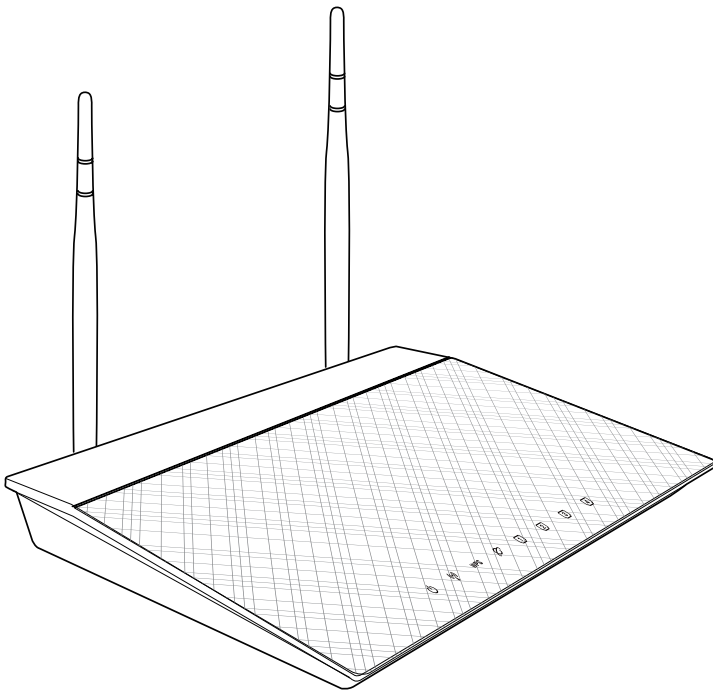




# **RT-N12 LX**

## **11n Wireless Router**



## **User Manual**

E6746

First Edition

July 2011

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## About this guide

This user guide contains information that you need to install and configure the ASUS Wireless Router.

## How this guide is organized

This guide contains the following parts:

- **Chapter 1: Knowing your wireless router**

This chapter provides information on the package contents, system requirements, hardware features, and LED indicators of the ASUS Wireless Router.

- **Chapter 2: Getting started**

This chapter provides instructions on setting up the Router and Access Point modes of the ASUS Wireless Router.

- **Chapter 3: Configuring the network clients**

This chapter provides instructions on setting up the clients in your network to work with your ASUS Wireless Router.

- **Chapter 4: Configuring the advanced settings**

This chapter provides instructions on configuring the ASUS Wireless Router's advanced settings.

- **Chapter 5: Installing the utilities**

This chapter provides information on the utilities that are available from the support CD.

- **Chapter 6: Troubleshooting**

This chapter provides you with a troubleshooting guide for solving common problems you may encounter when using the ASUS Wireless Router.

- **Appendices**

This chapter provides you with the regulatory Notices and Safety Statements.

## Conventions used in this guide



**WARNING:** Information to prevent injury to yourself when trying to complete a task.



**CAUTION:** Information to prevent damage to the components when trying to complete a task.



**IMPORTANT:** Instructions that you **MUST** follow to complete a task.



**NOTE:** Tips and additional information to aid in completing a task.

[illegible]

# 1

## Knowing your wireless router

### Package contents

Check the following items in your ASUS Wireless Router package.

- ☒ RT-N12 LX Wireless Router x1
- ☒ Power adapter x1
- ☒ Support CD (manual, utilities) x1
- ☒ RJ45 cable x1
- ☒ Quick Start Guide x1



---

**Note:** If any of the items is damaged or missing, contact your retailer.

---

### System requirements

Before installing the ASUS Wireless Router, ensure that your system/network meets the following requirements:

- An Ethernet RJ-45 port (10Base-T/100Base-TX)
- At least one IEEE 802.11b/g/n device with wireless capability
- An installed TCP/IP and Internet browser

### Before you proceed

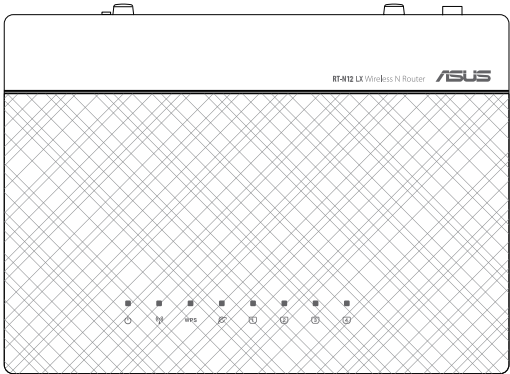
Take note of the following guidelines before installing the ASUS Wireless Router:

- The length of the Ethernet cable that connects the device to the network (hub, ADSL/cable modem, router, wall patch) must not exceed 100 meters.
- Place the device on a flat and stable surface as far from the ground as possible.
- Keep the device clear from metal obstructions and away from direct sunlight.
- Keep the device away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators, and other industrial equipment to prevent signal loss.
- Install the device in a central area to provide ideal coverage for all wireless mobile devices.

- Install the device at least 20cm from a person to insure that the product is operated in accordance with the RF Guidelines for Human Exposure adopted by the Federal Communications Commission.

