

# Winlink with Signalink USB, Paclink, and AGWPE

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## Installation and Configuration

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## 1. Target Audience

This document describes how to set up a VHF/UHF FM Winlink (WL2K) station using Paclink, AGWPE, and a the Signalink USB. Signalink USB is a registered trademark of Tigertronics.

This document is specifically not relevant to VHF/UHF Winlink user stations running RMS Express because RMS Express is not “AGWPE aware”.

This document will not cover installation and configuration of the Signalink itself since that is well-covered in the user guide that come with the Signalink. As of this writing:

- The Signalink USB documentation can be found at <http://www.tigertronics.com/> (click on Support | Signalink)

This document will not cover the configuration of your e-mail client since that depends on which e-mail client you use. The LOADING\_WL2K\_USER\_PROGRAMS Yahoo Group covers the configuration of Outlook Express as one of their “NEWE-Mail Assignments” (discussed later in this document).

NOTE: In Winlink terminology, this document is focused on the “WL2K User”, which is the end-user of the Winlink e-mail service. That is to say, it is focused on the station to whom a message is being sent (the ‘To:’ in an e-mail message address) or is the originator of a message (the ‘From:’ in an e-mail message address). That being said, these instructions will work for RMS Packet (the primary WL2K Gateway software).

NOTE: I have personally tested this material with the Signalink USB.

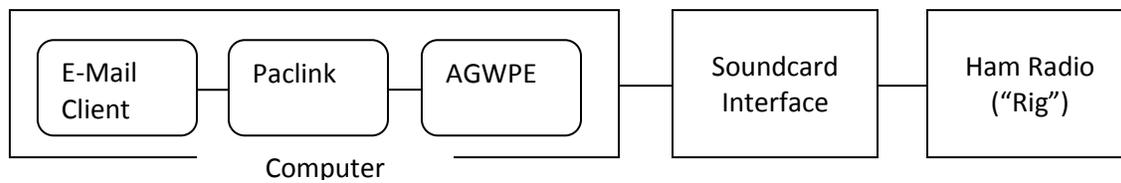
## 2. Overview

There are three types of soundcard interfaces

- Those with their own built-in soundcards such as the Signalink USB. These are usually referred to as external soundcard interfaces. These interfaces include VOX circuitry to hear sound coming out of your computer and trigger the PTT.
- Those that use the computer's internal soundcard such as all the other RIGBlasters and the Donner Digital interface. These are usually referred to as internal soundcard interfaces<sup>1</sup>. These interfaces use a line coming out of one of the computer's COM ports to trigger the PTT.
- The RIGBlaster Advantage, which is a cross between the two types – it has an external soundcard and the VOX circuitry, but also gives you the option of using a line coming out of one of the computer's COM ports to trigger the PTT.

If you are using a Signalink or the VOX capability in the RIGBlaster Advantage, then this document applies to you. If not, there is a companion document for internal soundcard interfaces.

The basic system schematic when using Paclink with a soundcard interface is:



The pieces are as follows:

- a. The E-Mail client is a standard Windows e-mail client that you're familiar with, such as Outlook (as a POP3 e-mail client), Outlook Express, Windows Mail, Thunderbird, etc. You use this software to create your outbound e-mail messages and read your inbound e-mail messages.
- b. Paclink, which is provided by the Winlink people. It handles all the "handshaking" with the Winlink servers such as logging you on, asking Winlink if there are any inbound e-mail messages for you, telling Winlink if you have outbound e-mail messages, and management of the transmission of the messages (e.g., checking for errors and requesting re-transmits). It is going to talk with your E-Mail client to receive outbound messages from and send inbound messages to the E-Mail client.
- c. AGWPE, which is provided by George, SV2AGW (AGWPE stands for AGW's Packet Engine). This software constructs the packets being sent outbound and deconstructs the packets being received inbound.
- d. The soundcard interface (the Signalink USB), which provides isolation between the computer and the rig. With either internal or external soundcard interface, a soundcard takes data coming

<sup>1</sup> When using an internal soundcard interface, you will need a reasonably recent computer (mfg 2005 or after) with at least 2Gig of memory. Netbook-class machines with only 1Gig may have problems. You need to make sure that the soundcard is NOT set to provide audiophile features like sound effects, reverb, bass emphasis, etc.

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from AGWPE and converts it into modulated audio that is sent to the rig (which is how data is sent via radio).

- e. The rig, which is your VHF/UHF FM rig.

### 3. Windows Vista/Windows 7 Install Folders

There are a number of web sites that provide instructions for installing AGWPE and Paclink (e.g., [www.soundcardpacket.org](http://www.soundcardpacket.org)). They all seem to have been written for Windows XP in that they make reference to installing AGWPE and Paclink under the c:\Program Files folder. In fact, the Paclink installer will try to install into a folder under c:\Program Files.

You CANNOT install either AGWPE or Paclink under c:\Program Files when running Windows Vista or Windows 7. Microsoft changed their security model in Vista to eliminate a massive security flaw in the way that they allowed programs to use that folder, and that change required some basic changes to how programs are installed. Neither AGWPE nor Paclink has been updated to follow the new security model – nor have many other programs from smaller software providers. Note that the change Microsoft made is a good thing even if it does create a problem for older software.

Because of this change, people running Vista or Win 7 must install AGWPE and Paclink somewhere other than under c:\Program Files. I have my AGWPE installed in c:\AGW\AGWPE and my Paclink installed in c:\Paclink. I also have AGWMonitor installed (c:\AGW\AGWMonitor) and AGWTerm installed (c:\AGW\AGWTerm). AGWMonitor is useful because it lets you see the contents of the packets flowing into and out of the computer.

