

WinLink2000, Telpac, and Paclink

Thousands of hams are able to keep in touch via e-mail using the WinLink 2000 system. Boaters, RVers, hikers, and almost anyone else have found the “WL2K” system quick, easy, and convenient. It’s kind of like the old Packet BBS forwarding system on steroids. This unique system is about to take another giant step forward, thanks to two new utilities called Telpac and Paclink. This month we’ll take a look at the whole system, and learn how you can get involved.

Being the Digital editor of *CQ* doesn’t guarantee that I know everything. I’d seen and heard a little bit about WinLink 2000 (WL2K), but it wasn’t until a presentation made by Rick Muething, KN6KB, at the 2003 ARRL/TAPR Digital Communications Conference in September in Connecticut when I really understood what he and his colleagues (Victor Poor, W5SMM, Hans Kessler, N8PGR, and Steve Waterman, K4CJX) had accomplished.

Do you remember back in the heyday of packet when Packet Bulletin Board System (PBBS) operators accepted your text-only message, and if you addressed it correctly, it could get across the state in a day or two, and across the country in under a week? Later, when HF was used for message forwarding, times were cut to a day or so for most of the world. Then the internet came along, just about killing that idea. However, the need for a radio-based message system didn’t go away, and folks struggled with AX.25 packet, Pactor, and other modes on slow and fickle HF channels.

WinLink 2000 was introduced in late 1999. Take a look at the winlink.org website for some history on how it evolved from Amlink, Winlink, and NetLink, early messaging systems dating back to 1983. Basically, with WinLink 2000 you have a few Participating Mail Box Operators (PMBOs) scattered throughout the world, generally with HF and some VHF radio ports. Users connect to the PMBO site over the air and interact with it much like one would interact with a PBBS. All of the PMBOs (there are 39 at present) are linked via the internet to a central server, which intelligently routes the messages to the best PMBO for the addressee, defined as the one(s) the addressee has used in the last 90 days. All this makes for a very fast, wide-reaching, and reliable message system, while eliminating the need for users to deal with address routing as in the old packet days.

Of course, it isn’t all *radio*. Some readers will be troubled by such a heavy use of the internet for



Photo A— At the ARRL/TAPR Digital Communications Conference in Connecticut, Rick Muething, KN6KB, explains the finer points of Telpac to John Wood, KF6HFA.

message forwarding. After all, can we count on the internet in an emergency? I asked Rick Muething about that very subject, and he told me the following:

WL2K is mainly directed at mobile hams who want to keep in touch, but is designed to be “Emergency Management” ready. If a large area was affected by some kind of disaster, one could expect that PMBO stations outside the affected area would remain operational and ready to accept emergency traffic via HF from the affected area. WL2K uses redundant central servers to connect to all the PMBOs, sited at professional hosting sites located in California and Ohio, to further reduce the chances of a local failure affecting the system. So, despite the use of the internet, the system is designed to function, and likely to be very useful, in an emergency. The system has achieved much better than a 99% uptime over the past four years of operation.

Until recently, the WinLink 2000 system was geared mainly towards support of HF Pactor operations, with limited VHF/UHF packet support. The PMBOs cover a wide area with HF, but there is a need for more local, shorter-range VHF packet coverage—something like a mini-PMBO, since a full-service PMBO requires significant investment. Having terrestrial VHF packet coverage would greatly increase the utility of WL2K, both for travelers and emergency preparedness.

A second issue was the e-mail client. Although AirMail (by Jim Corenman, KE6RK) was (and is!) used to provide a convenient and easy-to-use e-mail client, it was focused on the HF Pactor user. While AirMail offers direct support of the PTC II TNC (terminal node controller) for HF Pactor operation, as well as SCS and Kantronics TNCs for packet,

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Photo B— Gerald Youngblood, AC5OG, discusses the SDR-1000 Software Defined Radio with Ron Block, KB2UYT (left), and Phil Thies, K3TUF (right), at this past September's DCC.

some users wanted to use more generic e-mail clients such as Microsoft's Outlook Express, as well as operate VHF or UHF packet with other TNCs.

Using Common E-Mail Programs

Then, early this year, two new utilities were developed which address these issues. The first, Paclink, provides an interface from Microsoft Outlook and Outlook Express (and other common e-mail clients) to the packet radio world. The second, Telpac, provides a bridge between the worlds of packet and Telnet, allowing almost anyone to set up a local link to the WL2K system. Since over 90% of the computers out there run Windows®, the authors developed these only for computers running Microsoft Windows®. It's not that they have anything against Apple or Linux, but Microsoft offers software tools that make the task much easier. Of course, any competent Mac or Linux programmers are welcome to contact the WinLink 2000 folks to offer their services. Anyway, let's take a closer look at both of these new utilities.

Paclink software is aimed at the user of the WL2K system—that is, it is a client program. Instead of using AirMail or a terminal program to access the WinLink 2000 system, you can harness the power of an advanced mail client such as Outlook. Any e-mail client capable of SMTP (Simple Mail Transfer Protocol) or POP3 can be used, and those with

multiple account capabilities are the most convenient. The idea is that you can set up your WL2K account just like you'd set up any other e-mail account, and just switch between them as necessary. In other words, Paclink gives MS Outlook a radio connection.

