Dire Wolf and Outpost PM

John Huggins, KX4O, asked me to experiment with the prototype VAPN packet node. At first it was just if I could hear the beacon which, being 5 miles away, I did. Then he wanted me to test the Bulletin Board System (BBS) functions using the Terminal Node Controller (TNC) built into my Kenwood TS-2000 using the standard TNC command set. All worked as expected. Then John asked me work with and test the VAPN BBS with Outpost.

Outpost Packet Message Manager

Outpost PMM is PC based software client that allows you to work with an amateur radio BBS much like you would with your own email application. It “front-ends” the interaction with a BBS using a GUI interface and allows the receiving and sending of BBS messages without the end user needing to know the primitive traditional BBS command set. It allows the user to compose messages and to store sent and received messages in various folders on the local PC.

Outpost’s primary function is to be part of an ECOM response system. It has features to support that purpose with built in message forms and reports. It also allows the use of tactical call signs in emergency response situations. However this doesn’t mean it cannot be used for other purposes such as VAPN’s uses.

I was successful in getting Outpost working with the VAPN BBS with my TS-2000. I will explain more on setting up Outpost later in this article.

Dire Wolf

John’s goal was to get away from having a hardware TNC and to using a computer soundcard and software. This is not a new idea, George Rossopolos, SV2AGW, packet engine AGWPE has been around since the late 1990’s. It has been wide use since then and there are many programs that have been written using this application, Outpost being one of them. John was interested in using Dire Wolf as the soundcard application because of it superior performance.

I had never heard of Dire Wolf before John asked me. Dire Wolf is an acronym for “Decoded Information from Radio Emissions for Windows Or Linux Fans”. It was developed by John Lagner, WB2OSZ. As the name implies it can run on PC’s and even a Raspberry Pi. It can handle data rates from 300 to 38,400 bps depending on the protocol. It can also accommodate up to six sound ports. It can decode more than 1000 error-free frames using WA8LMF TNC Test CD.

Dire Wolf was written primarily for APRS as a simple standalone APRS decoder, digipeater, APRStt gateway or Internet Gateway (IGate). But it can act as a virtual TNC for many other applications. It can interface with applications by the AGW network Protocol, KISS network protocol or KISS serial port. Recently Dire Wolf was enhanced to support connected mode, APRS is unnumbered information – no specific destination, where in connected mode is interacting with a specific destination.
Putting It All Together

I should describe my set up here at my QTH. I am using a Dell Latitude laptop running Windows 7 Ultimate, a Tigertronics SignaLink USB sound card interface and a Kenwood TS-2000 multi-band transceiver.

So forward I went. John thought at first using Dire Wolf via its virtual serial port. In order to try to connect an application serial port you need to use a virtual serial null modem connection. This was accomplished using freeware software called “com0com”. It creates a virtual null modem where the application uses one of the virtual com ports for input and using the other virtual com port as the input to Dire Wolf.

I configured Outpost to use the virtual null modem com port input and pointed Dire Wolf to output side the null virtual com port as input. I then set up Dire Wolf to use my SignaLink sound card for transmit and receive.

So I then tried to get it all to work. I checked and double checked everything to no avail. I could not get Outpost to communicate with Dire Wolf. I looked and I couldn’t figure out what was wrong. Finally it hit me what the problem was. Dire Wolf’s serial input is a KISS TNC. In serial mode Outpost is looking for a hardware TNC. The very nature of the way it works with a serial port, “reading” command prompts and “responding” with commands, it would not work with a KISS TNC because by its very nature a KISS TNC offloads all of those process to software.

So how can I make these two applications work together? Outpost can interface with AGWPE. Dire Wolf accepts the AWGPE network protocol. So I put the two together and that was it, I successfully was able to have Outpost interact with the VAPN BBS using the Dire Wolf TNC.

Setting It All Up – Outpost

All of the configuration settings for Outpost are accessed via the setup menu.

The first item to set up was my station ID.

![Station ID is K4DNH](image)
Since I was just testing there was no need for any other identification but as you can see many other options are available. At this time there was no need for using passwords.

