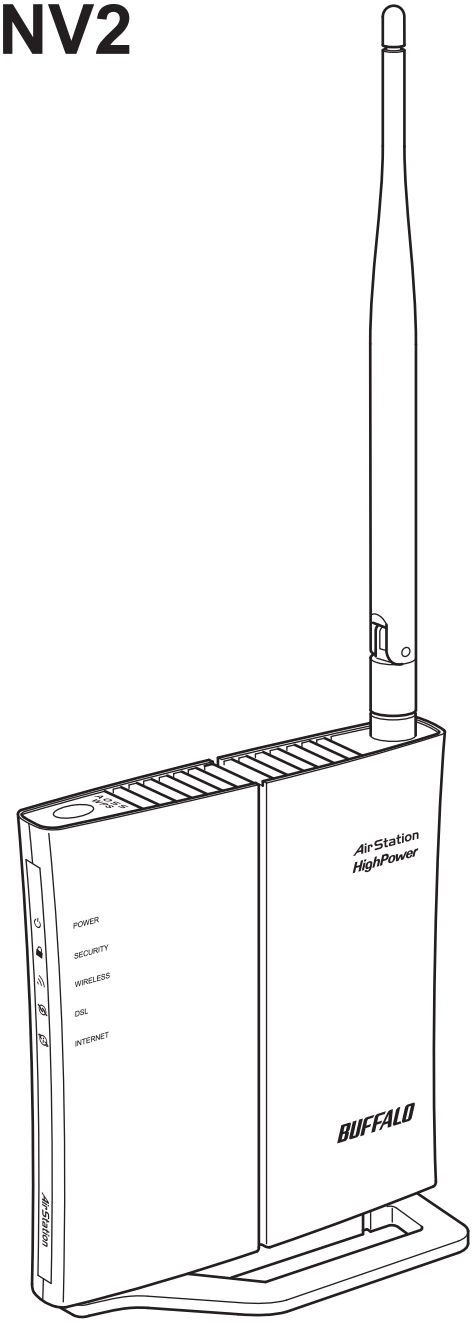
BUFFALO™

HighPower

User Manual

Broadband ADSL2+ Modem Router

WBMR-HP-GNV2



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Contents

Chapter 1 - Product Overview

Features

Supports IEEE802.11n and IEEE802.11b/g
With support for current Wireless-N, Wireless-G, and Wireless-B standards, the AirStation can transfer data to and from all standard 2.4 GHz wireless clients.

Dual speed mode
Dual speed mode makes wireless transmission faster by using 2 channels, allowing 150 Mbps data transmission.

Support AOSS and WPS
Both AOSS (AirStation One-touch Secure System) and WPS (Wi-Fi Protected Setup) are supported. These automatic connection standards make connection with compatible wireless devices easier.

Security Features
The AirStation is equipped with following security features:

- AOSS
- WPS
- WPA-PSK (TKIP/AES)
- WPA2-PSK(TKIP/AES)
- WPA/WPA2 mixed PSK
- WEP(128-bit and 64-bit)
- Privacy Separator
- MAC address access restriction
- Deny Any Connection/SSID stealth feature
- Setting screen with password
- Firewall feature with easy rules

Automatic Channel Selection
Monitors wireless interference and automatically assigns the clearest, best channel.

Initialization
To restore settings back to the factory defaults, hold down the Reset button on the bottom of the unit.

Browser Based Administration
This unit can be easily configured from a web browser on your computer.

Air Navigator CD Requirements

The AirStation wireless router and access point works with most wired and wireless devices. However, the automatic installation program on the CD requires a connected Windows 7, Vista or XP computer to run. If you use the AirStation with a different operating system, you will have to configure your network settings manually from a browser window.

150 Mbps High Speed Mode

150 Mbps is the link speed when using Wireless-N mode. It represents actual wireless data speeds, including overhead. Because the overhead is not available for user data transfer, usable wireless throughput will be substantially slower.

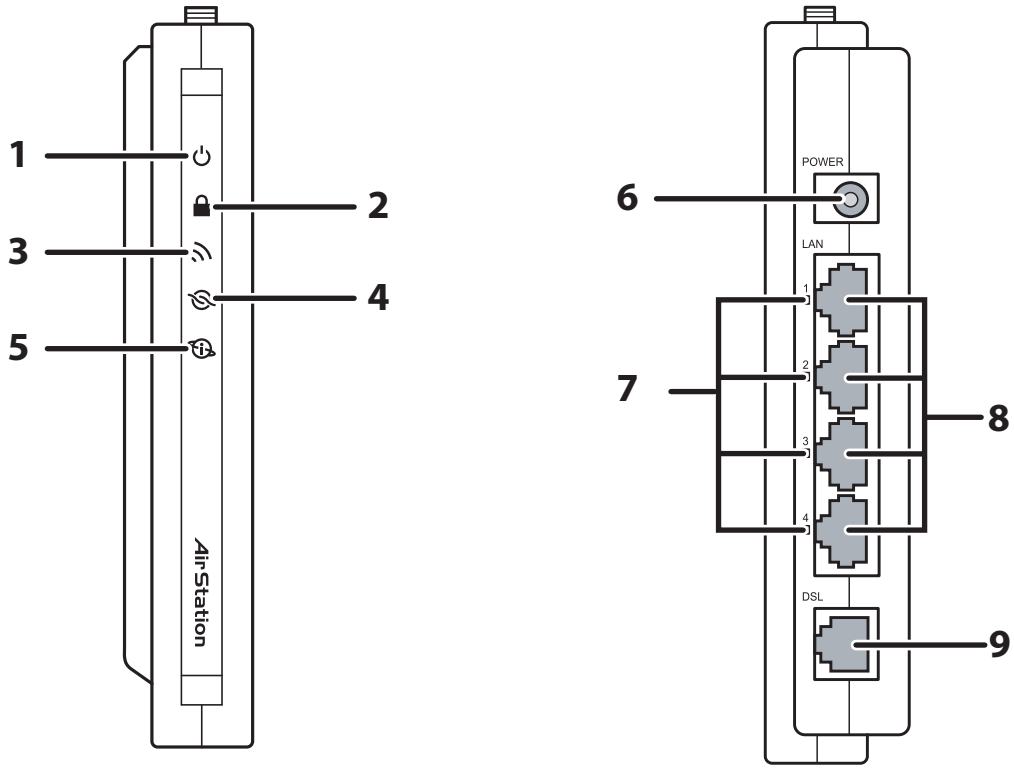
Package Contents

The following items are included in your AirStation package. If any of the items are missing, please contact your vender.

- WBMR-HP-GNV2 1
- Detachable antenna 1
- AC adapter 1
- Stand for vertical/horizontal/wall-mounting 1
- Screws for wall-mounting 2
- LAN cable 1
- DSL cable 1
- Air Navigator CD 1
- Quick Setup Guide 1

Hardware Overview

Front Panel LEDs / Back Panel



1 Power LED

On (Green) : The AC adapter is connected.
Off (Green) : The AC adapter is not connected.
Shows AirStation status.
2 blinks (Red) *1 : Flash ROM error.
3 blinks (Red) *1 : Wired Ethernet LAN error.
4 blinks (Red) *1 : Wireless LAN error.
5 blinks (Red) *1 : Network error.
9 blinks (Red) *1 : System error.
Continuously blinking (Red) *2 : Updating firmware, saving settings, or initializing settings.

*1 Turn off AirStation first, wait for a few seconds, then turn it back on.
*2 If the Power LED keeps blinking, do not turn off the AirStation nor unplug its power cable.

2 Security LED (Amber)

Indicates security status.

Off :	AOSS or Encryption is not set.
On :	AOSS/WPS activated; accessed to exchange security keys. Encryption has been set.
2 blinks :	The unit is waiting for an AOSS or WPS security key.
Blinking :	AOSS/WPS error; failed to exchange security keys.

Note : The Security LED is lit if an encryption key has been set.

3 Wireless LED (Green)

Indicates wireless LAN status.

On :	Wireless LAN is transmitting.
Off :	Wireless LAN is not active.

4 DSL LED (Green)

Indicates DSL status.

On :	The DSL port is connected.

5 Internet LED

Indicates Internet status.

On (Green) :	Connected to Internet
Blinking (Green) :	Communicating over Internet
On (Red) :	Not connected to Internet
Off :	Operating in bridge mode

6 DC Connector

Connect the included AC adapter here.

7 LAN LED (Green)

On :	An Ethernet device is connected.
Blinking :	An Ethernet device is communicating.

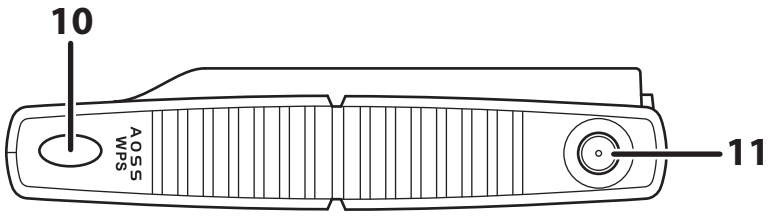
8 LAN Port

Connect your computer, hub, or other Ethernet devices to these ports. This switching hub supports 10 Mbps, 100 Mbps connections.

9 DSL Port

Connect your ADSL line to this port.

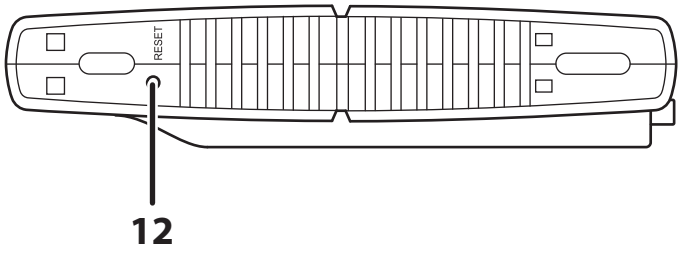
Top



10 AOSS Button To initiate AOSS, hold down this button until the Security LED flashes (about 1 second). Then, push or click the AOSS button on your wireless client device to complete the connection. Both devices must be powered on for this to work.

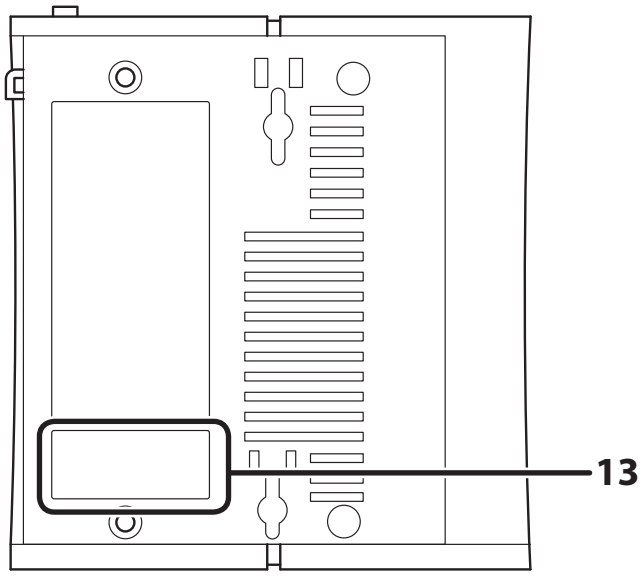
11 Antenna connector Screw on the antenna here.

Bottom



12 Reset Button To reset all settings, hold down this button until the Power LED comes on (about 3 seconds). Power must be on.

Right Side

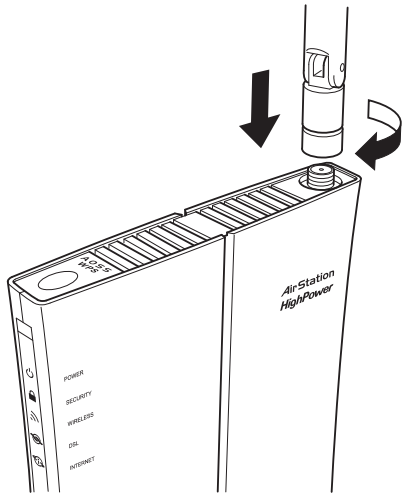


13 Factory Default Settings This sticker shows the AirStation's SSID, default encryption key, and WPS PIN code. By default, encryption is disabled for AirStations sold in Asia Pacific.

Chapter 2 - Placing Your AirStation

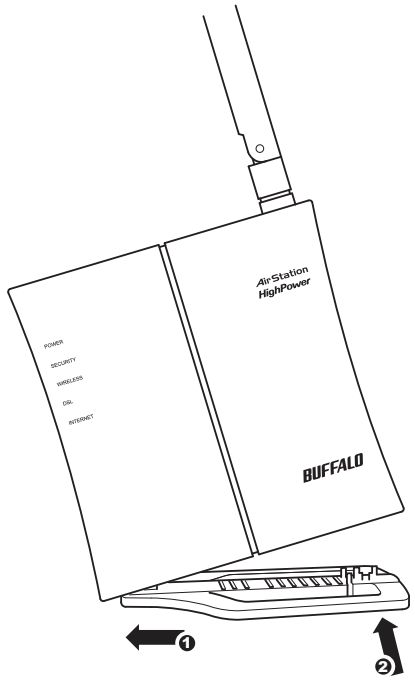
Antenna Placement

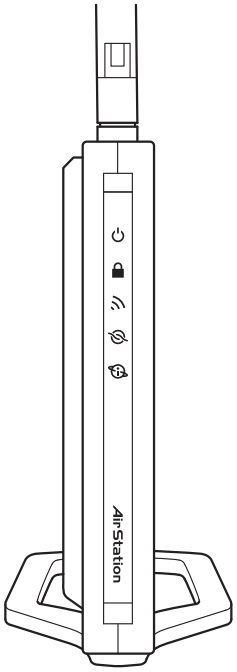
The antenna is included in the package. Screw the antenna clockwise to install.



Vertical Placement

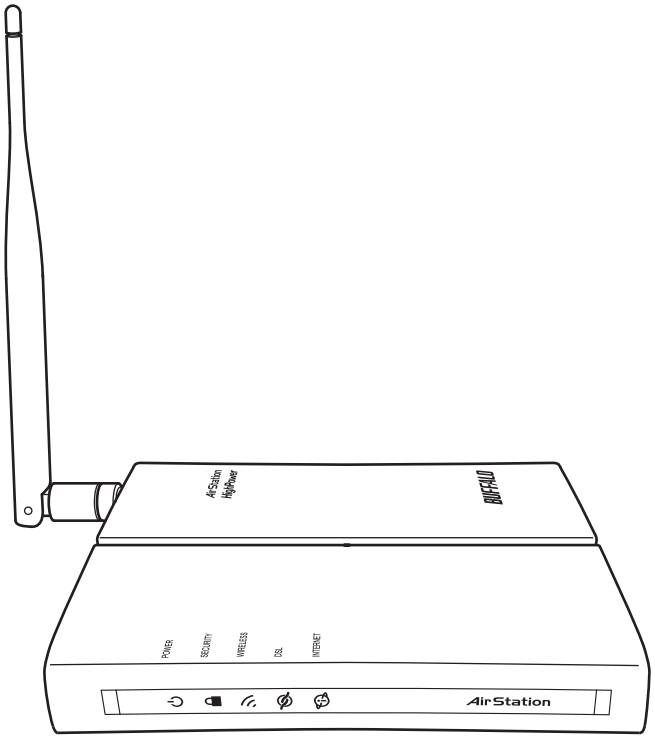
To place unit vertically, attach the stand as shown below.





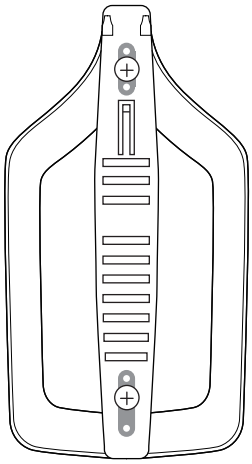
Horizontal Placement

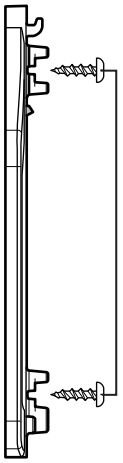
For horizontal placement, the stand is not used.



Wall-Mounting

1

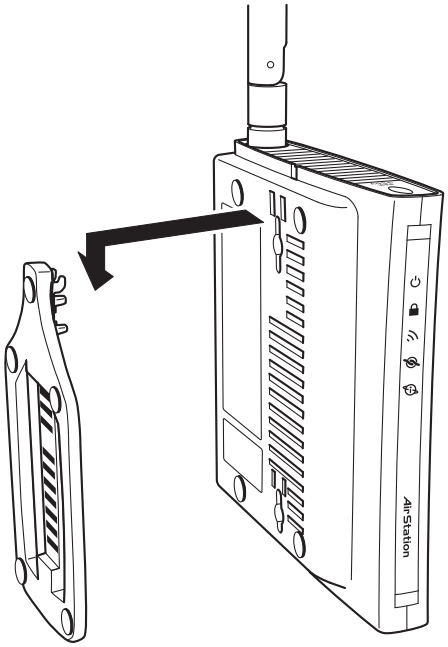




8.5 cm
(~3.3 inches)

To wall-mount the AirStation, attach the stand to the wall with the two screws (included).

2 Snap the center of the AirStation to the stand as shown.



Chapter 3 - Installation

Automatic Setup

The AirNavigator CD can step you through installing your AirStation. To step through the setup program, insert the CD into your Windows 7/Vista/XP PC and follow the instructions on the screen. If your computer uses a different operating system, use manual setup instead.

Note:
- **To use a wireless client in Windows 7 or Vista, perform setup using the AirNavigator CD to automatically generate a profile for wirelessly connecting to the AirStation. After setup is complete, once the LAN cable is removed, you can connect from your wireless client to the AirStation.**
- **Before performing setup, make the settings to enable the wireless client of the computer.**

Manual Setup

To configure your AirStation manually, follow the procedure below.

1 Power off your computers and networking equipment.

2 Connect your computer to one of the LAN ports on the rear of the AirStation with the supplied Ethernet network cable.

3 Connection for the AirStation to the ADSL line varies by country and region. Typically it involves a microfilter or a microfilter with built-in splitter to allow simultaneous use of ADSL service and telephone service on the same telephone line. Please read the following steps carefully and select the appropriate method.

- If your telephone service and ADSL service are on the same telephone line, ADSL microfilters are needed for each telephone and device, such as answering machine, fax machine, and caller ID display. Additional splitters may be used to separate telephone lines for telephone and Router.

  Note: Do not connect the ADSL microfilter between the wall jack and the Router—this will prevent ADSL service from reaching the modem.

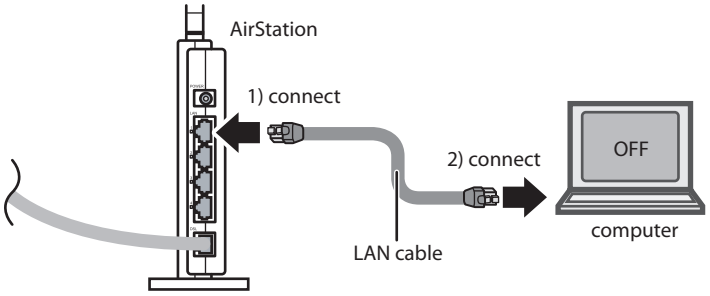
- If your telephone service and ADSL service are on the same telephone line and you are using an ADSL microfilter with built-in splitter, connect the splitter to the telephone wall jack providing ADSL service. Then, connect the telephone cord from the ADSL microfilter RJ11 port generally labelled 'DSL' to the gray RJ11 port labelled 'DSL line' on the back of your Router. Connect the telephony device to the other port on the ADSL splitter commonly labelled 'Phone'.

  Note: An RJ11 telephone cord is supplied. When inserting an RJ11 plug, be sure the tab on the plug clicks into position correctly.

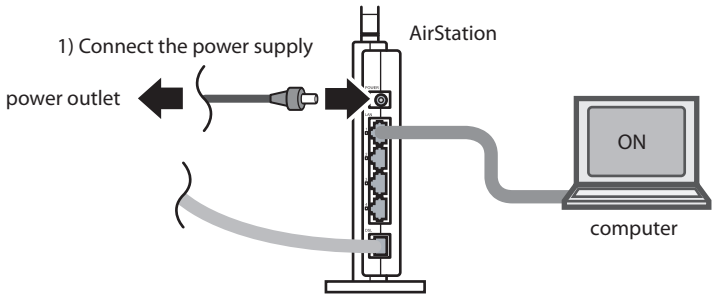
- If you have a dedicated ADSL service telephone line with an RJ11 wall jack, simply connect a telephone cord from the wall jack to the DSL port on the back of the AirStation.

- If you have an RJ45 wall jack for your ADSL service, connect an RJ45-to-RJ11 converter to the wall jack. Then connect one end of the telephone cord to the converter and the other end to the DSL port on the back of the AirStation.