## Hardware features

### Top panel

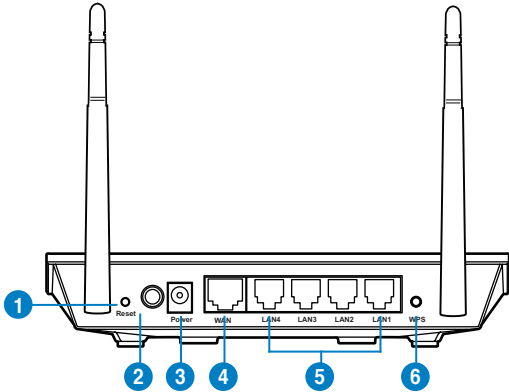


### Status indicators

LED	Status	Indication
Power	Off	No power
	On	System ready
WLAN	Off	No power
	On	Wireless system ready
	Flashing	Transmitting or receiving data (wireless)
WPS	Flashing constantly	WPS processing
	Flashing once	System reset to default settings
	Flashing slowly	Rescue mode
WAN (Wide Area Network)	Off	No power or no physical connection
	On	Has physical connection to an Ethernet network
	Flashing	Transmitting or receiving data (through Ethernet cable)
LAN 1-4 (Local Area Network)	Off	No power or no physical connection
	On	Has physical connection to an Ethernet network
	Flashing	Transmitting or receiving data (through Ethernet cable)

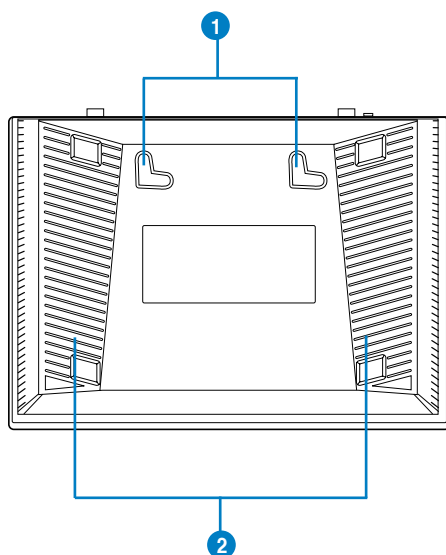


# Rear panel



Item	Description
1	<b>Reset button</b> Press this button for more than five seconds to reset the system to its factory default settings.
2	<b>Power switch</b> Press this button to turn the power on/off.
3	<b>Power (DC-In) port</b> Insert the AC adapter into this port to connect your router to a power source.
4	<b>WAN port</b> Connect an RJ-45 Ethernet cable to this port to establish WAN connection.
5	<b>LAN 1 ~ 4 ports</b> Connect RJ-45 Ethernet cables to these ports to establish LAN connection.
6	<b>WPS button</b> Press this button to establish wireless connection.

## Bottom panel



Item	Description
1	<b>Mounting hooks</b> Use the mounting hooks to mount your router on concrete or wooden surfaces using two round head screws.
2	<b>Air vents</b> These vents provide ventilation to your router.



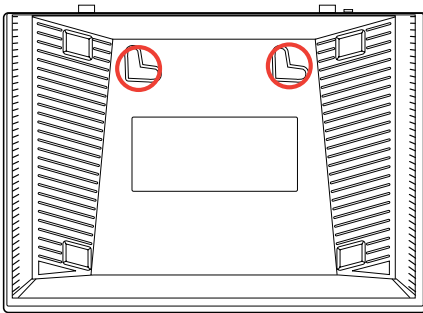
**Note:** For details on mounting your router on a wall or ceiling, refer to the section **Mounting options** on the next page of this user manual.

# Mounting options

Out of the box, the ASUS Wireless Router is designed to sit on a raised flat surface like a file cabinet or book shelf. The unit may also be converted for mounting to a wall or ceiling.

## To mount the ASUS Wireless Router:

1. Look on the underside for the two mounting hooks.
2. Mark two upper holes in a flat surface.
3. Tighten two screws until only 1/4" is showing.
4. Latch the hooks of the ASUS Wireless Router onto the screws.



**Note:** Re-adjust the screws if you cannot latch the ASUS Wireless Router onto the screws or if it is too loose.

[illegible]

# 2

## Getting started

### Setting up the wireless router

The ASUS Wireless Router includes a web graphics user interface (web GUI) that allows you to configure the wireless router using your web browser on your computer.



**Note:** For details on configuring your wireless router using the web GUI, refer to **Chapter 4: Configuring via the web GUI**.

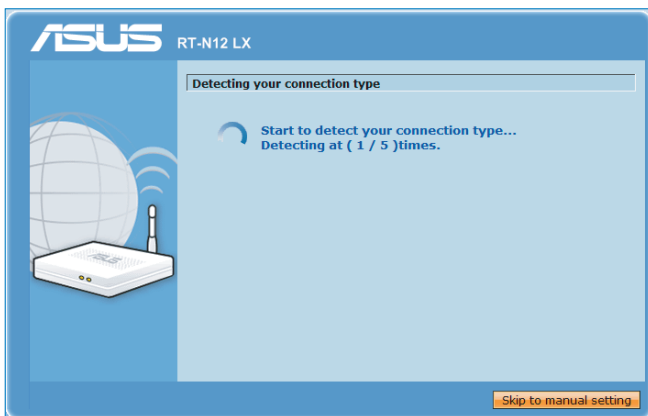
### Using the Quick Internet Setup (QIS)

#### Using QIS with auto-detection

The Quick Internet Setup (QIS) function guides you in quickly setting up your Internet connection.

##### To use QIS with auto-detection:

1. Launch a web browser. The wireless router automatically detects if your ISP connection type is **Dynamic IP**, **PPPoE**, **PPTP**, **L2TP**, and **Static IP**. Key in the necessary information for your ISP connection type.



