User Manual
High Power Wireless Broadband Router
WZR-HP-G54

A O S S™

AirStation High Power Wireless Broadband Router (WZR-HP-G54)

This manual introduces you to the AirStation Broadband Router, and will help you connect to your network quickly.

The WZR-HP-G54 router is a wireless 4-port router network device that complies with the 2.4GHz IEEE 802.11g standard specification for wireless LANs. It also supports 125* High-Speed Mode technology. The WZR-HP-G54 supports enhanced built-in NAT/SPI firewall functions and is used as a multi-functional router/link between wired and wireless LAN computers.

Summary of AirStation WZR-HP-G54 features:

• Wi-Fi™ (Wireless Fidelity) certified by the Wi-Fi Alliance as an 802.11b/g device. AirStation will communicate with other IEEE 802.11b/g Wi-Fi compliant wireless LAN products.
• High-power amplified radio increases range by up tp 70% and performance by up to 50%.
• Supports 125* High-Speed Mode.
• Support for Wi-Fi Protected Access™ (WPA), 802.1x, TKIP, AES, and WEP.
• Supports Frame Bursting for enhanced performance.
• DHCP client/server function.
• Auto roaming supports seamless roaming over multiple channels.
• VPN pass-through for secure communications.
• Packet Filtering for eliminating unwanted communications.
• SOHO/SMB routing and firewall functions provide a safer private networking environment,

including support for MS NetMeeting and MSN-Messenger.

- Additional SPI Firewall Functions: DMZ, intrusion detection, and notification.
- Syslog transmits some or all system activities to a central Syslog server.
- Extended range with optional add-on antennas or WDS (Wireless Distribution System).
- Auto Media Dependent Interface/Crossover (MDI/X) port allows connection by standard and crossover CAT5 cables.
- Supports Universal Plug and Play (UPnP).
- Includes Buffalo's AOSS System for easy, secure wireless client configuration.
- Enhanced security features:
  - SPI Firewall and DMZ zone functions to prevent unknown intruders.
  - Intrusion Detector Firewall (NAT) with pop-up or email alerts when intrusions are detected.
  - Dynamic packet filtering.
  - WPA, 802.1x, TKIP, AES, and WEP.
  - VPN (IPSec, PPTP and L2TP) pass-through
  - Packet monitoring and filtering by MAC address, IP address and port.
  - PPPoE support
  - WDS support
- Buffalo's easy web-based configuration interface.
- Broadband router static and dynamic routing methods between WAN and LAN based on updated

routing tables. An economical way to bridge multiple networks.

- Optional external antennas for boosting range and signal quality.
- Buffalo's AOSS System for easy, secure wireless client configuration.

Home Networking

Buffalo AirStation wireless access points enable sharing broadband by simply connecting the AirStation to a DSL or Cable modem to:

- Share files and printers.
- Access and share the Internet.
- Share media files.
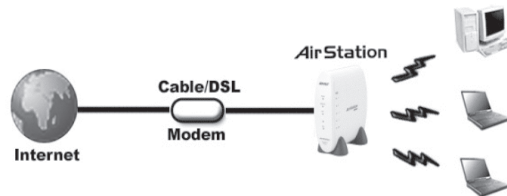
SOHO/SMB Networking

With high speed DSL or Cable connections readily available, many users can work effectively from a home office, connected securely to a corporate network. Buffalo's solutions are ideal for home networks that require secure, high speed access to the corporate LAN. They include VPN connectivity for secure access to corporate resources, which enables remote employees to handle information from clients or coworkers as if they were in the office. Connect the Buffalo AirStation Broadband router AP to a Cable or DSL modem in order to:

•Share broadband access.

•Share files and printers.

•Bridge between multiple networks and multiple computer platforms.

•Provide easy and secure access to home or company networks from remote locations.

System Requirements
• Broadband (High Speed) Internet connection or existing Local area connection.
• Wi-Fi (wireless) compatible computer with a Web Browser (such as Internet Explorer or Netscape) of version 4.5 or later. Safari 1.0 is supported with Macintosh OS X 10.2 or later.

AirStation WZR-HP-G54 Package Contents
The AirStation WZR-HP-G54 package consists of the following items:
• WZR-HP-G54 AirStation
• AC adapter and power cable
• CAT5 LAN cable
• Utility CD with Manual
• Quick Setup Guides
• Warranty Statement

Product Views

Power - Lit when the device is powered on.

Wireless - Lit when the wireless radio is on. Flashes when wireless traffic is present.

WAN - Lit when connection to Cable/DSL modem is present. Flashes when internet traffic is present.

Diag - Flashes red when performing diagnostic functions.

AOSS - Flashes when in AOSS mode, solid when AOSS encryption has been set.

