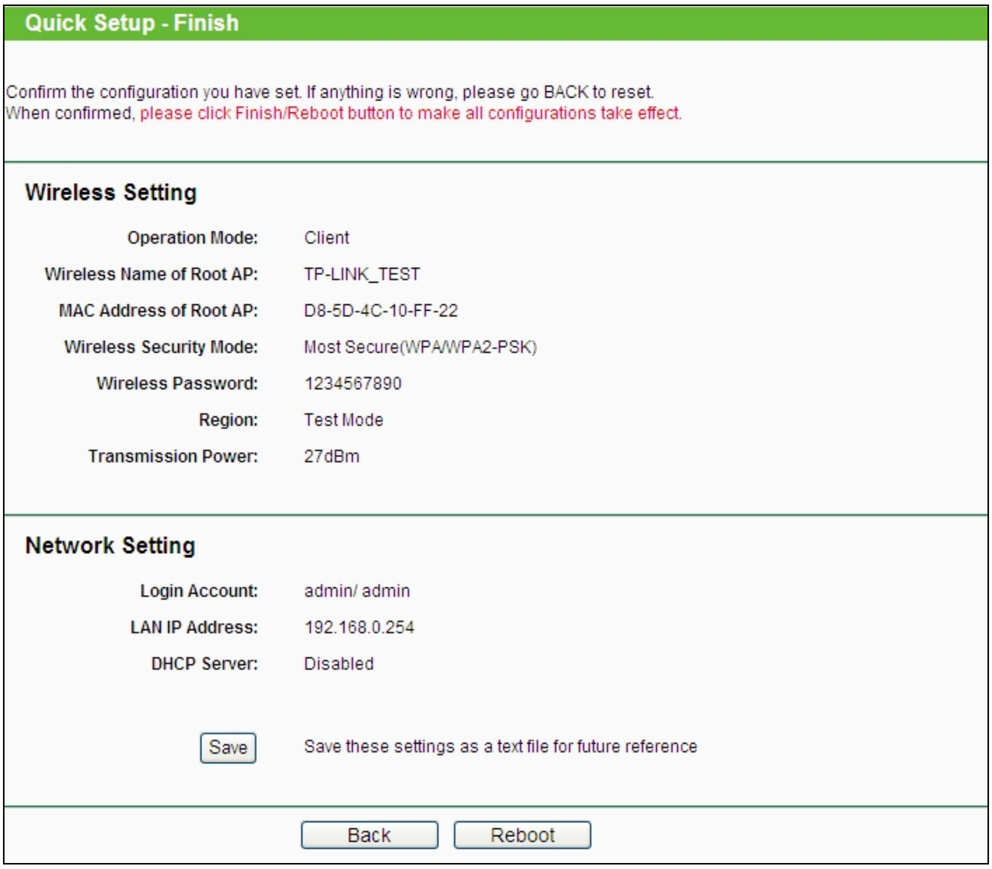


Quick Setup - Finish

Confirm the configuration you have set. If anything is wrong, please go BACK to reset.
When confirmed, please click Finish/Reboot button to make all configurations take effect.

Wireless Setting

Operation Mode: Client

Wireless Name of Root AP: TP-LINK_TEST

MAC Address of Root AP: D8-5D-4C-10-FF-22

Wireless Security Mode: Most Secure(WPA/WPA2-PSK)

Wireless Password: 1234567890

Region: Test Mode

Transmission Power: 27dBm

Network Setting

Login Account: admin/ admin

LAN IP Address: 192.168.0.254

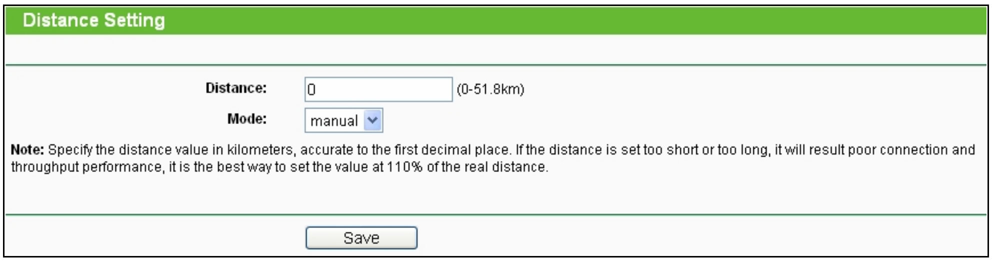
DHCP Server: Disabled

Save these settings as a text file for future reference

Figure 3-40 Finish page

☞ **Note:**

If the wireless connection is poor after basic configuration of operation mode, please select **Wireless** > **Distance Setting**, and set the outdoor distance value at 110% of the real distance as shown in Figure 3-41. It will help you stabilize outdoor links.



Distance Setting

Distance: 0 (0-51.8km)

Mode: manual

Note: Specify the distance value in kilometers, accurate to the first decimal place. If the distance is set too short or too long, it will result poor connection and throughput performance, it is the best way to set the value at 110% of the real distance.

Figure 3-41 Distance Setting

Chapter 4. AP & Multi-SSID & Repeater (Range Extender) & Bridge with AP & Client Operation Mode

This Chapter describes how to configure some advanced settings for your Access Point through the web-based management page in standard AP operation mode including AP, Multi-SSID, Repeater (Range Extender), Bridge with AP and Client mode. In the following explanations, we will take the device in Access Point operation mode for example.

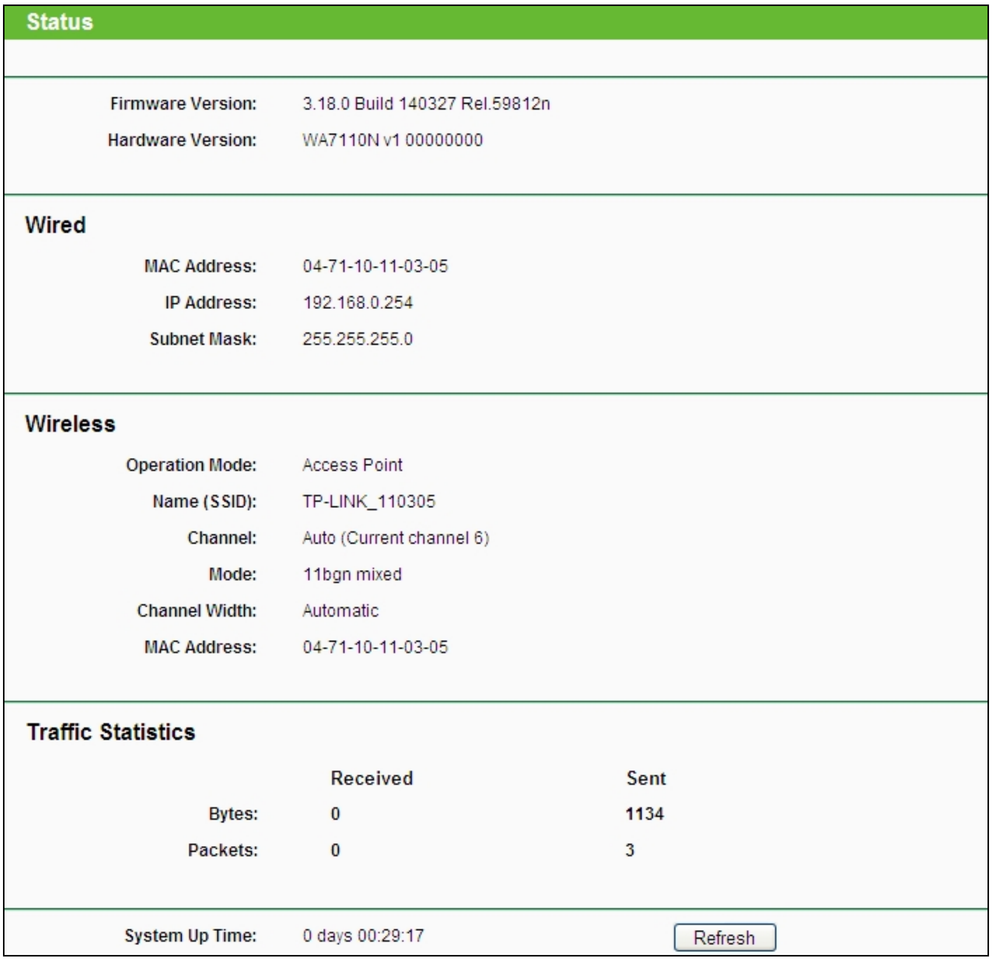
4.1 Login

After your successful login, you can configure and manage the Access Point. There are eight main menus on the left of the Web-based management page. Submenus will be available after you click one of the main menus. The eight main menus are: **Status**, **Quick Setup**, **Operation Mode**, **WPS**, **Network**, **Wireless**, **DHCP** and **System Tools**. On the right of the Web-based management page, there are the detailed explanations and instructions for the corresponding page. To apply any settings you have altered on the page, please click **Save**.

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

4.2 Status

Selecting **Status** will enable you to view the AP's current status and configuration, all of which is read-only.



Status

Firmware Version: 3.18.0 Build 140327 Rel.59812n
Hardware Version: WA7110N v1 00000000

Wired

MAC Address: 04-71-10-11-03-05
IP Address: 192.168.0.254
Subnet Mask: 255.255.255.0

Wireless

Operation Mode: Access Point
Name (SSID): TP-LINK_110305
Channel: Auto (Current channel 6)
Mode: 11bgn mixed
Channel Width: Automatic
MAC Address: 04-71-10-11-03-05

Traffic Statistics

	Received	Sent
Bytes:	0	1134
Packets:	0	3

System Up Time: 0 days 00:29:17

Figure 4-1 Status

1. Wired

This field displays the current settings or information for the LAN, including the **MAC address**, **IP address** and **Subnet Mask**.

2. Wireless

This field displays basic information or status for wireless function, including **Operation Mode**, **Name (SSID)**, **Channel**, **Mode**, **Channel Width** and **MAC address**.

3. WAN

These parameters apply to the WAN port of the router, including **MAC address**, **IP address**, **Subnet Mask**, **Default Gateway** and **DNS server**. If PPPoE is chosen as the WAN connection type, the **Disconnect** button will be shown here while you are accessing the Internet. You can also cut the connection by clicking the button. If you have not connected to the Internet, just click **Connect** to establish the connection.

4. Traffic Statistics

This field displays the router's traffic statistics.

5. System Up Time

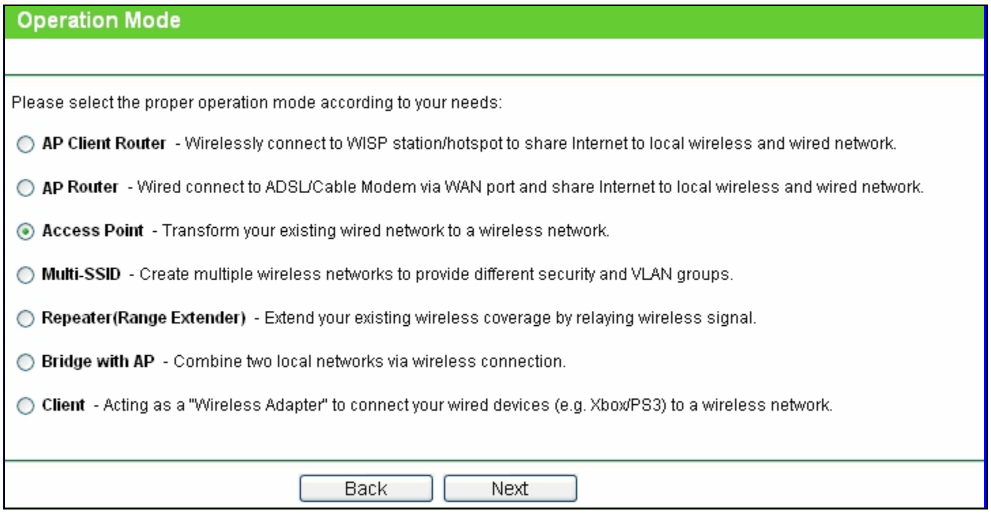
The total up time of the router since it was powered on or reset.

4.3 Quick Setup

Please refer to Section 3.2: "Quick Setup".

4.4 Operation Mode

Selecting **Operation Mode** will allow you to choose the operation mode for the AP. The AP supports seven operation mode types, **AP Client Router**, **AP Router**, **Access Point**, **Multi-SSID**, **Repeater (Range Extender)**, **Bridge with AP** and **Client**. Please select the one your want as shown in Figure 4-2. Click **Save** to save your choice.



Operation Mode

Please select the proper operation mode according to your needs:

○ **AP Client Router** - Wirelessly connect to WISP station/hotspot to share Internet to local wireless and wired network.

○ **AP Router** - Wired connect to ADSL/Cable Modem via WAN port and share Internet to local wireless and wired network.

● **Access Point** - Transform your existing wired network to a wireless network.

○ **Multi-SSID** - Create multiple wireless networks to provide different security and VLAN groups.

○ **Repeater(Range Extender)** - Extend your existing wireless coverage by relaying wireless signal.

○ **Bridge with AP** - Combine two local networks via wireless connection.

○ **Client** - Acting as a "Wireless Adapter" to connect your wired devices (e.g. Xbox/PS3) to a wireless network.

Figure 4-2 Operation Mode

- **AP Client Router -** In this mode, the device enables multi-users to share Internet from WISP. The LAN port devices share the same IP from WISP through Wireless port. While connecting to WISP, the Wireless port works as a WAN port at AP Client Router mode. The Ethernet port acts as a LAN port.

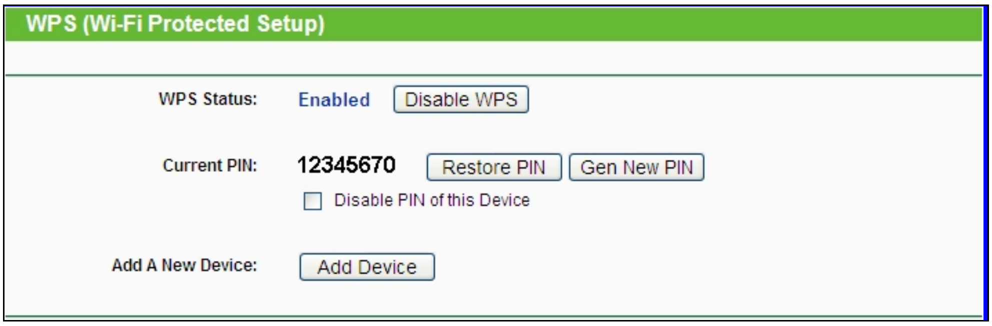
- **AP Router -** In this mode, the device enables multi-users to share Internet via ADSL/Cable Modem. The wireless port share the same IP to ISP through Ethernet WAN port. The Wireless port acts the same as a LAN port while at AP Router mode.
- **Access Point -** In this mode, the device can be connected to a wired network and transform the wired access into wireless that multiple devices can share together, especially for a home, office or hotel where only wired network is available.
- **Multi-SSID -** In this mode, the device can create up to 4 wireless networks labeled with different SSIDs and assign each SSID with different security or VLAN, especially for the situation when the various access policies and functions are required.
- **Repeater(Range Extender) -** In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- **Bridge with AP -** In this mode, the device can be used to combine multiple local networks together to the same one via wireless connections, especially for a home or office where separated networks can't be connected easily together with a cable.
- **Client -** In this mode, the device can be connected to another device via Ethernet port and act as an adaptor to grant your wired devices access to a wireless network, especially for a Smart TV, Media Player, or game console only with an Ethernet port.

☞ **Note:**

When you change the operation mode to Client/Repeater, WPS function will stay disabled. Please manually enable this function if needed when you switch back to Access Point/Multi-SSID/Bridge mode.

4.5 WPS

Choose **WPS** in the main menu, you will see the page as shown in Figure 4-3. The WPS function is disabled and cannot be configured in the standard AP mode.



WPS (Wi-Fi Protected Setup)

WPS Status: Enabled

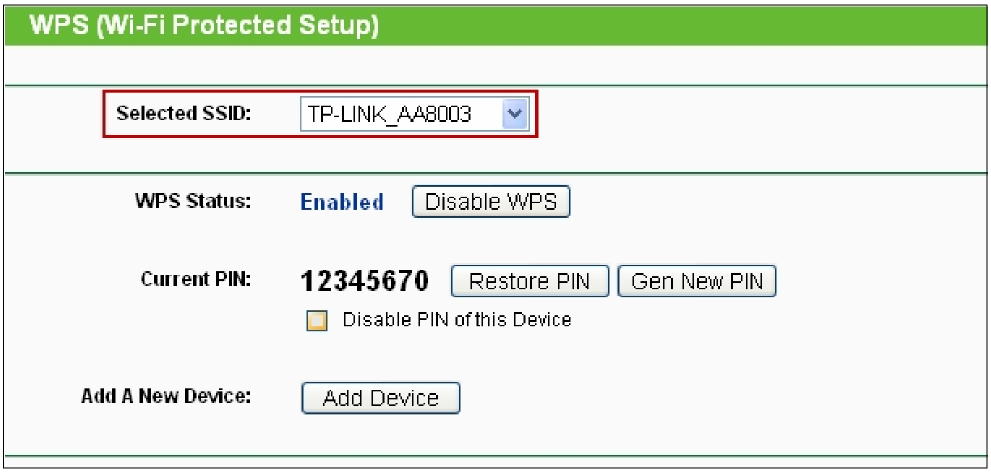
Current PIN: 12345670

□ Disable PIN of this Device

Add A New Device:

Figure 4-3 WPS

- **Selected SSID -** If Multi-SSID is enabled, you can choose one of the SSIDs from the pull-down list.



WPS (Wi-Fi Protected Setup)

Selected SSID: TP-LINK_AA8003

WPS Status: Enabled

Current PIN: 12345670

□ Disable PIN of this Device

Add A New Device:

- **WPS Status -** Enable or disable the WPS function here.
- **Current PIN -** The current value of the device's PIN 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 the new device to the existing network manually by clicking this button.

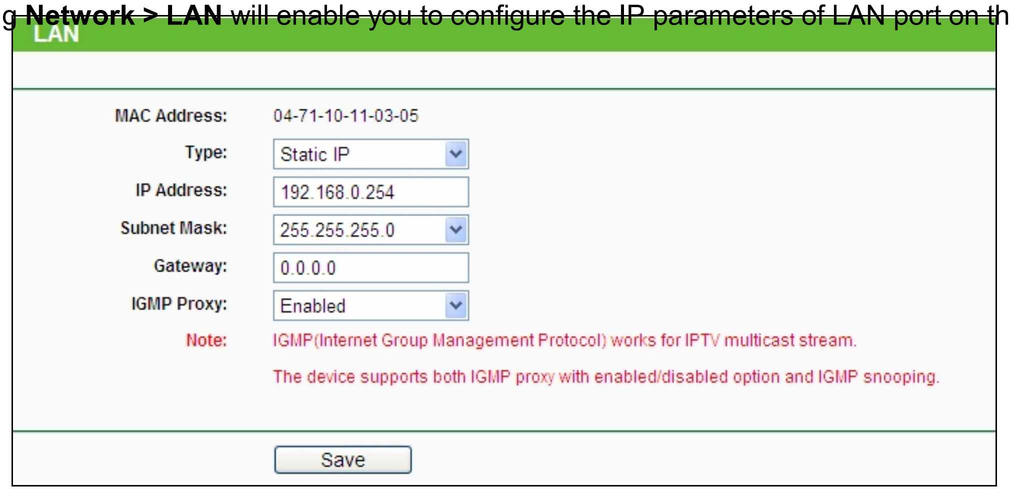
4.6 Network

The **Network** option allows you to customize your local network manually by changing the default settings of the AP.

Figure 4-4 the Network menu

4.6.1 LAN

Selecting **Network > LAN** will enable you to configure the IP parameters of LAN port on this page.



LAN

MAC Address: 04-71-10-11-03-05

Type: Static IP

IP Address: 192.168.0.254

Subnet Mask: 255.255.255.0

Gateway: 0.0.0.0

IGMP Proxy: Enabled

Note: IGMP(Internet Group Management Protocol) works for IPTV multicast stream.

