



Wireless Network Broadband Modem/Router

WL-108/109

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*Full Manual*

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## ***Requirements***

- ADSL service, and an ISP account.
- Standard Network cables.
- TCP/IP network protocol installed on each PC.
- Wireless Access Point requires Wireless devices compliant with the IEEE802.11b or IEEE802.11g specifications.

# Introduction

Congratulations on the purchase of your new WL-108/109 Broadband Router. The WL-108/109 is a multi-function device providing the following services:

- **ADSL Modem.**
- **Shared Broadband Internet Access** for all LAN users.
- **Wireless Access Point** for 802.11b and 802.11g Wireless Stations.
- **4-Port Switching Hub** for 10BaseT or 100BaseT connections.

## WL-108/109 Features

The WL-108/109 incorporates many advanced features, carefully designed to provide sophisticated functions while being easy to use.

### Internet Access Features

- **Shared Internet Access.** All users on the LAN or WLAN can access the Internet through the WL-108/WL-109 Wireless ADSL Router, using only a single external IP Address. The local (invalid) IP Addresses are hidden from external sources. This process is called NAT (Network Address Translation).
- **Built-in ADSL Modem.** The WL-108/WL-109 Wireless ADSL Router has a built-in ADSL modem, supporting all common ADSL connections.
- **IPoA, PPPoE, PPPoA, Direct Connection Support.** The WL-108/WL-109 Wireless ADSL Router supports all common connection methods.
- **Auto-detection of Internet Connection Method.** The WL-108/WL-109 Wireless ADSL Router can test your ADSL and Internet connection to determine the connection method used by your ISP.
- **Fixed or Dynamic IP Address.** On the Internet (WAN port) connection, the WL-108/WL-109 Wireless ADSL Router supports both Dynamic IP Address (IP Address is allocated on connection) and Fixed IP Address.

### Advanced Internet Functions

- **Application Level Gateways (ALGs).** Applications which use non-standard connections or port numbers are normally blocked by the Firewall. The ability to define and allow such applications is provided, to enable such applications to be used normally.
- **Virtual Servers.** This feature allows Internet users to access Internet servers on your LAN. The required setup is quick and easy.
- **URL Filter.** Use the URL Filter to block access to undesirable Web sites by LAN users.
- **Logs.** Define what data is recorded in the Logs, and optionally send log data to a Syslog Server. Log data can also be E-mailed to you.
- **Firewall.** As well as the built-in firewall to protect your LAN, you can define Firewall Rules to determine which incoming and outgoing traffic should be permitted.
- **Dynamic DNS Support.** DDNS, when used with the Virtual Servers feature, allows users to connect to Servers on your LAN using a Domain Name, even if you have a dynamic IP address which changes every time you connect.

- **VPN Pass through Support.** PCs with VPN (Virtual Private Networking) software using PPTP, L2TP and IPSec are transparently supported - no configuration is required.

#### Wireless Features

- **Standards Compliant.** The WL-108/109 complies with the IEEE802.11g (DSSS) specifications for Wireless LANs.
- **Supports both 802.11b and 802.11g Wireless Stations.** The 802.11g standard provides for backward compatibility with the 802.11b standard, so both 802.11b and 802.11g Wireless stations can be used simultaneously.
- **Speeds to 54Mbps.** All speeds up to the 802.11g maximum of 54Mbps are supported.
- **WEP support.** Support for WEP (Wired Equivalent Privacy) is included. Key sizes of 64 Bit and 128 Bit are supported.
- **Wireless MAC Access Control.** The Wireless Access Control feature can check the the MAC address (hardware address) of Wireless stations to ensure that only trusted Wireless Stations can access your LAN.
- **Simple Configuration.** If the default settings are unsuitable, they can be changed quickly and easily.

#### LAN Features

- **4-Port Switching Hub.** The WL-108/109 incorporates a 4-port 10/100BaseT switching hub, making it easy to create or extend your LAN.
- **DHCP Server Support.** Dynamic Host Configuration Protocol provides a dynamic IP address to PCs and other devices upon request. The WL-108/109 can act as a **DHCP Server** for devices on your local LAN and WLAN.
- **Multi Segment LAN Support.** LANs containing one or more segments are supported, via the WL-108/109's RIP (Routing Information Protocol) support and built-in static routing table.

#### Configuration & Management

- **Easy Setup.** Use your WEB browser from anywhere on the LAN for configuration.
- **Configuration File Upload/Download.** Save (download) the configuration data from the WL-108/109 to your PC, and restore (upload) a previously-saved configuration file to the WL-108/109.
- **Remote Management.** The WL-108/109 can be managed from any PC on your LAN. And, if the Internet connection exists, it can also (optionally) be configured via the Internet.
- **Network Diagnostics.** You can use the WL-108/WL-109 Wireless ADSL Router to perform a *Ping* or *DNS lookup*.

#### Security Features

- **Password - protected Configuration.** Optional password protection is provided to prevent unauthorized users from modifying the configuration data and settings.
- **Wireless LAN Security.** WEP (Wired Equivalent Privacy) is supported, as well as Wireless access control to prevent unknown wireless stations from accessing your LAN.
- **NAT Protection.** An intrinsic side effect of NAT (Network Address Translation) technology is that by allowing all LAN users to share a

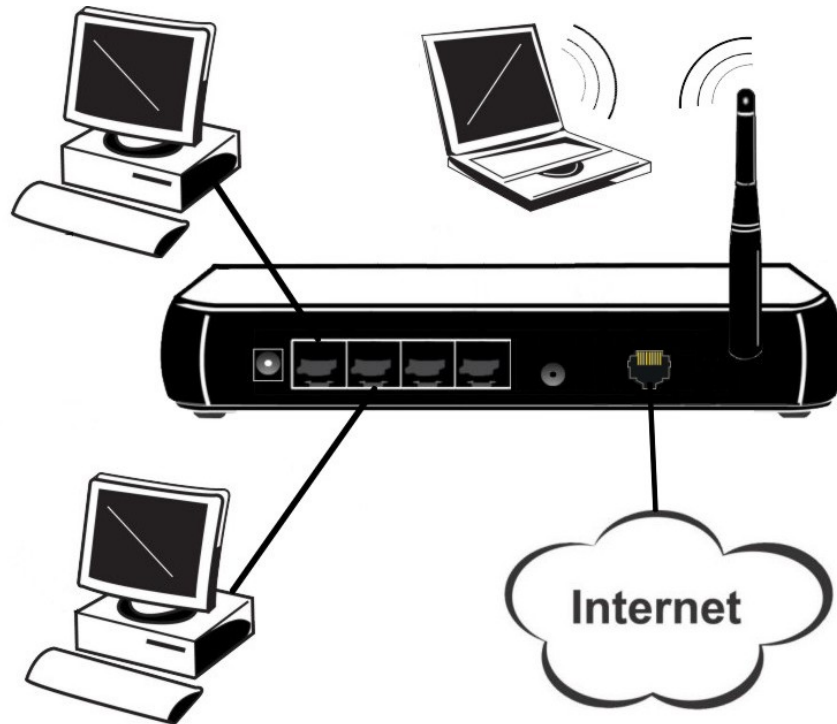
single IP address, the location and even the existence of each PC is hidden. From the external viewpoint, there is no network, only a single device - the WL-108/109.

- ***Stateful Inspection Firewall.*** All incoming data packets are monitored and all incoming server requests are filtered, thus protecting your network from malicious attacks from external sources.
- ***Protection against DoS attacks.*** DoS (Denial of Service) attacks can flood your Internet connection with invalid packets and connection requests, using so much bandwidth and so many resources that Internet access becomes unavailable. The WL-108/109 incorporates protection against DoS attacks.

# Setting up the Modem/router

## Physical installation

1. Ensure the Wireless ADSL Router is powered OFF.



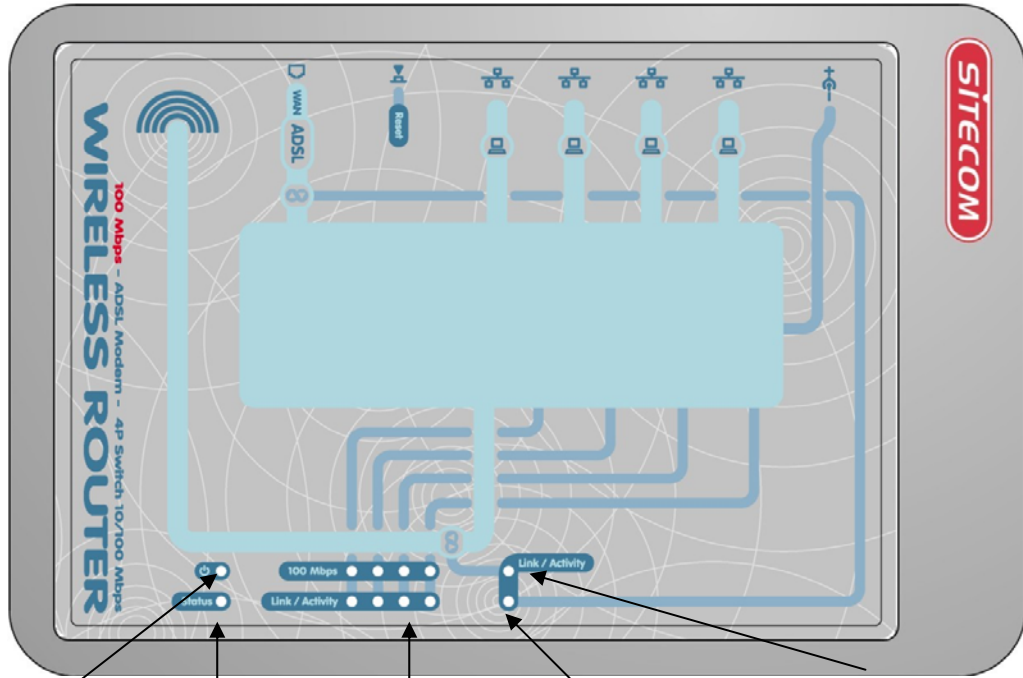
### Installation - WL-108

2. Connect the LAN cables: For the WL-108, use standard LAN cables to connect the PCs to the LAN ports (hub) on the broadband modem/router. If necessary connect the "Uplink" port to a standard port on another hub. You must use a standard LAN cable for this.
 

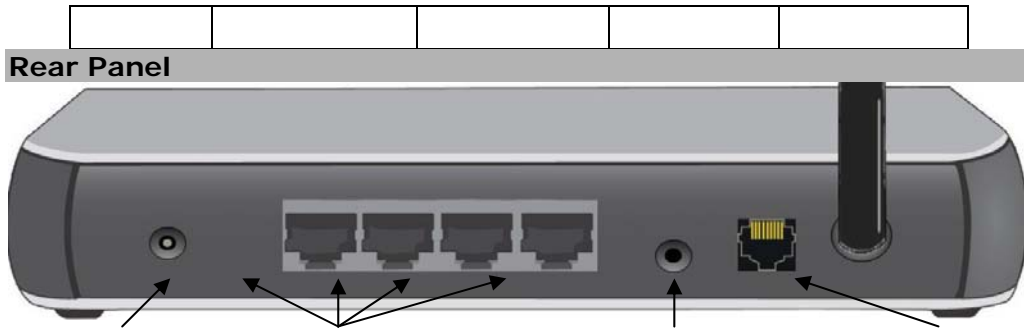
**Note:** If you use the "Uplink" port, then port 4 CANNOT be used.
3. Connect the supplied ADSL cable from the WAN port on the Wireless ADSL Router (the RJ11 connector) to the ADSL terminator provided by your phone company.
4. Your wireless PC's need some configuration which is explained later on in this manual.
5. Connect the power supply adapter to the broadband modem/router. Use only the adapter supplied with the router.
6. Check the LEDs
  - The *Power* LED should be ON.
  - The *Status* LED should flash, then turn Off. If it stays on, there is a hardware error.
  - For each LAN (PC) connection, the LAN *Link/Act* LED should be ON (provided the PC is also ON.)
  - The *WAN* LED should be ON.

