ASUS WL-520g Wireless Router

(For 802.11g/b Wireless Clients)
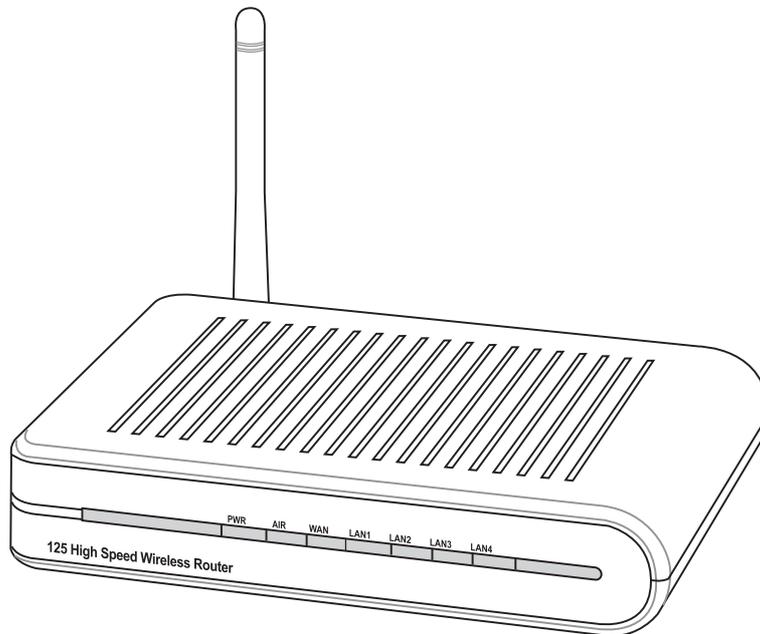
User's Manual

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1. Introduction

Overview

Thank you for purchasing the ASUS Wireless Router. The ASUS Wireless Router, WL-520g, complies with IEEE 802.11g and 802.11b standards. The 802.11g is as extension to 802.11b (used in majority of wireless LANs today) that broadens 802.11b's data rates to 54 Mbps within the 2.4 GHz band using OFDM (orthogonal frequency division multiplexing) technology. The 802.11g allows backward compatibility with 802.11b devices but only at 11 Mbps or lower, depending on the range and presence of obstructions. Wireless LANs are complementary extensions to existing wired LANs, offering complete mobility while maintaining continuous network connectivity to both corporate and home Intranets. They add a new level of convenience for LAN users. PC users stay connected to the network anywhere throughout a building without being bound by a LAN wires. This is accomplished through the use of Access Point functionality of ASUS Wireless Routers. ASUS Wireless Router with built-in Internet gateway capability, allows your family to share a broadband Modem and one ISP account simultaneously from different rooms without wires! ASUS Wireless products can keep you connected anywhere, any time.

System Requirements

To begin using the ASUS WL-520g Wireless Router, you must have the following minimum requirements:

- ADSL/Cable Modem and Broadband Internet Account.
- An Ethernet (10Base-T or 10/100Base-TX) adapter for wired client
- At least one 802.11g (54Mbps) or one 802.11b (11Mbps) wireless adapter for wireless mobile clients
- TCP/IP and an Internet browser installed

The Product Package

The Wireless Router comes with:

- Wireless Router
- Power adapter (5 Volts DC)
- RJ-45 Ethernet cable (straight-through)
- Quick Start Guide
- Support CD (with User's Manual)

1. Introduction

Features

125 High Speed Mode

The WL-520g wireless router uses the 802.11g OFDM standard to allow fast 54Mbps wireless data transfers while remaining fully compatible with previous 802.11b devices. With "Afterburner" technology, WL-520g can boost wireless transfer speeds by 35% compared with standard 802.11g speeds. (Afterburner support is also required on client side.)

Wi-Fi Multimedia (WMM)

WMM enhances wireless transfers of multimedia contents, providing wireless network users an improved experience for sharing audio and video files. WMM is a profile of the upcoming IEEE 802.11e Quality of Service (QoS) extensions for 802.11 networks. QoS and multimedia support are critical to wireless home networks, which require video on demand, audio on demand, voice over IP and high-speed Internet access. (WMM support is also required on client side.)

Wi-Fi Protected Access 2 (WPA2™)

WPA2 is the next-generation Wi-Fi security standard, combining the most powerful authentication and encryption techniques, such as the Advanced Encryption Standard (AES) to provide government grade security to protect wireless networks from unauthorized use. WPA2 is designed to be backward compatible with the original WPA standard, and therefore, WPA2 also supports TKIP, AES, WPA, WPA-PSK and 802.1x authenticated WPA networks. WEP, ACL and SPI firewall are also included to make sure information doesn't fall into the wrong hands.

ASUS EZSetup Wizard

Adopting a unique push button design, ASUS' Wireless Router Series greatly streamlines the setup process for beginners. Just press the button located on the back of the device and use the simple ASUS EZSetup Wizard utility. The routers will automatically register various wireless-capable devices onto the network and activate security standards.

Parental Control / Children Protection

With specific keywords in URL setting within a pre-defined time interval, this home wireless router will do web based filtering parental control to filter/block adult content from newsgroups or websites. It is a router-based filter, not PC-based, so you just make settings one time to keep all household internet devices protected.

The ASUS Wireless Family

The ASUS Wireless family contains a several wireless network solutions for 802.11g & 802.11b wireless local area networks in the home or office.

Access Point or Client
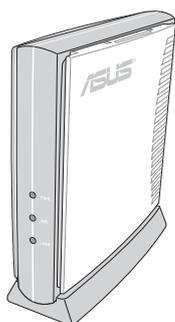
The **ASUS WLAN 802.11g Access Point (WL-300g)** creates a wireless network using the IEEE 802.11g and 802.11b wireless standards.
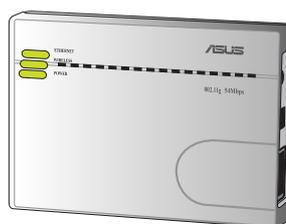
The **ASUS 3 in 1 Pocket Access Point (WL-330g)** creates a wireless network using the IEEE 802.11g/b wireless standards.

Access Point & Router
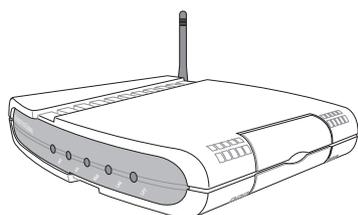
The **ASUS WLAN Gateway (WL-500g)** creates a wireless network using the IEEE 802.11g/b wireless standards and allows sharing a single Internet connection.
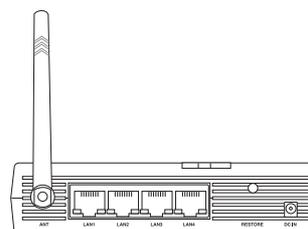
The **ASUS WLAN 802.11g Pocket Router (WL-530g)** creates a wireless network using the IEEE 802.11g and 802.11b wireless standards and allows sharing a single Internet connection.

PCMCIA Client

The **ASUS WLAN PC Card (WL-107g)** is a wireless LAN adapter that fits into a PCMCIA Type II slot in a Notebook PC and creates a wireless network using the IEEE 802.11g/b wireless standards.

Compact Flash (CF) Client
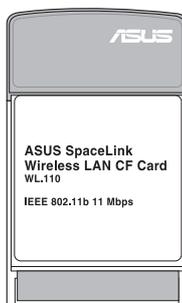
The **ASUS 802.11b Wireless CF Card (WL-110)** is a IEEE 802.11b wireless LAN adapter that fits into a Compact Flash Type II slot in a Portable Digital Assistant (PDA).

