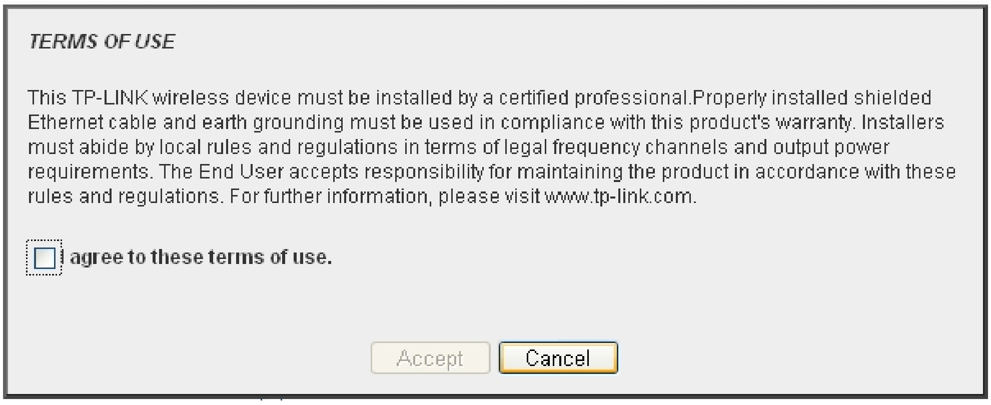


TERMS OF USE

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.

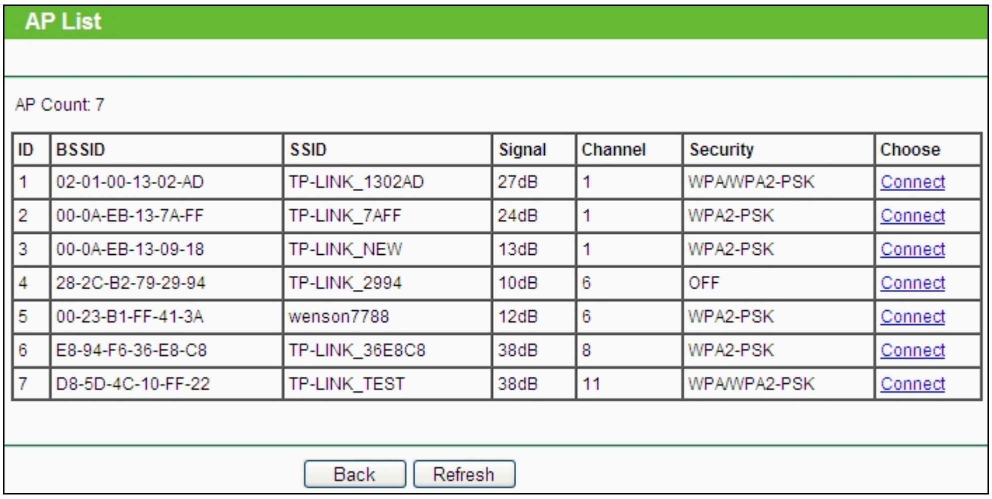
Note Dialog

☞ **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.
- **Enable Wireless 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 AP Router will broadcast its name (SSID) on the air.
- **Disable Local Wireless Access -** If you select the **Disable Local Wireless Access** checkbox, the wireless Device will disable local wireless access; other stations will not be able to access the Device by wireless.

Click **Survey** button on the Wireless page shown as Figure 5-17, and then AP List page will appear, as shown in Figure 5-18. Find the SSID of the Access Point you want to access, and click **Connect** in the corresponding row. For example, the desired item is selected. The target network's SSID will be automatically filled into the corresponding box which is shown as the Figure
5-19.

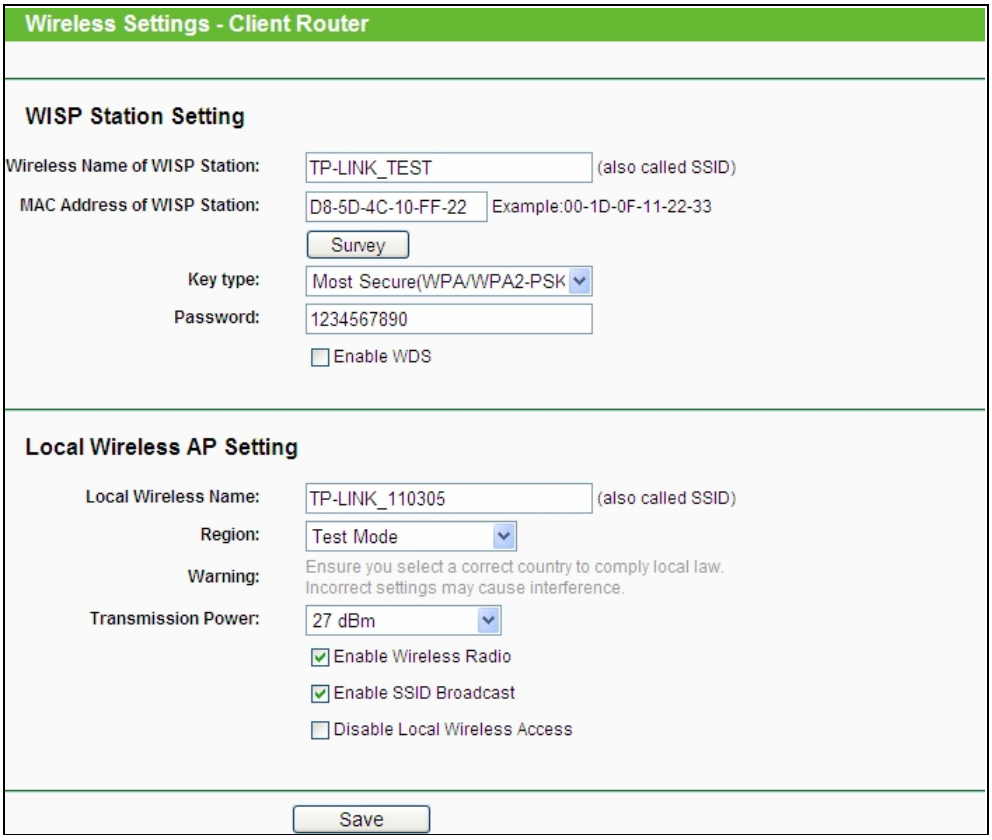


AP List

AP Count: 7

ID	BSSID	SSID	Signal	Channel	Security	Choose
1	02-01-00-13-02-AD	TP-LINK_1302AD	27dB	1	WPA/WPA2-PSK	Connect
2	00-0A-EB-13-7A-FF	TP-LINK_7AFF	24dB	1	WPA2-PSK	Connect
3	00-0A-EB-13-09-18	TP-LINK_NEW	13dB	1	WPA2-PSK	Connect
4	28-2C-B2-79-29-94	TP-LINK_2994	10dB	6	OFF	Connect
5	00-23-B1-FF-41-3A	wenson7788	12dB	6	WPA2-PSK	Connect
6	E8-94-F6-36-E8-C8	TP-LINK_36E8C8	38dB	8	WPA2-PSK	Connect
7	D8-5D-4C-10-FF-22	TP-LINK_TEST	38dB	11	WPA/WPA2-PSK	Connect

Figure 5-18 AP List



Wireless Settings - Client Router

WISP Station Setting

Wireless Name of WISP Station: TP-LINK_TEST (also called SSID)

MAC Address of WISP Station: D8-5D-4C-10-FF-22 Example:00-1D-0F-11-22-33

Key type: Most Secure(WPA/WPA2-PSK

Password: 1234567890

□ 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 5-19

☞ **Note:**

If you know the SSID of the desired AP, you can also input it to the field "Wireless Name of WISP Station" manually.

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

☞ **Note:**

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

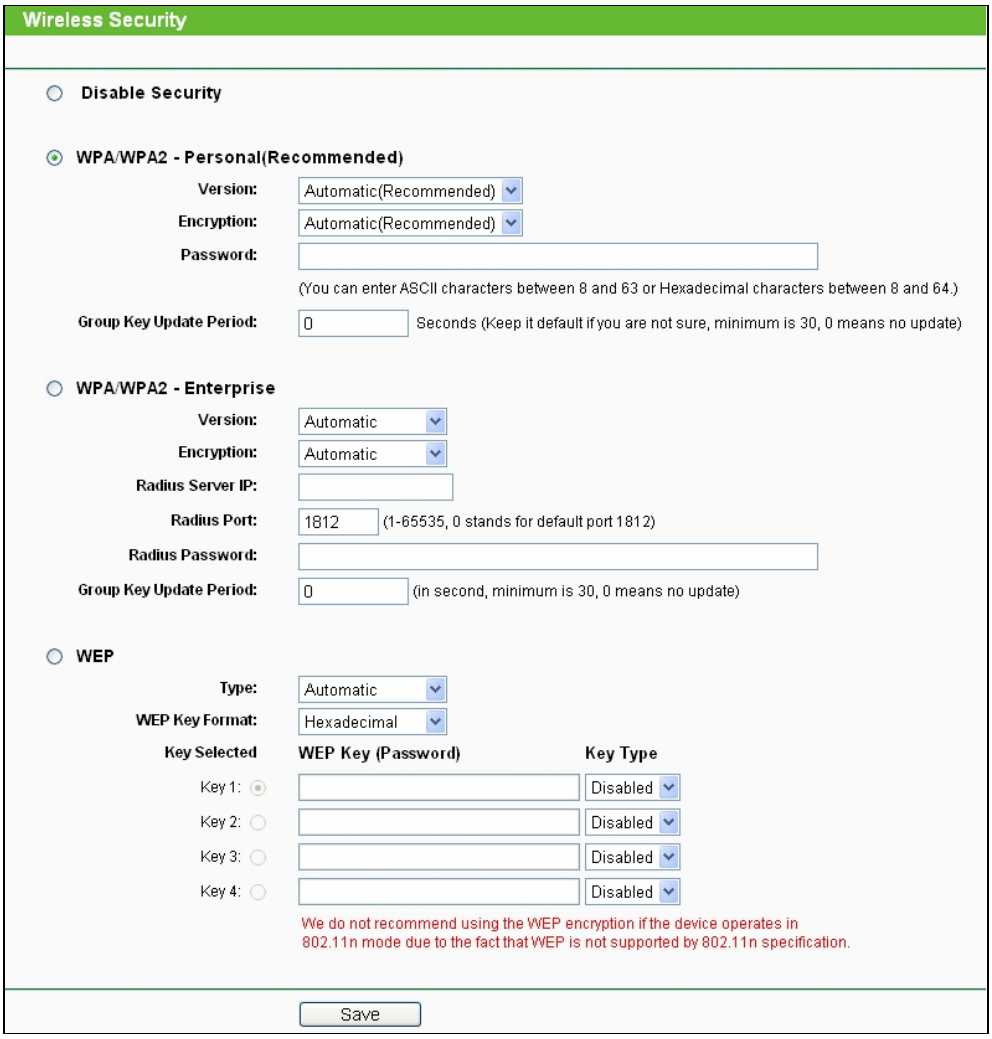
- Near the center of the area in which your wireless stations will operate;
- In an elevated location such as a high shelf;
- Away from the potential sources of interference, such as PCs, microwaves, and cordless phones;
- With the Antenna in the upright position;
- Away from large metal surfaces.

☞ **Note:**

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

5.7.2 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 Seconds (Keep it default if you are not sure, 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 (Password)	Key Type
Key 1: ●		Disabled
Key 2: ○		Disabled
Key 3: ○		Disabled
Key 4: ○		Disabled

We do not recommend using the WEP encryption if the device operates in 802.11n mode due to the fact that WEP is not supported by 802.11n specification.

Figure 5-20 Wireless Security

- **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.

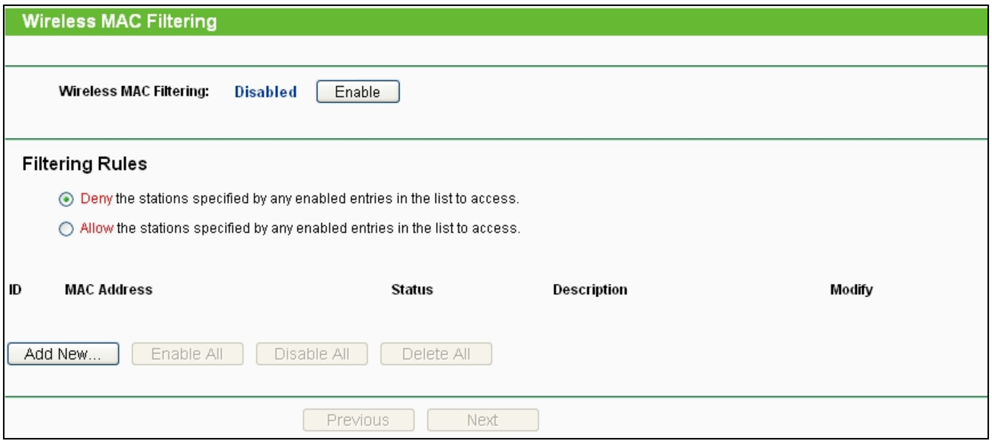
☞ **Note:**

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.

5.7.3 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 5-21 Wireless MAC address Filtering

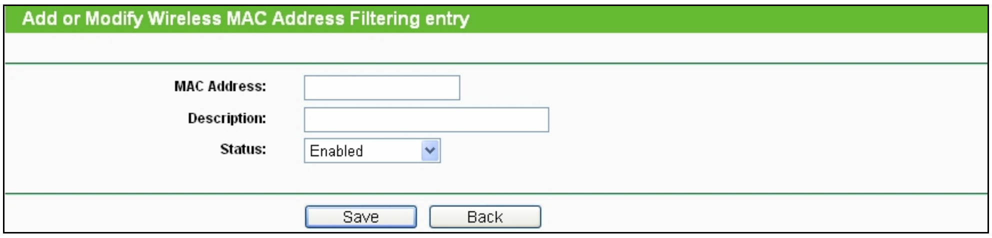
The Wireless MAC Address Filtering feature allows you to control wireless stations accessing the AP, which depend on the station's MAC addresses.

- **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 5-22.



Add or Modify Wireless MAC Address Filtering entry

MAC Address:

Description:

Status: Enabled

Figure 5-22 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:

3. Click the **Modify** or **Delete** button in the **modify** column in the MAC Address Filtering Table.

4. 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.

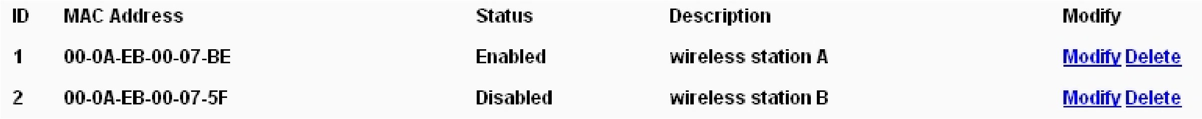
2. Select the radio button: **Allow the stations specified by any enabled entries in the list to access** for **Filtering Rules**.

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

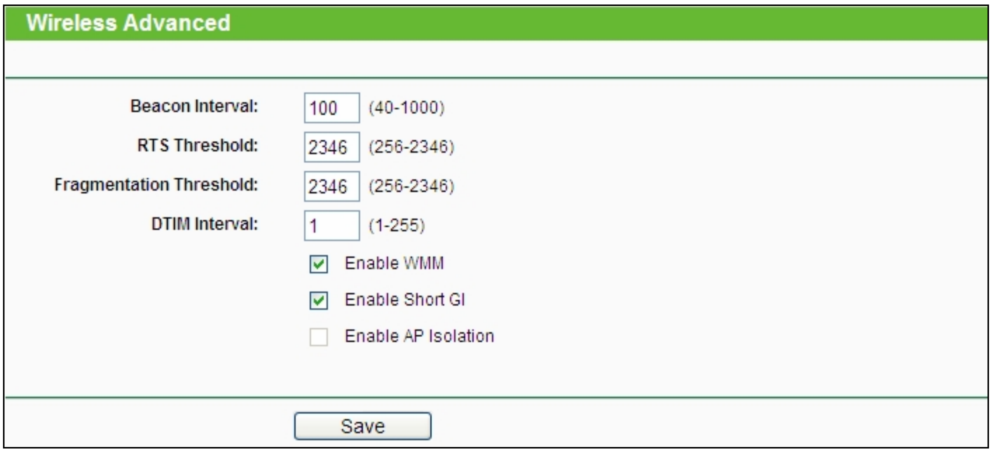
☞ **Note:**

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.

5.7.4 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 5-23. 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 5-23 Wireless Advanced

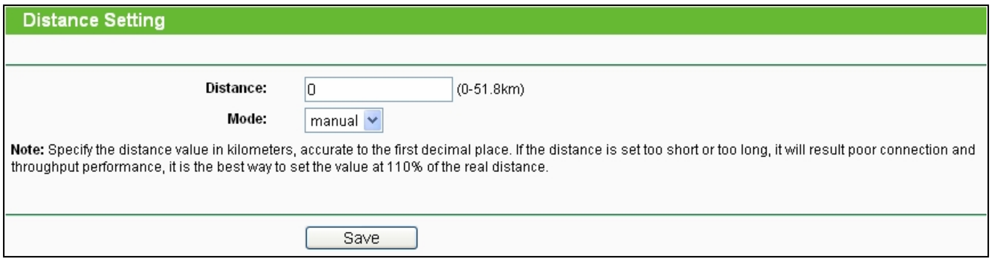
- **Beacon Interval -** The beacons are the packets sent by the Device to synchronize a wireless network. Beacon Interval value determines the time interval of the beacons. You can specify a value between 40-1000 milliseconds. The default value is 100.
- **RTS Threshold -** Here you can specify the RTS (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.

5.7.5 Distance Setting

Selecting **Wireless** > **Distance Setting** will allow you to adjust the wireless range in outdoor conditions as shown in Figure 5-24. 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 5-24 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:**

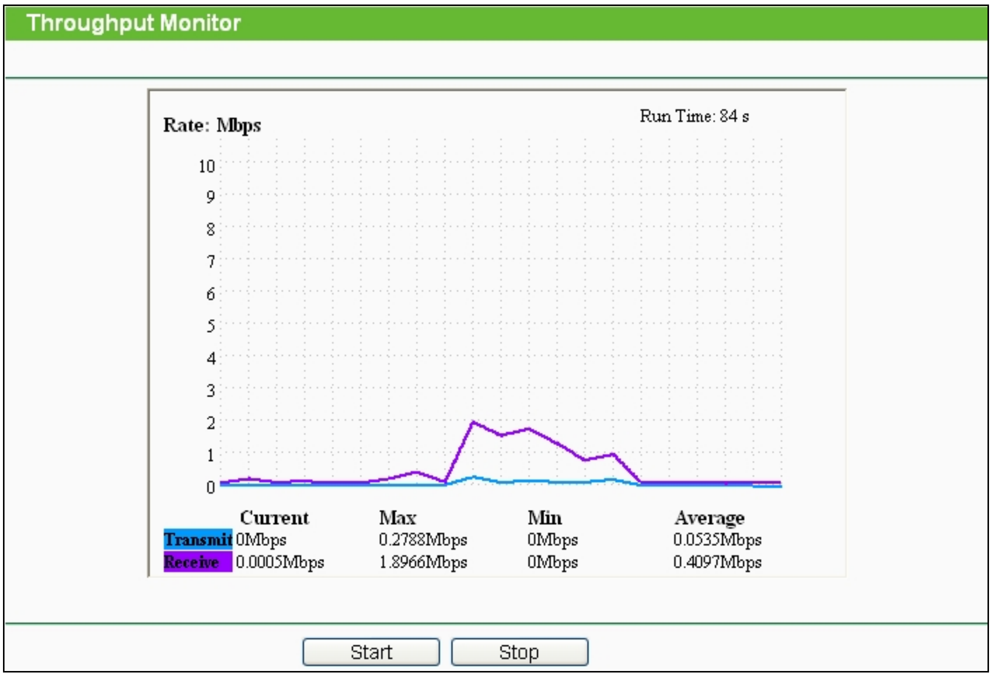
One hundred-meter is the smallest unit of this setting.

