Raven XT

Quick Start Guide

for Verizon

SIERRA WIRELESS

20070914
Rev 1.0

Activating your Raven XT on the Verizon Network

- Automatic Activation
- Setup Wizard
- Hardware Installation
- Indicator Lights

This Quick Start guide provides step-by-step directions for activating your Raven XT on Verizon's network.

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

Automatic Activation

One of the special features of your Raven XT for Verizon is the ability to activate itself automatically. When you first power on the Raven XT, it will check to see if it has been activated with account data. If it finds that it has not yet been activated, the Raven XT will attempt to retrieve the account data from the Verizon network using Over-the-Air Service Provisioning (OTASP).

Caution: *You need to have an account with Verizon before you attempt automatic activation. If you have not ordered an account from Verizon for your Raven XT, it will not succeed at activating.*

a. Attach the antenna to your Raven XT.

b. Plug the Raven XT into power.

c. While the LED lights cycle from the outside to the inside, the Raven XT is attempting to download its account information. The download process may take about a minute or two.

Caution: *Do not move your Raven XT while it is being programmed.*

d. When the Network lights illuminate, your Raven XT has successfully completed OTASP and is registered on the Verizon network.

e. If you need to update the ALEOS firmware, change the account information, install the Dial-Up Networking driver, or want to test the account settings of your Raven XT, follow the directions below to use the Setup Wizard. Otherwise, skip the Wizard steps and go to the Hardware Installation section.

Setup Wizard

You can find the Setup Wizard installation on the CD which came with your Raven XT or on the Sierra Wireless website: http://www.sierrawireless.com/support/AirLink/default.aspx.Use only the Setup Wizard for Verizon for best results.

Note: The Setup Wizard requires the Microsoft .NET framework v. 1.1 and Microsoft Windows 98, Windows 2000, Windows XP, or later. You can obtain .NET from Microsoft: http://www.microsoft.com.

Note: If you are setting modem for circuit switched mode, pelase test your connection to ensure your network account has been set up correctly.

1. Wizard: Starting the Setup Wizard
   - **a.** Connect the Raven XT to your computer using a serial cable USB cable.
   - **b.** Connect the power adapter and antenna to your Raven XT.
   - **c.** Install the Setup Wizard by running VerizonSetupWizard.exe and follow the prompts.
   - **d.** Run the Setup Wizard from the Windows Start menu.

     Start>All Programs>AirLink Communications>Setup Wizard>Setup Wizard

Figure 0-1: Setup Wizard

   - **e.** Click *Next* to start the Wizard process.
2. Wizard: Connecting to the Modem

If you connected your Raven XT to the port on your computer, select *Connected to an Ethernet/USB Port* and use the drop down menu to select the Ethernet adapter or USB/net connectionon your computer to which the modem is connected (most computers only have one adapter which will be selected for you). The default password for the modem is entered for you. Click *Next*.

Note: If you want to use USB with the Setup Wizard you will need to first install the driver, refer to Installing the USB driver section in this Chapter.

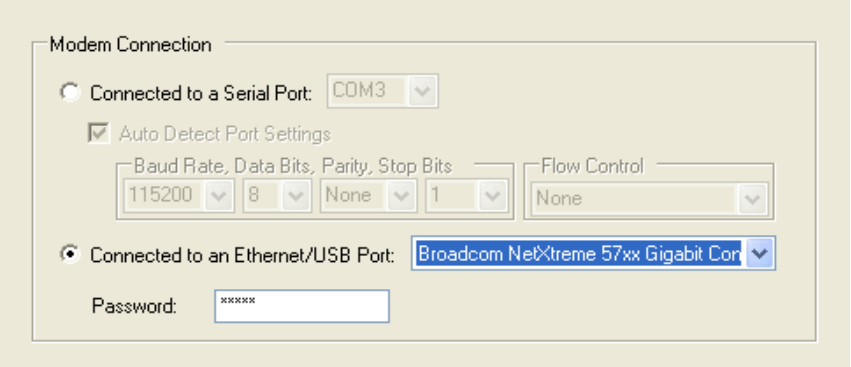

Figure 0-2: Setup Wizard : Ethernet Connection/USB Connection

OR

Select *Connected to a Serial Port*, check Auto Detect Port Settings or select the port from the drop down menu. Click *Next*.