(The illustrations are not to scale.)

PCI Client

The **ASUS WLAN PCI Card (WL-138g)** is a wireless LAN adapter that fits into a standard PCI slot in a desktop PC and creates a wireless network using the IEEE 802.11g/b wireless standards.

USB Access Point or Client   USB Client
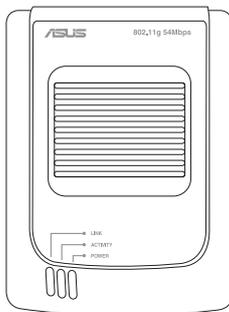
The **ASUS USB Wireless LAN Adapter (WL-160g)** creates a wireless network using the IEEE 802.11g/b wireless standards and connects to any computer using USB2.0 connectivity.
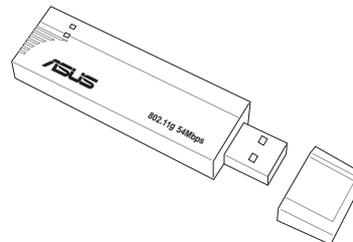
The **ASUS USB Wireless LAN Adapter (WL-167g)** is thumb-sized and creates a wireless network using the IEEE 802.11g/b wireless standards and connects to any computer using USB2.0 connectivity.

Access Point & File Server
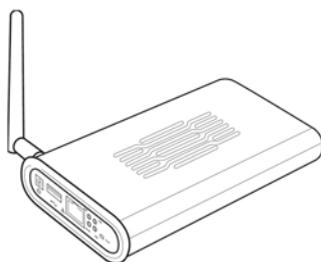
The **ASUS WLAN 802.11g Access Point (WL-HDD)** creates a wireless network using the IEEE 802.11g and 802.11b wireless standards. Also serves as a file server (wireless network attached storage).

(The illustrations are not to scale.)

Network Topology

The settings that you need to perform will vary depending on the role that your ASUS Wireless Router will play.

Network Backbone

No software setting is necessary in the ASUS Wireless Router.
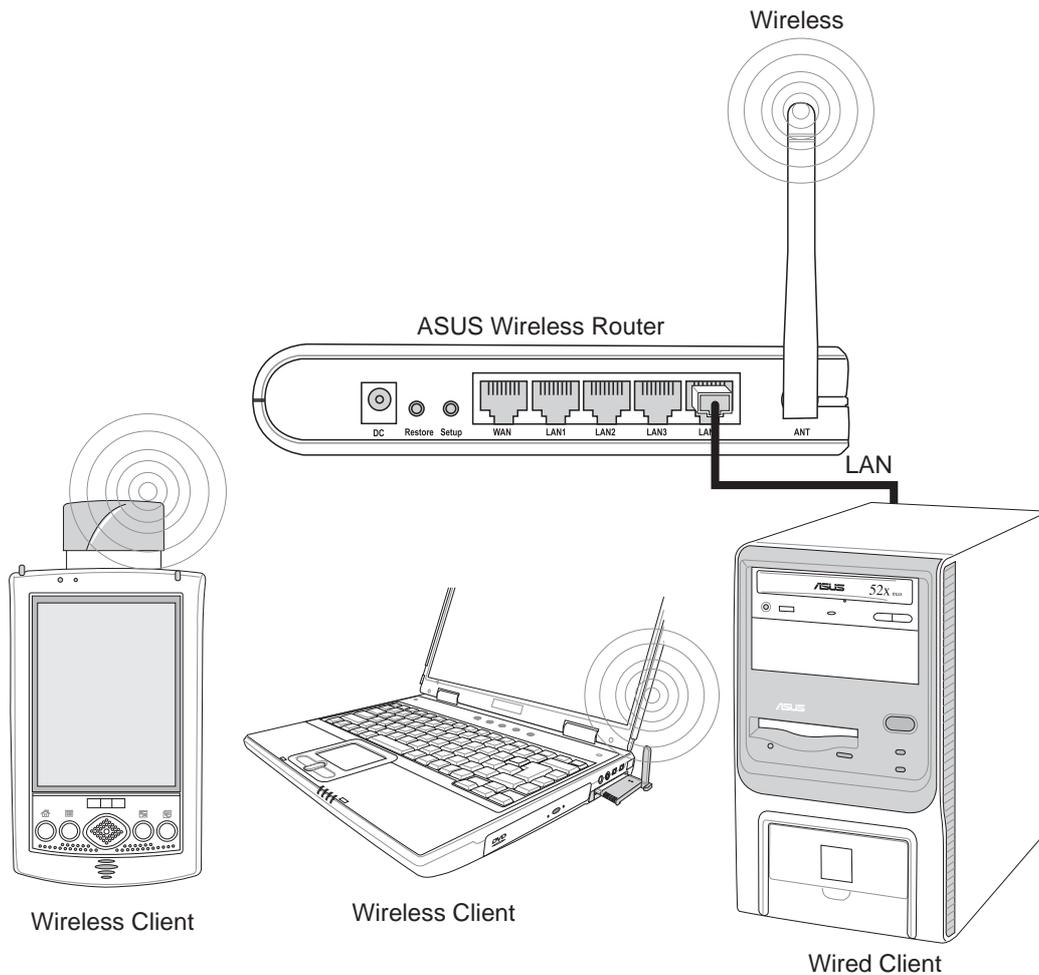
In this topology, the wireless router connects your wired and wireless devices together to form a local area network (LAN), as shown. To connect a computer (or other device) to the ASUS Wireless Router, you need a network cable (UTP-Cat5) with one end connected to one of the LAN ports on the back of the ASUS Wireless Router and the other in the 10/100 LAN port on that device. For wireless connections, wireless mobile clients must comply with the IEEE 802.11b standard.