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

Click **Save** to keep your settings.

5.7.6 Throughput Monitor

Selecting **Wireless** > **Throughput Monitor** will helps to watch wireless throughput information in the following screen shown in Figure 5-25.



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 5-25 Wireless Throughput

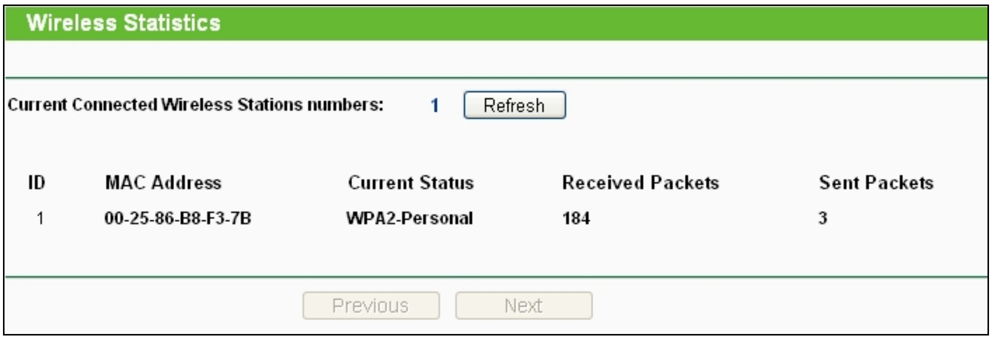
- **Rate** - The Throughput unit.
- **Run Time** - How long this function is running.
- **Transmit**- Wireless transmit rate information.
- **Receive**- Wireless receive rate information.

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

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

5.7.7 Wireless Statistics

Selecting **Wireless** > **Wireless Statistics** will allow you to see the wireless transmission information in the following screen shown in Figure 5-26.



Wireless Statistics

Current Connected Wireless Stations numbers: 1 Refresh

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

Figure 5-26 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.

5.8 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 5-27): **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.

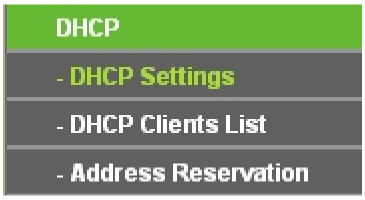
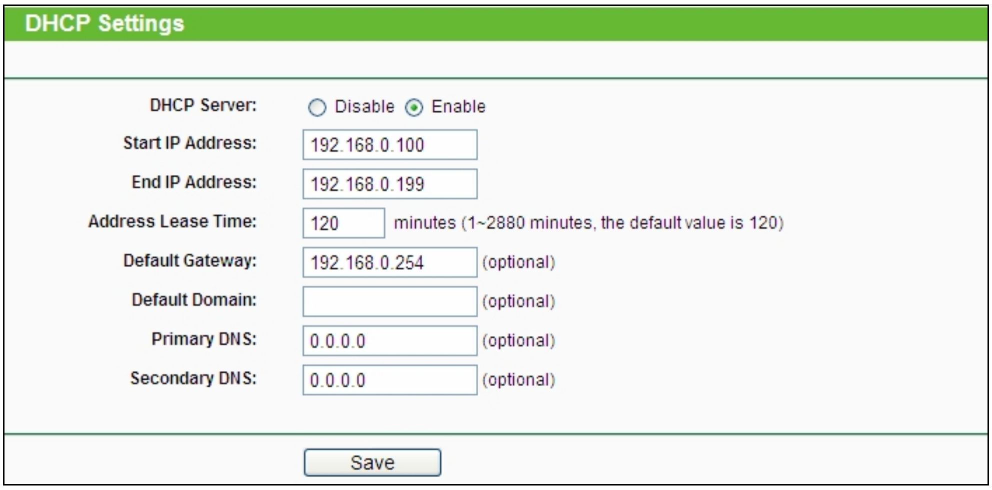


Figure 5-27 The DHCP menu

5.8.1 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 5-28).



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 5-28 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.

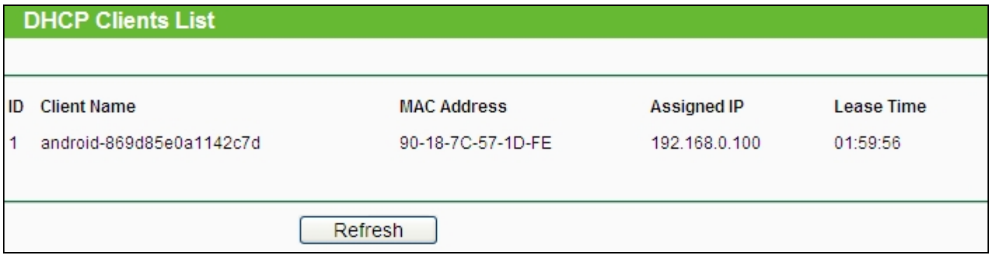
Click **Save** to save the changes.

☞ **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.

5.8.2 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 5-29).



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

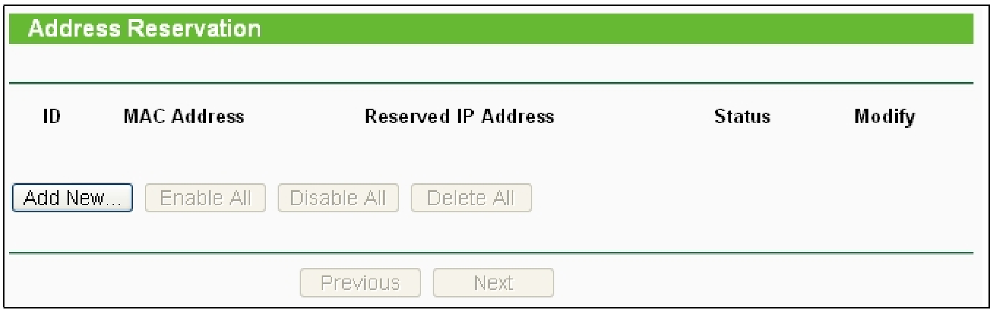
Figure 5-29 DHCP Clients List

- **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.

5.8.3 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 5-30).



Address Reservation

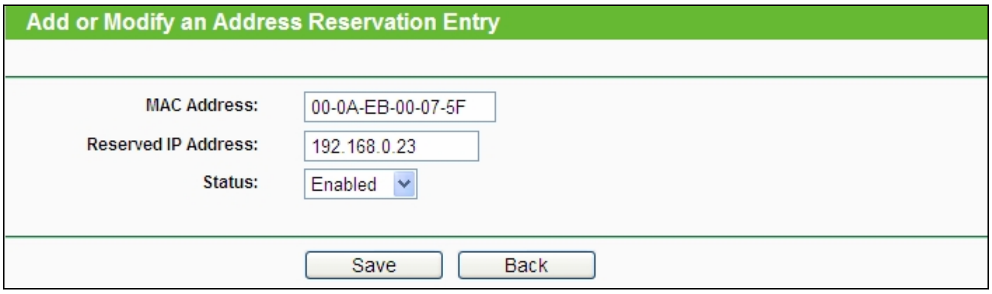
ID	MAC Address	Reserved IP Address	Status	Modify

Figure 5-30 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 5-31) 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 5-31 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.

5.9 Forwarding

There are four submenus under the Forwarding menu (shown in Figure 5-32): **Virtual Servers**, **Port Triggering**, **DMZ** and **UPnP**. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

Virtual servers can be used for setting up public services on your LAN, such as DNS, Email and FTP. A virtual server is defined as a service port, and all requests from the Internet to this service port will be redirected to the computer specified by the server IP. Any PC that was used for a virtual server must have a static or reserved IP Address because its IP Address may change when using the DHCP function. Port Triggering is used for some applications that cannot work with a pure NAT router, like Internet games, video conferencing, Internet calling and so on, which require multiple connections. The DMZ host feature allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing. DMZ host forwards all the ports at the same time. Any PC whose port is being forwarded must have its DHCP client function disabled and should have a new static IP Address assigned to it because its
IP Address may change when using the DHCP function. The Universal Plug and Play (UPnP) feature allows the devices, such as Internet computers, to access the local host resources or devices as needed. UPnP devices can be automatically discovered by the UPnP service application on the LAN.

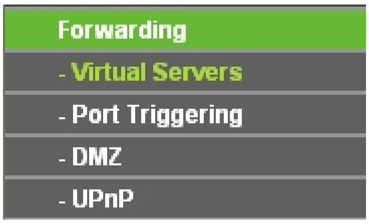
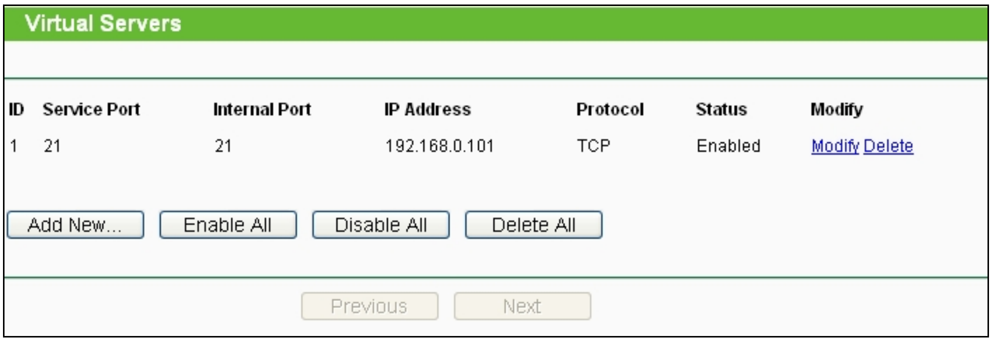


Figure 5-32 The Forwarding menu

5.9.1 Virtual Servers

Selecting **Forwarding > Virtual Servers** will allow you to set up virtual servers on the page as shown in Figure 5-33.



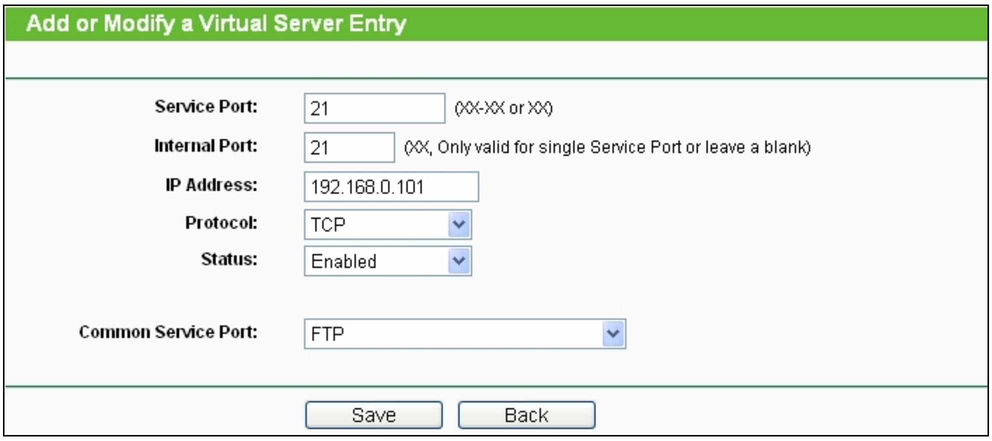
ID	Service Port	Internal Port	IP Address	Protocol	Status	Modify
1	21	21	192.168.0.101	TCP	Enabled	Modify Delete

Figure 5-33 Virtual Servers

- **Service Port -** The numbers of External Ports. You can type a service port or a range of service ports (the format is XXX – YYY, XXX is the start port, YYY is the end port).
- **Internal Port** - The Internal Service Port number of the PC running the service application. You can leave it blank if the **Internal Port** is the same as the **Service Port**, or enter a specific port number when **Service Port** is a single one.
- **IP Address -** The IP Address of the PC providing the service application.
- **Protocol -** The protocol used for this application, either **TCP**, **UDP**, or **All** (all protocols supported by the router).
- **Status -** The status of this entry is either **Enabled** or **Disabled**.
- **Modify** - To modify or delete an existing entry.

To setup a virtual server entry, please take the following steps:

1. Click the **Add New…** in virtual servers page. (pop-up Figure 5-34)
2. Select the service you want to use from the Common Service Port list. If the **Common Service Port** list does not have the service that you want to use, type the number of the service port or service port range in the **Service Port** box.
3. Type the IP Address of the computer in the **Server IP Address** box.
4. Select the protocol used for this application.
5. Select the **Enable** option to enable the virtual server.
6. Click the **Save** button.



Add or Modify a Virtual Server Entry

Service Port: 21 (XX-XX or XX)

Internal Port: 21 (XX, Only valid for single Service Port or leave a blank)

IP Address: 192.168.0.101

Protocol: TCP

Status: Enabled

Common Service Port: FTP

Figure 5-34 Add or Modify a Virtual Server Entry

- **Common Service Port** - Some common services already exist in the pull-down list.

☞ **Note:**

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

To modify or delete an existing entry:

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

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

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

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

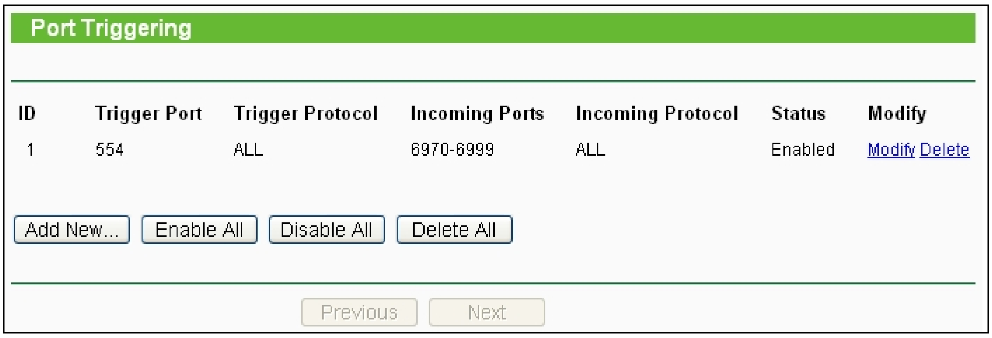
Click the **Next** button to go to the next page and Click the **Previous** button to return the previous page.

☞ **Note:**

If you set the virtual server of service port as 80, you must set the Web management port on **System Tools** → **Remote Management** page to be any value except 80 such as 8080. Or else there will be a conflict to disable the virtual server.

5.9.2 Port Triggering

Selecting **Forwarding > Port Triggering** will enable you to set up Port Triggering entries on the page as shown in Figure 5-35.



Port Triggering

ID	Trigger Port	Trigger Protocol	Incoming Ports	Incoming Protocol	Status	Modify
1	554	ALL	6970-6999	ALL	Enabled	Modify Delete

Figure 5-35 Port Triggering

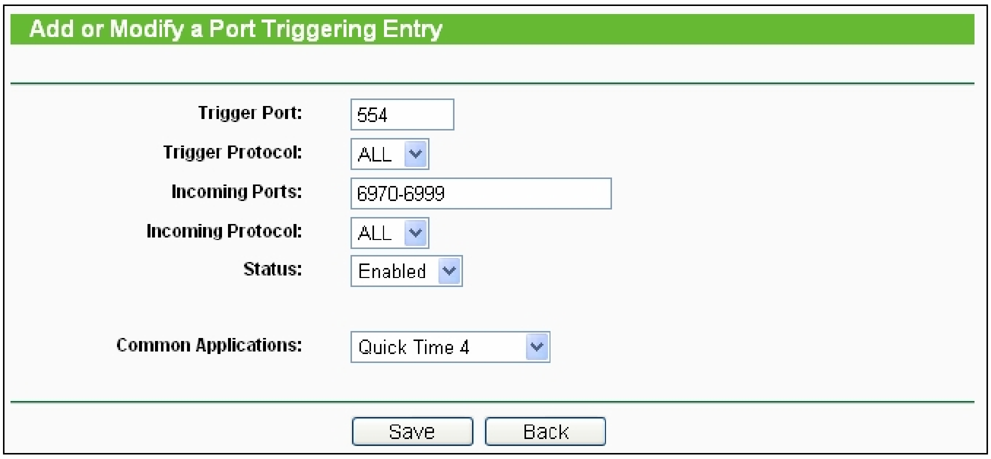
Once configured, operation is as follows:

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

- **Trigger Port** - The port for outgoing traffic. An outgoing connection using this port will "Trigger" this rule.
- **Trigger Protocol -** The protocol used for Trigger Ports, **TCP**, **UDP**, or **All** (all protocols supported by the router).
- **Incoming Ports Range -** The port or port range used by the remote system when it responds to the outgoing request. A response using one of these ports will be forwarded to the PC that triggered this rule. You can input at most 5 groups of ports (or port section). Every group of ports must be set apart with ",". For example, 2000-2038, 2050-2051, 2085, 3010-3030.
- **Incoming Protocol -** The protocol used for Incoming Ports Range, TCP , UDP, or ALL (all protocols supported by the router).
- **Status -** The status of this entry is either **Enabled** or **Disabled**.

To add a new rule, please take the following steps:

1. Click the **Add New…** in Port Triggering page. (pop-up Figure 5-36)
2. Select a common application from the **Commom Applications** drop-list then the port parameters will be automatically filled in the corresponding field. If the **Common Applicatins** list does not have the application you want, type the port parameters manually.
3. Select the protocol used for **Trigger Port** and **Incoming Ports** from the corresponding pull-down list.
4. Select the **Enable** option in the **Status** pull-down list..
5. Click the **Save** button to save the new rule.