Ethernet - 1, 2, 3, or 4 lit when ethernet clients are connected. Flashes when ethernet traffic is present.
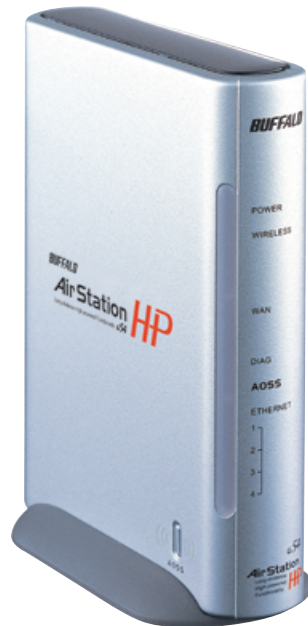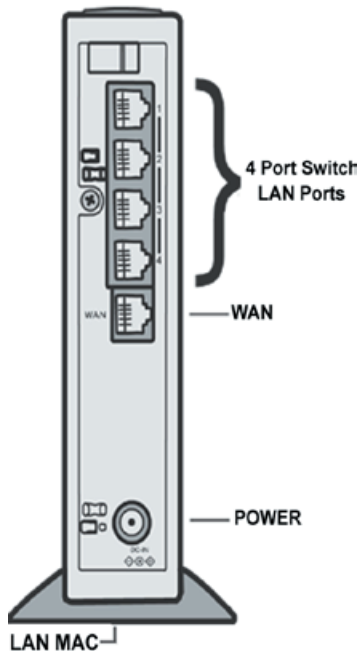
About the AirStation CD

The AirStation does not require any software to be installed on your computer for configuration. The AirStation CD contains client drivers for Buffalo Wireless Adapters (i.e. Notebook Adapter and Desktop PCI Adapter) and the AirStation documentation.

Prior to copying or installing any software, please read the Software License Agreement "license. txt", located in the root folder of the CD. By installing, copying or using the AirStation software, you are consenting to the terms of this agreement. If you do not agree to all of the terms of the Software License Agreement, do not download, copy or install the AirStation software.

It is the policy of Buffalo Technology to improve products as new technology, components, software and firmware become available.

Please consult the Buffalo Technology website (http://www.buffalotech.com) to download and install the latest firmware for your product.

Follow these simple steps to connect the AirStation to your Broadband Internet connection allowing you to combine and share wired and wireless computers and printers with the high speed internet connection.
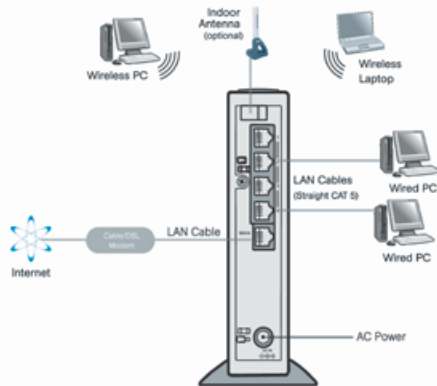
1. Power down the Cable or DSL modem and the computer which will be used to configure the AirStation router.

2. Plug the Cable or DSL modem's LAN Ethernet cable into the AirStation's WAN port. You may need to unplug this cable from your computer, hub or other router.

3. Plug the provided Ethernet cable into a LAN port on the AirStation and plug the other end into your computer Ethernet adapter's (NIC) port. If you plan to initially configure the AirStation via a wireless connection (not recommended), you may skip this step.

4. Power on your cable or DSL modem and wait one full minute. Power on the AirStation router, wait another full minute and then power on the computer which will be used to configure the AirStation. If the red DIAG light on the AirStation is lit or flashing after several minutes of being powered on, please consult Buffalo Technical Support.

Introduction

Configuring the AirStation using a standard web browser requires basic wireless configuration knowledge. Setup includes manual wireless configuration and basic administrative management.

Setup Preparation

Make note of the AirStation's LAN MAC address (found on the underside of the WZR-HP-G54). It is also recommended that you record any other broadband ISP information, such as global IP address, subnet mask address, default gateway address, DNS server address and PPPoE parameters.

Setup Overview

Buffalo recommends using a wired connection, meaning your computer is physically connected to the AirStation with a CAT5 cable plugged into one of the four LAN ports This type of setup will eliminate possible setup problems due to any issues with the wireless adapter on the computer being used to configure the AirStation.

Antenna Connector
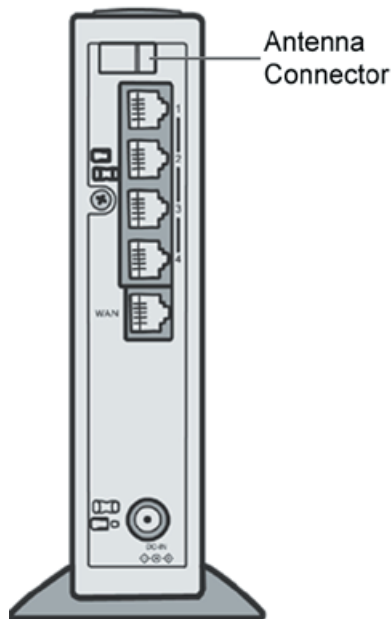
The WZR-HP-G54 has two internal antennas. One has a vertical orientation while the other has a horizontal orientation. This setup is ideal because it allows for proper antenna polarization with both desktop and notebook style wireless adapter antennas.

However, it may be necessary to increase your range further by installing an external, higher-gain antenna. Available external antennas are described as below. Antennas also come with different connectors. The WZR-HP-G54 has an unique *'MC Connector'* on it. Thus, the antenna must also have an MC connector.

The following four antennas are allowed to connect to WZR-HP-G54.