4 Connect your computer to one of the AirStation's LAN ports with the LAN cable.



5 Turn on the AirStation, wait one minute, and then turn on your computer.



6 Once your computer has booted, the AirStation's LEDs should be lit as described below:

POWER	Green light on.
WIRELESS	Green light on or blinking.
DSL	Green light on or off depending on your network.
INTERNET	Green light on.
LAN	Green light on or blinking.

For LED locations, refer to chapter 1.

7 Launch a web browser. If the [home] setup screen is displayed, setup is complete. If a user name and password screen is displayed, enter [root] (in lower case) for the user name, leave the password blank, and click [OK]. Step through the wizard to complete setup.

You've completed initial setup of your AirStation. Refer to Chapter 4 for advanced settings.

Gathering Information

Most DSL providers require PPPoE or PPPoA details to log in to your connection. You must call your ISP's Technical Support number to obtain the following information:

Username : This is the Username that is used to log onto your ADSL service provider's network. It is commonly in the form – user@isp.com.

Password : This is the Password that is used, in conjunction with the Username above, to log on to your ADSL service provider's network.

Connection Protocol : This is the method that your ADSL service provider uses to send and receive data between the Internet and your computer.

VPI : This is the Virtual Path Identifier (VPI). It is used in conjunction with the Virtual Channel Identifier (VCI) below, to identify the data path between your ADSL service provider's network and your computer.

VCI : This is the Virtual Channel Identifier (VCI). It is used in conjunction with the VPI above to identify the data path between your ADSL service provider's network and your computer.

Note : This information should be stored and kept to hand as it will be required to enable you to establish an internet connection.

The table below is a quick reference guide for configuring your ADSL Internet connection. You may try the settings for the ISPs shown.

Country	Encapsulation	VPI / VCI	Multi plexing	ISPs
France	RFC2516 PPPoE	8/35	LLC	Various
	RFC2516 PPPoE	8/67	LLC	
	RFC2364 PPPoA	8/35	VC	
Germany	RFC2516 PPPoE	1/32	LLC	T-Online, Various

Country	Encapsulation	VPI / VCI	Multi plexing	ISPs
Holland	RFC1483 Bridged	0/35 0/32 0/34	LLC	BBNed, XS4all Versatel, DHCP Baby XL, Tiscali. (start/Surf/ Family/Live)
	RFC2364 PPPoA	8/48	VC	KPN, Hetnet, HCCNet, Tiscali (lite/ Basis/Plus), Wanadoo
	RFC2364 PPPoA	0/32	VC	Versatel PPP, Zonnet
	RFC2516 PPPoE	8/35	LLC	Various
Belgium	RFC2364 PPPoA	8/35	LLC	Belgacom, Tiscali, Scarlet
Ireland	RFC2516 PPPoE	8/35	LLC	Eircom, BT, Digiweb, Irish Broadband
Italy	RFC2516 PPPoE	8/35	VC	TIN
Spain	RFC2516 PPPoE	8/32	LLC	Telefonica
Sweden	RFC1483 Bridged	3/35	LLC	Telia
UK	RFC2364 PPPoA	0/38	VC	BT, Freeserve, Tiscali, AOL

Chapter 4 - Configuration

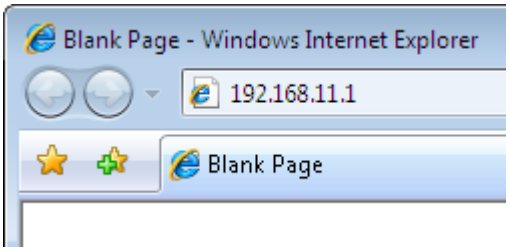
The web-based configuration tool lets you change advanced settings for the AirStation. Don't change these settings unless you know what you're doing.

How to Access the Web-Based Configuration Utility

To configure the AirStation's advanced settings manually, log in to the web-based configuration utility as shown below.

1 Launch a web browser.

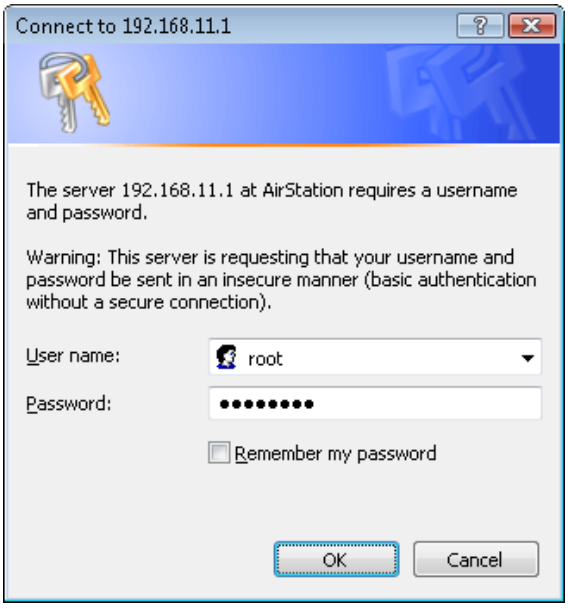
2



Enter the AirStation's LAN-side IP address in the address field, and press the [Enter] key.

Note:
- The AirStation's default LAN-side IP address is 192.168.11.1.
- If you changed the IP address of the AirStation, then use the new IP address.

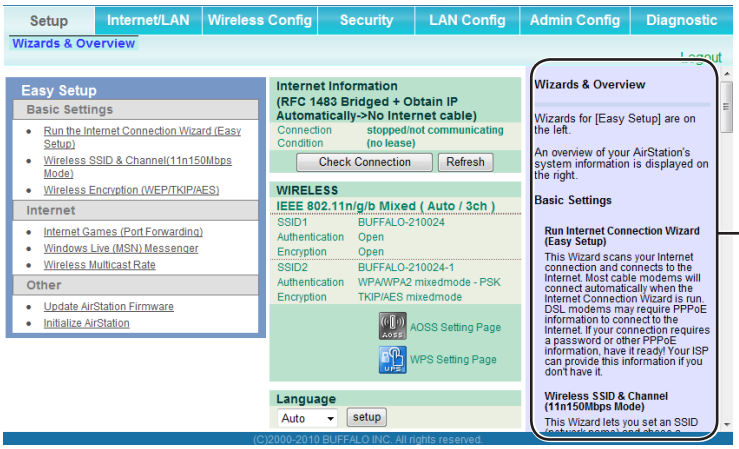
3



When this screen appears, enter [root] (in lower case) for the user name and the password that you set during initial setup. Click [OK].

Note:
- By default, the password is blank (not set).
- If you forget your password, hold down the Reset button (page 10) to initialize all settings. The password will then be blank. Note that all other settings will also revert to their default values.

4



This is the configuration utility, where most AirStation settings can be configured.

Help is always displayed on the right side of each screen. Refer to the Help screens for more information on using the configuration utility.

Configuration Utility Menus

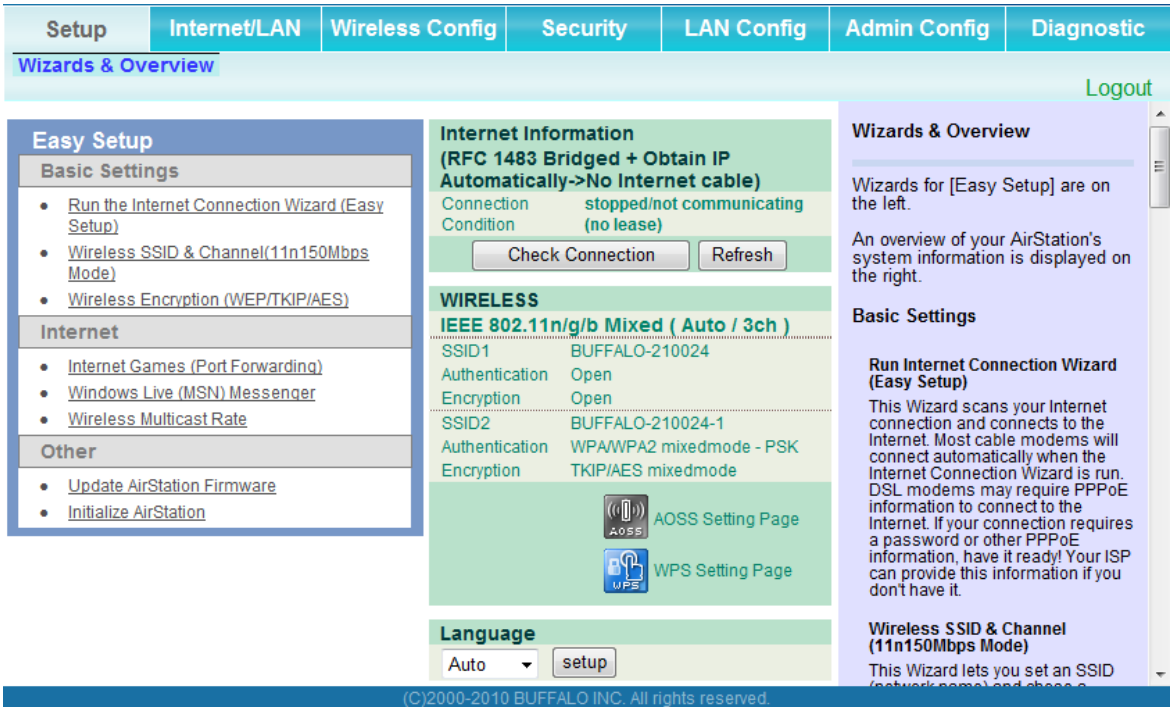
The menu structure for the AirStation is as follows. Please refer to the pages listed at right for explanations of each item.

Main screen	Descriptions	Page
Internet/LAN		
Internet	Configure Internet settings.	Page 25
DDNS	DNS settings.	Page 29
Route	Configure the AirStation's IP communication route.	Page 31
Wireless Config		
WPS	WPS settings and status.	Page 32
AOSS	AOSS (AirStation One-touch Secure System) settings and status.	Page 33
Basic	Configure basic wireless settings.	Page 35
Advanced	Configure advanced wireless settings.	Page 39
WMM	Set priorities for Wireless Multimedia Extensions (Wi-Fi Multimedia).	Page 40
MAC Filter	Limit access to specific devices.	Page 42
Security		
Firewall	Protect your computer from outside intruders.	Page 43
IP Filter	IP filters for packets passing through the LAN side and the Internet side.	Page 44
VPN Passthrough	Configure IPv6 passthrough, PPPoE passthrough, and PPTP passthrough.	Page 45
LAN Config		
Port Forwarding	Configure port translation and exceptions for games and other programs.	Page 46
DMZ	Configure a destination to transfer communication packets without a LAN side destination.	Page 48
UPnP	Configure UPnP (Universal Plug and Play).	Page 48
QoS	Configure priority for packets that require a guaranteed data flow.	Page 49
Admin Config		
Name	Configure the AirStation's name.	Page 50
Password	Configure the AirStation's login password for access to the configuration utility.	Page 51
Time/Date	Configure the AirStation's internal clock.	Page 52
NTP	Configure the AirStation to synchronize with an NTP server to automatically set the AirStation's internal clock.	Page 53
ECO	Configure the AirStation's ECO Mode.	Page 54

Access	Configure access restrictions to the AirStation's configuration screens.	Page 56
Log	Configure a syslog server to manage the AirStation's logs.	Page 57
Save/Restore	Save or restore the AirStation's configuration from a configuration file.	Page 58
Initialize/Restart	Initialize the AirStation or reboot it.	Page 59
Update	Update the AirStation's firmware.	Page 60
Diagnostic		
System Info	View current system information for the AirStation.	Page 61
Logs	Check the AirStation's logs.	Page 63
Packet Info	View all packets transferred by the AirStation.	Page 64
Client Monitor	View all devices currently connected to the AirStation.	Page 65
Ping	Test the AirStation's connection to other devices on the network.	Page 66
DSL Connection	View DSL Connection for the AirStation.	Page 67
Logout		
Click this to log out of the AirStation's configuration screens.		

Setup

Setup is the home page of the configuration utility. You can verify settings and the status of the AirStation here.



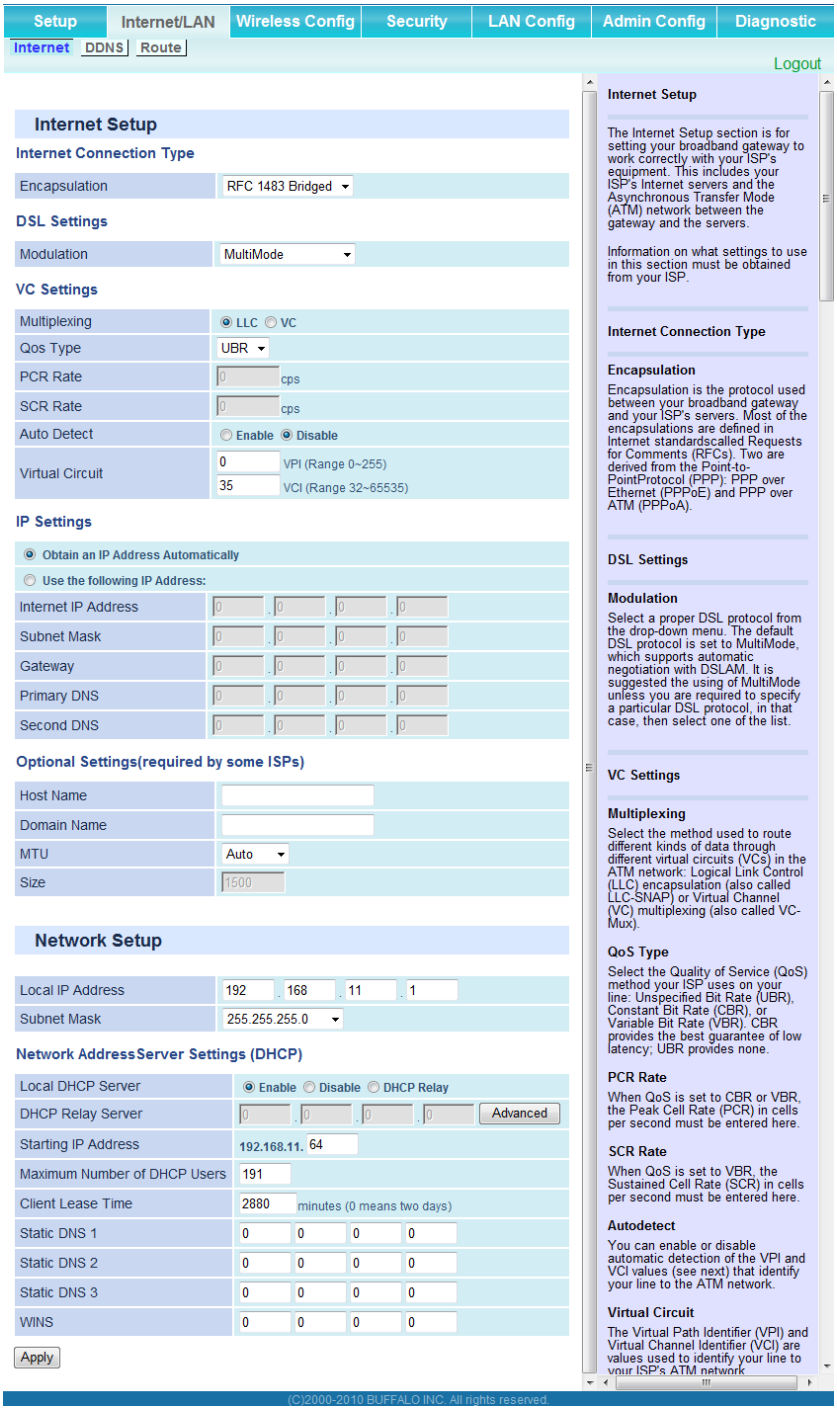
Parameter	Meaning
Internet/LAN (LAN Config)	Displays the configuration screen for the Internet port and LAN ports.
Wireless Config	Click this button to display the configuration screen for wireless settings.
Security	Click this button to display the configuration screen for security.
LAN Config	Click this button to display the configuration screen to open ports for games and applications.
Admin Config	Click this button to display the configuration screen for administration settings.
Diagnostic	Click this button to display the status of the AirStation.
Easy Setup	Enables you to easily configure the AirStation's network settings automatically.
Internet Information	Displays WAN-side system information for the AirStation.

Parameter	Meaning
WIRELESS	Displays the current wireless settings.
AOSS Setup	Click this button to display the AOSS configuration screen.
WPS Setup	Click this button to display the WPS configuration screen.
Language	Enables you to select the language you use.
Logout	Log out from the configuration screen of the AirStation. If the AirStation does not communicate for 5 minutes, it will log out automatically.

Internet/LAN

Internet

The Internet settings are made here. For details on the settings, refer to the documentation provided by your ADSL provider.



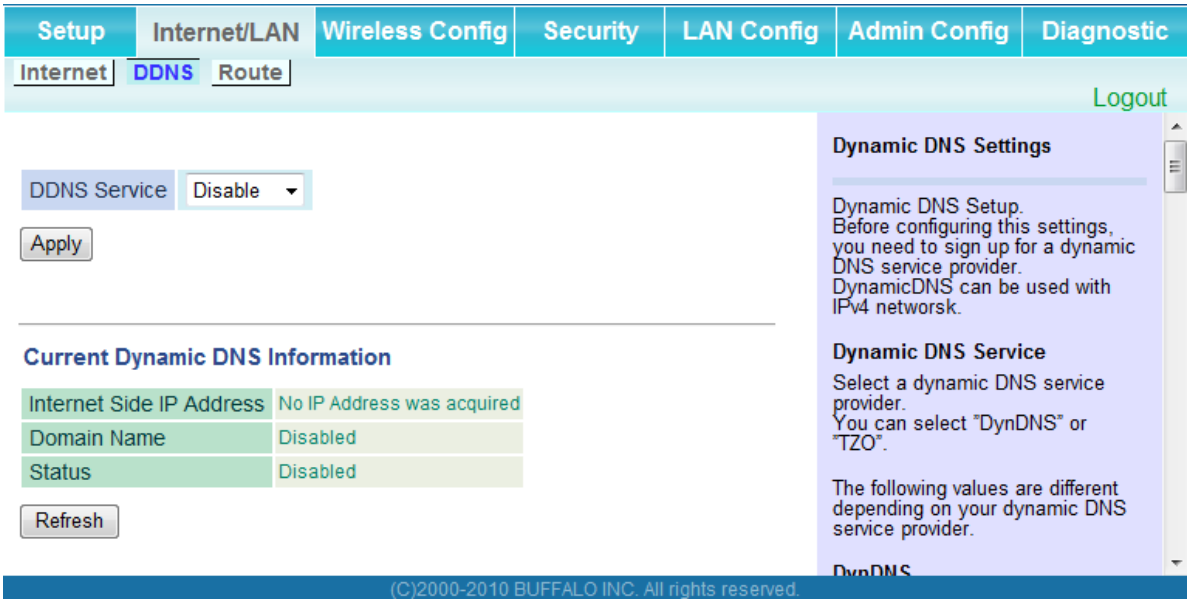
Parameter	Meaning
Internet Setup	
Encapsulation	Set the ADSL communication method.
Modulation	Set the modulation system used in ADSL communication.
Multiplexing	Set the encapsulation system for VC multiplexing. Select from LLC (Logical Link Control Encapsulation) which can handle multiple protocols or VC (Virtual Circuit) for a single protocol.
QoS Type	Set the QoS (Quality of Service). Select from the three service categories (UBR, CBR, VBR) where the QoS is guaranteed in the band.
PCR Rate	Set the PCR (Peak Cell Rate) when CBR or VBR is selected for QoS Type. The network upper limit transfer speed is set in the range from 1 to 65534 cps.
SCR Rate	Set the SCR (Sustainable Cell Rate) when CBR or VBR is selected for QoS Type. The network sustainable transfer speed is set in the range from 1 to 65534 cps.
Auto Detect	Set to VPI (Virtual Path Identification) or VCI (Virtual Channel Identification) of the virtual circuit when Disable is selected for Auto Detect.
Virtual Circuit	Set automatic detection of the virtual circuit.
Obtain an IP Address Automatically(DHCP)/Use following IP Address	This option is displayed when RFC1483 Bridged is selected in the Encapsulation field. Select whether the IP address, subnet mask, gateway, and DNS are obtained automatically or manually.
Internet IP Address	Set the “public” (or “global”) IP address that identifies your broadband gateway on the Internet.
Subnet Mask	Set the Internet subnet mask.
Gateway	Set the Gateway address specified by the provider.
Primary DNS / Second DNS	Set the DNS server address specified by the provider.
Service Name	Set the service name specified by the provider in 64 or less single-byte alphanumeric characters.