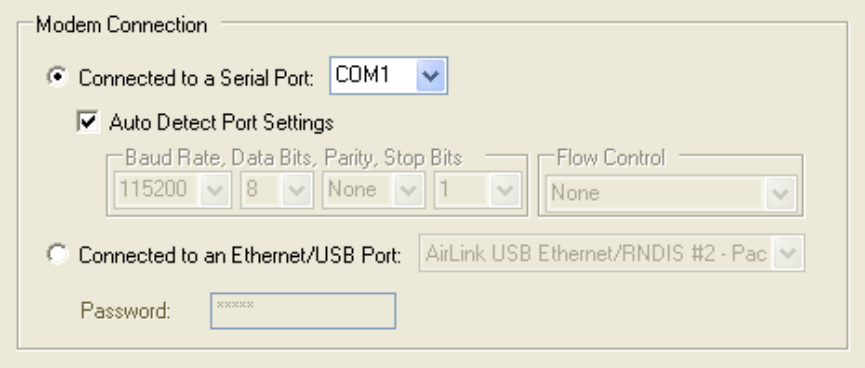

Figure 0-3: Setup Wizard : Serial Connection

Note: You cannot activate with serial and would need USB/net to use set up wizard.

After the Setup Wizard connects to your Raven XT, the details for your specific model will be displayed. If the incorrect model is displayed, press the Reset Button on your Raven XT so the Wizard can attempt to connect again. Click *Next*.

3. Wizard: Selecting Tasks

After the Wizard detects your Raven XT, you will be offered a menu of Setup tasks. Choose the tasks you need from those displayed.

Figure 0-4: Setup Wizard : Task Menu

- **Update ALEOS Firmware:** Check the Sierra Wireless server for the latest ALEOS firmware.
- **Activate Modem:** Configure your Raven XT to connect on the Verizon network.
- **Test Modem Setup:** Verify your Raven XT is properly configured and connecting on the Verizon network.
- **Setup a DUN Connection:** Create a Dial-Up Networking entry for local connection. This part of the setup is only needed if you will be using your Raven XT to connect directly from a computer to the Internet or other network.

Click *Next* when you have selected your desired options.

Note: Based on your selections, you may not need to do all of the following Wizard steps.

Note: Follow this step, only if Update Aleos option has been selected in the task menu checkbox

On occasion, Sierra Wireless releases updates to the firmware for your modem. These updates can include new features as well as bug fixes. To make sure your modem is at optimal performance, it is recommended to *Check for Updates* and *Update Now* if an update is found.

Note: While checking for ALEOS Firmware updates, the Setup Wizard uses the Internet connection on your computer to connect to the Sierra Wireless server. Your Raven XT is not connected to the wireless network for this process.

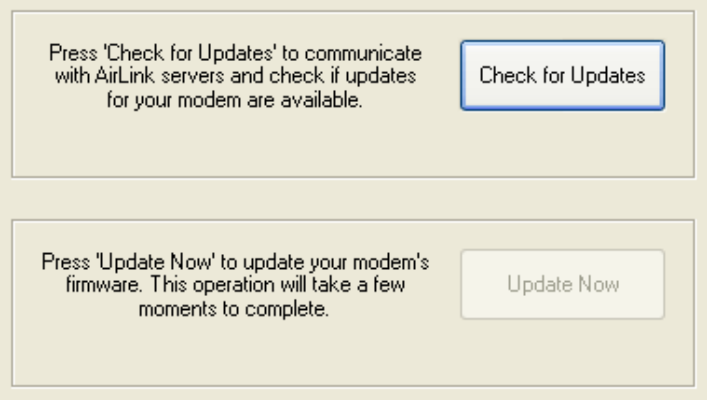

Figure 0-5: ALEOS Update

Tip: *You can download current ALEOS firmware from the Sierra Wireless web site and install it separately.*

Click *Next* when you are finished updating or if you choose not to update.

4. Wizard: Activate Modem

The steps and data required to activate your Raven XT on the Verizon network varies depending on the model.

The Wizard will check the signal strength of your Raven XT (RSSI). Click Next to begin the activation process.

Note: The process may take a few minutes. Progress information will display across the bottom.

