



HG232f 300Mbps Wireless Router

User Guide



HG232f 300Mbps Wireless Router
V100R001

User Guide

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1 Warnings and Precautions

To use the device properly and safely, read these warnings and precautions carefully and strictly observe them during operation. Unless otherwise specified, the term "device" refers to the device and its accessories.

Basic Requirements

- During storage, transportation, and operation of the device, keep it dry and prevent it from colliding with other objects.
- Do not dismantle the device. In case of any fault, contact an authorized service center for assistance or repair.
- Without authorization, no organization or individual can change the mechanical, safety, or performance design of the device.
- When using the device, observe all applicable laws and regulations and respect the legal rights of other people.

Environmental Requirements for Using the Device

- Before connecting and disconnecting cables, stop using the device, and then disconnect it from the power supply. Ensure that your hands are dry during operation.
- Keep the device far from sources of heat and fire, such as a heater or a candle.
- Keep the device far from electronic appliances that generate strong magnetic or electric fields, such as a microwave oven or a refrigerator.
- Place the device on a stable surface.
- Place the device in a cool and well-ventilated indoor area. Do not expose the device to direct sunlight.
- Use the device in an area with a temperature ranging from 0°C to 40°C.
- Do not block the openings on the device with any object. Reserve a minimum space of 10 cm around the device for heat dissipation.
- Do not place any object (such as a candle or a water container) on the device. If any foreign object or liquid enters the device, stop using the device immediately, power it off, remove all the cables connected to it, and then contact an authorized service center.
- During thunderstorms, power off the device, and then remove all the cables connected to it to prevent it from getting damaged due to lightning strikes.

Precautions for Using Wireless Devices

- When using the device, ensure that the antenna of the device is at least 20 cm away from all persons.
- Do not use the device where using wireless devices is prohibited or may cause interference or danger.
- The radio waves generated by the device may interfere with the operation of electronic medical devices. If you are using any electrical medical device, contact its manufacturer for the restrictions on the use of the device.
- Do not take the device into operating rooms, intensive care units (ICUs), or coronary care units (CCUs).

Areas with Inflammables and Explosives

- Do not use the device where inflammables or explosives are stored, for example, in a gas station, oil depot, or chemical plant. Otherwise, explosions or fires may occur. In addition, follow the instructions indicated in text or symbols.
- Do not store or transport the device in the same box as inflammable liquids, gases, or explosives.

Accessory Requirements

- Use only the accessories supplied or authorized by the device manufacturer. Otherwise, the performance of the device may get affected, the warranty for the device or the laws and regulations related to telecommunications terminals may become null and void, or an injury may occur.
- Do not use the power adapter if its cable is damaged. Otherwise, electric shocks or fires may occur.
- Ensure that the power adapter meets the specifications indicated on the device nameplate.
- Ensure that the power adapter meets the requirements of Clause 2.5 in IEC60950-1/EN60950-1 and it is tested and approved according to national or local standards.
- For pluggable device, the socket-outlet shall be installed near the device and shall be easily accessible.

Safety of Children

Keep the device and its accessories out of the reach of children. Otherwise, they may damage the device and its accessories by mistake, or they may swallow the small components of the device, causing suffocation or other dangerous situations.

Maintenance

- If the device is not used for a long time, power it off, and then remove all the cables connected to it.

- If any exception occurs, for example, if the device emits any smoke or unusual sound or smell, stop using the device immediately, power it off, remove all the cables connected to it, and then contact an authorized service center.
- Do not trample, pull, or overbend any cable. Otherwise, the cable may get damaged, causing malfunction of the device.
- Before cleaning the device, stop using it, power it off, and then remove all the cables connected to it.
- Use a clean, soft, and dry cloth to clean the device shell. Do not use any cleaning agent or spray to clean the device shell.

Disposal and Recycling Information



This symbol on the device (and any included batteries) indicates that the device (and any included batteries) should not be disposed of as normal household garbage. Do not dispose of your device or batteries as unsorted municipal waste. The device (and any batteries) should be handed over to a certified collection point for recycling or proper disposal at the end of its life.

For more detailed information about the recycling of the device or batteries, contact your local city office, the household waste disposal service, or the retail store where you purchased this device.

The disposal of this device is subject to the Waste from Electrical and Electronic Equipment (WEEE) Directive of the European Union. The purpose for separating WEEE and batteries from other waste is to minimize any environmental impact and health hazard due to the presence of hazardous substances.

Reduction of Hazardous Substances

This device is compliant with the EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (Regulation No 1907/2006/EC of the European Parliament and of the Council) and the EU Restriction of Hazardous Substances (RoHS) Directive (Directive 2002/95/EC of the European Parliament and of the Council). For more information about the REACH compliance of the device, visit the Web site www.huaweidevice.com/certification. You are recommended to visit the Web site regularly for up-to-date information.

EU Regulatory Conformance

This device should be installed and operated with a minimum distance of 20 cm between the antenna and all persons.

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For the declaration of conformity, visit the Web site
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CE0979

Notice: Observe the national local regulations in the location where the device is to be used. This device may be restricted for use in some or all member states of the European Union (EU).

Notice: This device can be operated in all European countries.

Norway: This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund.

Federal Communications Commission (FCC) Statement

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

This device should be installed and operated with a minimum distance of 20 cm between the antenna and all persons.

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

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

Warning: Changes or modifications made to this device not expressly approved by Huawei Technologies Co., Ltd. may void the FCC authorization to operate this device.

2 Product Introduction

The HG232f 300Mbps Wireless Router (hereinafter referred to as the router) is a network access device designed for home users and small or home office (SOHO) users. On the network side, the router provides an Ethernet interface that is used to access the Internet at a high speed. On the user side, the router provides the wireless local area network (WLAN) function and four Ethernet interfaces through which you can connect various home terminal devices, such as personal computers (computers) and Internet Protocol (IP) set-top boxes (STBs), to the Internet.

It supports the following functions:

- WLAN function
 - Wireless data rate of 300Mbit/s by using 2T2R external antenna
 - Compatibility with Institute of Electrical and Electronics Engineers (IEEE) 802.11b, 802.11g, and 802.11n
 - Establishment of a secure wireless connection by pressing the Wi-Fi Protected Setup (WPS) button
 - Easy and secure configuration and management of a WLAN
 - 64-bit and 128-bit Wired Equivalent Privacy (WEP) encryption
 - Security modes of Wi-Fi Protected Access (WPA and WPA2) and hybrid cryptosystem
 - Wireless Distribution System (WDS) through which a WLAN can be expanded
 - Low radiation
 - Certification by the Wi-Fi Alliance
- Integration of the functions of wireless access points (APs), routers, four-port switches, and firewalls
- WLAN standards (IEEE 802.11b, 802.11g, and 802.11n) and Ethernet standard (IEEE 802.3u)
- One 10/100 Mbit/s adaptive uplink Ethernet interface connected to a wide area network (WAN) and four 10/100 Mbit/s adaptive downlink Ethernet interfaces connected to a local area network (LAN)
- Multiple networking applications, such as accessing a broadband network in Point-to-Point Protocol over Ethernet (PPPoE) dial-up mode, obtaining an IP address through the Dynamic Host Configuration Protocol (DHCP), and configuring a static IP address
- IP quality of service (QoS)
- IPv6

- Traffic control through which you can manage the downloading rate of peer-to-peer (P2P) software
- Local and remote configuration through a Web-based configuration utility

3 Hardware Installation

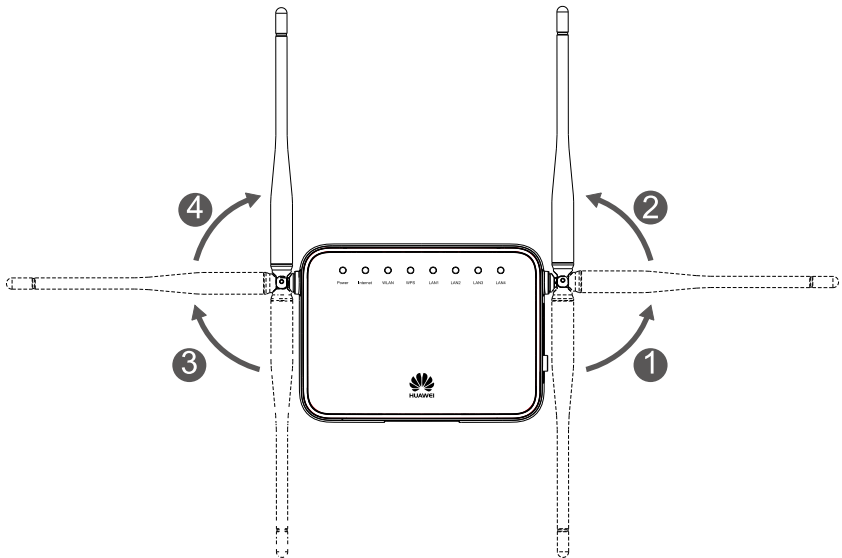
3.1 Selecting a Position for the Router

As described in chapter 1 "Warnings and Precaution," place the router in a stable and well-ventilated location and do not expose it to direct sunlight. For best results with the router WLAN function, place the router as follows:

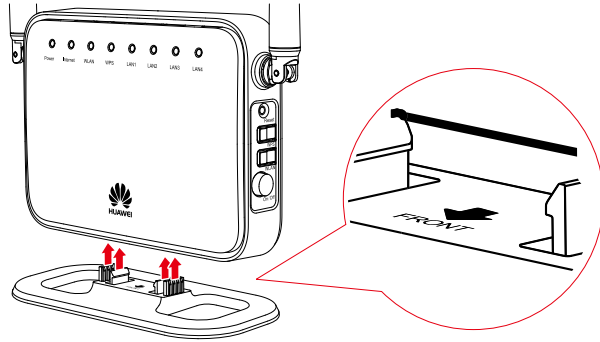
- Place the router in an open space and ensure that there are no obstacles, such as walls and columns, between your computer and the router. Otherwise, the transmission of radio signals on the WLAN may be negatively impacted.
- Ensure that the router and your computer are far from the electric appliances (such as a microwave oven) that generate strong magnetic or electric fields.

3.2 Installing the Hardware

Adjust the antennas by referring to the direction of the arrows in the following figure.



When installing the base, ensure that the arrow on the base points in the same direction as the front panel of the router.

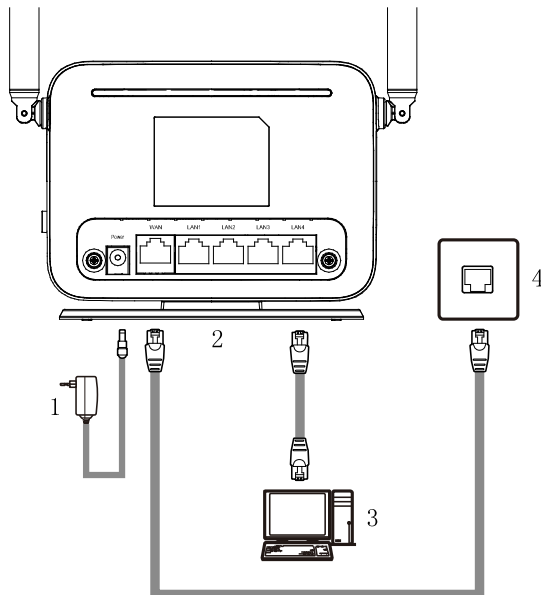


3.3 Connecting the Cables

3.3.1 Installing the Router on a Community Broadband Network

In some communities, network service providers use Ethernet interfaces as Internet interfaces. In such a network, you can access the Internet through your computer if a network adapter is installed on the computer.

