User Guide

www.tendacn.com

Wireless AC1750 Dual-band Gigabit Router

Copyright Statement

TABLE OF CONTENTS

CHAPTER 1 PRODUCT OVERVIEW

1.1 What it does

Thanks for purchasing this Tenda W1800R Wireless AC1750 Dual-band Gigabit Router! The Tenda W1800R is a 5th generation dual-band Wi-Fi router that delivers wireless speeds up to 1750Mbps, currently the fastest available. Compatible with next generation WiFi devices and backward compatible with 802.11 a/b/g and n devices, it enables HD streaming throughout your home. The W1800R with simultaneous dual band WiFi technology offers speeds up to 450+1300Mbps and avoids interference, ensuring top WiFi speeds and reliable connections. This makes it ideal for larger homes with multiple devices. In addition, four Gigabit Ethernet ports offer ultra-fast wired connections. Wirelessly access and share USB hard drive and USB printer using the two USB 2.0 ports. Plus, the DLNA media server feature enables sharing of digital media such as music, photos and videos between consumer devices such as computers, TVs, printers, cameras, cell phones, and other multimedia devices.

1.2 Features

- 2.4GHz: IEEE802.11n, IEEE802.11g, IEEE 802.11b;
- 5GHz: IEEE 802.11n, IEEE 802.11a, IEEE 802.11ac;
- IEEE802.3, IEEE802.3u;

- Operate in 2.4GHz and 5GHz wireless bands simultaneously;
- Wireless rate up to1.3Gbps;
- 1 * Gigabit WAN port for Internet connection;
- 3 * Gigabit LAN ports for LAN connection; 1* IPTV port for IPTV service;
- 2* USB ports for storage or wireless printing service sharing;
- Support DLNA media server;
- 3* high gain external antennas;
- WDS support for extending existing wireless coverage;
- Supports WEP, WPA-PSK, WPA2-PSK and Mixed WPA/WPA2-PSK encryption methods to secure your wireless network;
- Hidden/invisible SSID;
  MAC-based wireless access control;
- WPS one-touch encryption;
- Provides Wireless guest network feature;
- WMM streams your video and audio;
- Combines the function of a wireless AP, router, switch and firewall;
- Provides Internet connection types: Dynamic/ static IP,L2TP,PPTP，PPPOE/ PPPOE dual access;
- Built-in firewall supports domain name/MAC address filter
- SNTP to synchronize local time with Internet time servers;

- Bandwidth control;
- Supports UPnP and DDNS features;
- Provides virtual server and DMZ features;
- Provides logs to record device's usage status;

CHAPTER 2 QUICK INTERNET CONNECTION SETUP

2.1 Package Contents

- Unpack the box and verify the following items:
- W1800R Wireless AC1750 Dual-band Gigabit Router;
- Power Adapter
- Quick Install Guide
- Resource CD
- 3* 5dBi omni-directional antennas
- Ethernet Cable
- If any of the above items are incorrect, missing, or damaged, please contact your Tenda reseller for immediate replacement.

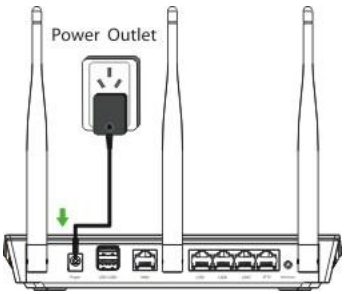
2.2 Minimum System Requirements:

- 200MHz or better CPU
- 64MB or larger memory
- Windows 98/2000/XP/Vista/7
- Installed Network Adapter
- Internet Explorer 6.0 or higher

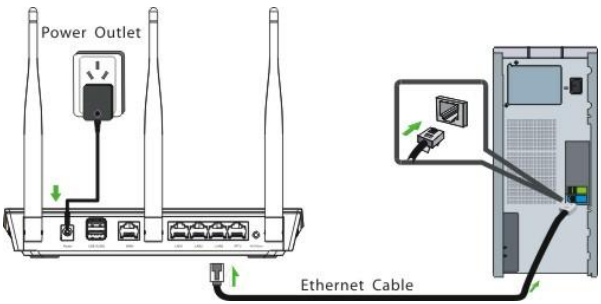
- Netscape Navigator 4.7 or higher
- Broadband Internet Service (through xDSL/Cable Modem/Ethernet)

2.3 Hardware Install

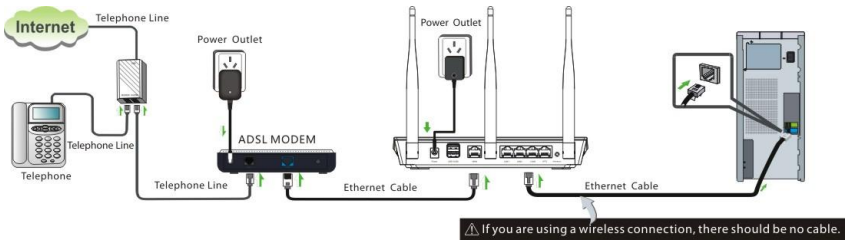
1. Connect one end of the included power adapter to the Device and plug the other end into a wall outlet nearby. (Using a power adapter with a different voltage rating than the one included with the Device will cause damage to the Device.)



2. Connect one of the LAN ports on the Device to the NIC port on your PC using an Ethernet cable.

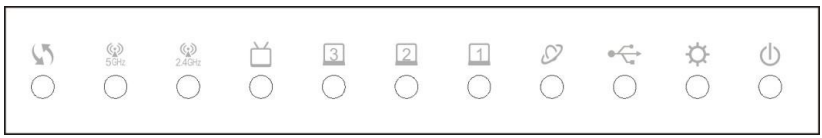


3. Connect the Ethernet cable from your ISP side to device's WAN port.



4. Observe status of LEDs on the device and ensure that they are functioning correctly as stated in the table below.

Front Panel:

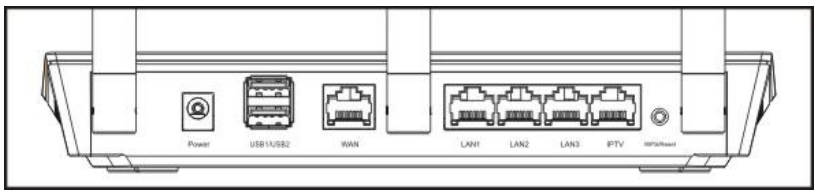


LED Overview:

LED	Icon	Status	Description
Power		Solid	Indicates a proper connection to the power supply
Sys		Blinking	Indicates system is functioning properly
USB		Solid	USB port connected correctly

WAN		Solid	WAN port connected correctly
		Blinking	WAN port is transferring data
LAN（1/2/3）		Solid	LAN port connected correctly
		Blinking	LAN port is transferring data
IPTV		Solid	IPTV port connected correctly
		Blinking	IPTV port is transferring data
2.4G	2.4GHz	Solid	2.4G wireless radio is on
		Blinking	Data being transferred over 2.4G wireless network
5G	5GHz	Solid	5G wireless radio is on
		Blinking	Data being transferred over 5G wireless network
WPS		Blinking	Device is performing WPS authentication on a client device.
		Off	WPS function is disabled or WPS authentication negotiation is completed

Back Panel:



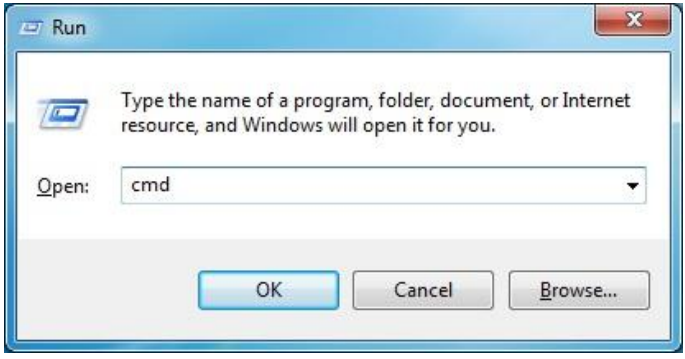
1) USB: USB port for connection to a USB device such as a USB printer or storage device;
2) WAN: Internet port （RJ-45）for connection to an Internet-enabled xDSL Modem/Cable Modem or existing Ethernet;
3) LAN/1/2/3: 3 LAN ports（RJ-45）for connection to PC's NIC or uplink to a hub, switch or wireless AP;
4) IPTV：IPTV port for connection to a network set-top box. However such port can function as a LAN port if IPTV STB port is not enabled;
5) WPS/Reset: WPS/Reset button; the WPS LED will display a blinking light if you enabled the WPS function from device web utility. Pressing this button for about 7 seconds restores the Device to factory defaults.

2.4 Web Utility Login

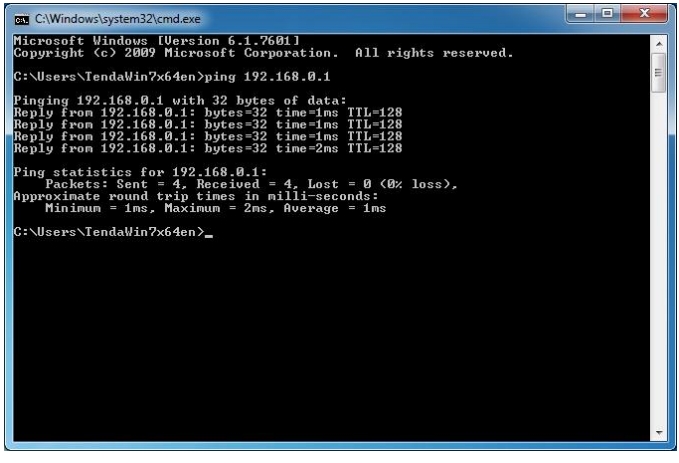
The device's default IP is 192.168.0.1. You can change it to accommodate your own needs. Here in this manual, we use the default IP.

Connect you PC to the Device and config your PC's TCP/IP settings following instructions in appendix 1 hereto. And then do as follows to run a Ping command to test connectivity between your PC and the Device.

- Click "Start"-> "Run", input "cmd" and press "Enter".



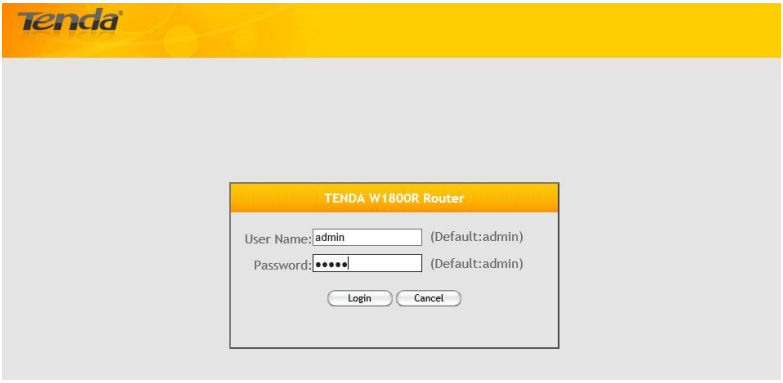
- Enter “ping 192.168.0.1” and press “Enter”. If you see the following screen, it means the router is reachable on your PC. If you don’t get the following screen, verify router’s power supply, Ethernet cable connections and your PC’s TCP/IP settings.



Login to Web Utility

Launch a web browser, in the address bar,input 192.168.0.1 and press “Enter”.

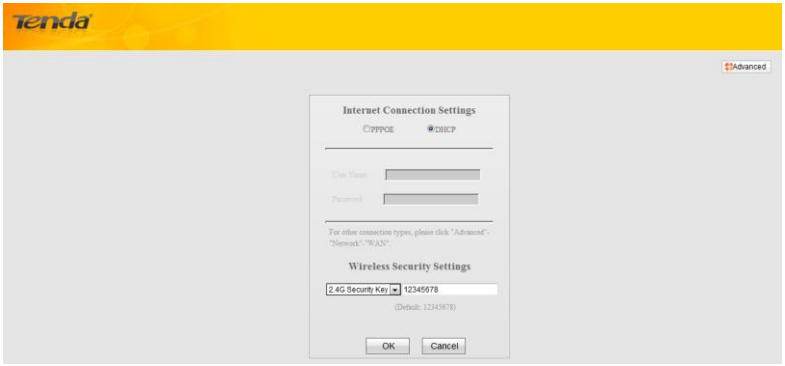
When connected to the Device successfully, you shall see the login window below. Enter user name and password in corresponding fields on window below (Default user name and password are respectively set to admin).



⚠ Note:

For security purpose, please change the default user name and password after you logged in to web utility.

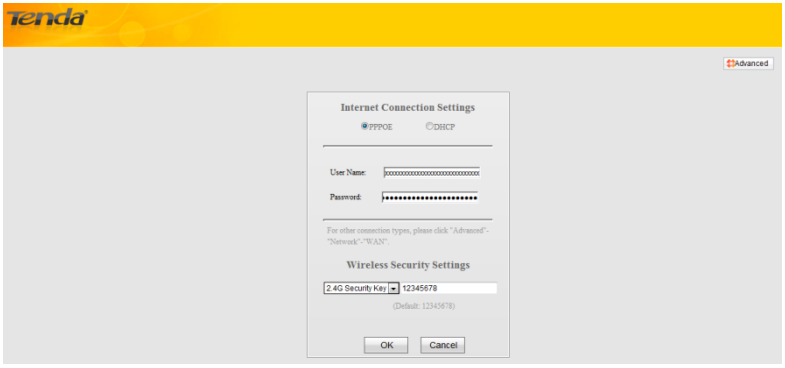
You will see the following interface if you entered a correct user name and a correct password.



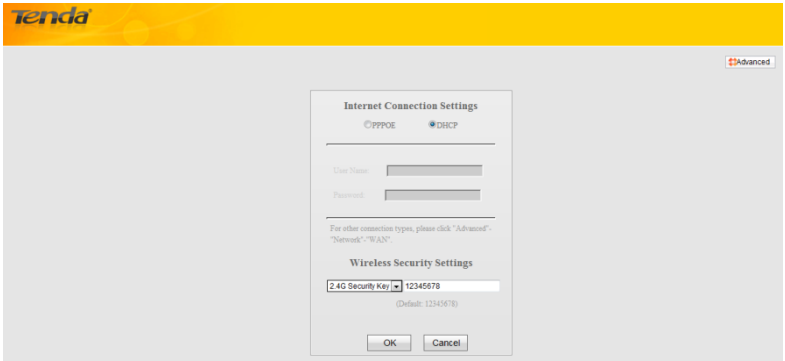
2.5. Internet Connection Setup

There are 2 Internet connection types on home page: PPPoE and DHCP.

If you used to create a broadband connection on your PC that is directly connected to a modem and provide a user name and a password for Internet access, then select PPPoE, enter the user name and password and then click OK.



If you used to access Internet simply by connecting your PC directly to the modem with no need to configure any settings on your PC. Then select DHCP, enter a security key and then click OK.



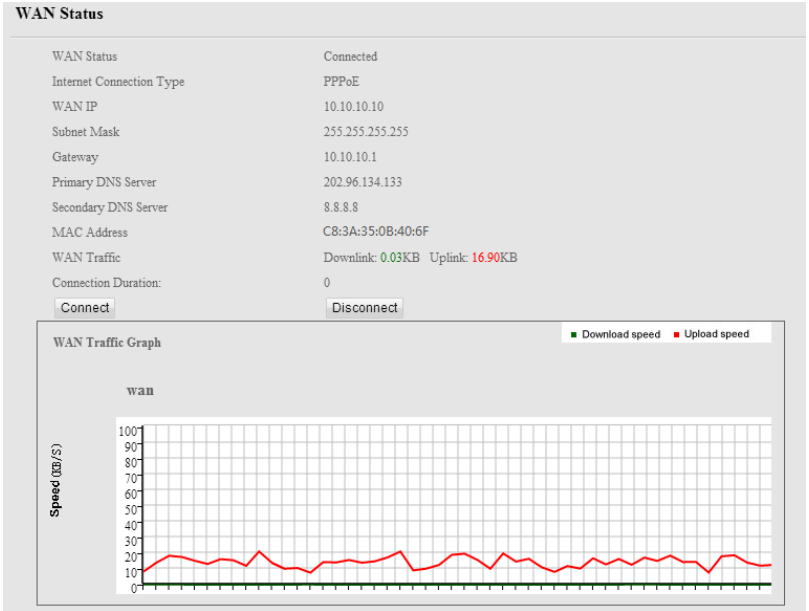
⚠Note:

DHCP is the default Internet connection type. If you need other connection types, please go to Chapter 4> WAN settings.

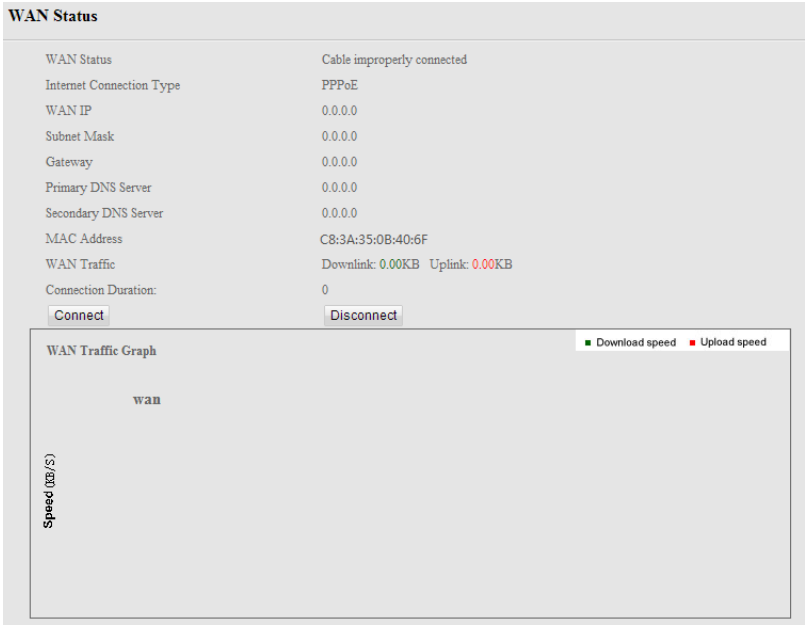
2.6 Verify Internet Connection Settings

After finishing settings on home page, click the Advanced button from right top corner there and then click Running Status-> WAN Status to check the Internet connection status.

A. If you find "Connected" and a WAN IP address displayed there (as shown below), you can now connect to the device using an Ethernet cable to access Internet.

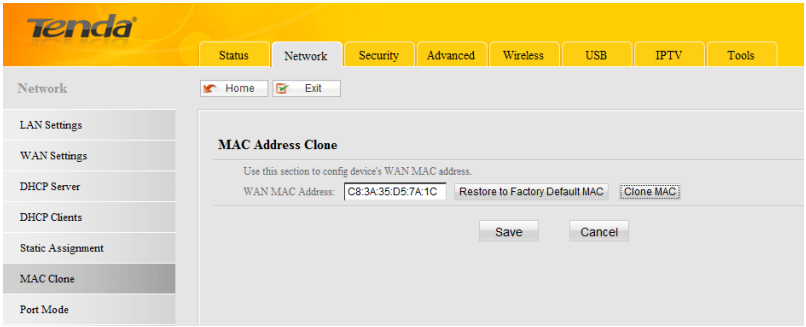


B. If "Disconnected" (or "Not connected") and no WAN IP address are displayed (as seen below), connection between the Internet-enabled modem (or broadband service) and your device may have failed. Please double check or re-connect all involved devices and cables properly and then refresh the page. If nothing is wrong, "Connecting" or "Connected" will be displayed.

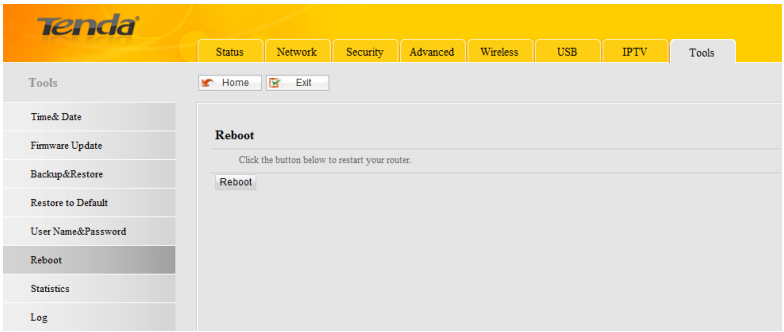


C. If "Connecting" is displayed and no WAN IP address is seen, try refreshing the page five times. And if it still displays "Connecting" try the following steps:

a. Click the Network menu and then click "MAC Clone". On the MAC Clone interface, click on the "Clone MAC" button, and then click "Save". Settings will take effect after device reboot.



b. Go back to the Status screen, refresh it a few times. If you find "Connected" and a WAN IP address displayed there, you can now connect to the device using an Ethernet cable to access Internet. If you still see "Connecting" there, please click Tools-> Reboot to reboot the device.



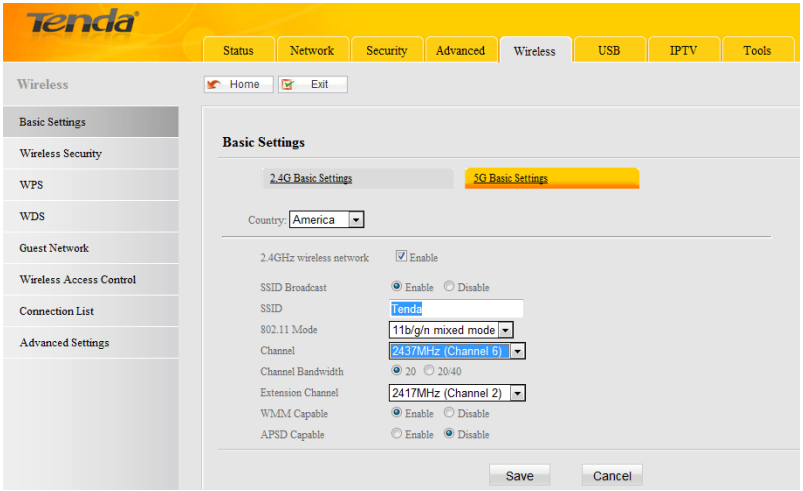
c. After device reboot, go back to the Status screen, refresh it a few times. If you find "Connected" and a WAN IP address displayed there, you can now connect to the device using an Ethernet cable to access Internet. If you still see "Connecting" after trying above solutions, verify that your PC is able to access

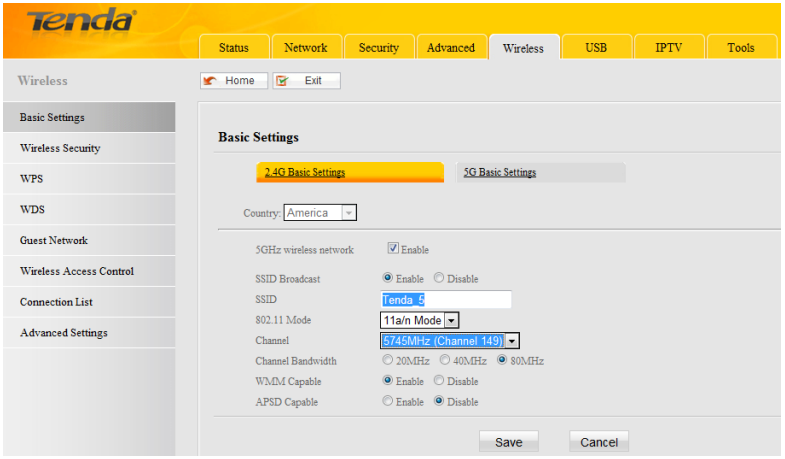
Internet when it is directly connected to the modem and contact our technical staff for help.

