: admin
- The default access: tplinkwifi.net

💡 Note:
All changed settings will be lost when defaults are restored.

7.9.6 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 7-32.

- 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 locate the update file for the Router, or enter the exact path to the Setting file in the text box.
- Click the **Restore** button.

**Note:**

The current configuration will be covered by the uploading configuration file. The upgrade process lasts for 20 seconds and the Router will restart automatically. Keep the Router on during the upgrading process to prevent any damage.

### 7.9.7 Reboot

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

![Reboot the Router](image)

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).

### 7.9.8 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 7-34.
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.

Click the **Save** button when finished.

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

### 7.9.9 System Log

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

**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. The result will be shown in the later log soon.
- Clear Log - All the logs will be deleted from this device permanently, not just from the page.

7.10 Logout

Click the Logout tab at the bottom of the main menu, and then the web-page will be logged out and return to the login window.
Chapter 8. Configuration for Hotspot Router Mode

This chapter will show each Web page’s key functions and the configuration way for Hotspot Router Mode of TL-WR802N.

8.1 Login

After your successful login, you can configure and manage the device. There are main menus on the left of the web-based utility. Submenus will be available after you click one of the main menus. On the right, there are the corresponding explanations and instructions.

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

8.2 Status

The Status page provides the current status information about the Router on Hotspot Router Mode. All information is read-only.
<table>
<thead>
<tr>
<th>Status</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware Version</td>
<td>3:1:0.9 Build 1005777 Rev 480001</td>
<td></td>
</tr>
<tr>
<td>Hardware Version</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAC Address</td>
<td>C4:89:84-35-78-5E</td>
<td></td>
</tr>
<tr>
<td>IP Address</td>
<td>192.168.0.1</td>
<td></td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>255.255.255.0</td>
<td></td>
</tr>
<tr>
<td>Wireless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation Mode</td>
<td>Hotspot Router</td>
<td></td>
</tr>
<tr>
<td>Wireless Radio</td>
<td>Enable</td>
<td></td>
</tr>
<tr>
<td>Name (SSID)</td>
<td>TP-LINK_792E</td>
<td></td>
</tr>
<tr>
<td>Channel</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>11bgn mixed</td>
<td></td>
</tr>
<tr>
<td>Channel Width</td>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>MAC Address</td>
<td>C4:89:84-35-78-5E</td>
<td></td>
</tr>
<tr>
<td>Client Status</td>
<td>Int.</td>
<td></td>
</tr>
<tr>
<td>WAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAC Address</td>
<td>C4:89:84-35-78-5F</td>
<td></td>
</tr>
<tr>
<td>IP Address</td>
<td>0.0.0.0 PPPoE(Connect Automatically)</td>
<td></td>
</tr>
<tr>
<td>Subnet Mask</td>
<td>0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>Default Gateway</td>
<td>0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>DNS Server</td>
<td>0.0.0.0 0.0.0.0</td>
<td></td>
</tr>
<tr>
<td>Online Time</td>
<td>0 day(s) 00:00:00 Connecting...</td>
<td></td>
</tr>
<tr>
<td>Traffic Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sent</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>System Uptime</td>
<td>0 days 00:02:21</td>
<td>Refresh</td>
</tr>
</tbody>
</table>

Figure 8-2  Status

- **Firmware Version** - The version information of the Router’s firmware.
- **Hardware Version** - The version information of the Router’s hardware.
- **LAN** - This field displays the current settings or information for the LAN, you can configure them in the **Network > LAN** page.
  - **MAC Address** - The physical address of the Router, as seen from the LAN.
  - **IP Address** - The LAN IP address of the Router.
  - **Subnet Mask** - The subnet mask associated with LAN IP address.
- **Wireless** - This field displays basic information or status for wireless function, you can configure them in the **Wireless > Wireless Settings** page.
  - **Operation Mode** - The current wireless working mode in use.
• **Wireless Radio** - Indicates whether the wireless radio feature of the AP is enabled or disabled.

• **Name (SSID)** - The SSID of the router.

• **Channel** - The current wireless channel in use.

• **Mode** - The current wireless mode which the Router works on.

• **Channel Width** - The current wireless channel width in use.

• **MAC Address** - The physical address of the Router, as seen from the WLAN.

• **Client Status** - The status of Client.

➤ **WAN** - This field displays the current settings or information for the WAN, you can configure them in the **Network > WAN** page.

  • **MAC Address** - The physical address of the WAN port, as seen from the Internet.

  • **IP Address** - The current WAN (Internet) IP Address. This field will be blank or 0.0.0.0 if the IP Address is assigned dynamically and there is no connection to the Internet.

  • **Subnet Mask** - The subnet mask associated with the WAN IP Address.

  • **Default Gateway** - The Gateway currently used by the Router is shown here. When you use **Dynamic IP** as the connection Internet type, the **Renew** button will be displayed here. Click the **Renew** Button to obtain new IP parameters dynamically from the ISP. And if you have got an IP address, **Release** button will be displayed here. Click the **Release** button to release the IP address the Router has obtained from the ISP.

  • **DNS Server** - The DNS (Domain Name System) server IP addresses currently used by the Router.

  • **Online Time** - The time that you online. When you use **PPPoE** as WAN connection type, the online time is displayed here. Click the **Connect** or **Disconnect** button to connect to or disconnect from Internet.

➤ **Secondary Connection** - Besides **PPPoE**, if you use an extra connection type to connect to a local area network provided by ISP, then parameters of this secondary connection will be shown in this area.

  • **IP Address** - The current WAN (Internet) IP Address. This field will be blank or 0.0.0.0 if the IP Address is assigned dynamically and there is no connection to the Internet.

  • **Subnet Mask** - The subnet mask associated with the WAN IP Address.

Click the **Release** to delete the network parameters, and click the **Renew** button to obtaining network parameters.

➤ **Traffic Statistics** - The Router’s traffic statistics.

  • **Received (Bytes)** - Traffic that counted in bytes has been received out from the WAN port.
• **Received (Packets)** - Traffic that counted in packets has been received out from the WAN port.

• **Sent (Bytes)** - Traffic that counted in bytes has been sent out from the WAN port.

• **Sent (Packets)** - Traffic that counted in packets has been sent out from the WAN port.

➢ **System Up Time** - The length of the time since the Router was last powered on or reset.

Click the **Refresh** button to get the latest status and settings of the Router.

### 8.3 Quick Setup

Please refer to Section 3.2: "Quick Installation Guide."

### 8.4 WPS

**WPS (Wi-Fi Protected Setup)** can help you to quickly and securely connect to a network. This section will guide you to add a new wireless device to an existing network quickly by function. The WPS function is only available when the Operation Mode is set to Access Point. Select menu “WPS”, you will see the next screen shown in Figure 5-3.

![WPS (Wi-Fi Protected Setup)](image)

➢ **WPS Status** - To enable or disable the WPS function here.

➢ **Current PIN** - The current value of the device’s PIN is displayed here. The default PIN of the device can be found in the label or User Guide.

➢ **Restore PIN** - Restore the PIN of the device to its default.

➢ **Gen New PIN** - Click this button, and then you can get a new random value for the device’s PIN. You can ensure the network security by generating a new PIN.

➢ **Disable PIN of this Device** - WPS external registrar of entering the device’s PIN can be disabled or enabled manually. If the device receives multiple failed attempts to authenticate an external Registrar, this function will be disabled automatically.

➢ **Add Device** - You can add a new device to the existing network manually by clicking this button.
To add a new device:

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

ernote:

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

For the configuration of the new device, here takes the Wireless Adapter of our company for example.

