ZyXEL G-2000 Plus

802.11g Wireless 4-port Router

Quick Start Guide

Version 3.60

12/2004

ZyXEL
Unleash Networking Power

Table of Contents

Procedure to View a Product's Certification(s)

1. Go to www.zyxel.com.

2. Select your product from the drop-down list box on the ZyXEL home page to go to that product's page.

3. Select the certification you wish to view from this page.

1 Introducing the ZyAIR

The ZyAIR G-2000 Plus is a broadband sharing gateway with a built-in wireless LAN access point and four-port switch that makes it easy for people to set up a small home/office network and share Internet access via a broadband (cable/DSL) modem. Key features of the ZyAIR include 802.1x wireless LAN security, WPA (Wi-Fi Protected Access), internal RADIUS server, firewall, remote management and UPnP. See your *User's Guide* for more details on all ZyAIR features.

You should have an Internet account already set up and have been given most of the following information.

INTERNET ACCOUNT CHECKLIST		
Your device's WAN IP Address (if given): _____		
Encapsulation:	(choose one below)	
☐ **Ethernet**	Service Type: _____	
	Login Server IP Address: _____	
	User Name: _____	Password: _____
☐ **PPTP**	User Name: _____	Password: _____
	Your WAN IP Address: _____	PPTP Server IP Address: _____
	Connection ID (if required): _____	
☐ **PPPoE**	(PPPoE) Service Name: _____	
	User Name: _____	Password: _____

2 Hardware Connections

2.1 Side Panel and Connections

Figure 1 ZyAIR Side Panel and Connections

LABEL	DESCRIPTION
LAN	Use an Ethernet cable to connect at least one computer for initial ZyAIR configuration. These ports are auto-negotiating (can connect at 10 or 100Mbps) and auto-crossover (automatically adjust to the type of Ethernet cable you use (straight-through or crossover)).
WAN	Connect your cable/DSL modem to this port with the cable that came with your modem.
RESET	You only need to use this button if you've forgotten the ZyAIR's password. It returns the ZyAIR to the factory defaults (password is 1234 and LAN IP address 192.168.1.1). Refer to the *User's Guide*.
After you've made the connections connect the power cable to a power supply and look at the front panel LEDs.	
POWER 12VDC	Connect the end of the included power adaptor (use only this adaptor) to this power socket. **Use only the included power adaptor.**

2.2 The LED Display

The **PWR** LED turns steady on when the power adaptor is connected. The **SYS** LED blinks while performing system testing and then turns steady on if the testing is successful. The link LED and the ZyAIR LED turn steady on while the wireless card on the ZyAIR is working. The **LAN** and **WAN** LEDs turn on, if they are properly connected. Refer to the *User's Guide* for more detailed LED descriptions.

ZyAIR LED

Figure 2 ZyAIR Front Panel

Table 1 ZyAIR Front Panel LED Description

LED	COLOR	STATUS	DESCRIPTION
ZyAIR	Blue	Blinking (Breathing)	ZyAIR is sending/receiving data through the wireless LAN.

Table 1 ZyAIR Front Panel LED Description

LED	COLOR	STATUS	DESCRIPTION
		On	The ZyAIR is ready, but is not sending/receiving data.
		Off	The LED has been disabled in the web configurator or SMT.
LAN 1-4		Off	The Ethernet connection is not ready, or has failed.
	Green	On	The ZyAIR has a successful 10Mbps Ethernet connection.
		Blinking	The ZyAIR is sending/receiving data.
	Orange	On	The ZyAIR has a successful 100Mbps Ethernet connection.
		Blinking	The ZyAIR is sending/receiving data.
WAN		Off	The ZyAIR does not have a WAN connection.
	Green	On	The ZyAIR has a successful 10Mbps WAN connection.
		Blinking	The ZyAIR is sending/receiving data.
	Orange	On	The ZyAIR has a successful 100Mbps WAN connection.
		Blinking	The ZyAIR is sending/receiving data.
SYS		Off	The ZyAIR is not ready or has malfunctioned.
	Green	On	The ZyAIR is functioning properly.
	Red	Blinking	The ZyAIR is rebooting.
PWR		Off	The ZyAIR is not receiving power.
	Green	On	The ZyAIR is receiving power.

To access the ZyAIR, configure your computer's IP address and subnet mask to be in the same range as the ZyAIR's.

The default IP address of the ZyAIR is 192.168.1.1

3 Set Up Your Computer's IP Address

The ZyAIR is already set up to assign your computer an IP address. Use this section to set up your computer to receive an IP address or assign it a static IP address in the 192.168.1.2 to 192.168.1.254 range with a subnet mask of 255.255.255.0. This is necessary to ensure that your computer can communicate with your ZyAIR.

> **Skip this section if your computer's IP address is already between 192.168.1.2 and 192.168.1.254 with subnet mask 255.255.255.0.**

Your computer must have a network card and TCP/IP installed. TCP/IP should already be installed on computers using Windows NT/2000/XP, Macintosh OS 7 and later operating systems. Refer to the *Setting Up Your Computer's IP Address* appendix for other operating systems.