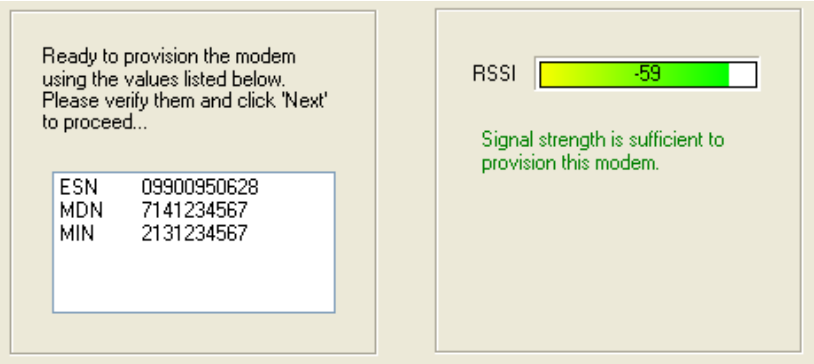

Figure 0-6: Setup Wizard : Signal Test

Tip: *If you have low signal, you may encounter difficulties activating your modem. Try a different location or a different antenna to increase your signal if it is -90 or lower (yellow to red bar).*

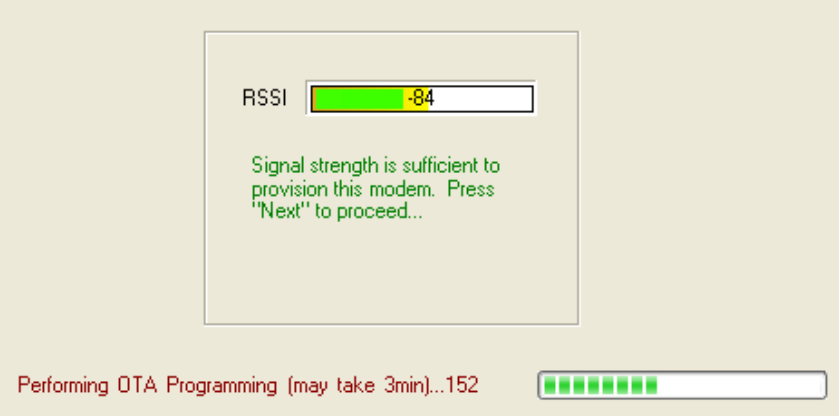

Figure 0-7: Setup Wizard: OTASP screen

Tip: *The Raven XT will get all of its account data from the next work while doing an over the air activation (OTASP).*

Your connection of your Raven XT to the Internet is tested using the Verizon cellular network.

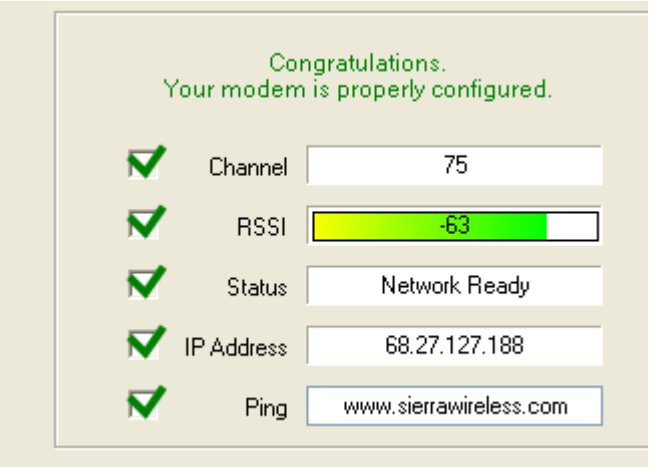

Figure 0-8: Setup Wizard: Connection Test

Green checks in the boxes indicate the tests were successful and your Raven XT is functioning properly. At this point your modem is configured and activated to work on the Verizon network.

*Note: These tests, depending on the strength of your signal, may take a few minutes. Initially, while the tests are being performed, there may be red **X**s in the boxes. The Status line will give an indication of the progress of the connection process.*

If Test Modem Settings shows the status of your modem is “Data Connection Failed - Waiting for Retry”, “No Service”, “No Carrier”, “Network Negotiation Failed”, “Network Authentication Failed”, “Modem Not Registered”, or the Reg Net light on the modem is not lit, double-check your device activation information and return to the Activate Modem step to reconfigure your Raven XT.

Private Networking Data Link is a special account configuration that provides a more secure connection for your Raven XT and often provides a static IP with authentication on an exclusive server. Consult your Verizon representative for details about Private Networking Data Link if it’s something you need for your account.

Before you start the configuration for Private Networking, Data Link, the connection to the network may be checked.

Caution: *Ensure the Raven XT has been activated before you proceed with the Private Networking Data Link steps. Configuring Private Networking Data Link before the Raven XT has been activated can prevent successful activation.*

- The Primary Home Agent (**Primary HA**) and Secondary Home Agent (**Secondary HA**) are the network servers responsible for IP addressing and routing. Fill in the information, as applicable.

