



Raven X HSUPA/HSDPA

Quick Start

20070914
Rev 3.0E



Activating your Raven X on your cellular provider

- Installing the SIM
- Configuring the APN
- Hardware Installation
- Indicator Lights
- Optional: Setting up a DUN Connection

This Quick Start guide provides step-by-step directions for activating your Raven X on your cellular provider's network.

Tip: For additional configuration options, refer to the User Guide for your Raven X.

Installing the SIM

The Subscriber Identity Module (SIM) in the Raven X is a smartcard that securely stores the key identifying a cellular subscriber. Generally, you will only need to install a SIM once in the life of the modem and it may be pre-installed by your Sierra Wireless Representative.

1. Before you start

If the SIM was pre-installed, unless you need to set a custom APN, activation of your modem is complete. Skip to the Raven X Placement section and/or to the DUN instructions, if you need Dial-Up Networking.

Cellular Account Required

- **Cellular Account Required-** To use your modem, you need to have a SIM with an active account with your cellular provider.

Software Required

- **AceManager** - Graphical interface for entering most AT Commands. You can download AceManager from the Sierra Wireless AirLink Solutions website: <http://www.sierrawireless.com/support/>. A default installation of this utility is assumed later in these directions

Hardware Required

- **Ethernet cable or serial cable** - An Ethernet cable or straight through serial cable.
- **Serial cable** - A straight through serial cable.
- **Power adapter and a power source** - You will need a power supply and power source for the modem.
- **PC or laptop** - To configure the modem, you will need a computer with an available Ethernet port or serial port.

Tools Required

- **Small Phillips screw driver** - The Phillips screw driver is the one which is also called a plus (+) or X screw driver.
- **Slim stylus** - A PDA stylus, an unbent paperclip, or other such item.

2. Opening the SIM Slot

- a. Unplug the Raven X power and all cables.
- b. Remove slot cover on the front of the Raven X to reveal the SIM slot.



Figure 0-1: Slot Cover

3. Remove the SIM from the card

- a. Carefully remove the SIM card from the card you received from your cellular provider.

4. Ejecting the SIM tray

- a. Using the tip of a PDA stylus, an unbent paperclip, or other slim blunt item press the yellow button of the SIM tray.

Tip: The button is between two boards.

- b.** Slide the tray out completely.



Figure 0-2: SIM tray button

- a.** Gently press the SIM card to secure in place.

5. Insert the SIM into the Tray

- a.** Place the SIM into the tray and gently press to click it into place.



Figure 0-3: Empty SIM Tray and a Tray with a Sample SIM

6. Insert the Tray and SIM

- a.** Slide the tray back into the modem.
- b.** Gently press the SIM to click it into place.

Tip: The top of the card faces the bottom of the modem.



Figure 0-4: Inserting the SIM

7. Finishing the SIM installation

Replace the cover to prevent dust or other unwanted particles from entering the Raven X. Once the cover is replaced, the installation is complete.

Note: The first time you power on your Raven X with your new SIM, there may be a delay of up to 10 minutes for the initial network connection to occur.

Configuring the APN

The APN (Access Point Name) is the way your modem knows how it will be communicating with the network. The APN allows custom IP addressing and tailoring your company's wireless IP solution to meet the security and IP addressing requirements of your applications.

Note: Most accounts use the default addressing solution of Private or Public IP addresses supplied by the Internet and Proxy APNs. Only if you have a Static or Custom IP address should you need to configure a custom APNs.

The default APN is *Internet*. If you need a different APN, use AceManager to configure it.

1. Start AceManager

Start > All Programs > AirLink Communications > AceManager 3G > AceManager 3G

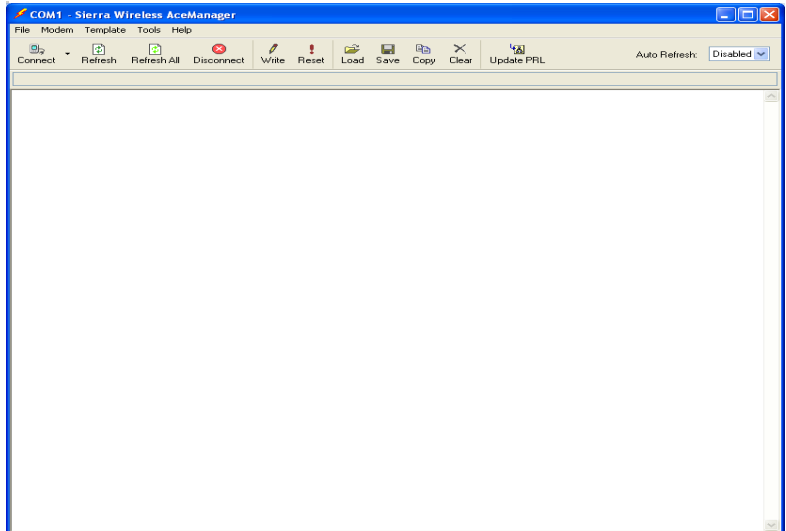
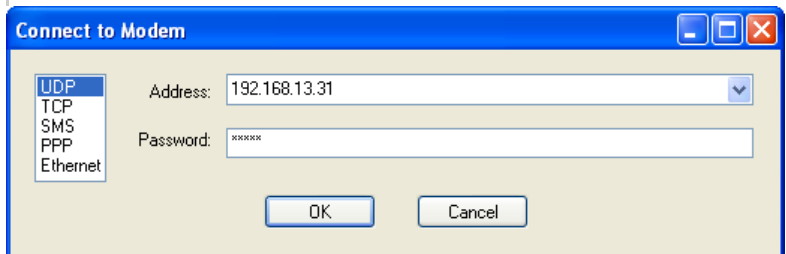


Figure 0-5: AceManager

2. Connect to the Modem

- a. Click the Connect button.



- b. Select a connection method:
 - If you are connecting locally with the modem connected directly to your computer using a serial cable, you can use PPP.
 - If you are connecting locally with the modem connected directly to your computer using an Ethernet cable, you can use UDP, TCP, or Ethernet.
- c. Enter the connection information.
 - For UDP or TCP, enter 192.168.13.31 as the IP address.
 - For PPP, select the COM port to which the modem is connected.
- d. Enter the password. The default password will be entered for you.
- e. Select OK.

