NHP5010

500Mbps Powerline AV Wireless N AP Router

User Manual

V1.0

Contents

About the User Manual

This user manual mainly describes how to install and configure the NHP5010 PLC wireless router.

Our company reserves the right to modify this manual for product upgrade or other causes without notifying users in advance. This user manual is only for reference.

Organization

This user manual is organized as follows:

Chapter	Description
Chapter 1 Safety Precautions	Provide safety precaution information.
Chapter 2 Overview	Provide a general overview of the NHP5010 PLC wireless router, and the packing list.
Chapter 3 Hardware Description and Device Connection	Mainly describe the hardware of the PLC wireless router and the procedure for connecting the wireless router.
Chapter 4 Configuring the LAN PC	Describe how to configure your PC and wireless connection.
Chapter 5 Web Configuration	Describe how to log in to the PLC wireless router and configure the parameters in the Web pages.
Chapter 6 Using the Security Pushbutton	Describe how to add a device to an existing network or remove a device from an existing network by the **Security** pushbutton.

Features

PLC Features

- Power voltage range is 100 to 240 V AC 50/60Hz.
- Support the HomePlug AV protocol and the IEEE1901 protocol.
- PLC physical link rate is up to 500Mbps.
- Support the following modulation schemes: OFDM QAM 4096/1024/256/64/16/8, QPSK, BPSK, and ROBO.
- Support 128-bit AES link encryption and user NMK authentication, for providing secure power line communication.
- Support windowed OFDM with noise mitigation based on patented line synchronization technique, for improving data integrity in noisy conditions.
- Support channel self-adaptation and channel estimation for maximizing real-time throughput.
- Support priority-based CSMA/CA channel access scheme for maximizing efficiency and throughput.
- Support four-level QoS.
- Support ToS and CoS packet classifications.
- Support IGMP multicast management session.

Wireless Features

- Support IEEE802.11b, IEEE802.11g, IEEE802.11n, IEEE802.3, IEEE802.3u, IEEE802.11i and IEEE802.11e.
- Support 2T2R mode. Transmission data rate is up to 300Mbps.
- Support WEP and WPA for secure data transmission.
- Support DHCP server.
- Support version upgrade through Web page.
- Support restoring factory default settings.
- Support the following wireless security modes: **WEP**, **WPA-PSK**, **WPA2-PSK**, and **WPA/WPA2-PSK**
- Support system status display.
- Support system log.

1 Safety Precautions

This device is intended for connection to the AC power line. Before using this product, please read the following precautions:

- Follow all warnings and instructions marked on the product.
- Unplug the device from the wall outlet before cleaning. Use a dry cloth for cleaning. Do not use liquid cleaners or aerosol cleaners.
- Do not put this product near water.
- Do not put this product near a radiator or heat source.
- Do not use an extension cord between the device and the AC power source.
- Only a qualified technician should service this product. Opening or removing covers may result in exposure to dangerous voltage points or other risks.
- Unplug the device from the wall outlet and refer the product to qualified service personnel for the following conditions:
  - If liquid has been spilled into the product
  - If the product has been exposed to rain or water
  - If the product does not operate normally when the operating instructions are followed
  - If the product exhibits a distinct change in performance

2 Overview

2.1 Product Introduction

Thank you for purchasing the NHP5010PLC wireless router.

The NHP5010 PLC wireless router is compatible with the HomePlug AV, IEEE1901 and 802.11b/g/n protocols. It supports CCK and OFDM modulation schemes. Its PLC physical link rate is up to 500Mbps, and its wireless physical rate is up to 300Mbps in the 802.11n mode.

The NHP5010PLC wireless router supports 128-bit AES link encryption of power line communication and wireless security modes including WEP, WPA-PSK, WPA2-PSK, and WPA/WPA2-PSK, which provide secure and reliable communication for users.

3 Hardware Description and Device Connection

3.1 LED Status Description and Pushbutton Description

There are 5 LED indicators on the front panel of the PLC wireless router. By observing their status, you can check whether the device runs normally.

The following table describes the status of LED indicators on the front panel:

LED Indicator	Color	Status	Description
Power	Green	On	System runs normally.
	Green	Blink	System is resetting. System is in the process of password synchronization.
	-	Off	Device is powered off or system is down.
LAN1	Green	On	Connection via the LAN1 interface succeeds.
	Green	Blink	Data is being transmitted via the LAN1 interface.
	-	Off	No connection is established via the LAN1 interface.
LAN2/WAN	Green	On	Connection via the LAN2/WAN interface succeeds
	Green	Blink	Data is being transmitted via the LAN2/WAN interface.
	-	Off	No connection is established via the LAN2/WAN interface.
Data	Green	On	PLC transmission rate equals to or is greater than 40Mbps.
	Orange	On	PLC transmission rate is between 20Mbps and 40Mbps.
	Red	On	PLC transmission rate is smaller than or equals to 20Mbps.
	-	Off	Device is not connected to the power line network.
WLAN/WPS	Green	On	WLAN is enabled.
	Green	Blink	Wireless data is being transmitted.
	-	Off	WLAN is disabled.
	Orange	On	WLAN is enabled and WPS connection succeeds.
	Orange	Blink	WPS negotiation is in progress and wireless data is being transmitted.

The following table describes pushbuttons on the front panel:

Button	Description
Security	It is used to set the status of the device members. ● Press and hold the **Security** pushbutton for more than 10 seconds to exit the current network and generate a random password of network member. ● Press and hold the **Security** pushbutton for less than 3 seconds, and then the PLC wireless router becomes a member of the existing AVLN.
Reset	Press the **Reset** pushbutton for more than 3 seconds and then release it. System restores the factory default settings.
WPS	It has the following functions: ● Press the **WPS** pushbutton for less than 3 seconds to enable the negotiation of PBC mode. ● Press the **WPS** pushbutton for more than 5 seconds to enable or disable WLAN.

3.2 Interface and Switch Description

The following table describes interfaces and switch on the PLC wireless router:

Interface	Description
LAN1	RJ45 LAN interface, for connecting a hub, switch, or computer on a LAN.
LAN2/WAN	RJ45 LAN interface, for connecting a hub, switch, or computer on a LAN.
OFF ON	Turn on or turn off the device.

3.3 Hardware Installation

3.3.1 System Requirements

Before installing the device, please ensure that the following items are ready:

- At least one Ethernet RJ45 cable (10Base-T/100Base-T)
- One NHP5010 PLC wireless router
- One PLC device for PLC communication
- A PC that is installed with the TCP/IP protocol and can access the Internet.

3.3.2 Before You Begin

Before you install the device, please pay attention to the following items:

- When the device is connected to a computer, hub, router, or switch, the Ethernet cable should be shorter than 100 meters.
- Place this device on a stable surface or support. Do not put this device on the ground.
- Keep the device clean. Keep away the device from direct sunshine. Avoid any metal in the device.
- Place the device in the center of the placement area, and try to optimize the wireless coverage.

3.3.3 Connecting the Device

To connect the device, do as follows:

Step 1 Connect one end of the RJ45 cable to the LAN interface of the PLC wireless router.

Step 2 Connect the other end of the RJ45 cable to your PC.

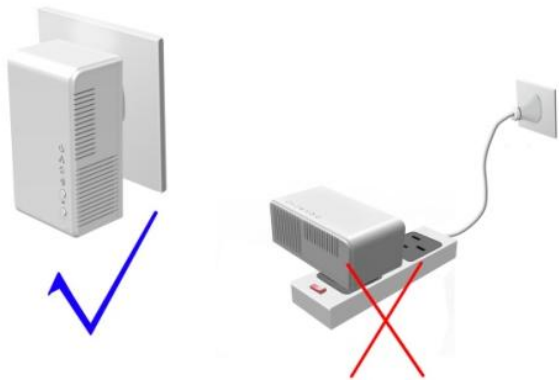
Step 3 Insert the power plug of the device into the wall socket directly.

3.4 Operation Range

The operation range of the PLC wireless router depends on the actual environment. The path and effect of signal transmission may vary with the deployment in a house or an office. In theory, the maximum PLC transmission distance can reach 300 meters. But for the practical application, the PLC transmission distance may vary due to the number of PLC devices connected to the power line network. For wireless transmission, straight transmission distance in the open air for some devices can reach 300 meters and indoor transmission distance can reach 100 meters.

3.5 Improving the Transmission Performance of Network

In order to improve the transmission performance of network, it is recommended that you insert the power plug of the device into the wall socket directly. Do not use the patch board.



4 Configuring the LAN PC

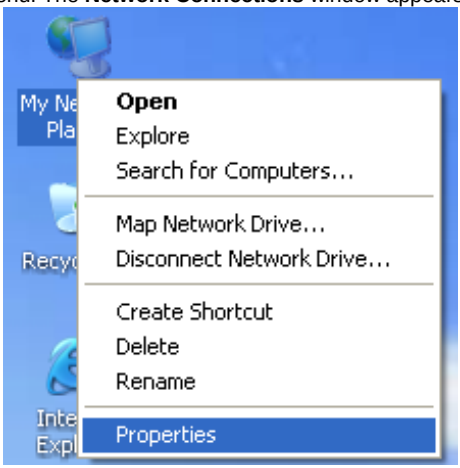
By default, the DHCP server is enabled. The LAN IP address of the PLC wireless router is **192.168.99.1** and the subnet mask is **255.255.255.0**.

Note:

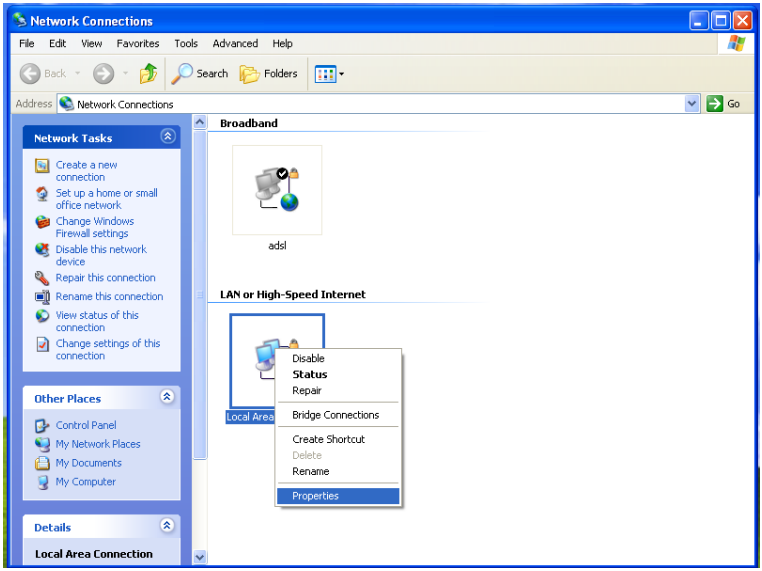
The configuration steps and figures on Windows XP are depicted as an example. The configuration process may vary depending on operation system of your PC.

To manually set the network adapter on Windows XP system, do as follows:

Step 1 Right-click the icon of **My Network Places** and choose **Properties** from the menu. The **Network Connections** window appears.



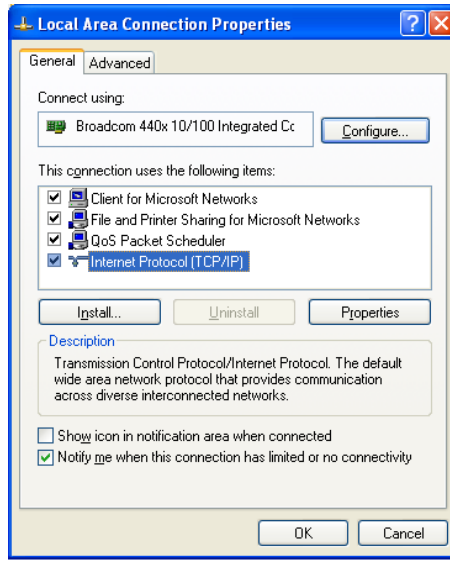
Step 2 Right-click the network adapter icon and choose **Properties** from the menu. The **Local Area Connections Properties** window appears.



Note:

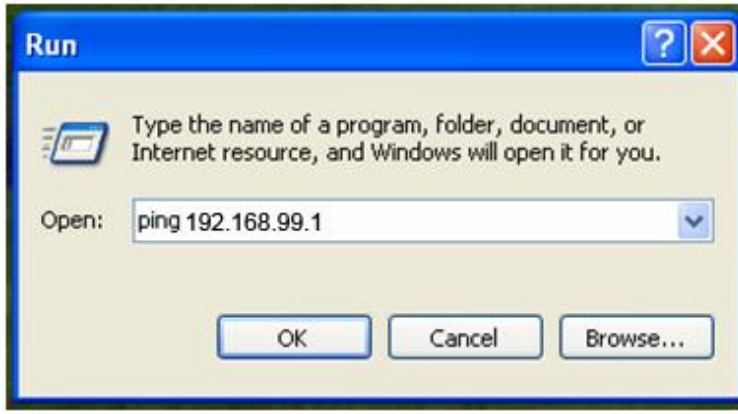
If multiple network cards are installed on your PC, a window other than the **Local Area Connections Properties** window may appears.

Step 3 Double-click **Internet Protocol (TCP/IP)** and the **Internet Protocol (TCP/IP) Properties** window appears.



Step 4 Select **Use the following IP address** and enter the IP address of the network adapter. Set the IP address to ***192.168. 99.X*** ('X' is a number in the range of 2 to 254) and set the subnet mask to ***255.255.255.0***. Configure the default gateway and IP addresses of the DNS servers according to your actual network, or leave them blank. After setting the parameters, click **OK**.

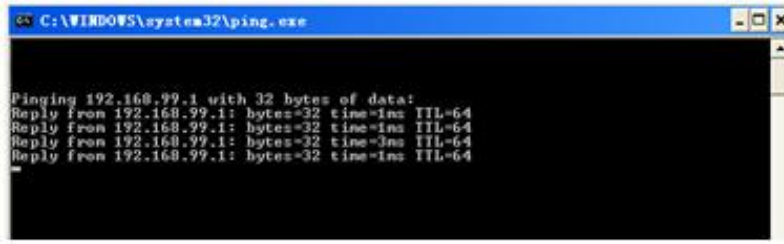
Step 5 Ping the default IP address of the PLC wireless router, to check whether the current connection between your PC and the PLC wireless router is normal. Choose **Start** > **Run** from the desktop and enter **ping 192.168.99.1**. See the following figure:



Note:

192.168.99.1 in the **ping** command is the default IP address of the LAN interface. If the IP address changes, enter the current IP address instead.

Step 6 If your PC can ping through the default IP address of the PLC wireless router, the following page appears, indicating that the connection between your PC and the PLC wireless router is normal:



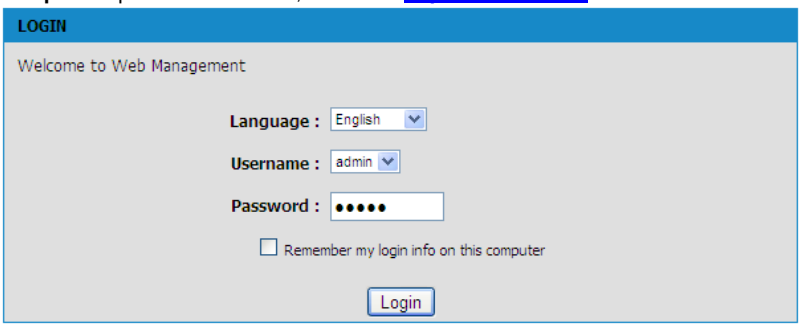
5 Web Configuration

This chapter describes how to log in to the PLC wireless router as a super user and how to configure the parameters in the Web pages.

5.1 Logging In to the PLC Wireless Router

If you log in to the PLC wireless router for the first time, do as follows:

Step 1 Open the IE browser, and enter ***http://192.168.99.1*** in the address bar.

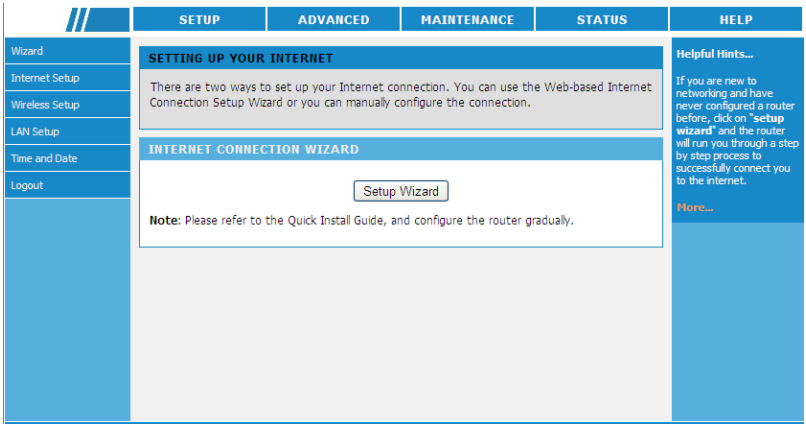


Step 2 In the login page, enter the user name and password.

Note:

- Both the default user name and password of super user are **admin**.

Step 3 Click **Login**, and the following page appears.



Note:

The LAN user is allowed to access the PLC wireless router by two-level user names and passwords (**admin**/**admin** and **user**/**user**).

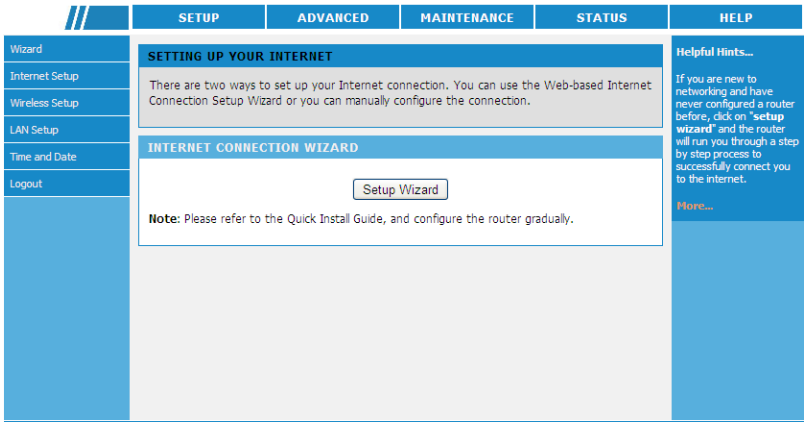
5.2 Setup

5.2.1 Wizard

You can set the basic network parameters for accessing the Internet by following this wizard.

To configure the wizard, do as follows:

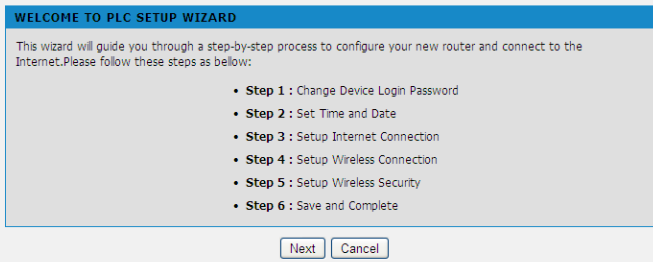
Step 1 Choose **SETUP** > **Wizard**, and the following page appears.



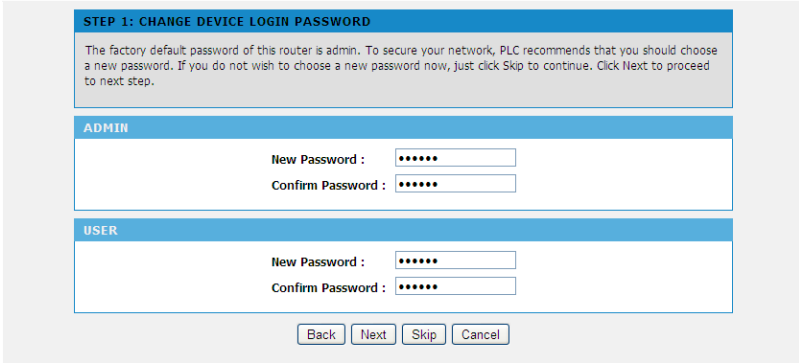
Note:

When you order the broadband service, pay attention to the Internet connection type. The PLC wireless router adopts Ethternet connection. Technical parameters of Internet connection properities are provided by your Internet service provider (ISP). For example, your ISP should tell you whether the Internet connection mode is static IP or dynamic IP, and whether the protocol used for Internet communication is DHCP or PPPoE.

Step 2 Click **Setup Wizard** to display the following page:



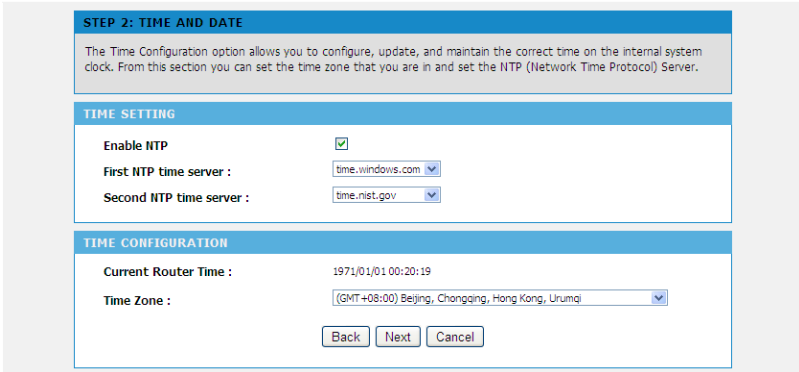
Step 3 There are 6 steps for configuring the wizard. Click **Next** to display the following page:



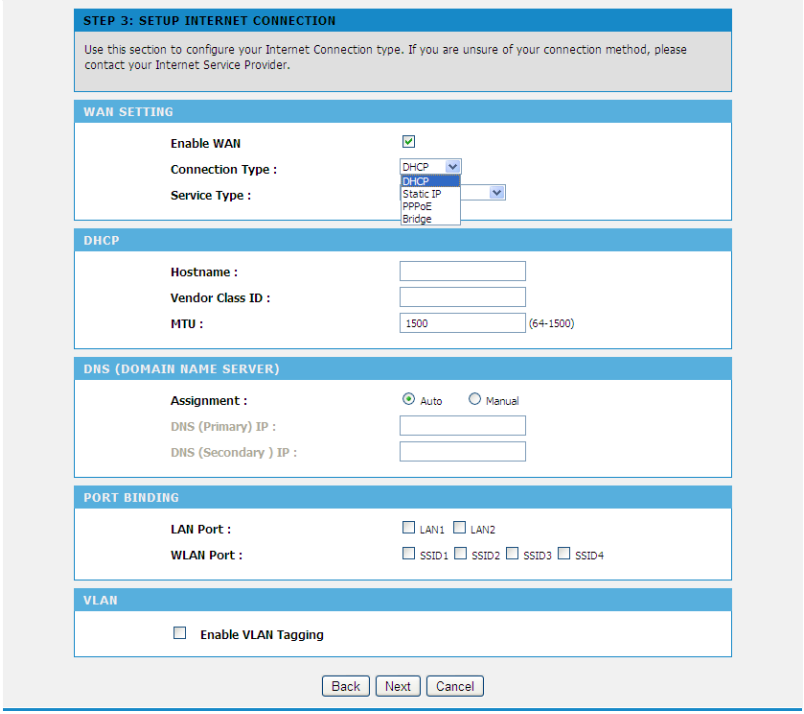
Note:

The password of the default super user of the PLC wireless router is **admin**. In order to ensure your network security, it is recommended to change the default password.

Step 4 In this page, you can change the password of the PLC wireless router. If you do not want to change the password, click **Next** or **Skip**. After setting the new password, click **Next** to display the following page:



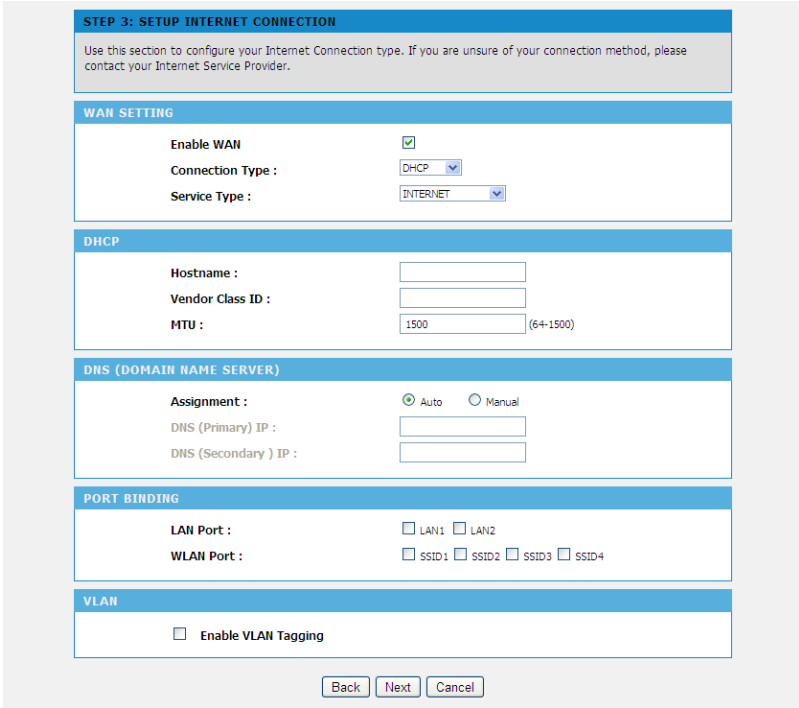
Step 5 In this page, you can set the Network Time Protocol (NTP) server according to your time zone. After setting the NTP server and time zone, click **Next** to display the following page:



Step 6 The PLC wireless router supports 4 types of Internet connection: **DHCP**, **Static IP**, **PPPoE**, and **Bridge**. In this page, you can select the proper Internet connection mode and configure the relevant parameters according to the actual requirements. If you are not sure of your Internet connection mode, please contact your ISP.