Add or Modify a Port Triggering Entry

Trigger Port: 554

Trigger Protocol: ALL

Incoming Ports: 6970-6999

Incoming Protocol: ALL

Status: Enabled

Common Applications: Quick Time 4

Figure 5-36 Add or Modify a Triggering Entry

To modify or delete an existing entry, please take the following steps:

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

3. Click the **Save** button.

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

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

Click **Delete All** to delete all entries

☞ **Note:**

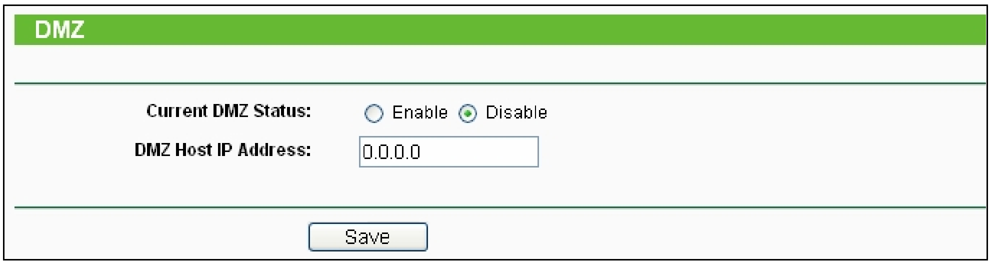
1) When the trigger connection is released, the corresponding opening ports will be closed.

2) Each rule can only be used by one host on the LAN at a time. The trigger connection of other hosts on the LAN will be refused.

3) Incoming Port Range enabled cannot overlap each other at the same time.

5.9.3 DMZ

Selecting **Forwarding > DMZ** will allow you to set up an DMZ host on the page as shown in Figure 5-37.



Current DMZ Status: ○ Enable ● Disable

DMZ Host IP Address: 0.0.0.0

Figure 5-37 DMZ

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

1. Click the **Enable** radio button

2. Enter the IP address of a local PC that is desired to be set as the DMZ host in the **DMZ Host IP Address** field.

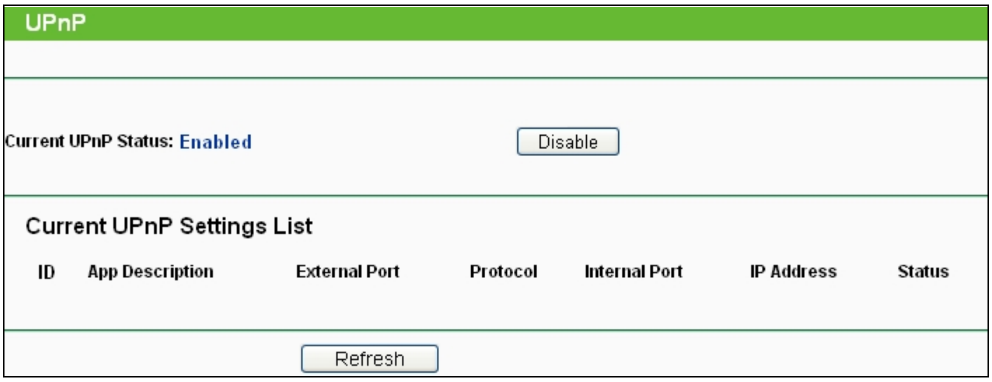
3. Click the **Save** button.

☞ **Note:**

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

5.9.4 UPnP

Selecting **Forwarding > UPnP** will enable you to configure the UPnP function on the page as shown in Figure 5-38:



Current UPnP Status: Enabled

Current UPnP Settings List

ID	App Description	External Port	Protocol	Internal Port	IP Address	Status

Figure 5-38 UPnP Settings

- **Current UPnP Status -** UPnP can be enabled or disabled by clicking the **Enable** or **Disable** button. As enabling UPnP may present a risk to security, this feature is disabled by default.
- **Current UPnP Settings List -** This table displays the current UPnP information.
  - **App Description** – The description provided by the application in the UPnP request
  - **External Port -** External port, which the router opened for the application.
  - **Protocol -** Shows which type of protocol is opened.
  - **Internal Port -** Internal port, which the router opened for local host.
  - **IP Address -** The IP address of the local host which initiates the UPnP request.
  - **Status -** Either Enabled or Disabled, “Enabled” means that port is still active. Otherwise, the port is inactive.

Click **Enable** to enable UPnP.

Click **Disable** to disable UPnP

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

5.10 Security

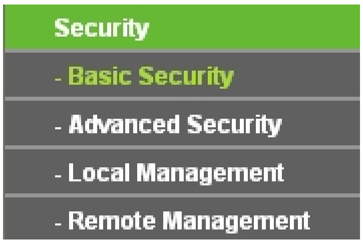
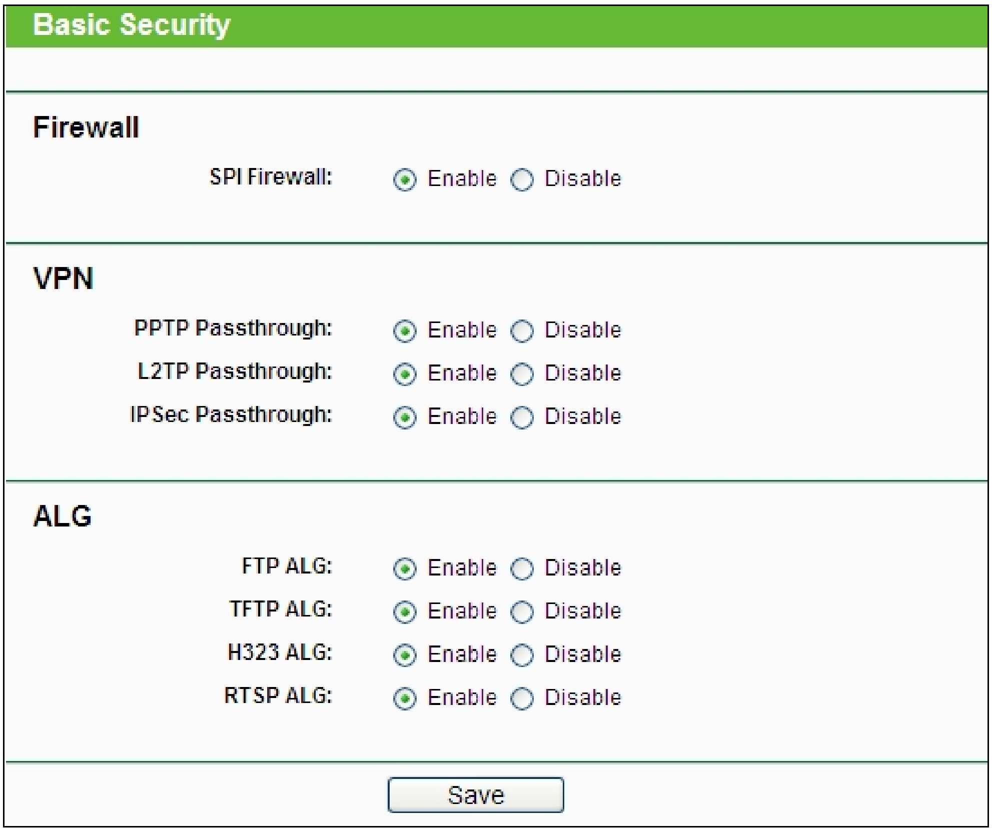


Figure 5-39 The Security menu

There are four submenus under the Security menu as shown in Figure 5-39: **Basic Security**, **Advanced Security**, **Local Management** and **Remote Management**. Click any of them, and you will be able to configure the corresponding function.

5.10.1 Basic Security

Choose menu **Security > Basic Security**, and then you can configure the basic security in the screen as shown in Figure 5-40.



Basic Security

Firewall

SPI Firewall: ● Enable ○ Disable

VPN

PPTP Passthrough: ● Enable ○ Disable

L2TP Passthrough: ● Enable ○ Disable

IPSec Passthrough: ● Enable ○ Disable

ALG

FTP ALG: ● Enable ○ Disable

TFTP ALG: ● Enable ○ Disable

H323 ALG: ● Enable ○ Disable

RTSP ALG: ● Enable ○ Disable

Figure 5-40 Basic Security

➢ **Firewall -** Here you can enable or disable the Device's firewall.

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

➢ **VPN -** VPN Passthrough must be enabled if you want to allow VPN tunnels using VPN protocols to pass through the Device.

- **PPTP Passthrough -** PPTP (Point-to-Point Tunneling Protocol) allows the Point-to-Point Protocol (PPP) to be tunneled through an IP network. To allow PPTP tunnels to pass through the Device, click Enable.
- **L2TP Passthrough -** L2TP (Layer Two Tunneling Protocol) is the method used to enable Point-to-Point sessions via the Internet on the Layer Two level. To allow L2TP tunnels to pass through the Device, click Enable.
- **IPSec Passthrough -** IPSec (Internet Protocol security) is a suite of protocols for ensuring private, secure communications over IP (Internet Protocol) networks, through the use of cryptographic security services. To allow IPSec tunnels to pass through the Device, click **Enable**.

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

- **FTP ALG -** To allow FTP clients and servers to transfer data across NAT, click Enable.
- **TFTP ALG -** To allow TFTP clients and servers to transfer data across NAT, click Enable.

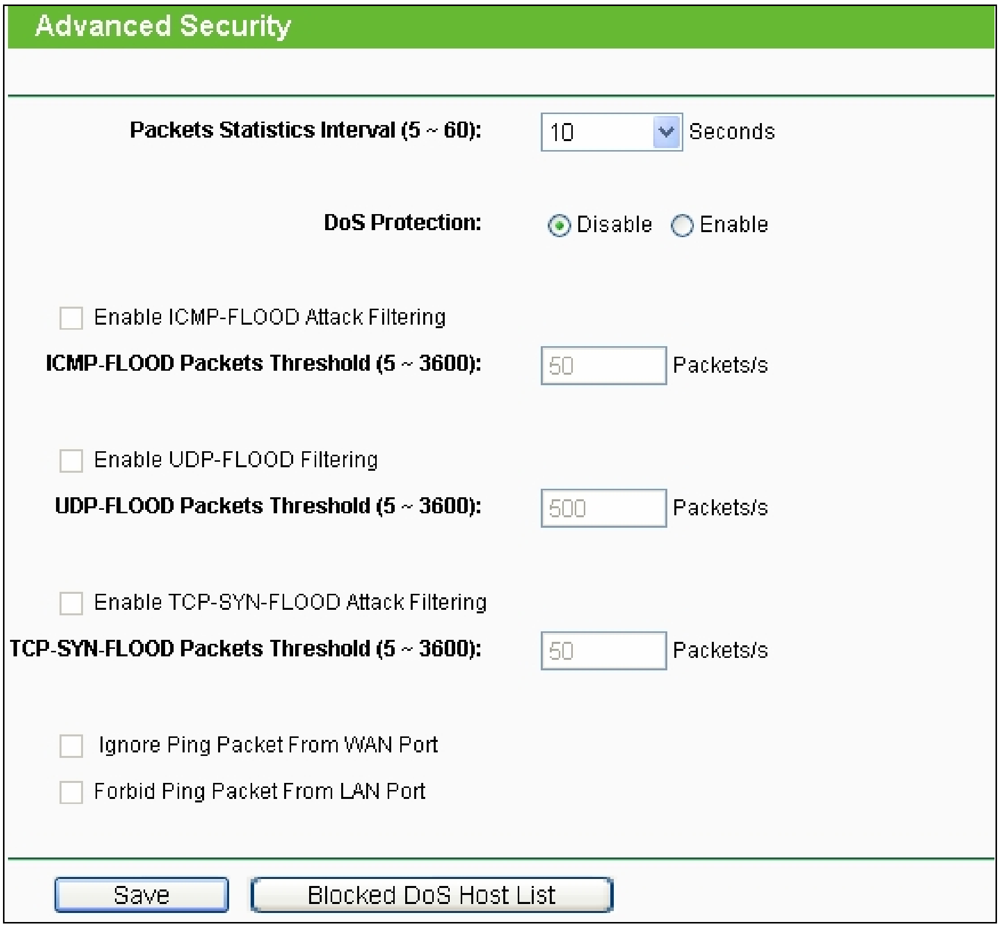
- **H323 ALG -** To allow Microsoft NetMeeting clients to communicate across NAT, click Enable.

- **RTSP ALG** - To allow some media player clients to communicate with some streaming media servers across NAT, click Enable.

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

5.10.2 Advanced Security

Choose menu **Security > Advanced Security**, and then you can protect the Device from being attacked by ICMP-Flood, UDP Flood and TCP-SYN Flood in the screen as shown in Figure 5-41.



Advanced Security

Packets Statistics Interval (5 ~ 60): 10 Seconds

DoS Protection: ● Disable ○ Enable

□ Enable ICMP-FLOOD Attack Filtering

ICMP-FLOOD Packets Threshold (5 ~ 3600): 50 Packets/s

□ Enable UDP-FLOOD Filtering

UDP-FLOOD Packets Threshold (5 ~ 3600): 500 Packets/s

□ Enable TCP-SYN-FLOOD Attack Filtering

TCP-SYN-FLOOD Packets Threshold (5 ~ 3600): 50 Packets/s

□ Ignore Ping Packet From WAN Port

□ Forbid Ping Packet From LAN Port

Figure 5-41 Advanced Security

☞ **Note:**

FLOOD Filtering will take effect only when the **Traffic Statistics** in **System Tools** is enabled.

- **Packets Statistics interval (5~60) -** The default value is 10. Select a value between 5 and 60 seconds in the pull-down list. The Packets Statistic interval value indicates the time section of the packets statistic. The result of the statistic used for analysis by ICMP-Flood, UDP Flood and TCP-SYN Flood.

- **DoS Protection -** Enable or Disable the DoS protection function. Only when it is enabled, will the flood filters be enabled.

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

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

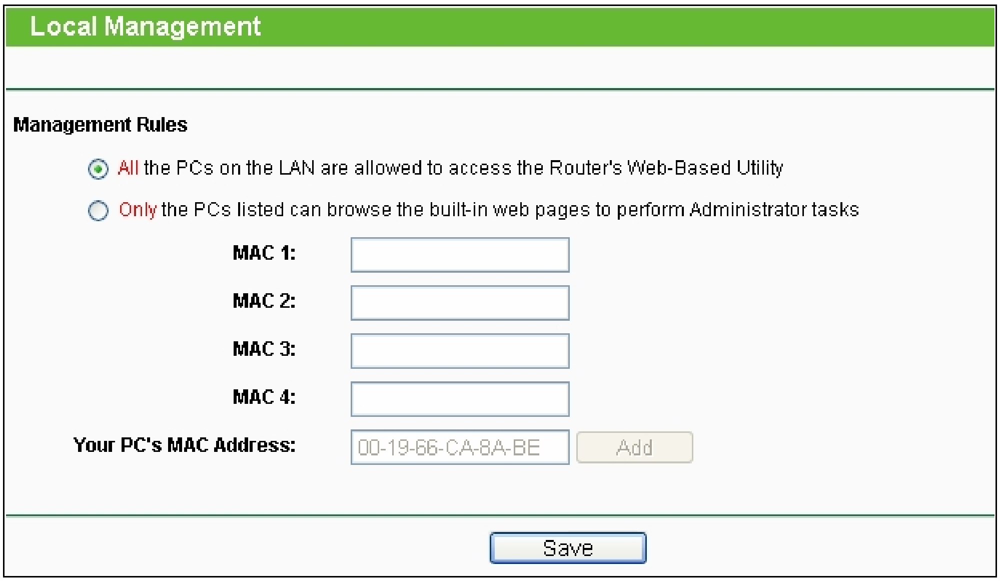
- **Enable UDP-FLOOD Filtering -** Enable or Disable the UDP-FLOOD Filtering.
- **UDP-FLOOD Packets Threshold (5~3600) -** The default value is 500. Enter a value between 5 ~ 3600. When the current UPD-FLOOD Packets number is beyond the set value, the Device will start up the blocking function immediately.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

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

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

5.10.3 Local Management

Choose menu **Security > Local Management**, and then you can configure the management rule in the screen as shown in Figure 5-42. The management feature allows you to deny computers in LAN from accessing the Device.



Local Management

Management Rules

● All the PCs on the LAN are allowed to access the Router's Web-Based Utility

○ Only the PCs listed can browse the built-in web pages to perform Administrator tasks

MAC 1:	
MAC 2:	
MAC 3:	
MAC 4:	
Your PC's MAC Address:	00-19-66-CA-8A-BE

Figure 5-42 Local Management

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

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

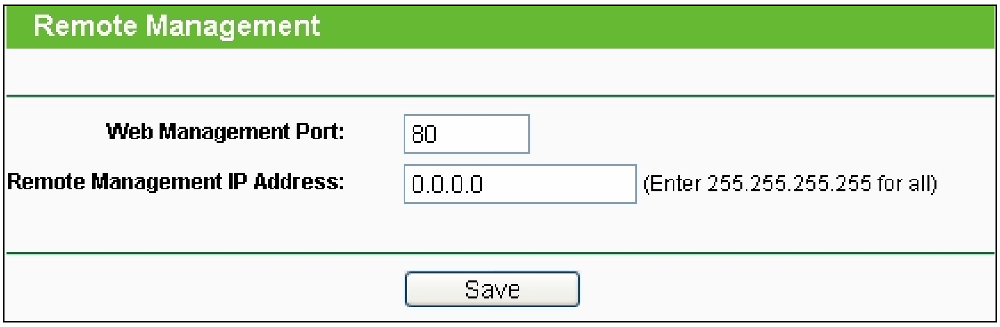
Click the **Save** button to save your settings.

☞ **Note:**

If your PC is blocked and you want to access the Device again, use a pin to press and hold the **Reset Button** on the back panel about 5 seconds to reset the Device's factory defaults in the Device's Web-Based Utility.

5.10.4 Remote Management

Choose menu **Security > Remote Management**, and then you can configure the Remote Management function in the screen as shown in Figure 5-43. This feature allows you to manage your Device from a remote location via the Internet.



Remote Management

Web Management Port: 80

Remote Management IP Address: 0.0.0.0 (Enter 255.255.255.255 for all)

Figure 5-43 Remote Management

- **Web Management Port -** Web browser access normally uses the standard HTTP service port 80. This Device's default remote management web port number is 80. For greater security, you can change the remote management web port to a custom port by entering that number in the box provided. Choose a number between 1 and 65535 but do not use the number of any common service port.
- **Remote Management IP Address -** This is the current address you will use when accessing your Device from the Internet. This function is disabled when the IP address is set to the default value of 0.0.0.0. To enable this function you should change 0.0.0.0 to a valid IP address. If set to be 255.255.255.255, then all the hosts can access the Device from Internet.

To access the Device, you should enter your Device's WAN IP address into your browser's address (in IE) or location (in Netscape) box, followed by a colon and the custom port number you set in the Web Management Port box.

