

Wireless Broadband Router
For xDSL/Cable Connections

User Guide

August 2002

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To obtain hardware service, contact the dealer from whom you purchased the Product. Product under warranty will be repaired or replaced according to the terms of the company Warranty Policy. After expiration of the warranty, you may elect to have the Product repaired, in accordance with the terms of this Warranty, except that you shall be responsible for all costs of repair, replacement and shipping and handling.

5. SHIPPING AND HANDLING:

For equipment covered by warranty, Customers are responsible for shipping of products requiring repair or replacement to and from the company Center, and for all shipping and handling charges incurred.

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1. INTRODUCTION

This manual provides detail instructions of setup and the functions of the wireless Internet Access Router. This is a breakthrough for SOHO users who need to share a high speed broadband Internet connection to the Internet.

The wireless Internet Access Router enables your network to connect through any xDSL/Cable modem to the Internet—providing a simple network solution for SMB and SOHO users.

Overview of the Wireless Router

The Wireless Router is a small desktop router that sits between your local Ethernet network and a remote network (e.g., the Internet or a remote office). The Wireless Router contains an WAN port connecting to an external xDSL/Cable modem, and a four-port 10/100Mbps Ethernet switch for connection to PCs on your local network.

Data comes into the Wireless Router from the local LAN and then is “routed” to the remote network, and vice versa.

Features and Specification

- LAN: 4-Port 10BaseT/100BaseT Ethernet switch
- WAN: 1 10BaseT RJ-45 WAN port for connecting Internet through xDSL/Cable modem
- Multiple users to share Internet access
- IP routing and NAT/PAT support
- VPN (Virtual Private Network) supporting for PPTP/L2TP/IPSec pass-through.
- Supporting PPPoE client function for xDSL connections
- Supporting MAC clone for cable modem connection
- Supporting Multimedia applications (ICQ, NetMeeting, CUSeeMe, Quick Time, etc)
- Supporting Virtual Server
- Seamless roaming by WLAN infrastructure
- 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- Supporting Cisco-like Command Line Interface (CLI)
- Embedded Telnet server for remote Console management
- Web-based GUI

- Firmware upgrade via Web-based GUI
- Configuration data upload and download via TFTP
- Support DHCP server/client
- SNMP MIB support, easily for MIS staff
- MAC address filtering
- IP Packet filtering (IP address/Protocol/Port number)
- SYSLOG

Wireless Router Applications

Accessing the Internet

The most common use for the Wireless Router is to provide Internet access, so that everyone on your LAN can surf the web and send/receive email or files. The Wireless Router automatically acquires the necessary IP address when the connection to the Internet is established. You don't need to apply for and assign an IP address to each PC or workstation on your network.

Accessing Servers from the Public Network

If you want special servers to be accessible by remote users across the Internet (e.g., an e-mail server, an FTP server, or a web server), you can configure the Wireless Router to *proxy* the service from its own address. This means that the remote user can address the router as if it were the special server and the Wireless Router will re-direct this connection to the appropriate computer on the network.

Package Contents

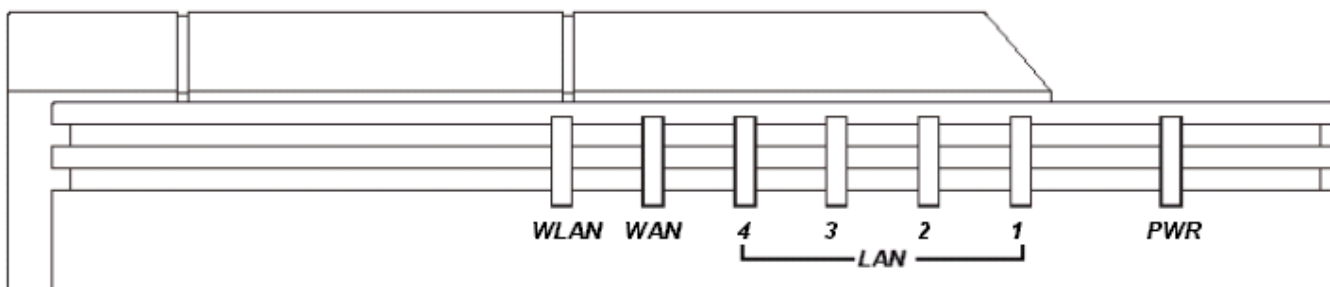
Please check your package. The items inside included:

- 1 Wireless Router
- 1 Quick Start Guide
- 1 LAN Cable
- 1 DC Power Adapter, DC 5V 2A
- 1 CD-ROM containing the online documentation

If any of the above items were damaged or missing, please contact your dealer immediately.