WLE-DA:	Patch Antenna
WLE-NDR:	Sleeve Antenna
WLE-HG-NDR	Sleeve Antenna
WLE-MYG	Yagi Antenna
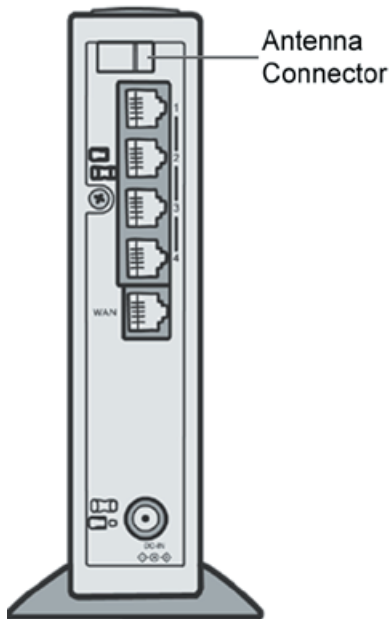
To install the antenna, slide the antenna connector door on the back of the WZR-HP-G54 to the right. This will expose the MC Connector. Attaching the antenna is simple; just insert the antenna's MC Connector into the WZR-HP-G54's MC Connector and firmly push it in until it snaps into place. Once clicked into place, the antenna's connector should swivel easily. It is important not to push the antenna connector in at an angle.

To remove the antenna, pull the antenna connector out. It is important not to pull the antenna connector out at an angle.

Open the Setup Screen

The computer used to configure the Airstation should be set to 'obtain an IP address automatically

Initial
Settings
Login
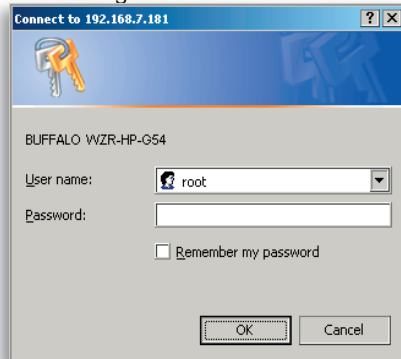
using a DHCP server'. Connect it to one of the four ports on the WZR-HP-G54 with an ethernet cable. On the computer, launch a Web Browser of version 4.5 or later. Enter 192.168.11.1 into the URL field. A window will open prompting you to enter a User ID and Password. Enter "root" as the User ID and leave the password field blank. Click **OK** to log in to the Airstation.

■ NOTE: The WZR-HP-G54 has a default IP address of 192.168.11.1 and a Subnet Mask of 255.255.255.0.

Connect to 192.168.7.181

BUFFALO WZR-HP-G54

User name: ￼ root

Password:

☐ Remember my password

OK   Cancel

Initial Settings Screen

Enter ISP information

Click the appropriate button to select the type of broadband you have. Users experienced in networking may choose to select the Advanced button and skip to Section 4. For supplementary tools, use the tabs along the top of the screen.

DSL Button

Select this if you have a dsl modem. If you have a cable modem, skip to page 17.

Initial DSL button Screen

Automatic IP Assignment by ISP

The DHCP server of the ISP assigns an IP address automatically.

Manual DSL IP Settings Screen

Enter IP Address Manually

Enter the IP Address given by your ISP here if they require the use of a static IP address.

DSL PPPoE Settings Screen

PPPoE Connection

Enter the PPPoE information provided by your ISP.

Initial CATV Settings Screen

CATV (Cable) Button

Press this if your internet connection is via a cablemodem.

Automatic IP Assignment by ISP

Select 'Automatic IP Assignment by ISP' if your ISP's DHCP server assigns an IP address automatically.

Manual IP Address Settings

Enter IP Address Manually

Select 'Enter IP Address Manually' if your ISP requires the use of a static IP address.

Auto IP/
Manual DNS
Settings

The IP Address is Acquired Automatically but DNS Server Address is Entered Manually

Select 'IP address is acquired automatically but DNS server address is entered manually' if the ISP's DHCP server supplies an IP address but not DNS server addresses.

Line
Test Tab

Line Test

Tests the connection to the Internet.

Security Tab

Security

The Security Tab offers three simple security settings. Follow the instructions in each screen to enter Encryption Keys, MAC Address Filtering and the degree of firewall security for the AirStation.

Encryption Setup.

- Select the desired encryption scheme from the choices. After it has been selected, press the *'Next'* button. You will then be prompted to enter the appropriate key(s) for that method of encryption.

Simple MAC Address Filter.

- Select '**Enable**' to use MAC filtering. See page 36 for more information on MAC Address Filtering.

Simple Security Setup.

- See page 55 for more information on Intrusion Detector.

Application
Tab

Applications

The Application Tab offers setup for special applications such as games, MS NetMeeting and MSN Messenger. Follow the on-screen menus to configure the AirStation for the application.
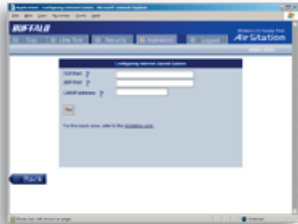
Internet Gaming Setup:

Enter the **ports** (refer to Game documentation) that the game uses and enter the **Local IP Address** of the PC that plays the game.

NetMeeting Setup:

Enter the **IP Address** of the PC that will use Netmeeting.

MSN Messenger Setup:

Refer to the **on-screen help** for information about Messenger.

Although your AirStation will function fine using only the *Standard Settings*, you may wish to explore more advanced options. The *Advanced Settings* section explains each function in the Advanced settings area.

Click the Top tab and click the Advanced button to enter the Advanced settings area.

AOSS (AirStation One-Touch Secure System) is a simple, one-touch setup for connecting wireless clients to an access point while setting up the most secure possible connection. Users no longer need to worry about choosing the proper security protocols, IP addresses, or SSID's. The intelligence of AOSS determines the most optimal connection and configures itself in seconds.