3.1 Windows 2000/NT/XP

The following example figures use the default Windows XP GUI theme.

1. Click **start** (**Start** in Windows 2000/NT), **Settings**, **Control Panel**.

2. In the Control Panel, double-click Network Connections (Network and Dial-up Connections in Windows 2000/NT).

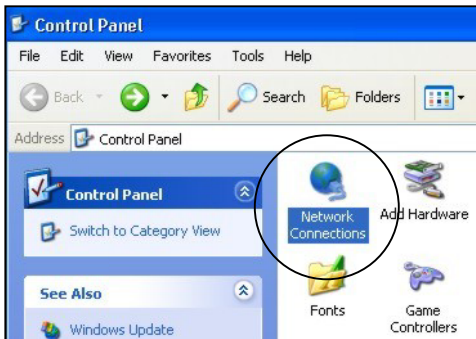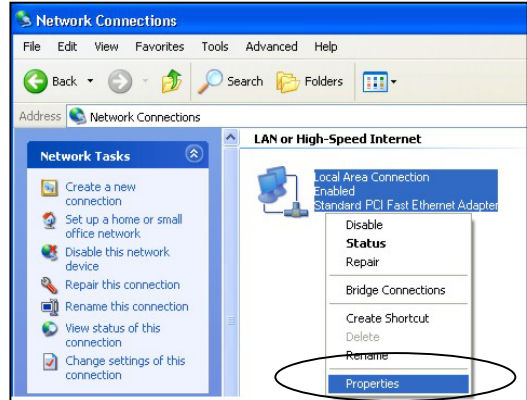**3.** Right-click Local Area Connection and then Properties.

Figure 4 Network Connection

Figure 3 Control Panel

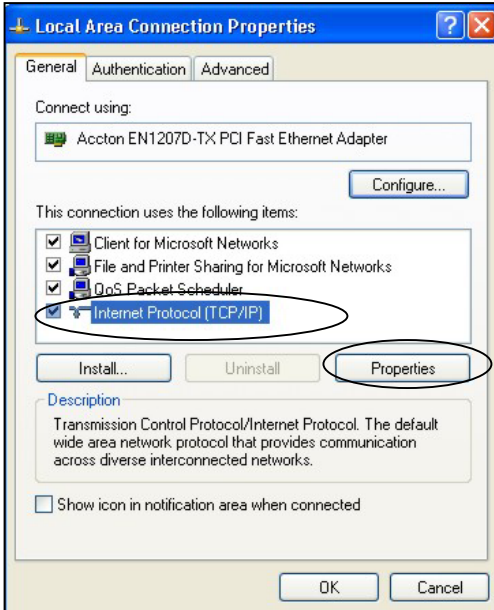**4.** Select Internet Protocol (TCP/IP) and then click Properties.

Figure 5 Local Area Connection Properties

5. Select **Use the following IP Address** and fill in an **IP address** (between 192.168.1.3 and 192.168.1.254).

6. Type 255.255.255.0 as the **Subnet mask**.
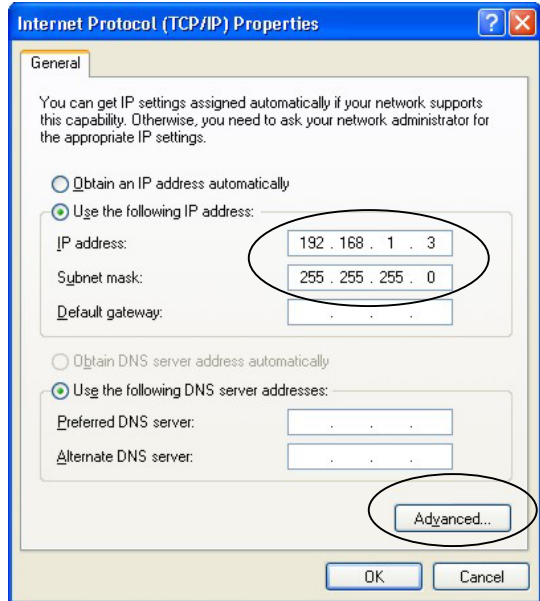
7. Click **Advanced**.[1]

Figure 6 Internet Protocol Properties

8. Remove any previously installed gateways in the **IP Settings** tab and click **OK** to go back to the **Internet Protocol TCP/IP Properties** screen.