If you've already installed AGWPE under c:\Program Files, delete out what you've installed for AGWPE. If you've already installed Paclink under c:\Program Files, you need to remove it using Control Panel --> Programs.

### 4. Installing AGWPE

To install AGWPE, download the zip file (currently at <http://www.sv2agw.com/downloads/default.htm>) and unzip it (“expand it”) into whatever folder you decide to use. The folder will look similar to what you see in *Figure 1 - AGWPE Installed On Computer*, below (note: you may have your computer set up so that you don’t see file name extensions like .exe or .HLP). Note the item “AGW Packet Engine”. Right click on that item and create a shortcut on your desktop. We’ll be using that shortcut in the future to start up AGWPE.

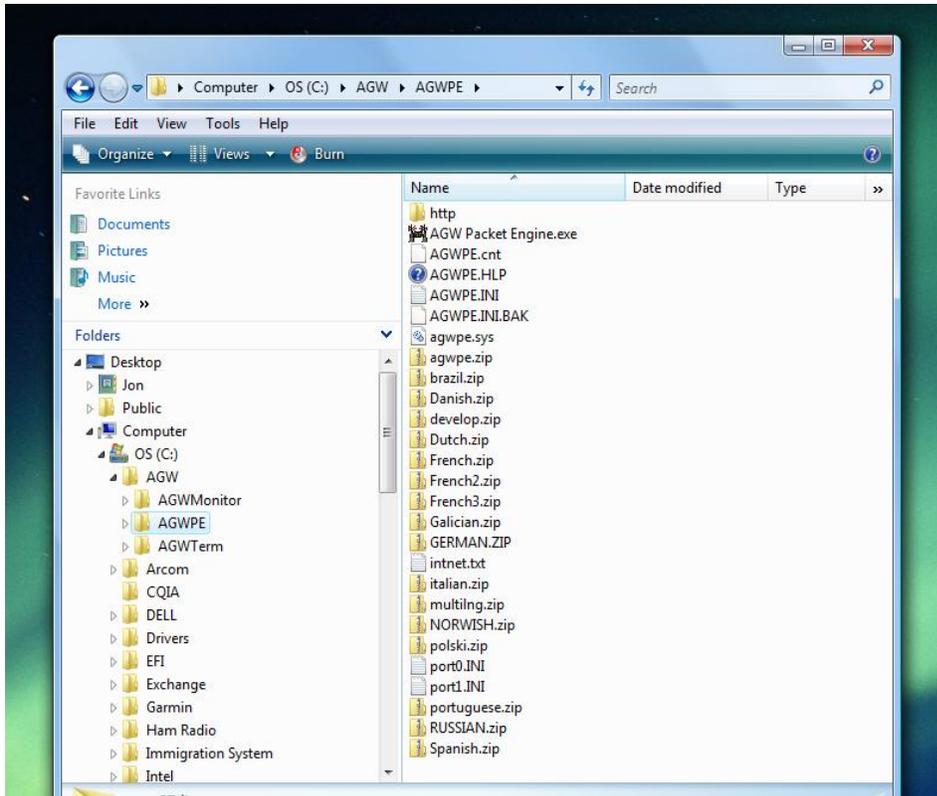


Figure 1 - AGWPE Installed On Computer

## 5. Configuring AGWPE with External Soundcard Interfaces

**YOU MUST HAVE YOUR INTERFACE PLUGGED INTO THE COMPUTER TO CONFIGURE AGWPE!!!**

### 5.1. Soundcard Setting in Vista and Win7

If you're running Vista or Win 7, you have to make a change in the Windows Control Panel. Open up the Control Panel and go to Sound. You'll see something like what is shown in *Figure 2 - Windows Sound Playback Before* for the Playback device, and *Figure 3 - Windows Sound Recording Before* for the Recording Device. The item '2 – USB Audio Codec' is my Signalink USB.