- The *WLAN* LED should be ON

**Top LEDs**



Power	Status (Red)	LAN	WAN	WLAN LED (Link/Activity)
<p><b>On</b> - Power on.</p> <p><b>Off</b> - No Power.</p>	<p><b>On</b> - Error condition.</p> <p><b>Off</b> - Normal operation.</p> <p><b>Blinking</b> - This LED blinks during start up.</p>	<p><b>Link/Act</b></p> <p><b>On</b> - Corresponding LAN (hub) port is active.</p> <p><b>Off</b> - No active connection on the corresponding LAN (hub) port.</p> <p><b>Flashing</b> - Data is being transmitted or received via the corresponding LAN (hub) port.</p> <p><b>100</b></p> <p><b>On</b> - Corresponding LAN (hub) port is using 100BaseT.</p> <p><b>Off</b> - Corresponding LAN (hub) port connection is using 10BaseT, or no active connection.</p>	<p><b>On</b> - Connection to the modem attached to the WAN (Internet) port is established.</p> <p><b>Flashing</b> - Data is being transmitted or received via the WAN port. For each port, there are 2</p>	<p><b>On</b> - Wireless connection is available, but Idle (no traffic).</p> <p><b>Off</b> - Error - No Wireless connection available.</p> <p><b>Flashing</b> - Data is being transmitted or received via the Wireless access point. This includes "network traffic" as well as user data. LEDs</p>



Power port	10/100BaseT LAN connections	Reset Button	WAN port (10/100BaseT)
<p>Connect the supplied power adapter here.</p>	<p>Use standard LAN cables (RJ45 connectors) to connect your PCs to these ports.</p> <p><b>Note:</b></p> <p>Any LAN port on the WL-108/109 will automatically function as an "Uplink" port when required. Just connect any port to a normal port on the other hub, using a standard LAN cable.</p>	<p>This button has two (2) functions:</p> <p><b>Reboot.</b> When pressed and released, the WL-108/109 will reboot (restart).</p> <p><b>Diagnostic print-out.</b> If held down for 3 seconds, a diagnostic print-out will be sent to the attached printer. Ensure the printer is ready before doing this.</p> <p><b>Clear All Data.</b> This button can also be used to clear ALL data and restore ALL settings to the factory default values.</p> <p><b>To Clear All Data and restore the factory default values:</b></p> <p>Power Off.</p> <p>Hold the Reset Button down while you Power On.</p> <p>Keep holding the Reset Button for a few seconds, until the RED Status LED on the front panel has flashed TWICE.</p> <p>Release the Reset Button. The WL-108/109 is now using the factory default values.</p>	<p>Connect this port to your ADSL line.</p>

# PC Setup

## Set up TCP/IP

If you are using a Fixed (specified) IP address, the following changes are required:

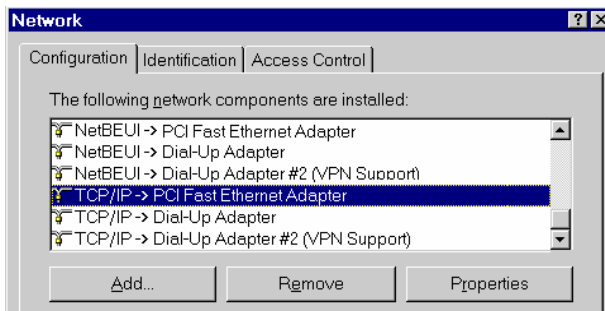
- The *Gateway* must be set to the IP address of the WL-108/109
- The *DNS* should be set to the address provided by your ISP.

## Using DHCP

To use DHCP, select the radio button *Obtain an IP Address automatically*. This is the default Windows setting. **Using this is recommended.** By default, the WL-108/109 will act as a DHCP Server.

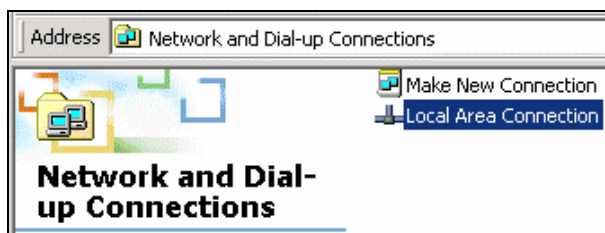
## Windows 98/ME

Right click the *Network Neighbourhood* icon on the desktop and click *Properties*. The following window will be displayed:

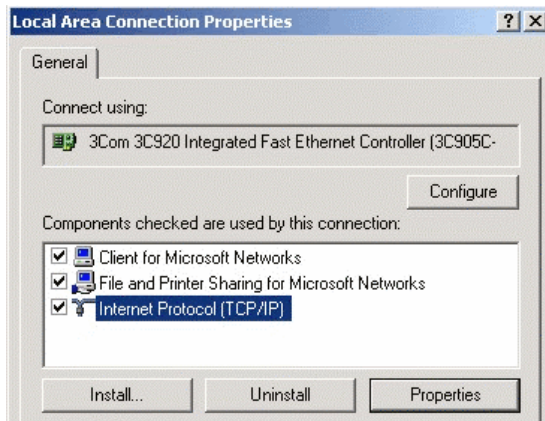


## Windows 2000/XP

Right click the *My Network Places* icon on the desktop and click *Properties*. The following window will be displayed:



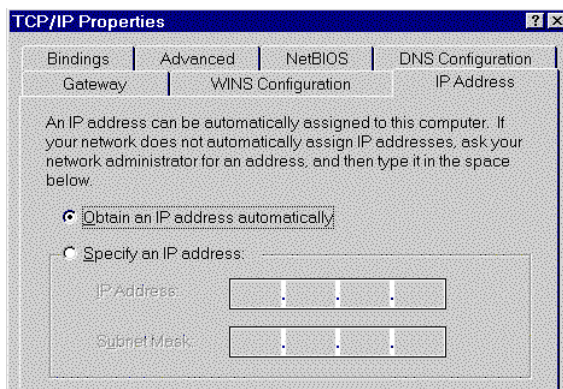
Right click the *Local Area Connection* of the correct network card, and then choose *Properties*.



If the list that appears on screen does not include a line, such as the one that has been selected above ("TCP/IP -> network card"), then follow the steps indicated below for adding this line:

- Click on the button "Add"
- Double-click on "Protocol"
- Select "Microsoft" and thereafter "TCP/IP"
- Click on "OK"
- Wait a few seconds, so that TCP/IP can be added. Thereafter, click on "OK" to leave the network properties screen. Restart your PC.

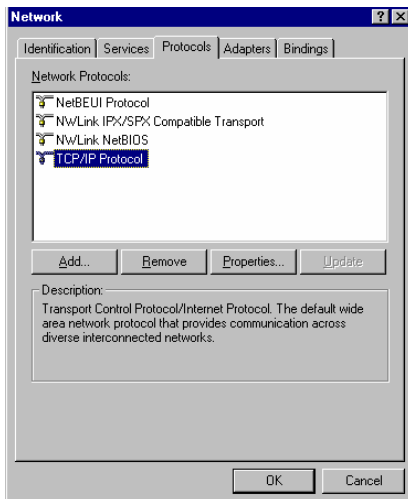
Select the line "TCP/IP -> Network card" as shown above. Click on the button *Properties* to obtain a window similar to the following:



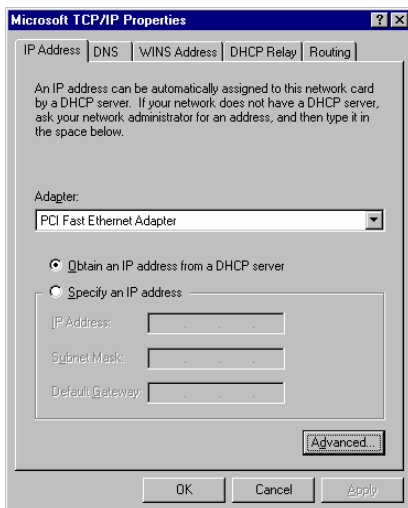
Check whether the setting "**Obtain an IP address automatically**" has been selected, as is illustrated above. The DHCP server in the broadband router will now assign an IP address to the PC.

## Windows NT

Select *Control Panel - Network*, and, on the *Protocols* tab, select the TCP/IP protocol, as shown below.



Click the *Properties* button to see a screen like the one below.



Select the network card for your LAN.

Select the appropriate radio button - *Obtain an IP address from a DHCP Server*

**Restart your PC**, even if you have not made any changes.

### Macintosh Clients

From your Macintosh, you can access the Internet via the WL-108/109. The procedure is as follows.

1. Open the TCP/IP Control Panel.
2. Select *Ethernet* from the *Connect via* pop-up menu.
3. Select *Using DHCP Server* from the *Configure* pop-up menu. The DHCP Client ID field can be left blank.
4. Close the TCP/IP panel, saving your settings.

#### Note:

If using manually assigned IP addresses instead of DHCP, the required changes are:

- Set the *Router Address* field to the WL-108/109's IP Address.
- Ensure your DNS settings are correct.

### Linux Clients

To access the Internet via the WL-108/109, it is only necessary to set the WL-108/109 as the "Gateway".

**Ensure you are logged in as "root" before attempting any changes.**

#### Fixed IP Address

By default, most Unix installations use a fixed IP Address. If you wish to continue using a fixed IP Address, make the following changes to your configuration.

- Set your "Default Gateway" to the IP Address of the WL-108/109.
- Ensure your DNS (Name server) settings are correct.

#### To act as a DHCP Client (recommended)

The procedure below may vary according to your version of Linux and X - windows shell.

1. Start your X Windows client.
2. Select *Control Panel - Network*
3. Select the "Interface" entry for your Network card. Normally, this will be called "eth0".
4. Click the *Edit* button, set the "protocol" to "DHCP", and save this data.
5. To apply your changes
  - Use the "Deactivate" and "Activate" buttons, if available.
  - OR, restart your system.

### Wireless Adapter

If your network adapter is a wireless adapter, besides above TCP/IP settings you also have to set the ESSID to 'Sitecom' and the mode to 'Infrastructure' in order to make a connection with the Wireless Broadband Modem/router

## Internet access

### Windows 98/ME/2000

- In the Taskbar, click on the Start button and select Settings - Control Panel - Internet options.
- Select the tab page *Connections* and click on the button *Settings*.
- Select "I want to configure my Internet connection manually" or "I want to make a connection via a LAN network" and click on "Next >".
- Select "I want to connect via a LAN network" and click on "Next >".
- Check carefully that all of the checkboxes in the screen *Internet configuration for a LAN* have **not been checked**.
- Continue with the steps in the wizard, until the task is completed.
- The configuration is now completed.

### Windows XP

- In the Taskbar, click on the Start button and select - Settings – Control Panel - Internet options.
- Select the tab *Connections* and click the *Setup...* button.
- When the New Connection Wizard starts, click on *Next*.
- Select *Connect to internet* and click on *Next*.
- Select *Set up my connection manually* and click on *Next*.
- Select *Connect using a broadband connection that is always on* and click on *Next*.
- Click on *Finish* to close the Wizard.
- In the Taskbar, click on the Start button and select - Settings – Control Panel - Internet options.
- Select the *Connections* tab and click on the *LAN Settings* button.
- Check carefully that **none** of the boxes in the *Local Area Network (LAN) Settings* window are checked.
- The configuration is now completed.

### Accessing AOL

To access AOL (America On Line) through the WL-108/109, the *AOL for Windows* software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is as follows:

- Start the *AOL for Windows* communication software. Ensure that it is Version 2.5, 3.0 or later. This procedure will not work with earlier versions.
- Click the *Setup* button.
- Select *Create Location*, and change the location name from "New Locality" to "WL-108/109".
- Click *Edit Location*. Select *TCP/IP* for the *Network* field. (Leave the *Phone Number* blank.)
- Click *Save*, then *OK*.  
Configuration is now complete.
- Before clicking "Sign On", always ensure that you are using the "WL-108/109" location.

## Manual configuration – Internet access

1. Make **TCP/IP** settings on your PC, as described in the foregoing section.

**Do not forget to restart your PC after you have finished.**

2. Using UPnP

If your Windows system supports UPnP, an icon for the WL-108/109 will appear in the system tray, notifying you that a new network device has been found, and offering to create a new desktop shortcut to the newly-discovered device.

- Unless you intend to change the IP Address of the WL-108/109, you can accept the desktop shortcut.
- Whether you accept the desktop shortcut or not, you can always find UPnP devices in *My Network Places*.

Double click the icon for the WL-108/109 (either on the Desktop, or in *My Network Places*) to start the configuration. Proceed with step 4.

3. Start your web browser. In the *Address* field, enter the following:  
192.168.0.1

### If you can't connect

If the WL-108/109 does not respond, check the following:

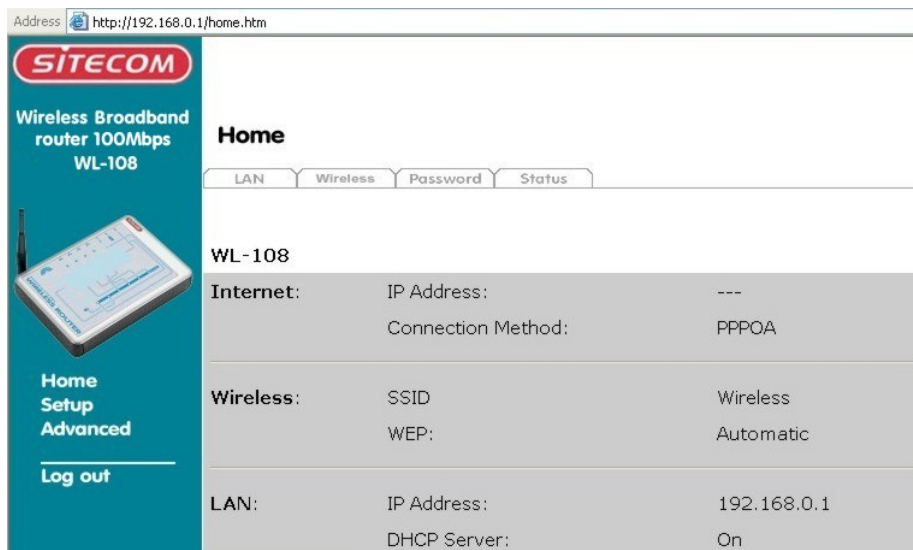
- The WL-108/109 is properly installed, LAN connection is OK, and it is powered ON. You can test the connection by using the "Ping" command:
- Open the MS-DOS window or command prompt window.
- Enter the command:  
ping 192.168.0.1  
If no response is received, either the connection is not working, or your PC's IP address is not compatible with the WL-108/109's IP Address. (See next item.)
- If your PC is using a fixed IP Address, its IP Address must be within the range 192.168.0.2 to 192.168.0.254 to be compatible with the WL-108/109's default IP Address of 192.168.0.1. Also, the *Network Mask* must be set to 255.255.255.0. See *Chapter 4 - PC Configuration* for details on checking your PC's TCP/IP settings.
- Ensure that your PC and the WL-108/109 are on the same network segment. (If you don't have a router, this must be the case.)