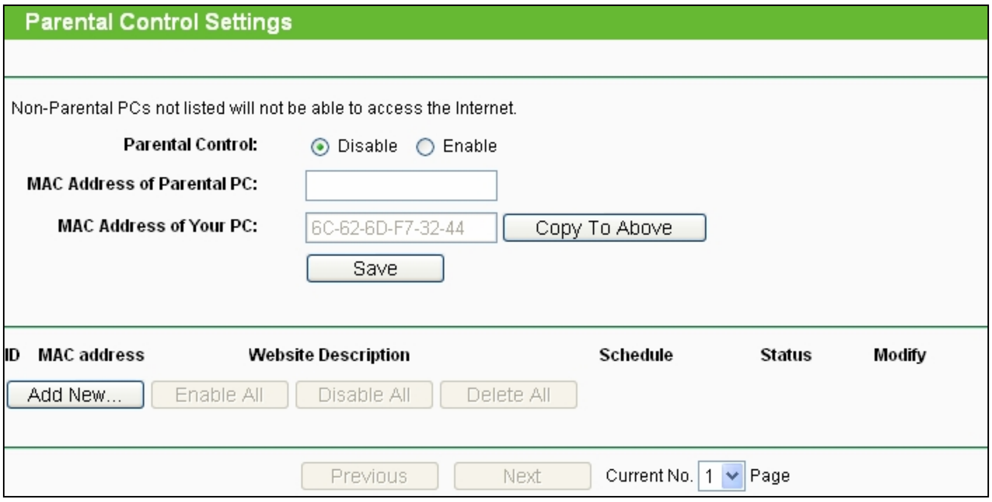
- For example, if your Device's WAN address is 202.96.12.8 and you use port number 8080, enter http://202.96.12.8:8080 in your browser. You will be asked for the Device's password. After successfully entering the password, you will be able to access the Device's web-based utility.

☞ **Note:**

Be sure to change the Device's default password to a secure password.

5.11 Parental Control

Choose menu **Parental Control**, and then you can configure the parental control in the screen as shown in Figure 5-44. The Parental Control function can be used to control the Internet activities of the children, their access to certain websites, as well as the time of surfing.



Parental Control Settings

Non-Parental PCs not listed will not be able to access the Internet.

Parental Control: ● Disable ○ Enable

MAC Address of Parental PC:

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

ID	MAC address	Website Description	Schedule	Status	Modify

Current No. 1 Page

Figure 5-44 Parental Control Settings

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

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

1. Click **Parental Control** menu on the left to enter the Parental Control Settings page. Check **Enable** and enter the MAC address 00-11-22-33-44-BB in the MAC Address of Parental PC field.
2. Click **Access Control > Schedule** on the left to enter the **Schedule** Settings page. Click **Add New...** button to create a new schedule with Schedule Description is **Schedule_1**, Day is **Sat** and Time is **"all day-24 hours"**.
3. Click **Parental Control** menu on the left to go back to the Parental Control Settings page, and then follow the instructions below.

1) Click **Add New...** button.

2) Enter 00-11-22-33-44-AA in the **MAC Address of Child PC** field.

3) Enter **Allow Google** in the **Website Description** field.

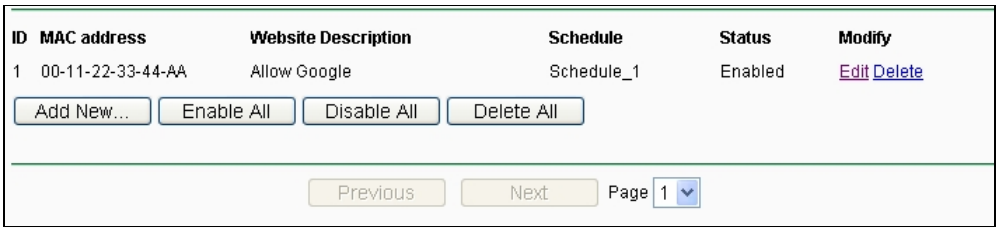
4) Enter **www.google.com** in the **Allowed Domain Name** field.

5) Select **Schedule_1** you create just now from the **Effective Time** drop-down list.

6) In **Status** field, select **Enable**.

7) Click **Save** to complete the settings.

4. Then you will go back to the **Parental Control** Settings page and see the following list.



ID	MAC address	Website Description	Schedule	Status	Modify
1	00-11-22-33-44-AA	Allow Google	Schedule_1	Enabled	Edit Delete

Figure 5-45 Parental Control List

Click the **Add New...** button to add a new Parental Control entry.

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

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

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

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

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

5.12 Access Control

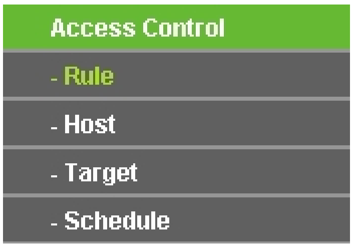


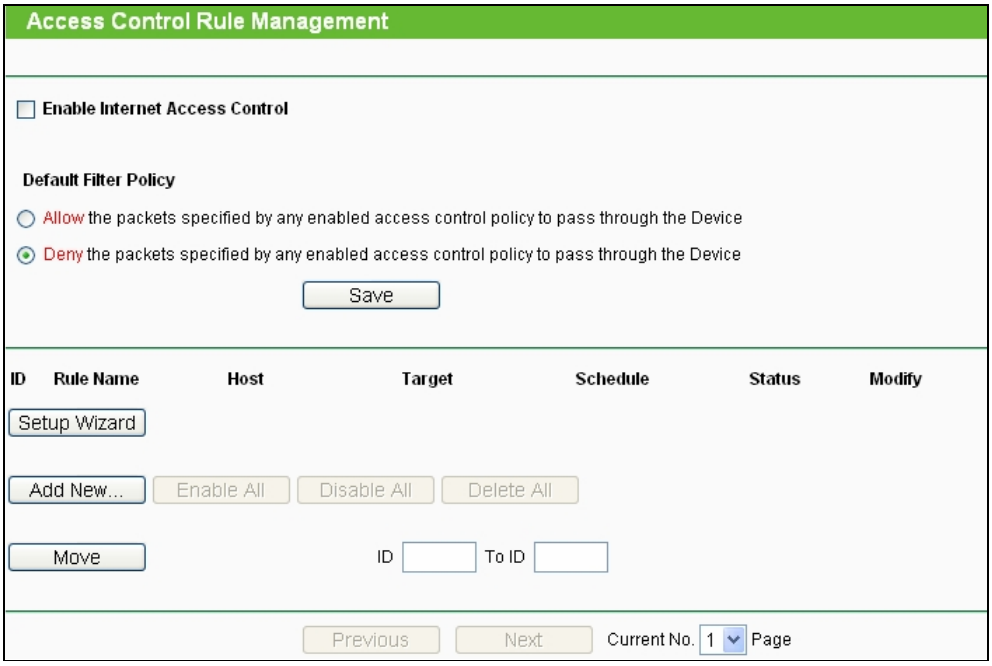
Figure 5-46 Access Control

There are four submenus under the Access Control menu as shown in Figure 5-46: **Rule**, **Host**, **Target** and **Schedule**. Click any of them, and you will be able to configure the corresponding function.

The Device, providing convenient and strong **Internet access control** function, can control the Internet activities of hosts in the LAN. Moreover, you can flexibly combine the **Host List**, **Target List** and **Schedule** to restrict the Internet surfing of these hosts.

5.12.1 Rule

Choose menu **Access Control > Rule**, and then you can view and set Access Control rules in the screen as shown in Figure 5-47.



Access Control Rule Management

□ Enable Internet Access Control

Default Filter Policy

○ Allow the packets specified by any enabled access control policy to pass through the Device

● Deny the packets specified by any enabled access control policy to pass through the Device

ID	Rule Name	Host	Target	Schedule	Status	Modify

ID □ To ID □

Current No. 1 Page

Figure 5-47 Access Control Rule Management

- **Enable Internet Access Control -** Select the check box to enable the Internet Access Control function, and then the **Default Filter Policy** can take effect.
- **Rule Name -** Here displays the name of the rule and this name is unique.
- **Host -** Here displays the host selected in the corresponding rule.
- **Target -** Here displays the target selected in the corresponding rule.
- **Schedule -** Here displays the schedule selected in the corresponding rule.
- **Status -** This field displays the status of the rule. **Enabled** means the rule will take effect, **Disabled** means the rule will not take effect.
- **Modify -** Here you can edit or delete an existing rule.

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

1. Click the submenu **Rule** of **Access Control** in the left to return to the Rule List page. Select Enable Internet Access Control and choose **Allow the packets specified by any enabled access control policy to pass through the Device**.
2. We recommend that you click **Setup Wizard** button to finish all the following settings.
3. Click the submenu **Host** of **Access Control** on the left to enter the **Host Setting** page. Add a new entry with the Host Description as Host_1 and MAC Address as 00-11-22-33-44-AA.
4. Click the submenu **Target** of **Access Control** on the left to enter the **Target Settings** page. Add a new entry with the Target Description as Target_1 and Domain Name as www.google.com.
5. Click the submenu **Schedule** of **Access Control** on the left to enter the **Schedule Settings** page. Add a new entry with the Schedule Description as Schedule_1, Day as Sat and Sun, Start Time as 1800 and Stop Time as 2000.
6. Click **Add New...** button to add a new rule as follows:

1) In Rule Name field, create a name for the rule. Note that this name should be unique, for example Rule_1.

2) In Host field, select Host_1.

3) In Target field, select Target_1.

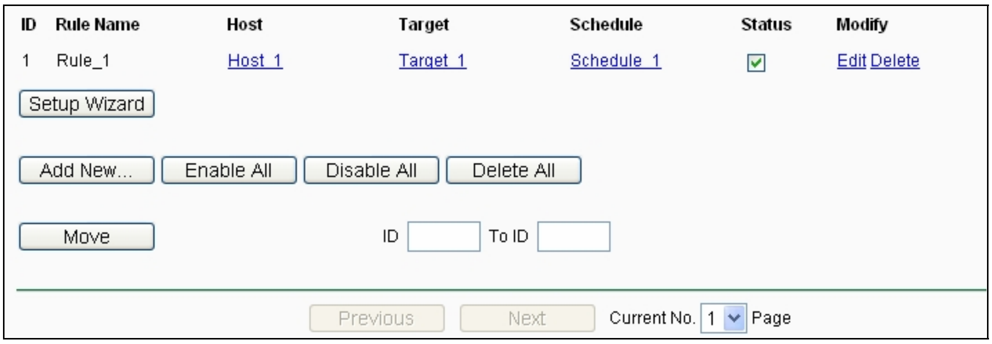
4) In Schedule field, select Schedule_1.

5) In Action field, select Allow.

6) In Status field, select Enable.

7) Click **Save** to complete the settings.

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



ID	Rule Name	Host	Target	Schedule	Status	Modify
1	Rule_1	Host_1	Target_1	Schedule_1	☑	Edit Delete

Figure 5-48 Access Control List

Click the **Add New...** button to add a new host list entry.

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

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

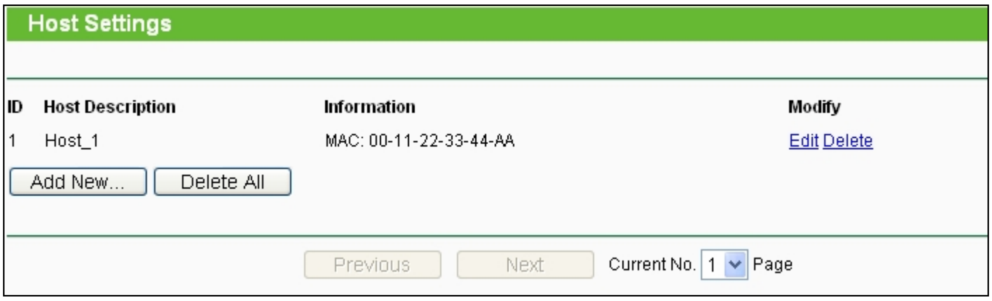
Click the **Delete All** button to delete all the entries in the table.

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

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

5.12.2 Host

Choose menu **Access Control > Host**, and then you can view and set a Host list in the screen as shown in Figure 5-49. The host list is necessary for the Access Control Rule.



Host Settings

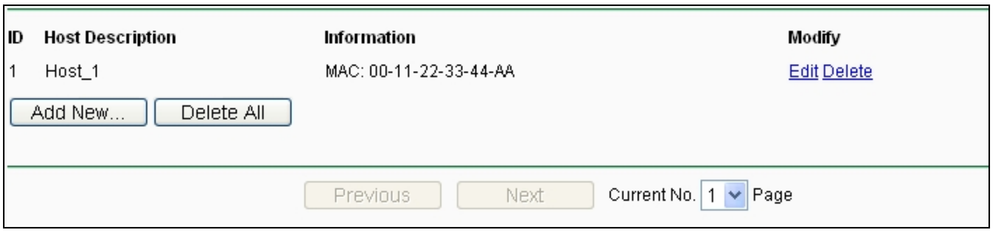
ID	Host Description	Information	Modify
1	Host_1	MAC: 00-11-22-33-44-AA	Edit Delete

Figure 5-49 Host Settings

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

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

1. Click **Add New...** button to enter the **Add or Modify a Host Entry** page.
2. In Mode field, select MAC Address from the drop-down list.
3. In Host Name field, create a unique description for the host, for example Host_1.
4. In MAC Address field, enter 00-11-22-33-44-AA.
5. Click **Save** to complete the settings.
6. Go back to the **Host Settings** page and you will see the following list.



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

Figure 5-50 Host List

Click the **Add New...** button to add a new host list entry.

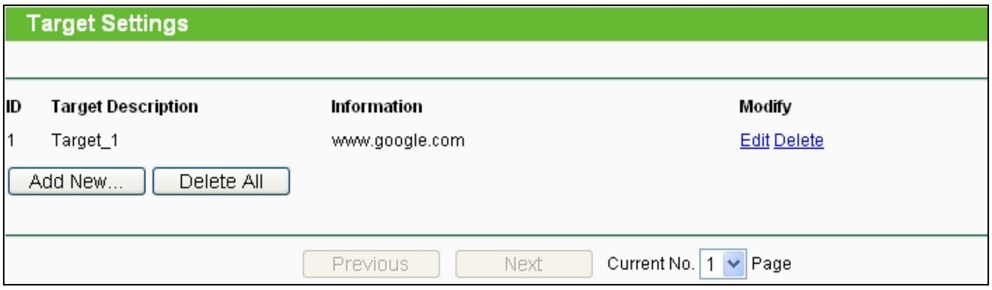
Click the **Delete All** button to delete all the entries in the table.

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

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

5.12.3 Target

Choose menu **Access Control > Target**, and then you can view and set a Target list in the screen as shown in Figure 5-51. The target list is necessary for the Access Control Rule.



Target Settings

ID	Target Description	Information	Modify
1	Target_1	www.google.com	Edit Delete

Figure 5-51 Target Settings

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

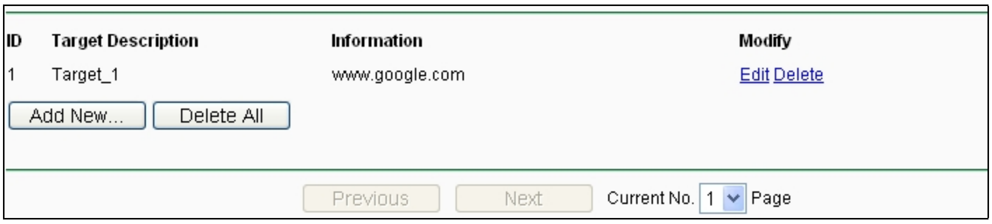
- **For example**: If you desire to restrict the Internet activities of host with MAC address 00-11-22-33-44-AA in the LAN to access www.google.com only, you should first follow the settings below:

1. Click **Add New…** button to enter **Add or Modify an Access Target Entry** page.
2. In Mode field, select Domain Name from the drop-down list.
3. In Target Description field, create a unique description for the target, for example Target_1.

4. In Domain Name field, enter www.google.com.

5. Click **Save** to complete the settings.

6. Go back to the **Target Settings** page and see the following list



ID	Target Description	Information	Modify
1	Target_1	www.google.com	Edit Delete

Figure 5-52 Access Target List

Click the **Add New...** button to add a new target entry.

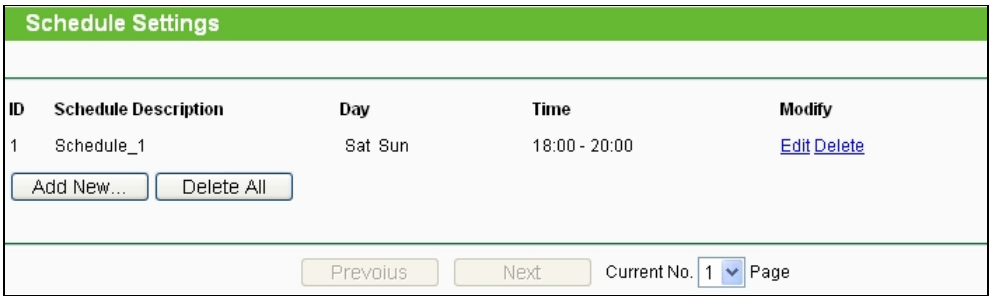
Click the **Delete All** button to delete all the entries in the table.

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

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

5.12.4 Schedule

Choose menu **Access Control > Schedule**, you can view and set a Schedule list in the next screen as shown in Figure 5-53. The Schedule list is necessary for the Access Control Rule.



Schedule Settings

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

Figure 5-53 Schedule Settings

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

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

1. Click **Add New...** button to enter the **Advance Schedule Settings** page.

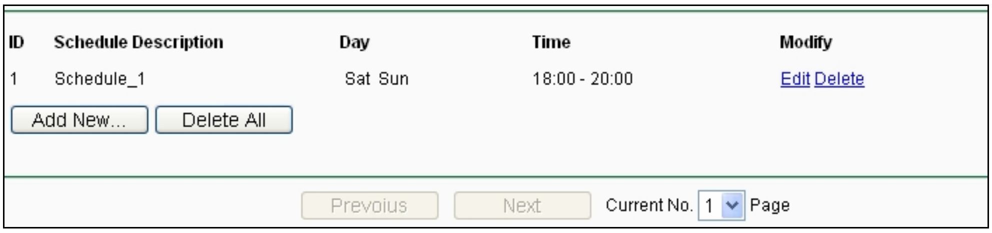
2. In Schedule Description field, create a unique description for the schedule, for example Schedule_1.

3. In Day field, choose **Select Days** and select Sat and Sun.

4. In Time field, enter 1800 in Start Time and 2000 in Stop Time.

5. Click **Save** to complete the settings.

6. Go back to the **Schedule Settings** page and see the following list



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

Figure 5-54 Schedule List

Click the **Add New...** button to add a new target entry.