Parameter	Meaning
User Name	Set the user name (PPP login name) specified by the provider in 64 or less single-byte alphanumeric characters and symbols. If the name specified by the provider contains an @ mark, the characters after the @ mark cannot be omitted when entering the User Name.
Password	Set the password specified by the provider in 64 or less single-byte alphanumeric characters and symbols.
Connect on Demand/Keep Alive	Select the Connect on Demand or Keep Alive. When Connect on Demand is selected, the AirStation is automatically connected to the server only when communication is performed. The connection is disconnected if the communication is not performed for a preset time (disconnect time). Set the disconnect time in the range from 1 to 9999 minutes. When Keep Alive is selected, the AirStation issues an LCP echo request to the server periodically at preset time intervals, and the response received from the server is used to confirm that communication is enabled. If no response from the server is received, the AirStation assumes that the line is disconnected, and it disconnects the connection. Set the Keep Alive time interval in the range from 20 to 180 seconds.
Host Name	Set the host name that is sent to the server when acquiring the IP address from the Internet.
Domain Name	Set the domain name.
MTU	Set the MTU (Maximum Transmission Unit) that is used in communication. Select from Auto or Manual. When set to Manual, the available range is set from 576 to 1500 bytes.
Network Setup	
Local IP Address / Subnet Mask	By default, the LAN side IP address is 192.168.11.1 with subnet mask 255.255.255.0. You may change it here.
Local DHCP Server	The factory setting of this control, Enable, sets the gateway to act as a DHCP server for local machines. When this setting is used, you can set a range of IP addresses to be assigned by DHCP. Addresses outside this range can be assigned manually to machines set to use fixed IP settings.

Parameter	Meaning
DHCP Relay Server	When Local DHCP Server is set to DHCP Relay, you must enter the IP address of the remote DHCP server here. (Note that "DHCP relay server" is a widely used but incorrect term for a remote DHCP server.)
Starting IP Address	This is the lowest address in the range that the gateway will assign by DHCP.
Maximum Number of DHCP Users	This is the number of addresses that can be assigned by DHCP.
Client Lease Time	This is the number of minutes any DHCP client is given exclusive use of a (non-reserved) DHCP-assigned IP address. This can be from 1 to 9999.
Static DNS 1 / Static DNS 2 / Static DNS 3	Enter the IP address(es) of one to three name servers.
WINS	Enter the IP address of a Windows Internet Name Service server, if such a server is available to you.

DDNS (Router Mode only)

Configure Dynamic DNS settings. Many settings are only available when the appropriate Dynamic DNS service is enabled.

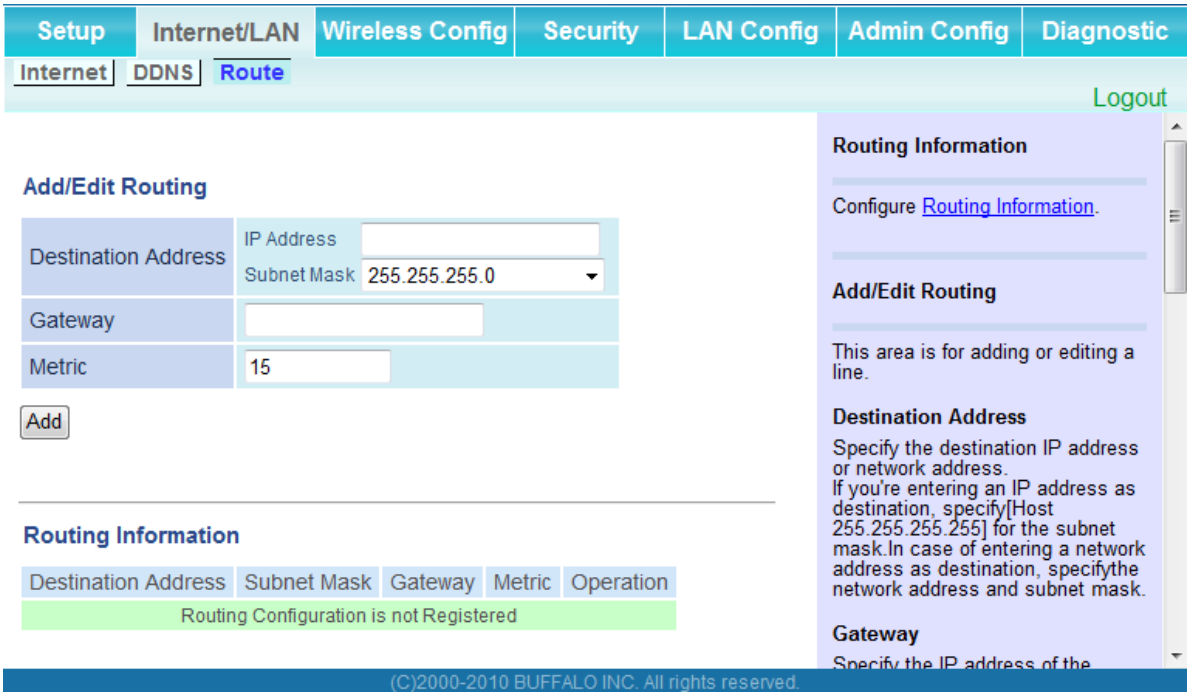


Parameter	Meaning
DDNS Service	Select a provider (DynDNS or TZO) for Dynamic DNS.
User Name	Enter the Dynamic DNS user name. You may enter up to 64 alphanumerical characters and symbols.
Password	Enter the Dynamic DNS password. You may enter up to 64 alphanumerical characters and symbols.
Host Name	Enter the Dynamic DNS host name. You may enter up to 255 alphanumerical characters, hyphens, and periods.
Email Address	Enter the email address which is registered to the Dynamic DNS service. You may enter up to 64 alphanumerical characters and symbols.
TZO Key	Enter the TZO Key which is registered to the Dynamic DNS service. You may enter up to 64 alphanumerical characters and symbols.
Domain Name	Enter the domain name which is registered to the Dynamic DNS service. You may enter up to 255 alphanumerical characters, hyphens, and periods.

Parameter	Meaning
IP Address Update Period	Specifies the period to notify the dynamic DNS service provider of the current IP address. For DynDNS, set it between 0 and 35 days. For TZO, set it between 0 and 99 days. If 0 (zero) days is set, no periodic update is performed.
Internet Side IP Address	The WAN-side IP address of the AirStation's Internet port. This address is sent to the dynamic DNS service provider.
Domain Name	The domain name assigned by the dynamic DNS Service provider. The AirStation can be accessed from the Internet using this domain name.
Status	Display the status of dynamic DNS service.

Route

Configure the AirStation's IP communication route.

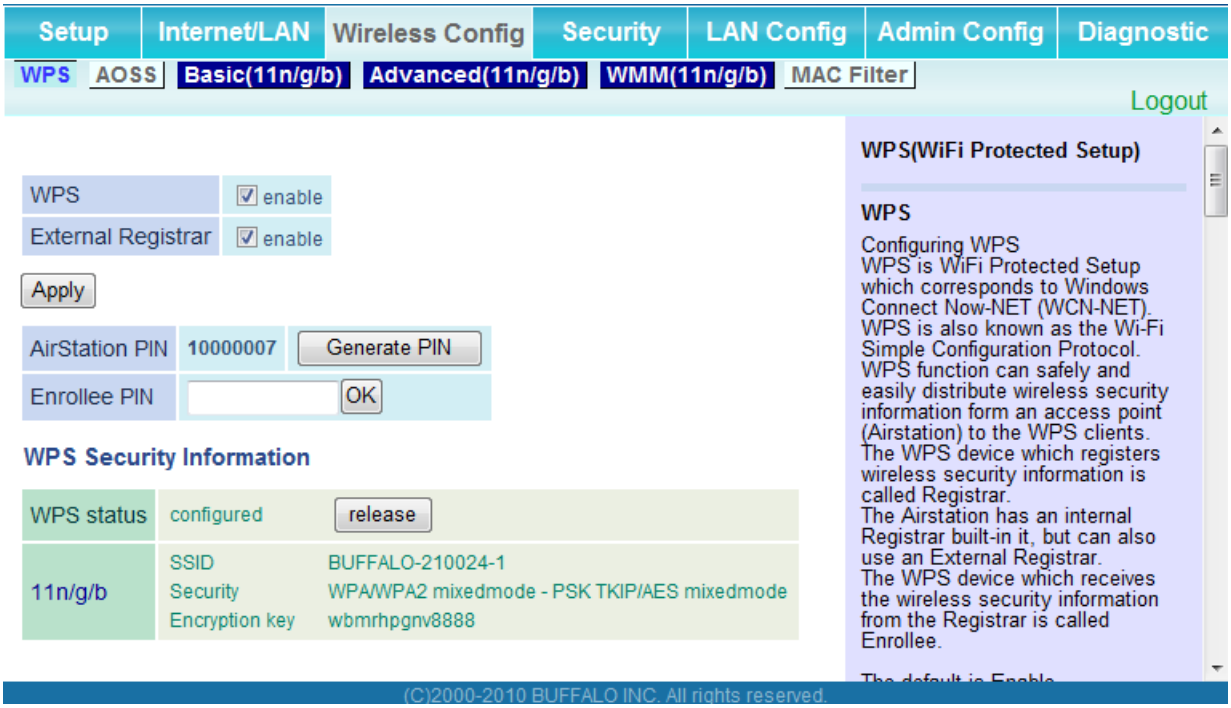


Parameter	Meaning
Destination Address	Adds a destination IP address and subnet mask to a routing table.
Gateway	Adds a gateway address to a routing table.
Metric	The metric is the maximum number of router hops a packet may take on the way to its destination address. Values between 1 and 15 may be entered. The default value is 15.
Routing Information	Manual entries will appear here after being added.

Wireless Config

WPS

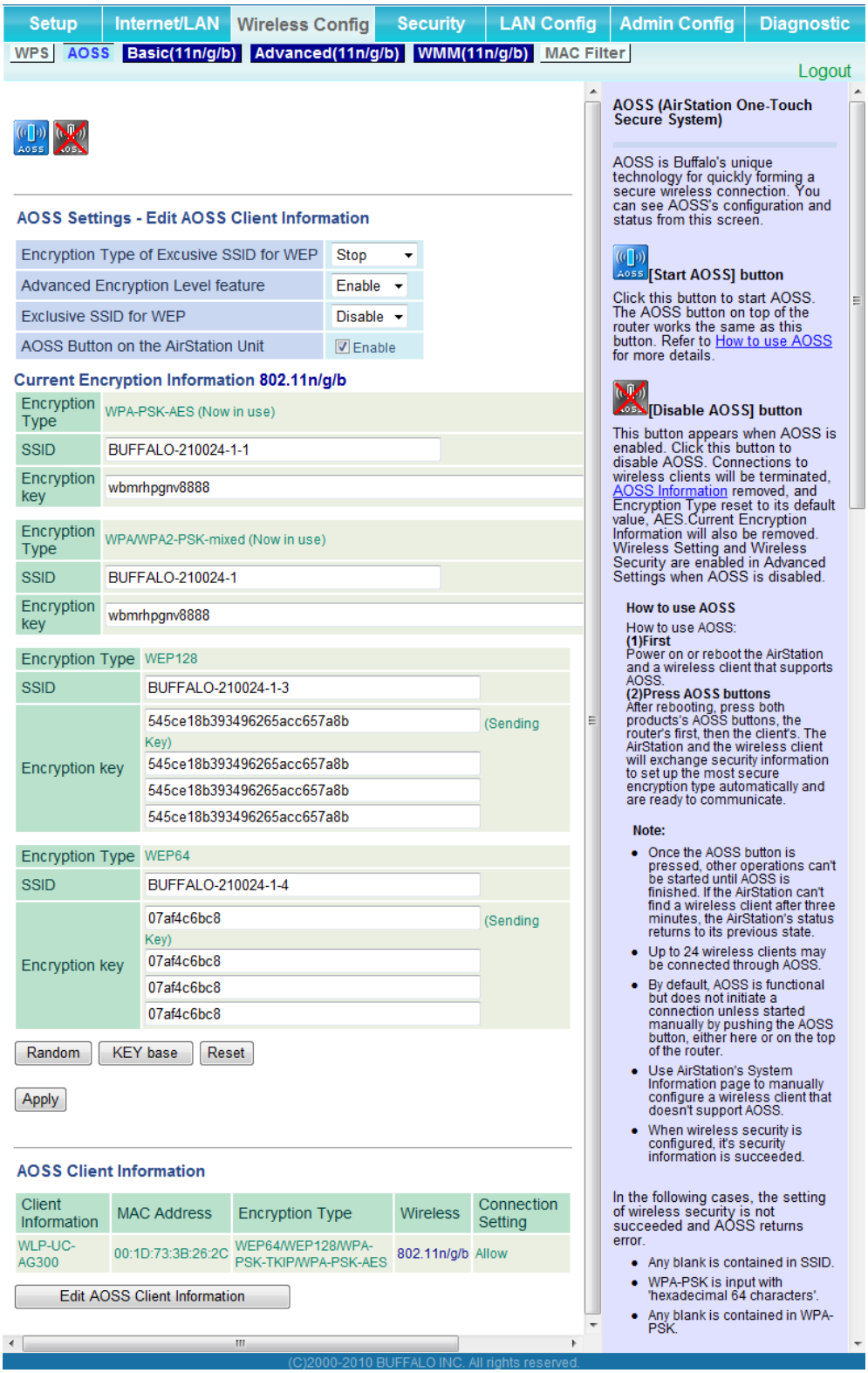
WPS Status and Settings.



Parameter	Meaning
WPS	Enable to use WPS automatic configuration.
External Registrar	Enable to accept the external configure requests from other WPS devices. Note: External configure requests will not be accepted if AOSS is in use.
AirStation PIN	Displays the PIN code of the AirStation. Clicking [Generate PIN] will generate a new PIN code. This code can be entered into other wireless devices that support WPS.
Enrollee PIN	Enter the PIN code for the other wireless device and click [OK].
WPS status	Displays [configured] if all available wireless bands are configured. Displays [unconfigured] if at least one wireless band is unconfigured.

AOSS

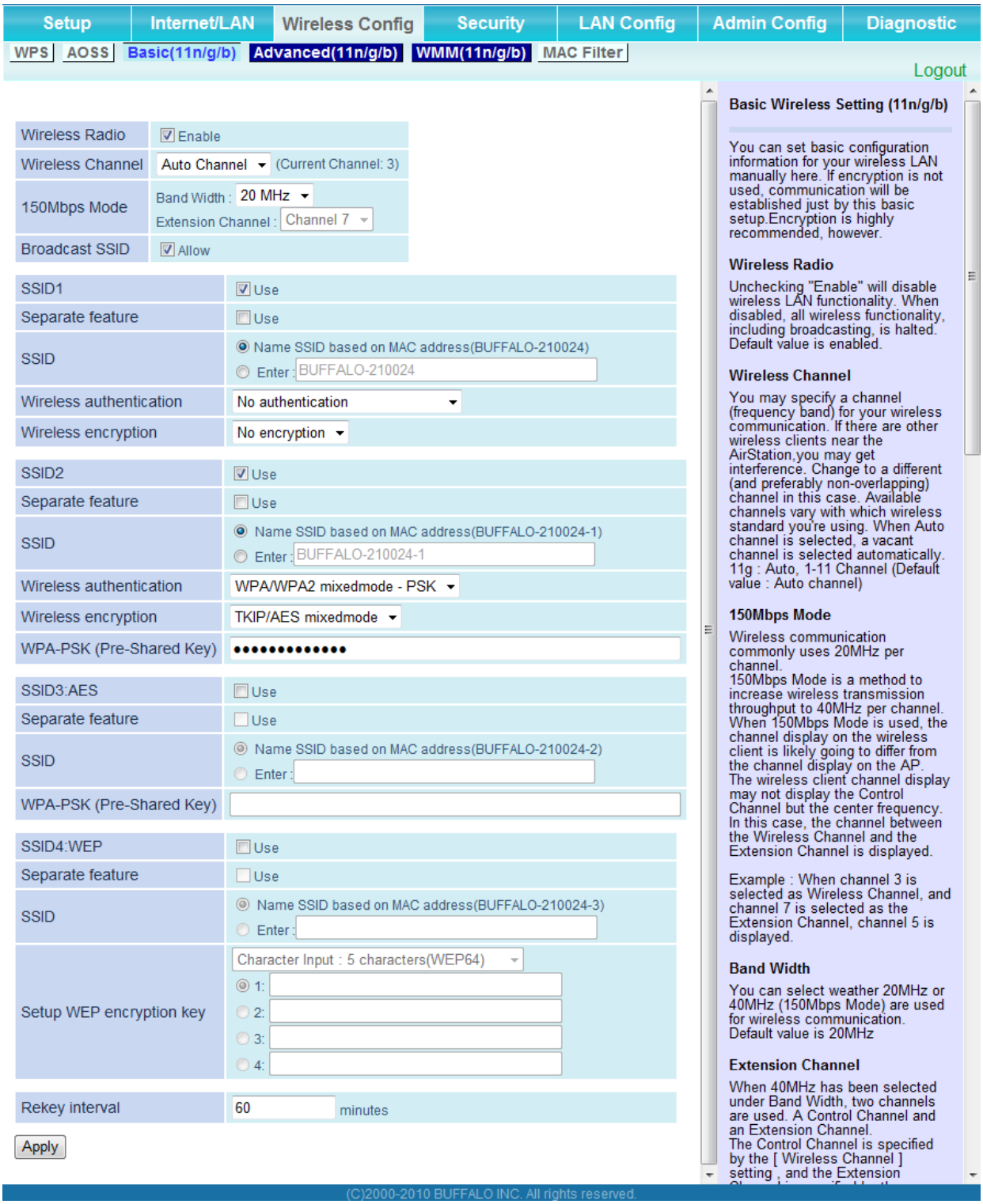
AOSS Status and Settings.



Parameter	Meaning
	Initiates AOSS automatic wireless configuration. Click this, then press or click the AOSS button on your AOSS-compatible wireless client. Repeat for additional AOSS clients.
	Click this button to disconnect AOSS connections. Note: If AOSS connections are disconnected, the SSID and encryption keys will be restored to their most recent settings before using AOSS.
Encryption Type of Exclusive SSID for WEP	You may allow a separate SSID specifically for WEP connections. If [disabled] is selected, then clients will not be able to connect with WEP.
Advanced Encryption Level feature	Expands security method from TKIP to WPA/WPA2-PSK-mixed mode.
Exclusive SSID for WEP	Set a separate SSID and network segment specifically for WEP connections. Devices connected with WEP will not be able to communicate with devices connected using AES/TKIP. All connected devices will be able to communicate with the internet.
AOSS Button on the AirStation Unit	Uncheck to disable the physical AOSS button on the AirStation.
Current Encryption Information * AOSS Connection only	Displays the encryption type, SSID, an encryption key configured by AOSS.
AOSS Client Information* * AOSS Connection only	Displays AOSS clients connected to the AirStation and information of the devices which are wirelessly communicated.

Basic

The screen to configure a basic wireless settings.



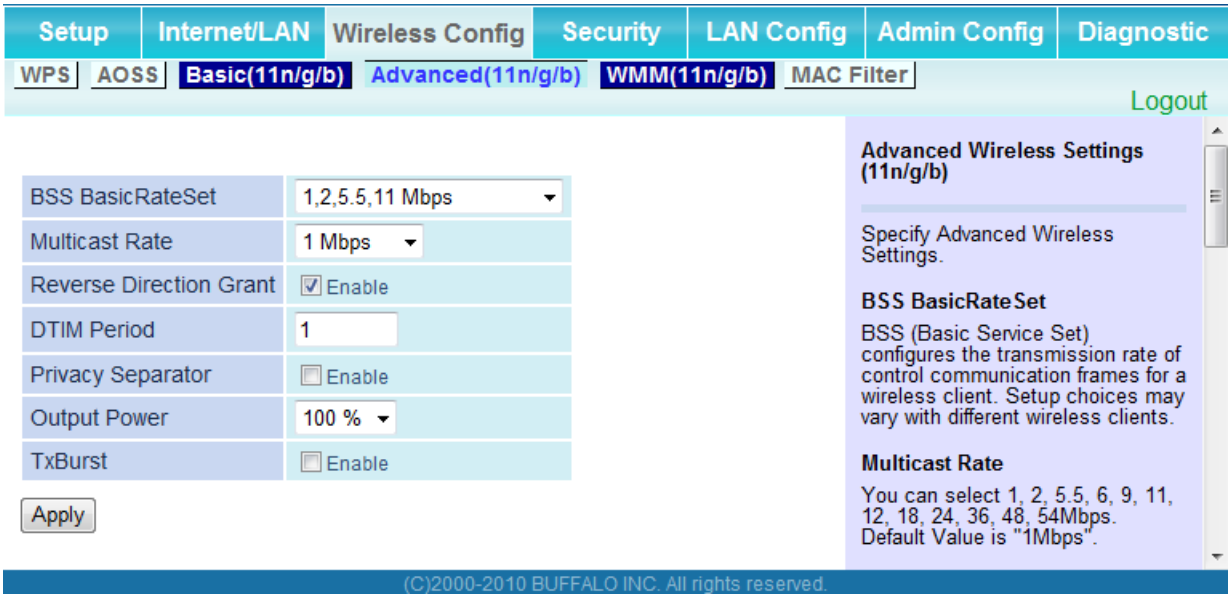
Parameter	Meaning
Wireless Radio	Determines whether to allow wireless communication. If this is unchecked, then no wireless connections will be allowed.
Wireless Channel	Sets a channel (a range of frequencies) used for wireless connections. With Auto Channel selected, the AirStation will automatically use the best available channel.
150 Mbps Mode	150 Mbps mode is a method to increase wireless transmission throughput to 40 MHz per channel. To use 150 Mbps mode, set the Bandwidth to 40 MHz and choose an Extension Channel. Note: If using Auto Channel for the wireless channel, then the Extension Channel is set automatically.
Broadcast SSID	If [Allow] is checked, then the AirStation will respond to SSID searches from wireless devices by broadcasting its SSID. If [Allow] is unchecked, then the AirStation ignores SSID searches from wireless devices.
[Use Multi Security function] [Do not use Multi Security function]	Clicking [Use Multi Security function] will enable Multi Security, allowing the use of multiple SSIDs, each with different wireless security settings. Clicking [Do not use Multi Security function] will disable the Multi Security function. The AirStation will then allow one SSID and one type of wireless security.
SSID1	Always enabled and supports all wireless encryption types. Encryption can be disabled.
SSID2	Always enabled and supports all wireless encryption types. Encryption can be disabled.
SSID3	SSID3 can use WPA-PSK-AES encryption.
SSID4	SSID4 can use WEP encryption.
Separate feature	When [use] is enabled, wireless devices connected to the AirStation can communicate only with the Internet side, not with each other.
SSID	Set SSID using 1-32 alphanumeric characters.
Wireless authentication	Specifies an authentication method used when connecting to a wireless device.