Hardware Configuration

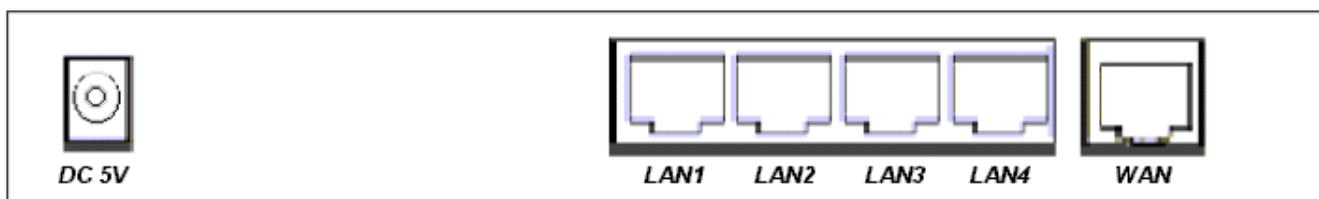
Front View



LED Indicators

LAN 1-4	LINK/ACT	The green LED will LIGHT when a good link is established, and BLINK when a packet is being transmitted or received.
WAN	LINK/ACT	The green LED will LIGHT when a remote carrier is connected, and BLINK when a packet is being transmitted or received.
WLAN		The green LED will LIGHT when wireless LAN is ready, and BLINK when data are being transmitted or received.
PWR		The green LED will LIGHT if the router is receiving power.

Rear View



DC5V	Connect the DC power adapter
WAN	Connect the xDSL/Cable Modem
LAN 1-4	Connect any wired networking devices, such as PCs, printers or servers

2. Basic Installation

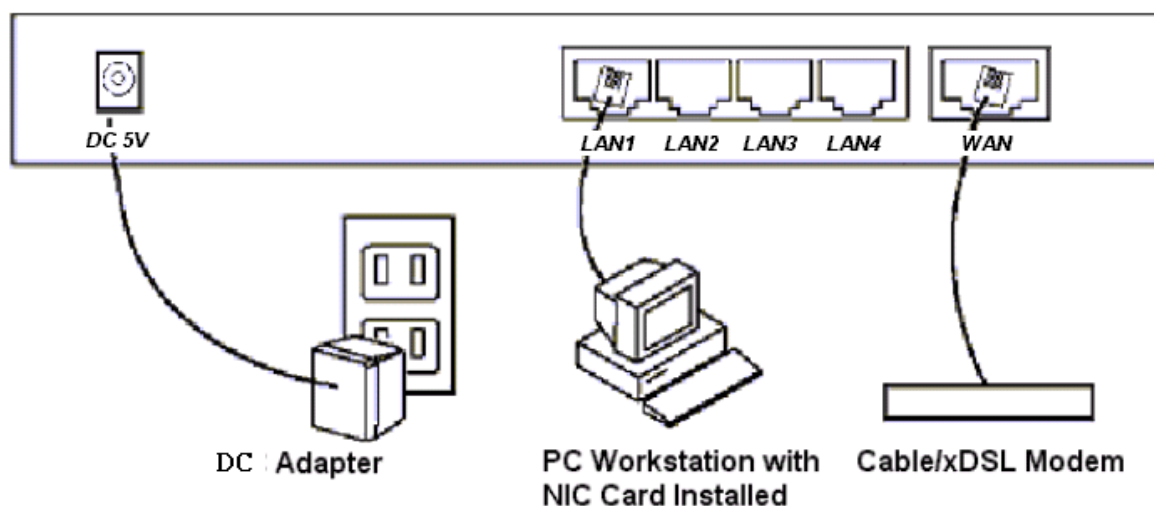
System Requirements

You must complete the following items before you configure your router:

- Install an xDSL/Cable modem with service through an Internet Service Provider
- Obtain an Internet access account from an Internet Service Provider
- Obtain a Gateway server address and DNS server address from your Internet Service Provider
- Set up a PC on the LAN with a fixed IP address or dynamic IP address assigned via DHCP

How to Connect Cables to your Wireless Router

The following illustration shows the connectors on the back of the Wireless Router.



Connect cables to these connectors as follows:

- Connect up to four workstations to the RJ-45 LAN connectors
- Connect to the xDSL or Cable device
- Plug the DC adapter power cable to the Wireless Router and a wall electrical outlet

WARNING! Power supply (power adapter) must be removed before you remove or slide in your PCMCIA Wireless Module into your Wireless Broadband Router.

3. Configuring the Wireless Router

You can configure your wireless router by a host PC in one of the following three ways.

- Web browser via a local LAN
- Command Line Interface via a telnet client

Configuring a PC running MS-Windows 95/98/Me:

1. Click the **Start Button**, and select **Settings**
2. Click the **Control Panel**. The Win95/98/Me Control Panel will appear
3. Open the Network setup window by double-clicking the **Network** icon
4. Check your list of Network items. If TCP/IP is already installed, proceed to step 5. Otherwise (You may need your Windows CD to complete the installation of TCP/IP):
 - Click the **ADD** button
 - In the Network Component Type dialog box, select **Protocol**
 - In the Select Network Protocol dialog box, select **Microsoft**
 - In the Network Protocols area of the same dialog box, select **TCP/IP** and click **OK**
5. With TCP/IP installed, select **TCP/IP** from the list of Network Components
6. In the TCP/IP window, check each of the tabs and verify the following settings:
 - Bindings: Select **Client for Microsoft Networks** and **Files and printer sharing for Microsoft Networks**
 - Gateway: All fields are blank
 - DNS Configuration: Select **Disable DNS**
 - WINS Configuration: Select **Use DHCP for WINS Resolution**
 - IP address: Select the **Obtain IP address automatically** radio button
7. Reboot the PC

Configuring a PC running MS-Windows XP/2000:

1. Click the **Start button**, and choose **Control Panel** (in Classic View)
2. In the Control Panel, double-click **Network Connections**
3. Double-click **Local Area Connection**
4. In the LAN Area Connection Status window, select **Internet Protocol (TCP/IP)** and click **Properties**
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons
6. Click **OK** to finish the configuration

Confirming Your PC's IP Configuration:

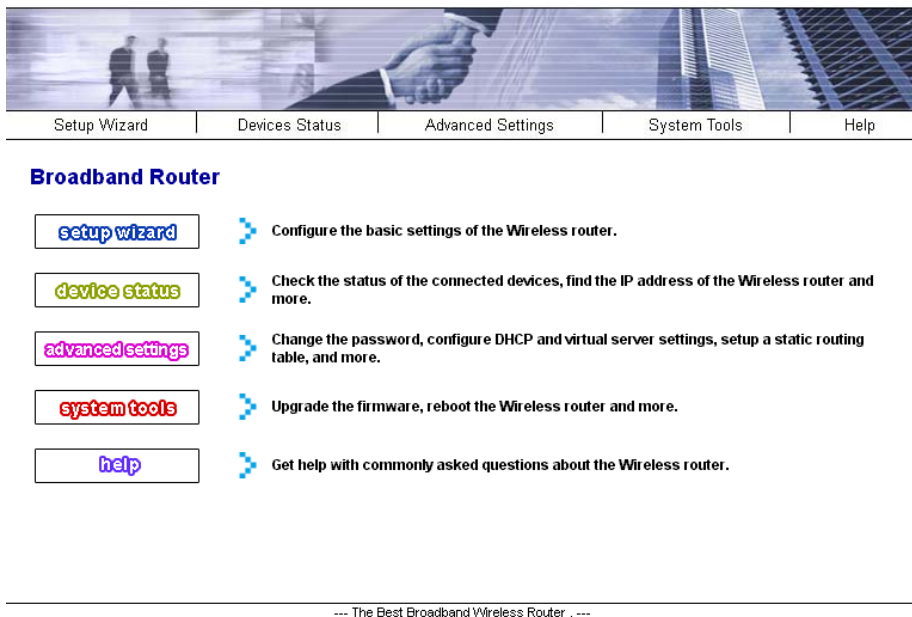
There are two tools useful for finding out a computer's IP address and default gateway:

WINIPCFG (for Windows 95/98/Me) Select the **Start button**, and choose **Run**. Type **winipcfg**, and a window will appear listing the IP configuration. You can also type **winipcfg** in the MS-DOS prompt.

Configuring the router via Web Browser

To access the Broadband Router Management System, open an Internet browser and enter the following URL: <http://192.168.1.1>

4. Basic Setup

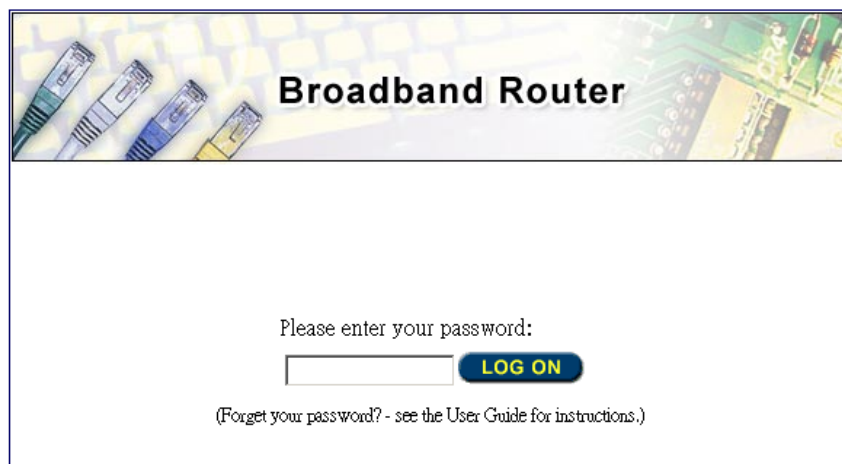


The home page displays the main menu on the upper-side of the screen; the main menu links are used to navigate to other menus that display configuration parameters and status. The Router management system includes Setup Wizard, Device Status, System Tools, Advanced Settings and Help choices.

Setup Wizard

Log on the Router

Click the **Setup Wizard** button, the login screen will appear, enter the default password "**password**" (You may change the password through the **Advanced Settings** menu).



The Setup Wizard will lead you through a series of configuration screens that will setup the ba-

sic functionality of your router. After you finish configuring these screens and press the “FINISH” button on the last screen, all of your configuration modifications will take effect.

Set your Local Time Zone and Local Date/Time

After logging in, the **time settings** page appears. The router maintains a real-time clock, which is automatically set to the local time of the management PC the first time a connection is made. To modify the router’s clock, modify the appropriate fields.

Click “NEXT”.

>time settings

local time zone
[GMT-08:00 (Pacific Time(US & Canada))] ▾

local date and time
[2002] [Jul ▾] [31 ▾] (HH:MM:SS) [07] [02] [50] [PM ▾]

daylight saving time Yes No

NEXT >

NOTE: Changes to this page will not take effect until you click FINISH on the save config page.

HELP

Operation Mode

The operation mode screen now appears. You have two options to choose from. Your router may be configured as a wireless access point or as an Internet gateway and a wireless access point.