(1) DHCP

If you select **DHCP**, the PLC wireless router automatically obtains the IP address, subnet mask and IP address of the gateway from the ISP. If your ISP does not provide IP network parameters, please select this mode. See the following figure:



The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of DHCP type.
Connection Type	Select **DHCP** from the drop-down list.
Service Type	● INTERNET: It is mainly used for the Internet service, for example, surfing the Internet. ● TR069: It is mainly used for the TR069 service, for example, TR069 remote management. ● TR069_INTERNET: It is a mixed type, which applies to both the Internet and TR069 services.
Hostname	Set the host name of local computer.
Vendor Class ID	Enter the vendor class ID. DHCP server assigns the IP

Field	Description
	address to your router according to the vendor class ID.
MTU	Set the maximum transmission unit (MTU). It is 1,500 bytes for most Ethernet networks. But some ISPs may require smaller MTUs. Do not modify the value of MTU size unless it is necessary for your ISP connection.
Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to your router.
DNS (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
DNS (Secondary) IP	If the ISP provides another DNS server, enter its IP address in this field. If the primary DNS server fails to resolve the domain name, the secondary will resolve it.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not '0', message will carry the VLAN ID.

(2) Static IP

If your ISP provides the information of IP address, subnet mask, gateway, and DNS server, please select **Static IP**. For detailed settings, refer to your ISP.

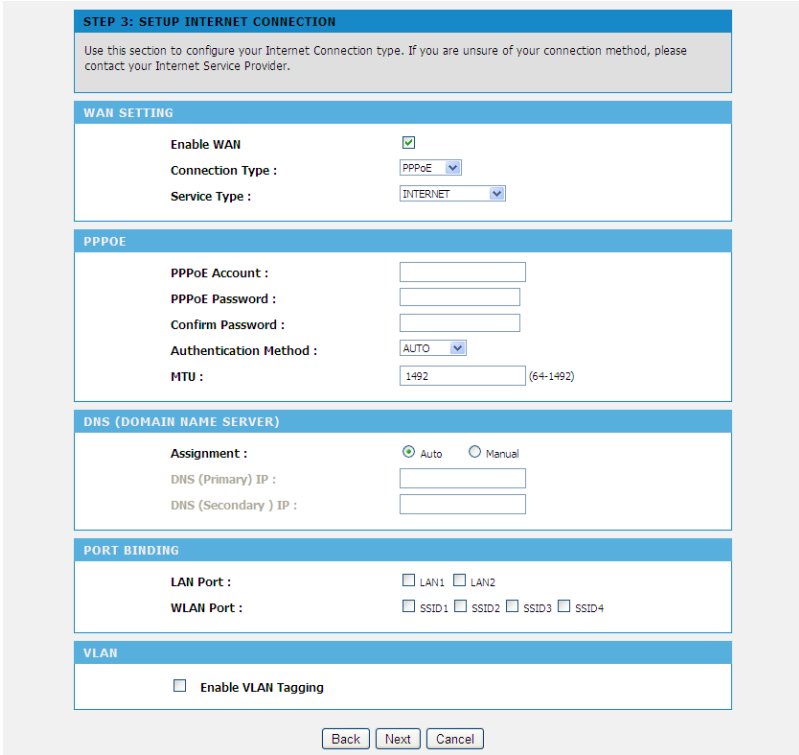
The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of static IP type.
Connection Type	Select **Static IP** from the drop-down list.
Service Type	● INTERNET: It is mainly used for the Internet service, for example, surfing the Internet. ● TR069: It is mainly used for the TR069 service, for example, TR069 remote management. ● TR069_INTERNET: It is a mixed type, which applies to both the Internet and TR069 services.
IP address	Enter the WAN IP address provided by the ISP. Do not leave this field blank.

Field	Description
Subnet mask	Enter the WAN subnet mask provided by the ISP. It varies with the network types. Usually, the subnet mask is **255.255.255.0** (Class C).
Default Gateway IP	Enter the IP address of gateway provided by the ISP. This IP address is used for connecting to the ISP.
MTU	Set the maximum transmission unit. it is 1,500 bytes for most Ethernet networks. But some ISPs may require smaller MTUs. Do not modify the value of MTU size unless it is necessary for your ISP connection.
Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to your router.
DNS (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
DNS (Secondary) IP	If the ISP provides another DNS server, enter the IP address of the DNS server. If the primary DNS server fails to resolve the domain name, the secondary will resolve it.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not '0', message will carry the VLAN ID.

(3) PPPoE

If the ISP provides the user name and password for PPPoE dialup, please select PPPoE.



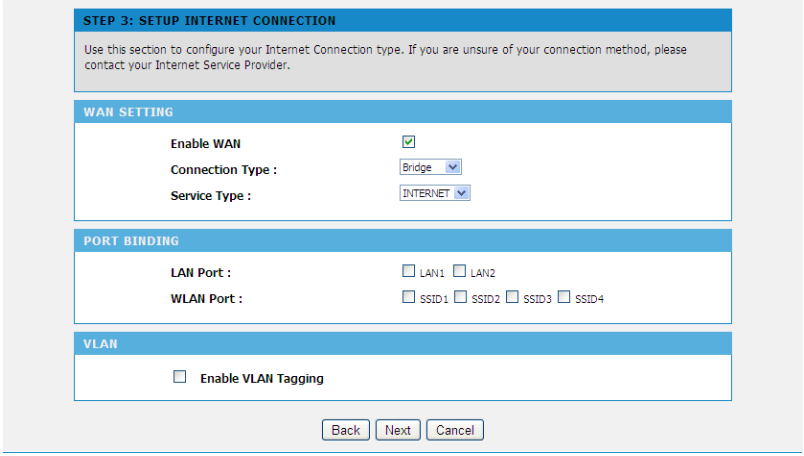
The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of PPPoE type.
Connection Type	Select **PPPoE** from the drop-down list.
Service Type	● INTERNET: It is mainly used for the Internet service, for example, surfing the Internet. ● TR069: It is mainly used for the TR069 service, for example, TR069 remote management. ● TR069_INTERNET: It is a mixed type, which applies to both the Internet and TR069 services.

Field	Description
PPPoE Account	Enter the user name provided by the ISP for PPPoE dialup.
PPPoE Password	Enter the password provided by the ISP for PPPoE dialup.
Confirm Password	Enter the PPPoE password again.
Authentication Method	You can select **AUTO**, **PAP**, **CHAP**, **MS-CHAP**, or **EAP** from the drop-down list.
MTU	Set the maximum transmission unit. It is 1500 bytes for most Ethernet networks, 1492 bytes for PPPoE connection. But some ISPs may require smaller MTUs. Do not modify the value of MTU size unless it is necessary for your ISP connection.
Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to your router.
DNS (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
DNS (Secondary) IP	If the ISP provides another DNS server, enter the IP address of the DNS server. If the primary DNS server fails to resolve the domain name server, the secondary will resolve it.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not '0', message will carry the VLAN ID.

(4) Bridge

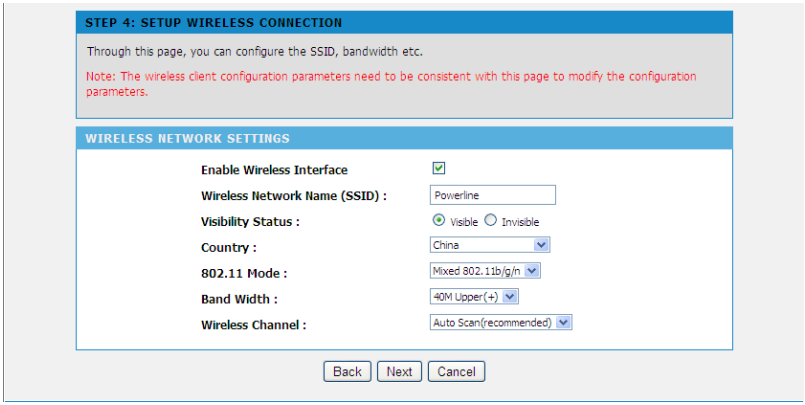
In the **Bridge** mode, all physical ports and wireless interfaces co-exist in the virtual interfaces.



The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of bridge type.
Connection Type	Select **Bridge** from the drop-down list.
Service Type	You can only select **INTERNET**.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not '0', message will carry the VLAN ID.

Step 7 After selecting the proper Internet connection type and setting the relevant parameters, click **Next** to display the following page.



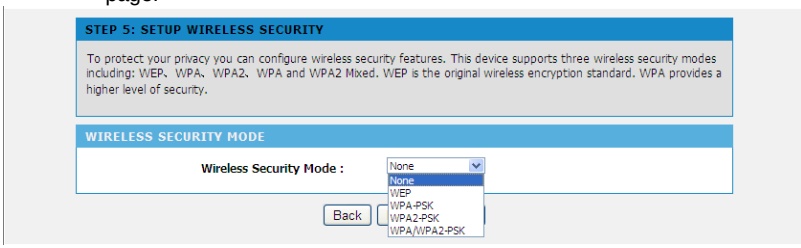
Step 8 In this page, you can configure the wireless parameters of the PLC wireless router.

The following table describes parameters in this page:

Field	Description
Enable Wireless Interface	Enable or disable the wireless interface.
Wireless Network Name (SSID)	The wireless network name (SSID) can contain up to 32 characters and can be letters, numerals, underlines, and any combinations of them. The SSID is case-sensitive.
Visibility Status	● If **Visible** is selected, the PLC wireless router broadcasts its SSID on the wireless network. ● If **Invisible** is selected, the PLC wireless router does not broadcast its SSID on the wireless network.
Country	Select the country where you are from the drop-down list.
802.11 Mode	● Select the appropriate wireless mode. The default is **Mixed 802.11b/g/n**. ● **802.11b only:** The maximum rate is 11Mbps. ● **802.11g only:** The maximum rate is 54Mbps. ● **802.11n only:** For 20M bandwidth, the maximum rate is 130Mbps (150Mbps for short preamble); for **40M Upper (+)** or **40M Lower (-)** bandwidth, the maximum rate is 270Mbps (300Mbps for short preamble).

Field	Description
	● **Mixed 802.11b/g:** It is compatible with 802.11b and 802.11g. ● **Mixed 802.11n/g:** It is compatible with 802.11n and 802.11g. ● **Mixed 802.11b/g/n:** It is compatible with 802.11b, 802.11n, and 802.11g.
Band Width	You can set the band width only in the 802.11 mode that is compatible with 802.11n. For **20M** bandwidth, the maximum rate is 130Mbps (150Mbps for short preamble); for **40M Upper (+)** or **40M Lower (-)** bandwidth, the maximum rate is 270Mbps (300Mbps for short preamble).
Wireless Channel	Select the working channel of the wireless network. The default is **Auto Scan**, which indicates that the wireless router automatically searches for the best channel among the available channels.

Step 9 After setting the wireless parameters, click **Next** to display the following page.

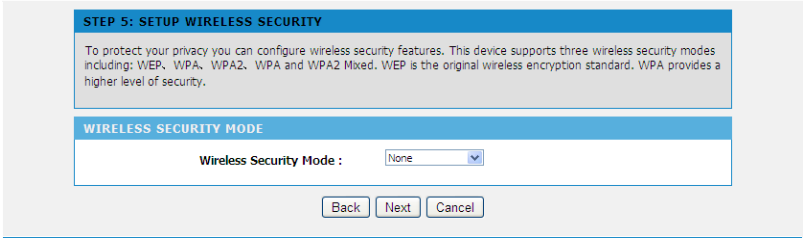


Step 10 In this page, you can set the wireless security modes.

The PLC wireless router provides the following 5 types of wireless security modes: **None**, **WEP**, **WPA-PSK**, **WPA2-PSK**, and **WPA/WPA2-PSK**.

(1) None

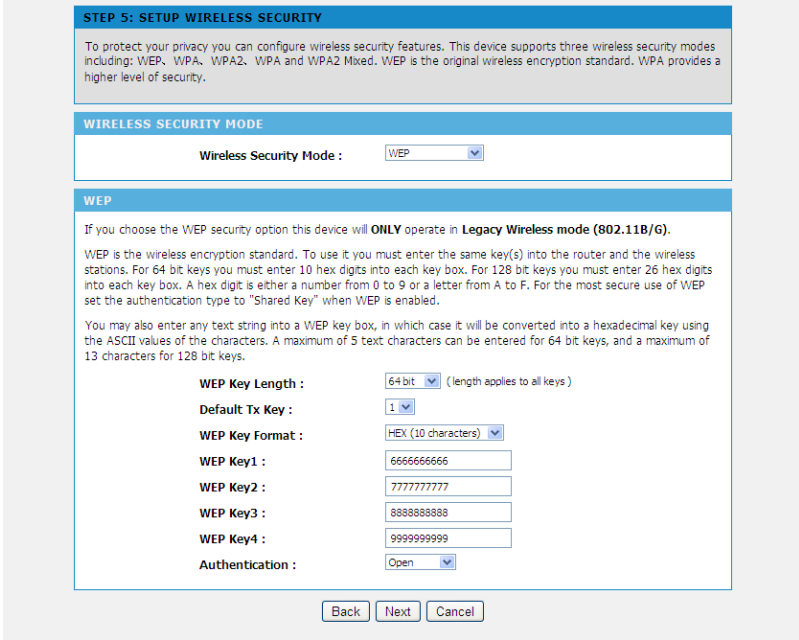
Select **None** from the drop-down list of wireless security mode to display the following page.



None means that data encryption is not adopted, the network is not secure, and any station can access the network. This option is not recommended.

(2) WEP

Select **WEP** from the drop-down list of wireless security mode to display the following page.

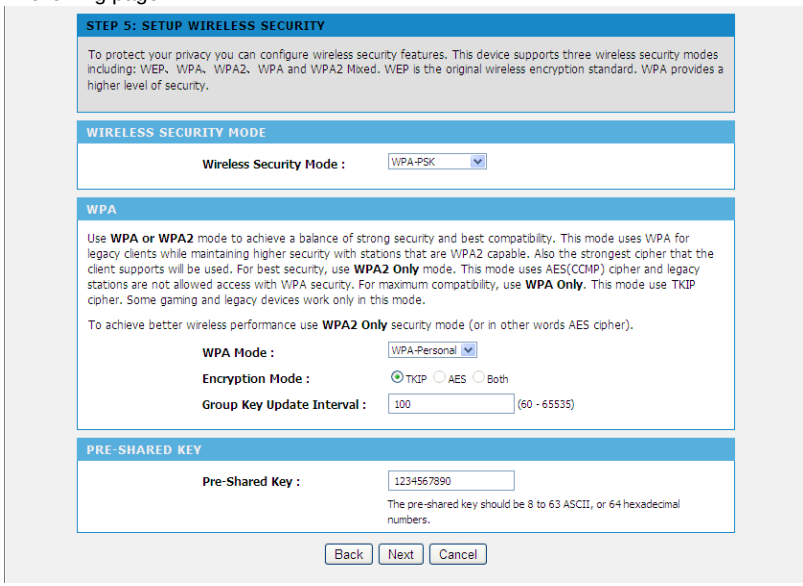


The following table describes parameters related to the WEP mode:

Field	Description
WEP Key Length	Select the encryption length of WEP key. You can select **64 bit** or **128 bit**.
Default Tx Key	Select one from the four keys as the default key of the wireless network.
WEP Key Format	● When the key format is **64 bit**, you need to enter 5 ASCII characters or 10 hexadecimal digits. ● When the key format is **128 bit**, you need to enter 13 ASCII characters or 26 hexadecimal digits.
WEP Key 1/2/3/4	Set 64-bit or 128-bit key according to the key format.
Authentication	Select the proper authentication mode. You can select **Open** or **Share Key**.

(3) WPA-PSK

Select **WPA-PSK** from the drop-down list of wireless security mode to display the following page.

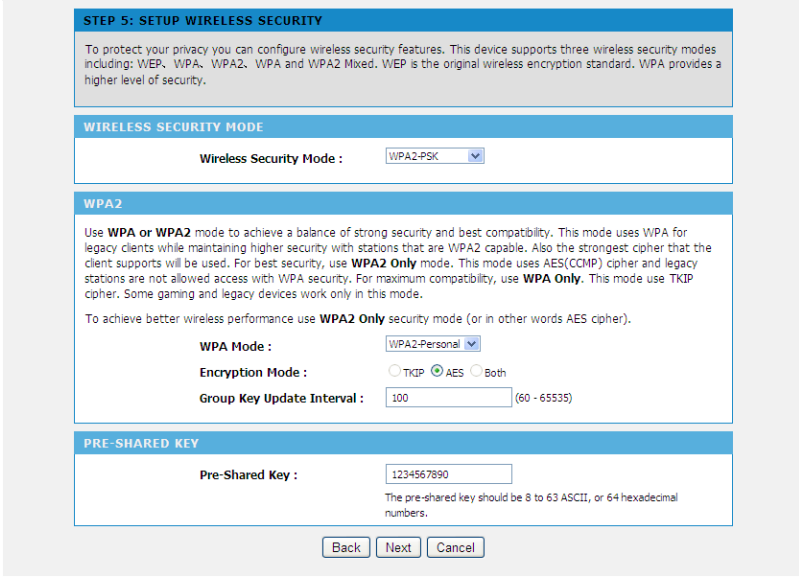


The following table describes parameters related to the WPA mode:

Field	Description
WPA Mode	Only **WPA-Personal** is available.
Encryption Mode	Only **TKIP** is available.
Group Key Update Interval	Set the update interval of group key.
Pre-shared Key	Set the pre-shared key. The PLC wireless router uses this key to authenticate the identity of workstation.

(4) WPA2-PSK

Select **WPA2-PSK** from the drop-down list of wireless security mode to display the following page.



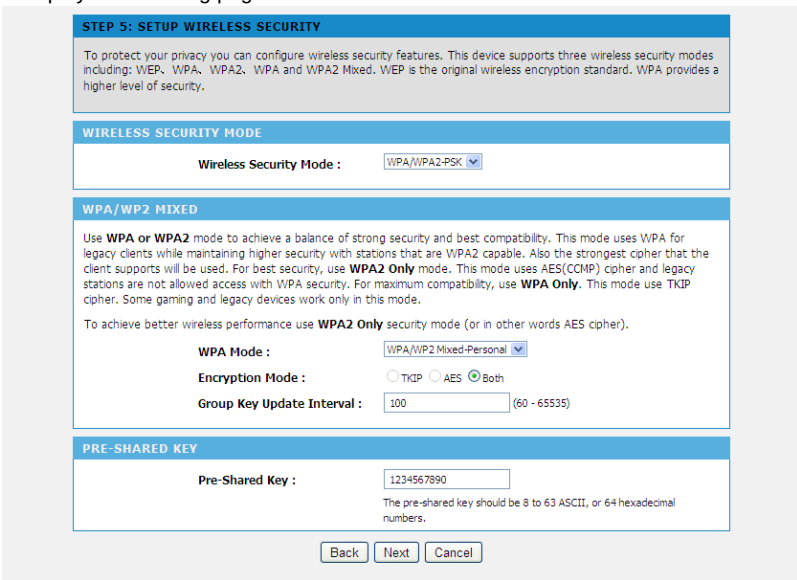
The following table describes parameters related to the WPA2 mode:

Field	Description
WPA Mode	Only **WPA2-Personal** is available.
Encryption Mode	Only **AES** is available.
Group Key Update	Set the update interval of group key.

Field	Description
Interval	
Pre-shared Key	Set the pre-shared key. The PLC wireless router uses this key to authenticate the identity of workstation.

(5) WPA/WPA2-PSK

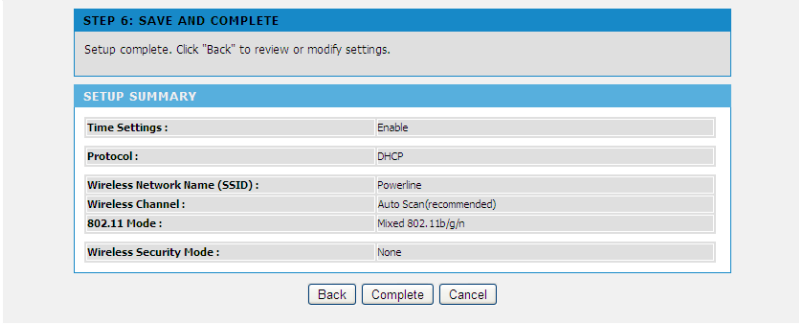
Select **WPA/WPA2-PSK** from the drop-down list of wireless security mode to display the following page.



The following table describes parameters related to the WPA/WPA2 Mixed mode:

Field	Description
WPA Mode	Only **WPA/WPA2 Mixed-Personal** is available.
Encryption Mode	You can only select **Both**. **Both** indicates that it is compatible with **TKIP** or **AES**.
Group Key Update Interval	Set the update interval of group key.
Pre-shared Key	Set the pre-shared key. The PLC wireless router uses this key to authenticate the identity of workstation.

Step 11 After selecting the proper wireless security mode and its relevant parameters, click **Next** to display the following page.



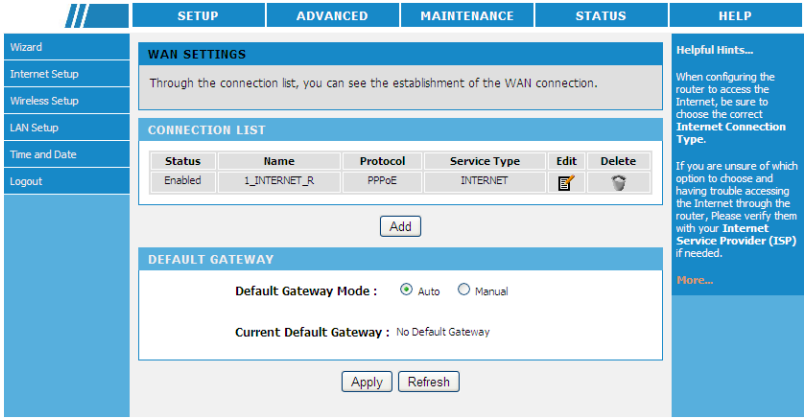
Step 12 In this page, you can view the configuration information of the PLC wireless router. If you want to modify some settings, click **Back**. If you want to make the settings take effect, click **Complete**.

Note:

In any configuration page of Wizard, you can click **Back** to modify the previous settings, or click **Cancel** to exit the page.

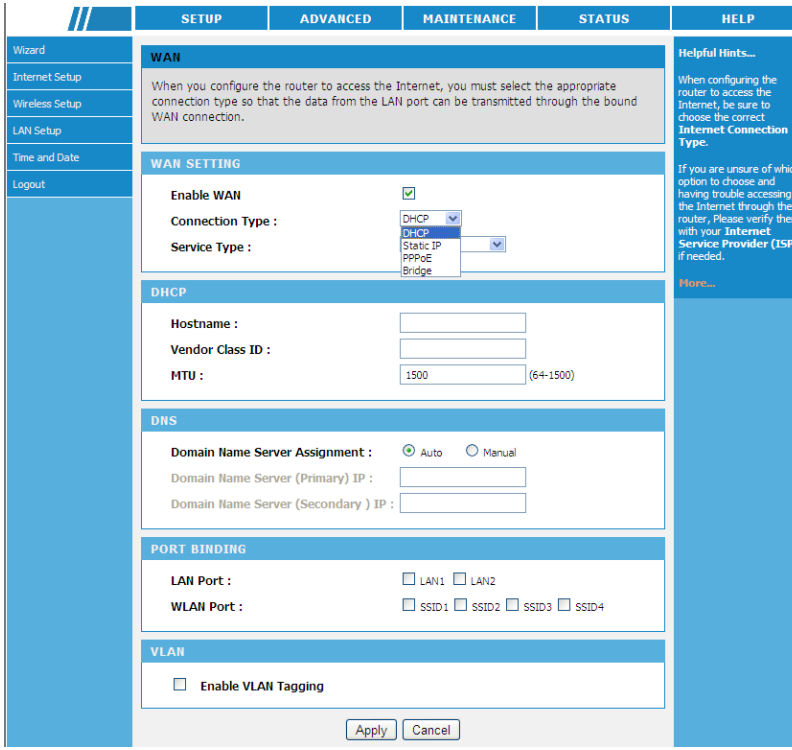
5.2.2 Internet Setup

Choose **SETUP** > **Internet Setup**, and the following page appears.



This device supports Internet access modes. In this page, you can add multiple WAN connections and set the default gateway mode. You can manually or automatically set the default gateway mode. If you select **Manual**, you need to select a proper WAN connection from the drop-down list, except the bridge WAN connections.

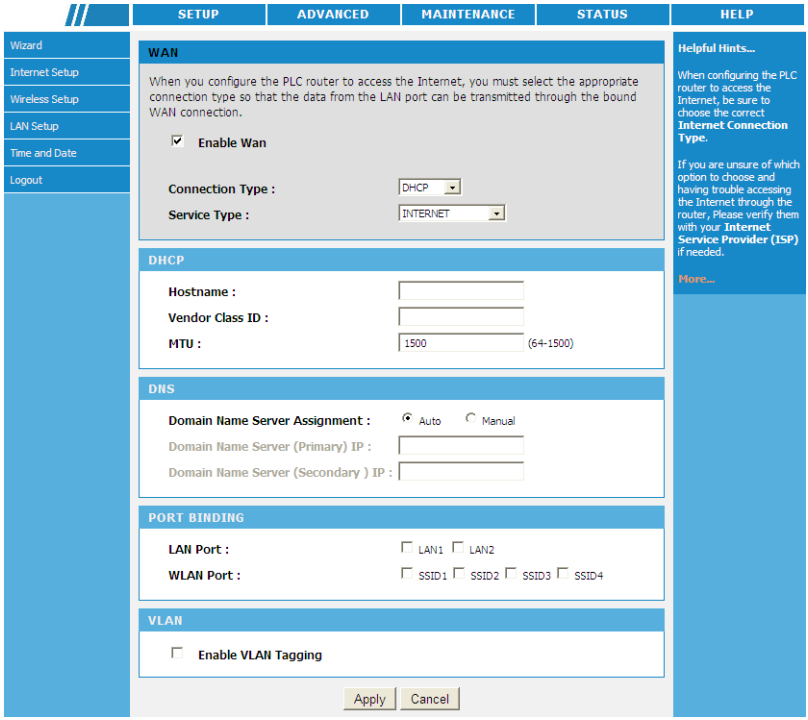
Click **Add** to display the following page.



The PLC wireless router supports four types of Internet connection modes. The Internet connection modes contain **DHCP**, **Static IP**, **PPPoE**, and **Bridge**. In this page, you can select the proper Internet connection mode and configure the relevant parameters according to the actual requirements.