Figure 3-1 Shows the cable connections of a community broadband network after the router is installed on the network

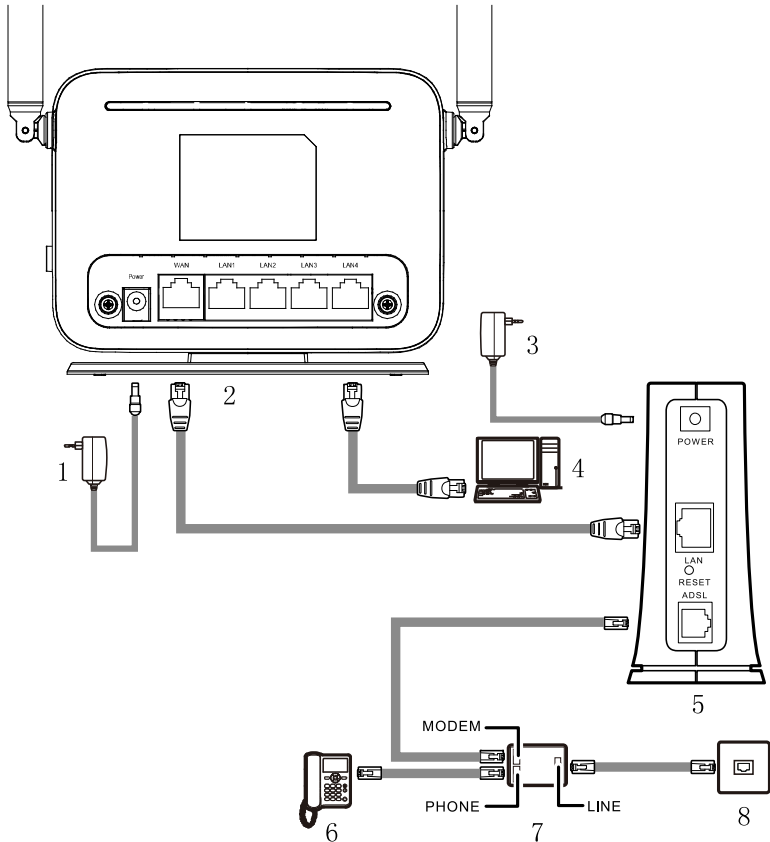


1. Power adapter of the router
2. Router
3. Desktop computer
4. Community broadband network interface on the wall (Ethernet interface)

3.3.2 Installing the Router on an ADSL Broadband Network

On the ADSL broadband network, the ADSL modem provides an Ethernet interface used to connect a computer to the Internet.

Figure 3-2 Shows the cable connections of an ADSL broadband network after the router is installed on the network

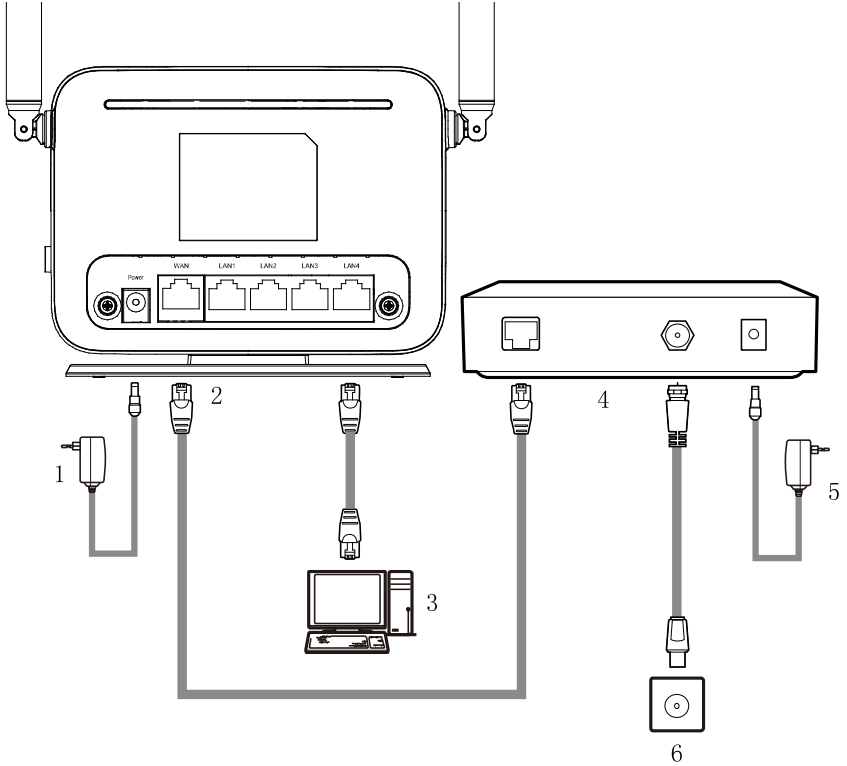


1. Power adapter of the router
2. Router
3. Power adapter of the ADSL modem
4. Desktop computer
5. ADSL modem
6. Telephone
7. Splitter
8. Telephone line interface on the wall

3.3.3 Installing the Router on a CATV Broadband Network

On CATV broadband network, the cable modem provides an Ethernet interface used to connect a computer to the Internet.

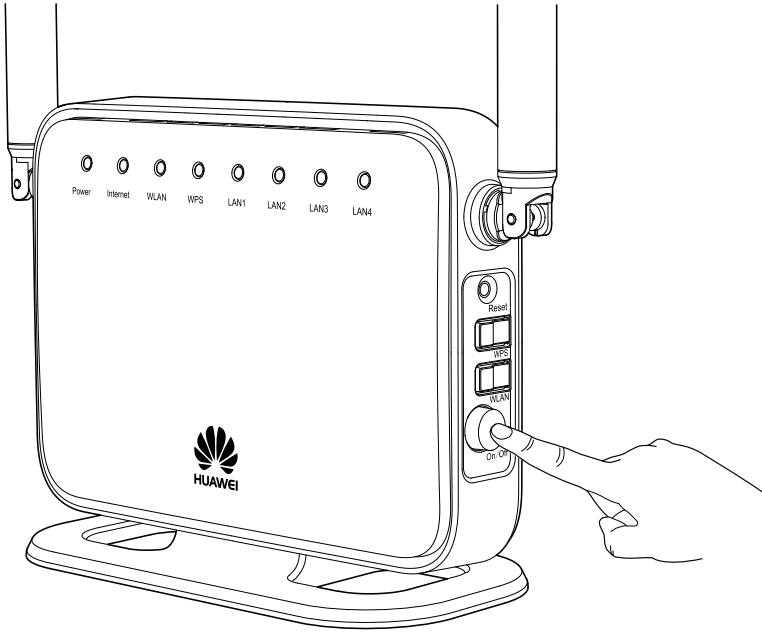
Figure 3-3 Shows the cable connections of a CATV broadband network after the router is installed on the network



- 1. Power adapter of the router
- 2. Router
- 3. Desktop computer
- 4. Cable modem
- 5. Power adapter of the cable modem
- 6. CATV network interface on the wall

3.4 Powering On the Router

Press the **On/Off** button on the side panel to power the router on. When the **Power** indicator light remains lit, you can consider that the router to be working properly.



 **NOTE**

To power the router off, press the **On/Off** button again, and then unplug the power adapter.

4 Configuration of Internet Access Parameters

4.1 Logging In to the Web-based Configuration Utility

Most of the router parameters are pre-set before delivery to meet common home application scenarios. To check the router's working status or configure certain advanced network functions, use the web-based configuration utility.

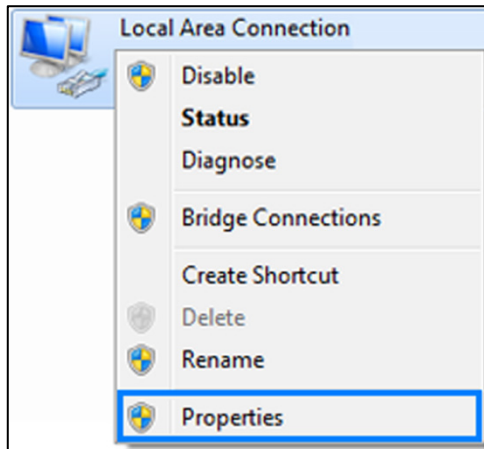
To log in to the web-based configuration utility:

Step 1 Set the network connection of your computer to obtain an IP address automatically.

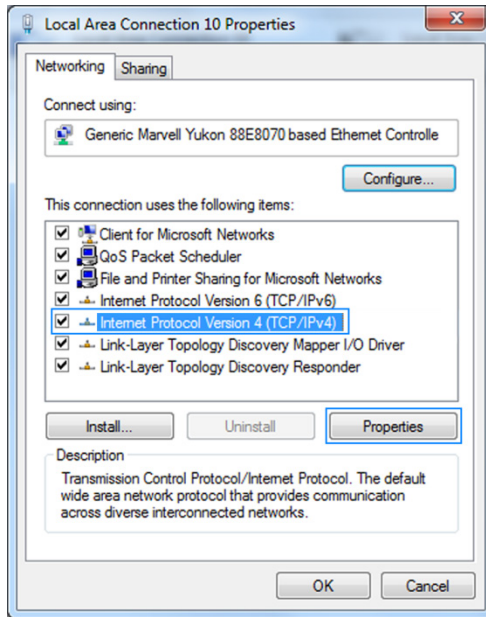
By default, the Dynamic Host Configuration Protocol (DHCP) function is enabled. The router then assigns an IP address to your computer automatically.

- The configuration procedure on the computer running the Windows 7 operating system is as follows:

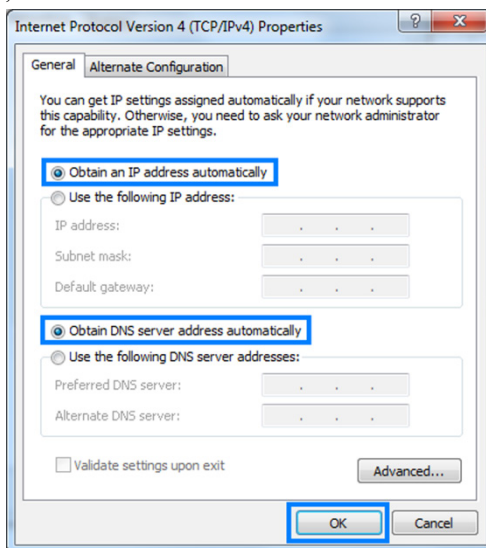
1. Choose **start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**.
2. Right-click **Local Area Connection** and choose **Properties**.



3. Double-click **Internet Protocol Version 4 (TCP/IPv4)**.



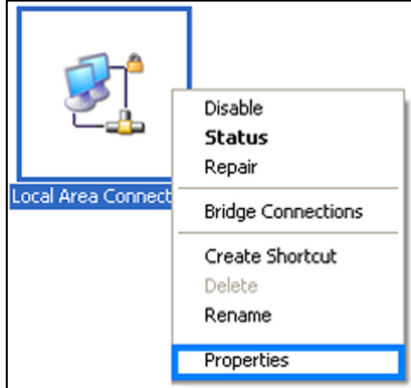
4. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, and click **OK**.



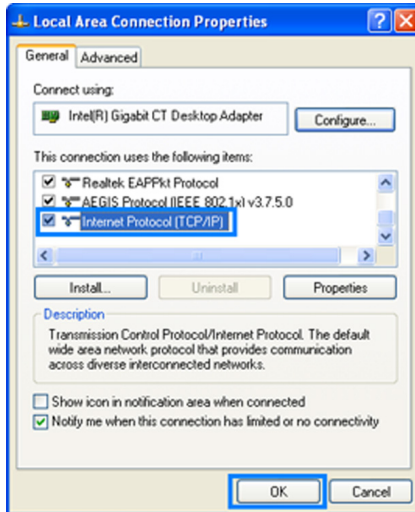
5. Go back to the former page, and click **OK**.