3. Enter the APN

- a. Select *EDGE/HSDPA/HSUPA* from the menu on the left side of AceManager (under “Groups”)
- b. Type your APN in the New Value field of **NETAPN*.
- c. Select a connection method:
 - If you are connecting locally with the modem connected directly to your computer using a serial cable, you can use PPP.
 - If you are connecting locally with the modem connected directly to your computer using an Ethernet cable, you can use UDP, TCP, or Ethernet.
- d. Enter the connection information.
 - For UDP or TCP, enter 192.168.13.31 as the IP address.
 - For PPP, select the COM port to which the modem is connected.
- e. Enter the password. The default password will be entered for you.
- f. Select *OK*.

Optional: If you need to configure your modem for a custom APN, after entering the APN, there is additional information you will need to enter.

1. Select *Misc* from the menu on the left side under the Common group.

GROUPS	MODEM DATA			PRINTABLE
----- INFO -----	AT	Name	Value	New Value
STATUS	*DATE	Date and Time	05/19/2009 18:29:49	
----- COMMON	OPRG	Enable Over-the-Air Programming	1	
Misc	*NETPHONE	Phone Number	5106912652	
USB		Force Static IP	0.0.0.0	
Serial	*DPORT	Device Port	12345	
Telnet	*NETUID	Network User ID		
TCP	*NETPW	Network Password		
UDP	*NETALLOWZEROIP	Allow Last Byte of net IP = Zero	1	
DNS	*HOSTPAP	Request PAP	0	
Dynamic IP	\$53	Destination Address		
PPP/Ethernet	\$53	Destination Port	0	
PassThru	\$53	Default Dial Code	T	
SMT	GPS	Enable Event Reporting	0	
Other	Server 1	Enable AceWeb	2	
Low Power	Server 2			
Firewall - IP	Server 3			
Firewall - Ports				
Port Forwarding				
----- LOGGING				

Figure 0-6: AceManager : Misc

2. Enter the NAI into the new value field for **NETUID* and enter your network password into the new value field for **NETPW*.

*NETUID	Network User ID	@	
*NETPW	Network Password		

Figure 0-7: AceManager : Misc - *NETUID, *NETPW

4. Write the Settings to the Raven X

- a. Click the Write button on the tool bar of AceManager.
- b. Wait for the message “Write Successful” to appear in the status bar.

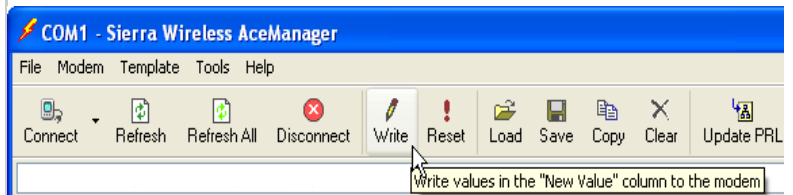


Figure 0-8: AceManager : Write

- c. Reset the Raven X.

Note: During installation, please be sure that the cables are secure but do not bear any additional weight that could loosen the connector from the unit.

Hardware Installation

Your Raven X should be mounted in a position that allows easy access for the cables so they are not bent, constricted, in close proximity to high amperage, or exposed to extreme temperatures. The LEDs on the front panel should be visible for ease of operational verification. You should ensure that there is adequate airflow around the modem but that it is kept free from direct exposure to the elements, such as sun, rain, dust, etc.

Caution: *The Raven X is in a hardened case and designed for use in industrial and extreme environments. However, unless you are using cables expressly designed for such environments, they can fail if exposed to the same conditions the Raven X can withstand.*

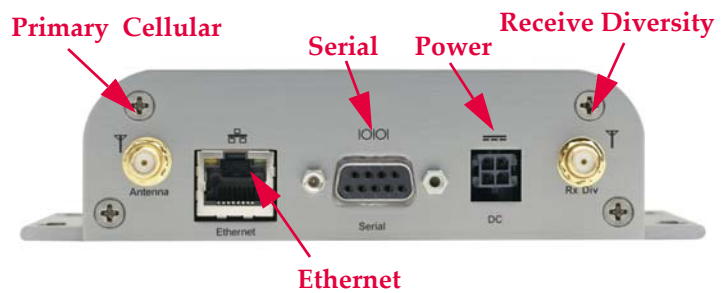


Figure 0-9: Raven X Connectors

Note: This device is not intended for use within close proximity of the human body. Antenna installation should provide for at least a 20 CM separation from the operator.

Cellular

Antennas selected should not exceed a maximum gain of 5 dBi under standard installation configuration. In more complex installations (such as those requiring long lengths of cable and/or multiple connections), it's imperative that the installer follow maximum dBi gain guidelines in accordance with the radio communications regulations of the Federal Communications Commission (FCC), Industry Canada, or your country's regulatory body (if used outside the US).

Your Raven X will work with most cellular antennas with a SMA connector. Connect the primary antenna or primary RF cable directly to the antenna connector on the back of the Raven X.

Tip: *When using a cable to an antenna placed away from the modem, minimize the length of your cable. All gain from a more advantageous antenna placement can be lost with a long cable to the modem.*

Power

Your Raven X can be used with either DC or AC, with the appropriate power adapter. DC cables and AC adapters are available as optional accessories in addition to the one included with your Raven X.

The DC power cable positive lead should be connected to the battery or power source positive terminal. The power cable negative lead should be connected to the battery or power source negative terminal.

Tip: *The DC power cable has a white wire lead in addition to the power positive and negative. This is for a feature not present in the Raven line modems. In the Raven X, the white wire lead has no function and can be ignored.*

Warning: *Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.*

Connecting to a Computer or other Device



Figure 0-10: Ethernet

The Ethernet port of your Raven X can be connected directly to a computer or other Ethernet device with either a cross-over cable or a straight-through cable. The Ethernet port on the Raven X is auto-sensing and will auto-detect the speed of the connecting device for 100baseTX or 10baseT. If you are connecting the modem to a hub or switch you should use a straight through cable or use the uplink port on the hub or switch with a cross-over cable.



Figure 0-11: Serial

The serial port of your Raven X can be connected directly to most computers or other devices using a standard straight through cable. If you have a DCE device, you will need a null modem or null modem cable.

Indicator Lights

When your Raven X is connected to power and an antenna, there is a specific pattern to the lights to indicate its operation mode.



Figure 0-12: Raven X Indicator lights

- **Network** - Indicates a successful connection to the cellular network with an IP address given and a channel acquired.

- **Signal** - Light shows the strength of the signal and may be nearly solid (strong signal) or flashing (weaker signal). A slow flash indicates a very weak signal.