Agent to an ISP
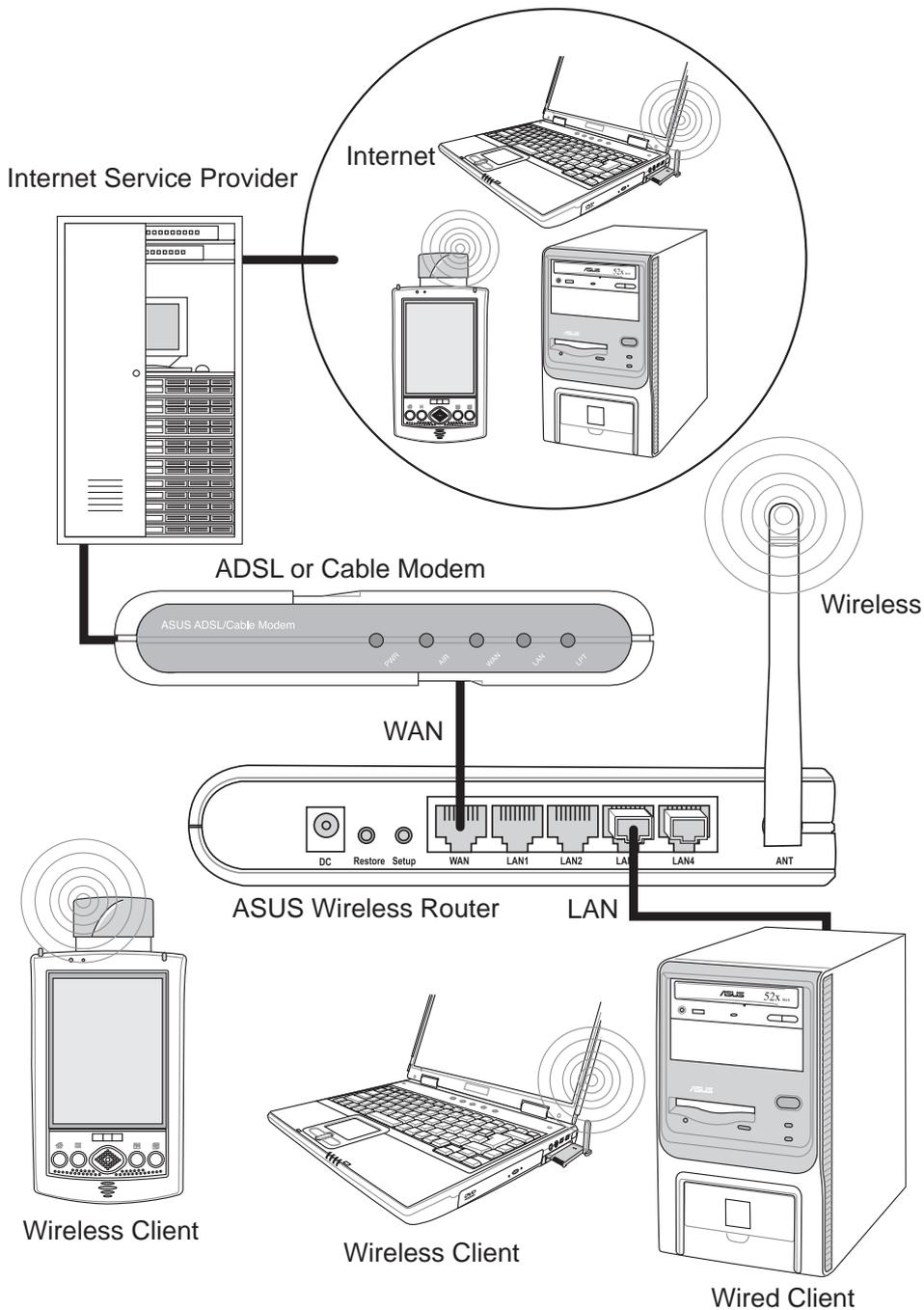
In this topology, the wireless router is not only a backbone of your LAN but also an agent to your Internet Service Provider (ISP). You may use an ADSL or Cable modem to communicate with your ISP. Connect the LAN port on the modem with the WAN port at the back of the ASUS Wireless Router using a network cable as shown above.

Note: You also need to make sure that other connections on the ADSL or Cable modem are correct.

Agent to Another Network

Wireless

Network Backbone

WAN

ASUS Wireless Router

DC   Restore Setup   WAN   LAN1   LAN2   LAN3   LAN4   ANT

LAN

Wireless Client

Wireless Client

Wireless Client

Wired Client
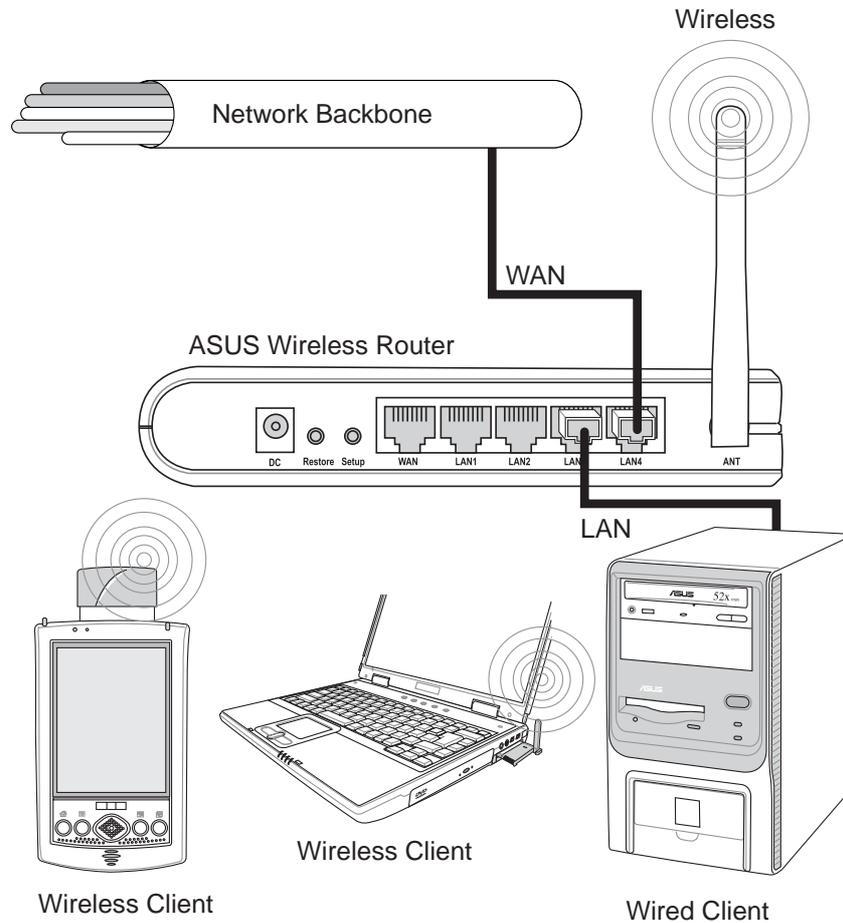
In this topology, the wireless router is an agent between your LAN and another network. Use a network cable with one end connected to the WAN port on the wireless router and the other to the other network as shown above.

1. Introduction

LED Indicators

The LEDs on the front of the ASUS Wireless Router display the status of the ASUS Wireless Router.

PWR   AIR   WAN   LAN1   LAN2   LAN3   LAN4

125 High Speed Wireless Router
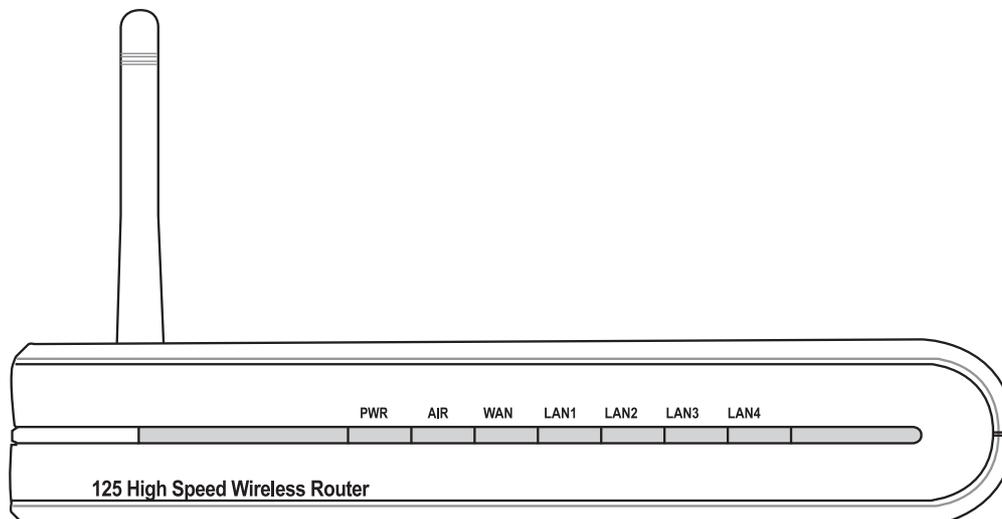
PWR (Power)

Off	No power
On	System ready
Flashing-slow	Firmware upgrade failed
Flashing-quick	EZsetup processing

> **Note: If the setup button is pushed without running the EZsetup wizard utility, the PWR indicator will flash and Internet connections will pause for a short period but will then return to normal operation without changes.**

AIR (Wireless Network)

Off	No power
On	Wireless system ready
Flashing	Transmitting or receiving data (wireless)

WAN (Wide Area Network)

Off	No power
On	Has physical connection to an Ethernet network
Flashing	Transmitting or receiving data (through Ethernet wire)

LAN 1-4 (Local Area Network)

Off	No power
On	Has physical connection to an Ethernet network
Flashing	Transmitting or receiving data (through Ethernet wire)

2. Installation Procedure

Follow these steps to install the ASUS Wireless Router.