■ NOTE: AOSS automatically creates a secure connection between your AOSS Access Point and client. You must have a Buffalo AOSS enabled wireless client device to use the AOSS features of your AOSS Access Point/Router.

▶ Configure your WZR-HP-G54's internet connection by referring to the instructions in the WZR-HP-G54 Quick Setup Guide.

▶ Once the WZR-HP-G54 has been configured, follow the directions to install your wireless client device and its drivers if necessary. Certain wireless client adapters require client software to configure them. If your device has a Client Manager, install it as well.

Standalone AOSS Device	Client Manager Device	Client Manager Software

■ NOTE: If the wireless client adapter is installed on a PC, then the AOSS client manager will need to be installed as well. If your wireless client adapter is a standalone device that does not require a PC, then just power up the device.

Standalone Devices: Ethernet Converters and Access Point Bridges

Client Manager Devices: CardBus, USB, and PCI Adapters.
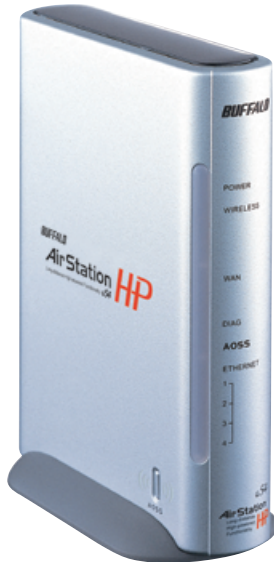
◗ Now that the WZR-HP-G54 and wireless client adapter are installed, you can use AOSS to configure them.

◗ To begin the configuration, press the AOSS button on the side of the WZR-HP-G54 for 3-5 seconds. The AOSS light will begin to flash when the AOSS mode has been enabled. You can stop pressing the button at this point.

■ NOTE: AOSS mode will stay active for a period of two minutes. This is the time-slot for initiating the wireless client adapter. The AOSS LED will stop flashing when AOSS mode has stopped or timed out.

◗ Refer to your wireless client adapter's AOSS supplement to initiate the wireless client adapter's AOSS mode.

◗ It typically takes 10-15 seconds for the AOSS light to stop flashing after the AOSS button has been pressed on the wireless client adapter. Once configuration is complete, the AOSS light will remain steady. Please refer to your wireless client adapter's supplement for the remainder of the setup.

Additional AOSS Information:

▶ Only one AOSS wireless client adapter can be configured to the AOSS router at a time. Thus, the button will need to be repressed for each additional AOSS wireless client adapter that will be connected.

▶ It is not necessary to AOSS client devices that have already been configured via AOSS unless significant changes have been made to the wireless network.

▶ Do not attempt to configure two separate AOSS networks at the same time, as it may cause undesired configurations.

▶ If an undesired client has connected via AOSS, it can be disconnected from within the WZR-HP-G54's advanced configuration menus.

Wireless Settings

LAN Settings

Wireless Settings

Wireless Function - Enable or disable wireless LAN computer communication.

SSID - Allows administrator to alter the SSID of the AirStation. Once this is done, the AP's new SSID should be selected in the client computer's wireless settings. The client computer then looks for that specific AP (and SSID) for wireless communication. Use up to 32 alphanumeric characters for the SSID (case sensitive). By default the SSID is the LAN Mac address of the AirStation.

■ Note: Roaming - When multiple AirStations have an identical SSID, WEP key (if WEP is used), (and channel in WDS mode) , client computers may Roam seamlessly between the AirStations.

Wireless Channel - Select the channel used for wireless communication. There are 11 overlap-

ping channels. Channels 1, 6 and 11 are non-overlapping. The 'Auto-Channel' option is recommended, as it constantly assesses the best available channel for the AirStation to operate on.

If there are multiple APs in close proximity using the same channel, there may be interference. In this case, change to a non-overlapping channel.

Privacy Separator - Enable or disable communication between wireless clients. If you choose to use this feature, every wireless client that is associated to the AirStation will not be able to communicate with any other wireless clients.

■ Note: If this function is used, wired clients can still communicate with wireless clients.

BSS (Basic Service Set) Basic Rate Set - The transmission data rates offered by the AirStation. It is recommended to use the 'Default' selection to accomodate 802.11 and 802.11b rate sets. It is NOT recommended to use the 'All' selection, as some devices may not understand all of the rate sets offered by the AirStation.

Frame Bursting - This function increases 802.11g communication throughput by transferring packets more efficiently. The following conditions affect this function:

• The wireless LAN client adapter must support Frame Bursting (and it must be enabled). If the wireless LAN client adapter does not support Frame Bursting, or Frame Bursting is not enabled, then it will operate at non-Frame Bursting speeds.

125* High-Speed Mode - This function increases the router's speed beyond that of normal 802.11g communication. Rate sets up to 125* Mbps are offered to clients. Note:

• The wireless LAN client adapter must support 125* High-Speed Mode, and have it enabled, for the network to operate in 125* High-Speed Mode. If the wireless LAN client adapter does not support 125* High-Speed Mode, or it is not enabled, then the wireless network will operate at regular 802.11g

speeds.

• You may leave 125* High-Speed Mode enabled at all times. It can only help throughput, not hurt it.

802.11g Protection - This enables protection mechanisms for when 802.11b clients join the network. It enables CTS (Clear-to-Send).

DTIM Period - An access point transmits beacon signals to nearby clients at a preset interval. This parameter sets the beacon transmission interval time (1-255 seconds). Selection of a larger number may conserve energy for the client computer (when client power management is enabled), but may delay wireless communication. The default value of 1 is recommended.