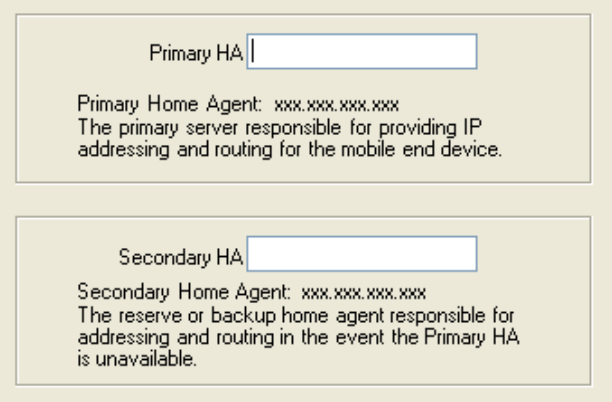

Figure 0-9: Setup Wizard : Primary and Secondardy HA

- **HA Shared Secret Password** is used for both Home Agent's. This may be filled in for you with a password created for your Raven XT for the Verizon network.
- The **AAA/Vision Password** is required by the Authentication, Authorization and Accounting server. This may be filled in for you with default for Verizon.

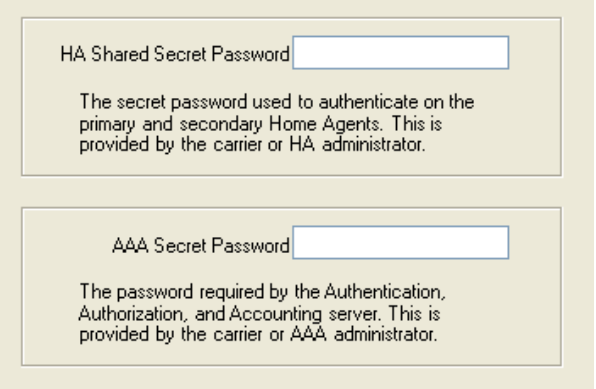

Figure 0-10: Setup Wizard : Passwords

When the Private Networking Data Link configuration is completed, the connection to the network will be tested again.

5. Optional: Setting up a DUN Connection

Note: Using DUN, the speed of the connection is the limited to the connection between the modem and the computer. This may be less than the total bandwidth available with EV-DO HSDPA.

Dial-up Networking (DUN) allows a computer or other device to use the serial port on a Raven XT to connect to the Internet or private network just like an analog modem using a standard phone line. The Setup Wizard will install a driver for the Raven XT and set up the connection between your computer and the Raven XT. You will need to have administrator access on the computer for this section of the installation.

If you already have other modems installed on your computer, they will be listed on the Sierra Wireless AirLink Modem Installation screen. If you have other modems installed on your computer using the same serial port, they may conflict. As long as you do not intend to use them, you can Remove other modems using this menu.

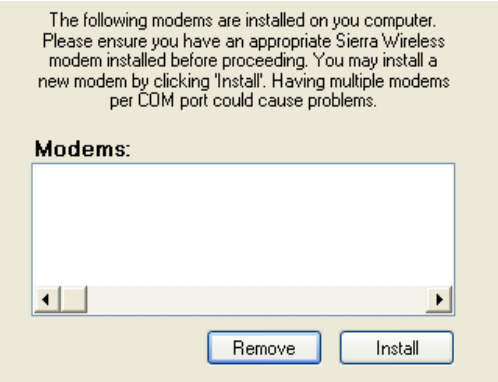

Figure 0-11: Setup Wizard : DUN driver

a. Select *Install* to begin adding the driver for the Raven XT to your computer.

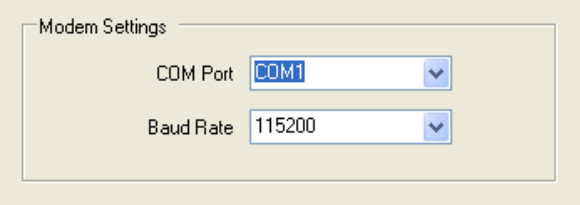

Figure 0-12: Setup Wizard : DUN settings

b. The COM port and speed should match the settings of the Raven XT and where it will be connected (default settings will be pre-entered).

c. Select *Next* to begin the driver installation.

d. You will see a confirmation box from Microsoft Windows to specify if you wish to install this driver on your computer. Select *Continue Anyway* to install the driver.

e. When the driver is installed, you will return to the Modem installation screen. The Raven XT should now be listed (in addition to any other modem installed on your computer).

f. Click *Next* to continue to install the DUN configuration.