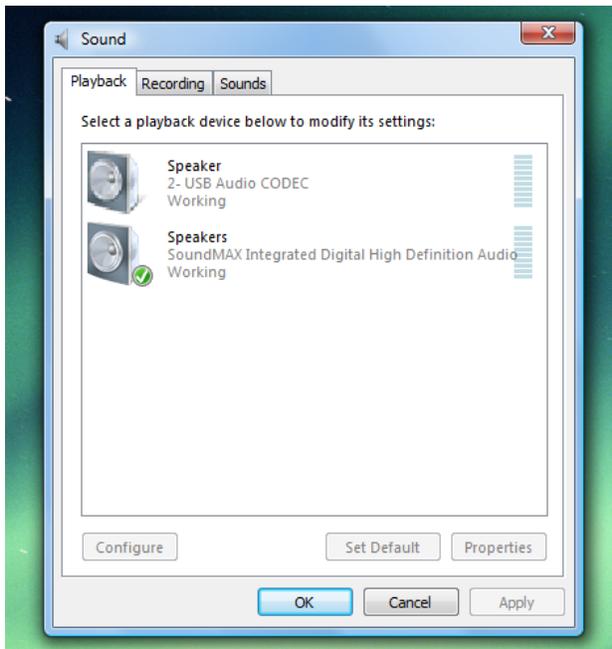


Figure 2 - Windows Sound Playback Before

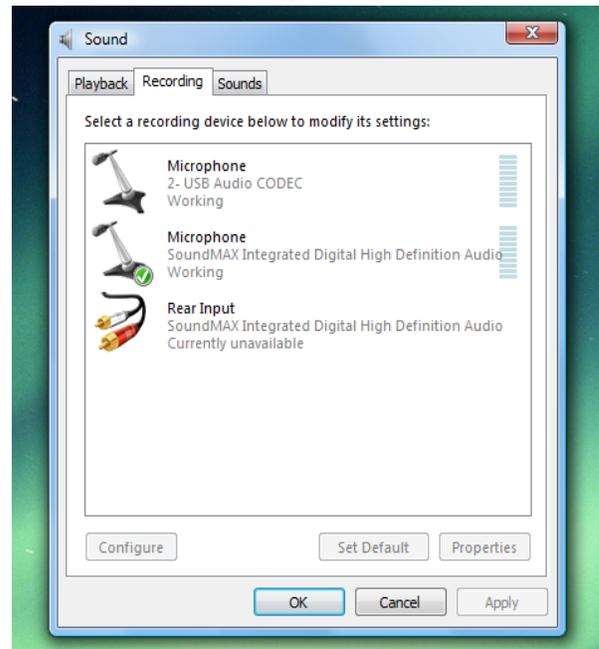


Figure 3 - Windows Sound Recording Before

Notice that Windows has given it the name 'Speaker' as a playback device, but has given it the name 'Microphone' as a recording device. We're going to give it the same name for both Playback and Recording. I gave them both the name 'Signalink' on my computer. George SV2AGW (the developer of AGW) gave them the name 'AGW' on his computer. It doesn't matter what name you give them, as long as it's the same name under Playback and under Recording.

Starting on the Playback tab, click on the 'Speaker 2- USB Audio CODEC' and then click 'Properties'. You'll see something like *Figure 4 - Speaker Properties Before*. Notice the highlighted name 'Speaker'. Just type that over with the name you've selected to give them. For jollies, I also changed the icon to something that looks like a radio, but you don't have to do that. The result is shown in *Figure 5 - Speaker Properties After*. Click "OK", switch to the Recording tab and do the same thing *with the same name*. The Signalink will now have the same name in both Playback and Recording as shown in *Figure 6 - Microphone Properties Before* and *Figure 7 - Microphone Properties After*.