(1) DHCP

If you select DHCP, the PLC wireless router automatically obtains the IP address, subnet mask, and IP address of the gateway from the ISP. If the ISP does not provide any IP network parameters, please select this mode. See the following figure:



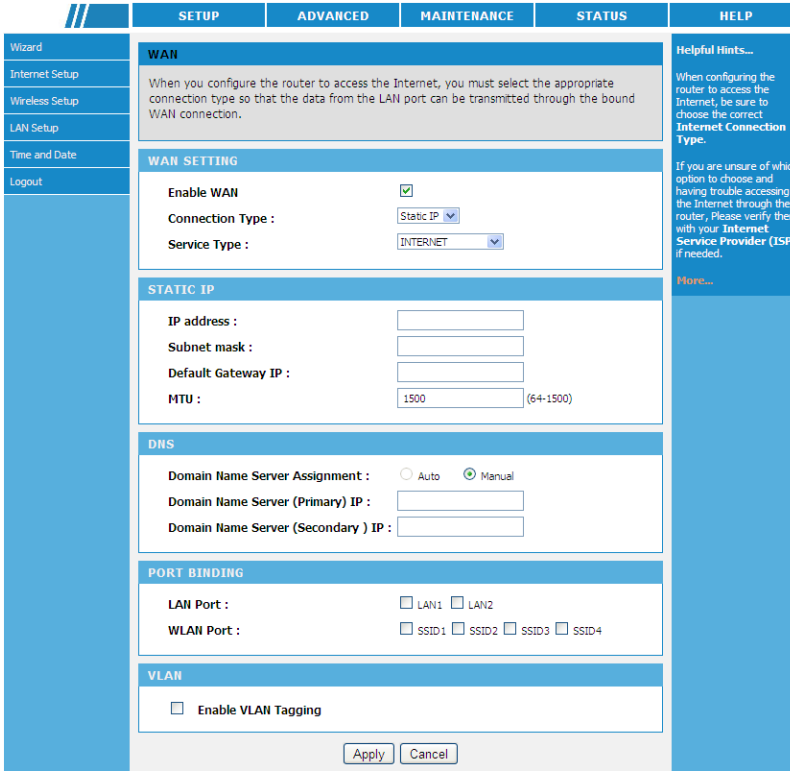
The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of DHCP type.
Connection Type	Select **DHCP** from the drop-down list.
Service Type	● INTERNET: It is mainly used for the Internet service, for example, surfing the Internet. ● TR069: It is mainly used for the TR069 service, for example, TR069 remote management. ● TR069_INTERNET: a mixed type, which applies to both the Internet and TR069 services.
Hostname	Set the host name of local computer.

Field	Description
Vendor Class ID	Enter the vendor class ID. DHCP server assigns the IP address to your router according to the vendor class ID.
MTU	Set the maximum transmission unit. It is 1500 bytes for most Ethernet networks. But some ISPs may require smaller MTUs. Do not modify the value of MTU size unless it is necessary for your ISP connection.
Domain Name Server Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to your router.
Domain Name Server (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
Domain Name Server (Secondary) IP	If the ISP provides another DNS server, enter the IP address of the DNS server. If the primary DNS server fails to resolve the domain name, the secondary will resolve it.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not ‘0’, message will carry the VLAN ID.

(2) Static IP

If the ISP provides the information of the IP address, subnet mask, gateway, and DNS server, please select **Static IP**. For detailed settings, refer to your ISP.



The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of static IP type.
Connection Type	Select **Static IP** from the drop-down list.
Service Type	● INTERNET: It is mainly used for the Internet service, for example, surfing the Internet. ● TR069: It is mainly used for the TR069 service, for example, TR069 remote management. ● TR069_INTERNET: It is a mixed type, which applies to both the Internet and TR069 services.

Field	Description
IP address	Enter the WAN IP address provided by the ISP. It cannot be null.
Subnet mask	Enter the WAN subnet mask provided by the ISP. It varies depending on the network type. Usually, the subnet mask is **255.255.255.0** (Class C).
Default Gateway IP	Enter the IP address of the gateway provided by the ISP. This IP address is used for connecting to the ISP.
MTU	Set the maximum transmission unit. It is 1500 bytes for most Ethernet networks. But some ISPs may require smaller MTUs. Do not modify the value of MTU size unless it is necessary for your ISP connection.
Domain Name Server Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to your router.
Domain Name Server (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
Domain Name Server (Secondary) IP	If the ISP provides another DNS server, enter the IP address of the DNS server. If the primary DNS server fails to resolve the domain name, the secondary will resolve it.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not ‘0’, message will carry the VLAN ID.

(3) PPPoE

If the ISP provides the user name and password for PPPoE dialup, please select **PPPoE**.

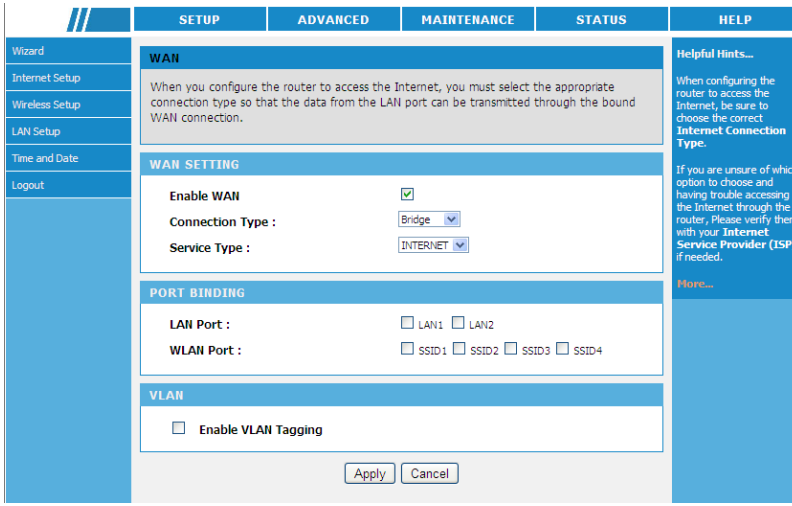
The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of PPPoE type.
Connection Type	Select **PPPoE** from the drop-down list.
Service Type	● INTERNET: it is mainly used for the Internet service, for example, surfing the Internet. ● TR069: It is mainly used for the TR069 service, for example, TR069 remote management. ● TR069_INTERNET: It is a mixed type, which applies to both the Internet and TR069 services.

Field	Description
PPPoE Account	Enter the user name provided by the ISP for PPPoE dialup.
PPPoE Password	Enter the password provided by the ISP for PPPoE dialup.
Confirm Password	Enter the PPPoE password again.
Authentication Method	You can select **AUTO**, **PAP**, **CHAP**, **MS-CHAP**, or **EAP** from the drop-down list.
MTU	Set the maximum transmission unit. It is 1500 bytes for most Ethernet networks, 1492 bytes for PPPoE connection. But some ISPs may require smaller MTUs. Do not modify the value of MTU size unless it is necessary for your ISP connection.
Domain Name Server Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to your router.
Domain Name Server (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
Domain Name Server (Secondary) IP	If the ISP provides another DNS server, enter the IP address of the DNS server. If the primary DNS server fails to resolve the domain name server, the secondary will resolve it.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 wireless WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not '0', message will carry the VLAN ID.

(4) Bridge

In the **Bridge** mode, all physical ports and wireless interfaces co-exist in the virtual interfaces.



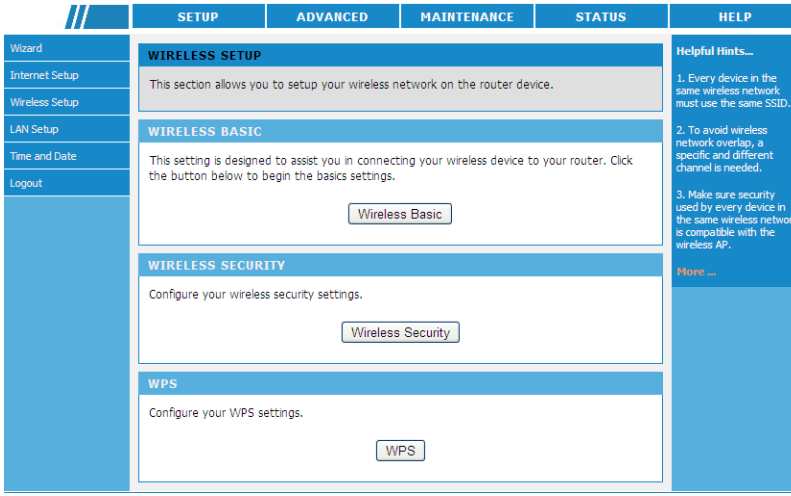
The following table describes parameters in this page:

Field	Description
Enable WAN	Enable or disable the WAN connection of bridge type.
Connection Type	Select **Bridge** from the drop-down list.
Service Type	You can only select **INTERNET**.
LAN Port	The PLC wireless router supports 2 LAN ports, which can be bound to different interfaces.
WLAN Port	The PLC wireless router supports 4 WLAN ports, which can be bound to different interfaces.
Enable VLAN Tagging	If you enable VLAN tagging and the VLAN value is not '0', message will carry the VLAN ID.

After setting the parameters, click **Apply** to save the settings.

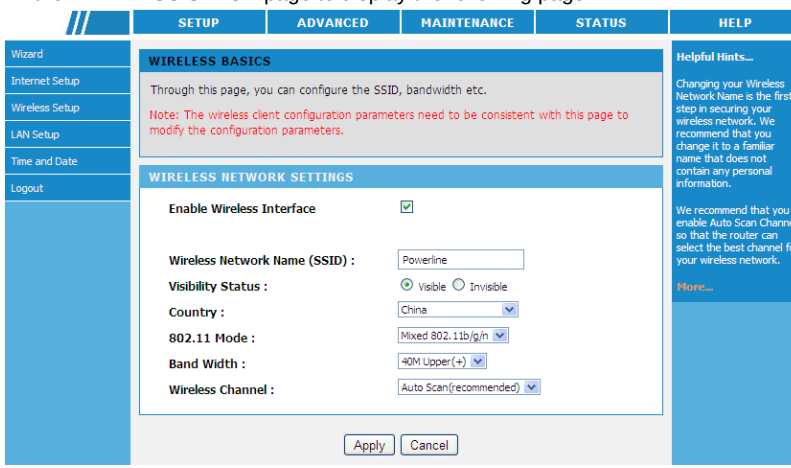
5.2.3 Wireless Setup

Choose **SETUP** > **Wireless Setup**, and the following page appears.



5.2.3.1 Wireless Basic Settings

Choose **Wirelss Setup** > **Wireless Basic** on the left pane or click **Wireless Basic** in the **WIRELESS SETUP** page to display the following page.



In this page, you can configure the basic wireless parameters.

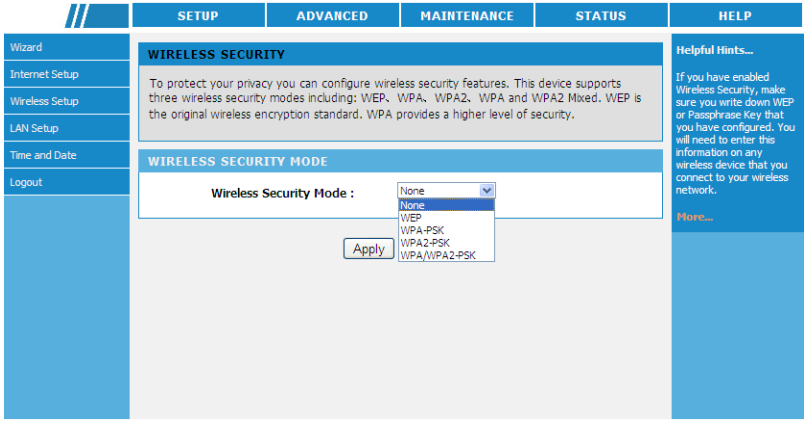
The following table describes parameters in this page:

Field	Description
Enable Wireless Interface	Enable or disable the wireless interface.
Wireless Network Name (SSID)	The wireless network name (SSID) can contain up to 32 characters and can be letters, numerals, underlines, and any combinations of them. The SSID is case-sensitive.
Visibility Status	● If **Visible** is selected, the PLC wireless router broadcasts its SSID on the wireless network. ● If **Invisible** is selected, the PLC wireless router does not broadcast its SSID on the wireless network.
Country	Select the country where you are from the drop-down list.
802.11 Mode	Select the appropriate wireless mode. The default is **Mixed 802.11b/g/n**. ● **802.11b only**: The maximum rate is 11Mbps. ● **802.11g only**: The maximum rate is 54Mbps. ● **802.11n only**: For **20M** bandwidth, the maximum rate is 130Mbps (150Mbps for short preamble); for **40M Upper (+)** or **40M Lower (-)** bandwidth, the maximum rate is 270Mbps (300Mbps for short preamble). ● **Mixed 802.11b/g**: It is compatible with 802.11b and 802.11g. ● **Mixed 802.11n/g**: It is compatible with 802.11n and 802.11g. ● **Mixed 802.11b/g/n**: It is compatible with 802.11b, 802.11n, and 802.11g.
Band Width	Only in the 802.11 mode that is compatible with 802.11n, can you set the band width. For **20M** bandwidth, the maximum rate is 130Mbps (150Mbps for short preamble); for **40M Upper (+)** or **40M Lower (-)** bandwidth, the maximum rate is 270Mbps (300Mbps for short preamble).
Wireless Channel	Select the working channel of the wireless network. The default is **Auto Scan**, which indicates that the PLC wireless router automatically searches for the best channel among the available channels.

After setting the parameters, click **Apply** to save the settings.

5.2.3.2 Wireless Security Settings

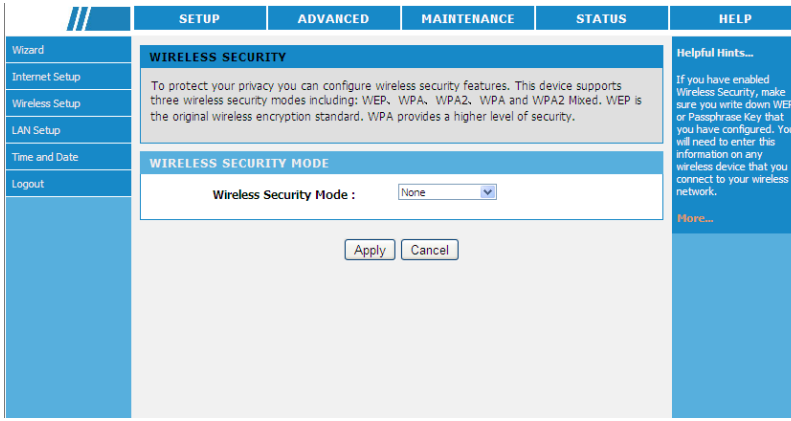
Choose **Wirelss Setup** > **Wireless Security** on the left pane or click **Wireless Security** in the **WIRELESS SETUP** page to display the following page.



Wireless security settings are very important in protecting the wireless base stations on your network and wireless communication between your router and wireless network. The PLC wireless router provides 5 types of wireless security modes, which contain **None**, **WEP**, **WPA-PSK**, **WPA2-PSK**, and **WPA/WPA2-PSK**.

(1) None

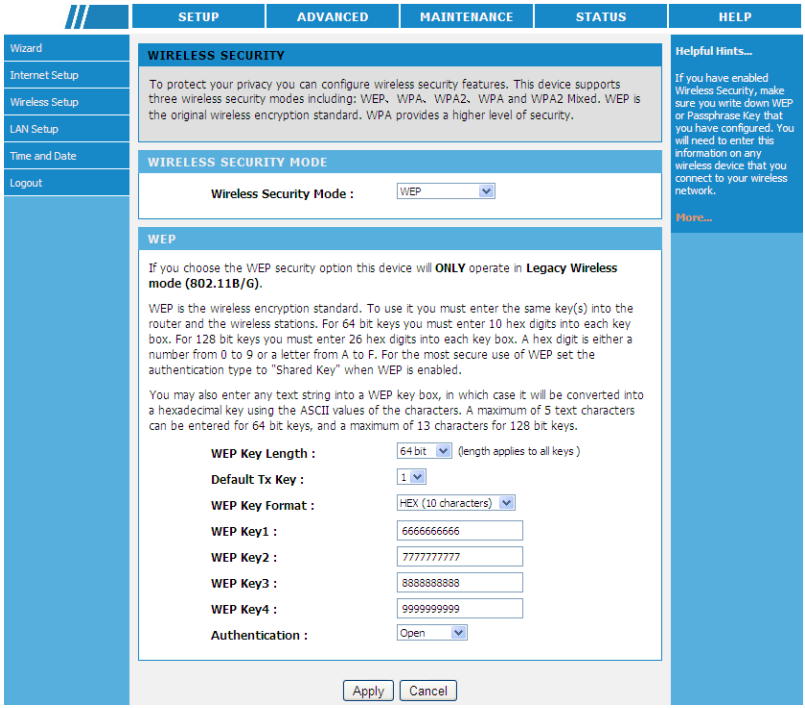
Select **None** from the drop-down list of wireless security mode to display the following page.



None means data encryption is not adopted and the network is not secure. Any station can access the network. This option is not recommended.

(2) WEP

Select **WEP** from the drop-down list of wireless security mode to display the following page.

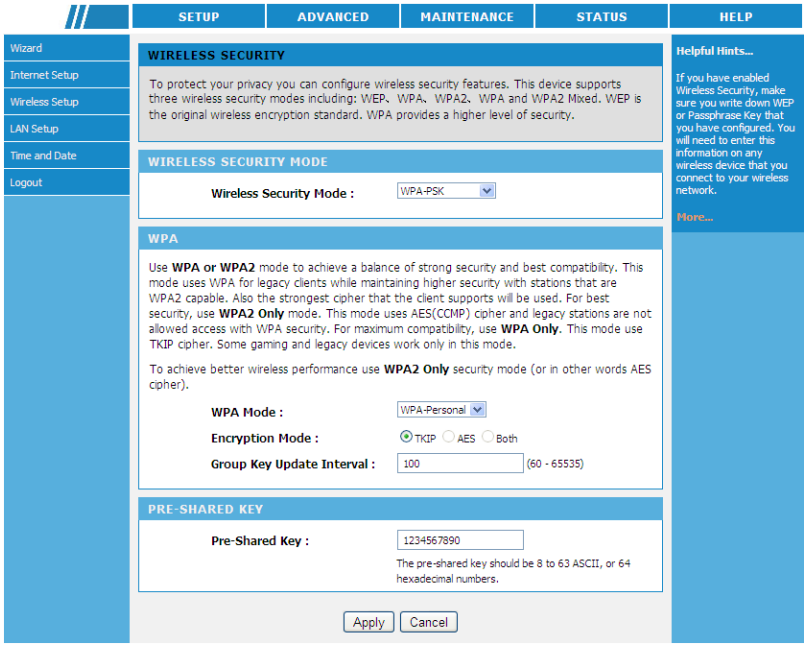


The following table describes parameters related to the WEP mode:

Field	Description
WEP Key Length	Select the encryption length of WEP key. You can select **64 bit** or **128 bit**.
Default Tx Key	Select one from the four keys as the default key of the wireless network.
WEP Key Format	● When the key format is **64 bit**, you need to enter 5 ASCII characters or 10 hexadecimal digits. ● When the key format is **128 bit**, you need to enter 13 ASCII characters or 26 hexadecimal digits.
WEP Key 1/2/3/4	Set 64-bit or 128-bit key according to the key format.
Authentication	Select the proper authentication mode. You can select **Open** or **Share Key**.

(3) WPA-PSK

Select **WPA-PSK** from the drop-down list of wireless security mode to display the following page.

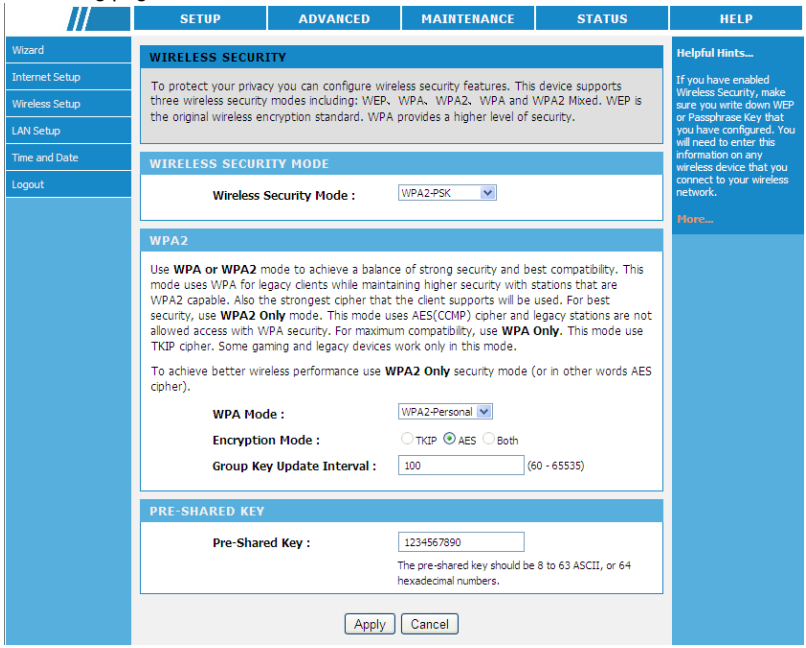


The following table describes parameters related to the WPA mode:

Field	Description
WPA Mode	Only **WPA-Personal** is available.
Encryption Mode	Only **TKIP** is available.
Group Key Update Interval	Set the update interval of group key.
Pre-shared Key	Set the pre-shared key. The PLC wireless router uses this key to authenticate the identity of workstation.

(4) WPA2-PSK

Select **WPA2-PSK** from the drop-down list of wireless security mode to display the following page.

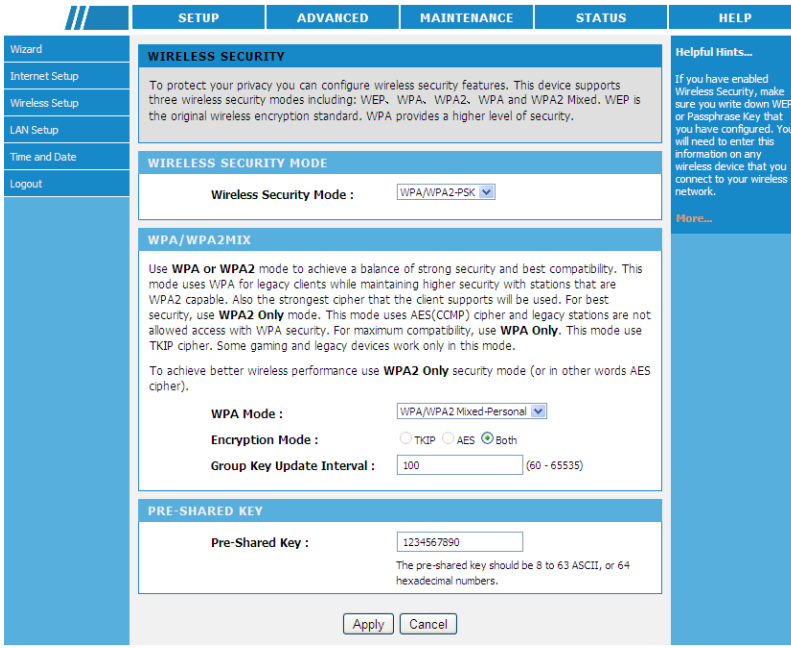


The following table describes parameters related to the WPA2 mode:

Field	Description
WPA Mode	Only **WPA2-Personal** is available.
Encryption Mode	Only **AES** is available.
Group Key Update Interval	Set the update interval of group key.
Pre-shared Key	Set the pre-shared key. The PLC wireless router uses this key to authenticate the identity of workstation.

(5) WPA/WPA2-PSK

Select **WPA/WPA2-PSK** from the drop-down list of wireless security mode to display the following page.



The following table describes parameters related to the **WPA/WPA2 Mixed** mode:

Field	Description
WPA Mode	Only **WPA/WPA2 Mixed-Personal** is available.
Encryption Mode	You can only select **Both**. **Both** indicates that it is compatible with **TKIP** or **AES**.
Group Key Update Interval	Set the update interval of group key.
Pre-shared Key	Set the pre-shared key. The PLC wireless router uses this key to authenticate the identity of workstation.

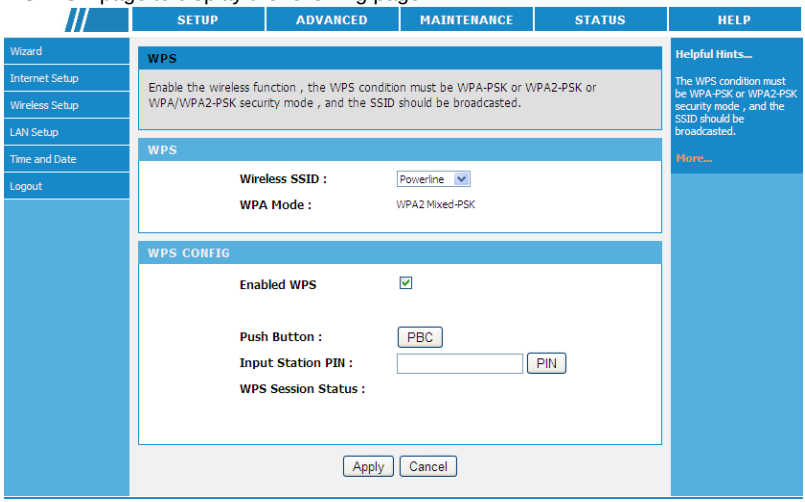
After setting the parameters, click **Apply** to save the settings.

5.2.3.3 WPS Settings

WPS refers to Wi-Fi Protected Setup. You can use the WPS setup function to add a wireless client to a network, without setting some specific parameters, such as

SSID, security mode, and password. To use this function, a wireless client must support WPS. If the wireless client does not support WPS, you must manually configure the wireless settings of wireless client, and ensure that its SSID and other wireless security settings are the same as that of the PLC wireless router.

Choose **Wirelss Setup** > **WPS** on the left pane or click **WPS** in the **WIRELESS SETUP** page to display the following page.