Parameter	Meaning
Wireless encryption	You may use any of the following types of encryption: **No encryption** Data is transmitted without encryption. Avoid this option since any communication may be intercepted. [No encryption] can be selected only when [No authentication] is selected for Wireless authentication. **WEP** WEP is a common encryption method supported by most devices. Use an encryption key to communicate with a wireless device. WEP can only be selected when [No authentication] is selected for Wireless authentication. **TKIP** TKIP is an encryption method which is more secure than WEP, but slower. Use an pre-shared-key to communicate with a wireless device. TKIP can be selected only when WPA-PSK or WPA2-PSK is selected for Wireless authentication. **AES** AES is more secure than TKIP, and faster. Use a pre-shared-key to communicate with a wireless device. AES can be selected only when WPA-PSK or WPA2-PSK is selected for Wireless authentication. **TKIP/AES mixed mode** TKIP/AES mixed mode allows both TKIP and AES authentication and communication. TKIP/AES mixed mode can be selected only when WPA/WPA2 mixed mode - PSK is selected for Wireless authentication.

Parameter	Meaning
WPA-PSK (Pre-Shared Key)	A pre-shared key or passphrase is the [password] for your wireless connections. There are two different formats for a pre-shared key. Use 8 to 63 alphanumeric characters (case-sensitive) for a [character] (ASCII) passphrase, or use 64 digits using 0 to 9 and a to f (not case-sensitive) for a [hexadecimal] passphrase..
Rekey interval	Set the update interval for the encryption key between 0 and 1440 (minutes).
Set up WEP encryption key	A WEP encryption key (passphrase) may have any of four different formats. A [character] (ASCII) passphrase may use either 5 or 13 alphanumeric characters (case-sensitive). A [hexadecimal] passphrase may use either 10 or 26 digits using 0 to 9 and a to f (not case-sensitive).

Advanced

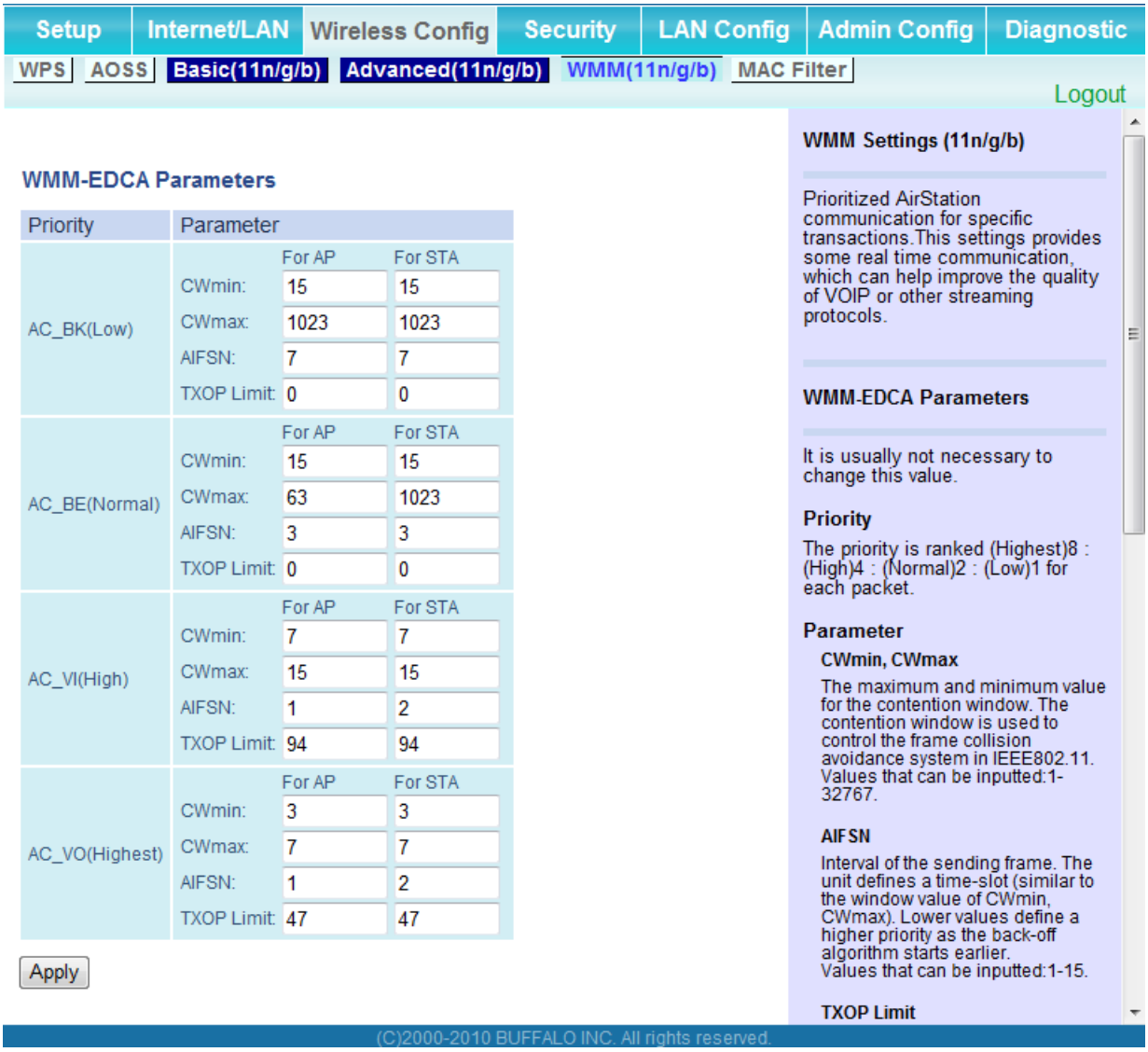
Configure advanced wireless settings.



Parameter	Meaning
BSS Basic Rate Set	Set the communication speeds of administrative and communication control frames of the AirStation and wireless devices.
Multicast Rate	Set the communication speed of multi-cast packets.
Reverse Direction Grant	For faster wireless communication, you may enable receiving packets while sending packets.
DTIM Period	Set the beacon responding interval (1 -255) for which the AirStation responds to a wireless device. This setting is effective only when power management is enabled for the wireless device.
Privacy Separator	If enabled, the Privacy Separator blocks communication between wireless devices connected to the AirStation. Wireless devices will be able to connect to the Internet but not with each other. Devices that are connected to the AirStation with wired connections will still be able to connect to wireless devices normally.
Output Power	You may reduce the wireless radio power output. The power of a radio wave and the distance that that radio wave reaches are almost proportional, so if the output power is reduced, the distance that the signal reaches also becomes smaller.

WMM

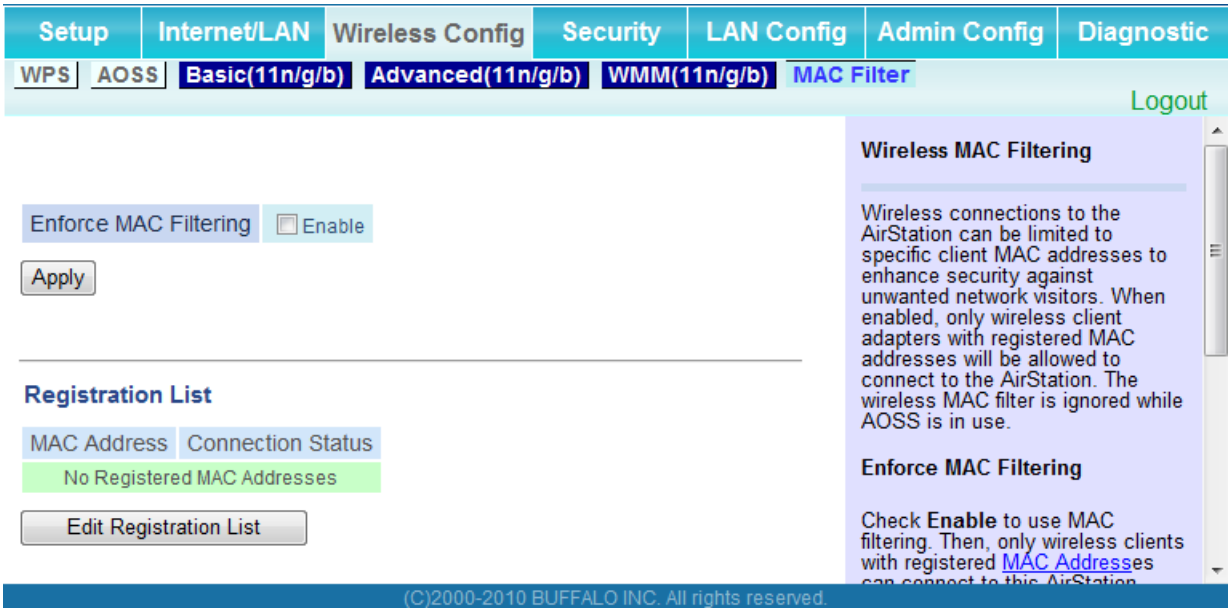
Set priorities for specific communications.



Parameter	Meaning
WMM-EDCA Parameters	You don't usually need to change these settings. Using the default settings is recommended. **Priority** The following priorities may be applied to individual transmission packets: (Highest) 8, (High) 4, (Normal) 2, and (Low) 1. From the queue, these packets are processed in order of priority. **CWmin, CWmax** The maximum and minimum value of the contention window. The contention window is used in the frame collision avoidance structure performed in IEEE802.11, and generally, the smaller the value in the window, the higher the probability that the queue obtains the right to send. **AIFSN** The interval to send frames. The unit of the AIFSN is a slot, just as the window defined by CWmin and CWmax is. The smaller the interval of sending frames, the faster the algorithm can restart. As a result, the priority of the queue is higher. **TXOP Limit** The period of time that the queue can use after obtaining the right to send. The unit is 32 ms. The longer this time, the more frames can be sent per right to send. However, the queue may interfere with other packet transmissions. If TXOP Limit is set to 0 (zero), only one frame can be sent per right to send.

MAC Filter

Restrict access to specific wireless devices.

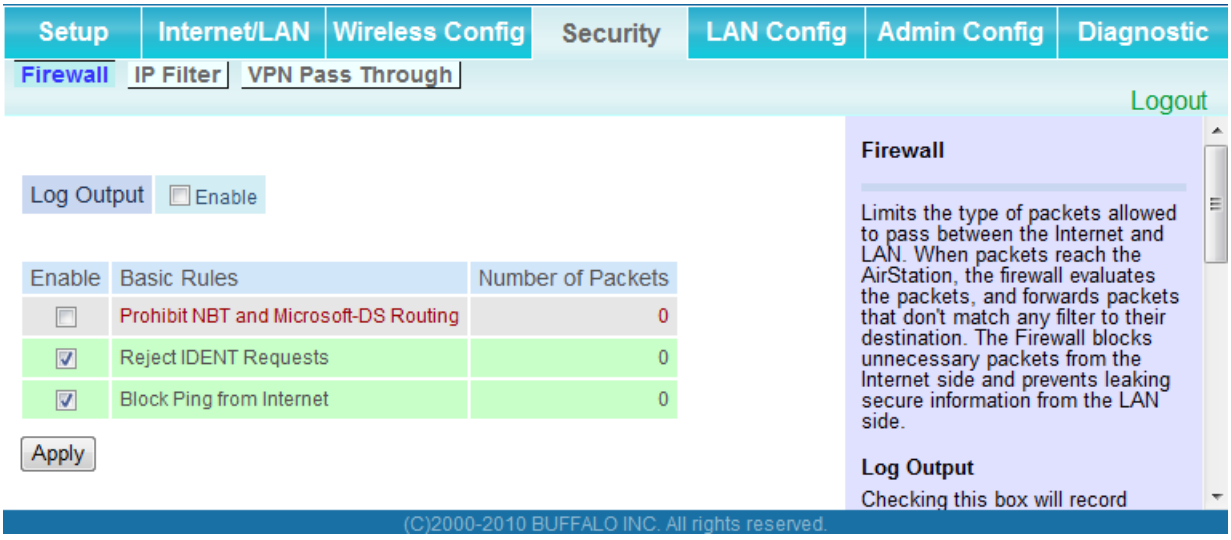


Parameter	Meaning
Enforce MAC Filtering	Enable to restrict wireless connections to devices with registered MAC addresses.
Registration List	Displays the MAC addresses of registered devices which are permitted to connect wirelessly.
[Edit Registration List]	Click to add a wireless device to the list of permitted devices.
MAC Addresses to be Registered	Enter a MAC address of a wireless device to permit to connect to the AirStation. Click [Register] to add that MAC address to the list.
List of all clients that are associated with this AirStation	Display the list of all MAC addresses of wireless devices connected to the AirStation.

Security (Router Mode only)

Firewall (Router Mode only)

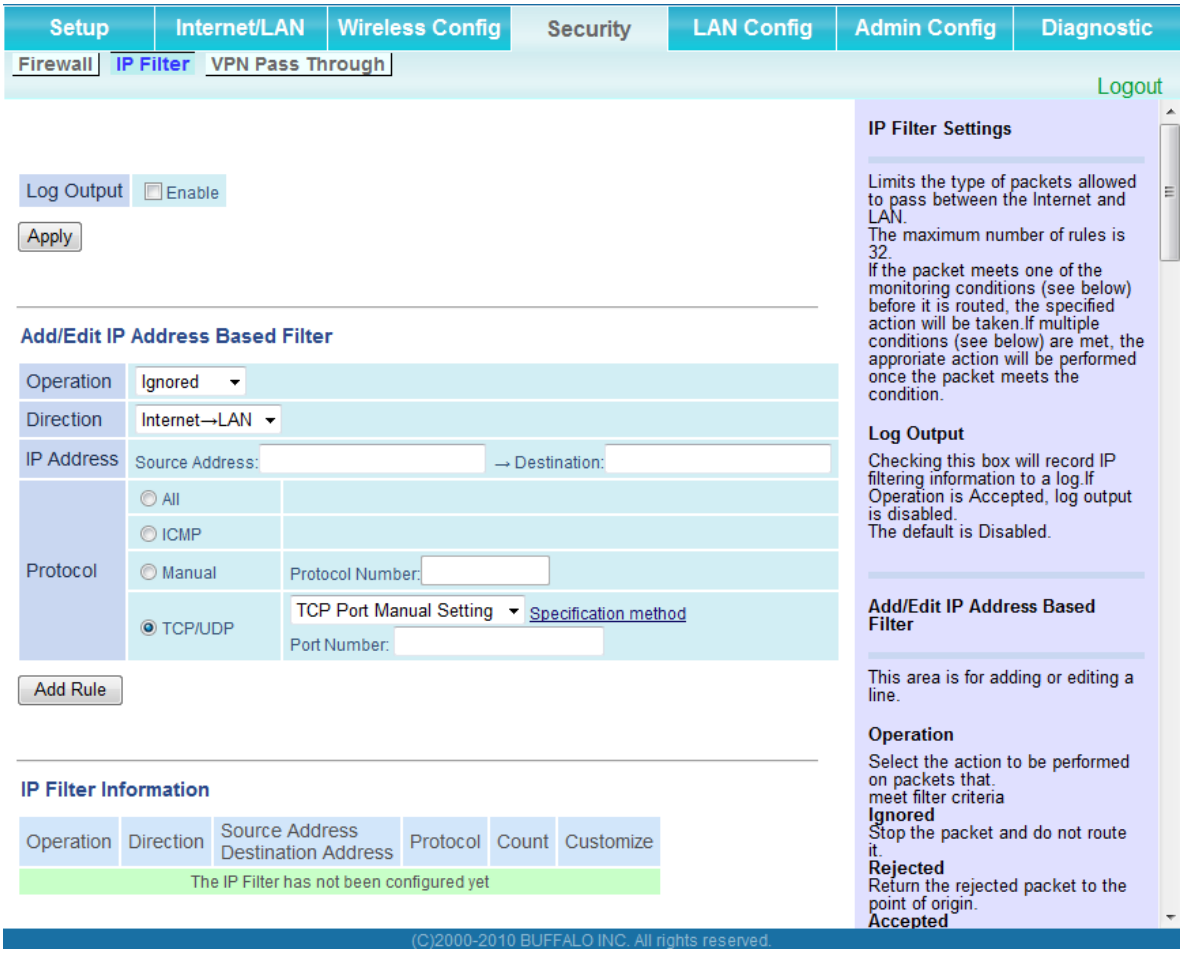
Configure the AirStation's firewall.



Parameter	Meaning
Log Output	Enable to output a log of firewall activity.
Basic Rules	Enable to use any of the quick filters. Preconfigured quick filters include: **Prohibit NBT and Microsoft-DS Routing** When this is enabled, you cannot use the Microsoft network feature from the Internet side to the LAN side and from the LAN side to the Internet. **Reject IDENT Requests** Enabling this option will answer IDENT requests from the Internet side with corresponding rejection packets. Enable this option if you experienced slower transfer speed for network application such as sending mail, using ftp or displaying on browser. If you have configured transfer of IDENT requests to the LAN side computer in the address translation settings (DMZ or TCP port:113), then that setting has higher priority, and overrides this setting. **Block Ping from Internet** If this is enabled, the AirStation will not respond to pings from the Internet side.

IP Filter (Router Mode only)

Edit IP filters.



Parameter	Meaning
Log Output	If enabled, IP filter activity is saved to a log.
Operation	Specify how to process target packets.
Direction	Specify the transmission direction of target packets.
IP Address	Specify the sender's IP address and receiver's IP address of the target packets.
Protocol	Select a protocol for target transmission packet.
IP Filter Information	Display the list of IP filters which have been registered.