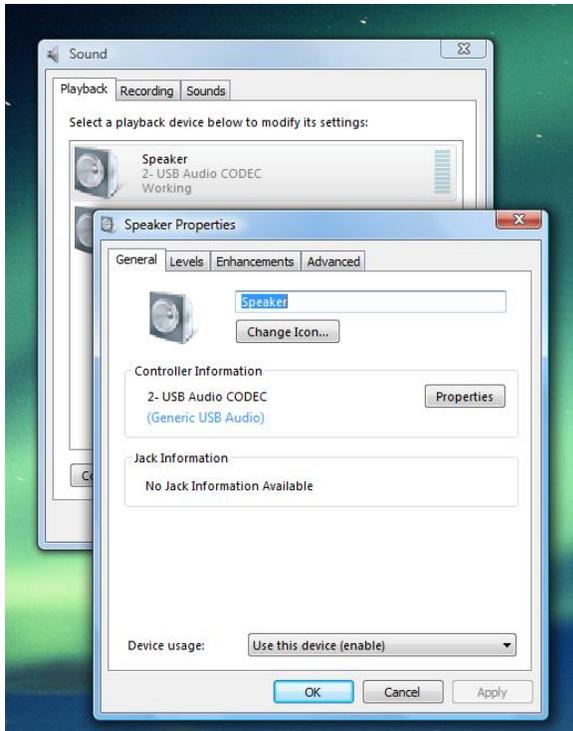


Figure 4 - Speaker Properties Before

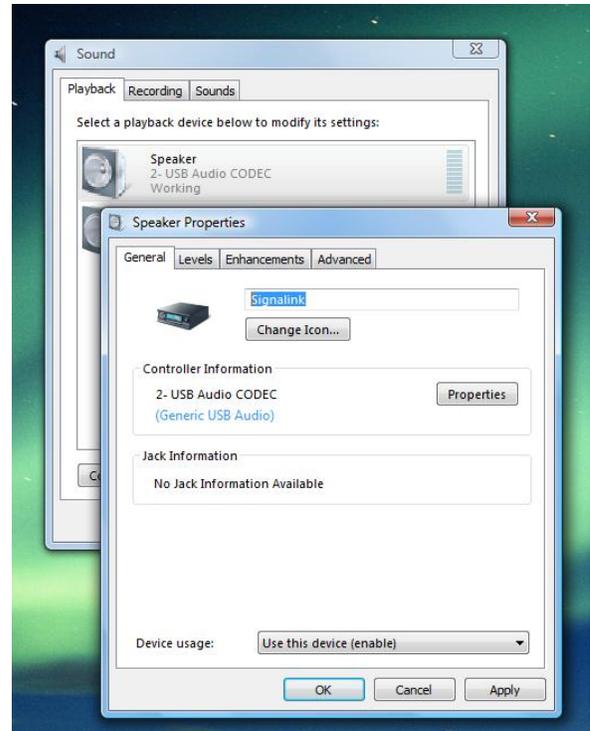


Figure 5 - Speaker Properties After

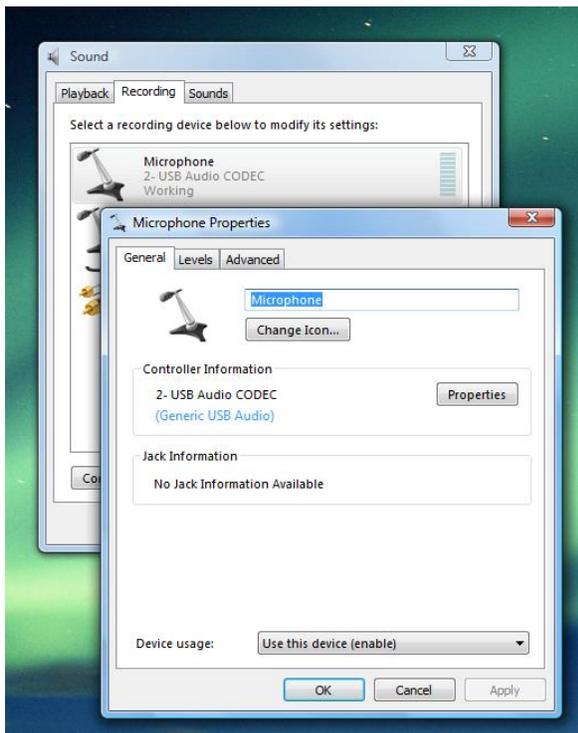


Figure 6 - Microphone Properties Before

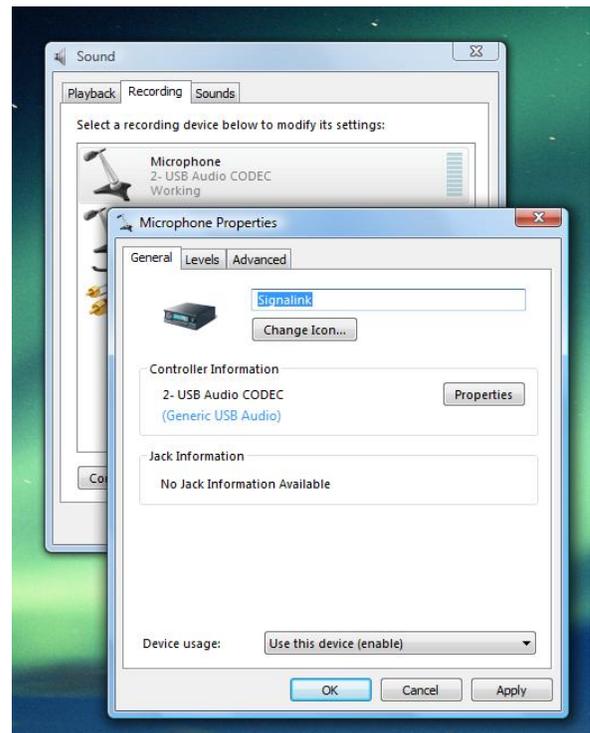


Figure 7 - Microphone Properties After

From now on, as long as you plug your device into the same USB port, Windows will remember these settings (you will have to redo this if you use a different USB port). Notice that you have NOT made the soundcard device your default soundcard!!!

### 5.2. Configuration

1. Start AGWPE by double clicking the shortcut you put on your desktop. You will get a Microsoft “Open File – Security Warning”. Uncheck the “Always ask before opening this file” checkbox and then click “Run”. You’ll get the AGW Packet Engine splash screen. When the splash screen goes away, there will be an AGWPE icon in your system tray. Left click the icon and select Properties.

2. You should see a window titled “RadioPort Selection” as shown in *Figure 8 - RadioPort Selection*, below. For a new install, you’ll see either no RadioPorts at all, or one that says something like “Port1 ?>NOTHING IDLE;”. That’s because we do not yet have anything set up. Click the “New Port” command button. You’ll get a popup telling you that a new TncPort has been created and that you must first configure and then restart. Click OK.

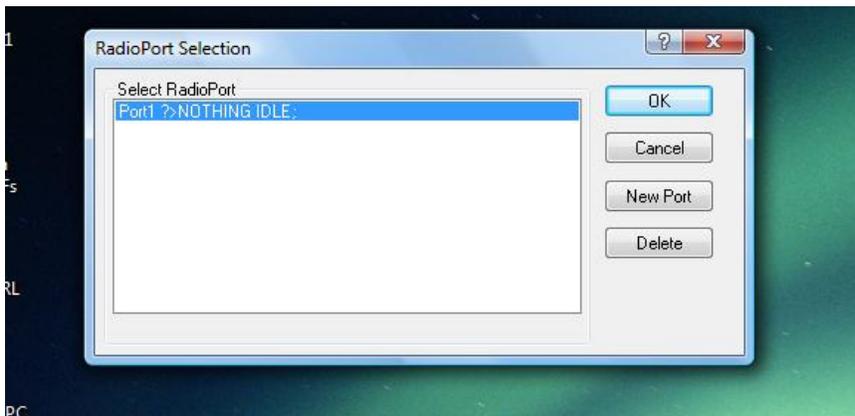


Figure 8 - RadioPort Selection

3. You'll see the “Properties for Port1” screen as shown in *Figure 9 - Properties for Port (External)*, below. As shown, you'll be on the “Tnc Setup” tab. Change the items in the screen so that it resembles what you see in *Figure 9*. Change the field labeled “Tnc Type Select Your Tnc Model” last since changing it will open still another screen!!

#### Notes:

- a. Select “Single Port” unless you're trying to control two different radios with the same computer. Please don't try to do that until you have one radio working correctly ☺
- b. “Select Port”:
  - i. If you have a Signalink, there is no COM port assignment and we do not want to assign a COM device in “Select Port”. Instead, select one of the LPT (printer) ports that you're not using.
  - ii. If you're using the RIGBlaster Advantage AND you are not using the COM Port approach, you will treat it the same as a Signalink.
- c. "SerialPort/modem baud rate" is normally the baud rate between the computer and the serial device (TNC).
  - i. For Signalink, set it to whatever the On Air Baud Rate is going to be (usually 1200 baud).

