

# **ADSL X6**

**U S E R ' S   G U I D E**



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# Overview

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This User's Guide provides instructions for setting up your X6, connecting the X6 to wired and wireless computers on a network, and securing your network. There are also instructions for setting up the X6 for gaming.

For most customers, Chapter 1 covers what you need to get connected to the Internet. Chapter 2 applies if you want to set up a network. Chapter 3 provides security information, and Chapter 4 provides what you need for gaming.

Chapter 5 Advanced Setup is primarily for System Administrators. This chapter explains how to use advanced features of the X6 such as adding extra security with firewall filtering, backing up and restoring the X6 configuration, updating the X6 firmware, and creating a fixed IP address.

You can find new and updated information about the X6 at the Zoom Web site:

**[www.zoom.com/techsupport/adsl/adsl\\_x6.shtml](http://www.zoom.com/techsupport/adsl/adsl_x6.shtml)**

# 1

## Installation Instructions

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*This chapter covers the basic instructions needed to install your X6 and get connected to the Internet. These instructions can be used by those with a Macintosh, Linux, or Windows operating system. If you already installed and connected your X6 (using the separate Quick Start booklet provided for Windows users), you can skip this chapter and begin with Chapter 2.*

### Package Contents

Your package contains the following items:

- Zoom ADSL X6 modem
- Ethernet cable
- Phone cord
- Power cube
- CD

The CD contains the installation software, documentation, warranty, and Customer Support information.

If anything is missing or damaged, please contact Zoom Customer Support or whoever sold you the modem.

In addition, the package may include:

- A splitter to enable you to use a single ADSL wall jack for both an Internet connection and for telephone service (certain countries only)
- Phone-jack adapter to adapt the phone cord to a particular phone jack (certain countries only)
- ADSL line filter(s) (certain models only)

## Before You Begin

Before you begin installing the X6 modem using this guide, you must have the following available to you:

- ADSL service enabled on your telephone line. To do this, you need to sign up with an ADSL service provider. Once this service is enabled, you should have an ADSL-enabled telephone wall jack to plug the X6 modem into. (Your service provider may refer to ADSL service as DSL service).
- One or more computers or laptops that you want to connect to the Internet. The X6 supports Macintosh, Linux, and Windows 98/Me/2000/XP operating systems.
- Any computer or laptop that you want to connect without wires to your network. These must be equipped with a wireless adapter or have built-in wireless capabilities. The X6 supports 802.11b and 802.11g compatible adapters.
- Any computer that you want to physically connect to your X6 LAN port. The X6 has four LAN ports to which you can connect devices. A computer must have an Ethernet port to make these connections.
- Additional Ethernet cables. If you plan to connect more than one computer directly to the modem, you will need additional Ethernet cables to make the connection. The modem supports up to four direct connections with its four LAN ports.

## Installing the X6

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Installing the X6 involves four steps: **Installing the Software**, **Installing the Hardware**, **Establishing Communication**, and **Setting Up a Wired Network**.

### Step 1: Installing the Software

#### **Important!**

This section is for Windows computers only. If you are using a Macintosh or Linux computer, skip this section and begin with the next one, **Step 2: Installing the Hardware** on page 10.

Regardless of how many computers you plan to use with the X6, you only have to install the software on one of them.

You will install the software on a Windows computer that you directly connect to the X6, and then use that computer to configure the modem. This computer must have an Ethernet port. If it does not, you can purchase an Ethernet card (sometimes called a Network Interface Card or NIC) to add an Ethernet port.

#### **Important!**

If possible, use a computer that is centrally located in your home or office and that has easy access to an ADSL line. A central location helps assure good wireless performance. If you do not have a desktop computer located centrally in your home (for example, it is in the basement), or you only have notebook computers, you should still directly connect this desktop computer or one of your notebooks to the X6 to configure it. Once the X6 is set up and your Internet connection is working, you can unplug the computer from the unit and move the X6 to a more central location.

- 1** Turn on your computer.
- 2** Insert the supplied CD into the CD drive of your computer. The CD should start automatically and the **Language Selection** screen should appear. (If the CD does not start automatically, on the Windows desktop, click the **Start** button, click **Run**, and then type **D:\setup.exe**, where **D** is the letter of your CD drive.)
- 3** Select your language. The **Main Menu** screen opens.



- 4** Click **Installation Wizard** to start the software installation, then click **Next** when prompted.
- 5** When the installation is complete, click **Finish** then click **Exit**.
- 6** Close any applications that may be open then remove the CD from the CD drive.
- 7** Shut down and power off the computer.

**Congratulations!** You have installed the software. Now continue with the next section, **Step 2: Installing the Hardware**.

## Step 2: Installing the Hardware

Windows users only: Be sure that you have already installed the software BEFORE beginning this section. Software installation is not required for Macintosh and Linux computers.

- 1** Shut down and power off your computer.
  - For Windows users, this is the computer on which you just installed the software.
  - For Macintosh or Linux users, this can be any one of the computers that you plan to use with the X6. In a typical situation, this would be the computer that is closest to your ADSL wall jack.

- 2** Rotate the antenna on the back of the modem to a vertical position.

- 3** Connect the modem to the computer's Ethernet port.

Plug one end of the Ethernet cable  into any one of the X6 modem's **LAN** ports (**LAN 1**, **LAN 2**, **LAN 3**, or **LAN 4**) and plug the other end into your computer's Ethernet port.

- 4** Plug the power cube into a power strip or wall outlet and then plug the power cube's other end into the modem's power (**PWR**) jack.

### **Important!**

Only use the power cube shipped with the X6. Other power cubes may damage your hardware.

**5** After you plug in the power cube, the **PWR** and **WLAN** lights on the front panel of the modem should become steady on, and the **LINK** light should blink. If the **PWR** light does not turn on, make sure there is power at the wall outlet or power strip where you plugged in the power cube.

**6** Turn the computer on.

**7** Plug one end of the supplied phone cord into the modem's **ADSL** port and the other into the ADSL wall jack. The blinking **LINK** light should become steady on. If it does not, refer to **Troubleshooting** on page 98.

**Tip!**

If your X6 came with an ADSL splitter, you can plug it into the ADSL wall jack. This enables you to use the wall jack for both your ADSL connection and for your telephone service. The splitter has two jacks, one labeled for your ADSL modem connection and the other for your phone.

**8** We **HIGHLY RECOMMEND** that you install a filter on **EVERY** phone and fax machine that is sharing the **ADSL phone line**. Phone filters block the ADSL frequencies so that someone making a normal phone call will not hear modem noise on the line. They also keep phone conversations from interfering with ADSL performance.

You may have received ADSL phone filters with your X6. If you did not, or if you need more filters, they are available at most retail stores that carry consumer electronics.

For each filter, plug the phone or fax machine's cord into the filter's **PHONE** end and plug the filter's **LINE** end into the wall jack. (Do not plug a filter between the wall jack and the X6.)

**Congratulations!** You have installed the hardware. Now continue with the next section **Step 3: Establishing Communication**.

## Step 3: Establishing Communication

### **Important!**

Macintosh and Linux users must make sure that the computer's TCP/IP settings are configured properly BEFORE starting this section. See **Macintosh TCP/IP Settings** on page 92 or **Linux TCP/IP Settings** on page 94 for instructions.

You must set up the X6 so that it can communicate with your Internet service provider. To do this, you must use the **Zoom Configuration Manager**.

- 1** Log into the **Zoom Configuration Manager** from the computer on which you installed the X6 software:
  - a** Open your Web browser and, in its address bar, type **http://10.0.0.2** and then press the **Enter** key on your keyboard.

### **Tip!**

If you are using a Windows computer, a **Zoom** icon should have been placed on your desktop automatically. Instead of typing the address above in your Web browser, you can double-click the **Zoom** icon.

- b** On the **Enter Network Password** dialog box, type the following user name and password in lowercase then click **OK**. (The **User Name** and **Password** you enter here are not the same as the User Name and Password that your Internet service provider may have given you.)

User Name: **admin**  
Password: **zoomadsl**

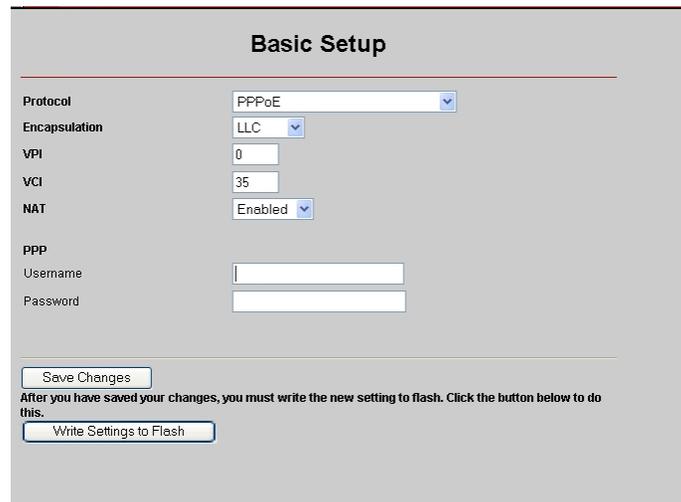


If you are not prompted for a **User Name** and **Password**, do the following in this order: Recheck all connections; restart the modem and computer; and reset the modem by inserting a paper clip into the **Reset** pinhole in the modem's back panel and press it three times.

**Tip:**

If you want to choose your own password after the setup is completed, you can do so using the Advanced Features of the X6. See **Changing Your Password** on page 81.

- 2** After you log in, use the **Basic Setup** page to configure the modem so it can connect with your Internet service provider.



**Basic Setup**

Protocol: PPPoE

Encapsulation: LLC

VPI: 0

VCI: 35

NAT: Enabled

PPP

Username:

Password:

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Do the following:

- a** Enter your **Protocol**, **Encapsulation**, **VPI**, and **VCI** settings in the appropriate boxes. Your service provider should supply these values. If you do not know these settings, refer to the tables starting on page 85.
- b** **NAT** (Network Address Translation) is **Enabled** by default. This feature lets multiple users access the Internet sharing a single IP address. **Enabled** is typically the right setting. Select **Disable** in the unlikely event that you want to assign different public IP addresses to each network user.

- C** Depending on the **Protocol** setting you selected the bottom half of the page will change so that you can enter additional information.
- **If you selected PPPoA or PPPoE**, enter your **ADSL Username** and **Password** in the appropriate boxes. Your Internet service provider should have given this information to you. (Your Username is typically your email address or the characters preceding the @ sign in your email address. This is NOT the same Username and Password that you used earlier to open the **Zoom Configuration Manager**.)
  - **If you selected 1483 Bridged or 1483 Routed**, you have the option of using either dynamic or static IP addressing. Depending on your situation, select the appropriate option button:
    - [MOST USERS] Ensure that **Obtain an IP address Automatically** is selected if you are using Dynamic Host Configuration Protocol (also known as DHCP or dynamic IP addressing). This option is selected by default because most Internet service providers use DHCP.
    - Select **Use the following IP Address** only if you are using a static IP address. (You should know if you are using static IP addressing. There is typically an extra charge for a static IP address and you usually have to make special arrangements with your Internet service provider to get one.)  
  
Then **enter** the **IP Address**, **Subnet Mask**, **Default Gateway**, and **DNS** that you plan to use. Click the **Save Changes** button, then click the **Write Settings to Flash** button.

- 3** Verify that your Internet connection is working. Open your Web browser (for instance, Internet Explorer or Netscape Navigator) and try to connect to a familiar Web address. If you connect successfully, you are ready to set up the rest of your network.

(If you do not connect, see **Appendix D** on page 98).

**Tip!**

If you configured the X6 using a notebook computer, you can keep it plugged in or you can disconnect it from the unit's **LAN** port. As long as the X6 remains plugged into an ADSL wall jack and a power source, the X6 can function as a stand-alone device. You can then make the notebook part of your wireless network.

**Congratulations!** You have established communication and your computer is now connected to the Internet. Now continue with **Step 4: Setting Up a Wired or Wireless Network.**

## Step 4: Setting Up a Wired or Wireless Network

Once a computer that is directly connected to the X6 modem is able to browse the Web, you know for certain that your Web connection is working. Now you can set up the rest of your network.

It is up to you whether you want to have some computers connected directly to the X6 and others connected wirelessly. The X6 supports both wired and wireless connections. You can have up to 253 connections, four of which can be wired directly through the X6's four **LAN** ports. You can also plug a network device (such as a hub, switch, or router) into one of the **LAN** ports.

To set up your network, you can do any or all of the following, in any order that you choose:

- If you want to connect additional computers directly to the X6, see **To Connect Additional Wired Computers** below.
- If you want to connect a hub, switch, or router directly to the X6, see **To Connect a Network Device** on page 18.
- If you want to connect additional computers using a wireless network, see **Setting Up Your Wireless Network** on page 20.

### To Connect Additional Wired Computers

You can connect up to four computers that have Ethernet ports directly to the X6.

- 1** Shut down and power off the computer you want to connect to the X6. (This is important because the computer must locate the correct IP address for the modem. This is done when the computer is turned back on in step 3 below.)

- 2** Plug one end of an Ethernet cable into one of the modem's LAN ports and plug the other end into the computer's Ethernet port.
- 3** Turn on the computer.
- 4** Verify that your Internet connection is working. Open your Web browser (for instance, Internet Explorer or Netscape Navigator) and try to connect to a familiar Web address.
- 5** Repeat steps 1–4 for each computer you want to add.

## To Connect a Network Device

You can use one of the **LAN** ports on the X6 to plug in a network device (for example, a hub, switch, or router).