The following table describes parameters in this page:

Field	Description
Wireless SSID	Select a wireless SSID from the drop-down list.
WPA Mode	Display current WPA mode.
Enabled WPS	Enable or disable WPS.
Push Button	Click the **PBC** button in this page, and then click the **PBC** button in the configuration utility page of wireless network card or press the **WPS** pushbutton on the wireless network card within 2 minutes to finish WPS configuration.
Input Station PIN	Enter the PIN code that is generated randomly by the configuration utility of wireless card.
WPS Session Status	Display current WPS connection status.

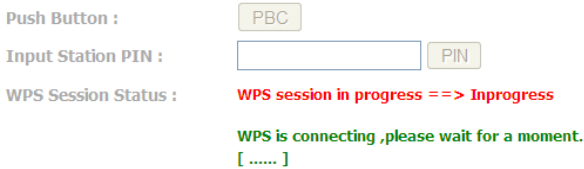
⚠ Caution:

If you want to use WPS, you must select the WPA-PSK, WPA2-PSK or WPA/WPA2-PSK mode and the SSID must be broadcasted.

WPS modes contain PBC mode and PIN mode.

- **PBC Mode**

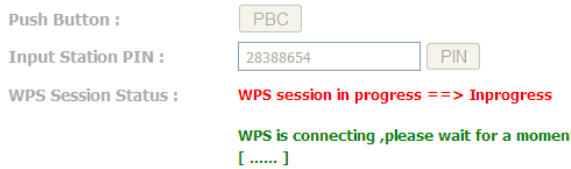
Click the **PBC** button in the WPS page or press the **WPS** button on the PLC wireless router to start WPS connection.



Press the **WPS** button on the network card or click the **PBC** button in the configuration utility page of network card within two minutes to start WPS connection. After WPS connection is established, the following page appears. The client can now visit the LAN.

- **PIN Mode**

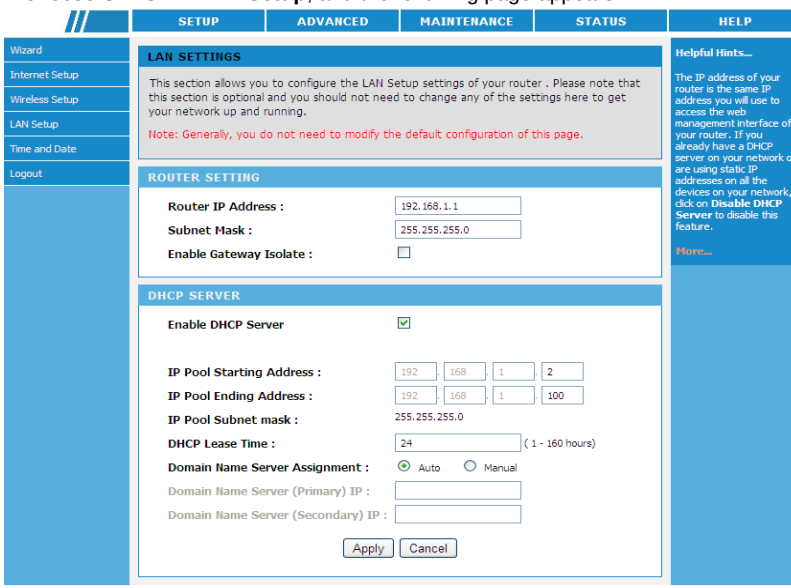
Enter the PIN of the network card in the WPS page (refer to the client of the network card), and then click **PIN** to start WPS connection. The following page appears:



Click the **PIN** button in the configuration utility page of network card within two minutes to start WPS connection. After WPS connection is established, the following page appears. The client can now visit the LAN.

5.2.4 LAN Setup

Choose **SETUP** > **LAN Setup**, and the following page appears.



In this page, you can configure the LAN settings of the PLC wireless router. You can modify the IP address of the LAN interface according to the actual network environment. The default IP address is **192.168.99.1**. Please note that this is an optional operation. Usually, you need not to modify the default settings in this page. You may use the default settings and DHCP service to manage the IP setting of the private network. The IP address of your host is from the DHCP address pool. If you want to enable the DHCP function of the PLC wireless router on the LAN, the network segment of DHCP IP pool of PLC wireless router must be the same as that of the IP address of your host. If the IP network segment of the PLC wireless router changes, the network segment of the DHCP IP pool will also change automatically.

The following table describes parameters in this page:

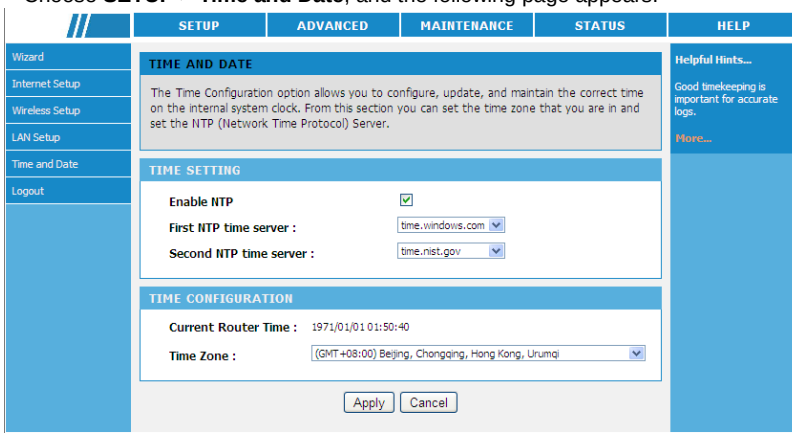
Field	Description
Router IP Address	Set the IP address that a LAN user uses to access the router. The default IP is ***192.168.99.1***. You can change it if necessary.
Subnet Mask	Subnet mask of the LAN interface. You can enter a different subnet mask according to the actual network environment.
Enable Gateway Isolate	After the gateway isolation is enabled, PCs on the LAN side cannot communicate with each other directly among different gateways.
Enable DHCP Server	Enable or disable the DHCP server.
IP Pool Starting Address	The first address in a consecutive IP address pool.
IP Pool Ending Address	The last address in a consecutive IP address pool.
IP Pool Subnet Mask	The subnet mask of the IP pool is the same as that of the PLC wireless router.
DHCP Lease Time	After the DHCP lease time is over, the PLC wireless router automatically assigns new IP addresses for all connected computers.
Domain Name Server Assignment	You can manually enter the IP address of domain name server or let the DNS server automatically assign one to

Field	Description
	your router.
Domain Name Server (Primary) IP	Enter the IP address of the primary DNS server. Domain names should be resolved first by the primary DNS server.
Domain Name Server (Secondary) IP	If the ISP provides another DNS server, enter the IP address of DNS server. If the primary DNS server fails to resolve the domain name, the secondary will resolve it.

After setting the parameters, click **Apply** to save the settings.

5.2.5 Time and Date

Choose **SETUP** > **Time and Date**, and the following page appears.



In this page, you can set the Network Time Protocol (NTP) server and your local time zone, for updating and maintaining the router time.

After enabling the Internet time servers, select the proper time servers and your local time zone, and then click **Apply** to save the settings.

When the PLC wireless router connects to the Internet, the router time will synchronize with the time of selected time zone.

5.2.6 Logout

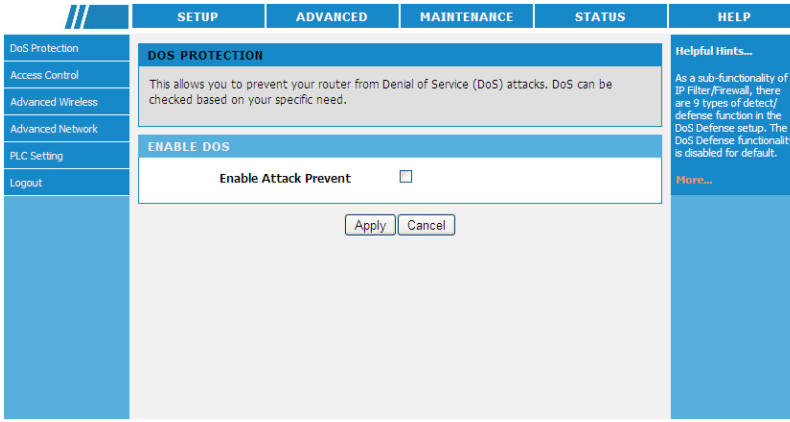
Choose **SETUP** > **Logout** to log out of the Web configuration page.

5.3 Advanced Settings

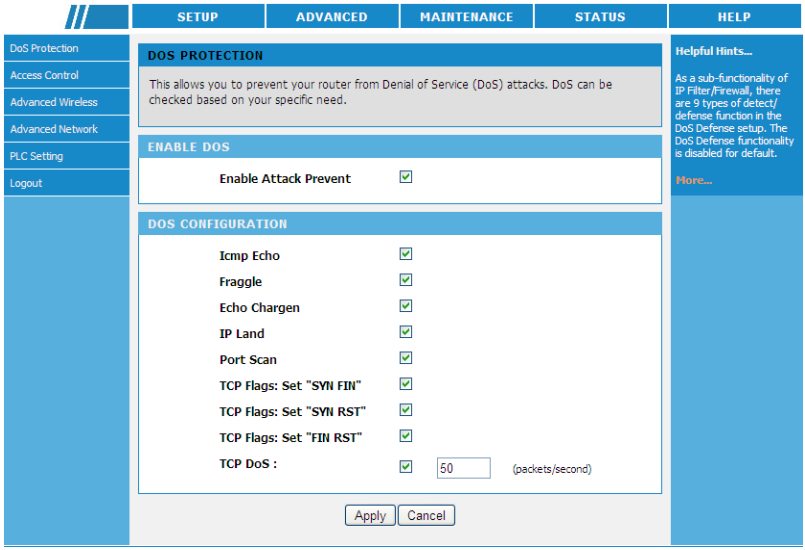
5.3.1 DoS Protection

Denial-of-Service attack (DoS attack) is one of most common network attack types. DoS attack is one type of external attacks launched by hackers, and it is usually used to prevent the legal users from enjoying the service. The way of common attack is to make the system server overload or let system crash.

Choose **ADVANCED** > **DoS Protection** on the left pane to display the following page.



Check **Enable Attack Prevent**, and the following page appears.

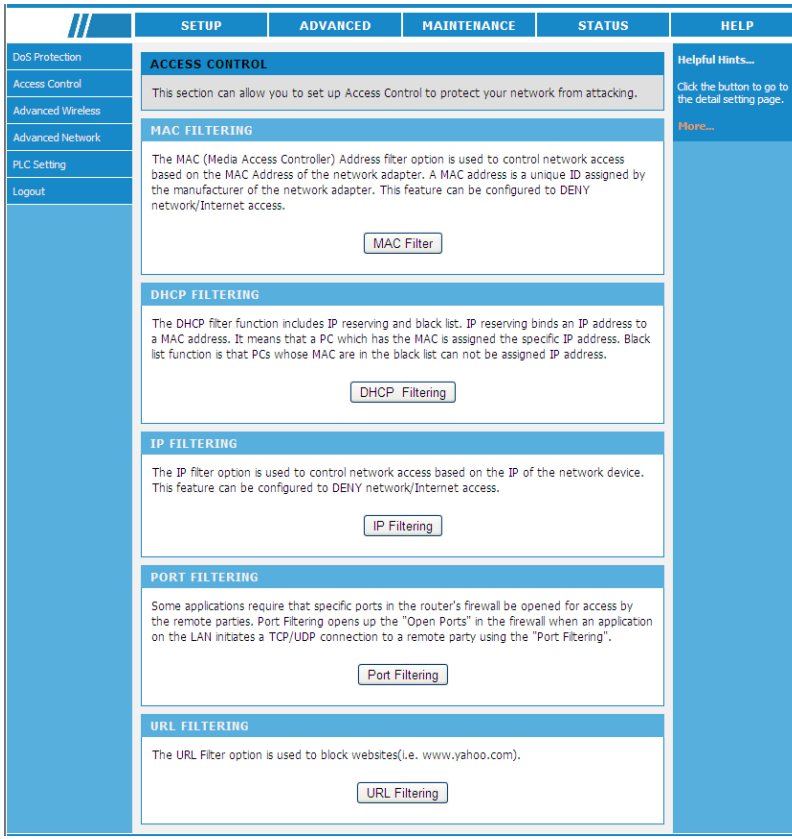


In this page, you can enable or disable the fire wall settings such as ICMP Echo, Fraggle, and Echo Chargen.

After setting the parameters, click **Apply** to save the settings.

5.3.2 Access Control

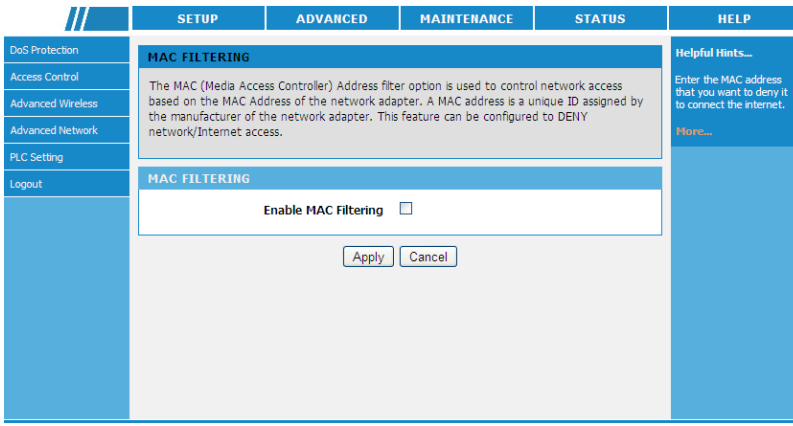
Choose **ADVANCED** > **Access Control**, and the following page appears.



5.3.2.1 MAC Filtering

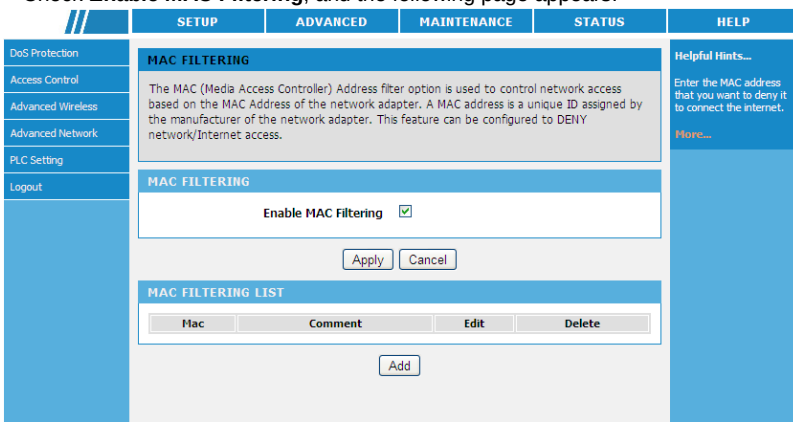
MAC (Media Access Control) address filter is used to filter the transmission data according to the physical address of wireless network card.

Choose **Access Control** > **MAC Filtering** on the left pane or click **MAC Filter** in the **ACCESS CONTROL** page to display the following page.

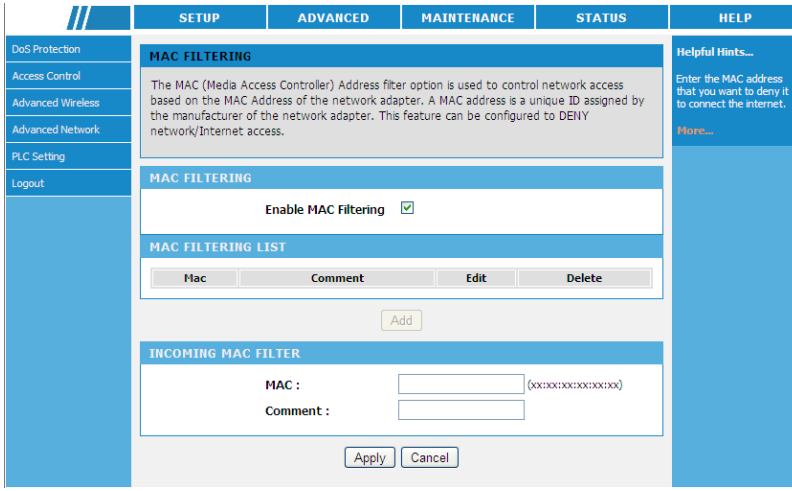


In this page, you can add the MAC addresses of devices to the MAC filtering list. The devices in the MAC filtering list are not allowed to access the Internet.

Check **Enable MAC Filtering**, and the following page appears.



Click **Add** to display the following page.



The following table describes parameters in this page:

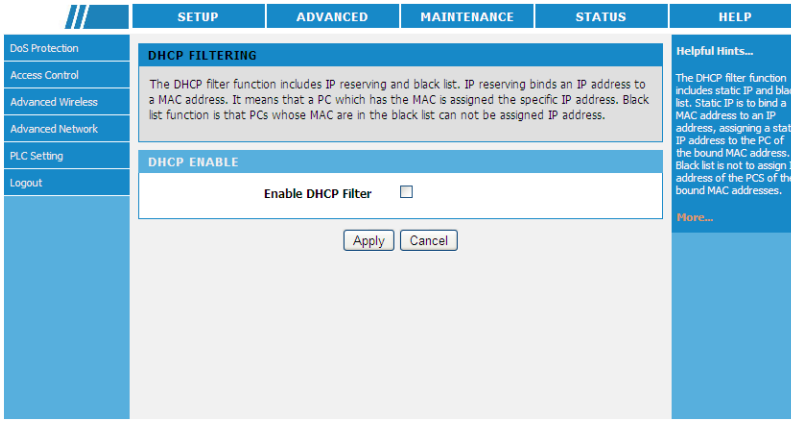
Field	Description
MAC	Enter the MAC address of the device that is not allowed to access the Internet.
Comment	Enter the comment about the MAC filtering rule.

After setting the parameters, click **Apply** to save the settings.

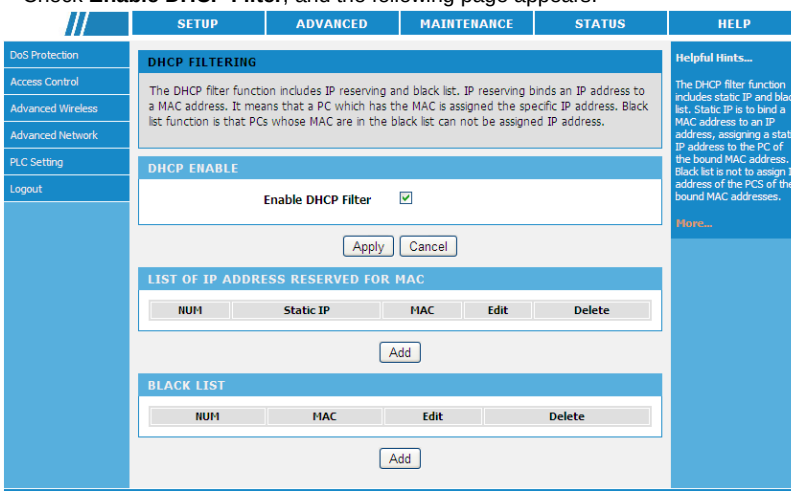
5.3.2.2 DHCP Filtering

DHCP Filtering is used to control network access based on the IP address of the network device.

Choose **Access Control** > **DHCP Filtering** on the left pane or click **DHCP Filtering** in the **ACCESS CONTROL** page to display the following page.



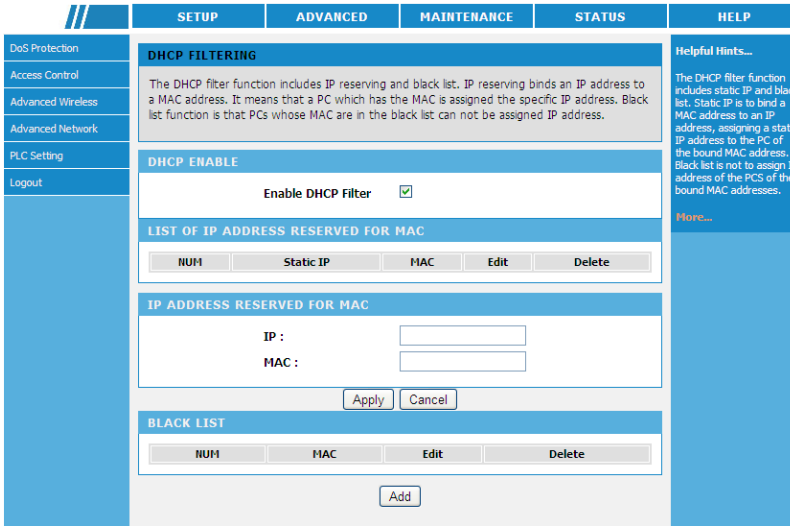
Check **Enable DHCP Filter**, and the following page appears.



- **List of IP Address Reserved for MAC**

If a MAC address of a LAN device is consistent with the specified MAC address, the PLC wireless router assigns the bound IP address to the device.

Click **Add** under the **LIST OF IP ADDRESS RESERVED FOR MAC** to display the following page.



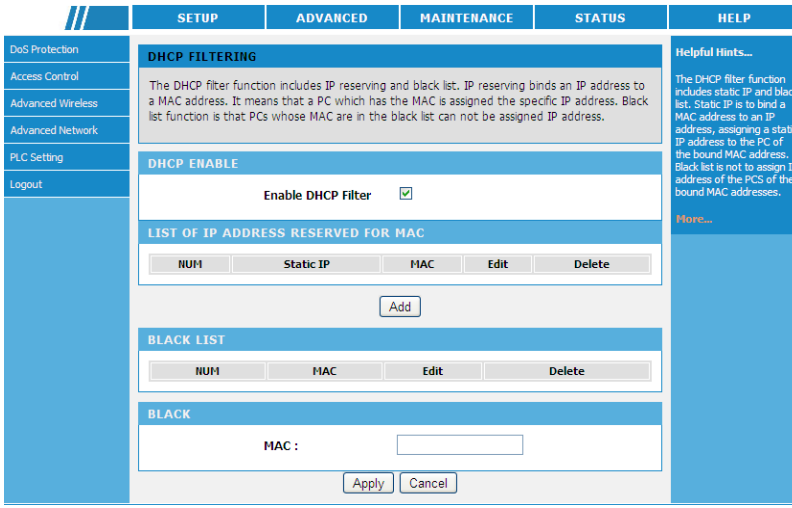
The following table describes the paramters for configuring an IP address reserved for a MAC address:

Field	Description
IP	Enter an IP address for binding to a MAC address.
MAC	Enter a MAC address for binding to an IP.

- **Black List**

The black list means that if a MAC address of a LAN device is not consistent with the specified MAC address, the PLC wireless router does not assign the bound IP address to the device.

Click **Add** under the **BLACK LIST** to display the following page.



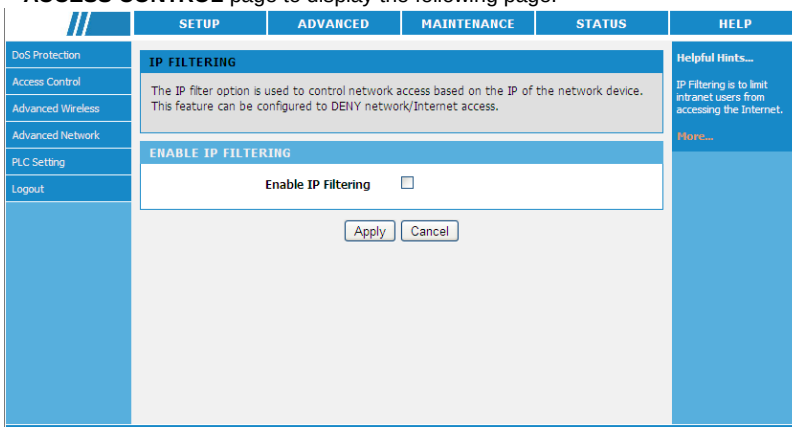
In this page, enter the MAC address of the LAN device.

After setting the parameters, click **Apply** to save the settings.

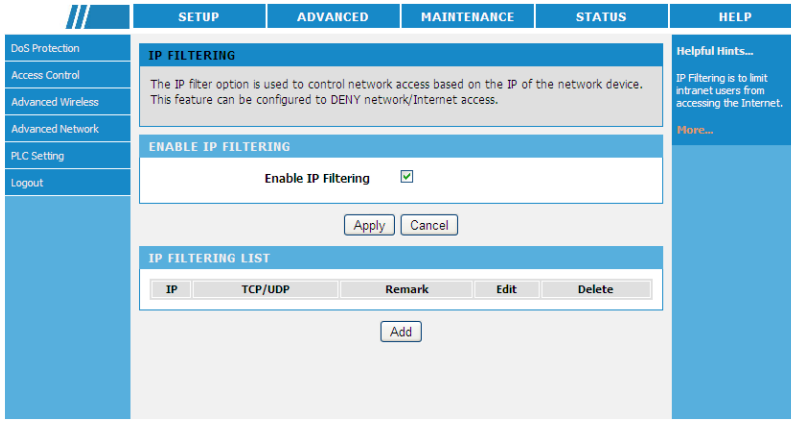
5.3.2.3 IP Filtering

The IP filter function can prevent the internal users from accessing the Internet.

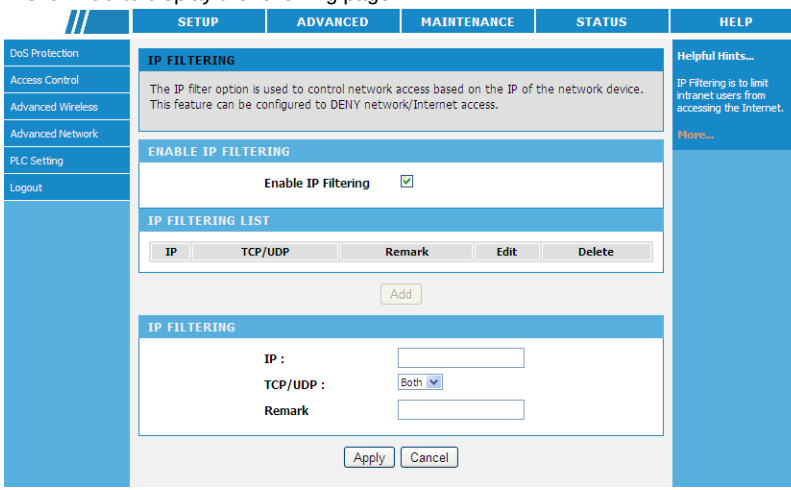
Choose **Access Control** > **IP Filtering** on the left pane or click **IP Filtering** in the **ACCESS CONTROL** page to display the following page.