- Start your web browser. In the *Address* field, enter the following:  
192.168.0.1
- Fill in the username and password in the pop-up window

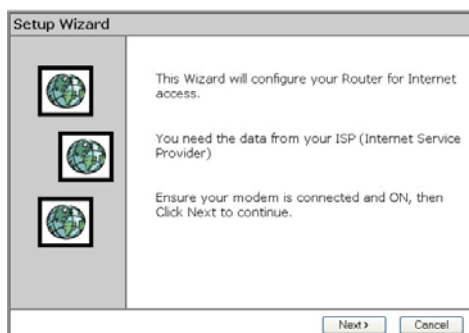
User name: admin  
Password: password



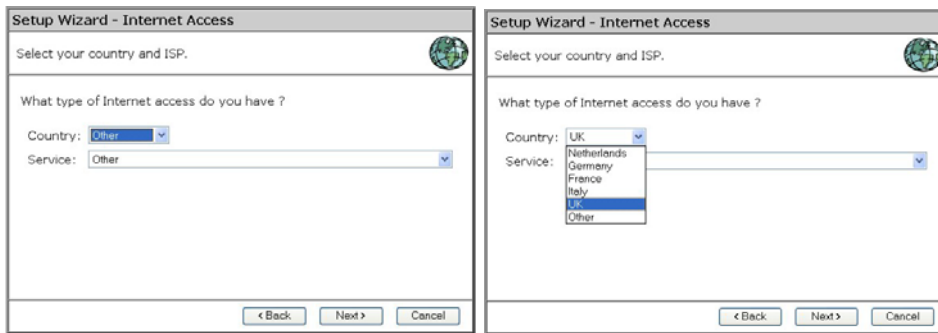
- The start up window will now be displayed. Click on **Setup**.



- The **Set up wizard** will now be displayed; check that the modem is connected and click on **Next**.



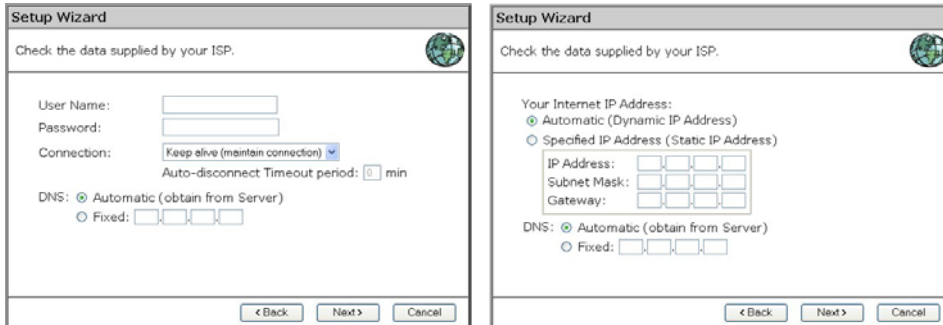
- Select your country from the **Country** list. If your Country isn't listed, please see the next Chapter "**Your Country/ISP is not listed**"



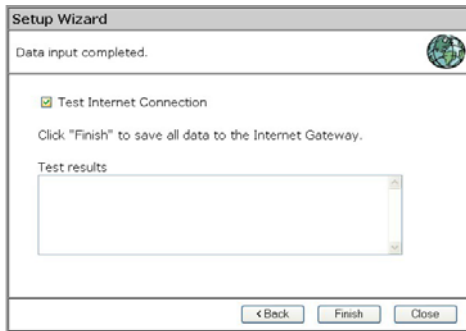
- From **Service**, select your internet provider. Click **Next**.



- Depending on the chosen provider, you may need to enter your user name and password or select dynamic or fixed WAN IP connection in the following window. Then click on **Next**.



- Click **finish** to complete the configuration. Click on **Close**. If **Test Internet Connection** is ticked, the router will test the connection after you have clicked on finish. Wait until this test has been completed before you click on close. The configuration is now completed.

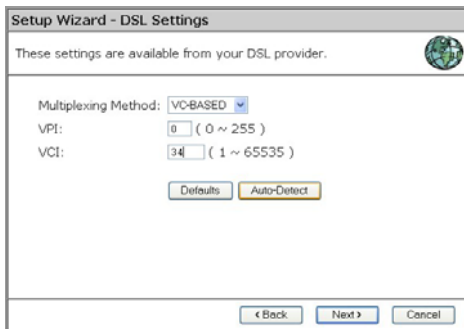


**Your country/ISP is not listed**

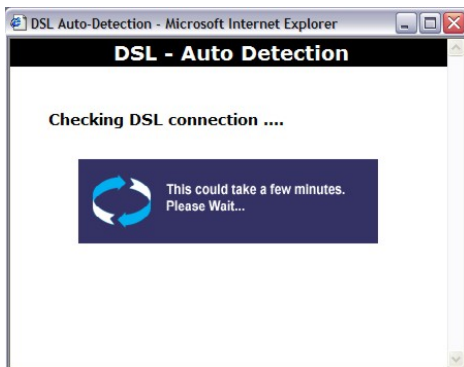
1. Select Other for Country and Services and then click on **Next**.



2. If you know the VPI/VCI settings for your ISP you can enter them or click **Auto-Detect**.



3. The modem router will try to determined the correct settings automatically. When finished click **OK** in the pop-up screen

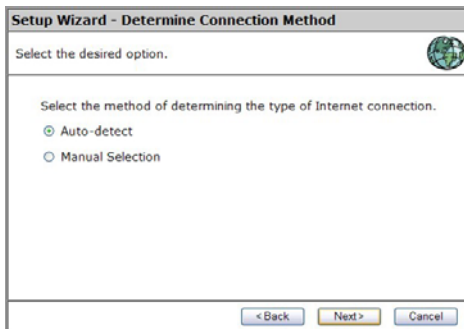




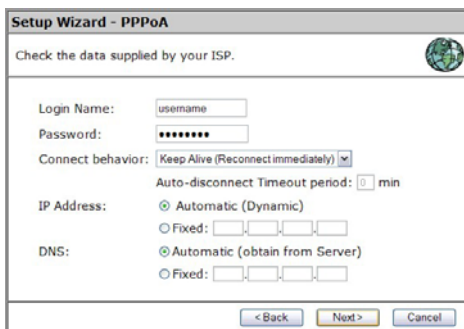
4. Click **Next**



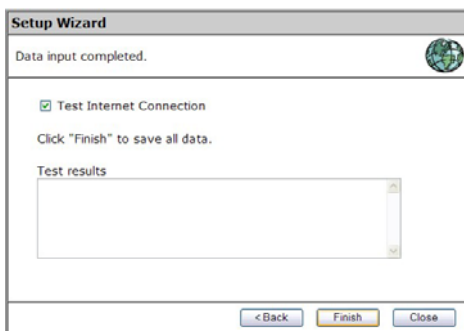
5. Choose manual selection if you know your connection method (PPPoA, PPPoE) or choose Auto-Detect. Click **Next**



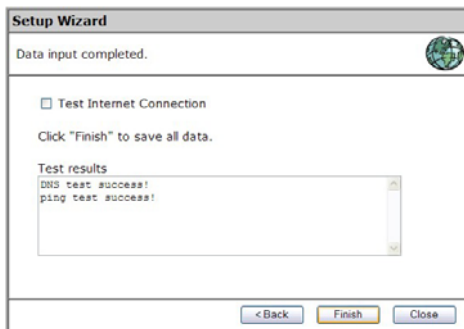
6. If necessary, fill in username and password. Choose the connection behavior. Select manual if you don't have a flatrate internet connection! The IP address and DNS should be set to automatic in most cases. Only choose Fixed if you have received specific instructions from your ISP, click **Next**



7. Click **finish** to complete the configuration. Click on **Close**. If **Test Internet Connection** is ticked, the router will test the connection after you have clicked on finish. Wait until this test has been completed before you click on close. The configuration is now completed.



8. Check the testresults to see if the internet connection is succesfull.



## Home Screen

After finishing the Setup Wizard, you will see the *Home* screen. When you connect in future, you will see this screen when you connect. An example screen is shown below.

WL-108		
Internet:	IP Address:	---
	Connection Method:	PPPOA
Wireless:	SSID	Wireless
	WEP:	Automatic
LAN:	IP Address:	192.168.0.1
	DHCP Server:	On

### Navigation & Data Input

- Use the menu bar on the left of the screen, and the "Back" button on your Browser, for navigation.
- Changing to another screen without clicking "Save" does NOT save any changes you may have made. You must "Save" before changing screens or your data will be ignored.



On each screen, clicking the "Help" button will display help for that screen.

From any help screen, you can access the list of all help files (help index).

## LAN Screen

Click *LAN* tab In the HOME menu to reach the **LAN** screen An example screen is shown below.

The screenshot shows a web interface with tabs for LAN, Wireless, Password, and Status. The LAN tab is selected. Under the heading 'TCP/IP', there are input fields for IP Address (192.168.0.1), Subnet Mask (255.255.255.0), a checked checkbox for 'DHCP Server', Start IP Address (192.168.0.2), and Finish IP Address (192.168.0.254). At the bottom right are buttons for 'Save', 'Cancel', and 'Help'.

### Data - LAN Screen

TCP/IP	
<b>IP Address</b>	IP address for the WL-108/109, as seen from the local LAN. Use the default value unless the address is already in use or your LAN is using a different IP address range. In the latter case, enter an unused IP Address from within the range used by your LAN.
<b>Subnet Mask</b>	The default value 255.255.255.0 is standard for small (class "C") networks. For other networks, use the Subnet Mask for the LAN segment to which the WL-108/109 is attached (the same value as the PCs on that LAN segment).
<b>DHCP Server</b>	<ul style="list-style-type: none"> <li>• If Enabled, the WL-108/109 will allocate IP Addresses to PCs (DHCP clients) on your LAN when they start up. The default (and recommended) value is Enabled.</li> <li>• If you are already using a DHCP Server, this setting must be Disabled, and the existing DHCP server must be re-configured to treat the WL-108/109 as the default Gateway. See the following section for further details.</li> <li>• The <b>Start IP Address</b> and <b>Finish IP Address</b> fields set the values used by the DHCP server when allocating IP Addresses to DHCP clients. This range also determines the number of DHCP clients supported.</li> </ul> <p>See the following section for further details on using DHCP.</p>
Buttons	
<b>Save</b>	Save the data on screen.

**Cancel**

The "Cancel" button will discard any data you have entered and reload the file from the WL-108/109.

**DHCP****What DHCP Does**

A DHCP (Dynamic Host Configuration Protocol) **Server** allocates a valid IP address to a DHCP **Client** (PC or device) upon request.

- The client request is made when the client device starts up (boots).
- The DHCP Server provides the *Gateway* and *DNS* addresses to the client, as well as allocating an IP Address.
- The WL-108/109 can act as a **DHCP server**.
- Windows 95/98/ME and other non-Server versions of Windows will act as a DHCP **client**. This is the default Windows setting for the TCP/IP network protocol. However, Windows uses the term *Obtain an IP Address automatically* instead of "DHCP Client".
- You must NOT have two (2) or more DHCP Servers on the same LAN segment. (If your LAN does not have other Routers, this means there must only be one (1) DHCP Server on your LAN.)

**Using the WL-108/109's DHCP Server**

This is the default setting. The DHCP Server settings are on the **LAN** screen. On this screen, you can:

- Enable or Disable the WL-108/109's *DHCP Server* function.
- Set the range of IP Addresses allocated to PCs by the DHCP Server function.

**Note!**

You can assign Fixed IP Addresses to some devices while using DHCP, provided that the Fixed IP Addresses are NOT within the range used by the DHCP Server.

**Using another DHCP Server**

You can only use one (1) DHCP Server per LAN segment. If you wish to use another DHCP Server, rather than the WL-108/109's, the following procedure is required.

1. Disable the DHCP Server feature in the WL-108/109. This setting is on the LAN screen.
2. Configure the DHCP Server to provide the WL-108/109's IP Address as the *Default Gateway*.