VPN Pass Through (Router Mode only)

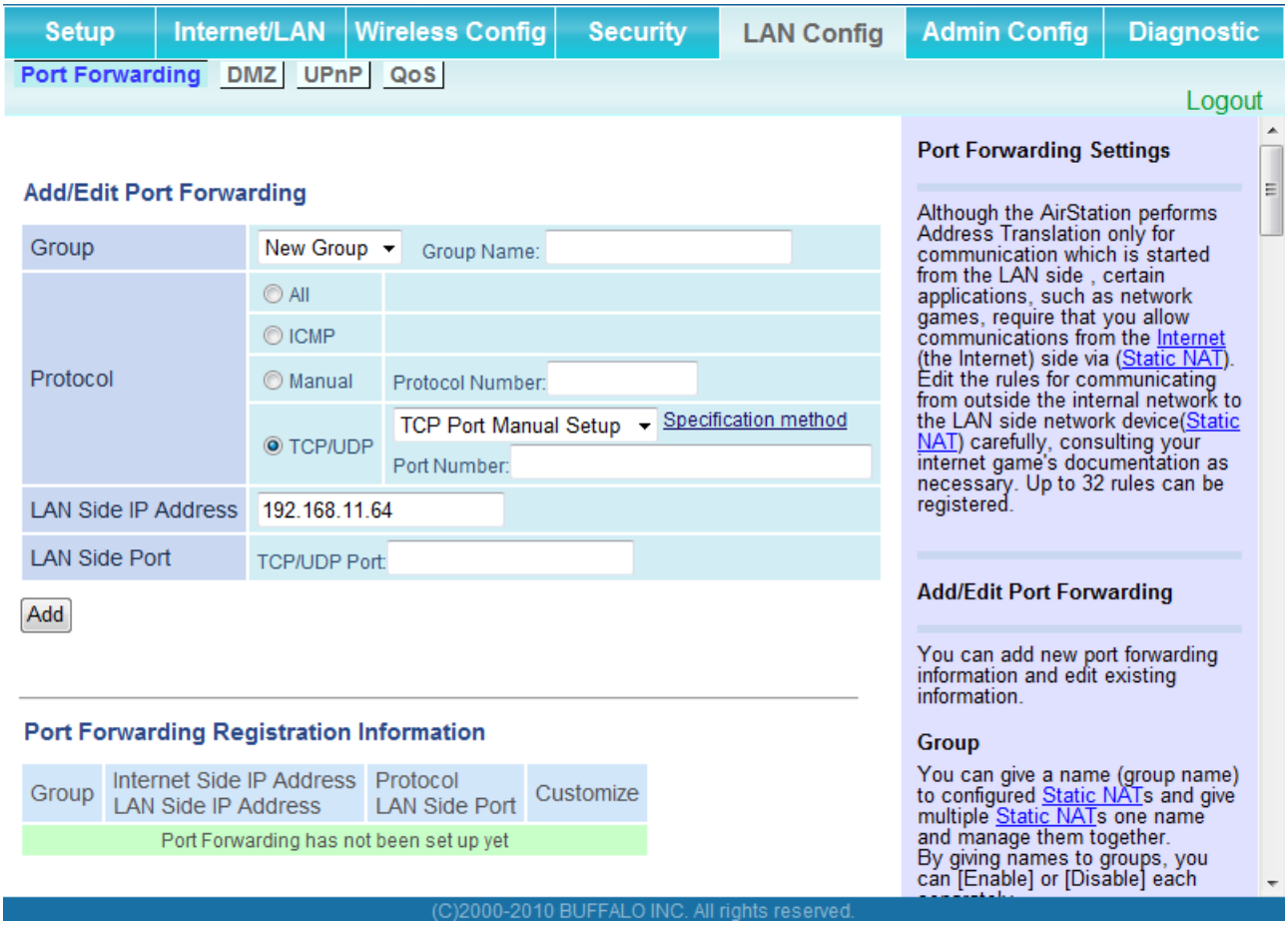
Configure IPv6 pass through, PPPoE pass through, and PPTP pass through.

Parameter	Meaning
PPPoE Pass Through	Enable to use PPPoE bridge. Using PPPoE bridge lets you automatically obtain an IP address from your provider using the PPPoE protocol from your computer connected to the LAN side because all PPPoE packets can pass through between the Internet and LAN.
PPPTP Pass Through	Enable to use the PPTP Pass Through for address translation.

LAN Config

Port Forwarding (Router Mode only)

Configure port translation.

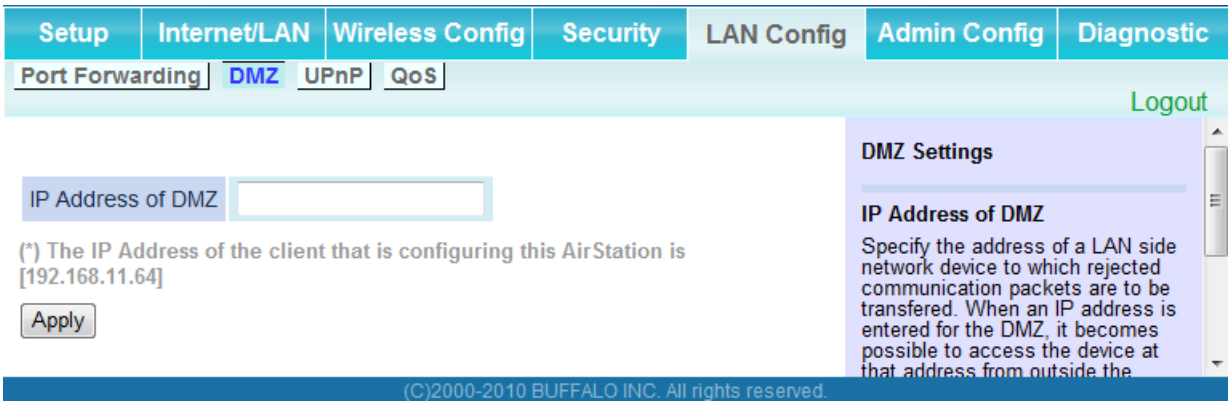


Parameter	Meaning
Group	Specify a group name for a new rule to belong to. Select [New Group] and enter the new group name in the Group Name field to create a new group. A group name can include up to 16 alphanumeric letters.
Protocol	Select the Internet side protocol (before translation) for the port translation table entry.

Parameter	Meaning
LAN Side IP Address	Enter the LAN side IP address (after translation) for the port translation table entry.
LAN Side Port	Select the LAN side (after translation) port number (1 - 65535) for the port translation table entry.
Port Forwarding Registration Information	Shows current entries in the port translation table.

DMZ (Router Mode only)

Configure a destination to transfer communication packets without a LAN side destination to.



Parameter	Meaning
IP Address of DMZ	Enter the IP address of the destination to which packets which are not routed by a port translation table are forwarded. Note: RIP protocol packets (UDP port number 520) will not be forwarded.

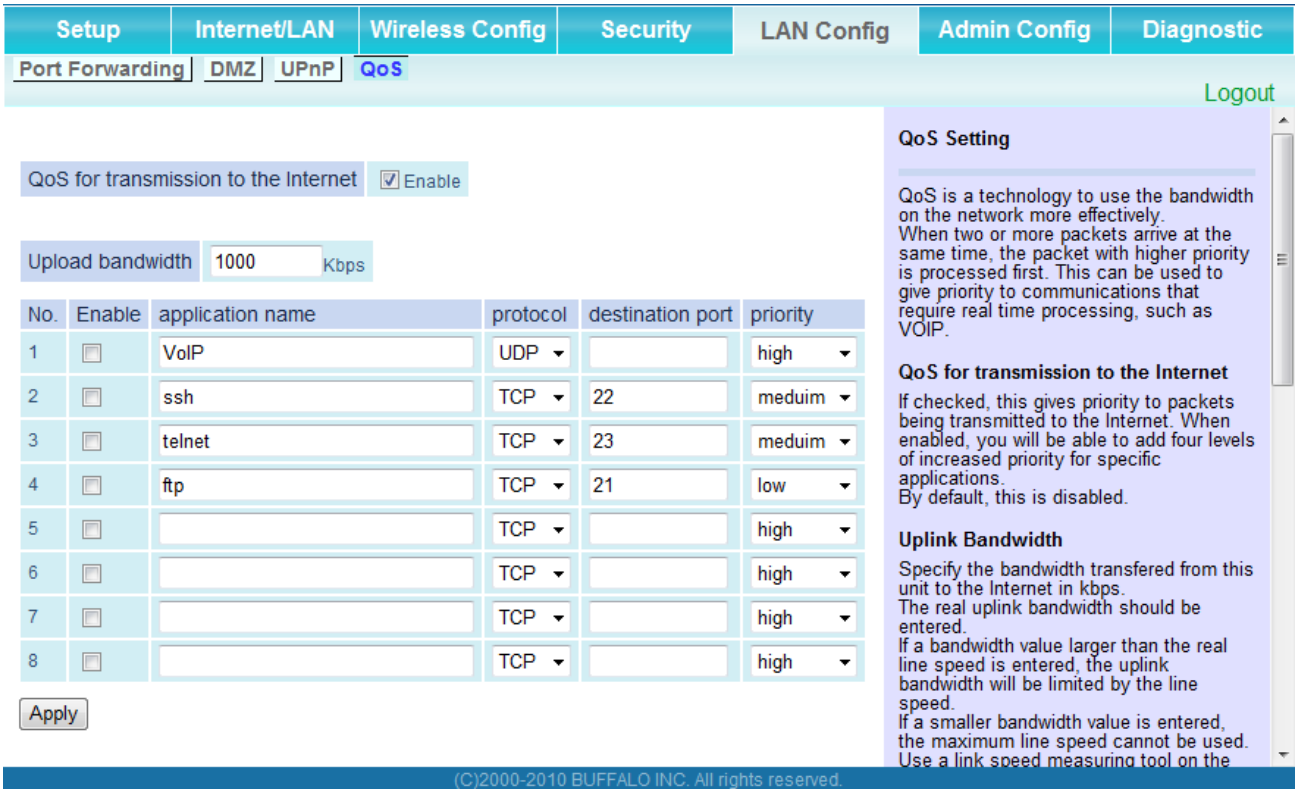
UPnP (Router Mode only)

Configure UPnP (Universal Plug and Play).

Parameter	Meaning
UPnP	Enable or disable Universal Plug and Play (UPnP) functionality.

QoS (Router Mode only)

Configure the priority of packets sent to the Internet.



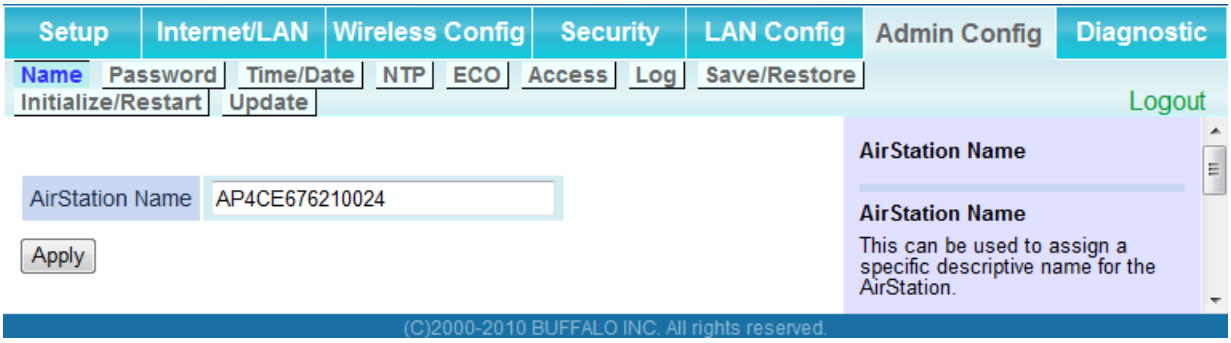
Parameter	Meaning
QoS for transmission to the Internet	Determine whether or not to prioritize packets sent to the Internet. Check this box to enable QoS.
Upload bandwidth	Specify the upstream bandwidth in kbps from the AirStation to the internet side. Set the actual value for the upstream bandwidth.
Enable	Enable or disable this entry.
application name	Enter an application name. Names may use up to 32 alpha numerical characters, double or single tick marks ('"), quotation marks (“), and semicolons (;).
protocol	Select either TCP or UDP.

Parameter	Meaning
destination port	Specify a destination port with the value of 1 - 65535. If this field is empty, a random port is selected.
priority	Select high, medium or low. If packets do not qualify for classification as a type on the list, then their priority is treated as a level between medium and low.

Admin Config

Name

Configure basic AirStation's settings.



Parameter	Meaning
AirStation Name	Enter a name for the AirStation. Names may include up to 64 alphanumeric characters and hyphens (-).

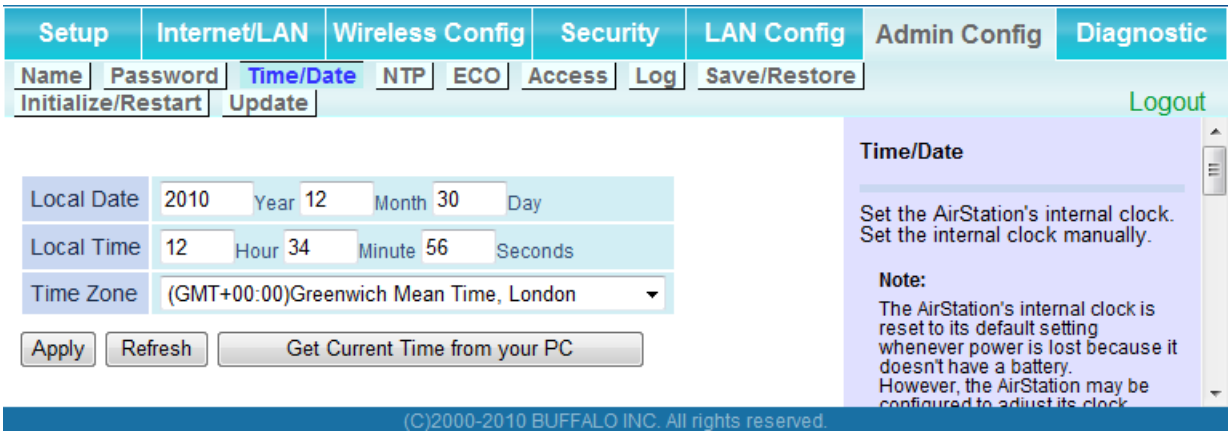
Password

Configure the password to log in to the AirStation's configuration screen.

Parameter	Meaning
Administrator Name	The Administrator name is used to log in to the AirStation's configuration utility. This name is fixed as [root].
Administrator Password	The password is required to log in. It may contain up to 8 alphanumeric characters and underscores (_).

Time/Date

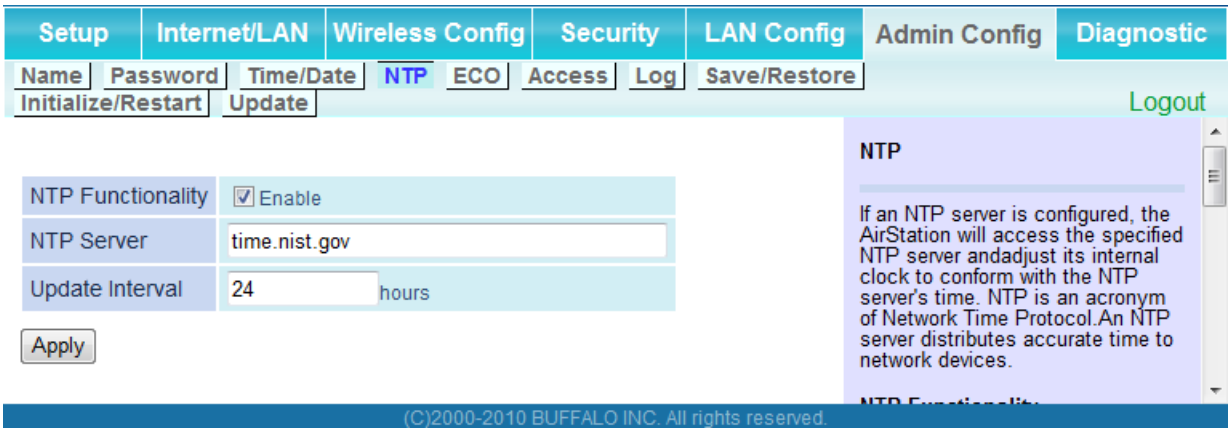
Configure the AirStation's internal clock.



Parameter	Meaning
Local Date	You may manually set the date of the AirStation's internal clock.
Local Time	You may manually set the time of the AirStation's internal clock.
Time Zone	Specify the time zone (offset of Greenwich Mean Time) of the AirStation's internal clock.

NTP

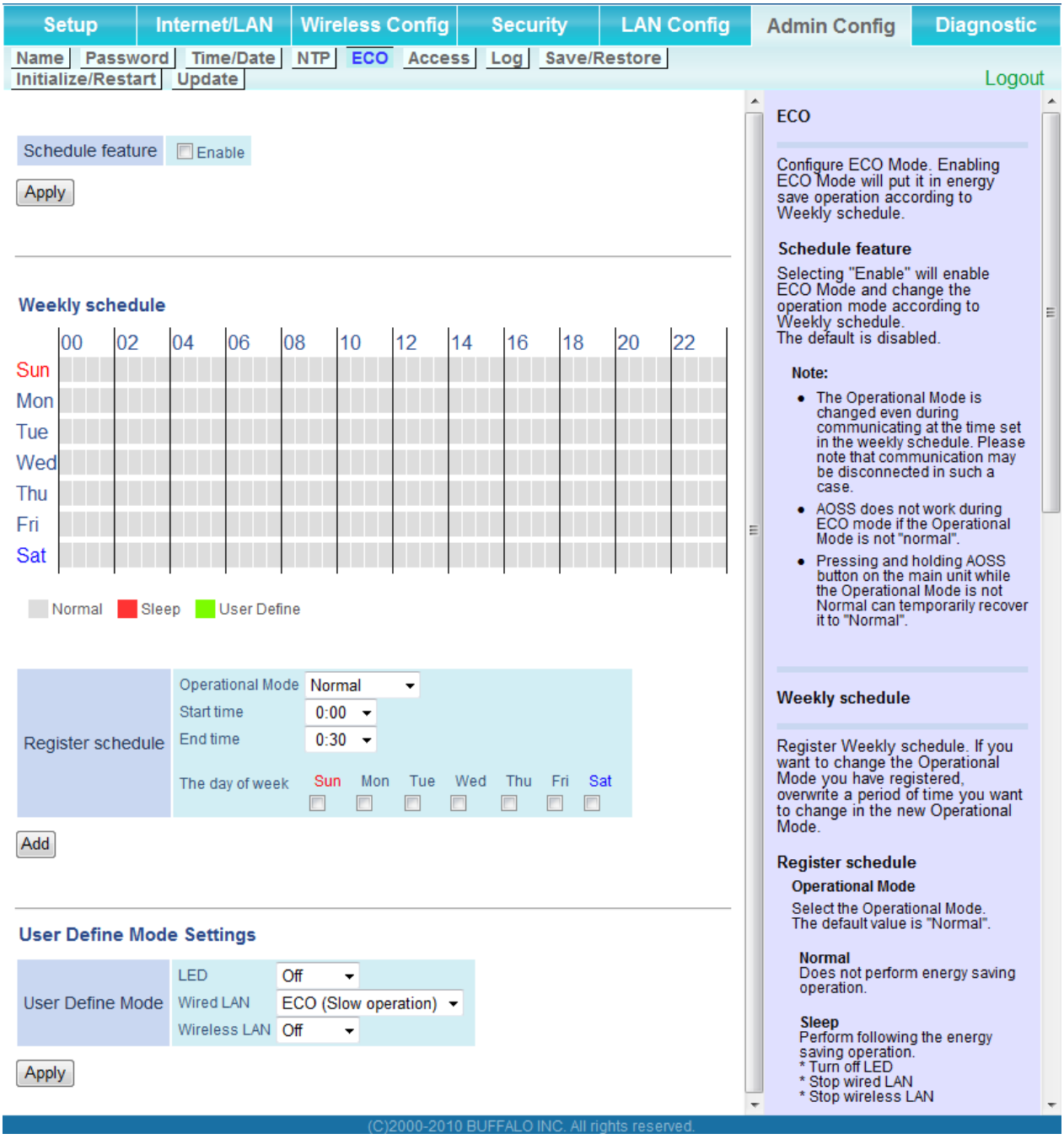
Configure an NTP server to automatically synchronise the AirStation's internal clock.



Parameter	Meaning
NTP Functionality	Enable to use an NTP server. The default is disabled.
NTP Server	Enter the name of the NTP server as a host name, host name with domain name, or IP address. Up to 255 alphanumeric characters, hyphens (-), and underscores (_) may be used. The default is [time.nist.gov].
Update Interval	How often will the AirStation check the NTP server for the correct time? Intervals of 1 - 24 hours may be set. The default is 24 hours.

ECO

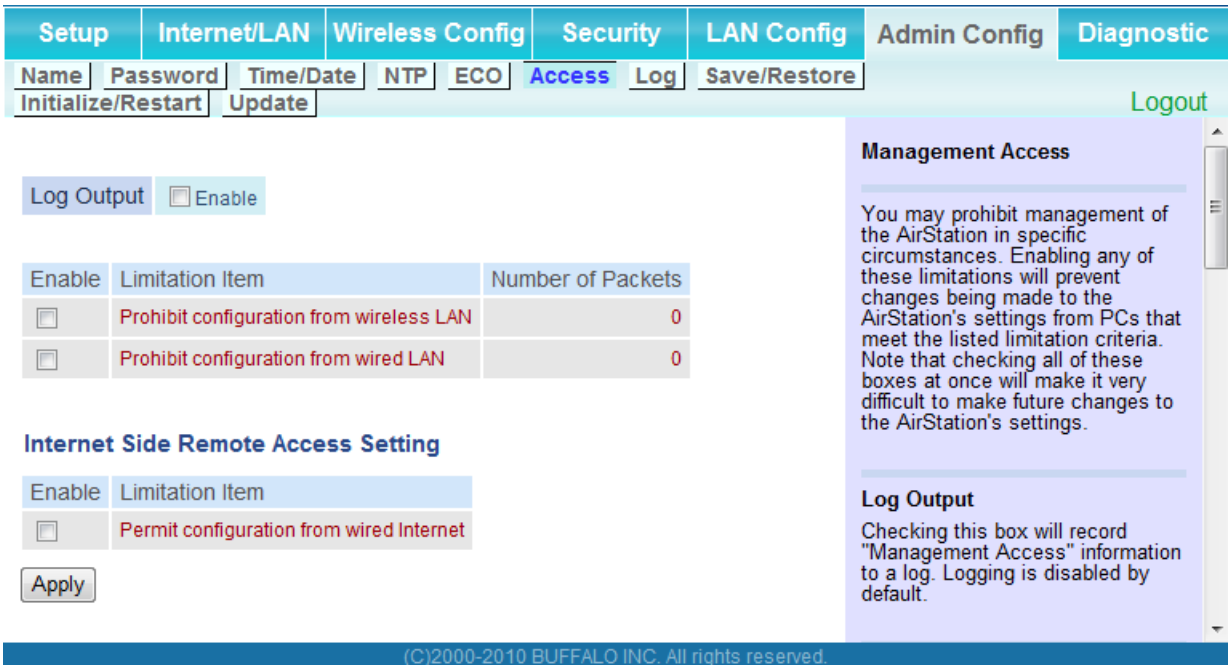
Configure Eco mode from this screen.