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- ii. For RIGBlaster Advantage, if you are not using the COM port to control PTT, set it to the On Air Baud Rate as with the Signalink.
- d. "Tnc RadioPort/Port Description" is just a name being assigned to this RadioPort for later reference in Paclink. It will default to something like '145.650Mhz 1200 baud'. You can either leave the name as-is or make it something you feel is more meaningful such as 'AGWPE 1200'.

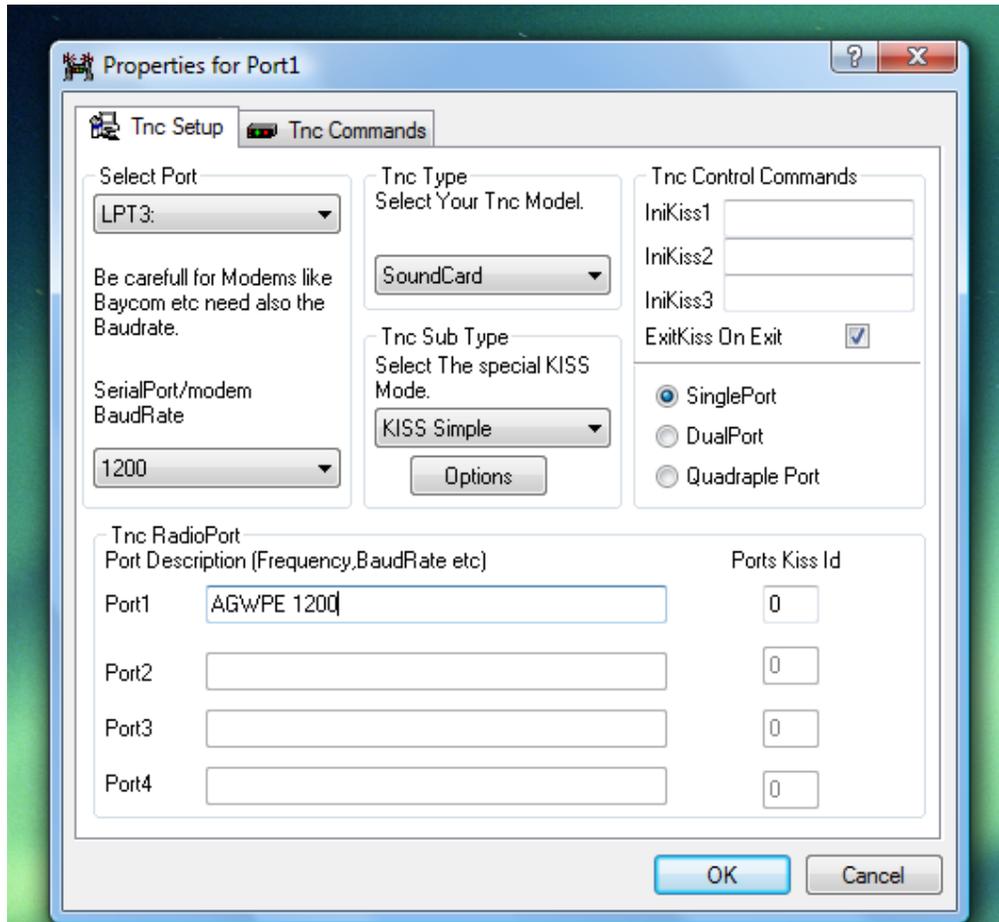


Figure 9 - Properties for Port (External)

When you select the "Tnc Type" on *Figure 9*, the "SoundCard Modem/TNC Setup" screen will open, as shown in *Figure 10 - Soundcard Modem/TNC Setup (External)*, below. Adjust the data in the screen so that it resembles what you see in *Figure 10*.

### Notes:

- a. For a single port (one radio), you will be adjusting the 'Left Channel'.
- b. "OnAir Baud Rate" is determined by the baud rate you're using on your rig, which in turn is determined by the baud rate of the WL2K gateway you're connecting to. Most gateways are 1200 baud.
- c. Under "SoundCard Selection": select the external soundcard by selecting the item that corresponds to the name of the soundcard in your device. For Vista and Win7, you're going to use the name that you set up in Section 5.1. above.