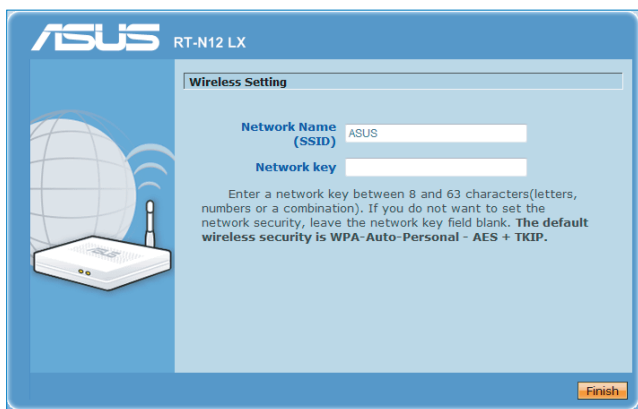
**Important:** Obtain the necessary information about your Internet connection type from your ISP.



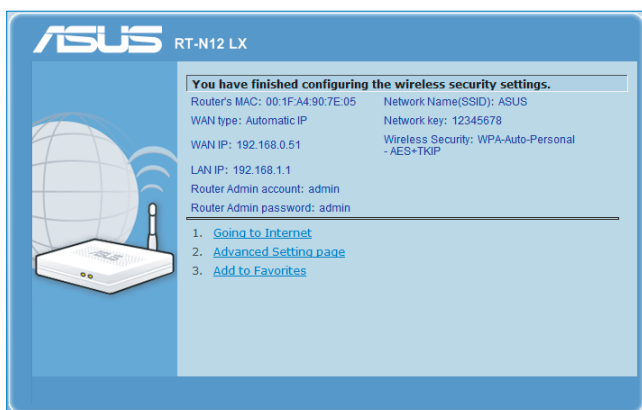
#### Notes:

- If QIS does not detect your Internet connection type, click **Skip to manual setting** and manually configure your connection settings.
- If QIS does not automatically launch, key in **http://192.168.1.1** in your web browser, and manually launch QIS. For more details, refer to the next section **Using QIS without auto-detection**.

2. Assign the **network name** and **network key** for a secure wireless network. Click **Finish** when done.



3. Internet connection setup is done.



Select your next preferred task from any of these options:

1. **Going to Internet:** Click to start surfing the Internet or do Internet-related activities such as chat, or read/write e-mail messages.
2. **Advanced Setting page:** Click to go to the wireless router's Advanced Setting page and configure more advanced wireless settings.
3. **Add to Favorites:** Click to add the router's web interface to your Favorites.

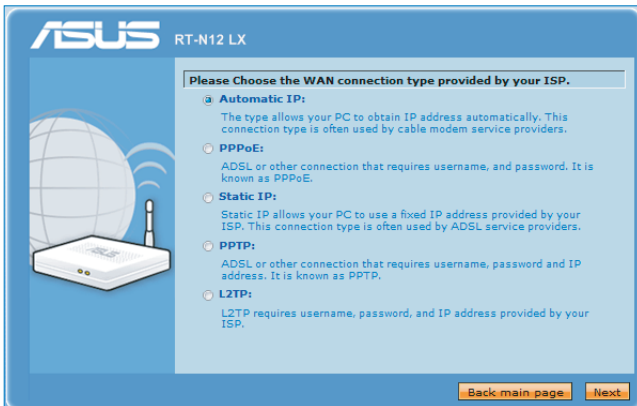


**Note:** If you choose options 2 and 3, you will need to log into the web GUI. For more details, refer to the section **Configuring via the web GUI** in this user manual.

## Using QIS without auto-detection

To use QIS without auto-detection:

1. In your web browser, key in <http://192.168.1.1>
2. Click **QIS** from the navigation menu. Select your connection type from these types of ISP services: **Automatic IP**, **PPPoE**, **Static IP**, **PPTP**, and **L2TP**.



3. Click **Next** and key in the necessary information for your ISP connection type.



**Important:** Obtain the necessary information about your Internet connection type from your ISP.

[illegible]



# 3

## Configuring the network clients

### Accessing the wireless router

#### Setting an IP address for wired or wireless clients

To access the ASUS Wireless Router, you must have the correct TCP/IP settings on your wired or wireless clients. Ensure that the clients' IP addresses are within the same subnet as the ASUS Wireless Router.

By default, the ASUS Wireless Router integrates the DHCP server function, which automatically assigns IP addresses to the clients in your network.

But in some instances, you may want to manually assign static IP addresses on some of the clients or computers in your network rather than automatically getting IP addresses from your wireless router.

Follow the instructions below that correspond to the operating system installed on your client or computer.



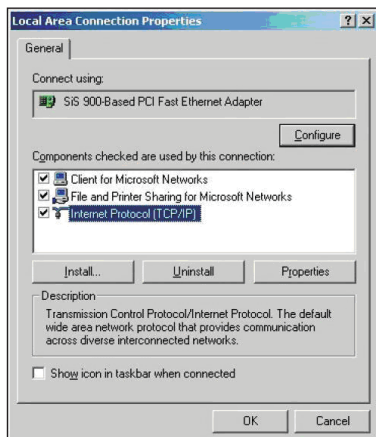
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**Note:** In the Router mode, if you want to manually assign an IP address to your client, we recommend that you use the following settings:

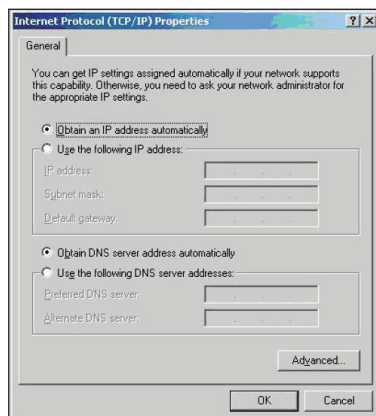
- **IP address:** 192.168.1.xxx (xxx can be any number between 2 and 254. Ensure that the IP address is not used by another device)
  - **Subnet Mask:** 255.255.255.0 (same as the ASUS Wireless Router)
  - **Gateway:** 192.168.1.1 (IP address of the ASUS Wireless Router)
  - **DNS:** 192.168.1.1 (ASUS Wireless Router) or assign a known DNS server in your network
-

## Windows® 2000

1. Click **Start > Control Panel > Network and Dial-up Connection**. Right-click **Local Area Connection** then click **Properties**.