The device supports both IGMP proxy with enabled/disabled option and IGMP snooping.

Figure 4-5 LAN

- **MAC Address -** The physical address of the router, as seen from the LAN. The value can't be changed.
- **Type** - Choosing dynamic IP to get IP address from DHCP server, or choosing static IP to configure IP address manually.
- **IP Address -** Enter the IP address of your router in dotted-decimal notation (factory default: 192.168.0.254).
- **Subnet Mask -** An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.
- **Gateway** - The gateway should be in the same subnet as your IP address.
- **IGMP Proxy –** IGMP (Internet Group Management Protocol) works for IPTV multicast stream. The device supports both IGMP proxy with enabled/disabled option and IGMP snooping.

☞ **Note:**

1) If you change the IP Address of LAN, you must use the new IP Address to login the Router.

2) If the new LAN IP Address you set is not in the same subnet, the IP Address pool of the DHCP server will not take effect until they are re-configured.

3) If the new LAN IP Address you set is not in the same subnet, the Virtual Server and DMZ Host will change accordingly at the same time.

4) The device will reboot automatically after you click the Save button.

4.7 Wireless

The **Wireless** option, improving functionality and performance for wireless network, can help you to make the AP an ideal solution for your wireless network.

Here you can create a wireless local area network just through a few settings. Basic Settings is used for the configuration of some basic parameters of the AP. Wireless Mode allows you to select the mode that AP works on. Security Settings provides three different security types to secure your data and thus provide greater security for your wireless network. MAC filtering allows you to control the access of wireless stations to the AP. Wireless Statistics shows you the statistics of current connected Wireless stations. Distance Setting is used to adjust the wireless range in outdoor conditions. Throughput Monitor helps to watch wireless throughput information Wireless statistics enables you to get detailed information about the current connected wireless stations.

There are eight submenus under the Wireless menu (shown in Figure 4-6): **Wireless Settings**, **Wireless Security**, **Wireless MAC Filtering**, **Wireless Advanced**, **Distance Setting**, **Throughput Monitor** and **Wireless Statistics**. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

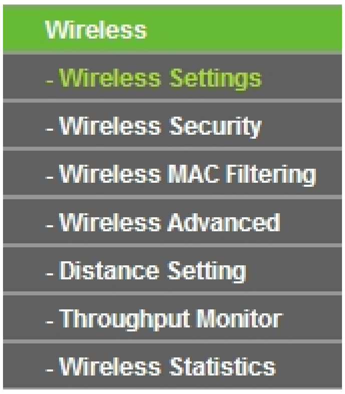
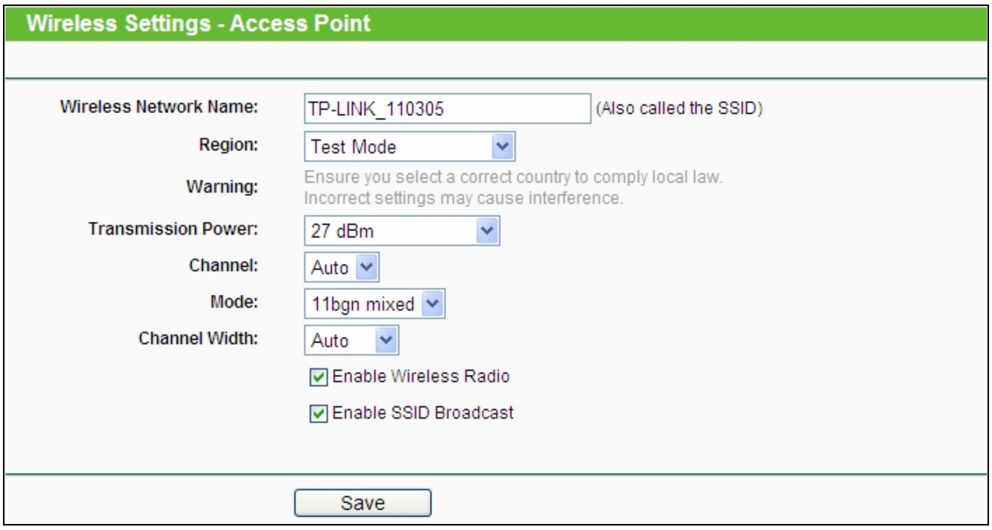


Figure 4-6 Wireless menu

4.7.1 Wireless Settings

Selecting **Wireless** > **Wireless Settings** will enable you to configure the basic settings for your wireless network on the screen below (Figure 4-7).



Wireless Settings - Access Point

Wireless Network Name: TP-LINK_110305 (Also called the SSID)

Region: Test Mode

Warning: Ensure you select a correct country to comply local law.
Incorrect settings may cause interference.

Transmission Power: 27 dBm

Channel: Auto

Mode: 11bgn mixed

Channel Width: Auto

☑ Enable Wireless Radio

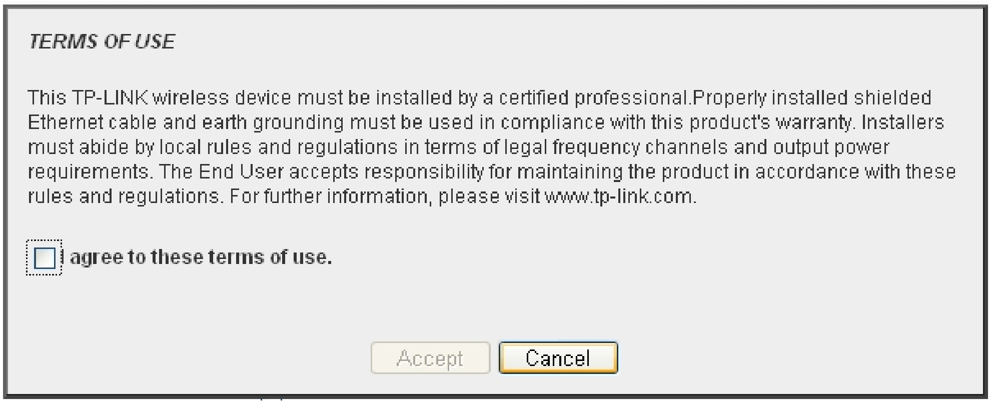
☑ Enable SSID Broadcast

Figure 4-7 Wireless Settings in AP Client Router mode

- **Wireless Network Name -** Enter a string of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your network. The default SSID is set to be (XXXXXX indicates the last unique six characters of each device's MAC address), which can ensure your wireless network security. But it is strongly recommended 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 device can be used. It may be illegal to use the wireless function of the device 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.

  When you select your local region from the pull-down list, the Note Dialog of **TERMS OF USE** will pop up. Select **I agree to these terms of use**, and click **Accept** to continue.



TERMS OF USE

This TP-LINK wireless device must be installed by a certified professional.Properly installed shielded Ethernet cable and earth grounding must be used in compliance with this product's warranty. Installers must abide by local rules and regulations in terms of legal frequency channels and output power requirements. The End User accepts responsibility for maintaining the product in accordance with these rules and regulations. For further information, please visit www.tp-link.com.

□ I agree to these terms of use.

Note Dialog

☞ **Note:**

Ensure you select a correct country to comply with local laws. Incorrect settings may cause interference. Limited to local law of the United States, selecting country code and channel function was disabled.

- **Transmission Power** - The available options of transmission power are determined by the region selected.
- **Channel -** This field determines which operating frequency will be used. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point.
- **Mode -** This field determines the wireless mode which the AP works on. The options includes: 11b only, 11g only, 11n only, 11bg mixed, 11bgn mixed.
- **Channel Width** - The bandwidth of the wireless channel.
- **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.
- **Enable SSID Broadcast** - If you select the **Enable SSID Broadcast** checkbox, the AP will broadcast its name (SSID) on the air.

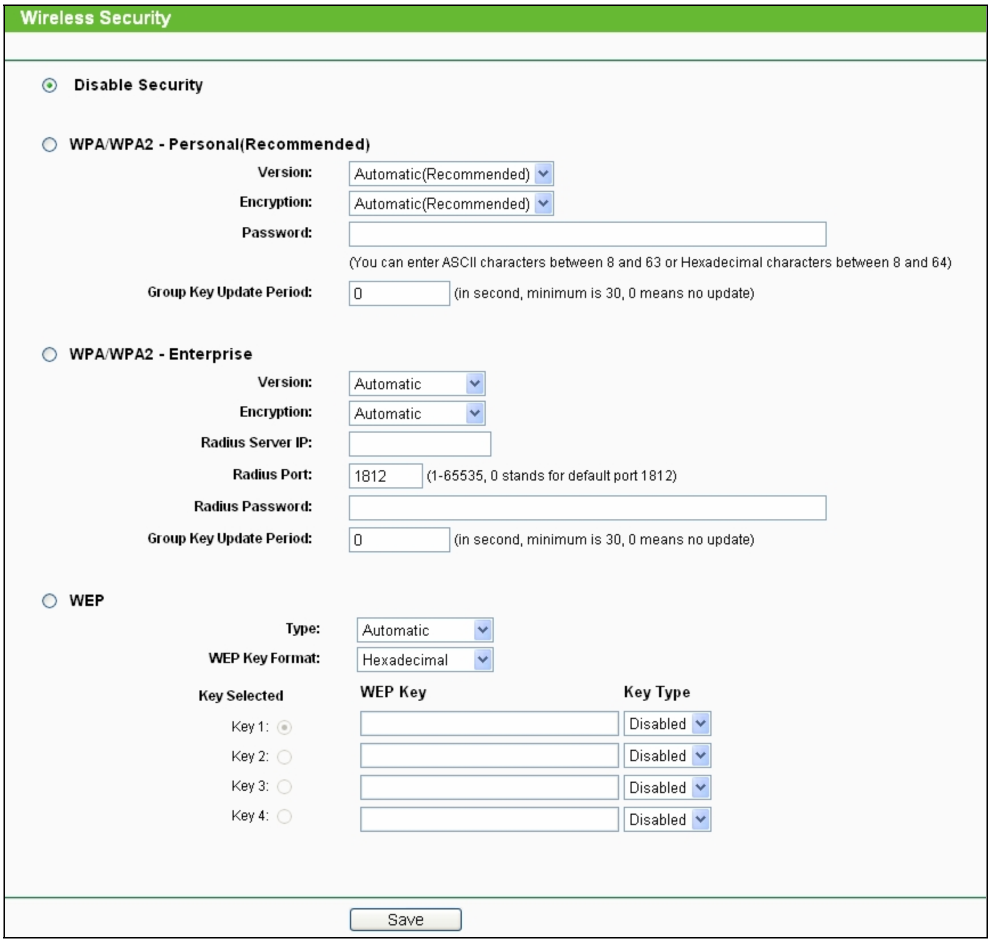
Be sure to click the **Save** button to save your settings on this page.

☞ **Note:**

The device will reboot automatically after you click the **Save** button.

4.7.2 Wireless Security

Selecting **Wireless** > **Wireless Security** will enable you to configure the security of the wireless network for your device on the page as shown in Figure 4-8.



Wireless Security

● Disable Security

○ WPA/WPA2 - Personal(Recommended)

Version: Automatic(Recommended)

Encryption: Automatic(Recommended)

Password:

(You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64)

Group Key Update Period: 0 (in second, minimum is 30, 0 means no update)

○ WPA/WPA2 - Enterprise

Version: Automatic

Encryption: Automatic

Radius Server IP:

Radius Port: 1812 (1-65535, 0 stands for default port 1812)

Radius Password:

Group Key Update Period: 0 (in second, minimum is 30, 0 means no update)

○ WEP

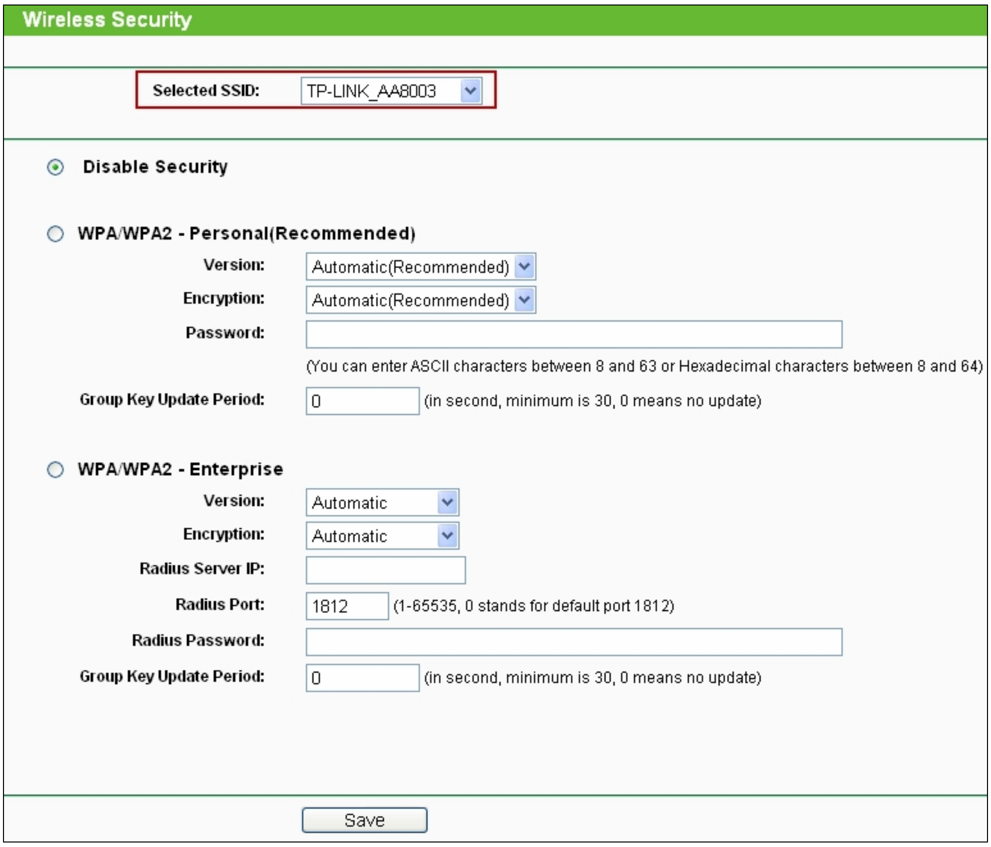
Type: Automatic

WEP Key Format: Hexadecimal

Key Selected	WEP Key	Key Type
Key 1: ●		Disabled
Key 2: ○		Disabled
Key 3: ○		Disabled
Key 4: ○		Disabled

Figure 4-8 Wireless Security

- **Selected SSID**: If Multi-SSID is enabled, you can choose one of the SSIDs from the pull-down list.



Wireless Security

Selected SSID: TP-LINK_AA8003

● Disable Security

○ WPA/WPA2 - Personal(Recommended)

Version: Automatic(Recommended)

Encryption: Automatic(Recommended)

Password:

(You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64)

Group Key Update Period: 0 (in second, minimum is 30, 0 means no update)

○ WPA/WPA2 - Enterprise

Version: Automatic

Encryption: Automatic

Radius Server IP:

Radius Port: 1812 (1-65535, 0 stands for default port 1812)

Radius Password:

Group Key Update Period: 0 (in second, minimum is 30, 0 means no update)

- **Disable Security -** The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect the device without encryption. It is recommended strongly that you choose one of following options to enable security.
- **WPA/WPA2-Personal** - Select WPA based on Radius Server.
- **WPA/WPA2-Enterprise** - Select WPA based on pre-shared passphrase.
- **WEP** - Select 802.11 WEP security.

Each security option has its own settings as described below:

WPA/WPA2 – Personal (Recommended)

- **WEP** - Select 802.11 WEP security.
- **Version** - You can select one of following versions:
  - **Automatic** - Select **WPA-Personal** or **WPA2-Personal** automatically based on the wireless station's capability and request.
  - **WPA-Personal** - Pre-shared key of WPA.
  - **WPA2-Personal** - Pre-shared key of WPA2.
- **Encryption** - You can select either **Automatic**, or **TKIP** or **AES**.
- **Password** - You can enter **ASCII** or **Hexadecimal** characters. For **Hexadecimal**, the length should be between 8 and 64 characters; for **ASCII**, the length should be between 8 and 63 characters.
- **Group Key Update Period** - Specify the group key update interval in seconds. The value can be either 0 or at least 30. Enter 0 to disable the update.

WPA/WPA2 - Enterprise

- **WEP** - Select 802.11 WEP security.
- **Version** - You can select one of following versions:
  - **Automatic** - Select **WPA** or **WPA2** automatically based on the wireless station's capability and request.
  - **WPA** - Wi-Fi Protected Access.
  - **WPA2** - WPA version 2.
- **Encryption** - You can select either **Automatic**, or **TKIP** or **AES**.
- **Radius Server IP** - Enter the IP address of the Radius Server.
- **Radius Port** - Enter the port that radius service uses.
- **Radius Password** - Enter the password for the Radius Server.
- **Group Key Update Period** - Specify the group key update interval in seconds. The value can be either 0 or at least 30. Enter 0 to disable the update.

WEP

- **Type** - You can select one of following types:
  - **Automatic** - Select **Shared Key** or **Open System** authentication type automatically based on the wireless station's capability and request.
  - **Open System** - Select 802.11 Open System authentication.
  - **Shared Key** - Select 802.11 Shared Key authentication.
- **WEP Key Format** - You can select **ASCII** or **Hexadecimal** format. ASCII Format stands for any combination of keyboard characters in the specified length. Hexadecimal format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length.

- **WEP Key settings** - Select which of the four keys will be used and enter the matching WEP key information for your network in the selected key radio button. These values must be 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.
  - For **64-bit** encryption - You can enter 10 hexadecimal digits (any combination of 0-9, a-f, A-F, and null key is not permitted) or 5 ASCII characters.
  - For **128-bit** encryption - You can enter 26 hexadecimal digits (any combination of 0-9, a-f, A-F, and null key is not permitted) or 13 ASCII characters.
  - For **152-bit** encryption - You can enter 32 hexadecimal digits (any combination of 0-9, a-f, A-F, and null key is not permitted) or 16 ASCII characters.

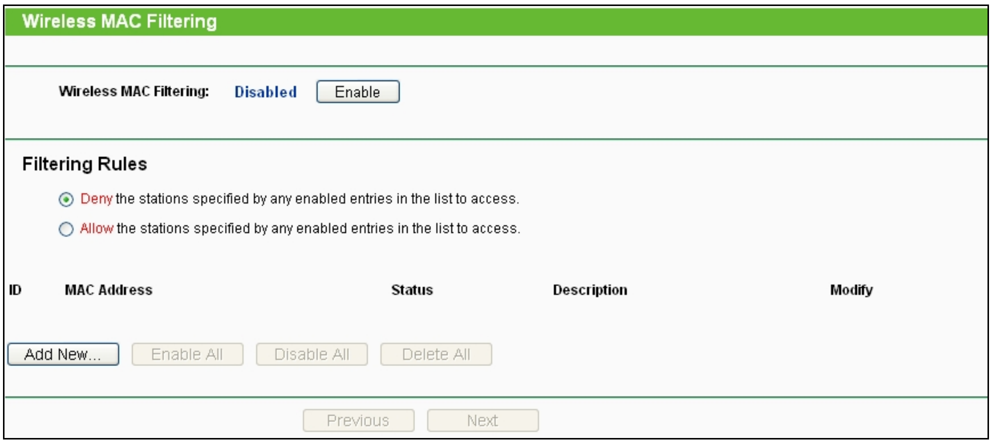
☞ **Note:**

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

Selecting **Wireless** > **Wireless MAC Filtering** will allow you to set up some filtering rules to control wireless stations accessing the device, which depend on the station’s MAC address on the following screen as shown Figure 4-9.



Wireless MAC Filtering

Wireless MAC Filtering: Disabled

Filtering Rules

● Deny the stations specified by any enabled entries in the list to access.