1. Determine the best location for the ASUS Wireless Router. Keep in mind the following considerations:

    • The length of the Ethernet cable that connects the ASUS Wireless Router to the network must not exceed 100 meters.

    • Try to place the ASUS Wireless Router on a flat, sturdy surface as far from the ground as possible, such as on top of a desk or bookcase, keeping clear of obstructions and away from direct sunlight.

    • Try to centrally locate the ASUS Wireless Router so that it will provide coverage to all of the wireless mobile devices in the area. Orientating the antenna vertically should provide the best reception.

    • Use only the power supply that came with this unit. Other power supplies may fit but the voltage and power may not be compatible.

2. Wall mounting or vertical standing is also possible.

Important: It is the responsibility of the installer and users of the ASUS Wireless Router to guarantee that the antenna is operated at least 20 centimeters from any person. This is necessary to insure that the product is operated in accordance with the RF Guidelines for Human Exposure which have been adopted by the Federal Communications Commission.

Wall Mounting Option

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.
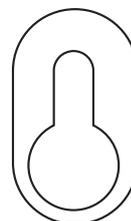
Follow these steps to mount the ASUS Wireless Router to a wall:

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

Note: Readjust the screws if you cannot latch the ASUS Wireless Router onto the screws or if it is too loose.

Connections

Connect your ADSL Modem and Wireless Router as shown in the illustration. A LAN cable must be connected between the LAN port on the ADSL and the WAN port on the Wireless Router.
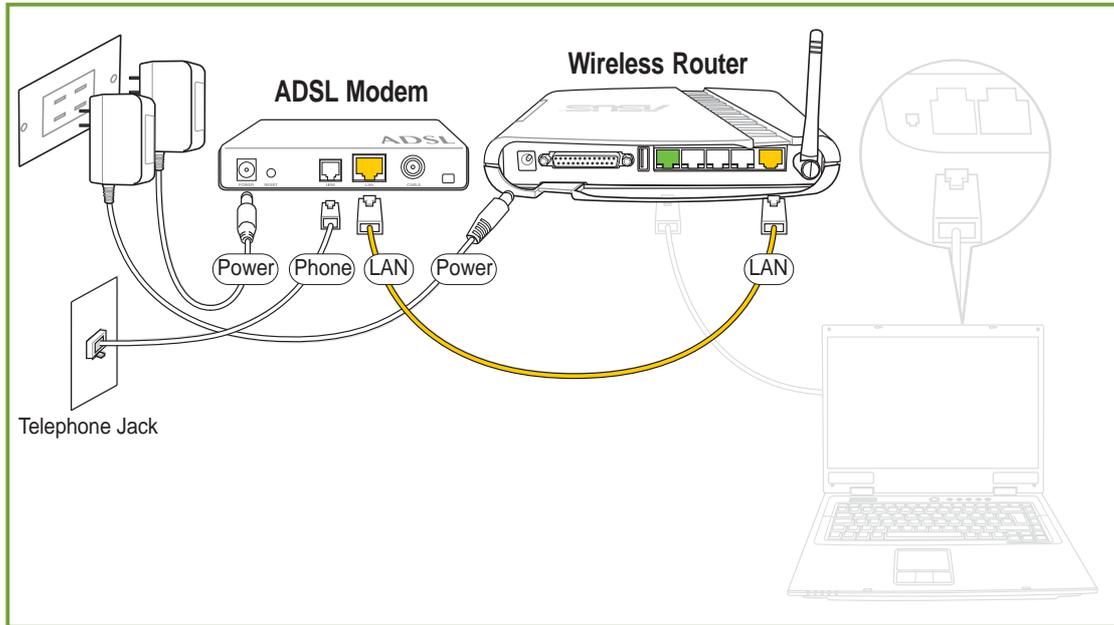
Connect the Wireless Router to your computer through the LAN port.
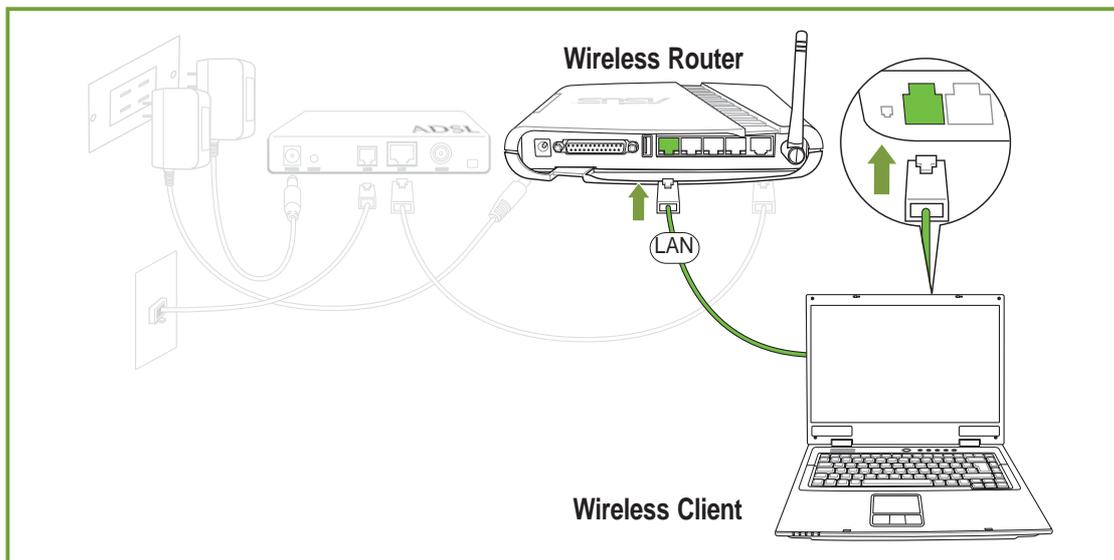
Warning: Use the ASUS Wireless Router only with the power adapter supplied in the product package. Using another power supply may damage the ASUS Wireless Router.

3. Software Configuration

Configuring the ASUS Wireless Router

The ASUS Wireless Router can be configured to meet various usage scenarios. Some of the factory default settings may suit your usage; however, others may need changing. Prior to using the ASUS Wireless Router, you must check the basic settings to guarantee it will work in your environment. Configuring the ASUS Wireless Router is done through a web browser. You need a Notebook PC or desktop PC connected to the ASUS Wireless Router (either directly or through a hub) and running a web browser as a configuration terminal. The connection can be wired or wireless. For the wireless connection, you need an IEEE 802.11g/b compatible device, e.g. ASUS WLAN Card, installed in your Notebook PC. You should also disable WEP and set the SSID to "default" for your wireless LAN device. If you want to configure the ASUS Wireless Router or want to access the Internet through the ASUS Wireless Router, TCP/IP settings must be correct. Normally, the TCP/IP setting should be on the IP subnet of the ASUS Wireless Router.