V. By PBC

If the wireless adapter supports Wi-Fi Protected Setup and the Push Button Configuration (PBC) method, you can add it to the network by PBC with the following two methods.

Method One:

Step 1: Keep the WPS Status as **Enabled** and click the **Add Device** button in Figure 5-3, then the following screen will appear.

![Add A New Device](image)

**Figure 8-4  Add A New Device**

Step 2: Choose **“Press the button of the new device in two minutes”** and click **Connect**.

Step 3: For the configuration of the wireless adapter, please choose **“Push the button on my access point or wireless router”** in the configuration utility of the WPS as below, and click **Connect**.
Step 4: Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

**Method Two:** Enter the PIN into my AP.

Step 1: For the configuration of the wireless adapter, please choose “**Enter the PIN of this device into my access point or wireless router**” in the configuration utility of the WPS as below, and click **Connect**.
The WPS Configuration Screen of Wireless Adapter

Note:

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

Step 2: Keep the WPS Status as Enabled and click the Add Device button in Figure 8-3.
Step 3: Choose “Enter the new device’s PIN” and enter the PIN code (take 16952898 for example) of the wireless adapter in the field after PIN as shown in the figure below. Then click Connect.

Method Three: Enter the PIN from my AP.

Step 1: Get the Current PIN code of the AP in Figure 8-3 (each AP has its unique PIN code. Here takes the PIN code 12345670 of this AP for example).
Step 2: For the configuration of the wireless adapter, please choose “Enter the PIN of my access point or wireless router” in the configuration utility of the WPS as below, and enter the PIN code of the AP into the field after “Access Point PIN”. Then click Connect.

The WPS Configuration Screen of Wireless Adapter

Note:
The default PIN code of the AP can be found in its label or the WPS configuration screen as Figure 8-3.

You will see the following screen when the new device has successfully connected to the network.

Add A New Device

- Enter the new device's PIN.
  - PIN (12345678)
- Press the button of the new device in two minutes.

Connect successfully!

Note:
1. The WPS LED on the AP 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 AP is disabled. Please make sure the Wireless function is enabled before configuring the WPS.

8.5 Operation Mode

The Router supports five operation mode types: Wireless Router, Access Point, Range Extender, Client and Hotspot Router. Please select one you want. Click Save to save your choice, which is shown as Figure 8-7.

![Operation Mode Figure](image)

8.6 Network

There are three submenus under the Network menu (shown in Figure 8-8): WAN, MAC Clone and LAN. Click any of them, and you will be able to configure the corresponding function.

8.6.1 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 follow (Figure 8-9):
This page displays the WAN IP parameters assigned dynamically by your ISP, including IP address, Subnet Mask, Default Gateway, etc. Click the Renew button to renew the IP parameters from your ISP. Click the Release button to release the IP parameters.

- **MTU Size** - The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default MTU Size unless required by your ISP.

- **Use These DNS Servers** - If your ISP gives you one or two DNS addresses, select Use These DNS Servers and enter the primary and secondary addresses into the correct fields. Otherwise, the DNS servers will be assigned dynamically from your ISP.

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

- **Host Name** - This option specifies the Host Name of the Router.

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

Click the Save button to save your settings.
2. If your ISP provides a static or fixed **IP Address**, **Subnet Mask**, **Default Gateway** and **DNS setting**, select **Static IP**. The Static IP settings page will appear as shown in Figure 8-10.

![Figure 8-10 WAN - Static IP](image)

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

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

3. If your ISP provides a PPPoE connection, select **PPPoE/Russia PPPoE** option. Then you should enter the following parameters (Figure 8-11):
User Name/Password - Enter the User Name and Password provided by your ISP. These fields are case-sensitive.

Confirm Password - Enter again the Password provided by your ISP to ensure the password you entered is correct.

Secondary Connection - It’s available only for PPPoE Connection. If your ISP provides an extra Connection type such as Dynamic/Static IP to connect to a local area network, then you can check the radio button of Dynamic/Static IP to activate this secondary connection.

• Disabled - The Secondary Connection is disabled by default, so there is PPPoE connection only. This is recommended.
• Dynamic IP - You can check this radio button to use Dynamic IP as the secondary connection to connect to the local area network provided by ISP.
• Static IP - You can check this radio button to use Static IP as the secondary connection to connect to the local area network provided by ISP.

Connect on Demand - In this mode, the Internet connection can be terminated automatically after a specified inactivity period (Max Idle Time) and be re-established when you attempt to access the Internet again. If you want your Internet connection keeps active all the time, please enter “0” in the Max Idle Time field. Otherwise, enter
the number of minutes you want to have elapsed before your Internet access disconnects.

- **Connect Automatically** - The connection can be re-established automatically when it was down.

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

  🔄 **Note:**

  Only when you have configured the system time on “System Tools → Time” page, will the Time-based Connecting function 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.

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

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

  If you want to do some advanced configurations, please click the Advanced button, and the page shown in Figure 8-12 will then appear:
- 202 -

Figure 8-12 PPPoE Advanced Settings

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

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

- **ISP Specified IP Address** - If your ISP does not automatically assign IP addresses to the Router during login, please click **Use IP address specified by ISP** check box and enter the IP address provided by your ISP in dotted-decimal notation.

- **Detect Online Interval** - The Router will detect Access Concentrator online at every interval. The default value is “0”. You can input the value between “0” and “120”. The value “0” means no detect.

- **Primary DNS/Secondary DNS** - If your ISP does not automatically assign DNS addresses to the Router during login, please click **Use the following DNS servers** check box and enter the IP address in dotted-decimal notation of your ISP’s primary DNS server. If a secondary DNS server address is available, enter it as well.

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

4. If your ISP provides BigPond Cable connection, please select **BigPond Cable** option. Then you should enter the following parameters (Figure 8-13):
### WAN

<table>
<thead>
<tr>
<th>WAN Connection Type:</th>
<th>BigPond Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Name:</td>
<td>username</td>
</tr>
<tr>
<td>Password:</td>
<td>*********</td>
</tr>
<tr>
<td>Auth Server:</td>
<td>$m-server</td>
</tr>
<tr>
<td>Auth Domain:</td>
<td></td>
</tr>
<tr>
<td>MTU Size (in bytes):</td>
<td>1500</td>
</tr>
</tbody>
</table>

(The default is 1500, do not change unless necessary.)

**Connection Mode:**

- **Connection Demand**
  - Max Idle Time: 15 minutes (0 means remain active all times)
- **Connect Automatically**
- **Connect Manually**
  - Max Idle Time: 15 minutes (0 means remain active all times)

[Connect] [Disconnect] [Disconnected!]

---

**Figure 8-13 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,
- **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.
- **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. Then you should enter the following parameters (Figure 8-14):

![WAN Connection Type](image-url)

- **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, check the radio button. If you want your Internet connection to remain active at all times, enter 0 in the Max Idle Time field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- Connect Automatically - Connect automatically after the Router is disconnected. To use this option, check the radio button.

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

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

Click the Save button to save your settings.

6. If your ISP provides PPTP connection, please select PPTP/Russia PPTP option. And you should enter the following parameters (Figure 8-15):
- 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, check the radio button.
If you want your Internet connection to remain active at all times, enter "0" in the Max Idle Time field. Otherwise, enter the number of minutes you want to have elapsed before your Internet connection terminates.

- **Connect Automatically** - Connect automatically after the Router is disconnected. To use this option, check the radio button.

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

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

Click the Save button to save your settings.