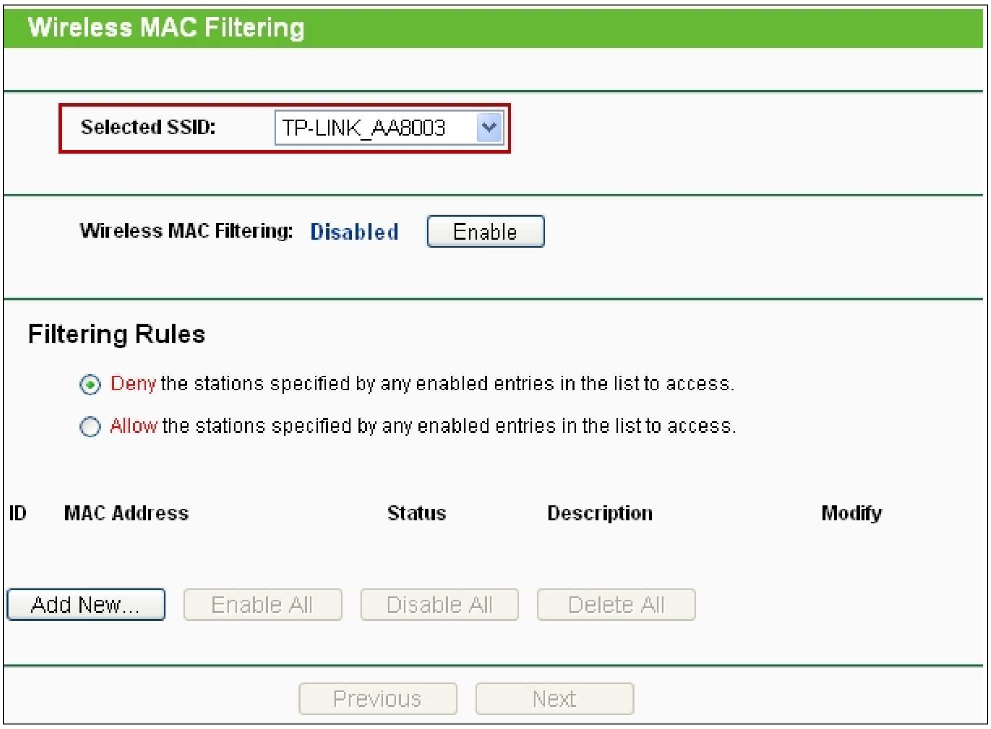
○ Allow the stations specified by any enabled entries in the list to access.

ID	MAC Address	Status	Description	Modify

Figure 4-9 Wireless MAC address Filtering

The Wireless MAC Address Filtering feature allows you to control wireless stations accessing the AP, which depend on the station's MAC addresses.

- **Selected SSID -** If Multi-SSID is enabled, you can choose one of the SSIDs from the pull-down list.



Wireless MAC Filtering

Selected SSID: TP-LINK_AA8003

Wireless MAC Filtering: Disabled

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.

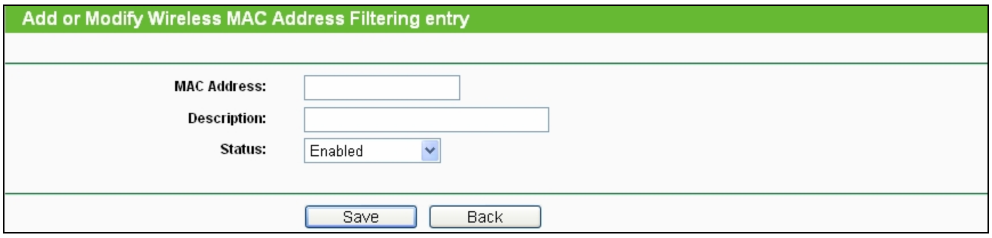
ID	MAC Address	Status	Description	Modify

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

To disable the Wireless MAC Address Filters feature, keep the default setting, **Disable**.

To set up an entry, click **Enable**, and follow these instructions:
First, you must decide whether the specified wireless stations can or cannot access the AP. If you desire that the specified wireless stations can access the AP, please select the radio button **Allow the stations specified by any enabled entries in the list to access**, otherwise, select the radio button **Deny the stations specified by any enabled entries in the list to access**.

To Add a Wireless MAC Address filtering entry, clicking the **Add New...** button, and following these instructions: The "**Add or Modify Wireless MAC Address Filtering entry**" page will appear, shown in Figure 4-10.



Add or Modify Wireless MAC Address Filtering entry

MAC Address:

Description:

Status: Enabled

Figure 4-10 Add or Modify Wireless MAC Address Filtering entry

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. Enter a simple description of the wireless station in the **Description** field. For example, Wireless station A.
3. **Status** - Select **Enabled** or **Disabled** for this entry on the **Status** pull-down list.
4. Click the **Save** button to save this entry.

To add another entries, repeat steps 1~4.

To modify or delete an existing entry:

1. Click the **Modify** or **Delete** button in the **modify** column in the MAC Address Filtering Table.
2. Enter the value as desired in the **Add or Modify Wireless MAC Address Filtering entry** page, and click the **Save** button.

You can click the **Enable All** button to make all the Entries enabled, click the **Disable All** button to make all the Entries disabled, click the **Delete All** button to delete all the entries.

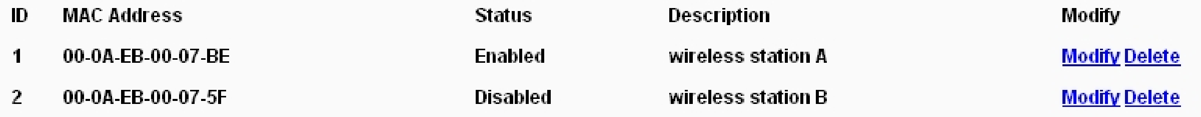
Click the **Next** button to go to the next page and click the **Previous** button to return to the previous page.

Note: If you enable the function and select the **Allow the stations specified by any enabled entries in the list to access** for **Filtering Rules**, and there are not any enable entries in the list, thus, no wireless stations can access the AP.

For example: If you desire that the wireless station A with MAC address 00-0A-EB-00- 07-BE be able to access the router. The wireless station B with MAC address 00-0A-EB- 00-07-5F not be able to access the router, while all other wireless stations cannot access the router, you should 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 and enter the MAC address 00-0A-EB-00-07-BE in the **MAC Address** field, enter wireless station A in the **Description** field and select **Enabled** in the **Status** pull-down list. Click the **Save** button.
5. Click the **Add New...** button and enter the MAC address 00-0A-EB-00-07-5F in the **MAC Address** field, enter wireless station B in the **Description** field and select **Disabled** in the **Status** pull-down list. Click the **Save** button.

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



ID	MAC Address	Status	Description	Modify
1	00-0A-EB-00-07-BE	Enabled	wireless station A	Modify Delete
2	00-0A-EB-00-07-5F	Disabled	wireless station B	Modify Delete

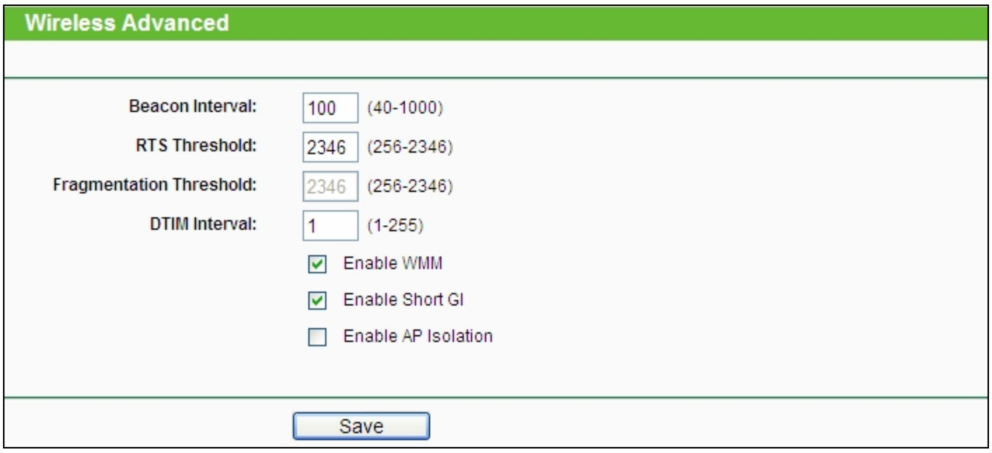
☞ **Note:**

1) If you select the radio button **Deny the stations specified by any enabled entries in the list to access** for **Filtering Rules,** the wireless station B will still not be able to access the router, however, other wireless stations that are not in the list will be able to access the router.

2) If you enable the function and select the **Allow the stations specified by any enabled entries in the list to access** for **Filtering Rules,** and there are not any enable entries in the list, thus, no wireless stations can access the router.

4.7.4 Wireless Advanced

Selecting **Wireless > Wireless Advanced** will allow you to do some advanced settings for the device in the following screen as shown in Figure 4-11. As the configuration for each operation mode is almost the same, we take Access Point mode for example here.



Wireless Advanced

Beacon Interval:	100	(40-1000)
RTS Threshold:	2346	(256-2346)
Fragmentation Threshold:	2346	(256-2346)
DTIM Interval:	1	(1-255)

☑ Enable WMM

☑ Enable Short GI

☐ Enable AP Isolation

Figure 4-11 Wireless Advanced

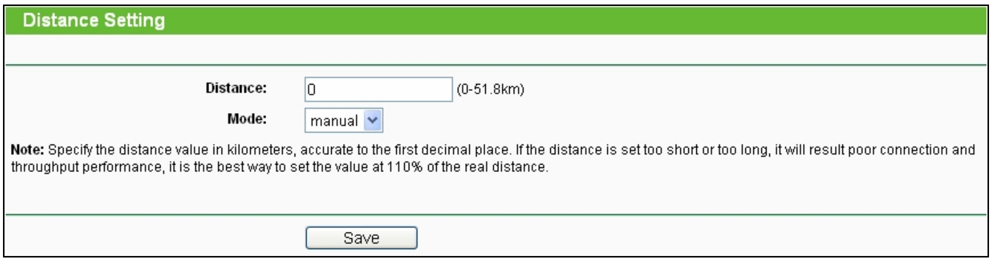
- **Beacon Interval -** The beacons are the packets sent by the Device to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. You can specify a value between 40-1000 milliseconds. The default value is 100.
- **RTS Threshold -** Here you can specify the RTS (Request to Send) Threshold. If the packet is larger than the specified RTS Threshold size, the Device will send RTS frames to a particular receiving station and negotiate the sending of a data frame. The default value is 2346.
- **Fragmentation Threshold** - This value is the maximum size determining whether packets will be fragmented. Setting the Fragmentation Threshold too low may result in poor network performance since excessive packets. 2346 is the default setting and is recommended.
- **DTIM Interval -** This value determines the interval of the Delivery Traffic Indication Message (DTIM). 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 -** 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 Distance Setting

Selecting **Wireless** > **Distance Setting** will allow you to adjust the wireless range in outdoor conditions as shown in Figure 4-12. This is a critical feature required for stabilizing outdoor links. Enter the distance of your wireless link and the software will optimize the frame ACK timeout value automatically.



Distance Setting

Distance: 0 (0-51.8km)

Mode: manual

Note: Specify the distance value in kilometers, accurate to the first decimal place. If the distance is set too short or too long, it will result poor connection and throughput performance, it is the best way to set the value at 110% of the real distance.

Figure 4-12 Distance Setting

- **Distance -** Specify the distance value in kilometers, accurate to the first decimal place. If the distance is set too short or too long, it will result poor connection and throughput performance, it is best to set the value at 110% of the real distance. If the AP is being used in an indoor setting, please use the indoor option.

☞ **Note:**

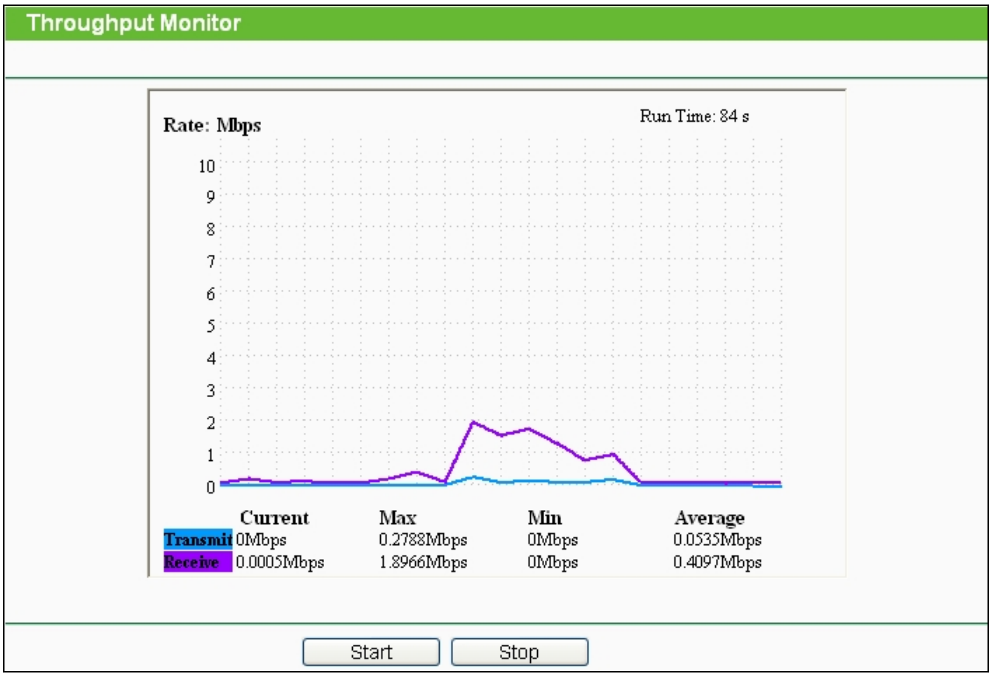
It only works after you have established connection to remote AP under client mode.

- **Mode -** You can select manual or indoor for the mode.

Click **Save** to keep your settings.

4.7.6 Throughput Monitor

Selecting **Wireless** > **Throughput Monitor** will helps to watch wireless throughput information in the following screen shown in Figure 4-13.



Throughput Monitor

Rate: Mbps

Run Time: 84 s

	Current	Max	Min	Average
Transmit	0Mbps	0.2788Mbps	0Mbps	0.0535Mbps
Receive	0.0005Mbps	1.8966Mbps	0Mbps	0.4097Mbps

Figure 4-13 Wireless Throughput

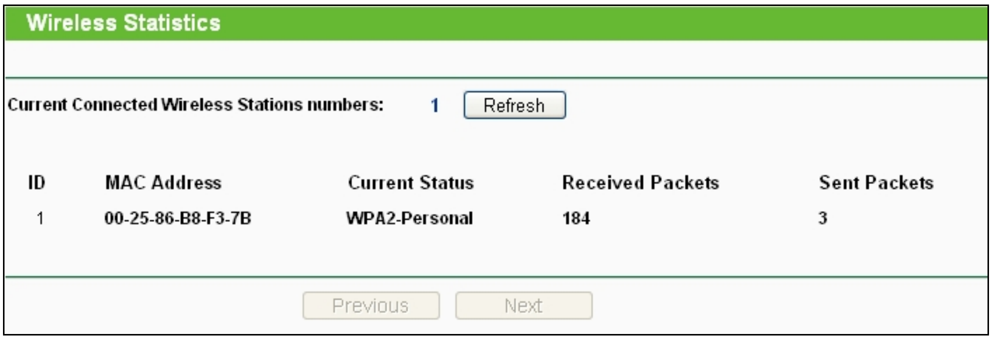
- **Rate** - The Throughput unit.
- **Run Time** - How long this function is running.
- **Transmit**- Wireless transmit rate information.
- **Receive**- Wireless receive rate information.

Click the **Start** button to start wireless throughput monitor.

Click the **Stop** button to stop wireless throughput monitor.

4.7.7 Wireless Statistics

Selecting **Wireless** > **Wireless Statistics** will allow you to see the wireless transmission information in the following screen shown in Figure 4-14.



Current Connected Wireless Stations numbers: 1

ID	MAC Address	Current Status	Received Packets	Sent Packets
1	00-25-86-B8-F3-7B	WPA2-Personal	184	3

Figure 4-14 The router attached wireless stations

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

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

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

☞ **Note:**

This page will be refreshed automatically every 5 seconds.

4.8 DHCP

DHCP stands for Dynamic Host Configuration Protocol. The DHCP Server will automatically assign dynamic IP addresses to the computers on the network. This protocol simplifies network management and allows new wireless devices to receive IP addresses automatically without the need to manually assign new IP addresses.

There are three submenus under the DHCP menu (shown as Figure 4-15): **DHCP Settings**, **DHCP Clients List** and **Address Reservation**. Clicking any of them will enable you to configure the corresponding function. The detailed explanations for each submenu are provided below.

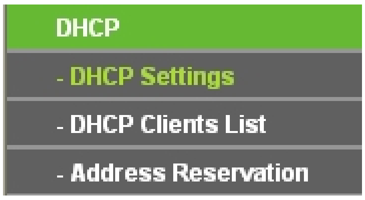
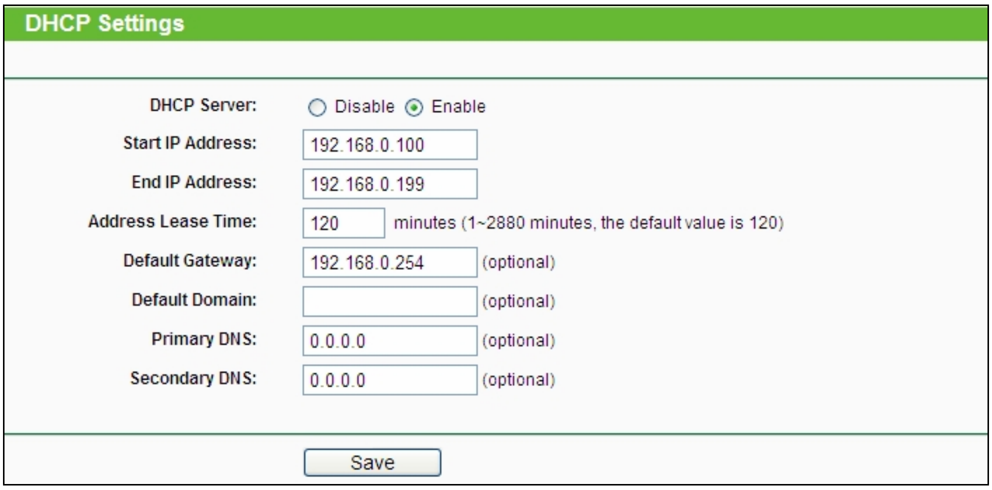


Figure 4-15 The DHCP menu

4.8.1 DHCP Settings

Selecting **DHCP** > **DHCP Settings** will enable you to set up the AP as a DHCP (Dynamic Host Configuration Protocol) server, which provides the TCP/IP configuration for all the PCs that are connected to the system on the LAN. The DHCP Server can be configured on the page (shown as Figure 4-16).



DHCP Settings

DHCP Server: ○ Disable ● Enable

Start IP Address: 192.168.0.100

End IP Address: 192.168.0.199

Address Lease Time: 120 minutes (1~2880 minutes, the default value is 120)

Default Gateway: 192.168.0.254 (optional)

Default Domain: (optional)

Primary DNS: 0.0.0.0 (optional)

Secondary DNS: 0.0.0.0 (optional)

Figure 4-16 DHCP Settings

- **DHCP Server -** Selecting the radio button before **Disable/Enable** will disable/enable the DHCP server on your AP. The default setting is **Disable**. If you disable the Server, you must have another DHCP server within your network or else you must manually configure the computer.
- **Start IP Address -** This field specifies the first address in the IP Address pool. 192.168.0.100 is the default start IP address.
- **End IP Address** - This field specifies the last address in the IP Address pool. 192.168.0.199 is the default end IP address.
- **Address Lease Time -** Enter the amount of time for the PC to connect to the AP with its current assigned dynamic IP address. The time is measured in minutes. After the time is up, the PC 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) -** Enter the IP address of the gateway for your LAN. The factory default setting is 0.0.0.0.
- **Default Domain (optional) -** Enter the domain name of the your DHCP server. You can leave the field blank.
- **Primary DNS (optional) -** Enter the DNS IP address provided by your ISP. Consult your ISP if you don't know the DNS value. The factory default setting is 0.0.0.0.
- **Secondary DNS (optional) -** Enter the IP address of another DNS server if your ISP provides two DNS servers. The factory default setting is 0.0.0.0.