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[1] See the appendices for information on configuring DNS server addresses.
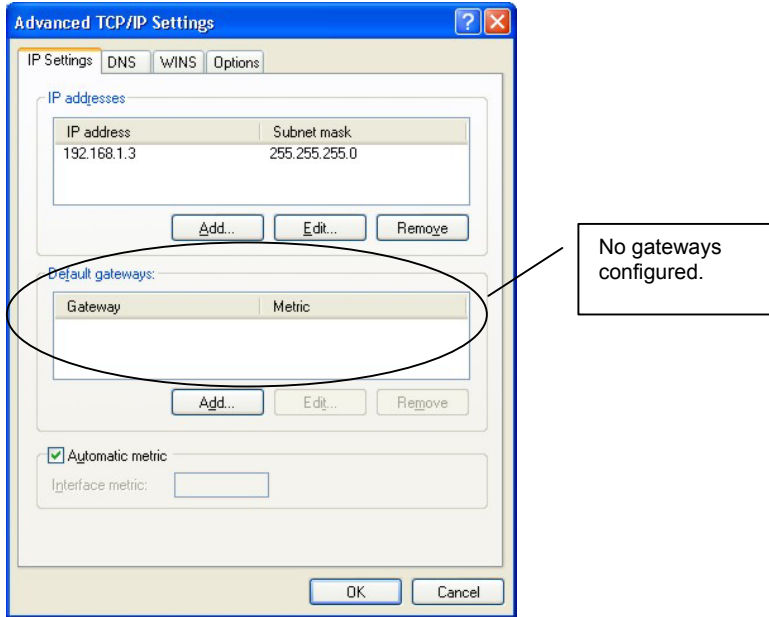
Figure 7 Advanced TCP/IP Settings

9. Click OK to close the Internet Protocol (TCP/IP) Properties window.

10. Click Close (OK in Windows 2000/NT) to close the Local Area Connection Properties window.

11. Close the Network Connections window (Network and Dial-up Connections in Windows 2000/NT).

3.2 Checking/Updating Your Computer's IP Address

1. In the computer, click Start, (All) Programs, Accessories and then Command Prompt.

2. In the **Command Prompt** window, type "ipconfig" and then press **ENTER** to verify that your computer's static IP address is in the correct subnet (in the range between 192.168.1.2 and 192.168.1.254 if using the default ZyAIR LAN IP address). Alternatively, to have the ZyAIR assign your computer a new IP address (from the IP pool), make sure your ZyAIR is turned on, type "ipconfig/renew" and then press **ENTER**.

3.3 Testing the Connection to the ZyAIR

1. Click Start, (All) Programs, Accessories and then Command Prompt.

2. In the **Command Prompt** window, type "ping 192.168.1.1" followed by a space and the IP address of the ZyAIR (192.168.1.1 is the default).

3. Press **ENTER**. The following screen displays.

```
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=10ms TTL=254
Reply from 192.168.1.1: bytes=32 time<10ms TTL=254
Reply from 192.168.1.1: bytes=32 time<10ms TTL=254
Reply from 192.168.1.1: bytes=32 time<10ms TTL=254

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum =  10ms, Average =  2ms

C:\>
```

Your computer can now communicate with the ZyAIR via the **ETHERNET** port.

4 Configure the ZyAIR

This *Quick Start Guide* introduces the ZyAIR and shows you how to use the web configurator Wizard. See your *User's Guide* for configuration details and background information on all ZyAIR features using the SMT (System Management Terminal) and web configurator.

4.1 Accessing the ZyAIR via the Web Configurator

1. Launch your web browser. Enter "192.168.1.1" as the web site address.

Default ZyAIR IP address.

2. The default password ("1234") is already in the password field (in non-readable format). Click **Login** to proceed to a screen asking you to change your password. Click **Reset** to revert to the default password in the password field.

ZyAIR G-2000PLUS

Enter Password and click Login.

Default password.

Password: [••••••]

[Login]   [Reset]
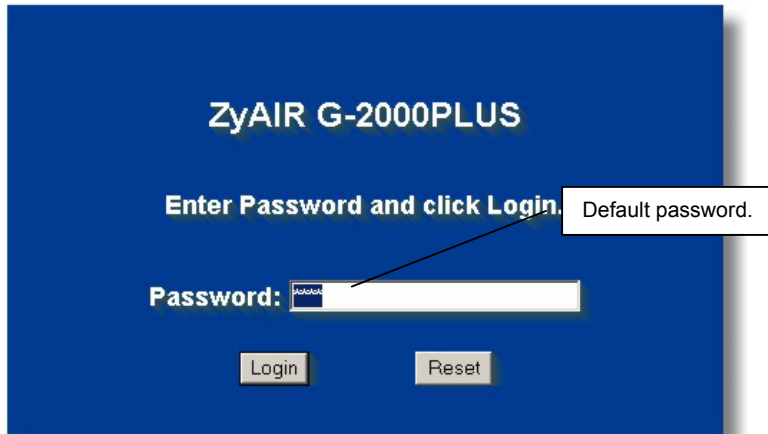
3. It is highly recommended you change the default password! Enter a new password, retype it to confirm and click **Apply**; alternatively click **Ignore** to proceed to the **Replace Factory Default Certificate** screen.

If you do not change the password, the following screen appears every time you login.

Use this screen to change the password.

Change default password.