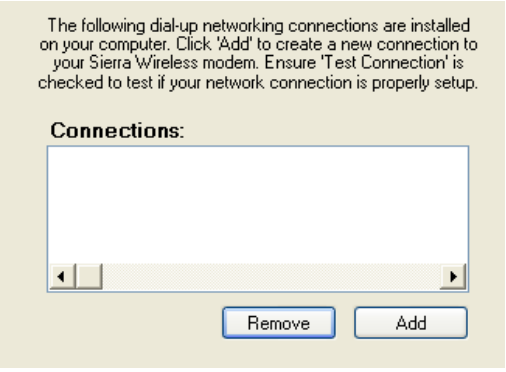

Figure 0-13: Setup Wizard : DUN connections

If you already have a DUN connection installed for a different modem, it will be listed on the Dial-up Networking Connection screen.

g. Select *Add* to create a new connection for the Raven XT.

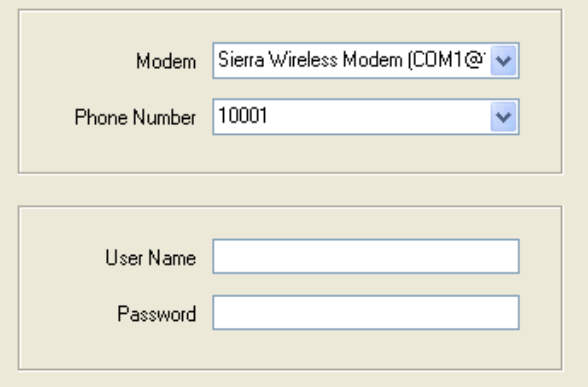

Figure 0-14: Setup Wizard : DUN settings

h. From the drop down menu, select *Sierra Wireless modem*.

i. The defaults for the phone number, user name and password will already be entered.

j. Select *Next* to begin the install.

Figure 0-15: Setup Wizard : DUN

At the completion of the DUN installation, you will return to the Dial-up Networking Connection screen. The AirLink modem should now be listed as a connection.

Your modem is now ready to be used as a DUN device for any applications on your computer needing a network connection. If you have DUN installed for more than one modem, you will need to specify in your application which DUN to use. Unless it is the only DUN, your Raven XT may not be the one your computer sees as a default.

Hardware Installation

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.

Your Raven XT 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 XT 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 XT can withstand.*

Figure 0-16: Raven XT Connectors

Cellular

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.

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 XT 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 XT.

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.*

Note: Your Raven XT does not have a second antenna for received diversity. Received diversity is disabled by default.

Power

This I/O port handles external input and output events. An external device can send digital input to the modem, through the digital I/O port.

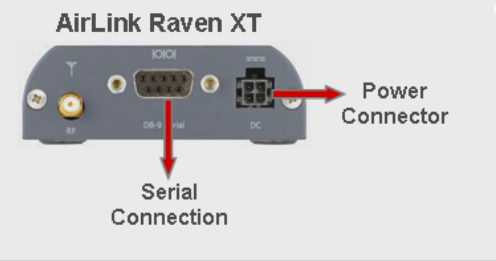

Figure 0-17: Digital 1/0 Port: Power Connector

Warning: ***Risk of electric shock:*** *Only use the supply voltages listed in this user guide.*

Warning: *When using AC to DC adapter the ambient temperature should not exceed 40 ^{0}C.*

Your Raven XT 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 XT.

Note: When using a DC power source (such as a solar cell), Sierra Wireless recommends placing a fuse (1-2 Amp) on the line close to the power source to protect your power source from possible surges due to shorts or other line issues.

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 XT, 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 0-18: USB

Your Raven XT's full-speed (12 Mbit) USB 2.0 port can be connected directly to most computers or other devices using a standard full-speed USB 2.0 cable. If the computer or device you are connecting or the cable is not rated for full-speed, the modem will communicate at a reduced speed to match. The Raven XT functions as a device, not a host.

When it is connected to a computer, the USB port should be seen as a COM port or Ethernet port after the applicable driver is installed.

The Raven XT has a standard mini-B connector.