>operational mode

select the operational mode

wireless access point only

internet gateway + wireless access point

< **BACK**

NEXT >

NOTE:

1. Changes to this page will not take effect until you click FINISH on the save config page.
2. Selecting "wireless access point only" disables the routing and firewall functions.

HELP

- **Wireless Access Point Only.** In this mode, the router will be used as an 802.11b access point. This means that the device is used to connect wireless clients to the wired LAN connected to the four-port 10/100 Mbps switch. The Internet gateway connection is disabled. All routing, address translation and DHCP server functions are also disabled.
- **Internet Gateway and Wireless Access Point.** This setting enables all routing func-

tions including address translation and firewall features. Use this setting if you connect an xDSL or Cable modem to the WAN port of your router.

The next series of screens will now depend on the choice you selected above: if you selected **wireless access point only**, the **ISP Settings** screen will be skipped.

Click "NEXT".

Device IP Settings

The **device IP settings** screen configures the IP address and subnet of the router on the LAN. The screen that appears depends on whether you've configured the device as a **wireless access point** or as an **internet gateway + wireless access point**.

> device IP settings

LAN IP address and subnet mask.

IP Address: . . .
IP Subnet Mask: . . .

[← BACK](#) [NEXT →](#)

NOTE:

1. It is recommended that the above default values not be modified unless necessary.
2. Changes to this page will not take effect until you click FINISH on the save config page.

[HELP](#)

IP Settings if Internet Access + Wireless Access Point selected

This value defaults to the IP address 192.168.1.1 with a network mask of 255.255.255.0. It is important to note that this type of address is termed a *private IP address* and is an essential security feature of the router: this type of address cannot be seen or accessed from the Internet. The Wireless Router's private address of 192.168.xxx.yyy is called a *Class C* IP address. This means that changing "xxx" will change the network while changing "yyy" will assign a different address in the same network.

Although its value may be changed to another address in the same or different private network, it is recommended that this address not be changed unless necessary. For example, if you want to create your own private network with another Wireless Router at remote office locations, you need to make sure that each Wireless Router on each LAN is assigned an address in a unique private IP network.

Also note that if you do change this value to an address in a different subnet, you will lose contact with the router until you change the address of your management PC to the same subnet as the newly configured one.

If you selected **wireless access point only**, then an additional field appears in the **device**

ip settings screen. The **Gateway IP Address** is the address of a device on your LAN that is used to access the Internet or any other IP network that is not in the locally attached LAN network.

Click “NEXT”.

device IP settings

LAN IP address and subnet mask.

IP Address:	<input type="text" value="192"/>	<input type="text" value="168"/>	<input type="text" value="1"/>	<input type="text" value="1"/>
IP Subnet Mask:	<input type="text" value="255"/>	<input type="text" value="255"/>	<input type="text" value="255"/>	<input type="text" value="0"/>
Gateway IP Address:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

[← BACK](#) [NEXT →](#)

NOTE:

1. It is recommended that the above default values not be modified unless necessary.
2. Changes to this page will not take effect until you click FINISH on the save config page.
3. To allow access to the Internet through another Internet Access Router on your network, you need to configure the IP address of that Internet Access Router to be the Gateway IP Address.

[HELP](#)

IP Settings if Wireless Access Point Only selected

Configuring Your Internet Connection

The **ISP settings** allows you to enter information you need to connect to the Internet through your Internet Service Provider (ISP). You must tell the router what type of connection to the Internet you have. You may also need to enter DNS server information if the router acts as a DHCP server and this information not provided automatically by your type of connection.

Note: If you selected **Wireless Access Point Only** in the operation mode screen, this screen will not appear.

Specify the WAN connection type required by your Internet Service Provider.

There are four ways that you may be connection to the Internet:

1. **Static IP:** Check this box if your ISP assigns you a fixed IP address.

If your ISP has assigned you a **static IP** address, check this box and enter the information below:

IP Address Assigned by Your ISP:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
IP Subnet Mask:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
ISP Gateway IP Address:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

IP Address Assigned by Your ISP: Enter the address as provided by the ISP. This is the IP address of your Internet connection and is normally reachable by anyone on the Internet.

IP Subnet Mask: The IP Netmask of your Internet connection IP address.

ISP Gateway address: The IP address of your ISP Gateway. This is provided by your ISP.

2. **Dynamic IP via PPPoE:** Your ISP assigns you an IP address dynamically. This setting requires you to enter a user name to identify you and a password for authentication. This type of connection is called a Point-to-Point over Ethernet (PPPoE) connection and is normally used over xDSL modems.

User name: The username of your ISP account.

Password: The password of your ISP account.

Idle Time: After this period of inactivity, the router will disconnect from the ISP. The default value of the idle timeout is 5 minutes. You can change the idle timeout value to anything between 0 to 60 minutes. A value of zero means there is no idle timeout.

If your ISP already provides you with **PPPoE** authentication information, select this button and enter the information below:

User Name:

Password:

Idle Time: Minutes

3. **Dynamic IP via DHCP:** This type of connection is normally used over Cable modems. It uses a method called the Dynamic Host Control Protocol (DHCP). In order to identify your account, Your ISP may require you to enter a Host Name and/or MAC Address.