## Wireless screen

LAN	<b>Wireless</b>	Password	Status
<b>Identification</b>			
Regulatory Domain:	Europe		
Station Name:	WL-108		
SSID (Service Set Identifier)	<input type="text" value="Wireless"/>		
<b>Options</b>			
<input type="checkbox"/> Broadcast SSID			
Mode:	<input type="text" value="802.11g &amp; 802.11b"/>		
Channel No:	<input type="text" value="03"/>		
WEP Encryption:	Disabled	<input type="button" value="Configure WEP"/>	
<b>Access Point</b>			
<input checked="" type="checkbox"/> Enable Wireless Access Point			
Allow access by:			
<input checked="" type="radio"/> ALL Wireless stations			
<input type="radio"/> Trusted Wireless stations only	<input type="button" value="Set Stations"/>		
		<input type="button" value="Save"/>	<input type="button" value="Cancel"/>
		<input type="button" value="Help"/>	

### Data - Wireless Screen

Identification	
<b>Regulatory Domain</b>	It is illegal to use this device in any location outside of the regulatory domain.
<b>Station name</b>	This is the same as the "Device Name" for the Wireless Router. On your PC, some Wireless status screens may display this name as the name of the Access Point in use.
<b>SSID (ESSID)</b>	<ul style="list-style-type: none"> <li>If using an ESS (Extended Service Set, with multiple access points) this ID is called an ESSID (Extended Service Set Identifier).</li> <li>To communicate, all Wireless stations should use the same SSID/ESSID.</li> </ul>
Options	
<b>Mode</b>	Select the desired option. <ul style="list-style-type: none"> <li>g &amp; b - This is the default, and should normally be used.</li> <li>g only - If selected, this ensures that "g" mode stations will connect at high speed, but "b" mode stations will be unable to connect at all.</li> <li>b only - If selected, "g" mode is unavailable. "g" mode stations will only be able to connect if they are fully backward-compatible with "b" mode.</li> </ul>
<b>Channel No.</b>	<ul style="list-style-type: none"> <li>Select the Channel you wish to use on your Wireless LAN.</li> <li>If you experience interference (shown by lost connections and/or slow data transfers) you may need to experiment with different channels to see which is the best.</li> <li>If using multiple Access Points, adjacent Access Points should use different Channels to reduce interference.</li> </ul>
<b>Enable ESSID Broadcast</b>	When enabled the Wireless Modem/router can be found by any wireless adapter via the 'site survey' option. When unchecked, the access point is hidden. This is an extra security feature.

<b>WEP data encryption</b>	<ul style="list-style-type: none"> <li>WEP (Wired Equivalent Privacy) status will display "Enabled" or "Disabled", depending on whether WEP is being used. If used, data is Encrypted before being transmitted, making communication more secure.</li> <li>Click the "Configure WEP" button to access the WEP sub-screen, and view or change the WEP settings.</li> </ul>
<b>Access Point</b>	
<b>Allow access by ...</b>	<ul style="list-style-type: none"> <li><b>All Wireless Stations</b> - All wireless stations can use the access point to access your LAN.</li> <li><b>Trusted Wireless stations only</b> - Only selected wireless stations access your LAN. To select the required wireless stations, click the "Select Stations" button.</li> </ul>
<b>Buttons</b>	
<b>Configure WEP</b>	Click this button to view the WEP sub-screen. See the following section for more details.
<b>Set Stations</b>	Click this button to select the required PCs.
<b>Save</b>	Save the data on screen.
<b>Cancel</b>	The "Cancel" button will discard any data you have entered since the last "Save" operation.

**WEP Screen**

This screen is accessed by clicking the "Configure WEP" button on the *Wireless* screen.

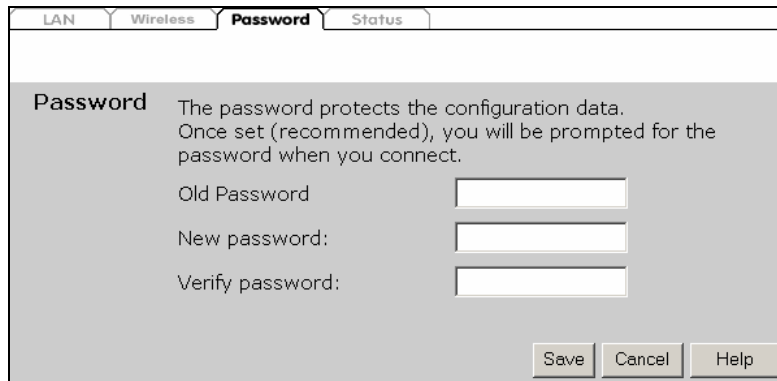


## Data - WEP Screen

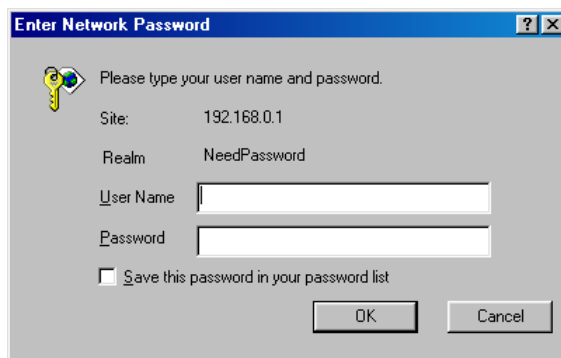
WEP Data Encryption	
<b>WEP Data Encryption</b>	<p>Select the option to match other Wireless Stations:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b> - data is NOT encrypted before being transmitted.</li> <li>• <b>64 Bit</b> - data is encrypted, using the default key, before being transmitted. You must enter at least the default key. For 64 Bit Encryption, the key size is 5 chars (ASCII) or 10 chars in HEX (0~9 and A~F).</li> <li>• <b>128 Bit</b> - data is encrypted, using the default key, before being transmitted. You must enter at least the default key. For 128 Bit Encryption, the key size is 13 chars (ASCII) or 26 chars in HEX (0~9 and A~F).</li> </ul>
<b>Authentication Type</b>	<p>Normally, this should be left at the default value of "Automatic". If changed to "Open System" or "Shared Key", ensure that your Wireless Stations use the same setting.</p>
<b>WEP Keys</b>	<ul style="list-style-type: none"> <li>• <b>Key Input</b> - Select "Hex" or "ASCII" depending on your input method. (All keys are converted to Hex, ASCII input is only for convenience.)</li> <li>• <b>Default Key</b> - select the key you wish to be the default. Transmitted data is ALWAYS encrypted using the Default Key; the other Keys are for decryption only.</li> <li>• <b>Key Value</b> - Enter the key value you wish to use. Other stations must have the same key.</li> </ul>
<b>Passphrase</b>	<p>If desired, you can generate a key from a phrase, instead of entering the key value directly. Enter the desired phrase, and click the "Generate Keys" button.</p>

## Password Screen

The password screen allows you to assign a password to the WL-108/109.



Once you have assigned a password to the WL-108/109 (on the *Password* screen above) you will be prompted for the password when you connect, as shown below. (If no password has been set, this dialog will not appear.)



- Leave the "User Name" blank.
- Enter the password for the WL-108/109, as set on the *Password* screen above.

# *Operation and Status*

## **Operation**

**Once both the WL-108/109 and the PCs are configured, operation is automatic.**

However, there are some situations where additional Internet configuration may be required:

- If using Internet-based ***Communication Applications***, it may be necessary to specify which PC receives an incoming connection. Refer to chapter *Advanced Features* for further details.
- Applications which use non-standard connections or port numbers may be blocked by the WL-108/109's built-in firewall. You can define such applications as ***Firewall Rules*** to allow them to function normally. Refer to chapter *Advanced Features* for further details.
- Some non-standard applications may require use of the ***DMZ*** feature. Refer to chapter *Advanced Features* for further details.

## Status Screen

Use the **Status** tab on the Home menu to view this screen.

[LAN](#)
[Wireless](#)
[Password](#)
[Status](#)

---

<b>Internet</b>	Modem Status	Connecting
	DownStream Connection Speed	0 kbps
	UpStream Connection Speed	0 kbps
	Connection Method:	PPPOA
	Internet Connection:	Not connected
	Internet IP Address:	---
		<a href="#">Connection Details</a>
<b>LAN</b>	IP Address:	192.168.0.1
	Network Mask:	255.255.255.0
	DHCP Server:	On
	MAC Address	00:50:f1:12:00:00
<b>Wireless</b>	Name (SSID)	Wireless
	Region	Europe
	Channel	3
	Wireless AP	enable
	Broadcast Name	disable
<b>System</b>	Device Name:	WL-108
	Firmware Version:	0.01.03

[Attached Devices](#)
[Refresh Screen](#)
[Help](#)

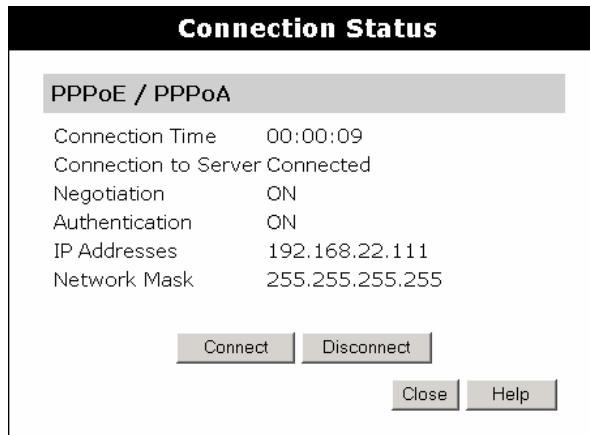
### Data - Status Screen

Internet	
<b>Modem Status</b>	This indicates the status of the ADSL modem component.
<b>DownStream Connection Speed</b>	If connected, displays the speed for the DownStream (download) ADSL Connection.
<b>UpStream Connection Method</b>	If connected, displays the speed for the UpStream (upload) ADSL Connection.
<b>Connection Method</b>	This indicates the current connection method, as set in the <i>Setup Wizard</i> .
<b>Internet Connection</b>	Current connection status: <ul style="list-style-type: none"> <li>• Active</li> <li>• Not connected</li> <li>• Failed</li> </ul> If there is an error, you can click the "Connection Details" button to find out more information.
<b>Internet IP Address</b>	This IP Address is allocated by the ISP (Internet Service Provider).

<b>"Connection Details" Button</b>	Click this button to open a sub-window and view a detailed description of the current connection. Depending on the type of connection, a "log" may also be available.
<b>LAN</b>	
<b>IP Address</b>	The IP Address of the WL-108/109.
<b>Network Mask</b>	The Network Mask (Subnet Mask) for the IP Address above.
<b>DHCP Server</b>	This shows the status of the DHCP Server function - either "Enabled" or "Disabled".  For additional information about the PCs on your LAN, and the IP addresses allocated to them, use the <i>PC Database</i> option on the <i>Advanced</i> menu.
<b>MAC Address</b>	This shows the MAC Address for the WL-108/WL-109 Wireless ADSL Router, as seen on the LAN interface.
<b>Wireless</b>	
<b>Name (SSID)</b>	If using an ESS (Extended Service Set, with multiple access points) this ID is called an ESSID (Extended Service Set Identifier).
<b>Region</b>	The current region, as set on the Wireless screen.
<b>Channel</b>	This shows the Channel currently used, as set on the Wireless screen.
<b>Wireless AP</b>	This indicates whether or not the Wireless Access Point feature is enabled.
<b>Broadcast Name</b>	This indicates whether or not the SSID is Broadcast. This setting is on the Wireless screen.
<b>System</b>	
<b>Device Name</b>	This displays the current name of the WL-108/109.
<b>Firmware Version</b>	The current version of the firmware installed in the WL-108/109.
<b>Buttons</b>	
<b>Connection Details</b>	View the details of the current Internet connection. The sub-screen displayed will depend on the connection method used. See the following sections for details of each sub-screen.
<b>Attached Devices</b>	This will open a sub-window, showing all LAN and Wireless devices currently on the network.
<b>Restart</b>	Clicking this button will restart (reboot) the WL-108/109. All existing connections though the WL-108/109 will be terminated, but will usually re-connect automatically.
<b>Refresh Screen</b>	Update the data displayed on screen.

## Connection Status – PPPoE/PPPoA

If using PPPoE (PPP over Ethernet) or PPPoA (PPP over ATM), a screen like the following example will be displayed when the "Connection Details" button is clicked.



### Data - PPPoE Screen

Connection	
<b>Connection Time</b>	This indicates how long the current connection has been established.
<b>PPPoE Link Status</b>	This indicates whether or not the connection is currently established. <ul style="list-style-type: none"> <li>• If the connection does not exist, the "Connect" button can be used to establish a connection.</li> <li>• If the connection currently exists, the "Disconnect" button can be used to break the connection.</li> </ul>
<b>Negotiation</b>	This indicates the status of the PPPoE Server login.
<b>IP Address</b>	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
<b>Network Mask</b>	The Network Mask associated with the IP Address above.
Buttons	
<b>Connect</b>	If not connected, establish a connection to your ISP.
<b>Disconnect</b>	If connected to your ISP, hang up the connection.
<b>Close</b>	Close this window

## Connection Details - Dynamic IP Address

If your access method is "Direct" (no login), a screen like the following example will be displayed when the "Connection Details" button is clicked.