For example, my Internet Service Provider allows me to set up five different e-mail addresses. Of course, one is my call-sign, but I also have one with my name, so non-ham friends and family don't have to wonder what an "N2IRZ" might be. Naturally, both kids have their own accounts, and so does the XYL. In Outlook Express, which comes with all newer Windows® versions, I set up each of these accounts, and I easily can select the one I want to use. While they all use the same dial-up connection, they could just as easily use different ones instead, just as each has its own password. Paclink appears like just another mail server to Outlook; it doesn't matter that it's running on the same computer.

You'll also need some other software

to use Paclink, all of it free for the downloading. Since Paclink was written in Microsoft's VB.NET, you'll need to install the .NET (pronounced "Dot Net") framework. While this is a huge (over 25 MB) download from the Microsoft site, it also allows you to run anything else that requires it. It's possible you already have it installed on your PC. If not, you can use the Windows® Update feature to get it.

The AGW Packet Engine

AGWPE, written by George Rossopoulos, SV2AGW, acts as the interface between your computer and TNC. While Paclink can control some types of TNCs directly, using AGWPE simplifies the task and adds flexibility. The program is free for amateur use and can be downloaded from the AGW website (see sidebar). Setup of Paclink, Outlook (or Outlook Express), and AGWPE is straightforward and is explained very clearly in the Paclink documentation.

Of course, you'll need a TNC, or at least a sound card. The WinLink 2000 folks recommend Kantronics products if you are not using the AGW Packet Engine, since the Kantronics Host Mode handles multiple channels more reliably. Of course, the AGW Packet Engine software kind of makes that point moot, supporting almost any TNC

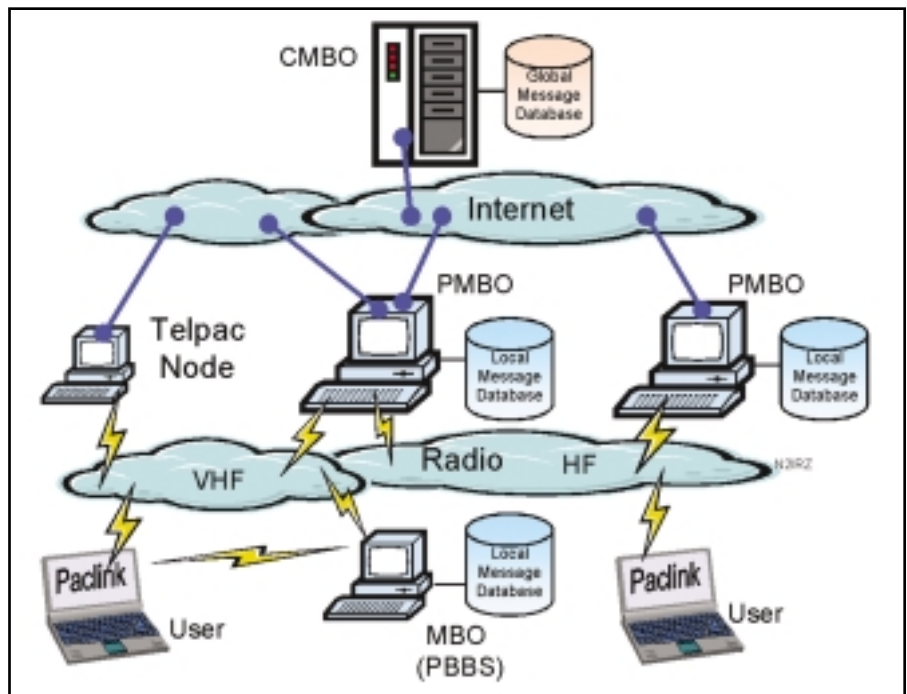


Fig. 1— The WinLink 2000 system. Users connect to one of 39 Participating Mail Box Operators (PMBOs) either directly or through a Telpac connection. PMBOs route all messages to the Clearing Mail Box Operator (CMBO), where they are passed along to the PMBOs the addressee has used in the recent past. Designed with emergency operations in mind, the system is very robust and flexible.

ever made, including the BayCom serial and parallel modems and most PC sound cards. Finally, you'll need a radio for the final link, a connection to your nearest PMBO . . . or do you?

With only 39 PMBOs out there, even with multiple ports, one can easily imagine congestion and competition for those precious HF entry lanes into the WL2K system. More PMBOs are welcome to join in certain geographic areas (sorry, but most of North America is well-covered), but you must realize that you need a significant investment in hardware (you need a server-class machine and a lot of radios), infrastructure (a full-time broadband internet connection), radios, antennas, and data terminals (PTC II TNC with Pactor I, II, and III), along with the commitment to ensure a very high degree of uptime. A PMBO isn't a part-time or fly-by-night operation. With these considerable resource requirements, it could be daunting for a casual operator to participate.