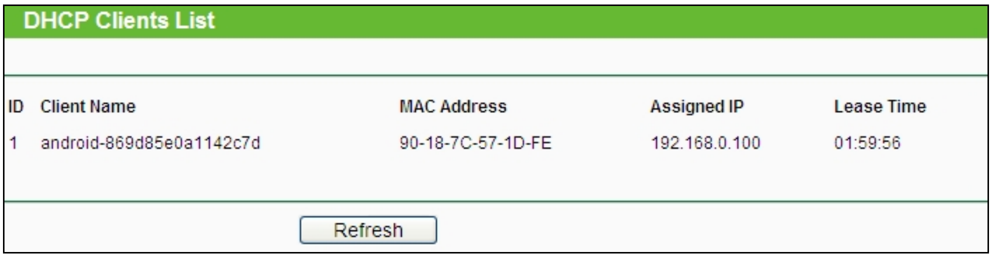
Click **Save** to save the changes.

☞ **Note:**

To use the DHCP server function of the device, you should configure all computers in the LAN as "Obtain an IP Address automatically" mode. This function will not take effect until the device reboots.

4.8.2 DHCP Clients List

Selecting **DHCP** > **DHCP Clients List** will enable you to view the Client Name**,** MAC Address, Assigned IP and Lease Time for each DHCP Client attached to the device (Figure 4-17).



DHCP Clients List

ID	Client Name	MAC Address	Assigned IP	Lease Time
1	android-869d85e0a1142c7d	90-18-7C-57-1D-FE	192.168.0.100	01:59:56

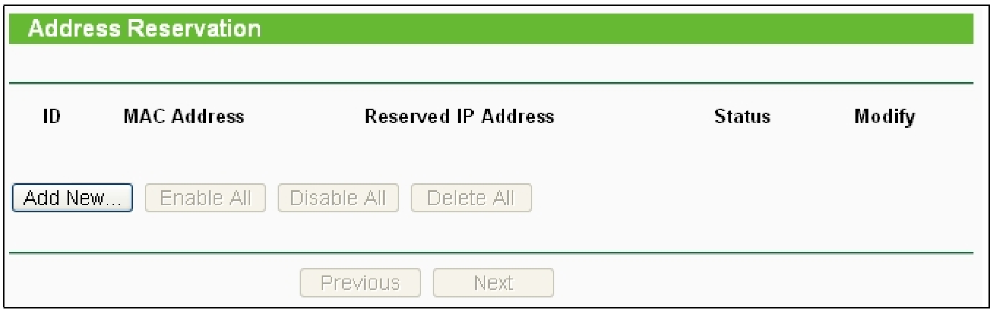
Figure 4-17 DHCP Clients List

- **ID -** Here displays the index of the DHCP client.
- **Client Name -** Here displays the name of the DHCP client.
- **MAC Address -** Here displays the MAC address of the DHCP client.
- **Assigned IP -** Here displays the IP address that the AP has allocated to the DHCP client.
- **Lease Time -** Here displays the time of the DHCP client leased. Before the time is up, DHCP client will request to renew the lease automatically.

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

4.8.3 Address Reservation

Selecting **DHCP** > **Address Reservation** will enable you to specify a reserved IP address for a PC on the LAN, so the PC will always obtain the same IP address each time when it accesses the AP. Reserved IP addresses should be assigned to servers that require permanent IP settings. The screen below is used for address reservation (shown in Figure 4-18).



Address Reservation

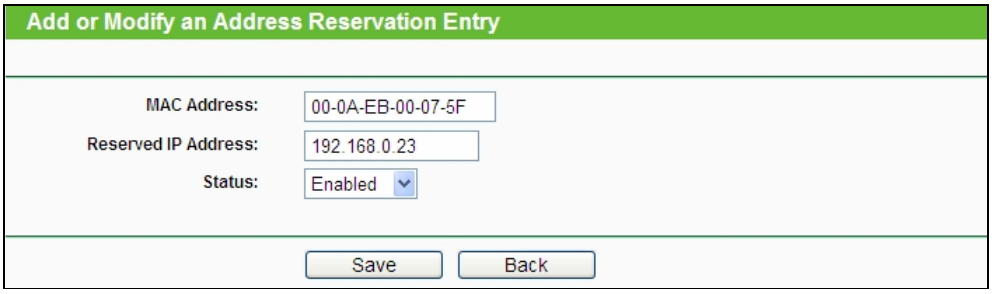
ID	MAC Address	Reserved IP Address	Status	Modify

Figure 4-18 Address Reservation

- **MAC Address -** Here displays the MAC address of the PC for which you want to reserve an IP address.
- **Reserved IP Address -** Here displays the IP address that the AP is reserved.
- **Status -** Here shows whether the entry is enabled or not
- **Modify -** To modify or delete an existing entry.

To Reserve IP addresses:

1. Click the **Add New button** in the page of **Address Reservation**, the following page (Figure 4-19) will display.
2. Enter the MAC address (the format for the MAC Address is XX-XX-XX-XX-XX-XX) and IP address in dotted-decimal notation of the computer you want to add.
3. Click the **Save** button after finish configuring.



Add or Modify an Address Reservation Entry

MAC Address: 00-0A-EB-00-07-5F

Reserved IP Address: 192.168.0.23

Status: Enabled

Figure 4-19 Add or Modify an Address Reservation Entry

To modify A Reserved IP address:

1. Select the reserved address entry to your needs and click **Modify**. If you wish to delete the entry, click **Delete**.
2. Click **Save** to keep your changes.

To delete all Reserved IP addresses:

Click **Clear All**.

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

☞ **Note:**

The changes won't take effect until the device reboots.

4.9 System Tools

System Tools option helps you to optimize the configuration of your device. You can upgrade the AP to the latest version of firmware as well as backup or restore the AP’s configuration files. Ping Watch Dog can help to continuously monitor a particular connection to a remote host. Speed Test helps to test the connection speed to and from any reachable IP address on current network, especially when we are building wireless network between devices which are far away from each other. It’s suggested that you change the default password to a more secure one because it controls access to the device’s web-based management page. Besides, you can find out what happened to the system in System Log.

There are twelve submenus under the **System Tools** menu (shown as Figure 4-20): **SNMP**, **Time Settings**, **Diagnostic**, **Ping Watch Dog**, **Speed Test**, **Firmware Upgrade**, **Factory Defaults**, **Backup & Restore**, **Reboot**, **Password**, **System log** and **Statistics**. Clicking any of them will enable you to configure the corresponding function. The detailed explanations for each submenu are provided below.

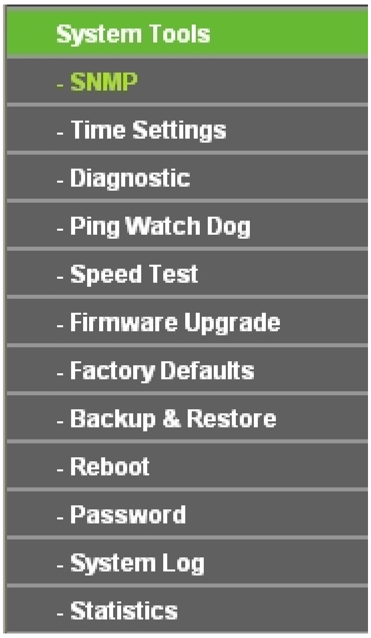
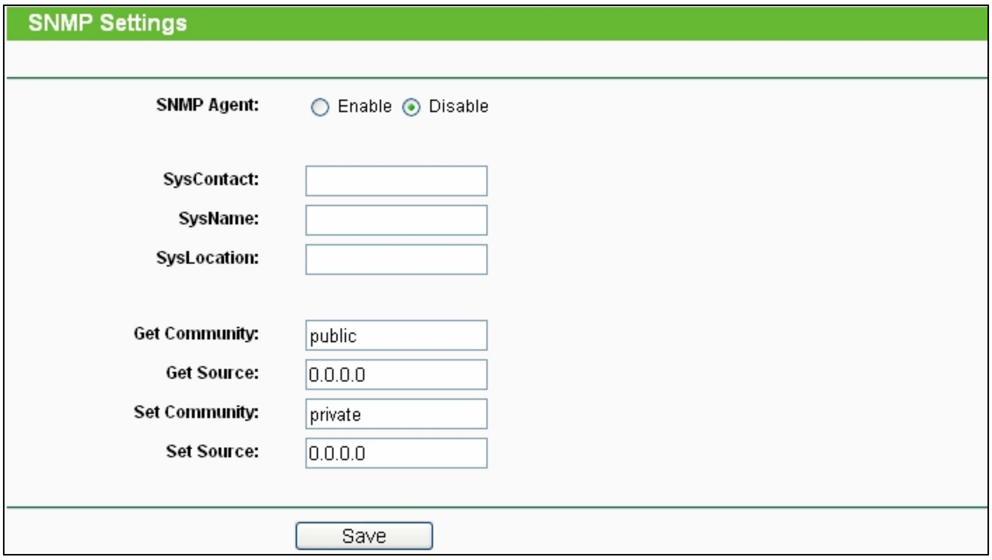


Figure 4-20 The System Tools menu

4.9.1 SNMP

Simple Network Management Protocol (SNMP) is a popular network monitoring and management protocol.

Choose menu “**System Tools > SNMP**”, and then you can configure the SNMP on the following screen.



SNMP Settings

SNMP Agent: ○ Enable ● Disable

SysContact:

SysName:

SysLocation:

Get Community: public

Get Source: 0.0.0.0

Set Community: private

Set Source: 0.0.0.0

Figure 4-21

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.

☞ **Note:**

Specifying one of these values via the Device's Web-Based Utility makes the corresponding object read-only. If there isn't such a config setting, then the write request will succeed (assuming suitable access control settings), but the new value would be forgotten the next time the agent was restarted.

Get Community - Enter the community name that allows Read-Only access to the 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 the 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.

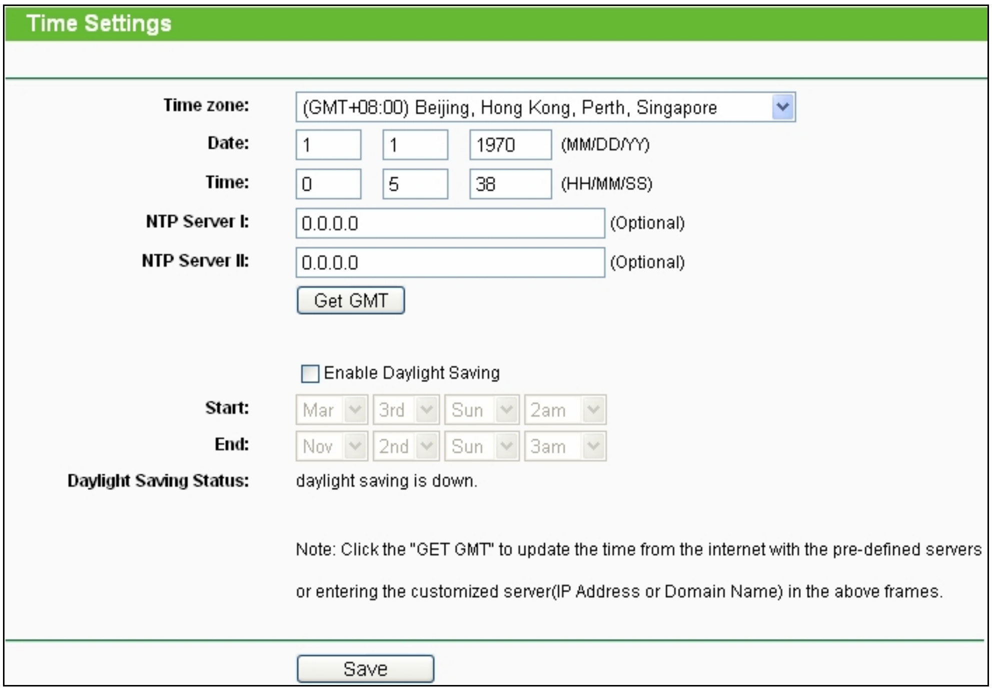
☞ **Note:**

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.

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

4.9.2 Time Settings

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



Time Settings

Time zone:	(GMT+08:00) Beijing, Hong Kong, Perth, Singapore
Date:	1 / 1 / 1970 (MM/DD/YY)
Time:	0 / 5 / 38 (HH/MM/SS)
NTP Server I:	0.0.0.0 (Optional)
NTP Server II:	0.0.0.0 (Optional)
	Get GMT
	□ Enable Daylight Saving
Start:	Mar / 3rd / Sun / 2am
End:	Nov / 2nd / Sun / 3am
Daylight Saving Status:	daylight saving is down.

Note: Click the "GET GMT" to update the time from the internet with the pre-defined servers or entering the customized server(IP Address or Domain Name) in the above frames.

Save

Figure 4-22 Time settings

- **Time Zone** - Select your local time zone from this pull-down list.
- **To set time manually:**

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

➢ **For automatic time synchronization:**

1. Enter the address or domain of the **NTP Server I** or **NTP Server II**.
2. Click the **Get GMT** button to get GMT from the Internet.

➢ **To enable Daylight Saving:**

1. Select the **Enable Daylight Saving** checkbox to enable daylight saving function.
2. Schedule the span of time which this function will effect. For example, if you want this function work at 0 o'clock(am) on the 1st Sunday of April and last until at 6 o'clok(pm) on the 2nd Saturday of September, you need choose "Apr", "1st", "Sun", "0am" at **Start** part and choose "Sep", "2nd", "Sat", "6pm" at the **End** part.
3. Click the **Save** button to effect this function.

☞ **Note:**

1) This setting will be used for some time-based functions such as firewall functions. These time dependant functions will not work if time is not set. So, it is important to specify time settings as soon as you successfully login to the Device.

2) The time will be lost if the Device is turned off.

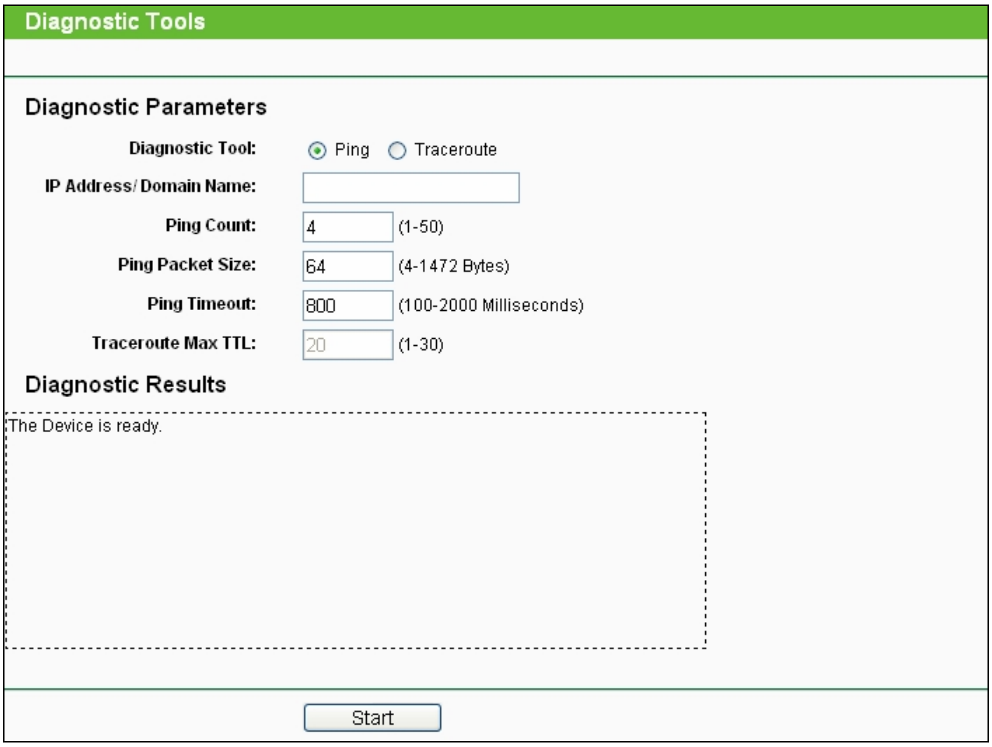
3) The Device will automatically obtain GMT from the Internet if it is configured accordingly.

4) In daylight saving configuration, start time and end time shall be within one year and start time shall be earlier than end time.

5) After you enable daylight saving function, it will take action in one minute.

4.9.3 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

Diagnostic Parameters

Diagnostic Tool: ◉ Ping ○ Traceroute

IP Address/ Domain Name:

Ping Count: 4 (1-50)

Ping Packet Size: 64 (4-1472 Bytes)

Ping Timeout: 800 (100-2000 Milliseconds)

Traceroute Max TTL: 20 (1-30)

Diagnostic Results

The Device is ready.

Figure 4-23 Diagnostic Tools

- **Diagnostic Tool -** Click 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:**

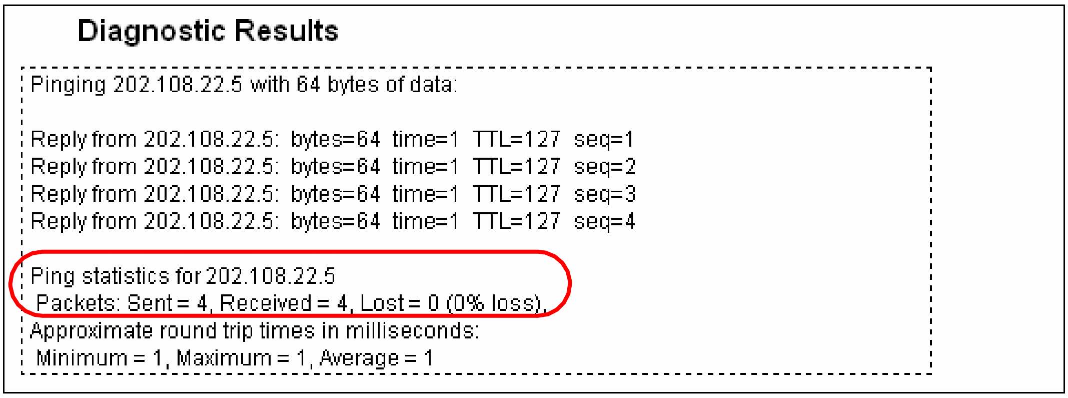
You can use ping/traceroute to test both numeric IP address or domain name. If pinging/tracerouting the IP address is successful, but pinging/tracerouting the domain name is not, you might have a name resolution problem. In this case, ensure that the domain name you are specifying can be resolved by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

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

Click the **Start** button to start the diagnostic procedure.

The **Diagnostic Results** page (as shown in Figure 4-24) displays the result of diagnosis.