New Password: [••••••]

Retype to Confirm: [   ]
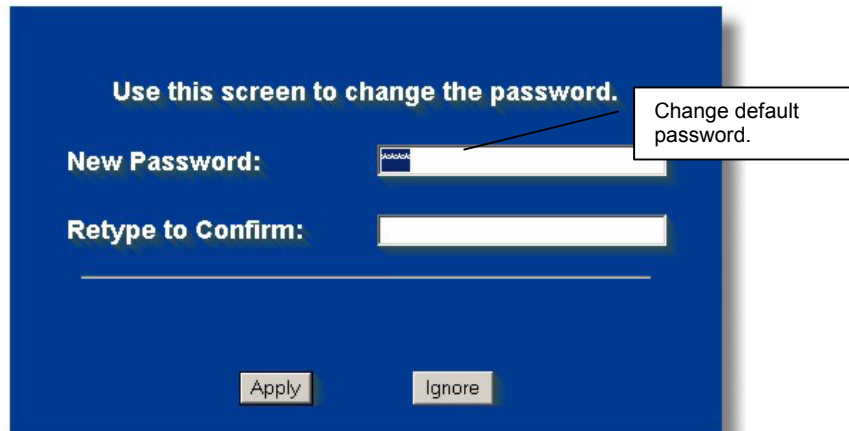
[Apply]   [Ignore]

4. Click Apply in the **Replace Factory Default Certificate** screen to create a certificate using your ZyAIR's MAC address that will be specific to this device; alternatively click **Ignore** to proceed to the **MAIN MENU** screen if you do not want to change the certificate now.

5. You should now see the web configurator **MAIN MENU** screen.
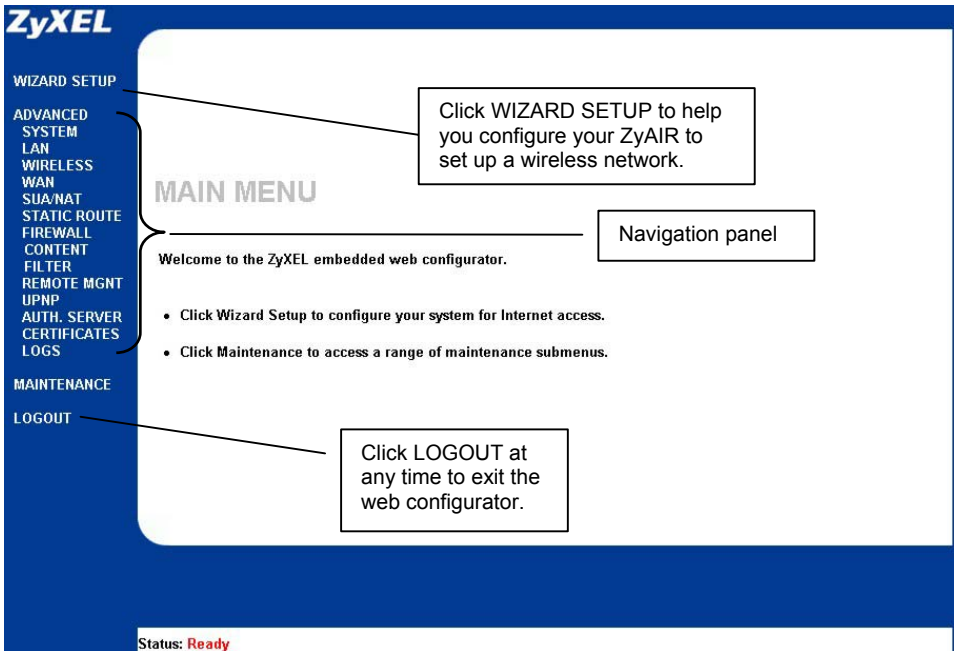
The management session automatically times out when the time period set in the Administrator Inactivity Timer **field expires (default five minutes). Simply log back into the ZyAIR if this happens to you.**

4.2 Common Screen Command Buttons

The following table shows common command buttons found on many web configurator screens.

Back	Click **Back** to return to the previous screen.
Apply	Click **Apply** to save your changes back to the ZyAIR.
Reset	Click **Reset** to begin configuring this screen afresh.

5 Configuring the ZyAIR Using the Wizard

The wizard consists of a series of screens to help you configure your ZyAIR for wireless stations to access your wired LAN. Refer to your *User's Guide* for more background information.

1. Click **WIZARD SETUP** to display the first wizard screen. Refer to your *User's Guide* for more background information on each field.

System Name is a unique name to identify the ZyAIR in an Ethernet network. Enter a descriptive name

Enter a **Domain Name** if your ISP requires a domain name for authentication; otherwise leave it blank. Click Next to continue

2. Use the second wizard screen to set up the wireless LAN.

WIZARD SETUP

Wireless LAN Setup

ESSID	Wireless
Choose Channel ID	Channel-06 2437MHz
Security	None

Back Next

ESSID is a unique name to identify the ZyAIR in a wireless LAN. Enter a descriptive name.

The range of radio frequencies used by IEEE 802.11b/g wireless devices is called a channel.

Select a channel ID that is not already in use by a neighboring device.