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

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

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

5.13 Advanced Routing

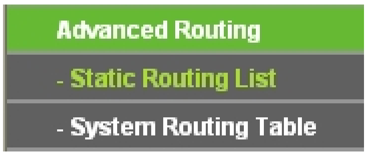
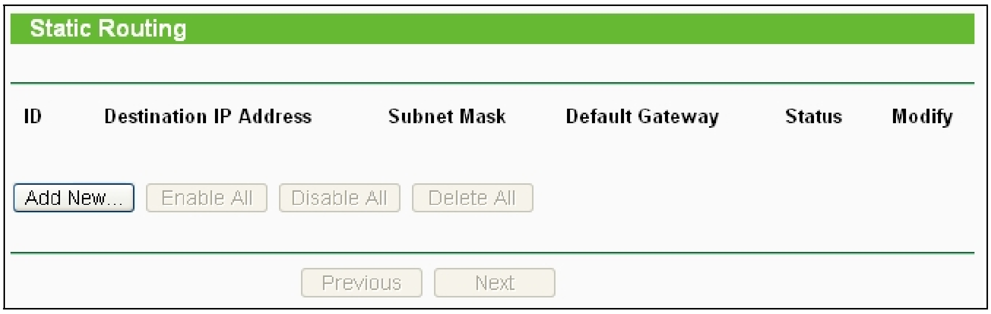


Figure 5-55 Access Control

There are two submenus under the Advanced Routing as shown in Figure 5-55: **Static Routing List** and **System Routing Table**. Click any of them, and you will be able to configure the corresponding function.

5.13.1 Static Routing List

A static route is a pre-determined path that network information must travel to reach a specific host or network. To add or delete a route, work in the area under the Static Routing page as shown in Figure 5-56.



Static Routing

ID	Destination IP Address	Subnet Mask	Default Gateway	Status	Modify

Figure 5-56 Static Routing

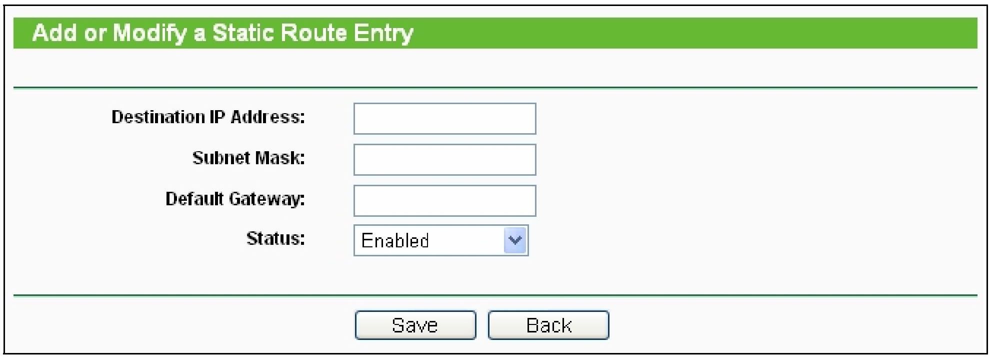
To add static routing entries:

1. Click the **Add New** button. (pop up Figure 5-57)
2. Enter the following parameters.

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

3. Select **Enabled** or **Disabled** for this entry from the **Status** pull-down list.

4. Click the **Save** button to save the changes.



Add or Modify a Static Route Entry

Destination IP Address:

Subnet Mask:

Default Gateway:

Status: Enabled

Figure 5-57 Add or Modify a Static Route Entry

To modify or delete an existing entry:

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

2. Modify the information.

3. Click the **Save** button.

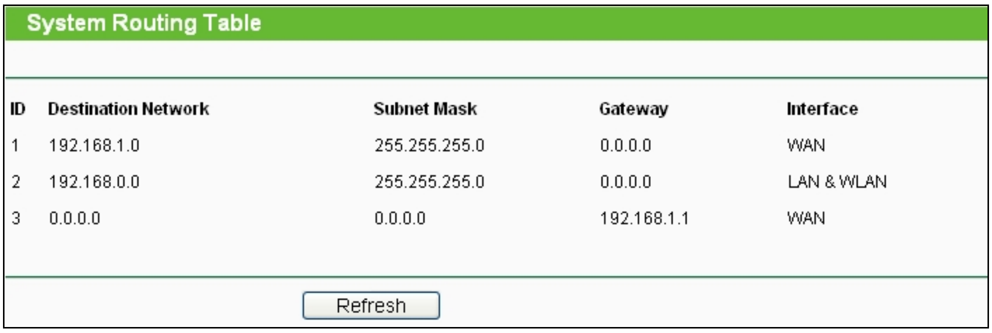
Click the **Enable All** button to make all entries enabled.

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

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

5.13.2 System Routing Table

Choose menu **System Routing Table > Rule**, and then you can view all of the valid route entries in use in the screen as shown in Figure 5-58.The Destination IP address, Subnet Mask, Gateway, and Interface will be displayed for each entry.



System Routing Table

ID	Destination Network	Subnet Mask	Gateway	Interface
1	192.168.1.0	255.255.255.0	0.0.0.0	WAN
2	192.168.0.0	255.255.255.0	0.0.0.0	LAN & WLAN
3	0.0.0.0	0.0.0.0	192.168.1.1	WAN

Figure 5-58 System Routing Table

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

You can click the **Refresh** button to refresh the data displayed.

5.14 Bandwidth Control

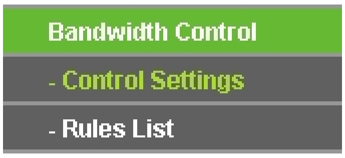
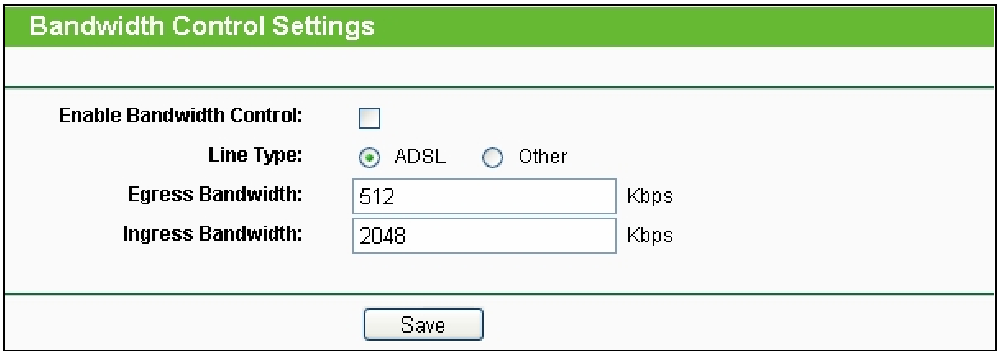


Figure 5-59 Bandwidth Control

There are two submenus under the Bandwidth Control menu as shown in Figure 5-59: **Control Settings** and **Rules List**. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

5.14.1 Control Settings

Choose menu **Bandwidth Control > Control Settings**, and then you can configure the Egress Bandwidth and Ingress Bandwidth in the next screen (shown in Figure 5-60). Their values should be configured less than 1000000Kbps.



Bandwidth Control Settings

Enable Bandwidth Control: □

Line Type: ● ADSL ○ Other

Egress Bandwidth: 512 Kbps

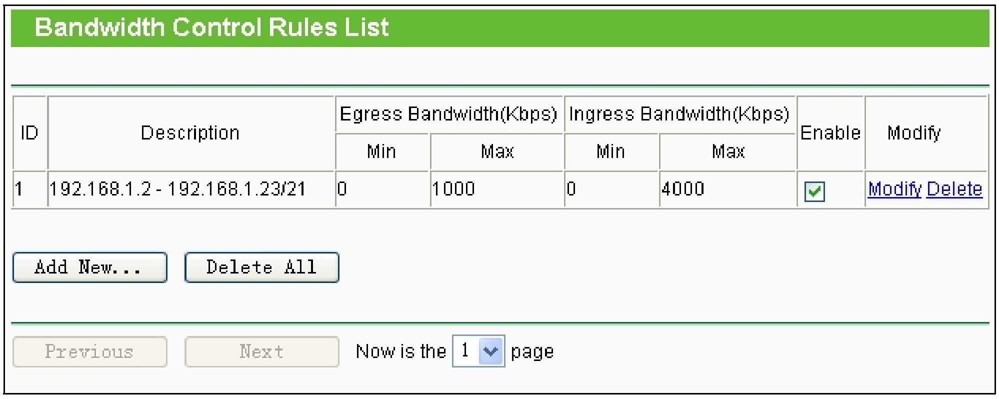
Ingress Bandwidth: 2048 Kbps

Figure 5-60 Bandwidth Control Settings

- **Enable Bandwidth Control -** If enabled, the Bandwidth Control rules will take effect.
- **Egress Bandwidth -** The upload speed through the WAN port.
- **Ingress Bandwidth -** The download speed through the WAN port.

5.14.2 Rules List

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



Bandwidth Control Rules List

ID	Description	Egress Bandwidth(Kbps)		Ingress Bandwidth(Kbps)		Enable	Modify
		Min	Max	Min	Max		
1	192.168.1.2 - 192.168.1.23/21	0	1000	0	4000	☑	Modify Delete

Figure 5-61 Bandwidth Control Rules List

- **ID -** The sequence of entry.

- **Description** - The information of description include address range, the port range and protocol of transport layer.
- **Egress Bandwidth** - The max upload speed which through the WAN port. The default number is 0.
- **Ingress Bandwidth** - The max download speed which through the WAN port. The default number is 0.
- **Enable -** Rule status, which shows whether the rule takes effect.
- **Modify -** Choose to modify or delete an existing entry.

5.15 IP & MAC Binding

ARP Binding is useful for controlling access of specific computers in the LAN. This page displays the **IP & MAC Binding Setting** table; you can operate it in accord with your desire.

There are two submenus under the IP & MAC Binding menu (shown in Figure 5-62): **Binding Setting** and **ARP List**. Click any of them, and you will be able to configure the corresponding function. The detailed explanations for each submenu are provided below.

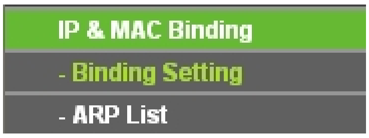
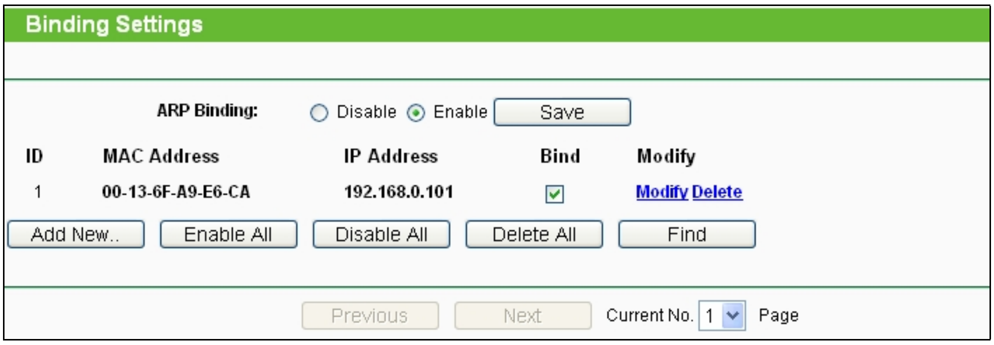


Figure 5-62 the IP & MAC Binding menu

5.15.1 Binding Setting

Selecting **IP & MAC Binding > Binding Setting** will allow you to configure the binding entries, as shown in Figure 5-63.



Binding Settings

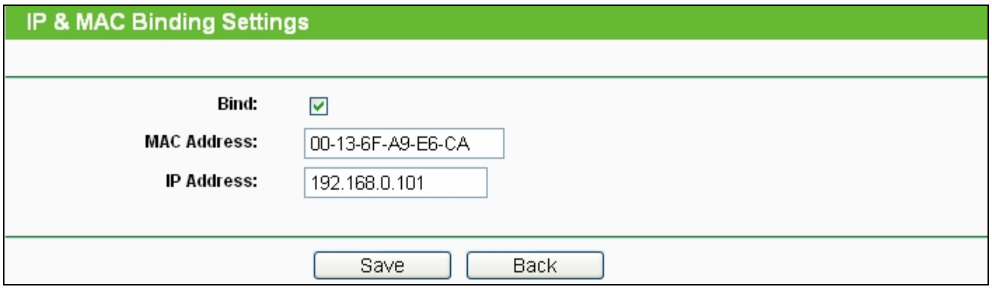
ARP Binding: ○ Disable ● Enable [Save]

ID	MAC Address	IP Address	Bind	Modify
1	00-13-6F-A9-E6-CA	192.168.0.101	☑	Modify Delete

Figure 5-63 Binding Setting

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

When you want to add or modify an IP & MAC Binding entry, you can click the **Add New** button or **Modify** button, and then you will go to the next page. This page is used for adding or modifying an IP & MAC Binding entry (shown in Figure 5-64).



IP & MAC Binding Settings

Bind: ☑

MAC Address: 00-13-6F-A9-E6-CA

IP Address: 192.168.0.101

Figure 5-64 IP & MAC Binding Setting (Add & Modify)

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

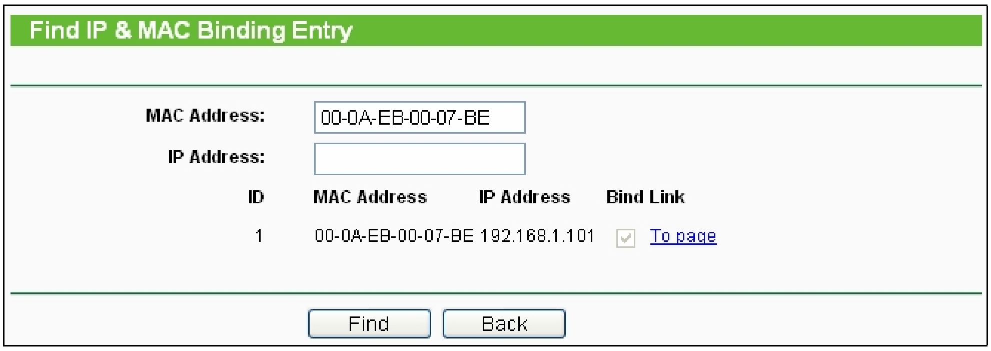
1. Click the **Add New...** button as shown in Figure 5-63.
2. Enter the MAC Address and IP Address.
3. Select the **Bind** checkbox.
4. Click the **Save** button to save it.

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

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

To find an existing entry, follow the steps below.

1. Click the **Find** button as shown in Figure 5-63.
2. Enter the MAC Address or IP Address.
3. Click the **Find** button in the page as shown in Figure 5-65.



Find IP & MAC Binding Entry

MAC Address: 00-0A-EB-00-07-BE

IP Address:

ID	MAC Address	IP Address	Bind	Link
1	00-0A-EB-00-07-BE	192.168.1.101	☑	To page

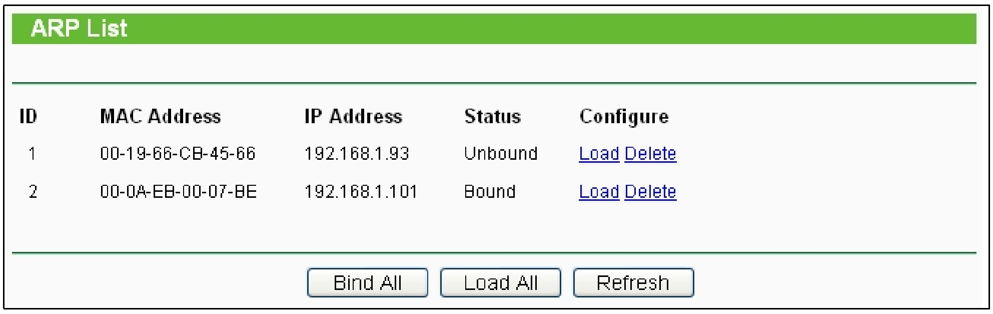
Figure 5-65 Find IP & MAC Binding Entry

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

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

5.15.2 ARP List

Selecting **IP & MAC Binding > ARP List** will enable you to observe the computers in the LAN by checking the relationship of MAC address and IP address on the ARP list, and you could configure the items on the ARP list also. This page displays the ARP List; it shows all the existing
IP & MAC Binding entries (shown in Figure 5-66).



ARP List

ID	MAC Address	IP Address	Status	Configure
1	00-19-66-CB-45-66	192.168.1.93	Unbound	Load Delete
2	00-0A-EB-00-07-BE	192.168.1.101	Bound	Load Delete

Figure 5-66 ARP List

- **MAC Address -** The MAC address of the controlled computer in the LAN.
- **IP Address -** The assigned IP address of the controlled computer in the LAN.
- **Status -** Indicates whether or not the MAC and IP addresses are bound.
- **Configure -** Load or delete an item.
  - **Load -** Load the item to the IP & MAC Binding list.
  - **Delete -** Delete the item.

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

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

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

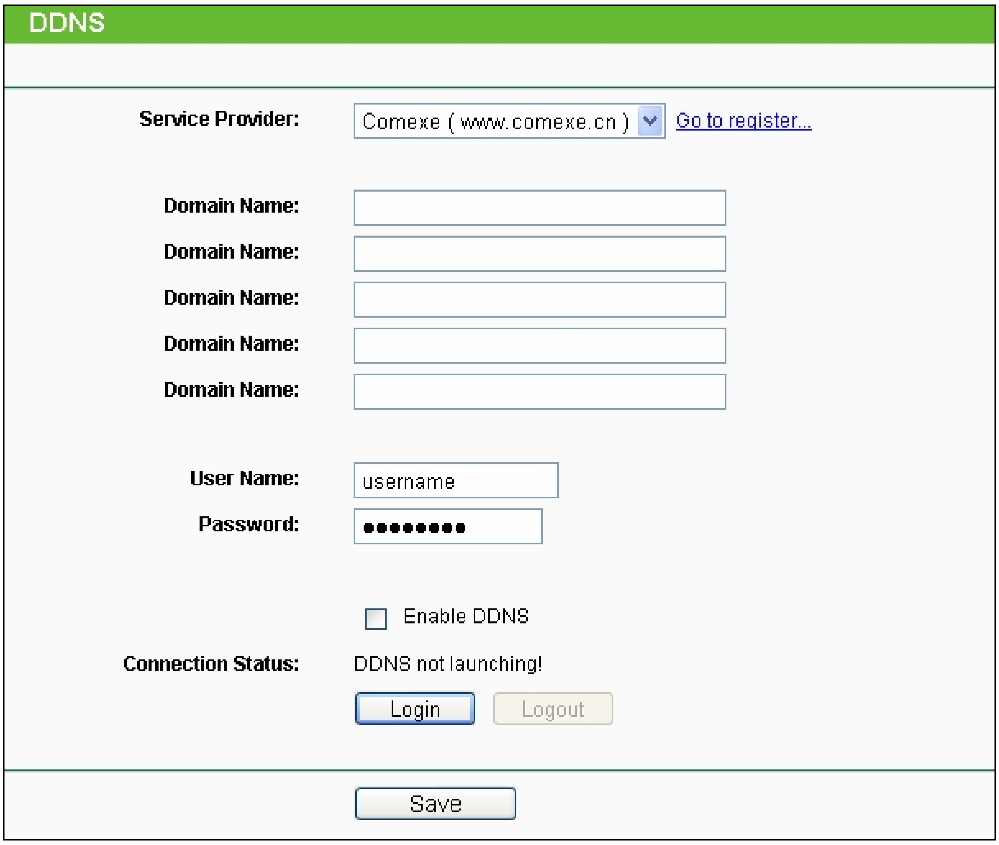
☞ **Note:**

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

5.16 Dynamic DNS

The Device offers a Dynamic Domain Name System (**DDNS**) feature. DDNS lets you assign a fixed host and domain name to a dynamic Internet IP address. It is useful when you are hosting your own website, FTP server, or other server behind the Device. Before using this feature, you need to sign up for DDNS service providers such as www.comexe.cn, www.dyndns.org, or www.no-ip.com. The Dynamic DNS client service provider will give you a password or key.