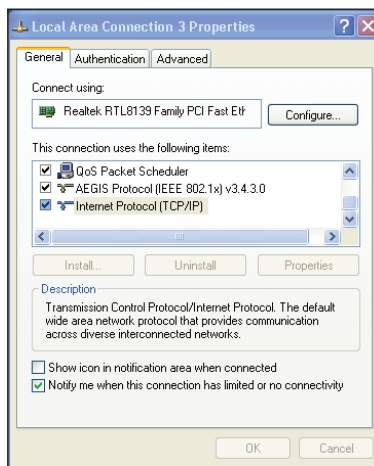


2. Select **Internet Protocol (TCP/IP)**, then click **Properties**.
3. Select **Obtain an IP address automatically** if you want the IP settings to be assigned automatically. Otherwise, select **Use the following IP address:** and key in **IP address**, **Subnet mask**, and **Default gateway**.
4. Select **Obtain DNS server address automatically** if you want the DNS server settings to be assigned automatically. Otherwise, select **Use the following DNS server addresses:** and key in the **Preferred** and **Alternate DNS server**.
5. Click **OK** when done.

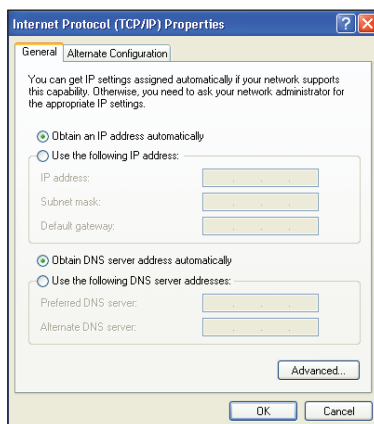


## Windows® XP

1. Click **Start > Control Panel > Network Connection**. Right-click **Local Area Connection** then select **Properties**.

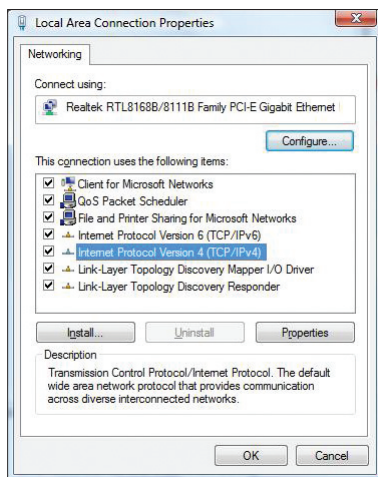


2. Select **Internet Protocol (TCP/IP)**, then click **Properties**.
3. Select **Obtain an IP address automatically** if you want the IP settings to be assigned automatically. Otherwise, select **Use the following IP address**: and key in **IP address**, **Subnet mask**, and **Default gateway**.
4. Select **Obtain DNS server address automatically** if you want the DNS server settings to be assigned automatically. Otherwise, select **Use the following DNS server addresses**: and key in the **Preferred and Alternate DNS server addresses**.
5. Click **OK** when done.

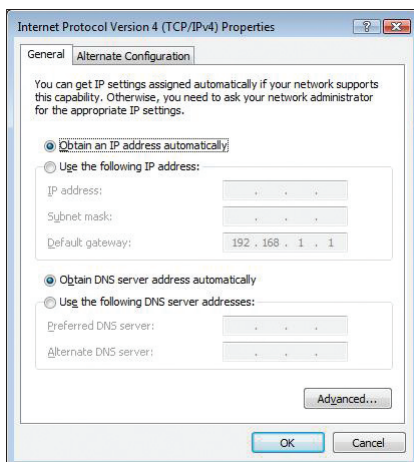


## Windows® Vista/7

1. Go to **Start > Control Panel > Network and Internet > Network and Sharing Center**. Click **View status > Properties > Continue**.



2. Select **Internet Protocol Version 4 (TCP/IPv4)**, then click **Properties**.
3. Select **Obtain an IP address automatically** if you want the IP settings to be assigned automatically. Otherwise, select **Use the following IP address:** and key in **IP address** and **Subnet mask**.
4. Select **Obtain DNS server address automatically** if you want the DNS server settings to be assigned automatically. Otherwise, select **Use the following DNS server addresses:** and key in the **Preferred and Alternate DNS server**.
5. Click **OK** when done.



# 4

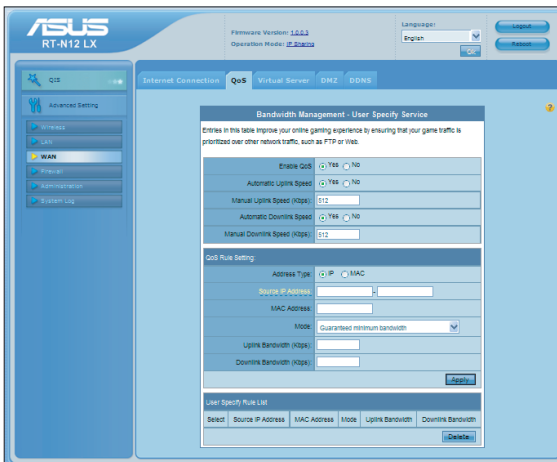
## Configuring the advanced settings

### Managing bandwidth with QoS

QoS enables you to set the bandwidth priority and manage the network traffic.