Wireless Security Settings

Wireless Output Power - Configure output power of the AirStation. Decrease wireless output power to shrink the wireless communication range. The default setting of 100% is recommended unless decreased range is desired

Wireless LAN Security

Broadcast SSID - You may **Enable** or **Disable** broadcasting the SSID. If denied, the AirStation will not be

found unless the specific AirStation's SSID is entered in the client computer manually.

Data Encryption - Disable to have no encryption of the wireless data. This will make accessing the AirStation and the network very easy. It is important to note that without encryption, it's easy for strangers to connect to your network, especially if your AirStation is broadcasting its SSID.

Select the type of data encryption:

• Disabled - Disable data encryption.
   - WEP - Uses WEP encryption. Encryption key should be entered.
   - TKIP - Uses TKIP (Temporal Key Integrity Protocol) for data encryption.

The encryption key is renewed every "Re-key interval" when "TKIP" is selected.

WEP - When the WEP (Wired Equivalent Protection) encryption standard is implemented into a wireless network, a WEP key is used between the client and access point to encrypt, transmit, and decrypt data. For this reason, the same WEP key must be used for communication between the client and the AirStation.

An access point and client may both carry multiple WEP keys. It is necessary for not only the WEP keys to match, but also the WEP key's order. If a wireless client cannot support multiple WEP keys, the AirStations must be configured to transmit key number 1 for a connection to take place.

Examples of WEP key:

64-bit ASCII: 5 digits of alphanumeric characters, "ab34Y"

128-bit ASCII: 13 digits of alphanumeric characters, "123456abcdef7"

■ Note: ASCII WEP keys are case sensitive.

64-bit HEX: 10 digits, using characters 0-9 and a-f, "00234ABCDE"

128-bit HEX: 26 digits, using characters 0-9 and a-f, "20123456789abcdeabcdeabcde"

TKIP - TKIP (Temporal Key Integrity Protocol) is a WEP expanded encryption technique. TKIP has greatly improved WEP's weaknesses by rotating secret keys between every packet. TKIP uses WPA-PSK (pre-Shared Key).

Characteristics:

- The Initialization Vector is expanded from 24-bits to 48-bits.

- The Initialization Vector is randomized.

- Uses a different RC4 key for every packet.

AES - AES further improves TKIP by using AES (Advanced Encryption Standard) encryption method. With its hardware co-processor, AES is able to use some of the strongest encryption available without sacrificing throughput as WEP and TKIP do.

TKIP & AES require an 8 to 63 character passphrase in ASCII or a 64 digit hexadecimal key.

Example 1: [airstation -WPA-PSK]

Example 2: [0123456789abcdef0123456789abcdef0123456789abcdef0123456789abcdef]

WPA Group Rekey Interval - When TKIP is selected, the encryption key is renewed at this interval. This interval is in seconds; the range of acceptable values is 0-3600.

If 0 is entered, the key is never renewed.

IEEE802.1x/EAP authentication (WPA) - Configure Authentication and WPA Settings.

Disable - Do not use any RADIUS Server based authentication.

Enable - Authorized clients access this AirStation via a RADIUS Server.

Use 802.1x/EAP to authorize every wireless client who wants to access the AirStation by using 802.1x/EAP and a RADIUS Server. The RADIUS server provides login information for every user establishing a more secure system than TKIP or other fixed encryption key methods. This also reduces the amount of necessary key maintenance.

A RADIUS server is necessary for IEEE802.1x/EAP authentication. Enter [RADIUS Server], {RA-DIUS Port] and [RADIUS Key] information.
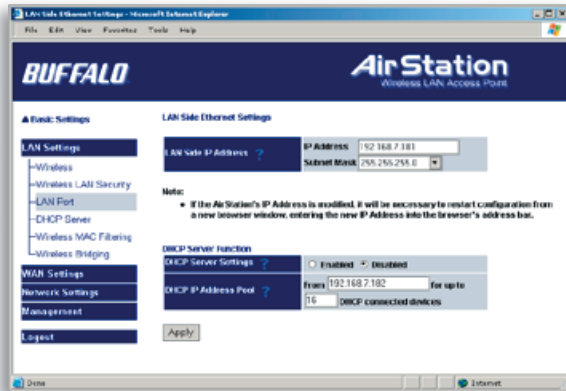
RADIUS authentication:
RADIUS Server - Enter RADIUS server IP address.
RADIUS Port - Enter port number for authentication.
RADIUS Key - Encryption key between RADIUS Sever and the AirStation. Enter the same key as registered in the server. Use a 1 to 256 character alphanumeric code.

LAN Port Settings

■ Note: The lower the rekey interval, the more often a rekey occurs. Setting a low rekey interval may affect performance negatively.

LAN Port
Set the LAN side Ethernet settings.

LAN Side IP Address - Allows administrator to specify a static IP and Subnet Mask for the LAN side of the AirStation.

■ Note: If the AirStation's IP address is changed, the configuring computer's IP must be changed to the same range to continue configuration. If the LAN IP is changed, restart the AirStation. (Section 4.4.10). If the IP address is changed, then the DHCP scope must be changed to match.

DHCP Server Function - Allows administrator to enable/disable the DHCP server function for the AirStation LAN side. Select **Use** to enable and **Do not use** to disable the function. Once **Use** is selected, the assigned IP address range can be specified. Enter the starting LAN IP address and total number of computers the DHCP server can accomodate.