2.7 Wireless Settings

2.7.1 Wireless-Basic Settings

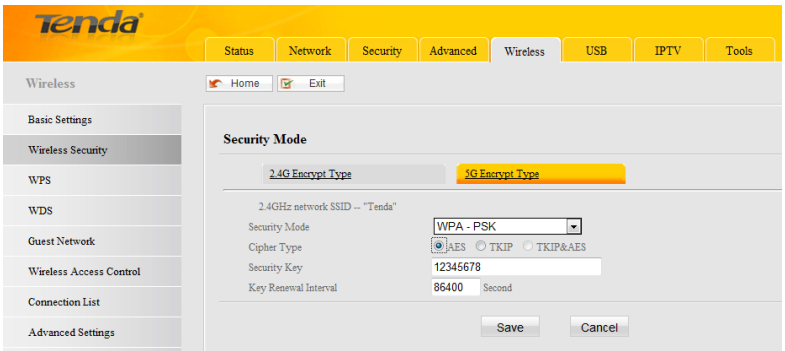
If you want to create a WLAN, simply click Wireless-> Basic Settings. Please change the SSID （Wireless Network name）, you can name it whatever you like. Leave other options unchanged unless necessary and then click OK. You can also change the SSID and channel settings for the 5G wireless network if you like.

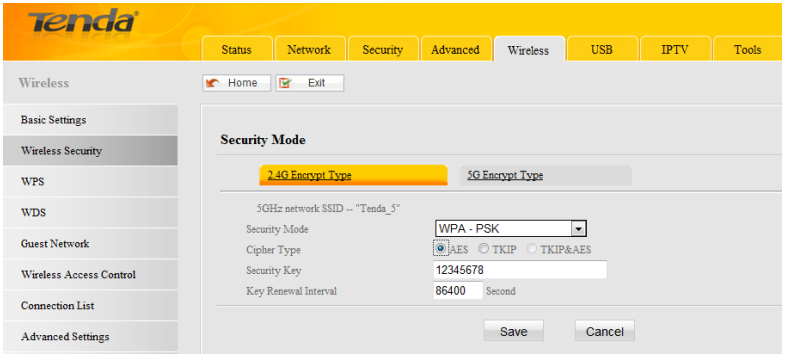




2.7.2 Wireless-Security Settings

If you want to encrypt your wireless network, click Wireless-Wireless Security, select a band: 2.4G or 5G, and then configure proper security settings. For example: Security Mode: WPA-PSK; Cipher Type: AES; Security Key: enter down to 8 characters. And then click Save.

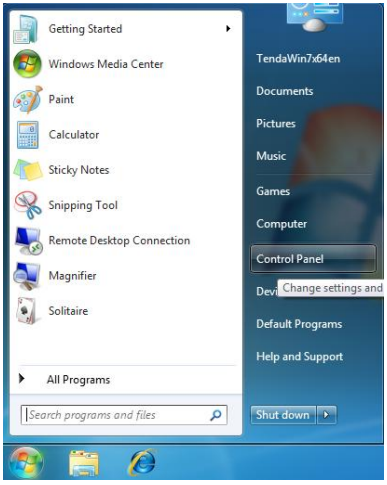




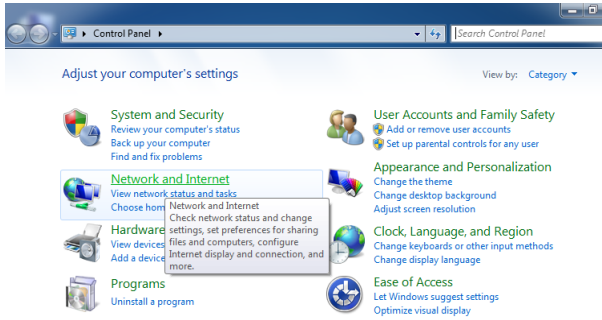
2.8 Connect to Device Wirelessly

Having finished above settings, you can search the device's wireless network (SSID) from your wireless devices (notebook, iPad, iPhone, etc) and enter a security key to connect to it wirelessly. If you are using Windows 7 OS, do as follows:

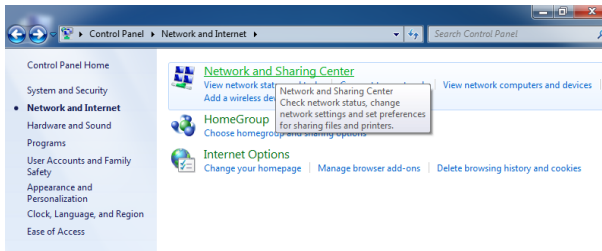
A. Click Start and select Control Panel.



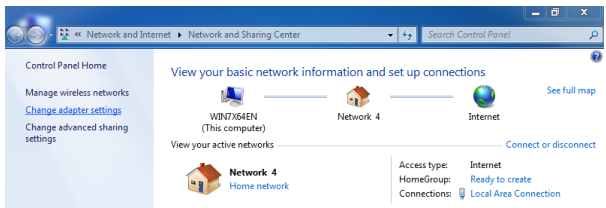
B. Click Network and Internet.



C. Click Network and Sharing Center.

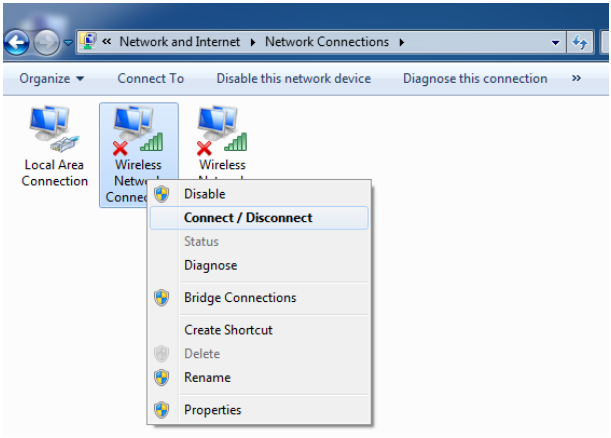


D. Click Change adapter settings.

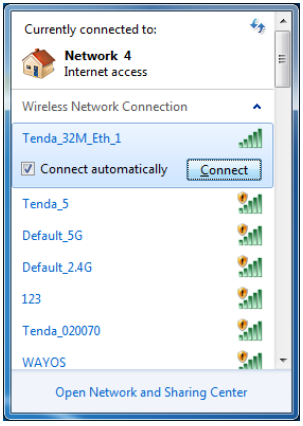


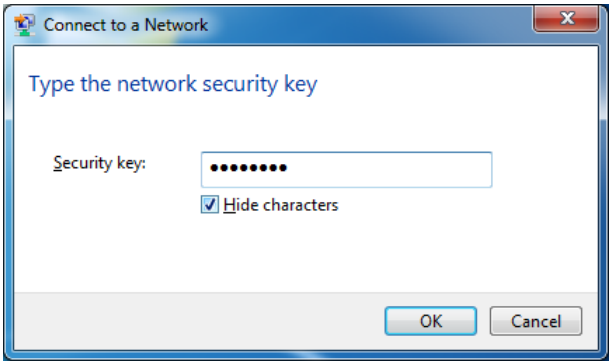
E. Select a desired wireless connection and click

Connect/Disconnect.

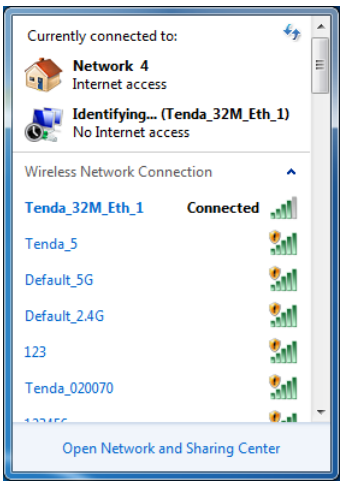


F. Select the desired wireless network, click Connect, enter the security key and then click OK.



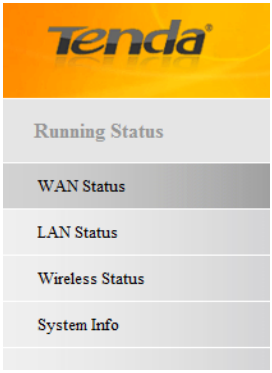


G. You can access Internet via the device when "Connected" appears next to the wireless network name you selected.



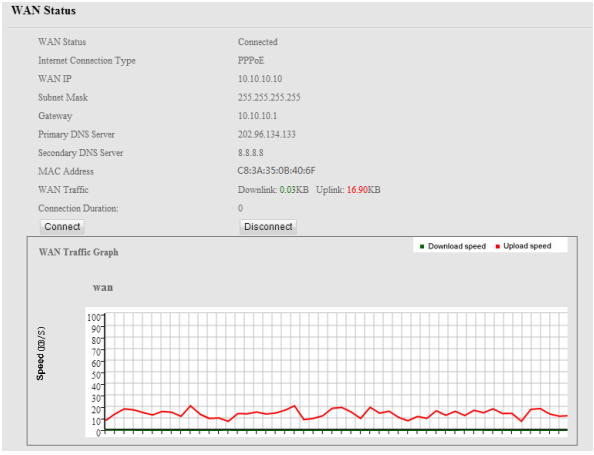
CHAPTER 3 RUNNING STATUS

There are 4 subdues under the Status tab: "WAN Status", "LAN Status", “Wireless Status" and "System Info", which are explained in details below.



3.1 WAN Status

This section allows you to view WAN Status, Internet Connection Type, WAN IP, Subnet Mask, Gateway, Primary DNS Server, Secondary DNS Server, MAC Address, WAN Traffic and Connection Duration. It also presents you a vivid impression of WAN traffic usage in a graph.

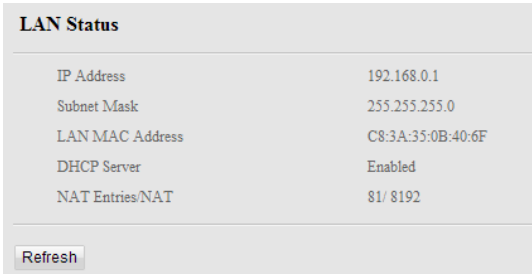


- WAN Status: Displays WAN connection status.
  Cable improperly connected: Indicates that the Ethernet cable from your ISP side is not correctly connected to the WAN port on the Device or the Device is not logically connected to your ISP.
  Connecting: Indicates that the WAN port is correctly connected and is requesting an IP address from your ISP.
  Connected: Indicates that the router has been connected to your ISP.
- Internet Connection Type: Displays current Internet connection type.
- WAN IP: Displays WAN (Internet) IP address provided by your ISP.
- Subnet Mask: Displays WAN subnet mask provided by your ISP.
- Gateway: Displays WAN gateway address provided by your ISP.
- Primary DNS Server: Displays primary WAN DNS address provided by your ISP.
- Secondary DNS Server: Displays secondary WAN DNS address (if any) provided by your ISP.
- MAC Address: Displays WAN MAC address.
- WAN Traffic: Displays current WAN uplink traffic and downlink traffic.

- Connect: Click to renew current IP address.
- Disconnect: Click to release current IP address and Internet connection will be disconnected.

3.2 LAN Status

This section displays information of device LAN IP Address, Subnet Mask, LAN MAC Address, DHCP Server and NAT Entries/NAT.

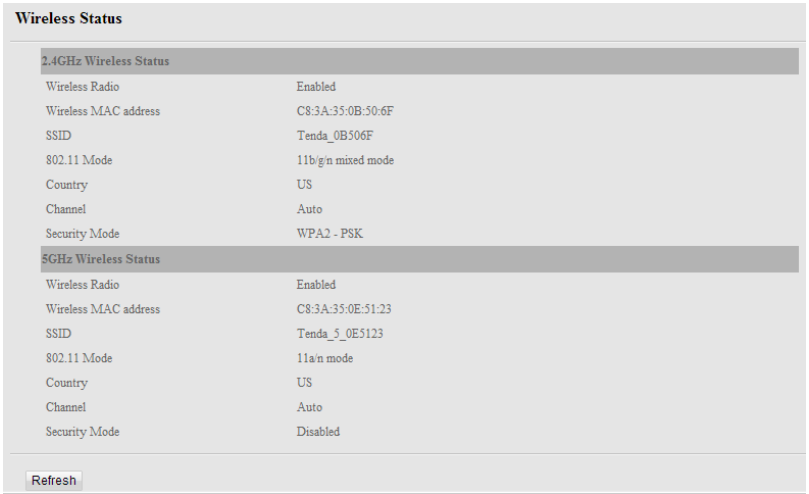


- IP Address：Displays current LAN IP address.
- Subnet Mask: Displays current LAN subnet mask.
- LAN MAC Address: Displays Device's LAN MAC address.
- DHCP Server: Displays whether DHCP server on the device is enabled or not.
- NAT Entries/NAT: Displays the number of NAT entries already used and the number of NAT entries still available.

3.3 Wireless Status

This section displays the status of 2.4G Wireless radio and 5G Wireless radio, Wireless MAC address, SSID, 802.11 Mode,

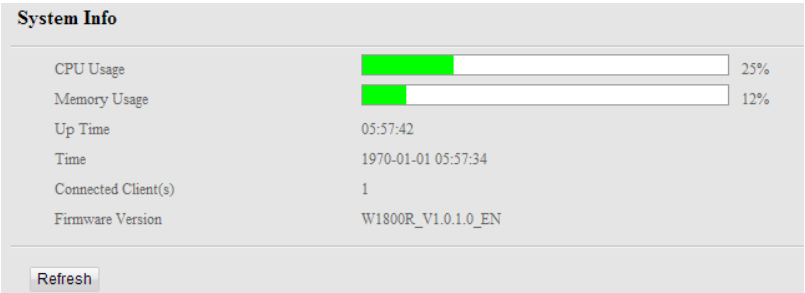
Country, Channel and Security Mode information.



- Wireless Radio: Displays whether wireless is enabled or not.
- Wireless MAC address: Displays the MAC address of the Device's wireless interface.
- SSID: Displays current SSID.
- 802.11 Mode: Displays currently active network mode.
- Country: Displays the country selected currently.
- Channel: Displays the channel that device is currently operating on.
- Security Mode: Displays current security Mode.

3.4 System Info

This section displays current CPU usage, memory usage, up time, system time, connected client(s) and firmware version info.

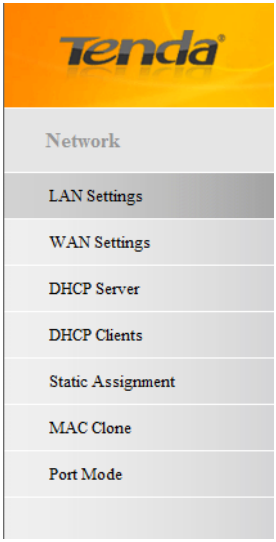


- CPU Usage: Displays current CPU usage.
- Memory Usage: Displays current memory usage.
- Up Time: Displays the uptime since device is powered up.
- Time: Displays Device's current system time.
- Connected Client(s): Displays the number of currently connected clients.
- Firmware Version：Displays Device's current firmware version.

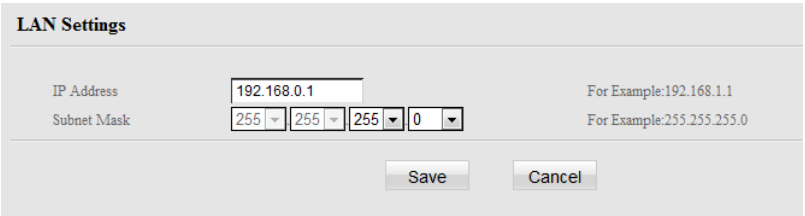
CHAPTER 4 NETWORK

Network includes the following five submenus: LAN Settings, WAN Settings, DHCP Server, DHCP Clients, Static Assignment, MAC Clone and Port Mode. Clicking any of them enters corresponding interface for configuration. Below explains, in

details, each such feature.



4.1.LAN Settings



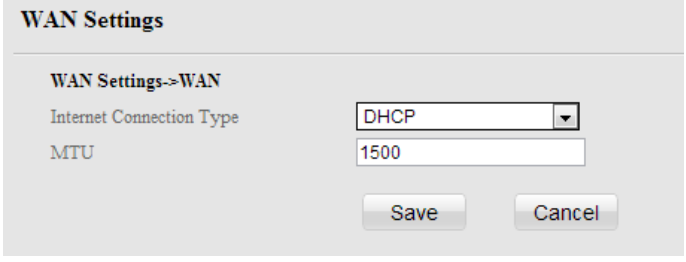
- IP Address: Device's LAN IP. The default is 192.168.0.1. You can change it according to your need.
- Subnet Mask: Device's LAN subnet mask.

4.2.WAN Settings

There are 6 types of Internet connection: DHCP (Dynamic IP), PPPoE and PPPoE dual access, PPTP, L2TP and Static IP available for your choice.

- Interface: Displays the interface used currently;
- Connection Status: Displays WAN current connection status: Disconnected, Connecting or Connected.
- Info: Displays the currently used Internet connection type, gateway, IP address and subnet mask information.

1) DHCP: Select DHCP (Dynamic IP) to obtain IP Address info automatically from your ISP. Select this option if your ISP does not provide you with any IP info.

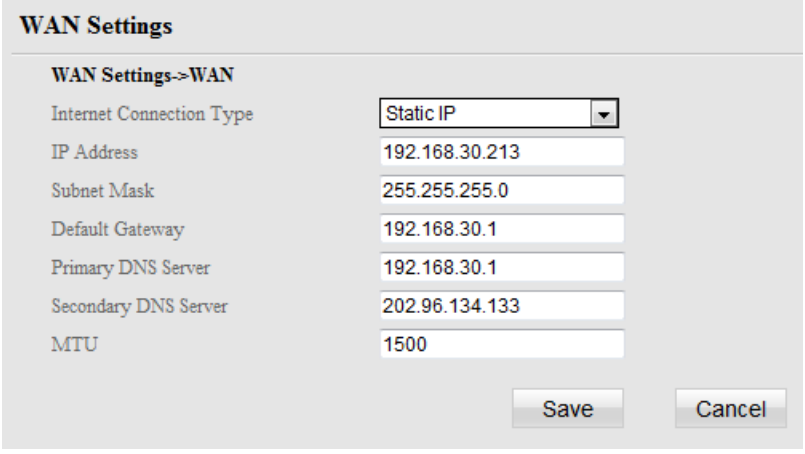


- Internet connection Type: Displays a list of available Internet

connection types.

- MTU: Maximum Transmission Unit. The default value is1500.

2) Static IP: Select Static IP Address if your ISP provides all the connection info. You will need to enter the provided IP address, subnet mask, gateway address, and DNS address(es) in corresponding fields.

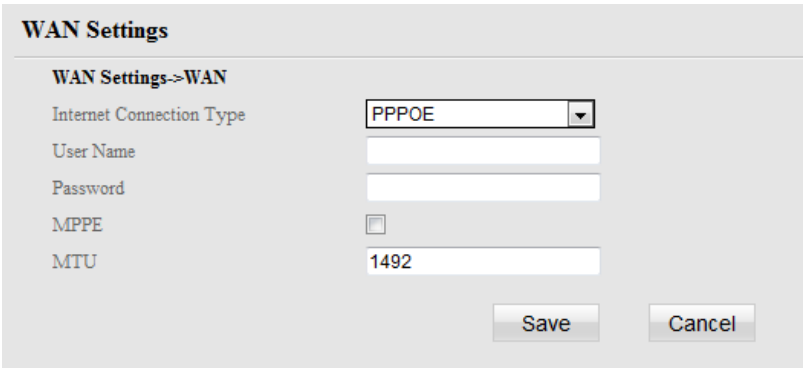


- Internet connection Type: Displays a list of available Internet connection types.
- IP Address: Enter the IP address provided by your ISP. Consult your local ISP if you are not clear.
- Subnet mask: Enter the subnet mask provided by your ISP. Consult your ISP if you are not clear.
- Default Gateway: Enter the gateway address provided by

your ISP. Consult your local ISP if you are not clear.

- Primary/Secondary DNS Server: Enter the Primary and Secondary DNS Server Addresses. Consult your local ISP if you are not clear.
- MTU: Maximum Transmission Unit.The factory default is 1500.

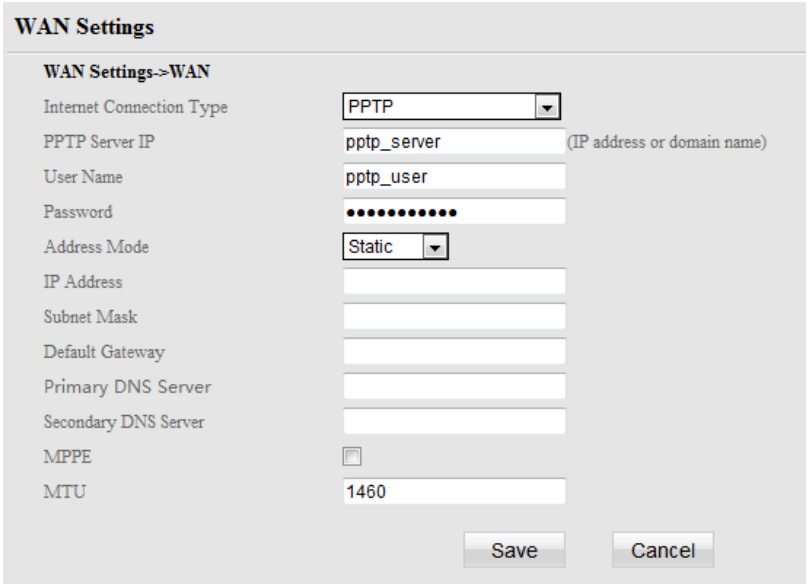
3) PPPoE: Select PPPoE (Point to Point Protocol over Ethernet) if your ISP uses a PPPoE connection and provides you with a PPPoE user name and a PPPoE password. Simply enter them in corresponding fields.