### 8.6.2 MAC Clone

Choose menu “Network → MAC Clone”, and then you can configure the WAN MAC address on the screen below, as shown in Figure 8-16:

**Figure 8-16  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 To 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:**

1. Only the PC on your LAN can use the **MAC Address Clone** function.
2. If you change WAN MAC Address when the WAN connection is PPPoE, it will not take effect until the connection is re-established.

### 8.6.3 LAN

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

<table>
<thead>
<tr>
<th>LAN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC Address:</td>
<td>00-57-00-3E-C5-FC</td>
</tr>
<tr>
<td>IP Address:</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>Subnet Mask:</td>
<td>255.255.255.0</td>
</tr>
<tr>
<td>IGMP Proxy:</td>
<td>Enable</td>
</tr>
</tbody>
</table>

**Note:** (IGMP Internet Group Management Protocol) works for IPTV multicast streams. The device supports both IGMP proxy with enabled/disabled option and IGMP snooping.

Figure 8-17  LAN

- **MAC Address** - The physical address of the LAN ports, as seen from the LAN. The value can't be changed.
- **IP Address** - Enter the IP address of your Router in dotted-decimal notation (factory default: 192.168.0.1).
- **Subnet Mask** - An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.
- **IGMP Proxy** - The Internet Group Management Protocol (IGMP) feature allows your devices in LAN can watch TV.

**Note:**

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

There are five submenus under the Wireless menu (shown in Figure 8-18): 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.

8.7.1 Wireless Settings

Choose menu “Wireless → Wireless Settings”, and then you can configure the basic settings for the wireless network on this page.

- 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. But it’s strongly recommended to choose one of the following modes to enable security.
- TL-WR802N 300Mbps Wireless N Nano Router -

- **WPA-PSK/WPA2-Personal** - 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 4-21.

  ![Figure 8-20](image_url)

- **WPA/WPA2-Enterprise** - It's based on Radius Server.
  
  - **Version** - you can choose the version of the WPA security from the pull-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 **Automatic**, **TKIP** or **AES**.
  
  - **Radius Server IP** - Enter the IP address of the Radius server.
  
  - **Radius Port** - Enter the port that Radius server 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.

- **WEP** - It is based on the IEEE 802.11 standard.
  
  - **Type** - you can choose the type for the WEP security on the pull-down list. The default setting is **Automatic**, which can select **Shared Key** or **Open System** authentication type automatically based on the wireless station's capability and request.
• **WEP Key Format** - *Hexadecimal* and *ASCII* formats are provided here. *Hexadecimal* format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. *ASCII* format stands for any combination of keyboard characters in the specified length.

• **WEP Key (Password)** - 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.
8.7.2 Wireless Security

- **Disable Security** - The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect the Router without encryption. But it’s strongly recommended to choose one of the following modes to enable security.

- **WPA-PSK/WPA2-Personal** - 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/WPA2-Personal radio button and choose TKIP encryption, you will find a notice in red as shown in Figure 8-22.

<table>
<thead>
<tr>
<th>WPA/WPA2 - Personal (Recommended)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version: Automatic (Recommended)</td>
</tr>
<tr>
<td>Encryption: TKIP</td>
</tr>
<tr>
<td>Wireless Password:</td>
</tr>
</tbody>
</table>

You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64.

Group Key Update Period: [ ] Seconds (Keep it disabled if you are not sure, minimum is 30, 0 means no update).

We do not recommend using the TKIP encryption if this device operates in 802.11n mode due to the fact that TKIP is not supported by 802.11n specification.

Figure 8-22

- **WPA /WPA2-Enterprise** - It’s based on Radius Server.
  - **Version** - you can choose the version of the WPA security from the pull-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 Automatic, TKIP or AES.
  - **Radius Server IP** - Enter the IP address of the Radius server.
  - **Radius Port** - Enter the port that Radius server 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.

- **WEP** - It is based on the IEEE 802.11 standard.
  - **Type** - you can choose the type for the WEP security on the pull-down list. The default setting is Automatic, which can select **Shared Key** or **Open System** authentication type automatically based on the wireless station's capability and request.

  **WEP Key Format** - **Hexadecimal** and **ASCII** formats are provided here. **Hexadecimal** format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length. **ASCII** format stands for any combination of keyboard characters in the specified length.

  **WEP Key (Password)** - Select which of the four keys will be used and enter the matching WEP key that you create. Make sure these values are identical on all wireless stations in your network.

  **Key Type** - You can select the WEP key length (64-bit, or 128-bit, or 152-bit.) for encryption. "Disabled" means this WEP key entry is invalid.
64-bit - You can enter 10 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 ASCII characters.

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

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

Note:
If you do not set the key, the wireless security function is still disabled even if you have selected Shared Key as Authentication Type.
Be sure to click the Save button to save your settings on this page.

8.7.3 Wireless MAC Filtering

Choose menu “Wireless → Wireless MAC Filtering”, and then you can control the wireless access by configuring the Wireless MAC Filtering function, as shown in Figure 8-23.

<table>
<thead>
<tr>
<th>Wireless MAC Filtering</th>
<th>Enabled</th>
<th>Disable</th>
</tr>
</thead>
</table>

Filtering Rules
- **Deny** the stations specified by any enabled entries in the list to access.
- **Allow** the stations specified by any enabled entries in the list to access.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add New...</td>
<td>Enable All</td>
<td>Disable All</td>
<td>Delete All</td>
<td></td>
</tr>
</tbody>
</table>

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 access.
- **Status** - The status of this entry, either **Enabled** or **Disabled**.
- **Description** - A simple description of the wireless station.

To Add a Wireless MAC Address filtering entry, click the **Add New...** button. The "Add or Modify Wireless MAC Address Filtering entry" page will appear, shown in Figure 8-24:
To add or modify a MAC Address Filtering entry, follow these instructions:

1. Enter the appropriate MAC Address into the **MAC Address** field. The format of the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). For example: 00-0A-EB-B0-00-0B.

2. Give a simple description for the wireless station in the **Description** field. For example: Wireless station A.

3. Select **Enabled** or **Disabled** for this entry on the **Status** 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.

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

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

1. Click the **Enable** button to enable this function.

2. Select the radio button “Allow the stations specified by any enabled entries in the list to access” for **Filtering Rules**.

3. Delete all or disable all entries if there are any entries already.
4. Click the Add New... button.

1) Enter the MAC address 00-0A-EB-B0-00-0B/00-0A-EB-00-07-5F in the MAC Address field.
2) Enter wireless station A/B in the Description field.
3) Select Enabled in the Status pull-down list.
4) Click the Save button.
5) Click the Back button.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Status</th>
<th>Description</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-0A-EB-B0-00-0B</td>
<td>Enabled</td>
<td>wireless station A</td>
<td>Modify/Delete</td>
</tr>
<tr>
<td>2</td>
<td>00-0A-EB-00-07-5F</td>
<td>Enabled</td>
<td>wireless station B</td>
<td>Modify/Delete</td>
</tr>
</tbody>
</table>

Figure 8-25 Filtering Rules

8.7.4 Wireless Advanced

Choose menu “Wireless → Wireless Advanced”, and then you can configure the advanced settings of your wireless network.

![Wireless Advanced](image)

- **Transmit Power** - Here you can specify the transmit power of Router. You can select High, Middle or Low which you would like. High is the default setting and is recommended.

- **Beacon Interval** - Enter a value between 20-1000 milliseconds for Beacon Interval here. The beacons are the packets sent by the Router to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. The default value is 100.

- **RTS Threshold** - Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Router will send RTS frames to a
particular receiving station and negotiate the sending of a data frame. The default value is 2346.

- **Fragmentation Threshold** - This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance because of excessive packets. 2346 is the default setting and is recommended.