1. If the dynamic DNS **Service Provider** you select is www.comexe.cn, the page will appear as shown in Figure 5-67.



DDNS

Service Provider: Comexe (www.comexe.cn) Go to register...

Domain Name:

Domain Name:

Domain Name:

Domain Name:

Domain Name:

User Name: username

Password: ●●●●●●●●●

□ Enable DDNS

Connection Status: DDNS not launching!

Figure 5-67 Comexe.cn DDNS Settings

➢ **To set up for DDNS, follow these instructions:**

1) Enter the **Domain Names** your dynamic DNS service provider gave.

2) Enter the **User Name** for your DDNS account.

3) Enter the **Password** for your DDNS account.

4) Click the **Login** button to login the DDNS service.

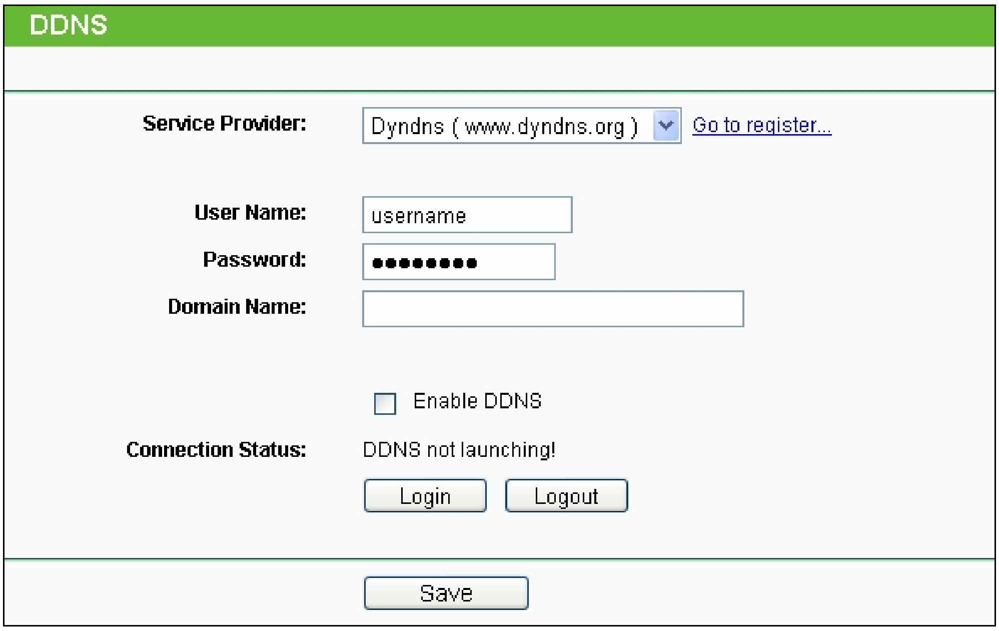
➢ **Connection Status** - The status of the DDNS service connection is displayed here.

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

☞ **Note:**

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

2. If the dynamic DNS **Service Provider** you select is www.dyndns.org, the page will appear as shown in Figure 5-68.



DDNS

Service Provider: Dyndns (www.dyndns.org) Go to register...

User Name: username

Password: ●●●●●●●●

Domain Name:

□ Enable DDNS

Connection Status: DDNS not launching!

Figure 5-68 Dyndns.org DDNS Settings

- **To set up for DDNS, follow these instructions:**
  1) Enter the User Name for your DDNS account.
  2) Enter the Password for your DDNS account.
  3) Enter the Domain Name you received from dynamic DNS service provider.
  4) Click the Login button to login to the DDNS service.

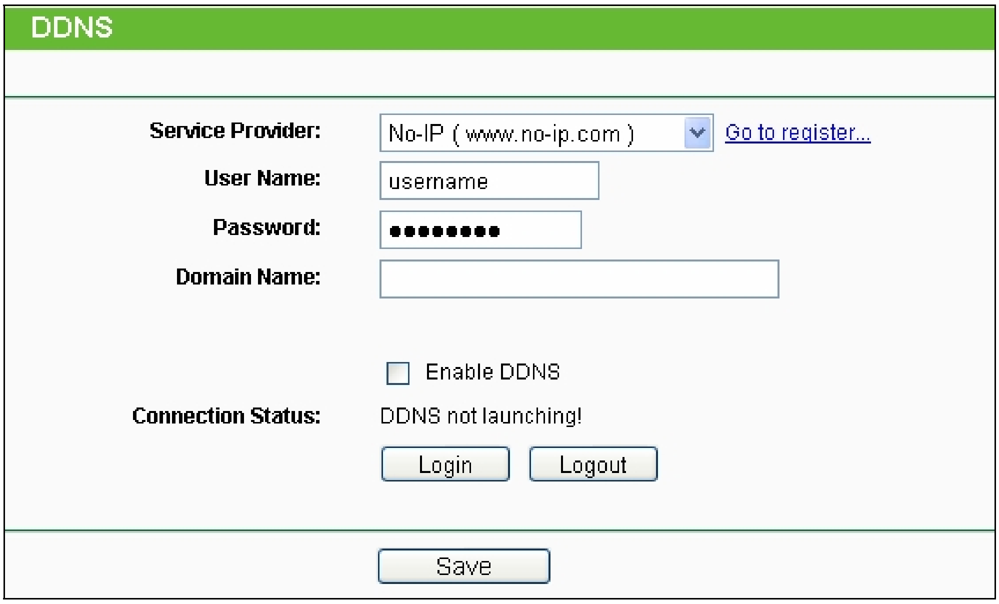
- **Connection Status** - The status of the DDNS service connection is displayed here.

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

☞ **Note:**

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

3. If the dynamic DNS **Service Provider** you select is www.no-ip.com, the page will appear as shown in Figure 5-69.



DDNS

Service Provider: No-IP (www.no-ip.com) Go to register...

User Name: username

Password: ●●●●●●●●●

Domain Name:

□ Enable DDNS

Connection Status: DDNS not launching!

Figure 5-69 No-ip.com DDNS Settings

➢ **To set up for DDNS, follow these instructions:**

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

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

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

☞ **Note:**

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

5.17 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.

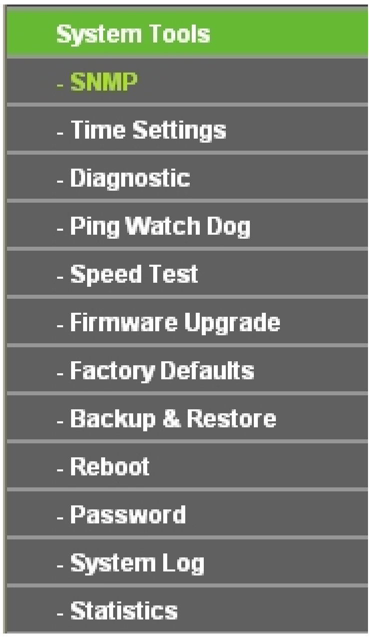
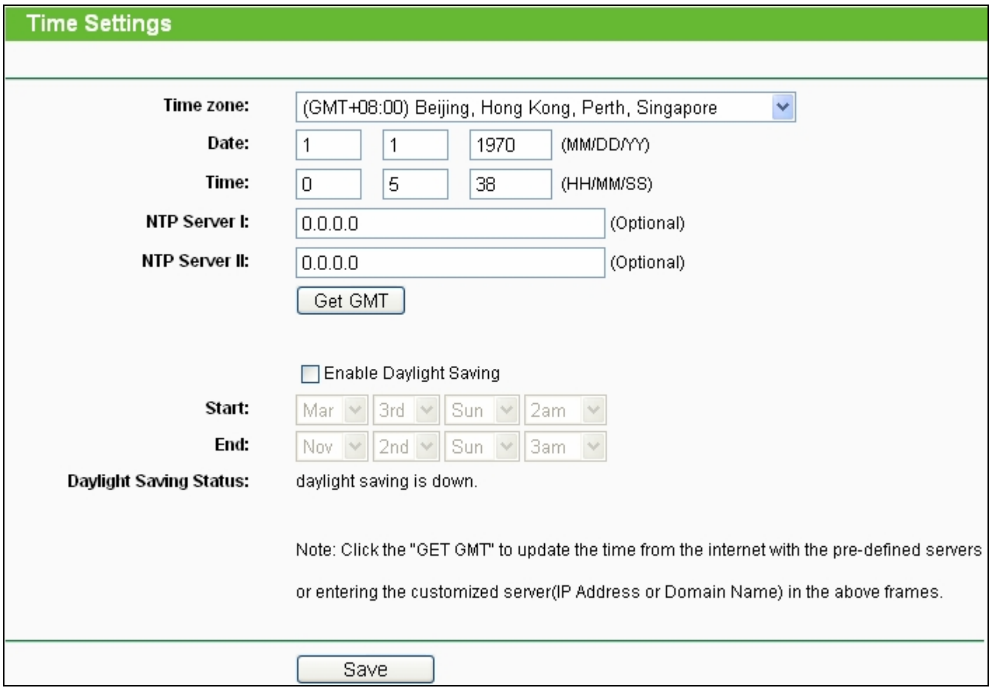


Figure 5-70 The System Tools menu

5.17.1 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.

Figure 5-71 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.

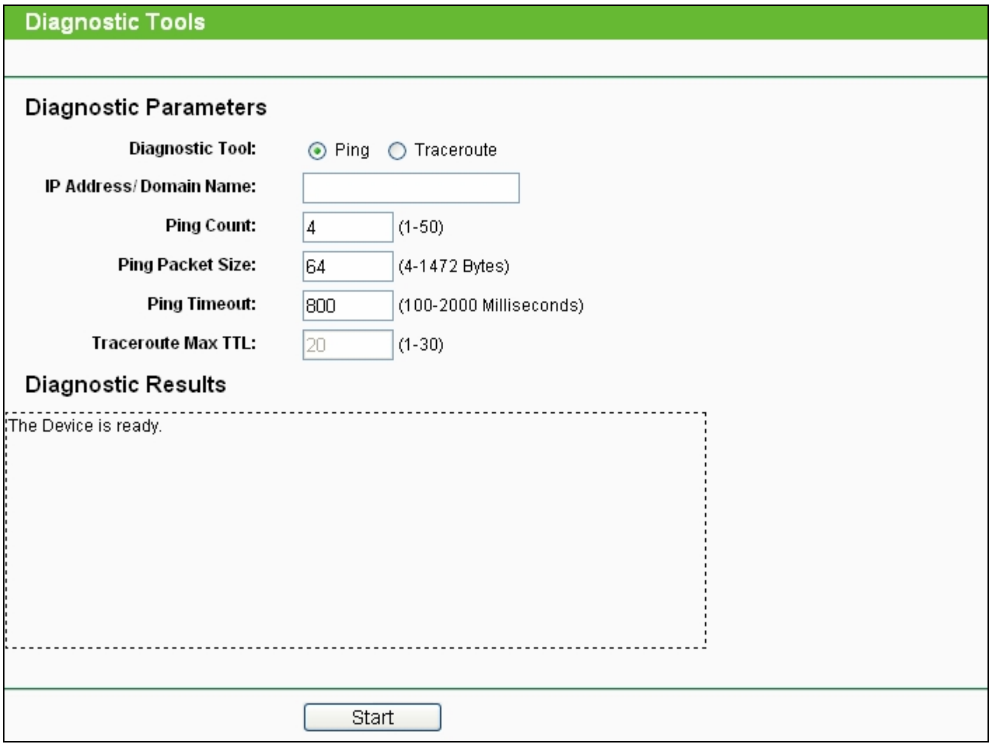
3) The Device will automatically obtain GMT from the Internet if it is configured accordingly.

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.

5.17.2 Diagnostic

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



Diagnostic Tools

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 5-72 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.

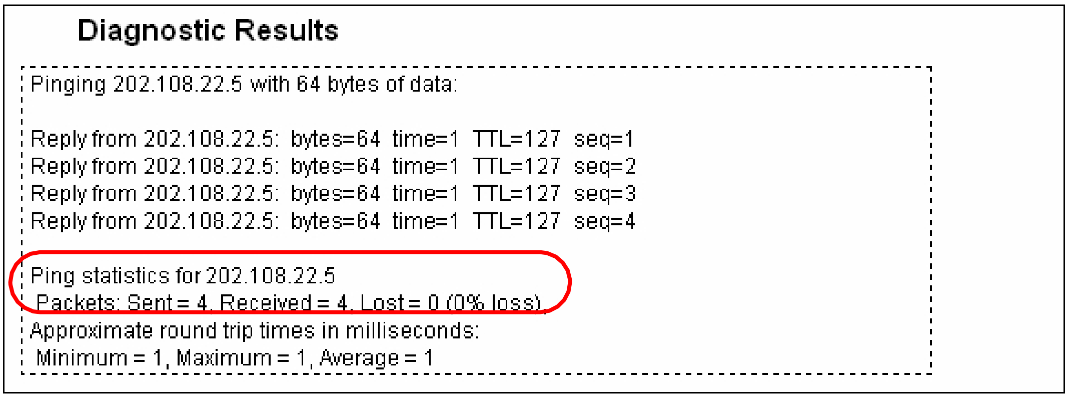
➢ **Ping Timeout** - Time to wait for a response, in milliseconds. The default is 800.