■ Note: If there is another DHCP server on the network, one either must be disabled or the IP

DHCP Server
Settings

range must be changed to avoid conflicts derived from overlapping DHCP scopes.

DHCP Server

this section Allows a more advanced configuration of the DHCP server functions.

DHCP Server Function - Allows administrator to enable/disable the DHCP server function for the AirStation LAN side. Select **Use** to enable or **Do not use** to disable this function. If DHCP is enabled, wireless and wired clients may receive IP addresses and other network information from the AirStation. If the DHCP server is turned off, all client PC's must have unique, static IP addresses and valid network settings manually entered. Check with your LAN administrator for static IP information.

Assigned IP address (Range Assignment) - Sets the beginning address and range of addresses to be assigned by the AirStation's DHCP server function. Select up to 253 consecutive addresses (nodes). The IPs to be excluded from the range specification should be entered in the specified field.

Lease duration - Specifies the time in hours (1-999) that an assigned IP address is valid. If the client computer does not request a renewal of IP address before the lease period expires, the AirStation can issue the IP to another client computer.

Default Gateway - Allows administrator to use the Default Gateway address (the AirStation's IP address), assign a specific Gateway address, or block clients from Gateway notification.

DNS server - Allows administrator to use the default DNS address (the AirStation's IP address), assign specific DNS addresses, or block clients from DNS address notification.

WINS server - Allows administrator to use a WINS address. Select auto assignment of the IP address, enter a specific WINS IP address, or block clients from the WINS address notification.

Domain name - Allows administrator to use an assigned domain name, assign a specific domain name, or block clients from domain name notification. Domain names will be sent to LAN computers when an IP address is assigned. Enter a maximum of 64 alphanumeric characters.

Manual IP and MAC Address Assignment Settings
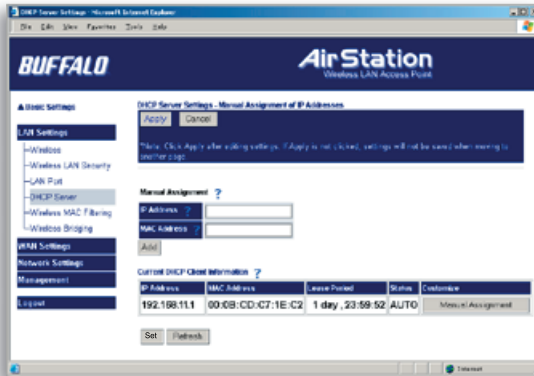
Manual IP and MAC Address Assignment - Allows administrator to add additional leased IP addresses tied to a specific MAC address. When a specific MAC address connects to the AP, the IP address specified will be given to that client.

Display/Delete lease information - IP addresses, MAC addresses, lease periods and status are displayed here.

Wireless MAC
Filter

Wireless MAC Filter

Wireless PC's Connection
- Select **Enable** to restrict wireless connections to the registered adapters in the list. Select **Disable** to disable MAC address filtering.

Press the **Preset** button to enter the MAC Address registration menus. This is where MAC Addresses can be assigned and deleted.

Register for
Allowable PC's
MAC Address

Registration for MAC Addresses - Input the MAC addresses that are allowed to communicate with the AirStation.

MAC address list - Displays a list of all MAC addresses allowed to communicate with the AirStation.

Wireless Bridge (WDS) Settings

Wireless Bridge (WDS)
The Wireless Distribution System supports peer-to-peer AP communication.

Wireless Bridge (WDS) Function - Select **Enable** to allow Bridge (WDS) mode between AirStations or **Disable** to block communication between AirStations.

Wireless Bridge (WDS) dedicated mode - Select **Enable** to restrict wireless computer communication with the AirStation. In dedicated mode wireless clients CANNOT connect to WDS AirStations.

■ Note: All AirStations must support WDS and be on the same channel. Do not use 'Auto-Channel' when using WDS. For roaming support, use the same SSID on all devices.

Add a WDS Partnet - Allows administrator to input the wireless MAC address of AirStations for Bridge (WDS) communication. The wireless MAC address is found in the Management section: click on **System Information**, then the **Wireless MAC Address** label.

Wireless Bridge (WDS) Settings

To enable WDS, set the Wireless Bridge (WDS) function to **Enable**.

Enter the Wireless MAC address of the AirStation to communicate with in the form of pairs of characters separated by colons and click **Add**.

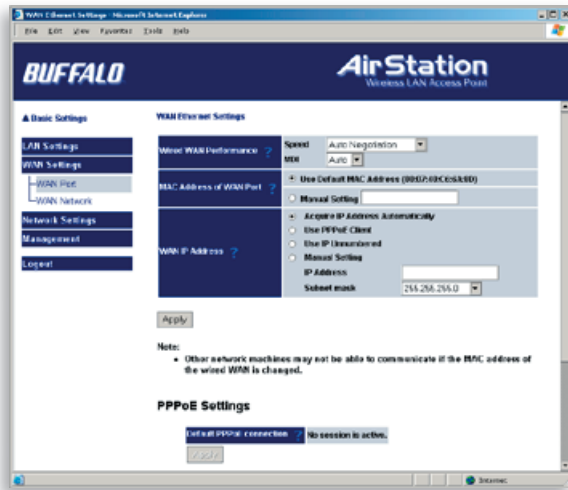Example of MAC Address: 00:00:00:00:00:00

Up to six AirStation MAC addresses may be registered.

Click **Apply** under Wireless Bridge (WDS) settings when the wireless Mac addresses AirStation are entered.