> **Note: Before rebooting your computer, the ASUS Wireless Router should be switched ON and in ready state.**

Connecting to the ASUS Wireless Router

Wired Connection

One RJ-45 cable is supplied with the ASUS Wireless Router. Auto crossover function is designed into the ASUS Wireless Router so you can use either a straight-through or a crossover Ethernet cable. Plug one end of the cable into the WAN port on the rear of the ASUS Wireless Router and the other end into the Ethernet port of your ADSL or Cable modem.

Wireless-Connection

Refer to your wireless adapter user's manual on associating with the ASUS Wireless Router. The default SSID of the ASUS Wireless Router is "default" (lower case), encryption is disabled and open system authentication is used.

3. Utilities

Setting IP address for Wired or Wireless Connection

Get IP Automatically

The ASUS Wireless Router incorporates a DHCP server so the easiest method is to set your PC to get its IP address automatically and reboot your computer. So the correct IP address, gateway, DNS (Domain Name System Server) can be obtained from the ASUS Wireless Router.

Note: Before rebooting your PC, the ASUS Wireless Router should be switched ON and in ready state.
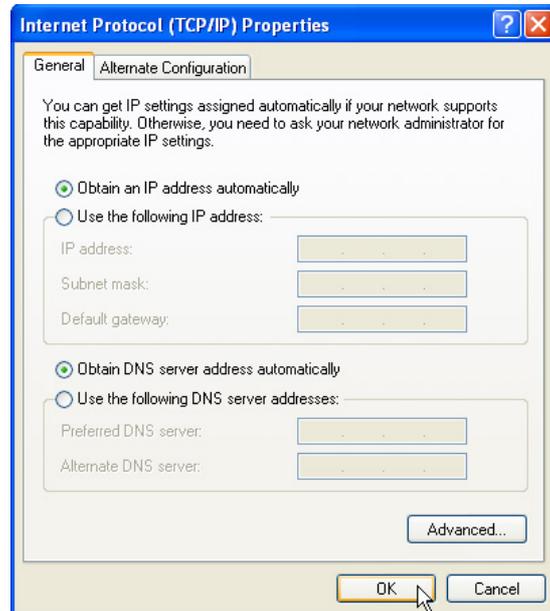
Setting IP Manually

If you want to set your IP address manually, the following default settings of the ASUS Wireless Router should be known:

- IP address 192.168.1.1
- Subnet Mask 255.255.255.0.

If you set your computer's IP manually, it needs to be on the same segment. For example:

- IP address 192.168.1.xxx (xxx can be any number between 2 and 254 that is not used by another device)
- Subnet Mask 255.255.255.0 (same as the ASUS Wireless Router)
- Gateway 192.168.1.1 (this is the ASUS Wireless Router)
- DNS 192.168.1.1 (ASUS Wireless Router IP address or your own).
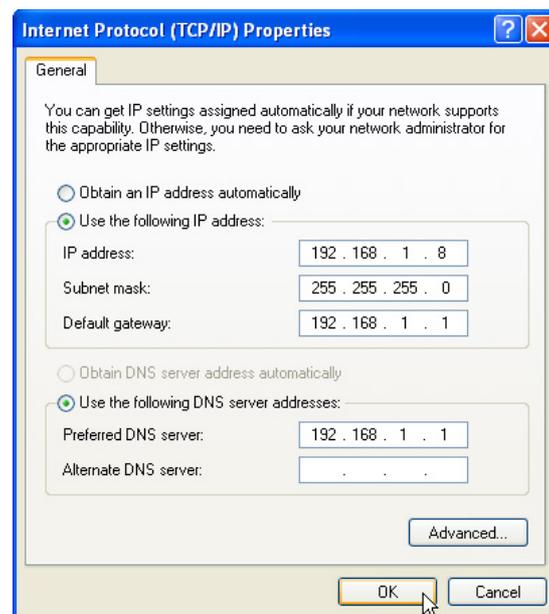
Installing the ASUS Wireless Router Utilities

Follow these steps to install the ASUS Wireless Router Utilities in Microsoft Windows. Insert the support CD provided with the ASUS Wireless Router and the menu will appear. (Double-click **setup.exe** if your autorun has been disabled.)
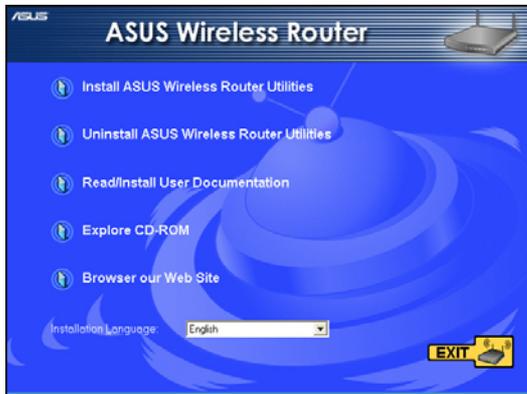
(1) Select a language and click **Install ASUS Wireless Router Utilities**.

(2) Click **Next** after reading the welcome screen.
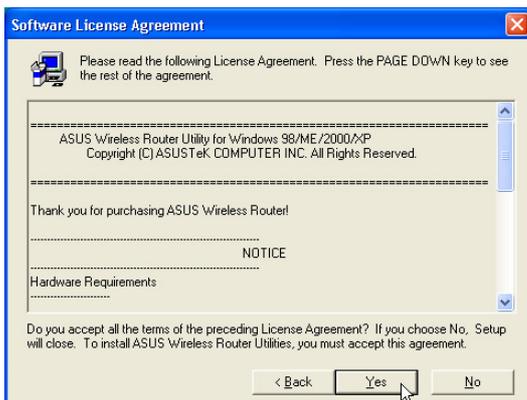
(3) Click **Yes** after reading the license agreement.
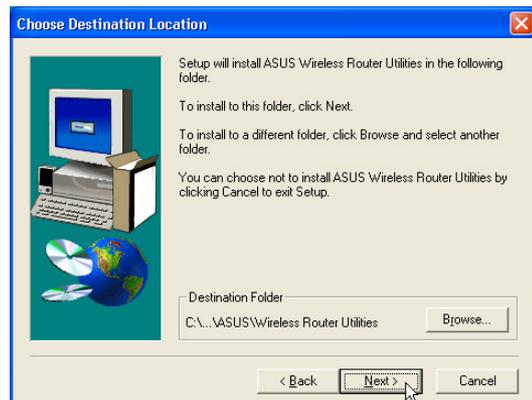
(4) Click **Next** to accept the default destination folder or enter another.
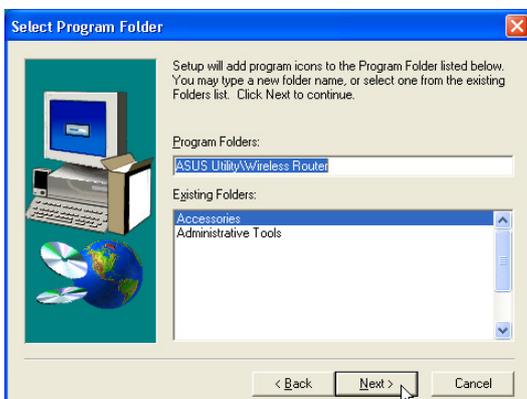
(5) Click **Next** to accept the default program folder or enter another.