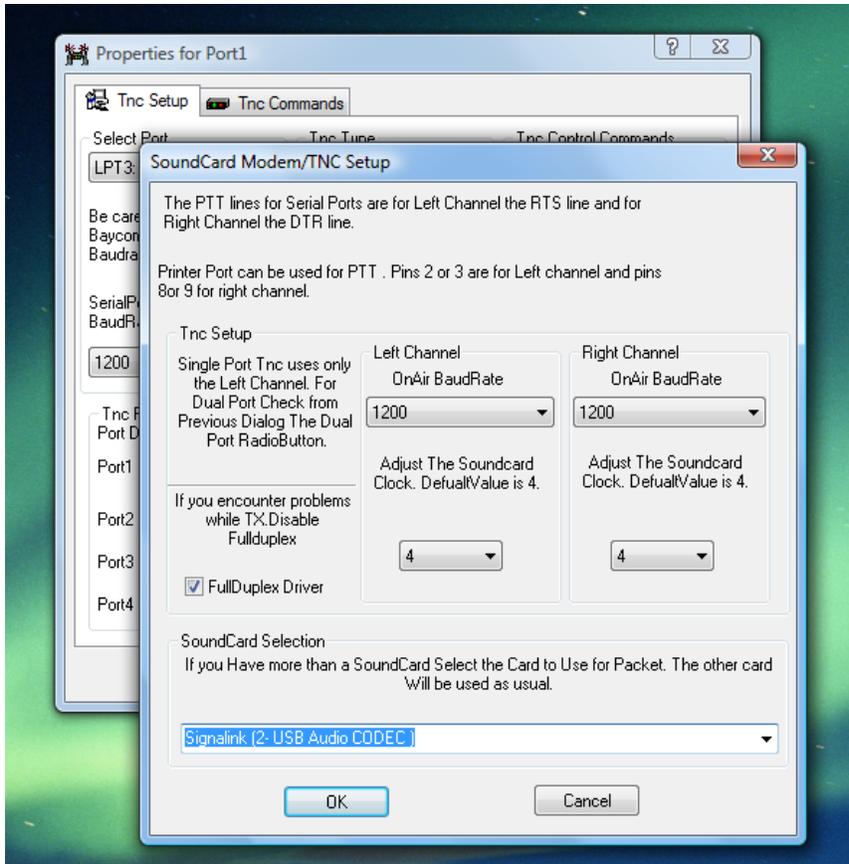


Figure 10 - Soundcard Modem/TNC Setup (External)

You're done configuring, so close the screens ("OK"), exit the program and then restart it.

Since the external interfaces contain their own soundcards and their own gain controls (e.g., the TX and RX knobs on the front of the Signalink USB), it's easiest to control them through those gain controls. Go into your Windows sound settings (Start → Control Panel → Sound) and set the volume for the external soundcard playback *and* recording to the max ('100'). Then use the TX and RX gain knobs on the front of the soundcard interface to adjust gain.

There are all sorts of instructions on the internet for calibrating the computer's volume settings (playback and record) when using AGWPE. I normally operate my Signalink with the TX at the 9 o'clock position and the RX at about the 11 o'clock position and find that works well with a wide variety of radios. Still, you may find that you have to adjust the gain by experimenting a little on the air.

### 6. Installing Paclink

As of this writing, the Paclink software is located at <http://www.winlink.org/ClientSoftware>. Paclink is downloaded as a Windows Installer Package, and double clicking on it will start up a standard Windows install process. As previously noted, it will attempt to install itself under the c:\Program Files folder and should not be installed there if you're running Windows Vista or Windows 7. I have my Paclink installed at c:\Paclink.

When you install Paclink, you should see a folder arrangement similar to that shown in *Figure 11 - Paclink Installed On Computer*

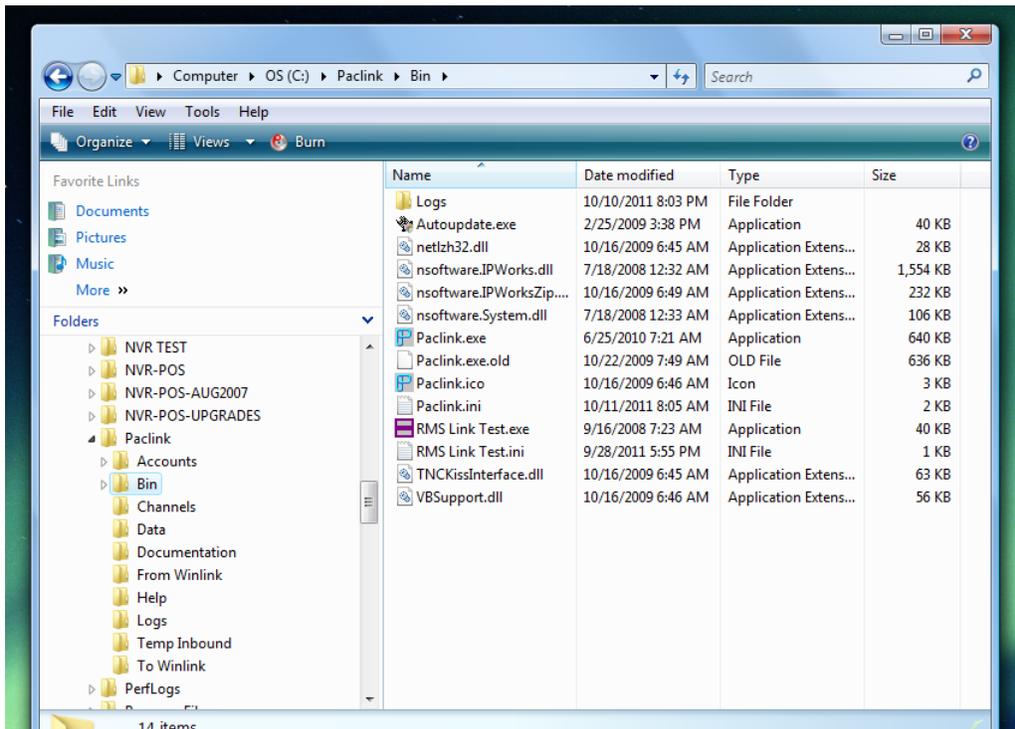


Figure 11 - Paclink Installed On Computer

Note the Application file Paclink.exe in the Bin folder under c:\Paclink (if you have the display of extensions turned off, you'll see a couple of different files called 'Paclink' and you'll have to go to Views → Detail to see which one is the Application. That's the actual program file and you should create a shortcut to it on your desktop so that you can double click on the shortcut to start Paclink.