Parameter	Meaning
Schedule feature	Enable to schedule Eco mode. **Note:** If Schedule is enabled, AOSS will only function while the AirStation is in Normal Operating Mode.
Weekly schedule	Graphically displays the configured schedule.
Register schedule	Configure operational mode for time periods in the weekly schedule. If User Defined mode is chosen, configure it below.
User Define Mode	Individual power saving elements may be configured individually for User Defined mode.

Access

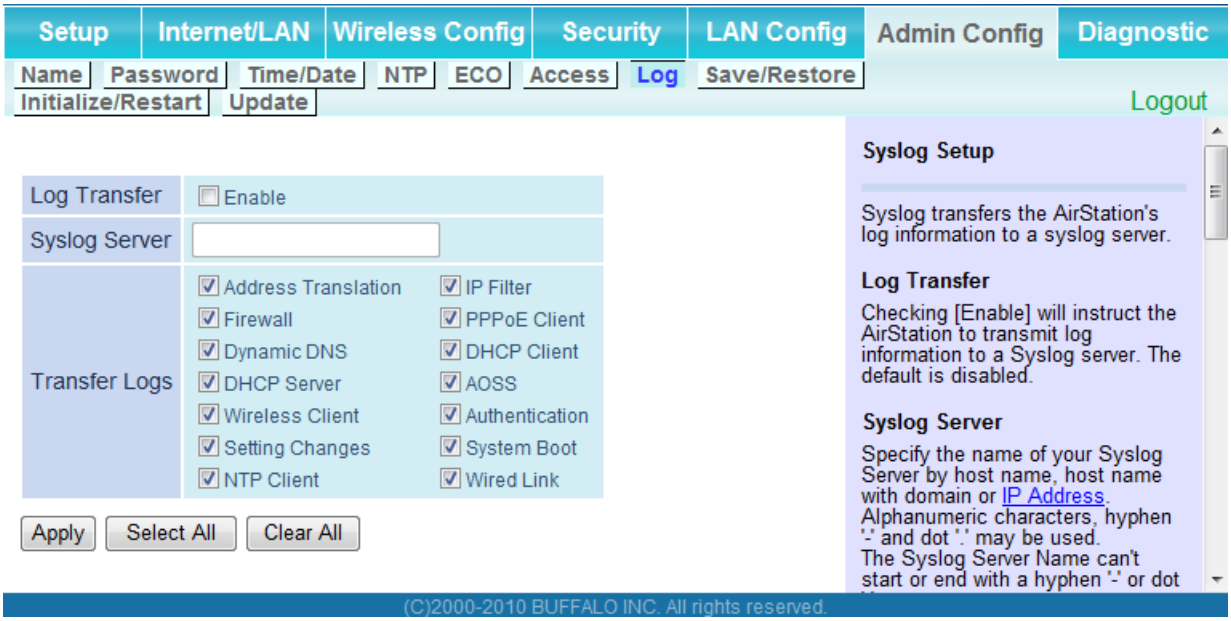
Restrict access to the AirStation's settings screens.



Parameter	Meaning
Log Output	Enabling outputs a log of changes to access settings.
Prohibit configuration from wireless LAN	If enabled, prevents access to settings screens from wirelessly connected devices (only wired devices may configure).
Prohibit configuration from wired LAN	If enabled, prevents access to settings screens from wired devices (only wirelessly connected devices may configure).
Permit configuration from wired Internet	If enabled, allows access to settings screens from network devices on the WAN (Internet) side.
Permitted IP address	Displayed only if Internet side configuration is enabled. Enter the IP address of a device that is permitted to configure the AirStation remotely from the WAN (Internet) side.
Permitted Port	Displayed only if Internet side configuration is enabled. Set a port number (1 - 65535) to configure the AirStation from the WAN (Internet) side.

Log

Transfer the AirStation's logs to a syslog server.



Parameter	Meaning
Log Transfer	Enable to send logs to a syslog server.
Syslog Server	Identify the syslog server by host name, host name with domain name, or IP address. You may enter up to 255 alphanumeric characters, hyphens (-), and underscores (_).
Transfer Logs	Choose which logs will be transferred to the syslog server.

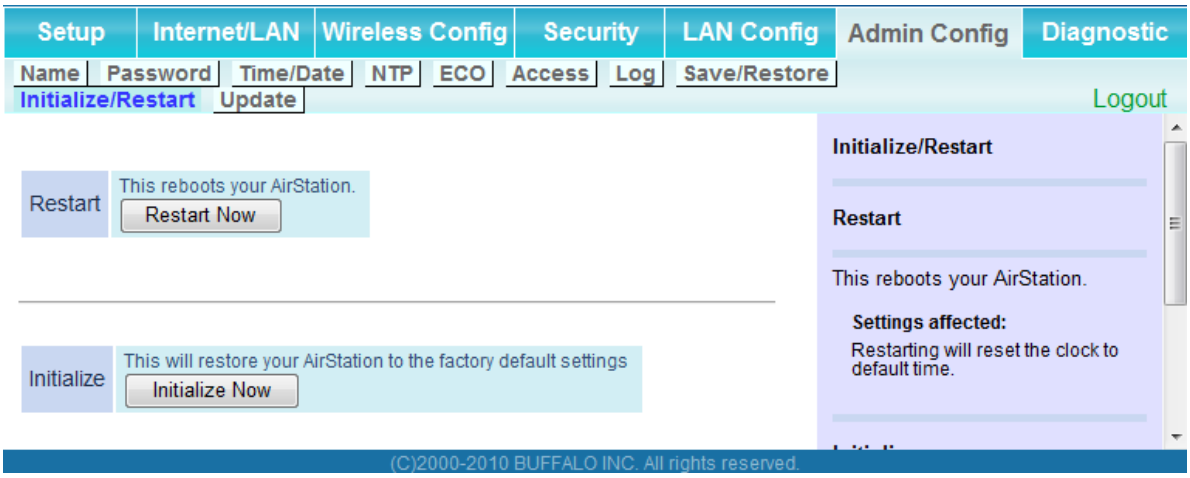
Save/Restore

Save AirStation settings as a file, and restore from them later.

Parameter	Meaning
Save current settings	Clicking [Save] will save the current configuration of the AirStation to a file. If the [Encrypt the configuration file with a password] option is checked, then the configuration file will be password protected with the current Administrator Password.
Restore Configuration from Backup File	Restore the configuration of the AirStation from a saved configuration file by clicking the [Browse...] button, navigating to the configuration file, and then clicking Restore. If the configuration file was password protected, then put a check next to [To restore from the file you need the password], enter the password, and click [Open].

Initialize/Restart

Initialize or restart the AirStation.



Parameter	Meaning
Restart	Click [Restart Now] to restart the AirStation.
Initialize	Click [Initialize Now] to initialize and restart the AirStation.

Update

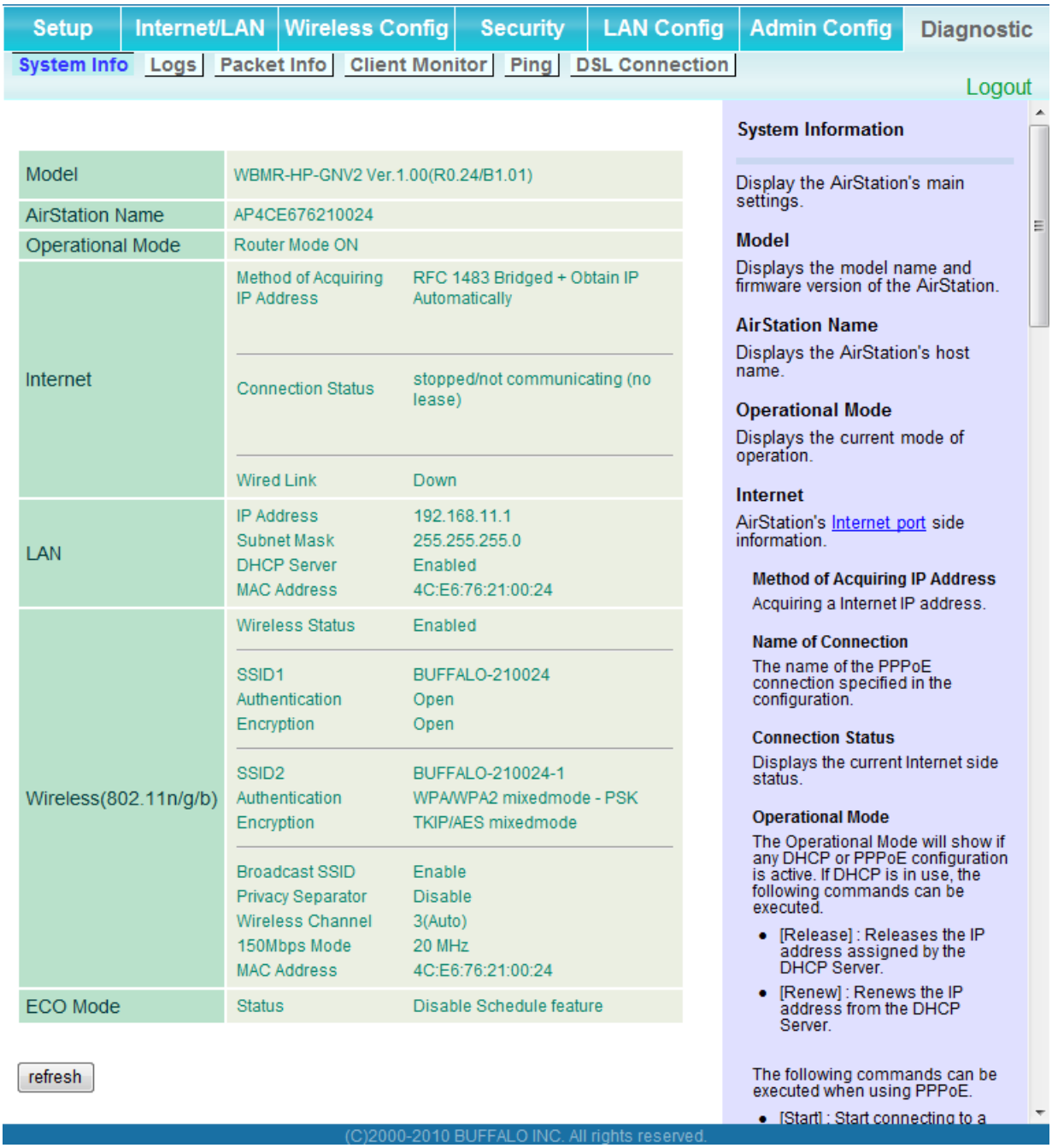
Update the AirStation's firmware.

Parameter	Meaning
Firmware Version	Displays the current firmware version of the AirStation.
Update Method	**Specify Local File** Updates from a firmware file stored on your computer. **Automatic Update (On Line Version Up)** Automatically updates to the latest firmware available.
Firmware File Name	Click [Browse...] to navigate to the firmware file on your computer if [Specify Local File] was selected. You don't need to specify the firmware location if you're using [Automatic Update]. Click [Update Firmware] to update the firmware.

Diagnostic

System Info

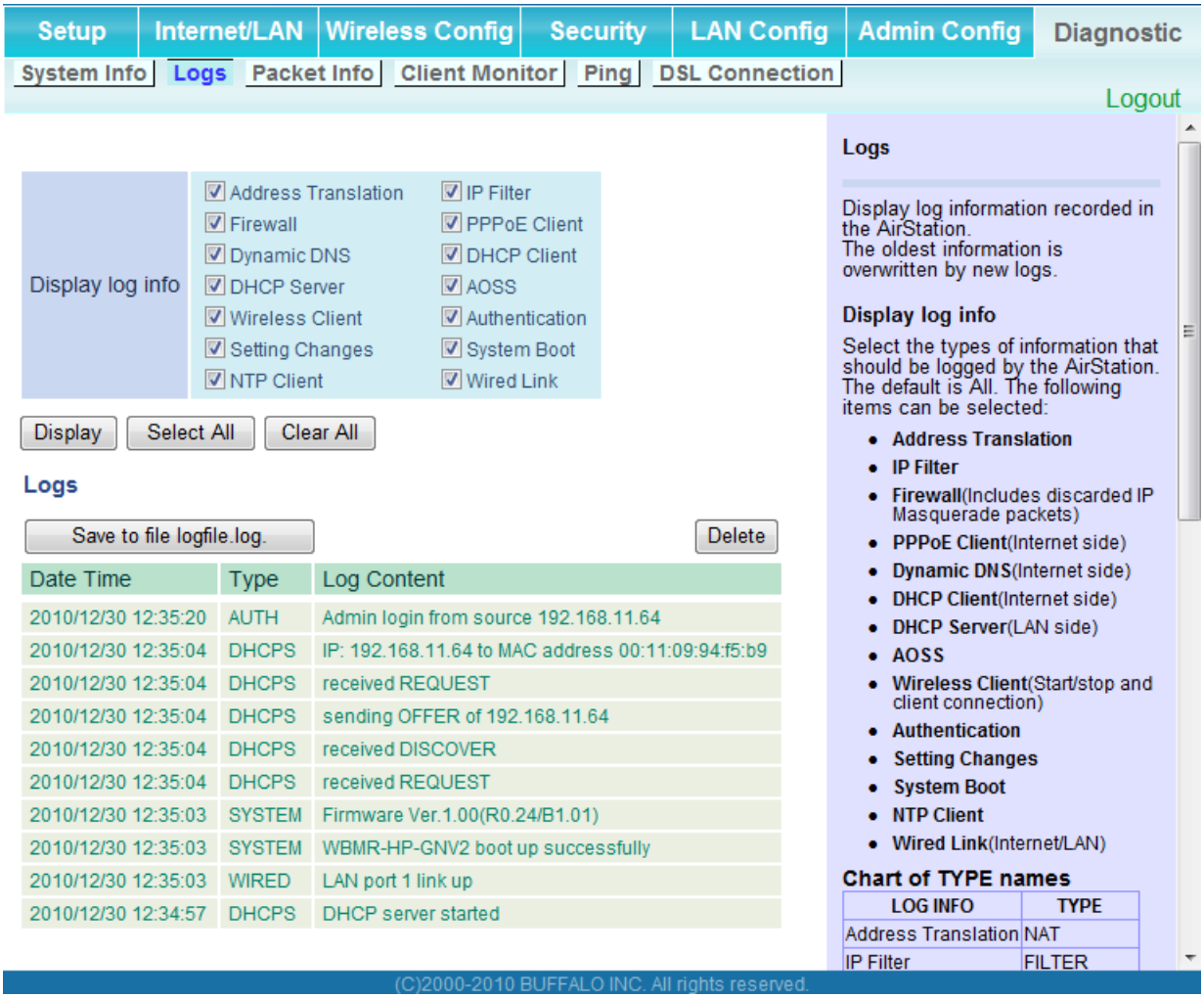
View system information for the AirStation.



Parameter	Meaning
Model	Displays the product name of the AirStation and the firmware version.
AirStation Name	Displays the AirStation Name.
Operational Mode	Displays the current operational mode of the AirStation.
Internet	Displays the information about the Internet port.
LAN	Displays the information about the LAN port.
Wireless	Displays the wireless status.
ECO Mode	This indicates the operating status of ECO Mode.

Logs

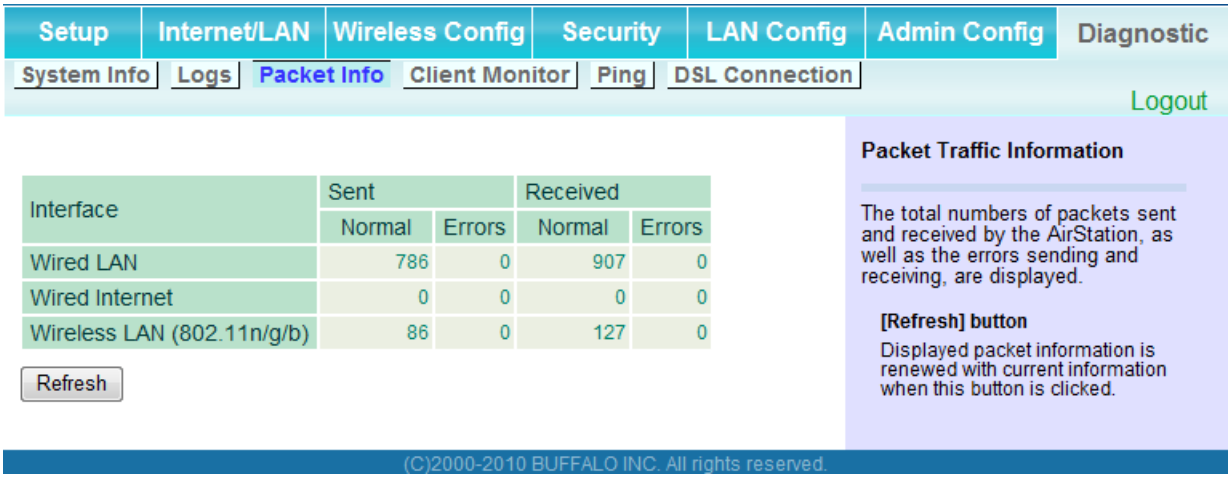
The AirStation's logs are recorded here.



Parameter	Meaning
Display log info	Choose the types of logs to display.
Logs	Displays the log information recorded in the AirStation.

Packet Info

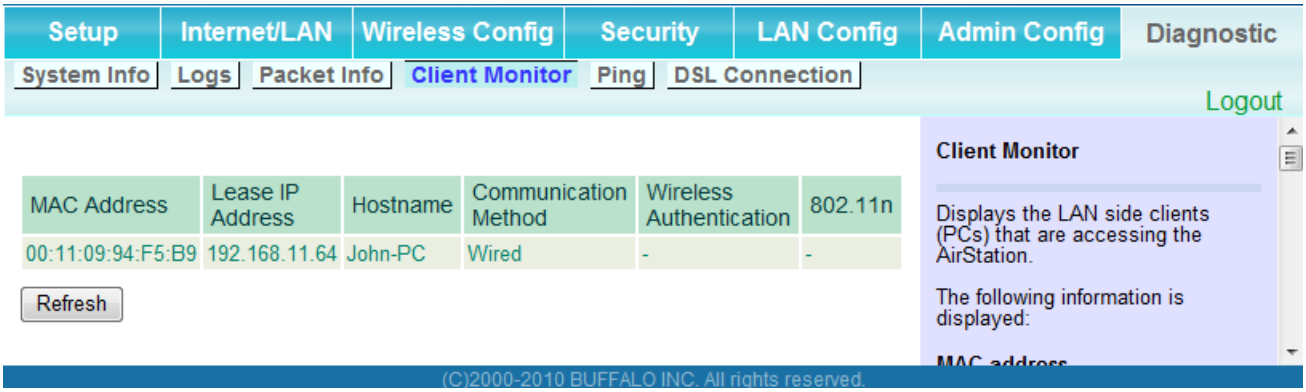
View packet transfer information.



Parameter	Meaning
Sent	Displays the number of packets sent to the Internet side of Ethernet, the LAN side of the Ethernet, and the LAN side of the wireless connection.
Received	Displays the number of packets received from the Internet side of Ethernet, the LAN side of the Ethernet, and the LAN side of the wireless connection.