Warning: *The USB port can only be used in a non-hazardous environment.*

Indicator Lights

When solid, Raven XT indicates a successful connection. When your Raven XT is connected to power and an antenna, there is a specific pattern to the lights to indicate its operation mode.

Figure 0-19: Raven XT 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.
- **Power** - Indicates the power adapter is connected and there is power getting to the Raven XT.
- The **Reset button** (on the left side of the Raven XT) 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 need to reactivate your Raven XT with Verizon.*

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 LED blinks.
- **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.

Installing the USB driver

1. Connect the Raven XT to your computer's USB port

Note: The USB port needs to be in USB/net, which is the default.

When you connect the Raven XT for the first time to a USB port on your computer, Windows should detect a new device and prompt you to install the driver.

Note: Windows will see each port type as a different USB device and will see every port on your computer separately. If you change the port type on the Raven XT or connect to a different USB port on your computer or hub, Windows will see it as a new device.

Figure 0-20: Found New Hardware Wizard

   a. To start the install of the USB virtual Ethernet driver, select No, not this time and click Next.
   b. Select Install from a list of specific location and click Next.

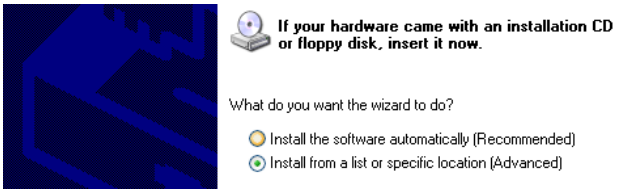

Figure 0-21: Hardware Wizard : Location options

2. Install the driver from a specific location
   a. Select and/or enter the location of the driver.
   - If the driver is on the CD and the CD is in your drive, you can just select Search removable media.
   - If you will be installing the driver from a file downloaded from the Sierra Wireless website, select Include this location in the search and type in the location where you downloaded the file.

b. Click Next.

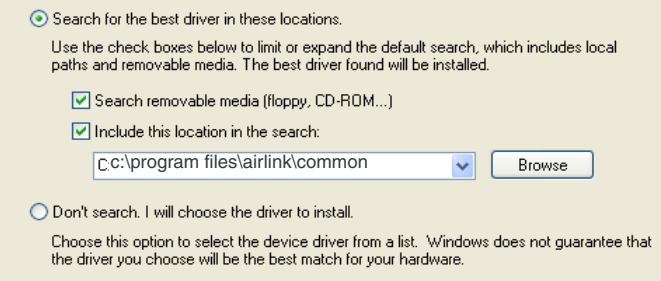

Figure 0-22: Hardware Wizard : Install location

After you select the location, the installation should begin. If you get a message asking if you want to continue the installation, click Continue Anyway.

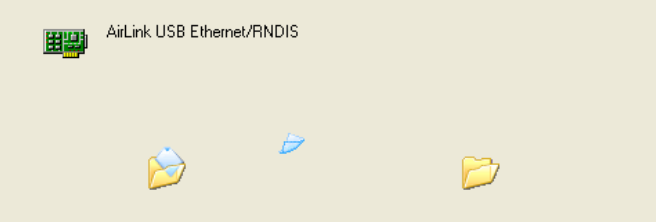

Figure 0-23: Hardware Wizard : Installing

c. Click Finish to complete the installation. The driver should be enabled without any need to reboot your computer.

Figure 0-24: Hardware Wizard : Finish

Note: If you are already connected to the modem with an Ethernet cable, when you complete the installation of the USB Ethernet driver, your computer will not use the USB connection initially. You may need to reboot your computer before you can use the USB port as an Ethernet connection to the modem.

3. Optional: Verify and Configure the Virtual Port Settings

Virtual Ethernet

The USB Ethernet connection will show up in your Network Connections as a Local Area Connection.

Tip: *If you also have an Ethernet card on the computer or have installed the USB Ethernet to more than one USB port on your computer, the USB Ethernet may show up with a number.*