Repeat this process on every other AirStation used in Bridge (WDS) mode.

WAN port
Setup

WAN Settings

Wired WAN Performance
- Select port speed and type of duplex connecting to the WAN port. If unknown, select Auto negotiation.

MAC Address of WAN - Set the AirStation MAC address to be used for WAN communication. Some ISP's may require you to set the MAC Address of the WAN to be the same as the MAC address of your broadband modem.

WAN IP Address - Allows administrator to select DHCP server, PPPoE, or manual setting for the WAN port of the AirStation.

Auto IP assignment from DHCP server - acquire the IP address automatically from the DHCP server.

Use PPPoE client - If selected, the information listed below must be entered.

Manual setting - Enter the appropriate IP address and subnet mask.

PPPoE Setting (for enabling PPPoE Client function) - Allows administrator to use PPPoE as specified by the ISP.

The following parameters should be entered for PPPoE Settings:

Name of Connection - Enter the name of your connection.

User Name - Enter the user name (up to 64 alphanumeric characters) for PPPoE authorization.

Password - Enter the password provided by your ISP (up to 64 alphanumeric characters). Reenter the password in the Confirmation box.

Service Name - Enter the PPPoE service name (up to 64 alphanumeric characters). If your ISP doesn't require a service name, then leave it blank.

Connection Type - Select from:
- Continuous Connection - connects immediately after setting and never disconnects.
- Connect on Demand - Reconnects when the disconnect time elapses.
- Manual - Disables Automatic Connection. Connects to the Internet using the connect button on the initial settings page.

The **Enter New Connection** button will not appear until **Use PPPoE Client** is set.

Disconnection Time - Specify the number of minutes (0-1440) before automatic disconnect is performed. If "0" is entered, the disconnect function is disabled. If **Continuous Connection** is selected, the timer is disabled.

PPPoE Settings Screen

Authorization - Enter authorization method for accessing the ISP's PPPoE server. If unknown, select Auto authorization.

MTU (Maximum Transmit Unit) Size - Sets Maximum Transmit Unit size (578-1492) when using PPPoE.

MRU (Maximum Receive Unit) Size - Sets Maximum Receive Unit size (578-1492) when using PPPoE.

Keep Alive - Enables the PPPoE client to send a Link Control Protocol (LCP) echo request to the PPPoE server once per minute. If there is no reply within six minutes, the client disconnects. Set to **Disable** if frequent disconnection occurs.

Activation - Enable/disable registered connection settings. If disabled, the connection is not permitted.

Network of WAN
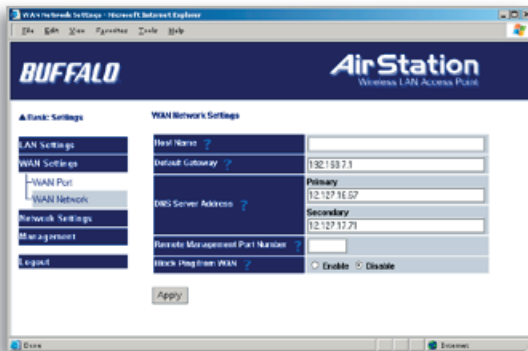
WAN Network

WAN side (Internet) parameters. These settings are generally not required if your ISP is providing DHCP services. In this case these fields can be left blank.

Host Name - Enter the host name.

Default Gateway - A default gateway IP should be assigned to the AirStation. If unknown, leave blank. If **Auto IP**

assignment from DHCP Server is selected in the **WAN Port** section, a gateway IP is assigned automatically, provided the DHCP server is configured to provide one.

DNS Server Address - Enter the primary and secondary DNS address(es) of the server to be used by the AirStation for DNS resolution.

If DNS was set to **Disabled**, leave blank. If **Auto IP assignment from DHCP Server** was selected, DNS addresses are assigned automatically, provided the DHCP server is configured to provide them.

Remote Management Port Number - Set a specific port number when remote setup of the AirStation is planned. Using port 80 allows the AirStation to be accessed from the internet by connecting to http://xxx.xxx.xxx.xxx (where xxx.xxx.xxx.xxx is your WAN IP address).

Block Ping from WAN - Allows a PING test from the WAN/Internet. Select **Disable** or **Enable**.

Routing Setup
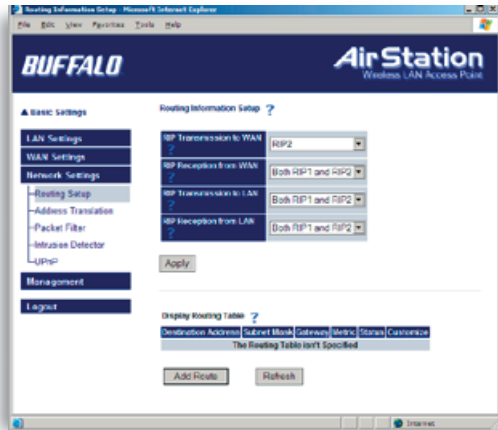
Network Settings
Routing Setup

RIP transmission to WAN - Allows RIP transmission or None (no RIP) to WAN

RIP reception from WAN - Allows RIP reception or None (no RIP) from WAN

RIP transmission to LAN - Allows RIP transmission or None (no RIP) to LAN

RIP reception from LAN - Allows RIP reception or None (no RIP) from LAN

RIP transmission to WAN - Allows RIP transmission or None (no RIP) to WAN

Display current information - Allows administrator to view and delete routing information.

