

Packet Mail: The “New” Old-School Digital Mail

John M. MacFarlane, VA7PX

I first encountered VHF-based Packet Radio while living on Mayne Island in British Columbia that had no internet service. From there I could barely access VE7CC’s DX spotting service located about 80 kilometres up the Fraser River. When the internet finally arrived, I dumped the Packet Radio station assuming that its day was done. Fast forward 20 years and I met Peter Tryon, VA7PWT, who has developed his own software that has breathed life back into Packet Radio. His vision is to use Packet Radio as another fun digital mode that expands VHF as a useful function for equipment that almost every Amateur already possesses.

As described on its Wikipedia page, Packet Radio is a digital radio switching scheme which has the following attributes:

- Transmitted data is broken into packets, each of which contains a destination and typically the source address
- A transmitted message may be broken into a sequence of packets before transmission, which are then re-assembled into the original message upon reception
- Packets for multiple destinations can be transmitted on the same radio link in an asynchronous fashion
- A packet may be addressed (broadcast) to all possible recipients rather than a specific one (broadcast)
- A packet may be stored and subsequently forwarded towards its destination by a network node

Packet communications was developed in the United States in the early 1970s by IBM and other big computer companies for use on wired networks, but it was Canadian Amateurs who made it accessible for use by Amateur Radio operators.

In 1978, several Amateurs of the Montreal Amateur Radio Club (MARC) – Robert Rouleau, VE2PY, Bram Frank, VE2BFH, Norm Pearl, VE2BQS, and Jacques Orsali, VE2EHP – started serious experimentation that led IBM employee Doug Lockhart, VE7APU, and the newly-formed Vancouver



Figure 1: The VA7PWT packet station setup.

Area Digital Communications Group (VADCG) in Vancouver to develop the first terminal node controller (TNC) and market it to Amateurs, allowing them to use Packet on the air.

The “Vancouver Protocol” offered several technical advantages, but AX.25 gained wider adoption due to early standardization and interoperability, ultimately becoming the dominant packet protocol in Amateur Radio.

AX.25 Packet Radio’s disadvantages included a poor method of resolving channel congestion – when more than one station tried to use the single radio channel at the same time – and the fact that packet routing information needed to be included in each packet’s header. This is called “source routing”, which is generally inefficient in congested or dynamic networks.

Over the years, interest in Packet Radio faded from popular use with only some diehard old school Amateurs continuing to use it. Some groups continued using Packet Radio as their preferred mode for Emergency Response communications. I was skeptical when Peter started promoting Packet Radio as a “fun digital mode”, but I had a VHF radio that like so many others was idle most of the day. His concept seemed to breathe life back into VHF for me so I got involved. He also demonstrated the “off-grid” capabilities for using it for easily passing mail to other

stations. In no time I was on the air having fun running Packet Radio to stations many kilometres from my shack.

Peter works with British Amateur developer Jon Welch, G7JJF, who is working on the development of the WinTNC program. Peter has developed his own software that packaged up many freeware programs and simplified and condensed their linking, configuring and operation. He has successfully created a small free software package that he calls “VA7PWT Packet Mail” and it is available at <https://va7pwt.org/>.

Some of the screens and functionality of VA7PWT Packet Mail are provided on the next page. Figure 2 shows the central control screen most often seen in the operation of the program, which consists of a main menu with straightforward buttons leading to main functions.

The main control screen (see Figure 3) is where various components are activated. The mail message form (see Figure 4) is very simple and straightforward to use. You fill in the blanks just as you would with any email message.

Most current and many older transceivers can be used for Packet with either an internal terminal node controller (TNC) or an external sound-card interface. If you are on the air now you probably have most, if not all, the equipment needed and with a bit of free software you could have a full Packet operation at your station.