The next item to set up is the Interface (yes I know this is backwards in order in the setup menu). The first tab is type.

Select New, Type in a name describing the interface, optionally a description and select the “AGW Packet Engine” and click “Apply”. This will enable the AGWPE tab. Select this tab.

For testing purposes no changes were necessary as Dire Wolf’s default AGW network interface defaults to these parameters. However note the TNC radio port. Since Dire Wolf is capable of multiple ports this value may be different in a multi-port configuration.
That is all that needs to be done for the interface settings. The next thing is the BBS setup parameters.

Select New. Give this BBS setting a name; in this case I named it W4VPN. The connect name should match the name of the BBS you are connecting to. You can put in a description. I let “BBS Type” and “Non-identifying BBSs” default.

Under Set/Get TNC you select the interface we just created above.

The next three tabs, “Prompts”, “Commands” and “Init Commands” I let default.

Under “Retrieve Commands” tab
I checked “Retrieve Private Messages”, “Retrieve NTS Messages” and “Retrieve Bulletins” although for initial testing I probably only needed to check “Retrieve Private Messages”.

The next tab “Path” is critical for the VAPN BBS.

In order for me to connect to VAPN the parameters must be correct using the KA-Node settings. So select the KA-Node radio button. Then these parameters were set exactly to these values:

**Node Name**: “W4VPN”

**Successful Connect Message**: “* * * Connected” = exactly what the BBS sends after the station connects with the node.

**Connect command**: “BBS” = VAPN does not default into BBS mode. This is the command to access the BBS of the node.

I let the other parameters default.

That is all that I needed to configure for Outpost.

**Setting It All Up – Dire Wolf**

Dire Wolf does not have a UI. It does have a status screen that displays the configuration and color coded status messages.
The entire configuration is done via Dire Wolf’s direwolf.conf file. It is a simple text file that is well documented that you use to configure all of Dire Wolf’s settings. A more in-depth explanation and details of all the configuration parameters are in the surprisingly detailed, and so far kept up to date, User Manual that is a separate download from the same directory that you download the setup file from.

Here is the beginning of the file:
Keeping in mind what I wanted to accomplish: Use Dire Wolf’s sound card TNC, using my SignaLink USB sound card interface, to interact with VAPN’s BBS using Outpost. As stated above, I needed to use Dire Wolf’s AGWPE network interface protocol.

Notice that there are a lot of options given as examples and you simply uncomment (remove the ‘#’) the parameters you want and comment out (put in the ‘#’) the ones you don’t.

First thing you need to do is set the device (my SignaLink) and how it is to be used. I am only using one device and one channel (sound channels – if you are using a stereo device L and R could be two different channels, each independently handling their own packets).

Since I am using my SignaLink I commented out the other “ADEVICE” settings and uncommented the “ADEVICE USB” line. I then verified that “ACHANNELS” was set to one “1”.
The next thing to configure is each specific channel properties. Each channel is separate with its own call, modem speed, DTMF and PPT properties.

Since I am only using one channel, I set the call sign to my own call sign. Then I uncommented out the "MODEM 1200" line. As you can see by the other examples you modify the behavior of the modem parameters in a variety of ways. There is no need for a DTMF decoder. Not show are the PTT parameters, because I was using VOX, however those can be set for each channel too.
The final settings to verify are the Virtual TNC Settings.

As you can see this is where the AGWPORT is set and the KISS network port are set. I left them to default. **Note the AGWPE port number is the same port number as specified in the Outpost Interface->AGWPE tab.** Notice also that this is where I uncommented the “NULLMODEM COM3” and set the value for the virtual null modem when I was trying to get Outpost to work via a COM port. I commented this line out when I switched to using the AGWPE network port.

There are many other Dire Wolf settings that follow including beaconing, digipeating and a bunch of APRS settings. This is a testament to how versatile and powerful Dire Wolf is as a virtual TNC.

After putting all of the pieces together everything worked as I had hoped. This is the simplest of scenarios. But hopefully you can see how VAPN can build on these tools to achieve to goals of the organization.