- 1** Plug one end of an Ethernet cable into one of the modem's **LAN** ports and the other end into the network device's Ethernet port. (For a hub or a switch, this is typically called an **Uplink** or **Expansion port**. For a router, this is typically called a **WAN port**.)
- 2** Set up your network. Refer to the documentation provided with your particular network device for instructions on how to do this.
- 3** Once your network is set up, reboot any computer that is part of the network.
- 4** Verify that your Internet connection is working. Open the Web browser (for instance, Internet Explorer or Netscape Navigator) on each computer and try to connect to a familiar Web address.

**Congratulations! You have set up your wired devices.** If you have wireless devices that you want to add to your network, go to **Setting Up Your Wireless Network** on page 20.

## Universal Plug and Play

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The X6 supports Universal Plug and Play (UPnP™). This means that other devices plugged into your computer or network (for example, a gaming application, router, or stand-alone firewall) that use UPnP should automatically detect the X6 and make the needed configurations for them to work together. There is no setup for you to do.

## If You Need Help

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Zoom has many Technical Support services available to its customers. You can access these services in a variety of ways:

- Windows users: Insert the CD, select your language, and then click the Customer Support link to view comprehensive support information.
- Macintosh and Linux users: Insert the CD and navigate to the Mac\_Linux folder to view documentation and support information.
- Visit our Web site at **www.zoom.com** and select **Technical Support**. From there, you can send email to our technical support experts or do a smart search through our **SmartFacts™** database.

**Tip:**

From time to time, Zoom may release improved firmware. This is also available at **www.zoom.com**, along with upgrade instructions. We recommend that you check our Web site periodically for updates.

- Call our support office in the United States at (561) 241-7170 or in the United Kingdom at 44 (0)1276 704440.
- Some retailers of Zoom products provide support or can recommend a convenient support center.

# 2

## Setting Up Your Wireless Network

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*This chapter discusses how to set up a wireless network using wireless adapters and/or computers that have built-in wireless capabilities. Chapter 3 provides information about implementing network security.*

Note that for **each** computer added to your wireless network, you will need to take appropriate steps for setting up that computer. To do that, select one of the three possibilities for that computer below:

1. Some newer Windows XP notebooks and desktops have built-in wireless networking capabilities and do not require the installation of a wireless component. If this is the case, you should set up that computer's wireless connection using Windows XP. See **Connecting a Windows XP Computer with Built-in Wireless Capabilities**.

### **Tip!**

To see if your notebook has built-in wireless capabilities: On the Windows desktop, click **Start**, click **Connect to**, and then locate the **Wireless Network Connection** option. If **Connect to** does not appear, or if there is no **Wireless Network Connection** option, then your notebook does not have wireless capabilities.

2. Some desktop and notebook computers may have built-in wireless networking capabilities, but do not use Windows XP. If this is so, set up your computer's wireless connection using **Connecting a Wireless-enabled Computer to the X6** on page 21.

3. Some desktop and notebook computers may need a wireless network adapter installed. This can be a USB adapter, PC Card adapter, or PCI adapter. When you install the adapter, make sure that it is set to **infrastructure** or **access point** mode (NOT **ad-hoc** or **peer-to-peer** mode). If you need help installing your wireless adapter or setting its mode, refer to the documentation that came with it. After you install the adapter, see **Connecting a Wireless-enabled Computer to the X6**.

## Connecting a Wireless-enabled Computer to the X6

- 1 Go to the wireless-enabled computer that you want to add to the network. The computer should have software that will let it perform a **site search** to scan for available wireless networks in your area. When the **SSID** (Service Set Identifier) of your X6 wireless network appears in the list—the SSID is **zoom**—select it as the network you want to use to connect to the Internet.

### Tip!

For most wireless adapters, you will use its wireless configuration manager software and click a **Scan** button or select a **Site Scan**, **Scan Networks**, or other similarly named tab to do a site search. If you need help, refer to the documentation that came with your wireless adapter.

There are several site scan issues you should be aware of:

- If you installed a wireless adapter on a Windows XP computer, Windows XP may try to automatically configure the adapter (rather than let you use the software provided with the wireless adapter). You will know this is happening because you will be prompted with a message about one or more wireless networks being available. You will also be able to click a link to open the **Wireless Network Connection Properties** dialog box. If this happens, click the link, and clear the **Use Windows to configure my wireless network settings** check box then click **OK**. You can then use the software provided with your wireless adapter without interruption from Windows XP.
- More than one wireless network may appear in the list. These are other wireless networks that are within range of your network. Your neighbors for instance may be within range of your network. Each wireless network has a channel associated with it. We recommend there be at least a five-channel difference between your network and those of your neighbors. Having less than a five-channel difference may result in interference with your connection. By default, the X6 uses channel 10. If you need to change this channel, you must do so using the **Wireless Setup** page of the **Zoom Configuration Manager**.
- If you want to secure your wireless network so it won't be accessible by others, you should specify security settings. To learn how, see **Setting Wireless Security** on page 26. (By default, the wireless connections provided by the X6 do not have any security applied.)

**2** Test your wireless connections. From each desktop or notebook computer that you set up, open your Web browser (for instance, Internet Explorer or Netscape Navigator) and try to connect to a familiar Web address.

**If you connect successfully, you are ready to browse the Web!**

**Important!**

If you want to add security to your network, see **Setting Wireless Security** on page 26.

# Connecting a Windows XP Computer with Built-in Wireless Capabilities

This section applies to Windows XP notebooks and computers that have built-in wireless capabilities.

- 1** On your Windows desktop, click the **Start** button then click **Control Panel**.
- 2** Double-click the **Network Connections** icon.
- 3** Right-click the **Wireless Network Connection** icon, then select **Properties**.
- 4** On the **Wireless Network Connection Properties** dialog box, select the **Wireless Networks** tab. Windows XP will automatically scan for available wireless networks in your area. Any compatible networks within range will appear in the **Available networks** list. It should find the wireless network of the X6—named **zoom**. (The scan is done automatically because the **Use Windows to configure my wireless network settings** check box is selected by default).
- 5** Select **zoom** from the **Available networks** list, then click the **Configure** button to add it to the **Preferred networks** list. The notebook will try to connect to the Internet using the wireless networks listed here, in the order in which they appear. (If you already have networks listed here, we recommend you either remove them or use the **Move up** button to move **zoom** to the top of the list.)
- 6** Click **OK**.

**7** Test your wireless connection. From the computer or notebook that you set up, open your Web browser (for instance, Internet Explorer or Netscape Navigator) and try to connect to a familiar Web address.

**If you connect successfully, your notebook's wireless capability is configured and you are ready to browse the Web!**

**Important!**

If you want to add security to your network, please see **Setting Wireless Security** on page 26.

## Checking Your Settings

If you ever need to check your wireless settings, you can do so from the **Wireless Setup** page. This page is available in the **Zoom Configuration Manager** by clicking the **Wireless** icon.

The table below explains the settings:

This setting...	Lets you specify...
<b>Wireless Status</b>	<b>Enable</b> shows that your wireless network is up. <b>Disable</b> indicates that your wireless network is down.
<b>SSID</b>	The Service Set Identifier for your wireless network. By default, the SSID for the X6 is <b>zoom</b> . You can change the SSID to any name that you want.
<b>Default Channel</b>	The channel your wireless connection uses by default for your wireless connection. The X6 comes set for channel <b>10</b> .
<b>Profile</b>	The standard used by your wireless adapters. This drop-down list contains <b>802.11b Only</b> , <b>802.11g Only</b> , or <b>Mixed Mode</b> .  The default is <b>Mixed Mode</b> , which allows you to mix both <b>b</b> and <b>g</b> wireless adapters.
<b>Encryption</b>	The type of encryption used for your wireless Internet signal. This drop-down list contains <b>None</b> , <b>WEP-64 bit</b> , <b>WEP 128 bit</b> , and <b>WPA</b> .  The default is <b>None</b> , meaning that no security is enabled.
<b>Country</b>	If your country is not listed, select <b>Other</b> .

# 3

## Setting Wireless Security

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*When you first set up your X6 wireless network, security is turned off by default. This means that your wireless signal is not encrypted and that anyone with compatible wireless technology can access your computer network and the Internet using your wireless connection. This chapter explains how to set up wireless security to protect your network and Internet connection.*

### Overview

To set up wireless security, you will create and enter a unique passphrase or an alphanumeric key. Once entered, only devices with the proper key or passphrase will be allowed to establish a connection to the network.

There are two ways to configure and implement a passphrase or key. They are referred to as **WPA** (WiFi Protected Access, sometimes called **WPA Shared Key**) and **WEP** (Wired Equivalent Privacy) 64 and 128 bit). WPA is better, but you can only use it if all your wireless devices support WPA.

You can check to see if all other clients that you plan to put on the network support WPA or WPA Shared Key. You can do this by checking the manual that came with each device or by checking the configuration software for the installed device. Look under **Security** or **Encryption** or **Setup** or **Advanced Features**. If all the clients support WPA, proceed with **Setting Up Security Using WPA or WPA Shared Key**. If they do not, skip to **Setting Up Security Using WEP**.

# Setting Up Security Using WPA or WPA Shared Key

WPA uses a **passphrase** that you choose and enter on the X6 and other wireless devices on the network (clients) to set up security. To use WPA, **all** of the wireless devices on your network must support WPA.

- 1** Check to see that all other clients that you plan to put on the network support WPA or WPA Shared Key. If they do not, skip to **Setting Up Security Using WEP**.
- 2** Click the **Wireless** icon in the **Zoom Configuration Manager**. This will open the **Wireless Setup** page. Go to **Encryption** (which should say None) and select **WPA** from the drop-down menu. A new fill-in box labeled **WPA Passphrase** will open directly below the **Encryption** box.



Name	Value
Wireless Status	Enable
SSID	zoom
Default Channel	10
Profile	802.11b Only
Encryption	WPA
WPA Passphrase	
Country	OTHER

[802.11x Authentication](#)

Save Changes

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Write Settings to Flash

- 3** Choose and enter a **Passphrase**. You can enter a word or phrase, or for greater security you can enter a combination of numbers and letters. The Passphrase is case-sensitive and can be up to 8 characters.

**4** Every wireless network client needs to be set individually by entering the **Passphrase** on all wireless devices on the network. Open the software that came with the device, which should be running on the computer where the device is installed. Find the configuration menu for security, choose **WPA**, and enter the **Passphrase**, exactly as you entered it on the X6 **Wireless Setup** page.

**Your security setup configuration is now complete!**

# Setting Up Security Using WEP

If **all** of your network devices DO NOT support WPA, you can use WEP to configure network security. WEP can be configured two ways: 64-bit and 128-bit. 128-bit WEP provides a bit more security than 64-bit, but 128-bit WEP also tends to diminish network performance. We recommend that most people configure their WEP for 64-bit security.

- 1** Click the **Wireless** icon in the **Zoom Configuration Manager**. This will open the **Wireless Setup** page. Go to **Encryption** (which should say None) and select **WEP-64 bit** (or **WEP-128 bit** for more security, but diminished network performance) from the drop-down menu. Six new boxes open directly below the **Encryption** box.

Name	Value
Wireless Status	Enable <input type="button" value="v"/>
SSID	zoom <input type="text"/>
Default Channel	10 <input type="text"/>
Profile	802.11g + b <input type="button" value="v"/>
Encryption	WEP-64 bit <input type="button" value="v"/>
Passphrase <input type="checkbox"/>	<input type="text"/>
Default Key	1 <input type="button" value="v"/>
Key 1	00-00-00-00-00 <input type="text"/>
Key 2	00-00-00-00-00 <input type="text"/>
Key 3	00-00-00-00-00 <input type="text"/>
Key 4	00-00-00-00-00 <input type="text"/>
Country	UNITED STATES <input type="button" value="v"/>

[802.1x Authentication](#)

- 2** Check the box marked **Passphrase** and then choose and enter a **Passphrase**. You can enter a word or a phrase, or for greater security you can enter a combination of numbers and letters. The Passphrase is case-sensitive and can be up to 8 characters.

If **ALL** of the wireless devices (clients) on the network are **Zoom devices**, go to **step 3**. If **some or all** of the devices are **not Zoom devices**, go to **step 4**.

**3** If **ALL** of the wireless devices (clients) on the network are **Zoom devices**, you need to enter the **Passphrase** that you just entered for each device.

Every wireless network client needs to be set individually. Open the software that came with the device, which should be running on the computer where the device is installed. Find the configuration menu for security, choose **WEP**, and enter the **Passphrase**, exactly as you entered it on the X6 **Wireless Setup** page.

**Your security setup configuration is now complete!**

**4** If **any or all** of the other wireless devices on the network (clients) are **not Zoom devices**, you will enter one of the keys shown below the Passphrase on each client. You must enter the same key for each device. The key that you must use is the key corresponding to the **Default Key** number shown. If the number in the default key box is 1, use Key 1, and so on. You can choose the default key you prefer using the pull-down **Default Key** menu box.

Now that you have a key, enter it for each client. Every wireless network client needs to be set individually. Open the software that came with the device, which should be running on the computer where the device is installed. Find the configuration menu for security, choose **WEP (64-bit or 128-bit** depending on what you selected), and enter the **Default Key**, exactly as it appears on the X6 **Wireless Setup** page.

**Your security setup configuration is now complete!**

# 4

## The X6 and Online Gaming

---

*This chapter covers the set up of the X6 for online gaming with a desktop, notebook, Xbox® Live, or Playstation® 2.*

### Do I Need to Do Anything?

There are three cases where you need to set up your modem in order to play online games:

- If you are using your computer to play a peer-to-peer or head-to-head game over the Internet, you always have to set up the modem unless you linked up to your partner by going to a Web site. A peer-to-peer game is a game where two players are competing directly against one another. Popular peer-to-peer games include **Age of Empires**, **Command and Conquer**, **Dark Reign 2**, and **Unreal Tournament**. If you are unsure whether your game is a peer-to-peer game, check the game instructions.
- If you are using your computer to play a multi-player game **and** you want to host the game. Popular multi-player games include **Half Life**, **Diablo II**, **Delta Force**, **Hexen II**, **Myth**, **Quake II**, and **Warcraft II, III**.
- If you are playing an online game using Xbox® Live or PlayStation® 2.