- **DTIM Interval** - This value determines the interval of the Delivery Traffic Indication Message (DTIM). A DTIM field is a countdown field informing clients of the next window for listening to broadcast and multicast messages. When the Router has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. You can specify the value between 1-255 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.

- **Enable AP Isolation** - This function isolate all connected wireless stations so that wireless stations cannot access each other through WLAN. This function will be disabled if WDS/Bridge is enabled.

⚠️ **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.

### 8.7.5 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Current Status</th>
<th>Received Packets</th>
<th>Sent Packets</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70-73-CB-4F-CB-C9</td>
<td>STA ASSOC</td>
<td>46</td>
<td>16</td>
<td>Allow</td>
</tr>
</tbody>
</table>

![Figure 8-27 Wireless Statistics](image)

- **MAC Address** - The connected wireless station's MAC address.

Received Packets - Packets received by the station.

Sent Packets - Packets sent by the station.

Configure - The button is used for loading the item to the Wireless MAC Filtering list.

- Allow - If the Wireless MAC Filtering function enable, allow the station to access.
- Deny - If the Wireless MAC Filtering function enable, deny the station to access.

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

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

Note:
This page will be refreshed automatically every 5 seconds.

8.8 DHCP

There are three submenus under the DHCP menu (shown in Figure 8-28): DHCP Settings, DHCP Client List and Address Reservation. Click any of them, and you will be able to configure the corresponding function.

8.8.1 DHCP Settings

Choose menu “DHCP → DHCP Settings”, and then you can configure the DHCP Server on the page as shown in Figure 8-29. 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 in the LAN.
DHCP Server - Enable or Disable the DHCP server. If you disable the Server, you must have another DHCP server within your network or else you must configure the computer manually.

Start IP Address - Specify an IP address for the DHCP Server to start with when assigning IP addresses. 192.168.0.100 is the default start address.

End IP Address - Specify an IP address for the DHCP Server to end with when assigning IP addresses. 192.168.0.199 is the default end address.

Address Lease Time - The Address Lease Time is the amount of time a network user will be allowed connection to the Router with their current dynamic IP Address. Enter the amount of time in minutes and the user will be "leased" this dynamic IP Address. After the time is up, the user will be automatically assigned a new dynamic IP address. The range of the time is 1 ~ 2880 minutes. The default value is 120 minutes.

Default Gateway (Optional) - It is suggested to input the IP address of the LAN port of the Router. The default value is 192.168.0.1.

Default Domain (Optional) - Input the domain name of your network.

Primary DNS - (Optional) Input the DNS IP address provided by your ISP or consult your ISP. 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".
8.8.2 DHCP Client List

Choose menu “DHCP → DHCP Client List”, and then you can view the information about the clients attached to the Router in the screen as shown in Figure 8-30.

<table>
<thead>
<tr>
<th>ID</th>
<th>Client Name</th>
<th>MAC Address</th>
<th>Assigned IP</th>
<th>Lease Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>tlink04129</td>
<td>0C-62-0D-F7-31-80</td>
<td>192.168.0.100</td>
<td>01:15:47</td>
</tr>
<tr>
<td>2</td>
<td>Unknown</td>
<td>76-73-09-6F-08-09</td>
<td>192.168.0.101</td>
<td>01:58:32</td>
</tr>
</tbody>
</table>

Figure 8-30 DHCP Client List

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

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

8.8.3 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 8-31). 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.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>Reserved IP Address</th>
<th>Status</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00-11-22-33-44-AA</td>
<td>192.168.0.169</td>
<td>Enabled</td>
<td>Modify/Delete</td>
</tr>
</tbody>
</table>

Figure 8-31 Address Reservation

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

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

![Add or Modify an Address Reservation Entry](image)

Figure 8-32 Add or Modify an Address Reservation Entry

To modify or delete an existing entry:
1. Click the Modify in the entry you want to modify. If you want to delete the entry, click the Delete.
2. Modify the information.
3. Click the Save button.
   - Click the Enable/Disable All button to make all entries enabled/disabled.
   - Click the Delete All button to delete all entries.
   - Click the Next button to go to the next page and Click the Previous button to return the previous page.

8.9 Forwarding

There are four submenus under the Forwarding menu (shown in Figure 8-33): Virtual Servers, Port Triggering, DMZ and UPnP. Click any of them, and you will be able to configure the corresponding function.
8.9.1 Virtual Servers

Choose menu "Forwarding \rightarrow Virtual Servers", and then you can view and add virtual servers in the screen as shown in Figure 8-34. Virtual servers can be used for setting up public services on your LAN, such as DNS, Email and FTP. A virtual server is defined as a service port, and all requests from the Internet to this service port will be redirected to the computer specified by the server IP. Any PC that was used for a virtual server must have a static or reserved IP Address because its IP Address may be changed when using the DHCP function.

![Virtual Servers Table]

- **Service Port** - The numbers of External Ports. You can type a service port or a range of service ports (in XXX – YYY format, XXX is the start port number, YYY is the end port number).
- **Internal Port** - The Internal Service Port number of the PC running the service application. You can leave it blank if the Internal Port is the same as the Service Port, or enter a specific port number when Service Port is a single one.
- **IP Address** - The IP Address of the PC providing 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, either Enabled or Disabled.
- **Modify** - To modify or delete an existing entry.

To setup a virtual server entry:

1. Click the Add New... button, the next screen will pop-up as shown in Figure 8-34.
2. Select the service port you want to use from the Common Service Port list. If the Common Service Port list does not have the service that you want to use, type the service port number or service port range in the Service Port box.
3. Type the IP Address of the computer in the IP Address box.
4. Select the protocol used for this application, either TCP, UDP, or All.
5. Select the Enable to enable the virtual server.
6. Click the Save button.
Figure 8-35  Add or Modify a Virtual Server Entry

Note:
If your computer or server has more than one type of available service, please select another service, and enter the same IP Address for that computer or server.

To modify or delete an existing entry:
1. Click the Modify in the entry you want to modify. If you want to delete the entry, click the Delete.
2. Modify the information.
3. Click the Save button.

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

Click the Delete All button to delete all entries.

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

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.

8.9.2 Port Triggering

Choose menu “Forwarding → Port Triggering”, and then you can view and add port triggering in the screen as shown in Figure 8-36. Some applications require multiple connections, like Internet games, video conferencing, Internet calling and so on. These applications cannot work with a pure NAT Router. Port Triggering is used for some of these applications that can work with an NAT Router.
Once the Router is configured, the operation is as follows:

1. A local host makes an outgoing connection 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.

   - **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 that triggered this rule. You can input at most 5 groups of ports (or port sections). Every group of ports must be set apart with ",". For example, 2000-2038, 2050-2051, 2085, 3010-3030.
   - **Incoming Protocol** - The protocol used for Incoming Ports Range, either TCP or UDP, or All (all protocols supported by the Router).
   - **Status** - The status of this entry, either Enabled or Disabled.
   - **Modify** - To modify or delete an existing entry.

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 8-36.

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.

![Add or Modify a Port Triggering Entry](image)

**Figure 8-37** Add or Modify a Port Triggering 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.

**Note:**
1. When the trigger connection is released, the corresponding opening ports will be closed.
2. Each rule is allowed to be used only by one host on LAN synchronously. The trigger connection of other hosts on LAN will be refused.
3. Incoming Port Range cannot overlap each other.

**8.9.3 DMZ**

Choose menu **“Forwarding → DMZ”**, and then you can view and configure DMZ host in the screen as shown in Figure 8-38. 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. DMZ host forwards all the ports at the same time. Any PC whose port is being forwarded must have its DHCP client function disabled and should have a new static IP Address assigned to it because its IP Address may be changed when using the DHCP function.
To assign a computer or server to be a DMZ server:

1. Check the Enable radio button.
2. Enter the IP Address of a local host in the DMZ Host IP Address field.
3. Click the Save button.