For exactly that reason Telpac was developed. Telpac is a small program that provides an interface between packet (either through the AGWPE or to a TNC directly) and Telnet (an internet connection). Basically, any casual packet operator can put his or her station on the air, accept WL2K connections over the air, and route them over the internet to a PMBO for processing. Unlike a PMBO, a Telpac station doesn't need to make much of an investment, nor is there a commitment to ensure availability. Unlike Paclink, which is a client program aimed at WL2K users, Telpac is aimed at network infrastructure operators—those willing to put up equipment for the rest of us.

Thus, here's an opportunity for most anyone with a packet station to get involved in WinLink 2000. You can put

up a WinLink 2000 Telpac port for general WL2K access on any VHF or UHF radio channel, or attached to a packet network, with little to no investment. (Note that HF packet access, being relatively inefficient, is not desirable.) Whether you do this as a service to local users, for travelers in your area, as another network utility, or for emergency preparedness, you'll be helping the WL2K system expand. Even if it's just local users trading e-mail using Outlook Express instead of a terminal program, it's the next big thing for packet. WinLink 2000 supports the FBB transfer protocol, so even your local BBS can be used to pass messages to and from WL2K via a PMBO or Telpac node.

The Internet Side

While the radio side of the Telpac connection is fairly straightforward, the internet side may be a little more unfamiliar. Because the WL2K system is designed for emergency use, it was made as flexible as possible. Your internet connection can be anything from full-time broadband (such as a cable modem or DSL) to a regular dial-up connection. Yes, Telpac will even dial up your ISP, pass the traffic, and hang up when it's done. Although the user will sense a little latency while the dial-up connection is built, having that flexibility is great in an emergency situation. Like Paclink, setup is straightforward and clearly explained in the documentation.

Some other emergency-preparedness features include the capability for PMBOs to connect to each other using an RF path instead of the internet. It's slower, for sure, but better than nothing in an emergency. Even Telpac operators can use a wireless radio path, such as WiFi (802.11x) or an HF internet bridge, for their internet connection. To

prevent unauthorized access, passwords are used on the internet side of things, but the radio ports are open to any registered user. Registration and callsign verification are automatic and as simple as connecting to the system—and it doesn't cost a dime.

Although I've been focussing on the e-mail capabilities of the WL2K system, it's capable of handling all kinds of traffic, from position reports to weather maps. The only limitation is the relatively slow RF data link, and with the progress being made there, that might not be much of a problem in the future. Whether you send the data from your yacht in the middle of the Pacific using Pactor, or from your RV parked by Mount Rushmore, WL2K offers a fast, reliable, and—most important—convenient way of moving data.

Summary

So there you have it: WinLink 2000 and the new Paclink and Telpac utilities. WinLink 2000 is everything the worldwide packet radio network wanted to be, but never attained. Although it uses the internet, it is a valid and valuable synergy, which makes the entire system much more valuable for all of us. Paclink lets us use off-the-shelf e-mail programs for messaging, and—with AGWPE—supports virtually any TNC. Telpac lets most anyone get involved in providing infrastructure for the rest of us so that access to the WinLink 2000 system can become universal and ubiquitous.

Every other month I write about some digital technology, whether it's something relatively new (like this month) or something well known (such as PSK31). I strive to discuss these topics in a way that is easy to understand, yet gives you enough information to decide whether or not it's interesting enough to learn more about it on your own.

My last two columns on PKS31 surprised me with the volume of mail it generated. Folks who had never tried anything digital before had a ball with a keyboard for the first time ever. I hope that each of you takes a moment and tries something new, whatever it may be, every month. You don't have to go crazy with every new mode (there are so many!), but until you try something new, you'll never know what's going to be fun. Go ahead and give this month's topic a try, then and write and let me know what you think.

As always, in this cold but festive time of year I want to extend my wishes for peace in the world, and all the very best to you and yours.

73, Don, N2IRZ

More Information and Software

To learn about the WinLink 2000 system and download software, visit their website at <<http://www.winlink.org>>. To see the location and status of the current Telpac nodes, visit <<http://www.winlink.org/status/Telpac.aspx>>.

To get more information about the AGW Packet Engine, Packet Engine Pro, Monitor, Terminal, and Digi software, visit <<http://www.elcom.gr/sv2agw>>.

To download the Microsoft .NET framework, which allows any .NET application to be run on your Windows® computer, visit <<http://www.microsoft.com>>. As an alternative, use the Windows® Update feature, which also lets you download any critical updates and other utilities for your Windows® operating system.

For more information about AirMail, or to download the software (which is licensed without charge for amateur radio use), visit the AirMail 2000 web page at: <<http://www.airmail2000.com>>.

As a special service for CQ readers who either don't have internet access or have a dial-up connection which might take hours to download the software, I'm offering a CD-ROM with the files you need for Paclink and Telpac. This includes the Microsoft .NET framework and all of the AGW packet engine files. To cover my costs for CD duplication and mailing, please enclose \$3.00. There is no need to send an SASE or stamps; just send \$3.00 and your address and tell me you want the Paclink/Telpac CD. My address is on the first page of this month's article.