Select **None**, **Basic (WEP)** or **Extended (WPA-PSK)** from the drop-down list box as the level of wireless security.
Choose **None** security to have no wireless LAN security configured. If you do not enable any wireless security on your ZyAIR, your network is accessible to any wireless networking device that is within range.
Choose **Basic (WEP)** security if you want to configure **WEP Encryption** parameters.
Choose **Extended (WPA-PSK)** security to configure a **Pre-Shared Key**. Choose this option only if your wireless clients support WPA-PSK.
The third screen varies depending on which security level you select.

The wireless stations and ZyAIR must use the same ESSID, channel ID and WEP encryption key (if WEP is enabled) or WPA-PSK (if WPA-PSK is enabled) for wireless communication.

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3.   Choose **Basic (WEP)** security in the previous screen to setup WEP Encryption parameters.

WIZARD SETUP

Wireless LAN Setup

Passphrase	Generate
WEP Encryption	64-bit WEP

64-bit WEP: Enter 5 characters or 10 digit ("0-9", "A-F") for each Key(1-4).
128-bit WEP: Enter 13 characters or 26 digit ("0-9", "A-F") for each Key(1-4).
(Select one WEP key as an active key to encrypt wireless data transmission.)

◉ ASCII   ○ Hex

◉ Key 1
○ Key 2
○ Key 3
○ Key 4

Use **Passphrase** to automatically generate a key or manually enter a key in one of the **Key 1~ 4** fields.

Back Next

WEP (Wired Equivalent Privacy) encrypts data frames before transmitting over the wireless network.

The higher the WEP Encryption, the higher the security but the slower the throughput.

Select **64-bit** or **128-bit** from the **WEP Encryption** drop-down list.

Select **ASCII** or **Hex** WEP key input method and then follow the on-screen instructions to set up the WEP keys.
You can generate or manually enter a WEP key by either:

Entering a **Passphrase** (up to 32 printable characters) and clicking **Generate**. The Prestige automatically generates a WEP key.
Or
Entering a manual key in a **Key** field and selecting **ASCII** or **Hex** WEP key input method.

4.   Choose **Extend (WPA-PSK)** security in the second wizard screen to set up a **Pre-Shared Key**.

WIZARD SETUP

Wireless LAN Setup

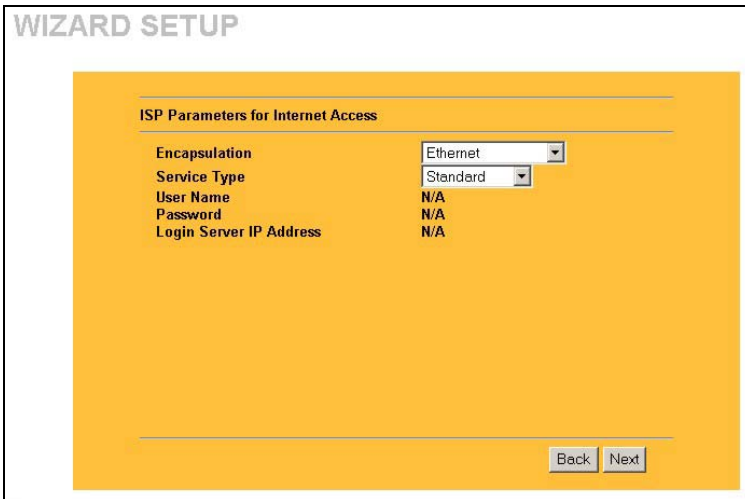**Pre-Shared Key** [   ]

Back | Next
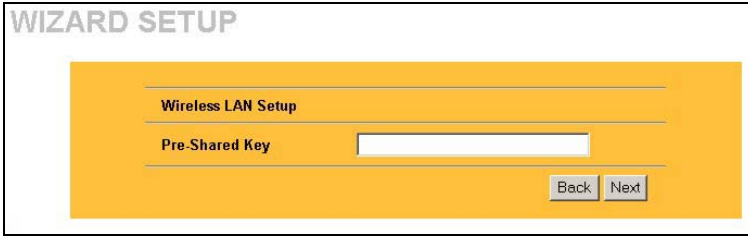
Pre-Shared Key

Type a pre-shared key to have a more secure wireless connection than WEP encryption.

Type from 8 to 63 case-sensitive ASCII characters.

You can set up the most secure wireless connection by configuring WPA in the advanced wireless screen. You need to configure a RADIUS server to do this.

5. This wizard screen has three variations depending on what encapsulation type you use. Use the information in Internet Account Information to fill in fields.

WIZARD SETUP

ISP Parameters for Internet Access

Encapsulation	Ethernet ▼
Service Type	Standard ▼
User Name	N/A
Password	N/A
Login Server IP Address	N/A

Back | Next

Choose **Ethernet** when the WAN port is used as a regular Ethernet. Choose from **Standard** or a RoadRunner version. You'll need **User Name**, **Password** and **Login Server IP Address** for some Roadrunner versions.

PPPoE or Point-to-Point Protocol over Ethernet (**PPP over Ethernet**) also functions as a dial-up connection. Therefore you'll also need a username and password and possibly the PPPoE service name.
Your ISP will give you all needed information.

Choose **PPTP** if your service provider uses a DSL terminator with PPTP login. The ZyAIR must have a static IP address in this case. You'll also need a login name, associated password, the DSL terminator IP address and possibly a connection ID.