- Internet connection Type: Displays a list of available Internet connection types.
- User Name: Enter the PPPoE User Name provided by your ISP. Consult your ISP if you are not clear.
- Password: Enter the PPPoE Password provided by your ISP. Consult your ISP if you are not clear.

- MPPE: Select whether to enable the MPPE authentication method.
- MTU: Maximum Transmission Unit.The factory default is 1492.

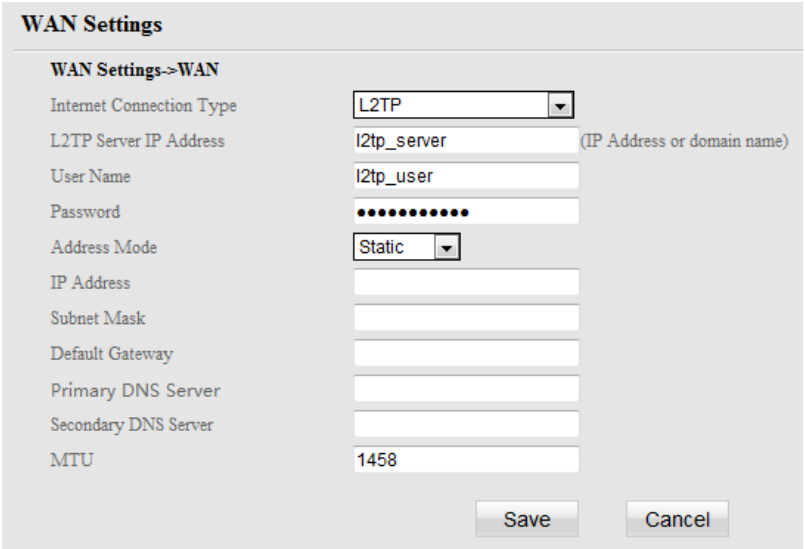
4) PPTP: Select PPTP (Point-to-Point-Tunneling Protocol) if your ISP uses a PPTP connection. The PPTP connects a router to a VPN server. For example：A corporate branch and headquarter can use this connection type to implement mutual and secure access to each other's resources.



- Internet connection Type: Displays a list of available Internet connection types.
- PPTP Server: Enter the IP address of a PPTP server.

- User Name: Enter your PPTP User Name.
- Password: Enter your Password.
- Address mode: Select “Dynamic” if you don’t get any IP info from your ISP, otherwise select “Static”. Consult your ISP if you are not clear.
- IP Address: Enter the IP address provided by your ISP. Consult your local ISP if you are not clear.
- Subnet Mask: Enter the subnet mask provided by your ISP. Consult your ISP if you are not clear.
- Default Gateway: Enter the gateway provided by your ISP. Consult your local ISP if you are not clear.
- Primary/Secondary DNS Server: Enter the Primary and Secondary DNS Server Addresses. Consult your local ISP if you are not clear.
- MPPE: Select whether to enable the MPPE authentication method.
- MTU: Maximum Transmission Unit.The factory default is 1460.

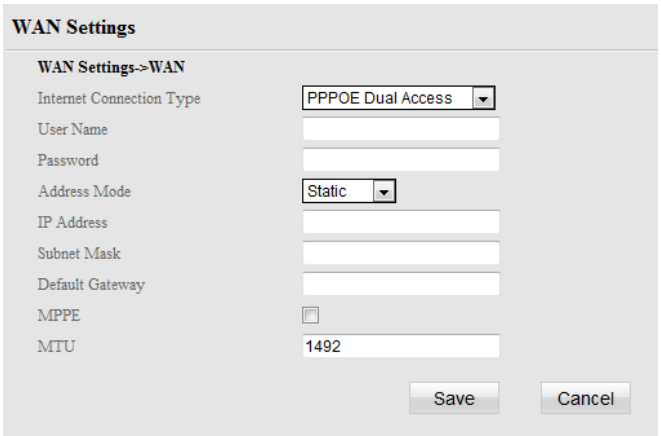
5) L2TP: Select L2TP (Layer 2 Tunneling Protocol) if your ISP uses an L2TP connection. The L2TP connects your router to a L2TP server. For example：A corporate branch and headquarter can use this connection type to implement mutual and secure access to each other’s resources.



- Internet connection Type: Displays a list of available Internet connection types.
- L2TP Server: Enter the L2TP IP address provided by your ISP.
- User Name: Enter your L2TP User Name.
- Password: Enter your Password.
- Address mode: Select “Dynamic” if you don’t get any IP info from your ISP, otherwise select “Static”. Consult your ISP if you are not clear.
- IP Address: Enter the IP address provided by your ISP. Consult your local ISP if you are not clear.
- Default Gateway: Enter the gateway provided by your ISP.

Consult your local ISP if you are not clear.

- Primary/Secondary DNS Server: Enter the Primary and Secondary DNS Server Addresses. Consult your local ISP if you are not clear.
- MTU: Maximum Transmission Unit. The factory default is 1458.
- PPPoE Dual Access: Select PPPoE (Point to Point Protocol over Ethernet) Dual Access if your ISP uses a PPPoE Dual Access connection and provides you with a PPPoE user name and a PPPoE password. Simply enter them in corresponding fields. In the mean time, you can also use static address mode or dynamic address mode for MAN access.



- Internet connection Type: Displays a list of available Internet connection types.

- User Name: Enter the PPPoE User Name provided by your ISP. Consult your ISP if you are not clear.
- Password: Enter the PPPoE Password provided by your ISP. Consult your ISP if you are not clear.
- Address mode: Select “Dynamic” if you don’t get any IP info from your ISP, otherwise select “Static”. Consult your ISP if you are not clear.
- IP Address: Enter the IP address provided by your ISP. Consult your local ISP if you are not clear.
- Subnet mask: Enter the subnet mask provided by your ISP. Consult your ISP if you are not clear.
- Default Gateway: Enter the gateway address provided by your ISP. Consult your local ISP if you are not clear.
- MPPE: Select whether to enable the MPPE authentication method.
- MTU: Maximum Transmission Unit.The factory default is 1492.

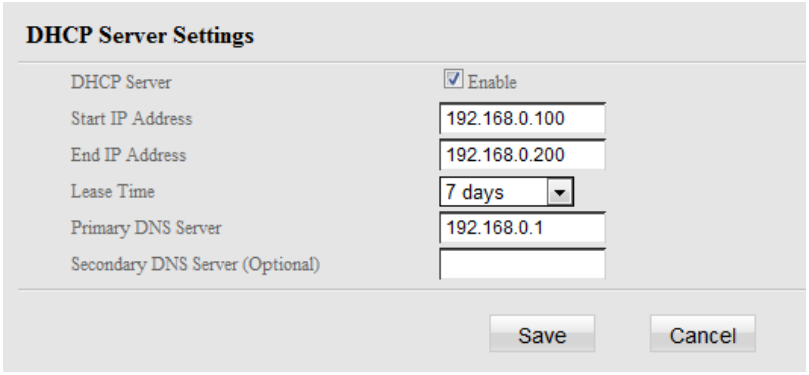
⚠**Note:**

It is not advisable to change the factory default MTU value unless necessary as an improper MTU value may degrade your network performance or even lead to network malfunction.

4.3 DHCP Server

The Dynamic Host Configuration Protocol (DHCP) is an

automatic configuration protocol used on IP networks. If you enable the built-in DHCP server on this device, it will automatically configure TCP/IP protocol settings for all DHCP-Client-enabled PCs in your LAN, including IP address, subnet mask, gateway and DNS etc.



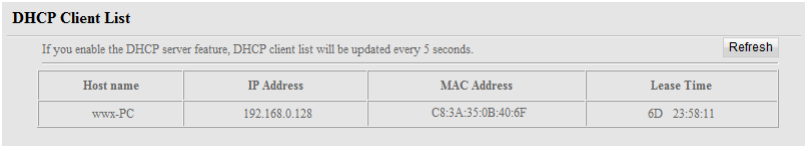
- DHCP Server: Select whether to enable or disable the Device's DHCP server feature.
- Start IP: Enter the starting IP address for the DHCP server's IP assignment.
- End IP: Enter the ending IP address for the DHCP server's IP assignment.
- Lease Time: The length of time for the IP address lease.
- Primary DNS Server: Specify a primary DNS server address that will be assigned to DHCP clients upon request.
- Secondary DNS Server: Specify a secondary DNS server address that will be assigned to DHCP clients upon request.

⚠Note:

To apply the DHCP server settings to all PCs on your LAN, you must set all PCs to "Obtain an IP address automatically" and "Obtain DNS server address automatically" respectively.

4.4 DHCP Clients

This section displays a DHCP dynamic client list, which includes host name, IP address, MAC address and lease time info.

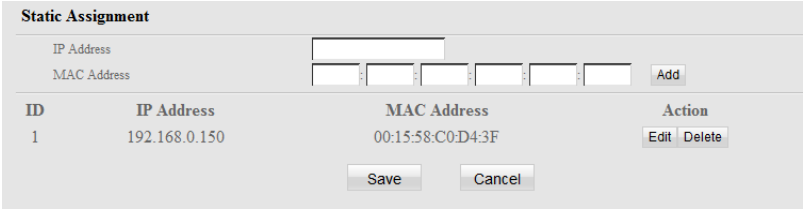


- Host name: Displays clients' host names.
- IP Address: Displays IP address(s) that client(s) obtained from the DHCP server.
- MAC Address: Displays MAC address of a given host.
- Lease Time: Remaining time for a corresponding IP address lease.

4.5 Static Assignment

The DHCP server provides DHCP static IP address reservation feature. If you would like some devices on your network to always have fixed IP addresses, you can use this feature and manually add a static DHCP assignment entry for each such device.

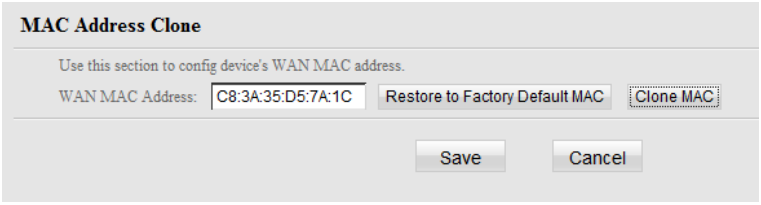
For example: If you want a PC at the MAC address of 00:15:58:C0:D4:3F (on your internal network) to always receive the IP address of 192.168.0.150 from the device's DHCP server. First, enter the IP address and MAC address in corresponding fields as seen below. Second, click Add and Save to save your settings.



- IP Address: Enter the IP address for static DHCP assignment.
- MAC Address: Enter the MAC address of a computer to always receive the same IP address you specify.
- Add: Click it to add a new IP-MAC static assignment entry to list.
- Edit: Click it to change an existing entry.
- Delete: Click to remove an existing entry.

4.6 MAC Clone

This section allows you to configure Device's WAN MAC address.



- WAN MAC Address: Config Device's WAN MAC address.
- Restore to Factory Default MAC: Reset Device's WAN MAC to factory default.
- Clone MAC: Click to copy your PC's MAC address to the WAN MAC Address field on the Device.

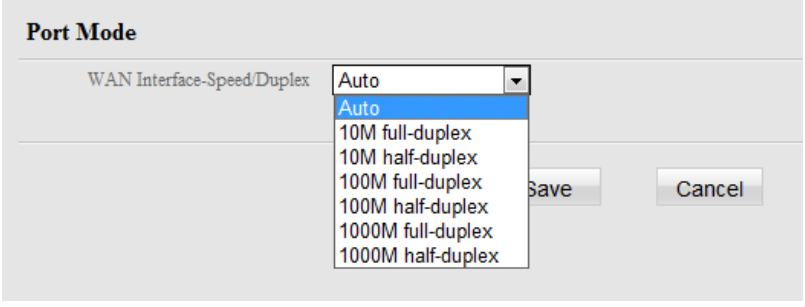
⚠Note:

1. Normally you don't need to change the default WAN MAC value. However, some ISP may bind client PC's MAC address for Internet connection authentication. In this case, simply enter such MAC in the WAN MAC Address field or click the "Clone MAC" button. Note that the WAN MAC address in "Status" interface will be updated accordingly once you changed it.
2. Do remember to reboot the router to activate the new WAN MAC. DO NOT use the "Clone MAC" feature unless required by your ISP.
3. Only the MAC addresses of the PCs on LAN can be cloned to the Device.

4.7 Port Mode

This page lets you set speed and duplex mode for device's WAN

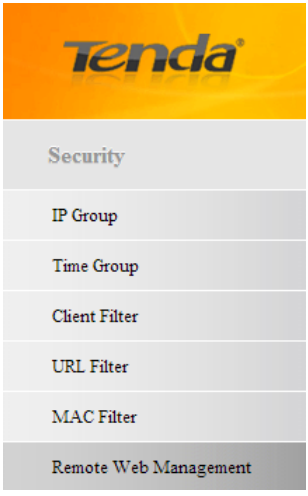
port. It is advisable to keep the default settings.



- Auto: Keep the default of Auto, unless the cable to the WAN port is excessively long, which may deduce drive capability.
- 10M full-duplex: Select to set WAN port to 10M full-duplex to enhance the driving ability.
- 10M half-duplex: Select to set WAN port to 10M half-duplex. If your WAN port is properly connected but does not function correctly, it may be caused by poor driving capacity of the cable. Please set the WAN port to 10M half-duplex to improve drive capability.
- 100M full-duplex: Select to set WAN port to 100M full-duplex.
- 100M half-duplex: Select to set WAN port to 100M half-duplex.
- 1000M full-duplex: Select to set WAN port to 1000M full-duplex.
- 1000M half-duplex: Select to set WAN port to 1000M half-duplex.

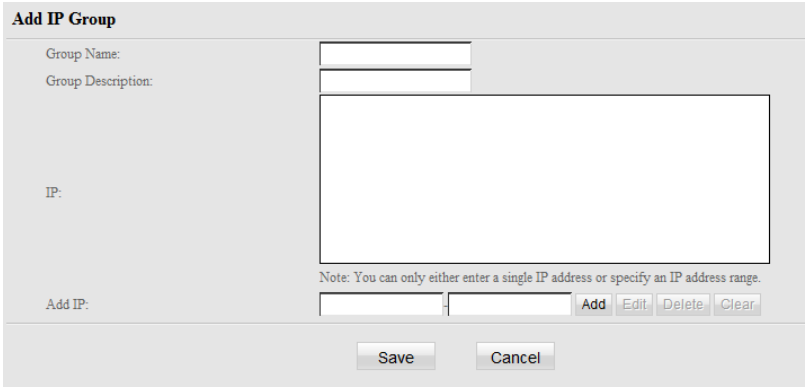
CHAPTER 5 SECURITY

The "Security" tab includes 6 submenus: IP Group, Time Group, Client Filter, URL Filter ,MAC Filter and Remote Web Management. Clicking any of them enters corresponding interface for configuration. Below explains, in details, each such feature.



5.1 IP Group

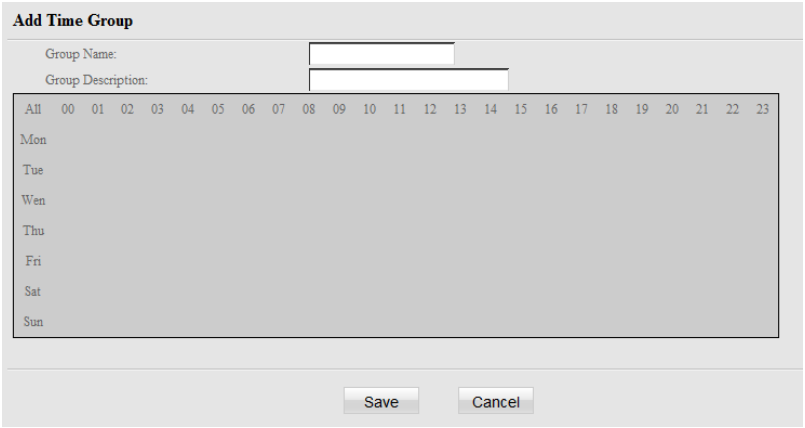
Here you can set up a IP group and define a name for it or briefly describe it. An IP group determines which IP address or IP addresses specific rules of other related features are to be enabled on.



- Group Name: Define a name for a corresponding group.
- Group Description: Briefly describe a corresponding group.
- IP: Displays the added IP address or an IP range;
- Add IP: Enter an identical IP address or two different IP addresses in both fields and then click Add to add a single IP address or a range of IP addresses.
- Edit: Click to edit an existing IP address or IP range.
- Delete: Click to delete an existing IP address or IP range.
- Clear: Click to clear all info on the page.

5.2 Time Group

Here you can set up a time group and define a name for it or briefly describe it. A time group determines when specific rules of other related features are to take effect.

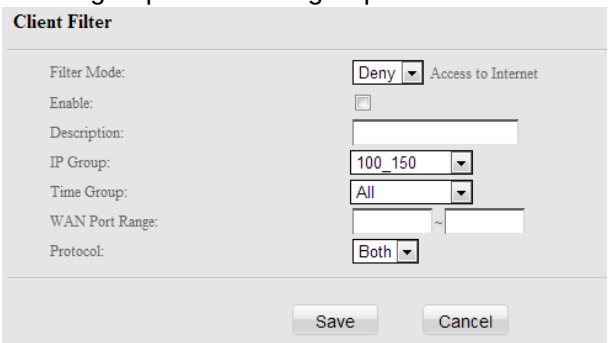


- Group Name: Define a name for a corresponding group.
- Group Description: Briefly describe a corresponding group.

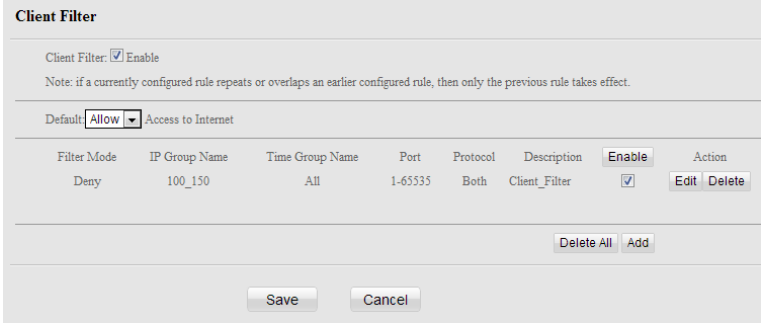
To select a time or time group, simply click corresponding area.

5.3 Client Filter

To better manage PCs in LAN, you can allow or disallow such PCs to access certain ports on Internet using the Client Filter functionality. Before you can set up a client filter rule, you must set an IP group and a time group.



- Filter Mode: Select Deny or Allow.
- Enable: Check to enable or uncheck to disable a corresponding filter rule （allow/disallow matched packets to pass through router）.
- Description: Briefly describe the current rule.
- IP Group: Select an IP group for the corresponding rule to apply to.
- Time Group: Select a time group for the corresponding rule to apply to.
- WAN Port Range: Enter TCP/UDP protocol port number (s); it can be a range of ports or a single port.
- Protocol: Select a protocol or protocols for the traffic (TCP/UDP/Both).



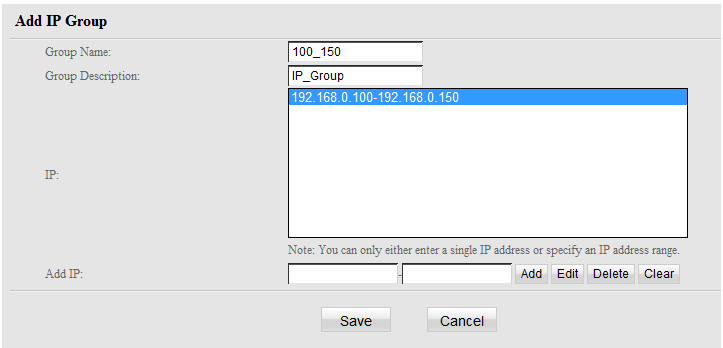
All client filter rules will be summarized in a list.

- Client Filter: Check to enable the feature.
- Default: Default filter mode; select Allow or Deny from the drop-down list. For example, if Deny is selected from the

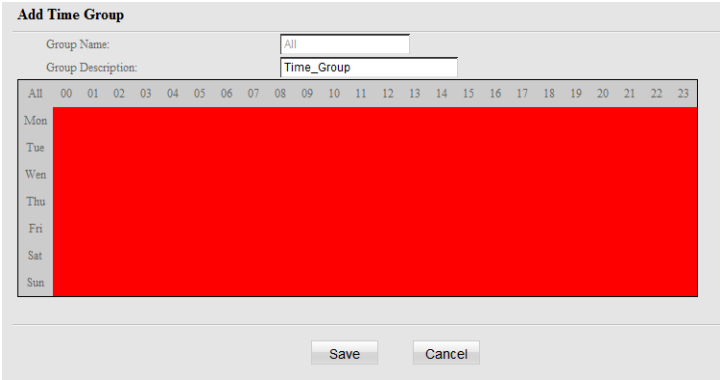
Default drop-down list (i.e. default mode is "Deny Access to Internet"), then all clients will be denied from accessing Internet at any time. And if Deny is selected from the Filter Mode drop-down list, then all clients will be denied from accessing Internet at any time. However, if Allow is selected from the Filter Mode drop-down list, then only clients whose IP addresses are included in the specified IP group will be allowed to access Internet during the time period specified by the time group in the rule.

Example 1: To forbid PCs at the IP addresses between 192.168.0.100 and 192.168.0.150 inclusive from accessing Internet at any time, do as follows:

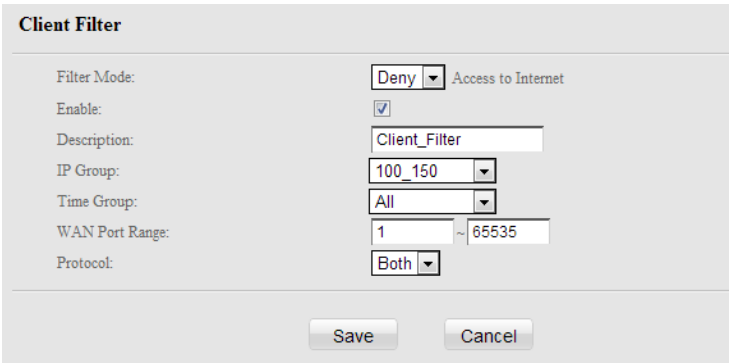
Step 1. Set an IP group: 192.168.0.100-192.168.0.150.