If your ISP already provides you with a Host Name, select this button and enter the information below: **(DHCP)**

Host Name:

Host Name: The Host Name is optional, but may be required by some ISPs.

4. **Dynamic IP via PPTP:** This type of connection is called the Point-to-Point Tunneling Protocol (PPTP) and provides a secure connection over the Internet and is normally used when connecting to a remote LAN through the Internet. In a manner similar to PPPoE, your ISP requires you to enter a user name and password in order to identify you. You also need to enter an IP address that is “tunneled” through the Internet.

If your ISP already provides you with **PPTP** authentication information, select this button and enter the information below:

PPTP Local IP Address: . . .

PPTP IP Netmask: . . .

PPTP Remote IP Address: . . .

User Name:

Password:

Idle Time: Minutes

PPTP Local IP address: The “tunneled” IP address provided by your ISP.

PPTP Local Net mask: the IP Network mask associated with the above address.

PPTP Remote IP address: the IP address from your ISP

User name: the user name of your ISP account.

Password: the password of your ISP account.

Idle Time: After this period of inactivity, the router will disconnect from the ISP. The default value of the idle timeout is 5 minutes. You can change the idle timeout value to anything between 0 to 60 minutes. A value of zero means there is no idle timeout.

Important Note:

- **If you used WinPoET/ RASPPPoE (PPPoE Dial-up Software) or a Windows PPTP application in your computer, you must remove or disable this software in order to operate properly. The router replaces your PPPoE or PPTP software when communicating with your ISP.**
- **If you don't know your connection type, please contact your Internet Service Provider.**

MAC Address: Some ISPs may identify you by a specific MAC address. A MAC address is a physical identifier of an Ethernet port, in this case the WAN port that is connected to the Cable modem. If this address is not the MAC address known to the ISP, you can substitute this address with the MAC address of the Ethernet network card installed in your PC that was used to identify your account. If you need to do this, check the **Clone MAC Address** selection to replace the router MAC address by the MAC address of the Ethernet network card installed in your PC¹.

Cloned MAC Address :

If your ISP requires you to use a specific WAN Ethernet MAC address, check this box and enter the MAC address here.

MAC Address: - - - - -

¹ Some ISPs may recognize your account using the LAN card MAC address on your PC that you used to access the Internet before the router was installed. In this case, you have to copy the LAN card MAC address in the MAC address field. For WIN 95/98/Me, you can run **winipcfg** to see the LAN card MAC address. For WIN 2000/NT/XP, you can run "**ipconfig/all**" to see the LAN card MAC address.

Provide DNS Server Address Information

If your Wireless Broadband Router acts as a DHCP Server and assigns IP address information to other PCs on your LAN, then you may need to configure DNS Server IP addresses in the router that are transferred to these DHCP clients. Note that these addresses are often configured automatically. Your ISP will tell you whether you need to configure these addresses.

The Domain Name System (DNS) is the technique that is used on the Internet to translate names like "www.ebay.com" to IP addresses like 209.103.14.2. In order to do this, a query is made to special DNS servers in the Internet that provide this information. Often, the addresses of these machines are sent to the router automatically when it logs into the ISP. However, there may be instances where this is not done, or where special addresses are required.

If your ISP requires you to manually enter DNS Server addresses, you can enter these addresses on this page. Up to two DNS server IP addresses may be entered.

DNS Settings :

Primary DNS IP Address: . . .

Secondary DNS IP Address: . . .

Configure Your Wireless LAN Connection

> wireless settings

Network ID(ESSID)

Disable ESSID Broadcasting
All wireless clients must use the same Network Name (ESSID) in order to associate with the wireless network.

Channel

Encryption
Enabling encryption will secure data and prevent unauthorized users from accessing your wireless network. Identical encryption keys must be entered on all authorized wireless clients.

Select one of the WEP keys for the wireless network:
You can specify different kinds of WEP key in ASCII or HEX type.
Use visible characters in the WEP key!
In ASCII type, just type the key you want: "this is the key."
In HEX type, please use dash - to separate each hexadecimal byte "XX-XX-XX-XX-XX-..."
See the rules in help manual.

Disable WEP

<input type="radio"/> WEP40 Key 1	<input type="radio"/> ASCII <input type="radio"/> Hex	<input type="text"/>
<input type="radio"/> WEP40 Key 2	<input type="radio"/> ASCII <input type="radio"/> Hex	<input type="text"/>
<input type="radio"/> WEP40 Key 3	<input type="radio"/> ASCII <input type="radio"/> Hex	<input type="text"/>
<input type="radio"/> WEP40 Key 4	<input type="radio"/> ASCII <input type="radio"/> Hex	<input type="text"/>
<input type="radio"/> WEP128 Key 1	<input type="radio"/> ASCII <input type="radio"/> Hex	<input type="text"/>
<input type="radio"/> WEP128 Key 2	<input type="radio"/> ASCII <input type="radio"/> Hex	<input type="text"/>

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NOTE: To access the wireless network, user must have correct ESSID and encryption key, if enabled.

[HELP](#)

Network Name (ESSID): The ESSID is the unique name shared among all points in a wireless network; the ID must be different from each other. The ESSID can up to 35 characters.

Disable ESSID Broadcasting: All wireless clients must use the same Network Name (ESSID) in order to associate with the wireless network.