**Note:**
After you set the DMZ host, the firewall related to the host will not work.

### 8.9.4 UPnP

Choose menu “Forwarding → UPnP”, and then you can view the information about UPnP (Universal Plug and Play) in the screen as shown in Figure 8-39. The 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.

- **Current UPnP Status** - UPnP can be enabled or disabled by clicking the Enable or Disable button.
- **Current UPnP Settings List** - This table displays the current UPnP information.
  - **App Description** - The description provided by the application in the UPnP request.
  - **External Port** - The external port the Router opens for the application.
  - **Protocol** - The type of protocol the Router opens for the application.
  - **Internal Port** - The Internal port the Router opens for local host.
  - **IP Address** - The IP address of the UPnP device that is currently accessing the Router.
- Status - The status of the port is displayed here. "Enabled" means that the port is still active. Otherwise, the port is inactive.

Click Refresh to update the Current UPnP Settings List.

8.10 Security

There are four submenus under the Security menu as shown in Figure 8-40: Basic Security, Advanced Security, Local Management and Remote Management. Click any of them, and you will be able to configure the corresponding function.

8.10.1 Basic Security

Choose menu “Security → Basic Security”, you can configure the basic security in the screen as shown in Figure 8-41.
- Firewall - A firewall protects your network from the outside world. Here you can enable or disable the Router’s firewall.

  - SPI Firewall - SPI (Stateful Packet Inspection, also known as dynamic packet filtering) helps to prevent cyber attacks by tracking more state per session. It validates that the traffic passing through the session conforms to the protocol. SPI Firewall is enabled by factory default. If you want all the computers on the LAN exposed to the outside world, you can disable it.

- VPN - VPN Passthrough must be enabled if you want to allow VPN tunnels using IPSec, PPTP, or L2TP protocols to pass through the Router’s firewall.

  - PPTP Passthrough - Point-to-Point Tunneling Protocol (PPTP) allows the Point-to-Point Protocol (PPP) to be tunneled through an IP network. To allow PPTP tunnels to pass through the Router, keep the default, Enabled.

  - L2TP Passthrough - Layer 2 Tunneling Protocol (L2TP) is the method used to enable Point-to-Point sessions via the Internet on the Layer 2 level. To allow L2TP tunnels to pass through the Router, keep the default, Enabled.

  - IPSec Passthrough - Internet Protocol Security (IPSec) is a suite of protocols for ensuring private, secure communications over Internet Protocol (IP) networks, through the use of cryptographic security services. To allow IPSec tunnels to pass through the Router, keep the default, Enabled.

- ALG - It is recommended to enable Application Layer Gateway (ALG) because ALG allows customized Network Address Translation (NAT) traversal filters to be plugged into the gateway to support address and port translation for certain application layer “control/data” protocols such as FTP, TFTP, H323 etc.

  - FTP ALG - To allow FTP clients and servers to transfer data across NAT, keep the default Enable.

  - TFTP ALG - To allow TFTP clients and servers to transfer data across NAT, keep the default Enable.

  - H323 ALG - To allow Microsoft NetMeeting clients to communicate across NAT, keep the default Enable.

Click the Save button to save your settings.

8.10.2 Advanced Security

Choose menu “Security → Advanced Security”, you can protect the Router from being attacked by TCP-SYN Flood, UDP Flood and ICMP-Flood in the screen as shown in Figure 8-42.
Advanced Security

- **Packets Statistics Interval (5~60)** - The default value is 10. Select a value between 5 and 60 seconds from the drop-down list. The Packets Statistics Interval value indicates the time section of the packets statistics. The result of the statistics is used for analysis by SYN Flood, UDP Flood and ICMP-Flood.

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

  🔄 Note:
  
  DoS Protection will take effect only when the Traffic Statistics in “System Tool → Traffic Statistics” is enabled.

- **Enable ICMP-FLOOD Attack Filtering** - Enable or Disable the ICMP-FLOOD Attack Filtering.

- **ICMP-FLOOD Packets Threshold (5~3600)** - The default value is 50. Enter a value between 5 ~ 3600. When the current ICMP-FLOOD Packets number is beyond the set value, the Router will startup the blocking function immediately.

- **Enable UDP-FLOOD Filtering** - Enable or Disable the UDP-FLOOD Filtering.

- **UDP-FLOOD Packets Threshold (5~3600)** - The default value is 500. Enter a value between 5 ~ 3600. When the current UDP-FLOOD Packets number is beyond the set value, the Router will startup the blocking function immediately.
- Enable TCP-SYN-FLOOD Attack Filtering - Enable or Disable the TCP-SYN-FLOOD Attack Filtering.

- TCP-SYN-FLOOD Packets Threshold (5~3600) - The default value is 50. Enter a value between 5 ~ 3600. When the current TCP-SYN-FLOOD Packets numbers is beyond the set value, the Router will startup the blocking function immediately.

- Ignore Ping Packet From WAN Port - Enable or Disable Ignore Ping Packet From WAN Port. The default setting is disabled. If enabled, the ping packet from the Internet cannot access the Router.

- Forbid Ping Packet From LAN Port - Enable or Disable Forbid Ping Packet From LAN Port. The default setting is disabled. If enabled, the ping packet from LAN cannot access the Router. This function can be used to defend against some viruses.

Click the Save button to save the settings.

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

8.10.3 Local Management

Choose menu “Security → Local Management”, you can configure the management rule in the screen as shown in Figure 8-43. The management feature allows you to deny computers in LAN from accessing the Router.

![Figure 8-43 Local Management](image)

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.

很小的字体：

Note:

If your PC is blocked but you want to access the Router again, press and hold the WPS button for more than 5 seconds to reset the Router to factory defaults.

8.10.4 Remote Management

You can configure the Remote Management function on this page. This feature allows you to manage your Router from a remote location, via the Internet.

<table>
<thead>
<tr>
<th>Remote Management</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Management Port:</td>
<td>00</td>
</tr>
<tr>
<td>Remote Management IP Address:</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>Save</td>
<td></td>
</tr>
</tbody>
</table>

Figure 8-44 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 interface to a custom port by entering that number in this box provided. Choose a number between 1024 and 65535, 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. The default IP Address is 0.0.0.0. It means this function is disabled. To enable this function, change the default IP Address to another IP Address as desired.

To access the router, you will 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 you use port number 8080, enter in your browser: http://202.96.12.8:8080. You will be asked for the router's password. After successfully entering the password, you will be able to access the router's Web-based utility.

很小的字体：

Note:

Be sure to change the router's default password to a very secure password.
8.11 Parental Control

Choose menu “Parental Control”, and you can configure the parental control in the screen as shown in Figure 8-45. 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.

![Parental Control Settings](image)

- **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 Restriction → Schedule”.
- **Modify** - Here you can edit or delete an existing entry.

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

1. Click the **Add New…** button and the next screen will pop-up as shown in Figure 8-45.
2. Enter the MAC address of the PC (e.g. 00-11-22-33-44-AA) you’d like to control in the MAC Address of Child PC field. Or you can choose the MAC address from the All Address in Current LAN drop-down list.
3. Give a description (e.g. Allow TP-LINK) for the website allowed to be accessed in the Website Description field.
4. Enter the allowed domain name of the website, either the full name or the keywords (e.g. tp-link) in the Allowed Domain Name field. Any domain name with keywords in it (e.g. www.tp-link.com) will be allowed.