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



Diagnostic Results

```
Pinging 202.108.22.5 with 64 bytes of data:

Reply from 202.108.22.5:  bytes=64  time=1  TTL=127  seq=1
Reply from 202.108.22.5:  bytes=64  time=1  TTL=127  seq=2
Reply from 202.108.22.5:  bytes=64  time=1  TTL=127  seq=3
Reply from 202.108.22.5:  bytes=64  time=1  TTL=127  seq=4

Ping statistics for 202.108.22.5
 Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milliseconds:
 Minimum = 1, Maximum = 1, Average = 1
```

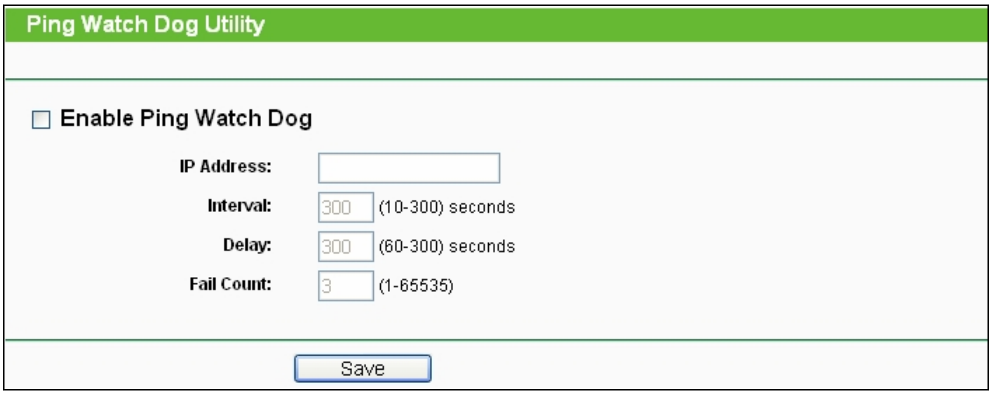
Figure 4-24 Diagnostic Results

☞ **Note:**

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

4.9.4 Ping Watch Dog

Selecting **System Tools** > **Ping Watch Dog** allows you to continuously monitor the particular connection between the device to a remote host. It makes this device continuously ping a user defined IP address (it can be the internet gateway for example). If it is unable to ping under the user defined constraints, this device will automatically reboot.



Ping Watch Dog Utility

□ Enable Ping Watch Dog

IP Address:

Interval: 300 (10-300) seconds

Delay: 300 (60-300) seconds

Fail Count: 3 (1-65535)

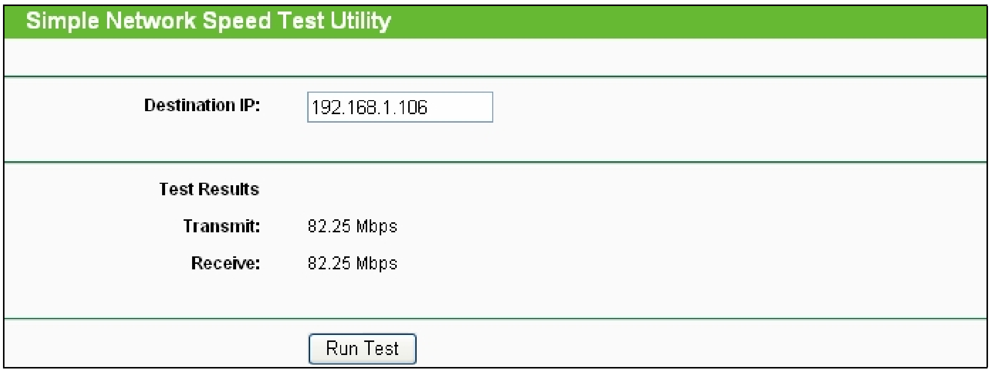
Figure 4-25 Ping Watch Dog Utility

- **Enable Ping Watch Dog -** 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 internal between two ping packets which are sent out continuously.
- **Delay -** Time delay before first ping packet is sent out when the device is restarted.
- **Fail Count -** Upper limit of the ping packet the device can drop continuously. If this value is overrun, the device will restart automatically.

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

4.9.5 Speed Test

Selecting **System > Speed Test** allows you to test the connection speed to and from any reachable IP address on current network on the page as shown in Figure 4-26. The speed test is especially used when you are building wireless network between devices which are far away from each other. It should be used for the preliminary throughput estimation between two network devices. The estimation is rough. You can input the remote device's administrator Username and Password under **Advance options** to get a precise estimation if the remote device is **TL-WA7110ND** too.



Simple Network Speed Test Utility

Destination IP: 192.168.1.106

Test Results

Transmit: 82.25 Mbps

Receive: 82.25 Mbps

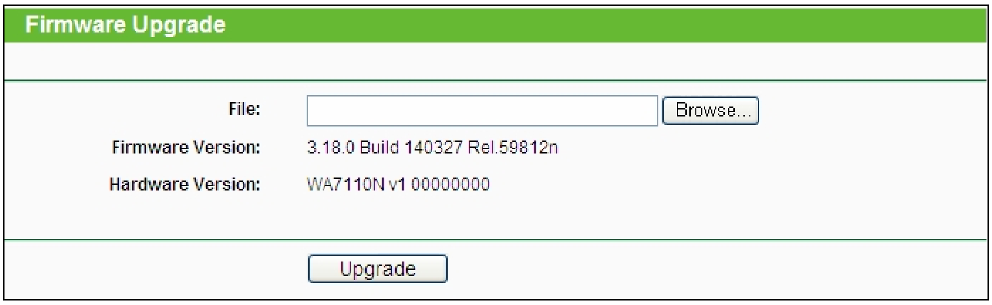
Figure 4-26 Speed Test

- **Destination IP -** The Remote device's IP address.
- **Transmit** - Estimate the outgoing throughput (Tx).
- **Receive** - Estimate the ingoing throughput (Rx).

Be sure to click the **Run Test** button to start a new test after you filled enough information. You can also stop a running test by click Stop Test button at any time.

4.9.6 Firmware Upgrade

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



Firmware Upgrade

File:

Firmware Version: 3.18.0 Build 140327 Rel.59812n

Hardware Version: WA7110N v1 00000000

Figure 4-27 Firmware Upgrade

- **To upgrade the Device's firmware, follow these instructions:**

1. Download a most recent firmware upgrade file from our website (www.tp-link.com).
2. Enter or select the path name where you save the downloaded file on the computer into the **File Name** blank.
3. Click the **Upgrade** button.
4. The Device will reboot while the upgrading has been finished.

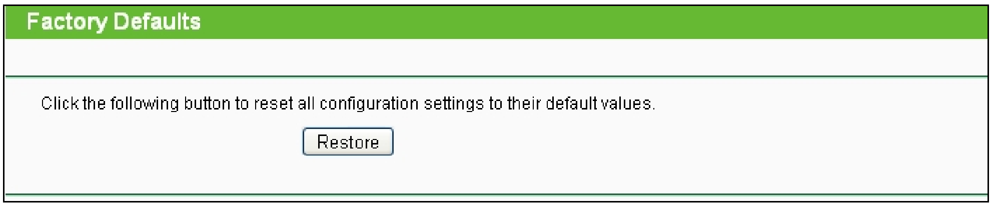
- **Firmware Version** - Displays the current firmware version.
- **Hardware Version** - Displays the current hardware version. The hardware version of the upgrade file must accord with the current hardware version.

☞ **Note:**

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

4.9.7 Factory Defaults

Choose menu **System Tools > Factory Defaults**, and you can restore the configurations of the Device to factory defaults on the following screen.



Factory Defaults

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

Figure 4-28 Restore Factory Default

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

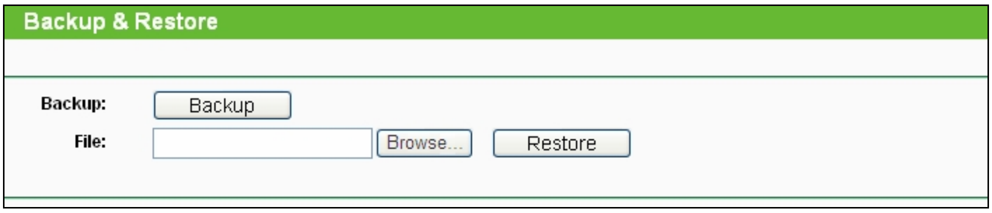
- Default User Name **- admin**.
- Default Password **- admin**.
- Default IP Address **- 192.168.0.254**.
- Default Subnet Mask **- 255.255.255.0**.

☞ **Note:**

All changed settings will be lost when defaults are restored.

4.9.8 Backup & Restore

Choose menu "**System Tools > Backup & Restore**", and then you can save the current configuration of the Device as a backup file and restore the configuration via a backup file as shown in Figure 4-29.



Backup & Restore

Backup: Backup

File:

Figure 4-29 Backup & Restore

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

➢ To restore the AP's configuration, follow these instructions:

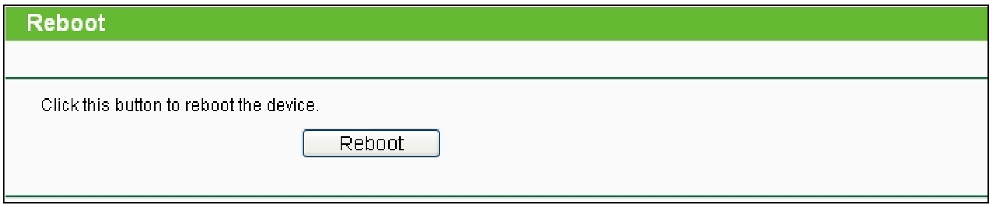
1. Click the **Browse** button to find the configuration file which you want to restore.
2. Click the **Restore** button to update the configuration with the file whose path is the one you have input or selected in the blank.

☞ **Note:**

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

4.9.9 Reboot

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



Reboot

Click this button to reboot the device.

Figure 4-30 Reboot the Device

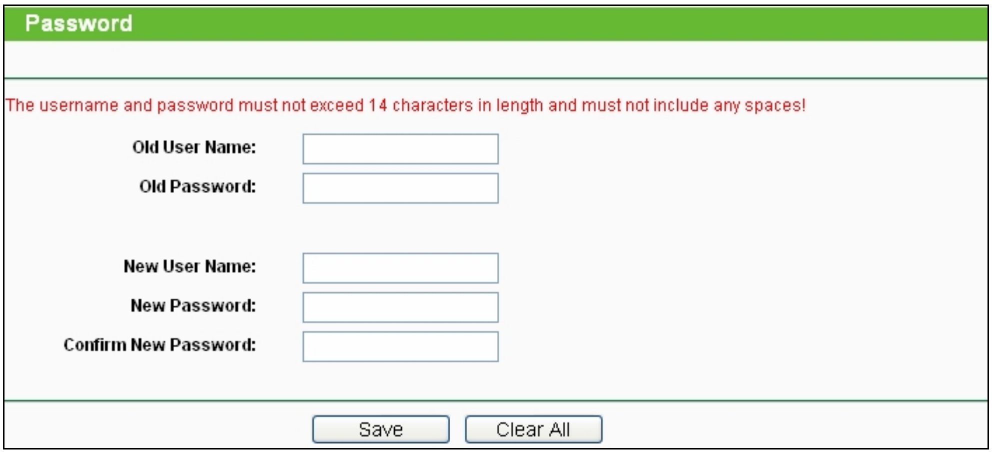
Click the **Reboot** button to reboot the Device.

➢ Some settings of the Device 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 Device (system will reboot automatically.).
- Restore the Device's settings to the factory defaults (system will reboot automatically.).
- Update the configuration with the file (system will reboot automatically.).

4.9.10 Password

Choose menu **System Tools > Password**, and then you can change the factory default user name and password of the Device in the next screen as shown in Figure 4-31.



Password

The username and password must not exceed 14 characters in length and must not include any spaces!

Old User Name:

Old Password:

New User Name:

New Password:

Confirm New Password:

Figure 4-31 Password

It is strongly recommended that you change the factory default user name and password of the AP. All users who try to access the AP's web-based utility will be prompted for the AP's user name and password.

☞ **Note:**

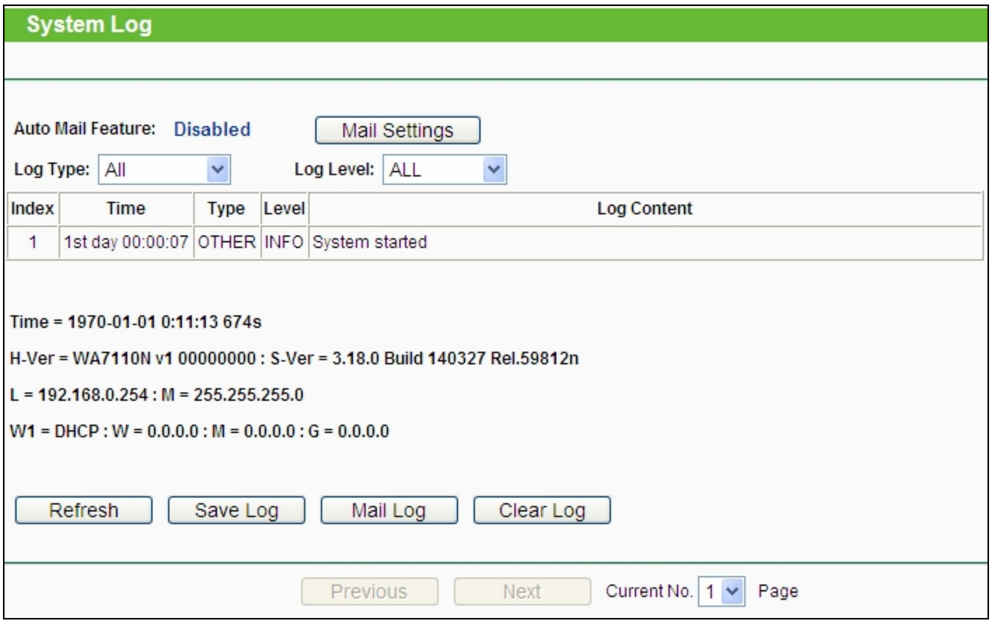
The new user name and password must not exceed 14 characters in length and must not include any spaces. Enter the new Password twice to confirm it.

Click the **Save** button when finished.

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

4.9.11 System log

Choose menu **System Tools > System Log**, and then you can view the logs of the Device.



System Log

Auto Mail Feature: Disabled

Log Type: All

Log Level: ALL

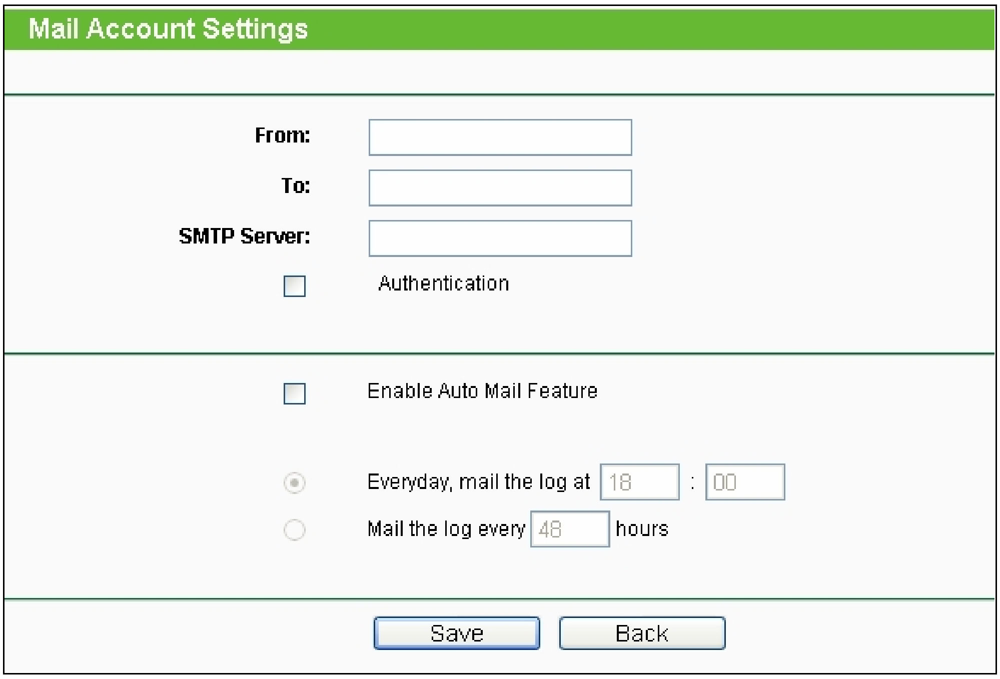
Index	Time	Type	Level	Log Content
1	1st day 00:00:07	OTHER	INFO	System started

```
Time = 1970-01-01 0:11:13 674s
H-Ver = WA7110N v1 00000000 : S-Ver = 3.18.0 Build 140327 Rel.59812n
L = 192.168.0.254 : M = 255.255.255.0
W1 = DHCP : W = 0.0.0.0 : M = 0.0.0.0 : G = 0.0.0.0
```

Current No. 1 Page

Figure 4-32 System Log

- **Auto Mail Feature -** Indicates whether auto mail feature is enabled or not.
- **Mail Settings -** Set the receiving and sending mailbox address, server address, validation information as well as the timetable for Auto Mail Feature.



Mail Account Settings

From:

To:

SMTP Server:

□ Authentication

□ Enable Auto Mail Feature

● Everyday, mail the log at 18 : 00

○ Mail the log every 48 hours

Figure 4-33 Mail Account Settings

- **From -** Your mail box address.
- **To -** Recipient's address.
- **SMTP Server -** Your SMTP server.
- **Authentication -** Most SMTP Server requires Authentication.

☞ **Note:**

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

- **User Name -** Your mail account name.
- **Password -** Your mail account password.
- **Auto Mail Feature** will help you monitor how your Device is running.

Everyday, at specified time, the Device will automatically send the log to specified mailbox.

Every few hours, such as 2 hours, the Device will automatically send the log to specified mailbox.

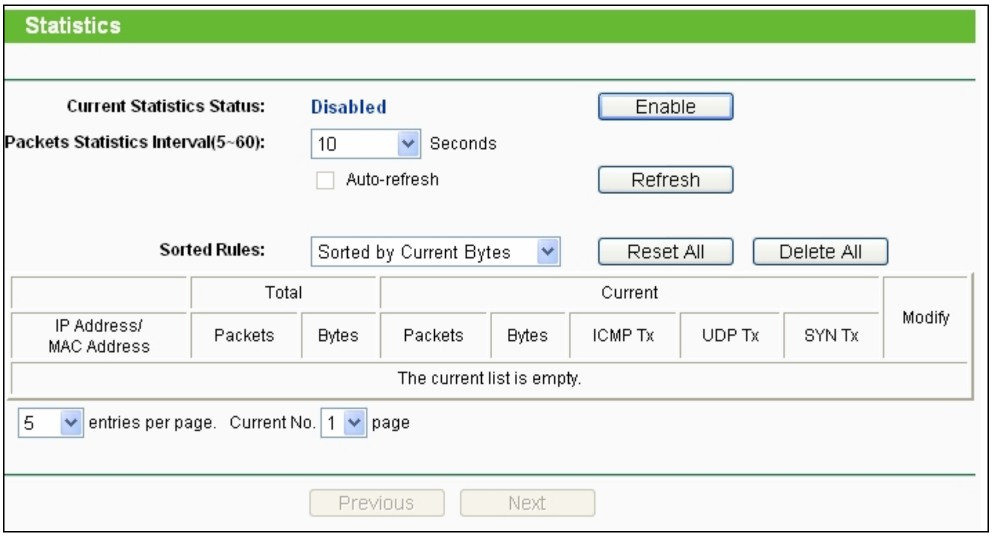
- **Log Type -** By selecting the log type, only logs of this type will be shown.
- **Log Level -** By selecting the log level, only logs of this level will be shown.
- **Refresh -** Refresh the page to show the latest log list.
- **Save Log -** Click to save all the logs in a txt file.
- **Mail Log -** Click to send an email of current logs manually according to the address and validation information set in Mail Settings. The result will be shown in the later log soon.
- **Clear Log -** All the logs will be deleted from the Device permanently, not just from the page.

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

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

4.9.12 Statistics

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



Statistics

Current Statistics Status: Disabled [Enable]

Packets Statistics Interval(5~60): 10 Seconds

□ Auto-refresh [Refresh]

Sorted Rules: Sorted by Current Bytes [Reset All] [Delete All]

	Total		Current					
IP Address/ MAC Address	Packets	Bytes	Packets	Bytes	ICMP Tx	UDP Tx	SYN Tx	Modify
The current list is empty.								

5 entries per page. Current No. 1 page

[Previous] [Next]

Figure 4-34 Statistics

The Statistics page shows the network traffic of each PC on the LAN, including total traffic and the value of the last **Packets Statistic interval** in seconds.

- **Current Statistics Status -** Enabled or Disabled. The default value is disabled. To enable, click the Enable button. If disabled, the function of DoS protection in Security settings will be disabled.

- **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 value indicates the time section of the packets statistic.
- **Sorted Rules -** Choose how displayed statistics are sorted.