Channel: Select the appropriate channel from the above list to correspond with your network settings. All points in your wireless network must use the same channel, which means all points must share the same bandwidth.

Note: The available channel numbers are different to varied country. Please watch out the available channel range, when implement CLI and HTTP functions.

USA and Canada: CH01~11, Europe: CH01~CH13, Japan: CH01~CH14, France: CH10~CH13, Spain: CH10~CH11

You can use encryption to protect your data when you are transmitting data across wireless channels.

WEP Selection: The Wireless Router allows you to use data encryption to secure your data from being eavesdropping by unauthorized wireless user. We allow up to four 40-bits encryp-

tion keys (**WEP40**) and two 128-bits encryption keys (**WEP128**) to be configured (using either the **ASCII** or **Hexadecimal** format). Please select the one you want to be used when communicate with the Wireless Router.

WEP Key Setting: The length of a WEP40 key must equal 5, that of a WEP128 key 13. Once you enable WEP function, Please make sure that the same WEP key is used on both the Wireless Router as well as the wireless client stations.

Finish Setup Wizard and Save Your Settings

After stepping through the Wizard's pages, you can go back to correct any modifications or you can click **FINISH**. Your modifications take effect when you click on the **FINISH** button. This will also save your new settings. Congratulations! You are now ready to use the Wireless Router.

> save config

You have completed the setup wizard configuration. Click FINISH to save these settings.

← BACK

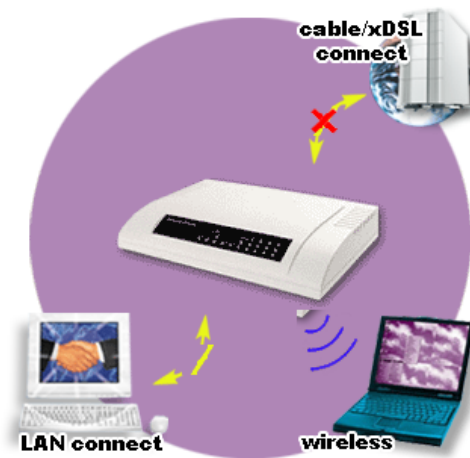
FINISH

HELP

Note: If you change the router's private address (e.g., from the default of **192.168.1.1** to **192.168.3.1**), once you click on **FINISH** you will no longer be able to communicate with your Wireless Router. You need to re-boot your computer to re-acquire a new IP address and the default Gateway from the Wireless Router based on the new private IP network address.

Device Status

> device status



HELP

You can monitor the connection status and get the device information on this page. The status of the WAN and modem backup interfaces are shown on the left panel along with other device status information.

Advanced Settings

The advanced settings tab on the top row of buttons will allow you to perform modifications that you may not normally need for basic operations. The exception to this is changing your password from the default factory setting. This is highly recommended for security purposes.

Password Settings

The default factory password is “*password*”, but you should change the password for security purposes. Enter the current password followed by the new password twice. The entered characters appear as asterisks.

> password settings

Change Password

To change your administrative password, enter your current password and then the new password twice.

Current password:

New password:

Re-enter new password:

SUBMIT

HELP

What if I forget the Password?

If you forget the password, the only way to recover is to clear the entire configuration and return the unit to its original state as shipped from the factory. Unfortunately, this means that you have to re-enter all of your configuration data. To clear the configuration and restore the password to the default, press the restore button and wait for the router to reset. When this is complete, the Router will return all settings to the factory default. The password will once again be “password”.

Note: Keep in mind that anyone who can physically access the router can perform this and thereby compromise the security in your network.

System Monitoring

The System Monitoring page presents several configuration items related to management of the router.

> system management

Remote Management

Allow remote management from all WAN IP addresses

Allow remote management for only 2 WAN IP addresses

Remote management IP address 1: . . .

Remote management IP address 2: . . .

Deny remote management from all WAN IP addresses

System Administration

HTTP Port No:

Telnet Port No:

Management session timeout: minutes

Syslog

Enable Syslog

Syslog server IP address: . . .

SUBMIT

NOTE: Syslog is a standard for logging system events (IETF RFC-3164). System event messages generated by the Wireless router will be sent to a Syslog daemon running on a server identified by this IP address.

HELP

Remote Management: In this section, you can place restrictions on remote devices allowed to manage the router. You have three choices:

- **Allow remote management from Internet IP addresses** – This will remove all restrictions on IP addresses that may manage the router
- **Allow remote management for only 2 Internet IP addresses** – Here you can specify up to two IP addresses that are allowed to manage the router remotely. Any other request originating at another IP address will be denied

- **Deny remote management from Internet IP addresses** – This choice will prevent any management access from the Internet

Management Utility Port Definition: The standard port settings for the HTTP Web server and the Telnet utility may be modified by entering the new port numbers in these fields

Remote Management Time-out: This setting defines that amount of idle time before a web browser or telnet management session times out. The default time-out for these sessions is 10 minutes

Syslog: Syslog is an IETF (Internet Engineering Task Force - the Internet standards body)-conformant standard for logging system events (RFC-3164). To remotely view logged system events for the wireless router, you need a PC that is running the Syslog daemon (a daemon is a hidden program that is always running on your PC in the background). System messages generated by the router are sent to a Syslog daemon on the PC with the IP address specified here if the Enable Syslog check box is checked.