RSSI LED Ranges

RSSI/Signal LED Status	Ranges of RSSI (dBm)
On Solid	Equal to or stronger than -69
Fast Blink	-70 to -79
Normal blink	-80 to -89
Slow Blink	-90 to -99
Extinguished	Equal to or weaker than -100

- **Activity** - Lights will flash as data is transferred to and from the PinPoint modem on the remote network.
- **Service** - Indicates when the connection is HSUPA/HSDPA or UMTS. Unlit indicates EDGE or GPRS.
- **Power** - Indicates the power adapter is connected and there is power getting to the Raven X.
- The **Reset button** (on the left side of the Raven X) has two functions. If it is quickly depressed and released, the modem will simply power cycle the internal hardware. If, however, the reset is depressed and held for several seconds (count 10 slowly, and wait for the power light to go off after the light pattern stops), the ALEOS configuration settings will return to the factory defaults.

Caution: *If you reset the modem configuration using the reset button, you may to reconfigure your APN.*

Light Patterns

The LEDs on the front of the modem will respond in different patterns to indicate modem states.

- **Normal** - Each LED, mentioned above, is lit as applicable.
- **Start up** - The LEDs will cycle from left to right.
- **PassThru mode** - Network and Signal LEDs will blink in tandem. The Activity LED will blink when transmitting or receiving data.
- **SOS** - The Network Channel and Service Err or Service LEDs will blink alternate to each other.
- **Configuration Reset** - The LEDs will cycle left to right and then right to left 4 times.

- **Authentication Failure** - The Network, Signal, and Activity LEDs blink every 2 seconds.
- **Data Retry** - The Network, Signal, and Activity LEDs blink every 3 seconds.
- **Invalid MAC Address or Ethernet Initiation Fail** - The Service LED will blink.

Optional: Setting up a DUN Connection

Dial-up Networking (DUN) allows a computer or other device to use the serial port on your Raven X to connect to the Internet or private network using PPP just like an analog modem using a standard phone line.

Caution: *To install any driver on your computer, you may need to be logged in as Administrator or have Administrator privileges for your login.*

Microsoft Windows XP is used in the examples below. The modem driver installation and DUN setup and configuration is similar in Microsoft Windows products. Examples are not provided here for installing the driver or configuring DUN for any other operating system.

Standard installations of Microsoft Windows XP and 2000 include a generic modem driver which will work with your Raven X.

1. Connect the Raven X.

- a. Connect the modem to the computer with a DB-9 cable or the USB port in serial mode.
- b. Plug in the AC adapter, connect the antenna(s) and power on the modem.

2. Install the driver.

- a. Select *Start > Control Panel > Phone and Modem Options* (in Classic View).

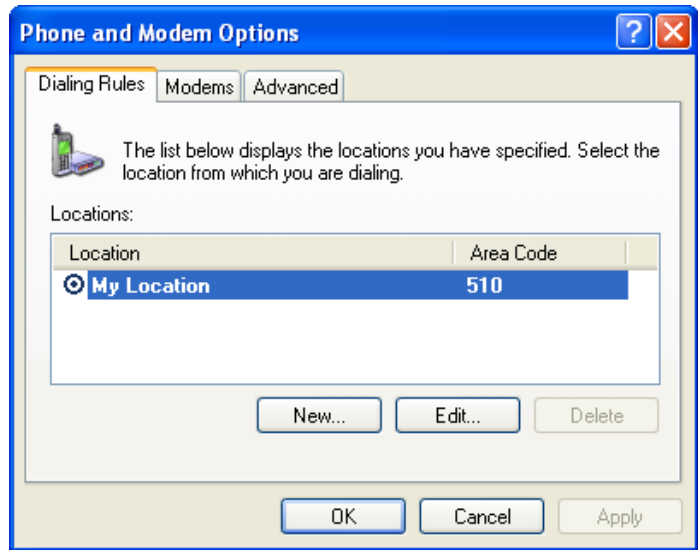


Figure 0-13: Phone and Modem Options

- b.** Select the *Modems* tab.

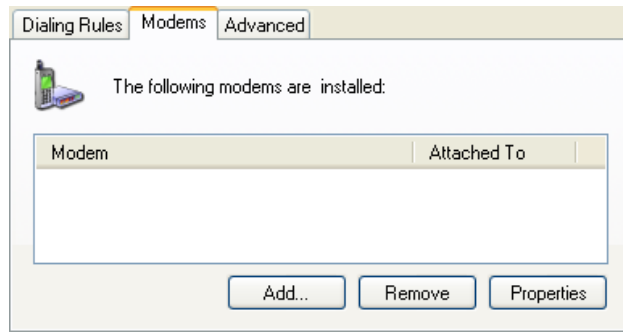


Figure 0-14: Phone and Modem Options: Modems

- c.** Select *Add*.

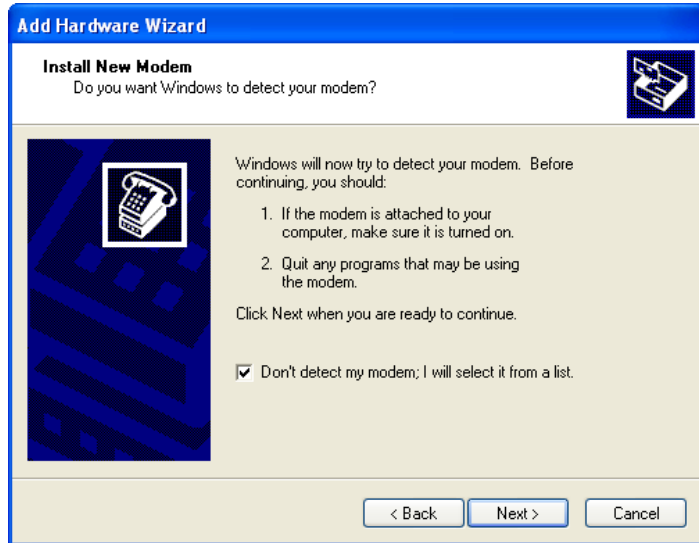


Figure 0-15: Add Hardware Wizard

- d. Check *Don't detect my modem; I will select it from a list.*
- e. Select *Next.*

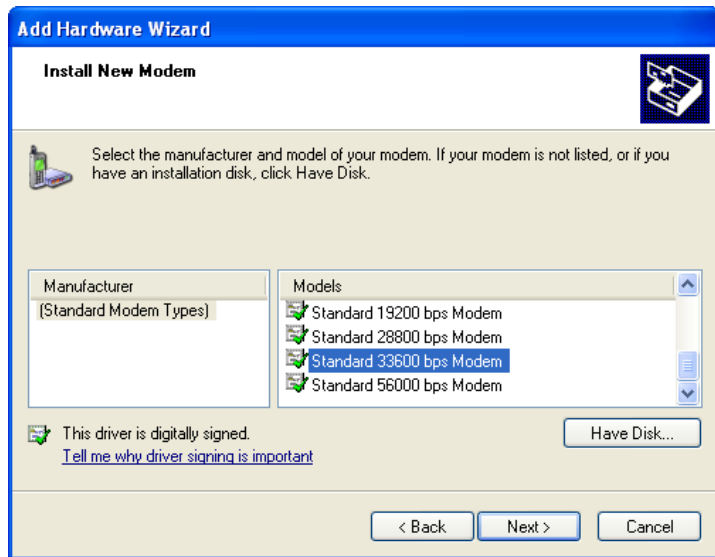


Figure 0-16: Add Hardware Wizard: Install New Modem

- f. Select *(Standard Modem Types)* from the Manufacturers column.
- g. Select *Standard 33600 bps Modem* from the Models column.