Click **Next** to continue.

If you change the ZyAIR's IP address, you must use the *new* IP address if you want to access the web configurator again.

---

6. This is the final wizard screen you need to configure. Fill in the fields and click **Next** to go to the last wizard screen.

WIZARD SETUP

WAN IP Address Assignment

- ◉ **Get automatically from ISP (Default)**
- ○ **Use fixed IP address**
  - **My WAN IP Address** `0.0.0.0`
  - **My WAN IP Subnet Mask** `0.0.0.0`
  - **Gateway IP Address** `0.0.0.0`

DNS Server Address Assignment

- **First DNS Server** [From ISP ▼] `0.0.0.0`
- **Second DNS Server** [From ISP ▼] `0.0.0.0`
- **Third DNS Server** [From ISP ▼] `0.0.0.0`

WAN MAC Address

- ◉ **Factory default**
- ○ **Spoof this computer's MAC Address - IP Address** `192.168.1.2`

[Back] [Next]

WAN IP Address Assignment
Select **Get automatically from ISP** if your ISP did not assign you a fixed IP address.

Select **Use fixed IP address** to give the ZyAIR a fixed, unique IP address. The fixed IP address should be in the same subnet as your broadband modem or router.

Enter a **Subnet Mask** appropriate to your network and the **Gateway IP Address** of the neighboring device, if you know it. If you do not, leave the Gateway IP Address field as **0.0.0.0**.

DNS Server Address Assignment

Select **From ISP** if your ISP dynamically assigns DNS server information (and the ZyAIR's WAN IP address). The field to the right displays the (read-only) DNS server IP address that the ISP assigns. If you chose **From ISP**, but the ZyAIR has a fixed WAN IP address, **From ISP** changes to **None** after you click **Next**.

If you chose **From ISP** for the second or third DNS server, but the ISP does not provide a second or third IP address, **From ISP** changes to **None** after you click **Next**.

Select **User-Defined** if you have the IP address of a DNS server. Enter the DNS server's IP address in the field to the right. If you chose **User-Defined**, but leave the IP address set to 0.0.0.0, **User-Defined** changes to **None** after you click **Next**.

If you set a second choice to **User-Defined**, and enter the same IP address, the second **User-Defined** changes to **None** after you click **Next**.

Select **None** if you do not want to configure DNS servers. If you do not configure a system DNS server, you must use IP addresses when configuring VPN, DDNS and the timeserver.
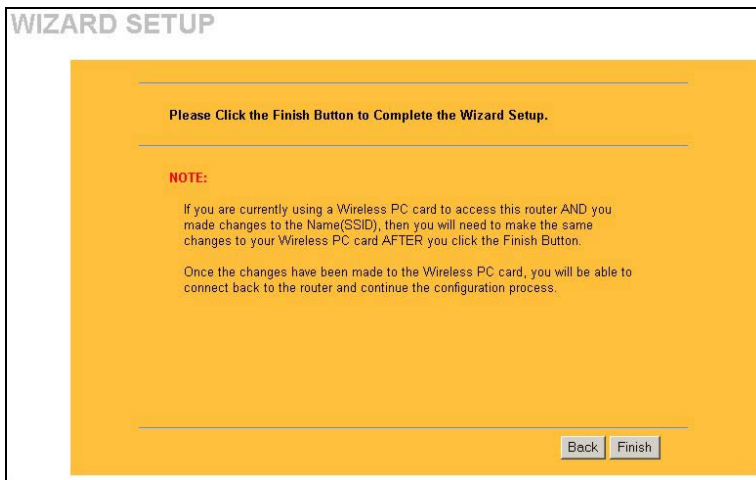
WAN MAC Address

The WAN MAC address field allows users to configure the WAN port's MAC address by either using the factory default or cloning the MAC address from a computer on your LAN.

Select **Factory Default** to use the factory assigned default MAC address. Alternatively, select **Spoof this Computer's MAC address - IP Address** and enter the IP address of the computer on the LAN whose MAC address you are cloning.
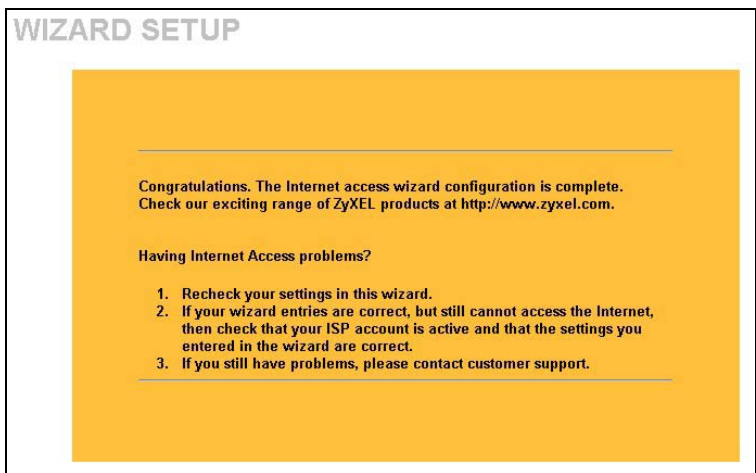
Click **Next** to continue.