Client Monitor

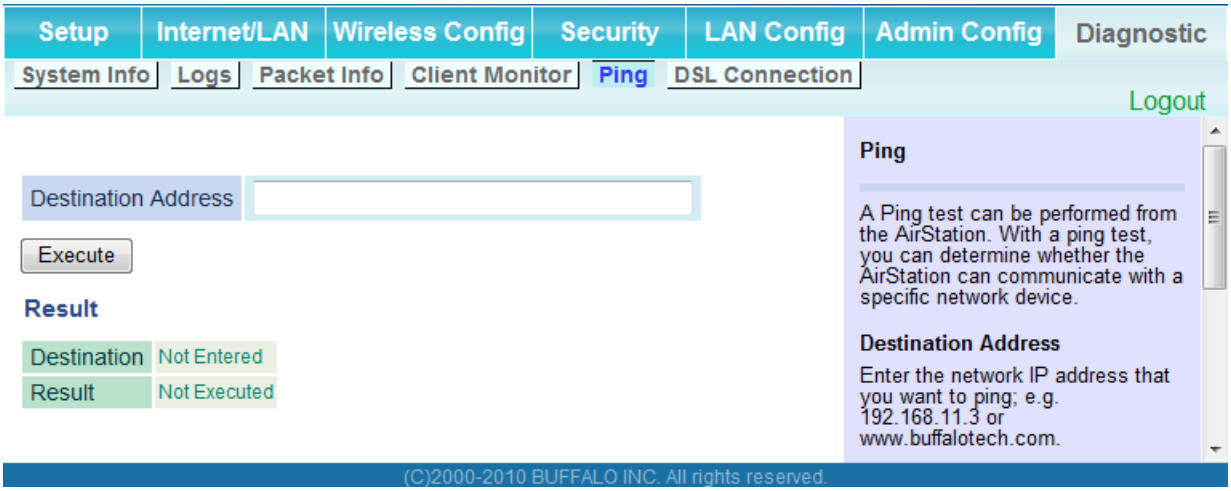
This screen shows devices that are connected to the AirStation.



Parameter	Meaning
Client Monitor	Displays information (MAC address, lease IP address, host name, communication method, wireless authentication and 802.11n) for devices that are connected to the AirStation.

Ping

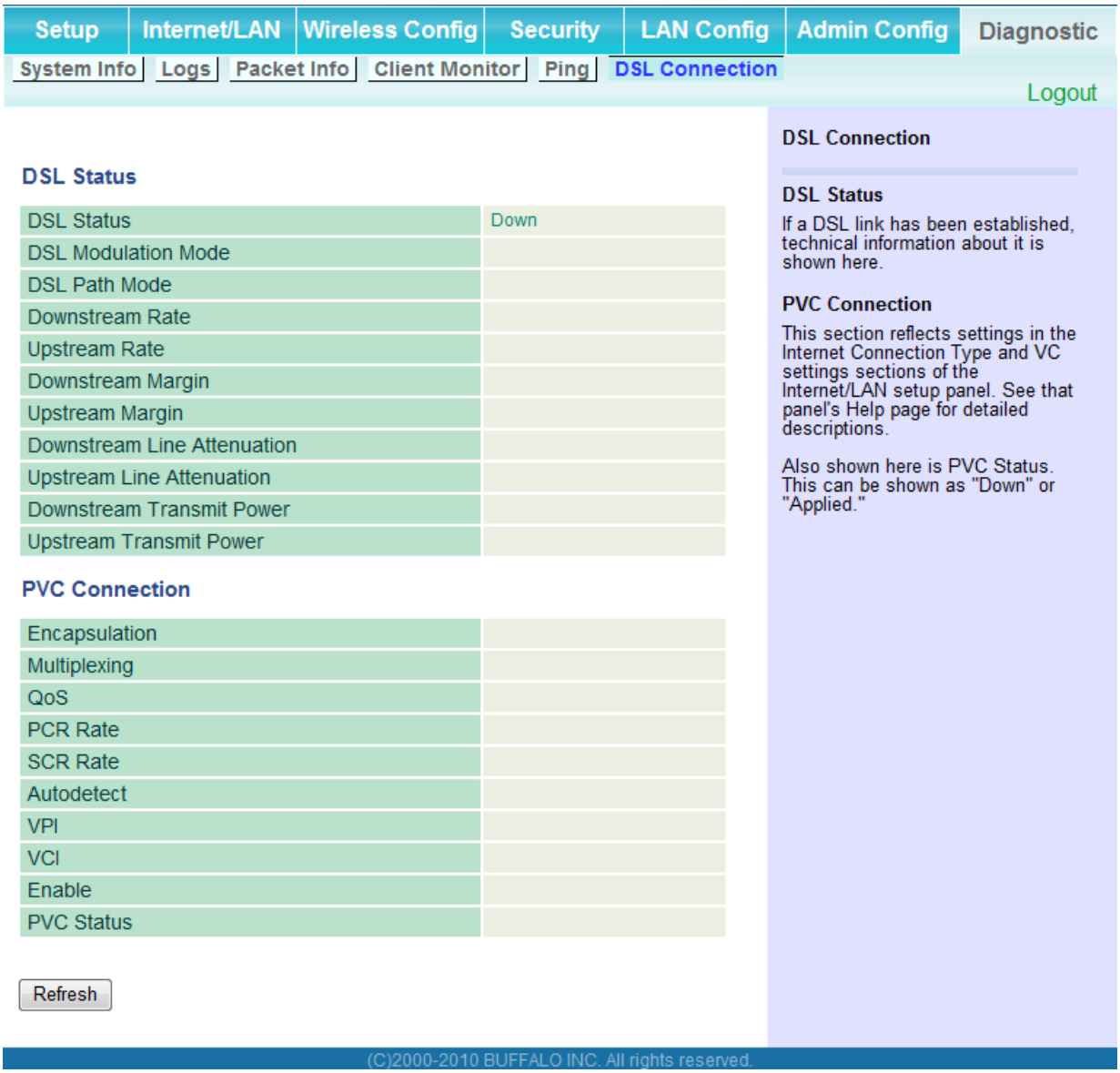
A Ping test checks whether the AirStation can communicate with a specific network device.



Parameter	Meaning
Destination Address	Enter an IP address or a host name of the device for which you try to verify the connection, and click [Execute]. The result will be displayed in the [Result] field.

DSL Connection

View DSL Connection for the AirStation.



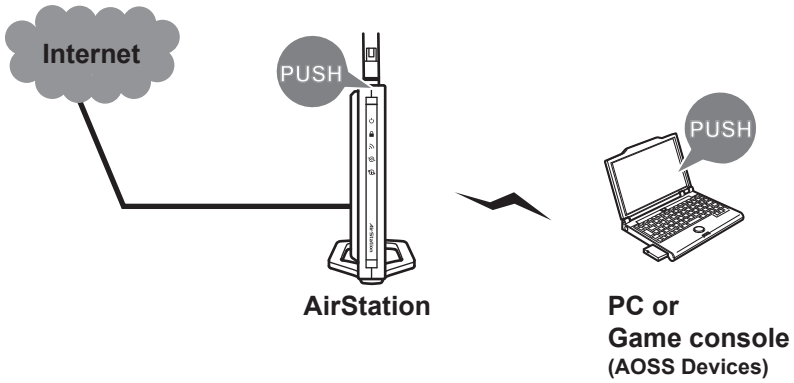
Parameter	Meaning
DSL Status	If a DSL link has been established, technical information about it is shown here.
PCV Connection	This section reflects settings in the Internet Connection Type and VC settings sections of the Internet/LAN setup panel. See that panel's Help page for detailed descriptions.

Chapter 5 - Connect to a Wireless Network

Automatic Secure Setup (AOSS/WPS)

AOSS and WPS are systems which enable you to automatically configure wireless LAN settings. Just pressing the buttons will connect wireless devices and complete security settings. Easily connect to any wireless devices, computers, or game machines which support AOSS or WPS.

AOSS (AirStation One-Touch Secure System) was developed by Buffalo Technology. WPS was created by the Wi-Fi Alliance.



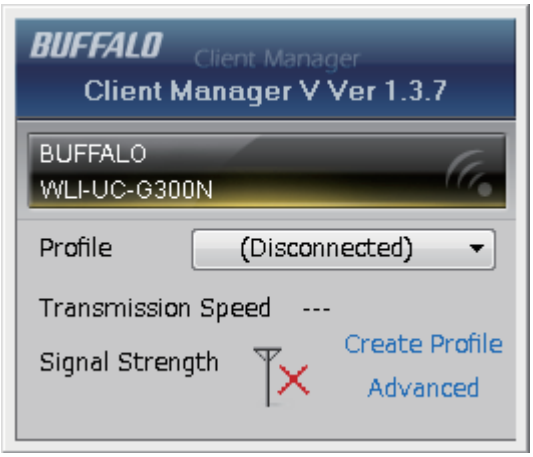
- Before using AOSS or WPS to connect to a Buffalo wireless client, install Client Manager software from the included AirNavigator CD. Consult your wireless client's documentation for more information.
- Buffalo's Client Manager software can be used with the wireless LAN devices built into your computer. However, it is not guaranteed to work with all wireless LAN devices available. Some wireless clients may require manual setup.

Windows 7/Vista (Client Manager V)

If you are using Windows 7/Vista, use the included Client Manager V software to connect wirelessly with AOSS/WPS.

1 Click the icon in the system tray.

2



When the screen at left is displayed, click [Create Profile].

3 If the User Account Control screen opens, click [Yes] or [Continue].

4

Click the [WPS AOSS] button.

Follow any instructions displayed on the screen. When the Security LED on the front of the AirStation stops flashing and is lit steadily, the connection is complete.

Windows XP (Client Manager 3)

If you are using Windows XP, use Client Manager 3 to connect wirelessly with AOSS/WPS.

1 Right click on the icon in the system tray, and select [Profile].

2

Click the [WPS AOSS] button.

Follow any instructions displayed on the screen. When the Security LED on the front of the AirStation stops flashing and is lit steadily, the connection is complete.

Other Devices (e.g. Game Console)

If you are using a game machine which supports AOSS or WPS, refer to that device's manual to initiate AOSS/WPS. When instructed, hold down the AOSS button on the AirStation for 1 second.

When the Security LED stops blinking and is lit steadily, the connection is complete.

Manual Setup

You can also connect to the AirStation without installing Client Manager V or Client Manager 3 by using the utility built-in to Windows. The procedure varies depending on which version of Windows you are using.

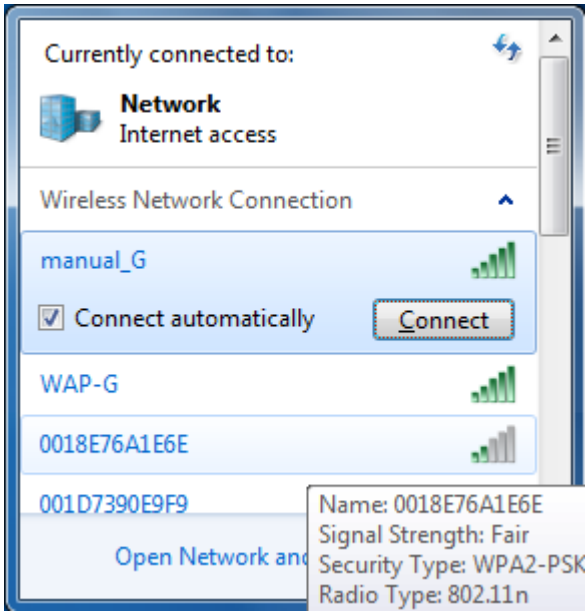
Note:
- **If the AirNavigator CD is used to perform setup when making the initial settings of AirStation, the wireless connection settings for the AirStation are completed during the Setup process. As a result, you do not need to make the settings below. After setup is complete, once the LAN cable is removed, you can connect from your wireless client to the AirStation.**
- **Before performing setup, make the settings to enable the wireless client of the computer.**

Windows 7 (WLAN AutoConfig)

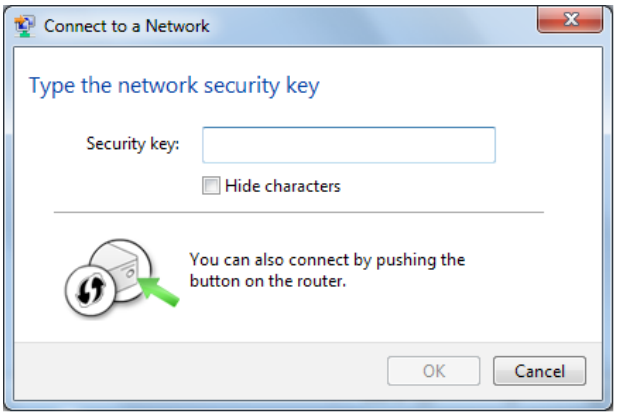
With Windows 7, use WLAN AutoConfig to connect to the AirStation.

1 Click on the network icon  in the system tray.

2



Select the target AirStation's name and click [Connect]. If you will be connecting to this device in the future, checking [Connect automatically] is recommended.

3 

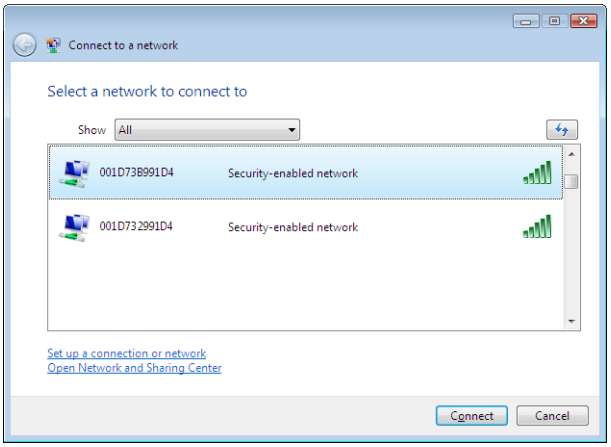
Enter the encryption key and click [OK].

Windows Vista (WLAN AutoConfig)

With Vista, use WLAN AutoConfig to connect to the AirStation.

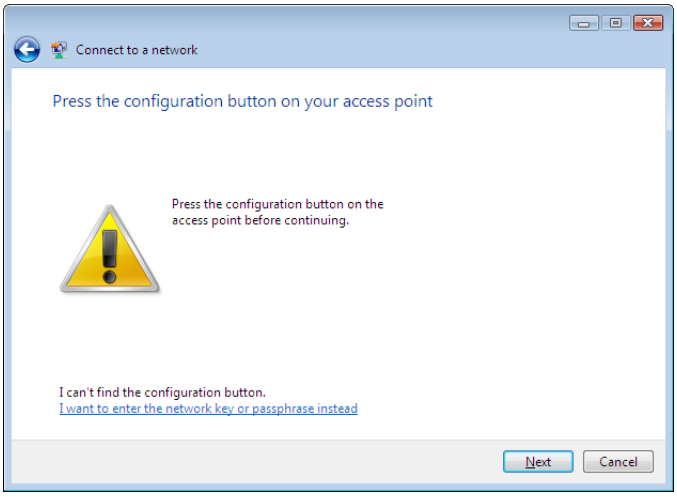
1 Right click on the wireless network icon  in the system tray.

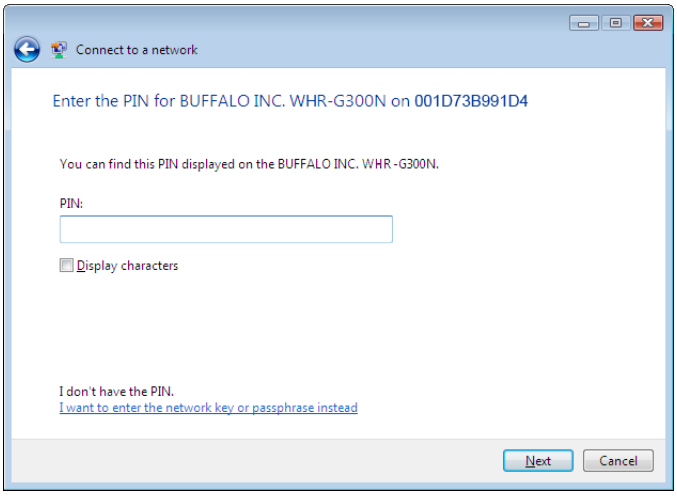
2 Click [Connect to a network].

3 

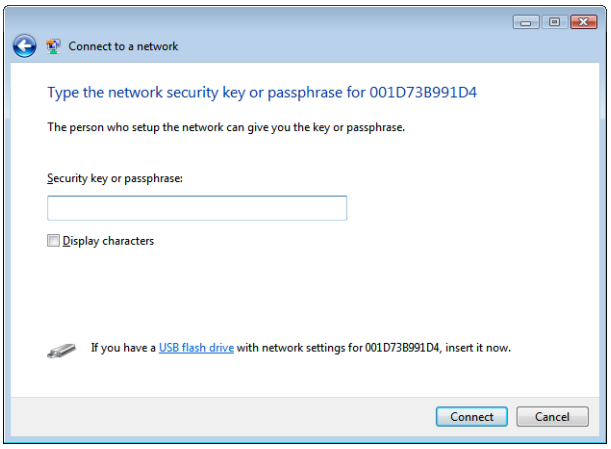
When the screen at left is displayed, select the network to connect to and click [Connect].

If the screen below is displayed, click [I want to enter the network key or passphrase instead]. Otherwise, go to step 4.





4



Enter the encryption key and click [Connect].

Step through the wizard to finish configuration. If the Set Network Location screen is displayed, select [Home], [Work], or [Public location] depending where you're using the AirStation.

Windows XP (Wireless Zero Configuration)

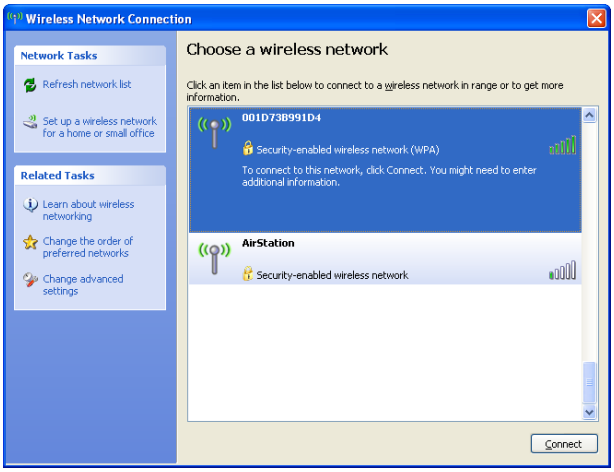
Windows XP includes a built-in utility to connect to your AirStation.

Note: If Client Manager 3 is installed on your computer, Wireless Zero Configuration is disabled. Uninstall Client Manager 3 to use Wireless Zero Configuration, or just use Client Manager 3 to connect to the AirStation.

1 Right click on the wireless network icon  displayed in the system tray.

2 Click [View Available Wireless Networks].

3



Select the network to connect to and click [Connect].

4

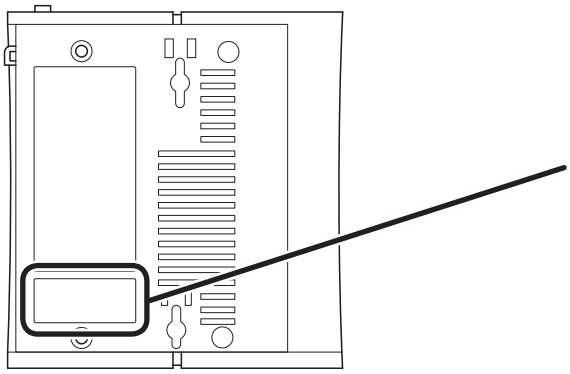
Enter the encryption key (twice) and click [Connect].

Follow the instructions displayed on the screen to finish configuration.

Mac OS X (AirPort)

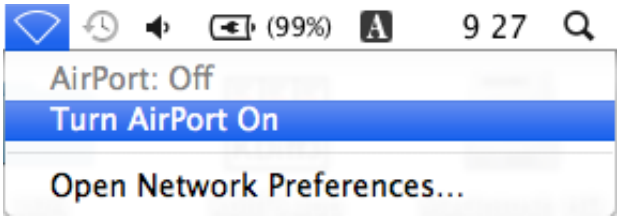
Use AirPort in the Mac OS X to connect to the AirStation.

1



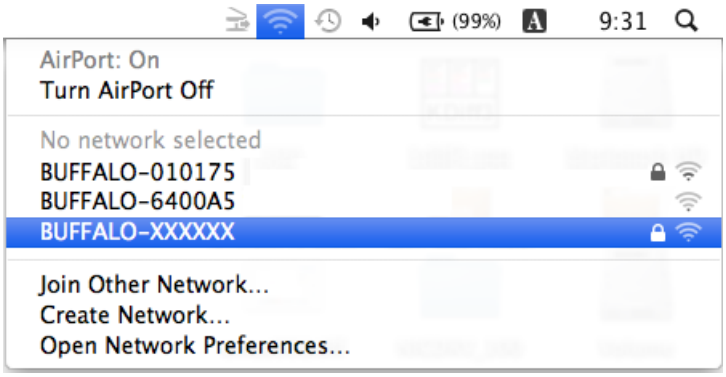
Refer to the label on the side of the AirStation, and make a note of the SSID and KEY printed on the label.

2



Click the icon in the top section of the screen, and select [Turn Airport On].

3



Click the value that matches the SSID that was noted in step 1.

4

Enter the value for the KEY that was noted in step 1 into the Password entry box, insert a check mark into [Remember this network], and click [OK].

Follow the instructions displayed on the screen to finish configuration.