To set up the bandwidth priority:

1. From the left navigation menu, click **Advanced Setting** > **WAN** > **QoS** tab.
2. Tick **Yes** in the **Enable QoS** field.
3. To manage the network traffic, select **IP** or **MAC** in the **Address Type** field.
4. Click **Apply** to save the settings.



# Setting up the operation mode

The Operation Mode page allows you to set up your wireless router into any of these two operation modes: **IP Sharing mode** or **Access Point mode**.

## Setting up the wireless router in IP Sharing mode

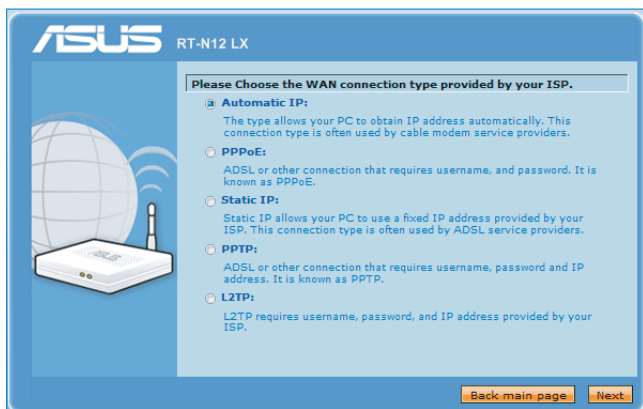
In the IP Sharing mode, the wireless router connects to the Internet via PPPoE, Automatic IP, PPTP, L2TP, or Static IP, and provides you with wireless radio signals. The NAT, firewall, and IP sharing services for LAN clients are enabled.

**To set up the wireless router in IP Sharing mode:**

1. From the navigation menu, click **Advanced Setting > Administration > Operation Mode** tab.
2. Tick **IP Sharing mode (Default)** and click **Save**.



3. Click **QIS** from the navigation menu. Select your connection type from these types of ISP services: **Automatic IP**, **PPPoE**, **Static IP**, **PPTP**, and **L2TP**.



3. Click **Next** and key in the necessary information for your ISP connection type.



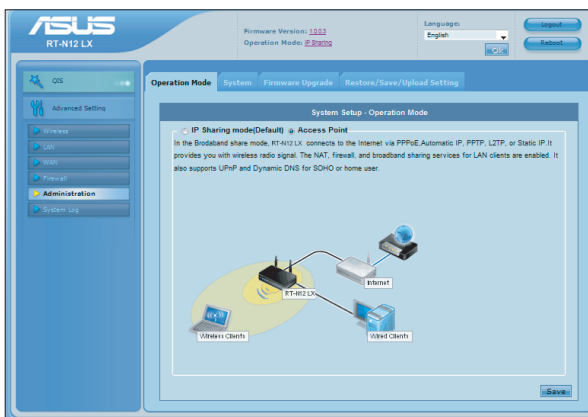
**Important:** Obtain the necessary information about your Internet connection type from your ISP.

## Setting up the wireless router in Access Point mode

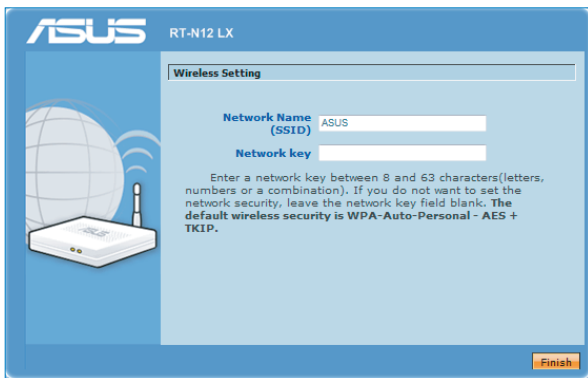
In the Access Point mode, the wireless router receives the WAN IP address from the router connected to the WAN port and provides you with wireless radio signals. The NAT, firewall, and IP sharing services are disabled.

### To set up the wireless router in AP mode:

1. From the navigation menu, click **Advanced Setting > Administration > Operation Mode** tab.
2. Tick **Access Point** and click **Save**.



3. Key in your network name (SSID) and network key. Click **Finish** when done.



# Setting up the Wi-Fi Protected Setup (WPS)

WPS (Wi-Fi Protected Setup) allows you to set up a secure and protected wireless network easily.