- The configuration procedure on the computer running the Windows XP operating system is as follows:

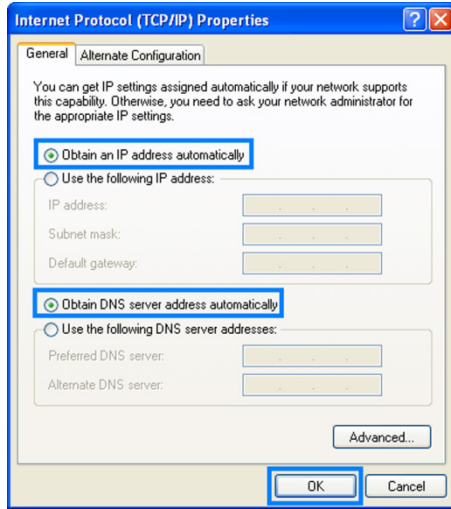
1. Choose **start > Control Panel > Network and Internet Connections > Network Connections**.
2. Right-click **Local Area Connection** and choose **Properties**.



3. Double-click **Internet Protocol (TCP/IP)**.



4. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, and click **OK**.



5. Go back to the former page, and click **OK**.

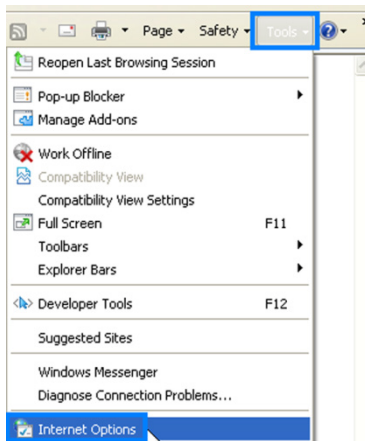
 **NOTE**

If you disable the DHCP function, please ensure that the IP address of the computer and that of the router LAN interface are in the same network segment to enable the computer to access the web-based configuration utility.

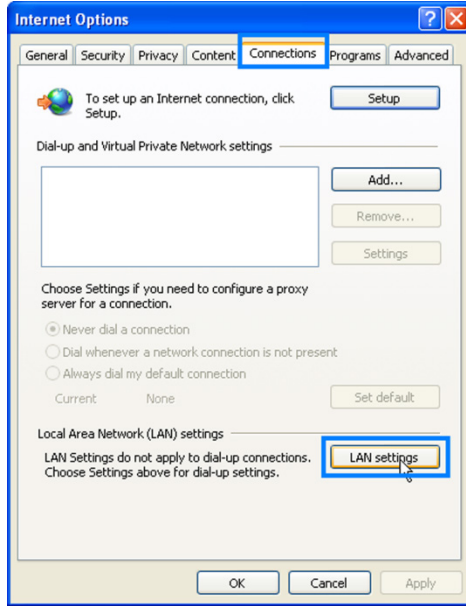
Step 2 Open a web browser on your computer and ensure that the browser does not use any proxy servers.

Using Internet Explorer 8.0 as an example to ensure no proxy servers are used.

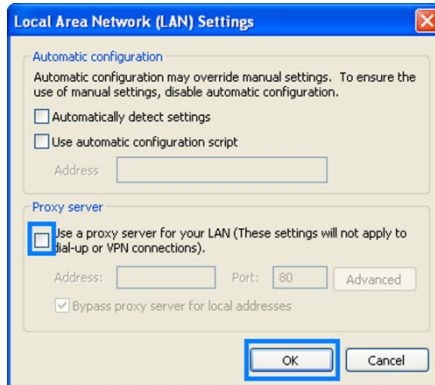
1. Start Internet Explorer. Choose **Tools > Internet Options**.



2. On the **Connections** tab of the **Internet Options** dialog box, click **LAN Settings**.



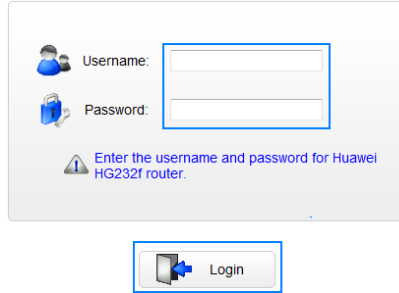
3. In the **Proxy server** area, ensure that **Use a proxy server for your LAN** is cleared. If **Use a proxy server for your LAN** is selected, clear **Use a proxy server for your LAN**, and then click **OK**.



Step 3 Enter **http://192.168.3.1** in the address bar, and then press **Enter**.

Step 4 Enter the user name (**admin** by default) and password (**admin** by default) in the **Username** and **Password** text boxes.

Step 5 Click **Login**.



NOTE

- The first time you log in to the web-based configuration utility, a wizard page used to change the password is displayed. The wizard page will be displayed when you have not modified the default password. If you don't to change the password, click **Skip** to skip the wizard and go immediately to the configuration wizard page.
- You can also change the password by choosing **Maintenance > Account**, for details, see chapter 7.1 "Changing the User Name and Password of the Web-based Configuration Utility".

To protect your router from unauthorized access, please change the default password. Enter a new password and Re-enter the new password to confirm it, and then click **Submit**.



After the default password is changed, the login page is displayed. Enter admin for user name and enter your new password to log in.

4.2 Using the Setup Wizard

After logging in to the web-based configuration utility, you can use the setup wizard provided by the utility to quickly configure the router.

When you configure the router for the first time, you can view the setup wizard page after logging in to the utility. To configure the router through the setup wizard:

 **NOTE**

- If you have configured the router before, the setup wizard page will not be displayed after logging in to the web-based configuration utility. However, you can still click **Setup Wizard** in the upper right corner to display the setup wizard page.
- To skip the wizard and go immediately to the configuration page, click **Here** when the following message displays: **Click Here to enter the advanced configuration page.**

Step 1 Log in to the Web-based configuration utility.

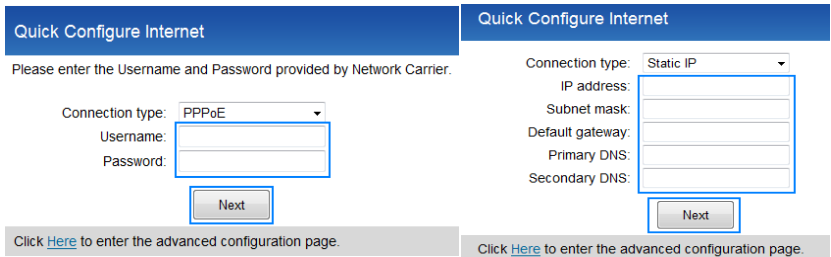
Step 2 Choose the network connection type and configure the network connection parameters.

Choose the connection type based on the application scenario. The following table describes the connection types.

Table 4-1 Configuring the network connection parameters

Application Scenario	Connection Type
The user name and password are provided by your service provider.	PPPoE (recommended)
The user name and password are provided by your service provider. Set up a dial-up connection on one computer only.	Bridge
Certain parameters, such as the static IP address and DNS server address, are provided by your service provider.	Static IP
No parameters are provided by your service provider. The IP address is automatically assigned by the service provider.	DHCP

- If you choose **PPPoE** or **Static IP**, enter the parameters provided by your service provider, and click **Next**.



The image shows two side-by-side screenshots of the 'Quick Configure Internet' web interface. The left screenshot is for the PPPoE configuration. It has a blue header 'Quick Configure Internet' and a sub-header 'Please enter the Username and Password provided by Network Carrier.' Below this, there is a 'Connection type:' dropdown menu set to 'PPPoE', and two input fields for 'Username:' and 'Password:'. A 'Next' button is at the bottom. A grey bar at the bottom contains the text 'Click [Here](#) to enter the advanced configuration page.' The right screenshot is for the Static IP configuration. It also has a blue header 'Quick Configure Internet'. Below it, there is a 'Connection type:' dropdown menu set to 'Static IP'. There are five input fields: 'IP address:', 'Subnet mask:', 'Default gateway:', 'Primary DNS:', and 'Secondary DNS:'. A 'Next' button is at the bottom. A grey bar at the bottom contains the text 'Click [Here](#) to enter the advanced configuration page.'

- If you choose **DHCP** or **Bridge**, click **Next** without changing any configurations.

NOTE

- If you choose **PPPoE**, **Static IP**, or **DHCP**, the computer automatically connects to the Internet as long as the router is working properly.
- If you choose **Bridge**, use the dial-up software on the computer to set up a dial-up connection each time you access the Internet.

Step 3 Set WLAN parameters, and then click **Next**.

NOTE

The default SSID and key are printed on the router's rear label. To protect your wireless network from unauthorized access, change the SSID and key promptly. You can also configure the WLAN SSID and key by choosing **Basic** > **WLAN**.

----End

After you complete the preceding procedure, you can start surfing the Internet. You need to perform the preceding procedure on a computer only once. The next time you power your computer on, you can start surfing the Internet without any further configurations.

5 Configuration of WLAN Parameters

If your computer has a wireless network adapter, you can use it to access the wireless network set up by the router.

 **NOTE**

The method for installing the wireless adapter and its driver varies by vendor. For details, see the installation guide provided by the vendor of your wireless adapter.

5.1 Setting Up a Wireless Connection Manually

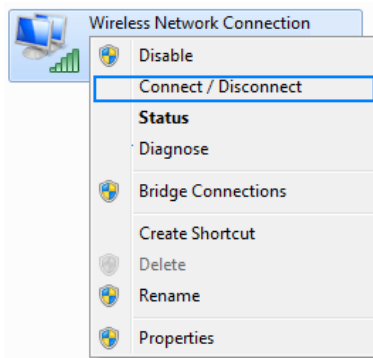
To manually set up a wireless connection, use either of the following methods:

- Use the tool provided by your network adapter.
For details, see the user guide of your network adapter.
- Use the wireless configuration software provided by the operating system of your computer.

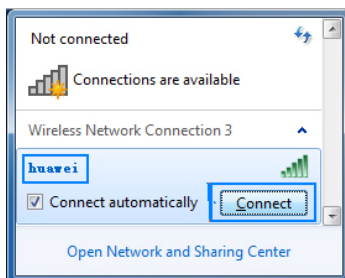
This section takes Windows XP and Windows 7 as an example and describes how to set up a wireless connection between your computer and the router manually.

5.1.1 Procedure on Computers Running Windows 7

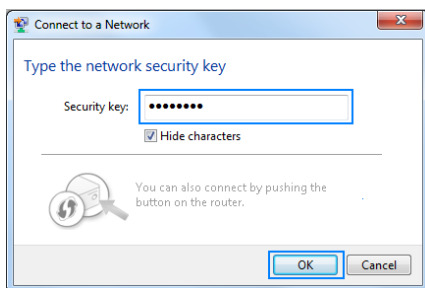
Step 1 Choose **Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**. Right-click **Local Area Connection**, and choose **Connect/Disconnect**.



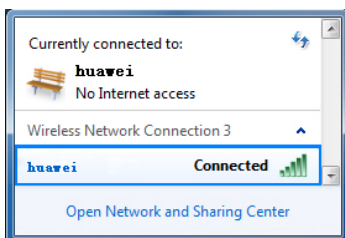
Step 2 From the wireless network list, click the SSID set when you configured the router, and click **Connect**.



Step 3 Enter the key set when you configured the router, and click **OK**.



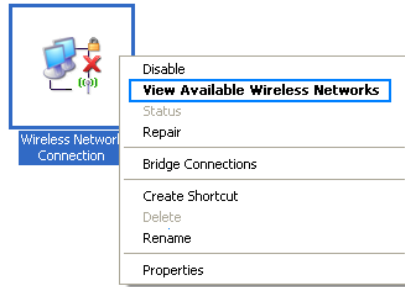
Step 4 After the key is verified, **Connected** is displayed on the right of the network icon, indicating that a wireless connection has been set up between the computer and router.