Check **Enable IP Filtering**, and the following page appears.



Click **Add** to display the following page.



The following table describes parameters in this page:

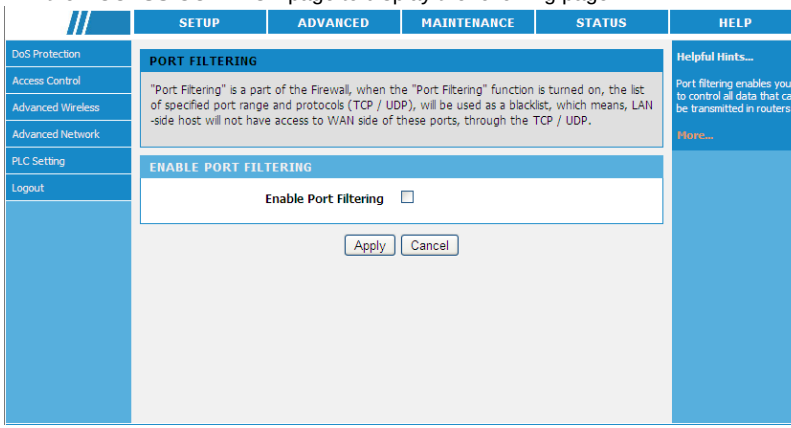
Field	Description
IP	Enter the computer IP address that needs to be filtered.
TCP/UDP	You can select **TCP**, **UDP**, or **Both**.
Remark	Enter the comment about the IP filtering rule.

After setting the parameters, click **Apply** to save the settings.

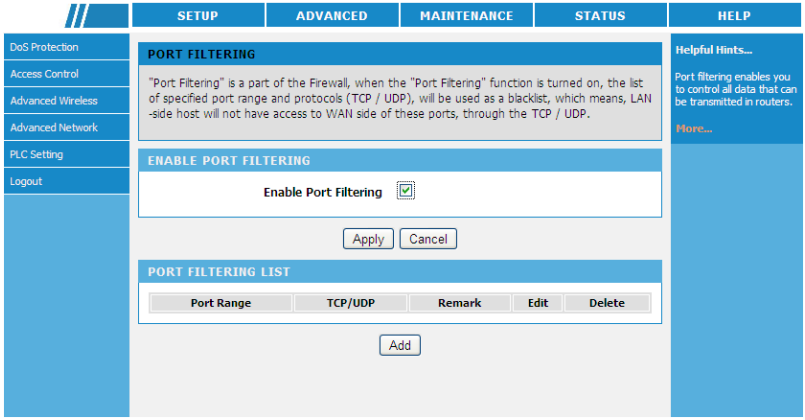
5.3.2.4 Port Filtering

The port filtering function allows you to control all data transmitted through the PLC wireless router. If a PC's port is in the specified range of port filtering, data from this port cannot be transmitted.

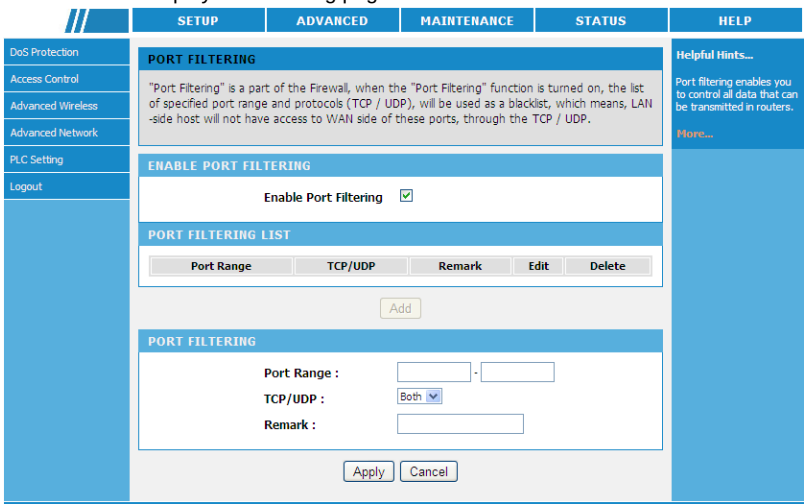
Choose **Access Control** > **Port Filtering** on the left pane or click **Port Filtering** in the **ACCESS CONTROL** page to display the following page.



Check **Enable Port Filtering**, and the following page appears.



Click **Add** to display the following page.



The following table describes parameters in this page:

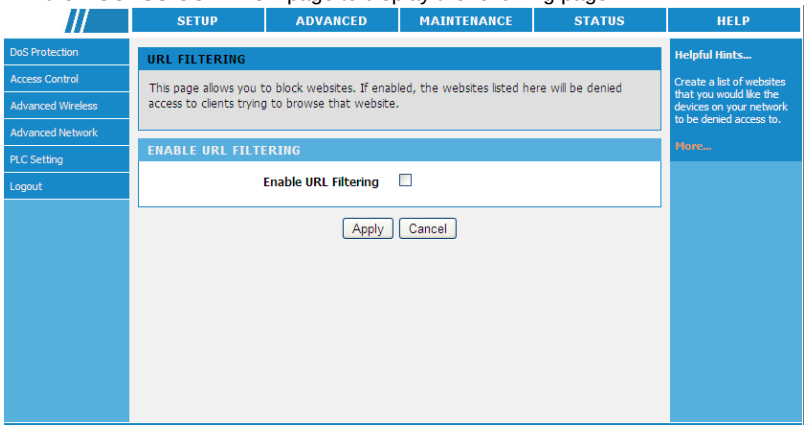
Field	Description
Port Range	Enter the port filtering range.
TCP/UDP	You may select **TCP**, **UDP**, or **Both**.
Remark	Enter the comment about the port filtering rule.

After setting the parameters, click **Apply** to save the settings.

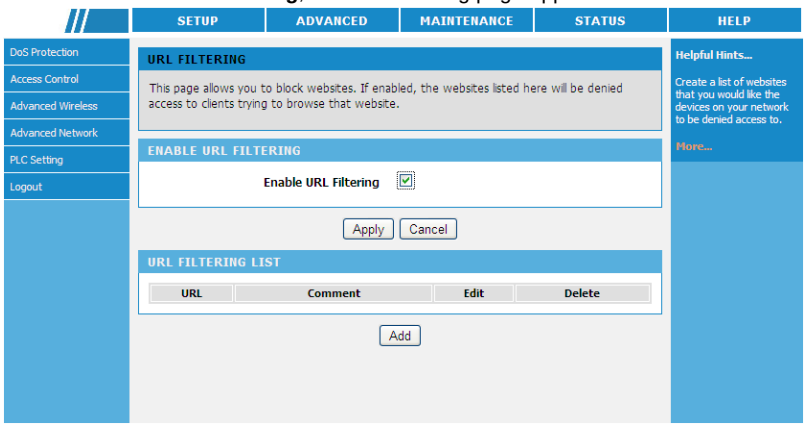
5.3.2.5 URL Filtering

URL filtering function is used to block some websites that you do not want the LAN users to access.

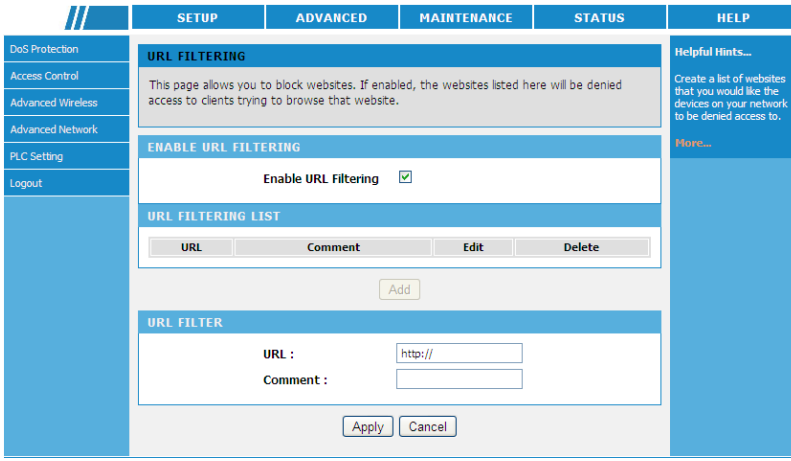
Choose **Access Control** > **URL Filtering** on the left pane or click **URL Filtering** in the **ACCESS CONTROL** page to display the following page.



Check **Enable URL Filtering**, and the following page appears.



Click **Add** to display the following page.



The following table describes parameters in this page:

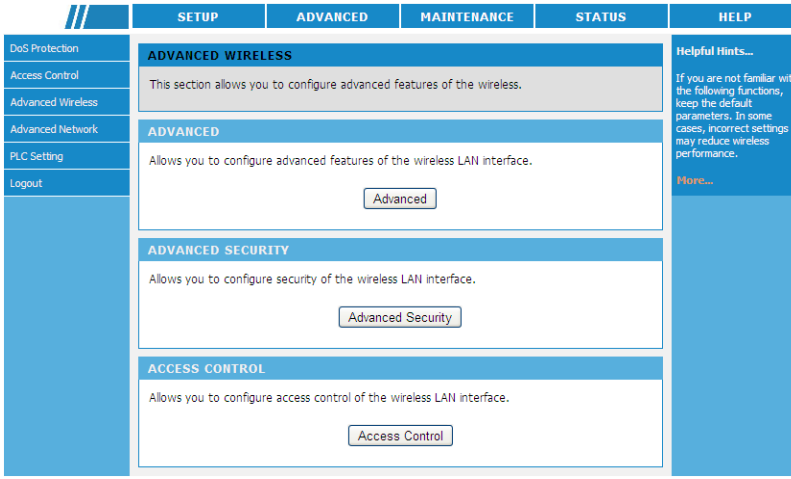
Field	Description
URL	Enter the URL that needs to be filtered.
Comment	Enter the comment about the URL filtering rule.

After setting the parameters, click **Apply** to save the settings.

5.3.3 Advanced Wireless

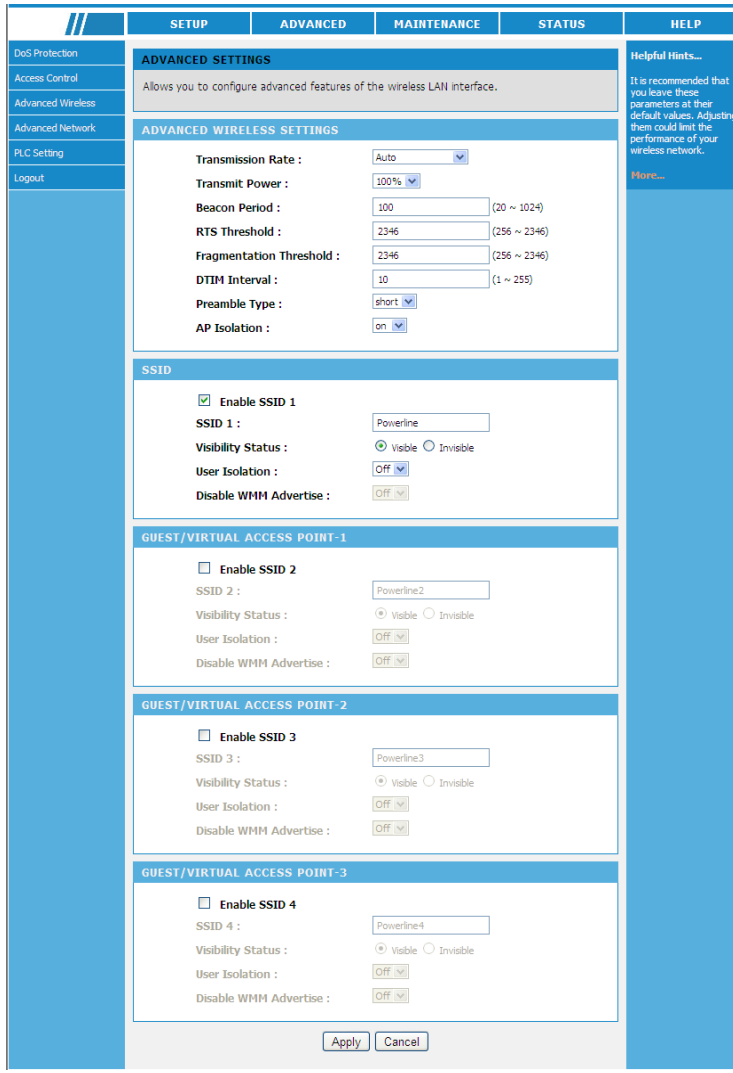
Usually, it is not recommended to modify the default settings of advanced wireless configuration page. The default settings can provide the optimal wireless performance. Improper modifications may influence the wireless performance.

Choose **ADVANCED** > **Advanced Wireless**, and the following page appears.



5.3.3.1 Advanced Wireless Settings

Choose **Advanced Wireless** > **Advanced** on the left pane or click **Advanced** in the **ADVANCED WIRELESS** page to display the following page.


SETUP
ADVANCED
MAINTENANCE
STATUS
HELP
DoS Protection
Access Control
Advanced Wireless
Advanced Network
PLC Setting
Logout
ADVANCED SETTINGS
Allows you to configure advanced features of the wireless LAN interface.
ADVANCED WIRELESS SETTINGS
Transmission Rate : Auto
Transmit Power : 100%
Beacon Period : 100 (20 ~ 1024)
RTS Threshold : 2346 (256 ~ 2346)
Fragmentation Threshold : 2346 (256 ~ 2346)
DTIM Interval : 10 (1 ~ 255)
Preamble Type : short
AP Isolation : on
SSID
Enable SSID 1
SSID 1 : Powerline
Visibility Status : Visible Invisible
User Isolation : Off
Disable WMM Advertise : Off
GUEST/VIRTUAL ACCESS POINT-1
Enable SSID 2
SSID 2 : Powerline2
Visibility Status : Visible Invisible
User Isolation : Off
Disable WMM Advertise : Off
GUEST/VIRTUAL ACCESS POINT-2
Enable SSID 3
SSID 3 : Powerline3
Visibility Status : Visible Invisible
User Isolation : Off
Disable WMM Advertise : Off
GUEST/VIRTUAL ACCESS POINT-3
Enable SSID 4
SSID 4 : Powerline4
Visibility Status : Visible Invisible
User Isolation : Off
Disable WMM Advertise : Off
Apply
Cancel
Helpful Hints...
It is recommended that you leave these parameters at their default values. Adjusting them could limit the performance of your wireless network.
More...

The following table describes parameters in this page:

Field	Description
Transmission Rate	Set the proper transmission rate.
Transmit Power	Select the proper transmission power from the drop-down list. You can select 100%, 80%, 60%, 40%, or 20%.
Beacon Period	Beacon period indicates the frequency of the PLC wireless router that sends the Beacon frame. By default, the PLC wireless router sends the beacon frame every other 100 ms. The range is 20~1024.
RTS Threshold	Set the CTS/RTS threshold. If the length of a packet is greater than the value, the router sends an RTS frame to the destination station for negotiation. After receiving the RTS frame, the wireless station responds with a Clear to Send (CTS) frame to the router, indicating that they can communicate with each other. The default value is 2346.
Fragmentation Threshold	Set the threshold of fragmentation length. If the length of a packet is greater than the value, the packet is automatically fragmented into several packets. Because too many packets lead to low performance of the wireless network, the value of fragmentation length cannot be too small. The default value is 2346.
DTIM Interval	DTIM interval indicates the frequency for sending the wireless packets. The range is 1~255 and the default value is 10.
Preamble Type	Set the preamble type. The default is short preamble. A preamble defines the length of the CRC correction block that is used for the communication between your router and wireless clients. Shorter preamble should apply to a network with intense traffic.
AP Isolation	**On** indicates that the wireless clients connecting to different SSIDs cannot communicate with each other. **Off** indicates that the wireless clients connecting to different SSIDs can communicate with each other.
Enable SSID1~4	Enable or disable the wireless function.

Field	Description
SSID1~4	Set the network name. The SSID can contain up to 32 characters and can be letters, numerals, underlines, and any combinations of them. The SSID is case-sensitive.
Visibility Status	● If **Visible** is selected, the PLC wireless router broadcasts its SSID on the wireless network, and the clients can scan the SSID. ● If **Invisible** is selected, the PLC wireless router does not broadcast its SSID on the wireless network and the clients cannot scan the SSID.
User Isolation	**On** indicates that the computers wirelessly connecting to the same SSID cannot communicate with each other. **Off** indicates that the computers wirelessly connecting to the same SSID can communicate with each other.
Disable WMM Advertise	This function is not available. If this function is disabled, the wireless PLC router adopts WMM to mark priority and to arrange the order of Wi-Fi network queues.

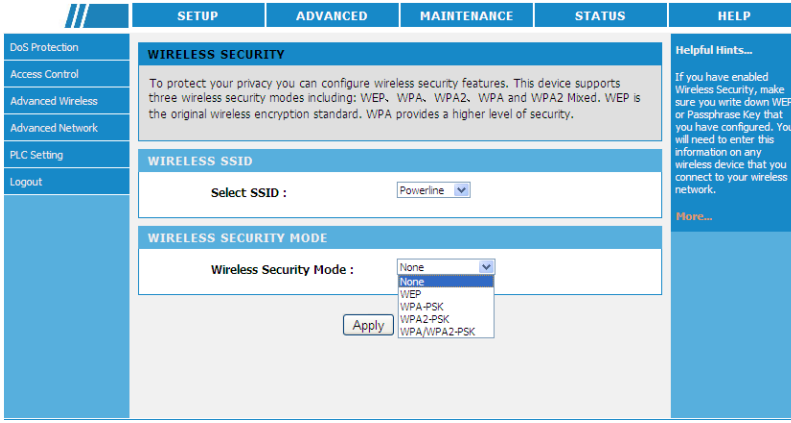
After setting the parameters, click **Apply** to save the settings.

⚠ **Caution:**

The settings in this page only apply to professional users who have deeper understanding in the wireless LAN. If you are not aware of the impact caused by the modification, please do not modify the settings in this page.

5.3.3.2 Advanced Security

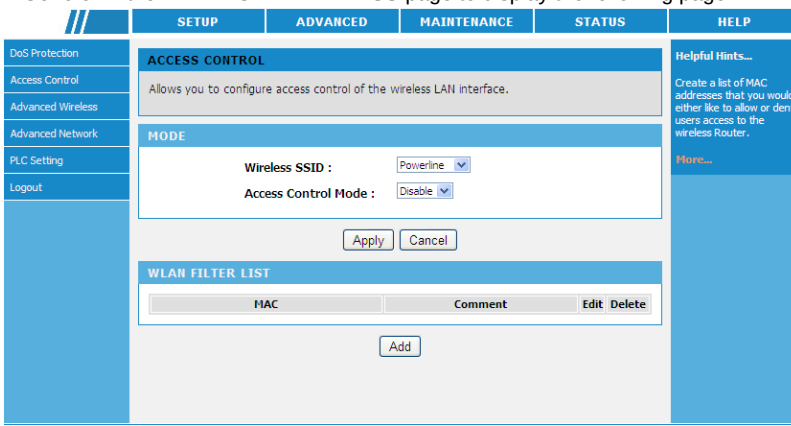
Choose **Advanced Wireless** > **Advanced Security** on the left pane or click **Advanced Security** in the **ADVANCED WIRELESS** page to display the following page.



For the parameters in this page, refer to 5.2.3.2 Wireless Security Settings.

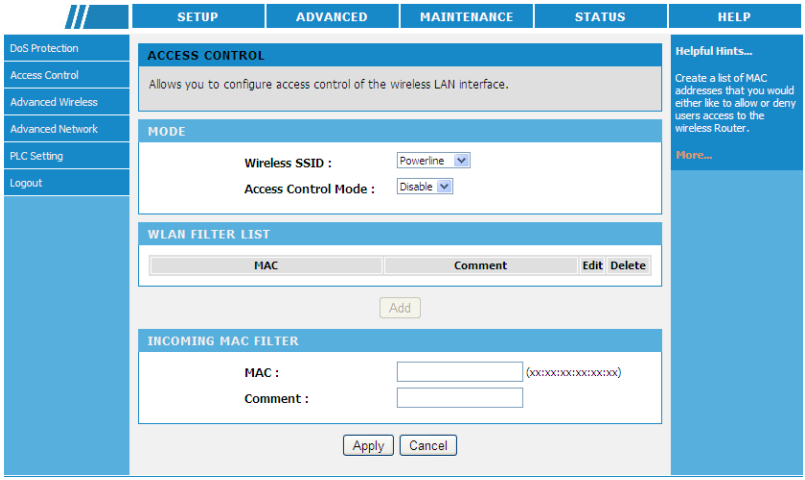
5.3.3.3 Access Control

Choose **Advanced Wireless** > **Access Control** on the left pane or click **Access Control** in the **ADVANCED WIRELESS** page to display the following page.



In this page, you can configure the access control settings of the wireless LAN interface.

Click **Add** to display the following page.



The following table describes parameters in this page:

Field	Description
Wireless SSID	Select a port name of wireless SSID from the drop-down list.
Access control Mode	You can select **Disable**, **Allow**, or **Deny**.
MAC	Enter the MAC address that needs to be filtered in the WLAN.
Comment	Enter the comment about the filtering rule.

After setting the parameters, click **Apply** to save the settings.

5.3.4 Advanced Network

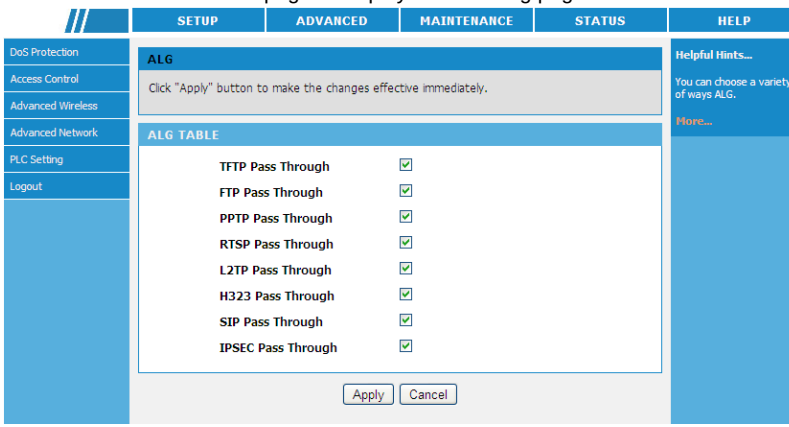
Choose **ADVANCED** > **Advanced Network**, and the following page appears.


SETUP
ADVANCED
MAINTENANCE
STATUS
HELP
DoS Protection
Access Control
Advanced Wireless
Advanced Network
PLC Setting
Logout
ADVANCED NETWORK
This section allows you to configure advanced features of the network.
ALG
choose multiple ALG modes.
ALG
DMZ
DMZ allows the server on the LAN site to be directly exposed to the Internet for accessing data.
DMZ
QOS
Choose WAN or LAN to configure network traffic bandwidth.
QoS
STATIC ROUTEING
This page allows you to add a specific route interface. If you are not familiar with these Advanced Network settings, please read the help section.
Static Routeing
RIP
This page allows you to add a specific route interface. If you are not familiar with these Advanced Network settings, please read the help section.
RIP
UPNP
UPnP is used for many types of popular Audio Visual software. It allows the auto discovery of your device on the network. If you feel that UPnP is a security concern, we offer the option to disable it here.
UPnP
TR-069
TR069 allows a management application to retrieve statistics and status from the TR069 agent in this device.
TR-069
VIRTUAL SERVER
The Virtual Server function allows you to assign a public port in your router which is redirected to an internal LAN IP address and LAN port according to the requirements. This feature is useful to host online services such as FTP or Web Servers.
Virtual Server
IGMP
IGMP contains IGMP Snooping and IGMP Proxy.
IGMP
DDNS
Click the button of DDNS you can set up ddns in the detail setting page.
DDNS
Helpful Hints...
Click the button to go to the detail setting page.
More...

5.3.4.1 ALG

When trusted users in the network wish to connect to untrusted networks, ALG leads the relevant applications to the agent server of firewall. The agent server serves as an actual server of Internet to assess the request, and then it determines whether to accept the request or not according to the relevant rules of network service.

Choose **Advanced Network** > **ALG** on the left pane or click **ALG** in the **ADVANCED NETWORK** page to display the following page.



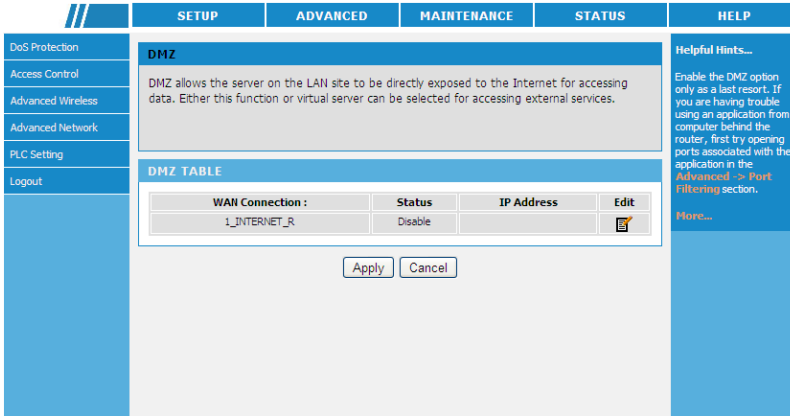
In this page, you may enable or disable the ALG settings, such as TFTP Pass Through, FTP Pass Through, and PPIP Pass Through.

After setting the parameters, click **Apply** to save the settings.