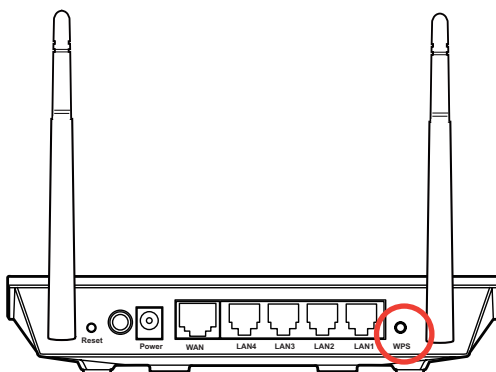
## Note:

- Ensure that you use a wireless LAN adapter with WPS function.
- Windows® operating systems and wireless LAN cards/adapters that support WPS:

OS Support	Wireless Adapter Support
Vista 32/64	Intel wireless LAN card
	ASUS 167gv2 driver v3.0.6.0 or later
	ASUS 160N/130N driver v2.0.0.0 or later
XP SP2	Intel wireless LAN card
	ASUS 167gv2 driver v1.2.2.0 or later
	ASUS 160N/130N driver v1.0.4.0 or later
XP SP1 and 2000	ASUS LAN card with ASUS WLAN Utility
	ASUS 167gv2 driver v1.2.2.0 or later
	ASUS 160N/130N driver v1.0.4.0 or later

## To set up the WPS:

1. Press the WPS button on your router.





2. Press the WPS button on the wireless LAN card and click **Start PBC**.  
You may also choose to key in the wireless LAN card's PIN code, then click **Start PIN**.



**Note:** Refer to the documentation that came with the wireless LAN card for the wireless LAN card's PIN code.

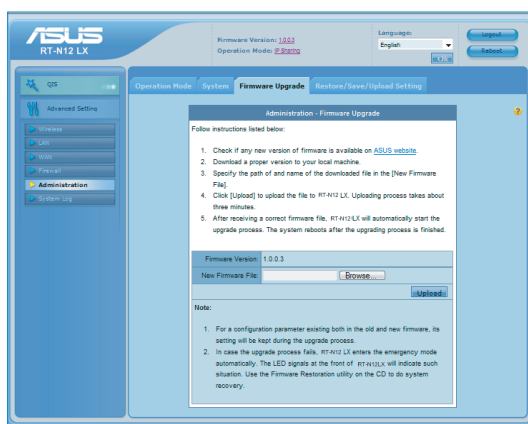
# Upgrading the firmware



**Note:** Download the latest firmware from the ASUS website at <http://www.asus.com>.

## To upgrade the firmware:

1. Click **Advanced Setting** from the navigation menu at the left side of your screen.
2. Under the **Administration** menu, click **Firmware Upgrade**.
3. In the **New Firmware File** field, click **Browse** to locate the new firmware on your computer.
4. Click **Upload**. The uploading process takes about three minutes.

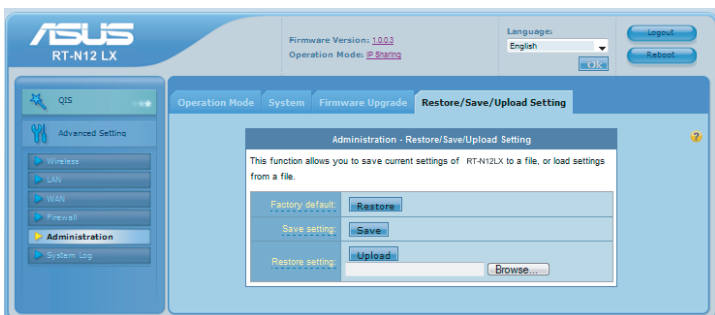


**Note:** If the upgrade process fails, use the Firmware Restoration utility to restore the system. For details on this utility, refer to the section **Firmware Restoration** in Chapter 5 of this user manual.

# Restoring/Saving/Uploading settings

To restore/save/upload the settings:

1. Click **Advanced Setting** from the navigation menu at the left side of your screen.
2. Under the **Administration** menu, click **Restore/Save/Upload Setting**.



3. Select the tasks that you want to do:
  - To restore to the default factory settings, click **Restore**, and click **OK** in the confirmation message.
  - To save the current system settings, click **Save**, and click **Save** in the file download window to save the system file in your preferred path.
  - To restore previous system settings, click **Browse** to locate the system file that you want to restore, then click **Upload**.

[illegible]

# 5

## Installing the utilities

### Installing the utilities

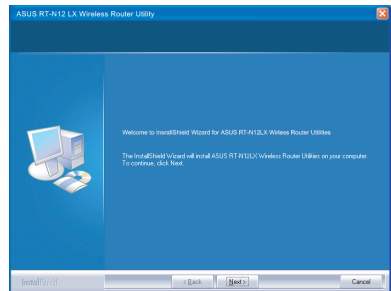
The support CD contains the utilities for configuring the ASUS Wireless Router. To install the ASUS WLAN Utilities in Microsoft® Windows, insert the support CD in the CD drive. If Autorun is disabled, run **setup.exe** from the root directory of the support CD.

To install the utilities:

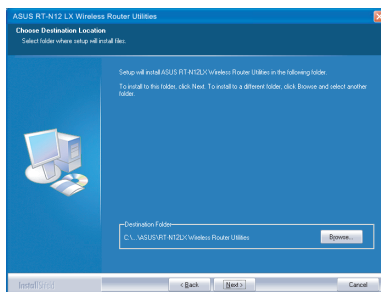
1. Click **Install...Utilities**.



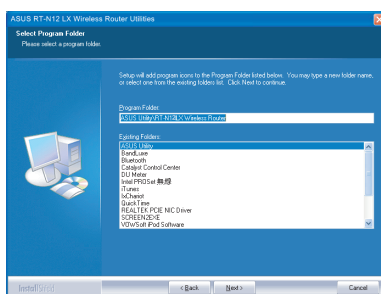
2. Click **Next**.



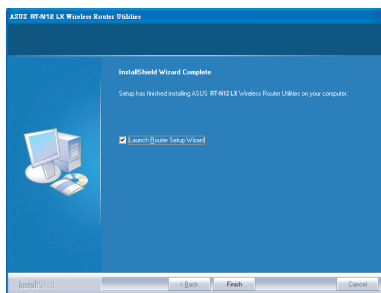
- Click **Next** to accept the default destination folder or click **Browse** to specify another path.