Figure 2: The Main Menu Screen

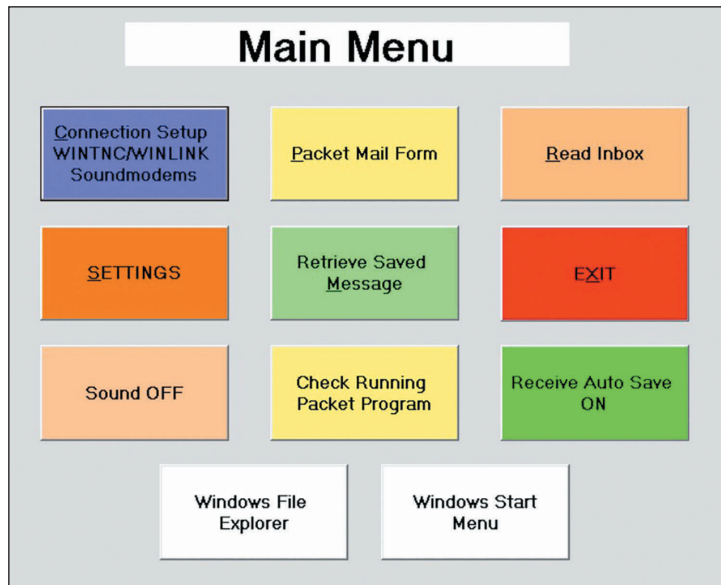


Figure 4: The Mail Message Form

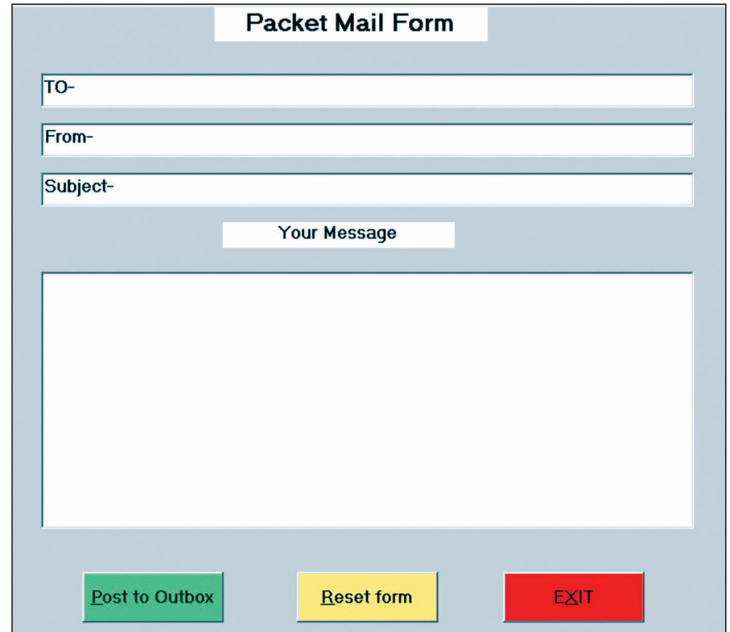
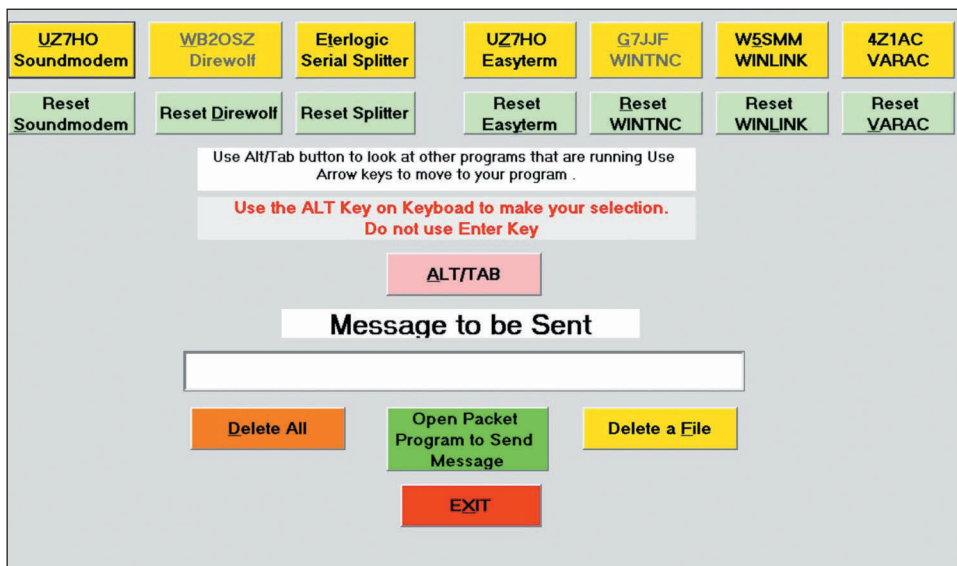


Figure 3: The Main Control Screen



Two popular TNC packages that Packeteers use are available as freeware. You will pick one of these choices:

- “Easy Term” is Windows-based freeware designed for AX.25 Packet and distributed by the developer Andrei Kopanchuk, UZ7HO. It can be download from <http://uz7.ho.ua/packetradio.htm>. This program can connect Sound Modem to the radio.
- “WinTNC” by Jon Welch, G7JJF, is also Windows-based and can open multiple channels that operate independently and simultaneously. The user sets the preferences for how many channels they want to operate.