In all three cases you will need to do the steps described in the next section, **Setting Up the X6 for Online Gaming**.

## Setting Up the X6 for Online Gaming

---

Setting up the X6 for online gaming involves two basic steps: **Choosing an IP Address for Gaming** and **Setting Up a Virtual Server or DMZ**. This section provides instructions for doing these tasks on your computer, Xbox®, or Playstation® 2.

### Step 1: Choosing an IP Address for Gaming

You need to make sure that the computer or gaming system you use for playing games always has the same IP address. By default, the X6 assigns addresses dynamically (using **Dynamic Host Configuration Protocol** or **DHCP**) to the devices on the local area network whenever they reboot. Therefore, the addresses won't necessarily always be the same. The modem, however, can be set up to assign the same address to your computer or gaming system every time.

To ensure that your computer or gaming system always uses the same address, follow the steps below.

- 1** If you are using Xbox or PlayStation 2, connect the device to your modem with an Ethernet cable. On your TV screen, locate **Network Settings** and select **Connect**.
- 2** Click the **Advanced Setup** icon in the **Zoom Configuration Manager**.

- 3** On the **Advanced Setup** page, click the **LAN Configuration** button. Next click the **Add DHCP Fixed Host** button. The **Create New DHCP Server Fixed Host** page appears:

**Create new DHCP server fixed host IP/MAC mapping**

Item	Value
<i>Define your new fixed mapping here. The IP address you choose will be given to the host with the MAC address you specify. The IP address must not clash with an IP address already present in a dynamic address range. You should also ensure that there is a suitable subnet defined for the IP address to reside in. The MAC address should be expressed as 6 hexadecimal pairs seperated by colons, e.g. 00:20:2b:01:02:03</i>	
IP address	<input type="text"/>
MAC address	<input type="text"/>
Maximum lease time	<input type="text" value="86400"/> seconds

- 4** Before you can enter an IP address, you need to enter the MAC (**Media Access Control**) address of your computer or gaming system. Follow the next set of instructions for your gaming system to find the gaming system's MAC address.

## If you are using a computer to play an online game:

- If you know the name of your computer or if you have only one computer connected, you can find the MAC address under **DHCP Clients** at the bottom of the **Create New DHCP Server Fixed Host** page. You can also find the MAC address on the **System Status** page. Click the **System Status** icon and scroll down until you see **DHCP Client Status**.
- If you do not know the name of your computer or you have more than one computer connected, follow these steps to find the MAC address:
  - a** Go to the computer you want to use for gaming.
  - b** Click the **Start** button and select **Run**.
  - c** In the **Run** dialog box, type **command** and click **OK** to open the **Command** or **MS-DOS** window.
  - d** In the **Command Prompt** or **MS-DOS** window (after **C:\>** or **C:\WINDOWS>**), type **ipconfig**, leave a space, then type **/all**  
It should look like this: **ipconfig /all**
  - e** Press **Enter**. The MAC address is displayed as the 12-digit **Physical Address** or **Internet Adapter** address. Go to **Step 5**.

**If you are using Xbox® Live to play an online game:**

- a** You can find the MAC address on the Xbox Dashboard in the lower right corner of the **Network Settings** menu. You will see something like MAC=0050F24ADC29. Your address will be different. You will also need to assign an **IP address** now. To do this, on the **Xbox Network Settings** menu select **IP Addresses**.
- b** On the **IP Addresses** screen, enter the following:

<b>Configuration</b>	Manual
<b>IP Address</b>	10.0.0.50
<b>Subnet Mask</b>	255.255.255.0
<b>Gateway</b>	10.0.0.2

- c** Press **B** to go back to the **Network Settings** menu.
- d** On the **Network Settings** menu, select **DNS Servers**.
- e** On the **DNS Servers** screen, enter the following:

<b>Configuration</b>	Manual
<b>Primary DNS</b>	10.0.0.2
<b>Alternate DNS</b>	10.0.0.2

- f** Press **B** twice to return to the main menu. Then go to **Step 5**.

**If you are using PlayStation® 2 to play an online game:**

- a** Insert your Network Access Disc into the PlayStation.
- b** On the main menu, select **ISP Setup**, then **I have an ISP**, then **Automatic Configuration**.
- c** On the **Select an Internet service provider** menu, select **Other**.
- d** On the **Connection Test** menu, select **Advanced**. The MAC address is displayed on the **Advanced Broadband Settings** screen.
- e** Now, to configure the Playstation 2's network settings, on the main menu select **ISP Setup** again. If a message displays, press **X** to disconnect from the Internet.
- f** On the **Edit Network Setting** menu, select **New Network Setting**.
- g** On the **Connect to the Internet** menu, select **Local Area Network**.
- h** On the **Local Area Network Setup** menu, select **Automatic Configuration**.
- i** On the **Connection Test** menu, select **Test Settings**.
- i** At the **Test for connecting to your ISP was successful** message, select **Continue**. Then follow the instructions to save your settings and return to the main menu. Now go to **Step 5**.

- 5** Now that you have determined the MAC address, you can assign your computer or gaming system an **IP address**. On the **Create New DHCP Server Fixed Host** page, make these entries:

Setting	Values
<b>IP Address</b>	Enter <b>10.0.0.50</b> . If you are setting up more than one computer or gaming system, you should use different IP addresses. For example, if you are setting up a Xbox and a computer, enter <b>10.0.0.50</b> for the Xbox, and <b>10.0.0.51</b> for the computer.
<b>MAC Address</b>	Type the MAC address from <b>Step 4</b> .
<b>Maximum Lease Time</b>	Leave the default setting.

- 6** Click **Save Changes** and then **Write Setting to Flash** to save the IP address to permanent memory. Now your computer or gaming system will always be assigned this address.

## Step 2: Setting Up a Virtual Server or DMZ

You set up either a virtual server or a DMZ (Demilitarized Zone) so that the modem's firewall won't block the other players from your system during your gaming. The main difference between the virtual server and the DMZ is the amount of access someone has to your system.

A virtual server will allow access to your computer on certain ports. A port is like a channel that is used by applications (such as games) to communicate on. For example, the directions for the game you want to play over the Internet might tell you to open up port 6000.

A DMZ differs from a virtual server in that it allows access on all ports to the computer. Because of this, DMZ's are less secure than virtual servers and should be used with caution on your computer. For Xbox® Live and Playstation®2, a DMZ is OK since security is not as much of an issue as it is for your computer.

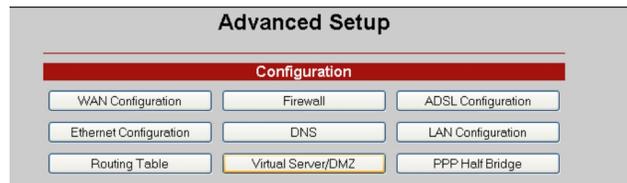
- If you are playing a **peer-to-peer** or **multi-player game** on your computer, go to **Setting Up a Virtual Server or DMZ on Your Computer** on page 39.
- If you are using Xbox Live, go to **Setting Up a DMZ on a Xbox® Live** page 41.
- If you are using Playstation 2, go to **Setting Up a DMZ on a Playstation® 2** on page 43.

# Setting Up a Virtual Server or DMZ on Your Computer

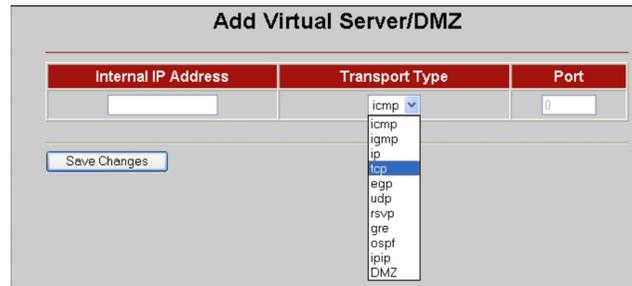
**Note:**

If you have third-party firewall software, such as the Windows XP firewall, installed on your computer, you may need to deactivate it before setting up the virtual server or DMZ. Otherwise your computer may block the ports you want to open.

- 1 Click the **Advanced Setup** icon. Then, click the **Virtual Server/DMZ** button:



- 2 On the **Virtual Server/DMZ** page, click the **Add Virtual Server/DMZ** link to display the **Add Virtual Server/DMZ** page:



**3** Make the following entries:

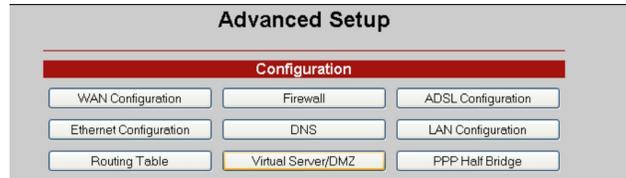
Setting	Values
IP Address	Enter the <b>IP address</b> that you specified on the <b>Create New DHCP Fixed Host Server</b> page.
Transport Type (Protocol)	<p><b>If you know your protocol (udp or tcp)</b> and port number(s) from your game instructions, select the protocol from the list.</p> <p><b>If you do not know your protocol or port number(s)</b>, you need to set up your computer as a DMZ by selecting <b>DMZ</b> from the <b>Protocol</b> list. This will open up all ports on the computer to all communication over the Internet.</p> <p><b>Warning:</b> Setting up a DMZ removes the protection provided by the ADSL Ethernet's firewall. We therefore recommend that a DMZ be used only when necessary.</p>
Ports	<p><b>If you designated your computer as a DMZ</b>, you do not have to enter anything here.</p> <p><b>If you are playing another peer-to-peer or multi-player game</b>, your game instructions should tell you what ports to enter here. To enter a number, you must enter <b>tcp</b> or <b>udp</b> in the <b>Protocol</b> box.</p> <p>If you need to enter multiple ports, add a new virtual server for each port. If you have several ports to enter, you may wish to set up your PC as a DMZ.</p> <p>The highest supported port number is 65535.</p>

**4** Click **Save Changes** and then **Write Settings to Flash**.

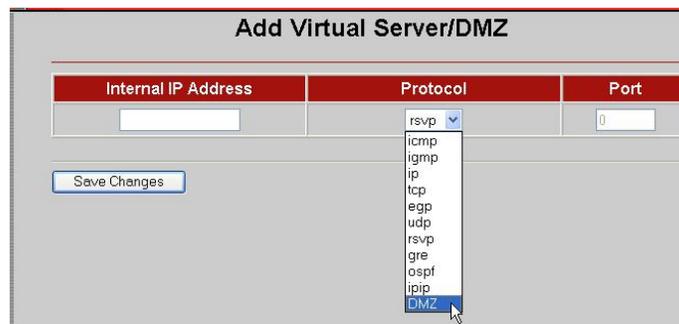
**Your set up is complete!**

## Setting Up a DMZ on a Xbox® Live

- 1 Click the **Advanced Setup** icon. Then, click the **Virtual Server/DMZ** button:



- 2 On the **Virtual Server/DMZ** page, click the **Add Virtual Server/DMZ** link to display the **Add Virtual Server/DMZ** page:



- 3 Make the following entries:

Setting	Values
<b>IP Address</b>	Enter the IP address that you specified on the <b>Create New DHCP Fixed Host Server</b> page.
<b>Transport Type (Protocol)</b>	Select <b>DMZ</b> to enable your Xbox as a DMZ.
<b>Ports</b>	The field remains unavailable because you selected DMZ. No entry is required.

**4** Click **Save Changes** and then **Write Settings to Flash**.

**5** **Update the Xbox Dashboard:**

Make sure you have your Xbox Live Starter Kit at hand. Insert the Xbox Live CD into your Xbox. Once the update is complete, the main menu will include a **Xbox Live** entry.

**6** **Insert the Xbox Communicator module into the Xbox Controller expansion slot (top slot).** Then insert the headset plug into the Communicator module.

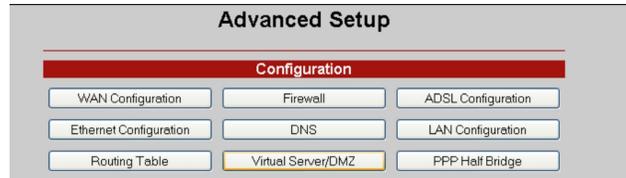
**7** **Activate your Xbox Live account:**

The Xbox Live CD should still be in your Xbox. We recommend that you watch a video that explains the installation process: Select **Xbox Live** from the menu. Then from the **Dashboard**, select **Xbox Live** and follow the prompts. Note: You will need your subscription code to activate your account—this number is located on the CD's sleeve. (If you require more detailed instructions, please refer to your **Xbox Live** documentation.)