7. Click **Finish** to save and complete the wizard setup.

WIZARD SETUP

Please Click the Finish Button to Complete the Wizard Setup.

NOTE:

If you are currently using a Wireless PC card to access this router AND you made changes to the Name(SSID), then you will need to make the same changes to your Wireless PC card AFTER you click the Finish Button.

Once the changes have been made to the Wireless PC card, you will be able to connect back to the router and continue the configuration process.

Back   Finish

Note:

If you are currently using a Wireless PC card to access this router AND you made changes to the Name (SSID), then you will need to make the same changes to your Wireless PC card AFTER you click the **Finish** button.

Once the changes have been made to the Wireless PC card, you will be able to connect back to the router and continue the configuration process.

WIZARD SETUP

Congratulations. The Internet access wizard configuration is complete.
Check our exciting range of ZyXEL products at http://www.zyxel.com.

Having Internet Access problems?

1. Recheck your settings in this wizard.
2. If your wizard entries are correct, but still cannot access the Internet, then check that your ISP account is active and that the settings you entered in the wizard are correct.
3. If you still have problems, please contact customer support.

This is the final wizard screen. You may return to the **Main Menu** and continue to configure your ZyAIR.

8.   Change the wireless parameter settings in the wireless stations to match those of the ZyAIR. Refer to the *User's Guide* for your wireless adapter.

5.1 Test Your Internet Connection

Launch your web browser and navigate to www.zyxel.com. You don't need a dial-up program such as Dial Up Networking. Internet access is just the beginning. Refer to the *User's Guide* for more detailed information on the complete range of ZyAIR features.

6 Hardware Installation

6.1 Attaching Antennas

Follow the steps below to connect the supplied antennas.

1.   Locate the antenna connectors on the sides of your ZyAIR.

2.   Screw the antennas clockwise onto the antenna connectors. The antennas should be perpendicular to the ground and parallel to each other.

Make sure the antennas are securely screwed onto the antenna connectors.
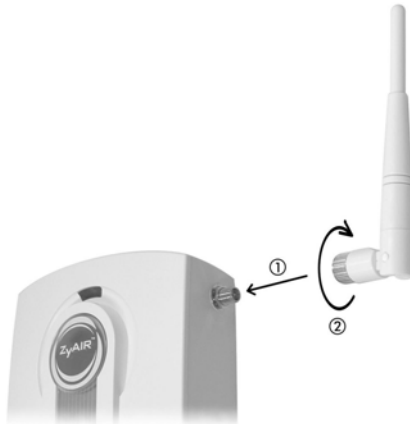

Figure 8 Attaching Antennas

6.2 Hardware Mounting Installation

In general, the best location for the access point is at the center of your intended wireless coverage area. For better performance, mount the ZyAIR high up free of obstructions.

Free-standing

Place your ZyAIR on a flat, level surface (on a desk or shelf) that is strong enough to support the weight of the ZyAIR with connection cables.

1. Follow the steps to position your ZyAIR on a level surface. You can use the diagrams below for instructions on how to do this.
2. Connect the screw (included) to the support holder.
3. Connect the support holder to the ZyAIR but do not tighten the screw.
4. Twist the support holder to the side.
5. Run the connection wires through the gap in the support holder

Figure 9 Support Holder Connections

6. Twist the support holder back to the vertical position and tighten the screw that connects the support holder to the ZyAIR.
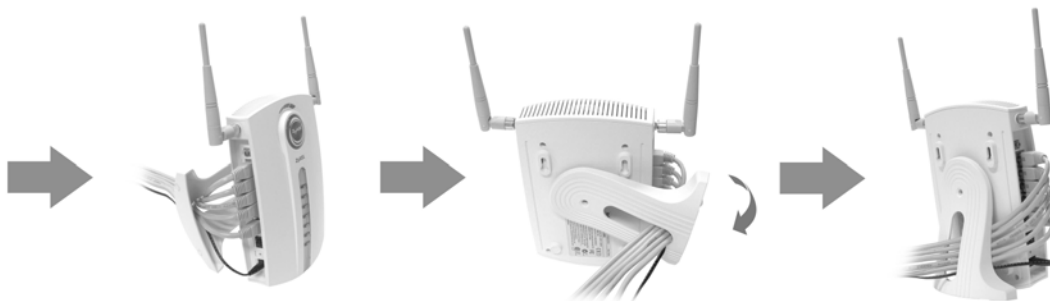

Figure 10 Support Holder Connection Pass Through

Wall-mounted

Follow the steps to attach your ZyAIR to a wall.

1. Locate a high position on the wall that is free of obstructions.
2. Connect two screws (not included) in the wall 80mm apart. You can use the diagram at the end of this guide to help you mark the screw holes correctly. Use screws with 6mm ~ 8mm (0.24" ~ 0.31") wide heads. Do not screw the screws all the way into the wall. Leave a small gap between the head of the screws and the wall.