You can also add control over the Packet Radio to Internet bridge. I also use Winlink occasionally to send emails over the Internet, particularly if they have attachments. Winlink is also compatible with VARA-HF and VARA-FM as long as the recipient station also has VARA installed.

Peter, VA7PWT, has centralized the control of each of these software packages into one composite interface which reduces the operating complexity. It can be a bit daunting the first time all these software packages are downloaded and configured. You need to tell the Packet Mail program where the various software packages reside on your computer or you can choose to leave those settings blank and have a simplified setup.

What does it take to get on the air with Packet Radio?

Most modern VHF-capable transceivers can be connected to a computer via their accessory socket. Some modern transceiver models even have a terminal node controller (TNC) included within them.

I have an older model UHF/VHF radio that does not support direct connection to my computer so I had to purchase a tiny Digirig Mobile sound modem interface that allowed me to carry out audio and rig control via the computer. Signal Link and other hardware producers offer similar interfaces.

I use the free, open-source Direwolf software because it allows multiple programs to run at the same time. UZ7HO Sound Modem is another useful piece of freeware that provides similar functionality, though it is not quite as flexible as Direwolf.

For users still operating older hardware-based TNCs such as the AEA PK-80 or the MFJ 1270, the Eterlogic Serial Splitter allows multiple programs to connect to one TNC and replaces Direwolf.

The Advantages of using the VA7PWT Packet Mail software include:

- It's fun, free and is not dependent on the internet, which is perhaps its greatest feature.
- It's very robust and you only need to configure the component programs once.
- It can easily handle a chat and each message received can easily be stored on the computer and it notifies the recipient audibly when a mail message arrives.
- Attachments can be sent, although large files such as Word documents or photos take a very long time to transmit. They are Base64-encoded for transmission. This provides no encryption or secrecy, but complies with Amateur Radio regulations.
- In the event of a repeater outage, each station can individually act as a "node" – especially in an emergency.
- Parks On The Air (POTA) activation spotting can be done via Packet when there is outside cellphone coverage but is still accessible to a node.

Our radio club, the Mid Island Amateur Radio Association, has a special interest group called "The Packeteers" led by Peter which meets online weekly to troubleshoot technical issues and to exercise our operating skills by sending messages. All Amateurs are welcome to attend these online sessions. Peter will give you a link to the meeting if you contact him by email.

On Vancouver Island and the adjacent mainland, we are blessed with a high number of Packet Nodes which provide a strong geographical distribution. In some parts of Canada, Packet Radio does not currently have many users so you will need to recruit one or two experimenters to set up and create a local network. Packet Radio also works on HF and VARA is an excellent software. VARA-FM can also be used on VHF, though it is a different digital protocol than Packet.

Operating Packet Radio can give that older transceiver sitting in your shack a new life and support more fun activities for you – particularly if a few Amateurs in your area get active on Packet and set up a local network.

Peter, VA7PWT, provides a link for the VA7PWT Packet Mail software on his website at va7pwt.org/. He also provides some helpful instructions related to configuring and operating the software which remove a lot of the mystery for its users. He also has links to the sources of the various free software programs.

Links and Software:

Digirig Mobile – <https://digirig.net/product/digirig-mobile/?msclkid=61e38af1835415faf83ae39d74dcd1d5>

Direwolf – <https://github.com/wb2osz/direwolf/releases>

Easyterm and Soundmodem – <https://uz7.ho.ua/packetradio.htm>

Eterlogic Serial Splitter: <https://eterlogic.com/Products.VSPE.html>

Eterlogic Virtual Serial Ports Emulator – <https://eterlogic.com/Downloads.html>

Packet Radio – Wikipedia – https://en.wikipedia.org/wiki/Packet_radio

UZ7HO Sound Modem – <https://uz7.ho.ua/packetradio.htm>

VarAC – <https://www.varac-hamradio.com>

Windows TNC (WINTNC) – <https://www.g7jjf.com/packet.htm>

Winlink – <https://winlink.org/WinlinkExpress>

John MacFarlane, VA7PX, has been an Amateur since 2005 and has Advanced certification. He is an enthusiastic fan of Packet Radio and is also active in Parks On The Air.