(6) Click **Finish** when setup is complete.

3. Utilities

Using the Wireless Router for the First Time

1. ASUS Wireless Router Utilities

Run **Device Discovery** from "ASUS Utility" in Windows Start Programs.

2. Connect to the ASUS WLAN Web Manager

Run the ASUS WLAN **Device Discovery** from the **Start** menu and click **Config** when the device is found.

Add **192.168.1.1** in the Exceptions box if you are using a proxy server (Microsoft® Internet Explorer).
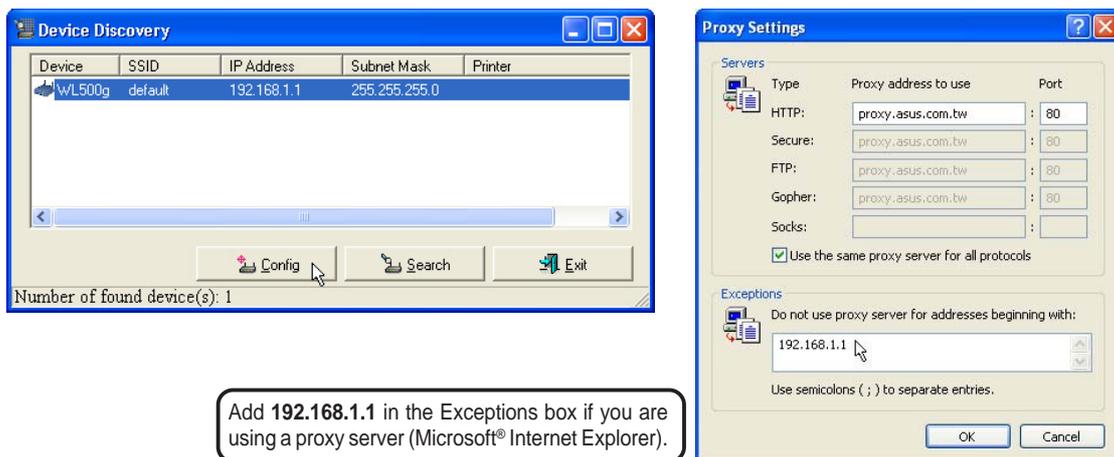
If your computer's IP is not on the same subnet as the ASUS Wireless Router (192.168.1.X), you will be asked to change it. The IP address can be any number from 2 to 254 that is not used by another device. Gateway is not required.

> Note: Using a proxy server (Microsoft® Internet Explorer) for your LAN requires that you set an exception for the ASUS Wireless Router or else connection will fail.

Enter Address or Name Manually

You can also open your PC's web browser and enter the name or the default IP address of the ASUS Wireless Router:

http://my.router or **http://my.WL-520g** or **http://192.168.1.1**

User Name & Password

Once connected, a window will ask for the "User name" and "Password" in order to log in. The factory default values are "**admin**" and "**admin**".

Note: If you cannot find any the ASUS Wireless Routers due to a problem in the IP settings, push and hold the "Restore" button over five seconds to restore factory default settings.

Home Page

After logging in, you will see the ASUS Wireless Router home page.

3. Utilities

IMPORTANT: After entering information on any page, click the "Apply", "Save", or "Finished" button. If you click any other link, you will be directed to another page and lose your new settings.

3. Set your own password

System Setup - Change Password

New Password:

Retype New Password:

4. Use Quick Setup

Wireless Home Gateway

- **Quick Setup** allows users to complete basic setting by just answering several questions.
- **802.11g and WPA** supports up to 54Mbps transmission rate, backward compatibility with 802.11b and interoperable security enhancement.
- **USB Application** Plug a USB storage to become a FTP server or plug a USB web camera to monitor your home environment.
- **IP Sharing** all computers share the same IP to Internet.
- **Internet Firewall** protect LAN or Wireless environment through flexible filter rule setting.
- **Status & Log** log status of system in details.

Commonly used features

Setting up a server in your LAN

1. Select **Virtual Server** under "NAT Setting"

2. (1) Enable Virtual Server

    (2) Choose Application (e.g. FTP)

    (3) Enter data in the fields

    Port Range: Port connected to WAN

    Local IP: IP address of the FTP Server

    Local Port: Oort of the FTP Server

    Protocol: Protocol Type

    (4) Click **Add** button to add settings

    (5) Click **Finish** button

3. Click **Save&Restart**".

Setting up as switching Hub and pure AP (no IP sharing NAT)

1. Connect the LAN port from a DSL or Cable modem to one of the LAN ports on the wireless router.

    DSL or Cable Modem

    ASUS Wireless Router
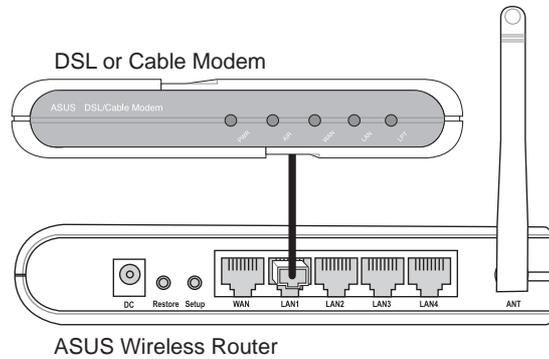
2. Select **DHCP Server** under "IP Config"

3. Turn OFF the "DHCP Server" function

    IP Config - DHCP Server

    WL520g supports up to 253 IP addresses for your local network. The IP address of a local machine can be assigned manually by the network administrator or obtained automatically from WL520g if the DHCP server is enabled.

    | Enable the DHCP Server? | Yes ○ No ● |
    | Domain Name: | |
    | IP Pool Starting Address: | 192.168.1.2 |
    | IP Pool Ending Address: | 192.168.1.254 |
    | Lease Time: | 86400 |
    | Default Gateway: | |

4. Click **Finish.**

    Restore   Finish   Apply

5. Click **Save&Restart**".

    Save & Restart

    Save&Restart will save all setting you have changed to WL520g and restart it. Please click **SaveRestart** button to continue.