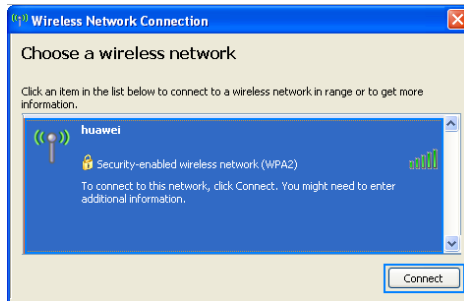
---End

5.1.2 Procedure on Computers Running Windows XP

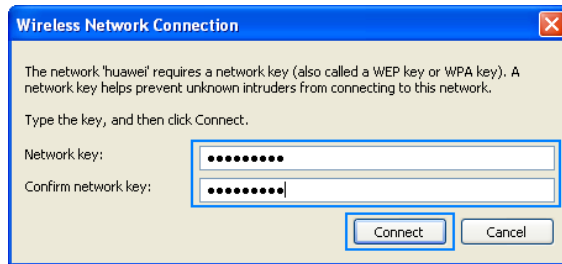
Step 1 Choose **Start > Control Panel > Network and Internet Connections > Network Connections**. Right-click **Wireless Network Connection**, and choose **View Available Wireless Networks**.



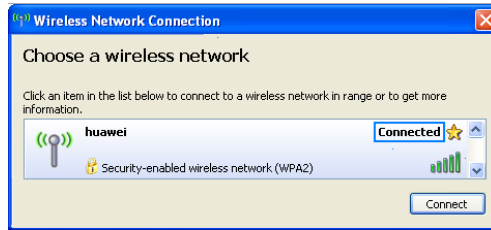
Step 2 From the wireless network list, click the SSID set when you configured the router, and click **Connect**.



Step 3 Enter the key set when you configured the router, and click **Connect**.



Step 4 After the key is verified, **Connected** is displayed on the right of the network icon, indicating that a wireless connection has been set up between the computer and router.

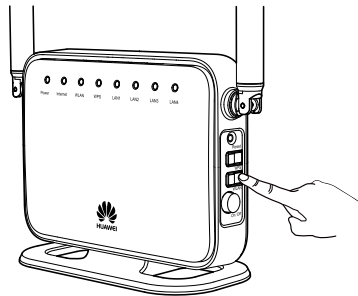


---End

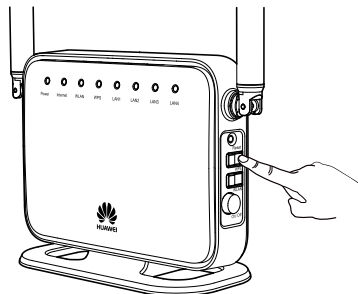
5.2 Setting Up a Wireless Connection with the WPS Button

The router supports the WPS function. If your network adapter also supports the WPS function, you can use the WPS function to set up a wireless connection between your computer and the router quickly. To set up such a wireless connection:

- Step 1** Check whether the WLAN indicator light of the router is on. If the WLAN indicator light is off, press the **WLAN** button on the side panel of the router to enable the WLAN function.



- Step 2** Press and hold the **WPS** button for 2 or more seconds on the side panel of the router.



The WPS indicator light of the router starts blinking. If the WPS indicator light does not start blinking, the WPS function cannot be enabled. For solutions to other WPS issues, see chapter 8 "FAQs."

Step 3 Enable the WPS negotiation function of the wireless network adapter on your computer within 2 minutes, and then wait for a short while (typically 10 seconds, at most 120 seconds).

 **NOTE**

For details, see the user guide provided by the vendor of your wireless adapter.

The router WPS indicator light stops blinking and remains lit, indicating that the router is connected to your computer over the WLAN. This state lasts 300 seconds. The WPS indicator light then turns off.

---End

You need to set up a wireless connection only once. You can access the wireless network anytime you want as long as the wireless network name and password are not changed. When the router is working properly, your computer connects to the router automatically after the computer's wireless function is enabled.

6 Configuring Frequently Used Functions

6.1 Configuring Multiple Computers to Access the Internet Simultaneously

Function Overview

The router provides four Ethernet ports and WLAN. Therefore, you can connect multiple computers to the router over a wireless connection or through the Ethernet ports. The computers can then access the Internet simultaneously through the routing function of the router.

Configuration Example

If you have two desktop computers and one laptop with a wireless network adapter installed, you can configure the desktop computers and laptop to access the Internet simultaneously. In this example, the laptop is configured to access the Internet over a wireless connection.

Most router configurations are completed before delivery. You only need to connect the desktop computers and laptop to the router and set certain Internet access parameters:

- Step 1** Connect the two desktop computers to the router by using network cables.
For details, see chapter 3 "Hardware Installation."
- Step 2** Connect the laptop to the router wirelessly by configuring the laptop.
For details, see chapter 5 "Configuration of WLAN Parameters."
- Step 3** Set the Internet access parameters of the router to connect the router to the Internet.
For details, see chapter 4 "Configuration of Internet Access Parameters."
- Step 4** Configure network connections on the desktop computers and laptop so that these computers can obtain their respective IP addresses automatically.

---End

NOTE

If the desktop computers and laptop cannot access the Internet after the preceding configuration, the network service provider may have linked your Internet access account to the Media Access Control (MAC) address of your previous network adapter. To remove the restriction, see section 6.7 "Removing the Restriction Caused by the Binding of the Internet Access Account to the MAC Address."

6.2 Enabling or Disabling the WLAN Function

Function Overview

The router allows you to enable or disable the WLAN function.

Configuration Example

To enable or disable the WLAN function:

Step 1 Log in to the web-based configuration utility.

Step 2 In the navigation tree, choose **Basic > WLAN**.

The WLAN configuration page is then displayed.

Step 3 Select **Enable WLAN**.

- Select **Enable WLAN** to enable the **WLAN** function.

The screenshot shows the router's web-based configuration utility. At the top, there is a breadcrumb trail: "Basic > WLAN > WLAN". Below this are three tabs: "WLAN", "WLAN WDS", and "WLAN Filtering". The "WLAN" tab is selected. In the main content area, there is a checkbox labeled "Enable WLAN" which is checked. Below this is a "Wireless Settings" section with various configuration options:

Wireless Settings	
Mode:	802.11b/g/n
Country:	UNITED KINGDOM
Channel:	Auto
Transmit power:	100%
Power Enhance:	<input type="checkbox"/> Enable
SSID index:	SSID1
SSID:	huawei
Hide broadcast:	<input type="checkbox"/> Enable
AP isolation:	<input type="checkbox"/> Enable
Band width:	20/40 MHz
Security:	WPA2-PSK
WPA pre-shared key:	●●●●●●●●
WPA encryption:	AES
WPS:	<input checked="" type="checkbox"/> Enable
WPS mode:	PBC

A "Submit" button is located at the bottom right of the settings area.

- Clear **Enable WLAN** to disable the **WLAN** function.

This screenshot is similar to the previous one, showing the same navigation and tabs. However, the "Enable WLAN" checkbox is now unchecked, indicating that the WLAN function has been disabled.

----End

6.3 Improving the Security of a WLAN

WLAN signals are transmitted in the air and can be easily intercepted by unauthorized parties. If the wireless signals are not encrypted, unauthorized parties may use your WLAN or obtain data transmitted on the WLAN. To improve the security of data transmitted on the WLAN, the router provides multiple security-related settings for the WLAN function. You can change these settings as required to protect your WLAN from unauthorized access.

6.3.1 Hiding the Name of a WLAN

Function Overview

The router allows you to hide the SSID. After this function is enabled, wireless signals transmitted from the router do not carry the SSID, preventing unauthorized parties from obtaining the SSID. In addition, computer users need to enter the valid SSID manually to add the computer to the WLAN. Therefore, the security of the WLAN is improved.

The router also provides the multi-SSID function. You can configure multiple SSIDs and enable one or multiple of them. You can also disable the SSIDs that are not required. After an SSID is disabled, no wireless client can connect to the WLAN that is specified by this SSID.

Configuration Example

To use and hide **SSID1** and disable the other SSIDs (so that the WLAN cannot be found by others), do as follows:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Basic > WLAN**.
The WLAN configuration page is then displayed.
- Step 3** Select **SSID1** for **SSID Index**.
- Step 4** Set **SSID** to **Enable**.
- Step 5** Set **Hide broadcast** to **Enable**, and then click **Submit**.

Basic > WLAN > WLAN

WLAN WLAN WDS WLAN Filtering

Enable WLAN

Wireless Settings

Mode: 802.11b/g/n

Country: UNITED KINGDOM

Channel: Auto

Transmit power: 100%

Power Enhance: Enable

SSID index: SSID1

SSID: huawei

Hide broadcast: Enable

AP isolation: Enable

Band width: 20/40 MHZ

Security: WPA2-PSK

WPA pre-shared key: ●●●●●●●●

WPA encryption: AES

Submit

Step 6 Select **SSID2** for **SSID Index**.

Step 7 Clear **Enable** for **SSID**, and then click **Submit**.

Basic > WLAN > WLAN

WLAN WLAN WDS WLAN Filtering

Enable WLAN

Wireless Settings

Mode: 802.11b/g/n

Country: UNITED KINGDOM

Channel: Auto

Transmit power: 100%

Power Enhance: Enable

SSID index: SSID2

SSID: HG232f-SSID2

SSID: Enable

Hide broadcast: Enable

AP isolation: Enable

Band width: 20/40 MHZ

Security: WPA-PSK/WPA2-f

WPA pre-shared key: ●●●●●●●●

WPA encryption: AES

Submit

Step 8 Repeat Step 6 and Step 7 to disable other SSIDs.

----End

 **NOTE**

If you no longer wish to hide the WLAN SSID, you can start broadcasting the SSID again as follows: In **Hide broadcast**, clear **Enable**, and then click **Submit**.

6.3.2 Changing the Name of a WLAN

Function Overview

When your router is delivered, the SSID is pre-set. You can find this pre-set SSID on the rear panel label of your router. However, you can change the SSID of your router as required.

Configuration Example

If your current SSID index is **SSID1** and you have used this SSID previously, you can change this SSID to **MyNewSSID** by doing the following:

Step 1 Log in to the web-based configuration utility.

Step 2 In the navigation tree, choose **Basic > WLAN**.

The WLAN configuration page is then displayed.

Step 3 Select **SSID1** for **SSID Index**.

Step 4 In **SSID**, enter **MyNewSSID**.

Step 5 Click **Submit**.



----End

6.3.3 Using Secure Encryption

Function Overview

To improve the security of a WLAN, it is important to select an optimum security mode for the WLAN. After such a security mode is used, a wireless client should provide a

valid password when connecting to the WLAN, encrypting data that is being transmitted. As a result, only authorized parties can use the WLAN and the data transmitted on the WLAN is protected against unauthorized access.

The router supports WEP encryption and multiple security modes, such as WPA-PSK and WPA2-PSK, meeting security requirements in diversified network environments.

NOTE

The WPS function can be used only when the security mode is set to **WPA-PSK**, **WPA2-PSK**, or **WPA-PSK/WPA2-PSK**.

Configuration Example

If you use the router at home and wish to select an optimum security mode, set the parameters as follows:

- Set the security mode to **WPA-PSK/WPA2-PSK**.
- Set the encryption mode to **AES**.
- Set the password used for accessing the WLAN to **MyPassword@2012**.

To set the preceding parameters:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Basic > WLAN**.
The WLAN configuration page is displayed.
- Step 3** Select **WPA-PSK/WPA2-PSK** for **Security Mode**.
- Step 4** In **WPA pre-shared key**, enter **MyPassword@2012**.
- Step 5** Select **AES** for **WPA Encryption**.
- Step 6** Click **Submit**.



Basic > WLAN > WLAN

WLAN WLAN WDS WLAN Filtering

Enable WLAN

Wireless Settings

Mode:	802.11b/g/n
Country:	UNITED KINGDOM
Channel:	Auto
Transmit power:	100%
Power Enhance:	<input type="checkbox"/> Enable
SSID index:	SSID1
SSID:	huawei
Hide broadcast:	<input type="checkbox"/> Enable
AP isolation:	<input type="checkbox"/> Enable
Band width:	20/40 MHz
Security:	WPA-PSK/WPA2-f
WPA pre-shared key:	MyPassword@2012
WPA encryption:	AES
WPS:	<input checked="" type="checkbox"/> Enable
WPS mode:	PBC

Submit

---End

 **NOTE**

After the password used to access a WLAN is changed, you need to enter the new password when connecting a computer to the WLAN.