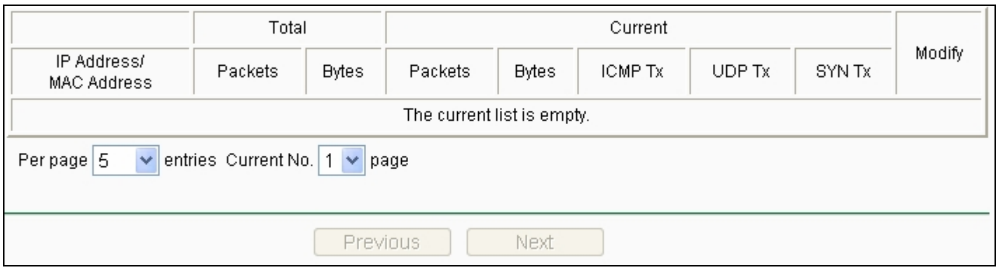
Click the **Auto-refresh** checkbox to refresh automatically.

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

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

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

- **Statistics Table**



	Total		Current					Modify
IP Address/ MAC Address	Packets	Bytes	Packets	Bytes	ICMP Tx	UDP Tx	SYN Tx	
The current list is empty.								

Per page 5 entries Current No. 1 page

Figure 4-35 Statistics Table

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

Chapter 5. AP Client Router & AP Router Operation Mode

This Chapter describes how to configure some advanced settings for your Access Point through the web-based management page. In the following explanations, we will take the device in AP Client Router operation mode for example.

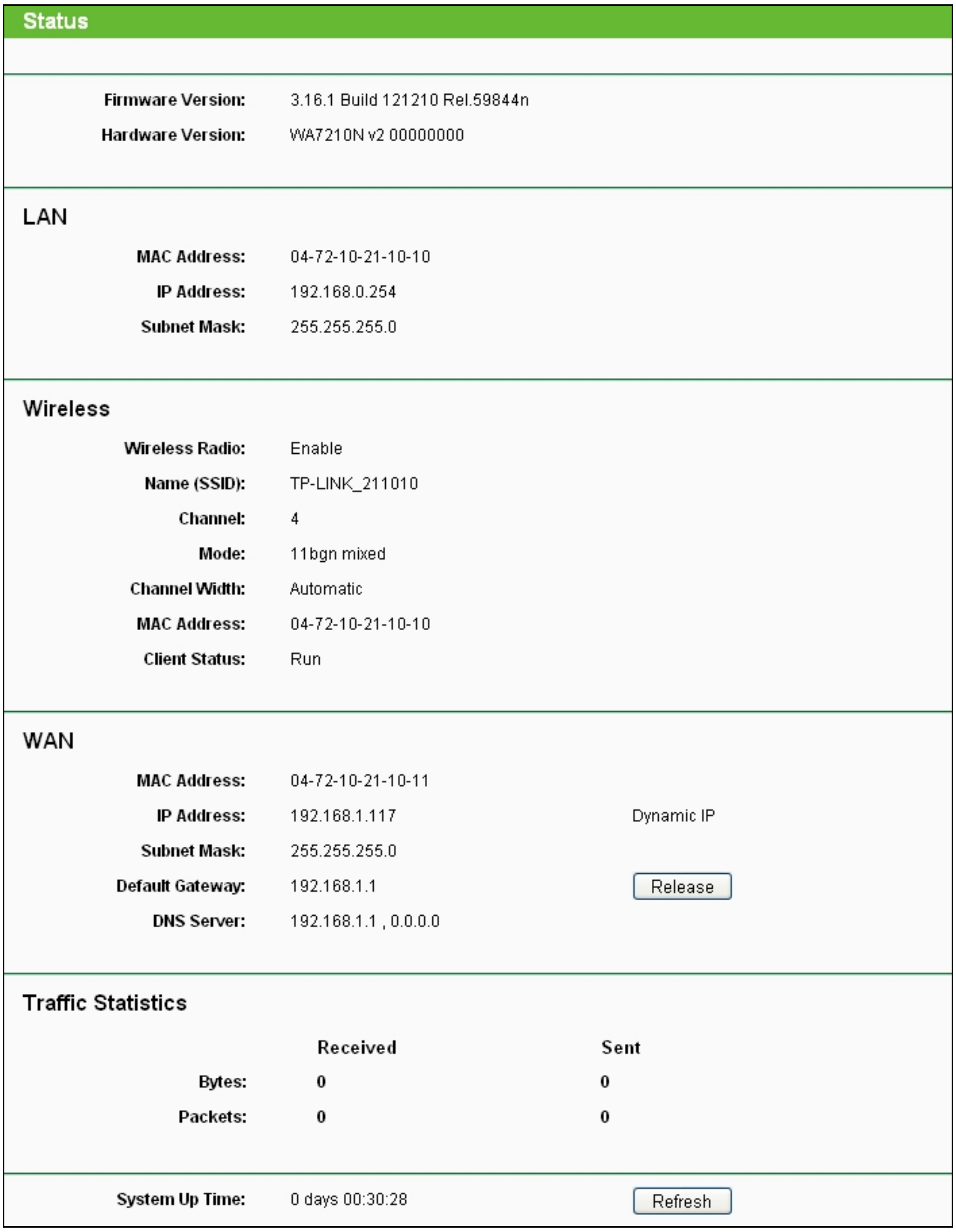
5.1 Login

After your successful login, you can configure and manage the Access Point. There are fifteen main menus on the left of the Web-based management page. Submenus will be available after you click one of the main menus. The sixteen main menus are: **Status**, **Quick Setup**, **Operation Mode**, **WPS**, **Network**, **Wireless**, **DHCP**, **Forwarding**, **Security**, **Parental Control**, **Access Control**, **Advanced Routing**, **Bandwidth Control**, **IP & MAC Binding**, **Dynamic DNS** and **System Tools**. On the right of the Web-based management page, there are the detailed explanations and instructions for the corresponding page. To apply any settings you have altered
on the page, please click **Save**.

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

5.2 Status

Selecting **Status** will enable you to view the AP's current status and configuration, all of which is read-only.



Status

Firmware Version: 3.16.1 Build 121210 Rel.59844n

Hardware Version: WA7210N v2 00000000

LAN

MAC Address: 04-72-10-21-10-10

IP Address: 192.168.0.254

Subnet Mask: 255.255.255.0

Wireless

Wireless Radio: Enable

Name (SSID): TP-LINK_211010

Channel: 4

Mode: 11bgn mixed

Channel Width: Automatic

MAC Address: 04-72-10-21-10-10

Client Status: Run

WAN

MAC Address: 04-72-10-21-10-11

IP Address: 192.168.1.117 Dynamic IP

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 192.168.1.1 , 0.0.0.0

Traffic Statistics

	Received	Sent
Bytes:	0	0
Packets:	0	0

System Up Time: 0 days 00:30:28

Figure 5-1 Status

1. LAN

This field displays the current settings or information for the LAN, including the **MAC address**, **IP address** and **Subnet Mask**.

2. Wireless

This field displays basic information or status for wireless function, including **Wireless Radio**, **Name (SSID)**, **Channel**, **Mode**, **Channel Width**, **MAC address** and **Client Status**.

3. WAN

These parameters apply to the WAN port of the router, including **MAC address**, **IP address**, **Subnet Mask**, **Default Gateway** and **DNS server**. If PPPoE is chosen as the WAN connection type, the **Disconnect** button will be shown here while you are accessing the Internet. You can also cut the connection by clicking the button. If you have not connected to the Internet, just click **Connect** to establish the connection.

4. **Traffic Statistics**

This field displays the router's traffic statistics.

5. **System Up Time**

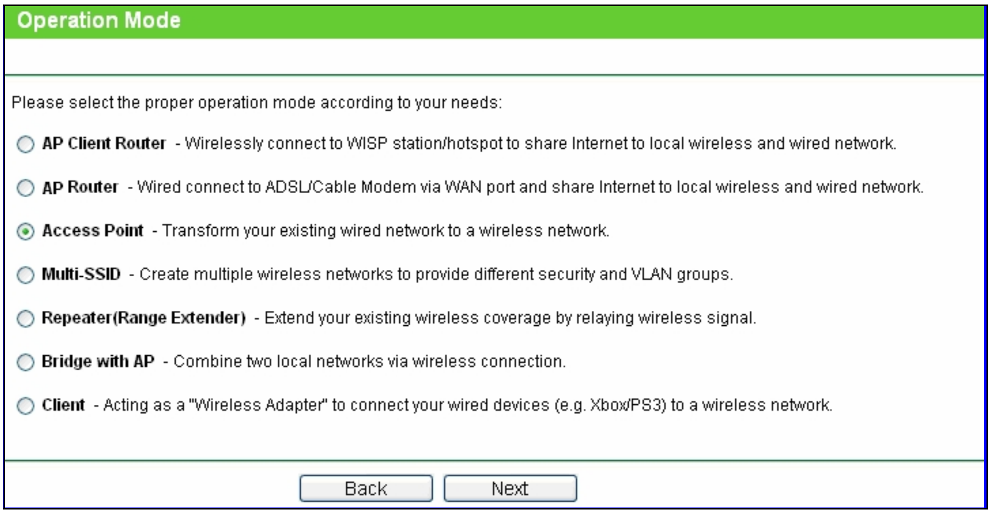
The total up time of the router since it was powered on or reset.

5.3 Quick Setup

Please refer to Section 3.2: "Quick Setup".

5.4 Operation Mode

Selecting **Operation Mode** will allow you to choose the operation mode for the AP. The AP supports seven operation mode types, **AP Client Router**, **AP Router**, **Access Point**, **Multi-SSID**, **Repeater (Range Extender)**, **Bridge with AP** and **Client**. Please select the one your want as shown in Figure 4-2. Click **Save** to save your choice.



Operation Mode

Please select the proper operation mode according to your needs:

○ **AP Client Router** - Wirelessly connect to WISP station/hotspot to share Internet to local wireless and wired network.

○ **AP Router** - Wired connect to ADSL/Cable Modem via WAN port and share Internet to local wireless and wired network.

● **Access Point** - Transform your existing wired network to a wireless network.

○ **Multi-SSID** - Create multiple wireless networks to provide different security and VLAN groups.

○ **Repeater(Range Extender)** - Extend your existing wireless coverage by relaying wireless signal.

○ **Bridge with AP** - Combine two local networks via wireless connection.

○ **Client** - Acting as a "Wireless Adapter" to connect your wired devices (e.g. Xbox/PS3) to a wireless network.

Figure 5-2 Operation Mode

- **AP Client Router -** In this mode, the device enables multi-users to share Internet from WISP. The LAN port devices share the same IP from WISP through Wireless port. While connecting to WISP, the Wireless port works as a WAN port at AP Client Router mode. The Ethernet port acts as a LAN port.
- **AP Router -** In this mode, the device enables multi-users to share Internet via ADSL/Cable Modem. The wireless port share the same IP to ISP through Ethernet WAN port. The Wireless port acts the same as a LAN port while at AP Router mode.
- **Access Point -** In this mode, the device can be connected to a wired network and transform the wired access into wireless that multiple devices can share together, especially for a home, office or hotel where only wired network is available.
- **Multi-SSID -** In this mode, the device can create up to 4 wireless networks labeled with different SSIDs and assign each SSID with different security or VLAN, especially for the situation when the various access policies and functions are required.
- **Repeater(Range Extender) -** In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- **Bridge with AP -** In this mode, the device can be used to combine multiple local networks together to the same one via wireless connections, especially for a home or office where separated networks can't be connected easily together with a cable.

- **Client -** In this mode, the device can be connected to another device via Ethernet port and act as an adaptor to grant your wired devices access to a wireless network, especially for a Smart TV, Media Player, or game console only with an Ethernet port.

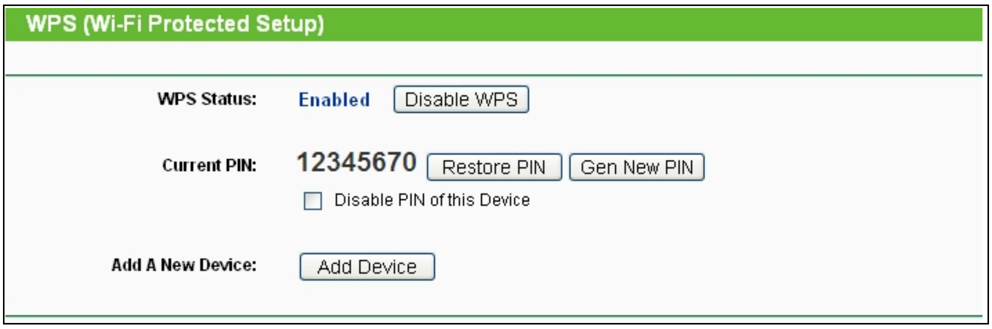
☞ **Note:**

When you change the operation mode to Client/Repeater, WPS function will stay disabled. Please manually enable this function if needed when you switch back to Access Point/Multi-SSID/Bridge mode.

5.5 WPS

WPS function will help you add a new device to the network quickly. If the new device supports Wi-Fi Protected Setup and is equipped with a configuration button, you can add it to the network by pressing the configuration button on the device and then press the button on the device within two minutes. The status LED on the device will light green for five minutes if the device has been successfully added to the network. If the new device supports Wi-Fi Protected Setup and the connection way using PIN, you can add it to the network by entering the device's PIN.

Select menu **WPS,** then you will see the next screen (shown in Figure 5-3).



WPS (Wi-Fi Protected Setup)

WPS Status: Enabled

Current PIN: 12345670

□ Disable PIN of this Device

Add A New Device:

Figure 5-3

- **WPS Status** - Enable or disable the WPS function here.
- **Current PIN** - The current value of the Device's PIN 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.
- **Add A New Device** - You can add the new device to the existing network manually by clicking **Add Device** button.

☞ **Note:**

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

To add a new device:

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

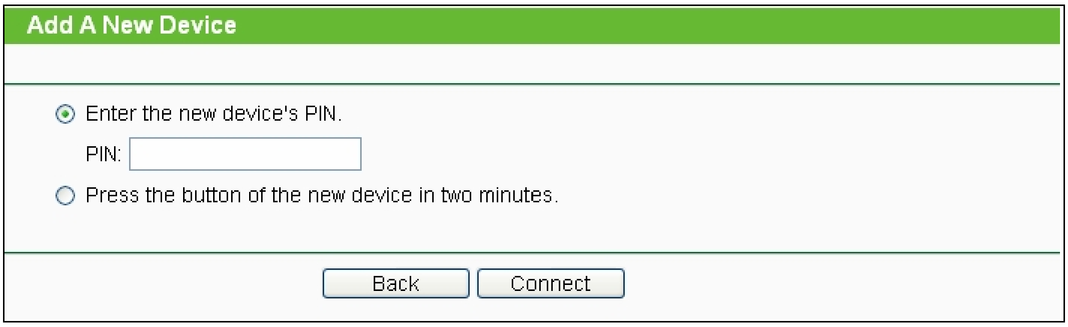
☞ **Note:**

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

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

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

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



Add A New Device

● Enter the new device's PIN.

PIN:

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

Figure 5-4 Add A New Device

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

Step 3: "**Connect successfully**" will appear on the screen of Figure 5-4, which means the client device has successfully connected to the Router.

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

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

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

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

Setup process.

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

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

5.6 Network

The **Network** option allows you to customize your local network manually by changing the default settings of the AP.

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

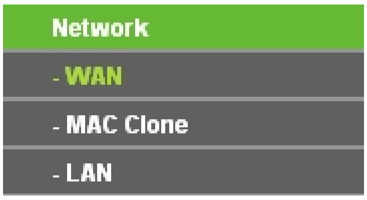
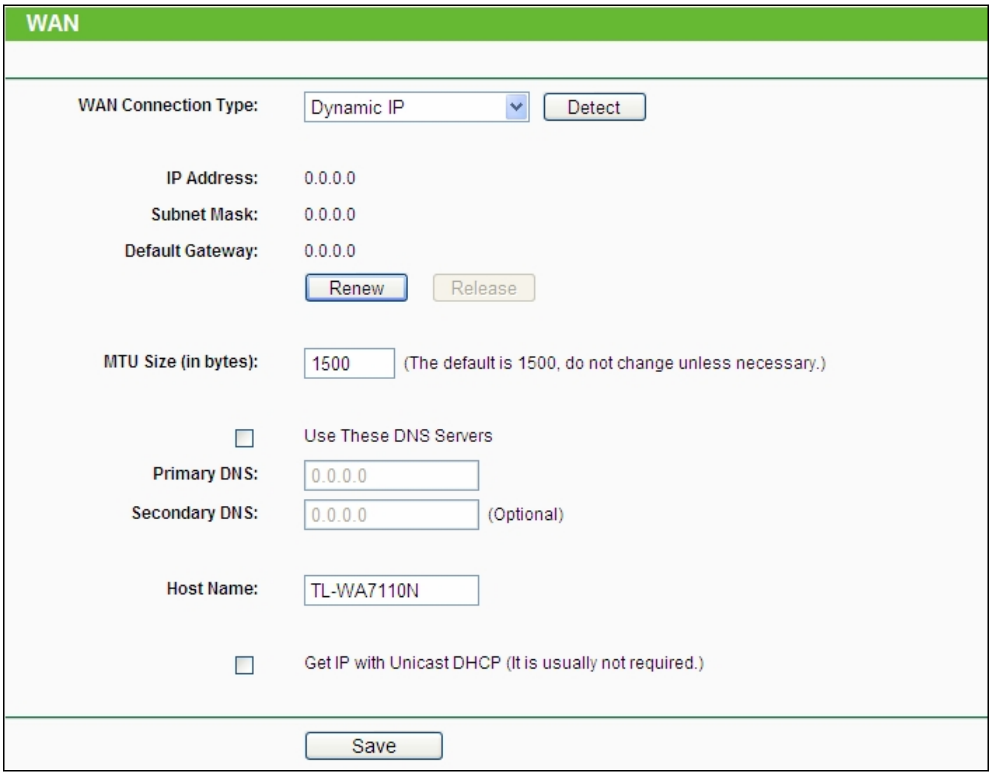


Figure 5-5 the Network menu

5.6.1 WAN

Choose menu **Network** > **WAN**, and then you can configure the IP parameters of the WAN on the screen below. There are six WAN connection types: Dynamic IP, Static IP, PPPoE/Russia PPPoE, BigPond Cable, L2TP/Russia L2TP, and PPTP/Russia PPTP; while there is one more type in AP Router mode, BigPond Cable.

1. If your ISP is running a DHCP server, select the **Dynamic IP** option. Then the Device will automatically get IP parameters from your ISP. You can see the page as follow (Figure 5-6).



WAN

WAN Connection Type: Dynamic IP [Detect]

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Default Gateway: 0.0.0.0

[Renew] [Release]

MTU Size (in bytes): 1500 (The default is 1500, do not change unless necessary.)

□ Use These DNS Servers

Primary DNS: 0.0.0.0

Secondary DNS: 0.0.0.0 (Optional)

Host Name: TL-WA7110N

□ Get IP with Unicast DHCP (It is usually not required.)

[Save]

Figure 5-6 WAN – Dynamic IP

This page displays the WAN IP parameters assigned dynamically by your ISP, including IP address, Subnet Mask, Default Gateway, etc.

- **IP Address -** The IP address assigned by your ISP dynamically.
- **Subnet Mask -** The subnet mask assigned by your ISP dynamically.
- **Default Gateway -** The default gateway assigned dynamically by your ISP.
- **MTU Size (in bytes) -** The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection.

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

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

Click the **Renew** button to renew the IP parameters from your ISP.

Click the **Release** button to release the IP parameters.