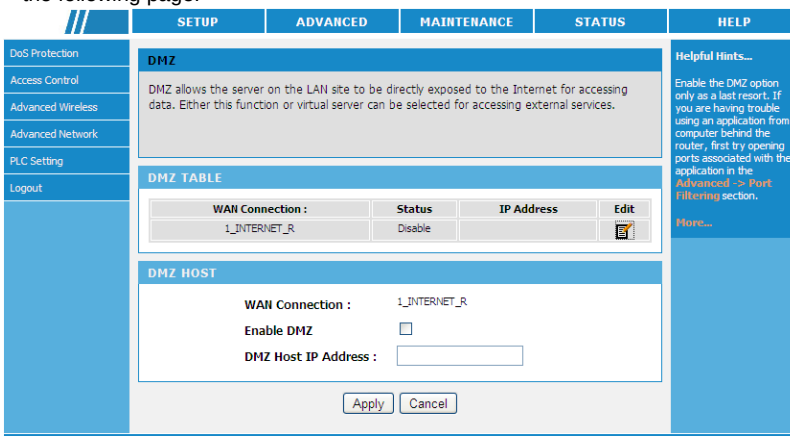
5.3.4.2 DMZ

DMZ allows all ports of a PC on your LAN to be exposed to the WAN. Enter the IP address of a PC and set the PC to be a DMZ host. Therefore, this PC is not restricted by the firewall any more. In this way, the DMZ host can have mutual unrestricted communcation with a user or server on the WAN.

Choose **Advanced Network** > **DMZ** on the left pane or click **DMZ** in the **ADVANCED NETWORK** page to display the following page.



Select a WAN connection in the DMZ table and click the **Edit** icon  to display the following page.



The following table describes parameters in this page:

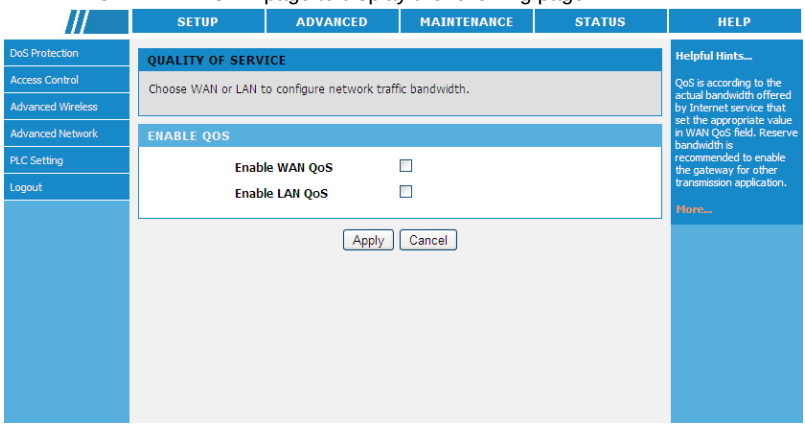
Field	Description
WAN Connection	Display current WAN connection.
Enable DMZ	Enable or disable DMZ function of the selected WAN connection.
DMZ Host IP Address	Enter the IP address of DMZ host.

After setting the parameters, click **Apply** to save the settings.

5.3.4.3 QoS

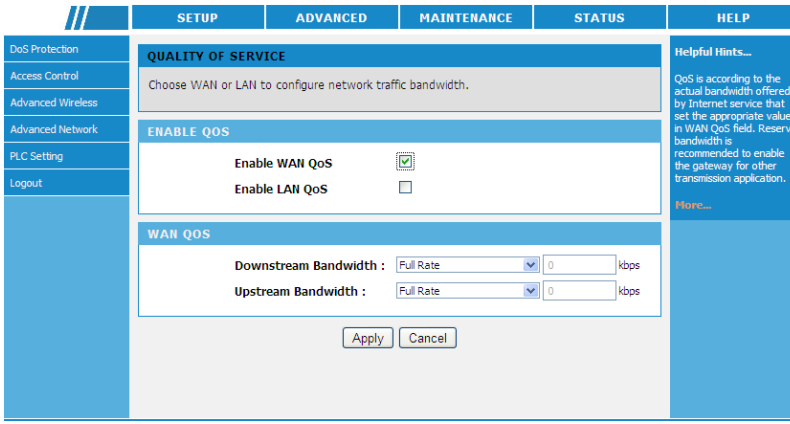
QoS function allows you to set an appropriate value in the field of WAN QoS according to the actual bandwidth provided by the ISP. Reserving bandwidth is recommended, so that the gateway can reserve bandwidth for other transmission applications.

Choose **Advanced Network** > **QoS** on the left pane or click **QoS** in the **ADVANCED NETWORK** page to display the following page.



- **WAN QoS**

Check **Enable WAN QoS**, and the following page appears.



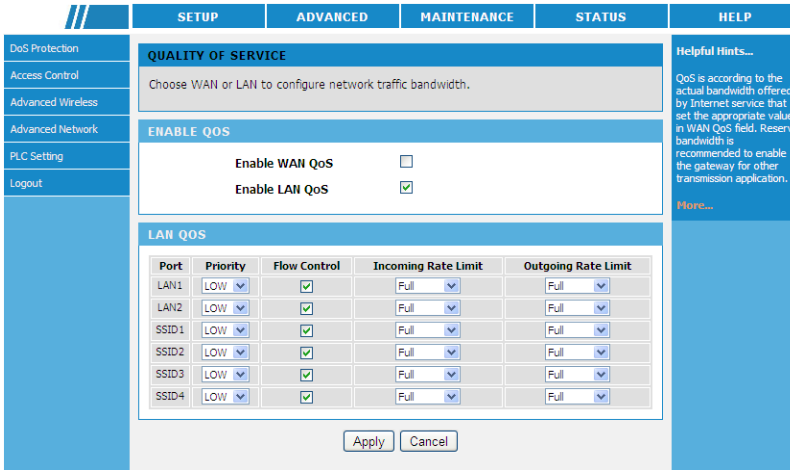
In this page, you can configure the data rate of downstream bandwidth and upstream bandwidth.

The following table describes parameters in this page:

Field	Description
Downstream Bandwidth	You may select a proper rate from the drop-down list or manually set a proper data rate. **Full Rate** indicates that there is no limit to the downstream bandwidth.
Upstream Bandwidth	You may select a proper rate from the drop-down list or manually set a proper data rate. **Full Rate** indicates that there is no limit to the upstream bandwidth.

- **LAN QoS**

Check **Enable LAN QoS**, and the following page appears.



In this page, you may configure the priority of the LAN interfaces, incoming and outgoing rate limits, and flow control.

The following table describes parameters in this page:

Field	Description
Port	The PLC wireless router supports 2 LAN interfaces and 4 WLAN interfaces.
Priority	You can select **LOW** or **HIGH**.
Flow Control	Enable or disable the flow control.
Incoming Rate Limit	Set the incoming rate limit. **Full** indicates that there is no limit to the incoming rate.
Outgoing Rate Limit	Set the outgoing rate limit. **Full** indicates that there is no limit to the outgoing rate.

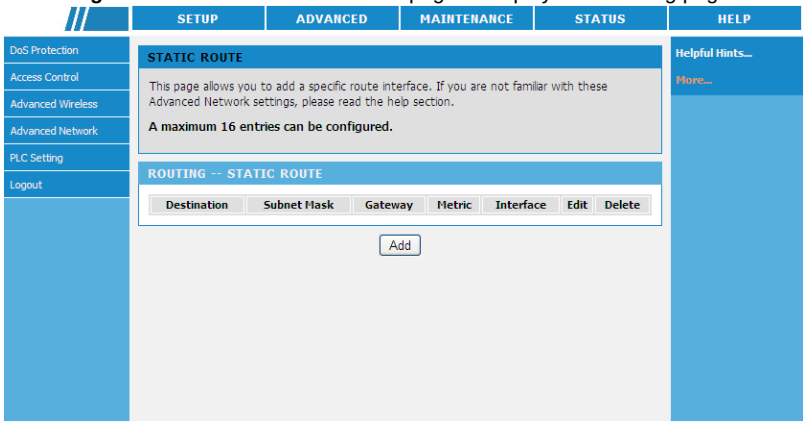
After setting the parameters, click **Apply** to save the settings.

5.3.4.4 Static Routing

Static routing is a special routing type. Applying proper static routing rules on a network can reduce the routing problems, improve the overload of routing traffic, and increase the forwarding speed of data packets. You can set the destination IP address, subnet mask, and gateway to specify a routing rule. The destination IP address and subnet mask are used to determine a destination network or a host.

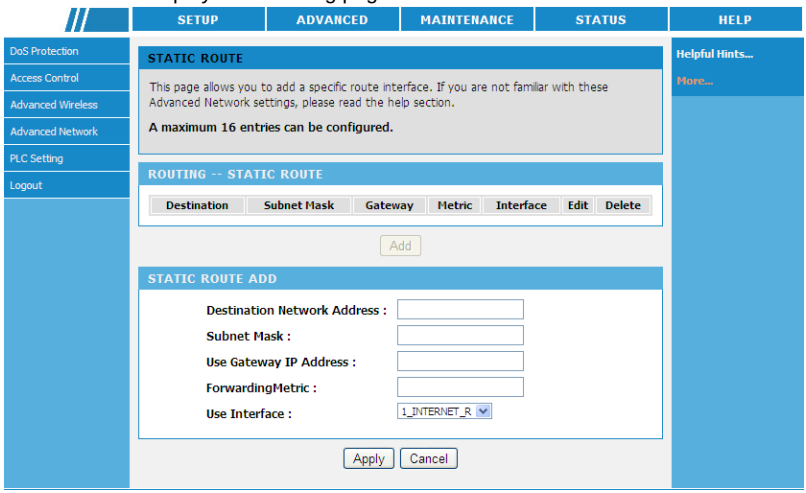
Then, the router sends the data packets to the specified destination network or host through the gateway.

Choose **Advanced Network** > **Static Routing** on the left pane or click **Static Routing** in the **ADVANCED NETWORK** page to display the following page.



In this page, you can set the static routing rules.

Click **Add** to display the following page.



The following table describes parameters in this page:

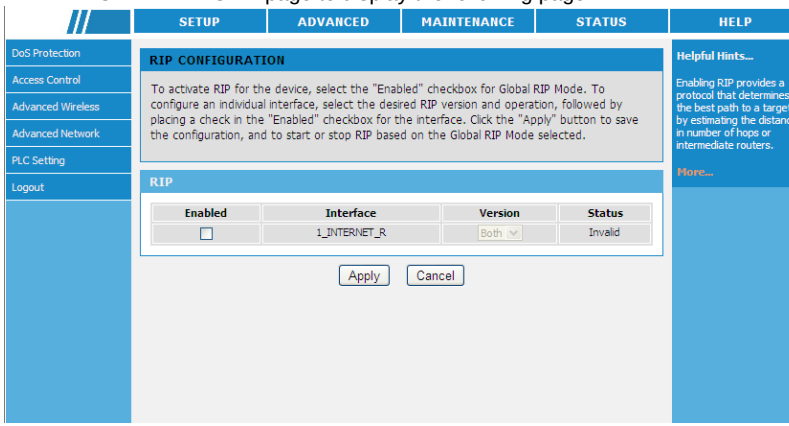
Field	Description
Destination Network Address	Set the IP address of destination network.
Subnet Mask	Set the subnet mask of the destination IP address.
Use Gateway IP Address	Set the IP address of host or router that data packets are sent to.
Forwarding Metric	Set the number of forwarding hops that network data packets are forwarded by the router.
Use Interface	Select a local legal interface for the routing rule.

After setting the parameters, click **Apply** to save the settings.

5.3.4.5 RIP

RIP (Routing Information Protocol) can be used to determine the optimal path by estimating the hops of distance or the number of routing router.

Choose **Advanced Network** > **RIP** on the left pane or click **RIP** in the **ADVANCED NETWORK** page to display the following page.



In this page, you can configure the RIP parameters.

The following table describes parameters in this page:

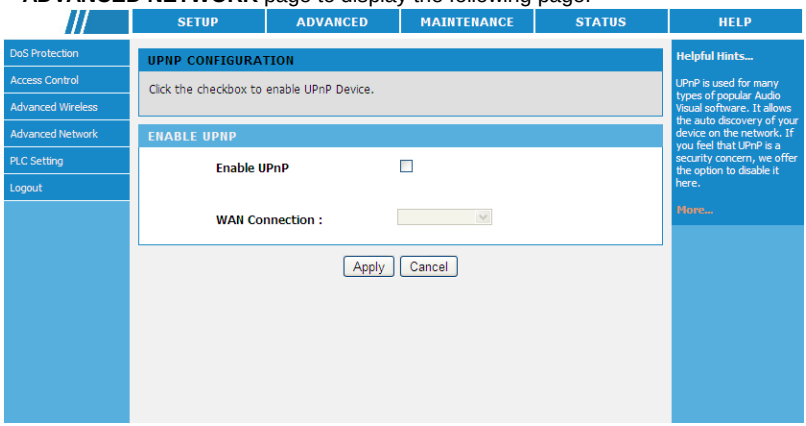
Field	Description
Enabled	Enable or disable RIP.
Interface	Display the WAN connection name.
Version	You can select RIPV**1**, RIPV**2** or **Both**. **Both** indicates that it is compatible with RIPV1 and RIPV2.
Status	Display whether the specified RIP is valid or not.

After setting the parameters, click **Apply** to save the settings.

5.3.4.6 UPnP

By using the Universal Plug and Play (UPnP) protocol, a host on the LAN side can require the router to realize the conversion of specific port, so that an external host can access resources on the internal host when necessary. For example, if MSN Messenger is installed on Windows ME and Windows XP operating systems, UPnP can be used for audio and video conversations. In this way, functions restricted by NAT can work properly.

Choose **Advanced Network** > **UPnP** on the left pane or click **UPnP** in the **ADVANCED NETWORK** page to display the following page.



In this page, you can enable the UPnP function and select a WAN connection. After setting the parameters, click **Apply** to save the settings.

Note:

UPnP is widely used in video and audio software. It can automatically search a device on the network. If you worry about the security problems caused by UPnP, you may disable UPnP.

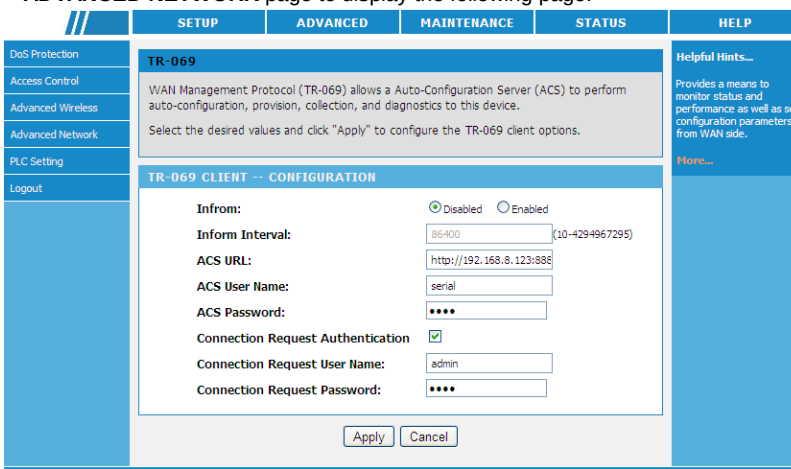
5.3.4.7 TR069

TR-069, one of the technology specifications, comes from the Digital Subscriber Line (DSL) Forum, whose full name is "CPE WAN Management Protocol (CWMP)". TR069 defines the general frame and protocol for next-generation home network devices. By using the TR069, the PLC router can realize the remote centralized management to the home network devices such as gateway, router, and set top box from the LAN side.

The basic features of the TR-069 are as follows:

- Automatic configuration and dynamic service
- Software and hardware upgrade
- Device status and performance monitoring

Choose **Advanced Network** > **TR069** on the left pane or click **TR069** in the **ADVANCED NETWORK** page to display the following page.



The following table describes parameters in this page:

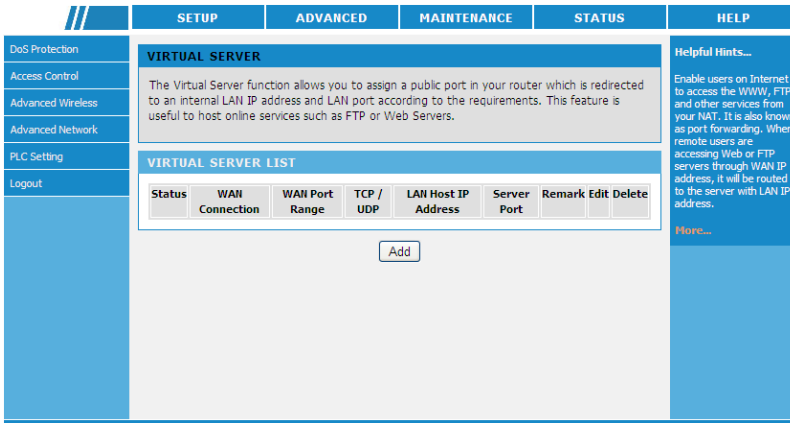
Field	Description
Inform	Enable or disable the informing function.
Inform Interval	Set the informing interval for the PLC router sending the connection request to the TR069 server.
ACS URL	Set the target path by which the PLC router sends the request to the TR069 server.
ACS User Name	Enter the user name that is used for the PLC router logging in to the TR069 server.
ACS Password	Enter the password that is used for the PLC router logging in to the TR069 server.
Connection Request Authentication	Enable or disable connection request authentication. After **Connection Request Authentication** is checked, you need to enter the username and password for authentication.
Connection Request User Name	Enter the user name that is used for the TR069 server accessing the PLC router.
Connection Request Password	Enter the password that is used for the TR069 server accessing the PLC router.

After setting the parameters, click **Apply** to save the settings.

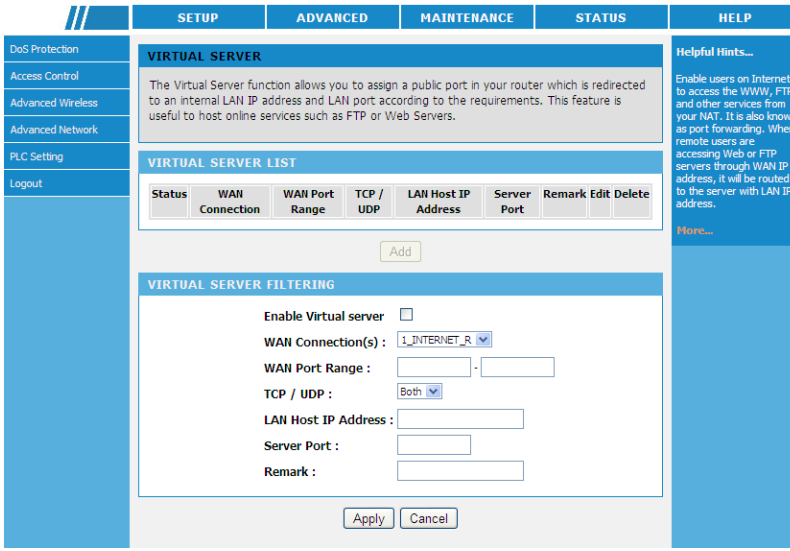
5.3.4.8 Virtual Server

Firewall can prevent unexpected Internet traffic from your LAN host. The virtual server can create a channel that is through the firewall. In that case, the Internet host can communicate with a LAN host within certain port range.

Choose **Advanced Network** > **Virtual Server** on the left pane or click **Virtual Server** in the **ADVANCED NETWORK** page to display the following page.



Click **Add** to display the following page.



The following table describes parameters in this page:

Field	Description
Enable Virtual Server	Enable or disable virtual server.
WAN Connection(s)	Select a WAN connection that routes to the server on the LAN.
WAN Port Range	Set the WAN port mapping range.
TCP/UDP	Select the protocol that server adopts. You can select **TCP**, **UDP**, or **Both**.
LAN Host IP Address	Enter the host IP address of LAN interface.
Server Port	Enter the server port number that the LAN host uses.
Remark	Enter the comment about the rule.

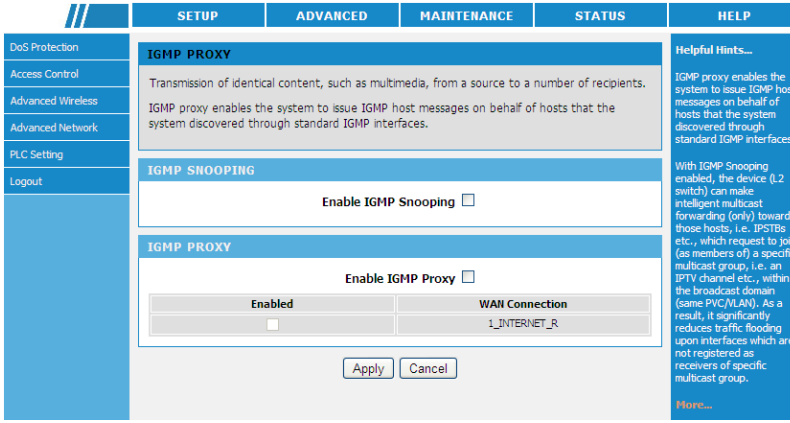
After setting the parameters, click **Apply** to save the settings.

5.3.4.9 IGMP

IGMP Snooping is used for multicast management and control. When the Ethernet switch of the second layer receives the IGMP packets transmitted between the host and router, IGMP Snooping will analyze the packets to establish and maintain the address table of the MAC multicast, and then the routing multicast packets will be transmitted according to the address table of MAC multicast. In this way, it dramatically reduces the service flood on the receiving interface of unregistered multicast group.

The IGMP proxy can make the PLC wireless router intercept the IGMP message of host via the LAN interface, and then the IGMP message of host is transmitted via the WAN interface. After IGMP proxy is enabled, the PLC wireless router works as the agent server of host.

Choose **Advanced Network** > **IGMP** on the left pane or click **IGMP** in the **ADVANCED NETWORK** page to display the following page.



In this page, you can enable or disable the IGMP Snooping and IGMP proxy.

After IGMP Snooping is enabled, only the host that has joined the multicast group can receive the multicast packets. Once the host leaves the multicast group, it cannot receive the multicast packets any more.

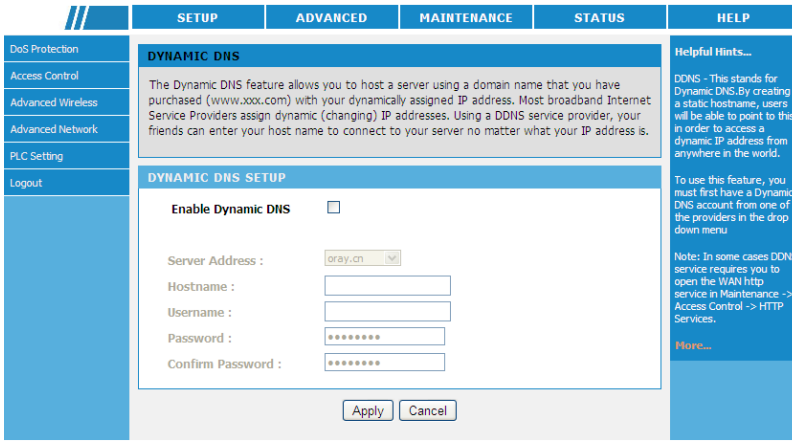
After IGMP Proxy is enabled, you can enable or disable the IGMP Proxy function of the selected WAN connections

After setting the parameter, click **Apply** to save the settings.

5.3.4.10 Dynamic DNS

Dynamic DNS can map a dynamic IP address to a fixed host name, and all users on the Internet can access the host by this host name. ISP assigns the IP addresses by DHCP, so it is difficult for the users to search the host by DNS. For example, if the IP address of a public Web server or VPN server is changed on the LAN, you can still find the corresponding host by the DDNS service.

Choose **Advanced Network** > **Dynamic DNS** on the left pane or click **DDNS** in the **ADVANCED NETWORK** page to display the following page.



In this page, you can configure the DDNS parameteres.

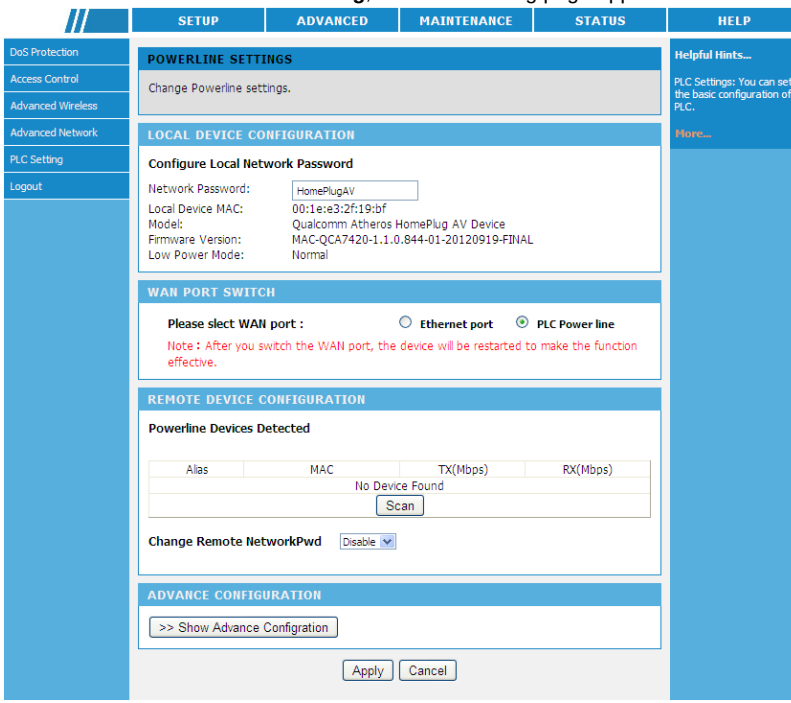
The following table describes parameters in this page:

Field	Description
Enable Dynamic DNS	Enable or disable Dynamic DNS.
Server Address	Select the proper DDNS service provider according to the actual situation. You may select **oray.cn**, or **dyndns.org**.
Hostname	Enter the host name or domain name provided by the DDNS service provider.
Username	Enter the username of DDNS account.
Password	Enter the password of DDNS account.
Confirm Password	Enter the password of DDNS account again.

After setting the parameters, click **Apply** to save the settings.

5.3.5 PLC Setting

Choose **ADVANCED** > **PLC Setting**, and the following page appears.



In this page, you can configure the parameters of PLC settings.

- **Local Device Configuration**

The local device configuration allows you to configure the local network password, and to view the information of the local device such as local device MAC, and firmware version.