### 7. Configuring Paclink

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**You always want AGWPE to be running when you start Paclink because Paclink is going to be using services provided by AGWPE. Wait until the AGWPE splash screen closes before starting Paclink.**

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The basic configuration and operation of Paclink is explained in a number of places on the internet. If you're a newbie to Winlink, you should join the Yahoo! Group called 'LOADING\_WL2K\_USER\_PROGRAMS', which is specifically intended to help people get started with Winlink. The 'Files' section of the group has a folder called 'NEW E-MAIL ASSIGNMENTS' containing a number of files that start with the words 'NEWE-Mail Assignment'. Do the following assignments:

- NEWE-Mail Assignment #1.pdf
- NEWE-Mail Assignment #2.pdf
- NEWE-Mail Assignment #3.pdf
- NEWE-Mail Assignment #4PACLINK.pdf

Note however that you can bypass the pieces that deal with Winpack because you're not going to be using that functionality.

Assignment #4 tells you how to configure a typical e-mail client (in this case Outlook Express) to work with Paclink. Configuring to other e-mail clients is similar in concept but may have slight differences depending on the client.

It is not worth reading through assignments 5, 6, and 7 because they are focused on using Paclink with a TNC and you're not using a TNC. Instead, the material that follows replaces the material in those assignments.

When you start Paclink for the first time, it's best to be connected to the internet because Paclink will try to do an auto update and will give you all sorts of nasty messages if it can't find the internet. If you are connected to the internet, you will see a string of auto update messages. Once the auto update is finished:

1. If this is a new install, the "Paclink Site Properties" screen will open automatically. This is all the same regardless of whether you're using a TNC or soundcard interface and filling it out is explained in Assignment #4. My site properties screen is shown in *Figure 12 - Paclink Site Properties, below*.

A few points:

- a. "Callsign": This is going to become your e-mail address @winlink.org, so put something in there that you want as your Winlink e-mail address. However, it's also going to be the callsign that Paclink is going to send over the air. Thus, you do want it to be a valid ham radio callsign.
- b. "Password for POP3/SMTP": You're going to pick a password that you're going to use in your e-mail client. It is not the same as the password you can establish on the winlink.org website to get view your Winlink e-mail via a web browser.

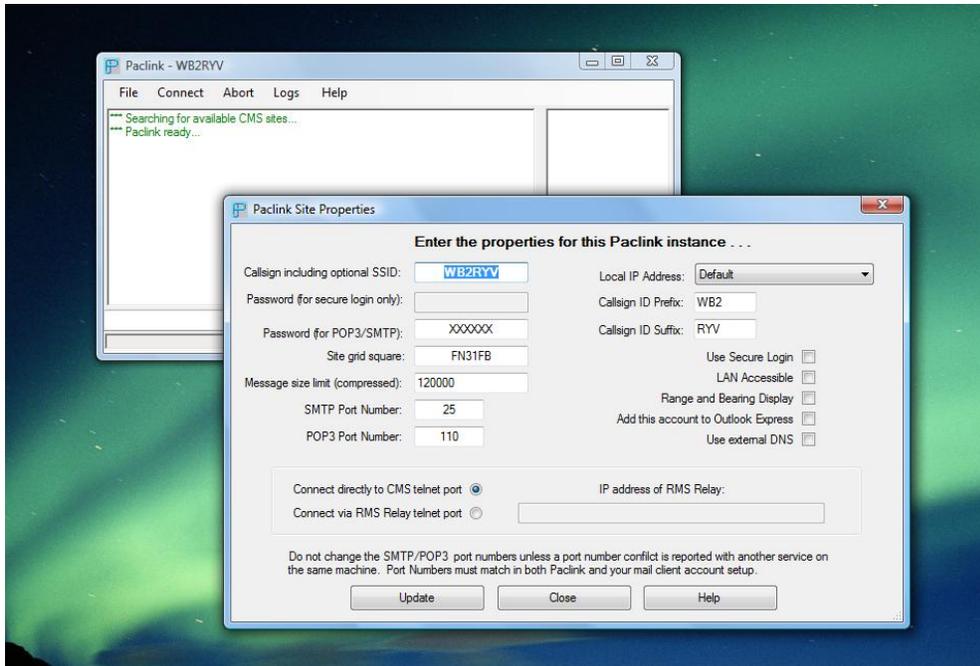


Figure 12 - Paclink Site Properties

Click Update to save your site properties.

2. Because you're using AGWPE, you do have to tell Paclink where to find AGWPE on your computer. From the Paclink main screen, select File → AGW Engine and the "AGW Engine Properties" screen will open, as shown in *Figure 13 - Paclink AGW Engine Properties* below. A few points:

- a. You should have AGWPE running on the same computer as your Paclink – at least as a beginner. On the assumption that you have AGWPE running on the same machine on which Paclink is running, select 'Local Machine' and then enter the path to where you have the executable for AGWPE installed (in my case c:\AGW\AGWPE).
- b. AGW Host will default to "Localhost" and AGW Port will default to "8000". You normally wouldn't have an AGW User Id or AGW Password, so leave them blank.