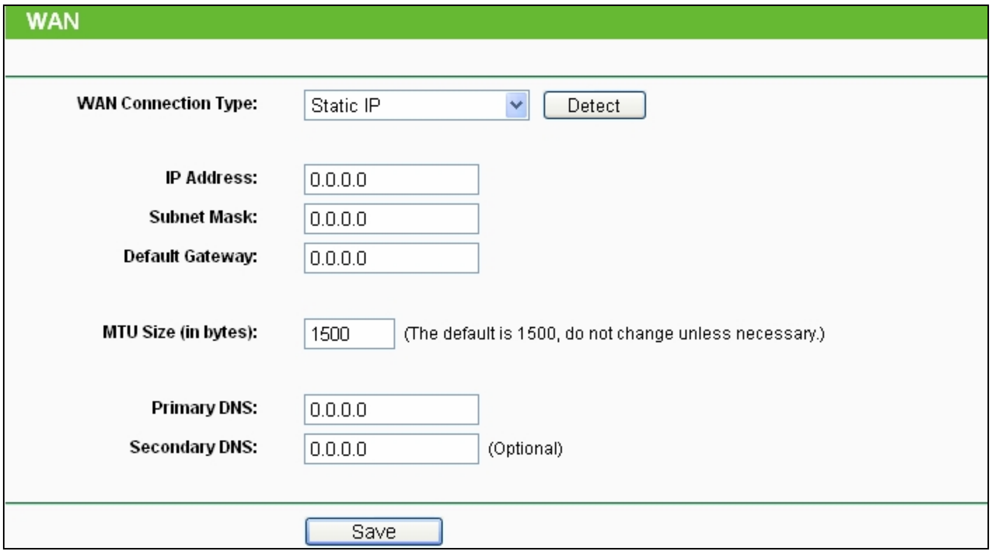
☞ **Note:**

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

- **Get IP with Unicast DHCP -** A few ISPs' DHCP servers do not support the broadcast applications. If you can't get the IP Address normally, you can choose Unicast. You generally need not to check this option.

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

2. If your ISP provides a static or fixed IP Address, Subnet Mask, Gateway and DNS setting, select the **Static IP** option. The **Static IP** settings page will appear as shown in Figure 5-7.



WAN

WAN Connection Type: Static IP

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Default Gateway: 0.0.0.0

MTU Size (in bytes): 1500 (The default is 1500, do not change unless necessary.)

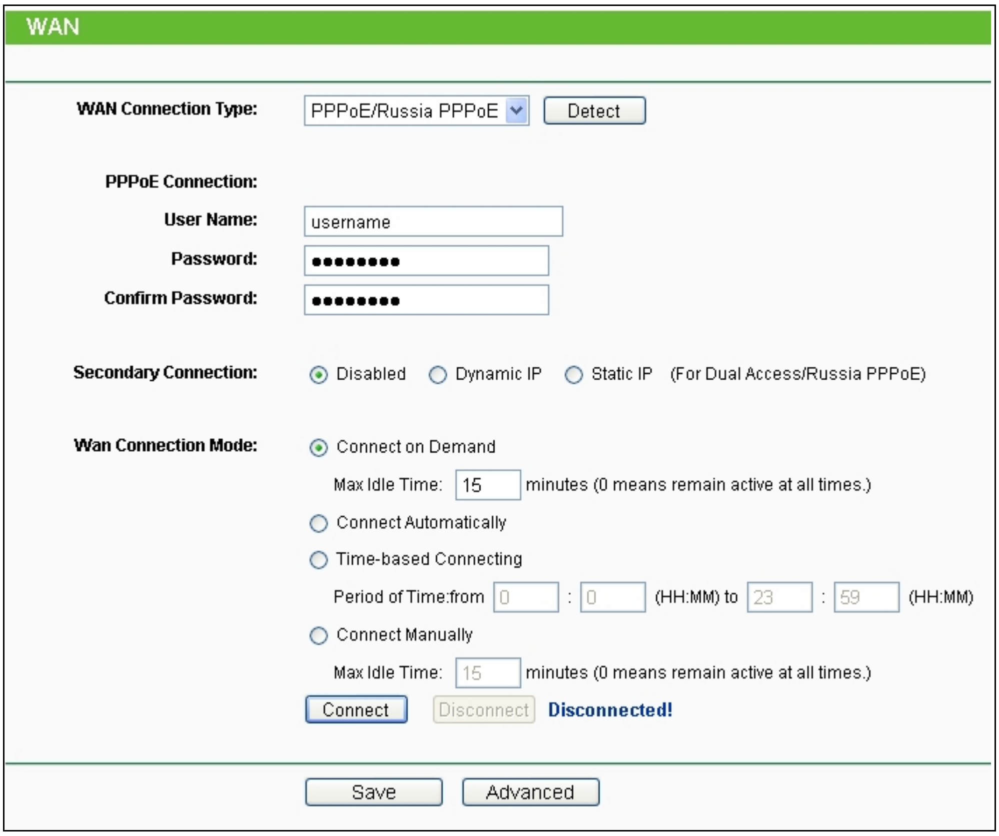
Primary DNS: 0.0.0.0

Secondary DNS: 0.0.0.0 (Optional)

Figure 5-7 WAN - Static IP

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 5-8):



WAN

WAN Connection Type: PPPoE/Russia PPPoE

PPPoE Connection:

User Name: username

Password: ●●●●●●●●

Confirm Password: ●●●●●●●●

Secondary Connection: ● Disabled ○ Dynamic IP ○ Static IP (For Dual Access/Russia PPPoE)

Wan Connection Mode: ● Connect on Demand

Max Idle Time: 15 minutes (0 means remain active at all times.)

○ Connect Automatically

○ Time-based Connecting

Period of Time:from 0 : 0 (HH:MM) to 23 : 59 (HH:MM)

○ Connect Manually

Max Idle Time: 15 minutes (0 means remain active at all times.)

Disconnected!

Figure 5-8 WAN – PPPoE/Russia PPPoE

➢ **PPPoE Connection**

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

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

- **Disabled -** The Secondary Connection is disabled by default, so there is PPPoE connection only. This is recommended.

- **Dynamic IP -** Use dynamic IP address to connect to the local area network provided by ISP.

- **Static IP -** Use static IP address to connect to the local area network provided by ISP.

➢ **WAN Connection Mode**

- **Connect on Demand -** You can configure the Device to disconnect your Internet connection after a specified period of the Internet connectivity (**Max Idle Time**). If your Internet connection has been terminated due to inactivity, **Connect on Demand** enables the Device to automatically re-establish your connection when you attempt to access the Internet again. If you wish to activate **Connect on Demand**, put a check mark in the circle.
  If you want your Internet connection to remain active all the time, enter **0** in the **Max Idle Time** field.

☞ **Note:**

Sometimes the connection cannot be disconnected although you specify a time to **Max Idle Time** (0~99 mins) because some applications visit the Internet continually in the background.

- **Connect Automatically -** Connect automatically after the Device is disconnected. To use this option, click the radio button.

- **Time-based Connecting -** You can configure the Device to make it connect or disconnect based on time. Enter the start time in HH-MM for connecting and end time in HH-MM for disconnecting in the **Period of Time** fields.

- **Connect Manually -** You can configure the Device to make it connect or disconnect manually. After a specified period of inactivity (**Max Idle Time**), the Device will disconnect your Internet connection, and 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 all the 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.

☞ **Note:**

1) Sometimes the connection cannot be disconnected although you specify a **Max Idle Time** (0~99 mins) because some applications visit the Internet continually in the background.
2) Only when you have set the system time on **System Tools** → **Time Settings** page, the **Time-based Connecting** function can take effect.

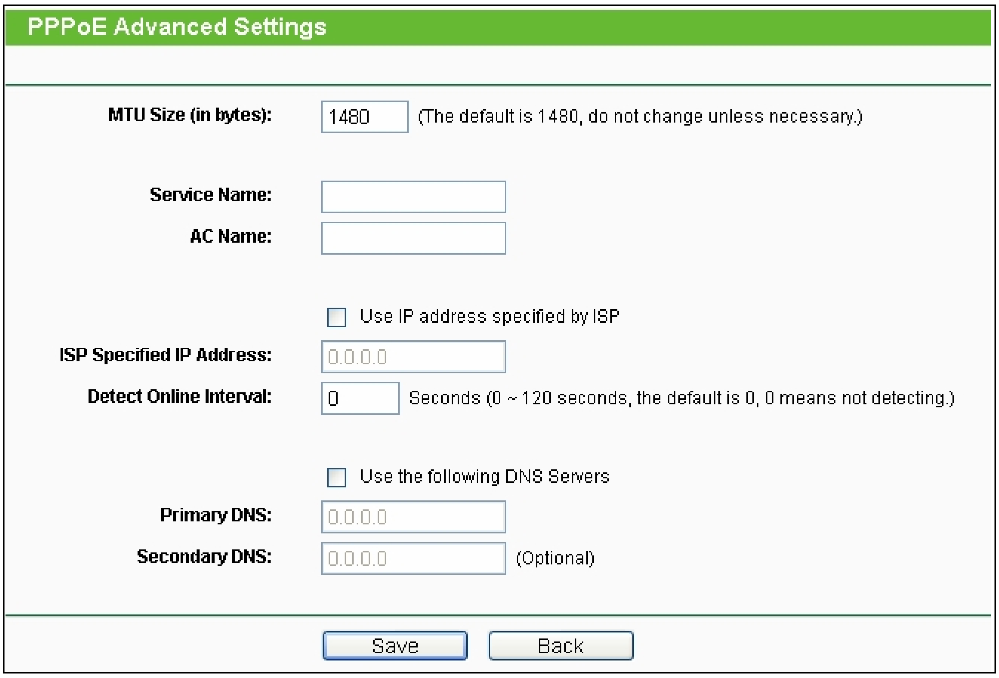
Click the **Connect** button to connect immediately.

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

Click the **Advanced** button to set up the advanced options.

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

➢ If you want to do some advanced configurations, please click the **Advanced** button, and then the page shown in Figure 5-9 will appear.



PPPoE Advanced Settings

MTU Size (in bytes):	1480 (The default is 1480, do not change unless necessary.)
Service Name:	
AC Name:	
	□ Use IP address specified by ISP
ISP Specified IP Address:	0.0.0.0
Detect Online Interval:	0 Seconds (0 ~ 120 seconds, the default is 0, 0 means not detecting.)
	□ Use the following DNS Servers
Primary DNS:	0.0.0.0
Secondary DNS:	0.0.0.0 (Optional)

Figure 5-9 PPPoE Advanced Settings

- **MTU Size -** The default MTU (Maximum Transmission Unit) size is 1480 bytes, which is usually fine. For some ISPs, you need modify the MTU. This should not be done unless you are sure it is necessary for your ISP.
- **Service Name/AC Name -** They should not be done unless you are sure it is necessary for your ISP.
- **ISP Specified IP Address** - If you know that your ISP does not automatically transmit IP address to the Device during login, click "**Use the IP Address specified by ISP**" checkbutton and enter the IP address in dotted-decimal notation, which is provided by your ISP.
- **Detect Online Interval** - The default value is 0. You can input the value between 0 and 120. The Device will detect Access Concentrator online every interval seconds. If the value is 0, it means not detecting.
- **Use the following DNS Servers** - If your ISP specifies a DNS server IP address for you, click the checkbox, and fill the **Primary DNS** and **Secondary DNS** blanks below. The **Secondary DNS** is optional. Otherwise, the DNS servers will be assigned dynamically from ISP.
- **Primary DNS** - (Optional) Enter the DNS IP address in dotted-decimal notation provided by your ISP.
- **Secondary DNS** - (Optional) Enter another DNS IP address in dotted-decimal notation provided by your ISP.

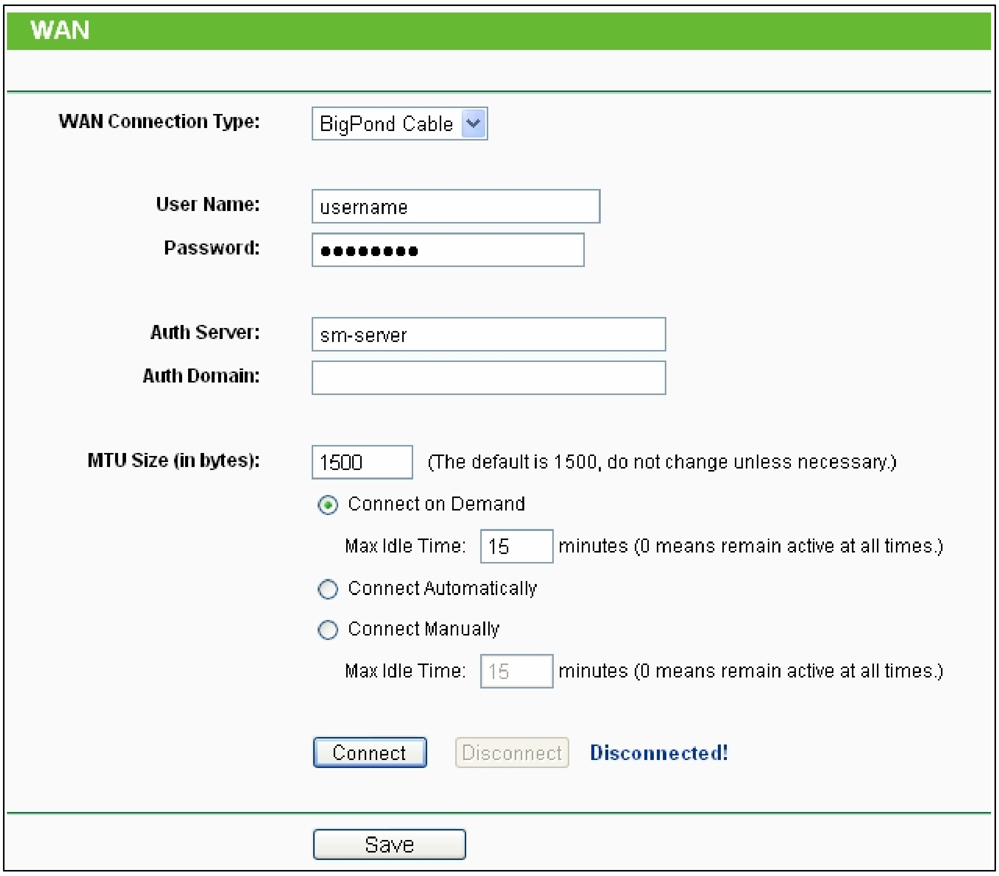
☞ **Note:**

The new advanced PPPoE parameters will not take effect until you dial-up again.

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

Click the **Back** button when finished.

4. If your ISP provides BigPond Cable (or Heart Beat Signal) connection, please select **BigPond Cable** option. And then you should enter the following parameters as in Figure 5-10.



WAN

WAN Connection Type: BigPond Cable

User Name: username

Password: ●●●●●●●●●

Auth Server: sm-server

Auth Domain:

MTU Size (in bytes): 1500 (The default is 1500, do not change unless necessary.)

● Connect on Demand

Max Idle Time: 15 minutes (0 means remain active at all times.)

○ Connect Automatically

○ Connect Manually

Max Idle Time: 15 minutes (0 means remain active at all times.)

Figure 5-10 WAN – BigPond Cable

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

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

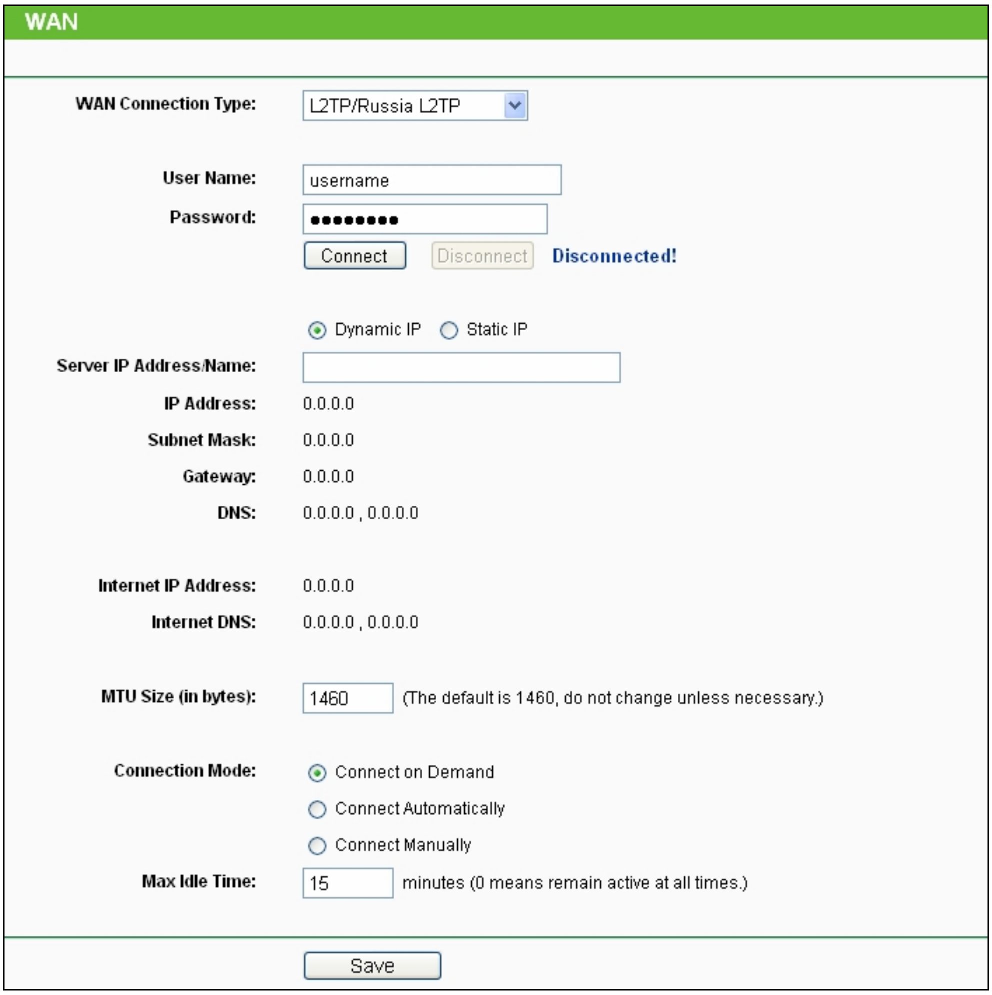
- **MTU Size -** The normal **MTU** (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. It is not recommended that you change the default **MTU Size** unless required by your ISP.
- **Connect on Demand -** In this mode, the Internet connection can be terminated automatically after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

☞ **Note:**

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 in Figure 5-11.



WAN

WAN Connection Type: L2TP/Russia L2TP

User Name: username

Password: ●●●●●●●●●

Connect | Disconnect | Disconnected!

● Dynamic IP ○ Static IP

Server IP Address/Name:

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Gateway: 0.0.0.0

DNS: 0.0.0.0 , 0.0.0.0

Internet IP Address: 0.0.0.0

Internet DNS: 0.0.0.0 , 0.0.0.0

MTU Size (in bytes): 1460 (The default is 1460, do not change unless necessary.)

Connection Mode:
● Connect on Demand
○ Connect Automatically
○ Connect Manually

Max Idle Time: 15 minutes (0 means remain active at all times.)

Save

Figure 5-11 WAN – L2TP/Russia L2TP

- **User Name/Password -** Enter the User Name and Password provided by your ISP. These fields are case-sensitive.
- **Dynamic IP/ Static IP -** Choose either one 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 Device 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 Device 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 time, 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 Device is disconnected. To use this option, check the radio button.