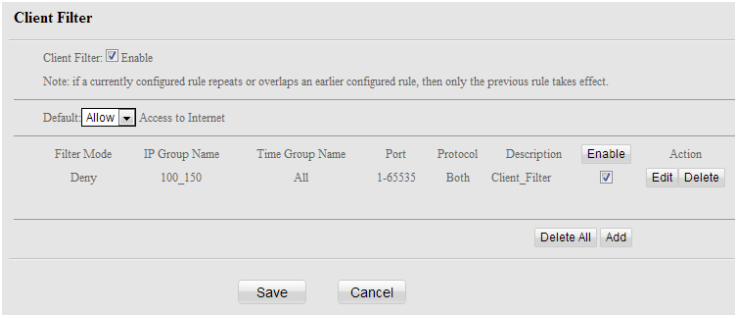
Step 2. Set a time group: select "All".



Step 3. Set a client filter rule as shown below.

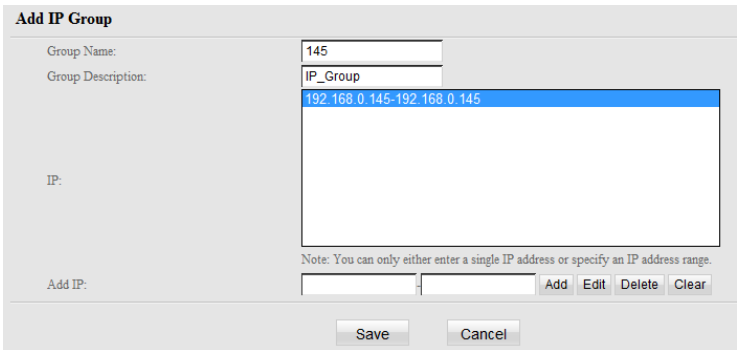


Step 4. Enable the Client Filter feature and select "Allow" from the "Default" drop-down list as shown below.



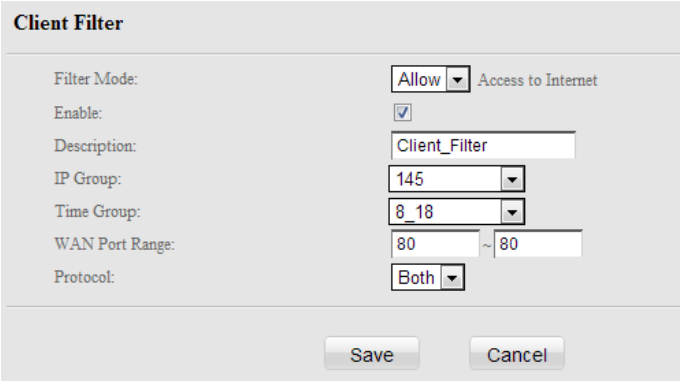
Example 2: To allow only the PC at an IP address of 192.168.0.145 to browse webpages from 8:00 to 18：00, do as follows:

Step 1. Set an IP group: enter 192.168.0.145 in both fields.



Step 2. Set a time group: select "08"-"18" and "Mon"-"Sun".

Step 3. Set a client filter rule as shown below.



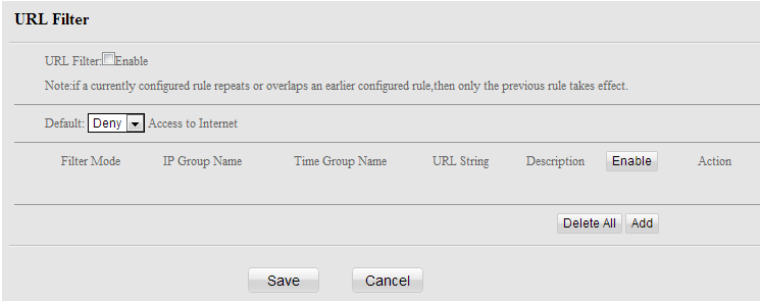
Step 4. Enable the Client Filter feature and select "Deny" from the "Default" drop-down list as shown below.

5.4 URL Filter

To better control LAN PCs, you can use the URL filter functionality to allow or disallow such PC to access certain websites within a specified time range. Before you can set up a URL filter rule, you must set an IP group and a time group.

- Filter Mode: Select Deny or Allow.
- Enable: Check to enable or uncheck to disable a corresponding filter rule （allow/disallow matched packets to pass through router）.
- Description: Briefly describe the current entry/rule.

- IP Group: Select a proper IP group for the corresponding rule to apply to.
- Time Group: Select a proper time group for the corresponding rule to apply to.
- URL String: Enter domain names or a part of a domain name to be filtered out.



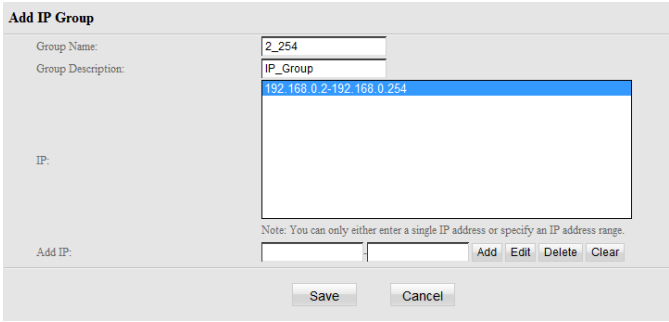
All rules will be summarized in a list.

- URL Filter: Check to enable the feature.
- Default: Default filter mode; select Allow or Deny from the drop-down list. For example, if Deny is selected from the Default drop-down list (i.e. default mode is "Deny Access to Internet"), then all clients will be denied from accessing Internet at any time. And if Deny is selected from the Filter Mode drop-down list, then all clients will be denied from accessing Internet at any time. However, if Allow is selected from the Filter Mode drop-down list, then only clients whose IP addresses are included in the specified IP group will be allowed to access corresponding websites during the time

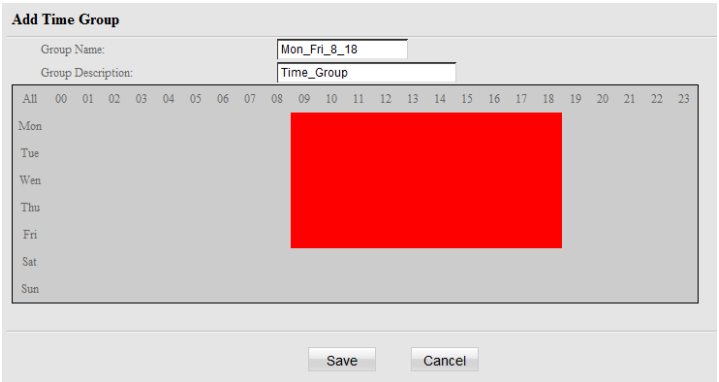
period specified by the time group in the rule.

If you want to disallow all computers on your LAN to access Google and facebook from 8：00 to 18：00 during working days (Monday- Friday), then do as follows:

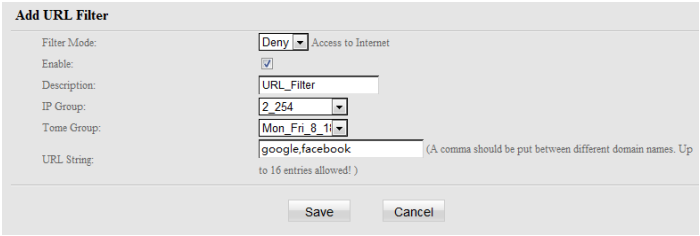
Step 1. Set an IP group: 192.168.0.2-192.168.0.254.



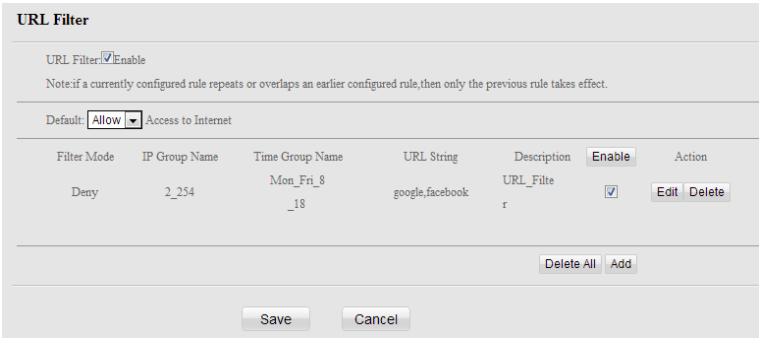
Step 2. Set a time group: select "08"-"18" and "Mon"-"Fri".



Step 3. Set a filter rule as shown below.



Step 4. Enable the URL Filter feature and select "Allow" from the "Default" drop-down list as shown below.

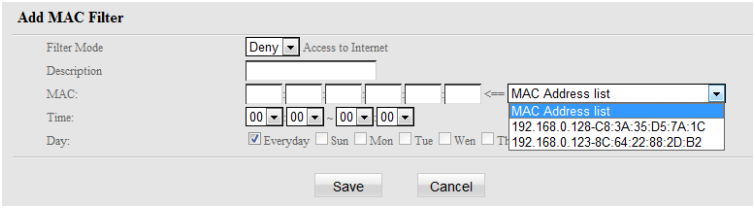


⚠Note:

Each entry can include up to 16 domain names, each of which must be separated by " ".

5.5 MAC Filter

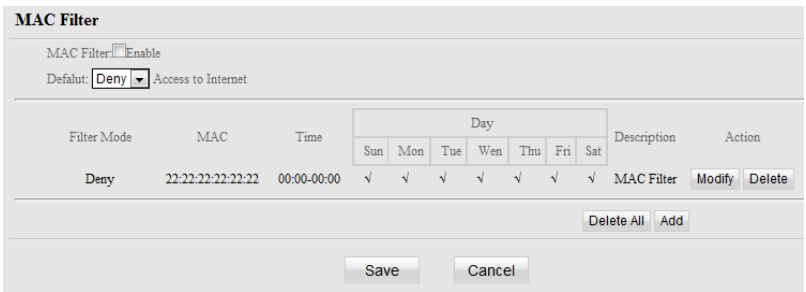
To better manage PCs in LAN, you may use the MAC Address Filter function to allow/disallow such PCs to access to Internet.



- Filter Mode:

  Deny Access to Internet: Disallow only specified packets to access Internet; other packets are not restricted.

  Allow Access to Internet: Allow only specified packets to access Internet; other packets are denied.
- Description: Briefly describe the current rule.
- MAC: Specify the MAC address of the PC for the corresponding rule to take effect. MAC Address list: Displays MAC addresses of all clients connected to the device. Simply select the desired MAC address and add it to the MAC field. Or you can also add it manually.
- Time: Specify a time range for a current rule to take effect.
- Day: Select a day or several days for a current rule to take effect.

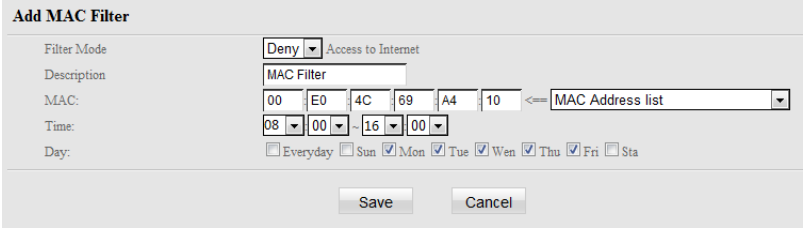


All rules will be summarized in a list.

- MAC Filter: Check to enable the feature.
- Default: Select Allow or Deny from the drop-down list. For example, if Deny is selected from the Default drop-down list (i.e. default mode is "Deny Access to Internet"), then all clients at specified MAC addresses will be denied from accessing Internet at any time. And if Deny is selected from the Filter Mode drop-down list, then all clients at specified MAC addresses will be denied from accessing Internet at any time. However, if Allow is selected from the Filter Mode drop-down list, then only clients at specified MAC addresses will be allowed to access Internet during the time period specified by the time group in the rule.

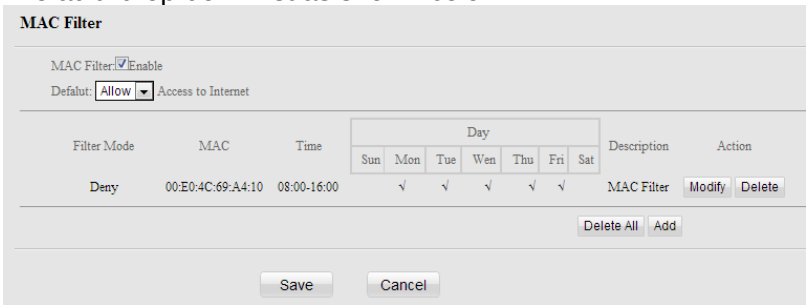
Example1: To prevent a PC at the MAC address of 00:E0:4C:69:A4:10 from accessing Internet between 8:00 and16:00 during working days (Monday -Friday). Do as follows:

Step 1. Set a MAC filter rule as shown below.



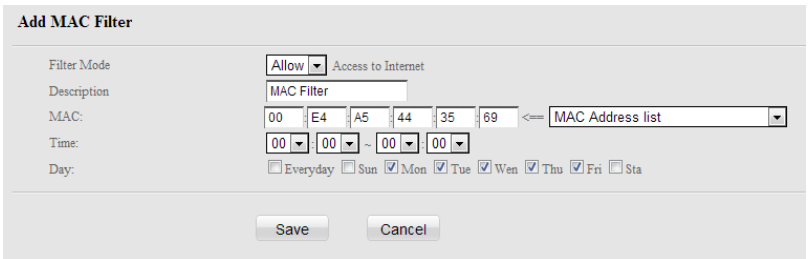
Step 2. Enable the MAC Filter feature and select "Allow" from the

"Default" drop-down list as shown below.

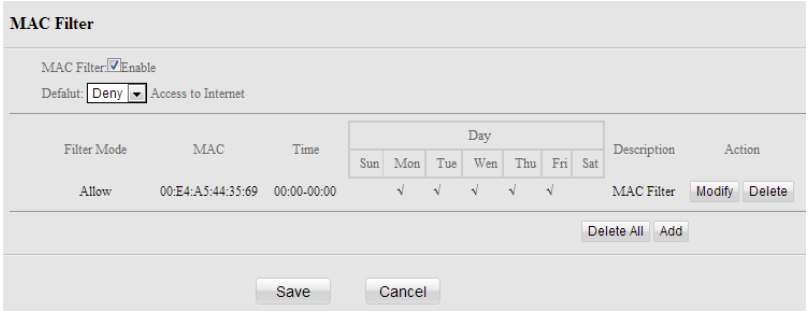


Example2: To allow a PC at the MAC address of 00:E4:A5:44:35:69 to access Internet from Monday to Friday. Do as follows:

Step 1. Set a MAC filter rule as shown below.

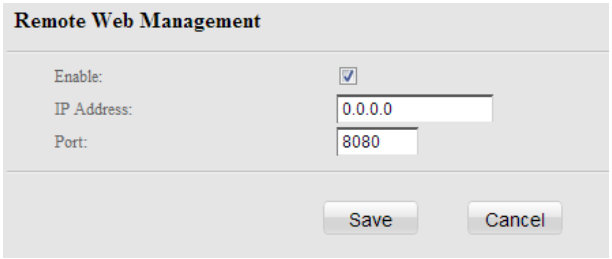


Step 2. Enable the MAC Filter feature and select "Deny" from the "Default" drop-down list as shown below.



5.6 Remote Web Management

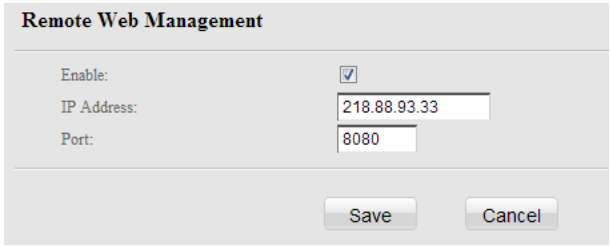
The Remote Web management allows the Router to be configured from the Internet by a web browser.



- Enable: Select whether to enable the Remote Web-based Management feature.
- IP Address: Enter a trusted IP address of a PC from Internet or other external networks which you want to authorize to manage the device remotely via a web browser.
- Port: Remote admin port; the port used by trusted hosts from

Internet or other external networks to access and manage the device remotely via a web browser.

For example: If you want to allow only the PC at the IP address of 218.88.93.33 from Internet to access Device's web-based utility via port: 8080, then configure the same settings as shown on the screenshot below on your Device.



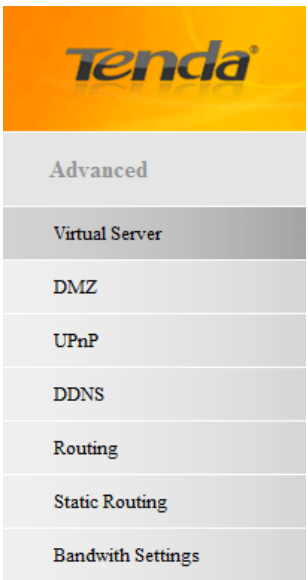
⚠Note:

1. To access the device via port 8080, enter "http://x.x.x.x:8080" where "x.x.x.x" represents the the device's Internet IP address and 8080 is the remote admin port. Assuming the device's Internet IP address is 220.135.211.56, then, simply replace the "x.x.x.x" with "220.135.211.56" (namely, http://220.135.211.56:8080).

Leaving the IP address field at "0.0.0.0" makes the device remotely accessible to all the PCs on Internet or other external networks; populating it with a specific IP address, say, 218.88.93.33, makes the device only remotely accessible to the PC at the specified IP address.

CHAPTER 6 ADVANCED

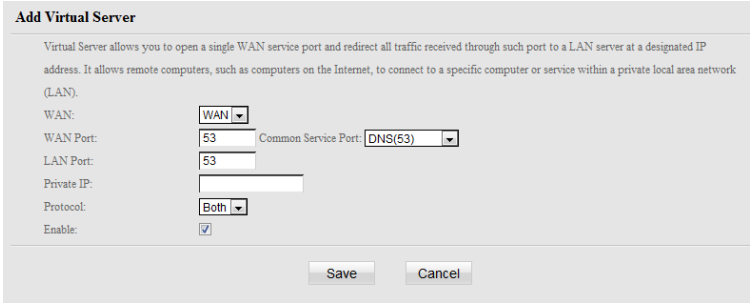
The "Advanced" tab includes the following 7 submenus:Virtual Server, DMZ, UPnP, DDNS, Routing, Static Routing and Bandwidth Settings. Clicking any of them enters corresponding interface for configuration. Below explains, in details, each such feature.



6.1 Virtual Server

The Virtual Server feature grants Internet users access to

services on your LAN. It is useful for hosting online services such as FTP, Web, or game servers. For each Virtual Server, you define a WAN port on your router for redirection to an internal LAN IP Address.



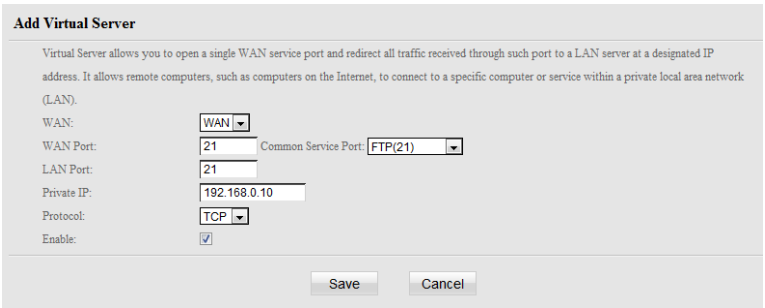
- WAN Port: WAN service port;
- LAN Port: LAN service port;
- Private IP: The IP address of a computer used as a server in LAN.
- Protocol: Includes TCP, UDP and Both. Select “Both” if you are not sure about which protocol to use.
- Enable: The corresponding entry takes effect only if you checked this option.

Well-Known Service Port: The “Well-Known Service Port” lists widely used protocol ports. Simply select a port, an entry ID and click the "Add to" button to populate the selected port to the corresponding fields of the selected entry. In case that you don’t find the port you need, enter it manually.

Example: You want to share some large files with your friends who are not in your LAN; however it is not convenient to transfer such large files across network. Then, you can set up your own PC as a FTP server and use the Virtual server to let your friends access these files. Assuming that the static IP address of the FTP server (Namely, your PC) is 192.168.0.10, you want your friends to access this FTP server on the default port of 21 using the TCP protocol, then do as follows:

1. Enter 21 in both WAN Port and LAN Port fields or select FTP from "Well-known Service Port" and an entry ID, 21 will be automatically populated to corresponding fields of the selected entry.

2. Enter 192.168.0.10 in the corresponding field, select "TCP" and then check "Enable" as seen below.



3. Click "Save" to save your settings.

Now, your friends only need to enter ftp://xxx.xxx.xxx.xxx:21 in their browsers to access your FTP server. xxx.xxx.xxx.xxx is the

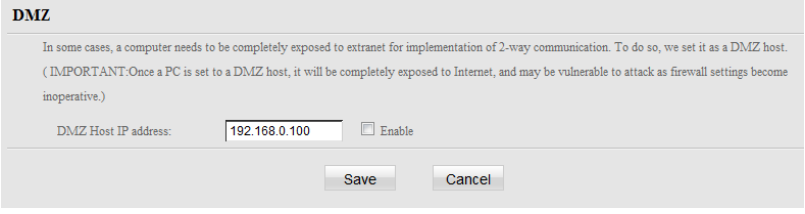
router's WAN IP address. Assuming it is 172.16.102.89, then your friends need to enter "ftp://172.16.102.89: 21" in their browsers.

⚠Note:

If you include port 80 on this section, you must set the port for remote (web-based) management to a different number than 80, such as 8080, otherwise the virtual server feature may not take effect.

6.2 DMZ

In some cases such as playing Internet games or holding video conferences, you may need to have your computer completely exposed to external networks for implementation of a bidirectional communication. To do so, set it as a DMZ host. Note that you should assign a static IP address to the PC designated as a DMZ host (DHCP Server> DHCP Client List> DHCP Reservation) before using the feature.



- DMZ Host IP address: Enter the IP address of a computer

on your LAN which you want to set as a DMZ host. The DMZ host should be connected to a LAN port on the Device.

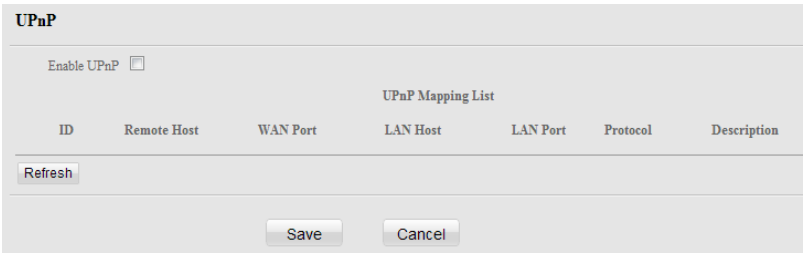
- Enable: Check/uncheck to enable/disable the DMZ host feature.