**Connection Details**

**Dynamic IP Address**

IP Address	192.168.9.51
Subnet Mask	255.255.255.0
Default Gateway	192.168.9.254
DNS Server	168.95.192.1 168.95.1.1
DHCP Server	192.168.9.51
Lease Obtained:	2002-09-08 12:23:16
Lease Expires:	2002-09-08 12:13:12

### Data - Dynamic IP address Screen

Internet	
<b>IP Address</b>	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
<b>Subnet Mask</b>	The Network Mask associated with the IP Address above.
<b>Default Gateway</b>	The IP Address of the remote Gateway or Router associated with the IP Address above.
<b>DNS IP Address</b>	The IP Address of the Domain Name Server which is currently used.
<b>DHCP Client</b>	The IP address of your ISP's DHCP Server.
<b>Lease Obtained / Expires</b>	The "Lease Expires" field indicates when the IP Address allocated by the DHCP Server will expire. The lease is automatically renewed on expiry; use the "Renew" button if you wish to manually renew the lease immediately.
Buttons	
<b>Release</b>	If an IP Address has been allocated to the WL-108/WL-109 Wireless ADSL Router (by the ISP's DHCP Server, clicking the "Release" button will break the connection and release the IP Address.
<b>Renew</b>	If the ISP's DHCP Server has NOT allocated an IP Address for the WL-108/109, clicking the "Renew" button will attempt to re-establish the connection and obtain an IP Address from the ISP's DHCP Server.
<b>Refresh</b>	Update the data shown on screen.
<b>Close</b>	Close this window.

**Connection Details - Fixed IP Address**

If your access method is "Direct" (no login), a screen like the following example will be displayed when the "Connection Details" button is clicked.

<b>Connection Status</b>	
<b>Fixed IP Address</b>	
IP Address	192.168.9.45
Subnet Mask	255.255.255.0
Default Gateway	192.168.9.254
DNS Server	168.95.1.1
<input type="button" value="Close"/> <input type="button" value="Help"/>	

**Data - Dynamic IP address Screen**

<b>Internet</b>	
<b>IP Address</b>	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
<b>Subnet Mask</b>	The Network Mask associated with the IP Address above.
<b>Default Gateway</b>	The IP Address of the remote Gateway or Router associated with the IP Address above.
<b>DNS IP Address</b>	The IP Address of the Domain Name Server which is currently used.

# *Advanced Features*

## Overview

The following advanced features are provided.

- Advanced Internet
  - DMZ
  - URL Filter
- Schedule
- Remote Management
- Virtual Servers
- Dynamic DNS
- Upgrade Firmware
- Config File
- PC Database
- Network Diagnostics
- Firewall Rules
- Firewall Services
- Logs
- E-mail
- Routing

These features are all available from the ***Advanced*** menu. This Chapter provides details of each feature.

## Advanced Internet Screen

This screen provides access to the DMZ and URL Filter features.

<b>Advanced Internet</b>	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

DMZ  Enable DMZ, using  [My PC is not listed](#)

URL Filter  Disable  
 Block Always  
 Block By Schedule

## DMZ

This feature, if enabled, allows one (1) computer on your LAN to be exposed to all users on the Internet.

The DMZ feature allows unrestricted 2-way communication between the "DMZ PC" and other Internet users or Servers.

- This allows almost any application to be used on the "DMZ PC".
- The "DMZ PC" will receive all "Unknown" connections and data sent to the corresponding IP address from the Internet.
- If the DMZ feature is enabled, you must select the PC to be used as the "DMZ PC".



**Note!**

**The "DMZ PC" is effectively outside the Firewall, making it more vulnerable to attacks. For this reason, you should only enable the DMZ feature when required.**

## URL Filter

If you want to limit access to certain sites on the Internet, you can use this feature. The URL filter will check each Web site access. If the address, or part of the address, is included in the block site list, access will be denied.

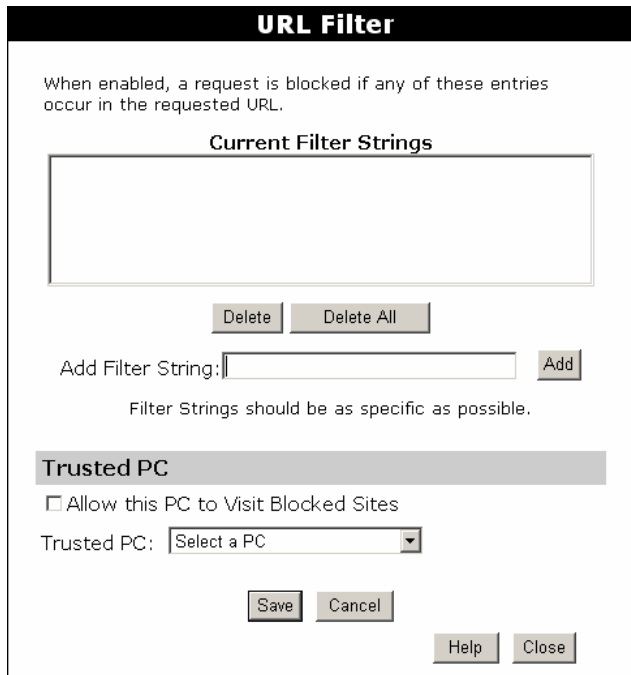
On the *Advanced Internet* screen, select the desired setting:

- **Never** - disable this feature.
- **By Schedule** - block according to the settings on the *Schedule* page.
- **Always** - allow blocking all of the time, independent of the *Schedule* page.

Click the **Configure URL Filter** button to open the URL Filter screen, allowing you to create or modify the filter strings which determine which sites will be blocked.

**URL Filter Screen**

Click the "Configure URL Filter" button on the *Internet* screen to access the *URL Filter* screen. An example screen is shown below.



**Data - URL Filter Screen**

Filter Strings	
<b>Current filterstring</b>	<p>The list contains the current list of items to block.</p> <ul style="list-style-type: none"> <li>To add to the list, use the "Add" option below</li> <li>To delete an entry, select it and click <b>Delete</b> button.</li> <li>To delete all entries, click the <b>Delete All</b> button.</li> </ul>
<b>Add Filter String</b>	<p>To add an entry to the list, enter it here, and click the "Add" button. An entry may be a Domain name (e.g. www.trash.com) or simply a string. (e.g. ads/ ) Any URL which contains ANY entry ANYWHERE in the URL will be blocked.</p>
Trusted PC	
<b>Allow Trusted PC</b>	<p>Enable this to allow one computer to have unrestricted access to the Internet. For this PC, the URL filter will be ignored.</p> <p>If enabled, you must select the PC to be the trusted PC.</p>
<b>Trusted PC</b>	<p>Select the PC to be the Trusted PC.</p>

## Schedule

This schedule can be used for Firewall Rules and the URL filter.

Advanced Internet	<b>Schedule</b>	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

**Schedule**

Every Day

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Time of day: (use 24-hour clock)

All Day

Start Time  Hour  Minute

End Time  Hour  Minute

**Local Time**

Time Zone:

Adjust for Daylight Savings Time

Use this NTP Server  .  .  .

Current Time: 2002-09-08 12:11:38

### Data - Schedule Screen

Schedule	
<b>Sunday, Monday...</b>	Use these checkboxes to select the desired days.
<b>Start Time</b>	Enter the start using a 24 hr clock.
<b>Finish Time</b>	Enter the finish time using a 24 hr clock.
Local Time	
<b>Time Zone</b>	In order to display your local time correctly, you must select your "Time Zone" from the list.
<b>Adjust for Daylight Savings Time</b>	If your region uses Daylight Savings Time, you must manually check "Adjust for Daylight Savings Time" at the beginning of the adjustment period, and uncheck it at the end of the Daylight Savings period.
<b>Use this NTP Server</b>	If you prefer to use a particular NTP server as the primary server, check the checkbox "Use this NTP Server" and enter the Server's IP address in the fields provided..  If this setting is not enabled, the default NTP Servers are used.
<b>Current Time</b>	This displays the current time on the WL-108/WL-109 Wireless ADSL Router.

## Remote Management

If enabled, this feature allows you to manage the WL-108/109 via the Internet.

Advanced Internet	Schedule	<b>Remote management</b>	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

<b>Remote Administration</b>	<input type="checkbox"/> Enable Remote Management Current IP Address: Port Number: <input type="text" value="8080"/>
<b>Access Permission</b>	Allow Remote Access By: <input checked="" type="radio"/> Everyone <input type="radio"/> Only This Computer: <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> <input type="radio"/> IP Address Range : From <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/> To <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>

### Data - Remote Management Screen

Remote Administration	
<b>Enable Remote Management</b>	Enable to allow management via the Internet. If Disabled, this device will ignore management connection attempts from the Internet.
<b>Port Number</b>	Enter a port number between 1024 and 65535 (8080 is recommended). This port number must be specified when you connect (see below).  <b>Note:</b> The default port number for HTTP (Web) connections is port 80, but using port 80 here will prevent the use of a Web "Virtual Server" on your LAN. (See <i>Advanced Internet - Virtual Servers</i> )
<b>Current IP Address</b>	You must use this IP Address to connect (see below).  This IP Address is allocated by your ISP. But if using a Dynamic IP Address, this value can change each time you connect to your ISP. So it is better if your ISP allocates you a Fixed IP Address.
Access Permission	
<b>Allow Remote Access</b>	Select the desired option. <ul style="list-style-type: none"> <li>• <b>Everyone</b> - allow access by everyone on the Internet.</li> <li>• <b>Only This Computer</b> - allow access by only one IP address. Enter the desired IP address.</li> <li>• <b>IP Address Range</b> - allow access from a range of IP addresses on the Internet. Enter a beginning and ending IP address to define the allowed range.</li> </ul> For security, you should restrict access to as few external IP addresses as practical.

**To connect from a remote PC via the Internet**

1. Ensure your Internet connection is established, and start your Web Browser.
2. In the "Address" bar, enter "HTTP://" followed by the Internet IP Address of the WL-108/109. If the port number is not 80, the port number is also required. (After the IP Address, enter ":" followed by the port number.)

e.g.

HTTP://123.123.123.123:8080

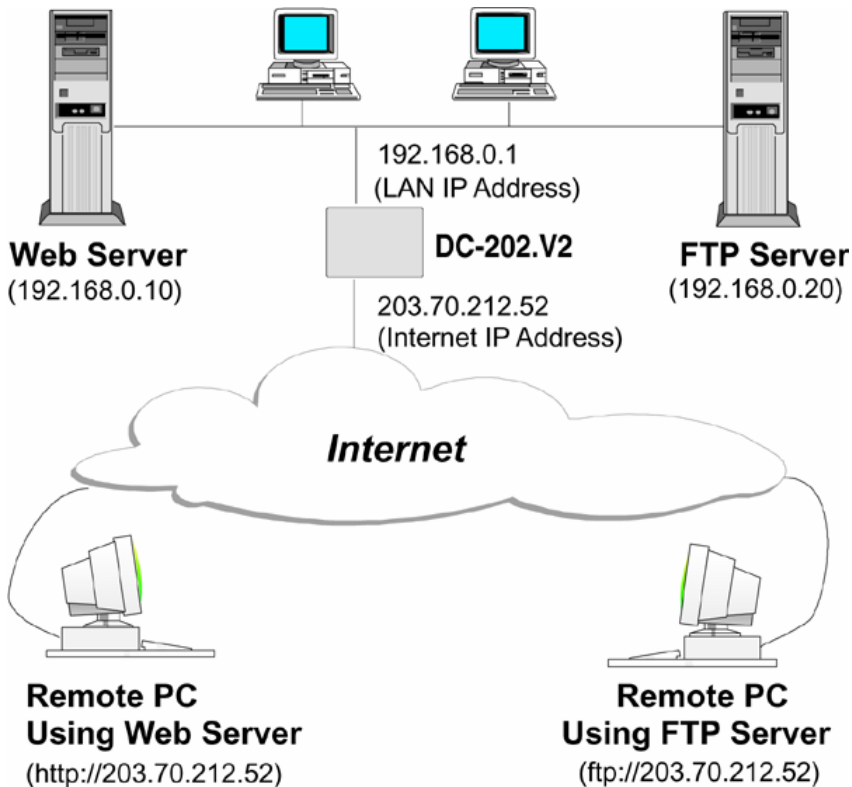
This example assumes the WAN IP Address is 123.123.123.123, and the port number is 8080.

## Virtual Servers

This feature, sometimes called "Port Forwarding", allows you to make Servers on your LAN accessible to Internet users. Normally, Internet users would not be able to access a server on your LAN because:

- Your Server does not have a valid external IP Address.
- Attempts to connect to devices on your LAN are blocked by the firewall in this device.

The "Virtual Server" feature solves these problems and allows Internet users to connect to your servers, as illustrated below.



### IP Address seen by Internet Users

Note that, in this illustration, both Internet users are connecting to the same IP Address, but using different protocols.

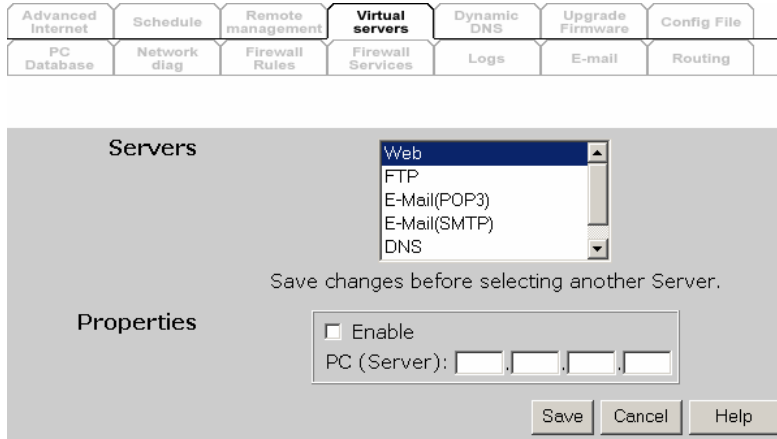
**To Internet users, all virtual Servers on your LAN have the same IP Address. This IP Address is allocated by your ISP.**

This address should be static, rather than dynamic, to make it easier for Internet users to connect to your Servers.