Make sure the screws are securely fixed to the wall and strong enough to hold the weight of the ZyAIR with the connection cables.

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3. Adjust the cables.
4. Align the holes on the back of the ZyAIR with the screws on the wall. Hang the ZyAIR on the screws.
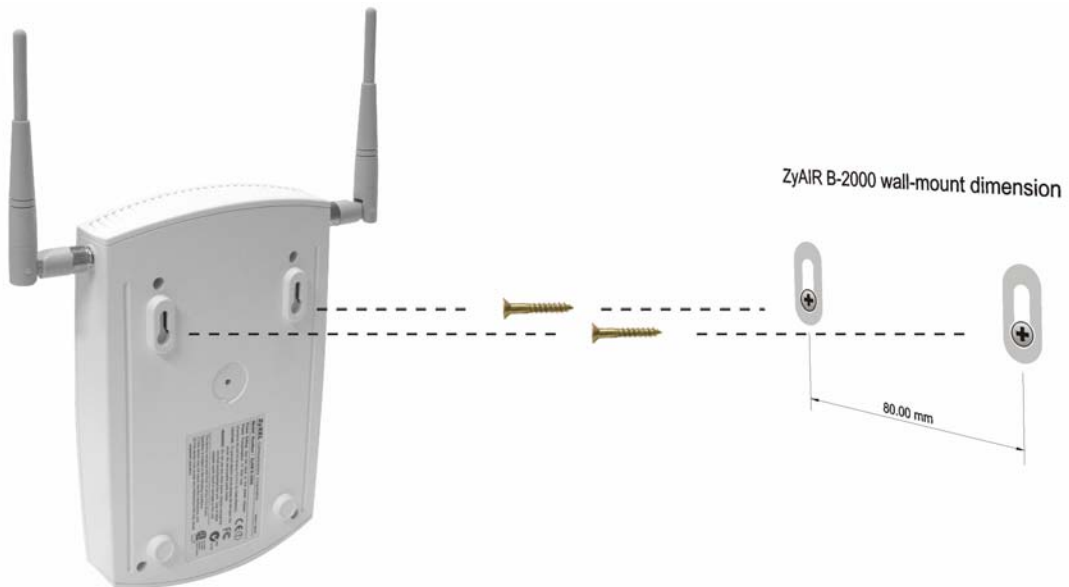
Figure 11 Wall Mounting the ZyAIR

7 Troubleshooting

Make sure you are using the correct power adaptor and the power adaptor is plugged into an appropriate power supply.

PROBLEM	CORRECTIVE ACTION
The **PWR** and/or **SYS** LED are off.	Make sure you are using the correct power adaptor and the power adaptor is plugged into an adequate power supply. Turn the ZyAIR off and on. If the error persists, you may have a hardware problem. In this case, you should contact your vendor.
The **LAN** LED is off.	Check the cable connection to the ZyAIR **LAN** port. Make sure your computer's network card is working properly.
The ZyAIR LED is off.	Turn the ZyAIR off and on. If the error persists, you may have a hardware problem. In this case, you should contact your vendor.
The **WLAN** LED is off.	Make sure that the access point and the associated computers are turned on and working properly. Move your computer closer to the access point or the peer computer(s) within the transmission range. There is too much radio interference (for example microwave or another access point) around your wireless network. Relocate or reduce the radio interference. Optimize the performance of the WLAN by ensuring that the distance between access points is not too far. In most buildings, most WLAN adapters operate within a range of 100 ~ 300 feet, depending on the thickness and structure of the walls. Radio waves can pass through walls and glass but not metal. If there is interference in transmitting through a wall, it may be that the wall has reinforcing metal in its structure. Install another access point to circumvent this problem. Floors usually have metal girders and metal reinforcing struts that interfere with WLAN transmission.

PROBLEM	CORRECTIVE ACTION
I cannot access the web configurator.	Make sure the IP addresses and subnet masks of the ZyAIR and the computer are in the same IP address range. (For example, if the ZyAIR is using the default IP address and subnet mask, check that the IP address of the computer is in the range 192.168.1.2 ~192.168.1.254 and the subnet mask is 255.255.255.0). Refer to the *Setting Up Your Computer's IP Address* section.
	If you change the ZyAIR default IP address, then enter the new IP address as the web site address.
	The default password is "1234". If you have changed the password and have now forgotten it, you will need to reset the ZyAIR. Refer to the *User's Guide* for how to use the **RESET** button.
I cannot ping any computer on the LAN.	If all of the LAN LEDs are off, check the cables between the ZyAIR and your computer or hub.
	Verify that the IP address and the subnet mask of the ZyAIR and the computers are on the same IP address range.
I cannot get a WAN IP address from the ISP.	The WAN IP is provided after the ISP verifies the MAC address, host name or user ID.
	Find out the verification method used by your ISP and configure the corresponding fields.
I cannot access the Internet.	Make sure the ZyAIR is turned on and connected to the network.
	Make sure you entered your username correctly. A username may be case-sensitive.