➢ **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
```

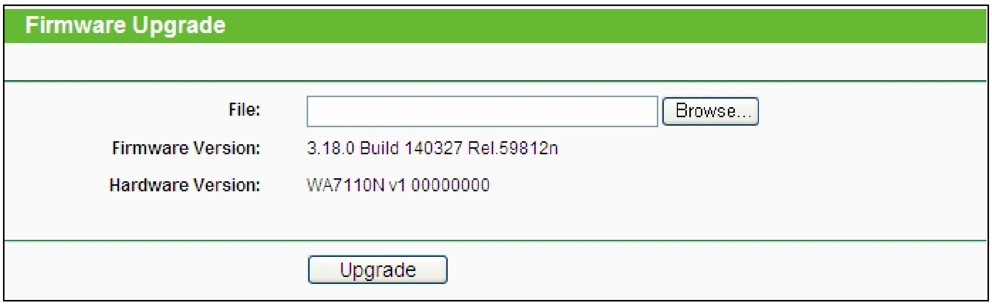
Figure 5-73 Diagnostic Results

☞ **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.

5.17.3 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 5-74 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.

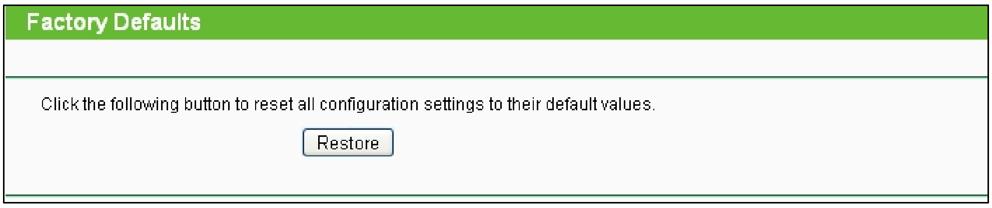
- **Firmware Version** - Displays the current firmware version.
- **Hardware Version** - Displays the current hardware version. The hardware version of the upgrade file must accord with the current hardware version.

☞ **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.

5.17.4 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 5-75 Restore Factory Default

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

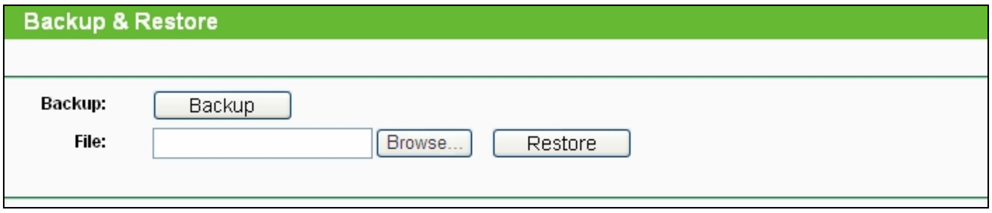
- Default User Name **- admin**.
- Default Password **- admin**.
- Default IP Address **- 192.168.0.254**.
- Default Subnet Mask **- 255.255.255.0**.

☞ **Note:**

All changed settings will be lost when defaults are restored.

5.17.5 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

Figure 5-76 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:

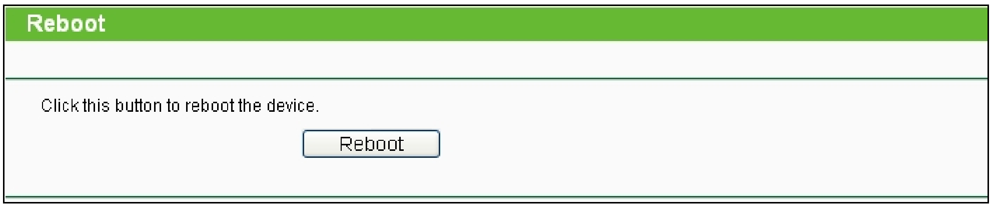
1. Click the **Browse** button to find the configuration file which you want to restore.
2. Click the **Restore** button to update the configuration with the file whose path is the one you have input or selected in the blank.

☞ **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.

5.17.6 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 5-77 Reboot the Device

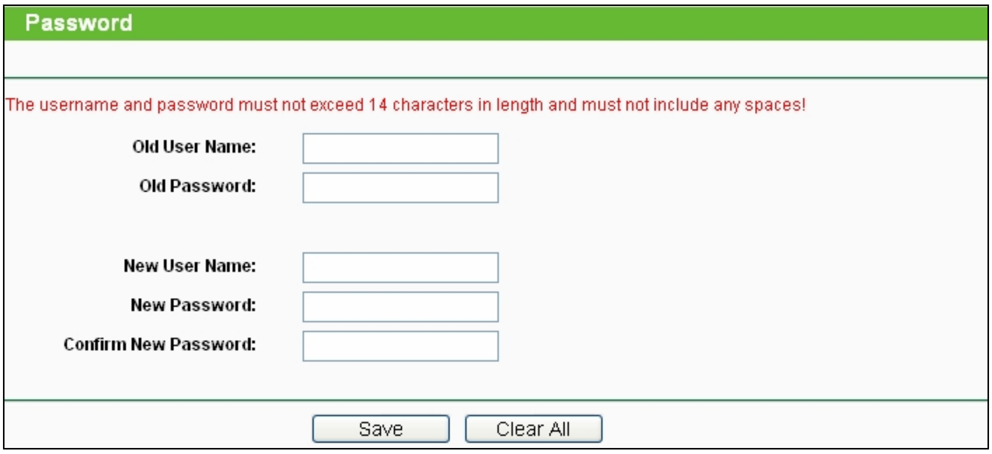
Click the **Reboot** button to reboot the Device.

➢ 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.).

5.17.7 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 5-78 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:**

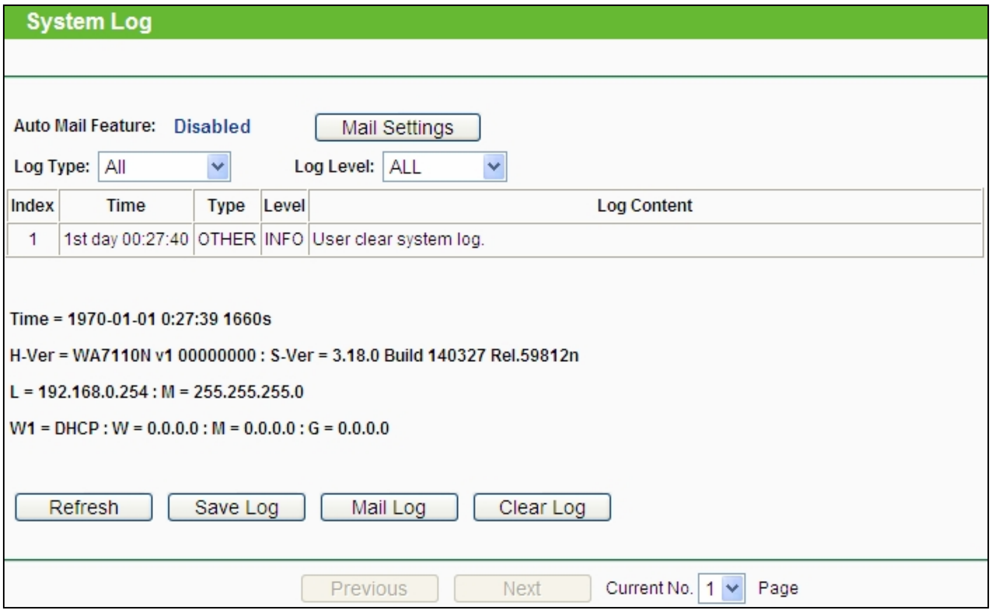
The new user name and password must not exceed 14 characters in length and must not include any spaces. Enter the new Password twice to confirm it.

Click the **Save** button when finished.

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

5.17.8 System log

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



System Log

Auto Mail Feature: Disabled

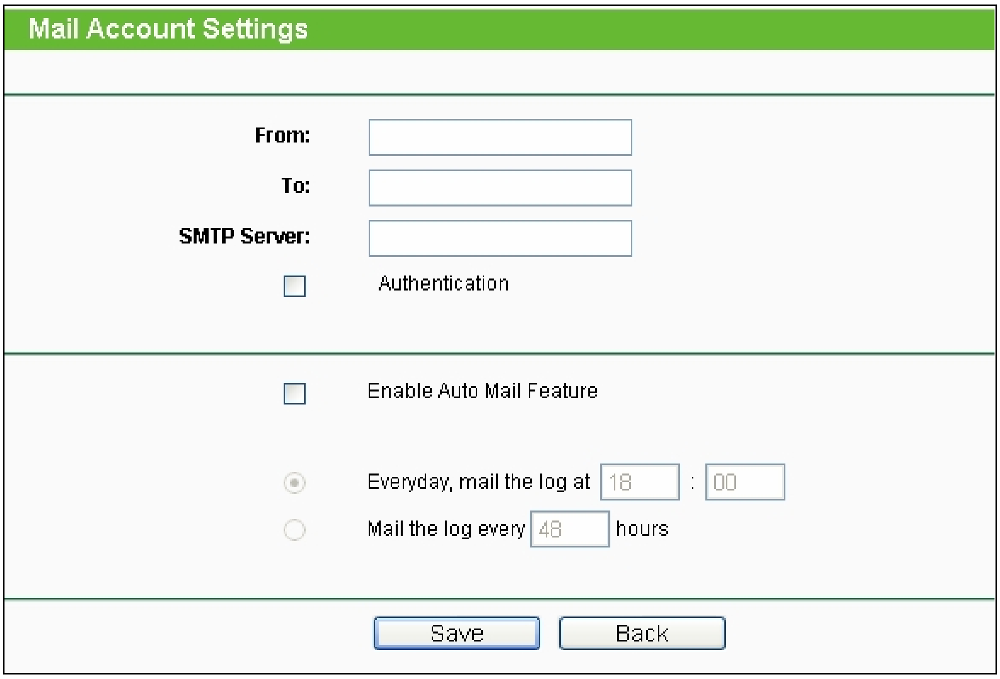
Log Type: All   Log Level: ALL

Index	Time	Type	Level	Log Content
1	1st day 00:27:40	OTHER	INFO	User clear system log.