Tip: If you have the speed for your modem configured as something other than the default, use the Standard Modem that matches the speed you configured.

h. Select *Next*.

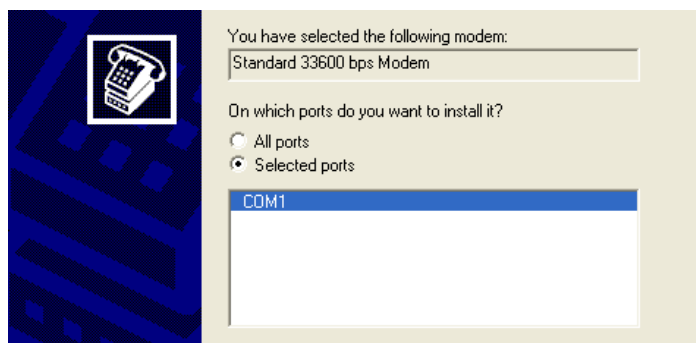


Figure 0-17: Add Hardware Wizard: Select Ports

i. Check *Selected Ports*.

j. Select the COM port the modem is connected to (commonly COM1).

k. Select *Next*.

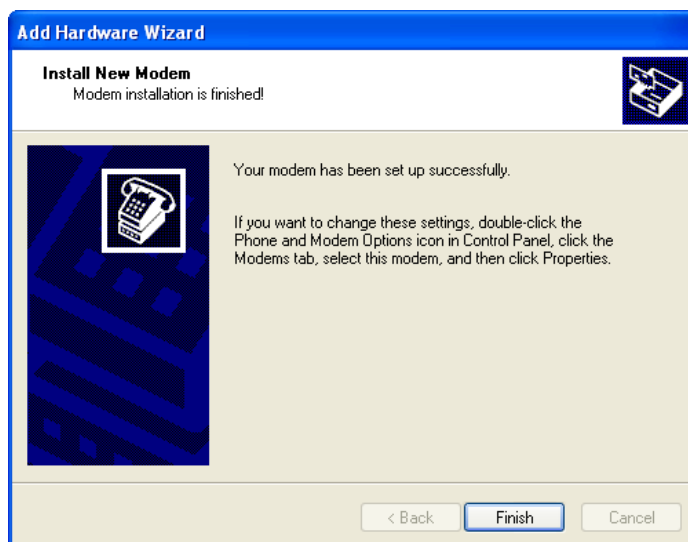


Figure 0-18: Add Hardware Wizard: Finish

l. Once the modem driver is installed, select *Finish*.

3. Configure the driver.

When you return to the *Phone and Modem Options* window, you should see the newly installed modem “attached to” the correct COM port.

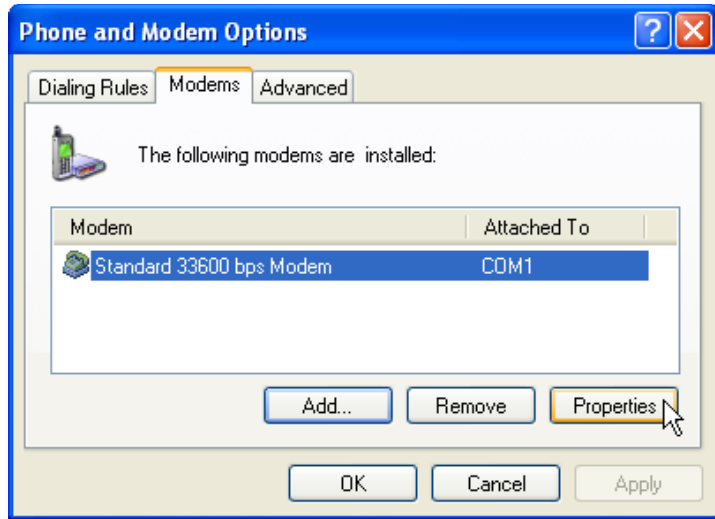


Figure 0-19: Phone and Modem Options: Modems

- a. Highlight the modem and select *Properties*.

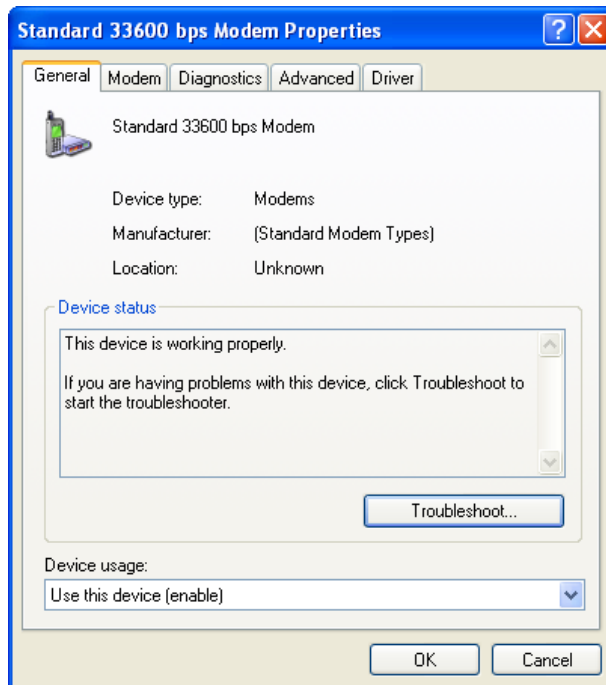


Figure 0-20: Modem Properties

- b. Select the *Modem* tab.