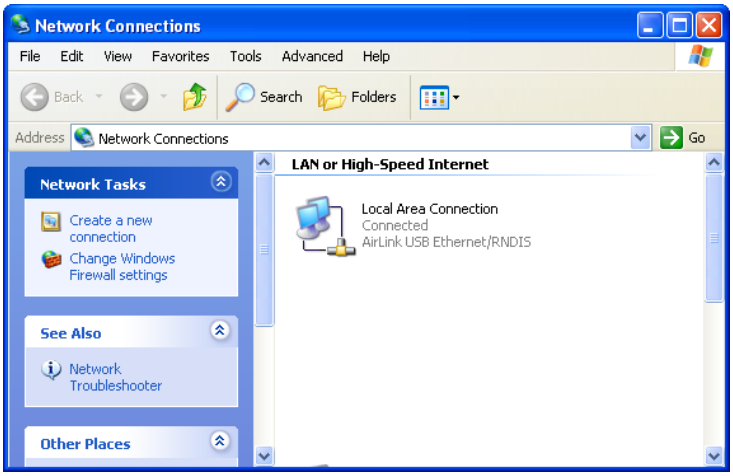

Figure 0-25: Network Connections

You can also verify the installation by looking in the Device Manager.

a. Click on Start > Control Panel.

b. Double-click on the System icon.

c. Select the Hardware tab and click the Device Manager button.

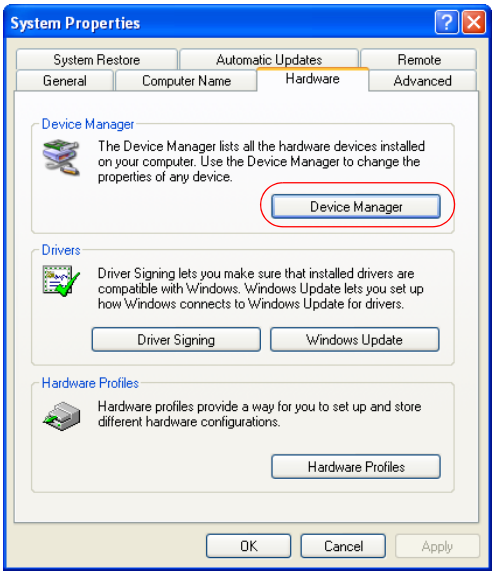

Figure 0-26: System Properties

d. Click on the + in front of *Network Adapters*.

The newly installed driver, AirLink USB Ethernet/RNDIS, should be displayed. If the driver is displayed with a # and number behind the driver name (such as, AirLink USB Ethernet/RNDIS #2), it means more than one is installed on your

computer, most likely for different USB port. More than one copy of the driver should not cause any problems since only the connected port and its driver would be active.

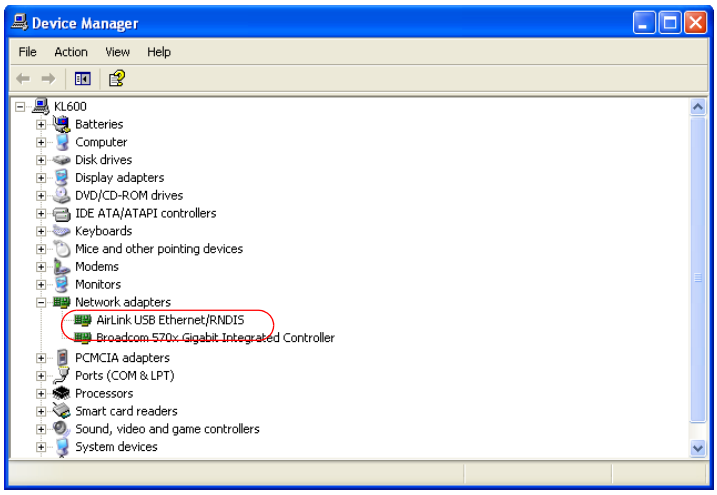

Figure 0-27: Device Manager - Ethernet

Virtual Serial

You can verify the installation by looking in the Device Manager.

Note: You cannot use USB/serial to with the Wizard to activate the modem.

a. Click on Start > Control Panel.

b. Double-click on the System icon.

c. Select the Hardware tab and click the Device Manager button.

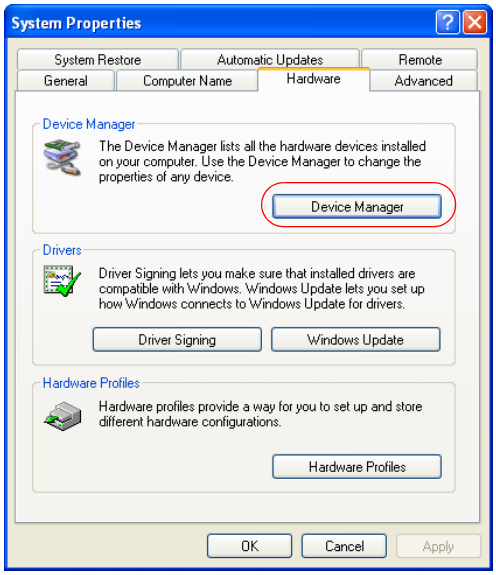

Figure 0-28: System Properties

d. Click on the + in front of *Modems*.