- **WAN Port Switch**

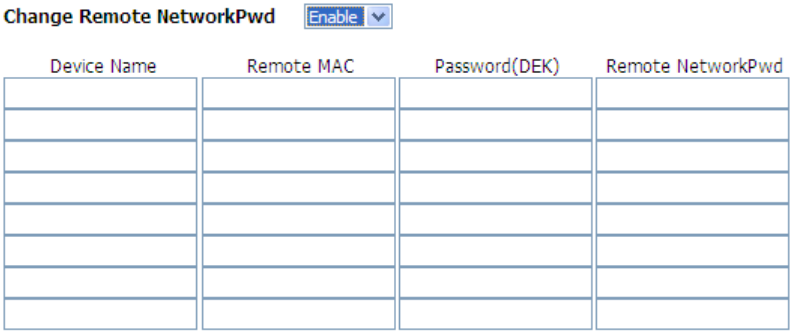
WAN port switch function is used to switch the WAN interface of the PLC router. Check the **Ethernet Port**, and then the LAN2/WAN interface serves as a WAN interface. If you check **PLC Power Line**, the two LAN interfaces still serve as the LAN interfaces, and the power line interface serves as a WAN interface.

Remote Device Configuration

The **Remote Device Configuration** allows you to view the configuration information of the remote PLC devices and to set the network passwords of the remote devices.

You can search current remote PLC devices by clicking the **Scan** button.

Select **Enable** from the drop-down list of **Change Remote NetworkPwd** to display the following page.



You can set the passwords of remote PLC devices according to their MAC addresses and DEKs (Device Equipment Key).

The following table describes parameters in this page:

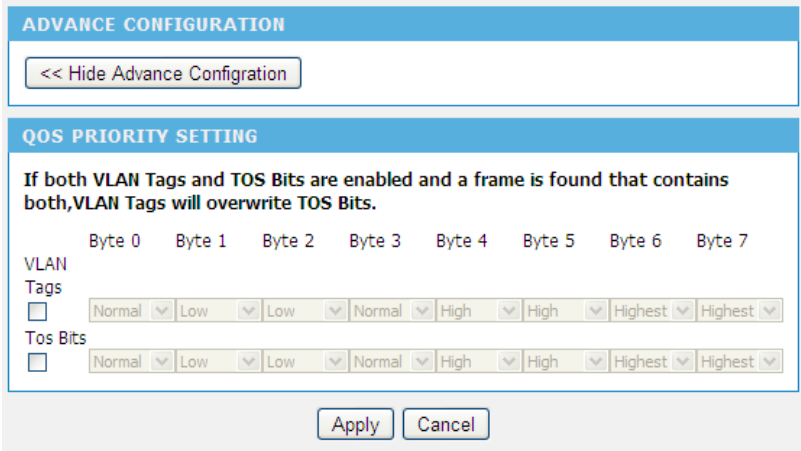
Field	Description
Device Name	Enter the device names of the remote devices.
Remote MAC	Enter the MAC addresses of the remote devices.
Password (DEK)	When you set the parameters of the remote devices, you need to enter this password for authentication.
Remote NetworkPwd	Set the network passwords for the remote PLC devices.

Note:

You can set up to 8 network passwords for the remote PLC devices.

You can access the Internet by network password synchronization. But network passwords of the two devices for password synchronization must be the same, and either of the PLC devices must be connected to the Internet.

- **Advanced Configuration**



QoS priority settings in this page only apply to PLC data stream. QoS function contains VLAN tag and ToS tag. Each VLAN tag or ToS tag contains 8 bits and defines 4-level QoS priority settings.

By default, QoS priority settings are hidden.

After setting the parameters, click **Apply** to save the settings.

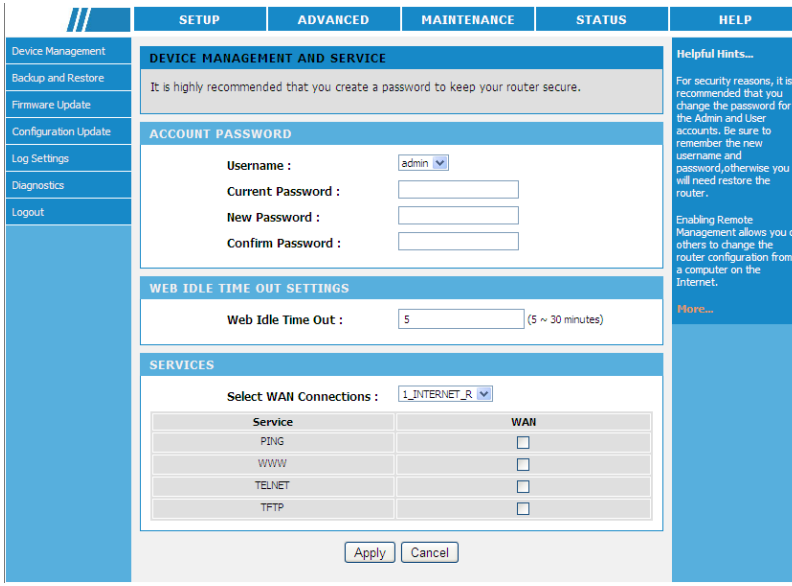
5.3.6 Logout

Choose **ADVANCED** > **Logout** to log out of the Web configuration page.

5.4 Maintenance

5.4.1 Device Management

Choose **MAINTENANCE** > **Device Management**, and the following page appears.



In this page, you can modify the password for logging in to the PLC wireless router, set Web idle timeout, and enable or disable the WAN connection service.

- **Account Password**

In order to ensure the network security, it is recommended you change the default login password. Please remember the new password if you change the default password. You may write it down and keep it well for future use. If you forget the login password, you need to restore the factory default settings of the PLC wireless router. After the default settings are restored, the PLC router will lose the new settings that you configure.

🕮 **Note:**

For the sake of network security, it is strongly recommended to change the password of **admin**. If you forget the login password, please restore the factory default settings of the PLC wireless router. The default user name and password of the super user are **admin**.

- **Web Idle Time Out Settings**

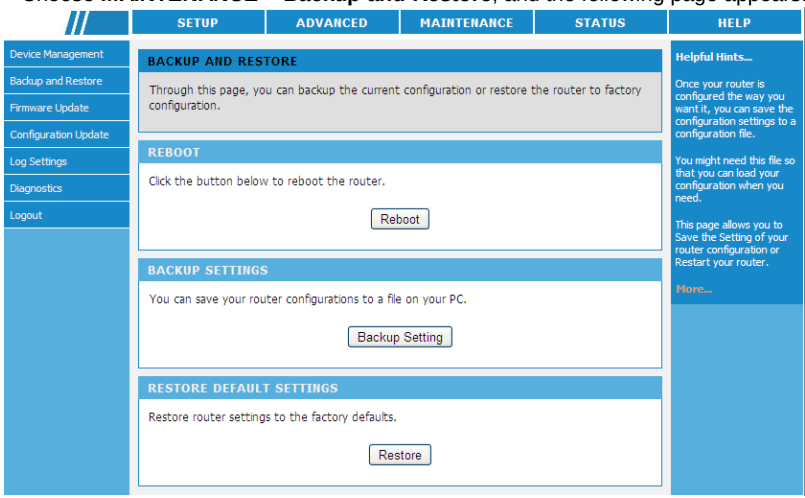
Web idle timeout setting is used to set the time for system automatically exiting the Web configuration page. The range is 5~30 minutes.

- **Services**

If you have established some WAN connections, you may enable or disable the service types of the selected WAN connections. You can also enable or disable the service types of remote hosts. For example, enable the Telnet service, and then the remote host can log in to the PLC wireless router by the Telnet service. After setting the parameters, click **Apply** to save the settings.

5.4.2 Backup and Restoration

Choose **MAINTENANCE** > **Backup and Restore**, and the following page appears.



In this page, you can reboot the router, backup the configuration file, and restore the factory default settings of the router.

- **Reboot**

Click **Reboot** to reboot the router.

- **Backup Settings**

Click **Backup Setting** and select the path to save the configuration file of the router to your local PC.

- **Restore Default Settings**

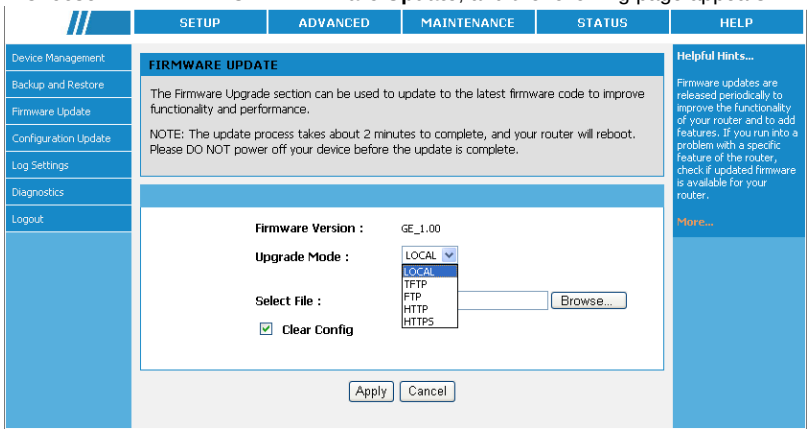
Click **Restore** to restore the factory default settings of the router. You may also press the **Reset** pushbutton on the front panel for 3 seconds to restore the factory default settings of the router.

⚠ **Caution:**

When operating in this page, do not press the Reset pushbutton.

5.4.3 Firmware Update

Choose **MAINTENANCE** > **Firmware Update**, and the following page appears.

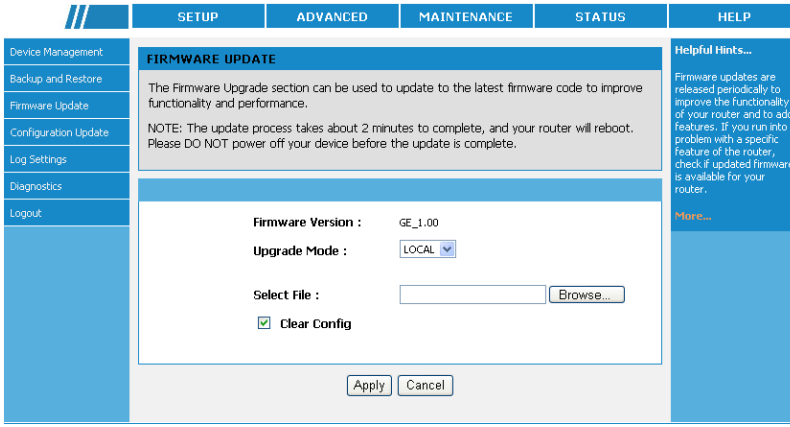


In this page, you can update the firmware version of the PLC wireless router. You may obtain the firmware from the local server or remote server.

- **Local Upgrade Mode**

Usually, you can upgrade firmware from the local server.

If you select **LOCAL** from the drop-down list of upgrade mode, the following page appears.

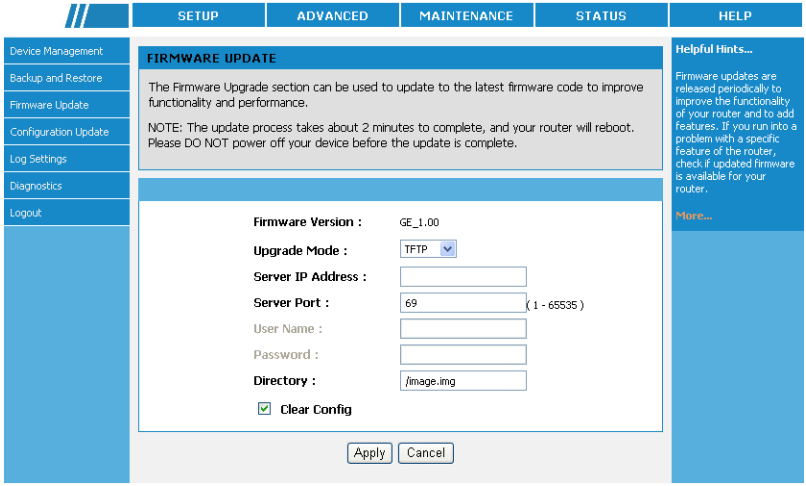


The following table describes parameters in this page:

Field	Description
Firmware Version	Display current firmware version.
Upgrade Mode	Select **LOCAL**.
Select File	Click **Browse…** to navigate to the latest firmware.
Clear Config	If you check **Clear Config**, the PLC router restores to the default settings after upgrade. Otherwise, the PLC router keeps the current settings.

- **TFTP Upgrade Mode**

If you select **TFTP** from the drop-down list of upgrade mode, the following page appears.

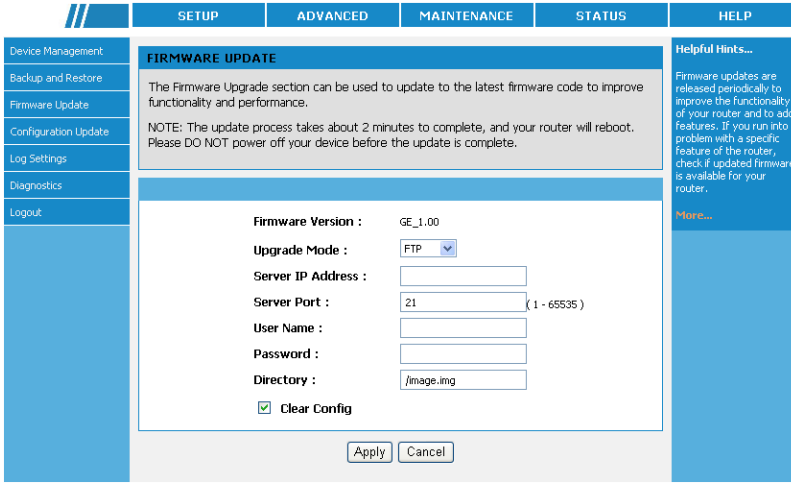


The following table describes parameters in this page:

Field	Description
Firmware Version	Display current firmware version.
Upgrade Mode	Select **TFTP**.
Server IP Address	Enter the IP address of TFTP server.
Server Port	Enter the port number of TFTP server.
Directory	Enter the firmware directory.
Clear Config	If you check **Clear Config**, the PLC router restores to the default settings after upgrade. Otherwise, the PLC router keeps the current settings.

- **FTP Upgrade Mode**

If you select **FTP** from the drop-down list of upgrade mode, the following page appears.

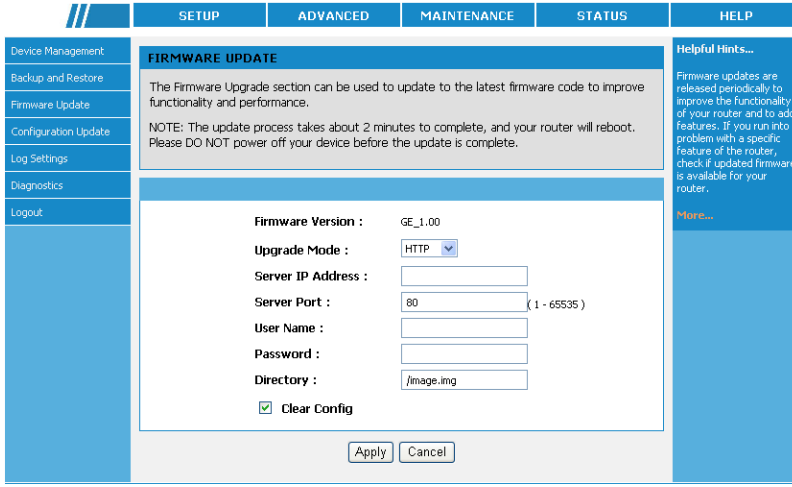


The following table describes parameters in this page:

Field	Description
Firmware Version	Display current firmware version.
Upgrade Mode	Select **FTP**.
Server IP Address	Enter the IP address of FTP server.
Server Port	Enter the port number of FTP server.
User Name	Enter the username for connecting to the FTP server.
Password	Enter the password for connecting to the FTP server.
Directory	Enter the firmware directory.
Clear Config	If you check **Clear Config**, the PLC router restores to the default settings after upgrade. Otherwise, the PLC router keeps the current settings.

- **HTTP Upgrade Mode**

If you select **HTTP** from the drop-down list of upgrade mode, the following page appears.

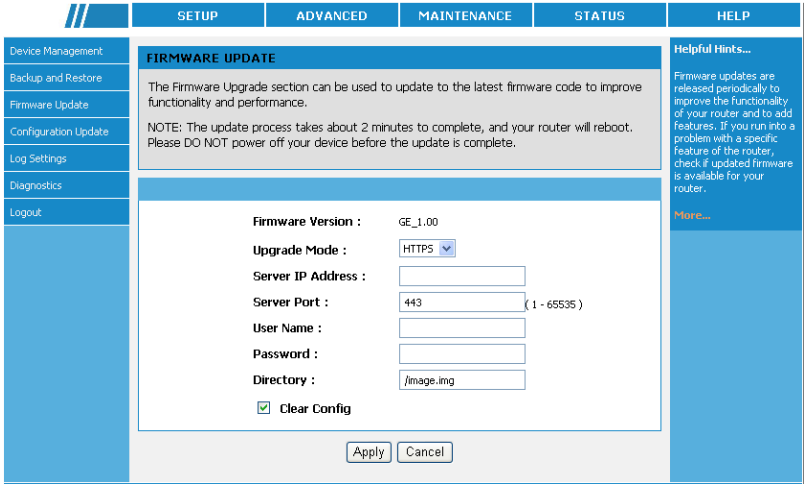


The following table describes parameters in this page:

Field	Description
Firmware Version	Display current firmware version.
Upgrade Mode	Select **HTTP**.
Server IP Address	Enter the IP address of HTTP server.
Server Port	Enter the port number of HTTP server.
User Name	Enter the username for connecting to the HTTP server.
Password	Enter the password for connecting to the HTTP server.
Directory	Enter the firmware directory.
Clear Config	If you check **Clear Config**, the PLC router restores to the default settings after upgrade. Otherwise, the PLC router keeps the current settings.

- **HTTPS Upgrade Mode**

If you select **HTTPS** from the drop-down list of upgrade mode, the following page appears.



The following table describes parameters in this page:

Field	Description
Firmware Version	Display current firmware version.
Upgrade Mode	Select **HTTPS**.
Server IP Address	Enter the IP address of HTTPS server.
Server Port	Enter the port number of HTTPS server.
User Name	Enter the username for connecting to the HTTPS server.
Password	Enter the password for connecting to the HTTPS server.
Directory	Enter the firmware directory.
Clear Config	If you check **Clear Config**, the PLC router restores to the default settings after upgrade. Otherwise, the PLC router keeps the current settings.

Click **Apply**, and then system begins to upgrade firmware.

After upgrade completes, the PLC wireless router automatically reboots.

Caution:

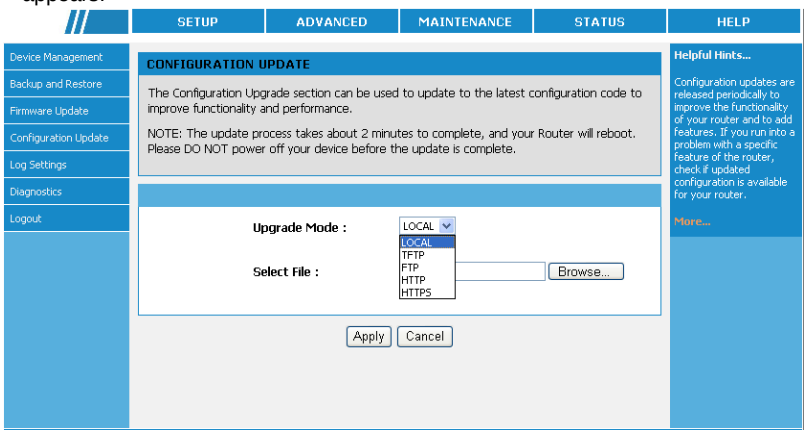
To avoid losing previous configuration of the router, save the configuration before upgrade.

During upgrade, do not power off the PLC wireless router or press the Reset pushbutton.

The default upgrade mode is Local, and it supports only the firmware with the format '.img'.

5.4.4 Configuration Update

Choose **MAINTENANCE** > **Configuration Update**, and the following page appears.

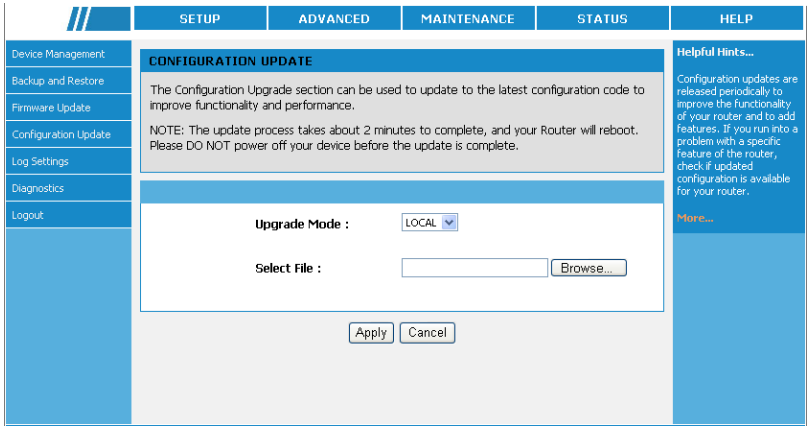


In this page, you can update the configuration file of the PLC wireless router. You may obtain the configuration file from the local server or remote server.

- **Local Upgrade Mode**

Usually, you can upgrade configuration file from the local server.

If you select **LOCAL** from the drop-down list of upgrade mode, the following page appears.

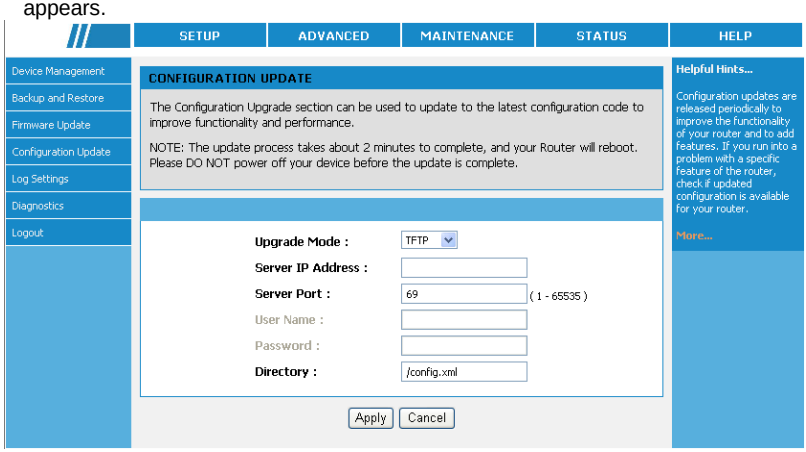


The following table describes parameters in this page:

Field	Description
Upgrade Mode	Select **LOCAL**.
Select File	Click **Browse…** to navigate to the latest configuration file.

- **TFTP Upgrade Mode**

If you select **TFTP** from the drop-down list of upgrade mode, the following page appears.

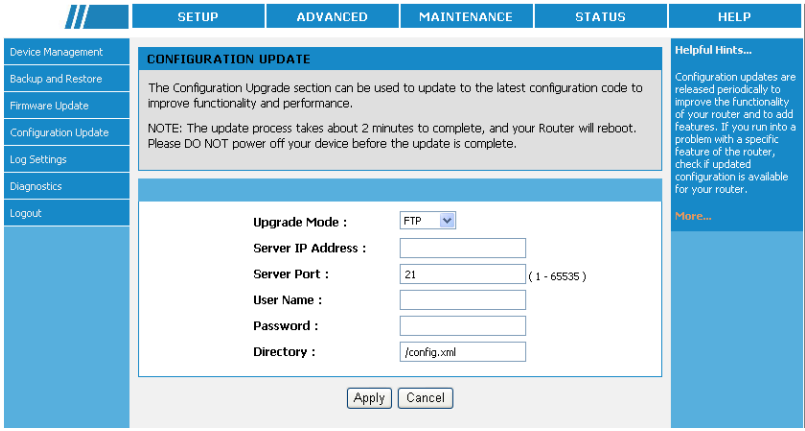


The following table describes parameters in this page:

Field	Description
Upgrade Mode	Select **TFTP**.
Server IP Address	Enter the IP address of TFTP server.
Server Port	Enter the port number of TFTP server.
Directory	Enter the directory of configuration file.

- **FTP Upgrade Mode**

If you select **FTP** from the drop-down list of upgrade mode, the following page appears.

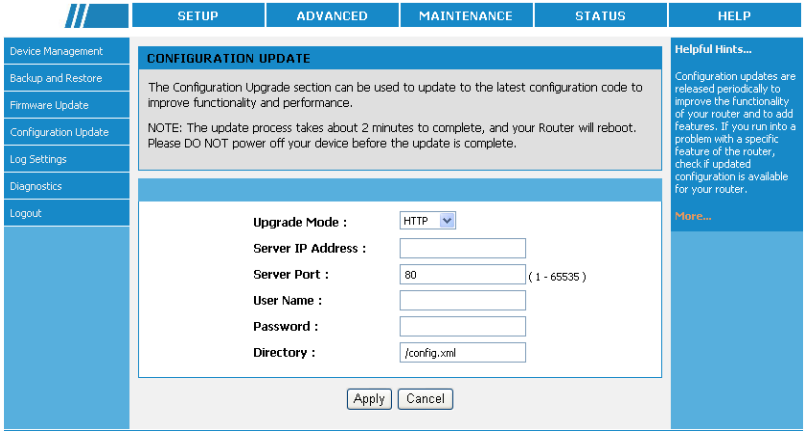


The following table describes parameters in this page:

Field	Description
Upgrade Mode	Select **FTP**.
Server IP Address	Enter the IP address of FTP server.
Server Port	Enter the port number of FTP server.
User Name	Enter the username for connecting to the FTP server.
Password	Enter the password for connecting to the FTP server.
Directory	Enter the directory of configuration file.

- **HTTP Upgrade Mode**

If you select **HTTP** from the drop-down list of upgrade mode, the following page appears.