- Click **Next** to accept the default program folder or enter another name.



- Click **Finish** when setup is completed.

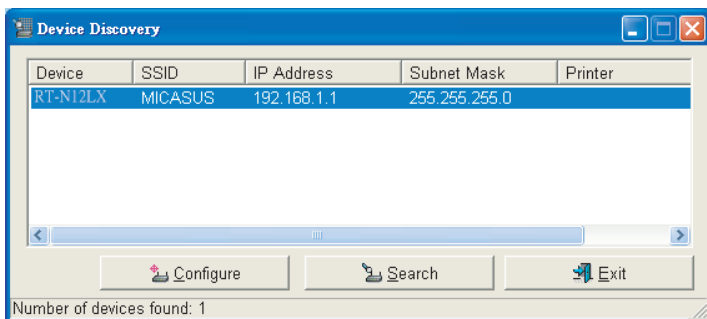


## Device Discovery

Device Discovery is an ASUS WLAN utility that detects an ASUS wireless router and enables you to configure the device.

### To launch the Device Discovery utility:

From your computer's desktop, click **Start > All Programs > ASUS Utility > RT-N12 LX Wireless Router > Device Discovery**.



- Click **Configure** to access the main page configure the wireless router.
- Click **Search** to search for ASUS wireless routers within range.
- Click **Exit** to exit the application.

# Firmware Restoration

Firmware Restoration is used on an ASUS Wireless Router that failed during its firmware upgrading process. It uploads the firmware that you specify. The process takes about three to four minutes.



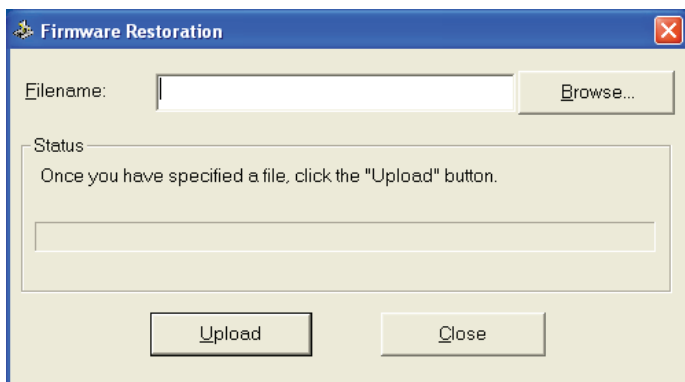
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**Important:** Launch the rescue mode before using the Firmware Restoration utility.

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## To launch the rescue mode and use the Firmware Restoration utility:

1. Unplug the wireless router from the power source.
2. Hold the Restore button at the rear panel and simultaneously re-plug the wireless router into the power source. Release the Restore button when the Power LED at the front panel flashes slowly, which indicates that the wireless router is in the rescue mode.
3. From your computer's desktop, click **Start > All Programs > ASUS Utility > RT-N12 LX Wireless Router > Firmware Restoration**.



4. Specify a firmware file, then click **Upload**.



---

**Note:** This is not a firmware upgrade utility and cannot be used on a working ASUS Wireless Router. Normal firmware upgrades must be done through the web interface.

---



# Troubleshooting

## Troubleshooting

This troubleshooting guide provides solutions to some common problems that you may encounter while installing or using the ASUS Wireless Router. These problems require simple troubleshooting that you can perform by yourself. Contact the ASUS Technical Support if you encounter problems not mentioned in this chapter.

Problem	Action
The client cannot establish a wireless connection with the router.	<p><b>Out of Range:</b></p> <ul style="list-style-type: none"><li>• Put the router closer to the wireless client.</li><li>• Try to change the channel settings.</li></ul> <p><b>Authentication:</b></p> <ul style="list-style-type: none"><li>• Use wired connection to connect to the router.</li><li>• Check the wireless security settings.</li><li>• Press the Restore button at the rear panel for more than five seconds.</li></ul> <p><b>Cannot find the router:</b></p> <ul style="list-style-type: none"><li>• Press the Restore button at the rear panel for more than five seconds.</li><li>• Check the setting in the wireless adapter such as SSID and encryption settings.</li></ul>

Problem	Action
Cannot access the Internet via wireless LAN adapter.	<ul style="list-style-type: none"> <li>• Move the router closer to the wireless client.</li> <li>• Check whether the wireless adapter is connected to the correct wireless router.</li> <li>• Check whether the wireless channel in use conforms to the channels available in your country/area.</li> <li>• Check the encryption settings.</li> <li>• Check if the ADSL or Cable connection is correct.</li> <li>• Retry using another Ethernet cable.</li> </ul>
Internet is not accessible.	<ul style="list-style-type: none"> <li>• Check the status indicators on the ADSL modem and the wireless router.</li> <li>• Check if the WAN LED on the wireless router is ON. If the LED is not ON, change the cable and try again.</li> </ul>
When ADSL Modem “Link” light is ON (not blinking), this means Internet Access is possible.	<ul style="list-style-type: none"> <li>• Restart your computer.</li> <li>• Refer to the Quick Start Guide of the wireless router and re-configure the settings.</li> <li>• Check if the WAN LED on the wireless router is ON.</li> <li>• Check the wireless encryption settings.</li> <li>• Check if the computer can get the IP address (via both wired network and wireless network).</li> <li>• Ensure that your web browser is configured to use the local LAN, and is not configured to use a proxy server.</li> </ul>
If the ADSL “LINK” light blinks continuously or stays off, Internet access is not possible - the Router is unable to establish a connection with the ADSL network.	<ul style="list-style-type: none"> <li>• Ensure that all your cables are all properly connected .</li> <li>• Disconnect the power cord from the ADSL or cable modem, wait a few minutes, then reconnect the cord.</li> <li>• If the ADSL light continues to blink or stays OFF, contact your ADSL service provider.</li> </ul>
Network name or encryption keys are forgotten.	<ul style="list-style-type: none"> <li>• Try setting up the wired connection and configuring the wireless encryption again.</li> <li>• Press the Restore button at the rear panel of the wireless router for more than five seconds.</li> </ul>