The newly installed driver, AirLink USB Serial Port, should be displayed.

Tip: *If the driver is displayed with a # and number behind the driver name (such as, AirLink USB Serial Port #2), it means more than one is installed on your computer, most likely for different USB port. More than one copy of the driver should not cause any problems since only the connected port and its driver would be active.*

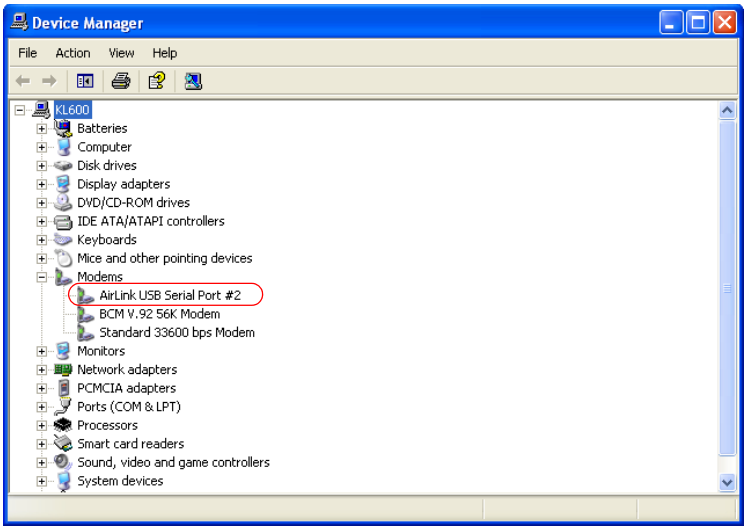

Figure 0-29: Device Manager - Serial

To connect to the modem using the USB virtual serial, most applications or utilities will require you to select or enter the serial (COM) port number. The USB connection will appear as a standard serial port, so you will need to determine its number to connect to it. The driver installation will automatically assign a port or you can change it if you wish to another unused port.

a. From the Device Manager, right click on the driver name and select Properties.

Figure 0-30: Device Manager : Driver menu

b. Select the Advanced tab and click the Advanced Port Settings button.

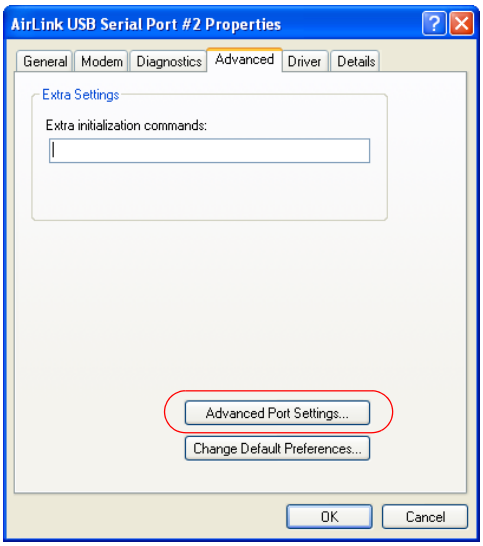

Figure 0-31: Driver Properties

c. At the bottom of the screen, the current port used will be listed. Use the drop down menu to select an available COM port number if you need to change it.

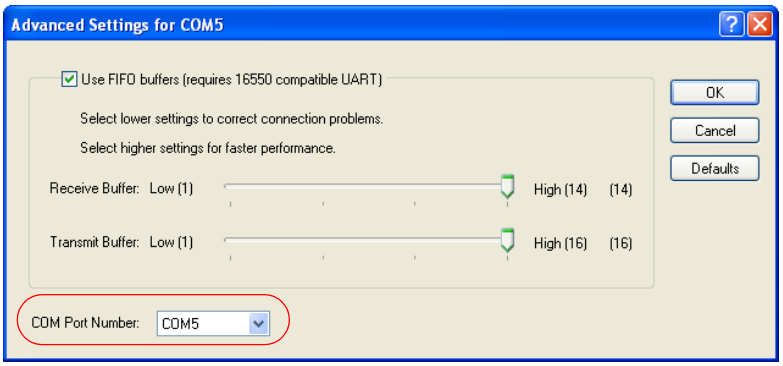

Figure 0-32: Advanced Settings

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