6.3.4 Allowing Only Specified Computers to Be Connected to a WLAN

Function Overview

After the SSID is hidden and an optimum security mode is used, your WLAN is in a secure state. You can prevent certain computers from connecting to the WLAN or allow only specified computers to be connected, preventing unauthorized users from accessing the WLAN.

Through the wireless MAC filtering function of the router, the preceding functions can be used after you enter the MAC addresses of the computers to be controlled.

The wireless MAC filtering function can be implemented in the following modes:

- **Blacklist:** The computers whose MAC addresses are listed in the filtering list are prevented from connecting to the WLAN.
- **Whitelist:** The computers whose MAC addresses are listed in the filtering list are allowed to be connected to the WLAN.

You can select either of the preceding modes for the wireless MAC filtering function.

 **NOTE**

The wireless MAC filtering function controls the option of whether to allow a computer to be connected to the router through a WLAN. The MAC address filtering function described in section 6.4 "Controlling the Internet Access Rights of " controls the option of whether to allow a computer connected to the router to access the Internet.

Configuration Example

If you have a desktop computer and laptop at home, the default SSID of your WLAN is **MyNewSSID**. The desktop computer is connected to the router through a network cable while a wireless network adapter is installed on the laptop. To allow only the laptop to be connected to the WLAN and prevent other unauthorized parties from accessing the WLAN, you can use the whitelist mode of the wireless MAC filtering function. To create a whitelist and allow only your laptop to be connected to the WLAN:

Step 1 View and record the MAC address of the laptop.

Using the Windows XP operating system as an example to view the MAC address of a computer:

1. Choose **Start > Run**.
2. In **Open**, enter **cmd**. Then press **Enter**.

- In the displayed command line window, enter **ipconfig /all**, and then press **Enter**. Multiple lines of information are displayed. Find the line of information that is similar to **Physical Address. : 00-11-09-11-04-DD. 00-11-09-11-04-DD** is the MAC address of the computer.

Step 2 Log in to the web-based configuration utility.

Step 3 In the navigation tree, choose **Basic > WLAN**.

The WLAN configuration page is then displayed.

Step 4 Click **WLAN Filtering**.

Step 5 Select **Enable**.

Step 6 Select **Whitelist**.

Step 7 Click **New**.

Step 8 In **Source MAC address**, enter the MAC address of the laptop.

For example, the MAC address can be **00:11:09:11:04:DD**.



The format of the MAC address entered in **Source MAC address** is different from that of the MAC address displayed in the command line window of a Windows XP operating system. The colons (:) replace the hyphens (-).

Step 9 Click **Submit**.

Basic > WLAN > WLAN Filtering

WLAN WLAN WDS WLAN Filtering

Enable

Filtering mode: Blacklist Whitelist

WLAN Filtering		New	Remove
MAC Address	Remove		
---	---		

Settings

Select SSID: MyNewSSID

Source MAC address: 00:11:09:11:04:DD AA:BB:CC:DD:EE:FF*

Submit

---End

6.4 Controlling the Internet Access Rights of Computers

Function Overview

You can prevent certain computers from accessing the Internet or allow only certain computers to access the Internet. In addition, you can specify the period during which computers are not allowed to access the Internet.

Through the MAC address filtering function of the router, the preceding requirements can be met after you enter the MAC addresses of the computers to be controlled.



NOTE

The MAC address filtering function controls the option of whether to allow a computer connected to the router to access the Internet. The wireless MAC filtering function controls the option of whether to allow a computer to be connected to the router through a wireless network.

Configuration Example

If you buy a computer for a young child and wish to restrict the Internet access period of the child for all periods except 19:00 to 20:00 each evening while preventing your own computer from being restricted, you can use the blacklist mode of the MAC address filtering function.

Suppose the MAC address of the computer of your child is **00:11:09:11:04:DD**.

You need to create the following two filtering rules:

- Rule 1: From 00:00 to 18:59 each day, restrict the computer whose MAC address is **00:11:09:11:04:DD** from accessing the Internet. The name of this rule is **rule1**.
- Rule 2: From 19:59 to 23:59 each day, restrict the computer whose MAC address is **00:11:09:11:04:DD** from accessing the Internet. The name of this rule is **rule2**.

The configuration procedure is as follows:

Step 1 Log in to the web-based configuration utility.

Step 2 In the navigation tree, choose **Advanced > SNTP**.

The network time configuration page is then displayed.

Step 3 Select **Enable auto synchronization with network time**.

Step 4 Select a time service address for **Time server 1**.

For example, you can select **clock.fmt.he.net**.

Step 5 Select your time zone for **Time zone**.

For example, if you are in China, you can select **(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi**.

Step 6 Click **Submit**.

Advanced > SNTP

SNTP

Status	
Status	Disabled
Current Time	2012-01-01 02:07:51
<input checked="" type="checkbox"/> Enable auto synchronization with network time	

Settings	
Time server 1:	clock.fmt.he.net
Time server 2:	clock.nyc.he.net
Time server 3:	clock.sjc.he.net
Time server 4:	clock.via.net
Time server 5:	None
Time zone:	(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi
<input type="checkbox"/> Enable daylight saving time	

Submit

Step 7 In the navigation tree, choose **Advanced > Filter**

The filter page is then displayed.

Step 8 Click **MAC Filter**.

Step 9 Click **New**.

Step 10 Set the following parameters based on rule 1.

- Rule name: rule 1
- Source MAC address: 00:11:09:11:04:DD
- Time control: Enable
- Start time: 00:00
- End time: 18:59
- Effective day: Select from Monday to Sunday.
- Status: Reject

Step 11 Click **Submit**.

Advanced > Filter > MAC Filter

MAC Filter IP Filter Application Filter URL Filter

MAC Filtering New Remove

Rule Name	Source MAC Address	Destination MAC Address	Time Control	Sunday to Saturday	Time	Priority	Status	Remove
----	----	----	----	----	----	----	----	----

Settings

Rule name:

Source MAC address: (AA:BB:CC:DD:EE:FF)

Bridge destination MAC address: (AA:BB:CC:DD:EE:FF)

Time control: Enable

Start time:

End time:

Effective day: Sunday Monday Tuesday
 Wednesday Thursday Friday
 Saturday

Priority:

Status:

Step 12 Click **New**.

Step 13 Set the following parameters based on rule 2.

- Rule name: rule2
- Source MAC address: 00:11:09:11:04:DD
- Time control: Enable
- Start time: 19:59
- End time: 23:59
- Effective day: Select from Monday to Sunday.
- Status: Reject

Step 14 Click **Submit**.

Advanced > Filter > MAC Filter

MAC Filter IP Filter Application Filter URL Filter

MAC Filtering						New	Remove	
Rule Name	Source MAC Address	Destination MAC Address	Time Control	Sunday to Saturday	Time	Priority	Status	Remove
rule1	00:11:09:11:04:DD		Enable	YYYYYY	00:00-18:59	0	Reject	<input type="checkbox"/>

Settings

Rule name:

Source MAC address: (AA:BB:CC:DD:EE:FF)

Bridge destination MAC address: (AA:BB:CC:DD:EE:FF)

Time control: Enable

Start time:

End time:

Effective day: Sunday Monday Tuesday
 Wednesday Thursday Friday
 Saturday

Priority:

Status:

---End

 **NOTE**

To delete a rule, select the desired rule from the rule list. In the **Remove** column, select the rule, and then click **Remove**.

6.5 Prohibiting Computers from Accessing Specified Web Sites

Function Overview

You can restrict computers from accessing specified web sites or restrict computers to access only specified web sites.

Through the Uniform Resource Locator (URL) filtering function of the router, the preceding requirements can be met after you enter the addresses of the web sites to be controlled.

Configuration Example

If the contents of the web site **www.yyy.com** are not suitable for browsing and you wish to prevent your family from browsing this web site, you can use the URL filtering function to prohibit this web site from being accessed.

The configuration procedure is as follows:

Step 1 Log in to the web-based configuration utility.

- Step 2** In the navigation tree, choose **Advanced > Filter**
The filter page is then displayed.
- Step 3** Click **URL Filter**.
- Step 4** Click **New**.
- Step 5** In **URL**, enter **www.yyy.com**.
- Step 6** Select **Reject** for **Status**.
- Step 7** Click **Submit**.

Advanced > Filter > URL Filter

MAC Filter IP Filter Application Filter URL Filter

URL Filtering				
Sequence Number	URL	Priority	Status	Remove
---	---	---	---	---

Settings

URL:

Priority:

Status:

----End

 **NOTE**

To delete a rule, select the desired rule from the rule list. In the **Remove** column, select the rule, and then click **Remove**.

6.6 Setting the Available Bandwidth of a Computer

Function Overview

The router provides traffic management function to control the bandwidth used by a computer for accessing the Internet. Through different bandwidth control rules, the router can implement the following bandwidth control functions:

- Ensuring the bandwidth used by a specified computer for accessing the Internet is not less than a specified bandwidth so that the computer can access the Internet at a required rate
- Restricting the bandwidth used by a specified computer for accessing the Internet to a specified bandwidth so that this computer cannot use excessive bandwidth and the Internet access rates of other computers are not affected

You can configure a maximum of eight bandwidth control rules for eight computers. The eight computers can be connected to the router through a wired Ethernet network or a WLAN.

 **NOTE**

Each computer can be configured with only one bandwidth control rule.

A bandwidth control rule distinguishes different computers based on the IP addresses of the computers. It is recommended that you configure your computer to obtain an IP address from the router automatically. After the IP address of your computer is obtained, you can configure the bandwidth control rule based on this IP address. The router can record the mapping between the MAC address and IP address of a computer and thus ensure that the same IP address can be assigned to the same computer every time.

Configuration Example

For example, you use a computer for video communications with your friend over the Internet and the name of your computer is **NXF-HP**. To ensure a fast data transmission rate and smooth video quality, you can use the traffic control function of the router and configure a bandwidth control rule for the computer named **NXF-HP**. The parameters of the rule are as follows:

- Mode: Assure Minimum Bandwidth
- Download: 500 kbit/s
- Upload: 500 kbit/s

The configuration procedure is as follows:

Step 1 Connect the computer named **NXF-HP** to the router through a wired network or a WLAN.

Ensure that the computer can access the Internet.

Step 2 Log in to the Web-based configuration utility.

Step 3 In the navigation tree, choose **Advanced > IP QoS**.

Step 4 Click **Enable P2P Traffic Management** check box.

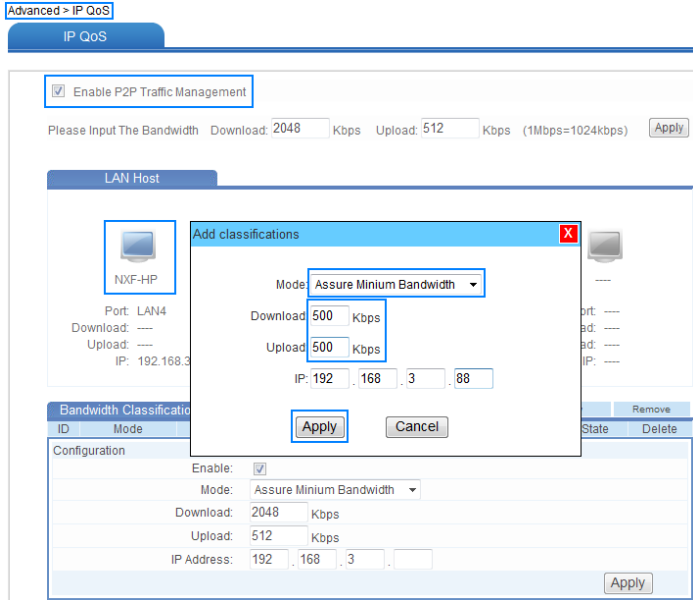
The configuration page for the traffic control function is displayed.