Problem	Action
<p>How to restore the system to its default settings?</p>	<ul style="list-style-type: none"> <li>• Press the Restore button at the rear panel of the wireless router for more than five seconds.</li> <li>• Refer to the section <b>Restoring/Saving/Uploading settings</b> in Chapter 4 of this user manual.</li> </ul> <p>The following are the factory default settings:</p> <p><b>User Name:</b> admin</p> <p><b>Password:</b> admin</p> <p><b>Enable DHCP:</b> Yes (if WAN cable is plugged in)</p> <p><b>IP address:</b> 192.168.1.1</p> <p><b>Domain Name:</b> (Blank)</p> <p><b>Subnet Mask:</b> 255.255.255.0</p> <p><b>DNS Server 1:</b> 192.168.1.1</p> <p><b>DNS Server 2:</b> (Blank)</p> <p><b>SSID:</b> ASUS</p>
<p>I cannot use <b>192.168.1.1</b> to access the main page.</p>	<p>Check the router's operation mode.</p> <ul style="list-style-type: none"> <li>• In the Router mode, the default IP address is 192.168.1.1.</li> <li>• In the AP mode, use Device Discovery to find the router's IP address.</li> </ul>

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

# Appendices

## Notices

### ASUS Recycling/Takeback Services

ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components, as well as the packaging materials. Please go to <http://csr.asus.com/english/Takeback.htm> for the detailed recycling information in different regions.

### REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at <http://csr.asus.com/english/REACH.htm>

### Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one 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.



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

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## Prohibition of Co-location

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

## Safety Information

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use on the supplied antenna.

## Declaration of Conformity for R&TTE directive 1999/5/EC

Essential requirements – Article 3

Protection requirements for health and safety – Article 3.1a

Testing for electric safety according to EN 60950-1 has been conducted. These are considered relevant and sufficient.

Protection requirements for electromagnetic compatibility – Article 3.1b

Testing for electromagnetic compatibility according to EN 301 489-1 and EN 301 489-17 has been conducted. These are considered relevant and sufficient.

Effective use of the radio spectrum – Article 3.2

Testing for radio test suites according to EN 300 328- 2 has been conducted. These are considered relevant and sufficient.

## CE Mark Warning

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

Operation Channels: Ch1~11 for N. America, Ch1~14 Japan, Ch1~13 Europe (ETSI)

## IC Warning

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.”

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.”

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## Safety Warning

SAFE TEMP: This wireless router should be only used in environments with ambient temperatures between 5°C(41°F) and 40°C(104°F).

DO NOT expose to or use near liquids, rain, or moisture. DO NOT use the modem during electrical storms.

# ASUS Contact Information

## ASUSTeK COMPUTER INC. (Asia Pacific)

Address	15 Li-Te Road, Peitou, Taipei, Taiwan 11259
Website	<a href="http://www.asus.com.tw">www.asus.com.tw</a>

### Technical Support

Telephone	+886228943447
Support Fax	+886228907698
Online support	<a href="http://support.asus.com">support.asus.com</a>

## ASUS COMPUTER INTERNATIONAL (America)

Address	800 Corporate Way, Fremont, CA 94539, USA
Telephone	+15029550883
Fax	+15029338713
Website	<a href="http://usa.asus.com">usa.asus.com</a>
Online support	<a href="http://support.asus.com">support.asus.com</a>

## ASUS COMPUTER GmbH (Germany and Austria)

Address	Harkort Str. 21-23, D-40880 Ratingen, Germany
Fax	+492102959911
Website	<a href="http://www.asus.de">www.asus.de</a>
Online contact	<a href="http://www.asus.de/sales">www.asus.de/sales</a>

### Technical Support

Telephone (Component)	+491805010923*
Telephone (System/Notebook/Eee/LCD)	+491805010920*
Fax	+492102959911
Online support	<a href="http://support.asus.com">support.asus.com</a>

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<b>Manufacturer:</b>	<b>ASUSTeK Computer Inc.</b> Tel: +886-2-2894-3447 Address: No. 150, LI-TE RD., PEITOU, TAIPEI 112, TAIWAN
<b>Authorised representative in Europe:</b>	<b>ASUS Computer GmbH</b> Address: HARKORT STR. 21-23, 40880 RATINGEN, GERMANY
<b>Authorised distributors in Turkey:</b>	<b>BOGAZICI BİL GİSAYAR SAN. VE TİC. A.Ş.</b> Tel: +90 212 3311000 Address: AYAZAGA MAH. KEMERBURGAZ CAD. NO.10 AYAZAGA/İSTANBUL  <b>CİZGİ Elektronik San. Tic. Ltd. Şti.</b> Tel: 0090 2123567070 Address: CEMAL SURURI CD. HALİM MERİC İS MERKEZİ No:15/C D: 5-6 34394 MECİDİYEKÖY/İSTANBUL

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