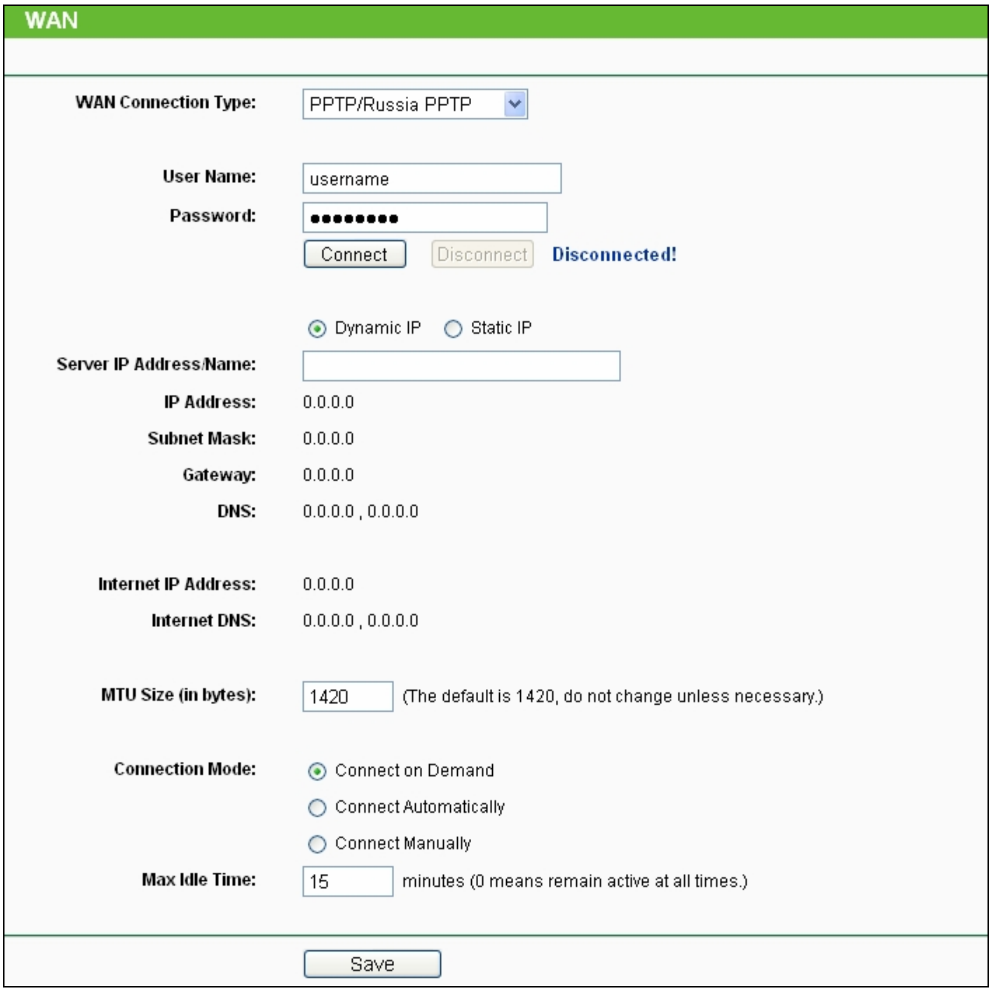
- **Connect Manually -** You can configure the Device to make it connect or disconnect manually. After a specified period of inactivity (**Max Idle Time**), the Device will disconnect from your Internet connection, and you will not be able to re-establish your connection automatically as soon as you 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 time, 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.

☞ **Note:**

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 5-12):



WAN Connection Type: PPTP/Russia PPTP

User Name: username

Password: ●●●●●●●●●

Disconnected!

◉ Dynamic IP ○ Static IP

Server IP Address/Name:

IP Address: 0.0.0.0

Subnet Mask: 0.0.0.0

Gateway: 0.0.0.0

DNS: 0.0.0.0 , 0.0.0.0

Internet IP Address: 0.0.0.0

Internet DNS: 0.0.0.0 , 0.0.0.0

MTU Size (in bytes): 1420 (The default is 1420, do not change unless necessary.)

Connection Mode:
◉ Connect on Demand
○ Connect Automatically
○ Connect Manually

Max Idle Time: 15 minutes (0 means remain active at all times.)

Figure 5-12 WAN – PPTP/Russia PPTP

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

- **Dynamic IP/ Static IP -** Choose either as you are given by your ISP and enter the ISP's IP address or the domain name.

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

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

- **Connect on Demand -** You can configure the Device 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 Device 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 Device is disconnected. To use this option, check the radio button.
- **Connect Manually -** You can configure the Device to make it connect or disconnect manually. After a specified period of inactivity (**Max Idle Time**), the Device 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.

☞ **Note:**

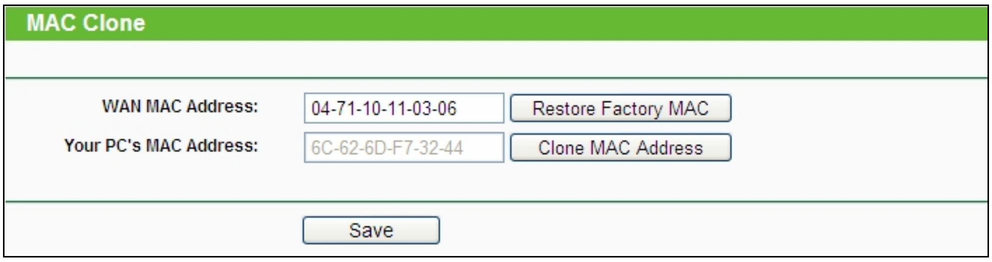
Sometimes the connection cannot be disconnected although you specify a time to **Max Idle Time** because some applications are visiting the Internet continually in the background.

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

5.6.2 MAC Clone

MAC Clone allows you to clone the MAC address of the managing PC's adapter to the WAN port. This is because some ISPs require that you register the MAC address of your adapter. Usually, you do not need to change anything here.

Selecting **Network > MAC Clone** will enable you to configure the MAC address of the WAN port on this page as shown in Figure 5-13.



MAC Clone

WAN MAC Address: 04-71-10-11-03-06

Your PC's MAC Address: 6C-62-6D-F7-32-44

Figure 5-13 MAC Address Clone

Some ISPs require that you register the MAC Address of your adapter, which is connected to your cable/DSL Modem or Ethernet during installation. Changes are rarely needed here.

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

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

Click **Save** to save your settings.

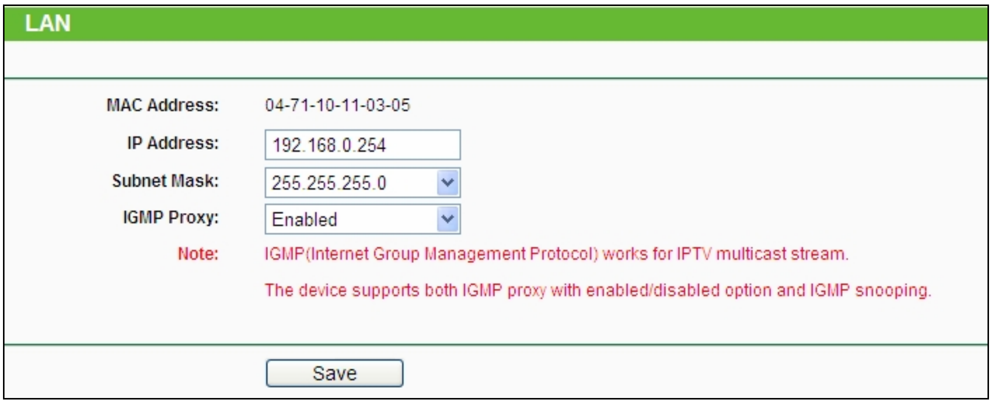
☞ **Note:**

1) Only the PC on your LAN can use the **Clone MAC Address** feature.

2) If you click Save, the Router will prompt you to reboot.

5.6.3 LAN

Selecting **Network > LAN** will enable you to configure the IP parameters of LAN port on this page.



LAN

MAC Address: 04-71-10-11-03-05

IP Address: 192.168.0.254

Subnet Mask: 255.255.255.0

IGMP Proxy: Enabled

Note: IGMP(Internet Group Management Protocol) works for IPTV multicast stream.
The device supports both IGMP proxy with enabled/disabled option and IGMP snooping.

Figure 5-14 LAN

- **MAC Address -** The physical address of the router, as seen from the LAN. The value can't be changed.
- **IP Address -** Enter the IP address of your router in dotted-decimal notation (factory default: 192.168.0.254).
- **Subnet Mask -** An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.
- **IGMP Proxy –** IGMP (Internet Group Management Protocol) works for IPTV multicast stream. The device supports both IGMP proxy with enabled/disabled option and IGMP snooping.

☞ **Note:**

1) If you change the IP Address of LAN, you must use the new IP Address to login the Router.

2) If the new LAN IP Address you set is not in the same subnet, the IP Address pool of the DHCP server will not take effect until they are re-configured.

3) If the new LAN IP Address you set is not in the same subnet, the Virtual Server and DMZ Host will change accordingly at the same time.

5.7 Wireless

The **Wireless** option, improving functionality and performance for wireless network, can help you to make the AP an ideal solution for your wireless network.
Here you can create a wireless local area network just through a few settings. Basic Settings is used for the configuration of some basic parameters of the AP. Wireless Mode allows you to select the mode that AP works on. Security Settings provides three different security types to secure your data and thus provide greater security for your wireless network. MAC filtering allows you to control the access of wireless stations to the AP. Wireless Statistics shows you the statistics of current connected Wireless stations. Distance Setting is used to adjust the wireless range in outdoor conditions. Throughput Monitor helps to watch wireless throughput information Wireless statistics enables you to get detailed information about the current connected wireless stations.

There are eight submenus under the Wireless menu (shown in Figure 5-15): **Wireless Settings**, **Wireless Security**, **Wireless MAC Filtering**, **Wireless Advanced**, **Antenna Alignment**, **Distance Setting**, **Throughput Monitor** and **Wireless Statistics**. Click any of them, and you will

be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

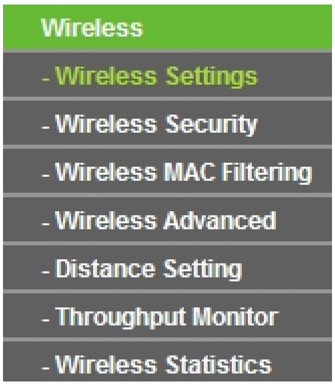


Figure 5-15 Wireless menu

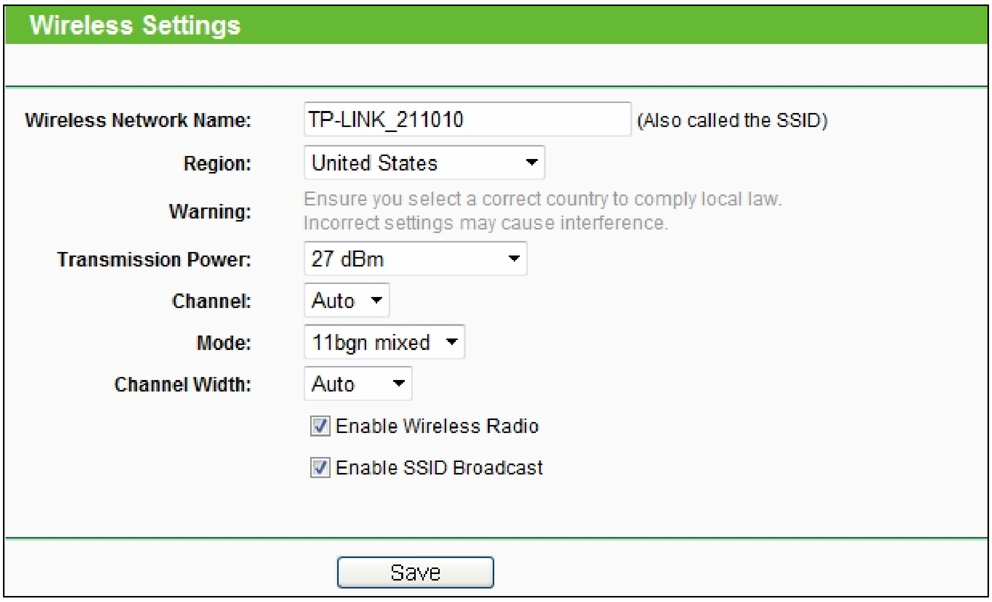
5.7.1 Wireless Settings

Choose menu **Wireless > Wireless Settings**, and then you can configure the basic settings for the wireless network on the **Wireless Settings** page（Figure 5-16 & Figure 5-17）.

☞ **Note:**

There are differences between the Wireless Settings page in AP Router mode and that in AP Client Router mode, as shown in Figure 5-16 & Figure 5-17.

1. Wireless settings in AP Router mode


Wireless Settings

Wireless Network Name: TP-LINK_211010 (Also called the SSID)

Region: United States

Warning: Ensure you select a correct country to comply local law.
Incorrect settings may cause interference.

Transmission Power: 27 dBm

Channel: Auto

Mode: 11bgn mixed

Channel Width: Auto

☑ Enable Wireless Radio

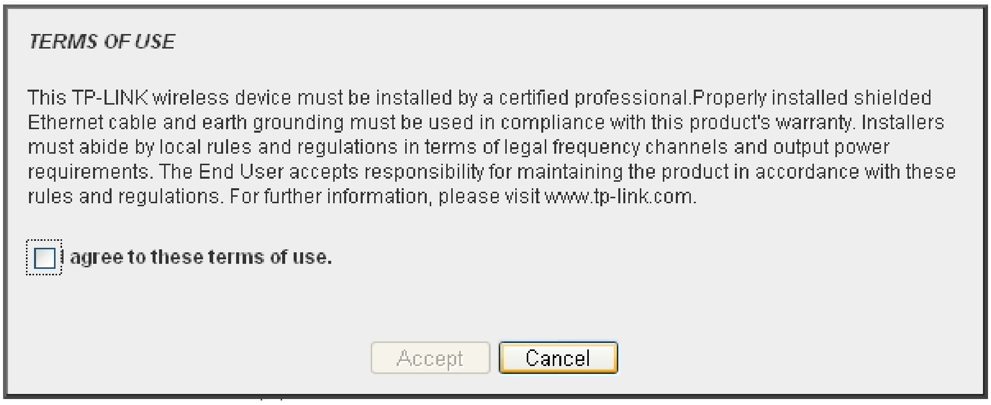
☑ Enable SSID Broadcast

Figure 5-16 Wireless Settings in AP Router mode

- **Wireless Network Name** - Enter a string of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your network. The default SSID is set to be **TP-LINK_xxxxxx** (xxxxxx indicates the last unique six characters of each Device's MAC address), which can ensure your wireless network security. But it is recommended strongly that you change your networks name (SSID) to a different value. This value is case-sensitive. For example, **MYSSID** is NOT the same as **MySsid**.

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

  When you select your local region from the pull-down list, the Note Dialog of **TERMS OF USE** will pop up. Select **I agree to these terms of use**, and click **Accept** to continue.



TERMS OF USE

This TP-LINK wireless device must be installed by a certified professional.Properly installed shielded Ethernet cable and earth grounding must be used in compliance with this product's warranty. Installers must abide by local rules and regulations in terms of legal frequency channels and output power requirements. The End User accepts responsibility for maintaining the product in accordance with these rules and regulations. For further information, please visit www.tp-link.com.

□ I agree to these terms of use.

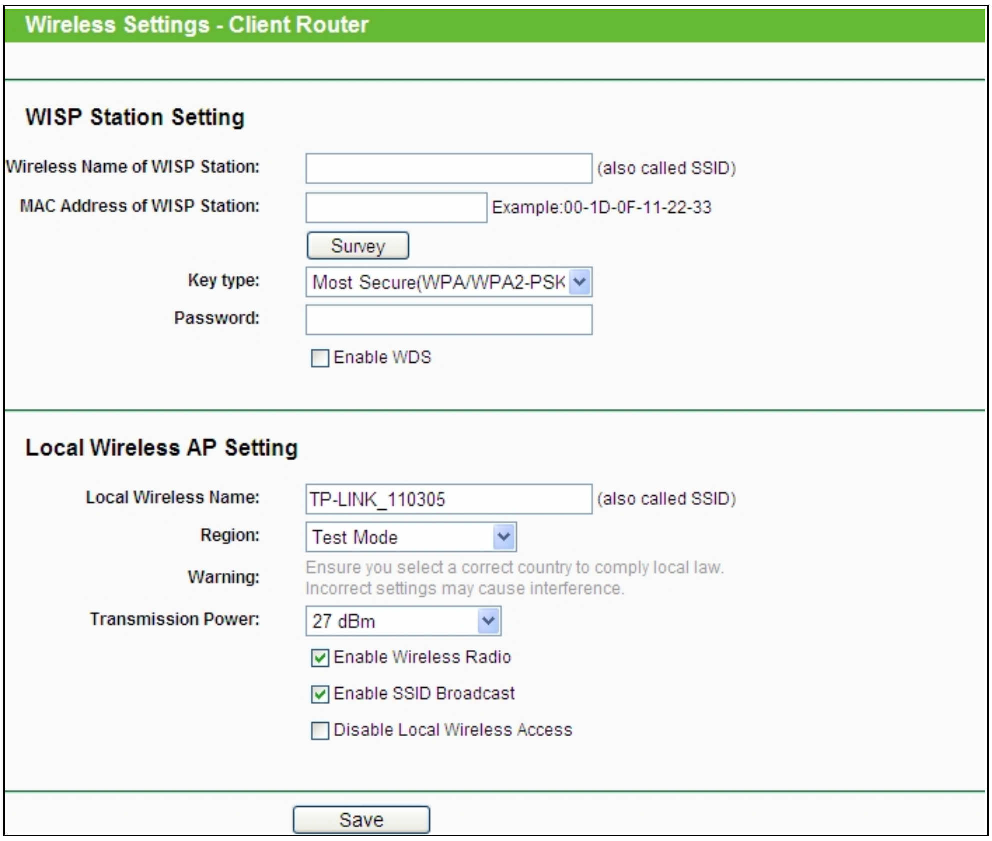
Note Dialog

☞ **Note:**

Ensure you select a correct country to comply with local laws. Incorrect settings may cause interference. Limited to local law of the United States, selecting country code and channel function was disabled.

- **Transmission Power** - The available options of transmission power are determined by the region selected.
- **Channel**- This field determines which operating frequency will be used. It is not necessary to change the wireless channel unless you notice interference problems with another nearby access point. If you select auto, then the Device will select the best channel automatically.
- **Mode**- This field determines the wireless mode which the Device works on.
- **Channel Width** - The bandwidth of the wireless channel.
- **Enable Wireless Device Radio** - The wireless radio of the Device can be enabled or disabled to allow wireless stations access. If enabled, the wireless stations will be able to access the Device, otherwise, wireless stations will not be able to access the Device.
- **Enable SSID Broadcast** - If you select the **Enable SSID Broadcast** checkbox, the wireless Device will broadcast its name (SSID) on the air.

2. **Wireless settings in AP Client Router mode**



Wireless Settings - Client Router

WISP Station Setting

Wireless Name of WISP Station: (also called SSID)

MAC Address of WISP Station: Example:00-1D-0F-11-22-33

Key type: Most Secure(WPA/WPA2-PSK

Password:

□ Enable WDS

Local Wireless AP Setting

Local Wireless Name: TP-LINK_110305 (also called SSID)

Region: Test Mode

Warning: Ensure you select a correct country to comply local law. Incorrect settings may cause interference.

Transmission Power: 27 dBm

☑ Enable Wireless Radio

☑ Enable SSID Broadcast

□ Disable Local Wireless Access

Figure 5-17 Wireless Settings in AP Client Router mode

- **Wireless Name of WISP Station -** The SSID of the AP your Device is going to connect to as a client. You can also use the search function to select a SSID to join.
- **MAC Address of WISP Station -** The BSSID of the AP your Device is going to connect to as a client. You can also use the search function to select a BSSID to join.
- **Survey -** Click this button, you can search the AP which runs in the current channel.
- **Key type -** This option should be chosen according to the AP's security configuration. It is recommended that the security type is the same as your AP's security type.
- **Auth Type -** This option should be chosen if the key type is WEP (ASCII) or WEP (HEX). It indicates the authorization type of the Root AP.
- **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.
- **Password -** If the AP your Device is going to connect needs password, you need to fill the password in this blank.
- **Local Wireless Name -** Enter a value of up to 32 characters. The same Name (SSID) must be assigned to all wireless devices in your network.
- **Region -** Select your region from the pull-down list. This field specifies the region where the wireless function of the Device can be used. It may be illegal to use the wireless function of the Device in a region other than one of those specified in this filed. If your country or region is not listed, please contact your local government agency for assistance.

  When you select your local region from the pull-down list, the Note Dialog of **TERMS OF USE** will pop up. Select **I agree to these terms of use**, and click **Accept** to continue.