5. Select from the Effective Time drop-down list the schedule (e.g. Schedule_1) you want the entry to take effect. 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 return to the previous page.

Add or Modify Parental Control Entry

The Schedule is based on the time of the Router. The time can be set in “System Tools -> Time Settings”.

MAC Address of Children’s PC:

Allowed Domain Name:

Select Effective Time:

Status:

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

1. Click “Parental Control” menu on the left to enter the Parental Control Settings page. Check Enable and enter the MAC address 00-11-22-33-44-BB in the MAC Address of Parental PC field.
2. Click “Access Restriction → 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:
   - Click Add New... button.
   - Enter 00-11-22-33-44-AA in the MAC Address of Child PC field.
   - Enter “Allow TP-LINK” in the Website Description field.
   - Enter “www.tp-link.com” in the Allowed Domain Name field.
   - Select “Schedule_1” you create just now from the Effective Time drop-down list.
   - 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 8-47.

8.12 Access Control

There are four submenus under the Access Restriction menu as shown in Figure 8-48: Rule, Host, Target and Schedule. Click any of them, and you will be able to configure the corresponding function.

8.12.1 Rule

Choose menu “Access Control→ Rule”, you can view and set Access Restriction rules in the screen as shown in Figure 8-49.
**Enable Internet Access Restriction** - Select the check box to enable the Internet Access Restriction 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.

**Action** - Here displays the action the Router takes to deal with the packets. It could be **Allow** or **Deny**. **Allow** means that the Router permits the packets to go through the Router. **Deny** means that the Router rejects the packets to go through the Router.

**Status** - This field displays the status of the rule. **Enabled** means the rule will take effect, **Disabled** means the rule will not take effect.

**Modify** - Here you can edit or delete an existing rule.

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

1. Click the Add New… button and the next screen will pop-up as shown in Figure 8-49.
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-down 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”.

- 235 -
6. In the **Action** field, select **Deny** or **Allow**.

7. In the **Status** field, select **Enabled** or **Disabled** to enable or disable your entry.

8. 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.

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

![Add Internet Access Control Entry](image)

**For example**: If you desire to allow the host with MAC address 00-11-22-33-44-AA to access [www.tp-link.com](http://www.tp-link.com) only from 18:00 to 20:00 on **Saturday and Sunday**, and forbid other hosts in the LAN to access the Internet, you should follow the settings below:

1. Click "**Access Restriction → Host**" in the left to enter the Host Settings page. Add a new entry with the Host Description is Host_1 and MAC Address is 00-11-22-33-44-AA.

2. Click "**Access Restriction → Target**" in the left to enter the Target Settings page. Add a new entry with the Target Description is Target_1 and Domain Name is [www.tp-link.com](http://www.tp-link.com).

3. Click "**Access Restriction → Schedule**" in the left to enter the Schedule Settings 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.

4. Click "**Access Restriction → Rule**" in the left to return to the Access Restriction Rule Management page. Select "**Enable Internet Access Restriction**" and choose "Deny the packets not specified by any access Restriction policy to pass through the Router".

5. 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 **Action** field, select Allow.
- In **Status** field, select Enabled.
- Click **Save** to complete the settings.

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

<table>
<thead>
<tr>
<th>ID</th>
<th>Rule Name</th>
<th>Host</th>
<th>Target</th>
<th>Schedule</th>
<th>Status</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rule_1</td>
<td>Host_1</td>
<td>Target</td>
<td>Schedule</td>
<td>Enabled</td>
<td>Edit/ Delete</td>
</tr>
</tbody>
</table>

**Figure 8-51  Rule Settings**

### 8.12.2 Host

Choose menu "**Access Control → Host**", you can view and set a Host list in the screen as shown in Figure 8-52. The host list is necessary for the Access Restriction Rule.

**Figure 8-52  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 8-53.
     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 8-54.

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 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, you should first follow the settings below:

1. Click **Add New**... button in Figure 8-52 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.
8.12.3 Target

Choose menu “Access Control ➔ Target”, you can view and set a Target list in the screen as shown in Figure 4-55. The target list is necessary for the Access Restriction Rule.

- 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.
   - If you select IP Address, the screen shown is Figure 8-57.
     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.
   - If you select Domain Name, the screen shown is Figure 8-58.
     1) In Target Description field, create a unique description for the target (e.g. Target_1).
2) In **Domain Name** field, enter the domain name, either the full name or the keywords (for example TP-LINK) in the blank. Any domain name with keywords in it (e.g. www.tp-link.com) will be blocked or allowed. You can enter 4 domain names.

3. 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 return to the previous page.

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

1. Click **Add New**… button in Figure 8-56 to enter the Add or Modify an Access Target Entry page.
2. In **Mode** field, select **Domain Name** from the drop-down list.
3. In **Target Description** field, create a unique description for the target (e.g. Target_1).
4. In **Domain Name** field, enter www.tp-link.com.
5. Click **Save** to complete the settings.
Then you will go back to the Target Settings page and see the following list,

![Target Settings Table]

8.12.4 Schedule

Choose menu “Access Control → Schedule”, you can view and set a Schedule list in the next screen as shown in Figure 8-60. The Schedule list is necessary for the Access Restriction Rule.

![Schedule Settings Table]

- **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 8-60 and the next screen will pop-up as shown in Figure 8-61.
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 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 to access www.tp-link.com only from **18:00 to 20:00** on **Saturday** and **Sunday**, you should first follow the settings below:

1. Click **Add New...** button shown in Figure 8-60 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.

---

**Figure 8-62 Schedule Settings**

<table>
<thead>
<tr>
<th>ID</th>
<th>Schedule Description</th>
<th>Day</th>
<th>Time</th>
<th>Modify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schedule_1</td>
<td>Sat Sun</td>
<td>18:00 - 20:00</td>
<td><strong>Edit</strong> <strong>Delete</strong></td>
</tr>
</tbody>
</table>

---
8.13 Advanced Routing

There are two submenus under the Network menu (shown in Figure 4-62): Static Routing List and System Routing Table. Click any of them, and you will be able to configure the corresponding function.

8.13.1 Static Routing List

Choose menu “Static Routing”, and you can configure the static route in the next screen, shown in Figure 8-64. A static route is a pre-determined path that network information must travel to reach a specific host or network.

To add static routing entries, follow the steps below.

1. Click Add New… shown in Figure 8-64, you will see the following screen Figure 8-65.

2. Enter the following data.

- **Destination Network** - 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.

Default Gateway - This is the IP Address of the gateway device that allows for contact between the Router and the network or host.

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

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

   Click the Delete button to delete the entry.

   Click the Enable All button to enable all the entries.

   Click the Disable All button to disable all the entries.

   Click the Delete All button to delete all the entries.

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

8.13.2 System Routing Table

Choose menu “Advanced Routing → System Routing Table”, and you can views all of the valid route entries in use. The Destination IP address, Subnet Mask, Gateway, and Interface will be displayed for each entry.

<table>
<thead>
<tr>
<th>ID</th>
<th>Destination Network</th>
<th>Subnet Mask</th>
<th>Gateway</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>192.168.0.0</td>
<td>255.255.255.0</td>
<td>0.0.0.0</td>
<td>LAN &amp; WLAN</td>
</tr>
<tr>
<td>2</td>
<td>192.0.0.0</td>
<td>255.0.0.0</td>
<td>0.0.0.0</td>
<td>LAN &amp; WLAN</td>
</tr>
</tbody>
</table>

Figure 8-66  Routing Table

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

- Subnet Mask - The Subnet Mask determines which portion of an IP address is the network portion, and which portion is the host portion.