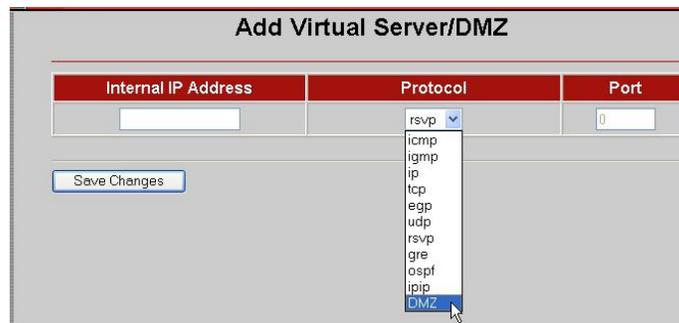
**Your setup is complete!**

## Setting Up a DMZ on a Playstation® 2

- 1 Click the **Advanced Setup** icon. Then, click the **Virtual Server/DMZ** button:



- 2 On the **Virtual Server/DMZ** page, click the **Add Virtual Server/DMZ** link to display the **Add Virtual Server/DMZ** page:



**3** Make the following entries:

<b>Setting</b>	<b>Values</b>
<b>Internal IP Address</b>	Enter the IP address that you specified on the <b>Create New DHCP Fixed Host Server</b> page.
<b>Transport Type (Protocol)</b>	Select <b>DMZ</b> to enable your Playstation as a DMZ.
<b>Ports</b>	The field remains unavailable because you selected DMZ.

**4** Click **Save Changes** and then **Write Settings to Flash**.

**Your setup is complete!**

# 5

## Using Advanced Setup

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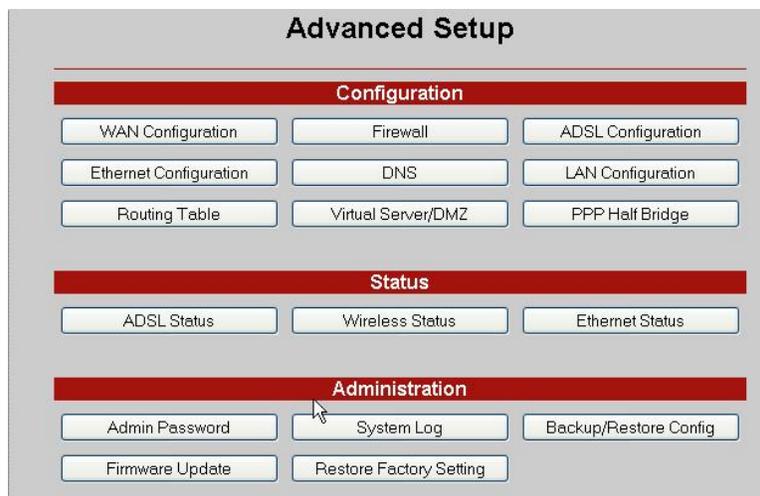
The options that are set by default when the X6 is installed are sufficient for most users. However, those who want or need to change the X6 settings can do so using the **Advanced Setup** page in the **Zoom Configuration Manager**. This chapter explains the advanced options and features of the X6 modem and how to apply them to your network.

The information in this chapter applies to you if:

- Your Internet service provider instructs you to enable, disable, or change the default settings for your X6
- You need to change your Wide Area Network settings
- You want to change the default firewall settings to block particular IP addresses and intrusive hosts
- You want to change your ADSL password
- You have customized your configuration and want to back it up for future use or apply it to additional modems
- You want to set up fixed IP addresses for your computer(s)

## Viewing the Advanced Setup Options

You open the **Advanced Setup** page by clicking the **Advanced Setup** icon at the top of the **Zoom Configuration Manager**. If you forget how to log in to the **Zoom Configuration Manager**, see page 12. The page opens and displays buttons organized into three groups: **Configuration**, **Status**, and **Administration**:



## Configuration Options

When you click a **Configuration** button, a page opens to the option you selected. The following table describes each option and the tasks you can perform.

This button...	Opens a page that lets you...
<b>WAN Configuration</b>	Specify how the Wide Area Network (WAN) ADSL setup is configured. Some of the values need to be supplied by your ISP/DSL provider.

This button...	Opens a page that lets you...
<b>Ethernet Configuration</b>	View and change the settings on the Ethernet ports on your X6. Typically you should not need to change these settings.
<b>Routing Table</b>	Set up the routes on which you want the X6 to send data that it receives on a particular interface, such as a LAN or Ethernet interface. Routes specify the IP address of the next device, interface, or Internet destination to forward data to, based on the ultimate destination of the data.
<b>Firewall</b>	Define an additional layer of security for the computers in your network. For example, if you create a DMZ interface using the <b>Virtual Server/DMZ</b> page (see below), you can enable the firewall filtering and add a security policy that blocks certain protocols from reaching the DMZ machine.
<b>DNS</b>	Allows you to specify multiple DNS servers. Typically, most users do not need to enter a DNS server unless instructed by their ISP.
<b>Virtual Server/DMZ</b>	Open access to your computer by creating a virtual server or a DMZ (Demilitarized Zone). By default, your modem uses NAT (Network Address Translation) to hide your networked computers from users on the Internet. However, there are times when you may want to give outside access to the computers in your network. If so, you can set up a virtual server or DMZ to allow outside users access to a computer on your network. You may want to allow access, for example, if a LAN computer is hosting Internet games or running a Web server.

This button...	Opens a page that lets you...
<b>ADSL Configuration</b>	Adjust the ADSL settings on your modem. Typically, you do not need to change these ADSL settings unless instructed by your service provider.
<b>LAN Configuration</b>	Specify the settings that control the connection between the X6 modem and your Ethernet jack. Set a fixed IP address for your computer.
<b>PPP Half Bridge</b>	Share the public IP address assigned by your ISP with a single PC on the LAN. This avoids problems caused by certain applications having to work through NAT (such as online games or FTP servers) and avoids the need to run a PPP software stack on the PC.

## Status Options

The **Status** buttons open reports that provide real-time information about your connections and networks. The reports refresh themselves to give you the most current information.

Typically, these reports are used for maintenance purposes and troubleshooting.

The following table describes each report in the **Status** group:

This button...	Opens a page that lets you...
<b>ADSL Status</b>	View information, such as the ADSL Line State, and Upstream and Downstream speeds.
<b>Wireless Status</b>	View information, such as your Link Speed, SSID, Default Channel, and Mac Address of your wireless computer.
<b>Ethernet Status</b>	View information about Rx (Receive) and Tx (Transmit) Packets.

To see sample reports, go to page 78.

## Administration Options

The buttons in the **Administration** group are typically used for administrative tasks, such as updating the modem's firmware, changing your **Zoom Configuration Manager** password, putting back your modem's configuration file.

The following table lists each button in the **Administration** group and gives a brief description of the things that you can do with that feature.

This button...	Opens a page that lets you...
<b>Admin Password</b>	Change the password to the <b>Zoom Configuration Manager</b> . The original user name and password are:  User name: <b>admin</b>  Password: <b>zoomadsl</b>
<b>Firmware Update</b>	Specify the path to the upgrade file you need to update your firmware. Use the <b>Browse</b> button on this page to navigate to the file, then click the <b>Upload</b> button to perform the firmware update.
<b>System Log</b>	View data generated or acquired by routine system communication with other devices. This information does not necessarily represent unexpected or improper functioning and is not captured by the system traps that create alarms. You can save the system log to a file.
<b>Restore Factory Settings</b>	Reboot the X6 and reset its configuration to the factory defaults.
<b>Backup/Restore Config</b>	Save your current configuration settings so that they may be restored at a later time.

# Using the WAN Configuration Settings

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## When do I need the WAN Configuration page?

The **WAN Configuration** page contains critical information about your Wide Area Network (WAN), ADSL setup, and Internet access. Some of these values are provided by your ISP/DSL provider and need to be entered on this page. To determine if you need to add other values, read the table descriptions that follow the picture. Note that **Protocol**, **Encapsulation**, **VPI**, **VCI**, **PPP**, and **NAT** also appear on the **Basic Setup** page. Most likely you have already entered values for these settings and only need the WAN Configuration page for setting up an advanced feature such as enabling a disconnect timeout on your PPP connection.

## WAN Configuration page

### WAN Configuration

---

**Protocol**

**Encapsulation**

**VPI**

**VCI**

**PPP**

Username

Password

Service Name

Disconnect timeout  minutes

Authentication

**NAT**

---

**ATM**

ATM Traffic Class

Peak Cell Rate

Burst Tolerance

Max Cell Rate

Max Burst Size

Sustainable Cell Rate

---

**RIP**

Accept V1

Accept V2

Sent V1

Sent V2

[Select PVC](#)

---

**After you have saved your changes, you must write the new setting to flash. Click the button below to do this.**

The table on the next page describes the settings on the **WAN Configuration** page and the values that you can enter. After you enter your values, click **Save Changes** and then, **Write Settings to Flash**.

**Note:** The table shows settings in addition to the ones shown in the picture. Depending upon your protocol setting, your WAN configuration may have all or only some of the settings shown in the table.

Setting	Description
<b>Protocol</b> (Internet Connection type)	Your Internet Service Provider supplies this value.  If your service provider instructs you to use 1483 Bridged mode, select <b>1483 Bridged + NAT</b> to take advantage of your modem's advanced routing and firewall features.
<b>Encapsulation</b>	The encapsulation value should match your DSL provider's encapsulation. The value refers to the way that data is passed over the Internet. An example value is LLC (Logical Link Control). Your DSL provider supplies this value when you sign up for ADSL service.
<b>VPI</b>	<b>Virtual Path Identifier</b> ranges from 0 – 256. Your DSL provider supplies the VPI when you sign up for ADSL service.
<b>VCI</b>	<b>Virtual Circuit Identifier</b> ranges from 0 – 65536. Your DSL provider supplies the VCI when you sign up for ADSL service.
<b>Username</b>	Your DSL provider supplies this username when you sign up for ADSL service. (It is not the same as the username and password for the <b>Zoom Configuration Manager</b> .)
<b>Password</b>	Your DSL provider supplies this password when you sign up for ADSL service.
<b>Service Name</b>	This is an optional value that your service provider may ask you to enter.

Setting	Description
<b>Disconnect timeout</b>	The amount of time before the PPP connection drops if there is no activity. A value of 0 means stay connected even if your network stays idle.
<b>Authentication</b>	The type of authentication protocol used during the negotiation of the PPP connection. This protocol may be specified by your ISP. One option, CHAP ( <b>C</b> hallenge <b>H</b> andshake <b>A</b> uthentication <b>P</b> rotocol), encrypts your user name and password during the negotiation. <b>P</b> assword <b>A</b> uthentication <b>P</b> rotocol does not.
<b>NAT</b>	Network Address Translation. By default, this setting is <b>Enabled</b> . NAT keeps a table of individual private IP addresses in your network and refers to the table when incoming requests are made. If no matches are found, the incoming data cannot come into your network. An <b>Enabled</b> setting keeps your IP addresses hidden from outside users. <b>Disabled</b> is some times used if you want to use Public IP addresses.
<b>MTU</b>	Maximum Transmission Unit. Largest physical packet size, measured in bytes, that the modem can send. Any messages larger than the MTU have to be fragmented before being sent.
<b>Obtain IP Address</b>	Enable this button if your service provider is using DHCP and you are using the 1483 protocol. If you are unsure of what your service provider is using select this button.
<b>Specify an IP Address</b>	Enable this button if you are using a static IP address and you are using 1483 protocol. Typically you have to request and pay extra for a static IP address.

Setting	Description
<b>IP Address, Subnet Mask, Default Gateway, and DNS</b>	If you are using a Static IP address, enter the values for <b>IP Address</b> , <b>Subnet Mask</b> , <b>Default Gateway</b> , and <b>DNS server</b> that your service provider gave you. You must also be using the 1483 protocol.
<b>Ethernet Filter Type</b>	Specifies the type of Ethernet filtering that is performed by the bridge interface. <b>All</b> -Allows all types of Ethernet packets through the port. <b>Ip</b> -Allows only IP/ARP types of Ethernet packets through the port. <b>PPPoE</b> -Allows only PPPoE types of Ethernet packets through the port.
<b>ATM Traffic Class</b> <b>Peak Cell Rate</b> <b>Burst Tolerance</b> <b>Max Cell Rate</b> <b>Max Burst Rate</b> <b>Sustainable Cell Rate</b>	These settings allow you to give priority to data that is sent over the network.  <b>Important!</b> You must make arrangements with your DSL provider to use anything except UBR ( <b>U</b> nspecified <b>B</b> it <b>R</b> ate) in the Traffic Class setting. Your service provider will also supply you with the Cell, Burst, and Tolerance Rates.

Setting	Description
<b>RIP</b>	<p>RIP is an Internet protocol that you can set up to share routing table information with:</p> <ul style="list-style-type: none"> <li>• LAN devices that support RIP</li> <li>• Remote networks connected via the ADSL line</li> <li>• Your ISP's location</li> </ul> <p>Most small home or office networks do not need to use RIP since they have only one router and one path to an ISP. In these cases there is no need to share routes because all Internet data from the network is sent to the same ISP gateway.</p> <p>You may want to configure RIP if any of the following circumstances apply to your network:</p> <ul style="list-style-type: none"> <li>• Your home network setup includes an additional router or RIP-enabled PC or device. These routers will need to communicate via RIP to share their routing table information.</li> <li>• Your network connects via the ADSL line to a remote network, such as a corporate network. In order for your modem to learn the routes used within your corporate network, they should both be configured with RIP.</li> <li>• Your ISP requests that you run RIP for communication with devices on their network</li> </ul>
<b>Accept V1</b>	Accept Version 1 of the RIP protocol.
<b>Accept V2</b>	Accept Version 2 of the RIP protocol.
<b>Sent V1</b>	Send Version 1: Send RIP information to other RIP-enabled devices.
<b>Sent V2</b>	Send Version 2: Send RIP Information to other RIP-enabled devices.

# Using the Ethernet Configuration Settings

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## Do I need to change my Ethernet settings?