Chapter 6 - Trouble Shooting

Cannot connect to the Internet over wired connection.

- Make sure that your AirStation is plugged in!
- Check that the status LEDs of your AirStation are lit as below:

  Power Green light is ON
  DSL Green light is ON or OFF (depending on your environment)
  Internet Green light is ON or flashing
- Make sure that your computer is set to [Obtain an IP address automatically]. (see appendix C)
- Refer to the documentation provided by your provider, and make the correct ADSL settings.
- Restart your AirStation.

Cannot access the web-based configuration utility.

- See chapter 4 for instructions to open the AirStation's configuration utility.
- Enter the correct user name and password to login to the configuration screen. The factory defaults are [root] (in lower case) for the user name and a blank password (enter nothing). If you changed the password, enter the new password that you set.
- Verify that your web browser is not set to use proxies.
- Make sure that your computer is configured to [Obtain an IP Address Automatically]. (see appendix C)
- Restart your AirStation.

Cannot connect to the network wirelessly.

- Configure your wireless client with the same SSID, encryption type, and encryption key as set on the AirStation.
  The factory defaults are:

SSID -	BUFFALO-XXXXXX (the last 6 digits of the AirStation's MAC address)
Encryption Type -	WPA/WPA2 mixed mode - PSK (Connect with either WPA-PSK TKIP or WPA2-PSK AES).
Encryption Key -	Printed on the label of the AirStation.

  Note: Encryption is disabled by default in Asia Pacific.

- Place your AirStation and wireless devices 2 - 10 feet apart.
- Restart your AirStation.

You forgot AirStation's SSID, Encryption Key, or Password.

Hold down the Reset button on the base of your AirStation for 3 seconds to initialize its settings. All settings, including your password, SSID, and encryption key will be initialized to their defaults. The factory defaults are:

SSID -	BUFFALO-XXXXXX (the last 6 digits of the AirStation's MAC address)
Encryption Type -	WPA/WPA2 mixed mode - PSK (Connect with either WPA-PSK TKIP or WPA2-PSK AES).
Encryption Key -	Printed on the label of the AirStation. (Encryption is disabled by default for Asia Pacific AirStations.)

The link speed is slower than 150 Mbps (Maximum link speed is only 65 Mbps).

By default, the AirStation's 150 Mbps mode is not enabled. You may enable it with the following procedure:

1. Open the configuration utility (chapter 4).
2. Click [Wireless SSID & Channel (11n 150 Mbps Mode)] in Easy Setup.
3. Change the value in [150 Mbps Mode] - [Band Width] to 40 MHz and click [Apply].

If you still cannot connect at 150 Mbps, check the settings of your wireless client device.

Other Tips

Issue:

I reset my wireless router to factory settings and forgot how to log in to the configuration utility.

Answer:

Open your browser and enter 192.168.11.1 as the browser address and hit Enter. You will be prompted to log in. Enter the user name as root and the password box is left empty (no password). Click [OK] to complete the login and the option to reset your password will be available on the first page.

Issue:

How do I forward ports on my wireless router for my gaming console?

Answer:

Log in to the router's configuration utility. From the home page, go to the Internet Game/ Port Mapping section. Enter the port that needs to be forwarded, and the IP address of the gaming console.

Issue:

How do I enable or modify security encryption settings on the wireless router?

Answer:

Log in to the configuration utility with your browser. Go to the Wireless Config tab and then select the Security tab. Buffalo recommends WPA for wireless encryption. The passphrase/key should be at least 8 characters in length.

Issue:

How do I change my wireless router's broadcasted network name (SSID)?

Answer:

Log in to the configuration utility. Go to the Wireless Config tab and then select the Basic tab if necessary. Find the settings area for SSID. Select the [Use] radio button and enter the name you wish to use for your network in the text field provided. Click [Apply] to save the settings. Once the wireless router has rebooted, you will need to manually select the new network name for all wireless devices and enter your encryption key if necessary.

Issue:

What can I do if my wireless connection drops randomly or seems slow?

Answer:

There are many environmental factors that may cause this. First, ensure the issue is not range related by moving the wireless router and the client device closer together. If the connection drops continue, then range is probably not the issue.
Other 2.4 GHz devices such as microwaves, other wireless networks, and 2.4 GHz wireless phones may impact performance. Try a different wireless channel for your wireless router. Log in to the wireless router with your browser. Click on the Wireless Config tab and then the Basic tab. Wireless channels from 1 - 11 may be selected. Try the Auto-Channel option if available. Otherwise, manually select an alternate channel and click [Apply].

Issue:

Where can I download the latest drivers, firmware and instructions for my Buffalo wireless products?

Answer:

The latest drivers and firmware are available online at
www.buffalotech.com

Appendix A - Specifications

Wireless LAN Interface	
Standard Compliance	IEEE802.11b / IEEE802.11g / IEEE802.11n
Transmission Method	Direct Sequence Spread Spectrum (DSSS), OFDM, SISO
Frequency Range	2,412 - 2,462 MHz (Channels 1 - 11)
Transmission Rate	802.11b/g: 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, 1 Mbps 802.11n 20 MHz BW (LongGI) 65, 58.5, 52, 39, 26, 19.5, 13, 6.5 Mbps (ShortGI) 72.2, 65.0, 57.8, 43.3, 28.9, 21.7, 14.4, 7.2 Mbps 40 MHz BW (LongGI) 135, 121.5, 108, 81, 54, 40.5, 27, 13.5 Mbps (ShortGI) 150, 135, 120, 90, 60, 45, 30, 15 Mbps
Access Mode	Infrastructure Mode
Security	AOSS, WPA2-PSK (TKIP/AES), WPA/WPA2 mixed PSK, WPA-PSK (TKIP/AES), 128/64bit WEP, Mac Address Filter
Wired LAN Interface	
Standard Compliance	IEEE802.3u (100BASE-TX), IEEE802.3 (10BASE-T)
Transmission Rate	10 / 100 Mbps
Transmission Encoding	100BASE-TX 4B5B/MLT-3, 10BASE-T Manchester Cording
Access Method	CSMA/CD
Speed and Flow Control	10 / 100 Mbps, Auto Sensing, Auto MDIX
Number of LAN Ports	4
LAN Port Connector	RJ-45
DSL Interface	
Standard Compliance	ADSL2+
Number of DSL Ports	1
DSL Port Connector	RJ-11
Other	
Power Supply	External AC 100-240 V Universal, 50/60 Hz
Power Consumption	About 18.0 W (Max)
Dimensions	165 mm x 128 mm x 29 mm (6.5 x 5.0 x 1.1 in.) (not including the antenna and stand)
Weight	202g (7.1 oz.) (not including the antenna and stand)
Operating Environment	0-40 °C (32-104 °F) , 10-85 % (non-condensing)

Appendix B - Default Configuration Settings

Feature	Parameter	Default Setting
Internet	Encapsulation	RFC 1483 Bridged
	Modulation	MultiMode
	Multiplexing	LLC
	QoS Type	UBR
	PCR Rate	0 cps
	SCR Rate	0 cps
	Auto Detect	Disabled
	Virtual Circuit	0 VPI 35 VCI
	IP Settings	Obtain an IP Address Automatically
	Host Name	none
	Domain Name	none
	MTU	Auto
	Local IP Address	192.168.11.1
	Subnet Mask	255.255.255.0
	Local DHCP Server	Enabled
	Starting IP Address	192.168.11.64
	Maximum Number of DHCP Users	191
	Client Lease Time	2880 minutes
	Static DNS 1 - 3	0.0.0.0
	WINS	0.0.0.0
DDNS (Router Mode only)	DDNS Service	Disabled
	Current Dynamic DNS Information	none
Route	Routing Information	none

Feature	Parameter	Default Setting
WPS	WPS	Enabled
	External Registrar	Enabled
	AirStation PIN	An 8-digit random value (Printed on the label of the AirStation)
	WPS Security Information	WPS status: configured or unconfigured SSID: BUFFALO-XXXXXX (the last 6 digits of the AirStation's MAC address) Security: WPA/WPA2 mixedmode - PSK TKIP/AES mixedmode or none Encryption key: A 13-digit random value or disabled. (Printed on the label of the AirStation. Encryption is disabled by default settings on AirStation for Asia Pacific.)
AOSS	Encryption Type of Exclusive SSID for WEP	none
	Advanced Encryption Level feature	Enabled
	Exclusive SSID for WEP	Disabled
	AOSS Button on the AirStation Unit	Enabled
Basic	Wireless Radio	Enabled
	Wireless Channel	Auto Channel
	150 Mbps Mode	Band Width: 20MHz Extension Channel: -
	Broadcast SSID	Allow
	SSID	SSID1: Name SSID based on MAC address SSID2: Name SSID based on MAC address SSID3: not used SSID4: not used
	Separate feature	SSID1: not used SSID2: not used SSID3: not used SSID4: not used
	Wireless authentication	WPA/WPA2 mixedmode - PSK, or no authentication
	Wireless encryption	TKIP/AES mixedmode, or no encryption
	WPA-PSK (Pre-Shared Key)	A 13-digit random value or disabled (Printed on the label of the AirStation. Encryption is disabled in default settings on AirStation for Asia Pacific.)
	Rekey interval	60 minutes

Feature	Parameter	Default Setting		
Advanced	BSS Basic Rate Set	1, 2, 5.5, 11 Mbps		
	Multicast Rate	1 Mbps		
	Reverse Direction Grant	Enabled		
	DTIM Period	1		
	Privacy Separator	Disabled		
	Output Power	100 %		
	Tx Burst	Enabled		
WMM	WMM-EDCA Parameters (Priority AC_BK (Low))		For AP	For STA
		CWmin	15	15
		CWmax	1023	1023
		AIFSN	7	7
		TXOP Limit	0	0
	WMM-EDCA Parameters (Priority AC_BE (Normal))		For AP	For STA
		CWmin	15	15
		CWmax	63	1023
		AIFSN	3	3
		TXOP Limit	0	0
	WMM-EDCA Parameters (Priority AC_VI (High))		For AP	For STA
		CWmin	7	7
		CWmax	15	15
		AIFSN	1	2
		TXOP Limit	94	94
	WMM-EDCA Parameters (Priority AC_VO (Highest))		For AP	For STA
		CWmin	3	3
		CWmax	7	7
		AIFSN	1	2
		TXOP Limit	47	47
MAC Filter	Enforce MAC Filter	Disabled		
	Registration List	none		
Firewall (Router Mode only)	Log Output	Disabled		
	Basic Rules	Prohibit NBT and Microsoft-DS Routing Reject IDENT Requests Block Ping from Internet		Disabled Enabled Enabled
IP Filter (Router Mode only)	Log Output	Disabled		
	IP Filter Information	none		

Feature	Parameter	Default Setting
VPN Pass Through (Router Mode only)	PPPoE Pass Through	Disabled
	PPTP Pass Through	Disabled
Port Forwarding (Router Mode only)	Port Forwarding Registration Information	none
DMZ (Router Mode only)	IP Address of DMZ	none
UPnP (Router Mode only)	UPnP	Enabled
QoS (Router Mode only)	QoS for transmission to the Internet	Disabled
Name	AirStation Name	AP + AirStation's MAC Address
Password	Administrator Name	root (fixed)
	Administrator Password	none
Time/Date	Local Date	2010 Year 1 Month 1 Day
	Local Time	0 Hour 0 Minute 0 Seconds
	Time Zone	(GMT+00:00) Greenwich Mean Time, London
NTP	NTP Functionality	Disabled
	NTP Server	time.nist.gov
	Update Interval	24 hours
ECO	Schedule Feature	Disabled
	Register schedule	Operational Mode: Normal Start time: 0:00 End time: 0:30 The day of week: none
	User Define Mode	LED: Off Wired LAN: ECO (Slow operation) Wireless LAN: Off
Access	Log Output	Disable
	Limitation Item	Prohibit configuration from wireless LAN Disabled Prohibit configuration from wired LAN Disabled Permit configuration from wired Internet Disabled

Feature	Parameter	Default Setting
Log	Log Transfer	Disabled
	Syslog Server	none
	Transfer Logs	Address Translation, IP Filter, Firewall, PPPoE Client, Dynamic DNS, DHCP Client, DHCP Server, AOSS, Wireless Client, Authentication, Setting Changes, System Boot, NTP Client, and Wired Link

Appendix C - TCP/IP Settings

Windows 7

To configure TCP/IP in Windows 7, follow the procedure below.

1 Click [Start] > [Control Panel] > [Network and Internet].

2 Click [Network and Sharing Center].

3 Click [Change Adapter Settings] on the left side menu.

4 Right-click on [Local Area Connection], then click [Properties].

5 If the User Account Control screen opens, click [Yes] or [Continue].

6 Select [Internet Protocol Version 4 (TCP/IPv4)] then click [Properties].

7 To have DHCP set your IP address settings automatically, check [Obtain an IP address automatically] and [Obtain DNS server address automatically].

To set your IP address settings manually, enter values for each setting. Examples:

If the router's IP address is 192.168.11.1,

IP address	192.168.11.80
Subnet mask	255.255.255.0
Default gateway	192.168.11.1
Preferred DNS server	192.168.11.1
Alternate DNS server	blank

8 Click [OK].

Windows Vista

To configure TCP/IP in Windows Vista, follow the procedure below.

1 Click [Start] > [Settings] > [Control Panel].

2 Click [Network and Sharing Center].

3 Click [Manage network connections] on the left side menu.

4 Right-click on [Local Area Connection], then click [Properties].

5 If the User Account Control screen opens, click [Yes] or [Continue].

6 Select [Internet Protocol Version 4 (TCP/IPv4)], then click [Properties].

7 To have DHCP set your IP address settings automatically, check [Obtain an IP address automatically] and [Obtain DNS server address automatically].

To set your IP address settings manually, enter values for each settings. Example:

If the router's IP address is 192.168.11.1,

IP address	192.168.11.80
Subnet mask	255.255.255.0
Default gateway	192.168.11.1
Preferred DNS server	192.168.11.1
Alternate DNS server	blank

8 Click [Close].

Windows XP

To configure TCP/IP in Windows XP, follow the procedure below.

1 Click [Start] > [Settings] > [Control Panel].

2 Double-click [Network].

3 Right click on [Local Area Connection], then click [Properties].

4 Select [Internet Protocol (TCP/IP)], then click [Properties].

5 To have DHCP set your IP address settings automatically, check [Obtain an IP address automatically] and [Obtain DNS server address automatically].

To set your IP address settings manually, enter values for each setting. Examples:

If the router's IP address is 192.168.11.1,

IP address	192.168.11.80
Subnet mask	255.255.255.0
Default gateway	192.168.11.1
Preferred DNS server	192.168.11.1
Alternate DNS server	blank

6 Click [Close].

Mac OS X

To configure TCP/IP in Mac OS X, follow the procedure below.

1 Click [Apple menu] > [System Preferences…].

2 Click [Network].

3 Click [Ethernet].

4 To have DHCP set your IP address settings automatically, select [Using DHCP] in the Configure IPv4 field.

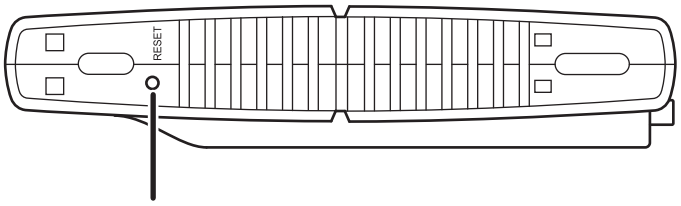
To set your IP address settings manually, select [Manually] in the Configure IPv4 field and enter values for each setting. Examples:

If the router's IP address is 192.168.11.1,

IP Address	192.168.11.80
Subnet Mask	255.255.255.0
Router	192.168.11.1
DNS Server	192.168.11.1
Search Domains	blank

5 Click [Apply].

Appendix D - Restoring the Default Configuration



With the AirStation powered on, hold down this button for 3 seconds to return it to factory default settings.

Appendix E - Regulatory Compliance Information

Federal Communication Commission Interference 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.

FCC Caution:

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

Important Note - FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for uncontrolled equipment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

EN60950-1: 2006 +A11: 2009
Safety of Information Technology Equipment

EN 50385: 2002
Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110MHz - 40 GHz) - General public

EN 300 328 V1.7.1 (2006-10)
Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

EN 301 489-1 V1.8.1 (2008-04)
Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

EN 301 489-17 V2.1.1 (2009-05)
Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems , 5 GHz high performance RLAN equipment and 5,8GHz Broadband Data Transmitting Systems.

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

CE 0560 !

Česky [Czech]
Buffalo Technology Inc. tímto prohlašuje, že tento AirStation WBMR-HP-GNV2 je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

Dansk [Danish]
Undertegnede Buffalo Technology Inc. erklærer herved, at følgende udstyr AirStation WBMR-HP-GNV2 overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Deutsch [German]
Hiermit erklärt Buffalo Technology Inc. dass sich das Gerät AirStation WBMR-HP-GNV2 in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.

Eesti [Estonian]
Käesolevaga kinnitab Buffalo Technology Inc. seadme AirStation WBMR-HP-GNV2 vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

English
Hereby, Buffalo Technology Inc. declares that this AirStation WBMR-HP-GNV2 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Español [Spanish]
Por medio de la presente Buffalo Technology Inc. declara que el AirStation WBMR-HP-GNV2 cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Ελληνική [Greek]
ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Buffalo Technology Inc. ΔΗΛΩΝΕΙ ΟΤΙ AirStation WBMR-HP-GNV2 ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Français [French]
Par la présente Buffalo Technology Inc. déclare que l'appareil AirStation WBMR-HP-GNV2 est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Italiano [Italian]
Con la presente Buffalo Technology Inc. dichiara che questo AirStation WBMR-HP-GNV2 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Latviski [Latvian]
Ar šo Buffalo Technology Inc. deklarē, ka AirStation WBMR-HP-GNV2 atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.

Lietuvių [Lithuanian]
Šiuo Buffalo Technology Inc. deklaruoja, kad šis AirStation WBMR-HP-GNV2 atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Nederlands [Dutch]
Hierbij verklaart Buffalo Technology Inc. dat het toestel AirStation WBMR-HP-GNV2 in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

Malti [Maltese]
Hawnhekk, Buffalo Technology Inc. , jiddikjara li dan AirStation WBMR-HP-GNV2 jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

Magyar [Hungarian]
Alulírott, Buffalo Technology Inc. nyilatkozom, hogy a AirStation WBMR-HP-GNV2 megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.

Polski [Polish]
Niniejszym, Buffalo Technology Inc. , deklaruję, że AirStation WBMR-HP-GNV2 spełnia wymagania zasadnicze oraz stosowne postanowienia zawarte Dyrektywie 1999/5/EC.

Português [Portuguese]
Buffalo Technology Inc. declara que este AirStation WBMR-HP-GNV2 está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Slovensko [Slovenian]
Buffalo Technology Inc. izjavlja, da je ta AirStation WBMR-HP-GNV2 v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

Slovensky [Slovak]
Buffalo Technology Inc. týmto vyhlasuje, že AirStation WBMR-HP-GNV2 spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

Suomi [Finnish]
Buffalo Technology Inc. vakuuttaa täten että AirStation WBMR-HP-GNV2 tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svensk [Swedish]
Härmed intygar Buffalo Technology Inc. att denna AirStation WBMR-HP-GNV2 står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Appendix F - Environmental Information

- The equipment that you have purchased has required the extraction and use of natural resources for its production.
- The equipment may contain hazardous substances that could impact health and the environment.
- In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems.
- The take-back systems will reuse or recycle most of the materials of your end life equipment in a sound way.
- The crossed-out wheeled bin symbol invites you to use those systems.

- If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.

Appendix G - GPL Information

The source code for Buffalo products that use GPL code is available at *http://opensource.buffalo.jp/* .

Appendix H - Warranty Information

Buffalo Technology (Buffalo Inc.) products come with a two-year limited warranty from the date of purchase. Buffalo Technology (Buffalo Inc.) warrants to the original purchaser the product; good operating condition for the warranty period. This warranty does not include non-Buffalo Technology (Buffalo Inc.) installed components. If the Buffalo product malfunctions during the warranty period, Buffalo Technology/(Buffalo Inc.) will, replace the unit, provided the unit has not been subjected to misuse, abuse, or non-Buffalo Technology/(Buffalo Inc.) authorized alteration, modifications or repair.

All expressed and implied warranties for the Buffalo Technology (Buffalo Inc) product line including, but not limited to, the warranties of merchantability and fitness of a particular purpose are limited in duration to the above period.

Under no circumstances shall Buffalo Technology/(Buffalo Inc.) be liable in any way to the user for damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use the Buffalo products.

In no event shall Buffalo Technology/(Buffalo Inc.) liability exceed the price paid for the product from direct, indirect, special, incidental, or consequential damages resulting from the use of the product, its accompanying software, or its documentation. Buffalo Technology (Buffalo Inc.) does not offer refunds for any product.