- Gateway - This is the IP address of the gateway device that allows for contact between the Router and the network or host.

- Interface - This interface tells you whether the Destination IP Address is on the LAN & WLAN (internal wired and wireless networks), the WAN (Internet).

Click the Refresh button to refresh the data displayed.
8.14 Bandwidth Control

There are two submenus under the Bandwidth Control menu as shown in Figure 8-67. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

8.14.1 Control Settings

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

![Bandwidth Control Settings](image)

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

8.14.2 Rule List

Choose menu "Bandwidth Control → Rule List", you can view and configure the Bandwidth Control rules in the screen below.
Figure 8-69  Bandwidth Control Rule List

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

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

**Step 1:** Click **Add New** shown in Figure 8-69, you will see a new screen shown in Figure 8-70.

**Step 2:** Enter the information like the screen shown below.

Figure 8-70  Bandwidth Control Rule Settings

- **Enable** - Enable or disable the rule.
- **IP Range** - Interior PC address range. If both are blank (or 0.0.0.0), the domain is no effective.
- **Port Range** - The port range which the Interior PC access the outside PC. If all are blank (or 0), the domain is no effective.
- **Protocol** - Transport layer protocol, here there are All, TCP, UDP.
- Egress Bandwidth - The max and the min upload speed which through the WAN port, default number is 0.
- Ingress Bandwidth - The max and the min download speed through the WAN port, default number is 0.

Step 3: Click the Save button.

8.15 IP & MAC Binding

There are two submenus under the IP & MAC Binding menu: Binding Setting 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.

8.15.1 Binding Setting

This page displays the IP & MAC Binding Setting table; you can operate it in accord with your desire.

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 - Whether or not enable the ARP binding.
Modify - Edit or delete item.
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.

**To add IP & MAC Binding entries:**
1. Click the Add New… button.
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:**
1. Find the desired entry in the table.
2. Click Modify or Delete as desired on the Modify column.

**To find an existing entry:**
1. Click the Find button (shown in Figure 8-72).
2. Enter the MAC Address or IP Address.
3. Enter the Find button in the next page (shown in Figure 8-74).
Click the Enable All button to make all entries enabled.

Click the Delete All button to delete all entries.

8.15.2 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 configure the items on the ARP list also. This page displays the ARP List; it shows all the existing IP & MAC Binding entries.

<table>
<thead>
<tr>
<th>ID</th>
<th>MAC Address</th>
<th>IP Address</th>
<th>Status</th>
<th>Configure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6C-62-60-F7-31-8D</td>
<td>192.168.0.100</td>
<td>Unbound</td>
<td>Load Delete</td>
</tr>
<tr>
<td>2</td>
<td>08-04-4E-0E-07-3E</td>
<td>192.168.0.173</td>
<td>Bound</td>
<td>Load Delete</td>
</tr>
</tbody>
</table>

Figure 8-75 ARP List

- **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.
- **Status** - Enabled or Disabled of the MAC address and IP address binding.
- **Configure** - Load or delete item.
- **Load** - Load the item to the IP & MAC Binding list.
- **Delete** - Delete the item.

1. Click the **Bind All** button to bind all the current items, available after enable.
2. Click the **Load All** button to load all items to the IP & MAC Binding list.
3. 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.

8.16 Dynamic DNS

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

8.16.1 No-IP DDNS

If the dynamic DNS Service Provider you select is www.noip.com, the page will appear as shown in Figure 8-76.

**Figure 8-76 No-IP DDNS Settings**

<table>
<thead>
<tr>
<th>DDNS Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Provider</td>
<td>No-IP (<a href="http://www.noip.com">www.noip.com</a>)</td>
</tr>
<tr>
<td>User Name</td>
<td></td>
</tr>
<tr>
<td>Password</td>
<td></td>
</tr>
<tr>
<td>Domain Name</td>
<td></td>
</tr>
</tbody>
</table>

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.

**Note:**

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

8.16.2 Comexe.cn DDNS

If the dynamic DNS Service Provider you select is www.comexe.cn, the page will appear as shown in Figure 8-77.
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.

### 8.16.3 Dyndns DDNS

If the dynamic DNS **Service Provider** you select is [www.dyndns.com](http://www.dyndns.com), the page will appear as shown in Figure 8-78.
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.

### 8.17 System Tools
There are nine submenus under the System Tools menu: **Time Settings**, **Diagnostic**, **Firmware Upgrade**, **Factory Defaults**, **Backup and 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.

### 8.17.1 Time Settings

You can set time manually or get GMT from the Internet for the router on this page:

[Figure 8-80 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.

To set time manually, follow the steps below:

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**.

For automatic time synchronization:

1. Enter the address of the **NTP Server 1** or **NTP Server 2**.
2. Click the **Get GMT** button to get GMT time from Internet if you have connected to Internet.
Note:

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, if not, the time limited on these functions will not take effect.

- The time will be lost if the router is turned off.
- The router will obtain GMT automatically from Internet if it has already connected to Internet.

8.17.2 Diagnostic

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

![Diagnostic Tools](image)

Figure 8-81  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 - Type the destination IP address (such as 202.108.22.5) or Domain name (such as www.baidu.com).

- Pings Count - The number of Ping packets for a Ping connection.

- Ping Packet Size - The size of Ping packet.

- Ping Timeout - Set the waiting time for the reply of each Ping packet. If there is no reply in the specified time, the connection is overtime.

- Traceroute Max TTL - The max number of hops for a Traceroute connection.

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 8-82 Diagnostic Results](image)

**Note:**

Only one user can use this tool at one time. "Ping Count", "Ping Packet Size" and "Ping Timeout" are Ping Parameters. "Traceroute Max TTL" is Traceroute Parameter.

### 8.17.3 Firmware Upgrade

The page allows you to upgrade the latest version firmware to keep your router up-to-date.

![Figure 8-83 Firmware Upgrade](image)
New firmware is posted at www.tp-link.com and can be downloaded for free. If the router is not experiencing difficulties, there is no need to upgrade firmware, unless the new firmware supports a new feature you need.

**Note:**

1. When you upgrade the router's firmware, you will lose current configuration settings, so make sure you backup the router's settings before you upgrade its firmware.
2. Make sure that your computer is connected to the Internet through the cable when you upgrade the firmware. To upgrade through wireless connection is not allowed.
3. Set your IP address as static IP before upgrading.

To upgrade the router's firmware, follow these instructions:

1. Download the latest firmware upgrade file from our website http://www.tp-link.com.
2. Enter or select the path name where you save the downloaded file on the computer into the File blank.
3. Click the Upgrade button.

- **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 current hardware version.

**Note:**

The firmware version must correspond to the hardware. The upgrade process takes a few minutes and the Router will restart automatically when the upgrade is completed. It is important to keep power on during the entire process. Loss of power during the upgrade could damage the Router.

### 8.17.4 Factory Defaults

This page allows you to restore the factory default settings for the router.

![Figure 8-84 Restore Factory Default](image)

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

- The default User Name: admin
- The default Password: admin
- The default access: tplinkwifi.net
Note:

Any settings you have saved will be lost when the default settings are restored.

8.17.5 Backup & Restore

This page allows you to save current configuration of router as backup or restore the configuration file you saved before.

![Backup & Restore Configuration](image)

- Click the **Backup** button to save all configuration settings as a backup file in your local computer.
- To restore the router's configuration, follow these instructions:
  - Click the **Browse** button to select the backup file which you want to restore.
  - Click the **Restore** button.

Note:

The current configuration will be covered with the uploading configuration file. The restoration process lasts for 20 seconds and the router will restart automatically. Keep the router on during the restoring process to prevent any damage.