```
Time = 1970-01-01 0:27:39 1660s
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
```

Figure 5-79 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 5-80 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.

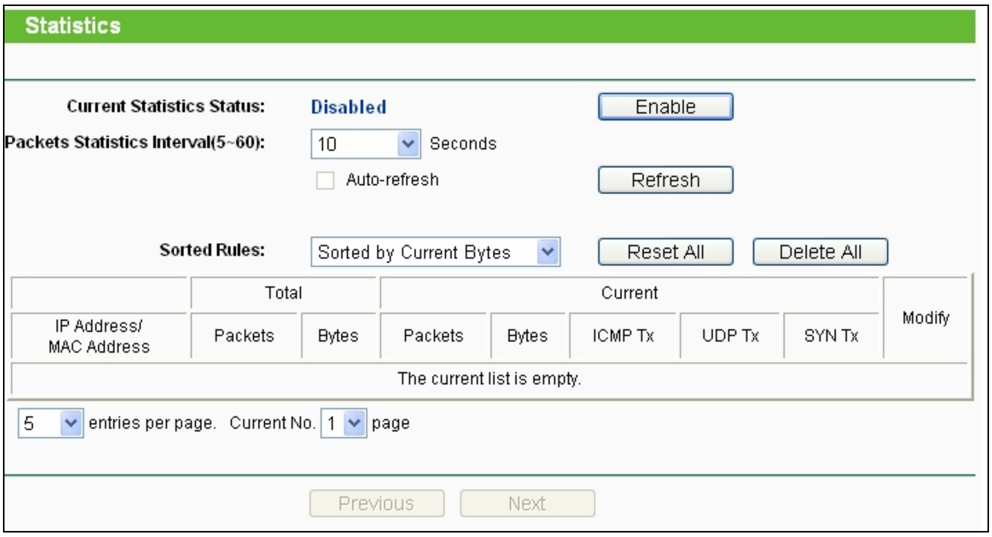
- **Log Type -** By selecting the log type, only logs of this type will be shown.
- **Log Level -** By selecting the log level, only logs of this level will be shown.
- **Refresh -** Refresh the page to show the latest log list.
- **Save Log -** Click to save all the logs in a txt file.
- **Mail Log -** 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.

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

5 entries per page. Current No. 1 page

[Previous] [Next]

Figure 5-81 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.

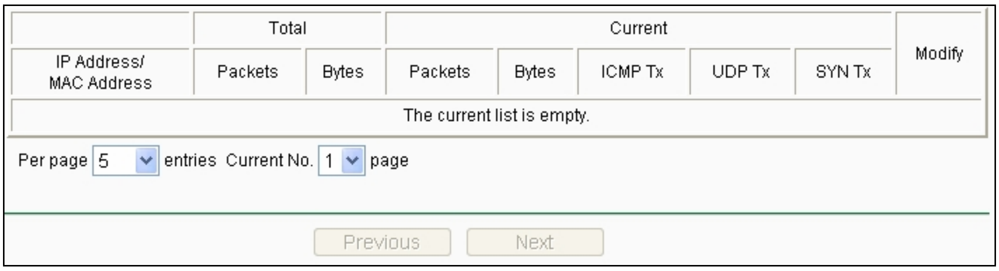
Click the **Auto-refresh** checkbox to refresh automatically.

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

[Previous] [Next]

Figure 5-82 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.

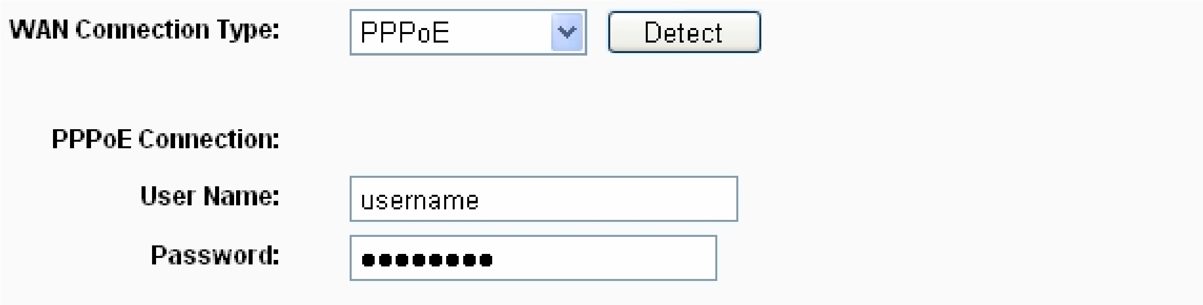
Appendix A: FAQ

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

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

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

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



WAN Connection Type: PPPoE ▾ [Detect]

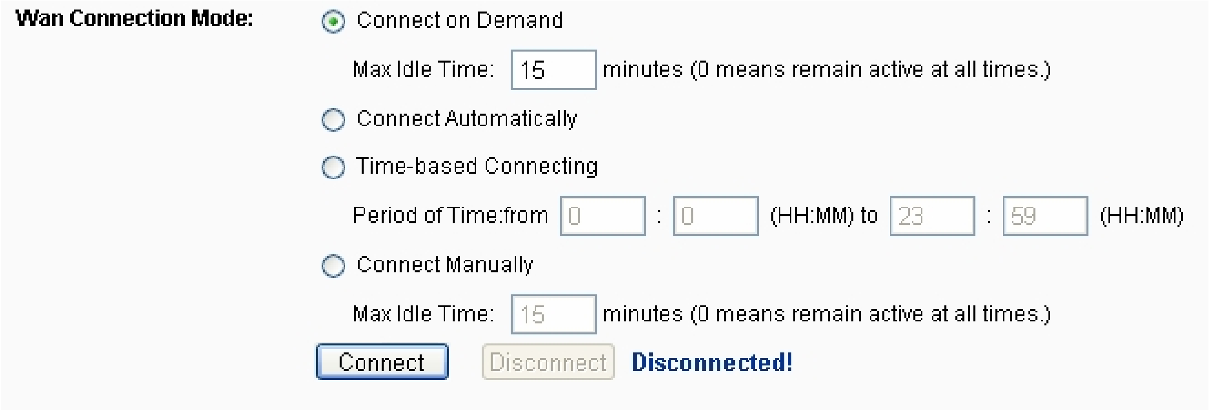
PPPoE Connection:

User Name: username

Password: ●●●●●●●●●

Figure A-1 PPPoE Connection Type

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



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.)

[Connect] [Disconnect] Disconnected!

Figure A-2 PPPoE Connection Mode

☞ **Note:**

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

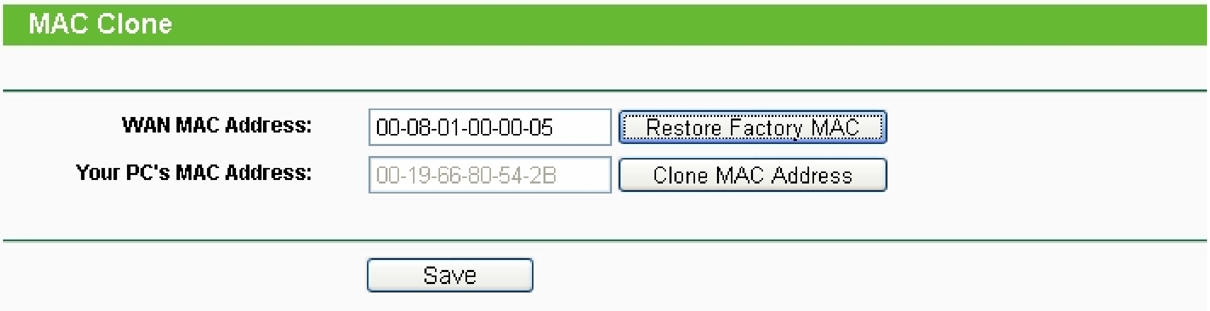
2) If you are a Cable user, please configure the router following the above steps.

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

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

2) Some ISPs require that you register the MAC Address of your adapter, which is connected to your cable/DSL Modem during installation. If your ISP requires MAC register, login to the

router and click the "Network" menu link on the left of your browser, and then click "MAC Clone" submenu link. On the "MAC Clone" page, if your PC's MAC address is proper MAC address, click the "Clone MAC Address" button and your PC's MAC address will fill in the "WAN MAC Address" field. Or else, type the MAC Address into the "WAN MAC Address" field. The format for the MAC Address is XX-XX-XX-XX-XX-XX. Then click the "Save" button. It will take effect after rebooting.



MAC Clone

WAN MAC Address: 00-08-01-00-00-05

Your PC's MAC Address: 00-19-66-80-54-2B

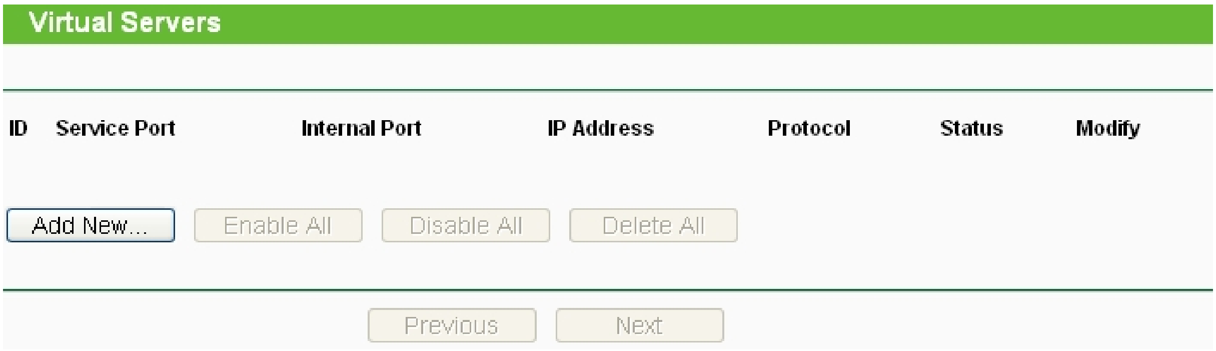
Figure A-3 MAC Clone

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

1) If you start Netmeeting as a sponsor, you don't need to do anything with the router.

2) If you start as a response, you need to configure Virtual Server or DMZ Host.

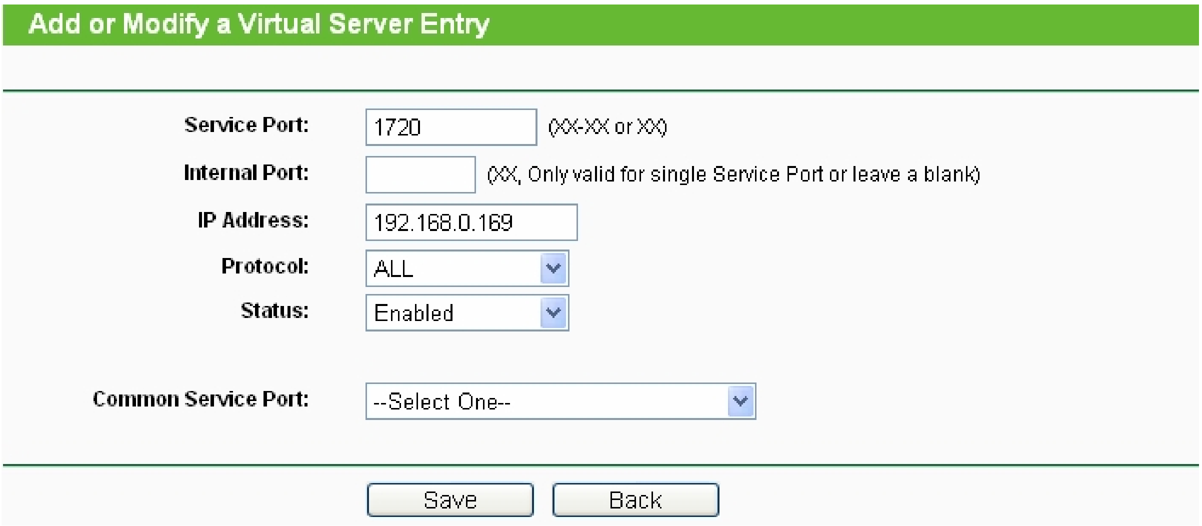
3) How to configure Virtual Server: Login to the router, click the "Forwarding" menu on the left of your browser, and click "Virtual Servers" submenu. On the "Virtual Server" page, click **Add New,** then on the "Add or Modify a Virtual Server" page, enter "1720" into the blank behind the "Service Port", and your IP address behind the IP Address, assuming 192.168.0.169 for an example, remember to "Enable" and "Save".



Virtual Servers

ID	Service Port	Internal Port	IP Address	Protocol	Status	Modify

Figure A-4 Virtual Servers



Add or Modify a Virtual Server Entry

Service Port: 1720 (XX-XX or XX)

Internal Port: (XX, Only valid for single Service Port or leave a blank)

IP Address: 192.168.0.169

Protocol: ALL

Status: Enabled

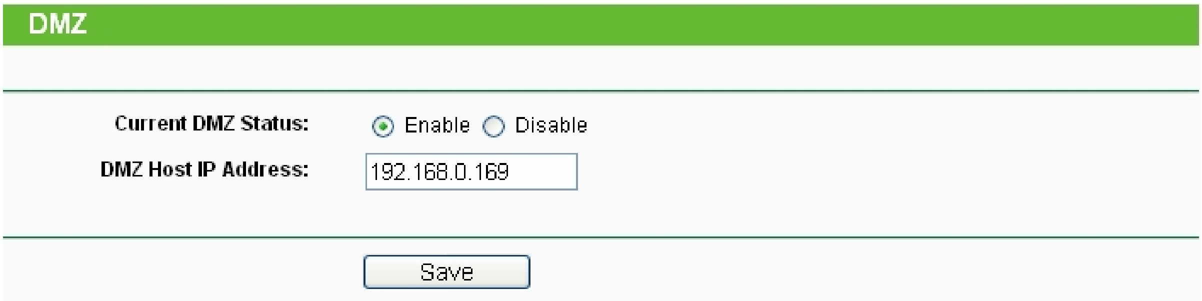
Common Service Port: --Select One--

Figure A-5 Add or Modify a Virtual server Entry

☞ **Note:**

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

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



DMZ

Current DMZ Status: ● Enable ○ Disable

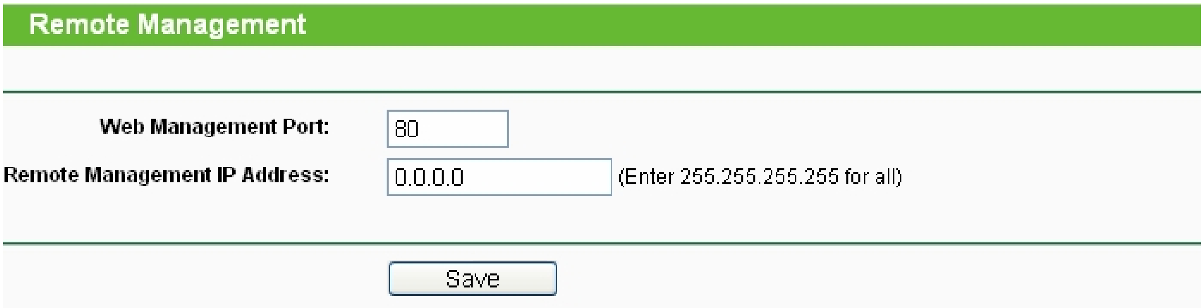
DMZ Host IP Address: 192.168.0.169

Figure A-6 DMZ

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

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

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



Remote Management

Web Management Port: 80

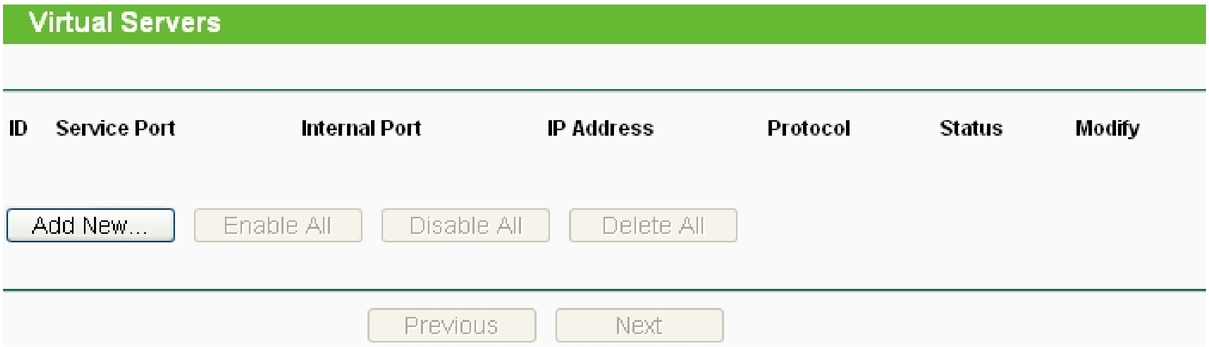
Remote Management IP Address: 0.0.0.0 (Enter 255.255.255.255 for all)

Figure A-7 Remote Management

☞ **Note:**

If the above configuration takes effect, to configure to the router by typing http://192.168.0.254:88/ (the router’s LAN IP address: Web Management Port) in the address field of the Web browser.

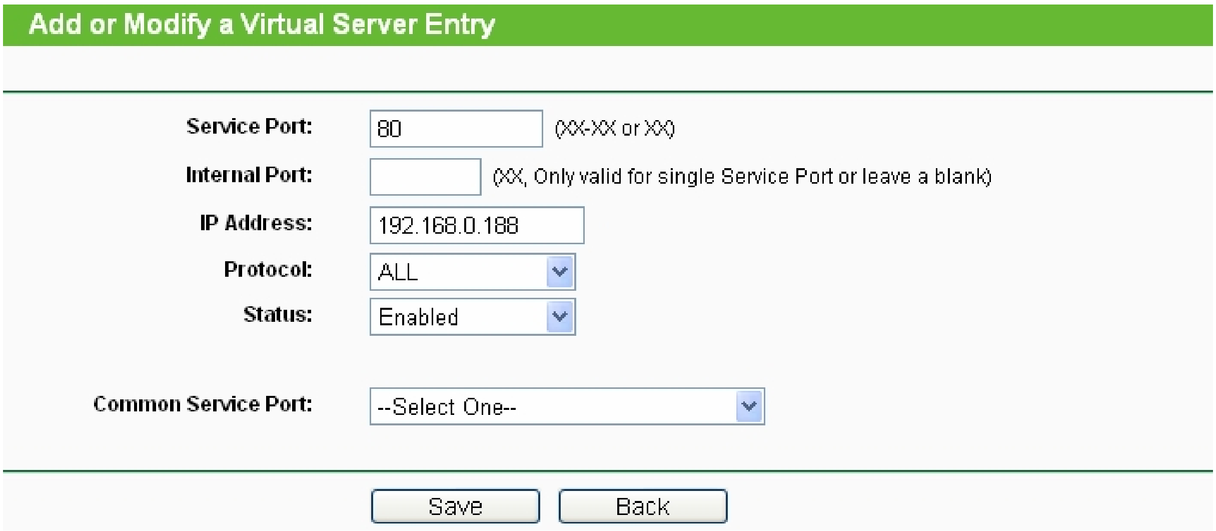
3) Login to the router, click the “Forwarding” menu on the left of your browser, and click the "Virtual Servers" submenu. On the "Virtual Server" page, click **Add New,** then on the “Add or Modify a Virtual Server” page, enter “80” into the blank behind the “Service Port”, and your IP address behind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



Virtual Servers

ID	Service Port	Internal Port	IP Address	Protocol	Status	Modify

Figure A-8 Virtual Servers



Add or Modify a Virtual Server Entry

Service Port:	80 (XX-XX or XX)
Internal Port:	(XX, Only valid for single Service Port or leave a blank)
IP Address:	192.168.0.188
Protocol:	ALL
Status:	Enabled
Common Service Port:	--Select One--

A-9 Add or Modify a Virtual server Entry

5. The wireless stations cannot connect to the router.

1) Make sure the "AP Router Radio" is enabled.

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

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

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

Appendix B: Configuring the PC

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

1. Configure TCP/IP component

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

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

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

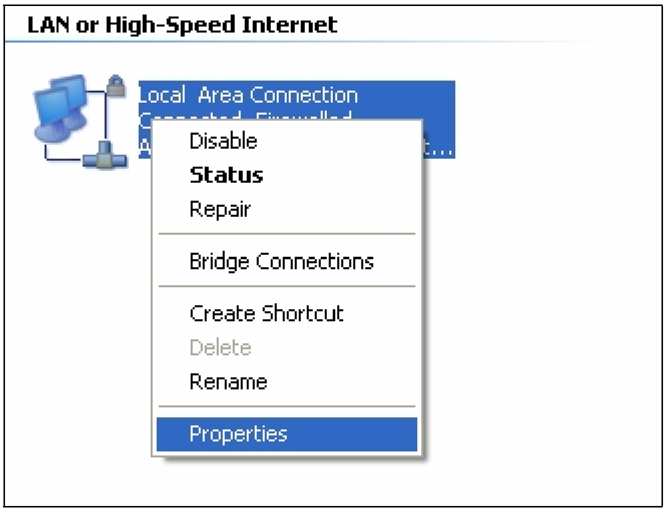
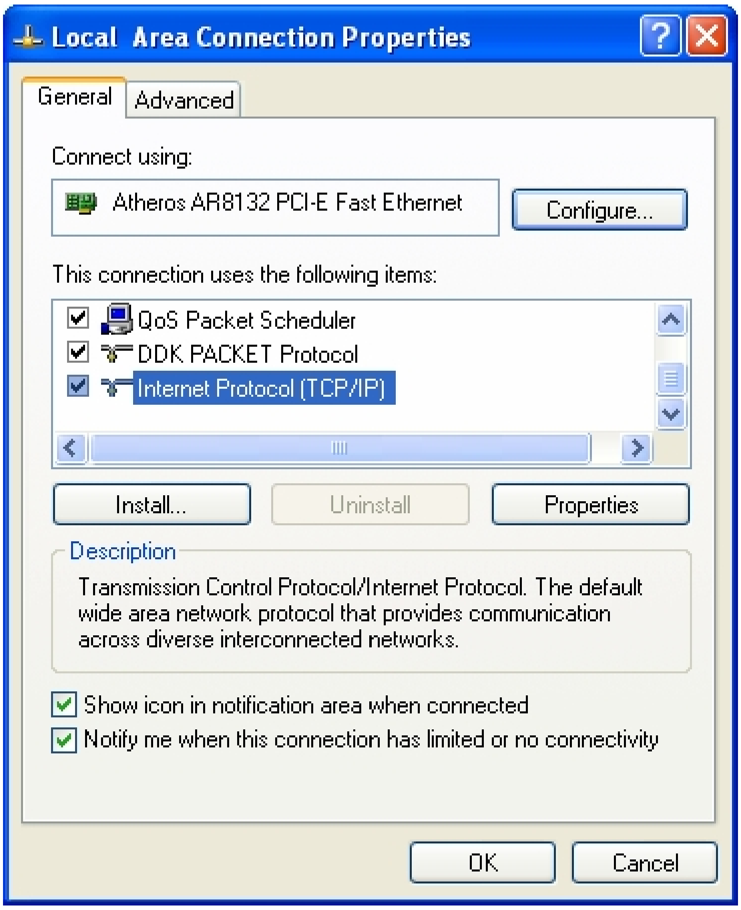


Figure B-1

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



Connect using:

Atheros AR8132 PCI-E Fast Ethernet

This connection uses the following items:

- ☑ QoS Packet Scheduler
- ☑ DDK PACKET Protocol
- ☑ Internet Protocol (TCP/IP)

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

☑ Show icon in notification area when connected

☑ Notify me when this connection has limited or no connectivity

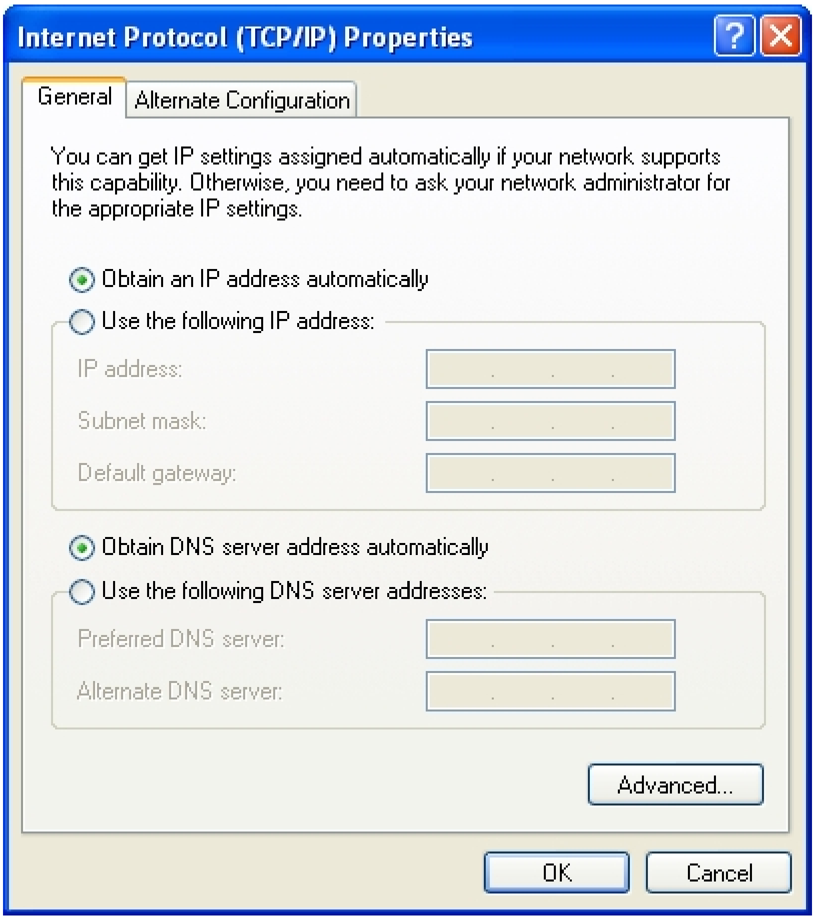
Figure B-2

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

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

➢ **Setting IP address automatically**

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



Internet Protocol (TCP/IP) Properties

General | Alternate Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

● Obtain DNS server address automatically

○ Use the following DNS server addresses:

Preferred DNS server: . . .

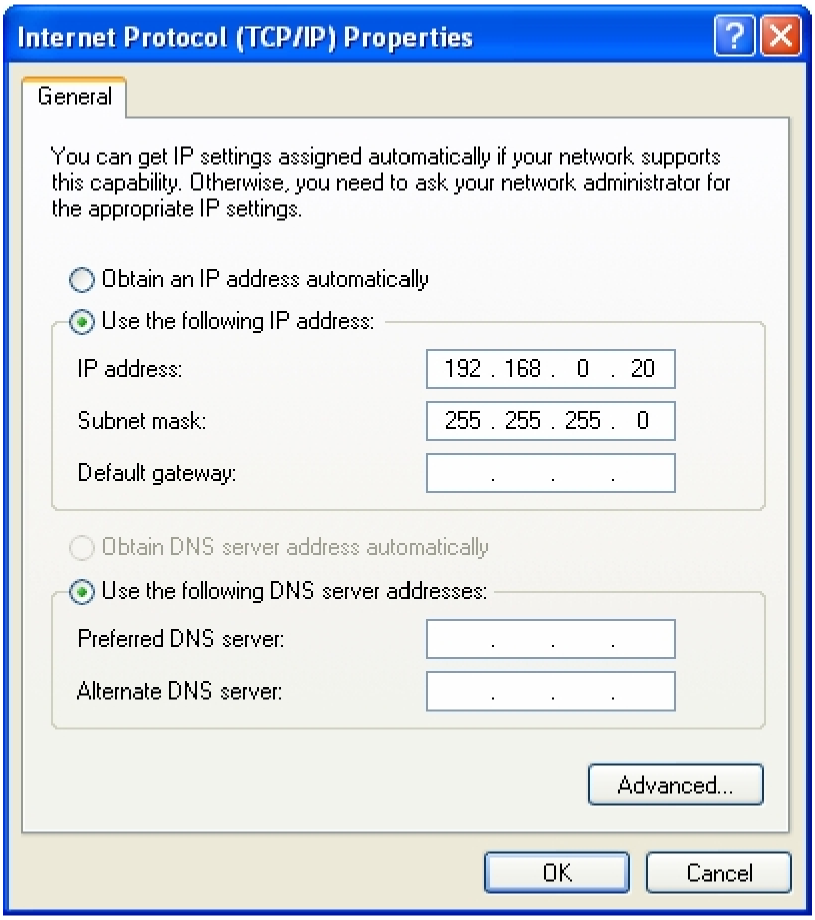
Alternate DNS server: . . .

Figure B-3

☞**Note:** For Windows 98 OS or before, the PC and router may need to be restarted.

➢ **Setting IP address manually**

1. Select **Use the following IP address** radio button. And the following items available
2. If the router's LAN IP address is 192.168.0.254, specify the **IP address** as 192.168.0.x (x is from 2 to 253), and the **Subnet mask** as 255.255.255.0.
3. Type the router’s LAN IP address (the default IP is 192.168.0.254) into the **Default gateway** field.
4. Select **Use the following DNS server addresses**. In the **Preferred DNS Server** field you can enter the same value as the **Default gateway** or type the local DNS server IP address.



You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 192 . 168 . 0 . 20

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

Figure B-4

Now:

Click **OK** to keep your settings.

Appendix C: Specifications

General	
Standards and Protocols	IEEE 802.3, 802.3u, 802.11b, 802.11g and 802.11n, TCP/IP, DHCP
Safety & Emission	FCC, CE
Ports	One 10/100M Auto-Negotiation LAN RJ45 port, supporting passive PoE
Cabling Type	10BASE-T: UTP category 3, 4, 5 cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m) 100BASE-TX: UTP category 5, 5e cable (maximum 100m) EIA/TIA-568 100Ω STP (maximum 100m)
Wireless	
Wireless Data Rates	up to 150 Mbps
Wireless Encryptions	64/128/152-bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK
Physical and Environment	
Working Temperature	-30℃~70℃
Working Humidity	10% ~ 90% RH, Non-condensing
Storage Temperature	-40℃~70℃(-40℉~158℉)
Storage Humidity	5% ~ 90% RH, Non-condensing

Appendix D: Glossary

- **802.11n -** 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **802.11b -** The 802.11b standard specifies a wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to
  as Wi-Fi networks.
- **802.11g -** specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **DDNS** (**D**ynamic **D**omain **N**ame **S**ystem) **-** The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.
- **DHCP** (**D**ynamic **H**ost **C**onfiguration **P**rotocol) **-** A protocol that automatically configure the
  TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.
- **DMZ** (**Dem**ilitarized **Z**one) **-** A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.
- **DNS** (**D**omain **N**ame **S**ystem) **–** An Internet Service that translates the names of websites into IP addresses.
- **Domain Name -** A descriptive name for an address or group of addresses on the Internet.
- **DoS** (**D**enial **o**f **S**ervice) **-** A hacker attack designed to prevent your computer or network from operating or communicating.
- **DSL** (**D**igital **S**ubscriber **L**ine) **-** A technology that allows data to be sent or received over existing traditional phone lines.
- **ISP** (**I**nternet **S**ervice **P**rovider) **-** A company that provides access to the Internet.
- **MTU** (**Maximum Transmission Unit**) **-** The size in bytes of the largest packet that can be transmitted.
- **NAT** (**N**etwork **A**ddress **T**ranslation) **-** NAT technology translates IP addresses of a local area network to a different IP address for the Internet.
- **PPPoE** (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) **-** PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
- **SSID -** A **S**ervice **S**et **Id**entification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.
- **WEP** (**W**ired **E**quivalent **P**rivacy) **-** A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.

- **Wi-Fi -** is a trademark of the Wi-Fi Alliance, founded in 1999 as Wireless Internet Compatibility

Alliance (WICA), comprising more than 300 companies, whose products are certified by the Wi-Fi Alliance, based on the IEEE 802.11 standards (also called Wireless LAN (WLAN) and Wi-Fi). This certification warrants interoperability between different wireless devices.

- **WISP - Wireless Internet Service Providers** (**WISPs**) are Internet service providers with networks built around wireless networking. The technology used ranges from commonplace Wi-Fi mesh networking or proprietary equipment designed to operate over open 900MHz,
  2.4GHz, 4.9, 5.2, 5.4, and 5.8GHz bands or licensed frequencies in the UHF or MMDS bands.
- **WLAN** (**W**ireless **L**ocal **A**rea **N**etwork) **-** A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.