⚠ Note:

1. Once enabled, the DMZ host will no longer be protected by device's firewall and thus may become vulnerable to attacks.
2. Users on WAN access the DMZ host through a corresponding WAN IP address.

6.3 UPnP

UPnP (Universal Plug and Play) allows a network device to discover and connect to other devices on the network. With this feature enabled, hosts in LAN can request the device to perform special port forwarding so as to enable external hosts to access resources on internal hosts.



- Enable UPnP: Check/uncheck to enable/disable the UPnP feature.
- UPnP Mapping List: Displays info of external/internal port,

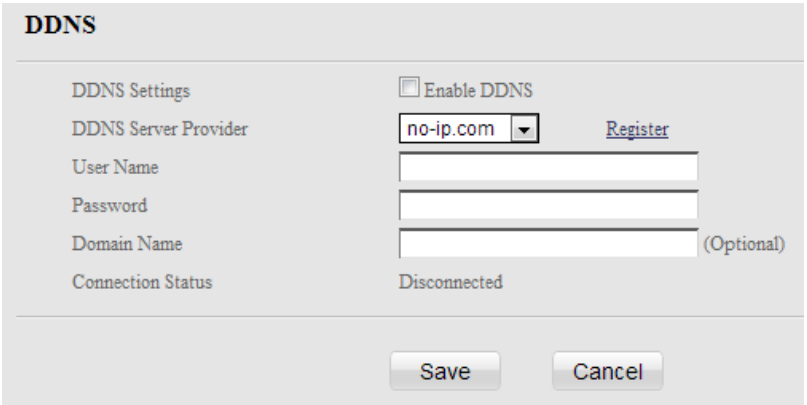
private (internal) IP, protocol and description, etc.

⚠Note:

Note: UPnP works in Windows XP, Windows ME or later (NOTE: Operational system needs to be integrated with or installed with Directx 9.0) or in an environment with installed application software that supports UPnP.

6.4 DDNS

Dynamic DNS or DDNS is a term used for the updating in real time of Internet Domain Name System (DNS) name servers. We use a numeric IP address allocated by Internet Service Provider (ISP) to connect to Internet; the address may either be stable ("static"), or may change from one session on the Internet to the next ("dynamic"). However, a numeric address is inconvenient to remember; an address which changes unpredictably makes connection impossible. The DDNS provider allocates a static host name to the user; whenever the user is allocated a new IP address this is communicated to the DDNS provider by software running on a computer or network device at that address; the provider distributes the association between the host name and the address to the Internet's DNS servers so that they may resolve DNS queries. Thus, uninterrupted access to devices and services whose numeric IP address may change is maintained.



- DDNS Settings: Enable/Disable the DDNS feature.
- DDNS Server Provider: Select your DDNS service provider from the drop-down menu.
- User Name: Enter the DDNS user name registered with your DDNS service provider.
- Password: Enter the DDNS Password registered with your DDNS service provider.
- Domain Name: Enter the DDNS domain name with your DDNS service provider.
- Connection Status: Displays current status of connection with the DDNS server.

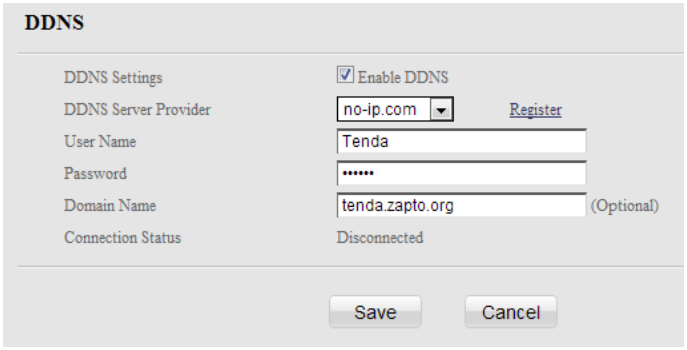
Click "Save" to save your settings.

For example: If you have registered a DDNS service from no-ip.com for a web server on the host at 192.168.0.10 and get

below info:

User Name	Tenda
Password	123456
Domain Name	tenda.zapto.org

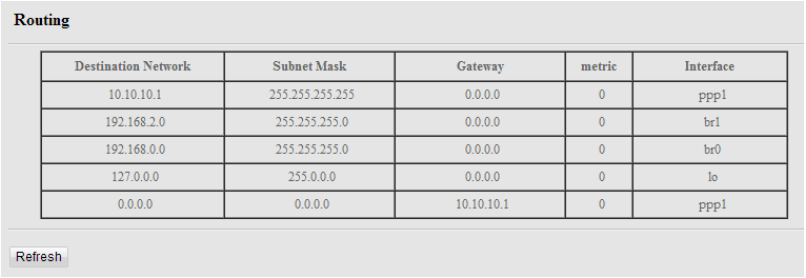
First set a mapping rule on Virtual Server interface (For details, see Virtual Server section) and then enter the registered user name, password and domain name as shown below:



Click Save to save the settings. Simply input "http://tenda.zapto.org" in a launched web browser and your web server will be accessible.

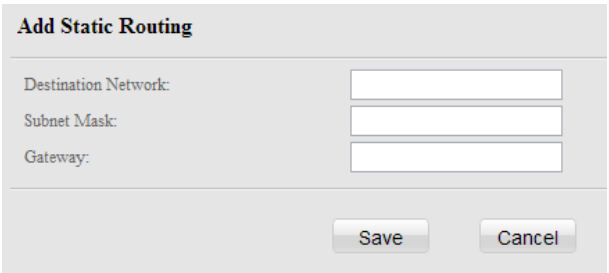
6.5 Routing

This section displays the routing table content.



6.6 Static Routing

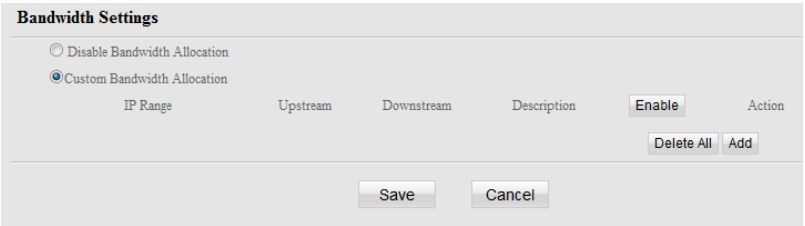
Use this section to customize static routes of data through your network.



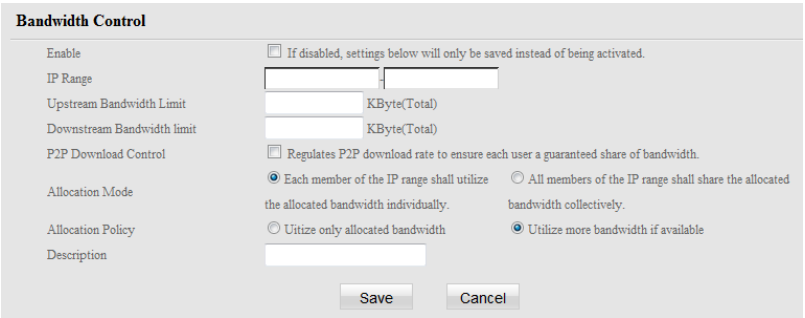
- Destination Network: The IP address of a destination network.
- Subnet Mask: The Subnet Mask that corresponds to the specified destination IP address.
- Gateway: The IP address for next hop.

6.7 Bandwidth Settings

To better manage bandwidth allocation and optimize network performance, use the Bandwidth Control feature.



Enable the bandwidth control feature, click Add and below screen will appear:

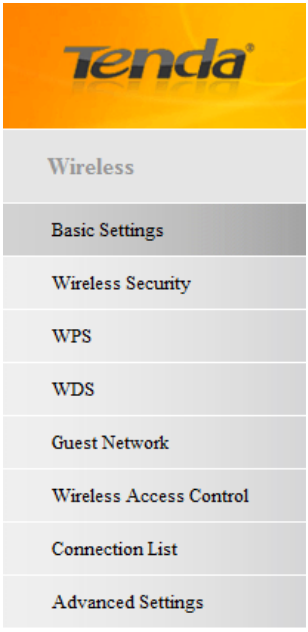


- Enable: Check/uncheck to enable/disable current entry. When disabled, corresponding entry will not take effect though existing in fact.
- IP Range: Enter a single IP or an IP range.
- Upstream Bandwidth Limit: Max uplink traffic.

- Downstream Bandwidth Limit: Max downlink traffic.
- P2P Download Control: Regulates P2P download rate to ensure each user a guaranteed share of bandwidth.
- Allocation Mode: Select either "Individual (Each member of the IP range shall utilize the allocated bandwidth individually)" or "Collective (All members of the IP range shall share the allocated bandwidth collectively)";
- Allocation Policy: Select either "Utilize only the allocated bandwidth" or "Utilize more bandwidth if available".
- Description: Briefly describe the current rule.

CHAPTER 7 WIRELESS SETTINGS

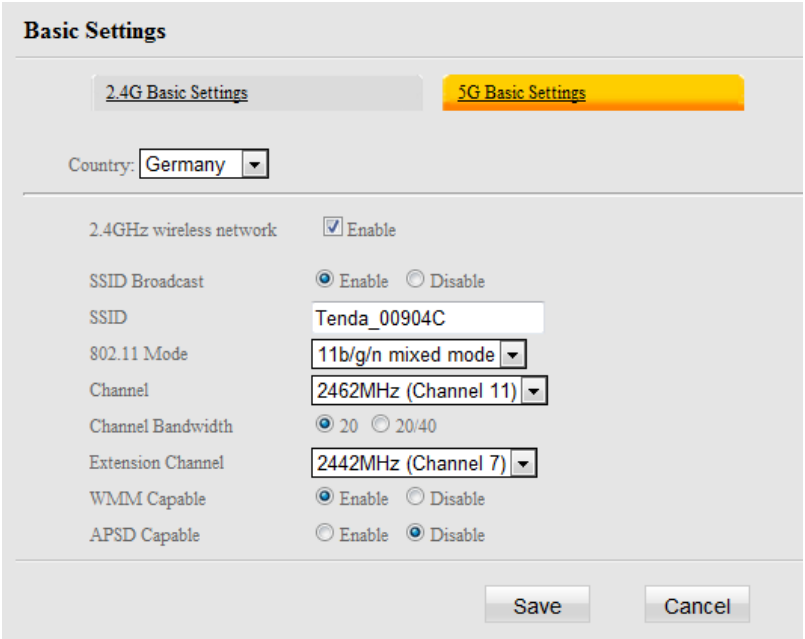
The "Wireless" tab includes 8 submenus: Basic Settings, Wireless Security, WPS, WDS, Guest Network, Wireless Access Control, Connection List and Advanced Settings. Clicking any of them enters corresponding interface for configuration. Below explains, in details, each such feature.



7.1 Basic Settings

This section allows you to manage your wireless network (2.4G or 5G). You can select your country (Unavailable for 5G wireless network), config wireless network name (SSID), network mode and channel settings, etc the way you want.

Basic Settings--2.4G



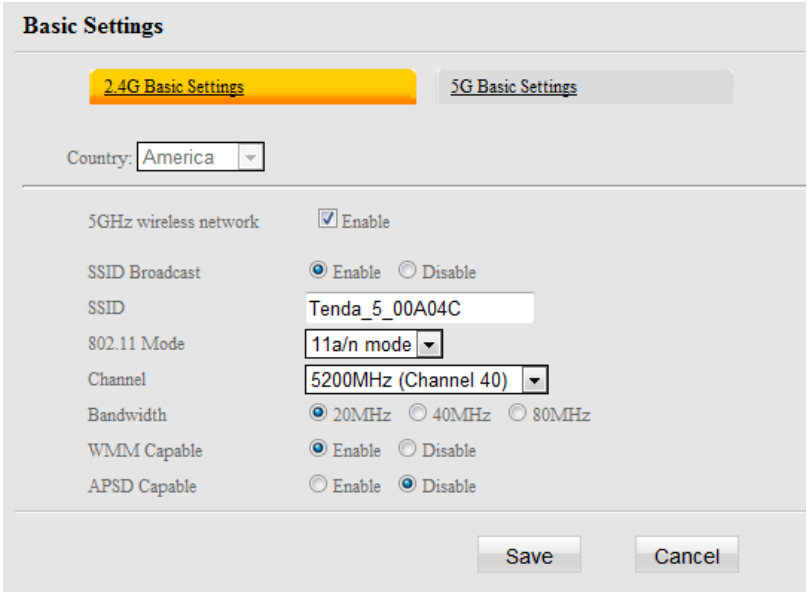
- Select 2.4G Basic Settings or 5GHz Basic Settings to configure basic settings on corresponding band.
- Country: Select your country from the drop-down list. There are 11 options available.
- 2.4GHz Wireless Network: Check/uncheck to enable/disable the 2.4GHz wireless feature. If disabled, all 2.4GHz-based features will be disabled accordingly.
- SSID Broadcast: This option is enabled By default. Select “Enable”/“Disable” to make your wireless network visible/ invisible to any wireless clients within coverage when they perform a scan to see what’s available. When disabled,

wireless clients will have to first know this SSID and manually enter it on their devices if they want to connect to the SSID.

- SSID: A SSID (Service Set Identifier) is the unique name of a wireless network.
- 802.11 Mode: Select a right mode according to your wireless client. The default mode is 11b/g/n mixed.
- Channel: For an optimal wireless performance, you may select the least interferential channel. It is advisable that you select an unused channel or “Auto” to let device detect and select the best possible channel for your wireless network to operate on from the drop-down list.
- Channel Bandwidth: Select a proper channel bandwidth to enhance wireless performance. When there are 11b/g and 11n wireless clients, please select the 802.11n mode of 20/40M frequency band; when there are only non-11n wireless clients, select 20M frequency band mode; when the wireless network mode is 11n mode, please select 20/40 frequency band to boost its throughput.
- Extension Channel：Available only in 11b/g/n mixed mode.
- WMM Capable: WMM is QoS for your wireless network. Enabling this option may better stream wireless multimedia data (such as video or audio).
- ASPD Capable：Select to enable/disable the auto power

saving mode.

Basic Settings--5G



- Select 2.4G Basic Settings or 5GHz Basic Settings to configure basic settings on corresponding band.
- 5GHz Wireless Network: Check/uncheck to enable/disable the 5GHz wireless feature. If disabled, all 5GHz-based features will be disabled accordingly.
- SSID Broadcast: This option is enabled By default. Select “Enable”/“Disable” to make your wireless network visible/ invisible to any wireless clients within coverage when they perform a scan to see what’s available. When disabled, wireless clients will have to first know this SSID and

manually enter it on their devices if they want to connect to the SSID.

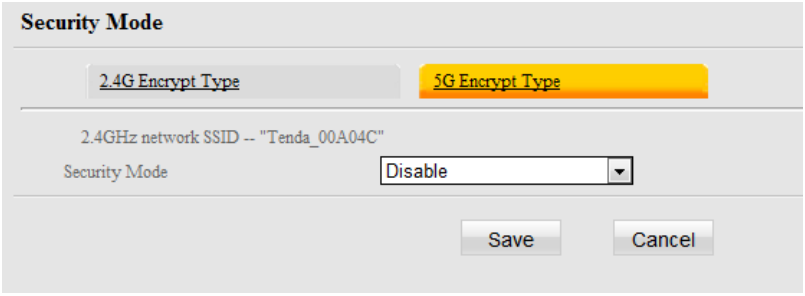
- SSID: A SSID (Service Set Identifier) is the unique name of a wireless network; it is configurable.
- 802.11 Mode: Select a right mode according to your wireless client. The default mode is 11a/n.
- Channel: For an optimal wireless performance, you may select the least interferential channel. It is advisable that you select an unused channel or “Auto” to let device detect and select the best possible channel for your wireless network to operate on from the drop-down list.
- Channel Bandwidth: Select a proper channel bandwidth to enhance wireless performance. For best throughput, 80MHz is recommended.
- WMM Capable: WMM is QoS for your wireless network. Enabling this option may better stream wireless multimedia data (such as video or audio).
- ASPD Capable: Select to enable/disable the auto power saving mode. By default, this option is disabled.

7.2 Wireless Security

This section allows you to encrypt your wireless network to block unauthorized accesses and malicious packet sniffing.

The security feature applies to both 2.4GHz wireless and 5GHz

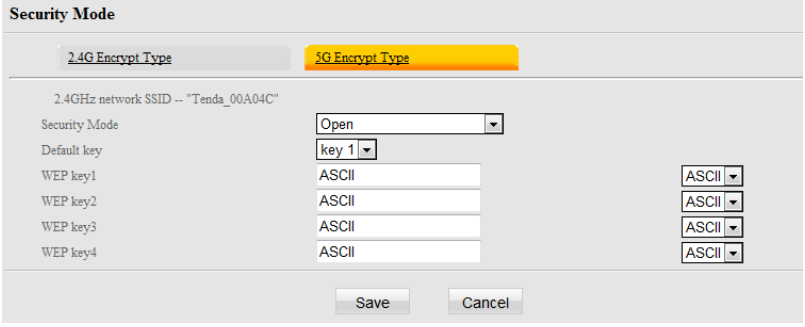
wireless networks. Depending on which band your wireless network is operating on, select the right option: 2.4G or 5G.



Six security modes are available: None (Disable), Open, Shared and WPA-PSK, WPA2-PSK and Mixed WPA-PSK/WPA2-PSK.

1、 Open

WEP is intended to provide data confidentiality comparable to that of a traditional wired network.

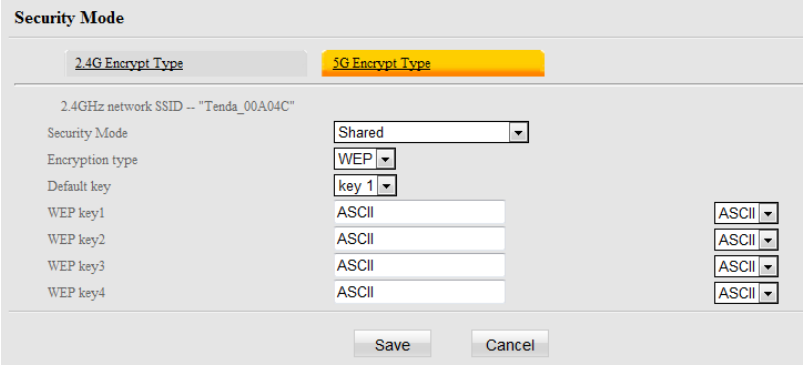


- Security Mode: Select a proper security mode from the drop-down list.
- Default Key: Select a key from the preset keys 1-4 for

current use.

2、 Shared

WEP is intended to provide data confidentiality comparable to that of a traditional wired network.

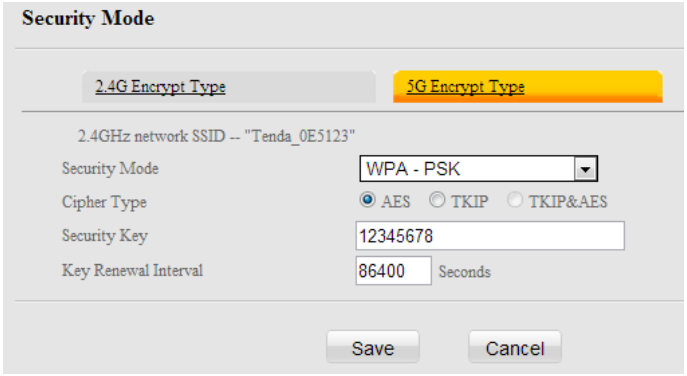


- Security Mode: Select a proper security mode from the drop-down list.
- Encrypt Type: WEP by default.
- Default Key: Select a key from the preset keys 1-4 for current use.

3、WPA-PSK

The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only

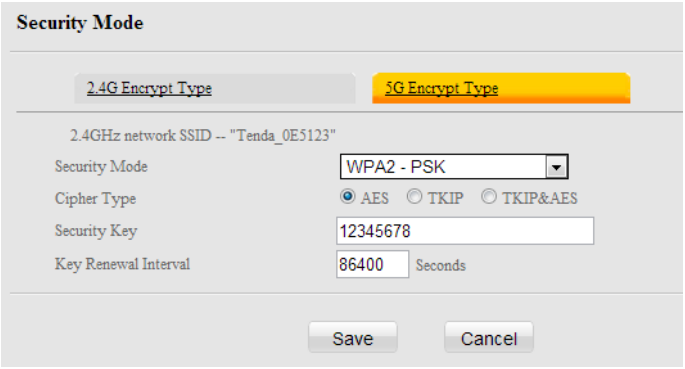
authorized network users can access the wireless network. WPA adopts enhanced encryption algorithm over WEP.



- Security Mode: Select a proper security mode from the drop-down list.
- Cipher Type: Select AES (advanced encryption standard) or TKIP (temporary key integrity protocol) &AES.
- Security Key: Enter a security key, which must be between 8-63 ASCII characters long.
- Key Renewal Interval: Enter a valid time period for the key.

4、WPA2-PSK

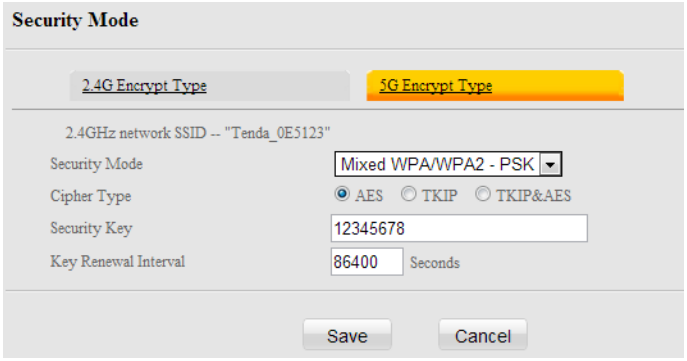
WPA2 is based on 802.11i and uses Advanced Encryption Standard (AES) instead of TKIP. It is more secured than WPA and WEP.



- Security Mode: Select a proper security mode from the drop-down list.
- Cipher Type: Select AES (advanced encryption standard) or TKIP (temporary key integrity protocol) &AES.
- Security Key: Enter a security key, which must be between 8-63 ASCII characters long.
- Key Renewal Interval: Enter a valid time period for the key.