8.17.6 Reboot

This page allows you to reboot the router.

![Reboot](image)

Click the **Reboot** button to reboot the router.

Some settings of the router will take effect only after rebooting, which include:
- Change LAN IP Address. (System will reboot automatically)
- MAC Clone (system will reboot automatically)
8.17.7 Password

This page allows you to change the factory default user name and password of the router.

![Password](image)

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

**Note:**

The new user name and password must not exceed 14 characters in length and must 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.
8.17.8 System Log

This page allows you to query the logs of the router.

**System Log**

<table>
<thead>
<tr>
<th>Index</th>
<th>Time</th>
<th>Type</th>
<th>Level</th>
<th>Log Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1st day 01:12:58</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>FTP Server stopped</td>
</tr>
<tr>
<td>7</td>
<td>1st day 01:12:58</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>Network sharing service stopped</td>
</tr>
<tr>
<td>6</td>
<td>1st day 00:11:17</td>
<td>SHARING</td>
<td>INFO</td>
<td>Media server started</td>
</tr>
<tr>
<td>5</td>
<td>1st day 00:00:07</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>Network sharing service started</td>
</tr>
<tr>
<td>4</td>
<td>1st day 00:06:08</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>Network sharing settings changed</td>
</tr>
<tr>
<td>3</td>
<td>1st day 00:06:24</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>FTP Server started</td>
</tr>
<tr>
<td>2</td>
<td>1st day 00:06:23</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>Network sharing service started</td>
</tr>
<tr>
<td>1</td>
<td>1st day 00:06:20</td>
<td>SHARING</td>
<td>NOTICE</td>
<td>Network sharing settings changed</td>
</tr>
</tbody>
</table>

Figure 8-88 System Log

- **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. The result will be shown in the later log soon.
- **Clear Log** - All the logs will be deleted from this device permanently, not just from the page.

8.17.9 Statistics

The Statistics page displays the network traffic of each PC in LAN, including total traffic and traffic of the last Packets Statistic interval seconds.
Figure 8-89 Statistics

- **Current Statistics Status** - Enable or Disable. The default value is disabled. To enable, click the **Enable** button. If disabled, the function of DoS protection in Security settings will be ineffective.

- **Packets Statistics Interval** - The default value is 10. Select a value between 5 and 60 seconds in the pull-down list. The Packets Statistic interval indicates the time section of the packets statistic.

- **Sorted Rules** - Here displays sort as desired.

### Statistics Table:

<table>
<thead>
<tr>
<th>IP Address</th>
<th>Total</th>
<th>The IP Address displayed with statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The total amount of packets received and transmitted by the router.</td>
</tr>
<tr>
<td></td>
<td>Bytes</td>
<td>The total amount of bytes received and transmitted by the router.</td>
</tr>
<tr>
<td>IP Address</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The total amount of packets received and transmitted in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td></td>
<td>Bytes</td>
<td>The total amount of bytes received and transmitted in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>ICMP Tx</td>
<td></td>
<td>The total amount of the ICMP packets transmitted to WAN in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>UDP Tx</td>
<td></td>
<td>The total amount of the UDP packets transmitted to WAN in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
<tr>
<td>TCP SYN Tx</td>
<td></td>
<td>The total amount of the TCP SYN packets transmitted to WAN in the last <strong>Packets Statistic interval</strong> seconds.</td>
</tr>
</tbody>
</table>

Click the **Save** button to save the **Packets Statistic interval** value.

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

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

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

1. How do I configure the Router to access the 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) Log in 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 and the “Confirm Password” field, and finish it by clicking Connect.

   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-1 PPPoE Connection Type](image1)

   ![Figure A-2 PPPoE Connection Mode](image2)

   **Note:**

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

   2. If you are a Cable user, please configure the Router following the above steps.
2. **How do I configure the Router to access the Internet by Ethernet users?**

1) Log in 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, log in 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.

![MAC Clone](image)

**Figure A-3 MAC Clone**

3. **I want to use NetMeeting, what do I need to do?**

1) If you start NetMeeting as a sponsor, 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**.
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.

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.

![Remote Management](image)

**Figure A-7 Remote Management**

*Note:*

If the above configuration takes effect, configure to the Router by typing 192.168.0.188 (the Router’s LAN IP address: Web Management Port) in the address field of the Web browser.

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 “88” into the blank next to the “Service Port”, and your IP address next to the “IP Address”, assuming 192.168.0.188 for an example, remember to Enable and Save.

![Virtual Servers](image)

**Figure A-8 Virtual Servers**
5. The wireless stations cannot connect to the Router.

1) Make sure the "Enable Wireless Router Radio" is checked.

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 PC

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 necessary.

1. Configure TCP/IP component

1) On the Windows taskbar, click the **Start** button, 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-0-1](image)

4) In the prompt page that showed below, double click on the **Internet Protocol (TCP/IP)**.
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, Choose Obtain DNS server automatically, as shown in the Figure below:
Note:

For Windows 98 OS or before, the PC and Router may need to be restarted.

7) Click OK to keep your settings.
# Appendix C: Specifications

## General

<table>
<thead>
<tr>
<th>Standards</th>
<th>IEEE 802.11n, 802.11b, 802.11g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocols</td>
<td>TCP/IP, PPPoE, DHCP, ICMP, NAT, SNTP</td>
</tr>
<tr>
<td>Port</td>
<td>One 10/100Mbps LAN/WAN port</td>
</tr>
</tbody>
</table>
| 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) |
| LED       | SYS |
| Dimensions (L×W×H) | 57mm×57mm×18mm |
| Safety & Emissions | FCC, CE |

## Wireless

<table>
<thead>
<tr>
<th>Frequency Band</th>
<th>2.4~2.4835GHz</th>
</tr>
</thead>
</table>
| Radio Data Rate | 11n: up to 300Mbps (Automatic)  
11g: 54/48/36/24/18/12/9/6/5.5/2/1Mbps (Automatic)  
11b: 11/5.5/2/1Mbps (Automatic) |
| Frequency Expansion | DSSS(Direct Sequence Spread Spectrum) |
| Modulation | DBPSK, DQPSK, CCK, 16-QAM, 64-QAM, BPSK, QPSK |
| Security | 64/128/152-bit WEP, WPA/WPA2, WPA2-PSK/WPA-PSK |
| Sensitivity @PER | 135M: -70dBm@10% PER  
65M: -73dBm@10% PER  
54M: -76dBm@10% PER  
6M: -92dBm@10% PER |
| Mode | Wireless Router Mode, Access Point Mode, Range Extender Mode, Client Mode, Hotspot Router Mode |

## Environmental and Physical

| Temperature | Operating: 0°C~40°C (32°F~104°F)  
Storage: -40°C~70°C(-40°F~158°F) |
|-------------|---------------------------------|
| Humidity | Operating: 10% - 90% RH, Non-condensing  
Storage: 5% - 90% RH, Non-condensing |
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 (Dynamic Domain Name System)** - The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.

- **DHCP (Dynamic Host Configuration Protocol)** - A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.

- **DMZ (Demilitarized Zone)** - 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 (Domain Name System)** – 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 (Digital Subscriber Line)** - A technology that allows data to be sent or received over existing traditional phone lines.

- **ISP (Internet Service Provider)** - 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 (Network Address Translation)** - NAT technology translates IP addresses of a local area network to a different IP address for the Internet.
- PPPoE (Point to Point Protocol over Ethernet) - PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.

- SSID - A Service Set Identification 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 (Wired Equivalent Privacy) - 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 (Wireless Local Area Network) - A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.