Click **Add Route** to Add a Routing Table Entry
 •**Destination address** - Network IP address and subnet mask.
 • **Gateway** - Address through which the packet passes before it reaches the destination address.

Add Routing
Table Entry

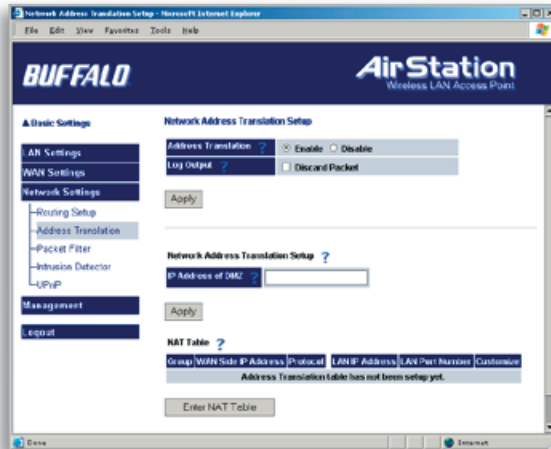**Routing information setup - Microsoft Internet Explorer**

Add routing table entry ?

Destination address ?	IP address	
	Subnet mask	255.255.255.0
Gateway ?		
Metric ?	15	

Add route

• **Metric** - Number of routers (1-15) to be passed before the packet reaches its destination.

Address
Translation
Setup

Address Translation

Select **Enable** or **Disable**. Address Translation must be enabled for client computers to connect to the Internet. Selecting **Enable** enables the following functions:

• **IP Masquerade** - When the LAN computer connects to the WAN side, the IP address of LAN computer is dynamically translated to become the WAN IP address of the AirStation. Multiple LAN computers can share one WAN IP address to access the Internet.

• **Static IP address translation** -When the WAN requests connection to the LAN, the WAN IP address of the AirStation is translated into the IP address of the LAN computer.

Log Output - Set 'Log Output' to log discarded packets. Otherwise, a dropped packed is not logged.

IPSec Pass-Through - Enables the AirStation's ability to pass IPSec VPN data.

IP Address of DMZ - Allows administrator to set the DMZ (De-Militarized Zone) address. Incoming packets containing no recognizable destination port information will be redirected to the DMZ's IP address.

Display/Delete NAT Table - Allows administrator to delete NAT tables.

Address Translation Setup

Add NAT Table

Group - Specify a group (up to 16 characters) that the NAT rule belongs to. Groups are simply used to visually organize the NAT table for the administrator. It is recommended that you name each group after the protocol that is being setup (e.g. Group Name FTP when setting up address translation for FTP).
Click **New Group** to create new group or select an existing group to add a NAT rule to it.

WAN Side IP Address - Select **AirStation's WAN Side IP Address** or **Manual IP Address**. For Manual setting, enter the IP address used by the WAN computer to connect to the local computer.

AirStation's IP Address of WAN should be used unless you have multiple WAN side IP addresses. Some network applications (including online games and streaming software) require adding Address Translation tables; consult the software's documentation for port information.

Protocol (WAN):

- **All** - Selects all IP protocols.
- **ICMP** - Network Diagnostic Protocol (1).
- **Manual** - Specify the protocol number (0-65535).
- **TCP/UDP** - Enter port number for TCP or UDP protocols. If both TCP and UDP are required, then separate entries are required.

LAN IP Address - Select **Manual IP Address** and enter the destination IP address of the LAN computer; or select **AirStation's LAN IP Address**.

Protocol (LAN) - Enter the destination port number. If left blank, the packets are transferred to the same port number as the source port number. Typically the destination port should be left the same as the source port.

• Click **Add to NAT table**. This will add the information to the NAT table. Once you have gone through this process for every desired translation, you will need to press the **Apply** button on the top of the screen to start the translating.

Packet Filter Setup
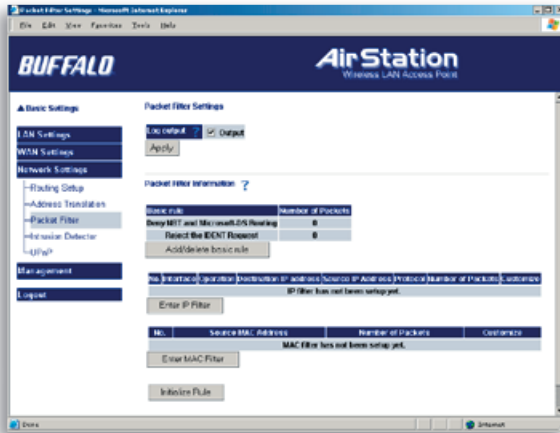
Packet Filter

Log Output - Select **Output** to activate the packet filter log.

Packet Filter Information - Click **add/delete basic rule**. Place a check mark next to the basic rule to enable.

Prohibit setup from wireless LAN - Prohibits administration from a wireless computer.

Prohibit setup from wired LAN - Prohibits administration from a wired computer.

Prohibit setup via wireless bridge access point - Prohibits setup from a personal computer connected to another AirStation in a wireless bridge.

Prohibit NBT and Microsoft-DS routing - Prevent unexpected external access via Microsoft network sharing. This prohibits computers on the internet from accessing shared resources on Windows machines. It is recommended that you leave this filter activated.

Reject the IDENT request - The AirStation sends reject packets if it receives an IDENT request. Use this filter when the communication speed goes down using a network application like E-mail,