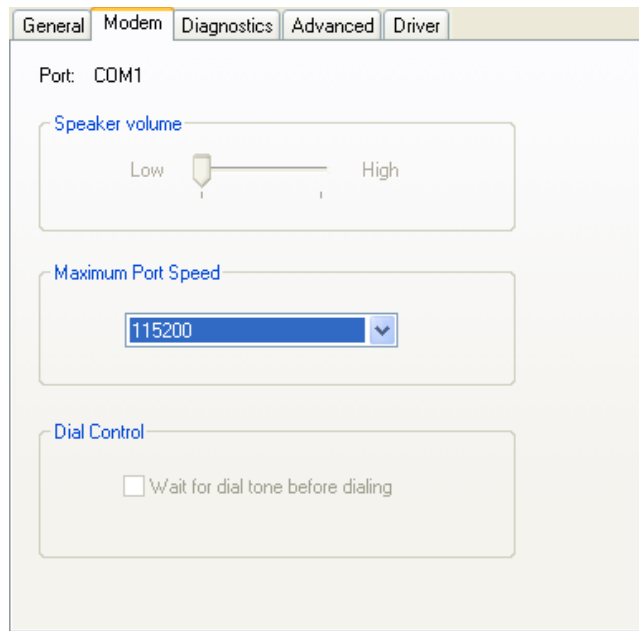


Figure 0-21: Modem Properties: Modem

- c. Maximum Port Speed should be set to 115200 (default).
- d. Select *OK* to exit.
- e. Select *OK* again to exit out of the Phone and Modem Options.

Creating a Dial-Up Networking (PPP) Connection

Once you have the driver for the modem installed on your computer, you can set up and configure Dial Up Networking (DUN) to use the modem as your connection to the Internet using PPP.

Note: No other device or program can be using the same COM port (serial port) configured for the modem driver.

Caution: *If you have an existing LAN connection, installing DUN for the modem may interfere with the LAN connection. It's recommended to disconnect your LAN connection before using a PPP connection with your Raven X.*

Once the DUN connection is initiated, by default, it will take over as the “default route” for network communication and specifically for Internet access. If you want the two connections to co-exist, you will need to de-select “Use default gateway on remote network” (described later) and use the route command in Windows to setup routing through the modem properly. This guide does not provide information on the route command. You may need to consult with your network administrator to properly configure routing.

1. Create a new network connection.

- a. Select *Start > Connect To > Show All Connections* to open the Network Connections window.

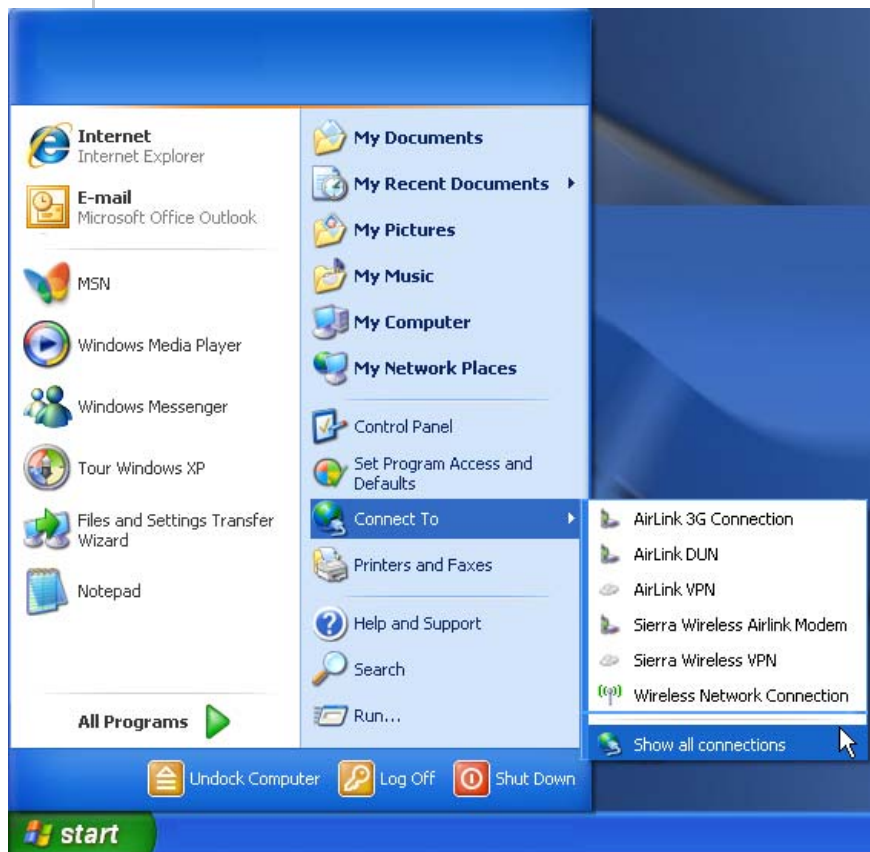


Figure 0-22: Windows : Start menu

- b. Select *Create a New Connection* under Network Tasks in the menu area on the left.

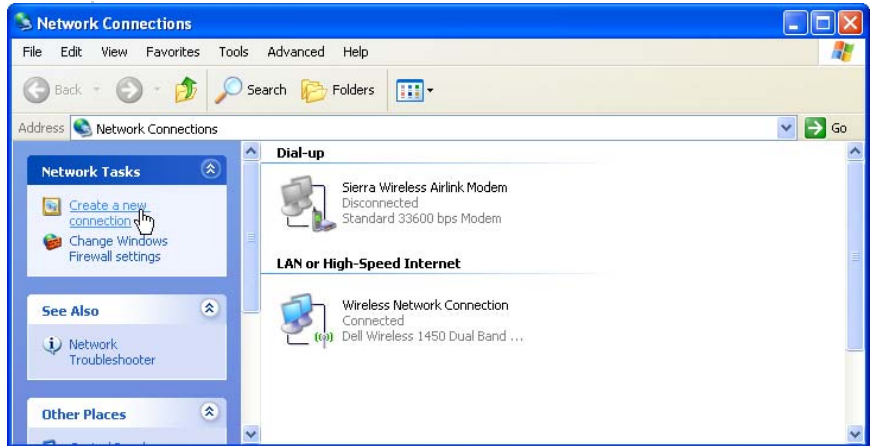


Figure 0-23: Create New Connection

- c. Select *Next* to start installing and configuring the DUN connection.



Figure 0-24: New Connection Wizard

- d. Select *Connect to the Internet*.
- e. Select *Next*.