3、Mixed WPA/WPA2-PSK

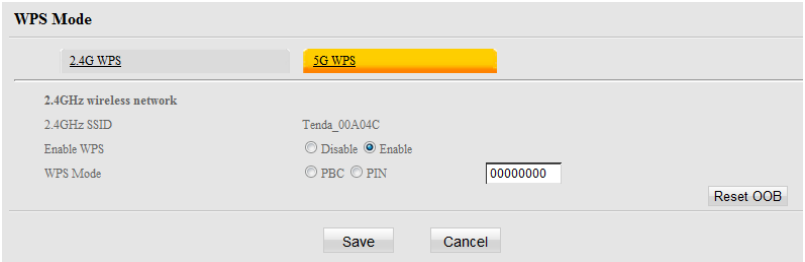
Mixed WPA/WPA2-PSK provides both WPA-PSK WPA2-PSK security modes with AES, TKIP and TKIP&AES cipher types.



- Security Mode: Select a proper security mode from the drop-down list.
- Cipher Type: Select AES (advanced encryption standard), TKIP or TKIP (temporary key integrity protocol) &AES.
- Security Key: Enter a security key, which must be between 8-63 ASCII characters long.
- Key Renewal Interval: Enter a valid time period for the key.

7.3 WPS

Wi-Fi Protected Setup makes it easy for home users who know little of wireless security to establish a secure wireless home network, as well as to add new devices to an existing network without entering long passphrases or configuring complicated settings. Simply enter a PIN code or press the software PBC button or hardware WPS button (if any) and a secure wireless connection is established.



- Enable WPS: Select to enable/disable the WPS encryption.
- WPS Mode: Select PBC (Push-Button Configuration) or PIN.
- Reset OOB: When clicked, the WPS LED turns off; WPS function will be disabled automatically; WPS server on the Router enters idle mode and will not respond to client's WPS connection request.

Operation Instructions:

PBC: (Before you start the following operations, make sure you have enabled the WPS feature on the device from the web utility.) Press the hardware WPS button on the device for 1 second and if the WPS LED keeps blinking for about 2 minutes, it indicates that PBC encryption mode is successfully enabled. And an authentication will be performed between your device and the other WPS/PBC-enabled wireless client during this time; if it succeeds, the wireless client connects to your device, and the WPS LED turns off. Repeat steps mentioned above if you want to add more wireless clients to the device.

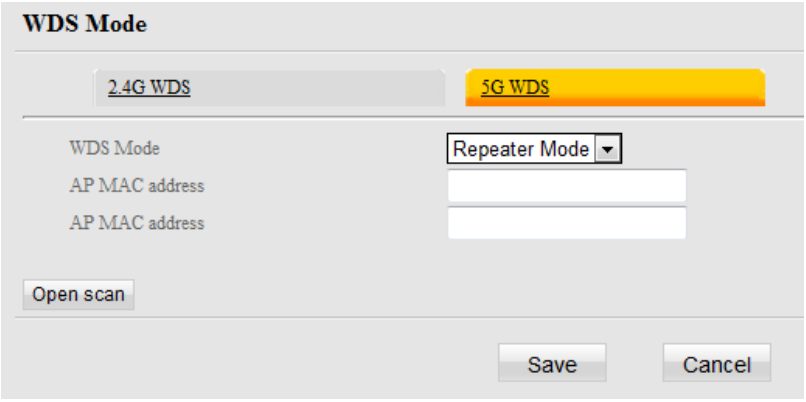
PIN: To use this option, you must know the PIN code from the

wireless client and enter it in the corresponding field on your device while using the same PIN code on client side for such connection.

⚠**Note:** To use the WPS encryption, the wireless adapter must be WPS-capable. The PIN code can be found on the label attached to device.

7.4 WDS

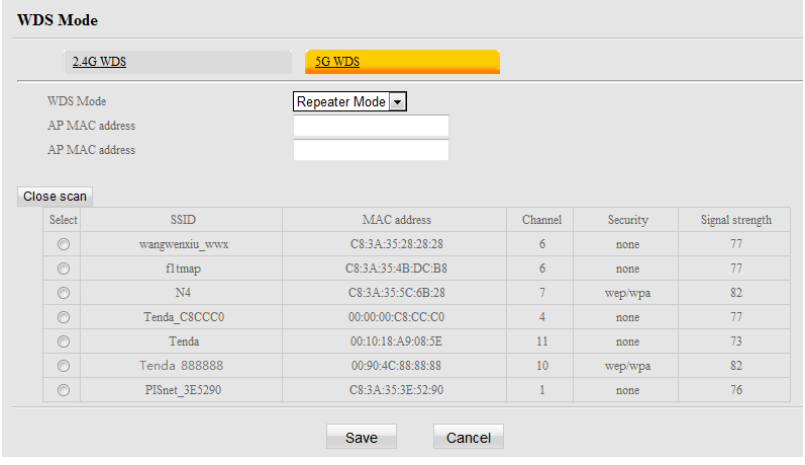
WDS (Wireless Distribution System) feature can be used to extend your existing 2.4G or 5G wireless network coverage. Here we present you how to config such feature in 2.4GHz, which also applies to 5GHz.



- Select 2.4G WDS or 5G WDS.
- WDS Mode: Select Disable or Repeater Mode.
- AP MAC address: Displays the MAC address of the router

that is successfully bridged.

For example: select Repeater Mode and click Open Scan to scan all available wireless networks (To ensure that both devices involved communicate through the same channel, set the channel to "Auto" before scanning.).



Simply check the wireless network you want to connect to. After successfully completing settings on the Device, repeat above operations on the other device. When the two devices added each other's MAC address, the WDS may be implemented successfully.

⚠Note:

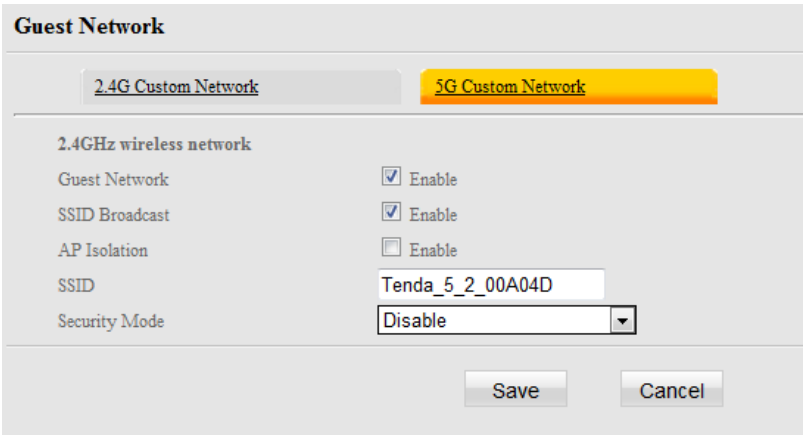
1. WDS feature can only be implemented between 2 WDS-capable wireless devices. Plus, SSID, channel, security

settings and security key must be exactly the same on both such devices.

Note that you may need to change one of the router's LAN IP to avoid an IP address collision. It is advisable to disable the DHCP server on either of the two routers involved.

7.5 Guest Network

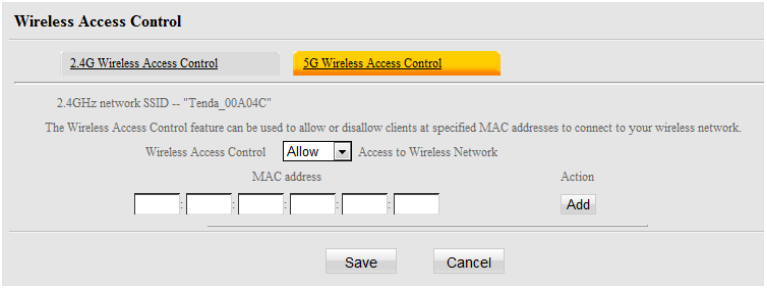
The Guest Network feature allows guests to access Internet and other users on the guest network while disallowing them to access Device web manager, users on master network and clients behind the LAN ports. Thus the wireless master network is secured. You can find the guest network available in both 2.4G and 5G networks. Here we present you how to config such feature on 2.4GHz band, which also applies to 5GHz.



- Select 2.4GHz or 5GHz Guest Network.
- Guest Network: Select to enable/disable the guest network feature.
- SSID Broadcast: This option is enabled By default. Select “Enable”/“Disable” to make your wireless network visible/ invisible to any wireless clients within coverage when they perform a scan to see what’s available. When disabled, wireless clients will have to first know this SSID and manually enter it on their devices if they want to connect to the SSID.
- AP Isolation: If enabled, clients connecting to the guest network will be mutually inaccessible.
- SSID ： A SSID (Service Set Identifier) is the unique name of a wireless network.
- Security Mode: Select a proper security mode to encrypt the guest network. For details, see section 7.2 hereof.

7.6 Wireless Access Control

The MAC-based Wireless Access Control feature can be used to allow or disallow clients to connect to your 2.4G or 5G wireless network. Here we present you how to config such feature in 2.4GHz band, which also applies to 5GHz network.

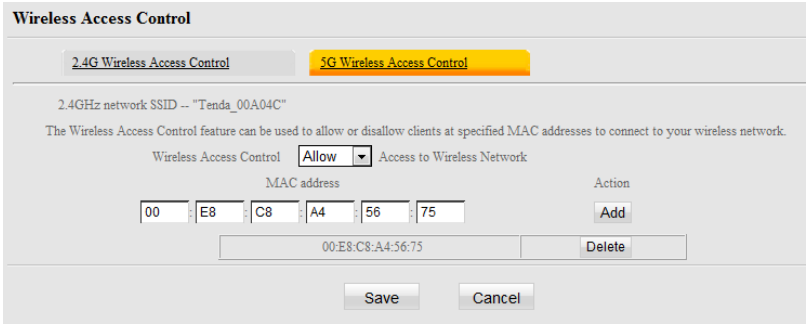


- Filter Mode:

  Allow Access to Wireless Network: Allow only PCs at specified MAC addresses to connect to your wireless network.

  Deny Access to Wireless Network: Block only PCs at specified MAC addresses from connecting to your wireless network.
- MAC address: Specify the MAC address that is to be filtered out.
- Add: Click to add specified MAC address to the MAC list.

Example: To allow only the PC at the MAC address of 00:E8:C8:A4:56:75 to connect to your wireless network, do as follows:



A. Enter 00:E8:C8:A4:56:75 in the MAC address field and then click Add.

B. The MAC address will then be displayed in the MAC list. Now click the Save button.

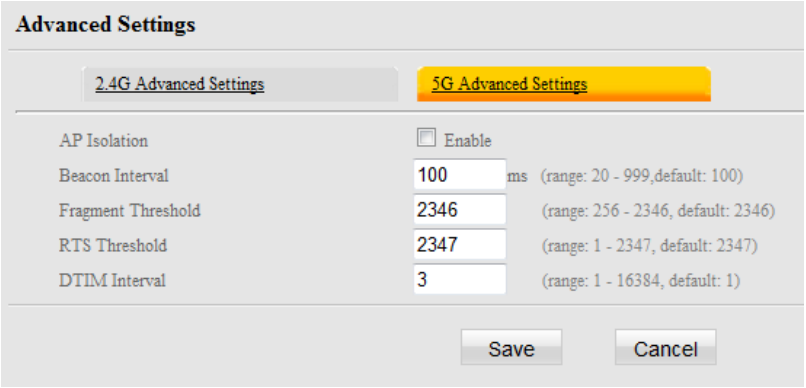
7.7 Connection List

This interface displays the information of currently connected wireless clients (if any).

7.8 Advanced Settings

This section allows you to config advanced settings, including AP Isolation, Beacon interval，Fragment threshold，RTS threshold

and DTIM interval, etc, for both 2.4G and 5G wireless networks.



- AP Isolation: Isolates clients connecting to master SSID.
- Beacon Interval: A time interval between any 2 consecutive Beacon packets sent by an Access Point to synchronize a wireless network. Do NOT change the default value of 100 unless necessary.
- Fragment Threshold: Specify a Fragment Threshold value. Any wireless packet exceeding the preset value will be divided into several fragments before transmission. DO NOT change the default value of 2346 unless necessary.
- RTS Threshold: If a packet exceeds such set value, RTS/CTS scheme will be used to reduce collisions. Set it to a smaller value provided that there are distant clients and interference. For normal SOHO, it is recommended to keep the default value unchanged; otherwise, device performance may be degraded.

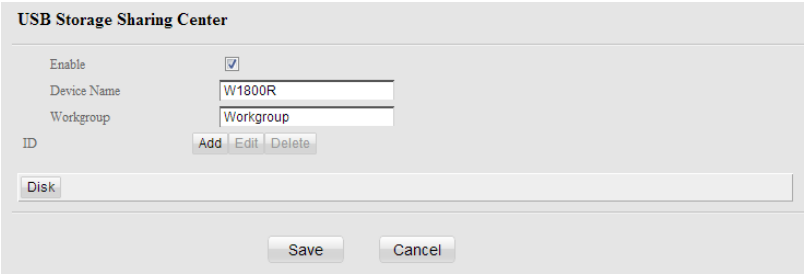
- DTIM Interval: A DTIM (Delivery Traffic Indication Message) Interval is a countdown informing clients of the next window for listening to broadcast and multicast messages. When such packets arrive at device's buffer, the device will send DTIM (delivery traffic indication message) and DTIM interval to wake clients up for receiving these packets.

CHAPTER 8 USB

The Router provides two USB interfaces for USB device connection. The "USB" tab includes three submenus: "USB Storage" "USB Printer" and DLNA.

8.1 USB Storage

The storage sharing feature allows you to share files on the storage device attached to the Device.



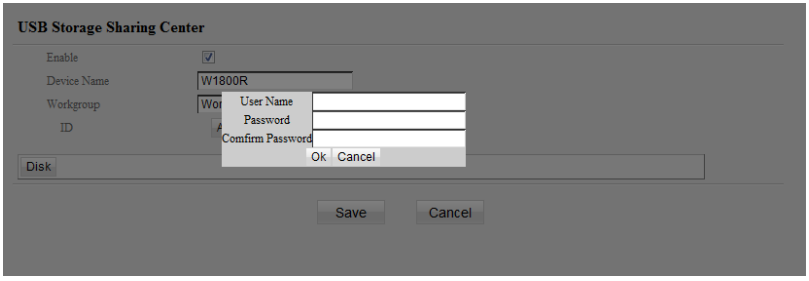
- Enable: Check/uncheck to enable/disable storage sharing feature.
- Device Name: Define a meaningful name to you for the device.
- Workgroup: Define a work group name for the device.
- Add: Click to add a user account. Up to 5 accounts can be added.
- Edit: Click to edit an existing account.
- Delete: Click to delete an existing account.

Operation Instructions:

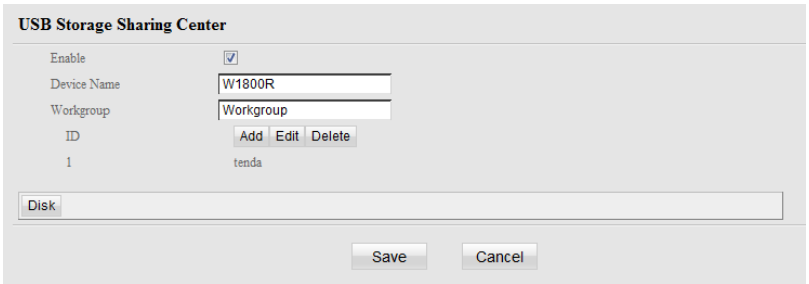
Before sharing files on a USB storage device, you must create a user account.

1. Create account:

1). Click “Add” to display a dialogue box as seen below:



2) a. Enter a user name and a password, which will be used to authenticate users trying to access the USB storage device for sharing files. b. Re-type to confirm password. Click the “OK” button and below screen will appear:



2. Set Access Right

Select a desired account, click Disk and select sda1 or sdb1.

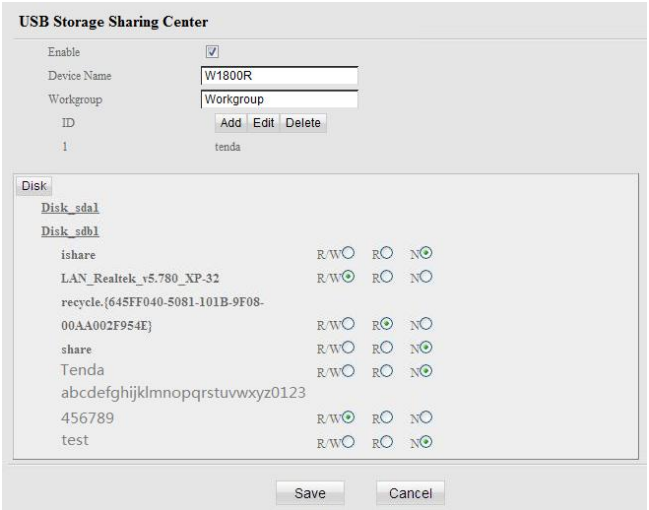
Select a proper access right:

Read/Write：The right to Read and Write.

Read: The right to Read.

No right: No right to share corresponding file.

Click “Save” to apply all settings.

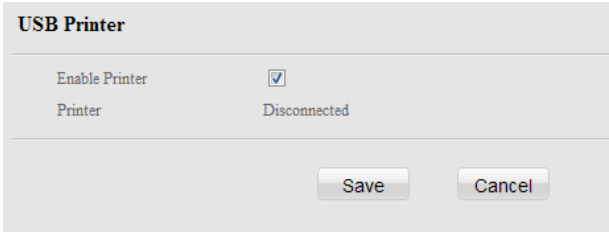


3. Access shared file

To access resources on such storage device, double click “My Computer” on your PC and enter \\192.168.0.1.

8.2 USB Printing

The USB printing service allows you to connect a USB printer to the device and thus all clients on your network can print anything they want on their PCs. The Router can identify a printer automatically as long as it is successfully connected.

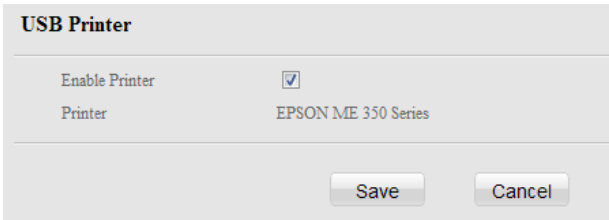


Enable Printer: Check/uncheck to enable/disable USB printing service.

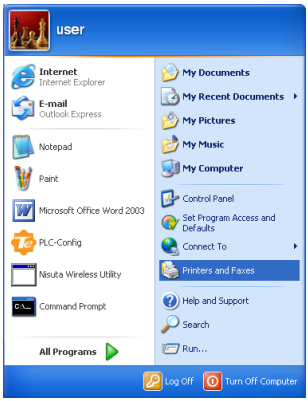
Operation Instructions:

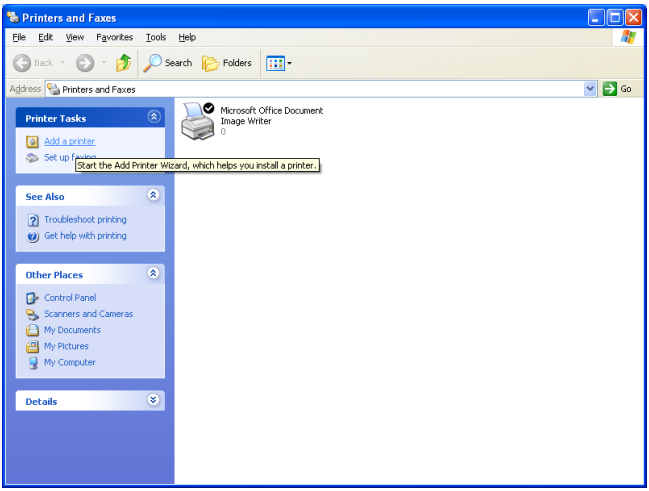
1. Correctly connect your USB printer to the USB port on the device.

2. Enable Printing Service

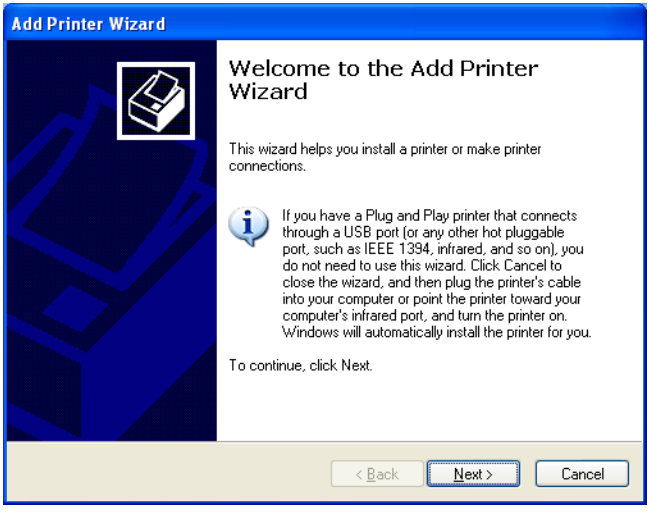


3. On your PC (connected to the device), click “Start”——“Settings”——“Printers and Faxes” and select “Add a printer” on appearing window.