Syslog server IP address: The IP address of the PC running the Syslog daemon.

DHCP Server Settings

The DHCP server within the Wireless Broadband Router assigns IP addresses to devices on your wired or wireless LAN configured to obtain an IP address automatically. If you are using the wireless router as an Internet Gateway, then the DHCP server is enabled by default.

> DHCP server settings

Enable DHCP Server

Automatically assigns IP addresses to wired and Wireless clients from the following range:

From: 192.168.1.1
To: 192.168.1.254

SUBMIT

Assigns a specific IP address to the client with the specified MAC address:

MAC Address: 00 - 00 - 00 - 00 - 00 - 00
IP Address: 192.168.1.

ADD

Select	IP Address	MAC Address
<input type="radio"/>		

DELETE SELECTED

HELP

Enable DHCP server: To enable the DHCP server and allow the router to automatically assign private IP addresses to requesting device, check this box.

Dynamic IP Address Assignment: IP addresses are normally assigned from the entire pool of available addresses in the IP “subnet” to which the router is attached. If you want to reserve some addresses for other purposes you can modify this address pool in the **From/To** boxes and the press **SUBMIT**.

From: Start IP address

To: End IP address

Static IP Address Assignment: If you require that specific PCs always obtain the same IP addresses, enter the PC’s MAC address and the IP address to assign via the DHCP process and press **ADD**.

MAC address: The MAC address of the PC.

IP address: The IP address to assign to the PC.

Static IP Address Assignment List: All configured Static IP Address Assignment entries appear in the displayed table. Entries may be deleted by first selecting the entry and then pressing the **DELETE SELECTED** button.

Virtual Server Settings

By default, a privately addressed PC on your LAN or any program or service running in a privately addressed PC on your LAN cannot neither be seen nor accessed from the Internet. However, if you have a service, such as a Web server or an FTP server, on your LAN that you would like to be accessible from the Internet, the settings on this page allows you to do so. Since each IP service uses a special address called a “TCP/UDP Port”, the router can translate this request to a destination on your private LAN. The remote Internet user uses the address of the router as if it was the LAN-resident server and the router does the translation automatically. Thus, the Internet user is never in direct contact with the PC providing the service and the router then acts as a **proxy** for this service to the Internet user. You may define multiple entries by first entering the Public Port Number and then the Private Port Number and Private IP Address to which the Public Port translates. The Drop-down list provides port numbers for standard applications as well as a Customization entry for you define your own port numbers. A special case is the DMZ server, or default virtual server. If you configure this device, all requests to ports that are otherwise unrecognized are directed to the machine with the specified private IP address. You cannot enter port numbers when you define the DMZ server.

Service Name: Choose the service to be redirected. You can select some of the popular TCP services from the drop-down list. If you want to define your own Public Port Numbers, choose the **CUSTOM** entry in the drop-down list.

Public Port: The destination port number as seen from the Internet using the Public IP address of the router. This field is only changeable when **CUSTOM** is selected as the Service Name.

Private IP address: The IP address of the private client to which the request will be redirected.

Private Port: The LAN side port number residing on the private client.

You can click **ADD** to add other services.

virtual server settings

This allows you to specify one or more applications running on server computers on the LAN that may be accessed by any Internet user. Internet data destined for the specified public port will be directed to the specified private port number on the LAN client with the specified private IP address. Note that Internet traffic directed to undefined public port numbers may be directed to the special server called "DMZ", if defined here (see note below).

Service Name:

Public Port No:

Private IP Address: 192.168.1.

Private Port No:

ADD

Select	Service	Public Port No	Private IP Address	Private Port No
<input type="checkbox"/>				

DELETE SELECTED

NOTE: A DMZ server is a common term used to describe the default virtual server. If the DMZ server is selected, Internet traffic not destined for a valid virtual server is redirected to this privately-addressed LAN client. This can be used together with a separate firewall device to perform additional security functions.

HELP

MAC Filtering Settings

MAC address filtering allows you to define a list of MAC addresses (for either wireless or LAN devices) that are authorized to access or denied access to the network.

When **Disable MAC address control list** is selected, no MAC address filtering will be performed.

When **Enable GRANT address control list** is selected, data traffic from devices listed in the table will be allowed to access the network.

When **Enable DENY address control list** is selected, data traffic from devices listed in the table will be denied/discarded by the network.

MAC filtering settings

MAC address filtering allows you to define a list of MAC addresses (for either wireless or LAN devices) that are authorized to access or denied access to the network.

disable MAC address control list

No MAC address filtering is performed.

enable GRANT address control list

Allow data traffic from devices listed in the table to access the network.

enable DENY address control list

Deny /discard data traffic from devices listed in the table.

Name:

MAC Address: - - - - -

ADD

Select	Name	MAC Address(es)
<input type="radio"/>		

DELETE SELECTED

NOTE: Incorrect configuration may cause undesirable behavior. Please refer to the user manual for more details.

HELP

The displayed table lists all configured MAC Filter entries. To delete an entry, select the entry and press **DELETE SELECTED**.