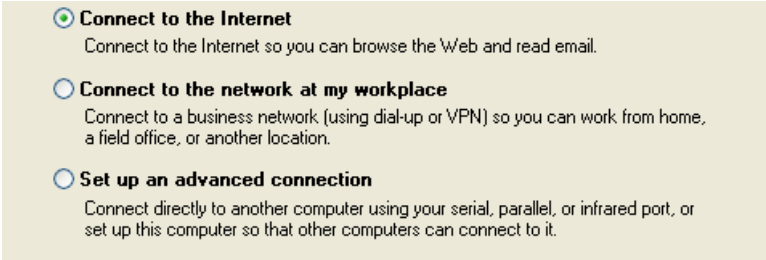


Figure 0-25: New Connection: Type

- f.** Select *Set up my connection manually*.
- g.** Select *Next*.

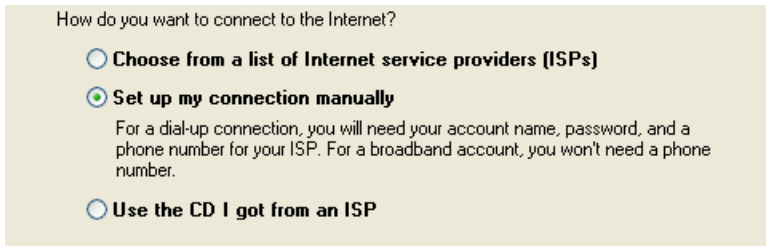


Figure 0-26: New Connection: How do you want to connect?

- h.** Select *Connect using a dial-up modem*.
- i.** Select *Next*.

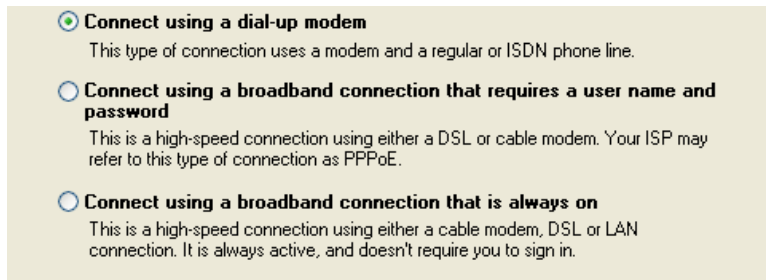
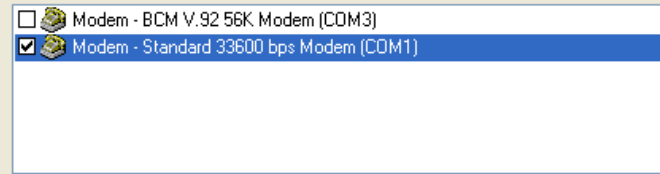


Figure 0-27: New Connection: Connect using...

- j.** *Optional:* If you have multiple modems installed on your computer, you may be prompted to select the modem to be used. If you only have one modem installed, this option will be omitted.
- k.** Check *Standard 33600 bps Modem*.
- l.** Select *Next*.

You have more than one dial-up device on your computer.

Select the devices to use in this connection:



Modem - BCM V.92 56K Modem (COM3)
 Modem - Standard 33600 bps Modem (COM1)

Figure 0-28: New Connection: Select Modem

- m. Type in a name for the connection, such as *Sierra Wireless AirLink Modem*.
- n. Select *Next*.

Type the name of your ISP in the following box.

ISP Name

Sierra Wireless Airlink Modem

The name you type here will be the name of the connection you are creating.

Figure 0-29: New Connection: Connection Name

Tip: The name provided here will not effect the connection in any way. It is only a label for the icon. It can be the name of your wireless service provider (Provider), your modem (Raven X), or any other designation for the connection.

- o. Type in *10001* as the phone number for the modem to dial.
- p. Select *Next*.

Type the phone number below.

Phone number:

10001

You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.

Figure 0-30: New Connection: Phone Number

- q. *Optional:* If you have multiple users configured for your computer, you may be prompted for Connection Availability. If you select *My use only*, the account currently logged on will be the only one able to use this DUN connection.
- r. Select *Next*.

A connection that is created for your use only is saved in your user account and is not available unless you are logged on.

Create this connection for:

- Anyone's use
- My use only

Figure 0-31: New Connection: Permissions

Generally the modem takes care of the Account Information, User name and Password, for the connection, so you can leave the fields blank (unless otherwise instructed by Support).

- s. If you want to allow others to use the same login for the modem, select *Use this account name and password...*
- t. Select *Next*.

Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)

User name:

Password:

Confirm password:

- Use this account name and password when anyone connects to the Internet from this computer
- Make this the default Internet connection

Figure 0-32: New Connection: Connection Information

Caution: *If you have a LAN connection to the Internet and select **Make this the default Internet Connection** for the DUN configuration, you will not be able to use the LAN to connect to the Internet and may also affect the network connection on your computer to the rest of the LAN. Select this option ONLY if the Raven X will be your sole network connection.*

- u. If you want to add a shortcut for this DUN connection to your desktop, check *Add a shortcut*.
- v. Select *Finish* to exit the Network Connection Wizard.

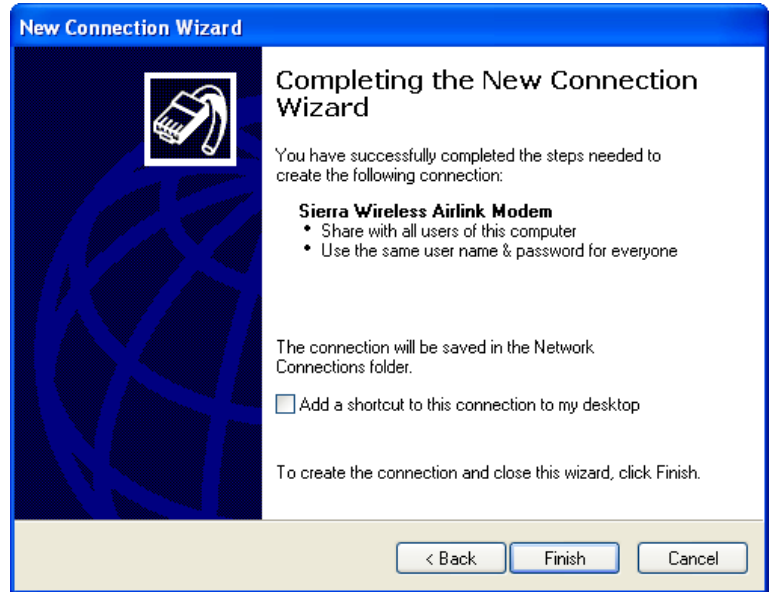


Figure 0-33: New Connection: Finish

2. Configure the DUN connection

After you complete the New Connection Wizard, there are a few more things you will want to configure in the connection.