    Save&Restart

3. Utilities

Setting up net meeting, MSN, on-line gaming, and remote control programs

1. Open **My Network Places** from Windows "start".
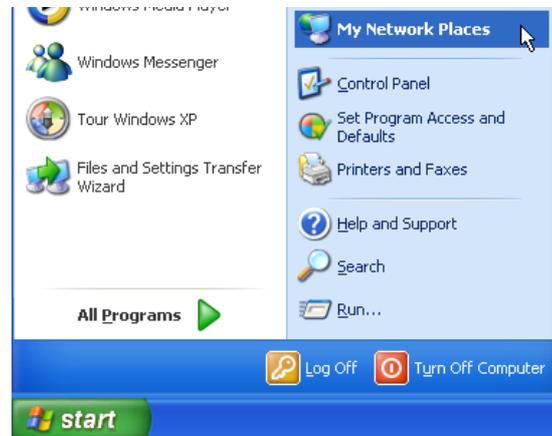
2. Click **View network connections**.
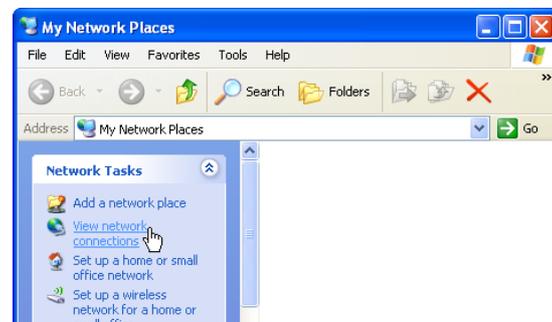
3. Right-click **Local Area Connection** and select "Properties".
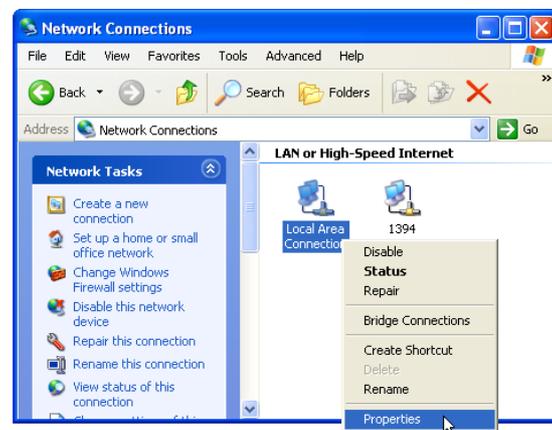
4. Double-click **Internet Protocol (TCP/IP)**
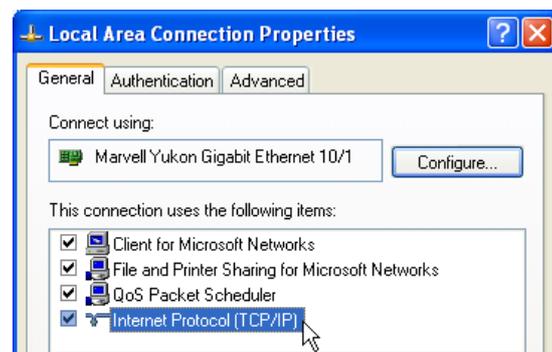
Setting up net meeting, MSN, on-line gaming, and remote control programs (Cont.)

5. Enter TCP/IP settings as shown here.
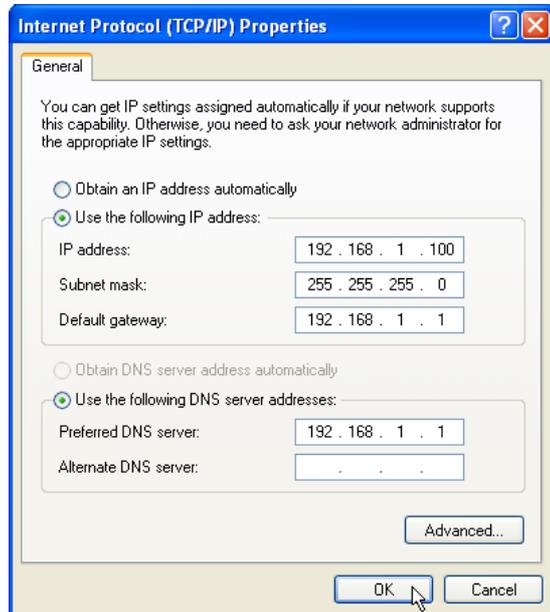
6. Choose "Virtual DMZ" from "NAT Setting" in WL-520g settings

8. Click **Save&Restart**".

7. Enter the IP address and click **Finish**.

3. Utilities
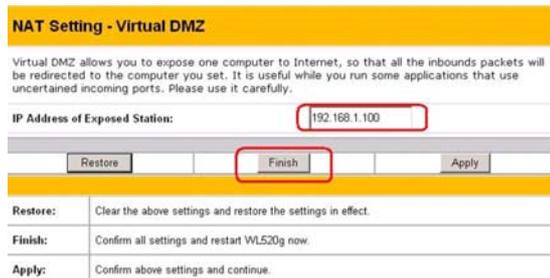
Setting up DDNS

1. Choose "Miscellaneous" from IP Config directory

2. If you do not have Dynamic-DNC, enable the DDNS Client. Then, choose one server from 2 and click **Free Trial** to apply for a new Dynamic-BNC.

3. After clicking **Free Trail**, this web page will open.
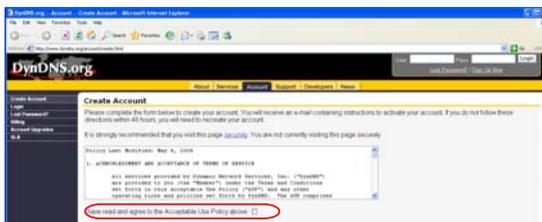
4. Read the policy and select "I have read...".
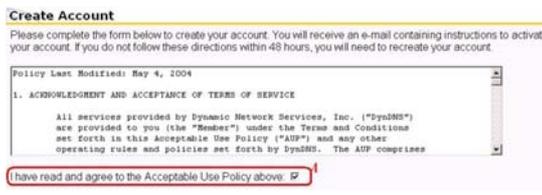
5. Enter the user name you want (e.g.WL-520g)

6. Enter an e-mail address for a activation letter.

7. Enter the password of your account

8. Click **Create Account.**
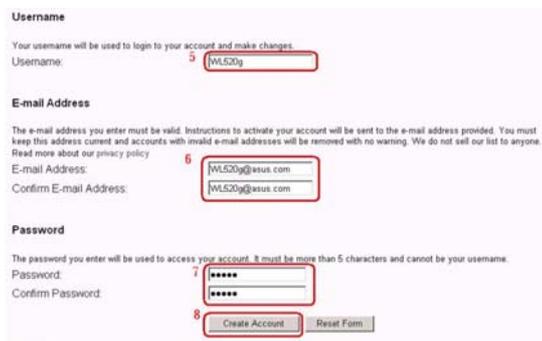
9. You will see this message telling you that your account has been created. You then receive a letter by e-mail to activate the account.
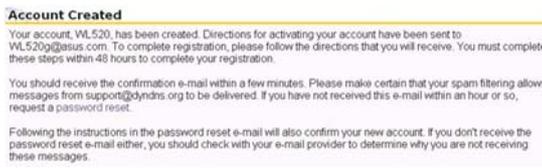
10. Open your e-mail to find the activation letter and open it.

11. Click the confirmation link to activate your account.
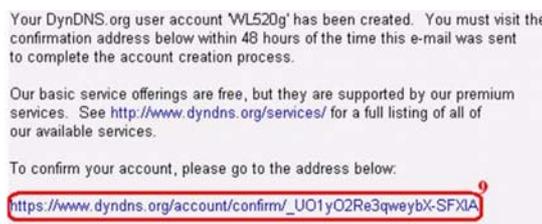
Setting up DDNS (Cont.)

12. Press the "login" to login your account
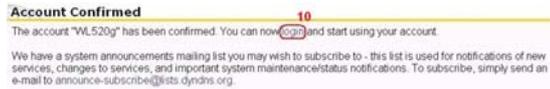
13. Enter your "Username" and "Password" that you used to apply for the account and click **Login**.

14. After you login, you will see this message.

15. Select **Services** tab.

16. Click **Add Host** next to Dynamic DNS to add your own DDNS.
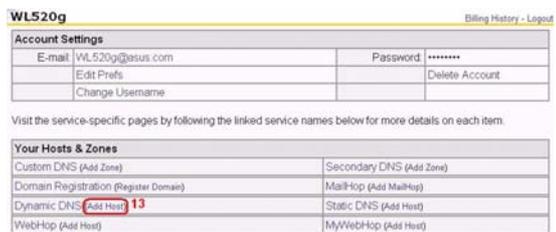
17. Enter the "Hostname" and then click **Add Host.**
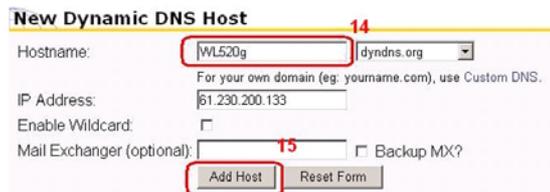
18. You will see this message when your Hostname is successfully created.