However, you can use the *DDNS (Dynamic DNS)* feature to allow users to connect to your Virtual Servers using a URL, instead of an IP Address.

## Virtual Servers Screen

The *Virtual Servers* screen is reached by the *Virtual Servers* link on the *Advanced* screen. An example screen is shown below.



This screen lists a number of pre-defined Servers, and allows you to define your own Servers. Details of the selected Server are shown in the "Properties" area.

## Data - Virtual Servers Screen

Servers	
<b>Servers</b>	This lists a number of pre-defined Servers, plus any Servers you have defined. Details of the selected Server are shown in the "Properties" area.
Properties	
<b>Enable</b>	Use this to Enable or Disable support for this Server, as required. <ul style="list-style-type: none"> <li>• If Enabled, any incoming connections will be forwarded to the selected PC.</li> <li>• If Disabled, any incoming connection attempts will be blocked.</li> </ul>
<b>PC (Server)</b>	Select the PC for this Server. The PC must be running the appropriate Server software.



**Note!**

**For each entry, the PC must be running the appropriate Server software.**

**If the desired Server type is not listed, you can define your own Servers, using the Firewall Rules.**



**Note!**

**From the Internet, ALL Virtual Servers have the IP Address allocated by your ISP.**

### Connecting to the Virtual Servers

Once configured, anyone on the Internet can connect to your Virtual Servers. They must use the Internet IP Address (the IP Address allocated to you by your ISP).

e.g.

http://203.70.212.52

ftp://203.70.212.52

It is more convenient if you are using a Fixed IP Address from your ISP, rather than Dynamic. However, you can use the *Dynamic DNS* feature, described in the following section, to allow users to connect to your Virtual Servers using a URL, rather than an IP Address.

## Dynamic DNS (Domain Name Server)

This free service is very useful when combined with the *Virtual Server* feature. It allows Internet users to connect to your Virtual Servers using a URL, rather than an IP Address.

This also solves the problem of having a dynamic IP address. With a dynamic IP address, your IP address may change whenever you connect, which makes it difficult to connect to you.

### The Service works as follows:

1. You must register for the service at <http://www.dyndns.org> (Registration is free). Your password will be E-mailed to you.
2. After registration, use the "Create New Host" option (at [www.dyndns.org](http://www.dyndns.org)) to request your desired Domain name.
3. Enter your data from [www.dyndns.org](http://www.dyndns.org) in the WL-108/109's DDNS screen.
4. The WL-108/109 will then automatically ensure that your current IP Address is recorded at <http://www.dyndns.org>
5. From the Internet, users will be able to connect to your Virtual Servers (or DMZ PC) using your Domain name, as shown on this screen.

## Dynamic DNS Screen

Select *Advanced* on the main menu, then *Dynamic DNS*, to see a screen like the following:

Advanced Internet	Schedule	Remote management	Virtual servers	<b>Dynamic DNS</b>	Upgrade Firmware	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

**DDNS Service**  Use a Dynamic DNS Service

**DDNS Data**

Service Provider:

Host Name:

User Name:

Password:

DDNS Status:

### Data - Dynamic DNS Screen

DDNS Service	
<b>Use a Dynamic DNS Service</b>	Use this to enable or disable the DDNS feature as required.

<b>DDNS Data</b>	
<b>DDNS Service</b>	Select the desired DDNS Service provider.
<b>Host Name</b>	Enter the domain name allocated to you by the DDNS Service. If you have more than one name, enter the name you wish to use.
<b>User Name</b>	Enter your Username for the DDNS Service.
<b>Password/Key</b>	Enter your current password for the DDNS Service.
<b>Domain Name</b>	Enter the domain name allocated to you by the DDNS Service. If you have more than one name, enter the name you wish to use.
<b>DDNS Status</b>	<ul style="list-style-type: none"> <li>• This message is returned by the DDNS Server</li> <li>• Normally, this message should be "Update successful"</li> <li>• If the message is "No host", this indicates the host name entered was not allocated to you. You need to connect to DDNS Service provider and correct this problem.</li> </ul>

## Upgrade Firmware

The firmware (software) in the WL-108/109 can be upgraded using your Web Browser.

You must first download the upgrade file, then select *Upgrade* on the *Advanced* menu. You will see a screen like the following.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	<b>Upgrade Firmware</b>	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

Locate and Select the Upgrade File from your Hard Disk :

### To perform the Firmware Upgrade:

6. Click the "Browse" button and navigate to the location of the upgrade file.
7. Select the upgrade file. Its name will appear in the *Upgrade File* field.
8. Click the "Start Upgrade" button to commence the firmware upgrade.



**The WL-108/109 is unavailable during the upgrade process, and must restart when the upgrade is completed. Any connections to or through the WL-108/109 will be lost.**

## Config File

This feature allows you to download the current settings from the WL-108/109, and save them to a file on your PC.

You can restore a previously-downloaded configuration file to the WL-108/109, by uploading it to the WL-108/109.

This screen also allows you to set the WL-108/109 back to its factory default configuration. Any existing settings will be deleted.

An example *Config File* screen is shown below.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	<b>Config File</b>
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing
<p><b>Backup Config</b> Save a Copy of Current Settings</p> <p style="text-align: right;"><input type="button" value="Backup"/></p> <p><b>Restore Config</b> Restore Saved Settings from a File</p> <p><input type="text"/> <input type="button" value="Browse..."/></p> <p style="text-align: right;"><input type="button" value="Restore"/></p> <p><b>Default Config</b> Revert to Factory Default Settings</p> <p style="text-align: right;"><input type="button" value="Factory Defaults"/></p> <p style="text-align: right;"><input type="button" value="Help"/></p>						

### Data - Config File Screen

<b>Backup Config</b>	Use this to download a copy of the current configuration, and store the file on your PC. Click <i>Download</i> to start the download.
<b>Restore Config</b>	<p>This allows you to restore a previously-saved configuration file back to the WL-108/109.</p> <p>Click <i>Browse</i> to select the configuration file, then click <i>Restore</i> to upload the configuration file.</p> <p><b>WARNING !</b></p> <p>Uploading a configuration file will destroy (overwrite) ALL of the existing settings.</p>
<b>Default Config</b>	<p>Clicking the <i>Restore Defaults</i> button will reset the WL-108/109 to its factory default settings.</p> <p><b>WARNING !</b></p> <p>This will delete ALL of the existing settings.</p>

## PC Database

The PC Database is used whenever you need to select a PC (e.g. for the "DMZ" PC). It eliminates the need to enter IP addresses. Also, you do not need to use fixed IP addresses on your LAN.

### PC Database Screen

An example *PC Database* screen is shown below.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
<b>PC Database</b>	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

DHCP Clients are automatically added and updated.  
If not listed, try restarting the PC.  
PCs using a Fixed IP address can be added and deleted below.

Known PCs

arian-hsu 192.168.0.2 (LAN) 00:20:ED:29:08:E4 (DHCP)
--

Name:   
 IP Address:

- PCs which are "DHCP Clients" are automatically added to the database, and updated as required.
- By default, non-Server versions of Windows act as "DHCP Clients"; this setting is called "Obtain an IP Address automatically".
- The WL-108/109 uses the "Hardware Address" to identify each PC, not the name or IP address. The "Hardware Address" can only change if you change the PC's network card or adapter.
- This system means you do NOT need to use Fixed (static) IP addresses on your LAN. However, you can add PCs using Fixed (static) IP Addresses to the PC database if required.

## Data - PC Database Screen

<b>Known PCs</b>	This lists all current entries. Data displayed is <i>name (IP Address) type</i> . The "type" indicates whether the PC is connected to the LAN.
<b>Name</b>	If adding a new PC to the list, enter its name here. It is best if this matches the PC's "hostname".
<b>IP Address</b>	Enter the IP Address of the PC. The PC will be sent a "ping" to determine its hardware address. If the PC is not available (not connected, or not powered On) you will not be able to add it.
<b>Buttons</b>	
<b>Add</b>	This will add the new PC to the list. The PC will be sent a "ping" to determine its hardware address. If the PC is not available (not connected, or not powered On) you will not be able to add it.
<b>Delete</b>	Delete the selected PC from the list. This should be done in 2 situations: <ul style="list-style-type: none"> <li>• The PC has been removed from your LAN.</li> <li>• The entry is incorrect.</li> </ul>
<b>Refresh</b>	Update the data on screen.
<b>Generate Report</b>	Display a read-only list showing full details of all entries in the PC database.
<b>Advanced Administration</b>	View the Advanced version of the PC database screen - <b><i>PC Database (Admin)</i></b> . See below for details.

**PC Database (Admin)**

This screen is displayed if the "Advanced Administration" button on the **PC Database** is clicked. It provides more control than the standard **PC Database** screen.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
<b>PC Database</b>	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	Routing

Any PC may be added, edited or deleted. If adding a PC which is not connected and On, you must provide the MAC (hardware) address

**Known PCs**

arian-hsu 192.168.0.2 (LAN) 00:20:ED:29:08:E4 (DHCP)

**PC Properties**

Name:   
 IP Address:  Automatic (DHCP Client)  
                DHCP Client - reserved IP address: ..  
                Fixed IP address (set on PC): ..  
 MAC Address:  Automatic discovery (PC must be available on LAN)  
                   MAC address is

**Data - PC Database ( Admin) Screen**

<b>Known PCs</b>	This lists all current entries. Data displayed is <i>name (IP Address) type</i> . The "type" indicates whether the PC is connected to the LAN.
<b>PC Properties</b>	
<b>Name</b>	If adding a new PC to the list, enter its name here. It is best if this matches the PC's "hostname".
<b>IP Address</b>	Select the appropriate option: <ul style="list-style-type: none"> <li>• <b>Automatic</b> - The PC is set to be a DHCP client (Windows: "Obtain an IP address automatically"). The WL-108/109 will allocate an IP address to this PC when requested to do so. The IP address could change, but normally won't.</li> <li>• <b>DCHP Client - Reserved IP Address</b> - Select this if the PC is set to be a DCHP client, and you wish to guarantee that the WL-108/109 will always allocate the same IP Address to this PC. Enter the required IP address. Only the last field is required; the other fields must match the WL-108/109's IP address.</li> <li>• <b>Fixed IP Address</b> - Select this if the PC is using a Fixed (Static) IP address. Enter the IP address allocated to the PC. (The PC must be configured to use this IP address.)</li> </ul>

<b>MAC Address</b>	Select the appropriate option <ul style="list-style-type: none"> <li>• <b>Automatic discovery</b> - Select this to have the WL-108/109 contact the PC and find its MAC address. This is only possible if the PC is connected to the LAN and powered On.</li> <li>• <b>MAC is</b> - Enter the MAC address on the PC. The MAC address is also called the "Hardware Address", "Physical Address", or "Network Adapter Address". The WL-108/109 uses this to provide a unique identifier for each PC. Because of this, the MAC address can NOT be left blank.</li> </ul>
--------------------	--

<b>Buttons</b>	
<b>Add as New Entry</b>	Add a new PC to the list, using the data in the "Properties" box. If "Automatic discovery" (for MAC address) is selected, the PC will be sent a "ping" to determine its hardware address. This will fail unless the PC is connected to the LAN, and powered on.
<b>Update Selected PC</b>	Update (modify) the selected PC, using the data in the "Properties" box.
<b>Clear Form</b>	Clear the "Properties" box, ready for entering data for a new PC.
<b>Refresh</b>	Update the data on screen.
<b>Generate Report</b>	Display a read-only list showing full details of all entries in the PC database.
<b>Standard Screen</b>	Click this to view the standard <i>PC Database</i> screen.

### Network Diagnostics

This screen allows you to perform a "Ping" or a DNS lookup. These activities can be useful in solving network problems. An example **Network Diagnostics** screen is shown below.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	<b>Network diag</b>	Firewall Rules	Firewall Services	Logs	E-mail	Routing
<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p><b>Ping</b> IP Address: <input style="width: 100px;" type="text"/></p> <p><b>DNS Lookup</b> Internet Name: <input style="width: 150px;" type="text"/>                      IP address: <input style="width: 100px;" type="text"/> DNS Server: <input style="width: 100px;" type="text"/></p> <p><b>Routing</b> Display the Routing Table</p> </div> <div style="width: 35%; text-align: right;"> <p><input type="button" value="Ping"/></p> <p><input type="button" value="Lookup"/></p> <p><input type="button" value="Display"/></p> <p><input type="button" value="Help"/></p> </div> </div>						

## Data - Network Diagnostics Screen

Ping	
<b>Ping this IP Address</b>	Enter the IP address you wish to ping. The IP address can be on your LAN, or on the Internet. Note that if the address is on the Internet, and no connection currently exists, you could get a "Timeout" error. In that case, wait a few seconds and try again.
<b>Ping Button</b>	After entering the IP address, click this button to start the "Ping" procedure. The results will be displayed in the <i>Ping Results</i> pane.
DNS Lookup	
<b>Internet Name/URL</b>	Enter the Domain name or URL for which you want a DNS (Domain Name Server) lookup. Note that if the address is on the Internet, and no connection currently exists, you could get a "Timeout" error. In that case, wait a few seconds and try again.
<b>Lookup Button</b>	After entering the Domain name/URL, click this button to start the "DNS Lookup" procedure.
Routing	
<b>Display</b>	Click this button to display the internal routing table. This information can be used by Technical Support and other staff who understand Routing Tables.