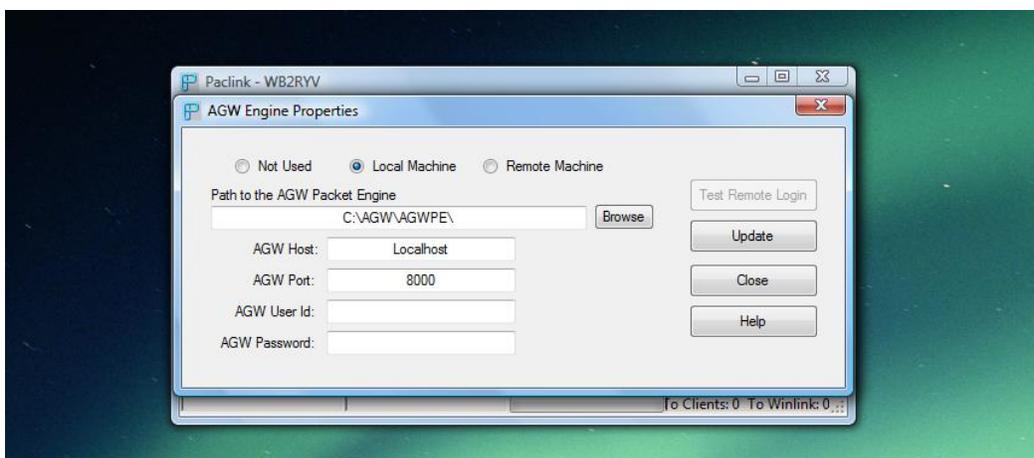


Figure 13 - Paclink AGW Engine Properties

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Click Update to save your data.

3. You now have to give Paclink some information about each of the Winlink gateways you'll be contacting. Paclink calls the set of information about a gateway a "channel". So for example, if you are going to set up data for two different gateways, you would have two "channels". Since you're using AGWPE, you will define "Packet AGW Channels" (for TNCs you would have defined "Packet TNC Channels"). From the Paclink main screen, select File → Packet AGW Channels. The "Packet AGW Channels" screen will open, as shown in *Figure 14 - Paclink Packet AGW Channels*, below. Notes:

- I often connect to the N1EZT Winlink gateway in the Stamford CT EOC on 145.030MHz, so I set up the channel with a "Channel Name" of 'N1EZT 145.030'. I could have called it 'Stamford CT Winlink System' or 'Stamford EOC' or anything else I wanted to call it because it's just a name.
- The "Remote Callsign" is the callsign of the gateway. Your transmissions to the gateway will have this callsign in them and the gateway may not answer if you are not sending the correct callsign. Notice that gateways often have SSID appendixes as part of their callsigns. For example, the SSID of the N1EZT Winlink gateway is -10, so the "Remote callsign" is 'N1EZT-10'. Check each gateway you're going to use because not everyone uses the SSID or they use something other than -10 (although -10 does seem to be the default for Winlink stations).
- AGW port engine: You should see the name you set up in AGWPE. For example, I set up my AGWPE as 'AGWPE 1200', and as you can see that name shows up in Paclink.
- If you're new to Winlink, leave everything else as defaulted, and make sure that the box labeled "Channel enabled" is checked.

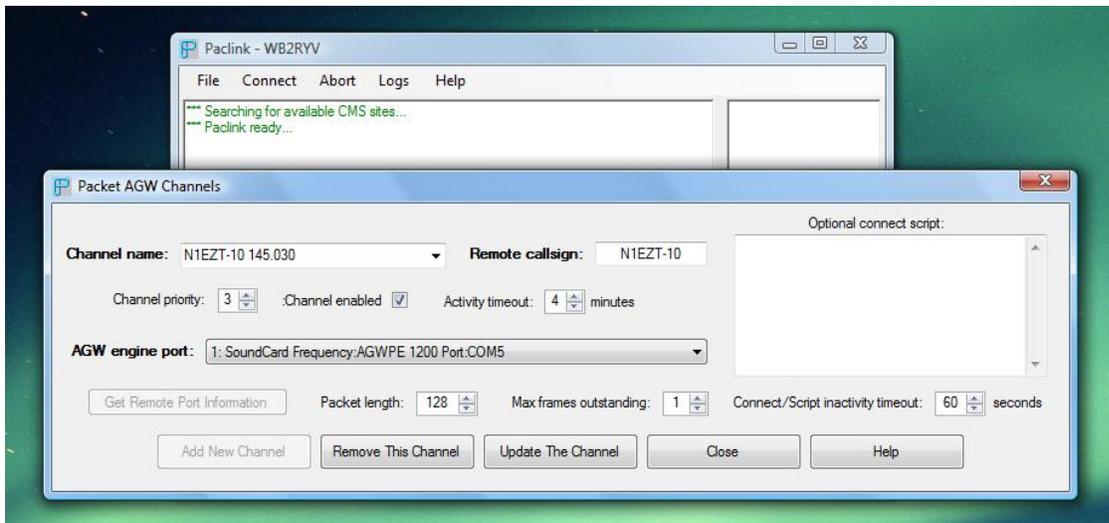


Figure 14 - Paclink Packet AGW Channels

Click "Add New Channel" if this is a new channel or "Update The Channel" if you're just updating an already existing channel.

Set up a channel for each gateway you think you'll be accessing. You can always add additional channels later.

### 8. VOX Delay Setting

Since you're using the Signalink's VOX circuitry to trigger the rig's PTT, you must set the VOX delay. This control tells the VOX circuitry how long it should keep the PTT triggered AFTER it stops hearing audio. On the Signalink USB the VOX Delay is controlled by the 'DLY' knob on the front of the unit. On the RIGBlaster Advantage, the knob is labeled 'VOX Delay'

For Winlink, you want the VOX Delay to be absolutely minimized. That's because Winlink gateways do not have any delay built in between their receiving a connect string and their responding to that connect request. If there is a delay on your end because of the VOX Delay feature, the rig will still be in transmit when the gateway acknowledges the connect request, Paclink will never receive the request, and you will never have a connection with the gateway.

This means that the VOX Delay should be set fully counterclockwise (no delay).