Step 5 Under **LAN Host**, click the computer icon indicated by **NXF-HP**.

Step 6 In the displayed dialog box, set the following parameters:

- Mode: Assure Minimum Bandwidth
- Download: 500 kbit/s
- Upload: 500 kbit/s

Step 7 Click **Apply**.



----End

 **TIP**

- To restrict the available bandwidth of a computer, select **Restrict Maximum Bandwidth** for **Mode**.
- To configure more than four rules, you can perform adding, deleting, and editing operations in the **Bandwidth** list in the lower area of the page.

6.7 Preventing Attacks on the Internet

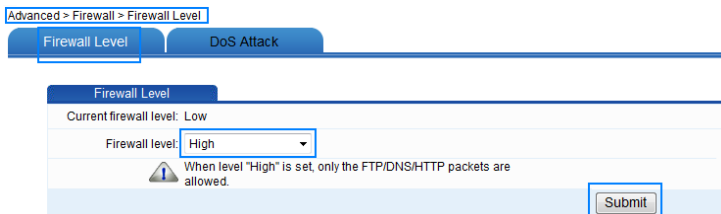
Function Overview

The Internet is an open network that is connected to computers all over the world, leaving computers on the Internet vulnerable to attacks at anytime. To help protect your computer from these attacks, the router provides powerful firewall functions. By using a firewall, a protective shelter is established between your home network and the Internet.

Configuration Example

If you have stringent requirements for network security, you can set the firewall level of the router to **High** as follows:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Advanced** > **Firewall**.
The firewall page is then displayed.
- Step 3** Select **High** for **Firewall level**.
- Step 4** Click **Submit**.



----End

6.8 Removing the Restriction Caused by the Binding of the Internet Access Account to the MAC Address

Function Overview

Certain network service providers bind your Internet access account to the MAC address of your computer's network adapter; only the computer with that MAC address can connect to the Internet. When this is the case, the MAC address of the router cannot be found in the network devices of a network service provider. As a result, the router cannot connect to the Internet and the computers connected to the router also cannot access the Internet.

You can use the MAC address cloning function of the router to remove this restriction. Through this function, the MAC address used during communication between the router and the network devices of a network service provider becomes the MAC address that is bound to the Internet access account. The router can then be connected to the Internet properly.

Configuration Example

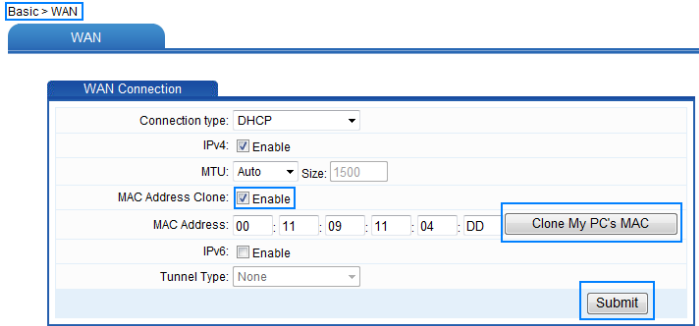
If you use computer 1 to access the Internet, your network service provider binds your Internet access account to the MAC address of computer 1's network adapter. Now, if multiple computers are added to your home and you need to use the router to access the Internet, you can use the MAC address cloning function of the router to change the MAC address of the router to that of computer 1's network adapter.

The configuration procedure is as follows:

- Step 1** Log in to the web-based configuration utility on computer 1.
- Step 2** In the navigation tree, choose **Basic** > **WAN**.

The WAN interface configuration page is then displayed.

- Step 3** Set **MAC Address Clone** to **Enable**.
- Step 4** Click **Clone My PC's MAC**.
- Step 5** Click **Submit**.



---End

6.9 Allowing Internet Users to Access an Internal Resource Server

Function Overview

Without special settings, Internet users cannot access the web or FTP servers on a LAN. By using the network address translation (NAT) function of the router, specified Internet users are allowed to access the web and FTP servers on a LAN.

Furthermore, IP addresses used by most users to access the Internet are dynamically assigned by network service providers, so many cannot use fixed IP addresses to access the resources provided on servers. The router's Dynamic Domain Name Service (DDNS) function allows Internet users to use fixed domain names to access the resources provided on servers.

After the DDNS function is enabled, the router automatically submits the new IP address obtained to the server of a DDNS provider. On the DDNS server, the IP address that corresponds to the domain name is updated to the latest IP address. When a computer on the Internet accesses the domain name, the DDNS server provides the latest IP address to that computer.

Configuration Example

If you deploy a web server on a LAN and want Internet users to be able to access the web site on the web server through a fixed domain name, the IP addresses of relevant devices should be as follows:

- The IP address of the router LAN interface is **192.168.3.1**.

- The IP address of the web server is **192.168.3.166**.

You can use the port relay function of the NAT and DDNS function to implement the preceding requirements.

Before the configuration, you need to complete the following actions:

- Apply for the DDNS from a DDNS provider to obtain relevant parameters.
- Apply for a domain name for the web site from the institution that manages web site domain names.

After the preceding actions, set the parameters of the router as follows:

- Configure a port mapping rule, and then map the IP address of the web server (**192.168.3.166:80**) to the **80** port of the WAN interface.
- Configure the DDNS. Ensure that the router can submit IP addresses to the DDNS server automatically.

The configuration procedure is as follows:

Step 1 Log in to the web-based configuration utility.

Step 2 In the navigation tree, choose **Advanced > NAT**.

The NAT page is then displayed.

Step 3 Click **Port Mapping**.

Step 4 Click **New**.

Step 5 Select **Application**, and then select **Security web server (HTTPS)** for **Application**.



The port mapping function of the router provides parameter setting templates of multiple applications. After a template is selected, the router sets relevant parameters automatically. You can change the parameter settings as required. You can also set all the parameters manually based on the requirements of other applications.

Step 6 Set the following parameters as planned.

- External start port: 80
- External end port: 80
- Internal host: 192.168.3.166
- Internal port: 80

Step 7 Click **Submit**.

Advanced > NAT > Port Mapping

ALG DMZ Port Mapping Port Triggering

Port Mapping New Remove

Mapping Name	Interface	Protocol	Remote Host	External Start Port	External End Port	Internal Port	Internal Host	Enable	Remove

Settings

Type: Customization Application Secure Web server (HTTPS)

Interface: WAN1_INTERNET_TR069_R

Protocol: TCP

Remote host:

External start port:

External end port:

Internal host: 192.168.3.166

Internal port:

Mapping name: SecureWebServer(HTTPS)

Submit

Step 8 In the navigation tree, choose **Advanced > DDNS**.

The DDNS configuration page is then displayed.

Step 9 Click **New**.

Step 10 Select **Others** for **Service provider**.



The DDNS function of the router provides parameter setting templates of multiple DDNS providers. After a template is selected, the router sets relevant parameters automatically. You can change the parameter settings as required. You can also set all the parameters again as required.

Step 11 Set the parameters provided by the DDNS provider.

Step 12 Click **Submit**.

Advanced > DDNS

DDNS New Remove

Service Provider	WAN Connection	Enable	Protocol	Domain	User Name	Password	Remove

Settings

Service provider: Others

Host:

User name:

Server address:

Protocol:

WAN connection:

Domain:

Password:

Server port:

Service name:

Submit

----End

6.10 Expanding the Coverage of a WLAN

Function Overview

The router supports the WDS function. Through the WDS function, two routers can be connected wirelessly, thus expanding the coverage of a WLAN.

Table 6-3 lists three WDS working modes, functions in each working mode, and relevant setting requirements.

Table 6-1 WDS working modes

Working Mode	Function	Setting Requirements
Bridge	Two WLANs can be connected wirelessly in this mode but other wireless clients cannot be connected to the router.	On each router, add the wireless MAC address of the peer router to the WDS MAC list.
Repeater	It is used to expand the coverage of a WLAN. The router can set up a connection with another wireless router or wireless client.	On each router, add the wireless MAC address of the peer router to the WDS MAC list.
Lazy	The function in this mode is the same as that in repeater mode. No WDS MAC list, however, is required to be configured on the router in lazy mode.	No WDS MAC list is required to be configured on the router in lazy mode. The MAC address of the router in lazy mode, however, needs to be added to the WDS MAC list of the peer router.

When configuring the WDS function, you should comply with the following principles:

- Both wireless routers should support the WDS function.
- The WDS function should be enabled on both wireless routers.
- On each router, add the wireless MAC address of the peer router to the WDS MAC list. No WDS MAC list is required to be configured on the router in lazy mode but a WDS MAC list should be configured on the peer router.
- The settings of the following parameters on both wireless routers should be the same:
 - Wireless channel
 - Encryption mode
 - Encryption password

 **NOTE**

- The security modes set on the two wireless routers can be different but the encryption modes should be the same.
 - The SSIDs of the two WLANs can be different but it is recommended that the two WLANs use the same SSID. Thus, wireless terminals can use one SSID to connect to the WLAN that is expanded.
- If the repeater mode is used for expanding the coverage of a WLAN, note that:
- The IP addresses of the LAN interfaces of the two routers should be in the same network segment. In addition, the IP addresses should be different.
 - Enable the DHCP server function only on the wireless router that is used to connect to uplink devices. Disable the DHCP function and enable the DHCP relay function on other wireless routers.

Configuration Example

For example, you have router A in your spacious house. The signals of router A cannot cover the area that is far from the router. In this case, you can add another router, that is, router B. By configuring the WDS function on the two routers, you can expand the coverage of a WLAN.

The parameters of the routers are planned as follows:

Router A:

- Set the IP address of the LAN interface to **192.168.3.166** (default value).
- Set the subnet mask of the LAN interface to **255.255.255.0** (default value).
- Enable the DHCP server function (default value).
- Select **SSID1** for **SSID** (default value).
- Set the name of **SSID1** to **mySSID**.
- Set the WLAN channel to **1**.
- The WLAN encryption settings are as follows:
 - Set the security mode to **WPA-PSK/WPA2-PSK**.
 - Set the encryption mode to **AES**.
 - Set the password used for accessing the WLAN to **MyPassword@2012**.
- Enable the WDS function and set the WDS mode to **Repeater**.
- Add the wireless MAC address of router B to the WDS MAC list.

Router B:

- Set the IP address of the LAN interface to **192.168.3.88**.

- Set the subnet mask of the LAN interface to **255.255.255.0**.
- Disable the DHCP server function.
- Enable the DHCP relay function.
- Select **SSID1** for **SSID** (default value).
- Set the name of **SSID1** to **my SSID** that is the same as the setting on router A.
- Set the WLAN channel to **1** that is the same as the setting on router A.
- The WLAN encryption settings are as follows (the same as the settings on router A):
 - Set the security mode to **WPA-PSK/WPA2-PSK**.
 - Set the encryption mode to **AES**.
 - Set the password used for accessing the WLAN to **MyPassword@2012**.
- Enable the WDS function and set the WDS mode to **Repeater**.
- Add the wireless MAC address of router A to the WDS MAC list.

The configuration procedure is as follows:

**NOTE**

The following procedure describes how to change the parameter settings as required. You can retain the default settings of the parameters that do not need to be changed.

- Step 1** Find and record the wireless MAC addresses of router A and router B.
The value of Wireless MAC is a character string that is similar to **00-11-09-11-04-DD**, and can be obtained by using the wireless card client to scan the corresponding SSID. Suppose the wireless MAC address of router A is **AA:AA:AA:AA:AA:AA** and that of router B is **BB:BB:BB:BB:BB:BB**.
- Step 2** Set the WLAN parameters of router A.
1. Log in to the Web-based configuration utility of router A.
 2. In the navigation tree, choose **Basic > WLAN**.
The WLAN configuration page is displayed.
 3. Set the following parameters.
 - Channel: 1
 - SSID Index: SSID1
 - SSID: MyNewSSID
 - Security: WPA-PSK/WPA2-PSK
 - WPA Pre-Shared Key: MyPassword@2012
 - WPA Encryption: AES
 4. Click **Submit**.