The **Ethernet Configuration** page contains information about the Ethernet ports on your ADSL modem. Typically you should not need to change these settings. However, if you are having problems establishing your Ethernet connection, you may need to change the **Speed/Duplex** value to match that of the Ethernet NIC in your computer. Here is a picture of the **Ethernet Configuration** page:

The screenshot shows the 'Ethernet Configuration' page. It features a table with the following data:

Port	Configuration	Linked	Speed/Duplex
#1	AutoNegot	✓	Autonego
#2	AutoNegot	✗	Autonego
#3	AutoNegot	✗	Autonego
#4	AutoNegot	✗	Autonego

Below the table is a 'Save Changes' button. Underneath that is a note: 'After you have saved your changes, you must write the new setting to flash. Click the button below to do this.' Below the note is a 'Write Settings to Flash' button.

The following table describes the Ethernet Configuration settings. If you change any of the settings, click **Save Changes**, and then **Write Settings to Flash**.

Setting	Description
<b>Port</b>	The Ethernet Ports 1-4 on the back of your modem.
<b>Configuration</b>	Shows how your Ethernet ports are set up.

Setting	Description
<b>Linked</b>	A check mark indicates that the Ethernet port is connected.
<b>Speed/Duplex</b>	If you are having problems establishing your Ethernet connection, try setting the Speed/Duplex value to match that of the Ethernet NIC in your computer.

# Setting Up a Static Routing Table

---

## Do I need static routing?

Most users do not need to set up static routes. The default route used in your modem will forward all packets correctly. However, if you set up your network with different subnets, you can use static routing to ensure your packets are handled correctly.

You can manually create a static route to tell the modem how to reach a specific IP network. The route entry specifies a destination network (or single host), together with a mask to indicate what range of addresses the network covers, and a next-hop gateway address or interface. If there is a choice of routes for a destination, the route with the most specific mask is chosen.

To route to a destination that is not on any local network, a route may be added via a gateway, for instance another router. The gateway IP address must be on the same subnet as one of the router's interfaces. Here is a picture of the **Static Routes** page:

**Static Routes**

Existing Routes

Valid	Destination	Gateway	Subnet Mask	Metric	Advertise	Delete?
-------	-------------	---------	-------------	--------	-----------	---------

Add Static Routes

Destination	Gateway	Mask	Metric	Advertise	Add
0.0.0.0		0.0.0.0	1	false	Add

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Write Settings to Flash

The following table describes Routing Table settings. If you change any of the settings, click **Add**, and then **Write Settings to Flash**.

Setting	Description
<b>Existing Routes</b>	This table shows the existing Static routes set up on your ADSL Modem.
<b>Destination</b>	Enter the <b>subnet IP address</b> of the destination.
<b>Gateway</b>	Enter the <b>Gateway IP address</b> of your destination's subnet. The HOP gateway must be on the same subnet as the modem.
<b>Mask</b>	Enter the <b>subnet mask</b> (range of IP addresses) of the destination IP addresses based on the above subnet IP address of the destination.
<b>Metric</b>	The number of hops. <b>This should usually be left at 1.</b>
<b>Advertise</b>	Enable this if you want to advertise this route.

# Adding Extra Security with Advanced Firewall Filtering

---

## Do I need extra security?

Setting up advanced firewall security provides an additional layer of security. For example, if you create a DMZ interface for gaming using the **Virtual Server/DMZ** page, you can enable the firewall filtering and add a security policy that blocks IP addresses, ports, aliases, and certain protocols from reaching the DMZ machine.

When you use the **Advanced Firewall Filtering** feature, you will move through multiple screens. Follow the steps below to set up this feature.

- 1 Open the **Firewall Configuration** page by clicking **Firewall** on the **Advanced Setup** page:

### Firewall Configuration

Item	Value
Advanced Firewall Filtering:	Disable ▾
Intrusion Detection:	Enable ▾

[Security Policy Configuration](#)  
[Security Trigger Configuration](#)  
[Configure Intrusion Detection](#)  
[Configure Security Logging](#)

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

**2** **Important!** Do not **Enable Advanced Firewall Filtering** on the **Firewall Configuration** page until you create your security policy. Otherwise, if you **Enable Firewall Filtering** before you create your policy, you will block all outgoing and incoming traffic. To set up your policy, click the link to **Security Policy Configuration** and open the page.

Firewall Interfaces	
Name	Type
iplan	internal
ppp-0	external

Current Security Policies	
Policy Type	Policy Configuration
external - internal	<a href="#">Policy Rules...</a>
external - dmz	<a href="#">Policy Rules...</a>
dmz - internal	<a href="#">Policy Rules...</a>

**3** Choose the **Policy Type** that you want then click the **Policy Rules** link. You can set one of three **Policy Types**. Choose the **External – Internal** policy to allow or block what is sent from the WAN to the LAN. Choose the **External –DMZ** policy to allow or block what is sent from the WAN to the DMZ machine or the Virtual Server. Choose the **DMZ-Internal** policy to allow or block what is sent from a DMZ machine to your LAN.

- 4** Click the **Policy Rules** link of the **Policy Type** that you want. The **Firewall Add Filter Rules** page opens. Click the **Add Policy Rule** link.

### Firewall Add Filter Rules

---

**Firewall Port Filters**

Source Address	Destination Address	IP Protocol	Source Port		Destination Port		Direction		<a href="#">Edit</a>	<a href="#">Delete</a>
			Min	Max	Min	Max	Inbound	Outbound		
Any	Any	TCP	0	65535	0	65535	Allow	Allow		

[Add Policy Rule](#)

**After you have saved your changes, you must write the new setting to flash. Click the button below to do this.**

Write Settings to Flash

- 5** After you click the link, the **Firewall Add Policy Rule** page opens:

### Firewall Add Policy Rule

---

Item	Value	
Src Address:	<input type="text" value="any"/> (IP)	<input type="text" value="0.0.0.0"/> (Mask)
Des Address:	<input type="text" value="any"/> (IP)	<input type="text" value="0.0.0.0"/> (Mask)
Protocol:	<input type="text" value="eq"/> <input type="text" value="TCP"/> <input type="text" value="0"/> (Protocol Number or Name)	
Source Port:	<input type="text" value="any"/> (Start)	<input type="text" value="65535"/> (End)
Destination Port:	<input type="text" value="any"/> (Start)	<input type="text" value="65535"/> (End)
Traffic Inbound:	<input type="text" value="Allow"/>	
Traffic Outbound:	<input type="text" value="Allow"/>	

Save Changes

You use the settings on the **Firewall Add Policy Rule** page to configure your firewall security. In setting your criteria or rules, it is important to know whether you want to block traffic or allow traffic into your network. This is controlled by the **Traffic Inbound** and **Traffic Outbound** settings where you choose **Allow** or **Block**. After you determine what you want to do, you then fill in the other settings to specify what it is that you want to block or allow.

Suppose you enter **Allow** in the **Traffic Inbound** and **Outbound** settings and **Any** in the **Src Address** setting. This sets the firewall to allow any traffic into your network. Conversely, suppose you choose **Block** for **Traffic Inbound**, choose **Assign** for **Src Address** and specify **a range of IP addresses**. This sets the firewall to block all traffic that has the IP addresses you specified.

The table that follows shows you the criteria that you can enter:

Setting	Description
<b>Src Address</b>	Source Address lets you specify <b>Any</b> for all IP addresses or a specific range of IP addresses from a particular source to be blocked or allowed.
<b>Des Address</b>	Destination Address lets you specify <b>Any</b> for all IP addresses or a specific range of IP addresses of a destination to be blocked or allowed.
<b>Protocol</b>	Protocol lets you specify a protocol to be blocked or allowed. <b>eq</b> is equals and <b>neq</b> is not equal. For example, <b>eq TCP</b> will allow only TCP. <b>neq TCP</b> will allow everything including TCP.
<b>Source Port</b>	Lets you block or allow traffic from a particular port.
<b>Destination Port</b>	Lets you block or allow traffic going to a destination port.
<b>Traffic Inbound</b>	Lets you block or allow inbound traffic based on the rules you set up in the policy.
<b>Traffic Outbound</b>	Lets you block or allow outbound traffic based on the rules you set up in the policy.

**6** Click **Save Changes** then **Write Settings to Flash**.

**7** Go back to the **Firewall Configuration** page and select **Enable**. Then click **Write Settings to Flash**.

### Firewall Configuration

Item	Value
Advanced Firewall Filtering:	Enable <input type="button" value="v"/>
Intrusion Detection:	Enable <input type="button" value="v"/>

[Security Policy Configuration](#)  
[Security Trigger Configuration](#)  
[Configure Intrusion Detection](#)  
[Configure Security Logging](#)

**After you have saved your changes, you must write the new setting to flash. Click the button below to do this.**

# Setting Security Logging

## What is security logging?

Security logging is a list of events (computer activity and user activity) that alerts you to potential security issues. Based on the **Level** selected, you can record all or some of these events. It also lets you examine the effectiveness of your blocking and intrusion detection. You can set the level of importance of the logged event and receive alerts if particular IP addresses are trying to gain access to your network.

To set security logging on, follow these steps:

- 1 Click **Firewall** on the **Advanced Setup** page. Then, click the link to **Configure Security Logging**. The **Security Logging** page opens:

Logging Type	Status	State	Level	Output to:
Session Logging	Enabled Level: notice Output to Event Log	Enable	notice	Event Log
Blocking Logging	Enabled Level: notice Output to Event Log	Enable	notice emergency alert critical error warning notice informational debug	Event Log
Intrusion Logging	Enabled Level: notice Output to Event Log	Enable		Event Log

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Write Settings to Flash

- 2 Enable the **Logging Types** that you want and set the **Level**. You can also print (**Output to**) the information to your console or to a file (**Event Log**).

# Configuring Intrusion Detection

## What is intrusion detection?

Intrusion detection protects your network from hackers who use the Internet to damage your network. Your modem's default **Intrusion Detection** setting should work fine for most hacker attacks, but there is additional functionality that you can set up. Your modem offers protection from various Denial of Service (DOS) attacks; prevents users from scanning your ports to try to access your computer; and can blacklist any host trying to damage your network.

Follow these steps to enable additional intrusion detection:

From the **Advanced Setup** page, click **Firewall**. Then click the link to **Configure Intrusion Detection**. The **Configuration** page opens:

Item	Value
Use Blacklist	false
Use Victim Protection	false
Victim Protection Block Duration	600 seconds
DOS Attack Block Duration	1800 seconds
Scan Attack Block Duration	86400 seconds
Maximum TCP Open Handshaking Count	5 per second
Maximum Ping Count	15 per second
Maximum ICMP Count	100 per second

**After you have saved your changes, you must write the new setting to flash. Click the button below to do this.**

The following table shows you the values you can enter:

<b>Setting</b>	<b>Description</b>
<b>Use Blacklist</b>	Blacklisting denies an external host access to your computer/network if an intrusion from a host has been detected. Access to the network is denied for ten minutes.
<b>Victim Protection Block Duration</b>	The length of time that packets destined for the victim of a spoofing attack are blocked.
<b>Use Victim Protection</b>	Protection for your system against broadcast pings. An attacker sends out a ping with a broadcast destination address and a spoofed source address.  Packets destined for the victim of a spoofing attack are blocked for a specified duration.
<b>DOS Attack Block Duration</b>	The duration that hosts are blocked once a Denial of Service (DOS) attack is detected.
<b>Scan Attack Block Duration</b>	The length of time that traffic from IP addresses doing the port scan are blocked once a port scan is detected. Port scans are used to determine if you have any open ports that can be accessed.
<b>Maximum TCP Open Handshaking Count</b>	Sets the maximum number of TCP open session requests allowed per second before a SYN flood attack is detected. SYN Flood is a specific type of DOS attack.
<b>Maximum Ping Count</b>	Sets the maximum number of pings per second before an Echo Storm is detected. Echo Storm is a DOS attack where the attacker sends oversized ICMP datagrams to the network using the ping command.
<b>Maximum ICMP Count</b>	Sets the maximum number of ICMP packets per second before an ICMP Flood is detected. ICMP Flood is a DOS attack where the attacker tries to flood the network with ICMP packets in order to prevent legitimate network traffic.

## Adding a DNS Server Name

---

### Do I need to add a DNS server name?

Typically you should not need to enter a DNS server name as it is assigned automatically when your connection is established.

However, your ISP may instruct you to enter an **IP address** for a **DNS server name**. Here is a picture of the DNS page where you add the **IP address**:

**DNS**

---

DNS server list

DNS server IP address	Delete

**Add new DNS server**

New DNS server IP address:

---

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

The following table shows you the values to enter. After you enter the value, click **Add**, then **Write Settings to Flash**.

Setting	Description
<b>DNS Server List</b>	Shows the list of currently configured DNS servers.
<b>New DNS Server IP Address</b>	Enter the <b>IP address</b> of the DNS server that your ISP instructed you to enter.

# Creating a Virtual Server or a DMZ

---

## Do I need to create a virtual server or DMZ?

By default, your modem uses NAT to hide your computers from users on the Internet; however, there may be times when you want to allow access by outside users to a computer on your network. For instance, you would want to allow access if a computer in your network is hosting Internet games or running a web server. For more information about the **Virtual Server/DMZ** feature and the differences between a virtual server and a DMZ, see page 38. For information about setting up a Virtual Server or DMZ for gaming, see **Setting Up the X6 for Online Gaming** on page 32.

Here is a picture of the **Virtual Server/DMZ** page:

Internal IP Address	Protocol	Port	Delete?
---------------------	----------	------	---------

[Add Virtual Server/DMZ](#)

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Clicking the **Add Virtual Server/DMZ** link opens the **Add Virtual Server/DMZ** page:

The screenshot shows a web interface titled "Add Virtual Server/DMZ". It contains three main input fields: "Internal IP Address", "Transport Type", and "Port". The "Transport Type" field has a dropdown menu open, listing various protocols: icmp, igmp, ip, tcp, egp, udp, rsvp, gre, ospf, ipip, and DMZ. Below these fields is a "Save Changes" button.