- a. Select *Properties*.



Figure 0-34: DUN Connection

- b. Uncheck *Use dialing rules*.

- c. Check *Show icon...when connected*.
- d. Select *Configure*, below the Connect using line.

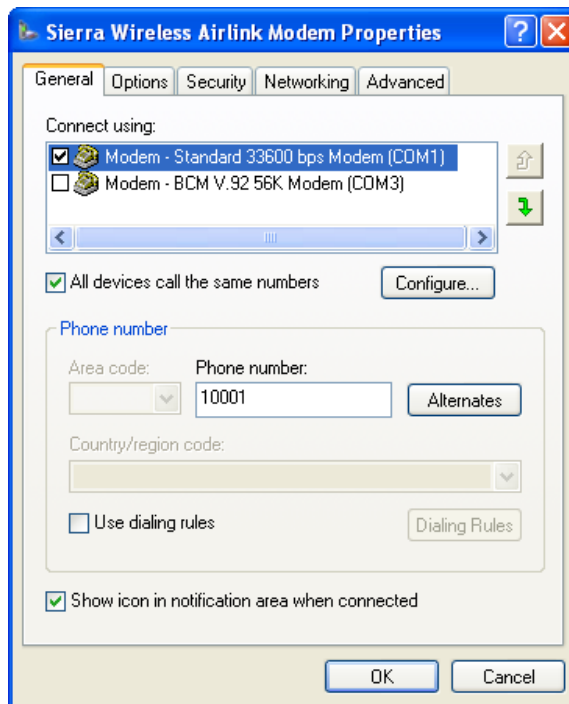


Figure 0-35: DUN Properties

- e. Select *115200* as the Maximum speed.
- f. Check *Enable hardware flow control*.
- g. Do not check any other option.
- h. Select *OK*.

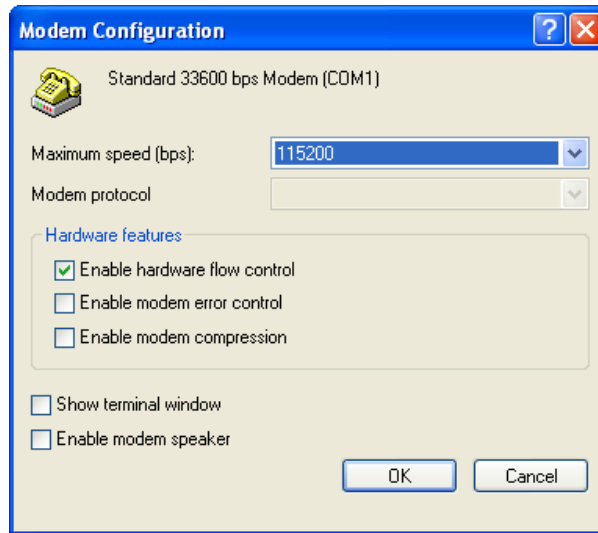


Figure 0-36: Modem Configuration

- i. Back at the main properties screen, select the *Networking* tab.

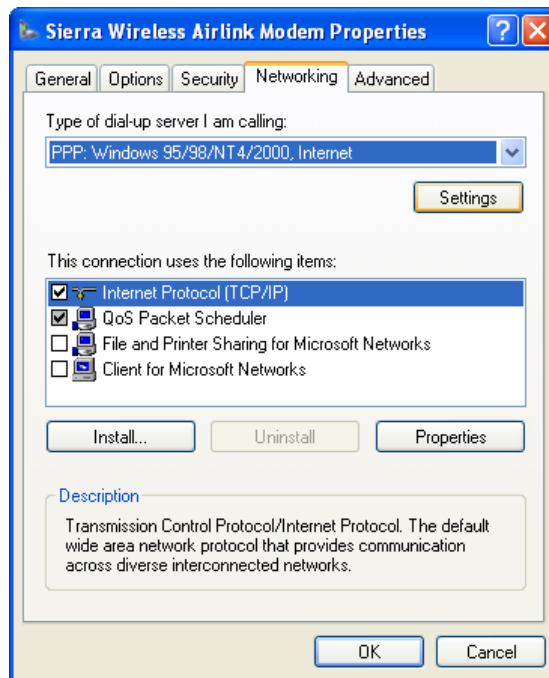


Figure 0-37: Networking

- j. Select *Settings*.
- k. Remove the checks from all three PPP settings.
- l. Select *OK*.

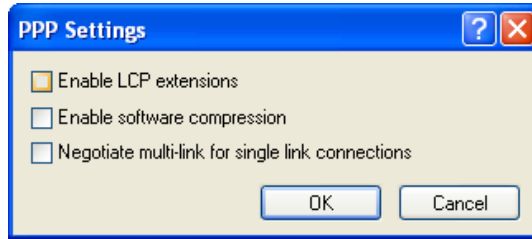


Figure 0-38: PPP Settings

- m. Select (highlight) Internet Protocol (TCP/IP) and then select *Properties*.

Tip: For most configurations, you will be obtaining the IP address and the DNS server address automatically.

- n. Select *Advanced*.

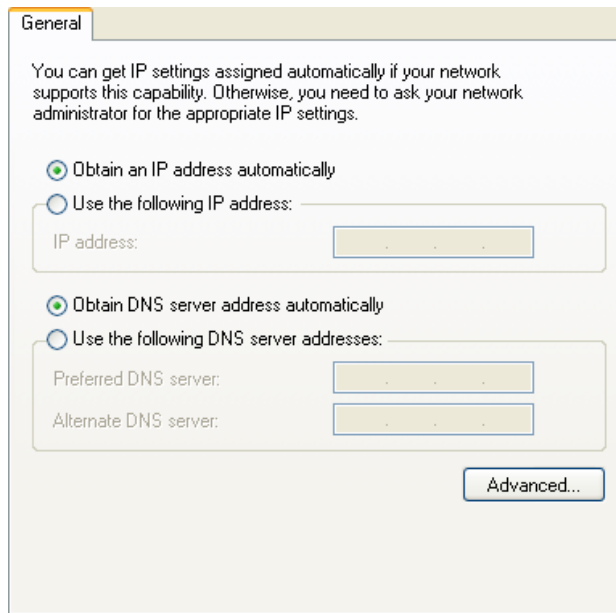


Figure 0-39: TCP/IP Properties

- o. Uncheck *Use IP header compression*.
- p. Check *Use default gateway on remote network*.
- q. Select *OK*.