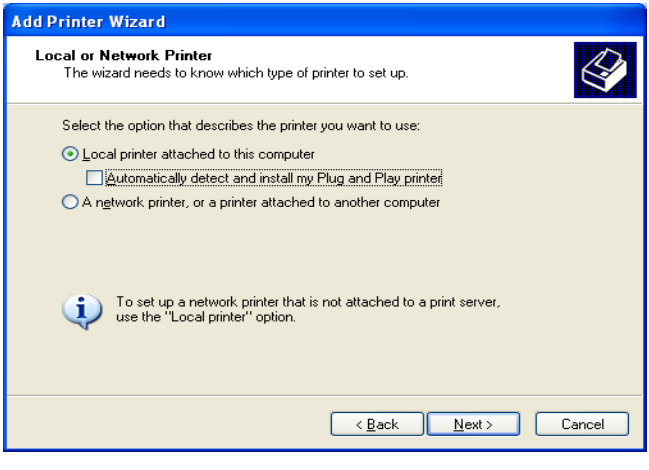

user
Internet
Internet Explorer
E-mail
Outlook Express
Notepad
Paint
Microsoft Office Word 2003
PLC-Config
Nisuta Wireless Utility
Command Prompt
All Programs
My Documents
My Recent Documents
My Pictures
My Music
My Computer
Control Panel
Set Program Access and Defaults
Connect To
Printers and Faxes
Help and Support
Search
Run...
Log Off
Turn Off Computer


Printers and Faxes
File Edit View Favorites Tools Help
Back Search Folders
Address Printers and Faxes
Go
Printer Tasks
Add a printer
Set up faxing
Start the Add Printer Wizard, which helps you install a printer.
Microsoft Office Document Image Writer
0
See Also
Troubleshoot printing
Get help with printing
Other Places
Control Panel
Scanners and Cameras
My Documents
My Pictures
My Computer
Details

4. Click “Next”.

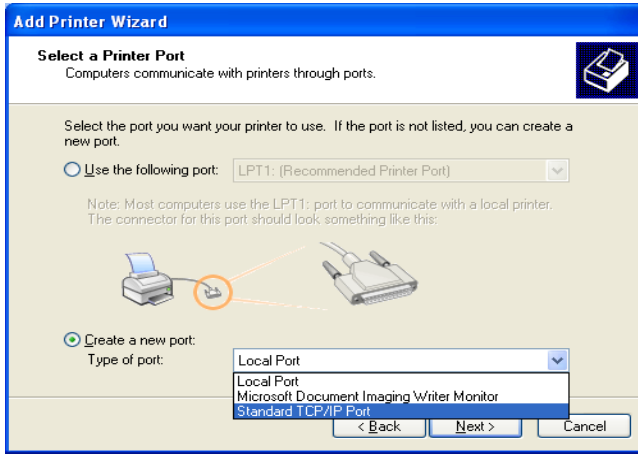


5. Select “Local printer attached to this computer” and click “”Next.

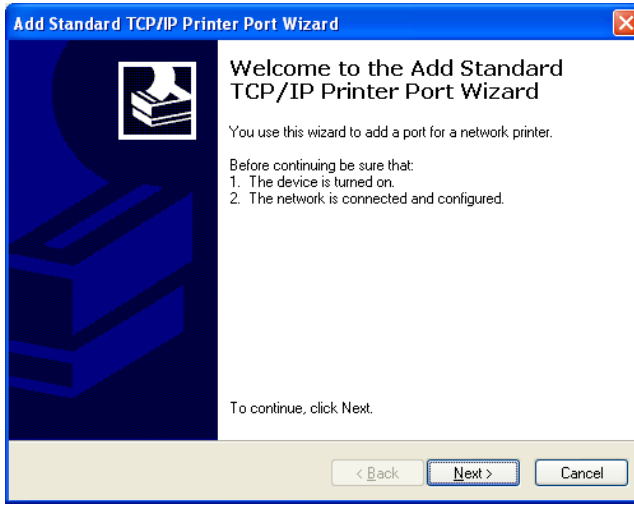


6. Select “Create a new port”, Type of port: “Standard TCP/IP

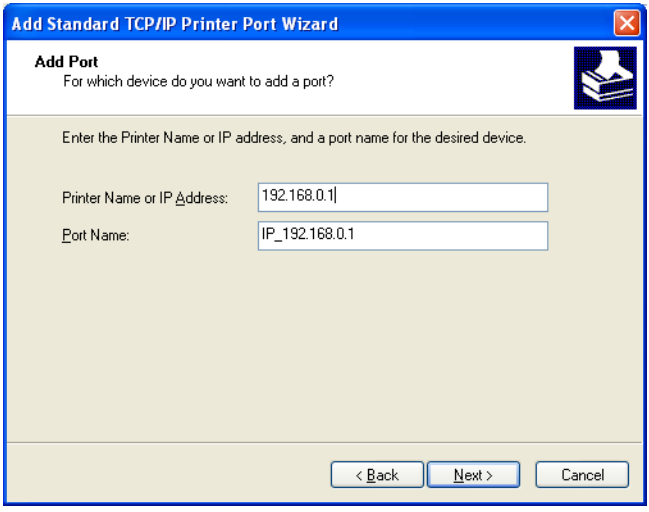
Port" and click "Next".



7. Click "Next".

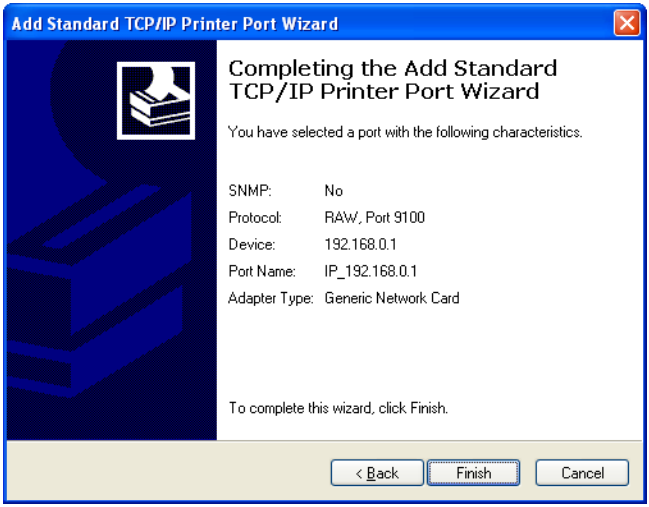


8. Enter Router's LAN IP address and click "Next".

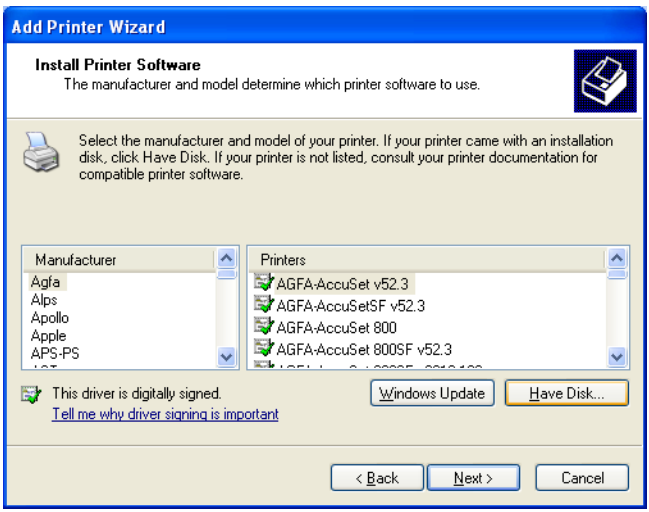


9. Click “Standard” under Device Type and select “Generic Network Card”, then click “Next”.

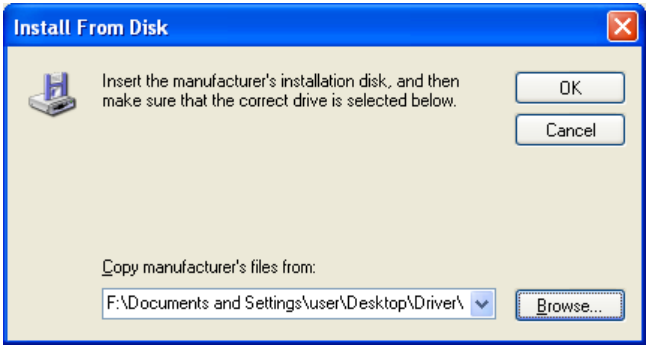
10. Click “Finish”.



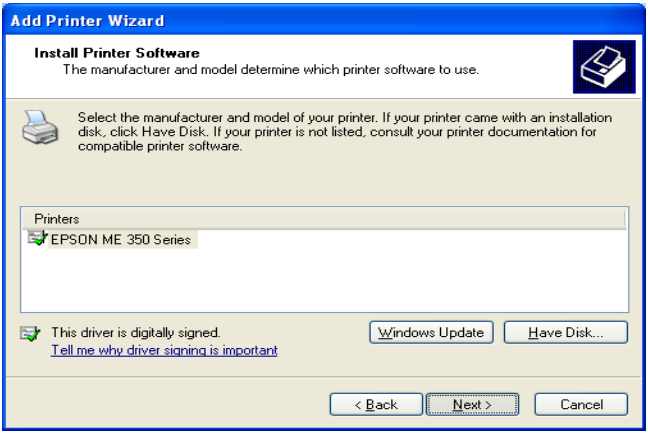
11. Select “Have Disk”.



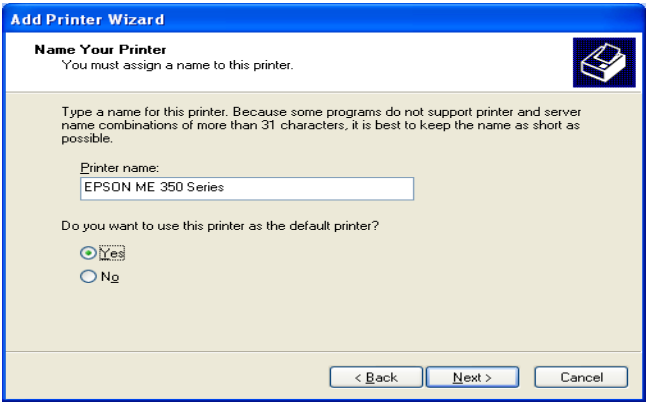
12. Click “Browse”, select corresponding drive file and click “Open”. At last click “OK”.



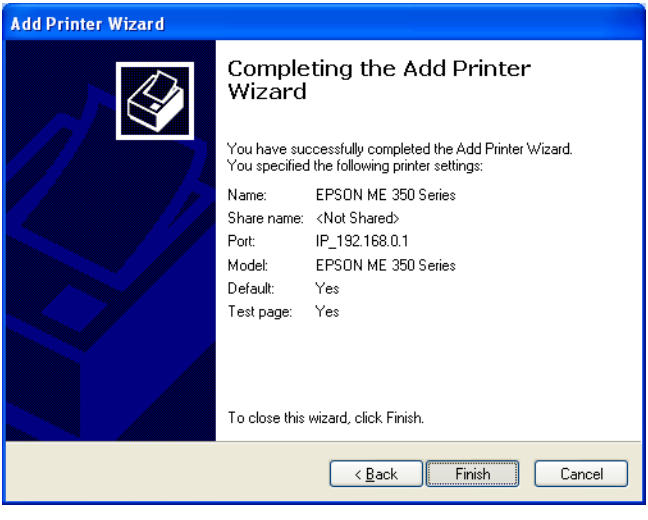
13. Click “Next”.



14. Define a name for the printer and click “Next”.



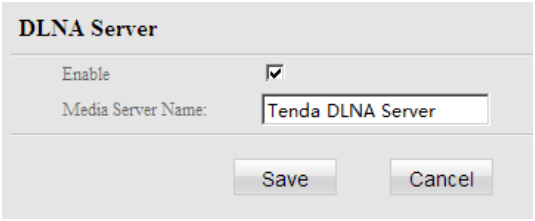
15. Click "Finish".



8.3 DLNA

The (DLNA) is responsible for defining interoperability guidelines to enable sharing of digital media such as music, photos and

videos between consumer devices such as computers, TVs, printers, cameras, cell phones, and other multimedia devices.



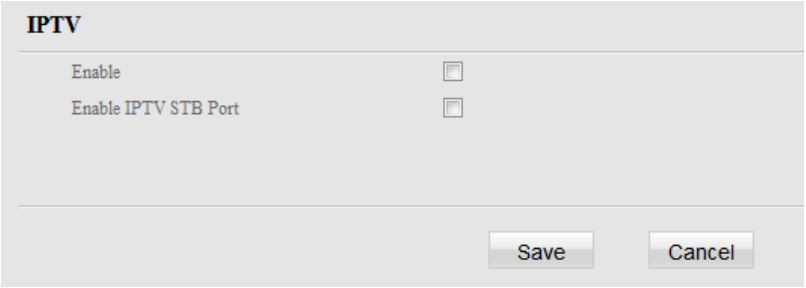
- Enable: Check to enable the DLNA feature;
- Media Server Name: This option is configurable. You can change it according to your own needs.

For example: To play multimedia files that are stored on a USB storage attached to the device on your smart phone. Do as follows:

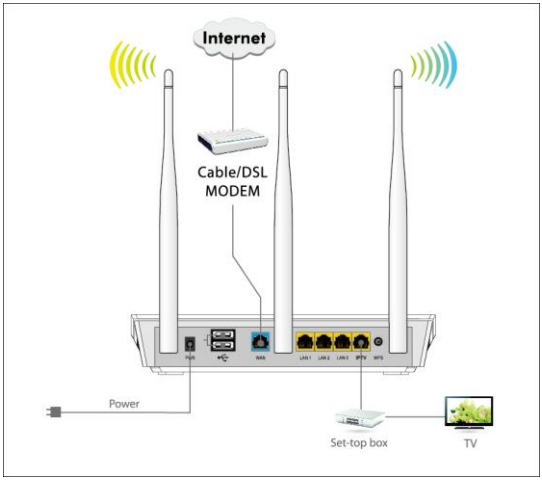
1. Connect the USB storage to the device.
2. Enable the DLNA feature on the device.
3. Change the DLNA server name if you like.
4. Start the DLNA client on your smart phone to perform a scan.
5. Select a multimedia file to play on your smart phone.

CHAPTER 9 IPTV

The IPTV feature makes it possible to enjoy online videos on your TV set via a set-top box while surfing Internet concurrently without mutual interference.



- Enable: Check/uncheck to enable/disable the IPTV feature. Multicast IPTV is supported in this mode and IPTV port is still functioning as a LAN port.
- Enable IPTV STB Port: Check/uncheck to enable/disable the IPTV-specific port. This mode applies to various forms of IPTV and the IPTV port only provides IPTV service instead of as a LAN port.
- See below for the network topology:



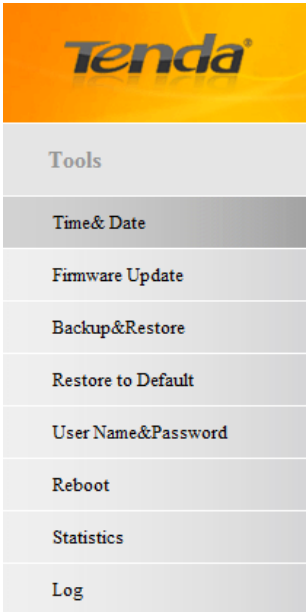
⚠ Note:

1. If you enabled both options mentioned above, then note below: (a). Set IPTV set-top box's connection type to DHCP/dynamic IP or static IP (IMPORTANT: Note that the set-top box's IP address should be on the same IP net segment as router's LAN IP.) if the set-top box is connected to any port of LAN ports 1-3. (b). Select the dialup mode provided by your ISP if the set-top box is connected to the IPTV-specific port.
2. After the IPTV port is set for IPTV purpose, PC that connects to such port will not be able to obtain an IP address or access Internet. So think twice before you start. Plus, LAN ports1-3 can only be used as LAN ports to connect PCs instead of an IPTV set-top box.

3. The IPTV feature is currently not supported on WLAN.

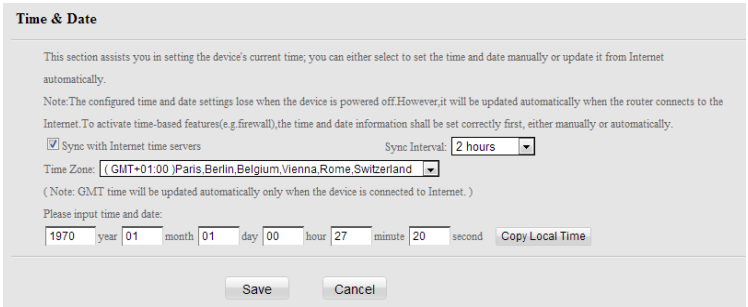
CHAPTER 10 TOOLS

The "Tools" tab includes 8 submeus: Time & Date, Firmware Update, Backup & Restore, Restore to Default, User Name & Password, Reboot, Statistics and Log. Clicking any of them enters corresponding interface for configuration. Below explains, in details, each such feature.



10.1 Time & Date

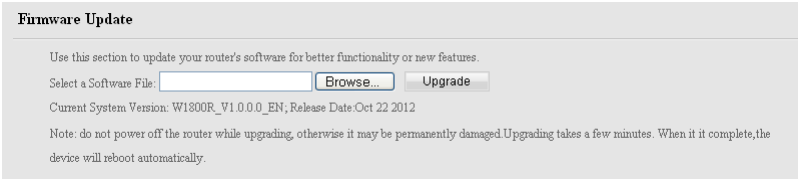
This section lets you configure, update, and maintain the correct time on the internal system clock. You can either select to set the time and date manually or automatically obtain the GMT time from Internet. Note that the GMT time is obtained only when Device is connected to Internet. You can also configure the system time manually.



- Sync with Internet time servers: Time and date will be updated automatically from Internet.
- Sync Interval: Specify a time interval for periodical update of time and date info from Internet.
- Time Zone: Select your current time zone.
- Copy Local Time: Click it to copy your PC's time to the device.

10.2 Firmware Update

Firmware upgrade is released periodically to improve the functionality of your device and also to add new features. If you run into a problem with a specific feature of the device, log on to our website (www.tendacn.com) to download the latest firmware to update your device.



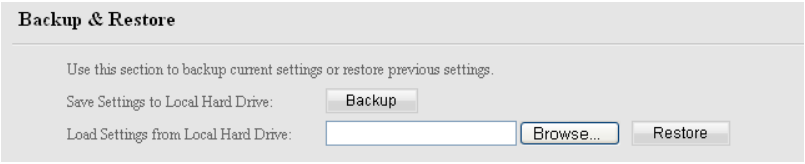
To update firmware, do as follows:

- 1. Click "Browse" to locate and select the firmware file and "Update" to update your Device.
- 2. Device restarts automatically when upgrade completes.

⚠ Note:

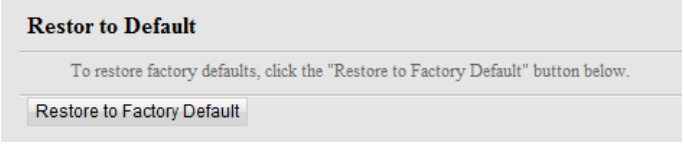
Note: DO NOT disconnect device from power supply or the operating PC while update is in process, otherwise it may be permanently damaged. When it is complete, the device will reboot automatically. Update takes a few minutes. Please wait.

10.3 Backup & Restore



- Backup settings: To backup settings, click the “Backup” button and specify a directory to save settings to your local hardware.
- Restore settings: To restore settings, click Browse to locate and select a configuration file and then click Restore.

10.4. Restore to Default



Click the "Restore to Factory Default" button to reset Device to factory default settings.

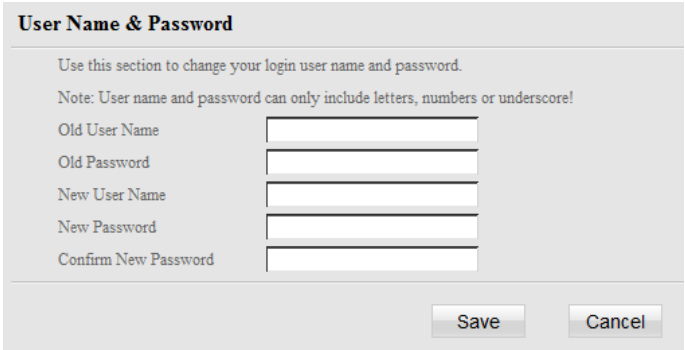
Default IP Address: 192.168.0.1

Default Subnet Mask: 255.255.255.0

Default User Name: admin

Default Password: admin

10.5 User Name & Password



This section allows you to change login password and user name for accessing Device's Web-based management interface.

Both login password and user name are preset to "admin" by default. To change either or both, do as follows: 1. Enter your current user name and password in Old User Name and Old Password fields. 2. Enter a new user name and a new password in New User Name and New Password fields. 3. Click "Save".

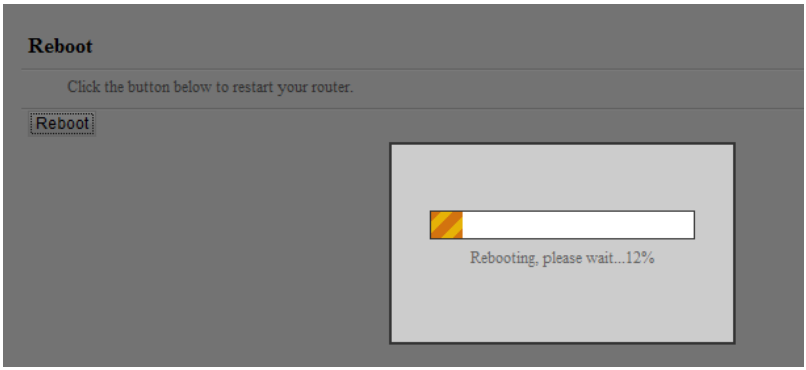
⚠ Note:

For security purpose, it is highly recommended that you change the default login password and user name.

10.6 Reboot

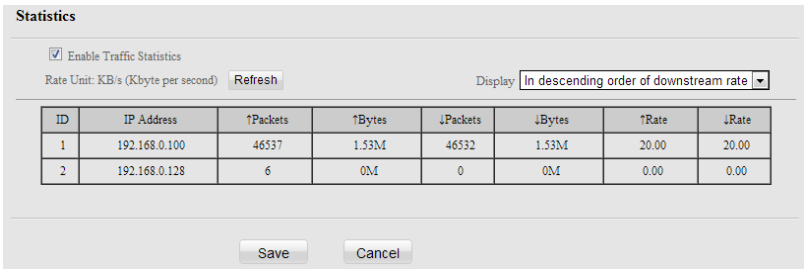
This section allows you to reboot the device.

To restart your device, click the “Reboot” button. Following screen will appear:



10.7 Statistics

Statistics displays current traffic of clients on your LAN.



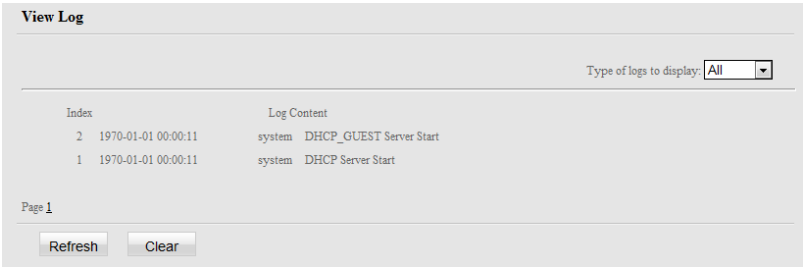
- Enable Traffic Statistics: Determine whether to enable the Traffic Statistics feature on internal users.
- Refresh: Click it to update statistic data.

Note:

Enabling the Traffic Statistics feature may degrade router's performance. So, do not enable it unless necessary.