The following table shows you the values you can enter. After you enter the value, click **Save Changes**, then **Write Settings to Flash**.

Setting	Description
<b>Internal IP Address</b>	The IP address of the computer where you will set up the virtual server or DMZ.  <b>Note:</b> You should use fixed IP mapping to ensure that the computer you are setting up as the virtual server or DMZ is always assigned the same IP address by your modem's DHCP server. To assign a fixed IP map, see <b>Step 1: Choosing an IP Address for Gaming</b> on page 32.
<b>Transport Type (Protocol)</b>	Select the protocol that you want to allow through to the computer. Select <b>DMZ</b> if you want to allow all protocols and all ports to be open on the computer.

Setting	Description
<b>Port</b>	If you selected <b>TCP</b> or <b>UDP</b> , you must specify the port where you want to allow access. If you want multiple ports to be open, add a virtual server for each port that you want open. If you selected <b>DMZ</b> , you cannot specify a port.

## Using the ADSL Settings

---

### Do I need to change my ADSL settings?

Typically you should not need to change your ADSL settings; however, you may be instructed to do so by your service provider. Or, if you are having problems establishing a physical layer connection, you may want to change a couple of the settings on the **ADSL Configuration** page. Here is a picture of the **ADSL** page where you change your settings:

The screenshot shows the 'ADSL Configuration' page. It features a table with two columns: 'Item' and 'Value'. The 'Item' column lists 'Standard', 'EC/FDM Mode', and 'Activate Line'. The 'Value' column shows dropdown menus with 'Multimode', 'FDM', and 'None' selected respectively. Below the table is a 'Save Changes' button. A text instruction reads: 'After you have saved your changes, you must write the new setting to flash. Click the button below to do this.' Below this instruction is a 'Write Settings to Flash' button.

Item	Value
Standard	Multimode
EC/FDM Mode	FDM
Activate Line	None

Save Changes

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Write Settings to Flash

The following table shows you the values to enter. After you enter the values, click **Save Changes**, then **Write Settings to Flash**.

Setting	Description
<b>Standard</b>	If you are having problems establishing the physical layer connection, you can try selecting the different settings to see if it helps you connect. (If the link light on the modem is blinking than the physical layer connection is down, if the link light is solid than the problem is elsewhere.)

Setting	Description
<b>EC/FDM Mode</b>	If you are having problems establishing the physical layer connection than you can try changing this value to <b>EC</b> .
<b>Activate Line</b>	Select <b>None</b> if there are no changes to the current mode.  Select <b>Abort</b> if you want to stop the modem from connecting. The status will show up as idle on the <b>ADSL Status</b> page. Select <b>Start</b> to restart the connection.

# Changing Your LAN Settings

## When would I need to change my LAN settings?

DHCP (Dynamic Host Configuration Protocol) is a protocol that enables your modem to manage the assignment of IP addresses to computers and devices on your LAN network. Enabling DHCP on your modem allows it to assign temporary IP addresses to your computers whenever they connect to your network. You can control the amount of time that lapses before a new address is issued or renewed. You can extend the range of IP addresses that are assigned to your network devices should you add new devices to your network. You can also change the default LAN IP address for your modem.

Here is a picture of the **LAN Configuration** page:

Item	Value
IP Address	<input type="text" value="10.0.0.2"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
<b>DHCP Server</b>	
Status:	<input type="text" value="Enable"/> ▾
Maximum Lease Time:	<input type="text" value="86400"/> seconds
Default Lease Time:	<input type="text" value="43200"/> seconds
Start IP address:	<input type="text" value="10.0.0.4"/>
End IP address:	<input type="text" value="10.0.0.24"/>
<input type="button" value="Save Changes"/>	
<b>Existing DHCP server fixed host</b>	
<input type="button" value="Add DHCP fixed host"/>	

The following table shows you the values to enter. After you enter the values, click **Save Changes**, then **Write Settings to Flash**.

Setting	Description
<b>IP Address</b>	The IP address of your modem.
<b>Subnet Mask</b>	The modem's subnet mask address.
<b>Status</b>	<b>You should leave this setting on Enable.</b> Disable would require you to set up fixed IP addresses for all of the devices in your network.
<b>Maximum Lease Time</b>	The maximum amount of time, in seconds, that a device in your network will have the temporary IP address before a new one is issued by the modem's DHCP server. (86,400 seconds equals 24 hours)
<b>Default Lease Time</b>	The Default amount of time that your modem's DHCP server will assign an IP address.
<b>Start IP Address</b>	The first IP address of a range that you specify using the Start and End IP Address settings. Your modem's DHCP server will assign the IP addresses in this range at random to the computers and devices in your network
<b>End IP Address</b>	The last IP address of a range that you specify using the Start and End IP Address settings. Your modem's DHCP server will assign numbers from this range at random to the computers and devices in your network. By default the DHCP server has 12 addresses available to assign. If you plan on attaching more than 12 devices to your network, change the ending IP address to allow for more devices.

## **Creating a Fixed IP Address**

---

### **How do I create a fixed IP address?**

You create a fixed IP Address for a computer on your network using the **DHCP Server Fixed Host** page. The button to this page is found on the **LAN Configuration** page.

You will want to create a fixed IP Address if you are setting up a computer, Xbox, or Playstation for gaming. To create a fixed IP address, see steps 2-6 in **Step 1: Choosing an IP Address for Gaming** on page 32.

# Assigning a Half Bridge Device

## When would I assign a half bridge device?

Assigning a **PPP Half Bridge** assigns a public IP address to a computer that you choose so you can bypass the modem's NAT feature and open up all ports on your computer. You may want to do this if you are using an application that requires multiple ports on a computer in your network. Some examples are video conferencing applications, gaming applications, and instant messaging.

Here is a picture of the **Half Bridge Configuration** page:

Name	Value
PPP Half Bridge Status	Disable
Choose which computer will use the public IP address:	None

[Advanced PPP Half Bridge](#)

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

To set up a half bridge configuration, you set the Half Bridge status to **Enable**. From the drop-down list, choose the computer that you want to share the public IP address. This default setup for the PPP Half Bridge works for most applications. You should not need to make additional changes using the **Advanced PPP Half Bridge**.

# Monitoring ADSL, Wireless, and Ethernet Status

---

## How should I use the ADSL, Wireless, and Ethernet Status Reports?

These reports are useful tools for evaluating your system and for troubleshooting. Should a problem arise, a Technical Support Representative may ask you for the information that is contained in the reports.

## Wireless Status Report

Here is a picture of a typical **Wireless Status** Report:

Wireless Status			
Item		Status	
Link Speed	540000		
SSID	zoom		
Default Channel	10		
Encryption	None		
Mac address	00:0c:20:00:77:1f		
Rx Packets	96308	Tx Packets	707

The **Wireless Status** Report shows you the modem speed (Link Speed), the SSID, your default channel, the Mac Address of the modem, and the number of packets that are being received and transmitted (Rx and Tx Packets). You can also tell if your modem has wireless encryption enabled. (To encrypt your information, click the **Wireless** icon in the **Zoom Configuration Manager**).

## ADSL Status Report

Here is a picture of the **ADSL Status Report**:

ADSL Status				
Item	Status			
ADSL Line State:	HandShake			
Mode:	Multimode			
Transmit Power:	0.0 dB			

	Downstream		Upstream	
Bit Rate	0 Kbps		0 Kbps	
Cell Rate	0		0	
SNR Margin	0.0 dB		0 dB	
Line Attenuation	0.0 dB		0.0 dB	
	Fast	Interleaved	Fast	Interleaved
CRC Errors	0	0	0	0
FEC Errors	0	0	0	0
HEC Errors	0	0	0	0
NCD Errors	0	0	0	0

The **ADSL Line State** tells you where your modem is in the connection process. The three states are **Training**, **Handshake**, and **ShowTime**. A line state of ShowTime shows that your modem has established a physical connection to the DSLAM (DSL Access Multiplexer – a device used in the process of connecting your computers, and/or network to the Internet). Training is at the beginning of the connection and Handshake is right after Training.

The **Downstream** and **Upstream** values tell you the speed at which information is being downloaded from the Internet (Downstream) and uploaded to the Internet (Upstream).

## Ethernet Status Report

Here is a picture of the **Ethernet Status Report**:

Ethernet Status			
Rx Packets	695	Tx Packets	1017
Rx Bad Packets	0	Tx Bad Packets	0
Rx CRC Packets	0	Tx Collisions	0
Rx Overlong Packets	0	Tx Excessive Collisions	0
Rx Short Packets	0		

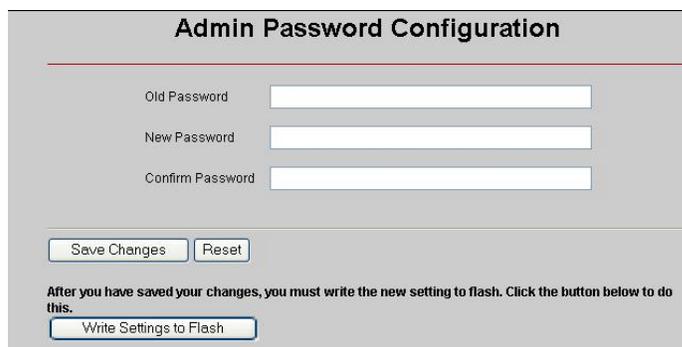
The Ethernet Status Report gives you information about the receive (Rx) and transmission (Tx) rates of packets.

# Changing Your Password

---

## When should I change my password?

For added protection of your X6 settings, you can change the Zoom login password after you have logged into the **Zoom Configuration Manager**. Here is a picture of the page where you enter your Old Password and New Password:



**Admin Password Configuration**

Old Password

New Password

Confirm Password

After you have saved your changes, you must write the new setting to flash. Click the button below to do this.

Be sure to write your new settings to Flash, and to remember your new password. If you forget your password, see **Restoring Factory Settings** on page 82.

## Restoring Factory Settings

---

### When would I need to restore my factory settings?

Should you forget your password, you can restore your modem to the factory settings. This will restore the **admin/zoomadsl** login to the **Zoom Configuration Manager** on your computer. You can login using the Zoom login and then change your password. Here is a picture of the **Restore Factory Settings** page:



Follow the instructions on the page to reset your ADSL modem to its original firmware. Please see **Backing Up and Restoring Your Configurations** on page 83 for information about restoring a stored X6 configuration.

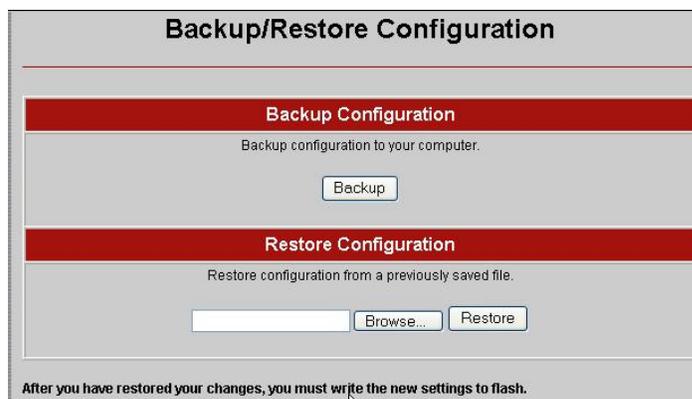
# Backing Up and Restoring Your Configurations

---

## When would I need to back up and restore my configuration settings?

It is a good idea to back up your configuration settings after you set up the X6, and also before you upload new firmware. Then if the update overwrites your configurations, you can put them back using the **Restore** option. You may also want to back up your configurations so you can use them to set up the same configurations in other modems.

Here is a picture of the **Backup/Restore Configuration** page:



**Backup/Restore Configuration**

---

**Backup Configuration**  
Backup configuration to your computer.

**Restore Configuration**  
Restore configuration from a previously saved file.

After you have restored your changes, you must write the new settings to flash.

Follow the instructions on the page to back up or restore your configuration settings.

# Updating Your Firmware

---

## How do I update my firmware?

Periodically you may want to update the firmware on your X6 modem. To do this, you download the Image file from the Zoom Web Site to your computer. You then use the **Firmware Update** option to upload the file to your modem.

**Important!** It is recommended that you backup your modem's configurations before you upload the firmware. (See **Backing Up and Restoring Your Configurations** on page 83). Also, **do not** turn off the modem or unplug it while the upload is in progress.

Here is a picture of the **Firmware Update** page:



**Firmware Update**

Select Image Upload to start a Firmware Update.

New Firmware Image

Please Backup your settings before uploading new firmware.  
**Important - do not turn off the modem or unplug it while upload is in process.**

Click **Browse** to go to the firmware update file. Then click **Image Upload**.

# Appendix A

## ADSL Internet Settings Tables

---

Below are two tables, one for the USA and one for other countries. These tables are for customers whose service providers do not supply them with ADSL settings. Many ADSL providers use different settings depending on the region where they are operating. This is why there may be more than one setting for your service provider. If you refer to the tables and there is more than one listing for your service provider, the most common is labeled (1), the next (2), and so on. We recommend that you try them in order starting with 1.

We post updated tables on our Web site. If your service provider or country is not listed in the tables below, please consult [www.zoom.com](http://www.zoom.com)

### **Note to USA customers**

If your ADSL service provider is not shown below, use the settings for **Service Provider Not Shown** at the bottom of the table. If those settings do not work, use the settings for the company that provides local telephone service in your area. (Refer to page 12 for more detailed installation instructions on entering the settings.)