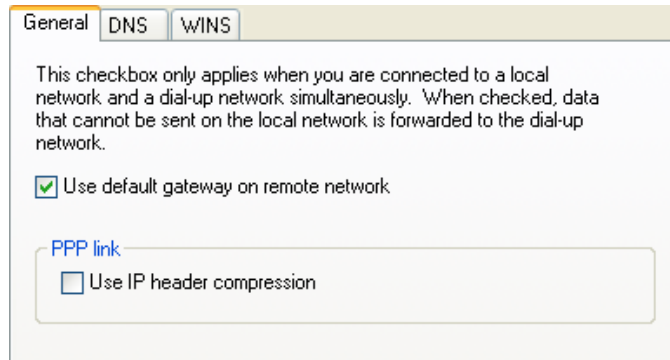


Figure 0-40: Advanced TCP/IP

Tip: You may want to check the Options tab and change the settings for applications you might be using. The default options are generally applicable for most uses.

Caution: Unless specifically directed to do so by Support or your network administrator, you do not need to make any changes to the options on the Security tab.

- r. Select OK until you return to the Connect window.

Connecting to the Internet Using DUN

There are two methods you can use to connect with Raven X to the Internet using DUN, AceView and the Windows DUN connection directly.

AceView

AceView is a small utility which can maintain your DUN connection and monitor the connection of your Raven X to Provider. If you have not already installed AceView you can obtain the most recent version from the Sierra Wireless AirLink website.

This guide assumes you have a default installation of AceView.

1. Start AceView.

Start > All Programs > AirLink Communications > AceView

Note: The direct DUN connection features of AceView are not available in Windows 98 or Windows NT.

2. Enable the Connection.

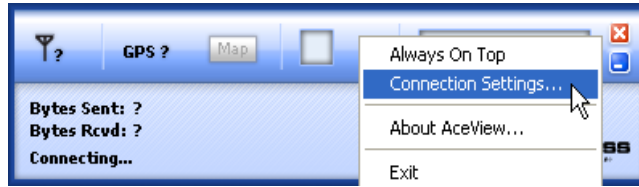


Figure 0-41: AceView: Menu

- a. Right-click on the AceView window to open the menu.
- b. Select *Connection Settings*.

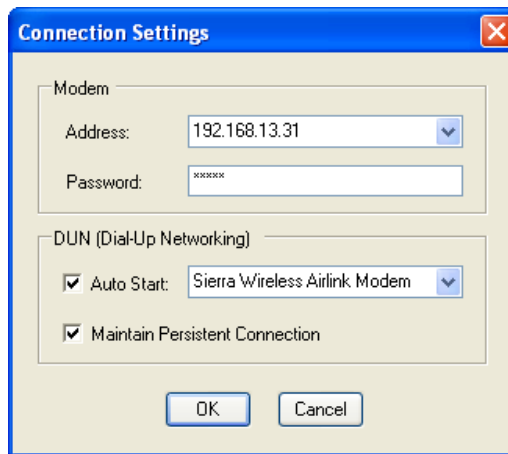


Figure 0-42: AceView: Connection Settings

- c. Select *Auto Start* in the DUN section.
- d. Select *Maintain Persistent Connection*.

When checked, AceView will continually check the DUN connection to ensure it is not down. If so, AceView will attempt to connect again.

Tip: When using the DUN connection, make sure the IP Address is set to the local IP address of the modem, 192.168.13.31 by default.

- e. Select *OK*.
- f. *OK*.

Windows DUN

You can directly use the Dial-up link for the DUN connection.

1. Start the DUN session.

Start > Connect To > Sierra Wireless AirLink Modem

If you named the connection differently, use the name of the PPP connection you made earlier.



Figure 0-43: DUN Connection

Tip: Generally you will not need to enter a Username or Password. If you do need to enter either, you can enter these parameters beforehand using *NETUID and *NETPW.

2. Select Dial to connect to the modem and the cellular network.

When you're connected, an icon should appear in the system tray showing the connection status.

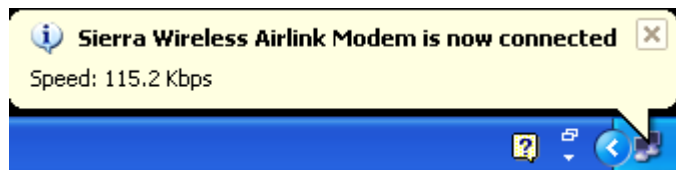


Figure 0-44: Connection indicator

Note: The speed shown in the connection is the speed between the modem and your computer, it is not the speed of the modem's connection to Provider or the Internet.

Caution: *For DUN connections on a Windows Mobility or other non-personal computer, the DNS settings may not be configured with the DUN connection. You may need to go into the network settings and add DNS servers manually.*

Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless AirLink Raven X are used in a normal manner with a well-constructed network, the Sierra Wireless AirLink Raven X should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless AirLink Raven X, or for failure of the Sierra Wireless AirLink Raven X to transmit or receive such data.

Safety and Hazards

Do not operate the Sierra Wireless AirLink Raven X in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless AirLink Raven X **MUST BE POWERED OFF**. The Sierra Wireless AirLink Raven X can transmit signals that could interfere with this equipment.

Do not operate the Sierra Wireless AirLink Raven X in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless AirLink Raven X **MUST BE POWERED OFF**. When operating, the Sierra Wireless AirLink Raven X can transmit signals that could interfere with various onboard systems.

Note: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless AirLink Raven X may be used at this time.

The driver or operator of any vehicle should not operate the Sierra Wireless AirLink Raven X while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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5,515,013	5,629,960	5,845,216	5,847,553	5,878,234
5,890,057	5,929,815	6,169,884	6,191,741	6,199,168
6,339,405	6,359,591	6,400,336	6,516,204	6,561,851
6,643,501	6,653,979	6,697,030	6,785,830	6,845,249
6,847,830	6,876,697	6,879,585	6,886,049	6,968,171
6,985,757	7,023,878	7,053,843	7,106,569	7,145,267
7,200,512	D442,170	D459,303		

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Consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, troubleshooting tips, and press releases:

www.sierrawireless.com

Revision History

Revision number	Release date	Changes
1.x	2003-2005	AirLink Communications documentation - CDPD, CDMA, and GPRS.
2.x	Q2: 2005-Q2: 2007	AirLink Communications documentation - CDMA, EV-DO, EDGE, and HSUPA/HSDPA.
3.0	Q2: 2008	Converted documentation from AirLink Communications documentation format into Sierra Wireless documentation format. Phase II of the conversion completed. Raven modem line documentation is revised.