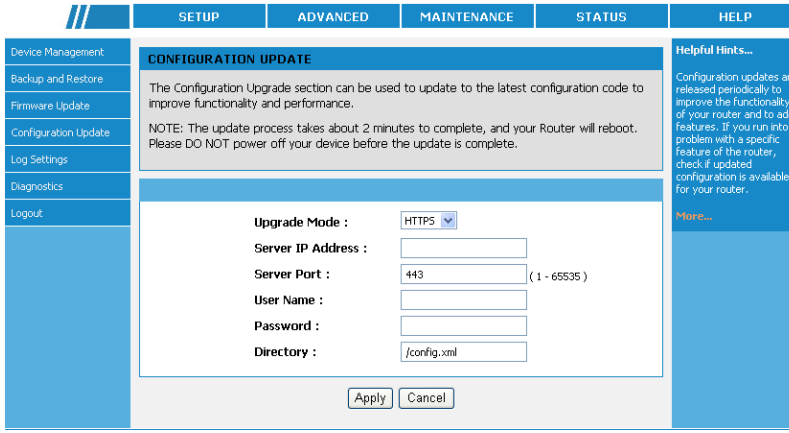


The following table describes parameters in this page:

Field	Description
Upgrade Mode	Select **HTTP**.
Server IP Address	Enter the IP address of HTTP server.
Server Port	Enter the port number of HTTP server.
User Name	Enter the username for connecting to the HTTP server.
Password	Enter the password for connecting to the HTTP server.
Directory	Enter the directory of configuration file.

- **HTTPS Upgrade Mode**

If you select **HTTPS** from the drop-down list of upgrade mode, the following page appears.



The following table describes parameters in this page:

Field	Description
Upgrade Mode	Select **HTTPS**.
Server IP Address	Enter the IP address of HTTPS server.
Server Port	Enter the port number of HTTPS server.
User Name	Enter the username for connecting to the HTTPS server.
Password	Enter the password for connecting to the HTTPS server.
Directory	Enter the directory of configuration file.

Click **Apply**, and then system begins to upgrade configuration file.
After upgrade completes, the PLC wireless router automatically reboots.

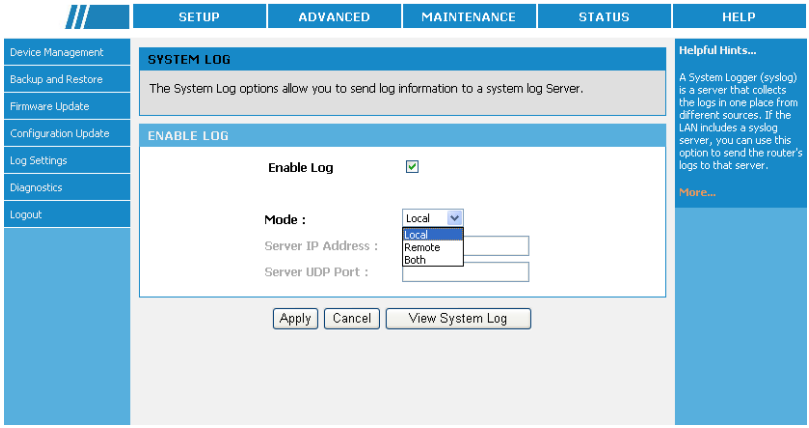
⚠ **Caution:**

During upgrade, do not power off the router or press the Reset pushbutton.

The PLC wireless router supports only the firmware with the format *'.xml'*.

5.4.5 Log Settings

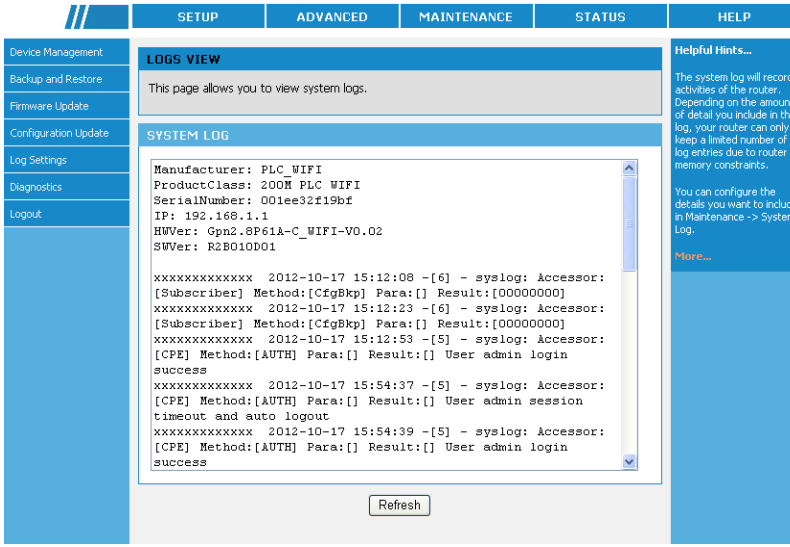
Choose **MAINTENANCE** > **Log Settings**, and the following page appears.



In this page, you can enable or disable the log function. After enabling the log function, you can set 3 types of system log modes. The log modes contain **Local**, **Remote**, and **Both**.

- When you select **Local**, the events are recorded in the local memory.
- When you select **Remote**, the events are sent to the remote system log server with specified IP address and UDP port.
- When you select **Both**, the events are recorded in the local memory or sent to the remote system log server with specified IP address and UDP port.

Click the **View System Log** button to display the following page.

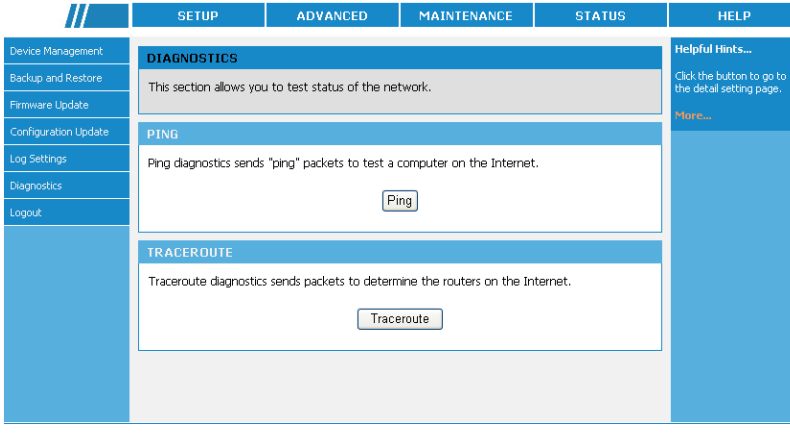


In this page, you can view the system log.

Click **Refresh** to refresh system log.

5.4.6 Diagnostics

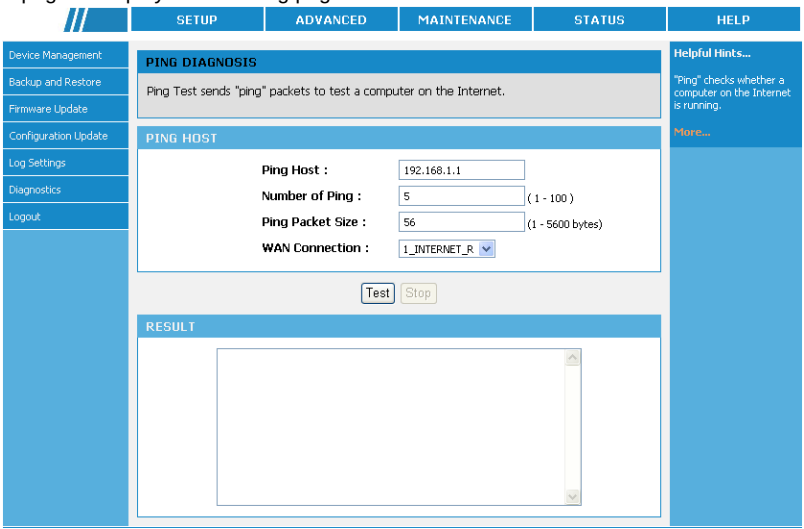
Choose **MAINTENANCE** > **Diagnostics**, and the following page appears.



5.4.6.1 Ping Diagnosis

The ping diagnosis allows you to test a connection between 2 hosts in the same network or in different networks in simple ways. If the command ping is successful, it means that there is a correct physical as well as a logical connection between 2 hosts on any network. (Unless if there is a firewall interfering somewhere in between.)

Choose **Diagnostics** > **Ping** on the left pane or click **Ping** in the **DIAGNOSTICS** page to display the following page.



In this page, you can set the parameters of Ping diagnosis.

The following table describes parameters in this page:

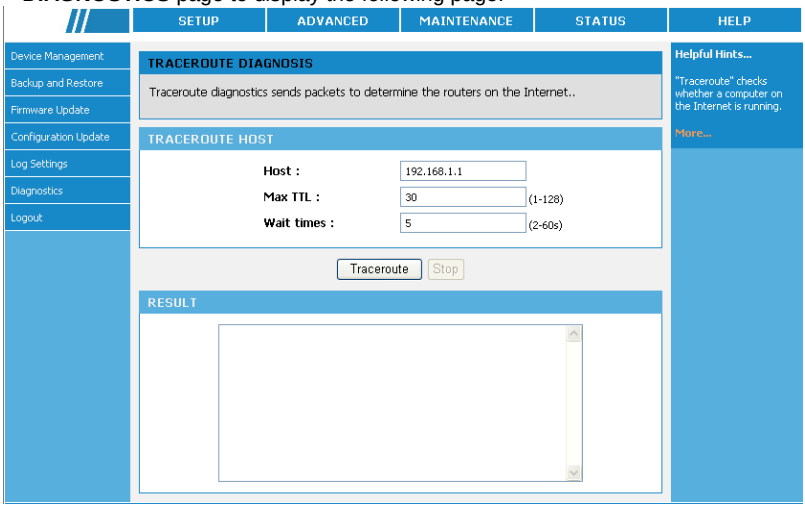
Field	Description
Ping Host	Enter the IP address of the host that connects to the LAN interface of the PLC wireless router.
Number of Ping	Set the number of ping packet.
Ping Packet Size	Set the length of the ping packet.
WAN Connection	Select a WAN interface for ping diagnosis.

After finishing the settings, click the **Test** button, and then the result of ping diagnosis is displayed in the page. Click **Stop** button to stop ping diagnosis.

5.4.6.2 Traceroute Diagnosis

Traceroute diagnosis is used to find out which path a packet takes to reach its destination. It is a nice way to see which router it passes and which network it crosses to reach its destination.

Choose **Diagnostics** > **Traceroute** on the left pane or click **Traceroute** in the **DIAGNOSTICS** page to display the following page.



In this page, you can set the parameters of Traceroute diagnosis.

The following table describes parameters in this page:

Field	Description
Host	Enter the IP address of host that performs the operation of tracing routing.
Max TTL	Set the maximum TTL (Time to Live). You can estimate the number of routers that data packet passes from the source host to the destination host according to the TTL value.
Wait times	Enter the waiting time.

After finishing the settings, click the **Traceroute** button, and then the result of Traceroute diagnosis is displayed in the page. Click **Stop** button to stop Traceroute diagnosis.

5.4.7 Logout

Choose **MAINTENANCE** > **Logout** to log out of the Web configuration page.

5.5 Status

5.5.1 Device Information

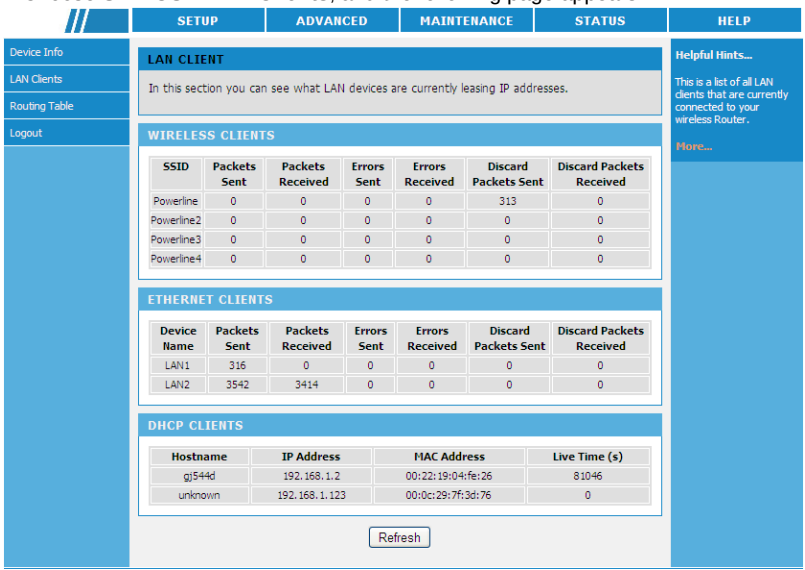
Choose **STATUS** > **Device Info**, and the following page appears.

In this page, you can view basic information of the PLC wireless router, such as the information of WAN and LAN interfaces, wireless LAN information and DHCP server Information.

Click **Refresh** to refresh the information in this page.

5.5.2 LAN Client

Choose **STATUS** > **LAN Clients**, and the following page appears.

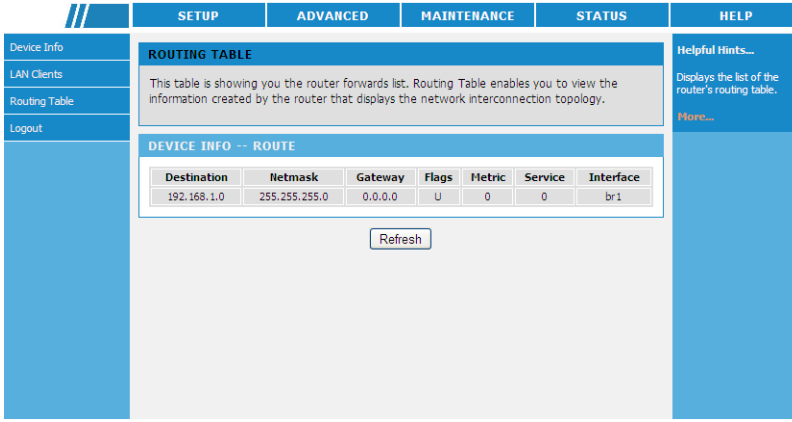


In this page, you can view the status information of wireless clients, Ethernet clients, and DHCP clients.

Click **Refresh** to refresh the information in this page.

5.5.3 Routing Table

Choose **STATUS** > **Routing Table**, and the following page appears.



In this page, you can view the routing information of the PLC wireless router.

Click **Refresh** to refresh the information in this page.

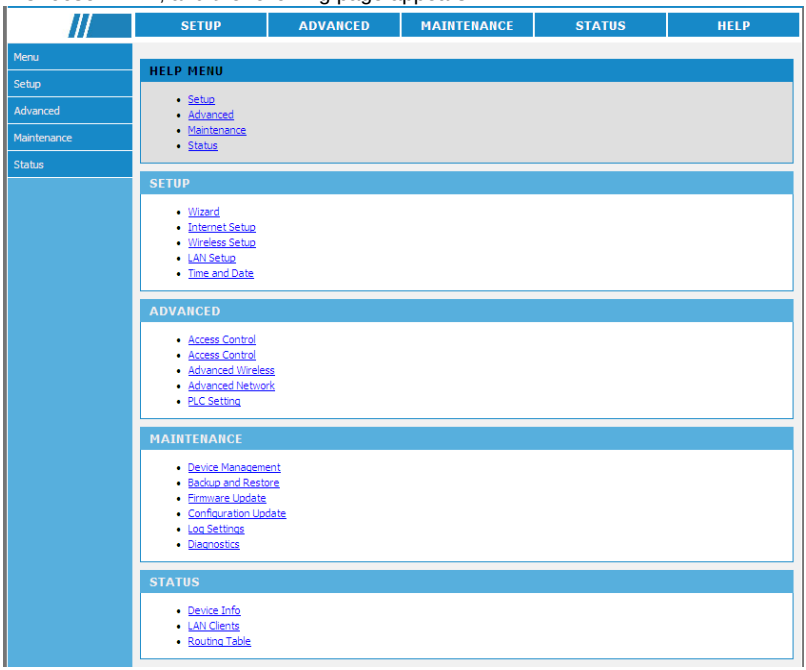
5.5.4 Logout

Choose **STATUS** > **Logout** to log out of the Web configuration page.

5.6 Help

Viewing the help information can help you know more about each configuration page of the PLC wireless router.

Choose **HELP**, and the following page appears.



In this page, you can click the menu that you are interested in to view the detailed information.

6 Using the Security Pushbutton

This chapter describes how to add new devices to, or remove old devices from a HomePlug AV logical network (AVLN). Both can be accomplished by using a **Security** (NMK) pushbutton.

Operation progress and outcome can be monitored by observing the behaviors of the Power and Data LED indicators.

6.1 Forming a HomePlug AV Logical Network

When two devices (A and B) with different NMK values are connected to the same power line, you want them to form a logical network. Do as follows:

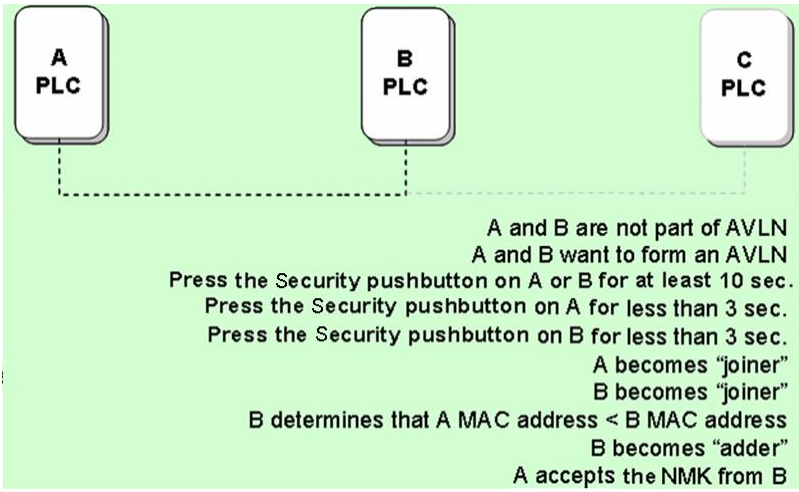
Step1 Press the **Security** pushbutton on A or B for at least 10 seconds. The device will reset and restart with a random NMK.

Step2 Press the **Security** pushbutton on the first device A for less than 3 seconds.

Step3 Press the **Security** pushbutton on the second device B for less than 3 seconds. Press the pushbutton on B within 2 minutes

Step4 Wait for the connection to complete.

The Power LED indicators on both devices will flash evenly at 1-second interval until the operation succeeds or fails. If the connection is successful, the Power and Data LED indicators on both devices illuminate steadily. If the connection is failed, the Power LED indicators on both devices still illuminate steadily, but the Data LED indicators on both devices go out. In that case, please repeat Step1 to Step4.



6.2 Joining an AVLN Network

Assume that a network exists, a new device, the 'joiner', wants to join the network. Any device on the existing network can become the 'adder'.

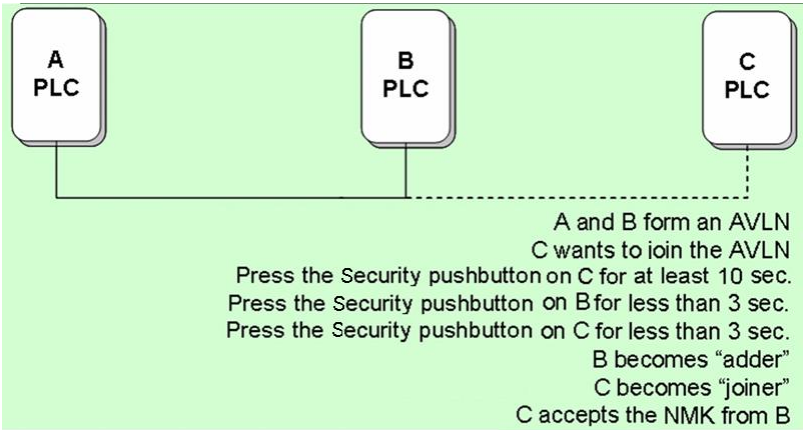
Step1 Press the **Security** pushbutton on the 'joiner' for at least 10 seconds. The device will reset and restart with a random NMK.

Step2 Press the **Security** pushbutton on the 'joiner' for less than 3 seconds.

Step3 Press the **Security** pushbutton on any network device for less than 3 seconds, making it the 'adder'. Please press this pushbutton within 1 minute.

Step4 Wait for the connection to complete.

The Power LED indicators on both devices will flash at 1-second interval until the process succeeds or fails. If the connection is successful, the Power and Data LED indicators on both devices illuminate steadily. If the connection is failed, the Power LED indicators on both devices still illuminate steadily, but the Data LED indicators on both devices go out. In that case please repeat Step1 to Step4.



6.3 Leaving an AVLN Network

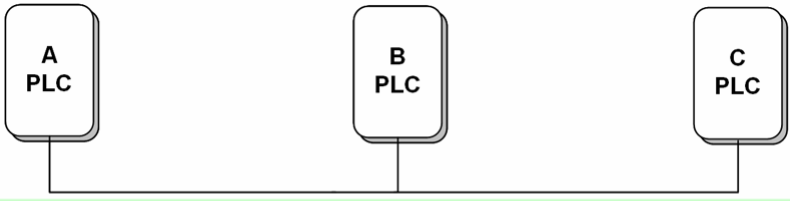
Assume that a network exists. If you want to remove one device, the ‘leaver’ from an AVLN network, or remove the device from the existing network and have it join another logical network, do as follows:

Step1 Press the **Security** pushbutton on the ‘leaver’ for more than 10 seconds. The device will reset and restart with a random NMK.

Step2 Wait for reset to complete.

The Power LED indicator on the ‘leaver’ will momentarily extinguish during reset and flash during restart, then illuminate steadily. The ‘leaver’ is removed from the existing network successfully.

Once the process completes, you may disconnect the device from the medium or join it to another logical network on the same medium.



A, B and C form an AVLN
A wants to leave the AVLN
Press the Security pushbutton on A for more than 10 sec.
A computes a random NMK
A resets and restarts

Appendix A Troubleshooting

Why all the LED indicators are off?

Check the connection between the power adapter and power socket.

(1) Check the connection between the power adapter and power socket.

(2) Check whether the device is turned on.

Why the LAN1 or LAN2/WAN indicator is off?

(1) Check the connection between your PLC wireless router and computer, hub, or switch.

(2) Check the running status of your computer, hub, or switch, and verify whether they run normally or not.

(3) Check the network cable that is connected to the PLC wireless router and other devices.

Why you fail to access the Web page?

Follow the steps below to check the connection between the computer and the device:

(1) Click **start > Run** and enter ping command **ping 192.168.99.1** (the IP address of PLC wireless router).

(2) If you fail to access the PLC wireless router, check the following settings:

- The network cable type
- The connection between your router and the computer
- TCP/IP settings of PC

How to restore factory defaults after carrying out the incorrect configuration?

(1) Press the **Reset** pushbutton for more than 3s and then release it. The PLC wireless router restores the factory default settings.

(2) The default IP address of the PLC wireless router is **192.168.99.1** and the subnet mask is **255.255.255.0**.

(3) The user name and password of the super user are **admin**.

(4) The user name and password of the common user are **user**.

Appendix B Specifications

PLC Module Specification	
Chip	Qualcomm Atheros AR7420/AR1540
Firmware	Support North America/Europe/APAC/Japan
Protocol	HomePlug AV IEEE1901 IEEE 802.3 10/100 Ethernet (100Mbps) IEEE 802.3u Fast Ethernet
PLC Rate	500Mbps
Signal Band	2~68MHz
Modulation Mode	Support OFDM 4096/1024/256/64/16/8-QAM, QPSK, BPSK, and ROBO
Encryption	128-bit AES
QoS	Support four-level QoS Support VLAN priority Support ToS and CoS packet classifications
Operation Mode	Support priority-based CSMA/CA channel access scheme
Multicast	Support IGMP management multicast session.
Wi-Fi Module Specification	
Chip	Qualcomm Atheros AR9341
Flash Memory	64Mbps
DDR SDRAM:	256Mbps
Protocol	IEEE 802.11b/g/n IEEE 802.3/3x/3u
Wireless Frequency Range	2.4 GHz~2.484 GHz
Channel	1~13
Wireless Signal Rate	11b: 11/5.5/2/1Mbps 11g: 54/48/36/24/18/12/9/6Mbps 11n: up to 300Mbps in 40MHz mode and up to 150Mbps in 20MHz mode.
Output Power	11b: 16~17 dBm 11g: 14~17 dBm

	11n: 11~16 dBm
Receiving Sensitivity	11b: 11Mbps/-84dBm 11g: 54Mbps/-75dBm 11n: 300Mbps/-64dBm
Operation Mode	2Tx/2Rx
Multiple SSID	Up to 4 BSSIDs
Security Authentication	WEP, WPA-PSK, WPA2-PSK, and WPA/WPA2-PSK SSID hiding MAC address access control list
System Specification	
LED Indicator	Power: Indicate power status. LAN1: Indicate the connection status of LAN1 interface. LAN2/WAN: Indicate the connection status of LAN2/WAN interface. Data: Indicate PLC rate. WLAN/WPS: Indicate WLAN and WPS connection status.
Power Socket	Support power sockets of English-style, European-style, Japanese-style, and Chinese-style.
Ethernet Port	2 x RJ45 for 10/100 Ethernet (Auto MDI/MDI-X)
Antenna	PCB-Antenna x 2
Button	Security: Set the status of device members. Reset: Restore factory default settings. WPS: Press this pushbutton for less than 3 seconds to enable the negotiation of PBC mode. Press this pushbutton for more than 5 seconds to enable or disable WLAN.
Software Upgrade	Support software upgrade by Web page.
Consumption	6.5W
Environment Requirements	
Operating Temperature	0~40ºC
Storage Temperature	-10~70ºC
Operating Humidity	10%~85%, non-condensing
Storage Humidity	5%~90%, non-condensing

Rated Input	100~240 V AC, 50/60Hz
EMC and Safety	
Compliance	FCC Part 15 Class B, CE
Safety Authentication	UL
Green Standard	RoHS
Physical Characteristics	
Dimension	L × W × H: 107mm × 62mm × 48.5mm
Weight	180g