**Table A: USA**

<b>Service Provider</b>	<b>VPI</b>	<b>VCI</b>	<b>Encapsulation</b>
AllTel (1)	0	35	PPPoE LLC
AllTel (2)	0	35	1483 Bridged IP LLC
August.net (1)	0	35	1483 Bridged IP LLC
August.net (2)	8	35	1483 Bridged IP LLC
BellSouth	8	35	PPPoE LLC
CenturyTel (1)	8	35	PPPoE LLC
CenturyTel (2)	8	35	1483 Bridged IP LLC
Covad	0	35	PPPoE LLC
Earthlink (1)	0	35	PPPoE LLC
Earthlink (2)	8	35	PPPoE LLC
GWI	0	35	1483 Bridged IP LLC
Qwest (1)	0	32	PPPoA LLC
Qwest (2)	0	32	PPPoA VC-MUX
SBC (1)	0	35	PPPoE LLC
SBC (2)	0	35	1483 Bridged IP LLC
SBC (3)	8	35	1483 Bridged IP LLC
Sprint (1)	0	35	PPPoA LLC
Sprint (2)	8	35	PPPoE LLC
Verizon (1)	0	35	PPPoE LLC
Verizon (2)	0	35	1483 Bridged IP LLC
<b>Service Provider Not Shown</b>	0	35	PPPoE LLC

**Table B: Countries Other Than the USA**

Service Provider	VPI	VCI	Encapsulation
Australia-Telstra	8	35	PPPoA LLC
Argentina-Telecom	0	33	PPPoE LLC
Argentina-Telefonica	8	35	PPPoE LLC
Belgium-ADSL Office	8	35	1483 Routed IP LLC
Belgium-Turboline	8	35	PPPoA LLC
Bolivia	0	34	1483 Routed IP LLC
Brazil-Brasil Telcom	0	35	PPPoE LLC
Brazil-Telefonica	8	35	PPPoE LLC
Brazil-Telmar	0	33	PPPoE LLC
Brazil-South Region	1	32	PPPoE LLC
Colombia-EMCALI	0	33	PPPoA VC-MUX
Denmark-Cybercity, Tiscali	0	35	PPPoA VC-MUX
France (1)	8	35	PPPoE LLC
France (2)	8	67	PPPoA LLC
France (3)	8	35	PPPoA VC-MUX
Germany	1	32	PPPoE LLC
Hungary-Sci-Network	0	35	PPPoE LLC
Iceland-Islandssimi	0	35	PPPoA VC-MUX
Iceland-Siminn	8	48	PPPoA VC-MUX
Israel	8	48	PPPoA VC-MUX
Italy	8	35	PPPoA VC-MUX
Jamaica (1)	8	35	PPPoA VC-MUX
Jamaica (2)	0	35	PPPoA VC-MUX
Jamaica (3)	8	35	1483 Bridged IP LLC SNAP
Jamaica (4)	0	35	1483 Bridged IP LLC SNAP
Kazakhstan	0	33	PPPoA VC-MUX
Mexico	8	35	PPPoE LLC
Netherlands-BBNED	0	35	PPPoA VC-MUX
Netherlands-MX Stream	8	48	PPPoA VC-MUX
Portugal	0	35	PPPoE LLC
Saudi Arabia (1)	0	33	PPPoE LLC
Saudi Arabia (2)	0	35	PPPoE LLC
Saudi Arabia (3)	0	33	1483 Bridged IP LLC
Saudi Arabia (4)	0	33	1483 Routed IP LLC
Saudi Arabia (5)	0	35	1483 Bridged IP LLC
Saudi Arabia (6)	0	35	1483 Routed IP LLC

**Table B (Continued): Countries Other Than the USA**

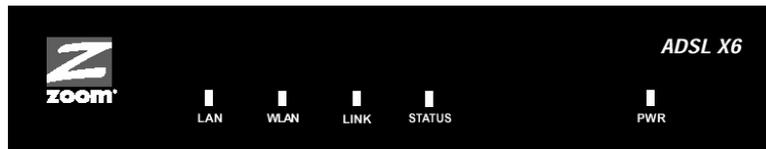
<b>Service Provider</b>	<b>VPI</b>	<b>VCI</b>	<b>Encapsulation</b>
Spain-Albura, Tiscali	1	32	PPPoA VC-MUX
Spain-Colt Telecom, Ola Internet	0	35	PPPoA VC-MUX
Spain-EresMas, Retevision	8	35	PPPoA VC-MUX
Spain-Telefonica (1)	8	32	PPPoE LLC
Spain-Telefonica (2), Terra	8	32	1483 Routed IP LLC
Spain-Wanadoo (1)	8	35	PPPoA VC-MUX
Spain-Wanadoo (2)	8	32	PPPoE LLC
Spain-Wanadoo (3)	8	32	1483 Routed IP LLC
Sweden-Telenordia	8	35	PPPoE
Sweden-Telia	8	35	1483 Bridged IP LLC
Switzerland	8	35	PPPoE LLC
Turkey(1)	8	35	PPPoE LLC
Turkey(2)	8	35	PPPoA VC-MUX
UK (1)	0	38	PPPoA VC-MUX
UK (2)	0	38	PPPoE LLC
Venezuela-CANTV	0	33	1483 Routed IP LLC
Vietnam	0	35	PPPoE LLC

# Appendix B

## Front and Back Panels

---

The front panel of the X6 looks like this:



The following table describes each light on the front panel.

Light	Description
LAN	Lights if any LAN port of the X6 is plugged into the Ethernet port of a powered-up device. Blinks when data is sent. Additional lights for each LAN port are on the back of the X6.
WLAN	Lights when the wireless access point is running and enabled. Blinks when data is sent.
LINK	Blinks when the X6 is performing its startup sequence. Stays on solid when the unit has synched up with its ADSL connection. <b>Note:</b> If the light fails to switch from blinking to steady after a minute or two, check with your ADSL provider that the ADSL connection is activated, or refer to Appendix D, <b>Troubleshooting</b> on page 98.
STATUS	Blinks red once while the X6 is powering up. Then it will only light when there is a problem with the unit. See <b>If You Need Help</b> on page 19 for Customer Support contact information.
PWR	Lights when the X6 is plugged into a power source.

The following table describes the back panel.

<b>Port</b>	<b>Description</b>
<b>PWR</b>	Port to connect the unit to the X6's power cube.
<b>RESET</b>	Recessed button to reset the modem to its factory settings. To reset, insert a paper clip and press the button three times.
<b>LAN 1</b> <b>LAN 2</b> <b>LAN 3</b> <b>LAN 4</b>	LAN ports that can connect the unit to an access point, a network hub, or the Ethernet port of a computer. The X6 has four LAN ports. Each port has a yellow and a green light above it. The yellow light turns on when the port is connected to a 100 megabit per second Ethernet port. The green light blinks when there is activity on that particular LAN line.
<b>ADSL</b>	Jack to connect the modem to the ADSL telephone wall jack.

# Appendix C

## TCP/IP Network Settings

---

If you are using a Macintosh or Linux computer, you **must** ensure that your computer's TCP/IP network settings are configured properly. Otherwise you will not be able to connect to the Internet.

**Note:**

If you are using a Windows computer, you do not have to configure the TCP/IP settings. This is because your Windows computer will automatically configure them for you. Only Windows users who are troubleshooting the X6 will need to verify the TCP/IP settings.

Depending on your operating system, follow the steps in the appropriate section to ensure your TCP/IP settings are correct.

- If you are using Macintosh, see **Macintosh TCP/IP Settings** on page 92.
- If you are using Linux, see **Linux TCP/IP Settings** on page 94.
- If you are using Windows, see **Windows TCP/IP Settings** on page 95.

# Macintosh TCP/IP Settings

How you configure your Macintosh computer's network settings differs, depending on your Mac OS. For OS X, follow the instructions below. Otherwise go to page 93.

## Mac OS X

- 1** From the **Dock**, choose **System Preferences** and then **Network** to display the **Network** pane. (For OS X 3, you also have to click the **Configure** button.)
- 2** Ensure that **Automatic** is selected from the **Location** list box.
- 3** Under the **Show** drop-down tab, choose **Built-in Ethernet**.
- 4** Under the **TCP/IP** tab, make sure that **Using DHCP** is highlighted in the **Configure:** list box. Do not enter anything into the **DHCP Client ID** field.
- 5** Click **Apply Now** (or **Save** if prompted) and close the **Network** pane.
- 6** Continue with **Step 3: Establishing Communication** on page 12.

## Mac OS 7.6.1 - 9.2.2

- 1** From the **Apple** menu, choose **Control Panels** and then **TCP/IP** to display the **TCP/IP** Window.
- 2** Under **Connect via:**, select **Ethernet built-in**.
- 3** Under **Configure:**, select **Using DHCP Server**. Do not enter anything in the **DHCP Client ID** field.
- 4** Close the **TCP/IP** Window. You will be asked if you want to save the changes. Click **Save**.
- 5** Continue with **Step 3: Establishing Communication** on page 12.

## Linux TCP/IP Settings

The instructions for setting up boot-time DHCP vary dramatically by distribution, so you may want to refer to your particular version's documentation.

Once you have followed the instructions for your Linux system, continue with **Step 3: Establishing Communication** on page 12.

### Note:

If you have more than one network card installed, you will need to pick distinct Ethernet identifiers for each (eth0, eth1, eth2, and so forth). If you select an identifier other than eth0 for your ADSL modem, use that identifier throughout.

## RedHat

Edit or create `/etc/sysconfig/network-scripts/ifcfg-eth0` so that it contains the following three lines:

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=dhcp
```

## SuSE

Edit the file `/etc/rc.config`; search for the variables `NETCONFIG`, `NETDEV_0`, and `IFCONFIG_0`.

Set them as follows (see the instructions in `rc.config`):

```
NETCONFIG="_0"
NETDEV_0="eth0"
IFCONFIG_0="dhcpcclient"
```

Reboot with this command: `/sbin/shutdown -r now`.

## Debian

Add this line to the file `/etc/network/interfaces`:

```
iface eth0 inet dhcp
```

Reboot with this command: `/sbin/shutdown -r now`.

# Windows TCP/IP Settings

How you configure your Windows computer's network settings differs, depending on your operating system. Go to the section that corresponds to your Windows operating system.

**Note:**

If you are using a Windows computer, you do not have to configure the TCP/IP settings. This is because your Windows computer will automatically configure them for you. Only Windows users who are troubleshooting the X6 will need to verify the TCP/IP settings.

## Windows XP

- 1** Open the **Internet Protocol (TCP/IP) Properties** dialog box.
  - a** From the desktop, click the **Start** button, point to **Control Panel**, and then click **Network and Internet Connections**.
  - b** Right-click the **Local Area Connection** icon, and select **Properties**.
  - c** Select your NIC card's TCP/IP entry (it should include **TCP/IP** in it, but not **AOL**, **Dial-up**, or **Adapter**) and click the **Properties** button.
- 2** Ensure the following is selected, depending on whether you are using dynamic (DHCP) or static IP addressing:
  - If you are using DHCP (most users): Ensure that **Obtain an IP address automatically** is selected and that either **Obtain a DNS server address automatically** or **Enable DNS** is selected. All fields should be blank.

- If you are using a static IP address: Ensure that **Use the following IP address** and **Use the following DNS server addresses** are selected and that the correct **IP address**, **Subnet mask**, **Default gateway**, and **Preferred DNS server** values appear.

## Windows 2000

- 1** Open the **Internet Protocol (TCP/IP) Properties** dialog box.
  - a** From the desktop, click the **Start** button, point to **Settings**, then **Network and Dial-up Connections**.
  - b** Right-click the **Local Area Connection** icon, and select **Properties**.
  - c** Select your NIC card's **TCP/IP** entry (it should include TCP/IP in it, but not AOL, Dial-up, or Adapter) and click the **Properties** button.
- 2** Ensure the following is selected, depending on whether you are using dynamic (DHCP) or static IP addressing:
  - If you are using DHCP (most users): Ensure that **Obtain an IP address automatically** is selected and that either **Obtain a DNS server address automatically** or **Enable DNS** is selected. All fields should be blank.
  - If you are using a static IP address: Ensure that **Use the following IP address** and **Use the following DNS server addresses** are selected and that the correct **IP address**, **Subnet mask**, **Default gateway**, and **Preferred DNS server** values appear.

## Windows 98/Me

- 1** Open the **Internet Protocol (TCP/IP) Properties** dialog box.
  - a** From the desktop, click the **Start** button, point to **Settings**, then **Control Panel**.
  - b** Double-click the **Network** icon to display the **Network** dialog box.
  - c** Select your NIC card's TCP/IP entry (it should include TCP/IP in it, but not AOL, Dial-up, or Adapter) and click the **Properties** button and then click **OK**.
  
- 2** Ensure the following is selected, depending on whether you are using dynamic (DHCP) or static IP addressing:
  - If you are using DHCP (most users): Ensure that **Obtain an IP address automatically** is selected and that either **Obtain a DNS server address automatically** or **Enable DNS** is selected. All fields should be blank.
  - If you are using a static IP address: Ensure that **Specify an IP address** is selected and that the correct **IP Address** and **Subnet Mask** values appear. On the **DNS Configuration** tab, ensure that **Enable DNS** is selected and that something appears in the **Host** box. (If not, enter any name, word, or combination of letters and numbers.) Ensure that the **DNS Server Search Order** box contains either **10.0.0.2** or **10.0.0.3**.

# Appendix D

## Troubleshooting

---

The following are some problems you may experience and some possible solutions to remedy the situation.

### Problem

My X6's **ADSL** light continually blinks and does not stay solidly lit.

### Solution

There are several issues that could cause this problem. Check these items:

- Ensure that the phone cord is firmly plugged into the wall jack and the **ADSL** jack on the back of the X6 (not the **PHONE** jack on the back of the modem).
- Verify that the jack the phone cord is connected to is enabled for ADSL service. Check with your service provider.
- Your phone cord may be defective. Replace the phone cord with a known good one.
- Check that you have phone filters on all the phones and fax machines using the same ADSL line as the X6. These devices can produce noise and interfere with your ADSL connection when they are off-hook.

## Problem

My X6's **ADSL** light is solidly lit, but I cannot connect to the Internet.

## Solution

There are several issues that could cause this problem. Check these items:

- Ensure that you are using the correct **VPI**, **VCI**, and **Encapsulation** settings. See Appendix A on page 85.
- If your **Encapsulation** begins with **PPP**, ensure that you have typed your **ADSL Username** and **Password** correctly. (Note that this is **NOT** the username and password you used to log into the **Zoom Configuration Manager** on page 12.)
  - If you had the modem automatically configure its settings, open the **Basic Setup** page, and ensure that **MANUAL** is selected, and then select **7** from the **Virtual Circuit** drop-down list. When the screen changes to show the automatic configuration settings, select **MANUAL** again, then enter the correct **Username** and **Password** in the boxes provided. Click **Save Changes** and **Write Settings to Flash**.
  - If you manually configured your modem, open the **Basic Setup** page, ensure that **MANUAL** is selected, and then enter the correct **Username** and **Password** in the boxes provided. Click **Save Changes** and **Write Settings to Flash**.
- Verify that your service provider's ADSL connection is functioning properly. (Place a call to your service provider's customer support department to verify this.)
- Windows users only: Verify that the Web browser on the computer on which you installed the software is configured for a **network connection** (this might be called a **Local Area Network** or **broadband** connection). If you need help configuring your Web browser, refer to **Appendix E: Configuring Your Web Browser** on page 105.

- Verify that your TCP/IP network settings are properly configured on your computer. To do this, refer to the appropriate section.
  - If you are using Macintosh, see **Macintosh TCP/IP Settings** on page 92.
  - If you are using Linux, see **Linux TCP/IP Settings** on page 94.
  - If you are using Windows, see **Windows TCP/IP Settings** on page 95.

## Problem

I cannot log into the **Zoom Configuration Manager**. I have typed **http://10.0.0.2**, but I am not prompted for a User Name and Password.

## Solution

There are several issues that could cause this problem. Check these items:

- If you are using a Macintosh or Linux computer, your TCP/IP settings may not be properly configured. See page 91 for more information.
- If you are using Mac OS X 10.3 and above, renew your IP address: Point to **System Preferences**, then choose **Network**. Click the **Configure** button and then the **Renew DHCP Lease** button.
- If you are using a Windows computer, perform a Release/Renew operation:
  - **Windows 2000/XP:** From the desktop, click the **Start** button, then point to **Programs**, point to **Accessories**, and then select **Command Prompt**. Type **ipconfig /all** and press the **Enter** key on your keyboard. In the subsequent dialog box, make sure the **NIC adapter** is highlighted in the drop-down list, click **Renew**, and then click **Release**. Then type **10.0.0.2** into your browser's address bar, and the **Network Password** box should display.
  - **For Windows 95/98/Me:** From the desktop, click the **Start** button and the point to **Run**. Type **winipcfg**, and click **OK**. In the subsequent dialog box, make sure the NIC adapter is highlighted in the drop-down list, click **Renew**, and then click **Release**. Then type **10.0.02** into your browser's address bar, and the **Network Password** box should display.

## Problem

The computer on which I installed the X6 software is connected to the Web, but one or more of the additional computers I have connected directly to the modem cannot access the Internet.

## Solution

There are several issues that could cause this problem. Check these items:

- Check that there's a good connection between an X6 LAN port and the computer that can't access the Internet.
- Try rebooting the computer that can't access the Internet. This will allow for the computer to release and renew its IP address.
- Try the following for any computer that can't access the Internet: Ensure that the computer is connected using its Ethernet port and one of the X6 modem's LAN ports. Run the installation CD (as explained in **Installing the Software** on page 8), reboot the computer, and then try to connect to a familiar Web address to ensure that the Internet connection is made.

## Problem

The computer on which I installed the X6 software is connected to the Web, but the computers connected through my network device (such as a wireless access point, router, hub, or switch) cannot access the Internet.

## Solution

The problem is most likely with your network device (such as a wireless access point, router, hub, or switch). Check these items:

- Try rebooting each computer on your network. For example, if you are using a router, reboot each computer that is connected to the router. This will allow for the computers to release and renew their IP addresses.
- If you are using a wireless access point or a router, verify that the device is using Dynamic Host Configuration Protocol (DHCP). This is also known as dynamic IP addressing. Depending on your device, this may be controlled by an **Obtain an IP address automatically** option. If you need help, refer to the documentation that came with your network device or contact its manufacturer.
- Refer to the documentation provided with your network device or contact its manufacturer for assistance.

# Appendix E

## Configuring Your Web Browser

---

### **Important!**

This section is for Windows computers only. If you are using a Macintosh or Linux computer, your browser is already configured properly. However, you must ensure that your computer's TCP/IP settings are configured properly. See **Macintosh TCP/IP Settings** on page 92 or **Linux TCP/IP Settings** on page 94 for instructions on how to do this.

When using a Windows computer, the software that you use to make an Internet connection must be set for a **network connection**, not a **dial-up connection**. This configuration should have been done automatically when you installed the software.

If you find that you need to configure your Web browser, this section includes instructions for recent versions of two popular Web browsers: Internet Explorer Version 5.0 (or later) and Netscape Navigator Version 7.2. The configuration is done on the same computer on which you installed the X6 software.

Depending on the browser you have on your Windows computer, follow the corresponding instructions in this section.

### **Tip:**

If you are using an earlier version of one of these browsers, the configuration may be slightly different from below. In those cases—or if you are using another browser altogether—configure the browser to use a **network connection** (this might be called a **Local Area Network** or **broadband** connection).

## Configuring Internet Explorer

The following instructions are for Internet Explorer Version 5.0 or later. (If you do not have this version, you can get a free upgrade from Microsoft Corp. If you are not sure what version you have, open Internet Explorer and from the **Help** menu, choose **About Internet Explorer**. The version number is directly below the Microsoft Internet Explorer logo. You can ignore all the numbers after the period following the first digit.)

- 1** On the desktop, right-click the **Internet Explorer** icon, and select **Properties**.

### Tip:

If you cannot access Internet Explorer in this way, open your computer's **Control Panel** (click the **Start** button and then, depending on your computer, either click **Control Panel**, or click **Settings** and then **Control Panel**). In the **Control Panel**, double-click the **Internet Options** icon. If this icon does not appear, double-click the **Network and Internet Options** icon and then double-click the **Internet Options** icon.

- 2** On the **Internet Properties** dialog box, select the **Connections** tab, then click the **Setup** button.
- 3** The setup process will proceed differently, depending on your operating system. The following table details the process for your Windows computer.

Windows XP	Windows 98/Me/2000
<ol style="list-style-type: none"><li>On the <b>Welcome to the New Connection Wizard</b> dialog box, click <b>Next</b>. (If you see a <b>Location Information</b> dialog box, click <b>Cancel</b> and then when asked if you are sure you want to cancel, click <b>Yes</b> to return to the <b>Welcome</b> dialog box.)</li></ol>	<ol style="list-style-type: none"><li>On the <b>Internet Connection Wizard</b> dialog box, select <b>I want to set up my Internet connection manually, or I want to connect through a local area network (LAN)</b>, then click <b>Next</b>.</li><li>On the <b>Setting up your</b></li></ol>

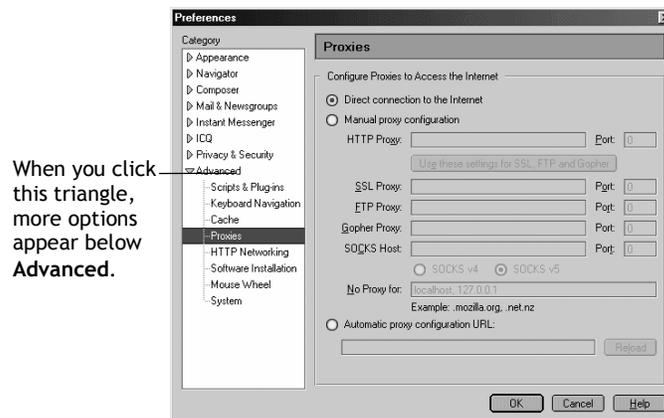
- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>b. On the <b>Network Connection Type</b> dialog box, select <b>Connect to the Internet</b>, then click <b>Next</b>.</li> <li>c. On the <b>Getting Ready</b> dialog box, select <b>Set up my connection manually</b>, then click <b>Next</b>.</li> <li>d. On the <b>Internet Connection</b> dialog box, select <b>Connect using a broadband connection that is always on</b>, then click <b>Next</b>.</li> <li>e. On the <b>Completing the New Connection Wizard</b> dialog box, click <b>Finish</b>.</li> </ul> | <ul style="list-style-type: none"> <li><b>Internet connection</b> dialog box, select <b>I connect through a local area network (LAN)</b>, then click <b>Next</b>.</li> <li>c. On the <b>Local area network Internet configuration</b> dialog box, uncheck the <b>Automatic discovery of proxy server</b> check box then click <b>Next</b>.</li> <li>d. On the <b>Set Up Your Internet Mail Account</b> dialog box select <b>No</b>, then click <b>Next</b>.</li> <li>e. On the <b>Completing the New Connection Wizard</b> dialog box, uncheck the <b>To connect to the Internet immediately, select this box...</b> check box (if it appears) and click <b>Finish</b>.</li> </ul> |
|--|--|

**4** If you accessed Internet Explorer's settings from the **Control Panel** (as explained in the **Tip** following step 1), the **Control Panel** window will still be open. Close it before continuing.

## Configuring Netscape Navigator

The following instructions are for Netscape Navigator Version 7.2. (If you do not have Version 7.2, you can get a free upgrade from Netscape Communication Corp. If you are not sure what version you have, open Netscape Navigator and from the **Help** menu, choose **About Netscape**. The version number is at the top of the screen.)

- 1** Double-click the **Netscape Navigator** icon on your desktop to open the browser.
- 2** From the **Edit** menu, choose **Preferences** to open the **Preferences** dialog box.
- 3** In the **Category** list, click the triangle to the left of **Advanced** to display a list of choices below it, then select **Proxies**. The **Preferences** dialog box changes to show the Proxies you can specify.



- 4** Select **Direct connection to the Internet**, then click **OK**.

# Appendix F

## Wireless Channels by Country

---

For most countries channels 1-13 are normal for private wireless networks. The following table shows countries known to use channels other than 1-13 for private wireless networks.

Country	Channels
France	10-13
Israel	4-9
Japan	1-13 14 (802.11b only)
Taiwan	1-11
USA	1-11

# Appendix G

## Regulatory Information

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### **U.S. FCC Part 68 Statement**

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. The unit bears a label on the back which contains among other information a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

This equipment uses the following standard jack types for network connection: RJ11C.

This equipment contains an FCC compliant modular jack. It is designed to be connected to the telephone network or premises wiring using compatible modular plugs and cabling which comply with the requirements of FCC Part 68 rules.

The Ringer Equivalence Number, or REN, is used to determine the number of devices which may be connected to the telephone line. An excessive REN may cause the equipment to not ring in response to an incoming call. In most areas, the sum of the RENs of all equipment on a line should not exceed five (5.0).

In the unlikely event that this equipment causes harm to the telephone network, the telephone company can temporarily disconnect your service. The telephone company will try to warn you in advance of any such disconnection, but if advance notice isn't practical, it may disconnect the service first and notify you as soon as possible afterwards. In the event such a disconnection is deemed necessary, you will be advised of your right to file a complaint with the FCC.

From time to time, the telephone company may make changes in its facilities, equipment, or operations which could affect the operation of this equipment. If this occurs, the telephone company is required to provide you with advance notice so you can make the modifications necessary to obtain uninterrupted service.

There are no user serviceable components within this equipment. See Warranty flyer for repair or warranty information.

It shall be unlawful for any person within the United States to use a computer or other electronic device to send any message via a telephone facsimile unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business, other entity, or individual sending the message and the telephone number of the sending machine or of such business, other entity, or individual. The telephone number provided may not be a 900 number or any other number for which charges exceed local or long distance transmission charges. Telephone facsimile machines manufactured on and after December 20, 1992, must clearly mark such identifying information on each transmitted message. Facsimile modem boards manufactured on and after December 13, 1995, must comply with the requirements of this section.

This equipment cannot be used on public coin phone service provided by the telephone company. Connection to Party Line Service is subject to state tariffs. Contact your state public utility commission, public service commission, or corporation commission for more information.

### **U.S. FCC Part 15 Emissions 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 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 or more 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.

### Industry Canada Emissions Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### Industry Canada CS03 Statement

Notice: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of concern. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas. Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Notice: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

### European Declaration of Conformity

The manufacturer declares under sole responsibility that this equipment is compliant to Directive 1999/5/EC (R&TTE Directive) via the following. This product is CE Marked.



Directive	Standard	Test Report
73/23/EEC-Low Voltage	EN 60950 : 2000 IEC 60950 : 3 <sup>e</sup> éd. 1999	electrical safety
89/336/EEC-EMC	EN 55024 : 1998 EN 55022 : 1998	EMC-immunity EMC-emissions

### Electrostatic Discharge Statement

The unit may require resetting after a severe electrostatic discharge event.

Note: If you do not use the supplied phone cord, use an equivalent of minimum AWG 26 line cord.

CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunication Line Cord.

Additional compliance information is located on the CD.