## Firewall Rules

The **Firewall Rules** screen allows you to define "Firewall Rules" which can allow or prevent certain traffic.

By default:

- All Outgoing traffic is permitted.
- All Incoming traffic is denied.

"Traffic" means incoming connection attempts, not packets.

Because of this default behavior, any **Outgoing** rules will generally **Block** traffic, and **Incoming** rules will generally **Allow** traffic.

### Firewall Rules Screen

An example screen is shown below.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	Network diag	<b>Firewall Rules</b>	Firewall Services	Logs	E-mail	Routing

#### Incoming Rules

#	Enable	Service Name	Action	LAN Server IP address	WAN Users	Log
Default	Yes	Any	BLOCK always	--	Any	Match

#### Outgoing Rules

#	Enable	Service Name	Action	LAN Users	WAN Servers	Log
Default	Yes	Any	ALLOW always	Any	Any	Never

### Data – Firewall Rules

Incoming Rules	
<b>#</b>	For the default rule, this will display "Default". For rules which you create, this will display a radio button which allows you to select the rule.
<b>Enable</b>	Indicates whether or not the rule is currently enabled. For rules you have added, this column will contain a checkbox, allowing you to easily enable or disable the rule. (Click Save after making any changes.)
<b>Service Name</b>	The Service covered by this rule.
<b>Action</b>	The action performed on connections which are covered by this rule.
<b>LAN Server</b>	The PC or Server on your LAN to which traffic covered by this rule will be sent.

<b>WAN Users</b>	The WAN IP address or addresses covered by this rule.
<b>Log</b>	Indicates whether or not connections covered by this rule should be logged.
<b>Buttons</b>	Use the <i>Add</i> button to create a new rule. The other buttons - <i>Edit</i> , <i>Move</i> , or <i>Delete</i> - require that a rule be selected first. Use the radio buttons in the left column to select the desired rule.
<b>Outgoing Rules</b>	
<b>#</b>	For the default rule, this will display "Default". For rules which you create, this will display a radio button which allows you to select the rule.
<b>Enable</b>	Indicates whether or not the rule is currently enabled. For rules you have added, this column will contain a checkbox, allowing you to easily enable or disable the rule. (Click Save after making any changes.)
<b>Service Name</b>	The Service covered by this rule.
<b>Action</b>	The action performed on connections which are covered by this rule.
<b>LAN Users</b>	The LAN PC or PCs covered by this rule.
<b>WAN Servers</b>	The WAN IP address or addresses covered by this rule.
<b>Log</b>	Indicates whether or not connections covered by this rule should be logged.
<b>Buttons</b>	Use the <i>Add</i> button to create a new rule. The other buttons - <i>Edit</i> , <i>Move</i> , or <i>Delete</i> - require that a rule be selected first. Use the radio buttons in the left column to select the desired rule.

**Incoming Rules**

This screen is displayed when the "Add" on "Edit" button for Incoming Rules is clicked.

**Inbound Services**

Service:

Action:

Send to LAN Server:

WAN Users:

Single/Start:  .  .  .

Finish:  .  .  .

Log:

## Data – Incoming Rules Screen

Inbound Services	
<b>Service</b>	Select the desired Service. This determines which packets are covered by this rule. If necessary, you can define a new Service on the "Services" screen, by defining the protocols and port numbers used by the Service.
<b>Action</b>	<p>Select the desired action for packets covered by this rule:</p> <ul style="list-style-type: none"> <li>• ALLOW always</li> <li>• ALLOW by schedule, otherwise Block</li> <li>• BLOCK always</li> <li>• BLOCK by schedule, otherwise Allow</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Any inbound traffic which is not allowed by rules you create will be blocked by the Default rule.</li> <li>• BLOCK rules are only useful if the traffic is already covered by an ALLOW rule. (That is, you wish to block a sub-set of traffic which is currently allowed by another rule.)</li> <li>• To define the Schedule used in these selections, use the "Schedule" screen.</li> </ul>
<b>Send to LAN Server</b>	Select the PC or Server on your LAN which will receive the inbound traffic covered by this rule.
<b>WAN Users</b>	<p>These settings determine which packets are covered by the rule, based on their source (WAN) IP address. Select the desired option:</p> <ul style="list-style-type: none"> <li>• <b>Any</b> - All IP addresses are covered by this rule.</li> <li>• <b>Address range</b> - If this option is selected, you must enter the desired values in the "Single/Start" and "Finish" fields to determine the address range.</li> <li>• <b>Single address</b> - Enter the required address in the "Single/Start" fields.</li> </ul>
<b>Log</b>	<p>This determines whether packets covered by this rule are logged. Select the desired action.</p> <ul style="list-style-type: none"> <li>• <b>Always</b> - always log traffic considered by this rule, whether it matches or not. (This is useful when debugging your rules.)</li> <li>• <b>Never</b> - never log traffic considered by this rule, whether it matches or not.</li> <li>• <b>Match</b> - Log traffic only it matches this rule. (The action is determined by this rule.)</li> <li>• <b>Not Match</b> - Log traffic which is considered by this rule, but does not match (The action is NOT determined by this rule.)</li> </ul>

**Outgoing Rules**

This screen is displayed when the "Add" on "Edit" button for Outgoing Rules is clicked.

**Outbound Services**

Service:

Action:

LAN Users:

PC:

WAN Users:

Single/Start:  .  .  .

Finish:  .  .  .

Log:

**Data - Outbound Rules Screen**

Outbound Services	
<b>Service</b>	Select the desired Service or application to be covered by this rule. If the desired service or application does not appear in the list, you must define it using the Services menu.
<b>Action</b>	Select the desired action for packets covered by this rule: <ul style="list-style-type: none"> <li>BLOCK always</li> <li>BLOCK by schedule, otherwise Allow</li> <li>ALLOW always</li> <li>ALLOW by schedule, otherwise Block</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Any outbound traffic which is not blocked by rules you create will be allowed by the Default rule.</li> <li>ALLOW rules are only useful if the traffic is already covered by a BLOCK rule. (That is, you wish to allow a subset of traffic which is currently blocked by another rule.)</li> <li>To define the Schedule used in these selections, use the "Schedule" screen.</li> </ul>
<b>LAN Users</b>	Select the desired option to determine which PCs are covered by this rule: <ul style="list-style-type: none"> <li><b>Any</b> - All PCs are covered by this rule.</li> <li><b>Single PC</b> - Only the selected PC is covered by this rule. If selected, you must select the PC.</li> </ul> <p><b>PC</b> - If using Single PC above, select the PC or Server on your LAN which will be covered by this rule.</p>
<b>WAN Users</b>	These settings determine which packets are covered by the rule, based on their source (WAN) IP address. Select the desired option: <ul style="list-style-type: none"> <li><b>Any</b> - All IP addresses are covered by this rule.</li> <li><b>Address range</b> - If this option is selected, you must enter the "Start" and "Finish" fields.</li> <li><b>Single address</b> - Enter the required address in the "Single/Start" fields.</li> </ul>

<b>Log</b>	<p>This determines whether packets covered by this rule are logged. Select the desired action.</p> <ul style="list-style-type: none"><li>• <b>Always</b> - always log traffic considered by this rule, whether it matches or not. (This is useful when debugging your rules.)</li><li>• <b>Never</b> - never log traffic considered by this rule, whether it matches or not.</li><li>• <b>Match</b> - Log traffic only it matches this rule. (The action is determined by this rule.)</li><li>• <b>Not Match</b> - Log traffic which is considered by this rule, but does not match (The action is NOT determined by this rule.)</li></ul>
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## Firewall Services

This screen is used to modify the list of *Services* which are available when creating Firewall Rules.

### Data – Firewall Services

Services	
<b>Services List</b>	This lists all defined Services.
<b>Add</b>	Use this to open a sub-screen where you can add a new service.
<b>Edit</b>	To modify a service, select it, and then click this button.
<b>Delete</b>	Pre-defined Services can not be deleted, but you can use this button to delete any services you have defined.

### Add/Edit Service

This screen is displayed when the *Add* or *Edit* button on the **Services** screen is clicked.

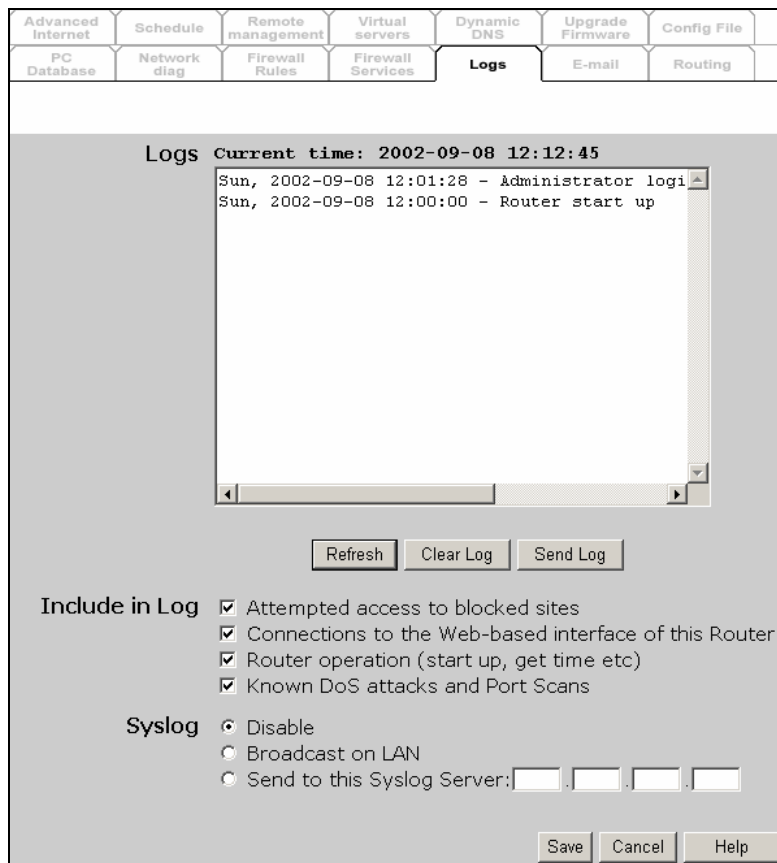
### Data – Add/Edit Service

Services	
<b>Name</b>	If editing, this shows the current name of the Service. If adding a new service, this will be blank, and you should enter a suitable name.
<b>Type</b>	Select the protocol used by the Service.
<b>Start Port</b>	Enter the beginning of the port range used by the Service.
<b>Finish Port</b>	Enter the end of the port range used by the Service.

## Logs

The Logs record various types of activity on the WL-108/109. This data is useful for troubleshooting, but enabling all logs will generate a large amount of data and adversely affect performance.

Since only a limited amount of log data can be stored in the WL-108/109, log data can also be E-mailed to your PC. Use the **E-mail** screen to configure this feature.



### Data - Logs Screen

Logs	
<b>Current Time</b>	The current time on the WL-108/WL-109 Wireless ADSL Router is displayed.
<b>Log Data</b>	Current log data is displayed in this panel.
<b>Buttons</b>	<p>There are three (3) buttons</p> <ul style="list-style-type: none"> <li>• <b>Refresh</b> - Update the log data.</li> <li>• <b>Clear Log</b> - Clear the log, and restart it. This makes new messages easier to read.</li> <li>• <b>Send Log</b> - E-mail the log immediately. This is only functional if the <b>E-mail</b> screen has been configured.</li> </ul>

Logs	
<b>Include (Checkboxes)</b>	<p>Use these checkboxes to determine which events are included in the log. Checking all options will increase the size of the log, so it is good practice to disable any events which are not really required.</p> <ul style="list-style-type: none"> <li>• <b>Attempted access to blocked sites</b> - If checked, attempted Internet accesses which were blocked are logged.</li> <li>• <b>Connections to the Web-based interface of this Router</b> - If checked, this will log connections TO this Router, rather than through this Router to the Internet.</li> <li>• <b>Router operation</b> - If checked, other Router operations (not covered by the selections above) will be logged.</li> <li>• <b>Known DoS attacks and Port Scans</b> - If checked, Denial of Service attacks, as well as port scans, will be logged.</li> </ul>
Syslog	
<b>Disable</b>	Data is not sent to a Syslog Server.
<b>Broadcast on LAN</b>	The Syslog data is broadcast, rather than sent to a specific Syslog server. Use this if your Syslog Server does not have a fixed IP address.
<b>Syslog</b>	If your Syslog server has a fixed IP address, select this option, and enter the IP address of your Syslog server.