Basic > WLAN > WLAN

WLAN WLAN WDS WLAN Filtering

Enable WLAN

Wireless Settings

Mode: 802.11b/g/n
Country: UNITED KINGDOM
Channel: 1
Transmit power: 100%
Power Enhance: Enable
SSID index: SSID1
SSID: MyNewSSID
Hide broadcast: Enable
AP isolation: Enable
Band width: 20/40 MHz
Security: WPA-PSK/WPA2-f
WPA pre-shared key: ●●●●●●●●
WPA encryption: AES
WPS: Enable
WPS mode: PBC

Submit

Step 3 Configure the WDS function of router A.

1. In the navigation tree, choose **Basic > WLAN**.
The WLAN configuration page is displayed.
2. Click **WLAN WDS**.
3. Select **Enable**.
4. Select **Repeater** for **WDS MODE**.
5. Click **New**.
6. Select **mySSID** for **Select SSID**.
7. In **MAC Address**, enter **BB:BB:BB:BB:BB:BB**.
This MAC address is the wireless MAC address of router B and is recorded in Step 1.
8. Click **Submit**.

Basic > WLAN > WLAN WDS

WLAN WLAN WDS WLAN Filtering

Enable

WDS MODE: Bridge Repeater Lazy

WDS MAC List

MAC Address	Remove
---	---

Settings

Select SSID: MyNewSSID
MAC Address: BB:BB:BB:BB:BB:BB (AA:BB:CC:DD:EE:FF)*

Submit

Step 4 Set the WLAN parameters of router B.

1. Log in to the Web-based configuration utility of router B.
2. In the navigation tree, choose **Basic > WLAN**.
The WLAN configuration page is displayed.
3. Set the following parameters.
 - Channel: 1
 - SSID Index: SSID1
 - SSID: mySSID
 - Enable SSID: Enable
 - Security: WPA-PSK/WPA2-PSK
 - WPA Pre-Shared Key: MyPassword@2012
 - WPA Encryption: AES
4. Click **Submit**.

Step 5 Configure the WDS function of router B.

1. In the navigation tree, choose **Basic > WLAN**.
The WLAN configuration page is displayed.
2. Click **WLAN WDS**.
3. Select **Enable**.
4. Select **Repeater** for **WDS Mode**.
5. Click **New**.
6. Select **mySSID** for **Select SSID**.
7. In **MAC Address**, enter **AA:AA:AA:AA:AA:AA**.
This MAC address is the wireless MAC address of router A and is recorded in Step 1.
8. Click **Submit**.

Step 6 Change the IP address of the LAN interface of router B.

1. In the navigation tree, choose **Basic > LAN**.
The DHCP page is displayed.
2. Under **LAN Host Settings**, enter **192.168.3.88** in **IP address**.
3. Under **LAN Host Settings**, click **Submit**.

Basic > LAN > DHCP

DHCP DHCPv6 Server SLAAC

LAN Host Settings

IP address:	192.168.3.88
Subnet mask:	255.255.255.0

Submit

Step 7 Disable the DHCP server function of router B.

1. In the navigation tree, choose **Basic > LAN**.
The DHCP page is displayed.
2. Under **DHCP Server**, clear **Enable**.

3. Under **DHCP Server**, click **Submit**.

The screenshot shows the DHCP configuration interface. At the top, there are navigation tabs: 'Basic > LAN > DHCP', 'DHCP', 'DHCPv6 Server', and 'SLAAC'. The 'DHCP' tab is selected. Below it, there are two main sections: 'LAN Host Settings' and 'DHCP Server'.
In the 'LAN Host Settings' section, the 'IP address' is set to 192.168.3.88 and the 'Subnet mask' is 255.255.255.0. A 'Submit' button is located at the bottom right of this section.
The 'DHCP Server' section has a 'DHCP server' checkbox checked and labeled 'Enable'. Below it, 'Start IP address' is 192.168.3.88 and 'End IP address' is 192.168.3.254. The 'Lease duration' is set to 'Infinite lease'. There are input fields for '1' day(s), '0' hour(s), and '0' minute(s), and another set for '0' second(s). The 'Primary DNS server address' is 192.168.3.101. The 'Secondary DNS server address' is empty. A 'Submit' button is highlighted at the bottom right of this section.

Step 8 Enable the DHCP relay function of router B.

1. In the navigation tree, choose **Basic > LAN**.
The DHCP page is displayed.
2. Under **DHCP Option Pool**, select **Computer** in **Device type**.
3. Set **DHCP relay** to **Enable**.
4. Click **Submit**.
5. Repeat 2 to 4 to enable the DHCP relay function for each port in the LAN port drop-down list box.

The screenshot shows the DHCP Option Pool configuration interface. The 'DHCP Option Pool' tab is selected. The 'Device type' is set to 'Computer'. The 'DHCP Option pool' checkbox is checked and labeled 'Enable'. The 'Start IP address' is 192.168.3.88 and the 'End IP address' is 192.168.3.254. The 'DHCP relay' checkbox is checked and labeled 'Enable'. The 'Operation' section has three radio buttons: 'Set' (selected), 'Delete', and 'Update'. A 'Submit' button is highlighted at the bottom right.

---End

7 Maintenance Guide

7.1 Changing the User Name and Password of the Web-based Configuration Utility

Function Overview

You can configure all the parameters of the router through the web-based configuration utility. To prevent unauthorized parties from changing these parameters, the user name and password are required to log in to the web-based configuration utility.

After logging in to the web-based configuration utility, you can change the user name and password.

Configuration Example

To change the user name to **MyWebUser** and change the password to **MyWebPassword**:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Maintenance > Account** to display the account management page.
- Step 3** In **New user name**, enter the new user name **MyWebUser**.
- Step 4** In **Current password**, enter the current password.
- Step 5** In **New password**, enter the new password **MyWebPassword**. In **Confirm password**, enter the new password **MyWebPassword** again.
- Step 6** Click **Submit**.

Maintenance > Account

Account

New user name:	<input type="text" value="admin"/>
Current password:	<input type="password"/>
New password:	<input type="password"/>
Confirm password:	<input type="password"/>

Submit

---End

 **NOTE**

If you cannot remember the user name and password that you have set, you can restore them to their default settings by pressing and holding the **Reset** button for 6 or more seconds. Once complete, the login information of the web-based configuration utility is restored to default settings. When the default settings are restored, your custom data is lost. Therefore, exercise caution when using the **Reset** button.

7.2 Changing the Login IP Address of the Web-based Configuration Utility

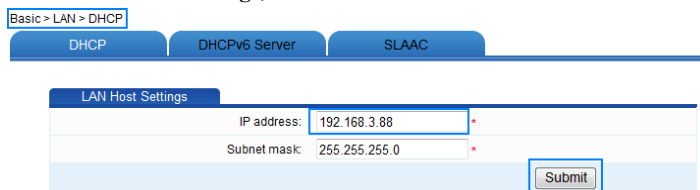
Function Overview

By accessing the IP address **192.168.3.1** of the router LAN port (the subnet mask is **255.255.255.0**), you can change this IP address according to your individual requirements. If you change the IP address of the LAN interface, ensure that the IP address of the computer and the IP address of the LAN interface of the router are in the same network segment to enable the computer to access the web-based configuration utility. Then enter the new IP address in the address bar to access the web-based configuration utility.

Configuration Example

If the login IP address of the web-based configuration utility is **192.168.3.1** and the subnet mask is **255.255.255.0**, change the IP address to **192.168.3.88** (the subnet mask remains the same) by doing the following:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Basic > LAN** to display the LAN configuration page.
- Step 3** Under the **LAN Host Settings** group box, enter the new IP address **192.168.3.88** in the **IP address** text box.
- Step 4** Under **LAN Host Settings**, click **Submit**.



Basic > LAN > DHCP	
DHCP DHCPv6 Server SLAAC	
LAN Host Settings	
IP address:	192.168.3.88
Subnet mask:	255.255.255.0
Submit	

----End

7.3 Backing Up or Importing a Configuration File

Function Overview

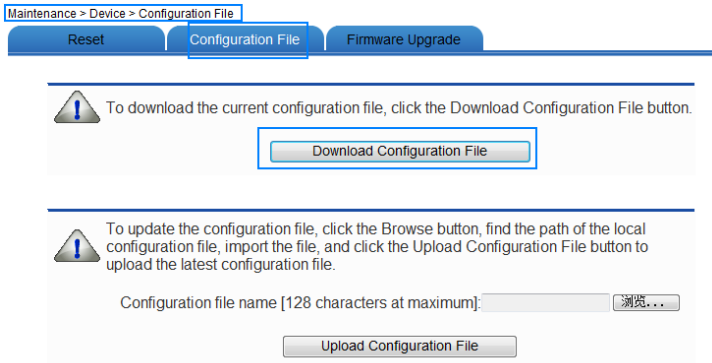
By using the parameter backup function, you can save a backup of the router configuration file to a computer. If the router configuration file is modified by mistake, you can import the backup file to the router.

Configuration Example

If you have modified multiple advanced parameters according to your individual requirements and you need to modify the parameters again, you can back up the configuration file of the router to avoid a network access failure due to misoperations. If the modification of the parameters fails, you can quickly restore the router to the normal state with the backup file.

- To back up the configuration file, do as follows:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Maintenance > Device**.
- Step 3** Click **Configuration File**.
- Step 4** Click **Download Configuration File**.



- Step 5** In the displayed dialog box, set the name and storage location of the configuration file, and then click **OK**.

----End

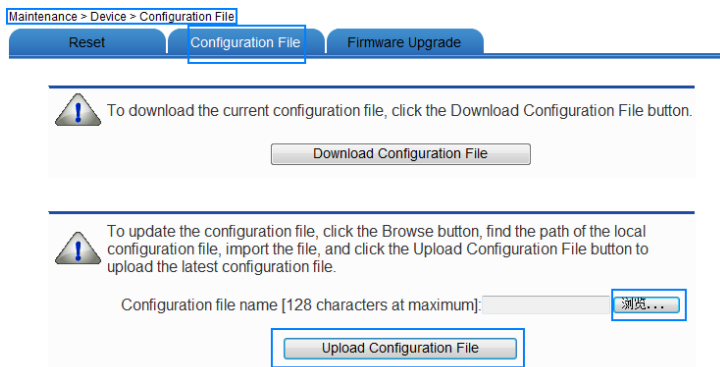
- To import the configuration file, do as follows:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Maintenance > Device**.
- Step 3** Click **Configuration File**.

Step 4 Click **Browse**.

Step 5 In the displayed dialog box, select the backup configuration file, and then click **OK**.

Step 6 Click **Upload Configuration File**.



---End

7.4 Restoring Default Settings

Function Overview

By default, many parameters are already set when the router is manufactured. Those parameters enable the router to work in most of network environments. In the following cases, you can restore the router to the default settings: You cannot access the network after you have changed the parameters or you have forgotten the login password of the web-based configuration utility.

NOTE

After you restore to default settings, your customized data is lost. Therefore, exercise caution when using this function.

You can restore to default settings by using either of the following methods:

- Pressing the **Reset** button
- Using the web-based configuration utility

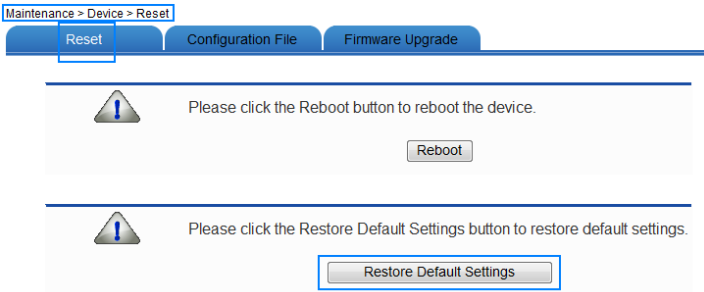
Configuration Example

If you have changed the login password of the web-based configuration utility and have forgotten it, you can press the **Reset** button on the router to quickly restore it to its default settings.