3. Utilities

Setting up DDNS (Cont.)

19. Enter your account data. The user name password is the account you created when applying for DDNS. Then click **Finish**.

20. Click **Save&Restart**.

21. Verify the DDNS is working. Click Windows **start** and select **Run...**

22. Type in **cmd** and click OK to open the DOS console.

23. Type **ping wl-520g.dyndns.org** (use your hostname). If you can see a reply from the hostname, the DDNS is working correctly.
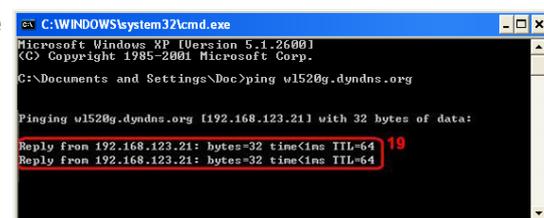
Setting up WDS

1. Choose **Bridge** under "Wireless".

2. Select AP mode as **WDS Only**. If you want to use both AP and WDS, you can choose **Hybrid** mode.

3. If you selected WDS or Hybrid mode, you will see a message telling you to choose a fixed channel for WDS.

4. Select a fixed channel for WDS
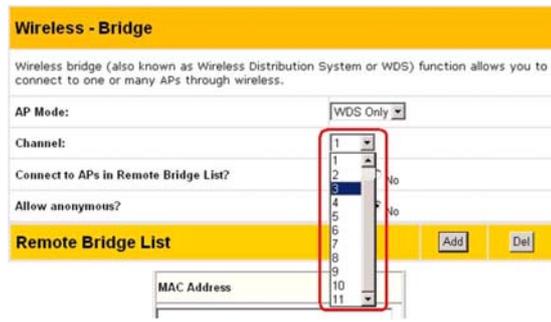
5. Select **Yes** or **No** to "Connect to APs in Remote Bridge List" to connect to other APs which are connected by the APs in you list.
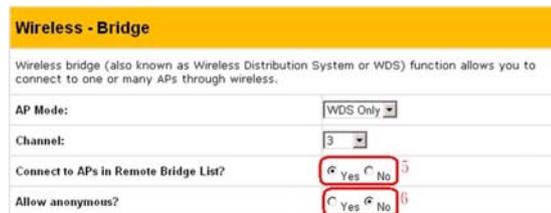
6. If you want to "Allow anonymous" login in your local area network, you can select "**Yes**".

7. Enter the MAC address of the APs you want to connect to.

8. Click **Add** after you key in the "MAC address"

9. Click **Finish**.
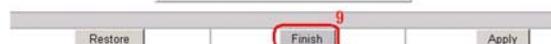
10. Click **Save&Restart**.

3. Utilities

Troubleshooting

The ASUS Wireless Router is designed to be very easy to install and operate. However, if you experience difficulties, use the information in this chapter to help diagnose and solve problems. If you cannot resolve a problem, contact Technical Support, as listed on the front of this manual.

Common Problems and Solutions

Problem

ASUS Wireless Router does not power up:

Solution

*   Check for faulty the ASUS Wireless Router power supply by measuring the output voltage with an electrical test meter.

*   Check failed AC supply (power outlet)

Problem

Cannot communicate with the ASUS Wireless Router through a wired network connection.

Solution

*   Verify network configuration by ensuring that there are no duplicate IP addresses. Power down the device in question and ping the assigned IP address of the device. Ensure no other device responds to that address.

*   Check that the cables used have proper pin outs and connectors or use another LAN cable.

Appendix

Appendix

Problem

The ASUS Wireless Router Web Manager still cannot find or connect to the ASUS Wireless Router after verifying the IP address and LAN cable, changes cannot be made, or password is lost.

Solution

In case the ASUS Wireless Router is inaccessible, you can restore the ASUS Wireless Router's factory default settings. Use a straightened paper clip to press the button located in the hole labeled "Restore " on the back of the ASUS Wireless Router and keep it depressed over 5 seconds. The LEDs will flash when reset is successful.
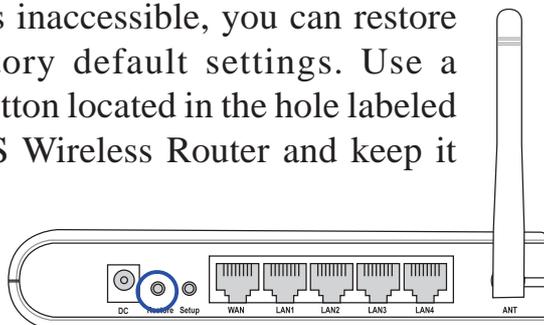
Reset to Defaults

The following are factory default values. These values will be present when you first receive your the ASUS Wireless Router, if you push the reset button on the back of the ASUS Wireless Router over 5 seconds, or if you click the "Restore" button on the "Factory Default" page under "Advanced Setup".

Name	Default Value
User Name	admin
Password	admin
Enable DHCP	Yes
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
DNS Server 1	192.168.1.1
DNS Server 2	(blank)
SSID	default
Domain Name	(blank)

Problem

My 802.11b PC Card will not associate with the ASUS Wireless Router.

Solution

Follow these steps:

1. Try to bring the devices closer together; the PC Card may be out of range of the ASUS Wireless Router.

2. Confirm that the ASUS Wireless Router and PC Card have the same SSID.

3. Confirm that the ASUS Wireless Router and PC Card have the same Encryption settings, if enabled.

4. Confirm that the ASUS Wireless Router's Air and Link LEDs are solid green.

5. Confirm that the authorization table includes or excludes the MAC address of the WLAN PC card if "Wireless Access Control" is enabled.

Problem

The throughput seems slow.

Solution

To achieve maximum throughput, verify that your antennas are well-placed, not behind metal, and do not have too many obstacles between them. If you move the client closer to the ASUS Wireless Router and throughput increases, you may want to consider adding a second the ASUS Wireless Router and implementing roaming.

• Check antenna, connectors and cabling.

• Verify network traffic does not exceed 37% of bandwidth.

• Check to see that the wired network does not exceed 10 broadcast messages per second.

• Verify wired network topology and configuration.

Appendix

Problem

I cannot find the ASUS Wireless Routers using the ASUS Wireless Router Discovery.

Solution

To configure the ASUS Wireless Router through a wireless LAN card, your computer must be in the same subnet of the ASUS Wireless Router. You cannot find the ASUS Wireless Routers with subnet different from your computer within the same gateway. You must change your computer to the same subnet as the ASUS Wireless Router. The factory default subnet of the ASUS Wireless Router is "192.168.1.1".

> **In Windows NT/2000/XP, you must log in with Administrator privileges so that all functions of the ASUS Wireless Router Manager can function correctly. If you do not log in as a member of the Administrator group, you cannot change IP settings but can still run the Discovery utility if the original IP setting is correct.**

Problem

How do I upgrade the firmware on the ASUS Wireless Router?

Solution

Periodically, a new Flash Code is available for ASUS Wireless Routers on the Web site at **http://www.asus.com**. Update the ASUS Wireless Router s Flash Code using the Firmware Upgrade option on the System Setup menu of the Web manager.