10.8 Log

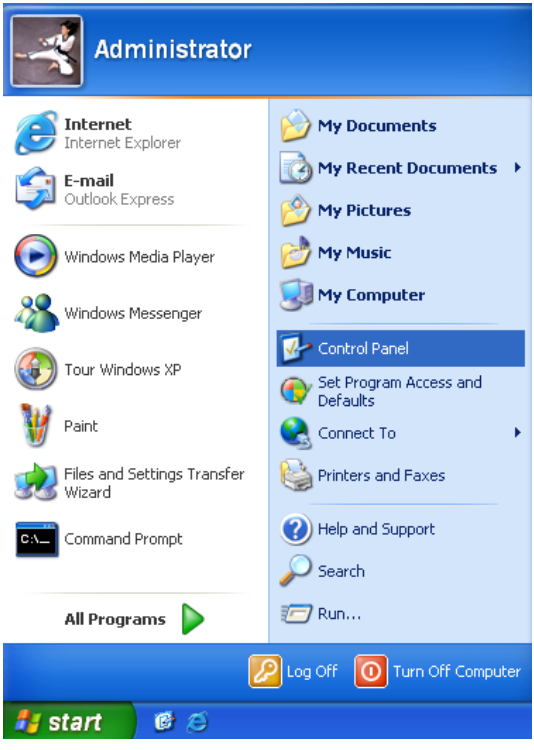
The Syslog option allows you to view all events that occur upon system startup and check whether there is attack present in your network. The logs are classified into 3 types: "All", "System "and "WAN".



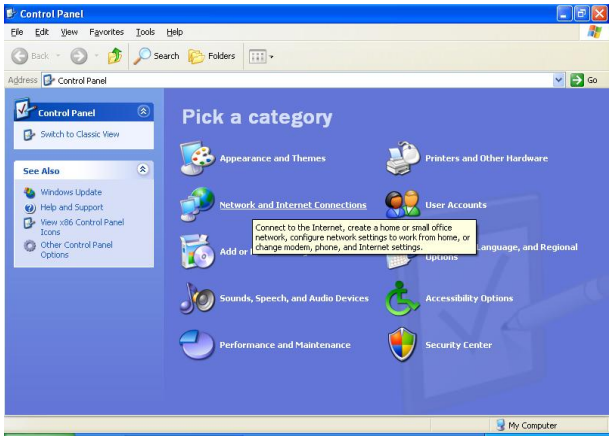
APPENDIX 1 CONFIG TCP/IP SETTINGS

If you are using Windows XP,do as follows:

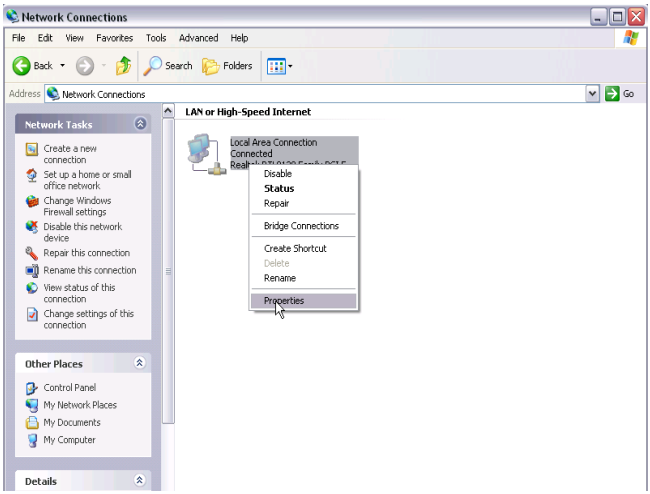
1. From the PC you are currently using, click Start and select Control Panel;



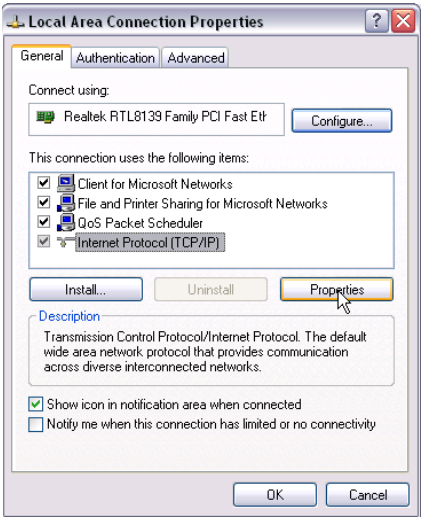
2. Click Network and Internet Connections.



3. Right-click on the Local .Area Connection and select Properties.

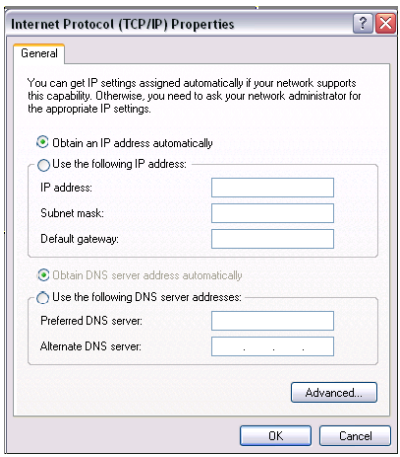


4. Select Internet Protocol (TCP/IP) and click Properties.



5. Select "Obtain an IP address automatically" or "Use the following IP address".

a. "Obtain an IP address automatically"



b. Use the following IP address"

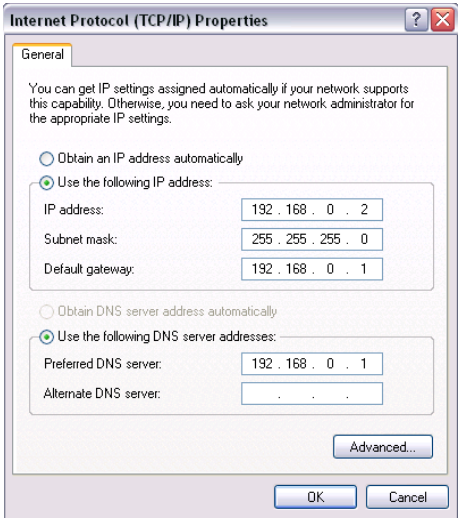
IP address: Enter 192.168.0.xxx where xxx can be any number between 2 and 254).

Subnet mask: Enter 255.255.255.0.

Default gateway: Enter 192.168.0.1.

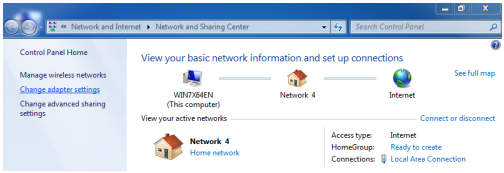
Preferred DNS server: Set Preferred (Primary) DNS the same as the LAN IP address of your Device (192.168.0.1) if you don't know your local DNS server address (Or consult your ISP). The Alternate (Secondary) DNS is not needed or you may enter one from your ISP.

Click OK twice to save your settings.

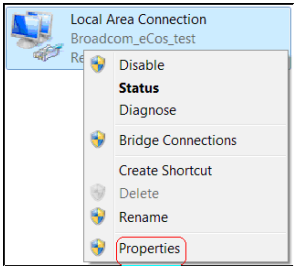


If you are using Windows 7, do as follows:

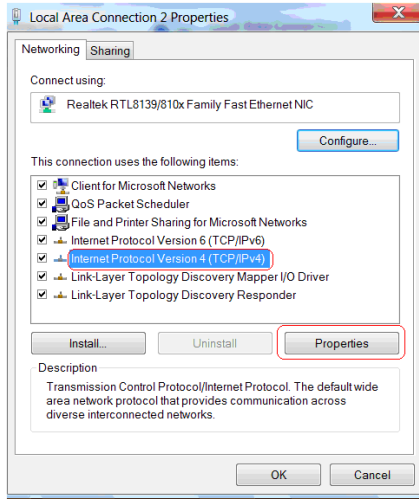
- From the PC you are currently using, click Start-> Control Panel-> Network and Internet-> Network and Sharing Center-> Change adapter settings;



- Right click “Local Area Connection” and select “Properties”.

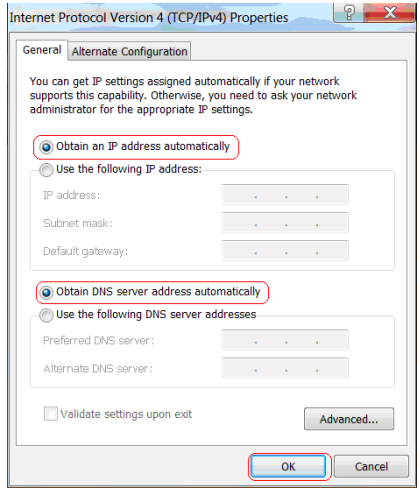


- Select "Internet Protocol Version 4 (TCP/IPv4)" and click "Properties".



➢ Select "Obtain an IP address automatically" or "Use the following IP address".

a. "Obtain an IP address automatically"



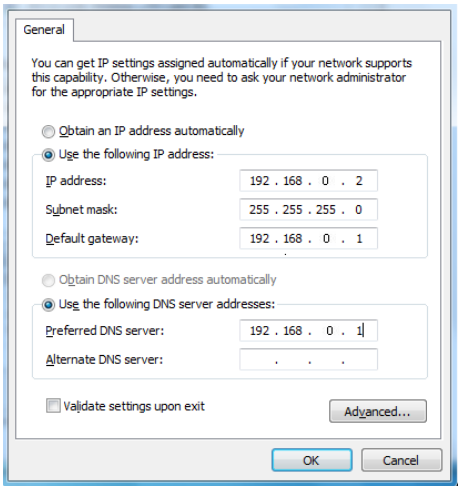
b. Use the following IP address".

IP address: Enter 192.168.0.xxx where xxx can be any number between 2 and 254). Subnet mask: Enter 255.255.255.0.

Default gateway: Enter 192.168.0.1.

Preferred DNS server: Set Preferred (Primary) DNS the same as the LAN IP address of your Device if you don't know your local DNS server address (Or consult your ISP). The Alternate (Secondary) DNS is not needed or you may enter one from your ISP.

Click OK twice to save your settings.



In this section, we present you how to config your PC's TCP/IP settings.

Before you start, make sure your PC has an installed NIC. If not, please install one first.

APPENDIX 2 GLOSSARY

DLNA

The (DLNA) is a non-profit collaborative trade organization established by Sony in June 2003, that is responsible for defining interoperability guidelines to enable sharing of digital media such as music, photos and videos between consumer devices such as computers, TVs, printers, cameras, cell phones, and other multimedia devices. DLNA uses Universal Plug and Play (UPnP) for media management, discovery and control.[4] UPnP defines the type of device that DLNA supports ("server", "renderer", "controller") and the mechanisms for accessing media over a network. The DLNA guidelines then apply a layer of restrictions over the types of media file format, encodings and resolutions that a device must support.

11AC

IEEE 802.11ac is a wireless computer networking standard of 802.11, currently under development, providing high-throughput wireless local area networks on the 5 GHz band. Theoretically, the 802.11ac specification will enable multi-station WLAN throughput of at least 1 gigabit per second and a maximum single link throughput of at least 500 megabits per second (500 Mbit/s). This is accomplished by extending the air interface concepts embraced by 802.11n: wider RF bandwidth (up to 160 MHz), more MIMO spatial streams (up to 8), multi-user MIMO,

and high-density modulation (up to 256 QAM).

Channel

Channel

A communication channel, also known as channel, refers either to a physical transmission medium such as a wire or to a logical connection over a multiplexed medium such as a radio channel. It is used to transfer an information signal, such as a digital bit stream, from one or more transmitters to one or more receivers. If there is only one AP in the range, select any channel you like. The default is Auto.

If there are several APs coexisting in the same area, it is advisable that you select a different channel for each AP to operate on, minimizing the interference between neighboring APs. For example, if 3 American- standard APs coexist in one area, you can set their channels respectively to 1, 6 and 11 to avoid mutual interference. Frequency interference rarely exists over 5 G band, which has more channels and greater frequency span.

SSID

SSID

Service set identifier (SSID) is used to identify a particular 802.11 wireless LAN. It is the name of a specific wireless network. To let

your wireless network adapter roam among different APs, you must set all Aps' SSID to the same name.

WPA/WPA2

The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only authorized network users can access the wireless network.

The later WPA2 protocol features compliance with the full IEEE 802.11i standard and uses Advanced Encryption Standard (AES) in addition to TKIP encryption protocol to guarantee better security than that provided by WEP or WPA. Currently, WPA is supported by Windows XP SP1.

PPPOE

The Point-to-Point Protocol over Ethernet (PPPoE) is a network protocol for encapsulating PPP frames inside Ethernet frames. Integrated PPP protocol implements authentication, encryption, and compression functions that traditional Ethernet can not provide and can also be used in the cable modem and digital subscriber line (DSL) and Ethernet that provide access service to

the users. Essentially, it is a protocol that allows to establish a point-to-point tunnel between two Ethernet interfaces within an Ethernet broadcast domain.

DNS

The Domain Name System (DNS) is a hierarchical distributed naming system for computers, services, or any resource connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities. A Domain Name Service resolves queries for these names into IP addresses for the purpose of locating computer services and devices worldwide. An often-used analogy to explain the Domain Name System is that it serves as the phone book for the Internet by translating human-friendly computer hostnames into IP addresses.

WDS

A wireless distribution system (WDS) is a system enabling the wireless interconnection of access points in an IEEE 802.11 network. It allows a wireless network to be expanded using multiple access points without the traditional requirement for a wired backbone to link them. All base stations in a wireless distribution system must be configured to use the same radio channel, method of encryption (none, WEP, or WPA) and the same encryption keys. They may be configured to different service set identifiers. WDS also requires every base station to

be configured to forward to others in the system. WDS may also be considered a repeater mode because it appears to bridge and accept wireless clients at the same time (unlike traditional bridging).WDS may be incompatible between different products (even occasionally from the same vendor) since it is not certified by the Wi-Fi Alliance. WDS may provide two modes of wireless AP-to-AP connectivity:• Wireless bridging, in which WDS APs communicate only with each other and don't allow wireless clients or stations (STA) to access them• Wireless repeating, in which APs communicate with each other and with wireless STAs.

DMZ

In computer security, a DMZ (sometimes referred to as a perimeter networking) is a physical or logical subnetwork that contains and exposes an organization's external-facing services to a larger untrusted network, usually the Internet. The purpose of a DMZ is to add an additional layer of security to an organization's local area network (LAN); an external attacker only has access to equipment in the DMZ, rather than any other part of the network. Hosts in the DMZ have limited connectivity to specific hosts in the internal network, although communication with other hosts in the DMZ and to the external network is allowed. This allows hosts in the DMZ to provide services to both the internal and external network, while an intervening firewall controls the traffic between the DMZ servers and the internal

network clients. Any services such as Web servers, Mail servers, FTP servers and VoIP servers, etc that are being provided to users on the external network can be placed in the DMZ.

APPENDIX 3 TROUBLESHOOTING

This section provides solutions to problems that may occur during installation and operation of the device. Read the following if you are running into problems. If your problem is not covered here, please feel free to go to www.tendacn.com to find a solution or email your problems to support@tenda.com.cn orsupport02@tenda.com.cn. We will be more than happy to help you out as soon as possible.

1. Q: I entered the device's LAN IP address in the web browser but cannot access the utility. What should I do?

Check whether device is functioning correctly. The Sys LED should blink a few seconds after device is powered up. If it does not light up, then some internal faults may have occurred.

Verify physical connectivity by checking whether a corresponding port's link LED lights up. If not, try a different cable. Note that an illuminated light does NOT ALWAYS indicate successful connectivity.

Run the "ping 192.168.0.1" command. If you get replies from 192.168.0.1, open your browser and verify that Proxy server is disabled. In case that ping fails, press and hold the "WPS/RESET" button on your device for 7 seconds to restore factory default settings, and then run "ping192.168.0.1" again.

4) Contact our technical support for help if the problem still exists

after you tried all the above.

2. Q: What should I do if I forget the login password to my device?

A: Reset your device by pressing the WPS/Reset button for over 7 seconds. Note: All settings will be deleted and restored to factory defaults once you pressed the WPS/Reset button.

3. Q: My computer shows an IP address conflict error after having connected to the device. What should I do?

A: 1) Check if there are other DHCP servers present in your LAN. If there are other DHCP servers except your router, disable them immediately.

2) The default IP address of the device is 192.168.0.1; make sure this address is not used by another PC or device. In case that two computers or devices share the same IP addresses, change either to a different address.

4. Q: I cannot access Internet and send/receive emails; what should I do?

This problem mainly happens to users who use the PPPoE or Dynamic IP Internet connection type. You need to change the MTU size (1492 by default). In this case, go to “WAN Settings” to change the MTU value from default 1480 to 1450 or 1400, etc.

5. Q: How do I share resources on my computer with users on Internet through the device?

A: To let Internet users access internal servers on your LAN such

as e-mail server, Web, FTP, via the device, use the "Virtual Server" feature. To do so, follow steps below:

Step 1: Create your internal server, make sure the LAN users can access these servers and you need to know related service ports, for example, port for Web server is 80; FTP is 21; SMTP is 25 and POP3 is 110.

Enter device web utility and click Virtual Server.

Step 3: Input the Start Port/External Port, say, 80.

Step 5: Input the internal server's IP address. For example, assuming that your Web server's IP address is 192.168. 0.10, then simply input it.

Select a proper protocol type: TCP, UDP, or Both depending on which protocol(s) your internal host is using.

Click Enable and save your settings.

For your reference, we collected a list of some well-known service ports as follows:

Server	Protocol	Service Port
Web Server	TCP	80
FTP Server	TCP	21
Telnet	TCP	23
NetMeeting	TCP	1503、1720
MSN Messenger	TCP/UDP	File Send:6891-6900(TCP) Voice:1863、6901(TCP)

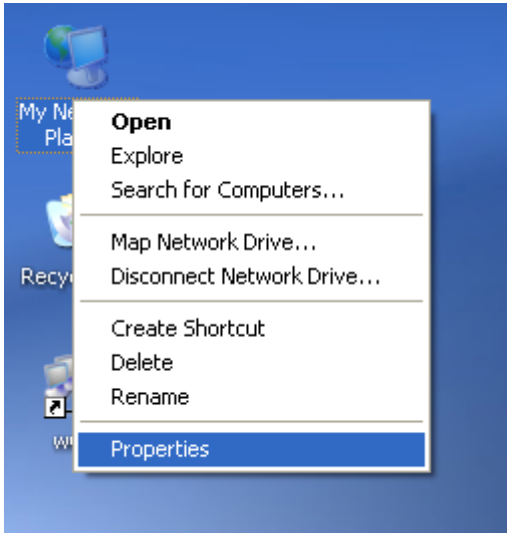
		Voice:1863、5190(UDP)
PPTP VPN	TCP	1723
Iphone5.0	TCP	22555
SMTP	TCP	25
POP3	TCP	110

APPENDIX 4 REMOVE WIRELESS NETWORK FROM YOUR PC

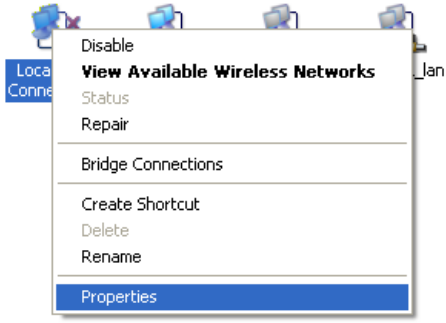
If you change wireless settings on your wireless device, you must remove them accordingly your PC; otherwise, you may not be able to wirelessly connect to the device. Below describes how to do remove a wireless network from your PC.

If you are using Windows XP, do as follows:

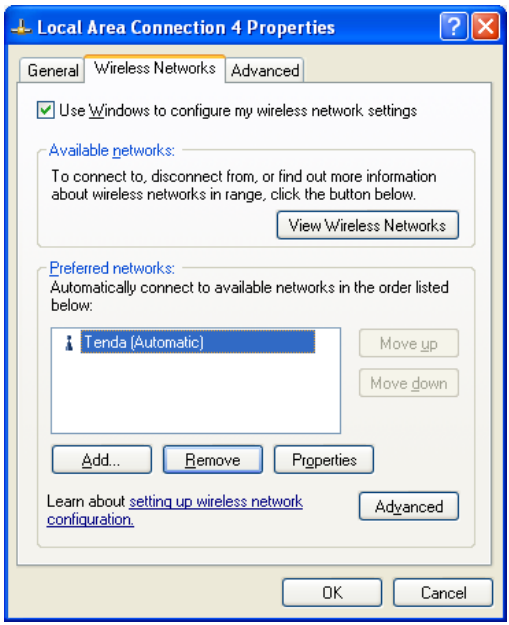
1. Right click "My Network Places" and select "Properties".



2. Click Wireless Network Connection and then select Properties.

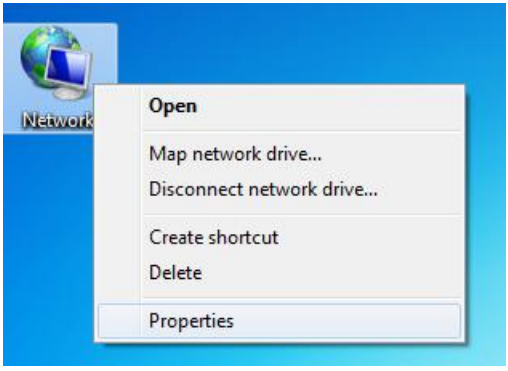


3. Click "Wireless Networks", select the item under "Preferred networks" and then click the Remove button.

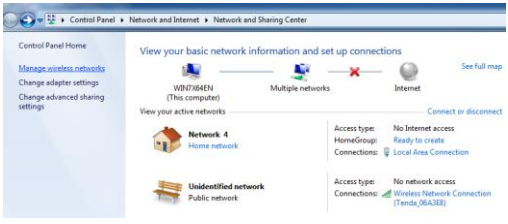


If you are using Windows 7, do as follows:

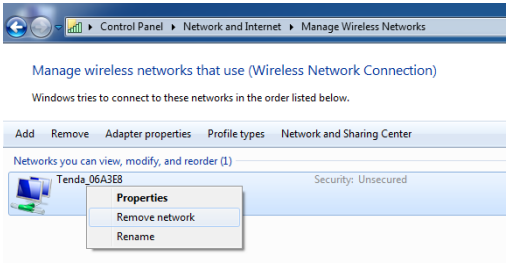
1. Click Network from your desktop and select Properties.



2. Select "Manage Wireless Networks".



3. Click the wireless connection and select "Remove network".



APPENDIX 5 SAFETY AND EMISSION STATEMENT

NCC Notice

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更設計之特性及功能。低功率射頻電機之作用不得影響飛航安全及幹擾合法通信；經發現有幹擾現象時，應立即停用，並改善至無幹擾時方得繼續使用。 前項合法通信，指依電信規定作業之無線電信。 低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之幹擾。

5.25 ~ 5.35GHz 限室內使用 (802.11a used)

FCC Statement

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause

undesired operation.

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

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement

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

NOTE:

(1)The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

(2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable

CE Mark Warning

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

This is a Class B product in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures

NOTE:

(1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

(2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable

"The product can be used without restrictions in the following countries: all EU member states except France and Norway.
The product can be used with limitations in the following countries: France (for indoor use only) and Norway (20 km in the center of Ny-Ĺlesund)."