IP Filtering Settings

You can define IP filtering rules to control the access between local network and Internet. You must define to which direction of traffic flow the rules apply: to the Internet (**Outbound**) or from the Internet (**Inbound**). You must then specify whether the data packet satisfying the rule should be forwarded to its destination (**Granted Access**) or discarded (**Denied Access**).

IP filtering settings

This allows you to define rules for allowing / denying access from / to the Internet.

- disable IP filtering**
No IP filtering is performed.
- Grant IP access**
Data traffic satisfying rules below are allowed/forwarded.
- Deny IP access**
Data traffic satisfying rules below are denied/filtered.

Define an IP filtering rule:

Name:

IP Protocol:

Apply to: Outbound to the Internet Inbound from the Internet

Source IP Address: Any
 Single IP
 IP Range
 Network

Source Port: Any
 Single
 Range

Dest. IP Address: Any
 Single IP
 IP Range
 Network

Dest. Port: Any
 Single
 Range

From: . . . To: . . .

IP: . . . Netmask: . . .

From: To:

From: To:

ADD

Select	Name	IP Protocol	Source IP Address(es)	Source Port(s)	Dest. IP Address(es)	Dest. Port(s)	Apply to
<input type="radio"/>							

DELETE SELECTED

NOTE: Incorrect configuration may cause undesirable behavior. Please refer to the user manual for more details.

HELP

Disable IP filtering: No IP filtering is performed.

Outbound: You can choose outbound filtering to filter outbound traffic.

Inbound: You can choose inbound filtering to filter inbound traffic.

Grant IP access: The IP listed in the table is allowed to pass between the local network and Internet.

Deny IP access: The IP listed in the table is blocked from passing between the local network and Internet.

The displayed table lists all configured rules.

To delete an IP filtering rule, select it and the press **DELETE SELECTED**.

Important Note:

Errors in, or incorrect configuration of, IP Filtering Settings may have a profoundly detrimental effect on the performance of your network. Please take special care when using this facility.

Static Routing

You can manually configure a “static” route to remote networks. A Static Route will override any route learned via the Routing Information Protocol (RIP), if activated. Note that the special entry, the *Default Route*, is created automatically during the Setup Wizard process. If the default route is deleted unintentionally, you must step through the Setup Wizard to restore it.

Destination IP address: The destination IP address of the route.

Subnet Mask: The subnet mask of the destination IP address.

Gateway IP address: Configure the IP address of the specified gateway that will be used to reach the Destination IP address.

Hop Count: The sum of the hops for this route. This is usually the count of the number of routers an IP packet must pass through to reach the destination IP address.

static routing

This allows you to manually configure static network routes. Static routes will override routes learned by standard routing protocol discover methods.

Destination IP Address: . . .

Subnet Mask: . . .

Gateway IP Address: . . .

Hop Count:

ADD

To add a static route, enter the information above and click ADD.

Select	Destination IP Address	Subnet Mask	Gateway IP Address	Interface	Hop
<input type="radio"/>					

DELETE SELECTED

To delete a static route from the table, select the route and click **DELETE SELECTED**.

NOTE: Changes to the routing table will take effect immediately.

HELP

Special Applications

Some Internet applications such as Internet messaging and games, Videoconferencing, Internet phones, etc. require special consideration when used from a privately addressed PC.

When the router sees a privately addressed PC attempting to make connection with a **Trigger Port** using the **TCP** or **UDP** protocols, it will use the settings configured on this page to allow connections from the Internet to multiple ports on the private PC. This screen specifies the public ports to be opened for these applications.

special application

Some Internet applications such as Instant Messaging or Games in particular use groups of ports, and are not easy to work behind a firewall. To work well with these special applications we will open ports to let traffic pass through. Before you set up special application, please see your applications' help for such information.

Select an Application :

Name:

Trigger Port:

Trigger Type:

Listen Ports:

Public Type:

ADD

Select	Name	Trigger Port	Trigger Type	Listen Ports	Public Type	Enabled
<input type="radio"/>						

DELETE SELECTED

NOTE: You can use up to 3 set of listen ports for a specific application. The listen ports can be seperated by a comma and no space allowed. (e.g.2300-2305, 4300-4305, 5300-5305)

HELP

Select an Application: From the drop-down list, select one of the standard applications listed, in which case, the following information will be filled out for you, or select **CUSTOM** to enter the following information yourself.

Trigger Port: Specify the port number for the application.

Trigger Type: Select the protocol type as TCP or UDP.

Opened Ports: The ports are opened for inbound traffic.

Public Type: Select the protocol type as TCP or UDP.

System Tools

Firmware Upgrade

You can upgrade to the newest firmware for your router via this page. You can either enter the file name in the entry field or browse for the file by clicking the **Browse...** button. Please make sure that the new firmware file is reachable from your management PC.

> firmware upgrade

Select the firmware file by clicking Browse and then click UPGRADE.

UPGRADE

HELP

Important Note:

Do not shut down the power before “Firmware successfully upgraded” is displayed.

Factory Default

If you click YES, your entire configuration will be reset to the factory defaults (including the password).

> factory default

Do you really want to restore the configuration to factory defaults?

YES

CAUTION: Restoring factory default settings will erase all your previous settings.

HELP

Reboot Router

If you want to reboot your system, click **YES** on this page.

> reboot router

Do you really want to reboot the Wireless router?

YES

HELP

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