When the router is powered on, press and hold the **Reset** button for 6 or more seconds, and then release it. The router then automatically restarts and the default settings are restored.

If your operations fail after multiple configurations and you need to cancel all the preceding configurations, you can use the web-based configuration utility to restore to the default settings. To restore to default settings through the web-based configuration utility, do as follows:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Maintenance > Device**.
- Step 3** Click **Reset**.
- Step 4** Click **Restore Default Settings**.



- Step 5** In the displayed confirmation dialog box, click **OK**.
---End

7.5 Upgrading Software

Function Overview

By using the software upgrading function, you can upgrade the software of the router to its latest version.



CAUTION

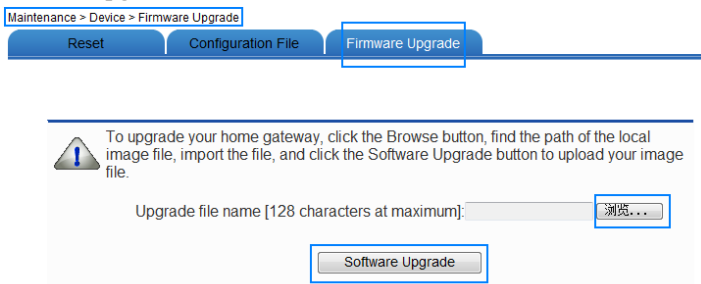
During the upgrade, do not power off the router; otherwise, the router may get damaged.

Configuration Example

You can download the latest software from the Huawei Device technical support web site: <http://www.huaweidevice.com>.

To upgrade the software of the router:

- Step 1** Log in to the web-based configuration utility.
- Step 2** In the navigation tree, choose **Maintenance > Device**.
- Step 3** Click **Firmware Upgrade**.
- Step 4** Click **Browse**.
- Step 5** In the displayed dialog box, select the upgrade file, and then click **OK**.
- Step 6** Click **Software Upgrade**.



---End

8 FAQs

Q 1: Can I use the router as a DHCP server?

Yes. The router incorporates the DHCP server software.

Q 2: How can I quickly restore the default settings of the router?

When the router is powered on, press and hold the **Reset** button for 6 or more seconds, and then release it. The router then automatically restarts and the default settings are restored.

Q 3: What can I do if I cannot access the router configuration page?

Step 1 Check the IP address of your computer and ensure that this IP address is in the same network segment as the router LAN IP address.

Step 2 Ensure that your Web browser does not use a proxy server.

Step 3 Ensure that you have entered the valid user name and password used to access the router configuration page.

If the problem persists, restore the default settings of the router.

---End

Q 4: Does the WPS function have any special requirement on the wireless encryption settings of the router?

The WPS function can be used only when the WLAN security mode is set to **WPA-PSK** or **WPA2-PSK**. It is recommended that you set the security mode to **WPA-PSK/WPA2-PSK**.

Q 5: If my computer fails to connect to a WLAN after I press and hold the WPS button, what should I do?

Step 1 Ensure that only one computer is connecting to the router through the WPS function at one time.

Step 2 On the router, ensure that the wireless network function and the WPS function implemented through the PBC method are enabled.

Step 3 Ensure that the security mode of the WLAN is set to **WPA-PSK** or **WPA2-PSK**. Note that the WPS function of the router is forcibly disabled if the WEP encryption is used for the WLAN.

- Step 4** Check the positions of the router and computer. Ensure that they are far from electric appliances that generate strong magnetic or electric fields, such as microwave ovens, refrigerators, and cordless telephones.
- Step 5** Place the router and the computer in an open space. Although radio signals can pass through obstacles, passing through too many obstacles, such as walls and columns may negatively impact the transmission of WLAN radio signals.
- End

Q 6: What can I do if I cannot access the Internet through a wireless network adapter?

- Step 1** Ensure that the power cables and telephone lines of the router are connected properly.
- Step 2** Check whether the WLAN indicator light of the router is on.
If the WLAN indicator is off, the WLAN function of the router is disabled. If this is the case, enable the WLAN function.
For details about how to enable the WLAN function, see section 6.2 "Enabling or Disabling the WLAN Function."
- Step 3** Look at the description of the wireless network adapter that is installed on the computer and check whether the wireless network adapter supports the 802.11b and 802.11g protocols.
If the wireless network adapter does not support the 802.11b and 802.11g protocols, replace it with a network adapter that does.
- Step 4** Check whether the driver for the wireless network adapter is installed on the computer properly.
If the driver is installed improperly, re-install it.
- Step 5** Check whether the computer can receive signals from the WLAN.
Using a computer that runs Windows XP as an example, check whether the computer can receive signals from a WLAN by doing the following:
1. In the **Control Panel** window, double-click **Network Connections** to display the **Network Connections** window.
 2. In the **Network Connections** window, right-click **Wireless Network Connection** and choose **View Available Wireless Network**.
- If the computer cannot detect a WLAN, place the computer close to the router and ensure that no obstacles (such as cement or wooden walls) are present between the computer and the router.
- Step 6** Check whether the computer accesses the WLAN of the router successfully.
Check the list of wireless network connections and ensure that the router is connected to the WLAN.
- Step 7** Try to access different web sites to check whether the router can access other web sites.
If the router cannot access other web sites, restore to the default settings of the router. If the problem persists, contact your network service provider.

---End

Q 7: How do I improve the transmission quality of wireless signals?

- Step 1** Check the positions of the router and computer. Ensure that they are far from electric appliances that generate strong magnetic or electric fields, such as microwave ovens, refrigerators, and cordless telephones.
- Step 2** Place your router in an open space.
Although radio signals can pass through obstacles, passing through too many obstacles, such as cement or wooden walls may negatively impact the transmission of WLAN radio signals.
- Step 3** Place your computer close to your router.
If your computer is far from your router, the transmission of radio signals may be negatively impacted.
- Step 4** Place your router and computer in a different direction.
- Step 5** Adjust the direction of your router antennas.
- Step 6** Avoid using your router to access a WLAN during thunderstorms.

---End

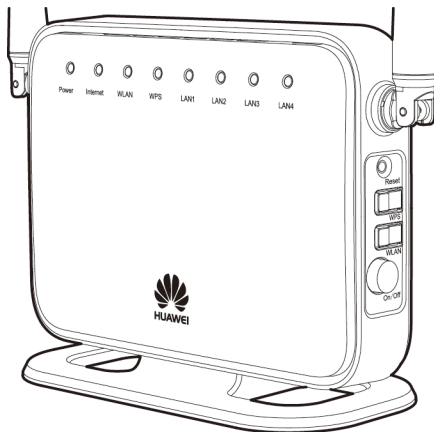
Q 8: What can I do if the WLAN of the router is not encrypted and the computer cannot access the WLAN?

- Step 1** Delete the settings of wireless network connections from your computer.
Using a computer that runs Windows XP as an example, delete the settings of wireless network connections by doing the following:
1. In the **Control Panel** window, double-click **Network Connections** to display the **Network Connections** window.
 2. In the **Network Connections** window, right-click **Wireless Network Connection** and choose **Properties**.
 3. In the **Wireless Network Connection Properties** dialog box, click the **Wireless Networks** tab.
 4. In the **Preferred Networks** group box, select the latest wireless network connection saved on your computer, and then click **Remove**.
 5. Delete all the other wireless network connections from the **Preferred Networks** group box.
 6. Click **OK**.
- Step 2** Create a wireless network connection that is not encrypted.

---End

9 Appendix

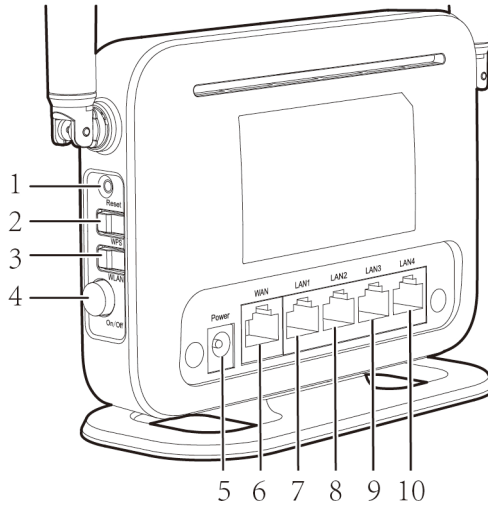
9.1 Indicators



Indicator	Color	Status	Description
Power	Green	On	The router is powered on.
	-	Off	The router is powered off.
Internet	Green	On	<ul style="list-style-type: none"> The router is working in routing mode. The WAN connection is set up and an IP address has been obtained. No data is being transmitted.
	Green	Blinking	<ul style="list-style-type: none"> The router is working in routing mode. The WAN connection is set up. Data is being transmitted.
	Red	On	<ul style="list-style-type: none"> The router is working in routing mode. The WAN connection is set up and no IP address is obtained. The router is working in routing mode, but no data is being transmitted.
	Red	Blinking	<ul style="list-style-type: none"> The router is working in bridge mode. The WAN connection is set up. Data is being transmitted.

Indicator	Color	Status	Description
	-	Off	The router is powered off or no WAN connection is set up.
WLAN	Green	On	The WLAN function is enabled, but no data is being transmitted on the WLAN.
	Green	Blinking	The WLAN function is enabled and data is being transmitted on the WLAN.
	-	Off	The WLAN function is disabled.
WPS	Green	On	A wireless connection is set up between the router and a wireless client through the WPS function. This state lasts 300 seconds.
	Green	Blinking	The router is attempting to set up a wireless connection with a wireless client (such as a computer with a wireless network adapter installed) through the WPS function. This state lasts no more than 2 minutes.
	-	Off	The WPS function is disabled.
LAN1 ~ LAN4	Green	On	A connection is set up between the corresponding LAN interface of the router and an Ethernet device (such as a computer) through a network cable, but no data is being transmitted.
	Green	Blinking	A connection is set up between the corresponding LAN interface of the router and an Ethernet device (such as a computer) through a network cable and data is being transmitted.
	-	Off	No connection is set up between the corresponding LAN interface of the router and an Ethernet device (such as a computer).

9.2 Interfaces and Buttons



Number	Interface or Button	Description
1	Reset	To restore the router to its default settings, power the router on, press and hold the Reset button for 6 or more seconds, and then release it. NOTE When the default settings are restored, your custom data is lost. Therefore, exercise caution when using the Reset button.
2	WPS	Used to enable the WPS function.
3	WLAN	Used to enable or disable the wireless network function.
4	On/Off	Used to power the router on or off.
5	Power	Used to connect to the power adapter.
6	WAN	Used to connect to Ethernet devices that provide Internet access interfaces, such as network jacks on walls, modems, and switches.
7~10	LAN1~ LAN4	Used to connect Ethernet devices, such as computers and switches, to the router.

9.3 Default Settings

Parameter	Setting
IP address of the LAN interface	192.168.3.1
Subnet mask of the LAN interface	255.255.255.0
User name used to log in to the web-based configuration utility	admin
Password used to log in to the web-based configuration utility	admin
SSID used to access wireless network	Check the label on the router's rear panel
WLAN key used to access wireless network	Check the label on the router's rear panel
DHCP server function	Enable
WLAN function	Enable

9.4 Technical Specifications

Item	Specification	
Ambient temperature for operation	0°C to 40°C (32°F to 104°F)	
Dimensions (without antenna, H × W × D)	About 103 mm × 136 mm × 60 mm	
Weight	< 200 g	
Relative humidity for operation	5% to 95%, non-condensing	
WLAN standards	802.11b, 802.11g and 802.11n (2.4 GHz)	
Wireless transmission rates	802.11b	Up to 11 Mbit/s
	802.11g	Up to 54 Mbit/s
	802.11n (with 2T2R external antenna used)	Up to 300.0 Mbit/s

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