## E-mail

This screen allows you to E-mail Logs and Alerts. A sample screen is shown below.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	<b>E-mail</b>	Routing

<b>E-mail Notification</b>	<input type="checkbox"/> Turn E-mail Notification On Send To This E-mail Address: <input type="text"/> Outgoing Mail Server: <input type="text"/>
<b>E-mail Alerts</b>	Send E-Mail alerts immediately <input checked="" type="checkbox"/> If a DoS attack is detected. <input checked="" type="checkbox"/> If a Port Scan is detected. <input checked="" type="checkbox"/> If someone attempts to access a blocked site.
<b>E-mail Logs</b>	Send Logs According to this Schedule Hourly <input type="text"/> Day <input type="text"/> Time <input type="text"/> <input checked="" type="radio"/> a.m. <input type="radio"/> p.m.

### Data – E-mail Screen

E-Mail Notification	
<b>Send Logs &amp; Alerts via E-mail</b>	Check this box to enable this feature. If enabled, the E-mail address information (below) must be provided.
<b>Send to this E-mail address</b>	Enter the E-mail address the Log is to be sent to. The E-mail will also show this address as the Sender's address.
<b>Outgoing Mail Server</b>	Enter the address or IP address of the SMTP (Simple Mail Transport Protocol) Server you use for outgoing E-mail.
E-mail Alerts	
<b>Send E-mail alerts</b>	You can choose to have alerts E-mailed to you, by checking the desired checkboxes. The WL-108/WL-109 Wireless ADSL Router can send an immediate alert when it detects a significant security incident such as <ul style="list-style-type: none"> <li>• A known hacker attack is directed at your IP address</li> <li>• A computer on the Internet scans your IP address for open ports</li> <li>• Someone on your LAN (Local Area Network) tries to visit a blocked site.</li> </ul>

**E-mail Logs**

**Send Logs**

Select the desired option for sending the log by E-mail.

- Never (default) - This feature is disabled; Logs are not sent.
  - When log is full - The time is not fixed. The log will be sent when the log is full, which will depend on the volume of traffic.
  - Hourly, Daily, Weekly... - The log is sent on the interval specified.
  - If "Daily" is selected, the log is sent at the time specified.
  - If the day is specified, the log is sent once per week, on the specified day.
  - Select the time of day you wish the E-mail to be sent.
  - If the log is full before the time specified to send it, it will be sent regardless.
-

## Routing

### Overview

- If you don't have other Routers or Gateways on your LAN, you can ignore the "Routing" page completely.
- If the WL-108/109 is only acting as a Gateway for the local LAN segment, ignore the "Routing" page even if your LAN has other Routers.
- If your LAN has a standard Router (e.g. Cisco) on your LAN, and the WL-108/109 is to act as a Gateway for all LAN segments, enable RIP (Routing Information Protocol) and ignore the Static Routing table.
- If your LAN has other Gateways and Routers, and you wish to control which LAN segments use each Gateway, do NOT enable RIP (Routing Information Protocol). Configure the Static Routing table instead. (You also need to configure the other Routers.)
- If using Windows 2000 Data center Server as a software Router, enable RIP on the WL-108/109, and ensure the following Windows 2000 settings are correct:
  - Open *Routing and Remote Access*
  - In the console tree, select *Routing and Remote Access*, *[server name]*, *IP Routing*, *RIP*
  - In the "Details" pane, right-click the interface you want to configure for RIP version 2, and then click "Properties".
  - On the "General" tab, set *Outgoing packet protocol* to "RIP version 2 broadcast", and *Incoming packet protocol* to "RIP version 1 and 2".

### Routing Screen

The routing table is accessed by the *Routing* link on the *Advanced* menu.

### Using this Screen

Generally, you will use either RIP (Routing Information Protocol) OR the Static Routing Table, as explained above, although it is possible to use both methods simultaneously.

### Static Routing Table

- If RIP is not used, an entry in the routing table is required for each LAN segment on your Network, other than the segment to which this device is attached.
- The other Routers must also be configured. See *Configuring Other Routers on your LAN* later in this chapter for further details and an example.

Advanced Internet	Schedule	Remote management	Virtual servers	Dynamic DNS	Upgrade Firmware	Config File
PC Database	Network diag	Firewall Rules	Firewall Services	Logs	E-mail	<b>Routing</b>

RIP

RIP Direction

RIP Version

Static Routing

Static Routing Table Entries

### Data - Routing Screen

RIP	
<b>RIP Direction</b>	Select the desired RIP Direction.
<b>RIP Version</b>	Choose the RIP Version for the Server.
Static Routing	
<b>Static Routing Table Entries</b>	<p>This list shows all entries in the Routing Table.</p> <ul style="list-style-type: none"> <li>This area shows details of the selected item in the list.</li> <li>Change any the properties as required, then click the "Edit" button to save the changes to the selected entry.</li> </ul>
Buttons	
<b>Add</b>	Add a new entry to the Static Routing table, using the data shown in the "Properties" area on screen. The entry selected in the list is ignored, and has no effect.
<b>Edit</b>	Update the current Static Routing Table entry, using the data shown in the "Properties" area on screen.
<b>Delete</b>	Delete the current Static Routing Table entry.
<b>Save</b>	Save the RIP setting. This has no effect on the Static Routing Table.

### Configuring Other Routers on your LAN

It is essential that all IP packets for devices not on the local LAN be passed to the WL-108/109, so that they can be forwarded to the external LAN, WAN, or Internet. To achieve this, the local LAN must be configured to use the WL-108/109 as the *Default Route* or *Default Gateway*.

#### Local Router

The local router is the Router installed on the same LAN segment as the WL-108/109. This router requires that the *Default Route* is the WL-

108/109 itself. Typically, routers have a special entry for the *Default Route*. It should be configured as follows.

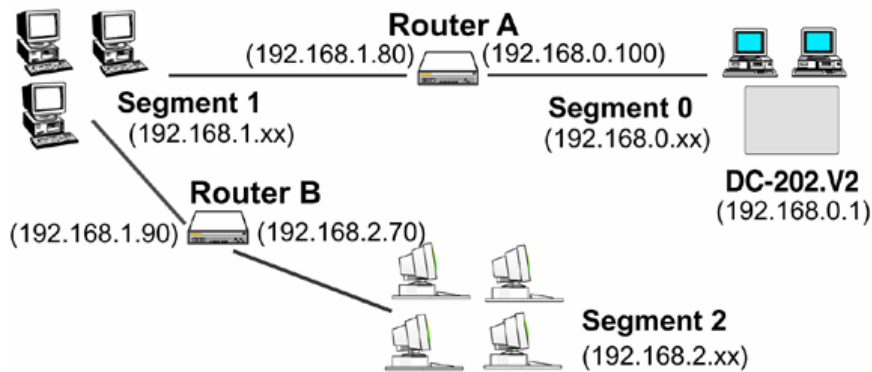
<b>Destination IP Address</b>	Normally 0.0.0.0, but check your router documentation.
<b>Network Mask</b>	Normally 0.0.0.0, but check your router documentation.
<b>Gateway IP Address</b>	The IP Address of the WL-108/109.
<b>Metric</b>	1

**Other Routers on the Local LAN**

Other routers on the local LAN must use the WL-108/109's *Local Router* as the *Default Route*. The entries will be the same as the WL-108/109's local router, with the exception of the *Gateway IP Address*.

- For a router with a direct connection to the WL-108/109's local Router, the *Gateway IP Address* is the address of the WL-108/109's local router.
- For routers which must forward packets to another router before reaching the WL-108/109's local router, the *Gateway IP Address* is the address of the intermediate router.

**Static Routing - Example**



**For the WL-108/109's Routing Table**

For the LAN shown above, with 2 routers and 3 LAN segments, the WL-108/109 requires 2 entries as follows.

<b>Entry 1 (Segment 1)</b>	
Destination IP Address	192.168.1.0
Network Mask	255.255.255.0 (Standard Class C)
Gateway IP Address	192.168.0.100 (WL-108/109's local Router)
Metric	2
<b>Entry 2 (Segment 2)</b>	
Destination IP	192.168.2.0

Address	
Network Mask	255.255.255.0 (Standard Class C)
Gateway IP Address	192.168.0.100
Metric	3

**For Router A's Default Route**

Destination IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	192.168.0.1 (WL-108/109's IP Address)

**For Router B's Default Route**

Destination IP Address	0.0.0.0
Network Mask	0.0.0.0
Gateway IP Address	192.168.1.80 (WL-108/109's local router)

## Appendix A

# Troubleshooting

### Overview

This chapter covers some common problems that may be encountered while using the WL-108/109 and some possible solutions to them. If you follow the suggested steps and the WL-108/109 still does not function properly, contact your dealer for further advice.

### General Problems

**Problem 1:** **Can't connect to the WL-108/109 to configure it.**

**Solution 1:** Check the following:

- The WL-108/109 is properly installed, LAN connections are OK, and it is powered ON.
- Ensure that your PC and the WL-108/109 are on the same network segment. (If you don't have a router, this must be the case.)
- If your PC is set to "Obtain an IP Address automatically" (DHCP client), restart it.
- If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address within the range 192.168.0.2 to 192.168.0.254 and thus compatible with the WL-108/109's default IP Address of 192.168.0.1. Also, the Network Mask should be set to 255.255.255.0 to match the WL-108/109. In Windows, you can check these settings by using *Control Panel-Network* to check the *Properties* for the TCP/IP protocol.

### Internet Access

**Problem 1:** **When I enter a URL or IP address I get a time out error.**

**Solution 1:** A number of things could be causing this. Try the following troubleshooting steps.

- Check if other PCs work. If they do, ensure that your PCs IP settings are correct. If using a Fixed (Static) IP Address, check the Network Mask, Default gateway and DNS as well as the IP Address.
- If the PCs are configured correctly, but still not working, check the WL-108/109. Ensure that it is connected and ON. Connect to it and check its settings. (If you can't connect to it, check the LAN and power connections.)
- Check the WL-108/WL-109 Wireless ADSL Router's status screen to see if it is working correctly.

**Problem 2:** **Some applications do not run properly when using the WL-108/109.**

**Solution 2:** The WL-108/109 processes the data passing through it, so it is not transparent.

Use the *Firewall Rules or Virtual Server* feature to allow the use of Internet applications which do not function correctly.

If this does solve the problem you can use the *DMZ* function. This should work with almost every application, but:

- It is a security risk, since the firewall is disabled.
- Only one (1) PC can use this feature.

## Wireless Access

**Problem 1:** **My PC can't locate the Wireless Access Point.**

**Solution 1:** Check the following.

- Your PC is set to *Infrastructure Mode*. (Access Points are always in *Infrastructure Mode*)
- The SSID on your PC and the Wireless Access Point are the same.  
Remember that the SSID is case-sensitive. So, for example "Workgroup" does NOT match "workgroup".
- Both your PC and the Wireless Access Point must have the same setting for WEP. The default setting for the WL-108/109 is disabled, so your wireless station should also have WEP disabled.
- If WEP is enabled on the WL-108/109, your PC must have WEP enabled, and the key must match.
- If using 256 Bit WEP keys, then only compatible devices using the TI chipset will be able to connect.
- If the WL-108/109's *Wireless* screen is set to *Allow Trusted PC's only*, then each of your Wireless stations must have been selected, or access will be blocked.
- To see if radio interference is causing a problem, see if connection is possible when close to the Wireless Access Point.  
Remember that the connection range can be as little as 100 feet in poor environments.

**Problem 2:** **Wireless connection speed is very slow.**

**Solution 2:** The wireless system will connect at the highest possible speed, depending on the distance and the environment. To obtain the highest possible connection speed, you can experiment with the following:

- Access Point location.  
Try adjusting the location and orientation of the Access

Point.

- **Wireless Channel**  
If interference is the problem, changing to another channel may show a marked improvement.
- **Radio Interference**  
Other devices may be causing interference. You can experiment by switching other devices Off, and see if this helps. Any "noisy" devices should be shielded or relocated.
- **RF Shielding**  
Your environment may tend to block transmission between the wireless stations. This will mean high access speed is only possible when close to the Access Point.

# Appendix B

## Specifications

### WL-108/WL-109 Wireless ADSL Router

Model	WL-108/WL-109 Wireless ADSL Router
ADSL Interface	T1.413, G.DMT, G.lite, multi-mode
Dimensions	189mm(W) * 122mm(D) * 33mm(H)
Operating Temperature	0° C to 40° C
Storage Temperature	-10° C to 70° C
Network Protocol:	TCP/IP
Network Interface:	4 * 10/100BaseT (RJ45) LAN connection 1 * RJ11 for ADSL line
LEDs	12
Power Adapter	15 V DC External

### Wireless Interface

Standards	IEEE802.11b, IEEE802.11g WLAN, JEIDA 4.2, roaming support
Frequency	2.4 to 2.4835GHz (Industrial Scientific Medical Band )
Channels	Maximum 14 Channels, depending on regulatory authorities
Modulation	CCK, DQPSK, DBPSK, OFDM/CCK
Data Rate	Up to 54 Mbps
Coverage Area	Indoors : 15m @54Mbps, 120m @6Mbps or lower Outdoors : 40m @54Mbps, 300m @6Mbps or lower
WEP	64Bit, 128Bit
Output Power	13dBm (typical)
Receiver Sensitivity	-80dBm Min.

## Regulatory Approvals

### FCC Statement

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

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

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

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

### FCC Radiation Exposure Statement

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

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

### CE Approval

#### CE Standards

This product complies with the 99/5/EEC directives, including the following safety and EMC standards:

- EN300328-2
- EN301489-1/-17
- EN60950

#### CE Marking 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.